December 1, 2005

FINDING OF NO SIGNIFICANT IMPACT

To All Interested Agencies and Public Groups:

In accordance with the environmental review guidelines of the Council on Environmental Quality at 40 Code of Federal Regulations Part 1500, the U.S. Environmental Protection Agency (EPA) has performed a Supplemental Environmental Assessment for the following proposed action under the authority of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) of November 1990, House Document 646, 101st Congress (Public Law 101-646).

Project Name: Ship Shoal Whiskey Island West Flank Restoration (TE-47)

Sponsors: U.S. Environmental Protection Agency, Region 6
Louisiana Department of Natural Resources

Total estimated funding	$42,175,800
Phase 1 (Engineering and Design) funding	$ 2,999,000
Phase 2 (Construction) funding	$39,176,800

Location: The proposed project is located on Whiskey Island in the Isles Dernieres Barrier Island chain, centered at approximate coordinates 29° 03' 45" north latitude, and 90° 49' 41" west longitude. The proposed sand borrow site is located approximately 10 miles south-southwest of Whiskey Island in the Gulf of Mexico, entirely within Block 88 of Ship Shoal.

Introduction. The EPA prepared an Environmental Assessment (EA) in December1993 for the restoration of Isles Derniers Barrier Island which included Racoon Island, Whiskey Island, Trinity Island and East Island. On September 4, 1997, EPA issued an addendum to the EA and a Finding of No Significant Impact (FNSI) for the Whiskey Island Barrier Island Restoration and Coastal Wetland Creation (TE-27) project, addressing the direct creation of approximately 355 acres (ac) of emergent marsh platform, and four major breach closures, including the Coupe Nouvelle. The Statement of Findings was issued on November 6, 1997. In April 2004, the U.S. Department of the Interior, Minerals Management Service (MMS), prepared an EA analyzing the proposed action to dredge sand within Block 88 in the Ship Shoal area for placement on the west flank of Whiskey Island (TE-47). Based on the EA, the MMS concluded that the proposed action would not significantly affect the quality of the human environment and that preparation of an Environmental Impact Statement (EIS) was not warranted.

Proposed Action. The objective of project TE-47 is to continue the restoration of Isles Dernieres. Offshore Ship Shoal sand would be excavated and transported a distance of

approximately 10 miles to restore the west flank of Whiskey Island. The restoration includes a 600-foot (ft) wide berm at +3 ft North American Vertical Datum of 1988 (NAVD), and 300-ft wide at +6 ft NAVD, and will require about 2.8 million cubic yards (cy) of sand. There is an existing east flank restoration area which includes a 450-ft wide berm at +3 ft NAVD, and a 100-ft wide dune transitioning from the west flank's +6 ft NAVD to the east flank's +4 ft NAVD. Approximately 1.1 million cy of sand will be required for the transition. The existing back barrier marsh habitat will be protected during the transition into the adjacent east dune to mitigate overwash-breaching (i.e., western marsh lobe) and to retain the island structural function.

After the construction, the west flank would be restored to approximately 415 ac of intertidal, supratidal, and dune habitat, and the extension to the east would be restored to approximately 85 ac of additional intertidal, supratidal, and dune habitat, for a total of 500 ac. The total benefits from the project would be the direct creation of approximately 85 ac of dune platform, a net increase of 98 ac of supratidal and a net increase of 131 ac of intertidal habitats. All areas will be planted and sand fencing placed to trap wind-blown sediment.

The proposed TE-47 project is part of and consistent with the Louisiana Coastal Wetlands Conservation and Restoration Task Force, and the Wetlands Conservation and Restoration Authority ecosystem strategy to restore barrier islands and gulf shorelines. CWPPRA provides Federal funds for planning and implementing projects that create, protect, restore and enhance wetlands in coastal Louisiana. Under CWPPRA, the project cost is shared by the Federal sponsoring agency and the State of Louisiana. The Federal government provides 85 percent of the project cost and the Louisiana Department of Natural Resources (LDNR) provides the remaining 15 percent.

Finding. On the basis of this Supplemental EA performed by the EPA of the proposed project, and other findings and available information, the Regional Administrator has determined that the proposed project is not a major Federal action significantly adversely affecting the quality of the human environment, and that preparation of an EIS is not warranted. This preliminary FNSI will become final 30 days after the issuance of the public notice if no new information is received to alter this finding. No administrative action will be taken on this decision during the 30-day comment period. Comments regarding this preliminary decision not to prepare an EIS, requests for copies of the EA, or review of the Administrative Record containing the information supporting this decision, may be submitted in writing to the U.S. Environmental Protection Agency; Office of Planning and Coordination (6EN-XP); 1445 Ross Avenue, Suite 1200; Dallas, Texas 75202-2733, or by telephone at (214) 665-8150.

Responsible Official,

John Blevins
Director
Compliance Assurance
and Enforcement Division

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
for the
ISLES DERNIERES BARRIER ISLAND
RESTORATION AND COASTAL WETLAND CREATION
WEST FLANK RESTORATION PROJECT (TE-47)
TERREBONNE PARISH, LOUISIANA

1.0 SUMMARY

1.1 Summary of Environmental Assessment

Project Name: Ship Shoal Whiskey Island West Flank Restoration (TE-47).

Location: On Whiskey Island, within the Isles Dernieres Barrier Islands chain, approximately 17.5 miles southwest of Cocodrie, Louisiana, in Terrebonne Parish, and centered at approximate coordinates 29° 03' 45" north latitude, and 90° 49' 41" west longitude. It is bounded by Raccoon Island to the west, Trinity Island to the east, Lake Pelto to the northeast, Caillou Bay to the northwest, and the Gulf of Mexico to the south. The proposed sand borrow site is located approximately 10 miles south-southwest of Whiskey Island in the Gulf of Mexico, entirely within Block 88 of Ship Shoal (see Figures 1a and 1b).

Sponsors: U.S. Environmental Protection Agency (EPA), Region 6;
Louisiana Department of Natural Resources (LDNR).

Total estimated funding	$42,175,800
Phase 1 (Engineering and Design) funding	$ 2,999,000
Phase 2 (Construction) funding	$39,176,800

Landrights: Two parties with ownership responsibilities have preliminarily been identified as the Louisiana Department of Wildlife and Fisheries (LDWF) for Whiskey Island, and the United States Department of the Interior, Minerals Management Service (MMS) for Ship Shoal.

Project Purpose: To continue the restoration of Whiskey Island by adding new offshore sediment into the west flank of the island, building beach, dune, and emergent marsh while protecting the existing back barrier marsh habitat. The project as proposed is consistent with the 1998 Coast 2050 Plan, Region 3 ecosystem strategy to restore barrier islands and gulf shorelines, which includes restoring and maintaining the Isles Dernieres barrier island chain. The proposed project is not expected to cause adverse environmental impacts requiring compensatory mitigation.

Dredged Material: Approximately 4 million cubic yards.
Wetlands: Saline marsh.

Threatened and Endangered Species: The piping plover, the brown pelican, the West Indian manatee, and five species of threatened and endangered sea turtles may occur in the proposed project vicinity. The proposed project is not expected to adversely impact these species.

Cultural Resources: There are no known cultural or historic sites in the proposed project area.

Permits and Compliance: Construction[1] of the project is authorized to begin as soon as the applicable environmental laws and regulations are met, project plans finalized, necessary land rights acquired, permits issued[2], and approval of the Louisiana Coastal Wetlands Conservation and Restoration Task Force established by Title III of Public Law 101-646, CWPPRA, and consisting of the Natural Resources Conservation Service (NRCS), the U.S. Army Corps of Engineers (ACE), National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (FWS), and the EPA. The Governor represents the State of Louisiana, with LDNR providing the primary source of the non-Federal portion of the funding.

1.2 Background. The Isles Dernieres chain is considered one of the most rapidly deteriorating barrier shorelines in the U.S. and is losing its structural framework function as a storm buffer and protection of the inland bays, estuaries, wetlands, human populations and infrastructures. The deterioration is caused by storm actions and by the loss of nourishing sediments due to natural and human alterations (Figure 4). Whiskey Pass was formed around 1934 in the mid-portion of Isles Dernieres, possibly by major hurricanes. Continued widening of existing tidal inlets and further deterioration of interior marshes has resulted in significant land loss and landscape change. From 1978 to 1988, Whiskey Island lost an average of 31.1 acres (ac) per year; and the short spit located on the western end of Whiskey Island is experiencing landward rollover at about 65 feet (ft) per year.

The EPA prepared an Environmental Assessment (EA) for the Whiskey Island Barrier Island Restoration and Coastal Wetland Creation (TE-27) project in December 1993. The EA was amended with the issuance of an Addendum and Finding of No Significant Impact (FNSI) on September 4, 1997; a Statement of Findings was issued on November 6, 1997. The dredging and re-vegetation projects were completed in July 1998, and May 1999, respectively. The MMS prepared an EA on April 2004, to analyze the proposal to dredge and place sand from Block 88 in the Ship Shoal area on the west flank of Whiskey Island (TE-47), and concluded that the

---

1 Construction is Phase 2 of the project and includes project and contract management, supervision and inspection, post-construction biological monitoring, operation, maintenance, repair, replacement, and rehabilitation (OMRRR), and the purchase of real estate.

2 U.S. Army Corps of Engineers 404 permit for construction activities on Whiskey Island and U.S. Department of the Interior, Minerals Management Service (MMS) permit for dredging operation on Ship Shoal.

proposed action would not significantly affect the quality of the human environment and that preparation of an Environmental Impact Statement was not warranted.

1.3 Preferred Option. The proposed Ship Shoal Whiskey Island West Flank Restoration (TE-47) project is a continuation of the (TE-27) project which includes Raccoon Island, Whiskey Island, Trinity Island and East Island, and involved the direct creation of approximately 355 ac of emergent marsh platform, and four major breach closures including the Coupe Nouvelle of Whiskey Island (Figure 2). The proposed action would excavate and transport sand from Block 88 in the offshore Ship Shoal area, to restore the integrity of the west flank of Whiskey Island, protect the existing back barrier marsh habitat (i.e., western marsh lobe), retain the island structural function (Figure 3), and transition into the adjacent east flank dune to mitigate overwash-breaching.[3] The restoration includes a 600-ft wide berm at +3 ft North American Vertical Datum (NAVD), a 300 ft wide dune at +6 ft NAVD, and the transition involves a 450-ft wide berm at +3 ft NAVD, and a 100 ft wide dune transitioning from +6 ft NAVD at the west flank dune to the adjoining east dune at +4 ft NAVD.

The restoration would add approximately 4 million cubic yards (cy) of material to the west flank of Whiskey Island to design a sustainable island template that closely follows the natural, healthier barrier shoreline, protect existing back barrier marsh habitat (i.e., western marsh lobes), and vegetate the completed project. The sand would be mined from Ship Shoal by a hydraulic cutterhead suction dredge and/or hopper dredge, and transported a distance of approximately 10 miles. Conventional earth moving equipment would be used to obtain design elevations, widths and slopes. All areas will be planted and have sand fencing to trap wind-blown sediment.

1.4 Purpose and Need for Action. The purpose and need for the proposed project is to create dune and marsh habitat with dredge material and enhance the structural integrity of Whiskey Island to minimize the erosive tidal forces and continue the restoration of the Isles Dernieres chain. Although acreage goals are proposed for a project footprint for 20 years after project implementation, the longevity of the barrier island is highly uncertain and largely dependent on the frequency and intensity of tropical storms, and the design of these projects to withstand these storms. Another goal is to assess the feasibility of mining and transporting sand from Ship Shoal for use in barrier island restoration.

1.5 Potential Benefits and Adverse Impacts. The bays, estuaries, and wetlands behind the island are habitat for one of the most productive commercial fisheries in the United States, and is habitat of continental importance for North American waterfowl populations. Loss of the barrier island would expose large areas of the valuable estuary and associated wetlands to wave attack, saltwater intrusion, and storm surges. The loss would result in the conversion of the bays to open gulf waters resulting in severe impact to important coastal infrastructure, fish, and wildlife resources. After restoration of the proposed west flank of Whiskey Island, there would be approximately 415 ac of intertidal, supratidal, and dune habitat, and approximately 85 ac of

3 Modeling indicated that the marsh lobe immediately to the east of the proposed project limits would experience significant overwash breaching in the design storm. This is primarily due to the difference in the adjacent east dune elevation which is lower than the required dune elevation for the west flank project.

intertidal, supratidal, and dune habitat in the east flank extension, for a total acreage of 500 ac of intertidal, supratidal, and dune, and a net increase of 98 ac of supratidal and a net increase of 131 ac of intertidal habitats (Table 1). Additional details can be found in the 30 percent Design Report, the 95 percent Design Report, the final plans and specifications, and the Wetland Value Assessment (WVA).

2.0 ALTERNATIVES

Alternatives considered included structural alternatives (such as placement of rocks or other solid objects, groins, revetments or breakwaters on or around the island), and non-structural alternatives (sediment fill such as placement of overwash or dredged materials, vegetative plantings such as beach nourishment, beach restoration, dune restoration and marsh creation for stabilization, and sand fences), as well as "massive"/numerous freshwater/sediment diversions from the Mississippi River. Mississippi River diversions were not considered feasible because the decades-to-centuries time scale of this approach. This approach would be based on the fact that the Louisiana barrier islands are the products of the natural destructive and constructive delta cycles. While there is an immediate need to enhance the barrier island system, the scale is beyond the scope of present CWPPRA funding, and there are numerous socioeconomic issues that are obstacles to such a large-scale restoration approach.

Current planning concepts are influenced by actual experience at shoreline and island protection projects. These real-world experiences concerning structural and non-structural alternatives are important considerations in the discussion of alternatives. They are detailed in length in the December 1993 EA, and in the September 4, 1997 Addendum, and are incorporated into this EA by reference. EPA and LDNR have elected to use non-structural solutions to barrier island restoration; a structural alternative was not considered feasible for this project.

2.1 No-action Alternative. The No-action Alternative was retained throughout the study as a basis for comparing the relative benefits and impacts of the alternatives. The No-action alternative involves leaving Whiskey West Flank with no restoration effort. This alternative would allow the erosion of the island to continue, resulting in decreasing island area and height. It has been estimated that every kilometer (km) of barrier island shoreline protects 30 square km (12 square miles) of wetland-estuarine habitat. Without restoration, mainland wetland-estuarine habitat would not be protected.

2.2 Alignment Alternatives. Two alignment alternatives were considered; an alignment directly over the morphological remains of the existing west flank or along a projection of the current east flank centerline, which runs generally in an east-west direction; and a second alignment which places the restoration in deeper Gulf waters, increasing the required volume of sand significantly. The second alignment alternative was eliminated from further consideration, because the overall objective was to maximize the restoration footprint for an estimated fill volume of approximately 2.5 million cy while minimizing sediment losses due to long shore transport, overwash, and breaching. The three basic restoration design templates studied for this project were based on the first alignment, and follow the morphological remains of the existing west flank.

Alinement Alternative A is a 100 ft gulfside equilibrated beach berm width at +3 ft NAVD, and a 200 ft wide dune at +7 ft NAVD.

Alinement Alternative B is a 200 ft gulfside equilibrated beach berm width at +3 ft NAVD and a 300 ft wide dune at +6 ft NAVD.

Alinement Alternative C is a 300 ft gulfside equilibrated beach berm width at +3 ft NAVD and a 400 ft wide dune at +5 ft NAVD.

Alternative C was eliminated from further consideration because it was considered too vulnerable to relatively small tropical storm systems, and the wider dune made it necessary to off-set the lower berm elevation because of the significantly reduced back barrier marsh habitat area. The modeling for Alternatives A and B indicated that the marsh lobe, immediately to the east of the current project limits, would experience significant overwash-breaching in the design storm, primarily because of the different elevation of the east flank dune. Alternative B was selected for modification over Alternative A because the model results for the representative storms indicate that it provides adequate protection during design storm conditions while resulting in reduced flow training effects.

2.3 Non-structural or Sedimentary Alternative - Alternative B-Extended. Alternative B-Extended is the preferred alternative (Figure 5). This alternative would restore Whiskey Island through the direct creation of dune and marsh habitat and prevent small storm surges from overtopping the island. It would add width and increase the elevation of the island, stabilize areas of the gulf and bay shoreline, and plant the created elevations with appropriate vegetation. The width of the island would be increased to prevent overwash and retain sand that might be lost from the system. The beach berm/dune template would be extended farther east onto the east flank of Whiskey Island and would enhance the structural integrity of the island through restoration of the littoral drift system, which would become a "feeder beach." The extension would prevent flow training over the western lobe marsh area and provide protection of habitat from some losses over the projected 20-year life of the project (Table 2). The addition of sediment into the near shore environment would extend the life of the island.

2.4 Recommendation. The EA is based on a comprehensive review of relevant literature, site-specific data, and project engineering and environmental reports including the findings published in the MMS April 2004, EA, *Issuance of Non-competitive Leases for the Use of Outer Continental Shelf Sand Resources from Ship Shoal, Offshore Central Louisiana for Coastal and Barrier Island Nourishment and Hurricane Levee Construction*. This EA concludes that there are no significant adverse environmental impacts anticipated by the implementation of this project as proposed. This finding supports the recommendations of the CWPPRA Task Force, the EPA and LDNR. The long-term protection and enhancement of the project area is expected to be beneficial to wetlands, fisheries, wildlife, recreational, and cultural resources as well as the natural structural framework of the Terrebonne-Barataria estuary and the coast of Louisiana.

3.0 AFFECTED ENVIRONMENT

3.1 Soils. The soil types present in the project area include Felicity loamy fine sand and Scatlake muck. Beach, dune and overwash soils are sandy, while saline marshes are typically clays and mucky clays.

3.1.1 No-action Alternative. Land loss projections estimate that none of the Isles Dernieres chain would exist by 2050 and some of the islands would become sub-aqueous by 2007.

3.1.2 Non-structural Alternative - Alternative B-Extended. Over time, soils should follow natural patterns and conditions.

3.2 Water Quality. Whiskey Island is primarily a sand beach facing the Gulf of Mexico. The waters that impact the beach are from Terrebonne Basin, coastal bays, and gulf waters (subsegment 120806). The backside of the island is marsh and faces Caillou Bay (subsegment 120801). Subsegments are characterized by designated beneficial uses such as primary contact recreation, drinking water supply, oyster propagation, etc. Both subsegments have uses and standards identical to the Timbalier Island subsegment.

One of the standards that apply to the Whiskey Island project area is turbidity. Coastal waters are naturally very turbid due to the considerable amount of suspended sediments derived from resuspension of bay bottom sediments and coastal erosion. The turbidity standard that applies to this area is probably exceeded regularly due to natural wind and wave action. However, as for the Timbalier Island project, this standard is mostly applied to outstanding natural resource waters and is not applied to gulf waters. When applied to other ambient waters, it is as a secondary parameter only. The standards for turbidity allow for an exemption from meeting the criteria for periods of time for activities permitted under Sections 402 and/or 404 and/or certified under Section 401.

The waters surrounding Whiskey Island have been designated by the state for oyster propagation. As with Timbalier Island, the fecal coliform standard that applies to this area is probably not currently exceeded, nor would it be expected to be exceeded with or without the project since the island is 18 miles removed from significant sources of inland freshwater pollution. There are no apparent water quality problems.

3.2.1 No-action Alternative. The No-action Alternative could potentially contribute to an increase in turbidity in the Terrebonne estuary due to increased wave actions causing greater erosion and formation of erosive, high-energy tidal surges allowing higher salinity waters of the Gulf of Mexico into interior bay waters.

3.2.2 Non-structural Alternative - Alternative B-Extended. Alternative B-Extended would have no long-term adverse impact on present conditions. However, short-term adverse temporary impacts due to increased turbidity from placement of material on the island could occur during project construction. The slurry discharge site for beach nourishment can contain suspended silt, clay, and organic matter, which could temporarily degrade the water quality in a dredge plume over an area ranging 5-10 ac. These impacts are minor and would be limited to the construction

phase of the project. It is expected that turbidity levels would return to normal shortly after construction ended.

The normal discharges from the Mississippi/Atchafalaya Rivers have a much greater effect on the turbidity, nutrient load, contaminant content, and BOD of near shore marine waters than the incremental contributions originating from the dredging and sand emplacement phase of the proposed project. Long-term benefits may occur due to decreased likelihood of higher wave energies resulting from the creation of wetlands.

3.3 Climate and Air Quality. The climate along the Louisiana coast is humid, subtropical with a strong maritime character, and greatly influenced by the Gulf of Mexico. The prevailing wind is from the south at an average speed of 11 miles per hour. The average rainfall is 65.7 inches per year, with 60 percent of the rain occurring between April and September. The average temperature in the winter is 52° Fahrenheit (F) with an average daily minimum of 42° F. The average temperature in the summer is 81° F and the average daily maximum is 89° F. Hurricanes and tropical storms can have a major effect on barrier island morphology. For the study area the annual frequency of landfall of tropical storms is 0.17 storms/yr/100 nautical miles, or about one storm every six years for a shoreline the length of Isles Dernieres. About one half of these tropical storms are hurricane strength.

Data on the offshore wave statistics (WIS Station G1058) from 1976 – 1995 indicate that the month mean wave height for all waves ranges from 1.5 ft to 3.4 ft. The maximum waves for the same period range from 7.5 ft to 25.3 ft. Based on the data, the summer months of May through July appear to have the lowest mean wave heights along with the lowest maximum wave heights. The month of July does have a higher maximum wave height, 13.8 ft compared to 8.5 and 7.5 ft for May and June. Based on these cost estimates, a hydraulic suction cutterhead fredge with pipeline/booster station to shore was selected as the preferred alternative.

3.3.1 No-action Alternative. The No-action alternative would have no impact on present air quality conditions. There are no air quality monitoring stations in Terrebonne Parish, although existing air quality can be considered good. Except for minor boat traffic and small oil and gas processing facilities, there are no air pollution sources located on or near Whiskey Island. The closest major sources of air pollution are 70 or more miles away in the urban-industrial corridor from New Orleans to Baton Rouge.

3.3.2 Non-structural Alternative - Alternative B-Extended. This alternative would have no long-term adverse impact on present conditions. Minor temporary impacts due to emissions from diesel engines powering the dredging activities, propulsion between the dredge site and mooring buoy, and pump-out operations could occur during project construction. Additional emissions would result from tugs and barges used in the placement and relocation of the mooring buoys. On the beach, air emissions would result from bulldozers, graders, and trucks. Emissions would occur over a period of about seven months with most of the emissions occurring at the dredge site and the mooring buoy just off the beach. The predominant emissions would consist of nitrogen oxides (NO_x) with smaller amounts of carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM), and volatile organic compounds (VOC). Model predictions indicate that the highest concentrations would occur within one km from the pump-out site.

Concentrations of NO_2, SO_2, CO, and PM at the beach were lower than those over water and well within the National Ambient Air Quality Standards (NAAQS) and no adverse air quality impacts would be expected.

3.4 Wetland Loss. According to the 1998 Coast 2050 Plan, this project lies within the Isles Dernieres Island Shorelines mapping unit of Region 3. The average loss of land in this unit for the period 1978-1990 was approximately 495 ac. Subsidence is occurring at an estimated rate of 2.1-3.5 ft per century for this mapping unit. Much of the land loss and erosion of the islands is attributable to the synergistic effects of global sea-level rise, subsidence, tropical and extra-tropical storm activity, inadequate sediment supply, and significant anthropogenic disturbances. For the Isles Dernieres Shorelines mapping unit, the area is comprised of approximately 78 percent open water, nine percent saline marsh, eight percent barrier beach, and six percent hardwood forest. As of 2002, Whiskey Island was made up of 63.82 ac of beach, 187.84 ac of bare land, 270.08 ac of marsh and 7.68 ac of barrier vegetation (approximately 529.42 ac of land and 321.04 ac of intertidal). Within the project boundary, wetlands are classified as saline marsh.

3.4.1 No-action Alternative. Without sand nourishment of the Whiskey Island area, marsh would continue to be lost. Area change rates for Whiskey Island between 1978 and 1988 have been documented at -31.1 ac per year. The spits on either end of Whiskey Island are rapidly migrating landward at about 20 m/yr (McBride and Byrnes 1997). Based on research conducted prior to the restoration on East and Trinity Islands in 1999, it was expected that none of the Isles Dernieres would remain by 2050 if No-action is taken. These reports predicted that without remedial action, Whiskey Island might become sub-aqueous by 2007.

3.4.2 Non-structural Alternative - Alternative B-Extended. With implementation of the project, the life of the wetlands should be increased. Long-term benefit would result from re-establishing the marsh platform at an elevation conducive to the establishment of marsh vegetation. Establishing dune vegetation would increase the stability of the island. During construction, impacts to existing vegetation will be minimal with the requirement that 1) access to or movement across the island outside of the defined project area shall generally be prohibited within vegetated areas for all personnel and equipment, 2) vegetated areas shall not be used for equipment, personnel or material access or storage, and 3) the dredged fill shall be discharged within the contained areas in a manner that will minimize overflow of the dredged material from the bounds of its placement area.

3.5 Wildlife and Fisheries. Marshes of the Coast 2050 Isle Derniers Shorelines mapping unit support populations of marine fisheries resources. Characteristic species include but are not limited to red drum (*Sciaenops ocellatus*), black drum (*Pogonias cromis*), Spotted seatrout (*Cynoscion nebulosus*), Spanish mackerel (*Scombermorus maculatus*), Gulf menhaden (*Brevoortia patronus*), southern flounder (*Paralichthys lethostigma*), white shrimp (*Litopenaeus setiferus*), brown shrimp (*Farfantepenaeus aztecus*), blue crab (*Callinectes sapidus*), and American oyster (*Crassostrea virginica*). These species utilize project area aquatic resources primarily as nursery, foraging, and predator refugia habitat. The emergent wetlands and associated open water habitat in the vicinity of the proposed project support generally decreasing

populations of finfish, shellfish, birds, reptiles and mammals. Only the Spanish mackerel (*Scombermorus maculatus*) is believed to be increasing.

These areas of open water and marsh are a valuable nursery and food source for many commercial and/or recreational species of finfish and shellfish. Project area wetlands also provide wildlife food, cover, nesting and resting habitat. It has been observed that bird habitats in and around the Isles Dernieres Island arc occur primarily on Wine Island and Raccoon Island. Birds that could be of concern are the piping plover, brown pelicans, nesting migratory birds, wading birds, anhingas, cormorants, gulls, terns, and black skimmers. Nesting seabirds have been documented on Whiskey Island, but those colonies are not known to be currently active. Nesting colonies shift with resource availability and new colonies may be established or old ones may be re-activated. Several active migratory, wading bird nesting colonies are located in proximity to the proposed project area (Figure 6). Colonies may be present that are not currently listed in the database maintained by the LDWF. That database is updated primarily by monitoring the colony sites that were previously surveyed during the 1980's.

3.5.1 No-action Alternative. With continuing loss of saline marsh, shoreline, and shallow open water habitat, fish and wildlife populations, specifically southern flounder, black drum, brown shrimp, American oyster, seabirds, shorebirds, waterfowl, and raptors, in the area would likely decline. While loss of vegetation reduces the quality of marsh as habitat for terrestrial and semi-aquatic wildlife, a short-term increase in the value of the area as a nursery and associated food source for finfish and shellfish would result. However, continued land loss leads to increasing water depth and the value of the area as a food source and nursery declines further.

3.5.2 Non-structural Alternative - Alternative B-Extended. This alternative would protect existing marsh, create vegetated wetlands, and reduce future land loss. As project area marshes are protected and enhanced, the habitat value for associated fish and wildlife species will increase, and persist for a longer period of time. Colonial nesting waterbirds are protected under the Migratory Bird Treaty Act. For colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,500 feet of a rookery would be restricted to the non-nesting period of September 1 through February 15, depending on species present. For colonies containing nesting wading gulls, terns, and/or black skimmers, all activity occurring within 650 feet of a rookery would be restricted to the non-nesting period of September 1 through April 1, depending on species present). Therefore, a survey for bird nesting and wintering piping plover should be conducted prior to project construction by a qualified biologist in coordination with the LDWF and FWS. If bird nesting or piping plover use is identified, construction activities within 1,500 feet of the site must be coordinated with LDWF, FWS, LDNR, EPA, and all contractors would be required to minimize habitat disturbance.

3.6 Threatened and Endangered Species. Federally listed species and critical habitat currently known to occur in the proposed project area include the brown pelican (*Pelecanus occidentalis*), the West Indian manatees (*Trichechus manatus*), the piping plover (*Charadrius melodus*) and its designated critical habitat, and five species of threatened and endangered sea turtles.

3.6.1 Brown Pelicans. Brown pelicans are currently known to nest on Raccoon Point on Isles Dernieres, Queen Bess Island, Plover Island (near Baptiste Collette Bayou), Wine Island, Rabbit Island in Calcasieu Lake, and islands in the Chandeleur chain. Pelicans change nesting sites as habitat changes occur, and may be found nesting on mud lumps at the mouth of South Pass (Mississippi River Delta), and on small islands in St. Bernard Parish. In spring and summer, nests are built in mangrove trees or other shrubby vegetation, although occasional ground nesting may occur. Brown pelicans feed along the Louisiana coast in shallow estuarine waters, using sand pits and offshore sand bars as rest and roost areas. Major threats to this species include chemical pollutants, colony site erosion, disease, and human disturbance. The brown pelican population is expected to increase in the Isles Dernieres Shorelines mapping unit.

3.6.2 West Indian Manatees. West Indian manatees occasionally enter Lakes Pontchartrain and Maurepas, and associated coastal waters and streams during the months of June through September. Manatees have been regularly reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, and in canals within the adjacent coastal marshes of Louisiana. They have also been occasionally observed elsewhere along the Louisiana Gulf coast. The manatee has declined in numbers due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution. Cold weather and outbreaks of red tide may also adversely affect these animals.

3.6.3 Piping Plover. The piping plover winters in coastal Louisiana and occurs in the vicinity of the proposed project. Piping plovers may be present in Louisiana for 8 to 10 months, arriving from the breeding grounds as early as late July and remaining until late March or April. Piping plovers feed extensively on intertidal beaches, mudflats, sandflats, algal flats, and washover passes with no or very sparse emergent vegetation and require unvegetated or sparsely vegetated areas for roosting. Roosting areas may have debris, detritus, or microtopographic relief offering refuge to plovers from high winds and cold weather. In most areas, wintering piping plovers are dependant on a mosaic of sites distributed throughout the landscape, as the suitability of a particular site for foraging or roosting is dependent on local weather and tidal conditions. A study of 48 wintering piping plovers in south Texas found a mean home range size of 3,117 acs, with a mean distance moved per individual of approximately two miles. Plovers may move among sites as environmental conditions change.

3.6.4 Designated critical habitat. Designated critical habitat are specific areas that are essential to the conservation of the piping plover. The primary constituent elements for piping plover wintering habitat are those habitat components that support foraging, roosting, and sheltering and the physical features necessary for maintaining the natural processes that support these habitat components. Constituent elements are found in geologically dynamic coastal areas that contain intertidal beaches and flats (between annual low tide and annual high tide), and associated dune systems and flats above annual high tide. Important components (or primary constituent elements) of intertidal flats[4] habitat include sand and/or mud flats with no or very sparse emergent vegetation. Adjacent un-vegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting plovers. Major threats to this

4 Intertidal flats are a habitat type that exists on the Louisiana barrier islands, including Whiskey Island and is included in the Wetland Value Assessment (WVA) intertidal habitat category.

species include the loss and degradation of habitat due to development, disturbance by humans and pets, and predation.

3.6.5 Sea turtles. Sea turtles require three major habitats: nesting beaches, pelagic developmental habitats, and benthic feeding habitats for juveniles and adults. It is possible that any of these species of sea turtles - Kemp's ridley, the loggerhead turtle, the green turtle, the hawksbill turtle, and the leatherback turtle - could be found along the Louisiana coast, although occurrences of hawksbill and leatherback turtles would be extremely rare. The hawksbill is rare in the gulf and leatherbacks prefer offshore waters.

Kemp's Ridley (*Lepidochelys kempii*). Kemp's ridley sea turtle feeds mainly on crabs. Its nesting areas and habitats include the barrier islands of south Texas and nearshore habitats, especially the crab-rich waters off the mouth of the Mississippi River. The sheltered estuaries, bays, and lagoons of Louisiana may be primary developmental areas and feeding grounds. Trawlers report seeing Kemp's ridleys frequently. In Louisiana, Kemp's ridley account for 60 percent of all strandings and 52 percent of these in the vicinity of Isles Derniers. The NMFS consulted with the ACE in November 1991 and issued a biological opinion under Section 7 of the Endangered Species Act that the unrestricted operation of hopper dredges from North Carolina to Cape Canaveral, Florida jeopardized the continued existence of sea turtles, particularly Kemp's ridley. In addition to direct take, channelization of the inshore and nearshore areas can degrade foraging and migratory habitat through spoil dumping, degraded water quality/clarity and altered current flow. Dredging operations affect the ridley through incidental take and by degrading the habitat. Incidental take of ridleys has been documented with hopper dredges.

Loggerhead Turtle (*Caretta caretta*). The loggerhead turtle is relatively common in the nearshore waters of the Gulf of Mexico. The loggerhead feeds on sponges, jellyfish, mollusks, crustaceans, sea urchins, fishes, seaweeds and grasses. Rocky places and shellfish beds are prime foraging habitat. They use hardbottom or offshore reef areas, and have been sighted around oil rigs. They also enter estuaries, coastal streams, salt marshes and the mouths of large rivers.

Green Turtle (Chelonia mydas). The green turtle is relatively common in the nearshore waters of the Gulf of Mexico. Its diet is primarily marine grasses and macrophytic algae.

Hawksbill Turtle (*Eretmochelys imbricata*). The hawksbill turtle is usually found in seawaters less than 15 meters (49 feet or 8 fathoms) deep and feeds on invertebrates, marine grasses and macrophytic algae. These turtles are regularly, but less and less frequently, found in the Gulf of Mexico, particularly off the Yucatan peninsula of Mexico. In the United States they are found using coral reefs, as well as lagoons, shoals, and vegetated bays.

Leatherback Turtle (*Dermochelys coriacea*). The leatherback turtle is found in deeper oceanic waters and feeds primarily on jellyfish. There have been reports of leatherbacks in the bays of Alabama.

3.6.6 No-action Alternative . Without implementation of the proposed project, existing potential brown pelican and piping plover habitat would continue to be lost.

3.6.7 Non-structural Alternative - Alternative B-Extended. Implementation of the proposed project is not likely to adversely impact these threatened or endangered species and would likely enhance the quantity and quality and increase the longevity of the available habitat for these species. Construction will be done within the guidelines set forth by the FWS and the LDWF to insure protection of critical habitat necessary for the brown pelican and piping plover.

Piping plover. Although the proposed project will in fill the sandflat/overwash areas of Whiskey Island, only a relatively small amount of habitat will be affected when compared to the amount of critical habitat available. In addition, filling in any breaches along the island will create new suitable habitat (beach) for the piping plover on the gulf side of the island. Wintering plovers in Louisiana depart for the breeding grounds during late March and early April so that when construction is planned to begin in April or May, most birds will have left the wintering grounds. Because any plovers remaining in the project area during construction would be displaced to other suitable habitats in the vicinity, the proposed project will not adversely modify critical habitat and is not likely to adversely affect the wintering piping plovers.

Brown pelican. This alternative would extend the life of the island-protecting habitat from loss over the 20-year project life. Also, any pelicans utilizing the project area during the project construction could easily relocate. Therefore, the proposed project is not likely to adversely affect the brown pelican. LDNR will take all necessary precautions to avoid impacts to wintering and nesting populations of piping plovers in the project area, both during construction and future operation and maintenance work. In addition, LDNR will conduct surveys to document any nesting birds and other avian activities in the area and coordinate all construction activities within 1,500 feet of the documented nesting sites in coordination with the LDWF, EPA and FWS. All contractors would be required to minimize habitat disturbance. In addition, FWS recommends that on-site contract personnel be informed of the need to identify colonial nesting birds and their nests, and should avoid affecting them during the breeding season.

West Indian Manatee. The primary potential impacts to the West Indian manatees would include possible collision with service vessels and noise in the water from the dredge operation or service vessels. The West Indian manatee is extremely limited in Louisiana coastal waters (except Lake Pontchartrain/Maurepas and tributary streams), and sightings off the Louisiana coast or stranding on Louisiana shorelines are rare. The dredge and service vessels would be required to have a qualified observer on board to sight the manatees while in transit so the manatees or other marine mammals could be avoided. The proposed project is expected to have negligible effect on the West Indian manatee. No collision fatalities are expected. The West Indian manatees are not likely to be adversely affected by the proposed project.

Sea Turtles. Suspended sediments from restoration activities could impact sea turtles. A discharge plume could potentially impact turtles by displacing or reducing the food sources, or by impairing their ability to locate prey. Sea turtles probably would avoid the increased turbidity and activities surrounding construction sites and no adverse impacts to these species would be

anticipated. Similar work has been conducted on adjacent islands, Isles Dernieres Island and East Timbalier Island. Sea turtles may occasionally be found at some sand dredge sites;

MMS has performed a biological assessment and issued a biological opinion that dredging of sand at designated sites might adversely affect listed species by hopper dredge entrainment. Biological opinion conservation measures, and measures deemed reasonable and prudent by the NMFS to minimize the impacts of hopper dredging include 1) the use of intake and overflow screening, 2) use of sea turtle deflector dragheads, 3) observer and reporting requirements, 4) sea turtle relocation trawling, and 5) sedimentation levels. The detailed terms and conditions are outlined in the biological opinion.

3.7 Depleted Marine Mammals. Under the Marine Mammal Protection Act (MMPA), a species is designated as depleted when it falls below its optimum sustainable population (OSP). OSP is defined as "the number of animals which will result in the maximum productivity of the population or the species, keeping in mind the optimum carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element." NMFS regulations have further defined OSP as "a population size, which falls within a range from [the carrying capacity of the] ecosystem to the population level that results in maximum net productivity." The bottlenose dolphin (*Tursiops truncates*) is designated as depleted and is a common inhabitant of the continental shelf and upper slope waters of the northern Gulf. It is the most widespread and common cetacean observed in the northern Gulf of Mexico. They mate and calve primarily from February through May.

3.7.1 No-action Alternative. Without implementation of the proposed project, Whiskey Island is projected to lose 483 ac of land within 20 years. Dolphins are part of a complex ecosystem and land loss may result in less food supply.

3.7.2 Non-structural Alternative - Alternative B-Extended. Implementation of the proposed project is not likely to adversely impact the bottlenose dolphin and may provide additional habitat for them to feed. Coastal, or inshore, dolphins live close to land and are often seen from beaches and boats. Oceanic, or offshore, dolphins live farther out at sea. They feed on various fishes, squids and shrimps that live closer to shore, herding fish into shallow water and keeping them trapped while they feed. The primary impact-producing factors affecting marine mammals include collision by service vessels and noise in the water from the dredge operation or service vessels. The dredge and service vessels would be required to have a qualified observer on board to sight mammals while in transit for protection and avoidance of marine mammals, and construction will be done within the guidelines set forth by NMFS to insure protection of bottlenose dolphin.

3.8 Essential Fish Habitat (EFH). Project evaluation included an examination of habitat considered to be essential for fisheries as established under the provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), intended to promote the protection, conservation, and enhancement of essential fish habitat (EFH). The MSFCMA defines EFH as those waters and substrates necessary to federally managed fish species for spawning, breeding, feeding or growth to maturity of specific species depending upon life stage (Table 3). Categories of EFH that have been designated in the project area include estuarine

wetlands, water column, and mud, sand, and shell substrates, marine water column, non-vegetated bottoms, and continental shelf features.

In addition to being designated EFH for the species listed in Table 3, the barrier island wetlands, shallow water bottoms, and tidal flats provide unique nursery and foraging habitat for numerous marine and estuarine fishery organisms. Studies by the Louisiana State University, Coastal Fisheries Institute, have identified the barrier island wetlands as important habitat for shark assemblages dominated in frequency and abundance by neo-nate and juvenile blacktip and Atlantic sharpnose sharks. Estuarine-dependent species that utilize barrier islands serve as prey for other species managed under MSFCMA (e.g., red drum, mackerels, snappers, and groupers) and highly migratory species managed by the NMFS (e.g., billfish and sharks). Shallow water bottoms also provide habitat for benthic communities, including marine worms and crustaceans, which are important components of the aquatic food web that contribute to the fishery productivity of the Terrebonne Bay estuaries.

3.8.1 No-action Alternative. The No-action alternative would continue the conversion of highly productive and declining categories of EFH to other categories, and potentially contribute to declines in federally managed species or their prey over time.

3.8.2 Non-structural Alternative - Alternative B-Extended. Impacts on those fish or shellfish species with benthic lifestyles inhabiting featureless sandy bottoms and EFH would primarily result from mechanical disturbance of the Ship Shoal sea bottom. Mobile fish and invertebrates would be able to swim clear of dredge operation areas. However, this alternative would provide protection of existing marsh and associated shallow open water habitat, and would reduce the land loss rate. Some impacts to EFH would be the temporary increase in the turbidity at the proposed disposal areas and adjacent water bodies. In addition, temporary adverse impacts to the estuarine and marine water column would result from the dredging and construction activities.

Other impacts would be permanent. Approximately 574 ac of water bottoms would be dredged to a 35-ft depth, and approximately 314 ac of water bottoms in the vicinity of Whiskey west flank would be filled to intertidal, supratidal, and/or dune elevations. It is estimated the project will result in a net loss of 77 ac of shallow subtidal habitat over the entire island, and a net increase of 131 ac of intertidal flats habitat in the project footprint. Some of the 183 ac of supratidal and dune habitat estimated to be created by the project will be converted from existing intertidal marsh habitat, but it is not known how much. Some intertidal flat will be converted to intertidal marsh as a result of vegetative planting, and some intertidal flat habitat may be created, although project plans and specifications do not include its intentional creation.

Protection and enhancement of project area WVA intertidal and subtidal habitat areas will increase the habitat value for associated fisheries species and maintain it longer than without the project. The preliminary finding of this EA is that the proposed project will have no significant adverse impacts on EFH, and is submitted to initiate consultation requirements pertaining to EFH under the MSFCMA.

3.9 Recreation. Whiskey Island has recreational value due to the unique location between the gulf and inland marshes. Recreational fishing on gulf beaches is often very productive, and is enjoyed by many recreational fishermen.

3.9.1 No-action Alternative. Future recreational use will decrease as beach erosion continues to destroy habitat and as wetland deterioration is exacerbated, leading to declines in fisheries, nursery, and wildlife habitat.

3.9.2 Non-structural Alternative - Alternative B-Extended. This alternative would beneficially affect recreational resources. Project components may provide for greater long-term productivity and viability of project area beach, dune, and marsh, thus contributing to the stability of fish and wildlife populations. Some temporary adverse short-term impacts to recreation would occur as a result of filling and construction activity. These include avoiding fill areas until compaction and re-vegetation are completed, increased turbidity of surface waters, and increased noise within the project area during construction.

4.0 PROPOSED MITIGATIONS.

4.1 Mitigation criteria. The following mitigation measures are considered necessary to ensure compliance with NEPA and 40 CFR 1500.2(f) regarding the requirement for Federal agencies to avoid or minimize adverse effects of their actions upon the quality of the human environment.

4.1.1 "No-dredge" Setback. Establish "no-dredge" buffer zones which would setback borrow sites at least 1000 ft away from either side of existing pipelines.

4.1.2 Dredge Limitations. Dredging depth will be limited to 15 feet below the existing bottom and the discharge of dredged fill material within the contained area will be in a manner that would minimize spillover; vegetated areas will be avoided to the greatest extent practicable.

4.1.3 LDWF and FWS 1,500-foot Setback. A survey of bird nesting and wintering piping plover must be conducted by a qualified biologist, in coordination with the LDWF and the FWS, prior to project construction. Establish buffer zones of at least 1,500 ft for colonies of nesting seabirds and piping plovers, and 650 ft for colonies of nesting wading gulls, terns, and black skimmers within which sand emplacements will not be allowed. All contractors will be required to minimize habitat disturbance and on-site contract personnel will be informed of the need to identify colonial nesting birds and their nests and avoid affecting them during the breeding season.

4.1.4 NOAA and NMFS Measures. The NOAA and NMFS believe that reasonable and prudent measures necessary to minimize the impacts of hopper dredging to sea turtles in the Gulf of Mexico should include: 1) use of intake and overflow screening, 2) use of sea turtle deflector dragheads, 3) sea turtle relocation trawling, 4) maintain a sedimentation level minimum distance of 400 ft from hard grounds to reduce potential damage to habitats adjacent to sand mining sites hopper dredges operating at offshore sand mining sites since these areas may attract sea turtles, and 5) observer and reporting requirements.

4.1.5 Qualified Observer. For the protection of marine mammals, the dredge and service vessels would be required to have a qualified observer on board to sight mammals while in transit so mammals could be avoided.

4.2 Marsh Platform. A bio-benchmark survey was conducted for the Timbalier Island (TE-40) restoration project to establish an optimum elevation range for the marsh platform. The target elevation of the marsh platform must be compatible with the flooding tolerance of the desired plant species. If the elevation of the platform is too high, it will not be inundated by normal tidal flow and will not serve as a nursery for marine organisms. In addition, the desired wetland plant species will be out-competed by non-wetland plant species. Conversely, if the elevation of the marsh platform is too low, the wetland plants will not survive due to water logging, and the marsh platform will erode. For the purpose of this project, the Timbalier bio-benchmark elevation will be applied because the two islands are located close to each other.

Based on the Timbalier bio-benchmark, the target elevation range for the marsh platform should be about +1.3 to 1.9 ft NAVD, with an average elevation of about +1.4 ft NAVD. The backbarrier marsh platform for the Whiskey Island is designed with an elevation of +2 ft NAVD at the back toe of the dune and sloping back to +1.0 ft NAVD on the bay side. The marsh platform will be constructed so that the entire range of elevation is represented. This should speed the development of intertidal channels and ponds on the marsh platform and would allow ingress and egress of marine organisms and may also speed natural plant colonization by creating paths for seed and propagule dispersal.

4.3 Protection Vegetation. Vegetative plantings are an integral part of all barrier island post construction activities to help stabilize the marsh platform and the dune. Smooth cordgrass (*spartina alterniflora*), marshhay cordgrass (*Spartina patens*), bitter panicum (*Panicum amarum*), and black mangrove (*Avicennia germinans*), which are all common plant species on Whiskey Island will be planted in the newly created habitats. These plantings are similar to those used for the Timbalier Island (TE-40) restoration project. Some concern was raised as to whether the borrow site material (almost 100 percent sand) is appropriate for marsh vegetation. Smooth cordgrass is adapted to a wide range of soils from coarse sands to clays and mucks, is an inter-tidal brackish plant species, and will not survive in soils with extremely high levels of organic matter. However, it is expected that smooth cordgrass, and the other plant species to be planted in the newly created habitats will be less productive in the pure sand borrowed from Ship Shoal than they would be in sediments containing more clay and/or silt. Sand does not retain nutrients, including nitrogen, phosphorus, and iron, the way clays do. However, since the sand will be deposited on top of a clay layer at some depth, it is possible that nutrients will migrate upwards into the root zones. Alternately, some nutrients may diffuse downwards from the overlying water. In addition, it will be important to achieve proper intertidal elevations because, if supratidal elevations are created with pure sand, the resulting soil will dessicate rapidly because of the very limited water retention characteristics of sand, resulting in very high water stress for whatever plants might be planted there, or might colonize naturally.

Access to or movement across the island outside of the defined project area shall generally be prohibited for all personnel and equipment for protection of existing vegetation. Vegetated areas shall not be used for equipment, personnel or material access or storage. The

dredged fill shall be discharged within the contained areas in a manner that will minimize overflow of the dredged material from the bounds of its placement area.

4.4 Borrow Site. It will take approximately 2.8 million cy of sand to restore the west flank of Whiskey Island, and approximately 1.1 million cy to transition into the existing east dune of Whiskey Island. This will require a total of approximately 3.85 million cy of sand from Ship Shoal for the restoration of Whiskey Island. The guidelines at 40 CFR Part 230 Section 404(b)(1), Subpart G require the use of available information to make a preliminary determination concerning the need for testing of the material proposed for dredging. No testing is required when the material to be dredged is composed primarily of sand, gravel, or other inert material, is found in areas of high current or wave energy, and is likely to be free of contaminants. Knowledge of the proposed dredging site proximity to sources of contamination, gained from previous testing, or through experience, and knowledge of the area to be dredged, may be utilized to determine that there is no reason to believe that contaminants are present and, therefore, there is no need for testing. There is no reason to believe that the Ship Shoal Block 88 borrow area is a carrier of contaminants and therefore, testing is not required. The dredged or fill material is composed primarily of sand, is found in an area of high wave energy, and there has been no recent source of sediment input into the system other than sediment provided from resuspension of bay bottom sediments and eroding marshes in the bays.

A geophysical survey performed in August 2003, determined that the hydrographic conditions across most of the borrow site are relatively flat, with the controlling depth at approximately minus 18 ft mean lower low water datum. The top nine to fifteen feet of the borrow area consists of fine-grained sand, which is similar to the sand present at Whiskey Island. The borrow area would provide approximately four times the material required for the Whiskey Island project, and there are no known active pipelines, fixed platforms, caissons, wellheads, or other structures within the proposed borrow area in Block 88. A sonar survey of the site did pick up eleven side scan sonar contacts, which were debris, disturbed sea floor and a buoy. Many additional unidentified magnetic anomalies were located by the sonar survey, most of which are assumed to be debris. The area of the borrow pit was minimized to avoid magnetic anomalies and side scan sonar contacts where possible.

4.5 Dredging Methods. Dredges are grouped into two main classes: mechanically operated and hydraulically operated. For offshore dredging, hydraulic dredges are almost exclusively employed. Generally, if the borrow area is less than 5-6 km from the beach, then cutter suction and pipeline are used. If the distance is greater than 5-6 km, a hopper dredge is employed. Three alternative scenarios were selected for consideration as follows with the cost estimate based on a borrow quantity of 4.0 million cy.

4.5.1 Hydraulic Suction Cutterhead Dredge(s) with Pipeline(s) to Shore - *estimated cost: $25,900,000*. Transport of sediments will be accomplished by pumping material through twenty to thirty-six inch pipelines to shore. Floating and fixed booster pumps will be situated along the pipeline and spaced to optimize cost. Once the sediment is transported, the material will be placed along the front of the restoration project for final placement and grading.

4.5.2 Hopper Dredge(s) to Intermediate Point for Transfer to Pipeline to Shore - *estimated cost: $29,000,000*. The pipeline to shore, with booster stations, would be similar to the first option but shorter in overall length. Dredges will be chosen based on the operating drafts and transfer points from the hopper dredge to pipeline to the shore of Whiskey Island.

4.5.3 Hydraulic Cutterhead Dredge(s) Filling Hopper Barges for Delivery to Transfer Point and Pipeline to Shore - *estimated cost: $37,590,000*. This approach is similar to the second option substituting a cutterhead dredge and barges for the hopper dredges. This option offers more flexibility and assurance of production output by using multiple units as well as the ability to locate the transfer point in shallower water closer to shore.

4.5.4 Sand Fences. Sand fences are an integral part of dune restoration projects and will be placed on the dune where they are not susceptible to wave energy. Sand fences capture the Aeolian transport of fine grain sand and will add elevation to the dune from sand accumulation. Sand fence was included in all alternative cost estimates.

5.0 OTHER ENVIRONMENTAL CONSIDERATIONS

5.1 Cumulative Impacts. Potential cumulative impacts would be the aggregate impacts to the environment resulting from the proposed action in combination with other ongoing actions, and actions being considered within the reasonably foreseeable future. No significant adverse cumulative impacts are expected. On the contrary, the value of barrier islands for protecting mainland shorelines, wetlands, and estuarine habitats has often been observed. It has been estimated that every km of barrier island shoreline protects 30 square km of wetland-estuarine habitat. There are approximately 3 million ac of marsh in Louisiana, or 40 percent of the nation's coastal wetlands. The cumulative effect of barrier island restoration would be the protection of about 110 miles of approximately 384 miles of highly productive marshes, reduction of coastal land loss, protection of inland communities from storm surge and flooding, protection of unique fishery habitat, maintenance of nesting/resting sites for shore birds and migrating birds, and maintenance of shallow near-shore marine fisheries habitat.

The proposed action is part of an effort under CWPPRA to create, protect, restore and enhance wetlands in coastal Louisiana. Restoring the Isles Dernieres chain is a primary focus. CWPPRA has provided Federal funds for planning and implementing such restoration (Figure 1). The Timbalier Island (TE-40) construction to create beach/dune/marsh was recently completed and the final inspection was conducted on 7 January 2005. Approximately 4.6 million cy of material from the Little Pass borrow site restored a 2.2 mile segment on the eastern end of the island. Two significant storm events with significant rainfall/runoff and wave action occurred during the latter stages of construction and the newly created beach/dune/marsh environment performed well. Over 22,000 linear feet of sand fencing (a double row) was installed to trap windblown sand. Five thousand pounds of gulf annual rye seed was dispersed and has already begun growing on the dune to further prevent erosion until the more diverse species planting. A total of eight different species will be planted completing the project. The New Cut project and Whiskey Island Back Barrier are two additional CWPPRA barrier island restoration projects being proposed for the near future. Other barrier island restoration projects

are likely to be proposed and selected under CWPPRA that will conform to the strategies outlined by the Coast 2050 Plan.

5.2 Coastal Zone Management (CZM). 6.2 Coastal Zone Management, Prime Farmlands and Floodplains. The CWPPRA Task Force approved the proposed project for funding on January 16, 2002. The EPA Region 6 and the LDNR are co-sponsors of the project. In order to comply with CZM requirements, the project will need a Coastal Use Permit (CUP) prior to construction, which is issued by the LDNR. Applications for the CUP and COE 404 permits have been submitted. A Joint Public Notice for both permits will be issued upon completion of this EA.

5.3 Infrastructure. According to the 1998 Coast 2050 plan for the Isles Dernieres Shorelines mapping unit, there is substantial oil and natural gas activity in the area, especially in Terrebonne Bay behind the islands, but also on the islands themselves. Oil and natural gas access canals have negatively impacted Trinity Island. These canals serve as potential weak spots, or focal points, for breaches to form during severe storm and overwash events. This unit has 11 oil and/or natural gas wells and no roads or pipelines. There are no navigation channels nor any major port or terminal installations within this unit.

5.4 Non-Issue Environmental Considerations. Other environmental elements that were considered but determined not to be factors in the proposed action included floodplains, prime farmland soils, cultural resources, oyster leases, socio-economic and environmental justice issues. The Federal Emergency Management Agency Flood Insurance Rate Maps delineate the 100-year Flood Hazard Areas, designated "A" or "V" zones. Coastal zone areas are designated "V" zones in which structures are subject to damage from both flooding and significant wave action. Whiskey Island is designated to be in a "V" zone area. Coastal barriers are unique landforms that provide protection for diverse aquatic habitats and serve as the mainland's first line of defense against the impacts of coastal storms and erosion. Implementation of the proposed project proposal will not result in the construction or introduction of any structure that would impede, displace, retard or cause flood waters to backup. The proposed project is intended to be located at the western end of Whiskey Island and enhance the structural integrity of the island

The project is located in open water in the Terrebonne Basin and there are no oyster leases within the vicinity of Whiskey Island. No residential areas, cultivation or livestock grazing exist within the project area. The soils are not considered prime farmland and there is no potential for grazing once the project construction has been completed. A basic Environmental Justice analysis was not performed. According to the Louisiana Office of Cultural Development, Division of Archaeology, there are no archaeological sites or historic standing structures either listed on or determined eligible for listing on the National Register of Historic Places located within the project area. Additionally, there are no other known cultural resources within the project area.

5.5 Unavoidable Adverse Effects. The primary unavoidable adverse effects are the immediate impacts from construction related sediment excavation and deposition on the non-mobile benthic organisms in the areas; and, minor and temporary disturbance to adjacent wetlands, water, and air quality. The effects on air, wetlands, and water quality and the noise generated by the

proposed project will be of a temporary nature. Because the project is a restoration action, the social and environmental benefits of the proposed project are considerably greater than the environmental impacts and irretrievable commitment of resources identified in this document. The proposed project will reduce the identified risks of taking No-action and would create dune and marsh habitat with dredged material.

5.6 Relationship Between Local, Short-Term Use of the Environment and the Maintenance and Enhancement of Long-Term Beneficial Uses. Whiskey Island is rapidly decreasing in size as the shorelines are eroding at rapid rates. All structural and non-structural alternatives have short-term localized impacts during construction, but offer significant long-term environmental benefits. No long-term adverse impacts to adjacent islands, wetlands, water quality, threatened or endangered species, species managed by the Gulf of Mexico Fishery Management Council or their essential habitat, other fish and wildlife resources, recreational or socio-economic resources, or cultural resources, are expected.

5.7 Irreversible and Irretrievable Commitment of Resources. The irreversible and irretrievable commitment of resources would be labor, materials, wear on machinery, monies spent, and energy expended for implementation of the restoration action.

6.0 PUBLIC PARTICIPATION AND CONSULTATIONS

Public involvement was achieved through the Citizen Participation Group and public meetings conducted during the project development and selection stages under CWPPRA, and involved input from the public and local, State, and Federal agencies. The project concept was originally proposed to the public at a nomination meeting held in 2001. An overview of the selected project was presented to the public in 2002.

The public recognizes that the continued loss of coastal wetlands can ultimately result in the displacement of entire communities, the loss of occupational and recreational opportunities, and ultimately, the forfeiture of a unique culture and way of life. Passage of the Louisiana constitutional amendment establishing the Coastal Wetlands Conservation and Restoration Fund clearly demonstrated the public's overwhelming support to effectively address the State's coastal land loss problem. This statutorily dedicated fund has provided a State funding mechanism for cost sharing this project.

Coordination has been maintained with each of the CWPPRA Task Force agencies and the LDNR. Consultation with the FWS and LDWF has been conducted in accordance with the Endangered Species Act of 1973 and Fish and Wildlife Coordination Act. The EA has been prepared in coordination with the NMFS in determining categories of EFH and associated fisheries species within the project vicinity. Submittal of the EA is provided to initiate formal Federal consultation requirements pertaining to EFH under the MSFCMA. Federal, State, and local agencies, as well as other interested stakeholders, will receive a copy of this EA.

Consultation has also been conducted with the Louisiana Department of Culture, Recreation and Tourism in accordance with the National Historic Preservation Act of 1966, and

Archaeological and Historic Preservation Act of 1974. Responses from the respective agencies with regard to the proposed action are included in Section 7.0.

U.S. Natural Resources Conservation Service
U.S. Army Corps of Engineers
U.S. National Marine Fisheries Service
U.S. Fish and Wildlife Service
Federal Emergency Management Agency
State Historic Preservation Officer
Louisiana Department of Environmental Quality
Louisiana Department of Natural Resources
Louisiana Department of Wildlife and Fisheries
National Audubon Society
Terrebonne Parish Consolidated Government

7.0 COMMENT LETTERS, MAPS AND TABLES

Table 1 – Project Area Comparison of Wetland Value Assessment (WVA) Habitat Class

WVA Habitat Class	NAVD Elevation (ft)	Project Area (acres)				Entire Whiskey Island			
		Area Existing TY0	Area Restored TY1	Area Change	Area Remaining TY20	Area Existing TY0	Area Restored TY1	Area Change	Area Remaining TY20
		Future with Project (FWP)				Future with Project (FWP)			
Subtidal						191	114	-77	55
Intertidal	0-2.0	150	281	+131	88	591	710	+119	400
Supratidal	2.0-4.9	36	134	+98	37	259	340	+81	154
Dune	>5	0	85	+85	0	0	85	+85	0
Total land	NA	186	500	+314	125	850	1135	285	554

Moffatt & Nichol's memo to DMJM+HARRIS, Inc., May 6, 2005 and WVA.
Approximately 20 to 30 percent of the restored area would remain after 20 years (TY20). A reasonable estimate of the distribution at TY20 might be on the order of 50% intertidal beach, 30% supratidal beach, 0% dune, and 20% intertidal marsh.
DMJM+HARRIS, Inc. - Design Report Revised for 95% Submittal, July 22, 2005

Table 2 - Comparison of Habitat Class

WVA Habitat Class	**Area (acres) Existing**	**Area (acres) Alternate A**	**Area (acres) Alternate B**	**Area (acres) Alternate C**	**Area (acres) Alternative B-Extended**
Subtidal	313	134	134	134	203
Intertidal Marsh	150	204	181	146	181
Gulf Beach	36	126	144	163	198
Dune	0	83	90	99	121
Total land	186	413	415	408	500
Cumulative Total	409	547	549	542	703

Alternate "B-Extended" was selected as the preferred alternative
DMJM+HARRIS, Inc. - Design Report Revised for 95% Submittal, July 22, 2005

Table 3 - EFH Requirements for Federally Managed Species that occur in the Study Area

Species	Life Stage	EFH
brown shrimp *(Farfantepenaeus aztecus)*	Eggs/larvae	Nearshore and offshore gulf waters (< 110 m, demersal)
	Post larval/juvenile	Marsh edge, SAV, tidal creeks, inner marsh
	Subadult	Mud bottoms, marsh edge
	Adult	Neritic gulf waters, silt muddy sand, and sandy substrates
white shrimp (*Litopenaeus setiferus*)	Eggs/larvae	Nearshore gulf waters < 40 m
	Post larval/juvenile	Marsh edge and ponds, SAV, inner marsh, oyster reefs
	Subadult	Same as post larval/juvenile
	Adult	Nearshore gulf waters to 30 m
red drum (*Sciaenops ocellatus*)	Eggs/larvae	Nearshore and offshore gulf waters
	Post larval/juvenile	SAV, estuarine mud bottoms, marsh/water interface
	Subadult	Estuarine and marine mud and sand bottoms, oyster reefs, estuarine water column
	Adult	Estuarine water column (Gulf shoreline to 50 m depth), shell substrate; estuarine and marine mud bottoms
Spanish mackerel *(Scombermorus maculatus)*	Larvae	< 50 m
	Juvenile and subadult	Gulf from shoreline to 75 m depth
King mackerel	Juvenile and adult	Gulf from shoreline to 200 m depth
Bluefish *(Pomatomus saltatrix)*	Juvenile, subadult and adult	Nurseries are inshore along estuaries, beaches, and inlets; older life stages common out to the continental shelf
Cobia (*Rachycentron canadum*)	Eggs, larvae	Top meter of water column; marine/estuarine
	Post larval, juvenile, adult	Gulf, shore to 40 m water depth; larval and juveniles common in 3 – 9 m of water
Bonnethead Shark (*Sphyrna tiburo*)	Juvenile and adult	Inlets, estuaries, and gulf waters < 25 m
Atlantic Sharpnose Shark (*Rhizoprionodon terraenovae*)	Juvenile	Gulf waters less than 40 m between the Mississippi and Atchafalaya Rivers
Little tunny (*Euthynnus alletteratus*)	Post larval, juvenile, adult	Occupy depths < 200 m in gulf, common near shoals

October 4, 2005, NMFS E-mail

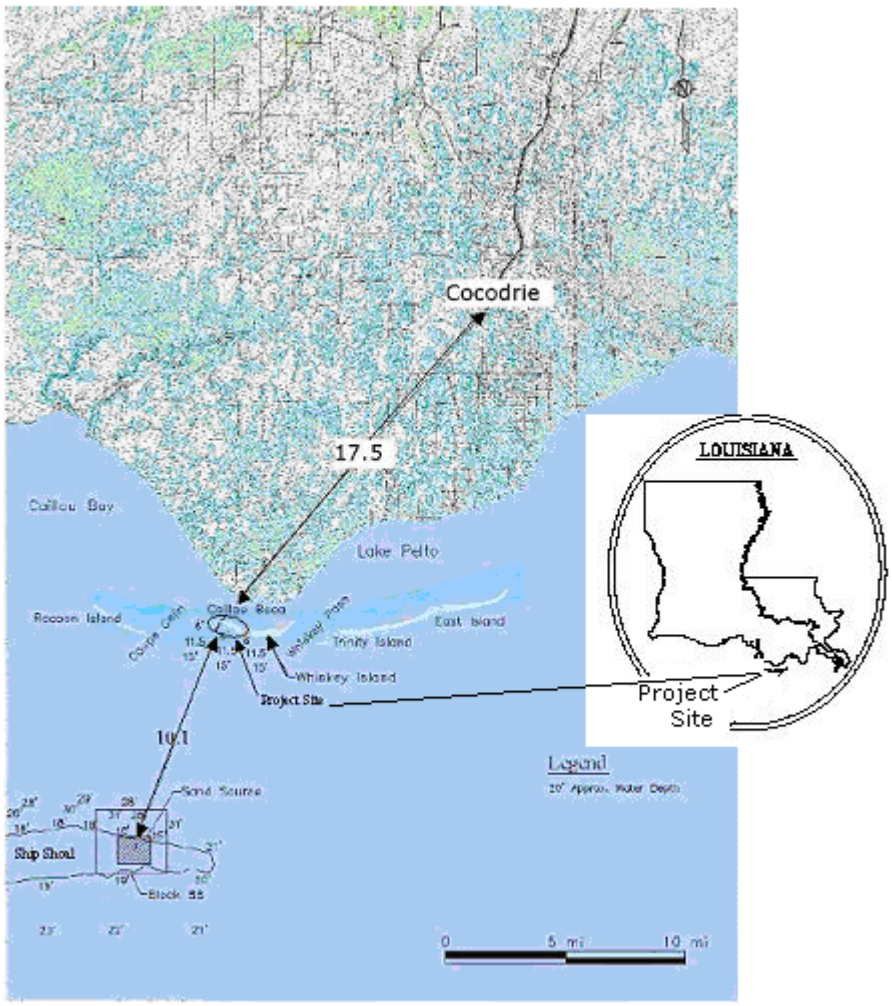

Figure 1a: Ship Shoal – Whiskey Island Wet Flank Restoration (TE-47) Location

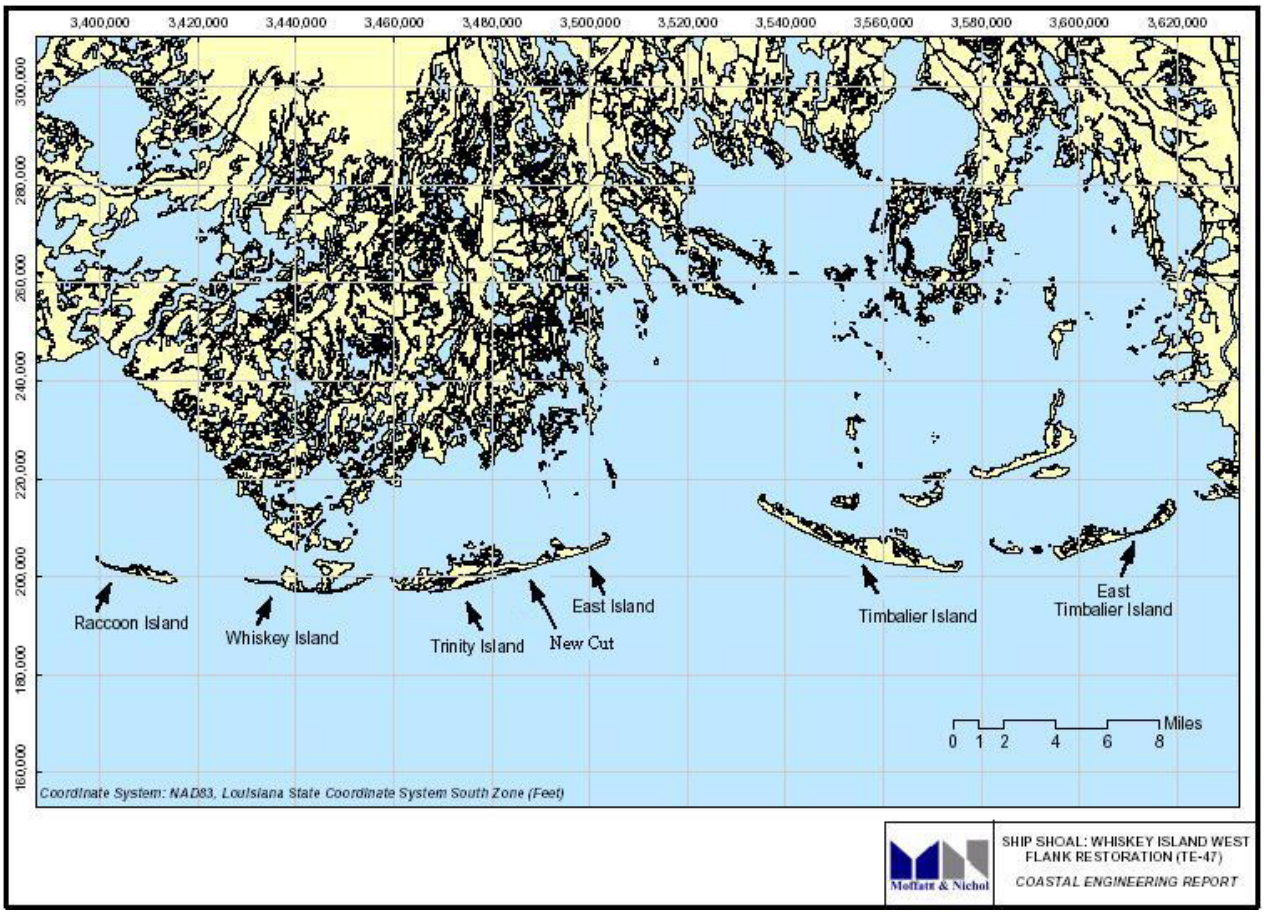

Figure 1b: Location of CWPPRA Barrier Island Projects

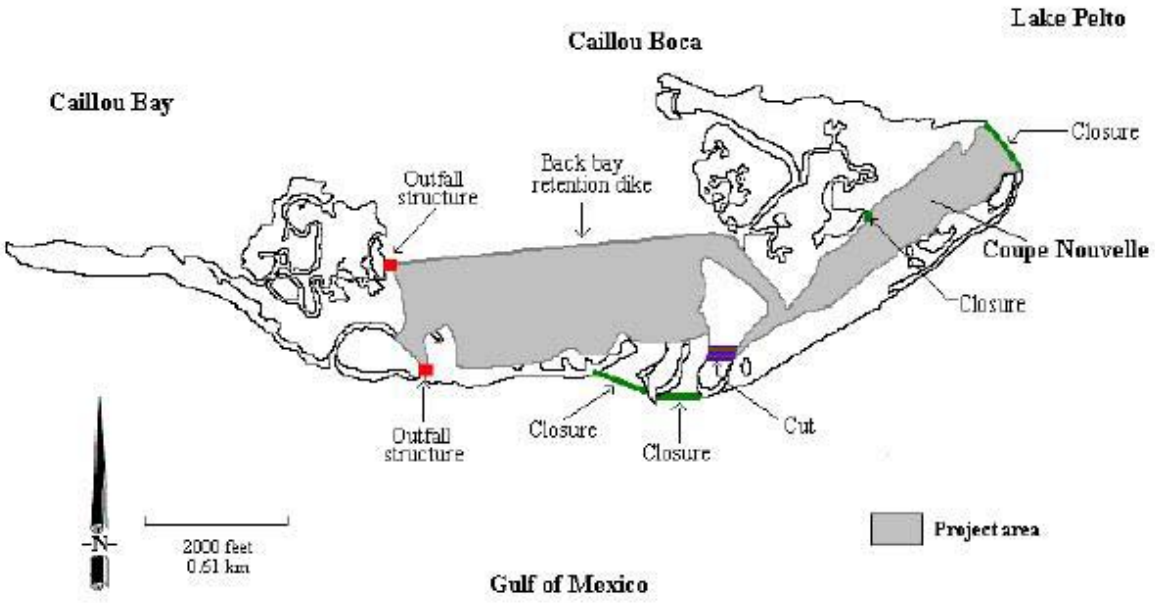

Figure 2: Whiskey Island Barrier Island Restoration and Coastal Wetlands Creation (TE-27) Project: Project Construction Area and Associated Structures.

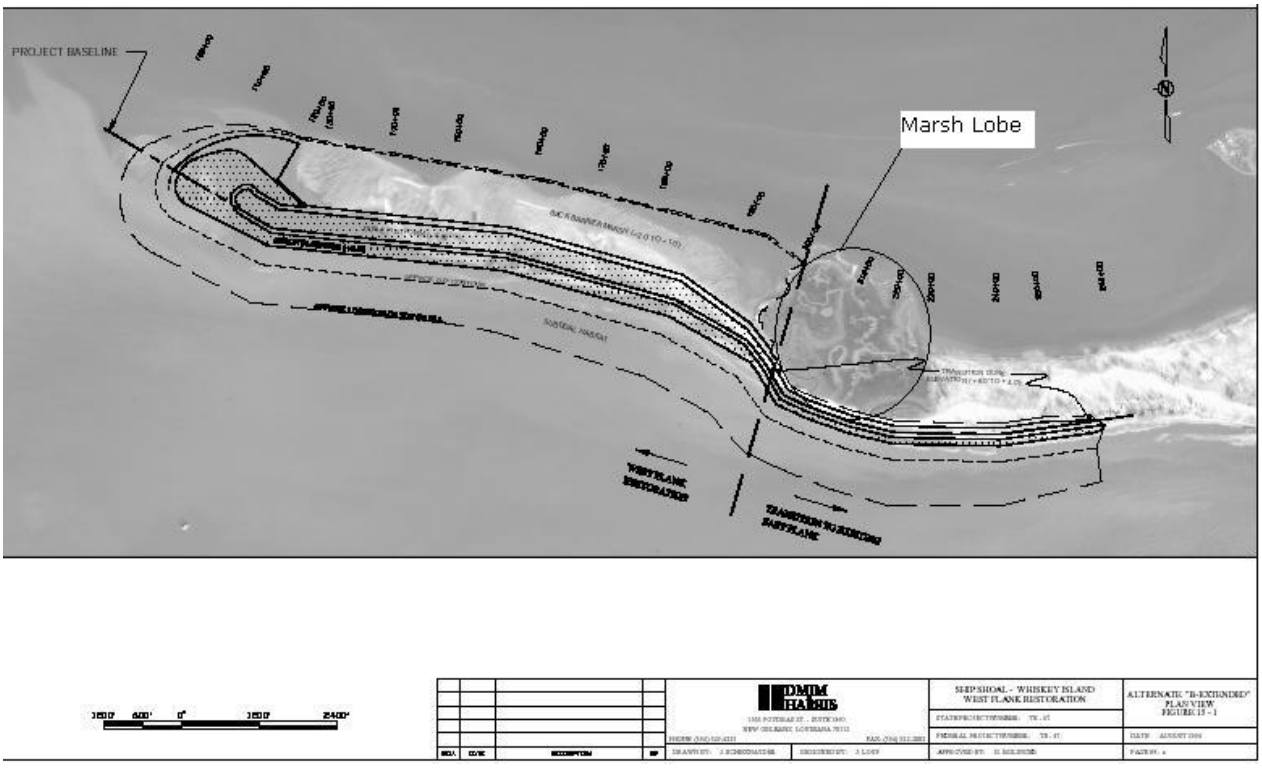

Figure 3: Alternative "B-Extended" Plan View

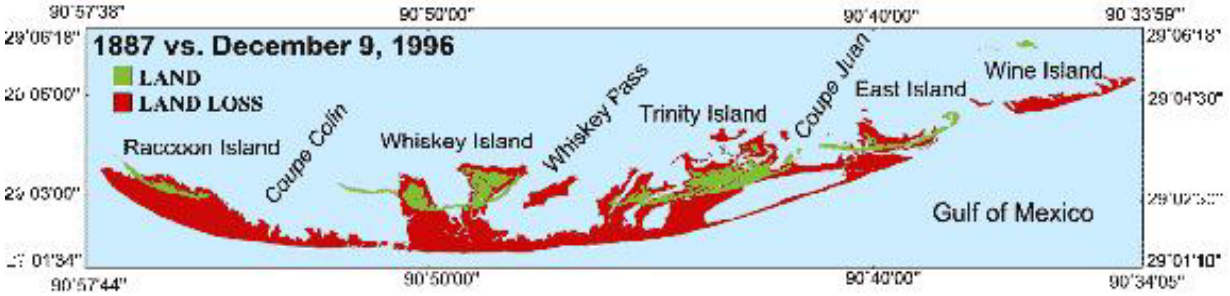

Figure 4: ***Map illustrating over 100 years of land loss on Isles Dernieres (University of New Orleans, Coastal Research Laboratory).***

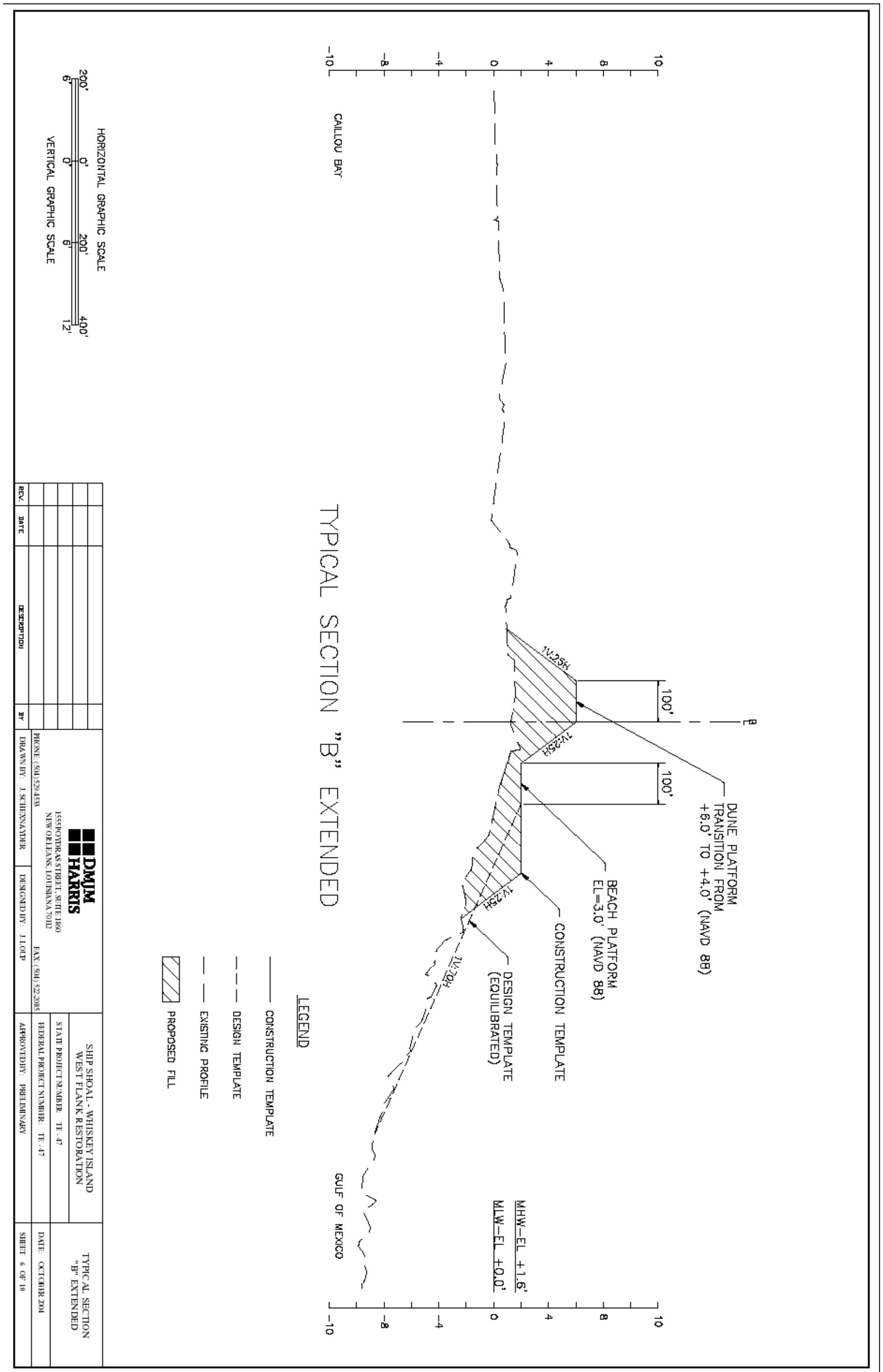

Figure 5: Alternate B-Extended – Typical Section

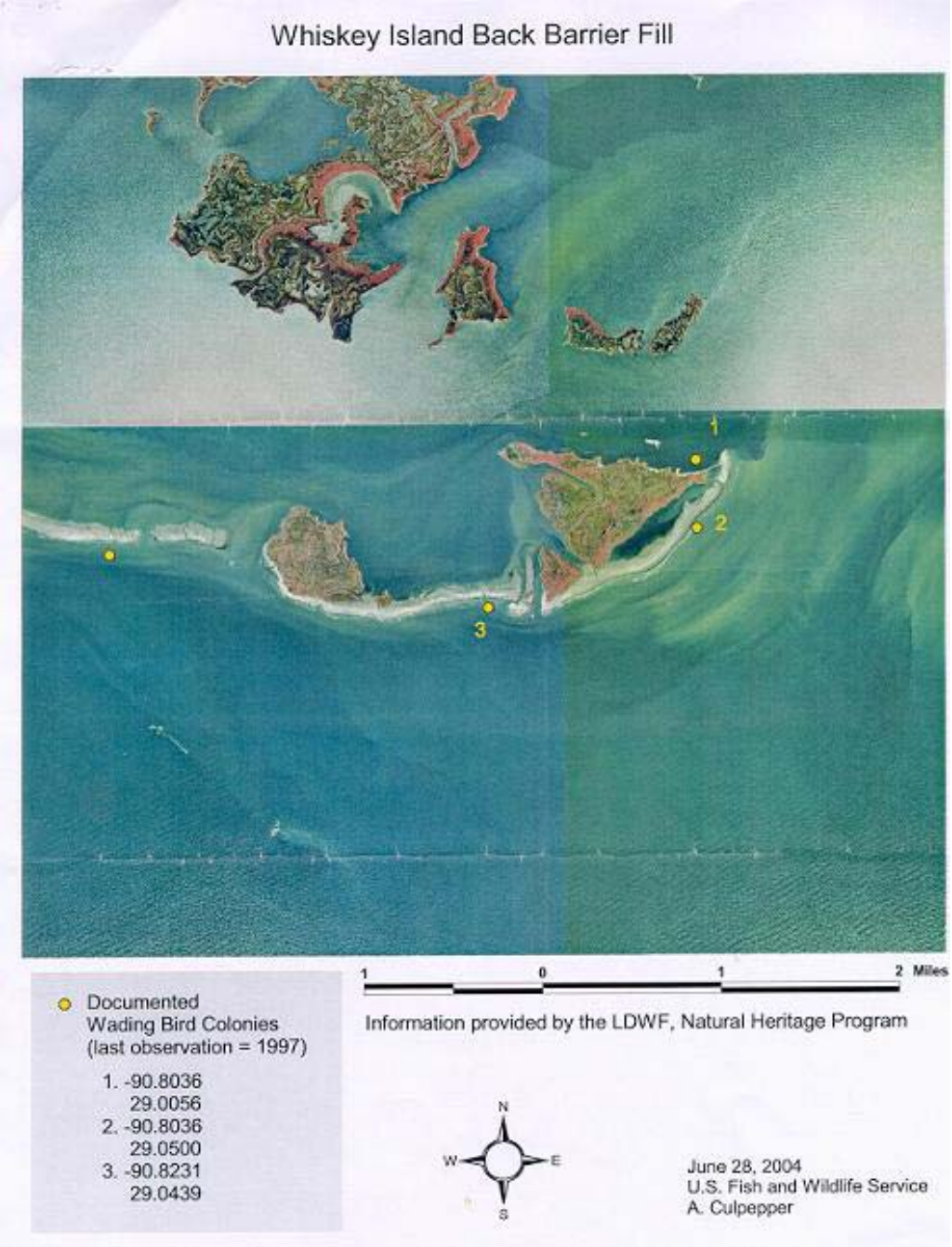

Figure 6: Location Wading Bird Colonies

List of Comment Letters, Memorandums and E-mails

Louisiana Department of Environmental Quality, Memorandum of August 10, 2004 from Dugan Sabins

Louisiana Office of Cultural Development, State Historic Preservation Officer, Letter of July 9, 2004

Moffatt & Nichol, Memorandum of May 6, 2005, to DMJM+HARRIS, Inc.

Natural Resources Conservation Service, Letter of August 26, 2005

Natural Resources Conservation Service, Letter of July 13, 2004

Natural Resources Conservation Service, Letter of July 8, 2004

U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, National Marine Fisheries Service, E-mail of October 4, 2005

U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, National Marine Fisheries Service, Letter of July 2, 2004

U.S. Department of the Interior, Fish and Wildlife Service, Letter of July 13, 2004

8.0 REFERENCES

Armbruster, Charles K., Darin Lee, Mary Anne Townson, and Norma Clark, 2001. Monitoring Progress Report No.1, Whiskey Island Resotration (TE-27).

Bjorndal, Karen A. and Alan B. Bolten, 1989. *Goals for sea turtle research in the Gulf of Mexico with respect to the oil and gas industries*. Archie Carr Center for Sea Turtle Research, University of Flordida, Gainesville, FL. In Sea Turtles and Marine mannals of the Gulf of Mexico (see Tucker, 1990).

Boesch, D.F., M.N. Josselyn, A.J. Mehta, J.T. Morris, W.K. Nuttle, C.A. Simenstad, D.J.P. Swift, 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, Louisiana with support provided by the Walton Jones Foundation, Inc., Charlottesville, Virginia. 103 pp.

Byles, R.A., 1989. *Satellite telemetry of Kemp's ridly sea turtle, Lepidochelys kempi, in the Gulf of Mexico*. In: Eckert, S.A. and others, comp., Proceedings of the ninth annual workshop on sea turtle conservation and biology. NOAA Technical Memorandum NMFS-SEFC-232

C&C Technologies, 2003. *High Resolution Geophysical and Archaeological Survey of Portions of Blocks 87, 88, 89, 94 and 95 Ship Shoal Area*, December 2003

CWPPRA Environmental Work Group, 2001. CPPRA Environmental Work Group (EWG). Revised October 2001. *Ship Shoal: Whiskey Pass Closure and Whiskey Island West Flank Restoration Candidates Project Information Packet for Wetland Value Assessment.* EPA.

DMJM+HARRIS, Inc. *Dredging Alternatives Analysis*, August 17, 2004

DMJM+HARRIS, Inc. *Design Report Revised for 95% Submittal*, April 8, 2005

DMJM+HARRIS, Inc. *Design Report Revised for 95% Submittal*, July, 2005

Drake, K.R. 1999. *Movements, habitat use and survival of wintering piping plovers*. M.S. Thesis. Texas A&M University-Kingsville, Kingsville, TX. 81 pp.

Guntenspergen, G.R., and B.A. Vairin. 1996. *Willful Winds; Hurricane Andrew and Louisiana's Coast*. U.S. Department of Interior, National Biological Survey and Louisiana Sea Grant College Program. 16pp.

LCWC&RTF and WC&RA, 1998. *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.

LCWC&TF and WC&RA, 1999. *Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority*. 1999. *Coast 2050: Toward a Sustainable Coastal Louisiana*. Appendix E – Region 3 Supplemental Information. Louisiana Department of Natural Resources. Baton Rouge, LA.

McBride, R.A., and M.R. Byrnes. 1997. *Regional Variations in Shore Response along Barrier Island Systems of the Mississippi River Delta Plain*; Historical Change and Future Prediction. Journal of Coastal Research 13(3): 628-655.