SECTION 404(b)(1) EVALUATION
MEDIUM DIVERSION AT WHITE DITCH
PLAQUEMINES PARRISH, LOUISANA

I. INTRODUCTION

A. Purpose and General Description.

This project was identified as a Near-term Critical Restoration Feature Recommended for Study and Future Congressional Authorization in the LCA Main Report dated January 21, 2005. In November 2007, WRDA passed, authorizing this and other projects from the LCA Main Report. The MDWD feasibility study is anticipated to result in a Chief's Report containing a recommended plan to construct a Mississippi River diversion in the vicinity of White Ditch for the purposes of introducing freshwater, sediments, and nutrients into the study area. This project will provide a source of river sediment, freshwater and nutrients to the River aux Chenes subbasin and other nearby portions of the upper Breton Sound Basin, to restore and protect marsh soils and vegetation and maintain a functional salinity regime.

The proposed 35,000 cfs diversion would be built just north of Phoenix Louisiana (see Figure 1). Ten 15-ft by 15-ft box culverts with hydraulic operated sluice gates would be placed in the Mississippi River levee. An outflow channel about 7,200 feet long, 545 feet wide and 16 feet deep would be dredged to carry the flow. In addition about 8,600 feet of Bayou Garelle would be deepened to allow passage of the diverted waters. All material removed from these channels would be used beneficially. Some would be placed immediately adjacent to the outfall canal and Bayou Garelle to guide the water and to create 31 acres of ridge habitat. The rest would be placed in open water and marsh adjacent to the channels to nourish/create 385 acres of marsh. The marsh nourishment/creation areas would be surrounded by containment berms built with material from within the areas. Rip-rap will be placed along the outfall channel in key places for stabilization. Rip-rap plugs would be placed in six major canals leading to River aux Chenes to prevent diverted sediment from leaving the project area. The material that is removed would be placed adjacent to the channel to nourish or create marsh. The diversion of fresh water, sediments and nutrients would benefit 98,000 acres of wetlands and estuarine waters.

B. Location.

The boundary of the project encompasses over 98,000 acres of intermediate, brackish, and intertidal wetland habitats. The study area boundary follows distinct landscape features beginning in the north with the confluence of the non-Federal back levee and the Forty-Arpent canal, extending along the non-Federal back levee, the Mississippi River levee, the Federal back levee and along the left descending natural bank of the Mississippi River to the west; past American Bay, California Bay, and through Breton Sound, near Bay Gardene to the south; into and along River aux Chenes to the east, and back to the point of beginning.

C. Authority.

Title VII of the Water Resources Development Act (WRDA) 2007 authorizes the Louisiana Coastal Area (LCA) ecosystem restoration program. Included within that authority are requirements for comprehensive coastal restoration planning, program governance, a Science and Technology Program, a program for the beneficial use of dredged material, feasibility studies for restoration plans, project modification investigations, and restoration project construction, in addition to other program elements. This authorization was recommended by the Chief of Engineer's Report, dated January 31, 2005.

D. General Description of Dredged and Fill Material.

(1) General Characteristics of Material

The material placed to build the Marsh Berms would come from adjacent marsh land. This material is primarily alluvium that was deposited by annual flooding of the Mississippi River along with varying amounts of organic matter. Once the Marsh Berms are constructed, the area within the berm perimeter will be filled with excavated material from the Outfall Channel and Bayou Garelle to create/nourish marsh. In addition, some material from the Outfall Channel would be placed adjacent and abutting to the channel to create ridges. This material is primarily alluvium that was deposited by annual flooding of the Mississippi River along with varying amounts of organic matter. The canal plugs and Outfall Channel stabilization would be done with rip-rap.

(2) Quantity of Material.

Approximately 3.8 million cubic yards of material will be use to create the berms. Approximately 5 million cubic yards of excavated spoil from the Outfall Channel will be used create/nourish marsh. There will be approximately 150,000 cubic yards of spoil used in the ridge restoration. About 250,000 tons of 400 lb rip rap will be placed in key locations along the channel to aid in stabilization. The plugs in the canals will be constructed with 1,000 tons of 400 pound rip rap and will not hinder boat traffic in the project area.

(3) Source of Material.

All material excavated and placed within the project area is present or former swamp floor native material deposited by historic and prehistoric annual flooding of the Mississippi River. No material would be brought into the project area from outside sources except material needed to stabilize the Outfall Channel and to construct the canal plugs.

E. Description of the Proposed Discharge Sites.

(1) Location and Size.

The marsh berms would be located at the edges of the marsh creation/nourishment areas. They would cover a few acres. The created/nourished marsh and berms combined would cover 385 acres located at various sites adjacent to the Outfall Channel and Bayou Garelle The canal ridges would cover 31 acres adjacent to the Outfall Channel. All these are indicated on Figure 1. The canal plugs would be placed where six major canals cross the River aux Chenes ridge. The channel stabilization rip-rap would be placed as necessary.

(2) Type of Site and Habitat.

Material to construct marsh berms, marsh, and canal ridges would. be placed on intermediate marsh or in open water. The rip-rap for Outfall Channel would be placed at the edge of the ridge adjacent to the channel. Rip-rap for the canal plugs would be placed in six canals.

(3) Timing and Duration of Discharge.

Construction of the diversion and associated outfall management features is anticipated to take 24–36 months.

F. Description of Disposal Method.

The marsh berms would be built by mechanical means (e.g. small bucket dredge). The marsh would be created with a hydraulic dredge and pump system. Ridge creation would be conducted along the outfall channel and Bayou Garelle by means of a mechanical dredge. The material would be compacted to meet applicable engineering standards. The channel plugs would be built by mechanical means.

II. FACTUAL DETERMINATIONS

A. Physical Substrate Determinations.

(1) Comparison of Existing Substrate and Fill.

Material placed to create marsh berms would be the same as exiting substrate. Material placed to create/nourish marsh and create the ridges would come from the Outfall Channel and would be essentially the same as the substrate – alluvium laid down by the Mississippi River. The material needed to construct the channel plugs would be rip-rap brought in from an outside source. The excavated material will be certified as clean fill to adjacent marsh land.

(2) Changes to Disposal Area Elevation.

The marsh berms would be constructed +6.0 NAVD88. Areas were assumed to have an elevation of -1.0 NAVD and will be filled to +3.0 NAVD with initial construction. Assumed compactions of 1.0 ft will occur within 10 years of completion of the marsh creation areas.

(3) Migration of Fill.

The berms, marsh and ridges are not expected to migrate.

(4) Duration and Extent of Substrate Change.

The marsh berms and channel ridges would be above 0 NAVD 88 for the 50-year project life. The marsh would likely reach 0 NAVD 88 in about 30 years.

(5) Changes to Environmental Quality and Value.

Direct impacts to environmental quality and value from placement for marsh and ridge creation are expected to result in a net benefit of 139.94 Average Annual Habitat Units (AAHUs) as calculated using the Wetland Values Assessment (WVA) methodology.

(6) Actions to Minimize Impacts.

Formulation of plans for the proposed placement focused on maximizing environmental benefits to meet project objects while avoiding or minimizing any incidental negative effects on aquatic areas and substrates.

B. Water Circulation, Fluctuation, and Salinity Determinations.

(1) Alteration of Current Patterns and Water Circulation.

Placement of marsh berms and marsh creation/nourishment will have very little effect on water circulation. Channel ridges will prevent north to south movement of water in the degraded marsh that can occur now. Construction of canal plugs will slow water moving toward the east.

(2) Interference with Water Level Fluctuation.

Disposal of dredged material or rip-rap during project construction is unlikely to interfere with water level fluctuation.

(3) Salinity Gradient Alteration.

Disposal of dredged material during project construction is not expected to influence salinity.

(4) Cumulative Effects on Water Quality.

a. Salinity.

Effects of the proposed action on salinity would occur once the project is constructed the introduction of Mississippi River water into the MDWD would reduce salinities in the project area. However, the reduction in salinity values within the project area are highly dependent on how the structure will be operated and the volume of water allowed to be diverted from the river. During diversion operation salinities would be lowered across the project areas. Depending on the intensity and duration of these operations, an effect on the salinities from the diversion within the project area could be seen for up to 3-months.

Placement of dredged material during project construction would not influence salinity. However, the purpose of this diversion is to introduce fresh water into the basin. During diversion operation at maximum flow, salinities would be lowered across the project area. The operation of the White Ditch Diversion would be coordinated with that of the Caernarvon Diversion in the northern portion of the Breton Basin.

b. Clarity.

Disposal associated with marsh berm construction, marsh creation/nourishment and ridge building would reduce water clarity. However, reduction in clarity caused by construction activities would be short duration and clarity would soon return to pre-construction levels. Operation of the White Ditch and Caernarvon Diversions would impact water clarity.

c. Color.

Placement of dredged material during construction would have no impact on the color of the water. Operation of the White Ditch and Caernarvon Diversions would impact water color.

d. Water Chemistry and Dissolved Gasses.

Materials excavated to provide features of the proposed action would contain variable concentrations of organic material. Decomposition of organic material within the placement sites may result in a local, temporary reduction in dissolved oxygen or release of ammonia. However, hydrologic exchange between the marsh and MDWD would reduce dissolved oxygen deficits and facilitate the transformation of ammonia into non-toxic nitrate. The introduction of river water into the Breton Sound Basin may increase dissolved oxygen concentrations, particularly during summer.

e. Tem perature.

Placement of dredged material during construction would have no impact on temp. However, the diverted Mississippi River water could lower water temperature in much of the Breton Basin when the diversion is at full operation. No significant negative impacts are expected.

f. Nutrien ts.

An existing problem with the marsh within the Breton Sound Basin is a lack of nutrients. One of the objectives of the proposed action is to allow waters from the Mississippi River to supply nutrients to the marsh within the basin. The project is expected to have a positive impact on this parameter.

Placement of dredged material during construction would have no effect on nutrients. However, one of the objectives of the proposed diversion is to allow waters from the Mississippi River to supply nutrients to the marsh within the basin. This would be in addition to nutrients brought in by the Caernarvon Diversion.

(5) Changes to Environmental Quality and Value.

Deposition of dredged material may temporarily affect water quality by increasing turbidity/suspended solids in the construction area. However, operation of the White Ditch Diversion is expected to provide approximately 13,355 AAHUs in environmental habitat benefits over 50 years of operation.

(6) Actions Taken to Minimize Impacts.

Material dredged from the Outfall Channel would be used beneficially to create./nourish marsh and create ridge habitat.

C. Suspended Particulate / Turbidity Determinations.

(1) Alteration of Suspended Particulate Type and Concentration.

Material excavated from the existing White Ditch and the marsh is of similar physical and chemical quality to existing substrates within the marshes. Particulates suspended during project construction would dissipate after construction activities are complete.

(2) Particulate Plumes Associated with Discharge.

There would be essentially no particulate plumes associated with discharge during construction.

(3) Changes to Environmental Quality and Value.

Construction of the Outfall Channel would convert 223 acres of marsh to water. However, dredged material from the Outfall Channel would be used to create 31 acres of ridge and to create/nourish 385 acres of marsh. In addition, the diversion of Mississippi River water is expected to provide approximately 13,355 AAHUs of habitat benefit over 50 years.

(4) Actions to Minimize Impacts.

See (3) above.

D. Contaminant Determinations.

Fill material is former marsh sediment that would be returned to the marsh floor. A Phase I Environmental Site Assessment of the study revealed no potential sources of contamination at or near the construction areas.

E. Aquatic Ecosystem and Organism Determinations.

(1) Effects on Plankton.

During actual construction activities of project features there would be short-term direct impacts to plankton populations due to increases in turbidity, low DO, and introduction of dredged sediments into shallow open water areas. Plankton populations should return after construction.

(2) Effects on Benthos.

Disposal of dredged material to create marsh berms, create/nourish marsh and create ridges would eliminate benthos in the project footprint.

(3) Effects on Nekton.

Disposal effects on nekton are likely to be minor as the fish and shellfish could leave the disposal site.

(4) Effects on the Aquatic Food Web.

The marsh created/nourished by disposal from the Outfall channel would benefit the aquatic food web. In addition, operation of the diversion would have a beneficial effect on the aquatic food web in the project area. Nutrients and would be added to the food web, providing a benefit to local area fisheries.

(5) Effects on Threatened and Endangered Species.

No federally listed threatened or endangered species are known to occur within the project area boundary (USFWS, 2010).

(6) Effects on Other Wildlife.

Placement of dredged material may disrupt or displace wildlife in the immediate vicinity. However, any such impacts would be localized and temporary, and most wildlife species would move to an area with more favorable conditions and return after construction is completed.

(7) Actions to Minimize Impacts.

Placement of material excavated for construction of project features was designed in the context of beneficial use, to be used for marsh and ridge creation which will directly benefit the aquatic ecosystem.

F. Proposed Disposal Site Determinations.

Discussions pertaining to turbidity and suspended particulates are summarized under Section II. C in this document. Contaminants were discussed previously under Section II. D of this Evaluation. Implementation of the proposed project will have no significant adverse effects on municipal or private water supplies; recreational or commercial fisheries; water related recreation or aesthetics; parks; national monuments; or other similar preserves. Any adverse impacts will be minor and of short-term duration. An application for State water quality certification under Section 401 of the Clean Water Act is being submitted to the Louisiana Department of Environmental Quality.

G. Determination of Cumulative Effects on the Aquatic Ecosystem.

The project would have long-term positive effects to aquatic resources found on the site. Temporary turbidity impacts may occur on- and off-site during construction of project features, but would be short-term in duration. No long-term, negative cumulative impacts are anticipated to occur. Beneficial impacts are expected to occur on site for wetlands, wetland wildlife, and fish. Long-term productivity would be enhanced with implementation of the project.

H. Determination of Secondary Effects on the Aquatic Ecosystem.

Most fish and wildlife utilizing these water bodies should benefit from the physical conditions the White Ditch Diversion would create when operated to meet project objectives. However, indirect impacts to oyster leases could include increased rate of mortality and decrease in productivity in oyster leases located closest to the diversion site, during the period when the diversion is at full operational capacity and for up to 3 months after the return to maintenance flow conditions. This could result in a loss of revenue for commercial oyster harvesters. Over the 50-year planning horizon, potential beneficial effects to oyster populations could result if reduced salinities resulting from diversion operation were to increase the spatial extent of

habitats experiencing salinities in the optimal range (5–15 parts per thousand) for oyster production. Continued water quality and biological monitoring of the project area before and after project construction should assist in refining the operation plan as needed to meet project objectives for restoring marsh while maintaining a functioning salinity regime in the estuary.

III. FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

A. No significant adaptations of the guidelines were made relative to this evaluation

B. No practicable alternatives to the proposed discharges could be identified that would have less adverse impacts on the aquatic ecosystem.

C. Chemical constituents of the dredged material released during dredging and disposal operations are not expected to exceed LA Water Quality Standards.

D. The proposed action is compliant with the Endangered Species Act of 1973, as amended. The proposed action would not adversely affect endangered or threatened species or their critical habitats.

E. The proposed action is compliant with specified protection measures for marine sanctuaries designated by the Marine Protection, Research, and Sanctuaries Act of 1972. All disposal sites and effects are inland waters. No effects would occur in ocean waters beyond the shoreline of the Gulf of Mexico.

F. Evaluation of Extent of Degradation of the Waters of the United States.

(1) Effects on Human Health and Welfare

a. Municipal and Private Water Supplies.

Implementation of the TSP may require replacement of a water supply pipeline at the diversion site to continue providing water services to the Point la Hache and Phoenix communities. Implementation of Alternative 4 may have a short term indirect impact on water services if replacement of a water supply pipeline is required at the diversion site.

b. Recreational and Commercial Fisheries.

There would be short-term direct impacts to recreational and commercial fishing due to increases in turbidity, low DO, and introduction of dredged sediments into shallow open water areas. The immediate area would be unavailable for fishing during construction.

c. Plankton.

There would be short-term direct impacts to plankton populations due to increases in turbidity, low DO, and introduction of dredged sediments into shallow open water areas. There would be long-term loss of shallow water habitats in some areas due to dredge disposal activities. However, overall, there is an abundance of shallow open water habitat in the project area available for use by plankton.

d. Fish.

Temporary conditions would likely displace more mobile fisheries species from the construction area. Following construction, displaced fish would likely return to the project area. However, the canal plugs could have some negative impact on fisheries access to the area.

e. Shellf ish.

No measurable direct impacts to oysters are anticipated to result from placement of dredged material.

f. W ildlife.

Temporary low DO and turbidity caused by placement of dredged material is unlikely to affect wildlife.

g. Special Aquatic Sites.

Wetlands are the major special aquatic sites in the project area. Disposal of dredged material would create/nourish 385 acres of marsh.

(2) Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems.

Impacts to early life stages may occur during placement of dredged material, but they are expected to diminish after project completion. The created/nourished marsh would provide a nursery area for early life stages of many fish and shellfish.

(3) Effects on Aquatic Ecosystem Diversity, Productivity and Stability.

Disposal of dredged material would create/nourish marsh. The diversion would increase submersed aquatic vegetation, plankton, plant growth production of organic detritus. As a result, ecosystem diversity and productivity would be expected to increase. Enhancement of marsh habitats over the project life is expected to increase the long-term stability of the aquatic ecosystem in this area.

(4) Effects on Recreational, Aesthetic, and Economic Resources.

Disposal of dredged material would have very little impact on recreational, aesthetic, and economic resources. The diversion is an un-natural element and may work to decrease the scenic quality. However, the potential benefits of reclaimed land mass and marsh area, and the need to protect this marsh area outweigh the visual impacts of developing the diversion.

G. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem.

As stated in Section II. E. (7) of this evaluation, formulation of project plans and designs, evaluation of alternative plans, and development of operational scenarios for the TSP, have all been conducted with the objective of minimizing potential negative impacts to the aquatic ecosystem. Placement of material excavated for construction of project features was designed in the context of beneficial use, to be used for marsh and ridge creation which will directly benefit habitat for wildlife and fish in the immediate vicinity of construction.

IV. EVALUATION RESPONSIBILITY

A. Evaluation Prepared By: Alan Edmondson

B. Evaluation Review By:

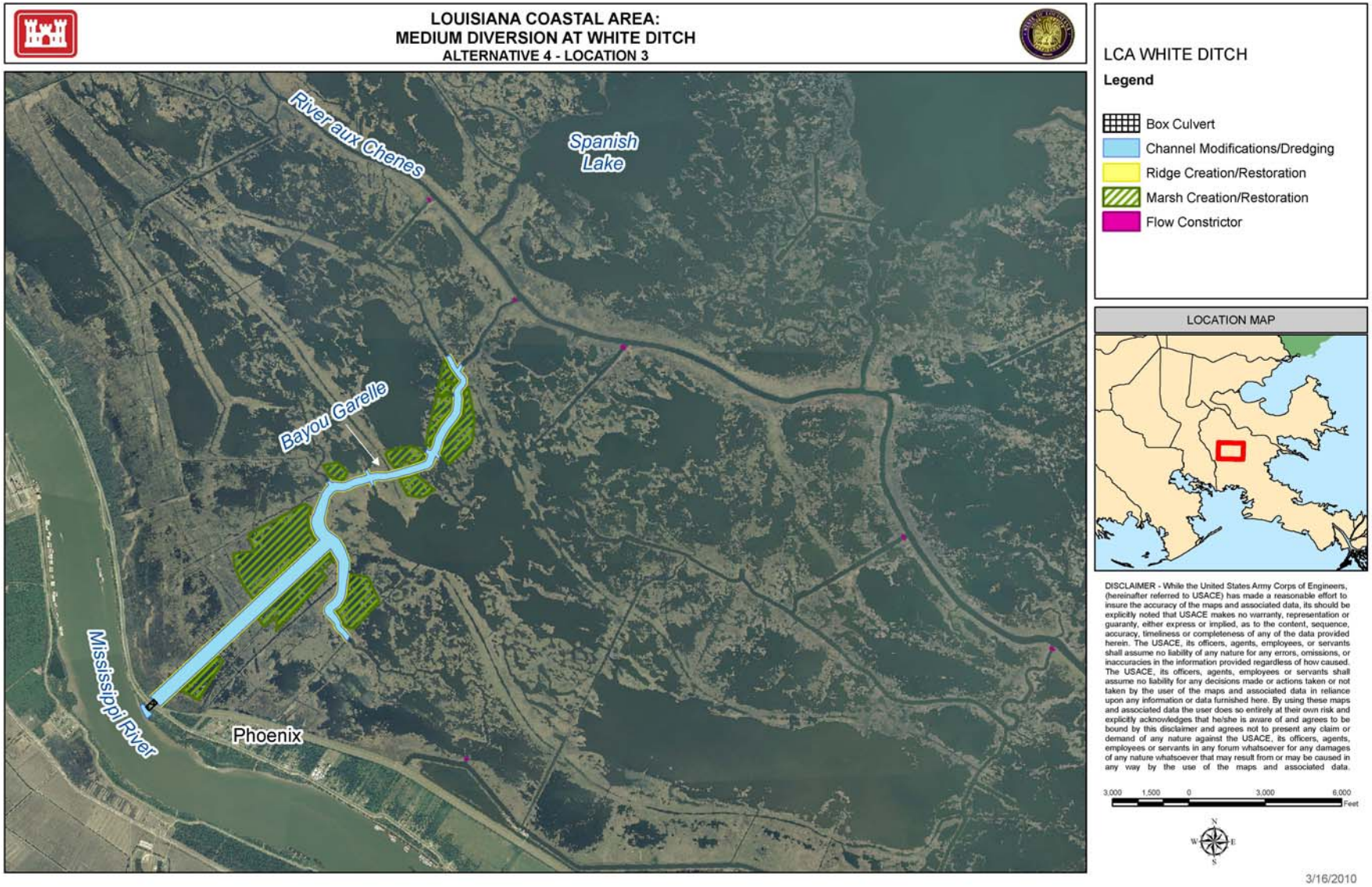
The proposed plan for the **MEDIUM DIVERSION AT WHITE DITCH PLAQUEMINES PARRISH, LOUISANA,** which incorporates sites for dredging and excavation and the placement of fill, complies with the requirement of guidelines, and includes appropriate and practicable methods to minimize adverse effects to the aquatic ecosystem.

Date: 10-6-10

for Joan M. Exnicios

Chief New Orleans Environmental Branch

Figure 1.


LOUISIANA COASTAL AREA:
MEDIUM DIVERSION AT WHITE DITCH
ALTERNATIVE 4 - LOCATION 3
River aux Chenes
Spanish Lake
Bayou Garelle
Mississippi River
Phoenix
LCA WHITE DITCH
Legend
Box Culvert
Channel Modifications/Dredging
Ridge Creation/Restoration
Marsh Creation/Restoration
Flow Constrictor
LOCATION MAP
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