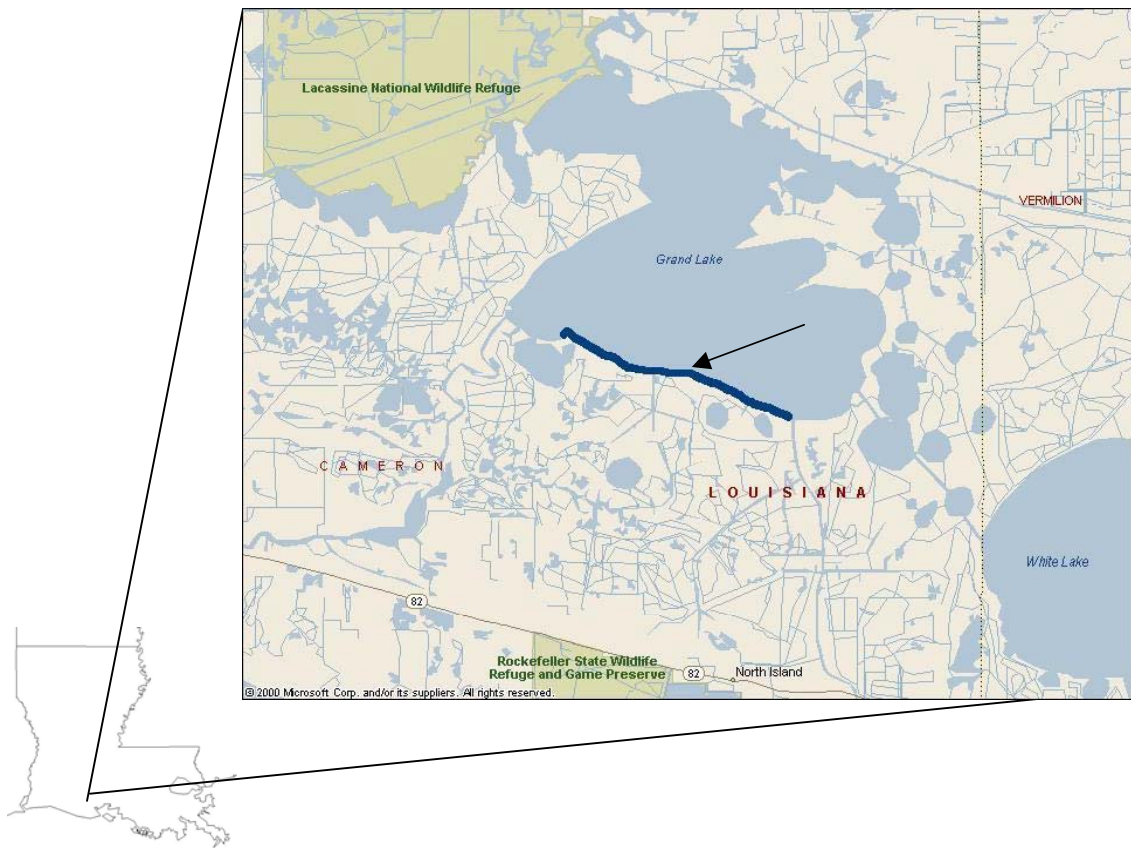


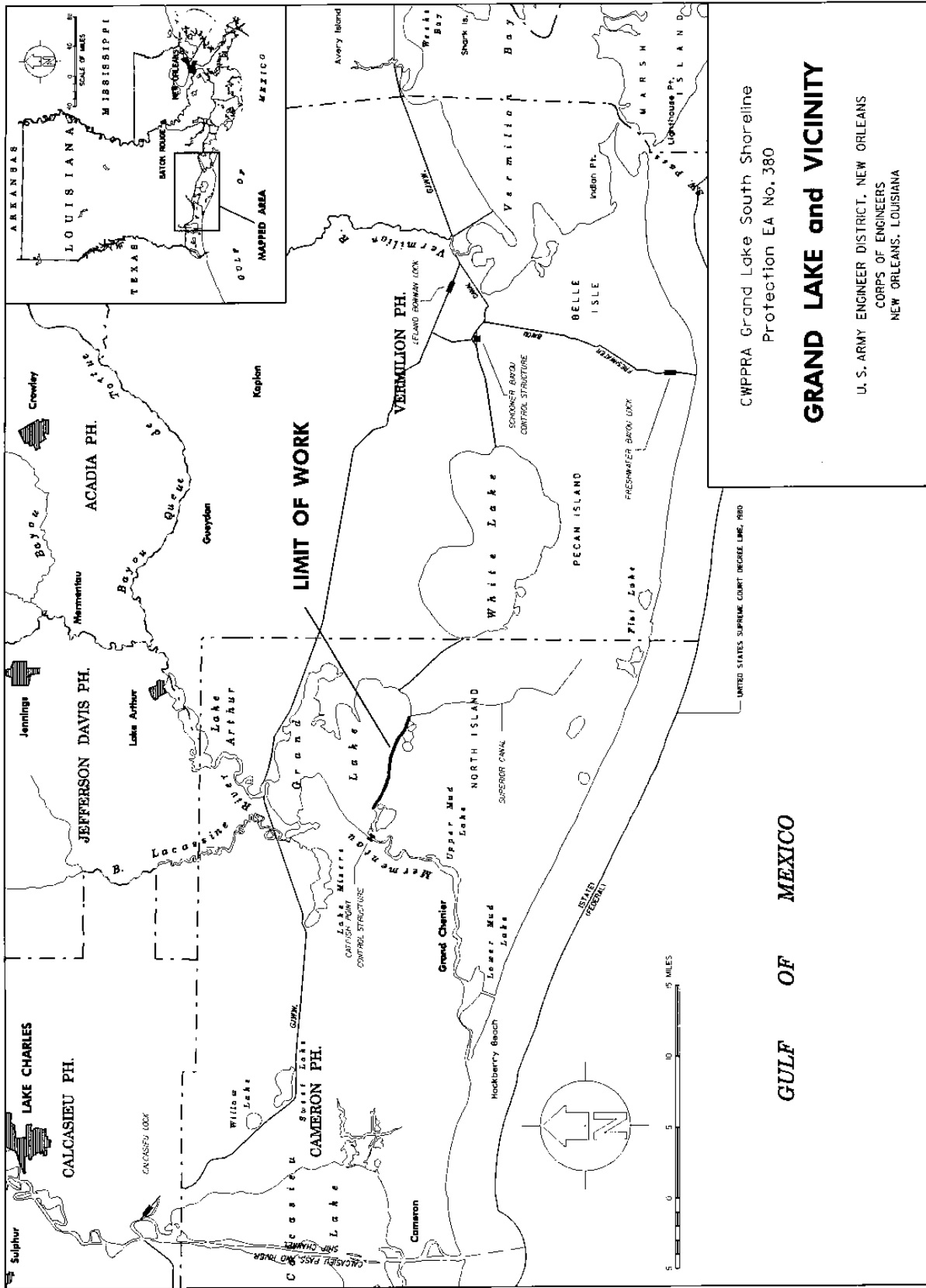
**ENVIRONMENTAL ASSESSMENT**  
**GRAND LAKE SHORELINE PROTECTION**  
**CAMERON PARISH, LOUISIANA**  
**EA #380**

**INTRODUCTION**

The U.S. Army Corps of Engineers, Mississippi Valley Division, New Orleans District (CEMVN), has prepared this Environmental Assessment # 380 (EA #380) to evaluate the potential impacts associated with the proposed shoreline stabilization along the southern shore of Grand Lake between Superior Canal and Tebo Point, Cameron Parish, Louisiana (see Figure 1, and Map – pg 2). Grand Lake and the Mermentau River provides a navigable channel for commercial shipping vessels between the Gulf of Mexico and the Gulf Intracoastal Waterway (GIWW). EA #380 has been prepared in accordance with the National Environmental Policy Act of 1969 and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation, ER 200-2-2.



**Figure 1. Grand Lake Shoreline improvement project location**



CWPPRA Grand Lake South Shoreline  
Protection EA No. 380

### GRAND LAKE and VICINITY

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS  
CORPS OF ENGINEERS  
NEW ORLEANS, LOUISIANA

UNITED STATES SUPREME COURT DECREE LINE, 1910

GULF OF MEXICO

## **PURPOSE AND NEED FOR THE PROPOSED ACTION**

The purpose of the proposed action is stop shoreline erosion from Superior Canal to Tebo Point and to promote accretion of sediment behind the breakwater. The proposed action resulted from shoreline erosion rates between 11 to 32 feet per year in comparison of aerial photographs taken 20 years apart (1978-79 and 1997-98). At this rate, approximately 445 acres of valuable wetland habitat would continue to be exposed and/or lost in the next 20 years. Wetlands left exposed to and unprotected from the open waters of Grand Lake would continue to deteriorate, converting into shallow open water.

## **AUTHORITY FOR THE PROPOSED ACTION**

On November 29, 1990, the U.S. Congress enacted Title III, Public Law 101-646, the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA). President George H.W. Bush signed the law on November 29, 1990. The CWPPRA directed formation of the Louisiana Coastal Wetlands Conservation and Restoration Task Force, and charged the Task Force with developing a long term Restoration Plan for Louisiana's coastal wetlands. The Act provides planning and project construction funding. The Act directs the Task Force to submit annual listing of priority projects, designated to create, restore, and preserve coastal vegetated wetlands, to the U.S. Congress as part of the President's budget. The Task Force submitted the first annual Priority Project List to the U.S. Congress in November 1991. This shoreline stabilization project, using rocks to abate shoreline erosion, was approved for Phase 1 funding through the 10<sup>th</sup> Priority List.

## **PRIOR REPORTS**

- Grand-White Lakes Land Bridge Protection Project EA (PME-18/ME-19), Cameron Parish, LA (1/2003). This report was prepared by the US Fish & Wildlife Service in coordination with the CWPPRA Task Force agencies. The EA evaluates alternatives to stop or slow shoreline erosion along the southeastern shoreline of Grand Lake and the northern and western shorelines of Collicon Lake. The preferred alternative would halt shoreline erosion and create marsh in that portion of the Grand-White Lakes Land Bridge, which is currently less than 500 feet wide and in danger of breaching.
- Mermentau River Disposal Area Containment Dikes & Flotation Canal Lower Mud Lake EA No. 311. This report evaluates impacts attributed to the construction of containment dikes and associated flotation canals in conjunction with routine maintenance dredging of the Mermentau River downstream of Grand Lake and the Catfish Point Control Structure. A Finding of No Significant Impact (FONSI) was signed on 27 April 2000.
- Grand & White Lakes Flood Control Project, Technical report #HL-93-11 (8/1993). The Mermentau River is the primary tributary to the Grand and White Lakes area of southwest Louisiana, which provides fresh water for local agriculture, livestock, and wildlife productivity. Hydraulic control structures within the system prevent higher salinities from intruding into sensitive areas. These features also restrict the passage of flood flows from the lower Mermentau River basin to the Gulf of Mexico.
- Grand & White Lakes Water Management Study (9/1983). This report presents the results of an initial evaluation of water resources related problems in the Grand and White Lakes area in western coastal Louisiana. The study was intensively surveyed to obtain agricultural data and information on water resources problems being experienced by local residents. Five major problem areas were identified: restricted lake access to juvenile marine and estuarine organisms, increasing severity of flooding, saltwater intrusion in irrigation water supplies, and wildlife productivity. Eleven alternative plans were developed, and in the final analysis, some of the plans were proposed to be combined to form a comprehensive plan of improvement addressing

all the problem areas.

- Mermentau River Basin, Final Environmental Impact Statement (EIS) Operation and Maintenance of Four Projects. Filed with the U.S. Environmental Protection Agency (EPA) on 26 March 1982.
- Mermentau River-Gulf of Mexico Navigation Channel, Louisiana. Final EIS filed with the EPA on 10 October 1978.

## **PUBLIC CONCERNS**

Land loss and habitat deterioration are major problems along the Louisiana coastal area. Habitat losses have significant impacts to the socioeconomic livelihood of the commercial fisheries and shellfish industries. Aerial photography (1978-1979 and 1997-1998) indicates that shoreline erosion rates vary from 11 to 32 feet per year. Substantial concern has been expressed since Louisiana has approximately 40 percent of the nation's coastal marshes. These marshes and other associated wetlands directly support 28 percent of the national fisheries harvest, the largest fur harvest in the U.S., a majority of the marine recreational fishing landings, and an extensive variety of wildlife (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority [LCWCRTF and WCRA], 1998). The continued loss of wetlands is of substantial concern and has contributed towards authorization of this project.

## **DESCRIPTION OF THE PROPOSED ACTION**

The proposed action consists of building approximately 39,000 feet of stone breakwater along the south shore of Grand Lake in Cameron Parish, LA (Appendix A: Proposed Project Footprint). The breakwater will stretch westwards from Superior Canal to the mouth of Catfish Lake, approximately 1600 feet east of Tebo Point. This breakwater would be built at the outer edge of the -2 foot depth contour (estimated -1.2 ft North American Vertical Datum 1988 [NAVD 88] equivalent). The crest elevation would be +3.5 feet NAVD 88, 4-foot crest width, with 1:5 front and back slopes. Stone size for the breakwater would be 650 pounds maximum (largest stones would be approximately 24 inches in diameter), and would require approximately 185,000 tons of stones. The stones would be placed on geotextile fabric that is 3600 pounds per linear foot (plf). Gaps for fish access would be built approximately every 1,000 feet, would have a top width of 50 feet, and would extend to the lake bottom. A flotation channel would be at least 45 feet from the centerline of the dike with a side slope of 1:2 and a depth of -5 feet. Material from the flotation canal would be cast inside the breakwater where feasible. Additional access dredging is likely to be required in the vicinity of the project site in order to allow rock transport from the GIWW and/or the Mermentau River to the project site. Controlling water depth would be -5 feet and materials would be stockpiled adjacent to the required dredge location during construction, then returned to its pre-project location upon project completion. Shoreline loss would be prevented and some marsh would accrete south of the breakwater so at the end of 20 years, 495 acres of marsh would be protected and/or created.

## **ALTERNATIVES TO THE PROPOSED ACTION**

One alternative to the proposed action has been considered, and this was No-action.

No-Action. Under the no-action alternative, CEMVN would not construct a breakwater along the southern shoreline of Grand Lake between Superior Canal and Tebo Point.

## ENVIRONMENTAL SETTING

### GENERAL

The project is located on the south shore of Grand Lake, which is in the Mermentau River Basin, part of the Lakes sub-basin, Cameron Parish, in southwestern Louisiana. The lake is approximately 42,000 surface acres, somewhat circular in shape, and approximately eight miles across. Due to the shallowness of the lake (less than 10 feet deep), wind driven waves easily form. During the winter months, strong northern winds cause large waves, which continue to cause erosion on the southern shore. Coastal marsh bisected by canals completely surrounds the lake, and access to the lake is by boat from one of these canals. The coastal marshes provide important winter habitat for migratory birds, the southern end of the Mississippi Flyway. Vegetation types occurring on the shores of the lake are primarily water tolerant grasses, sedges, and shrubs.

### CLIMATE

Cameron Parish is located within a subtropical latitude. The climate is influenced by the many water surfaces of the nearby lakes, streams, and the Gulf of Mexico. Throughout the year, these water areas modify the relative humidity and temperature conditions, decreasing the range between the extremes. Summers are long and hot with high average humidity, with average daily temperatures of 81°Fahrenheit and the average daily maximum of 90°F. Winters are influenced by cold, dry polar air masses moving southward from Canada, with the average daily temperature of 53°F, and the average daily minimum of 43°F. Annual precipitation averages 55 inches.

### GEOLOGY/SOILS

Grand Lake and the Mermentau River Basin lie in the Chenier Plain, a series of ancient natural beaches consisting of coarse sand and crushed shells, which through the activities of nature, have become isolated from the sea by strips of marshes. These sediments from the Mississippi River were deposited along the coast and periodically eroded as the river shifted its mouth during the past 3,000 years. Eroded deposits are evident as intermittent shell ridges, called “cheniers” by early French explorers & settlers because of the live oaks that grow on them (Boesch et al, 1994).

Soils in the project area consist of Larose and Allemands types. Both are described as very poorly drained, ponded most of the time, and are frequently flooded. Larose soils are further described as very slowly permeable, very fluid, mineral soils that formed in herbaceous plant remains. The Allemands soil type is more organic than Larose, and formed in moderately thick accumulations of decomposed herbaceous material. Both soil types are also well suited for wetland wildlife, and used for hunting, fishing, and other outdoor activities. Controlling the level of water and preventing wildfires and saltwater intrusions are the main concerns in managing the soils for wildlife habitat (Midkiff *et al*, 1995).

## SIGNIFICANT RESOURCES

### GRAND LAKE

#### Existing Conditions

This resource is institutionally significant because of the Clean Water Act of 1977, as amended. Grand Lake is technically significant because it provides habitat for various species of wildlife, finfish, and shellfish. Grand Lake is publicly significant because of the desire of the public for recreational use of the lake for fishing, boating, and bird watching.

Grand Lake and the Mermentau River basin are made up of slow moving bayous and rivers; lakes; and marshes. Historically, the area was typified by vast expanses of marsh interspersed with long strands of uplands along old natural ridge lines (cheniers) south of Grand and White Lakes. The lake itself is large, approximately 10 miles across at the widest southern end, irregular in shape, and fairly shallow (less than 10 feet), except for maintained shipping channels. Webb (1982) stated that erosion is generally more severe as fetch (length of open water) increases, and that north winds generate powerful wave action on the southern shorelines. The relative shallowness of the lake causes it to be more susceptible to wind driven wave action, which causes further erosion and inundation into the surrounding marsh. Attempts to stabilize the shoreline in the vicinity of Tebo Point during the 1990's (1994, 1995, & 1997) with vegetative plantings failed in the long term partially due to the wind driven wave action.

Local elevation is measured only in inches, and with a minor change of water depth, plant cover changes. Prior to control structure construction in the early 1930s, the marsh vegetation varied from fresh to brackish, depending on the volume of flood-flows passing down the Mermentau River to the Gulf of Mexico. Historically, during high water periods the vegetation tended to become fresher; during low flows, more saline. Currently the lake is surrounded by fresh marsh with some brackish marsh around the Mermentau River outflow south of Catfish Point Control Structure. Most of the area surrounding the various large and small lakes are sawgrass or maidencane with intermittent ponds. Early vegetation studies indicated saltwater ingress was accentuated by construction of the old Inland Waterway through Grand and White Lakes (Plate 1). Montz (1977) indicates that the placement of control structures, Vermilion Lock (replaced by the Leland Bowman Lock in 1984) on the GIWW, Schooner Bayou Control Structure, and Freshwater Bayou Navigation Canal (1933, 1951, and 1969 respectively)



**Figure 2. Catfish Point Control Structure, Mermentau River (USACE photo)**

stabilized the vegetation north of the structures and resulted in the replacement of brackish species with fresher types. Although the aerial coverage of saline marshes along the gulf had undergone no noticeable change, brackish marsh was reduced and the line of demarcation between brackish and intermediate marsh had generally migrated eastwards (USACE MVN, 1983). Grand Lake is completely surrounded by freshwater marsh with the exception of an area of intermediate salinity marsh in the vicinity of Catfish Point Control Structure (Figure

2) on the Mermentau River outflow from Grand Lake.

#### Future Conditions with No Action

Without implementation of the proposed action, the shoreline would continue to erode at rates that vary from 11 to 32 feet per year based on aerial photographs, continuing the loss of Louisiana's fresh water marshes. As the surrounding marsh drowns, converting to shallow lake bottom, Grand Lake would continue to grow in surface acreage (approximately 445 acres in the project area). Unfortunately these shallow waters aren't as valuable as habitat for aquatic species as emergent shorelines and marshes (Webb, 1982).

#### Future Conditions with the Proposed Action

With implementation of the proposed action, approximately 32 acres of muddy and non-vegetated bottom would be lost under the footprint of the breakwater. However, with construction of the breakwater, shoreline loss would be prevented and some marsh would accrete south of the breakwater.

### WETLANDS

#### Existing Conditions

This resource is institutionally significant because of: the Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968. Wetlands are technically significant because: they provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and nonconsumptive recreational opportunities. Wetlands are publicly significant because of the high value the public places on the functions and values that wetlands provide.

In the project area, the full range of marsh and shallow open water and fresh to saline water is present. In the study by Peters *et al* (1978), 16 wetland associated groups composed 59% of the U.S. commercial fisheries landings by weight. Louisiana Department of Natural Resources states that over 75% of the state's commercially harvested fish and shellfish species are dependant on wetlands. Most of these species utilize estuarine wetlands during young and larval stages of their life cycle. Much of the wetlands around Grand Lake are under some type of management or have been dewatered for agricultural uses especially in the northern portions. Except for the altered areas, the salinity is related to the distance from the Gulf. Historically, the wetlands were more saline, but with the Catfish Point and Schooner Bayou Control Structures the hydrology of the area has changed and as a result less brackish water is allowed to enter the lake and surrounding marshes, thus converting the intermediate marsh to fresh marsh. Dominant vegetation consists of bulltongue, maidencane, giant cutgrass, wiregrass, Roseau cane, willow, buttonbush, elephant's ear, and a few bald cypress trees.

#### Future Conditions with No Action

Without implementation of the proposed action, the southern lake edge would continue to erode, enlarging the lake, and enveloping the marsh in the process, for a total of approximately 445 acres.

## Future conditions with Proposed Action

With implementation of the proposed action, there would be a temporary disturbance during construction, but once completed, the southern lake edge would stabilize allowing sediment to settle out, and create and/or protect approximately 495 acres of marsh at the end of 20 years. In addition, this project is anticipated to benefit 445 acres of fresh marsh and 717 acres of open water, for a total of 1,162 acres<sup>1</sup>. Based on the Wetlands Value Assessment (WVA; see Appendix B: Wetland Value Assessment Spreadsheet), the project will have a net gain of approximately 149 Average Annual Habitat Units (AAHU).

## FISHERIES

### Existing Conditions

This resource is institutionally significant because of the Fish and Wildlife Coordination Act of 1958, as amended. Fisheries resources are technically significant because: they are a critical element of many valuable freshwater and marine habitats; they are an indicator of the health of various freshwater and marine habitats; and many species are important commercial resources. Fisheries resources are publicly significant because of the high priority that the public places on their esthetic, recreational, and commercial value.

Grand Lake and surrounding marshes are freshwater bodies that are influenced by locks and control structures. This area sustains populations of Gulf menhaden, blue crab, largemouth bass, channel catfish, and several species of sunfish. Red and black drum, spotted seatrout, southern flounder, and white and brown shrimp populations have declined within the lake as it as converted to a more freshwater lake (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority, 1999). The marsh adjacent to the project area provides nursery habitat for larval freshwater fish such as largemouth bass, channel catfish, and sunfish as well as habitat for some estuarine-dependant species tolerant of near-freshwater conditions such as Gulf menhaden, brown and white shrimp, and red drum. In the Coast 2050 Report (LCWCRTF and WCRA, 1998 and 1999), these resources were expected to remain steady in the next 50 years.

### Future Conditions with No Action

Without implementation of the proposed action, nursery habitat for freshwater and estuarine species would continue to be lost as the lake encroaches into the marsh.

### Future conditions with Proposed Action

With implementation of the proposed action, the lake shoreline would be protected, thus protecting the marsh edge and saving valuable habitat for larval fish and shellfish.

## WILDLIFE

### Existing Conditions

---

<sup>1</sup> Louisiana Coast 2050 website, <http://www.lacoast.gov/reports/wva.asp>



This resource is institutionally significant because of the Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918. Wildlife are technically significant because: they are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources. Wildlife are publicly significant because of the high priority that the public places on their esthetic, recreational, and commercial value.

The diversity of resident wildlife encountered in the marshes and open water is dependent on the quality and quantity of suitable habitat. Although much of the project area is marsh, there are small areas of uplands. Animals typical of woodlands do not only inhabit the Chenier ridges, but also by marsh species that use the elevated sites and trees for nesting, basking, resting, and foraging. Reptiles and amphibians found on the ridges include American alligators, box turtles, six-lined racerunners, skinks, prairie kingsnakes, earth snakes, pigmy rattlesnakes, terrestrial salamanders, toads, and tree frogs. Mammals would include raccoons, swamp rabbits, least shrew, nine-banded armadillos, gray and fox squirrels, rice rats, coyotes, and gray foxes. About half of the wintering population of migratory birds using the central flyway has been reported in the coastal zone of Texas (Webb, 1982) and Louisiana. These birds include Neotropical migrants who use the area for important foraging and resting areas just prior to or returning from the tropics, as well as waterfowl, who winter in the area. Dabbling and diving ducks mainly use the lake mainly as winter habitat.

#### Future Conditions with No Action

Without implementation of the proposed action, marsh habitat would continue to convert to open water as the shoreline erodes and the availability of suitable habitat would be reduced. The diversity of wildlife would be expected to decline as the diversity of habitat commonly associated with freshwater/intermediate marshes would decline (LCWCRTF and WCRA 1998). Species that inhabit the proposed project area as a necessity would be impacted as available habitat is reduced. However, as wetlands continue to decline, the diversity or number of species that utilize wetland habitat by choice would decline as well.

#### Future conditions with Proposed Action

With implementation of the proposed action, future conditions would be expected to remain similar to existing conditions. As the shoreline becomes stabilized and marsh begins to fill in behind the breakwater, additional marsh habitat is expected to be created, thus providing more habitat for resident as well as migratory wildlife.

### ESSENTIAL FISH HABITAT

#### Existing Conditions

This resource is institutionally significant because of the Magnuson-Stevens Fishery Conservation and Management Act. Essential Fish Habitat (EFH) is technically significant because, as the Act states, EFH is "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." EFH is publicly significant because of the high value that the public places on the seafood and the recreational and commercial opportunities EFH provides.

Salinity ranges from 0-0.5ppt in project area,<sup>2</sup> with higher levels on the west end of the

---

<sup>2</sup> Source: Louisiana Department of Water Quality. [www.deq.state.la.us/surveillance/wqdata/wqdata.aspx](http://www.deq.state.la.us/surveillance/wqdata/wqdata.aspx)

project area, closer to Tebo Point and Catfish Lake. Due to the low salinity levels most managed species are not found in abundance (Table 1); although the adjacent wetlands are used as nursery and foraging habitats for juveniles and adults shrimp, juvenile crabs, and juvenile and adult Red Drum (Table 2). These habitats support economically important marine fishery species such as spotted seatrout, southern flounder, Atlantic croaker, gulf menhaden, striped mullet, and blue crab. These species serve as prey for other Federally managed fish species such as mackerels, snappers, groupers, billfishes, and sharks.

Salinity Zone <sup>1</sup>	Life Stage	Brown Shrimp	White Shrimp	Gulf Stone Crab	Red Drum	Spanish Mackerel	Gray Snapper
0 – 0.5 ppt.	Adults	R	R		R		
	Juveniles	R	C - A	C	R		

Relative Abundance: Blank – Not Present; R – Rare; C – Common; A – Abundant. Variation in abundance due to seasonality and salinity levels. (Modified from NOAA SEA Division website <http://galveston.ssp.nmfs.gov/efh>)

Species	Life Stage	Essential Fish Habitat
Brown Shrimp	Juvenile	Turbid estuaries, marsh edge, submerged aquatic vegetation, tidal creeks, inner marsh, shallow open water, nonvegetated bottom, and muddy substrates.
White Shrimp	Adult	Gulf of Mexico, < 33m depth, silt & soft mud
	Juvenile	Marsh edge, submerged aquatic vegetation, marsh ponds, inner marsh, oyster reef, nonvegetated bottom, muddy substrates with high organic content, and turbid estuaries.
Gulf Stone Crab	Juvenile	Rock jetties, oyster reefs, rubble, and mud sediments near structures.
Red Drum	Adult	Gulf of Mexico, estuarine mud bottoms, oyster reef
	Juvenile	Submerged aquatic vegetation, estuarine mud bottoms, marsh/water interface, oyster reef

(Source: Gulf States Marine Fish Commission (<http://www.gsmfc.org>), habitat association tables for the 1998 Generic Amendment for Addressing EFH Requirements).

### Future Conditions with No Action

Without implementation of the proposed action, fisheries access would be expected to remain similar to existing conditions. However, the availability of suitable habitat would decline as the existing marsh is converted to shallow open water.

### Future conditions with Proposed Action

With implementation of the proposed action, fisheries access would be expected to remain similar to existing conditions. During construction phase, approximately 157 acres<sup>3</sup> of nonvegetated and mud bottom would be disturbed. Only approximately 22.4 acres of muddy and/or nonvegetated bottom would be lost under the footprint of the actual breakwater (25 feet wide × 39,000 feet long). Stabilizing the shoreline and allowing sediment to settle out, would

<sup>3</sup> Breakwater construction footprint of 39,000 feet long × 175 feet wide.

create and/or protect approximately 495 acres of more desirable marsh and nursery habitat at the end of 20 years.

## ENDANGERED OR THREATENED SPECIES

### Existing Conditions

This resource is institutionally significant because of: the Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940. Endangered (E) or threatened (T) species are technically significant because the status of such species provides an indication of the overall health of an ecosystem. These species are publicly significant because of the desire of the public to protect them and their habitats.

Of the 29 listed Threatened or Endangered species listed in Louisiana<sup>4</sup>, seven are listed in Cameron Parish, with others listed as “occasional visitors.” Possible listed species in the project area include the Brown Pelican (E); Piping Plover (T); West Indian Manatee (E); Green sea turtle (T); and Leatherback, Hawksbill, and Kemp’s Ridley sea turtles (all E). Bald Eagles and the Louisiana Black Bear are listed only as occasional visitors at Lacassine NWR on the northwest shore of Grand Lake. No Bald Eagle nests are known to occur in the Grand Lake area. Brown pelicans may rest or feed in the project area, but are not known to be resident. Of the listed marine species, the Manatee and the four sea turtles are predominately salt or brackish zone species and as Grand Lake is a fresh water lake, these animals would most likely be only occasional visitors to Grand Lake.

### Future Conditions with No Action

Without implementation of the proposed action, no threatened or endangered species would be already affected.

### Future conditions with Proposed Action

With implementation of the proposed action, there would be no direct or indirect affects on threatened or endangered species. Bald eagles and brown pelicans may be occasional visitors in the project area, but the south shore of Grand Lake is not a known nesting or major feeding ground. Protected marine mammals, fish, or turtles could conceivably swim to Grand Lake through the several canals interlacing the area. However, since the lake is within the upper limits of the tidal system and predominately freshwater, these animals are not likely to be in the lake or project area. In a letter dated May 7, 2003, the U.S. Fish & Wildlife Service concurred with CEMVN’s determination that the proposed project is not likely to adversely affect any Federally listed threatened or endangered species.

## CULTURAL RESOURCES

### Existing Conditions

This resource is institutionally significant because of: the National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979; as well as other statutes. Cultural resources are technically significant because of: their association or linkage to past events, to historically

---

<sup>4</sup> U.S. Fish & Wildlife Service web page, <http://ecos.fws.gov/servlet/TESSwebpage>

important persons, and to design and/or construction values; and for their ability to yield important information about prehistory and history. Cultural resources are publicly significant because preservation groups and private individuals support their protection, restoration, enhancement, or recovery.

The southern shore of Grand Lake has seen erosion in past years. Recent estimates are that the shoreline is eroding at the rate of 11 to 32 feet per year. Although no formal cultural resources survey has been conducted of the Grand Lake area, numerous sites have been recorded in the general area of the current project limits. Site 16CM33 is located on the northern edge of Tebo Point, but this site remains outside of the current project area. All sites in the shoreline area tend to be shell middens with various cultural debris sometimes associated. These sites are all in a state of erosion, caused either by wavewash or the erosion of the shoreline. As the shoreline continues to erode, further damage is caused to any prehistoric or historic evidence of occupation in the area. However, no study or recorded information indicates that cultural resource sites exist within the boundaries of the current project area. Recent visits to the project area by an archeologist from CEMVN have found no signs of reported or unreported sites within the project area, and have found no indication that 16CM33 extends into the project area.

#### Future Conditions with No Action

Without implementation of the proposed action, the shoreline of Grand Lake would continue to erode. Any unknown cultural resources would eventually become exposed and potentially destroyed by this erosion.

#### Future Conditions with the Proposed Action

With implementation of the proposed action, erosion to the shoreline of Grand Lake would be reduced. Unknown cultural resources that may exist within the project area would risk damage during construction activities. However, because no existing cultural resources are known or believed to exist within the proposed project area, the Proposed Action would have no effect on cultural resources. Recent site visits by CEMVN personnel found no evidence that reported or unreported cultural resources exist within the project area. To the degree that shoreline erosion would be halted by the proposed action, any unknown cultural resources would remain stable.

If project limits change to include the northern edge of Tebo Point, then site 16CM33 would be damaged. Therefore, if project limits change no work may proceed until further cultural resources investigation has occurred. Furthermore, barges carrying rock for construction of this project must access the project area from the north and must avoid construction of a flotation channel near Tebo Point. Likewise, if any unrecorded cultural resources are determined to exist within the proposed project boundaries, then no work will proceed in the area containing these cultural resources until a CEMVN-PM-RN archeologist has been notified and final coordination with the Louisiana State Historic Preservation Officer (SHPO) and the Tribal Historic Preservation Officers (THPO) has been completed.

## RECREATIONAL RESOURCES

### Existing Conditions

This resource is institutionally significant because of the Federal Water Project Recreation Act of 1965, as amended, and the Land and Water Conservation Fund Act of 1965, as amended. Recreational resources are technically significant because of the high economic value of recreational activities and their contribution to local, state, and national economies. Recreational resources are publicly significant because of: the high value that the public places on fishing,

hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Louisiana; and the large per-capita number of recreational boat registrations in Louisiana.

The natural and recreational resources of the project area provide wide and varied opportunities for outdoor enjoyment. Recreational activities taking place in Grand Lake include motorized and non-motorized boating, environmental study, hunting, fishing, and wildlife viewing, including nature photography. Recreational fishing is by far the most popular activity in the area due to the presence of the Gulf of Mexico, numerous other water bodies and access into adjacent bayous and marshes. Small game hunting in the adjacent marshes is also popular due to the abundance of habitat and a wide range of species available to the hunter.

The Grand Lake/Cameron Parish area is bountiful in recreational opportunities. Within the 45-mile radius of the proposed project is a population of approximately 10,000 residents. Many of that number engage in multiple recreational uses. On any given day during the year, families can be seen fishing, boating, bird watching, sightseeing and hunting in the vicinity of the project. Included within the proposed project's market area are: 1,477 registered boats, 2,855 resident fishing licenses, and 729 resident hunting licenses<sup>5</sup>.



**Figure 3. Wintering waterfowl (USACE photo)**

#### Future Conditions with No Action

Without implementation of the proposed action, Grand Lake would continue to be impacted by increasing amounts of sediment and nutrients being introduced into it as well as shoreline erosion along the southern shoreline. Recreational use within the project area would continue as it is at present. Erosion is expected to continue along the shoreline impacted by wind and wave erosion. While natural population growth would bring more visitors to the area over time, their experience would be diminished by the negative impacts of no action.

#### Future Conditions with the Proposed Action

The recreational environment in and around the project would experience limited short-term disruption imposed by the physical size and working activities of the floating bucket dredge and associated equipment. Construction of the breakwaters would increase turbidity in the vicinity of work, temporarily disrupting fishing activities. This turbidity would temporarily displace any water-oriented recreational activity taking place during construction to other areas in lake.

The fish and wildlife community thru the construction of the breakwater would realize positive long-term benefits. The breakwaters would provide a new area for fisheries to breed, colonize and forage. Larger sport fish would be attracted by the presence of smaller bait fish and

---

<sup>5</sup> Louisiana Department of Wildlife & Fisheries 2000-2001 statistics

shrimp using the rocks for protection. The exposed rocks would provide areas for birds to loaf and forage.

## AESTHETICS

### Existing Conditions

This resource's institutional significance is derived from laws and policies that affect visual resources, most notably the 1969 National Environmental Policy Act, (NEPA). The 1988 U.S. Army Corps of Engineers Visual Resources Assessment Procedure (VRAP) provides a technical basis for identifying the project's significant impacts. Public significance is based on expressed public perceptions and professional analysis of the projects visual impacts.

Primary viewpoints into the proposed project area emanate from commercial boats as they enter Grand Lake from Superior Canal and from recreational boat traffic as it ventures south from the Intracoastal Waterway. Views are of an existing rock jetty placed in support of petroleum related infrastructure and a variety of vegetation with contrasting forms and textures. Viewpoints that may provide some visual interest are based on the interplay of forms and textures occurring when manmade elements are contrasted by water, vegetation and changes in elevation from the water's edge to dry land.

### Future Conditions with No Action

Without implementation of the proposed action, visual resources would evolve from Existing Conditions as dictated by Grand Lake's wave action causing land erosion and resulting in the loss of shoreline vegetation.

### Future Conditions with the Proposed Action

The eventual creation of marsh as sediment settles behind the proposed breakwater would benefit existing visual resources by providing depth to an otherwise narrow viewed stretch of vegetation. The created marsh would also provide additional contrast in form and texture to the existing background as defined by the existing vegetated shoreline. There may be some perceived visual disturbances as an unnatural breakwater structure is placed in front of somewhat naturally evolved shoreline but the visual benefits surrounding the possible creation of marsh far outweigh any perceived visual disturbances.

During construction activity, loud sounds and visual noise from dredging and disposal activities would temporarily affect aesthetic resources in an otherwise quiet remote area. These minor impacts would be of short duration and the project area should stabilize quickly.

## AIR QUALITY

### Existing Conditions

This resource is considered institutionally significant because of the Louisiana Environmental Quality Act of 1983, as amended, and the Clean Air Act of 1963, as amended. Air Quality is technically significant because of the status of regional ambient air quality in relation to the National Ambient Air Quality Standards (NAAQS). It is publicly significant because of the desire for clean air expressed by virtually all citizens.

Cameron Parish is currently classified in attainment of all NAAQS. This classification is the result of area-wide air quality modeling studies. The total volatile organic compound emissions for this project during construction is anticipated to be well below the *de minimis* level of 100 tons per year. Therefore, this action conforms to the Louisiana State Implementation Plan.

## **HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE**

The USACE is obligated under Engineer Regulation 1165-2-132 to assume responsibility for the reasonable identification and evaluation of all Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within the vicinity of the proposed action. A site visit was conducted on March 6, 2003. A HTRW Land Use History and Phase I HTRW Initial Site Assessment (ISA) # 214 (completed May 12, 2003) have been completed for the proposed action and are on file in the CEMVN. Four pipelines are located near the eastern portion of the project site, near Superior Canal. The pipelines should be clearly marked and avoided to the maximum extent practicable. Based on results of the initial investigation, HTRW risk is low. No further HTRW investigation is warranted for the project.

## **CUMULATIVE IMPACTS**

Shoreline erosion due to artificially elevated water levels is thought to be the leading cause of land loss along Grand Lake. High water levels were maintained in the Lakes Subbasin beginning in 1951, with the installation of the Catfish Point Control Structure, through the mid 1970s. Since then, the water level has been affected by Catfish Point Control Structure, Schooner Bayou Control Structure, Leland-Bowman Lock (formerly Vermilion Lock), Calcasieu Lock, and tidal influence. Dunbar, et al. (1992) states that the greatest land loss in the Lake Subbasin occurred between 1956 and 1974. Attempts to stabilize the shoreline in the late 1990's around Tebo Point with vegetative plantings failed primarily due to the wind driven wave action. CEMVN has managed water at a lower level since the early 1990s, but the lake rims were badly eroded by this time. Consequently, the historical buffer from wave energy was also gone.

The proposed project serves as a barrier to prevent further erosion of the southern shoreline of Grand Lake. Impacts associated with construction would be limited to the footprint of the breakwater and the flotation canal. Material from the flotation canal would be cast inside the breakwater where feasible. Shoreline loss would be prevented and some marsh would accrete south of the breakwater so at the end of 20 years, 495 acres (approximately 149 AAHUs) of marsh would be protected and/or created. At current erosion rates of 11-32 feet per year, in 20 years approximately 445 acres of valuable wetland habitat could potentially be lost, converting to shallow open water. If in the future, the breakwater is continued around Tebo Point (shown as "Optional Work Area" in Appendix A, Figure 1), then a supplemental EA, including further study of cultural resources, will be required.

## **COORDINATION**

Preparation of this EA and a draft Finding of No Significant Impact (FONSI) has been coordinated with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. The following agencies, as well as other interested parties, are receiving copies of this EA and draft FONSI:

U.S. Department of the Interior, Fish and Wildlife Service

U.S. Environmental Protection Agency, Region VI  
U.S. Department of Commerce, National Marine Fisheries Service  
U.S. Natural Resources Conservation Service, State Conservationist  
Advisory Council on Historic Preservation  
Governor's Executive Assistant for Coastal Activities  
Louisiana Department of Wildlife and Fisheries  
Louisiana Department of Natural Resources, Coastal Management Division  
Louisiana Department of Natural Resources, Coastal Restoration Division  
Louisiana Department of Environmental Quality, PER-REGC  
Louisiana Department of Environmental Quality, EP-SIP  
Louisiana State Historic Preservation Officer

## **MITIGATION**

No impacts have been identified that would require compensatory mitigation.

## **COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS**

Environmental compliance for the proposed action would be achieved upon: coordination of this EA and draft Finding of No Significant Impact (FONSI) with appropriate agencies, organizations, and individuals for their review and comments; U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) confirmation that the proposed action would not be likely to adversely affect any endangered or threatened species; Louisiana Department of Natural Resources concurrence with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program; receipt of a Water Quality Certificate from the State of Louisiana; public review of the Section 404(b)(1) Public Notice; signature of the Section 404(b)(1) Evaluation; receipt of the Louisiana State Historic Preservation Officer Determination of No Affect on cultural resources; receipt and acceptance or resolution of all USFWS Fish and Wildlife Coordination Act recommendations; receipt and acceptance or resolution of all Louisiana Department of Environmental Quality comments on the air quality impact analysis documented in the EA; and receipt and acceptance or resolution of all NMFS Essential Fish Habitat recommendations. The draft FONSI will not be signed until the proposed action achieves environmental compliance with applicable laws and regulations, as described above.

## **CONCLUSION**

The proposed action consists of construction of a rock breakwater along the southern shore of Grand Lake between Tebo Point and the Superior Canal. This office has assessed the environmental impacts of the proposed action and has determined that the proposed action would have no significant impact on fisheries, wildlife, threatened or endangered species, cultural resources, recreation, aesthetics, and air quality. Risk of encountering HTRW on this project is low. Approximately 32 acres of muddy and non-vegetated bottom, would be lost under the footprint of the breakwater; however, the stabilization and creation of approximately 495 acres of more desirable freshwater marsh which provides important nursery habitat (essential fish habitat) would make up for this loss. This project is anticipated to benefit 445 acres of fresh marsh and 717 acres of open water for a total 1,162 acres. Shoreline loss would be prevented and some marsh would accrete south of the breakwater so at the end of 20 years, 495 acres (149 AAHUs) of marsh would be protected/created. If in the future, the breakwater is continued around Tebo Point, then a supplemental EA will be required.





## PREPARED BY

EA #380 and the associated draft FONSI were prepared by Elizabeth L. McCasland, biologist, with relevant sections prepared by: Casey J. Rowe - HTRW; Paul J. Hughbanks - Cultural Resources; Jay V. Gamble - Recreational Resources; Richard T. Radford – Aesthetics; and Christopher J. Monnerjahn - Project Manager. The address of the preparers is: U.S. Army Corps of Engineers, New Orleans District; Planning, Programs, and Project Management Division, CEMVN-PM; P.O. Box 60267; New Orleans, Louisiana 70160-0267.

## LITERATURE CITED

Boesch, Donald F, *et al.* 1994. Scientific Assessment of Coastal Wetland Loss, Restoration and Management in Louisiana. *Journal of Coastal Research*, special issue No. 20, Louisiana State University, Baton Rouge, LA.

Dunbar, J.B., L.D. Britsch, and E.R. Kemp III. 1992. Land loss rates. Report 3, Louisiana coastal plain. US Army Corps of Engineers, Mississippi Valley Division, New Orleans District, LA.

Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. 1998. *Coast 2050: Toward a Sustainable Coastal Louisiana*. Louisiana Department of Natural Resources, Baton Rouge, LA.

Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. 1999. *Coast 2050: Toward a Sustainable Coastal Louisiana, The Appendices*. Appendix F – Region 4 Supplemental Information. Louisiana Department of Natural Resources, Baton Rouge, LA.

Midkiff, Clay; A.J. Roy, and Rick Nolde. 1995. *Soil Survey of Cameron Parish, Louisiana*. U.S. Department of Agriculture.

Montz, Glen N. 1977. *A Vegetative Study of the White Lake and Vermilion Bay Louisiana Area*. US Army Corps of Engineers, Mississippi Valley Division, New Orleans District, LA.

Peters, D. S., D.W. Ahrenholz, and J.T. Rice. 1978. Harvest and value of wetland associated fish and shellfish. *In: Wetland Functions and Values: the state of our understanding*. Greason, P.E., J.E. Clark, and J.R. Clark, editors. Am. Water Resources Assoc., Urbana, IL.

US Army Corps of Engineers, Mississippi Valley Division, New Orleans District. 1983. *Grand and White Lakes Water Management Study, Louisiana; initial evaluation report*. New Orleans, LA.

Webb, James W. 1982. Salt Marshes of the Western Gulf of Mexico. *In: Roy R. Lewis III, editor. Creation and Restoration of Coastal Plant Communities*. CRC Press, Boca Raton, FL.



# DEPARTMENT OF THE ARMY

NEW ORLEANS DISTRICT CORPS OF ENGINEERS

P.O. BOX 60267

NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO  
ATTENTION OF:

Planning, Programs, and  
Project Management Division  
Environmental Planning  
and Compliance Branch

## FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Grand Lake Shoreline Protection Project  
Cameron Parish, Louisiana  
EA # 380

Description of Proposed Action. The proposed action consists of building approximately 39,000 feet of stone breakwater along the south shore of Grand Lake in Cameron Parish, Louisiana. The breakwater will stretch westward from Superior Canal to the mouth of Catfish Lake, ending approximately 1,600 feet east of Tebo Point. This breakwater would be built at the outer edge of the 2-foot depth contour (estimated -1.2 ft North American Vertical Datum 1988 [NAVD 88] equivalent). Dimensions of the breakwater would be a crest elevation of +3.5 feet NAVD 88, a 4-foot crest width, and 1:5 front and back slopes. Stone size for the breakwater would be 650 pounds maximum (largest stones would be approximately 24 inches in diameter), and the dike would require approximately 185,000 tons of stones. The stones would be placed on geotextile separator fabric with a tensile strength of 3,600 pounds per linear foot. Gaps for fish access would be built approximately every 1,000 feet, would have a top width of 50 feet, and would extend to the lake bottom, with an approximate bottom width of 36 feet. A flotation channel for equipment access would be at least 45 feet from the centerline of the dike with side slopes of 1:2 and a depth of 5 feet. Material from the flotation canal would be cast inside the breakwater where feasible. Additional access dredging is likely to be required in the vicinity of the project site in order to allow rock transport from the Mermentau River to the project site. Controlling water depth would be 5 feet. Dredged material would be stockpiled adjacent to the required dredging location during construction, then returned to its pre-project location upon project completion. Shoreline loss would be prevented and some marsh would accrete south of the breakwater so at the end of 20 years, 495 acres of marsh would be protected and/or created.

Factors Considered in Determination. This office has assessed the impacts of the proposed action on significant resources, including Grand Lake, wetlands, fisheries, wildlife, essential fish habitat, endangered or threatened species, cultural resources, recreational resources, aesthetics, and air quality. No significant adverse impacts were identified for any of the significant resources. The risk of encountering HTRW is low. By a letter dated 7 May 2003, the U.S. Fish and Wildlife Service confirmed that the proposed action is not likely to adversely affect any endangered or threatened species. In a letter, dated 11 March 2004, the Louisiana Department of Natural Resources concurred with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program (Coastal Zone Consistency #C20040024).

A Water Quality Certificate, (#030801-08 / AI 117263 / CER20030001) dated 23 January 2004 was received from the Louisiana Department of Environmental Quality. Review of the Section 404(b)(1) Public Notice was completed on 7 November 2003. The Section 404(b)(1) Evaluation was signed on 30 October 2003. In a letter dated 3 March 2004, the Louisiana State Historic Preservation Officer concurred with a recommendation of no effect on historic properties. This office has concurred with, or resolved, all Fish and Wildlife Coordination Act recommendations contained in a letter from the U.S. Fish and Wildlife Service, dated 13 February 2004. This office has concurred with, or resolved, all Essential Fish Habitat recommendations contained in a letter from NOAA Fisheries, dated 11 March 2004.

Environmental Design Commitments. No impacts have been identified that would require compensatory mitigation. The following commitments are an integral part of the proposed action:

1.) If the proposed action is changed significantly or is not implemented within one year, CEMVN will reinitiate coordination with the USFWS to ensure that the proposed action would not adversely affect any Federally listed threatened or endangered species, or their habitat. (USFWS CAR letter dated 13 February 2004)

2.) CEMVN is aware of cultural site 16CM33 on Tebo Point. As the Proposed Action will stop at the mouth of Catfish Lake, approximately 1,600 feet east of Tebo Point, the project should have no effect on this resource. If, during construction, evidence is found that portions of site 16CM33 is located within construction areas, then all construction in the affected areas must cease until an CEMVN-PM-RN archaeologist is notified and appropriate actions can be determined. Furthermore, if in the future, the breakwater would be extended around Tebo Point, then a supplemental EA, including further study of cultural resources, will be required. If any unrecorded cultural resources are determined to exist within the proposed project boundaries, then no work will proceed in the area containing these cultural resources until a CEMVN-PM-RN archeologist has been notified and final coordination with the SHPO and THPO has been completed. (SHPO coordination letter dated 3 March 2004)

3.) Approximately 32 acres of muddy and non-vegetated bottom, would be lost under the footprint of the breakwater; however, the stabilization and creation of approximately 495 acres (or 149 Average Annual Habitat Units) of more desirable freshwater marsh which provides important nursery habitat (essential fish habitat) would make up for this loss. (NOAA Fisheries coordination letter dated 9 February 2004)

Public Involvement. The proposed action has been coordinated with appropriate Federal, state, and local agencies and businesses, organizations, and individuals through distribution of Environmental Assessment # 380 (EA #380) for their review and comment.

Conclusion. This office has assessed the potential environmental impacts of the proposed action. Based on this assessment, and a review of the public comments made on EA #380 a determination has been made that the proposed action would have no significant impact on the human environment. Therefore, an Environmental Impact Statement will not be prepared.

2 APR 04

Date



Peter J. Rowan  
Colonel, U.S. Army  
District Engineer