RECORD OF DECISION

WEST BAY SEDIMENT DIVERSION
PLAQUEMINES PARISH, LOUISIANA

I have reviewed the final Environmental Impact Statement for the West Bay Sediment Diversion, Plaquemines Parish, Louisiana, project. Based on this review, and the views of interested agencies and the concerned public, I find the recommended plan fully addresses the planning objectives. The plan is justified, in accordance with environmental statutes, and in the public interest. The purpose of this Record of Decision is to complete the procedural requirements of the National Environmental Policy Act for this authorized plan.

Numerous alternatives were evaluated that included eight potential sediment rich freshwater diversions located below the terminus of the mainline Mississippi River flood protection levee system which is at approximately River Mile 44 (east bank) above Head of Passes (AHP) and River Mile 10.5 AHP (west bank). Potential sites for diversion structures and associated channels above the terminus of the levee system were not evaluated because of the high cost of site preparation and the relocation of existing infrastructure such as highways, railroads, levees, drainage canals, businesses, and residences in many areas. To facilitate evaluation of the eight potential diversions, those potential site locations were ranked by order of lowest to highest probable site development cost. Of the eight potential site locations, the two highest-ranking site locations, East Bank River Mile 7.5 AHP (Delta National Wildlife Refuge) and West Bank River Mile 4.7 AHP (West Bay), were subjected to further screening. The two sites were chosen because of their relatively low site development cost; their lack of potential impacts to active oyster producing areas; the existing fresh to low salinity habitat in their receiving areas; and the existing deteriorated condition of marsh habitat in their receiving areas. Ultimately, the diversion site located at River Mile 4.7 AHP (West Bay) was selected as the preferred and environmentally preferred alternative over the East Bank River Mile 7.5 AHP location, due to the availability of a large open water area unencumbered by wildlife management areas, oil and gas facilities, and other developments.

The West Bay Sediment Diversion will consist of an uncontrolled, sediment rich freshwater diversion through the west bank of the Mississippi River at River Mile 4.7 AHP. The sediment diversion channel will be constructed in two phases: 1) Construction of an interim diversion channel to accommodate a discharge of 20,000 cubic feet per second (cfs) at the 50 percent duration stage of the Mississippi River, and 2) Modification of the interim diversion channel design to accommodate full-scale diversion of 50,000 cfs at the 50 percent duration stage of the Mississippi River immediately upon completion of a period of intensive monitoring of diversion operations. Contingency plans for closing the diversion conveyance channel will be implemented if hydrographic monitoring of the Mississippi River navigation channel indicates the thalweg of the river migrating toward the diversion channel or if shoaling substantially increases in the navigation channel downstream of the diversion. The sediment diversion will induce shoaling between River Miles 1.5 and 5 AHP in the navigation channel of the Mississippi River and increase saltwater intrusion in the river. The project will convert 9,831 acres of shallow open water to vegetated wetlands over the 20-year life of the project.

Mitigation for unavoidable impacts will involve the relocation of a 10-inch crude oil pipeline, maintenance dredging in the Pilottown Anchorage Area, and saltwater intrusion. The pipeline is being relocated to avoid any possible adverse impacts to the pipeline from channel scour. Relocation of the pipeline will also eliminate the possibility of adverse environmental impacts from a rupture. Modeling studies indicate that maintenance dredging will become necessary in the Pilottown Anchorage Area as a result of the West Bay Sediment Diversion. Annual shoaling rates in the anchorage are estimated to range from 900,000 cubic yards (cy) to 1,100,00 cy.

Dredging of the anchorage will mitigate for any adverse impacts to navigation. Pipeline relocation and anchorage maintenance are project related costs and will cost approximately $2,000,000 and $11,500,000, respectively. Municipal water supply intakes and water treatment plants for Boothville and Pointe a la Hache, Louisiana, are located at river miles 18.6 AHP and 49 AHP, respectively. During low river periods, saltwater intrusion in the Mississippi River impacts the use of water supply intakes at Boothville and Pointe a la Hache. When necessary, municipal water is supplied to those areas impacted by saltwater intrusion, from the Belle Chasse Water Plant located in Belle Chasse, Louisiana. The West Bay sediment diversion is expected to increase the duration of saltwater impacts at Boothville by 5 days and Pointe a la Hache by 4 days. Upgrades currently being implemented at the Belle Chasse Water Plant are sufficient to handle expected increases in the duration of saltwater intrusion; therefore no further mitigation is required. There are no unresolved issues.

All practicable means to avoid or minimize adverse environmental effects have been incorporated into the recommended plan. The public interest will be best served by implementing the selected plan as described in the final Environmental Impact Statement (FEIS). The FEIS was filed with the Environmental Protection Agency on December 31, 2001 (ERP No. F-COE-G39033-LA).

18 Mar 02
Date

Thomas F. Julich
Colonel, U.S. Army
District Engineer

US Army Corps of Engineers®
New Orleans District

West Bay Sediment Diversion

Plaquemines Parish, Louisiana

Final Environmental Impact Statement
October 2001

Main Environmental Impact Statement
Appendices

FINAL
ENVIRONMENTAL IMPACT STATEMENT
WEST BAY SEDIMENT DIVERSION, LOUISIANA

OCTOBER 2001

LEAD AGENCY: U. S. ARMY CORPS OF ENGINEERS,
NEW ORLEANS DISTRICT

ABSTRACT: The proposed project consists of a large-scale, uncontrolled sediment diversion channel into West Bay[1] through the west bank (right descending bank) of the Mississippi River at mile 4.7 Above Head of Passes (AHP), in southeastern Louisiana. The project objective is to restore vegetated wetlands in shallow open water. The sediment diversion channel would be constructed in two phases: 1) Construction of an interim diversion channel to accommodate a discharge of 20,000 cubic feet per second (cfs) at the 50 percent duration stage of the Mississippi River, and 2) Modification of the interim diversion channel design to accommodate full-scale diversion of 50,000 cfs at the 50 percent duration stage of the Mississippi River immediately upon completion of a period of intensive monitoring of diversion operations. Contingency plans for closing the diversion conveyance channel would be implemented if hydrographic monitoring of the Mississippi River navigation channel indicates the thalweg of the river migrating toward the diversion channel or if the shoaling substantially increases in the navigation channel downstream of the diversion. The sediment diversion would induce shoaling between river miles 1.5 and 5 AHP in the navigation channel of the Mississippi River and increase saltwater intrusion in the river. The project would convert 9,831 acres of shallow open water to vegetated wetlands over the 20-year life of the project. A small amount of riverbank and adjacent wetlands would be excavated for construction of the diversion channel. No other coastal wetlands would be adversely affected by the project, and the project would not conflict with other wetland creation or protection projects. No environmental mitigation features are proposed for this project.

DATE:

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Please send your comments to the District Engineer by the date stamped above. If you would like further information, contact Mr. Sean P. Mickal, U.S. Army Engineer District, New Orleans, P.O. Box 60267, New Orleans, Louisiana 70160-0267.
Telephone: (504) 862-2319.

[1] The boundaries for West Bay are identical to the boundaries used for the West Bay Management Unit, as depicted in Figure 7-6. Region 2 mapping units, Coast 2050: Toward a Sustainable Coastal Louisiana, 1998. Also see Figure 19 of the main EIS.

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1. SUMMARY

1.1. Major Conclusions and Findings

Purpose and Alternatives. The purpose of this project is to restore vegetated wetlands within the active Mississippi River delta using a large-scale, uncontrolled sediment diversion channel (see Figures 1-5). This project has been authorized and funded for construction under the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA, Public Law 101-646, Title III). The proposed project was selected from a number of candidate projects evaluated under the first Priority Project List developed under authority of CWPPRA. Alternatives for the proposed project were developed during a feasibility study for the Land Loss and Marsh Creation (LLMC) feature investigated under the Louisiana Coastal Area authority. Alternatives included different sizes, locations, and features for sediment diversions from the Mississippi River. This project was selected because of ease of implementation, minimal adverse impacts, and significant beneficial effects.

Rationale for the Project. Vegetated wetlands are disappearing in coastal Louisiana at the rate of approximately 25 square miles per year. This project would restore wetlands in the river delta where land loss has been great. The proposed project was compared to a number of other sediment diversions that varied in size, location, and features during the LLMC feasibility study. However, that study was never distributed for public review.

Project Costs. The current estimate for this project is approximately $22,000,000. When authorized on the first Priority Project List, the cost estimate of the project was approximately $8,500,000. Costs increases are associated with the relocation of a 10-inch pipeline and maintenance dredging in the Pilottown Anchorage Area. The 10-inch pipeline is being relocated to avoid impacts to the pipeline and West Bay as a result of channel scouring through the proposed diversion. Relocation of the pipeline is estimated at approximately $2,000,000. Increased costs due to maintenance dredging is a result of expected increase in shoaling rates in the Pilottown Anchorage Area as indicated by recent modeling studies. Maintenance dredging activities are expected to cost approximately $11,500,000. Approximate costs for this project will be shared on an 85% percent Federal and 15% percent non-Federal.

Environmental Features. Though there would be direct adverse impacts from project construction, there would be a significant net environmental benefit resulting from project implementation. A net total of 9,831 acres of coastal wetlands, mostly marsh, is expected to develop over the 20-year project life, solely as a result of the project. The opinion of wetland and fisheries scientists is that coastal marshes are very important to the estuarine and nearby marine systems' productivity, and that there is a correlation between acres of coastal marshes and abundance of fisheries resources. Coastal marshes in Louisiana are susceptible to degradation through submergence, mainly as a result of subsidence, sea-level rise, and lack of sediment input. After submergence, lagoons or shallows form where the marshes once were. Future marsh development at these sites is dependent upon basin-filling processes. Accelerated sedimentation, accomplished by sediment diversion channels, would result in tidal flats that are intermittently flooded and suitable for marsh development.

Environmental Impacts. The lands that would be impacted by construction of the sediment diversion channel are the river bank and associated swamp. The U.S. Fish and Wildlife Service

(USFWS) considers the lands impacted by this project to be a Category 2 resource; a habitat of high value and relatively scarce in the nation. However, the marsh to be created would also be a Category 2 resource, and the project would create approximately 180 times more marsh than would be lost through project construction. Over the 20-year project life approximately 9,831 acres of shallow water bodies would be filled by the sediment diversion project and emergent marsh and associated coastal wetlands would be created. This project would also have beneficial secondary impacts in terms of erosion control, increased fisheries productivity, and wildlife benefits.

The diversion of sediment-laden Mississippi River waters would induce shoaling at Pilottown Anchorage and in Southwest Pass of the Mississippi River (the main navigation channel) and slightly increase the duration of saltwater intrusion, which could adversely affect municipal water supply intakes at river miles 19 and 49.

The remote possibility exists that the diversion could capture the flows of the Mississippi River. Monitoring efforts would closely evaluate this project and emergency plans would be enacted if closure of the diversion becomes necessary (see appendix A).

Endangered Species. Through consultation with the USFWS and the National Marine Fisheries Service (NMFS), it has been determined that the proposed project would not cause adverse effects to any endangered or threatened species.

Essential Fish Habitat (EFH). The various types of wetland habitat located in the project area provide foraging and nursery habitat for numerous species of dependent fish and shellfish. The initial determination is the proposed project will have a substantial positive impact on Essential Fish Habitat of Federally managed species in the Gulf of Mexico. This environmental impact statement assesses the impacts of the proposed action on EFH and includes the required components of 50 CFR 600.920(g). The final determination relative to impacts is subject to review by the NMFS. Consultation on EFH is a requirement of the Magnuson-Stevens Fishery Conservation and Management Act.

Clean Water Act. A Section 404(b)(1) evaluation addressing this proposed project was prepared during the LLMC feasibility study (under which the proposed project was first studied). The evaluation indicates minimal dredged material impacts to existing water quality associated with construction. Further modifications and/or mitigation for the project are not required. State water quality certification per Section 401 has been received (see Appendix B).

Consistency with the Coastal Zone Management (CZM) Program. The U.S. Army Corps of Engineers, New Orleans District, has determined the proposed sediment diversion is consistent, to the maximum extent practicable, with the guidelines of Louisiana's approved Coastal Resources Program (see Appendix B).

Cultural Resources. There are no cultural resource sites either listed on, or which have been determined eligible for listing on, the National Register of Historic Places in the immediate area of construction for this project. This conclusion is based on archeological surveys and historic records research conducted to identify significant cultural resources. No impacts to such resources are anticipated from construction of the conveyance channel or within the shallow open water areas where sediments would be directed. The State Historic Preservation Officer (SHPO) is being consulted regarding the results of the cultural resource investigation (see

Appendix C). Archeological and/or cultural surveys are on file at New Orleans District and are available for public review.

Recreational Resources. The marsh restored by the project would increase fish and wildlife productivity. There would be a corresponding increase in the sport hunting and fishing potential.

1.2. Areas of Concern

1.2.1. Areas of Resolved Controversy

Several issues concerning the consequences of such a large sediment diversion surfaced during the planning of this EIS. Saltwater intrusion farther up the Mississippi River and for longer periods, as a result of the targeted diversion flow rate of 50,000 cubic feet per second (cfs), was a major concern for municipalities utilizing the Mississippi River as a source for freshwater. Currently, an underwater earthen sill is constructed at river mile 63 to halt the upriver migration of the saltwater wedge beyond that point during low flow periods. Analysis of saltwater intrusion reveals the number of days saltwater impacts the suitability of municipal drinking water may increase by an additional 5 days above current impacts. A plan has been put in place to mitigate for saltwater intrusion and the costs to offset this impact would be borne by the Federal Government.

The impact of this sediment diversion on navigation, particularly in the Pilottown Anchorage area and in Southwest Pass, has raised concerns from public and private interests. Previous modeling has indicated shoaling would occur. However, the magnitude of this shoaling above or below the diversion is currently being re-studied to try and arrive at a more accurate shoal rate. The extent of shoaling that will actually occur is uncertain for such a large sediment diversion. The impact to navigation is not expected to be significant since maintenance dredging operations are annually performed in the impacted reaches. Plans have been developed to mitigate for these impacts and the costs will be borne by the Federal government.

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TABLE OF CONTENTS

LIST OF TABLES

TABLE PAGE

LIST OF FIGURES

FIGURE PAGE

LIST OF APPENDICES

Appendix	Title
A	Monitoring Plan
B	Natural Resources
C	Cultural Resources
D	Public Comments and Responses
E	HTRW Analysis

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2. PURPOSE AND NEED FOR ACTION

2.1. Introduction

This project will create marsh within the active Mississippi River Delta using a large-scale, uncontrolled sediment diversion from the Mississippi River. Without the project, continued land loss will cause serious economic and development problems for coastal communities, as well as loss of fish and wildlife resources important to the state and nation. With the project constructed, overall land loss in the delta would continue, but at a slower rate.

2.2. Construction Authority

On November 29, 1990, the U.S. Congress enacted Title III, Public Law 101-646, the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA). President Bush signed the law on November 29, 1990. The CWPPRA directed formation of the Louisiana Coastal Wetlands Conservation and Restoration Task Force, and charged the Task Force with developing a long term Restoration Plan for Louisiana's coastal wetlands. The Act provides planning and project construction funding. The Act directs the Task Force to submit annual listings of priority projects, designated to create, restore, and preserve coastal vegetated wetlands, to the U.S. Congress as part of the President's budget. The Task Force submitted the first annual Priority Project List to the U.S. Congress in November 1991. This marsh creation project, using a large-scale uncontrolled sediment diversion through the west bank of the Mississippi River at Mile 4.7 Above Head of Passes (AHP), is approved for construction funding through the first CWPPRA Priority List.

2.3. Public Concerns

Land loss and habitat deterioration are major problems along the Louisiana coastal area. Habitat losses have significant adverse impacts to the socioeconomic livelihood of the commercial fisheries and shellfish industries. Substantial concern has been expressed since Louisiana has approximately 40 percent of the nation's coastal marshes. These marshes and other associated wetlands directly support 28 percent of the national fisheries harvest, the largest fur harvest in the U.S., a majority of the marine recreational fishing landings, and an extensive variety of wildlife. The continued loss of wetlands is of substantial concern and has contributed towards authorization of this project.

2.4. Planning Objectives

The Federal objective considered for the project is to provide long-term conservation of wetlands and dependent fish and wildlife populations by identifying coastal wetland projects intended to create, restore, protect, or enhance coastal wetlands.

2.5. Environmental Commitments

Project Monitoring

This proposed large-scale diversion would be intensively monitored during the initial years of diversion operations. The monitoring program would provide valuable area-specific data

applicable to other diversion projects that could be developed in coastal Louisiana. A monitoring program of twenty years in length is envisioned (Appendix A).

3. ALTERNATIVES

3.1. Background in Plan Formulation

The concept of large-scale diversions of sediments from the Mississippi River was evaluated in a Reconnaissance Report produced in 1984 for the Land Loss and Marsh Creation (LLMC) study. The LLMC study was conducted under broad authority provided by the Louisiana Coastal Area, Louisiana, authorization. Authorization came from identical resolutions passed by both Houses of Congress in 1967. Sediment diversions were determined to be potentially viable methods for marsh creation and were therefore carried over into a Feasibility Stage analysis conducted under the LLMC study. A Feasibility Report and EIS for the LLMC, St. Bernard, Plaquemines, and Jefferson Parishes, was subjected to internal Corps of Engineers review but has not been distributed to the public. This EIS originates from the LLMC, but will focus on an area within the active Mississippi River Delta only.

During the Feasibility Stage analysis, an interdisciplinary planning team used hydrographic survey maps to select eight potentially favorable reaches along the Mississippi River AHP to evaluate as sites for large-scale diversions of sediment-laden water. Five potential sites were identified above Venice, Louisiana, on the left descending bank (west bank) and three sites were identified between Venice and Head of Passes (two on the left descending bank and one on the right descending bank). All of the locations were below the terminus of the mainline Mississippi River flood protection levee system which is at approximately River Mile 44 AHP on the east-bank (Bohemia) and River Mile 10.5 AHP (Venice) on the west bank. Diversion structures and associated channels above the terminus of the levee system would require relocations of existing infrastructure such as highways, railroads, levees, drainage canals, and businesses and residences in many areas. Also, considerable expense would be required to protect the integrity of the existing Mississippi River and hurricane protection levee systems that protect these areas. Sites above the terminus of the Mississippi River levee system were not evaluated because of the obvious high cost of site preparation. The eight potential sites that were previously evaluated are listed as follows and illustrated on Figure 18:

1. (East bank) Delta National Wildlife Refuge (NWR) - Mile 7.5 to 9.5 AHP
2. (East bank) Benney's Bay - Mile 9.5 to 11.0 AHP
3. (West bank) West Bay - Mile 4.0 to 7.5 AHP
4. (East bank) Bolivar Point - Mile 21.0 to 21.5 AHP
5. (East bank) Sunrise - Mile 27.1 to 27.6 AHP
6. (East bank) Tropical Bend - Mile 29.0 to 29.5 AHP
7. (East bank) Home place - Mile 37.3 to 37.8 AHP
8. (East bank) Point Michel - Mile 43.9 to 44.4 AHP

To facilitate evaluation, the eight potential sites were subjectively ranked by order of lowest to highest probable site development cost. The purpose of the ranking was to identify the large-scale diversion site most likely to be economically justified, i.e., the site with the apparent highest marsh creation potential and lowest potential monetary and non-monetary costs. The top-ranked location was then selected as a model for development of generic design options that could be adapted to other potential diversion sites. The site selected through the initial ranking

process was located at River Mile 7.5 on the east bank of the river immediately adjacent to the Delta National Wildlife Refuge.

Options were developed to divert 20,000 cubic feet per second (cfs), 40,000 cfs, 75,000 cfs, and 100,000 cfs when the total Mississippi River discharge is about 380,000 cfs that is the long-term (1930-1987) 50-percent duration (median) discharge of the Mississippi River in the project area. These size diversions correspond to approximately 5, 10, 20, and 25 percent of the average discharge of 380,000 cfs. The alternatives were concurrently designed for three conveyance channel bottom elevations: shallow depth (-25 feet National Geodetic Vertical Datum (NGVD)), mid-depth (-33 to -50 feet NGVD), and maximum depth (-65 to -75 feet NGVD) for specific discharge. A design discharge velocity of 2.5 feet per second was used for all designs. A total of 20 design options were developed for the Delta National Wildlife Refuge location that could be adapted to any of the eight potential diversion sites (Table 1). A schematic diagram showing a typical large-scale sediment diversion is presented on Figures 4 & 5.

The sediment diversion would be uncontrolled since the amount of water and sediment diverted would depend solely upon the concurrent stages in the Mississippi River and the marsh development areas. Diversion discharges both higher and lower than the design discharge would occur.

The 20 preliminary options for large-scale sediment diversions were subjected to a second level of screening consisting of two major elements. The first element consisted of design evaluation and economic comparison of two proposals for enhancing sediment retention in the marsh development areas. The second element consisted of an economic evaluation of the cost-effectiveness of employing, versus not employing, sediment retention enhancement

Table 1. Original Large-Scale Diversion Alternatives

1.	100,000 cfs, -75 ft NGVD sill elevation (without SRED)
2.	100,000 cfs, -75 ft NGVD sill elevation (with SRED)
3.	100,000 cfs, -50 ft NGVD sill elevation (without SRED)
4.	100,000 cfs, -50 ft NGVD sill elevation (with SRED)
5.	100,000 cfs, -25 ft NGVD sill elevation (without SRED)
6.	100,000 cfs, -25 ft NGVD sill elevation (with SRED)
7.	75,000 cfs, -65 ft NGVD sill elevation (without SRED)
8.	75,000 cfs, -65 ft NGVD sill elevation (with SRED)
9.	75,000 cfs, -50 ft NGVD sill elevation (without SRED)
10.	75,000 cfs, -50 ft NGVD sill elevation (with SRED)
11.	75,000 cfs, -25 ft NGVD sill elevation (without SRED)
12.	75,000 cfs, -25 ft NGVD sill elevation (with SRED)
13.	40,000 cfs, -47 ft NGVD sill elevation (without SRED)
14.	40,000 cfs, -47 ft NGVD sill elevation (with SRED)
15.	40,000 cfs, -25 ft NGVD sill elevation (without SRED)
16.	40,000 cfs, -25 ft NGVD sill elevation (with SRED)
17.	20,000 cfs, -33 ft NGVD sill elevation (without SRED)
18.	20,000 cfs, -33 ft NGVD sill elevation (with SRED)
19.	20,000 cfs, -25 ft NGVD sill elevation (without SRED)
20.	20,000 cfs, -25 ft NGVD sill elevation (with SRED)

Design options adaptable to eight locations between Mississippi River miles 4.0 and 45.0. NGVD – National Geodetic Vertical Datum of 1929 (formerly referred to as mean sea level, msl). All elevations cited are referenced to this datum unless otherwise noted.

devices (SREDs, Figures 6 & 7). Two conceptual designs were developed for a feature to enhance sediment retention in the marsh development areas: an earthen dike with low-level weirs located at 1,000-foot intervals, and a truck tire/filter screen system. Engineering evaluation of the two conceptual designs indicated both would be about equally effective in promoting sediment retention, and thus increasing the acreage of marsh that could be developed per unit of time. Economic comparison of the two designs showed that the total cost, i.e., initial cost plus periodic maintenance costs, of the earthen sediment retention feature to be substantially less than the truck tire/filter screen design. On the basis of the design and cost evaluation, the truck tire/filter screen conceptual design was eliminated from further consideration during the study.

After selecting the conceptual design for the SRED, the evaluation focused on assessing whether that feature could be cost effectively incorporated into the marsh development alternatives. This assessment consisted of comparing the incremental increase in the cost employing the SRED versus the incremental increase in monetary benefits and marsh acreage. Generally, the evaluation showed that the benefits of employing the SRED exceeded costs. The ten large-scale sediment diversion options that did not include a SRED were therefore eliminated.

Application of economic and qualitative screens to the intermediate array of alternatives resulted in eliminating six of the remaining ten options for large-scale sediment diversions. The four remaining options were further evaluated to determine the optimal combination of diversion discharge and conveyance channel dimensions. This evaluation indicated that the 40,000 cfs/mid-depth conveyance channel design option provided the greatest net benefits over costs. This determination suggested that the optimal plan would consist of multiples of the 40,000 cfs model design that could be adapted for application at any of the other eight potential sites.

Large-scale sediment diversions would increase shoaling in the primary navigation channel of the lower Mississippi River (Southwest Pass). Analyses indicate that incremental shoaling in the navigation channel would increase logarithmically with each 40,000 cfs design diversion implemented. That is, one 40,000 cfs design diversion would impose an additional dredging burden of about 425,000 cubic yards per year. Adding a second 40,000 cfs diversion would increase the total additional dredging burden to 1,360,000 cubic yards per year.

The LLMC study evaluated alternatives on their economic (tangible) benefits versus cost. Four tangible economic benefit categories were found to be readily quantifiable and were used in the analysis. The categories are commercial fisheries, commercial wildlife, recreation, and real estate values. Benefits and costs were determined for the two sites that were the highest ranked in earlier analysis: the Mile 7.5 AHP site (Delta National Wildlife Refuge) and the Mile 4.7 AHP site (West Bay[1]). The remaining six potential sites are located on the east bank of the river above the sites. Average benefits attributable to diversions at the remaining sites would be comparable to those estimated for the Delta National Wildlife Refuge and West Bay sites. Relocation of oil and gas pipelines and other facilities would be required at all sites. Diversions to the east of the Mississippi River above about Mile 15 AHP would adversely impact oyster producing areas managed as seed grounds by the State of Louisiana. Deposition of sediments from the diversion would result in major dislocation of the seed oyster producing areas and

[1] The boundaries for West Bay are identical to the boundaries used for the West Bay Management Unit, as depicted in Figure 7-6. Region 2 mapping units, Coast 2050: Toward a Sustainable Coastal Louisiana, 1998. Also see Figure 19 of the main EIS.

cause a drastic shift in the aquatic species utilizing the area. Also, diversions above this point would impair effective operation of the Caernarvon Freshwater Diversion Structure located at Mile 81.5 AHP. The Caernarvon Structure was built to restore salinity regimes in the Breton Basin for the benefit of fish and wildlife resources.

The West Bay and the Delta National Wildlife Refuge diversion sites were chosen, as part of the tentatively selected plan in the draft LLMC study, because of their relatively low site development cost; their lack of potential impacts to active oyster producing areas; the existing fresh to low salinity habitat in their receiving areas; and the existing deteriorated condition (nearly all shallow, open water) in their receiving areas. The West Bay sediment diversion site at mile 4.7R AHP was ultimately selected as the preferred alternative for construction of the sediment diversion.

3.2. Maximizing Sediment Diversion

Selection of the point where water is to be diverted from a stream is an important factor in maximizing the amount of sediment diverted. In general, the inside of a curve is the best location. This is true because the heavy bed load is swept toward the inside of the curve. The sediment concentration at the inside of a curve is higher than at other locations in the stream. This effect is due to spiral flow, which sweeps the bed load to the inside of the curve and forms point bars. The effect of spiral flow, sometimes referred to as bed load sweep, is well known and widely employed.

The angle of deflection between the direction of flow in the parent channel and the direction of flow in the diversion channel is generally called the "angle of diversion." Egyptian engineers who studied the effect of angle of diversion called it the "angle of twist." They attached considerable importance to its effect on the amount of sediment directed into a diversion channel. The importance of the angle of diversion has been confirmed by a number of investigations.

Any diversion at an angle with the flow in the parent channel becomes, in effect, a curve with curvature opposite to that of the parent channel. The higher velocity surface water requires a greater force to turn it than does the slower moving water near the stream bed. Consequently, the surface water, because of its higher momentum, tends to continue with the parent stream. Conversely, the slower moving water near the bed, that carries the greater concentration of sediment, tends to flow into the diversion channel. Therefore, the diversion channel receives the sweep of the bed load, which flows from the outside to the inside of a curve. For any angle of diversion, the diversion takeoff is, in effect, on the inside of the curve created by the diversion.

Results of model studies by H. Bulle in 1926, and independently by A. Schoklitsch in 1937, attempted to give some of the parameters necessary to determine the optimum angle of diversion. However, it was found that there is no one optimum angle. This angle varies with the ratio of the discharge in the diversion to the discharge in the stream. The optimal angle also varies with the position of the diversion intake in a stream bend. The best solution to the problem is to select the diversion angle by model study for the dominant diversion ratio, or for the condition that produces the maximum bed load discharge. In the absence of a model study, 120 degrees, measured from the direction of flow in the parent stream, is usually accepted as the angle of the diversion channel that produces maximum bed load diversion. Ongoing

investigations are looking into the possibility of changing the direction of the diversion angle to maximize sediment capture from the river proper.

3.3. Results of Internal Corps of Engineers Review of the Land Loss and Marsh Creation Study

The Draft LLMC report was subjected to internal Corps of Engineers review during 1990. During the review process, questions were asked about the maximum amount of water that could be diverted above Head of Passes before navigation in Southwest Pass would be threatened by the Corps' inability to maintain the channel. Engineering design criteria developed by the New Orleans District's senior hydrologists limited the maximum diversion at any one location to about 30 percent of the river's median discharge. This amounts to a maximum permissible design diversion of approximately 100,000 cfs when the total discharge of the river, measured at Tarbert Landing, Mississippi, is about 380,000 cfs. The consensus opinion of the hydrologists was that single location discharges above the 30 percent level would have the potential to progressively capture larger and larger portions of the river's total discharge over time. Since the Delta National Wildlife Refuge and the West Bay sites had been determined to be approximately equal in site development costs and benefits, a decision was made to study the feasibility of having a 50,000 cfs design diversion at each site for a total of 100,000 cfs diverted. The evaluation indicated that two 50,000 cfs diversions would be superior, in terms of monetary and non-monetary benefits, to the two 40,000 cfs diversions originally proposed. The two 50,000 cfs diversions would be located at the same sites as proposed for the two 40,000 cfs diversions (West Bay and Delta National Wildlife Refuge) and the sill elevations of both the diversions would be -45 feet NGVD. Additionally, both diversions would have low-level earthen berms (SREDs) located in the receiving areas to enhance retention of diverted sediments.

Theoretically, the proposed large-scale diversions should, in general, be self-maintaining, with approximately equal seasonal amounts of sedimentation and scour. Still, there are uncertainties associated with the possible enlargement of the cross section of the diversion channel during extremely high discharges. The possibility exists that during periods of very high diversion discharges, excessive scour could cause the cross section of the diversion channel to increase substantially. Additionally, it is possible that the diversion channel cross section could progressively enlarge over time. A worst-case scenario could be where an enlarging uncontrolled diversion captures larger portions of the river's discharge over time. Eventually, shoaling would increase substantially in the navigation channel downstream of the diversion, severely affecting navigation.

While there is a risk of enlargement of the diversion channel during flood flow discharges, the possibility of massive, rapid, and uncontrollable enlargement, is considered to be remote. It is highly unlikely that a single flood event could result in a major dislocation, such as permanent realignment of the Mississippi River navigation channel. A more likely scenario would involve a sustained period, perhaps several years, of clearly identifiable trends pointing toward progressive diversion channel enlargement. Given this more probable scenario, closure of the diversion channel could be implemented during a low-flow period, in a reasonably short period, to preclude significant impacts to navigation.

During sediment diversion operations, the theoretical cross section of the diversion channel could increase from scour caused by diverted flows from the Mississippi River. Although the

possibility of massive uncontrollable enlargement of the diversion channel is considered to be remote, contingency plans for closure have been developed. An extensive program of hydrographic monitoring of navigation and diversion channels has been developed. If hydrographic monitoring of the navigation channel indicates a) the thalweg of the river migrating toward the diversion channel, threatening capture of the river, or b) shoaling substantially increases downstream of the diversion in the navigation channel, severely affecting navigation, contingency plans for closing the diversion conveyance channel would be implemented.

During the LLMC study and review process, the necessity of numerical and physical models was discussed. Models would help determine the optimal orientation of the sediment diversion channels and scour and sedimentation tendencies at the diversion site.

3.4. Coastal Wetlands Planning, Protection, and Restoration Act Project Alternative Formulation

CWPPRA mandates that a Task Force submit a list of priority coastal wetlands restoration projects to provide for the long-term conservation of such wetlands, dependent fish, and wildlife populations in order of priority, based on the cost effectiveness of such projects in creating, restoring, protecting, or enhancing coastal wetlands, taking into account the quality of such coastal wetlands. The Task Force recognized, at the onset, that in order to prepare the first Priority Project List, it would be necessary to inventory and identify existing project proposals, in various stages of formulation, rather than conduct a traditional plan formulation process. Most of the projects submitted for consideration had undergone some level of conceptual design and analysis prior to being submitted for the list although a few of the submitted proposals had no prior investigations and had to be quickly developed into "projects."

Section 302(6) of the CWPPRA defined a coastal wetlands restoration project and specified evaluation criteria for inclusion of wetland projects on a Priority Project List. The five Federal Task Force members and the State of Louisiana each proposed candidate wetland projects and completed candidate project fact sheets. Initially, 38 projects totaling about $300 million in cost, were submitted for consideration for the list. The Task Force reviewed each fact sheet to ensure that: (1) the candidate wetland project proposal satisfied specific criteria; (2) there was no duplication among the candidate projects; (3) the cost and wetland benefit data were of sufficient detail and reliability to allow a meaningful evaluation; and (4) the total cost was not disproportionately high relative to the funds expected to be available in fiscal year 1992.

This first screening of candidate projects reduced the number of candidates to 27. The cost and wetland benefit data for these 27 projects were further refined based on comments made during the first screening process. The second screening placed special emphasis on the: (1) total project cost; (2) number of similar types of candidate projects; and (3) time available to conduct the detailed wetland benefit analysis on each project. The second screening resulted in the selection of 18 wetland projects for evaluation, with the other nine projects remanded to their respective lead Task Force members for further study and refinement and consideration for inclusion in the second Priority Project List or the Restoration Plan.

Each of the 18 candidate projects was subjected to traditional time-value analysis of life-cycle project costs and other economic impacts and an evaluation of predicted wetland benefits.

Wetland benefits were determined by use of a community-based version of the U.S. Fish and Wildlife Service Habitat Evaluation Procedures developed by the Task Force agencies specifically for evaluating CWPPRA candidate projects. The product of these two analyses was a cost/habitat unit figure for each project, which was used as the primary ranking criterion.

The Priority Project List consisted of 14 wetland projects that fell within the funding limit for fiscal year 1992 and 4 wetland projects deferred to subsequent Priority Project Lists or the long-term Restoration Plan. The West Bay Sediment Diversion has a cost per average annual habitat unit of $305. The cost places it approximately in the middle of the 14 projects approved for first year funding.

During formulation of the proposal to build a large-scale diversion at the West Bay site under the CWPPRA, a re-analysis was made of the necessity for a model that had been deemed necessary by reviewers of the LLMC study. A proposal was made to accelerate the project schedule by deleting the numerical modeling and using a phased construction period. The proposal was to construct a 20,000 cfs design diversion during the annual low water period and allow the diversion to operate for one high water season while monitoring the navigation and diversion channels intensively. If monitoring showed that the diversion channel was operating within accepted limits of scour and silting, the diversion would be enlarged to the 50,000 cfs design and continue to be monitored. If however, the diversion showed a marked tendency to enlarge past the ultimate design limit of 50,000 cfs, the diversion would be closed during the following low water season. If the channel was silting-in, modeling would be necessary to determine a more suitable design and/or site location.

The 9,831 acres of marsh estimated to be created by this sediment diversion was calculated without a SRED in place during the twenty-year project life. In the original LLMC study, numbers generated were used to estimate acreage over a 50-year project life with SREDs in place. The need for construction of the SRED will be determined from results of monitoring during the 20,000 cfs diversion. If the need for a SRED is realized, appropriate steps would be taken to determine the best location of a SRED within the marsh creation zone to provide the greatest benefit for marsh creation. All applicable environmental documentation and cultural resource investigations would be pursued when a final location for a SRED is determined.

It should be noted the eliminated large scale sediment diversion alternatives from the LLMC were all evaluated at river mile 7.5, diverting to the east side of the delta (Delta National Wildlife Refuge). This proposed location was chosen, based on the location of a trailing end of a sandbar where sediment capture would be maximized, and project costs, including impacts to existing improvements, would be minimized. A diversion to the west at mile 4.7R AHP (the West Bay site) was later evaluated because of the proximity to a large open water area unencumbered by landowners, wildlife management areas, oil & gas facilities, etc..

As stated earlier, the proposed action is to construct a 50,000 cfs, uncontrolled diversion of water and sediments from the Mississippi River in the vicinity of River Mile 4.7 AHP, right descending bank. This is the project proposed for funding by the first year Priority Project List of the CWPPRA. Subsequent to submittal of the first priority project list, the LLMC report was revised to incorporate responses to comments received during the Corps of Engineers internal review process. Various project options were updated and revised and minor changes were made.

Guidelines developed by the CWPPRA Task Force are such that major changes in a proposed project design that significantly increase costs or decrease benefits by 25 percent of the approved project cost be resubmitted to the Task Force for reconsideration.

3.5. Comparative Impacts of Alternatives

Table 2 (FEIS-11), Comparative Impacts of Alternatives, describes for each significant resource in the environmental project area the base condition, future without the project, and impacts of the plans considered in detail. Table 3 (FEIS-16) presents comparative socioeconomic impacts covering items such as esthetics, property values and demographic impacts. Agricultural lands and natural and scenic streams would not be impacted by this project.

3.6. Direct Construction Impacts

Table 4 (FEIS-17) shows the direct construction impacts, over the 20-year planning period, for construction of this project.

Table 2. Comparative Impacts of Alternatives

ALTERNATIVE	SIGNIFICANT RESOURCE
	Marsh
Base Condition	These marshes sustain important populations of fish and wildlife and act as storm buffers protecting local population centers such as Venice.
Future Without Project (No Action)	Existing marsh would continue to be converted to open water.
Future with Project	Marsh creation would occur in the active delta area. The expected loss of marsh due to subsidence and erosion is 27 acres per year. These marshes are expected to experience the same rate of loss as natural marshes in the vicinity of the marsh development site. Consequently, the expected life of any acre of the marsh created with the large-scale uncontrolled diversion from the Mississippi River is about 46 years. Re-vegetation by natural succession will provide the projected habitat. New land in the delta is rapidly covered with vegetation. The elevation of new land dictates which species colonize the new land masses.

ALTERNATIVE	SIGNIFICANT RESOURCE
	Water Bodies
Base Condition	Approximately 268,000 acres of fresh to saline water bodies are present in the project area.
Future without Project (No Action)	Acreage of water bodies would continue to increase as emergent marsh deteriorates and is converted into open water.
Future with Project	The sediment diversion would replace approximately 9,831 acres of water bodies in the delta with fresh/ intermediate marsh and scrub-shrub associations over the project life. Conversion of emergent marsh would continue in areas not influenced by the diversion.

TABLE 2. COMPARATIVE IMPACTS OF ALTERNATIVES (continued)

ALTERNATIVE	SIGNIFICANT RESOURCE
	Threatened and Endangered Species
Base Condition	Four threatened and five endangered species are actually or potentially present in the project area (see section 3.2.14. Endangered and Threatened Species).
Future without Project (No Action)	Habitat value would continue to decline as West Bay is converted into open water.
Future with Project	Habitat created and/or restored by the diversion would provide resources that may be utilized by most, if not all species (see endangered species assessments, Appendix B).

ALTERNATIVE	SIGNIFICANT RESOURCE
	Wildlife Resources
Base Condition	The project area supports abundant and diverse wildlife populations.
Future without Project (No Action)	Wildlife populations would continue to decrease as suitable habitat is converted to open water and lost.
Future with Project	Wildlife populations would benefit within the marsh creation area. However, populations of wildlife would continue to decrease within the project area.

ALTERNATIVE	SIGNIFICANT RESOURCE
	Fishery Resources
Base Condition	Project area supports valuable commercial fishery resources.
Future without Project (No Action)	Fishery productivity would decline due to loss of marshlands.
Future with Project	Even with the project in place, overall productivity would decline. Productivity would increase in the marsh creation area and in the surrounding open waters.

TABLE 2. COMPARATIVE IMPACTS OF ALTERNATIVES (continued)

ALTERNATIVE	SIGNIFICANT RESOURCE
	Nesting Colonies
Base Condition	Numerous sea and wading bird nesting colonies are located in the project area.
Future without Project (No Action)	Suitable nesting resources will continue to be converted to open water.
Future with Project	Restored habitat would provide nesting and foraging resources in the project area. Construction or maintenance work and related surveys will not be conducted within 1,500 feet of any waterbird nesting colonies during the nesting season. The US Fish and Wildlife Service would be consulted prior to any construction or maintenance related activity, to identify any colonies that may be present in the project area.

ALTERNATIVE	SIGNIFICANT RESOURCE
	Scrub – Shrub/Tidal Flats
Base Condition	Approximately 2,554 acres of scrub/shrub and or tidal flats remain.
Future without Project (No Action)	Acreage of this resource would continue to decline as it is converted to open water.
Future with Project	The sediment diversion would stabilize or increase the acreage of both resource types.

ALTERNATIVE	SIGNIFICANT RESOURCE
	Recreation Resources
Base Condition	The project area provides opportunities for a variety of consumptive and non-consumptive recreational activities. The area supports marsh water-based recreation--waterfowl hunting, fresh and saltwater fishing, sport shrimping and crabbing; and land-based recreation—big game hunting, small game and migratory bird hunting.
Future without Project (No Action)	Hunting and fishing are expected to decline based on the continued loss of wetlands.
Future with Project	Hunting and fishing may increase during the 20 year life of the project.

TABLE 2. COMPARATIVE IMPACTS OF ALTERNATIVES (continued)

ALTERNATIVE	SIGNIFICANT RESOURCE
	Water Quality
Base Condition	The Mississippi River is a source of municipal and industrial water supply and may contain fecal coliforms, plant nutrients, heavy metals, phenols, pesticides, polychlorinated biphenyls, and other compounds. Receiving areas may contain somewhat lower levels of pollutants than the river. Temperature of the river is cooler than the receiving areas.
Future without Project (No Action)	Wastewater loading in the lower river and basin would continue to increase with expanding urbanization and industrialization, but the continuing implementation of improved treatment methods for both point and non-point pollution sources would offset long-term impacts and should result in better water quality.
Future with Project	Short-term increases in levels of heavy metals, nitrogen, phosphorus, hydro-carbons and bacteria within the marsh creation area is expected, but long-term effects would not be. Municipal water facilities at River miles 19 and 49 may experience a slight increase in the duration of unacceptable salinity levels.

ALTERNATIVE	SIGNIFICANT RESOURCE
	Mineral Resources
Base Condition	Mineral resources consist mainly of oil, natural gas, aggregate deposits, salt, and sulfur.
Future without Project (No Action)	Petroleum exploration and production will occur in the future. Adverse environmental impacts resulting from canal dredging, drilling, conversion of habitat to production areas, and other activities related to the petroleum industry will continue.
Future with Project	Petroleum exploration and production will likely occur in the future. This project would have little effect on petroleum exploration.

TABLE 2. COMPARATIVE IMPACTS OF ALTERNATIVES (continued)

ALTERNATIVE	SIGNIFICANT RESOURCE
	Archeological Sites/National Register Properties
Base Condition	Approximately 80 archeological sites have been identified in Plaquemines Parish. Many of these sites contain the remains of both prehistoric and historic cultural activity. The developmental history of the Mississippi River's delta, documented changes in land area (both loss and gain) in the project area, and the rate of subsidence in the project area suggest the receiving waters portion of project area has a low probability for containing significant archeological sites. The conveyance channel and earthen weir is located on the natural levee of the Mississippi River. This area is generally considered to possess a high probability for containing significant cultural resources; however, bank erosion and subsequent foreshore protection would have destroyed any sites which might once have been located within this portion of the project area. Presently, there are no properties within the active delta registered to or pending nomination to the National Register of Historic Places.
Future without Project (No Action)	Previously recorded and as yet unrecorded archeological sites in the vicinity of the project area will continue to be adversely impacted by natural processes and industrial development. These destructive forces may accelerate in the future.
Future with Project	It is unlikely that the project would impact any cultural resource sites. Cultural resources, which may occur within shallow open water where sediments may be directed, could potentially be protected by the introduction of sediments.

ALTERNATIVE	SIGNIFICANT RESOURCE
	Cultural Values
Base Condition	Many ethnic groups have settled in the delta and still live adjacent to the proposed project area. Commercial and recreational fishing and hunting continues to be a major aspect of those persons that live in and those persons that visit the delta. Oil and gas interests continue to use the area as a staging point for related activities in the Gulf of Mexico and depend not only on those living near the delta for support, but also those that live throughout Louisiana and other neighboring states and vice versa.
Future without Project (No Action)	As the delta continues to degrade, those that depend on the delta and the Gulf will be displaced as natural resources continue to decline. Oil & gas operations may relocate and leave behind those that depend on the industry as a livelihood.
Future with Project	Natural resources would be somewhat stabilized over the life of the project and possibly beyond, providing for a continuance of the base condition that currently exists.

Table 3. Comparative Socioeconomic Impacts of Alternatives

Resource	Base Condition	Future Without Project (No Action)	Future With Project
Air and Noise	Air quality and noise levels are acceptable.	No change.	Temporary local air and noise pollution during construction.
Esthetics	Appreciation of marshes and waterways is common.	Remain the same.	Degradation at construction sites, overall improvement as marsh establishes.
Community Cohesion	Fish and wildlife resources are important.	Likely to reduce as fish and wildlife resources decline.	Increase in fish and wildlife resources will help increase cohesion.
Population and Employment	Low local population growth. Unemployment above state average.	Growth rates remain low as well as unemployment remains above state average.	Would help reduce prospects of continued low growth and high unemployment.
Personal Income	Per capita income lower than state.	Estimates will remain below the state average.	Improvement linked to increase in commercial fisheries stocks.
Tax Revenues, Public Facilities, and Services	Deteriorating tax base.	Tax base continue to decline.	Help maintain tax base.
Displacement of People, Businesses, and Farms	None expected.	No change from base condition.	Minor beneficial effects.
Desirable Community and Regional Growth	Growth rate is relatively slow.	Limited growth.	Minor benefits to the extent the economy benefits.
Property Values	Low market value.	Continued loss of resources will lower property values.	Values would be partially maintained.

Table 4. Construction Impacts of Project

	Acres of Water Bottom Excavated	Cubic Yards Excavated
50,000 cfs Diversion	13.1	1,470,000
Overbank	5.5	630,000
Pipeline Relocation (Primary Route)	16	118,334
Pipeline Relocation (Alternate Route)	17	131,251
Totals	51.6	2,349,585

4. AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

4.1. Environmental Conditions

For environmental analysis purposes, the overall project area encompasses the active Mississippi River Delta (see Figures 1 & 2). However, the marsh creation area (see Figure 3), the primary focus of this analysis, would be impacted directly as a result of the construction of the diversion. The limits of the marsh creation area represent the limits of marsh creation for a 50-year project life. The proposed action analyzed in this document is a 20-year project and is not expected to create emergent marsh at the limits illustrated througout the figures. The major source of water in the area is the Mississippi River. Three Federally maintained navigation channels; the Mississippi River - Baton Rouge to the Gulf of Mexico ship channel - South and Southwest Passes; Baptiste Collette Bayou; and Tiger Pass; are located within the active delta. Due to its location in the Gulf of Mexico, the area has a subtropical marine climate.

Existing habitat types in the project area include all marsh types and associated open water bodies, beach, shrub/scrub, bare land, forest, and upland. Up to 90 per cent of the habitat within the project area consists of fresh and intermediate marsh.

Important terrestrial animals in the area include nutria, muskrat, raccoon, mink, and otter, all of which are harvested for fur. White-tailed deer, rabbits, various small mammals, and a variety of birds, reptiles, and amphibians also are present. The American alligator is harvested throughout the area for its meat and hide, especially in fresh and intermediate marshes. The marshes and shallow bays function as nursery grounds for valuable stocks of shrimp, oysters, crabs, and finfishes. These resources provide excellent opportunities for sport and commercial fishing. Popular recreational activities include fishing, hunting, and boating.

The portion of the project area designated for receiving waters exhibits a low probability for containing significant cultural resources. The natural levees of the Mississippi River have the highest probability for containing evidence of significant cultural resources. No historical or archeological sites are thought to occur in the construction portion of the project area.

The petroleum, chemical, and related industries, as well as the port of New Orleans and commercial fisheries, form the majority of the economic base of the area. Major commodities moving through the port include grain, petroleum products, salt, and sulfur.

4.2. Significant Resources

4.2.1. General

A given resource is considered to be significant if it is identified in the laws, regulations, guidelines or other institutional standards of national, regional, and local public agencies; if it is specifically identified as a concern by local public interests; or if it is judged by the responsible Federal agency to be of sufficient importance to be designated as significant. This section

discusses each significant resource listed previously in Table 2, Comparative Impacts of Alternatives.

4.2.2. Mississippi River

Existing Conditions. The Mississippi River discharges the headwater flows from about 41 percent of the contiguous 48 states. Discharge at Baton Rouge ranges from 1,500,000 cfs once every 16 years, on average, to a low of 75,000 cfs recorded once during the period 1930 to the present, and average annual discharge is 450,000 cfs. Deep-draft navigation is a major component of waterborne traffic on the river. Currently, the river is maintained to a depth of –45 feet for deep-draft access from mile marker –22 in the bar channel reach up to river mile 232.4 at Baton Rouge, LA. There is extensive urban and industrial development near the Baton Rouge and New Orleans metropolitan areas. The remaining areas adjacent to the river are developed primarily for agriculture; however, industrial and urban development in these areas does occur. The Mississippi River is a source for drinking water, recreation, and commerce.

Future without Project. The river would remain channeled and existing conditions would persist.

Future with Project. With implementation of the proposed action, a significant portion of the water column (50,000 cfs), and the associated sediment load, will be diverted into West Bay. Increased shoaling would occur downstream of the diversion location.

4.2.3. Hazardous, Toxic, Radioactive Wastes

A Phase I Initial Site Assessment #179 has been completed for this proposed project per ER 1165-2-132 (26 June 1992) and is attached in Appendix E. Based on information gathered during the preparation of this Phase 1 Site Assessment, there is a low risk of encountering an HTRW problem. The project should proceed as scheduled with construction. Should the construction methods change, or the area of construction be more than evaluated, the HTRW risk will require re-evaluation.

4.2.4. Air Quality

The construction of this proposed sediment diversion would result in emissions caused by the use of construction equipment. However, these emissions would be minor and short-term and would not alter the status of the parish regarding “attainment” of National Ambient Air Quality Standards (NAAQS). Plaquemines Parish is currently classified in attainment of all NAAQS. This classification is a result of area-wide air-quality modeling studies.

4.2.5. Water Quality

Existing Conditions. The designated uses of Mississippi River waters in the reach above Head of Passes are: primary contact recreation; secondary contact recreation; propagation of fish and wildlife; and drinking water supply. Numerous point source discharges of industrial and municipal wastewater occur between Baton Rouge and New Orleans. Non-point discharges, however, are minimal in the lower river since there are no tributaries or local drainage areas of significance.

Most water quality parameter levels vary seasonally in response to normal fluctuations in discharge, temperature and other factors including suspended sediment concentration and turbidity, which are higher in the winter and spring months. The river has consistently high dissolved oxygen levels, which usually exceed BOD (biochemical oxygen demand) by a ratio of three or more. Nutrients are abundant, particularly nitrate, which is characteristically highest during the spring and summer. Water temperatures are often several degrees cooler than in the other relatively small and shallow water bodies in southeast Louisiana. Bacterial pathogen levels vary greatly during all seasons and are generally reflective of the quality of municipal wastewater discharges in the Baton Rouge to New Orleans reach. Improved sewage treatment methods since about 1980 have resulted in substantially lower average fecal coliform levels in the lower river than in the past.

Most of the synthetic organic compounds officially designated by the USEPA (U.S. Environmental Protection Agency) as priority pollutants are only detectable, if at all, at concentrations well below their chronic criteria levels. Heavy metals are usually measured below their chronic criteria levels. Imposed prohibitions on toxic pesticides and improved industrial wastewater treatment technologies to satisfy the Clean Water Act requirements have reduced the average concentrations of potentially toxic chemicals and heavy metals, despite overall increases in wastewater discharges to the river. An EWOCDS (Early Warning Organic Compound Detection System) has been implemented to provide additional protection to water users along the lower river.

Water quality in the project area that would be receiving water and sediment from this proposed diversion is strongly influenced by Mississippi River water discharges.

Future without Project. Without implementation of the proposed action, total wastewater loads to the Mississippi River are expected to increase with expanding urbanization and industrialization, although continued implementation of improved control and treatment methods for both point and non-point pollution sources to satisfy future Federal and state water quality standards, should result in the overall increase of river water quality. The general quality of the project area receiving waters should be improved commensurately.

Future with Project. Quantities of heavy metals, organic chemicals and bacterial pathogens could increase slightly in the area. The project generally would not have a long-term significant effect on water quality in the area since most toxic substances would be tightly bonded to fine sediment particles and be rendered not bioavailable. Increased suspended sediment and turbidity levels would largely offset eutrophication tendencies effected by excessive nutrient loads. With implementation of the proposed action, water quality in the marsh creation area of the diversion site may experience a short-term decline until marsh establishes and acts as an effective pollution screen. Implementation of this project may have a positive indirect effect by reducing the extent of the hypoxic zone in the Gulf of Mexico as nutrients are assimilated from Mississippi River water into the marsh creation area. Mitsch et al. (1999), offer conclusions and recommendations suggesting that a river diversion through marsh would reduce nitrate levels before reaching the open waters of the Gulf of Mexico. Excessive nitrate levels in Mississippi River water is one of many factors contributing to the hypoxic zone located along the coast of Louisiana. A December 1995, Espey and Associates contaminant assessment of water, elutriate, and sediment samples from the Southwest Pass Navigation Channel reported “that dredging and discharge of material from the test sites would not cause unacceptable impacts to the water column or to benthic organisms found in disposal areas of the Gulf of Mexico.” Furthermore, an

April 1999, Batelle sediment assessment included analysis of water quality in Southwest Pass. In Batelle's assessment, water quality was found to be clean and contained only tract amounts of PAHS and metals in samples taken from the river.

4.2.6. Saltwater Intrusion into Public Water Supply

Existing Conditions. Highly saline gulf waters frequently invade the lower Mississippi River to points well upstream of Head of Passes. The extent of saltwater intrusion is influenced by flow duration, wind speed and direction, tides, and riverbed configuration. Differences in density result in two relatively distinct water masses. Dense saltwater migrates upstream, while less dense freshwater flows downstream above it. Freshwater flowing downstream continually erodes the leading edge of saltwater moving upstream. This interaction of the two water masses results in the formation of a "wedge" of saltwater.

Future without Project. The leading edge, or "toe," of the saltwater wedge extends upstream of Head of Passes when freshwater discharges in the Mississippi River drop below about 300,000 cfs. Discharges have been less than 300,000 cfs about 38 percent of the time during the 58-year period 1930 through 1987. Constant intermixing occurs at the freshwater/saltwater interface; consequently, surface salinities downstream of the toe of the saltwater wedge become elevated to the point that municipal and industrial uses of the water are restricted. Surface chloride concentrations exceeding the U.S. Environmental Protection Agency standard for drinking water, occurs at locations from 15 to 20 miles downstream of the toe of the saltwater wedge.

Future with Project. Large-scale uncontrolled diversions of water and sediment may impact municipal and industrial use of water taken from the lower Mississippi River. Municipal water supply intakes for Boothville and Pointe a la Hache, Louisiana, are located at river miles 18.6 AHP and 49 AHP, respectively (see Figure 8). Model studies were conducted to assess potential saltwater intrusion impacts that could be expected to occur at these locations with implementation of large-scale uncontrolled sediment diversions. These studies indicate that implementation of the proposed large-scale diversion would exacerbate saltwater intrusion problems at both intake locations. That is, the average annual number of days that surface chloride concentrations would be elevated above the 250 milligram per liter (mg/L) during water standard would increase. The average numbers of days that surface chloride concentrations would be elevated above 250 mg/L would be 5 days at the Boothville municipal water supply intake and 4 days at the Point a la Hache municipal water supply intake. Chloride concentrations above 250 mg/L gives water a salty taste that is objectionable to many people. Generally, chloride concentrations considerably higher than 250 mg/L are not harmful to most healthy individuals.

4.2.7. Marshes

Existing Conditions. The following types of marshes occur in the project area: (1) fresh marsh, with a salinity of 1.0 parts per thousand (ppt) or less; (2) intermediate marsh, with a salinity of between 1.0 and 8.0 ppt; (3) brackish marsh, with a salinity of between 8.0 and 18 ppt; and (4) saline marsh, with a salinity greater than or equal to 18.0 ppt. The elevation range of marshes in the delta is 1.0 to 2.3 feet NGVD (Montz, 1977). White (1989) documented sedimentation rates and vascular plant succession on accreting mudflats in the Mississippi River Delta. The average rate of sedimentation for 3 years was 6.9 cm/year. First and second year colonizers included an assemblage of herbs, grasses and sedges. After two-three years, White found that black willow

dominated the highest land and delta threesquare was dominant on the lower regions of the mudflats.

Chabreck (1972), Montz (1977, 1981), and Visser et al. (1998) categorized marsh habitats by vegetation: Fresh marsh vegetation in the delta includes freshwater threesquare, delta threesquare, roseau, cattail, smartweed, spikerush, pennywort, pickerelweed, alligatorweed, bulltongue, elephants ear, and delta duckpotato. As indicated by the name, intermediate marsh occurs in the transition zone between fresh and brackish marsh. Vegetation in the intermediate marsh type in the delta includes wiregrass, roseau, softstem bulrush, deerpea, bulltongue, wild millet and saltmarsh aster. Brackish marsh occurs at moderate salinities between the intermediate and saline marsh zones. Typical vegetation includes wiregrass, leafy threesquare, three-cornered grass, and widgeongrass. Saline marsh generally is found along shorelines of the Gulf of Mexico, large bays, and barrier islands. The most abundant plant species in this zone are oystergrass, glasswort, black rush, saltwort and saltgrass.

Marshes provide habitats for fish and wildlife, act as storm buffers between the Gulf of Mexico and developed areas of the coastal zone, and have the capacity to absorb water pollutants. The fresher marsh types function as valuable habitat for waterfowl, furbearers, and the American alligator. The higher salinity marshes produce food and serve as nursery areas essential to the reproduction, survival, and growth of many estuarine-dependent species of fish and shellfish. Many of these species are extremely valuable commercial and recreational resources in the project area. It has been documented that biological productivity is dependent not only on acreage of vegetated wetlands, but also on freshwater introduction and the interface between wetlands and open water (Madden, et al., 1988 and Baltz, et al., 1993).

Future without Project. Without implementation of the proposed action, by 2020, over 90 per cent of existing marsh would disappear.

Future with Project. With implementation of the proposed action, approximately 9,831 acres of marsh would be created by this project. In the delta, there would be extensive secondary benefits to the existing marsh. Fringe brackish and saline marshes would benefit by increased detrital input from the new and existing fresh marsh. Increased freshwater influx, sediment deposition, and the resulting stabilization of marsh vegetation change would help reduce the loss rates of the existing marsh. About 5.5 acres of riverbank area vegetated with willow, baldcypress, maple, ash, elephants ear, freshwater threesquare, and roseau would be converted to diversion channel. Dredged material would be placed on either side of the cut for stabilization and behind the cut in shallow open water, creating fresh marsh. About 122 acres of marsh would be created with the dredged material. This acreage of marsh would be replaced by sediment diversion created marsh by the end of the project in 2020. Total new marsh created by the project would be 9,831 acres. The newly created marshes would provide detritus, forage area and stability to the delta area. Wildlife and fisheries would benefit from the newly created marshes. Re-vegetation of the new delta would be by natural invasion of nearby plants. New land in the delta is vegetated with plants within one year.

Land Loss Projections. Between 1932 and 1990, the delta experienced a net loss of approximately 118,870 acres of marsh - a loss of more than 180 square miles. Over the 59-year period the average annual rate of loss in this area was 2014.75 acres or 3 square miles. The shoreline of coastal Louisiana experiences an average recession rate of approximately 27 feet per year. Shoreline recession is the result of a combination of factors such as compaction,

subsidence, erosion, saltwater intrusion, and sea level rise. Land loss has been accelerated by construction of canals for navigation, drainage, and mineral exploration.

The basic action of the project is replacing open water with sediments, eventually creating marsh. One fundamental issue can at least be raised regarding this activity: which is more desirable, open water or marsh?.

4.2.8. Open water versus marsh

Because of the great expanse of periodically flooded marshes and swamps in the Mississippi River Deltaic Plain, one might expect these wetlands to play a major role in controlling or augmenting the productivity of adjacent freshwater and estuarine ecosystems. Perhaps the best studied area in coastal Louisiana is the Barataria Basin. Trends and facts found in this system can be extrapolated to other coastal systems as well.

The Barataria Basin carbon budget, the difference between the import and export of organic material, indicates that all aquatic habitats are strongly dependent on imported organic matter, and that upstream habitats are significant sources of organic matter for downstream habitats. The portion of wetland primary production exported to adjacent water bodies is lowest in the swamp (2%) and greatest in the salt marsh (30%). Research in both the Barataria Basin and in Lake Pontchartrain show that bayous, canals, and lake edges that are contiguous with wetlands have higher levels of nutrients and organic matter than open water areas (Witzig and Day, 1983). Upstream production provides from 9% to 30% of total carbon inputs to the different water bodies.

The mass balance technique used to calculate the carbon budget depends to some extent on fluxes calculated by difference, so the resulting budget cannot be validated. Considerable data, however, exist to show that: (1) carbon in significant quantities is exported from the estuaries into the gulf; (2) carbon is exported from wetlands to adjacent water bodies; and (3) downstream export of carbon affects primary productivity of aquatic habitats.

It is commonly held that the coastal wetlands play an important role in supporting the fisheries (Lindall and Saloman, 1977). There is strong evidence that shows coupling between fisheries and the marsh estuarine system. Several lines of evidence from the Barataria Basin have been examined.

There have been over 20 studies of nekton community composition, biomass distribution, and migratory patterns in the basin. Bay anchovy, croaker, sea catfish, striped mullet, spot, menhaden, silverside, and shrimp comprise 80% to 95% of the total numbers and biomass (Chambers, 1980). The bay anchovy is an estuarine resident that normally completes its entire life cycle within the estuary. Other species spawn offshore and use the estuary as a nursery and feeding ground. Studies indicate that there are fairly specific, repeating patterns in the way marine species use the Barataria Basin. For example, Sabins and Truesdale (1974) identified over 80 species of juvenile fishes that migrated through Caminada Pass. They identified a "warm water fauna" composed mainly of the young of inshore spawners and a "cold water fauna" composed predominately of the young of offshore spawners. The majority of fishes in a number of marsh and estuarine habitats in the Caminada Bay area are seasonal migrants using

the estuary for spawning, feeding, or as a nursery. This use of marsh as observed in the Caminada Bay area would be similar in other Louisiana coastal marshes as well.

Marine species, especially larval and juvenile forms, preferentially seek out shallow water adjacent to wetlands, such as marsh ponds, tidal creeks, and the marsh edge in general. Data from Barataria Basin and Lake Pontchartrain show that nekton biomass is 7 to 12 times higher in shallow water marsh areas when compared to open water. This pattern has also been demonstrated on the East Coast where shallow tidal creeks and marsh shoals harbor dense populations of juvenile marine species (Bozeman and Dean, 1980) and that young fish actively seek creek headwaters. The data of Chambers (1980) suggest that marine-spawned juveniles capable of tolerating variable salinities, preferentially migrate into water with low salinity and slowly move into waters of higher salinity as they grow.

It may be that it is primarily the shallow nature of waters adjacent to wetlands that attracts nekton seeking either food or refuge from predators. This is at least partially true, since these areas are practically all less than 1 meters deep. However, most open waters in the Barataria Basin are less than 2 meter deep and many are less than 1 meter. The lakes and bays of the basin have flat, shallow bottoms. Since there is a distinct biomass difference between open waters and near marsh waters, it must be caused by more than the shallow nature of these areas. The flux of nutrients from the sediment to the overlying water helps support phytoplankton primary production, the basis of the food chain. Zeitzschel (1980) identified processes that effect the rate of benthic nutrient release. Two of these, resuspension of surface sediments and pore water advection, are enhanced by physical factors that dominate intertidal mud flats.

A number of studies have shown correlations among estuaries, wetlands, and fisheries. Turner (1977) correlated shrimp yield (kg/ha) and intertidal wetland areas on a worldwide basis. On a regional basis (the northern Gulf of Mexico), he found that yields of inshore shrimp are directly related to the area of estuarine vegetation, whereas they are not correlated with area, average depth, or volume of estuarine water. Moore et al. (1970) presented data on distribution of demersal fish off Louisiana and Texas. Their data suggest that the greatest fish populations occur offshore from extensive wetlands with a high freshwater input. Bahr et al. (1983) quantified organic matter flow in the Louisiana coastal zone. Their analysis showed a quantitative relationship between gross primary production and aquatic upper level consumers. They concluded that all input energy (from primary production) was used in the system or exported. This suggests that any reduction in primary production would be reflected in reduced secondary production, including the harvest of fishery species. They also stressed that habitat quality is also important in fisheries production. Thus, the source of primary organic matter must be considered. Based on recent research, it appears that an even more fundamental relationship exists between fisheries and marsh/estuaries. The relationship is between sediment nutrients, the area of intertidal mud flats, and macrotidal turbid estuaries (Keizer et al., 1989).

In summary, the evidence from Barataria Basin and elsewhere in Louisiana suggests that wetlands enhance fisheries productivity. The picture is certainly not complete, and we know that very few nekton species are absolutely dependent on estuaries or wetlands. However, the data suggest specific ways that nekton use wetlands. It is probable that many nekton species have evolved behavioral patterns that allow them to exploit wetlands as both food sources and habitat.

Delta Cycles. Deltas undergo successional changes in salinity, physiography, and biology, which are partially determined by the land building or land loss that the area experiences (Madden et al., 1988). They pass through underwater, emergent, and deterioration phases. In any Louisiana deltaic system, there is a net export of materials to the Gulf of Mexico, either gradient driven or hydrologically driven. Fishery production is related to land-water interface, probably because such shallow and protected areas seem to satisfy the major nursery requirements of physiological suitability, food supply, and protection (Joseph, 1973). Both young and old deltas exhibit high degrees of productivity. Young deltas are very productive due to the spatial complexity of the newly forming land masses. This complexity is comparable to an older delta, which is experiencing a breakup of its land mass. Madden et al. (1988) suggested that deltaic ecosystems are continuously productive over their cyclic life, and that evolution of a delta allows efficient exploitation of the changing river and marine subsidies.

4.2.9. Estuarine Water Bodies

Existing Conditions. In 1990, the Mississippi Delta contained approximately 330,344 acres of open water within the project area. These water bodies include ponds, impoundments, bayous, canals, bays, sounds, tidal passes, and navigational channels. Water bodies are inhabited by a variety of adult finfish and shellfish and provide valuable nursery habitat for many important species.

Future without Project. Without implementation of the proposed action, open water would increase to about 355,094 acres by 2050, mainly due to continued of marsh loss.

Future with Project. With implementation of the proposed action, approximately 9,831 acres of open water in the delta would be replaced by marsh and scrub-shrub habitat. However, open water would continue to increase throughout the project area. Though the total amount of nursery habitat for shellfish and finfish would decrease in the delta, the quality of the existing habitat would increase as a result of the additional marsh created by the sediment diversion.

4.2.10. Fisheries

4.2.10.1. Commercial and Recreational Fisheries

Existing Conditions[2]. Commercial fishery resources are primarily estuarine/marine in nature. Approximately 85 percent of the state's fisheries spawn in the Gulf of Mexico. Menhaden dominate the total poundage harvested in coastal Louisiana with approximately of 912 million pounds (413 thousand metric tons) landed in 1998 at a value of $47.5 million. Shrimp (brown and white combined) rank first in total value with landings totaling approximately 153 million pounds (47 thousand metric tons) in 1998 at a value of $154 million. Other commercially important species include oysters, blue crab, croaker, black drum, red drum (harvest closed), catfish and bullheads, flounders, king whiting, mullet, sea catfish, sea trout (white and spotted), spot, sheepshead, and finfish. In 1998, Louisiana ranked No. 2 in the U.S. in terms of seafood produced and harvested, second only to Alaska (4.9 billion pounds/2.7 million metric tons). 1.13 billion pounds (515 thousand metric tons) of seafood were harvested in the freshwaters,

[2] Fisheries data in this section were obtained from:
O,Bannon, Barbara. Editor. Fisheries of the United States 1998. Fisheries Statistics and Economics Division, National Marine Fisheries Service. Silver Spring, MD. July 1998.

coastal estuaries, and coastal waters of Louisiana. Primary freshwater species that are harvested commercially include red swamp crawfish, gar, bowfin, carp, freshwater drum, buffalo, blue catfish, channel catfish, flathead catfish, and yellow bullhead.

Sportfishing is diverse and substantial, including both fresh and saltwater fishing. Brown shrimp and white shrimp are taken by sport trawlers, while blue crab is the only crab species taken in significant numbers by sportfishermen. Saltwater sport finfishes commonly harvested include spotted seatrout, sand seatrout, Atlantic croaker, spot, black drum, sheepshead, southern flounder, southern kingfish, and Spanish mackerel. Freshwater sportfishing occurs in the fresh to slightly brackish waters of Louisiana. Species commonly taken include largemouth bass, black crappie, white crappie, warmouth, bluegill, red ear sunfish, channel catfish, blue catfish, and flathead catfish. Red swamp crawfish are harvested from wooded swamps, fresh marshes, and crawfish farm ponds (typically, flooded rice fields).

The project area supports rich populations of phytoplankton, zooplankton, benthos, macroinvertebrates, and numerous small fishes. These organisms constitute vital components in the aquatic food chain.

Future without Project. Without implementation of the proposed action, fishery productivity would decline due to loss of marsh and saltwater intrusion.

Future with Project. With implementation of the proposed action, fishery productivity would also decline under the future with project condition, although the decrease would not be as dramatic.

4.2.10.2. General Fisheries Impacts

Although it is the consensus of fishery experts that overall benefits to fishery resources would outweigh the adverse impacts, a variety of potential adverse impacts could occur. Aquatic organisms could be adversely impacted by changes in salinity, temperature, levels of pollutants, and hydrologic factors. Quantification of potential impacts is difficult based on available information. More information will become available from the Caernarvon and Davis Pond Freshwater Diversion biological monitoring programs. This project has a monitoring program proposed for post-construction, particularly dealing with the processes of delta formation and vegetation/fishery impacts. The following information identifies concerns and discusses potential adverse impacts in a qualitative manner.

The primary project objective is to create marsh. The sediment diversion would move existing iso-haline lines more seaward in the immediate project construction area. However, this large diversion would cause slightly higher inward salinity shifts in the delta, due to the subsequent reduction in water flows through the passes. The delta would remain a mostly freshwater marsh area.

Salinity shifts would result in overall positive benefits to estuarine species such as white shrimp, brown shrimp, blue crab, menhaden, atlantic croaker, and spotted seatrout. This benefit would primarily benefit juvenile and young-adult estuarine species because of increased nursery habitat resulting in increased fisheries productivity. Adult estuarine species would continue to occupy higher salinity zones in open waters near marsh edge. It is also important to note that salinity and temperature often function synergistically in their effects on organisms. Thomas (1999),

documented that the highest catch rates of brown shrimp and spotted seatrout (both typically associated with high salinity zones) are found when the ambient water temperature reaches 15 to 30 C in salinities below 10 ppt. Catch rates for white shrimp and blue crabs are also highest at salinities below 10 ppt, albeit at a wider range of temperatures. Saucier et al. (1993) reported spotted seatrout spawning sites and collected fertilized eggs from water with a salinity range of 7 ppt to 25.8 ppt within a temperature range of 24.5 to 33.5ºC. In the long term, significant marsh savings and creation would accrue, thereby improving production of all these species.

During years of peak sediment diversion, it is possible that some benthic organisms would be buried by sediment deposition. Sediment from the diversion deposited in open water greater than 3 feet deep would remain under water and benthic organisms would re-populate the area. In addition, emergent marsh vegetation would re-vegetate certain areas of the delta where the water is shallow. During sediment deposition and marsh development, a slight decrease in fishery populations could occur because of the decrease in open water. Species composition of benthic populations would likely be modified due to differences in the sediment transported by the river and sediment in the receiving area. Quantification of impacts to aquatic organisms due to water level fluctuations and sedimentation is not possible based on existing information.

4.2.11. Essential Fish Habitat

Existing conditions. All of the marine and estuarine waters of the northern Gulf of Mexico have been designated as Essential Fish Habitat (EFH) through regulations promulgated by the National Marine Fisheries Service (NMFS) and the Gulf of Mexico Fishery Management Council as required by the Magnuson-Stevens Fishery Conservation and Management Act. EFH is described as waters and substrates necessary for Federally-managed species to spawn, breed, feed, and grow to maturity. In the northern Gulf of Mexico, EFH has generally been defined as areas where individual life-stages of specific Federally-managed species are common, abundant or highly abundant. In estuarine areas, EFH is defined as all estuarine waters and substrates (mud, sand, shell, rock and associated biological communities, including the sub-tidal vegetation (seagrasses and algae) and adjacent inter-tidal vegetation (marshes and mangroves). The open waters, waterbottom substrates, and inter-tidal marshes of the West Bay Sediment Diversion project area are considered EFH under the estuarine component.

Table 5. Life-stages of Federally managed species that commonly occur within the project area

Species	Life-stage	Essential Fish Habitat
Brown Shrimp	postlarval/juveniles subadults	Marsh edge, SAV, tidal creeks, inner marsh Estuarine mud bottoms, marsh edge
White shrimp	postlarval/juveniles subadults	Marsh edge, SAV, marsh ponds, inner marsh Marsh edge, SAV, marsh ponds, inner marsh
Gray snapper	postlarval/juveniles	Estuarine, SAV, mud bottoms
Red Drum	postlarval/juveniles subadults adults	SAV, estuarine mud bottoms, marsh/water interfaces Estuarine mud bottoms Estuarine mud bottoms

The following Federally managed species are common to abundant in the estuarine waters of south Louisiana: brown shrimp, white shrimp, pink shrimp, seabob shrimp, Gulf stone crab, red

drum, gray snapper, billfish, and Spanish mackerel. Many other Federally-listed species occur in the near-shore Gulf of Mexico. Many of the non-listed species that occur in the estuarine waters of the project area, such as Atlantic croaker, sand seatrout, spot, gulf menhaden, striped mullet, and blue crab, serve as prey for other Federally-managed species like cobia, king mackerel, snappers, groupers, and sharks.

The Mississippi delta is well known for its abundance of fisheries resources. As for Federally managed species, red drum and white shrimp are especially abundant. Though commercial fishing for red drum is not allowed in either state or Federal waters, hundreds, if not thousands, of recreational anglers fish for redfish in the Mississippi delta. White shrimp are harvested by hundreds of commercial fishing vessels ranging in size from small, inshore wing-net boats to large, offshore trawlers.

Future without project. Without implementation of the proposed action, EFH in the project area would continue to convert from inter-tidal marshes to shallow, open water with mud or sand substrates. Some of the shallow, open water areas would become vegetated with submerged aquatic vegetation. While both types of habitats, inter-tidal marsh and shallow open water, are considered EFH, there has been such an enormous loss of the inter-tidal marsh areas in the Mississippi delta, that there is now significantly more open water than marsh. The productivity of marine fishery species, especially shrimp, has been tied to the areal extent of marsh habitats and the length of the shoreline interface. As marsh disappears, the length of the shoreline interface eventually will decrease. Therefore, fisheries production of Federally managed, estuarine-dependent species is expected to decrease in the future because of the continued loss of inter-tidal wetlands that provide protected nursery areas and organic detritus.

Future with project. With implementation of the proposed action, the sediment diversion would partially offset the continued loss of inter-tidal wetlands in the Mississippi delta through the natural process of delta building. Shallow, open water areas, some of which contains submerged aquatic vegetation, would be converted to inter-tidal marshes and much smaller amounts of supra-tidal wooded habitat dominated by black willow.

The net effect of the sediment diversion on EFH is considered beneficial since the project will replace some of the inter-tidal wetlands lost in the Mississippi Delta during the second half of the 20th Century. Shallow open water habitat, which has formed from the loss of inter-tidal wetlands, is abundant in the area. The inter-tidal wetlands formed by the diversion represent a desirable, yet diminishing resource, which the diversion would restore.

4.2.12. Wildlife

Existing Conditions. The project area contains a great variety of mammals, birds, reptiles, and amphibians. Of special interest from a commercial standpoint are nutria, muskrat, mink, otter, bobcat, and raccoon, which are trapped for their valuable pelts. Other species inhabiting the area include white-tailed deer, skunks, rabbits, squirrels, and various species of small mammals. Large populations of migratory waterfowl, including snowgeese, gadwalls, pintails, mallards, blue-winged teal, green-winged teal, wigeons, mottled ducks, and lesser scaup are present in the area. These waterfowl are highly sought by sportsmen. In addition, coots, gallinules, rails, mourning doves, and snipe are important game species. Nongame wading birds, shore birds, and sea birds include egrets, plovers, ibis, herons, sandpipers, willets, black-necked stilts, gulls, terns, skimmers, grebes, loons, cormorants, and white and brown pelicans. Various raptors,

such as barred owls, red-shouldered hawks, marsh hawks, ospreys, Artic peregrine falcons, and bald eagles are present. Passerine birds present include sparrows, vireos, warblers, mockingbirds, grackles, red- winged blackbirds, wrens, bluejays, cardinals, and crows. Many of these birds are present primarily during periods of spring and fall migrations. The area provides habitat for amphibians such as the Lesser Siren and various frogs and toads. In addition, the area also provides habitat for reptiles such as various terrestrial and aquatic turtle species, and several species of poisonous and nonpoisonous snakes. The American alligator is abundant in fresh to intermediate marsh and is caught commercially for its hide and meat.

Numerous terrestrial invertebrates occur throughout the project area. The most notable are insects, which often serve as vectors that transmit disease organisms to high animals, including man. Mosquitoes are the most important of the vectors, although other groups, such as deer flies, horseflies, and biting midges, are also considered vectors. The area provides suitable breeding habitat for such species as *Aedes sollicitans* (salt-marsh mosquito), *Culex salinarius,* and other species of mosquitoes.

General Wildlife Impacts.

Material excavated during construction/dredging of the diversion would be deposited on the ridge/disposal areas adjacent to the channel and would impact some marsh habitat. A small number of the less mobile species would be lost through burial during disposal. A greater number of less mobile species would be displaced to adjacent habitats-where many would suffer mortality due to competition with residents, and/or these habitats would be degraded due to overcrowding. Disposal areas converted to shrub- scrub, mainly the banks of the diversion cut, would retain some wildlife value for upland species.

The project would provide maximum benefits to wildlife resources due to reductions in rates of land loss and reduced degradation of habitat quality in the project area. Of particular benefit to wildlife species would be the creation of fresh/intermediate marshes.

Commercially important wildlife, including furbearers and alligators, is dependent upon productive marsh habitat in the coastal area. Most of these species prefer the fresher marsh areas; therefore, annual future harvests are expected to be greater in the delta area with the project than they would be without sediment diversion. With implementation of this plan, it is projected that the project area would contain a total of 9,831 acres more marsh in the year 2020 than under the without-project condition.

Recreationally important wildlife, including big game, small game, migratory birds, and waterfowl would benefit from reductions in rates of habitat degradation and marsh creation. This would, in turn, lead to increased hunting opportunities. Increases in man-days of hunting and their attendant values are presented in the Recreational Resources Section.

Wildlife populations in the project area could be both negatively and positively affected by the project. Minor modifications of the present isohaline lines would result in a redistribution of particular populations as would water level changes during the dry months. Changes in water temperatures near the diversion channel outfall could impact specific wildlife, particularly reptiles and amphibians. Most populations would not be harmed, and many would benefit from the creation of marsh and increased productivity.

Potential negative impacts to wildlife could be related to the introduction of pollutants from the Mississippi River, including nutrients and sediments. The most serious problems would occur near the outfall of the diversion channel. Enriching the receiving bodies with inorganic nutrients, especially inorganic nitrogen and phosphorus, could in some situations create additional problems in already eutrophic waters. This could impact the prey base, especially fish, and would be more critical during warm months. Siltation and turbidity could also impact the prey base. Aquatic plants could be smothered by silt, or productivity could be retarded because of reduced light penetration. Reduced visibility due to turbidity would make feeding difficult for both prey and predators.

Tissue contaminant studies conducted by the USFWS at the Caenarvon freshwater diversion (Conzelmann et al. 1999), however, show little evidence of any serious problems resulting from the introduction of Mississippi River water into the marsh. As expected, overall levels of pollutants commonly listed in the Mississippi River decrease in the marsh area where freshwater is diverted. Lane et al. (1999) conducted water quality analyses at seven locations in the Breton Sound estuary from 1988 to 1994. Data revealed a decrease in total nitrogen and salinity levels throughout the study area and also assimilation of total suspended solids into the existing marsh habitat. As marsh develops in the West Bay marsh creation area, the restored marsh will function as the Breton Sound estuary does and would significantly reduce any impacts due to the introduction of Mississippi River water into the site.

Creating marsh is the primary beneficial impact of the project on wildlife. As sediment from the diversion splays into West Bay, changes in some existing plant and animal distributions would occur. Most wildlife species would benefit from this change, however, instances when saltwater species may utilize the new marsh would become infrequent. Species most likely affected would be the seaside sparrow, some rails, and terns. Marsh development, in general, would displace aquatic species.

Changes in water levels in the delta could impact some species in the project area. Reptile and amphibian reproduction is susceptable to water level changes. Direct impacts would generally involve the loss of eggs by drowning, and indirect impacts would include increased predation and displacement. Amphibians generally lay their eggs in shallow, nearshore waters or isolated ponds. Increased water levels would allow predators, such as aquatic insects and fish, access to these areas. Aquatic snakes and turtles lay eggs near water bodies, and these sites could be covered with water. Although alligator eggs are laid in vegetative nests on the marsh floor, the egg cavity is generally a foot above the marsh. Also, increased water levels could impact a few avian species. Mottled ducks could also be impacted because they breed along marsh edges in nests constructed on the ground or in clumps of grass several inches above the marsh floor. Other ground-nesting birds that could be impacted are the rails. However, increased water levels and flows tend to increase the productivity of wetland areas, and this would provide a larger food base for most wildlife. In addition, the impacts resulting from high water would be mitigated, over time, as sediment accumulates and marsh is created. The newly created marsh would provide more nesting habitat for wildlife in West Bay as it develops.

Future without Project. Without implementation of the proposed action, most species of wildlife would be adversely impacted by wetland loss.

Future with Project. With implementation of the proposed action, wildlife populations would increase or decrease according to the amount of available habitat. The type, extent, and duration

of any effect on wildlife populations by the proposed project would be related to the life history of any particular species utilizing the project area.

4.2.13. Nesting Colonies

Existing Conditions. Recent surveys of the project area conducted by the Louisiana Natural Heritage Program (LNHP) listed 29 sea and wading bird nesting colonies in 1999 . Of the 29 colonies known to exist, 10 were listed as active and the other 19 sites are historical and may have been active as recently as 1998. It is possible other nesting colonies may exist in the project area, but are not included in the LNHP database. Nesting colonies can be comprised of the following species:

Royal Tern
Green-backed Heron
Great Blue Heron
Great Egret
Cattle Egret
Little Blue Heron
Tri-colored Heron
Snowy Egret
White Ibis
White-faced Ibis
Glossy Ibis
Yellow-crowned Night Heron
Caspian Tern
Gull-billed Tern
Roseate Spoonbill
Least Tern
Black Skimmer
Forster's Tern
Black-crowned Night Heron
Brown Pelican
Laughing Gull
Reddish Egret
American Oystercatcher
Sooty Tern
Sandwich Tern

Future without Project. Without implementation of the proposed action, the quantity and quality of available nesting habitat would continue to decline adversely impacting nesting colonies.

Future with Project. With implementation of the proposed action, nesting bird colonies are expected to benefit from habitat created by the sediment diversion. Approximately 9,831 acres of potential nesting and foraging habitat would be created. More water from the Mississippi River would also be entering the diversion area, but significant pollutant levels above those that already occur from bank overflow are not expected.

Construction or maintenance work and related surveys will not be conducted within 1,500 feet of any waterbird nesting colonies during the nesting season. The appropriate US Fish and Wildlife Service field office would be consulted prior to any construction or maintenance related activity, to identify any colonies that may be present in the project area. Agency and contract personnel will be informed of the need to identify and avoid impacting colonial waterbirds during the nesting season and all contracts will contain a statement prohibiting work within 1,500 feet of any active nesting colonies.

4.2.14. Endangered and Threatened Species

Existing Conditions. Threatened species actually or potentially present in the area include the piping plover, bald eagle, loggerhead sea turtle, and the gulf sturgeon. Endangered species

actually or potentially present in the area include the brown pelican, green sea turtle, Kemp's Ridley sea turtle, hawksbill sea turtle, and leatherback sea turtle (see Appendix B for endangered and threatened species assessments).

Future without Project. Without implementation of the proposed action, improvements in the quantity and the quality of habitats as a result of the freshwater diversion project would not be realized by most species. However, the delta area would continue to deteriorate, mainly as a result of land loss.

Future with Project. With implementation of the proposed action, newly created marsh, would provide forage, protection, and nesting habitat for some endangered species on which these species subsist. The project would not adversely impact any endangered or threatened species.

4.2.15. Recreational Resources

Existing Conditions. The project area provides opportunities for a variety of outdoor recreational activities. Consumptive activities include sport hunting and fishing. Fresh and saltwater sport fishing is popular in the area, as well as sport shrimping and sport crabbing. Non-consumptive recreational activities include boating and various forms of wildlife-oriented recreation. Marsh and estuarine water bodies are heavily utilized by hunters and fishermen.

Future without Project. Without implementation of the proposed action, hunting and fishing values are expected to decline based on the continued loss of the wetland resource.

Future with Project. With implementation of the proposed action, recreational values are expected to accrue with 6,130 average annual man-days, including fishing and hunting.

4.2.16. Federal Wildlife Refuges, National Parks, and State Wildlife Management Areas

Existing Conditions: Delta National Wildlife Refuge. This 48,800-acre refuge is located in the delta due east of the construction area. The area consists almost entirely of coastal marsh habitat and open water. Endangered and threatened species found in the refuge include the American alligator, brown pelican, peregrine falcon, and the piping plover. The refuge supports large numbers of shorebirds, wading birds, migratory and resident passerines, and raptors. Likewise, furbearers such as nutria and game mammals such as white tail deer are year round residents. Marsh and open water provide year round and seasonal habitat for fish and shellfish species. The majority of consumptive uses are hunting, fishing, and trapping. Non-consumptive uses include wildlife observation, canoeing, photography, and primitive camping

The 66,000-acre Pass-A-Loutre Wildlife Management Area is located in the south central portion of the active Mississippi Delta. This preserve is composed primarily of fresh marsh, some intermediate marsh, and canal bank vegetation. Waterfowl concentrations are good, with the habitat being suitable for most types of waterfowl. Fur species, including nutria, muskrat, and opossum, are present. Fishing, boating, crabbing, and birdwatching are popular activities. No campgrounds are available.

Future without Project. Without implementation of the proposed action, marsh loss and habitat degradation would continue. Existing conditions affecting the state and Federal refuges would remain unchanged.

Future with Project. With implementation of the proposed action, freshwater and sediment diversion into West Bay would not impact state or Federal wildlife management areas.

4.2.17. Minerals

Existing Conditions. The mineral resources in the area consist mainly of petroleum resources. Numerous buried pipelines and cables are located within the area. The majority of the pipelines transport oil and natural gas.

Future without Project. Without implementation of the proposed action, petroleum exploration and production will occur in the future. The environment will continue to experience adverse impacts associated with canal dredging, drilling, conversion of habitat to production areas, and other activities related to the petroleum industry.

Future with Project. With implementation of the proposed action, oil and gas exploration will continue to occur. Sediment from the diversion may fill some active canals or access routes used by companies. Oil and gas companies were contacted early in the planning process for possible conflicts of the diversion site with existing structures and pipelines.

4.2.17.1. Facility Relocations

A 10-inch diameter crude oil pipeline owned by Chevron Pipeline Company, which runs parallel to the river through the marsh creation area, would be relocated. No aerial power line relocations would be required at the diversion site.

The Chevron pipeline is located approximately 560 feet from the bay side end of the proposed diversion cut. A 3,000 linear foot section of pipeline would be relocated from its current position to a depth of –80 feet NGVD at the lowest point. In order to minimize impacts to existing marsh, directional drilling would be employed to install new pipeline. Existing pipeline would be removed by conventional excavation methods. Approximately 132,000 cubic yards of material would be excavated from 17 acres of water bottom for access routes, ditches, and staging areas (Table 4 & Figures 9 - 14). After completion of the relocation, the areas impacted would be restored as close as possible to pre-existing conditions.

4.2.17.2. Maintaining Access to Local Oil and Gas Exploration and Production Facilities

Oil and gas exploration and production operations had historically occurred in the shallow water areas where new marsh would be created. These operations, if still active, might be impacted by the large- scale sediment diversion. Sediments that escape capture in the marsh development areas might accelerate natural shoaling of oil field canals and boat slips.

There are approximately 73,000 linear feet of canals and slips, occupying about 117 acres, in the marsh creation area. However, none of these canals and slips appear to be actively used. Further, we do not believe such canals or slips would be affected equally by the sediment diversion operations.

4.2.18. National Register Properties

Existing Conditions. No previously recorded National Register sites are located in the project area. In addition, the Louisiana State Historic Preservation Officer has been consulted for information on historic properties pending nomination to the National Register; None are present.

Future without Project. Without implementation of the proposed action, there are no sites listed and/or eligible for listing on the National Register of Historic Places in the project area.

Future with Project. With implementation of the proposed action, there will be no impacts since there are no National Register Sites located in the project area.

4.2.19. Archeological Resources

Cultural Resources.

Existing Conditions. Several Cultural Resource investigations have been conducted in this area which cover portions of the area to be impacted by the proposed project. A terrestrial cultural resources survey of Tiger and Grand Passes was completed in 1978 (Gagliano et al., 1978) and an archeological and historical evaluation on the passes of the modern Mississippi River Delta, with particular emphasis on Southwest Pass were completed in 1985 (Goodwin et al., 1985). No cultural resources were identified in the project area as a result of these investigations. There are no archeological sites or historic properties either listed on or which have been determined eligible for listing on the National Register of Historic Places within the limits of the proposed project. These studies not only indicate where cultural resources were identified, but they also provide data used to predict the probability of encountering cultural resources in the area.

A number of factors influence the archeological record of the project area. The chronology of the Mississippi River's delta phases dates the first advance of the recent Balize lobe ca. 1500 A.D. Since this delta formed only within the last 500 years, no prehistoric deposits are expected on it. The rate of subsidence in the project area is approximately 5 ft per every 100 years. Documented changes in land area (both loss and gain) in the project area from approximately 1932 to 1983 shows that most of the project area has deteriorated from a marsh environment and is currently under water (May and Britsch 1987). Any sites, which may have existed within the receiving water portion of project area, are presumed to have been destroyed or obscured to a point where their detection is no longer feasible.

Historic map and records research was conducted for this project. A review of the Mississippi River Commission (MRC) maps, modern topographic quadrangles, and aerial photographic coverage dating from 1945 to the present, indicates that the natural levees of the Mississippi River have the highest probability for containing evidence of significant cultural resources. However, a review of the Conveyance Office records and Notarial Acts failed to identify any evidence of dwellings, structures, or other improvements within the limits of the proposed conveyance channel and earthen weir.

Field reconnaissance conducted on 27 May 1992 failed to encounter any cultural resources within the limits of the proposed conveyance channel. A rock dike was constructed to provide foreshore protection on the riverside of the proposed conveyance channel. A review of the ca. 1878 MRC

Chart 83, and the 1971 USGS 7.5' series Pilottown, Louisiana topographic quadrangle indicates that approximately 288 m (472 feet) of bankline erosion has occurred at this location between ca. 1878 and 1971. Bankline erosion and subsequent foreshore protection would have destroyed any sites which might once have been located within this portion of the project area.

In October 1992, the Corps of Engineers sent a letter to the State Historic Preservation on the West Bay Sediment Diversion Project, which outlined the above cultural resource analysis for the diversion area. In a letter dated December 7, 1992, the State Historic Preservation Officer concurred with the recommendation that no further cultural resources investigations were warranted for the diversion channel.

Recently however, as a part of the contingency plan for an emergency closure of the diversion, it was proposed that material used to close the diversion could be taken from one of two locations. The first location is within the Pilottown Anchorage area and the second location is within the Mississippi River navigation channel. Material from the Pilottown Anchorage area would be dredged from the area that would be maintained for deep draft access (see Figure 11). Borrow material would originate from new material below the depth where shoaling would occur in order to obtain the most suitable material for closing the diversion. Suitable borrow material originating from the navigation channel would be removed from a depth below –49 feet and no deeper than –59 feet. Currently, the navigation channel is maintained to a depth of –49 feet (including 2 feet advanced maintenance plus 2 feet of allowable overdepth). A channel to the West Bank rock dike area will be dredged so access can be made to the rock dike along the West Bank of the Mississippi River. This is referred to as the anchorage area.

The Final Environmental Impact Statement, “Deep-Draft Access to the Ports of New Orleans and Baton Rouge, Louisiana” (July 1981) cleared dredging in the current navigation channel to a depth of -59 feet (including 2 feet advanced maintenance plus 2 feet of allowable overdepth). The access channel had not been surveyed for marine cultural resources. An underwater archaeological survey of the channel was conducted in 1985, which is not up to our current standards for conducting a marine cultural resources survey (Muller 1985). A cultural resources survey was conducted in February 2000 for the channel and for the anchorage area for this project. The survey located one magnetic anomaly in the project area that is suggestive of a shipwreck. The analysis of the anomaly along with the historic research and interviews with the Coast Guard and locals indicate that a vessel went down at this location between 1960 to 1973. The anomaly is a modern vessel that appears to be highly fragmented based on pattern analysis of the geophysical data. The anomaly does not meet the criteria of Section 106 of the National Historic Preservation Act since it is neither intact nor over 50 years old. The results of this survey can be found in Appendix C.

In conclusion, we believe that no additional cultural resource investigations are required in the project area. No potentially significant cultural resources are recorded in the project area. The portion of the project area designated for receiving waters exhibits a low probability for containing significant cultural resources. This is due in part to the recent formation of the land surface and its present condition. The proposed conveyance channel and earthen weir is located on the natural levee of the Mississippi River. This area is generally considered a high probability for containing significant cultural resources. However, the result of archival and historic record research, along with reconnaissance survey and assessment of previous impacts indicates that the construction of the proposed conveyance channel and earthen weir will not impact significant cultural resources.

The proposed conveyance channel and earthen weir is located on the natural levee of the Mississippi River at River Mile 4.7 AHP. Approximately 288 meters (472 feet) of bankline erosion has occurred at this location between circa 1878 and 1971. Bankline erosion and subsequent foreshore protection would have destroyed any sites, which might once have been located within this portion of the project area.

The Cultural Resources investigation conducted by COE Staff Archeologists and the results of the previous terrestrial and marine surveys as well as the current 2000 submerged cultural resources survey indicates that no significant cultural resources are located within the project impact zone. No further work is recommended. The State Historic Preservation Office is currently reviewing the draft report with the results of this submerged cultural resources survey.

4.2.20. Section 122 Items

4.2.20.1. Social and Economic Issues

In addition to the National Environmental Policy Act (NEPA), Section 122 of the River and Harbor and Flood Control Act of 1973 (Public Law 91-611) provides general guidance and an outline of major social, economic, and environmental affects that the Corps of Engineers are to consider in planning projects. Since 1973 guidance has included several basic issues, including health and safety. The West Bay Sediment Diversion project is located near the Mouth of the Mississippi River, and in wetland areas beyond residential populations; therefore its benefits and impacts to human populations may not be obvious. It is part of a series of projects designed to reduce the level of land loss causing potential damage to nursery areas of commercial and recreational fisheries, affecting the stability of the navigation channel, and causing a growing threat to developments further inland threatened by storms and hurricanes.

4.2.20.2. Air and Noise

Existing Conditions. Air quality and noise levels are generally acceptable due to the remote and isolated nature of the project area.

Future without Project. Without implementation of the proposed action, no significant adverse impacts on air and noise levels are expected to occur in the future without the project.

Future with Project. With implementation of the proposed action, it would create temporary air and noise pollution at the time of construction and during maintenance periods. Impacts would be remote and therefore minimal. Any temporary adverse affects caused by construction would require compliance with local and federal regulations.

4.2.20.3. Esthetics

Existing Conditions. An appreciation of marshes, bays, the adjacent Mississippi River of the Delta, and surrounding wildlife habitat is largely the attending esthetic value common in the area.

Future without Project. Without implementation of the proposed action, over the next 250 years the esthetics of the future without project conditions would remain about the same; however, as

wetlands are converted to open water, the unique characteristics of the environment including some of its scenic qualities will be lost.

Future with Project. With implementation of the proposed action, the result would be minor degradation of esthetic values at the construction site due to the removal of streamside vegetation and conversion of stream banks to an inflow channel. Esthetics of the site would improve as emergent marsh occurred. To the extent that the loss of wetland could be controlled, the loss of related esthetic values would also be reduced.

4.2.20.4. Community Cohesion

Existing Conditions. Community cohesion generally refers to forces that create a social bond within a community. This bond may be a characteristic of a common language, religion, ethnicity, education, income, or other factor considered of mutual economic and/or social benefit. While the project site is unpopulated, recreational and commercial fishing and hunting groups operate in the vicinity. Waterborne commerce that passes along the project site is important to the economic development of many people in the region. The wetlands and shallow waters of the project site receive the initial surge and impacts of hurricanes and storms that pass though the area, reducing property damage and the loss of life of communities further inland, and sustaining the social bonds of local residents.

Future without Project. Without implementation of the proposed action and because the West Bay Diversion site is unpopulated, the future without project impacts to community cohesion at that location would be insignificant. However, if fishery production declines due to the erosion of marsh and the quality of environmental habitat, the mutual interests of nearby communities dependent on commercial harvests and recreational charter services could be impacted. Advancements in aquaculture technology could mitigate commercial harvests but not declines in recreational fishing. As subsidence, erosion, and land loss continued, the cost of maintaining the adjacent navigation channel could increase. As wetlands declined, the natural flood protection it provides against the initial surge of hurricanes would tend to decline, reducing the desire of some local residents to remain in the area. While opinions may differ as to causes and level of significance, a general consensus has emerged within communities indicating that the loss of wetlands should be controlled in the future.

Future with Project. Implementation of the proposed action would benefit community cohesion by sustaining useful natural resources and reducing the adverse affect of storms and hurricanes. The impacts would be largely indirect, since the immediate project site is unpopulated. As discussed in earlier sections of this report, this project is only one feature of the much larger CWPPRA project designed to reduce property damage along the coast and maintain fish and wildlife resources.

4.2.20.5. Population Displacements and Employment

Existing Conditions. As previously mentioned, the project site is unpopulated wetland and shallow waterbottoms in lower Plaquemines Parish near the mouth of the Mississippi River; therefore, impacts to population would tend to be those affecting people living further inland and residential displacements caused by a growing threat of flooding. Employment in and around the project site is related largely to mineral production, commercial and recreational fishing, and waterborne commerce located along the west bank of the river. The community nearest the

project site is in the Boothville-Venice area that had a 1990 population of 2,699. The total population of Plaquemines Parish increased from 9,608 in 1930 to 14,239 in 1950, 22,545 in 1960, 25,225 in 1970, and 26,049 in 1980. In 1990 the population of the Parish was 25,575; and in 1998 the estimated population was 26,407. Plaquemines Parish is considered part of the New Orleans Metropolitan Statistical Area (MSA), with a portion of it located within the New Orleans Urbanized Area. As in other areas of Coastal Louisiana, the limited availability of protected land and the frequency of storms and hurricanes that pass through the area influence both employment and population growth. In the past, low water flows and the saltwater wedge on the Mississippi River have required fresh water to be barged to communities closest to the project site. Such factors tend to influence population conditions and employment growth in the area. The 1990 census estimated that 833 of the residents in the Boothville-Venice area were employed and unemployment was 6.4 percent. In 1990 civilian employment in Plaquemines Parish totaled 9,467; unemployment was 10.5 percent. More current information is available from the Louisiana Department of Labor. It estimates that the May 1999 civilian employment of people living in the Parish was 10,100, and that unemployment was only 3.5 percent. It estimates that in the fourth quarter of 1998 the total number of jobs in the Parish was 19,013. The much higher figure reflects the number of people working in Plaquemines Parish but living elsewhere. Some of these employees may prefer living in more urbanized areas or in more protected areas, including employees that work and live on offshore oil platforms but maintain residences in other parishes or States.

Future without Project. Without implementation of the proposed action, population and employment closest to the project site are not anticipated to grow substantially in the future for the reasons discussed above. If the previous rate of subsidence, erosion, and land loss continues, the potential for population and employment growth in the Parish may decline, as the threat of storm damage and saltwater intrusion increases. As fish and wildlife habitats decline, employment associated with fishing and hunting would decline. People affected would tend to seek jobs elsewhere. Much of the construction associated with onshore development of the oil and gas industries in the area has been completed. The latest projections prepared by the U.S. Department of Commerce, Bureau of Economic Analysis indicate no significant change in the population of Plaquemines between 1990 and 2040, while employment-based estimates are projected to decline. Projections prepared by Louisiana State University project that population will increase slightly between 25,575 in 1990 and 29,820 in 2010. The completion of additional flood protection projects on the Westbank, an improved hurricane evacuation route, and additional highway improvements may encourage expansion in some areas of Plaquemines Parish; however, areas closest to the project site would experience a growing threat of flooding and storm damage affecting local population and employment. As in the past, opportunities for employment in offshore oil production and related services will depend, in part, upon future prices and the technology for exploration and production.

Future with Project. With implementation of the proposed action, the diversion would incrementally help maintain employment in commercial fishing and chartered recreational fishing and reduce the prospects of displacement of people living in nearby fishing communities. If the project helps maintain the stability of the waterway and reduces flooding in adjacent areas, it could indirectly reduce population displacements and employment losses in developed areas further inland as well.

4.2.20.6. Personal Income

Existing Conditions. Maintaining wetlands in the coastal area, including the West Bay project site, could help maintain economic conditions further inland. Personal income is an important measure of economic conditions. The 1990 census estimated that the 1989 median family income of Plaquemines Parish was $26,523; and it estimated median family income of Louisiana at $26,313. The median family income for the Boothville-Venice area was $17,500. The latest (1997) published estimate of per capita personal income for Plaquemines Parish is $19,580. Per capita personal income for Louisiana in 1997 was slightly larger, at $20,458.

Future without Project. Without implementation of the proposed action, unpublished estimates provided by the U.S. Department of Commerce, Bureau of Economic Analysis indicate that per capita personal income for Plaquemines Parish could be approximately $13,372 by 2020, assuming 1982 constant dollars. Using these figures and estimates for personal income figures for the Parish between 1982 and 1997, the 2020 per capita personal for the Parish can be projected to $24,500. Historical estimates suggest that earnings in the Boothville-Venice area would increase at a slower rate.

Future with Project. With implementation of the proposed action, the project is a feature of a larger project designed to help maintain the nation's coastal wetlands that generate income for commercial and recreational fishing industries and protect property important for a wide variety of income-producing activities like waterborne commerce and oil and gas production.

4.2.20.7. Tax Revenues, Public Facilities, and Services

Existing Conditions. Wetland resources contribute in a direct way to the tax base of local and regional communities. Tax revenues, which reflect the size of the tax base, are used to construct or maintain roads, bridges, fire and police protection, port facilities, flood protection and other necessary public facilities and services.

Future without Project. Without implementation of the proposed action, a continued decline of wetland areas in the vicinity of the project site could ultimately contribute to the deterioration of the area's tax base. In this case, local government may decide to investigate alternative sources of revenue in order to maintain a given level of public services.

Future with Project. With implementation of the proposed action, the proposed project would contribute to the preservation and expansion of the region's tax base and the public facilities and services upon which they depend.

4.2.20.8. Displacement of Businesses and Farms

Existing Conditions. Sometime displacements of businesses and farms are required in developing Corps projects; however, displacements also occur due to changing economic conditions, whether from the conversion of wetland for a higher use, the depletion of natural resources, or changing environmental conditions. Economic activity in the vicinity of the project site has included oil and gas production, related manufactured production and services, waterborne commerce and related services, and commercial and chartered fishing. Agricultural activities have included the production of oranges, limited by the small amount of arable land available. Oil and gas resources in and around Plaquemines Parish have been among the most

productive in the United States; however, maturing of the local industries, declining resources, increases in production elsewhere, and instability in the market have reduced activity in the Parish. While the area remains one of the nation's most productive sources of marine fisheries, in recent years commercial fishing interests have experienced difficulties from international competition as well as the effects of overfishing. During the 1980's a substantial amount of business displacements in the New Orleans area occurred as a result of declines in the oil industry. While conditions have become somewhat more stable, the magnitude of growth previously experienced by the oil industry has not returned.

Future without Project. Without implementation of the proposed action, under future without project conditions, business and industrial activity may fluctuate with the fortune of oil and gas production and related services. However, waterborne commerce in the area is expected to remain an important element of the regional economy. As wetlands in the vicinity of the project site continue to decline, business activities nearby may have an incentive to move into more protected areas further inland or take remedial measures. Similarly, farmers who are marginally productive may eventually determine to seek other opportunities. If the habitat required for commercial harvest of fish and shellfish declines, the industry may gradually decline, or adjust to new fishery technologies. Businesses supporting recreational fishing would tend to decline as well.

Future with Project. Implementation of the proposed action, and similar projects, could help reduce the adverse effects of conditions discussed in the previous paragraph. It could help maintain businesses and farms located further inland subject to the effects of storms and flooding. It would help maintain the productivity of critical resources needed by commercial and recreational fishing interests.

4.2.20.9. Desirable Community and Regional Growth

Existing Conditions. Factors normally associated with desirable community and regional growth include increases in employment and income opportunities, and increases in productivity sufficient to improve public facilities and services.

Future without Project. Without implementation of the proposed action, future without project is expected to reflect current trends in desirable community or regional growth.

Future with Project. With implementation of the proposed action, the project would contribute to desirable community and regional growth only to the extent that it would reduce the effects of erosion and land loss.

4.2.21. Navigation Resources

4.2.21.1. Operations and Maintenance Considerations

The 50,000 cfs sediment diversion would be designed to be essentially self maintaining. That is, annual or periodic maintenance dredging of the sediment conveyance channel would not be required. Additionally, armoring, in the form of a rip-rap control section would not be required. However, characteristically, flow channels in delta splays have a tendency to bifurcate. Periodically, additional bifurcations would be dredged in the new delta formed by the sediment

diversion. This would help to maintain optimal performance of the sediment diversion and assist in extending the growth of the delta.

The West Bay Sediment Diversion is expected to induce additional dredging in the Mississippi River below the diversion. Currently, on average, approximately 17 million cubic yards of shoal material is removed from the navigation channel in the project reach (downstream of mile 4.0, Cubit's Gap) at a cost of about $30 million annually. Actual quantities of shoal material vary widely from year to year. In any given year, it would be impossible to determine the fraction of the total quantity of shoal material attributable to diversion operations with accuracy. A recent 3-dimensional sedimentation computer model indicates shoaling in the Pilottown Anchorage area and the navigation channel between river miles 6.0 and 1.5 AHP as a result of the sediment diversion (Table 5). As shoaling occurs in the anchorage area, a hydraulic cutterhead dredge would remove any new material deposited on the river bottom. Only the first 500 feet of the anchorage area from the channel boundary would be maintained to pre-diversion depths. Material dredged from the anchorage area would be pumped into open water or would be beneficially used inside the West Bay marsh creation area.

Table 6. Predicted Annual Shoaling Rates

	Location by River Mile (AHP)	Shoaling rate (cubic yards)
Navigation Channel	1.5 – 5.0	199,200
Pilottown Anchorage – 250 foot wide deep draft lane	0.0 – 6.0	900,000
Pilottown Anchorage – 500 foot wide deep draft lane	0.0 – 6.0	1,100,000

4.2.21.2. Impacts on Deep Draft Mississippi River Shipping

Theoretically, increased shoaling would also seasonally impact deep-draft shipping by incrementally reducing average available drafts. As a long-term average, available drafts in the Mississippi River Southwest Pass are expected to be greater than 45 feet about 90 percent of the time. That is, on a long-term average basis, available drafts are expected to be less than 45 feet about 37 days per year.

4.2.21.3. Loss of River Anchorage Area

Construction of this project would adversely affect about 2,000 linear feet of river anchorage area (see Figure 16).

4.3. Cumulative Impacts Assessment

The primary goal of cumulative impacts assessment (CIA) is to determine the magnitude and significance of the environmental consequences, adverse or beneficial, of the proposed action in the context of the cumulative effects of other past, present, or reasonably foreseeable future actions. The area considered for the CIA (Figure 17) includes the marsh creation area, the project area, the Barataria-Terrebonne Estuary, and the Mississippi River up to river mile 63, and the Gulf of Mexico.

Past, Present, and Reasonably Foreseeable Future actions:

Future without Project. Without implementation of the proposed action, the land-loss rate in the project area is expected to remain the same, but the percentage of land loss will decrease as land is converted to open water. Approximately 60,000 acres of marsh covered West Bay[3] in 1932. By 1990, West Bay experienced a net loss in marsh cover of nearly 52,000 acres or 87 per cent. It is predicted that by the year 2050, an additional 2,600 acres (4 per cent) would be lost leaving the area with approximately 5,400 acres of identifiable marsh. This represents a 91 per cent reduction in the cover of marsh in West Bay. In both Breton Sound Basin and Barataria Bay Basin, land loss trends are expected to decrease as a result of the Caernarvon and Davis Pond Freshwater Diversion projects into those basins, respectively. These projects would reestablish historic salinity regimes in the basins, but their effects would not be evident in the delta. The State of Louisiana is aggressively pursuing small scale diversions throughout the delta. The State has already built several diversions around their Pass a Loutre Management area, and these are experiencing land accretion.

Future with Project. The land loss rate for the entire delta would remain the same. However, the land loss rate of marsh in the delta would be reduced with a total of 9,831 net acres created in West Bay over the 20-year project life. The project would contribute to the continued productivity of the delta and Barataria Bay ecosystems and would also have detrital contributions to Gulf of Mexico fisheries. The duration of saltwater intrusion at Boothville and Pointe a la Hache is expected to increase by two and four days respectively during low river stages. Induced sedimentation below the diversion would likely increase dredging frequency in the navigation channel. The possibility that the diversion would capture the Mississippi River is remote.

[3] The boundaries for West Bay are identical to the boundaries used for the West Bay Management Unit, as depicted in Figure 7-6. Region 2 mapping units, Coast 2050: Toward a Sustainable Coastal Louisiana, 1998. Also see Figure 19 of the main EIS.

Table 7. Cumulative effects of constructing a large-scale sediment diversion for marsh creation in the Mississippi River Delta.

	Direct Effect	Indirect Effect	Cumulative Effects
Air Quality	Temporary, localized reduction in air quality during construction of diversion and necessary bifurcation dredging in marsh creation area.	No overall effect.	No effect on overall air quality.
Marsh Loss	Immediate loss of wetlands in West Bay resulting from diversion construction and pipeline relocation. Material removed during diversion construction would be placed in West Bay in a manner conducive to wetland development. Operating diversion would create more than 9,000 acres of marsh over twenty years. Increase in nursery habitat for juvenile pelagic fish species.	No effect on the rate of marsh loss outside of the marsh creation area or the project area. Detrital efflux beneficial for Barataria-Terrebone estuary complex.	Restoration of marsh in West Bay and indirect benefits for marshes located in the Barataria-Terrebone estuary complex.
Existing and Proposed Diversions	Minor reduction in current velocity and/or sediment available for diversions downriver of the West Bay sediment diversion. Increases in the duration of saltwater intrusion in the river during low river conditions.	No overall effect.	No overall effect.
Gulf of Mexico	Assimilation of fertilizers and pesticides by marsh plants and associated sub-stratum in marsh creation area would lower nutrient load n water column.	Reduction in the amount of nutrient laden water reaching the open waters of the Gulf of Mexico which would reduce the extent of the hypoxic zone along the Gulf Coast.	Enhancement of water quality before reaching the Gulf of Mexico.
Mississippi River	Reduction in current velocity immediately below the diversion.	Slight increase in the duration of saltwater intrusion in the river during low river conditions.	No overall effect.
Navigation Channel	Increased sedimentation in the navigation channel and the Pilottown Anchorage Area immediately below the diversion.	No overall effect.	Increased maintenance dredging in river within project area boundaries.
Fisheries	Loss of open water habitat. Increase in suitable habitat for the recruitment and development of juvenile marine and freshwater organisms.	Net increase in productivity of coastal marshes in southeast Louisiana.	Enhancement of fishery habitat.
Wildlife	Increase in nesting and foraging habitat.	Net increase in productivity of coastal marshes in southeast Louisiana.	Enhancement of wildlife habitat.
Cultural Resources	No overall effect	No overall effect	No overall effect
Recreation	No overall effect	No overall effect	No overall effect

5. LIST OF PREPARERS

The following persons were primarily responsible for preparing this Environmental Impact Statement:

NAME	EXPERTISE	EXPERIENCE	ROLE IN PREPARING EIS
Mr. Richard E. Boe	Fishery Biology	11 years, Fishery Biologist, LA Dept. of Wildlife & Fisheries; 10 years, Biologist, COE, NOD	Review and Technical Assistance
Ms. Joan Exnicios	Archeology/Cultural Resource Management	5 years, Louisiana State Historic Preservation Office; 9 years, Cultural Resources, COE, NOD	Cultural Resources Investigation
Mr. Bill Hicks	Hydraulic/ Environmental Engineering.	6 years, Environmental Studies, COE, NOD	Water Quality Impacts
Mr. Rick Broussard	Civil Engineering	22 years, COE, NOD	Engineering Technical Assistance and Input
Mr. Robert Lacy	Economics	22 years, COE, NOD	Demographic and Social Assessment
Mr. Sean Mickal	Estuarine Biology	4 years, Biology Student, Operations Division, COE, NOD; 1 year, Fishery Biologist, Environmental Planning and Compliance Branch, COE, NOD	EIS Coordinator
Mr. Burnell J. Thibodeaux	Civil/Hydraulic/ Environmental Engineering	18 years, Hydraulic & Hydrologic Studies, COE, NOD	Coordinator for Engineering Division, hydrology/water quality input

6. PUBLIC INVOLVEMENT

6.1. Public Views and Concerns

Coordination to date has shown strong interest in creating marshland and taking measures to reduce erosion, to slow land loss, and to preserve the wildlife and fisheries. This project addresses these concerns for the area, particularly where land loss is highest. The view expressed by state and local governing agencies to this agency that influenced decision-making and the preparation of this EIS was the need to create marsh in the project area to help prevent land loss due to erosion, subsidence, and saltwater intrusion.

6.2. Public Involvement Program and Study History

An essential part of the planning process is the participation of and coordination with the public and Federal, State, and local agencies. During the LLMC study process, an effort was made to promote communication between study planners and local, State and Federal officials and the public. Avenues of public involvement included public notices, interagency meetings, formal and informal contacts through correspondence, special topic meetings, and public meetings.

The original public meetings for the study were held in Jennings, Houma, and New Orleans, Louisiana, in November and December 1968. Local interests expressed concern about a number of issues, including land loss. This project was originally a part of the LLMC study. A notice of study initiation for the Reconnaissance Report was mailed in October 1983 to Federal, State, and local agencies and officials, local libraries, news media, post offices, environmental groups, industries, and interested individuals. The notice outlined the study purpose and asked that any comments or suggestions pertaining to the LLMC study be submitted for consideration in the planning effort.

Several meetings were held with local interests. Two interagency meetings were held to discuss the status and future direction of the LLMC study. Representatives of the U.S. Fish and Wildlife Service, Minerals Management Service, Soil Conservation Service, the Louisiana Departments of Natural Resources, Geological Survey and Coastal Management Section, Wildlife and Fisheries, and Health and Human Resources, the academic community, and representatives of several parishes attended the meetings. In December 1983, representatives of the U.S. Army Corps of Engineers Waterways Experiment Station (WES) were invited to give a presentation on WES techniques in erosion control and marsh creation. Local parish officials, academicians, state representatives, and agency officials attended the meeting held at the New Orleans District.

Public meetings were held in Belle Chasse, Houma, and Cameron, Louisiana in August 1984. Initial study results were discussed and local concerns and ideas obtained. Future study objectives were also discussed. The Notice of Intent for this project was mailed to the Federal Register 5 March 1992.

Since the start of the Feasibility Report phase for the LLMC Project, there have been numerous interagency meetings with Federal, State and local officials on selection of alternatives, scope of the study, environmental impacts of various alternatives, and determining the Final Plan.

The Notice of Availability for the draft EIS (in it's most current revision) and the subsequent public meeting on the draft EIS were published in the Federal Register on April 13, 2001. A public meeting was held on May 15, 2001, in Buras, Louisiana to receive and hear comments on the draft EIS.

6.3. Required Coordination on Final EIS

Circulation of this final EIS to Federal agencies, State agencies, and other interested parties for their review will accomplish the required coordination as provided under the National Environmental Policy Act and the National Historic Preservation Act. The U.S. Fish and Wildlife Service Coordination Act Report (CAR) supplied comments on scoping and responses to environmental coordination for the proposed action under CWPPRA. Endangered species coordination with USFWS and NMFS was also accomplished.

6.4. Recommendations Expressed in the Draft Fish and Wildlife Coordination Act Report for the Land Loss and Marsh Creation Project

Based on USFWS review of Land Loss and Marsh Creation Project plans considered for marsh creation in St. Bernard, Plaquemines, Lafourche, and Jefferson Parishes, the Fish and Wildlife Service recommends that the following measures be implemented in the interest of fish and wildlife conservation:

1. The project should be recommended for authorization.

Corps Response - This project will be recommended for authorization.

2. The LLMC EIS recommended that the first cost of the marsh creation measures be considered a 100-percent Federal cost, in accordance with Section 906(e) of the Water Resources Development Act of 1988.

Corps Response - The CWPPRA project will recommend that the first cost of the project be shared on a 75-percent Federal, 25-percent non-Federal basis. This will be subject, however, to review by the Office of Management and Budget (OMB), which may recommend a different cost sharing.

Since authorization of the proposed action, project costs are now shared on an 85-percent Federal, 15-percent non-Federal basis.

3. The Corps coordinates closely with the Service and the Louisiana Department of Wildlife and Fisheries during the design and construction phases of the project.

Corps Response - The Corps of Engineers will coordinate closely with the U.S. Fish and Wildlife Service and Louisiana Department of Wildlife and Fisheries during the design and construction phases of the project.

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8. FIGURES

Figure 1. Mississippi River Active Delta.

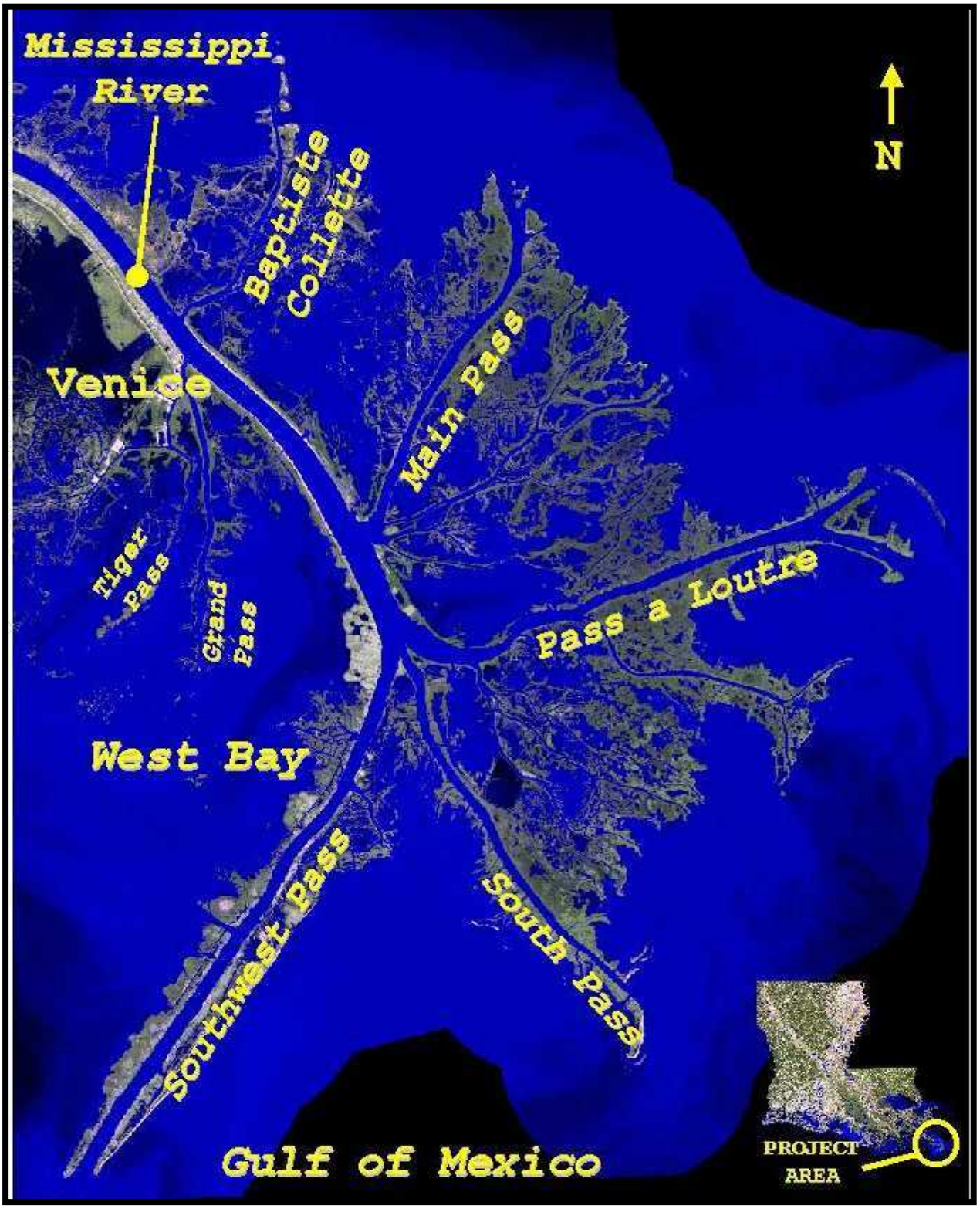


Figure 2. West Bay Sediment Diversion Project Area.

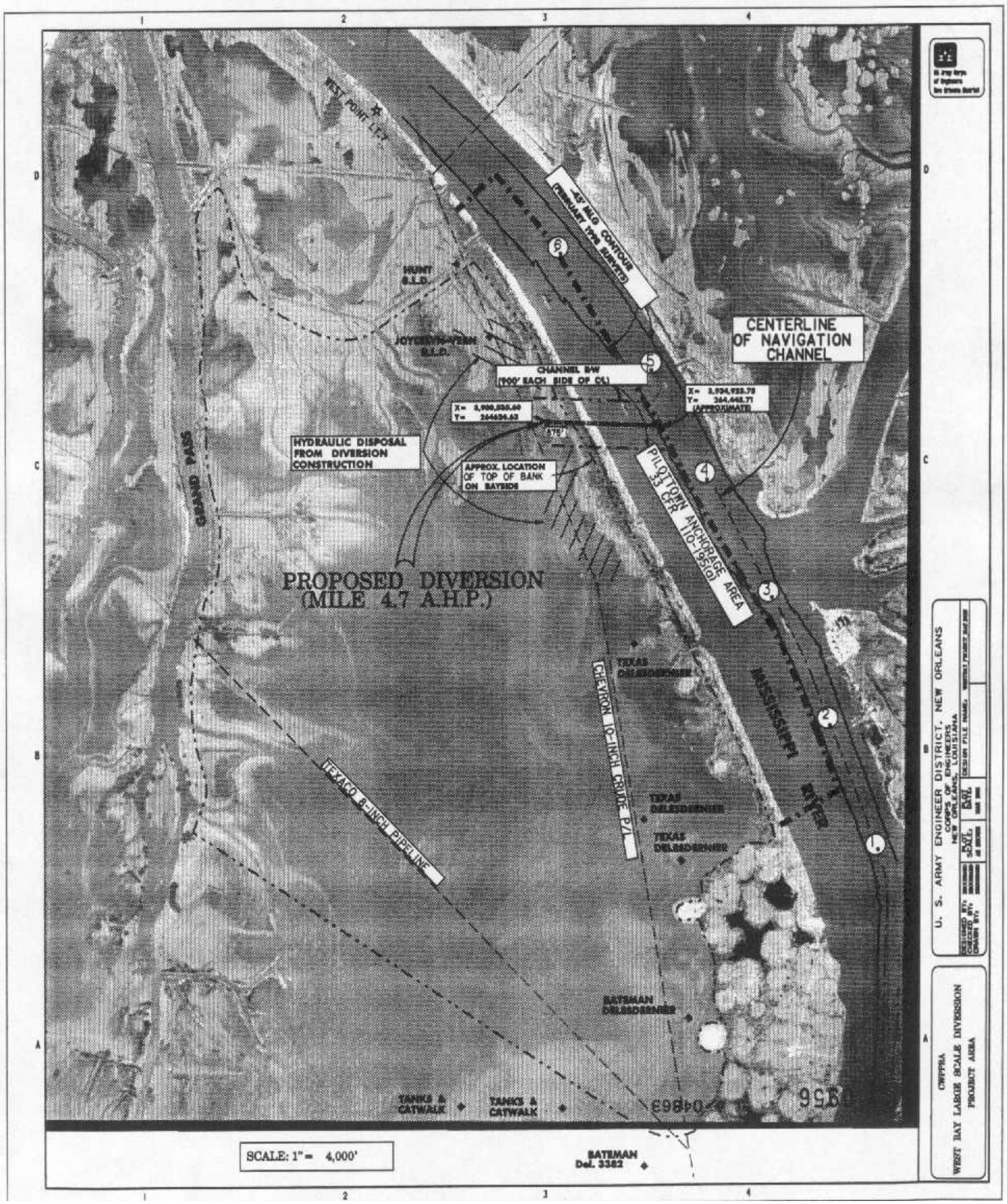


Figure 3. West Bay Sediment Diversion Marsh Creation Area.

Figure 4. 20,000 cfs Sediment Diversion Design.

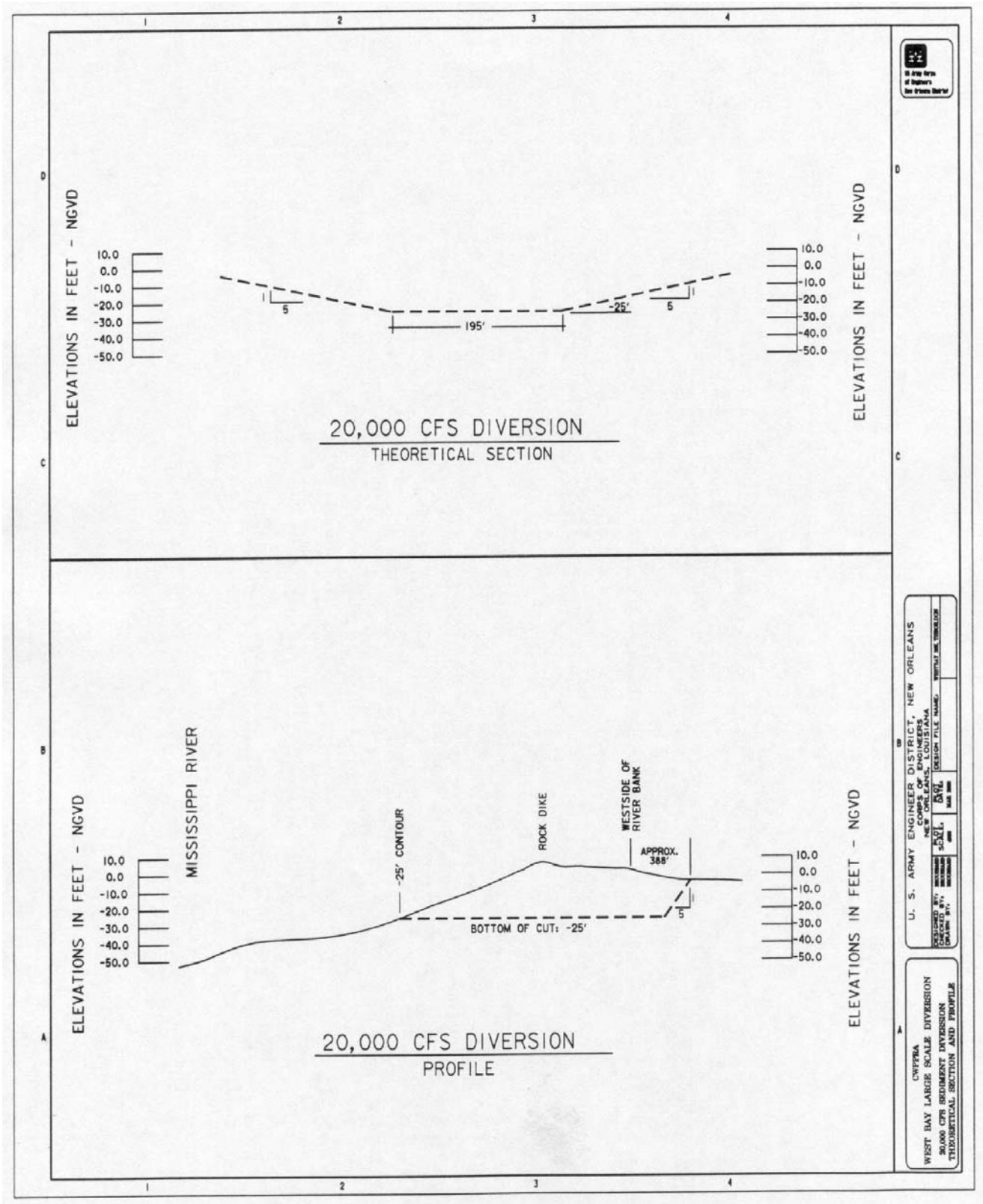


Figure 5. 50,000 cfs Sediment Diversion Design.

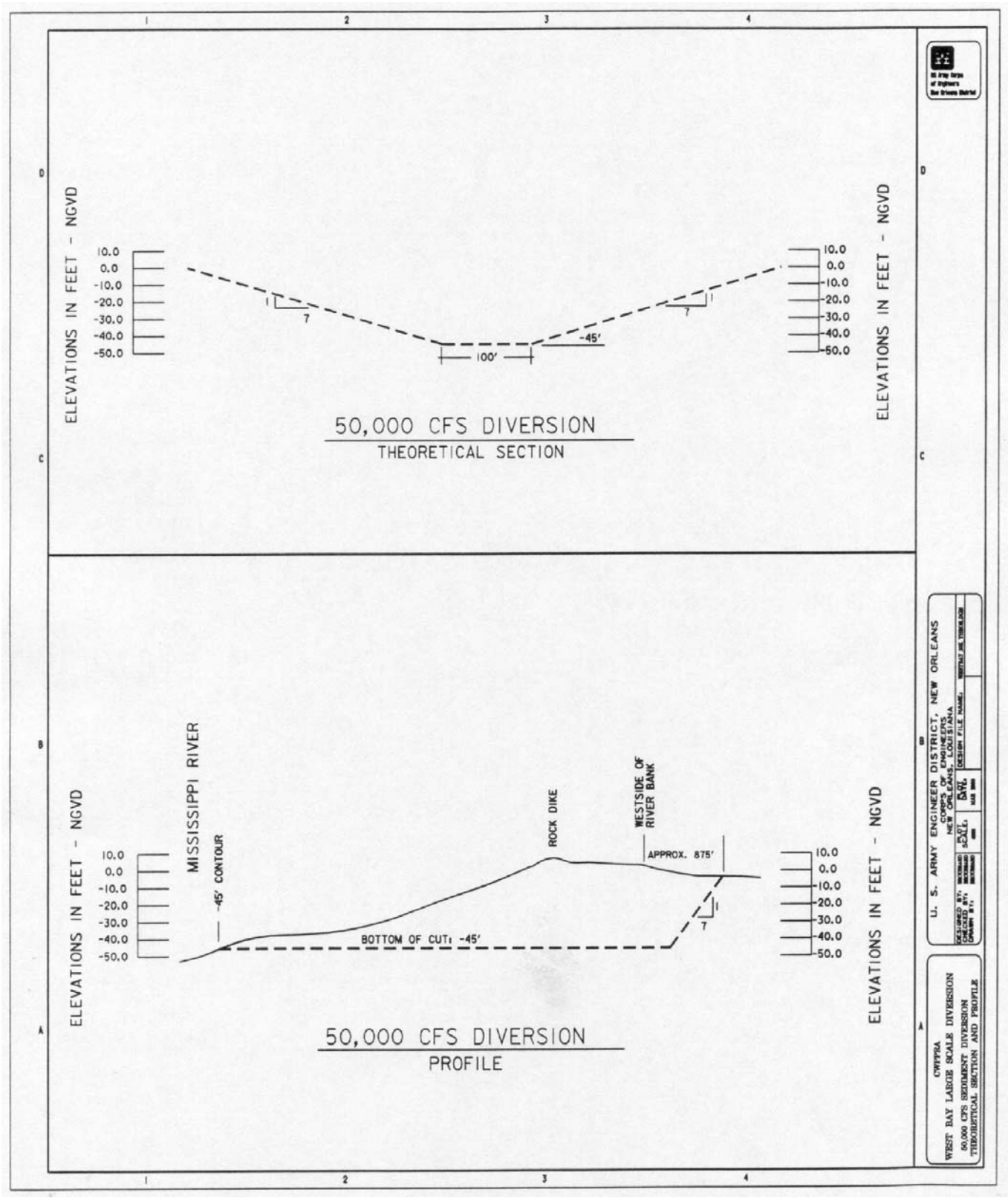


Figure 6. SRED Design.

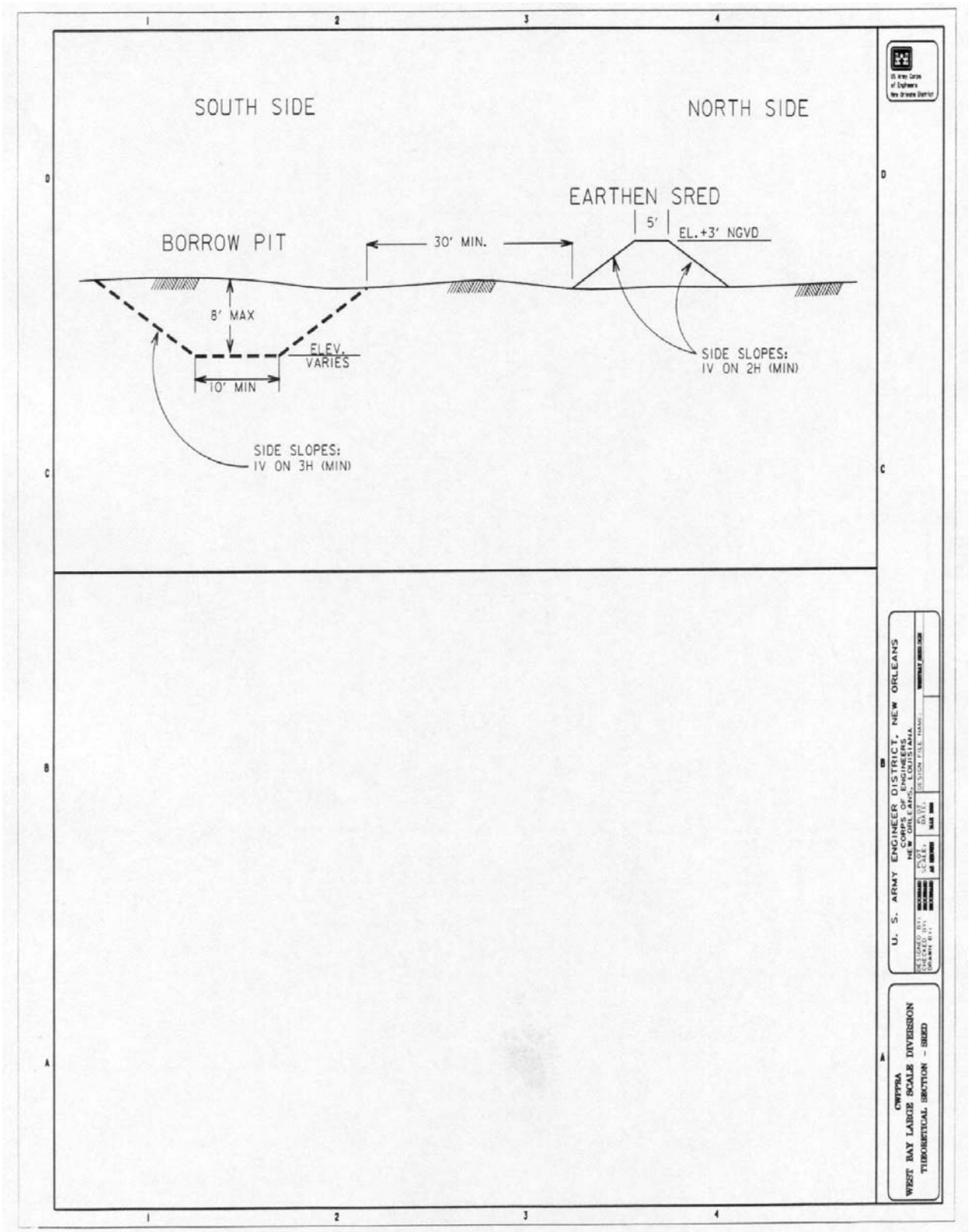


Figure 7. Potential SRED Location.

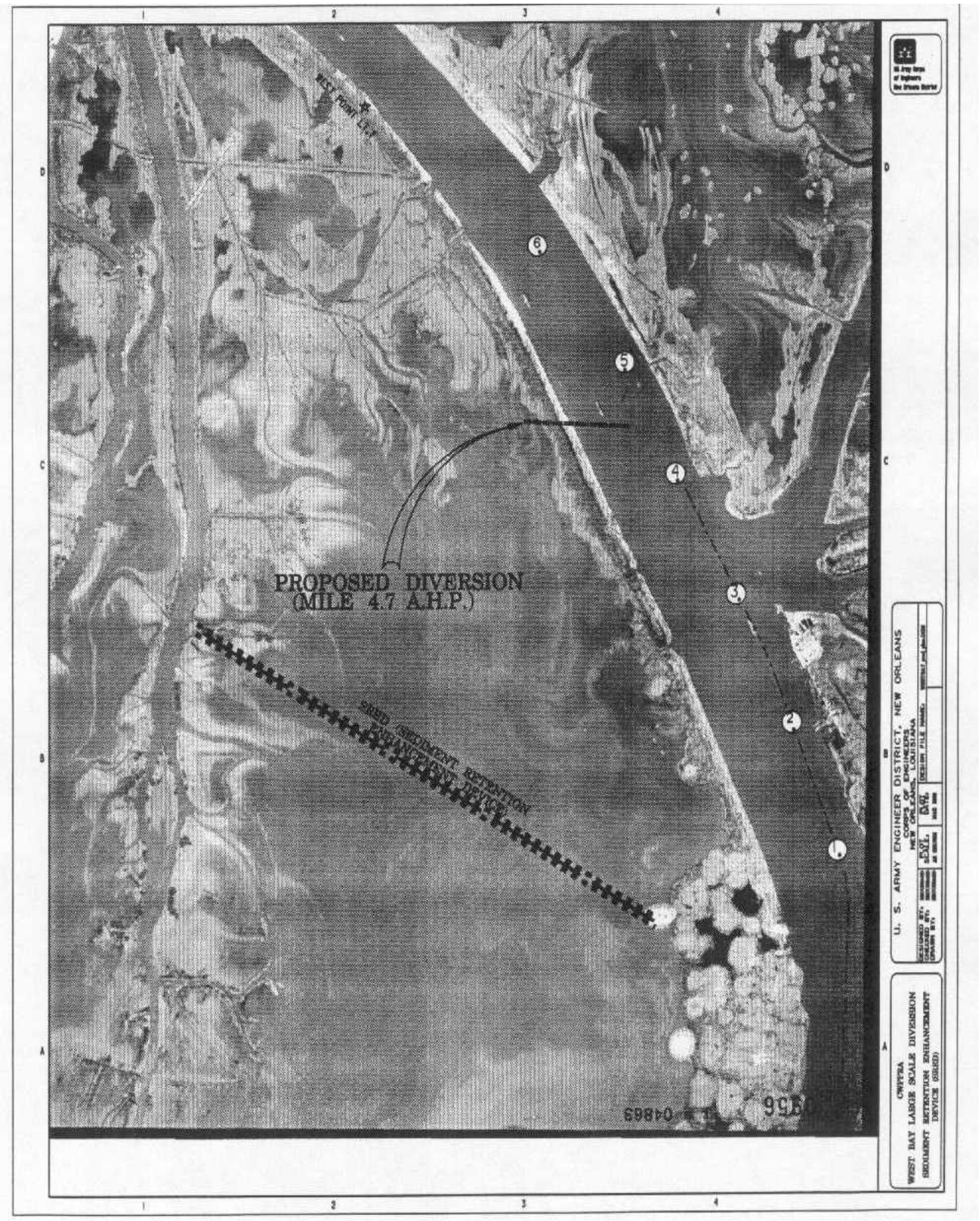


Figure 8. Location of Pointe a la Hache and Boothville.

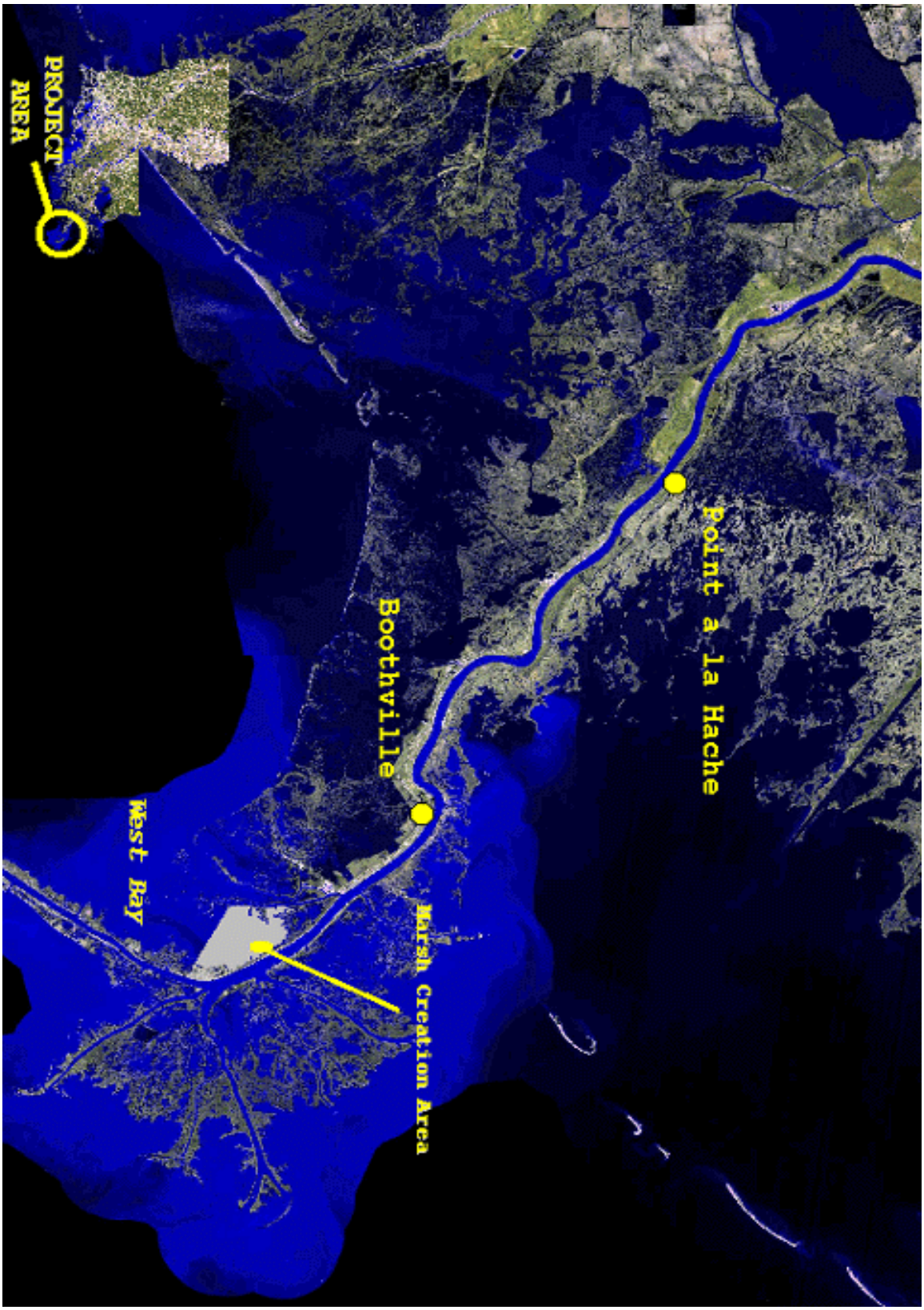


Figure 9. Pipeline Relocation Plans – Plan View of Location with Access Routes from Grand Pass.

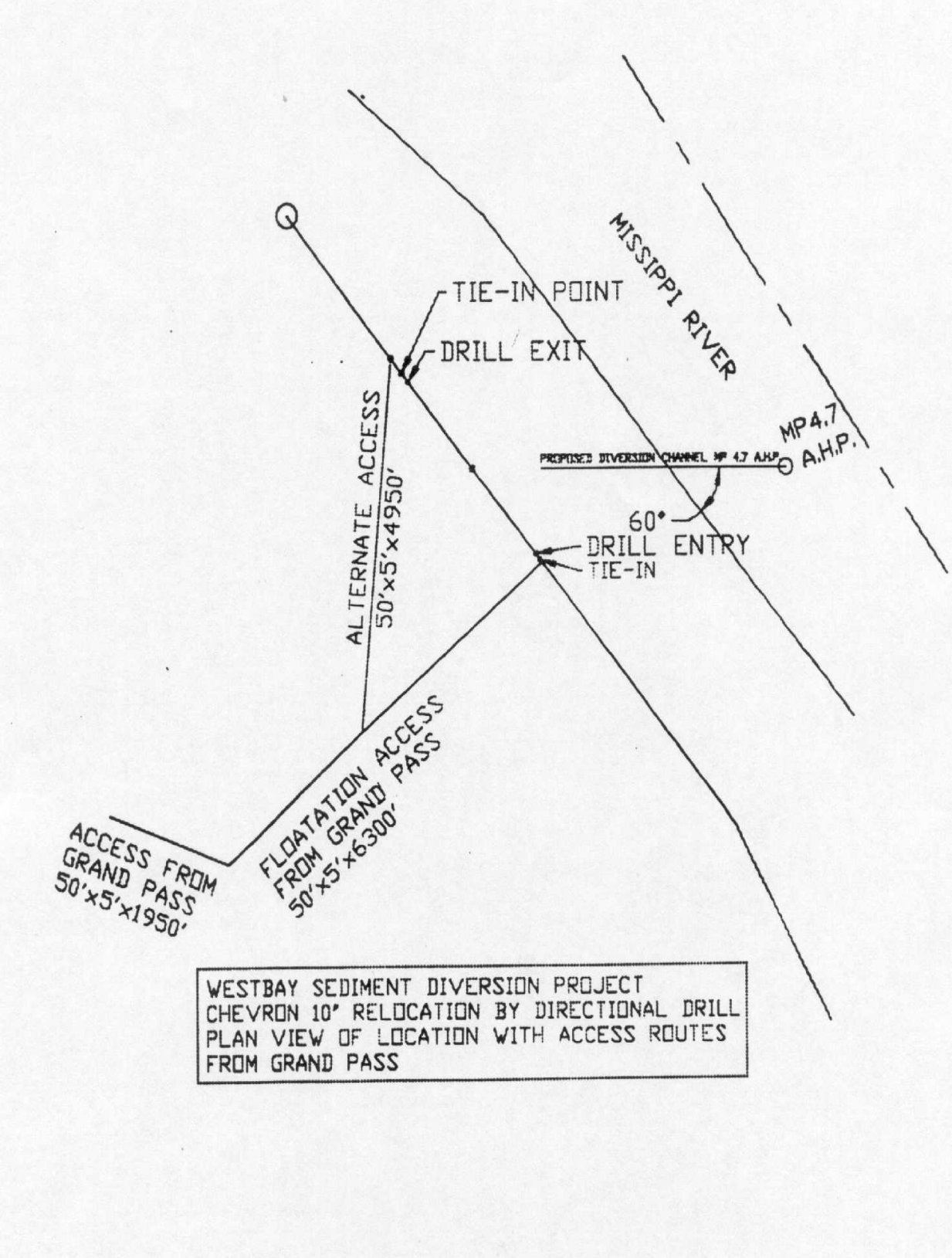


Figure 10. Pipeline Relocation Plans – Work Areas.

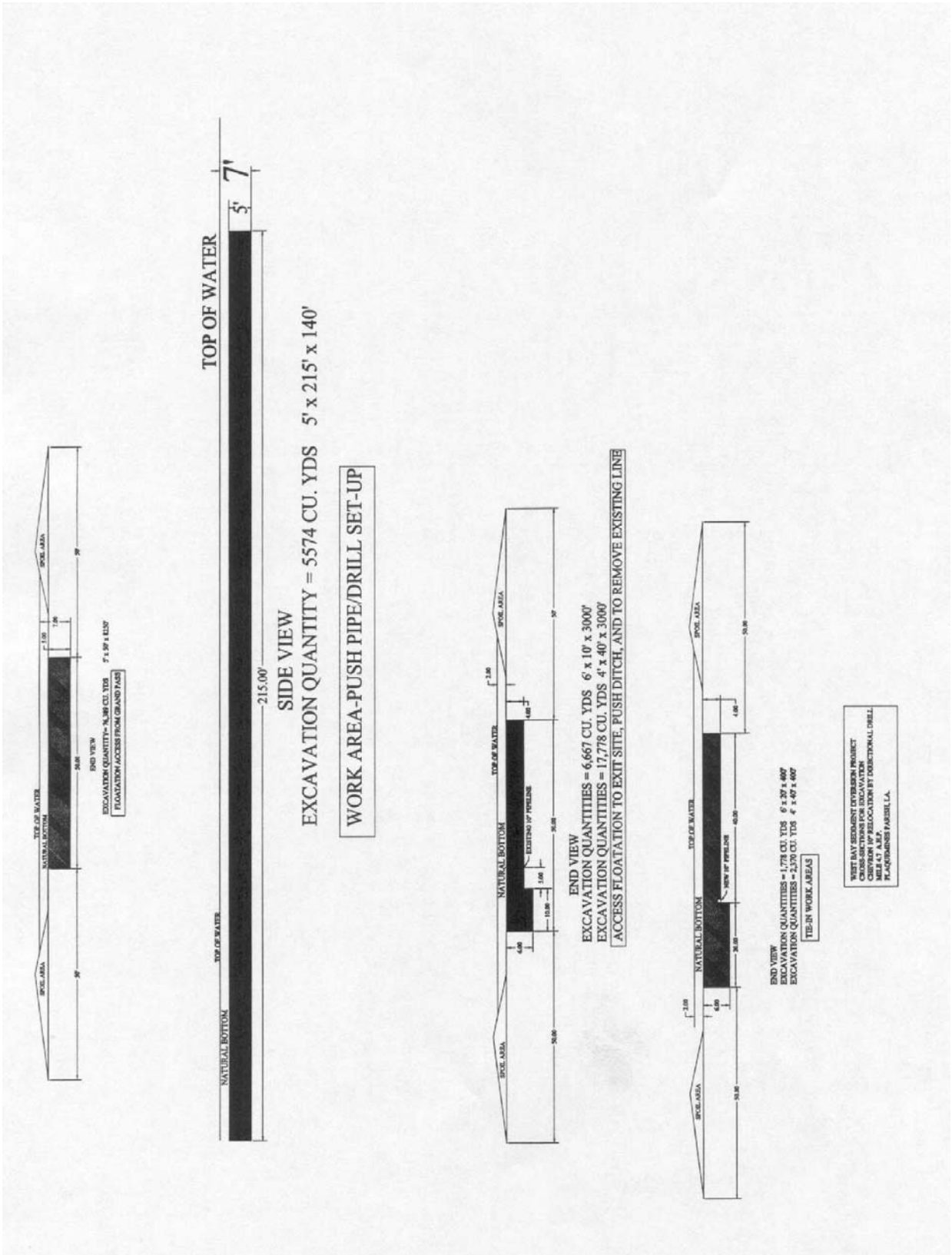


Figure 11. Pipeline Relocation Plans – Work Area-Push Pipe/Drill Set-Up.

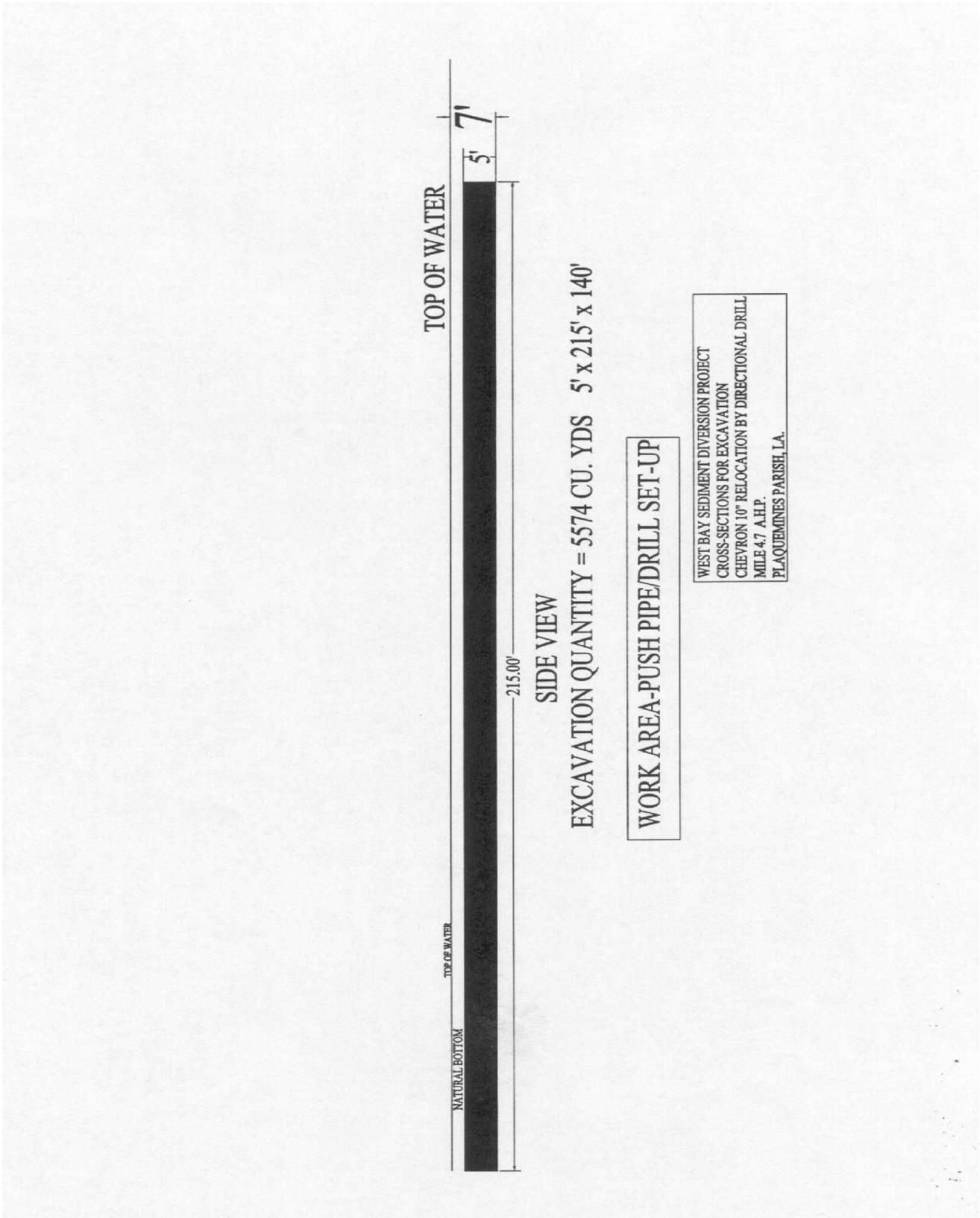


Figure 12. Pipeline Relocation Plans - Access.

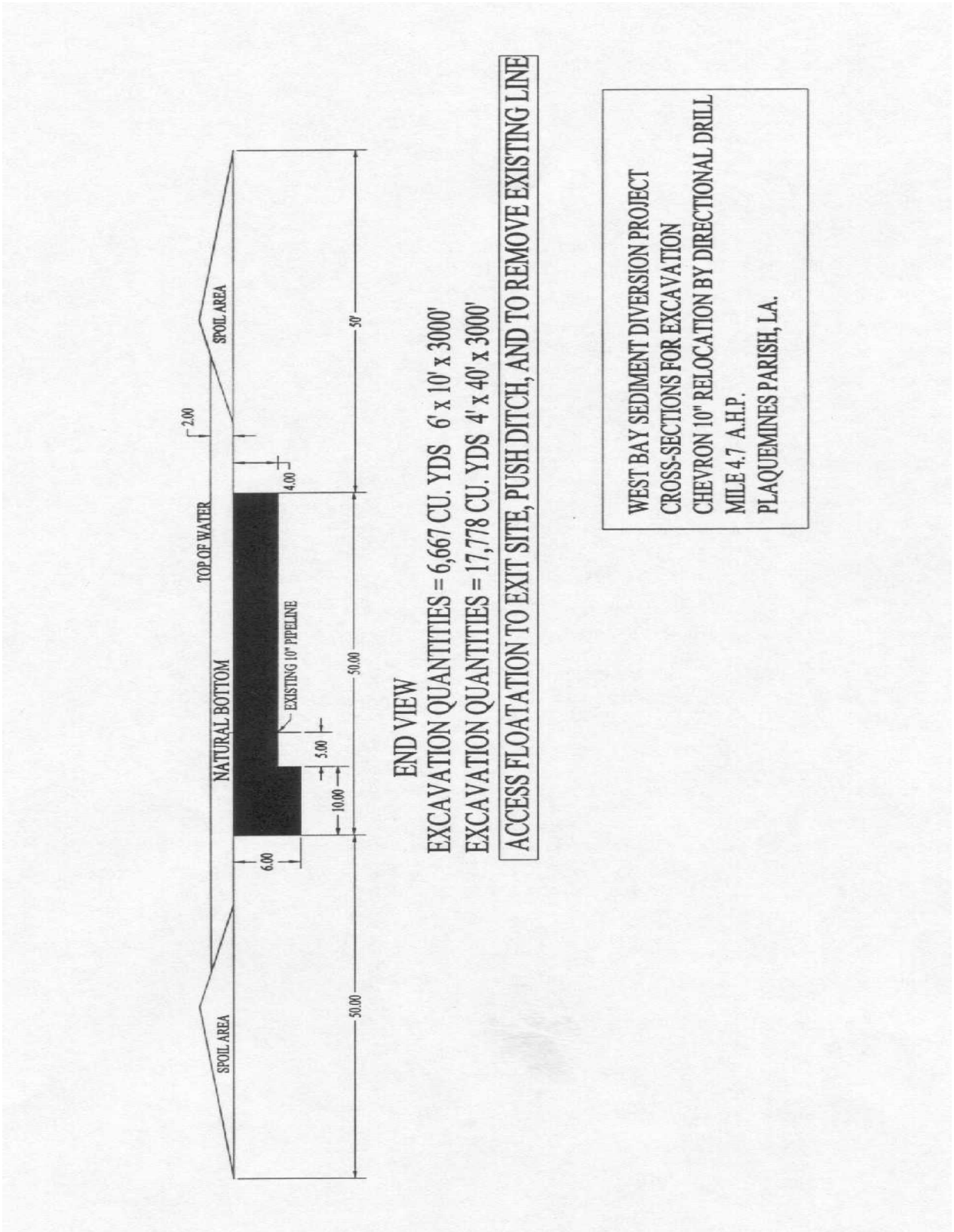


Figure 13. Pipeline Relocation Plans – Tie-in Work Areas.

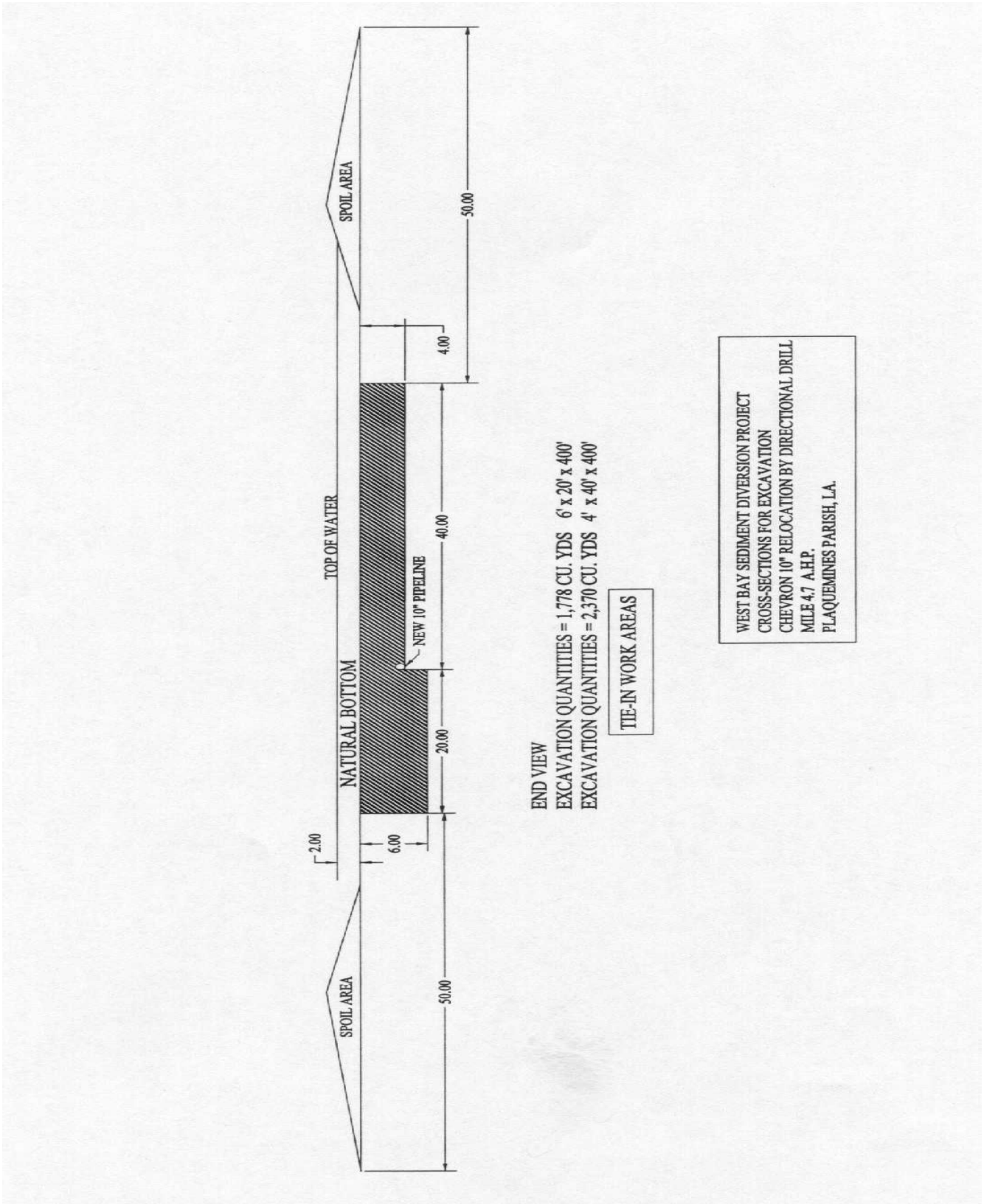


Figure 14. Pipeline Relocation Plans – Temporary or False Ditch.

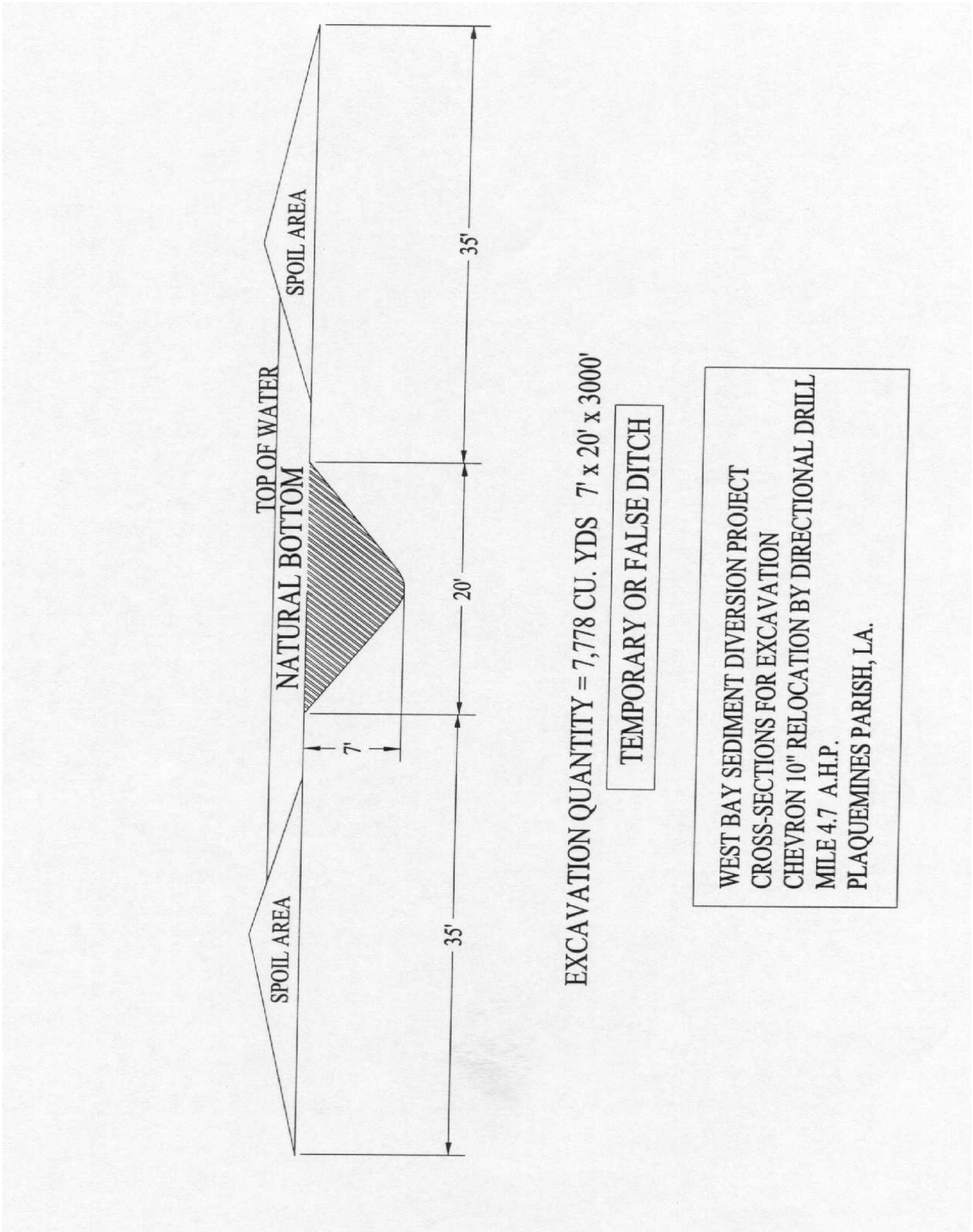


Figure 15. Borrow Areas for Contingency Plan Closure.

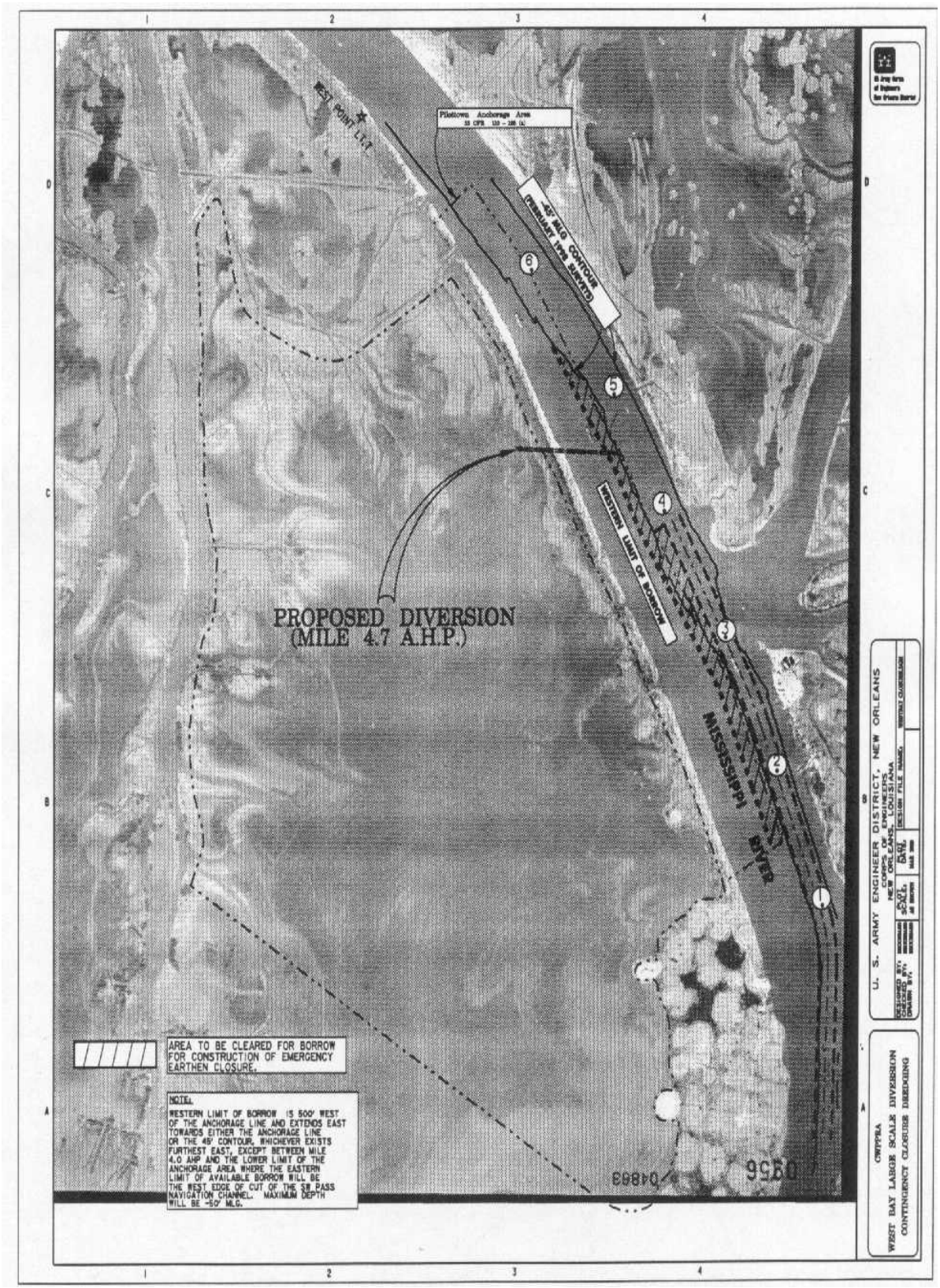


Figure 16. Anchorage Area.

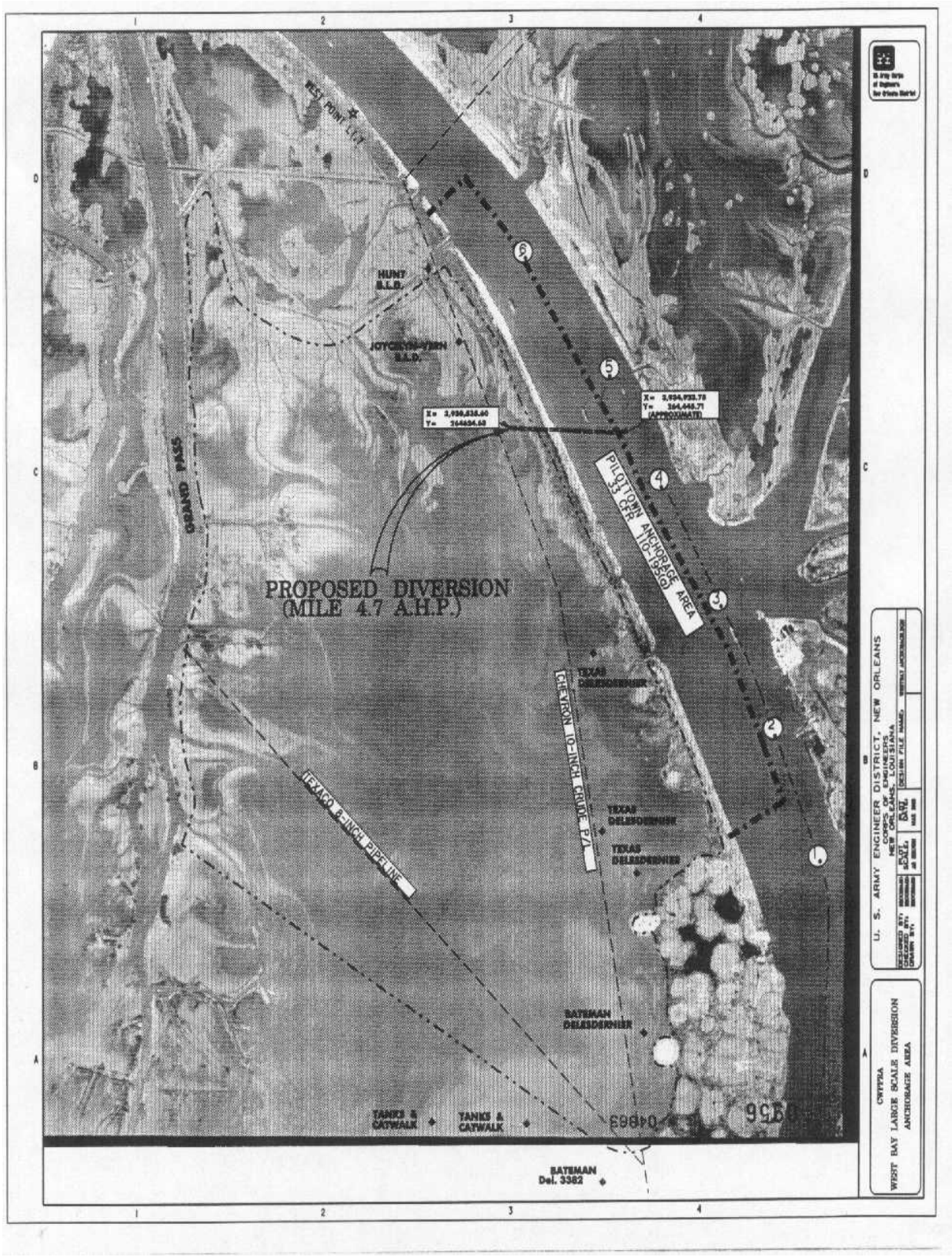


Figure 17. Cumulative Effects Assessment Impact Area.

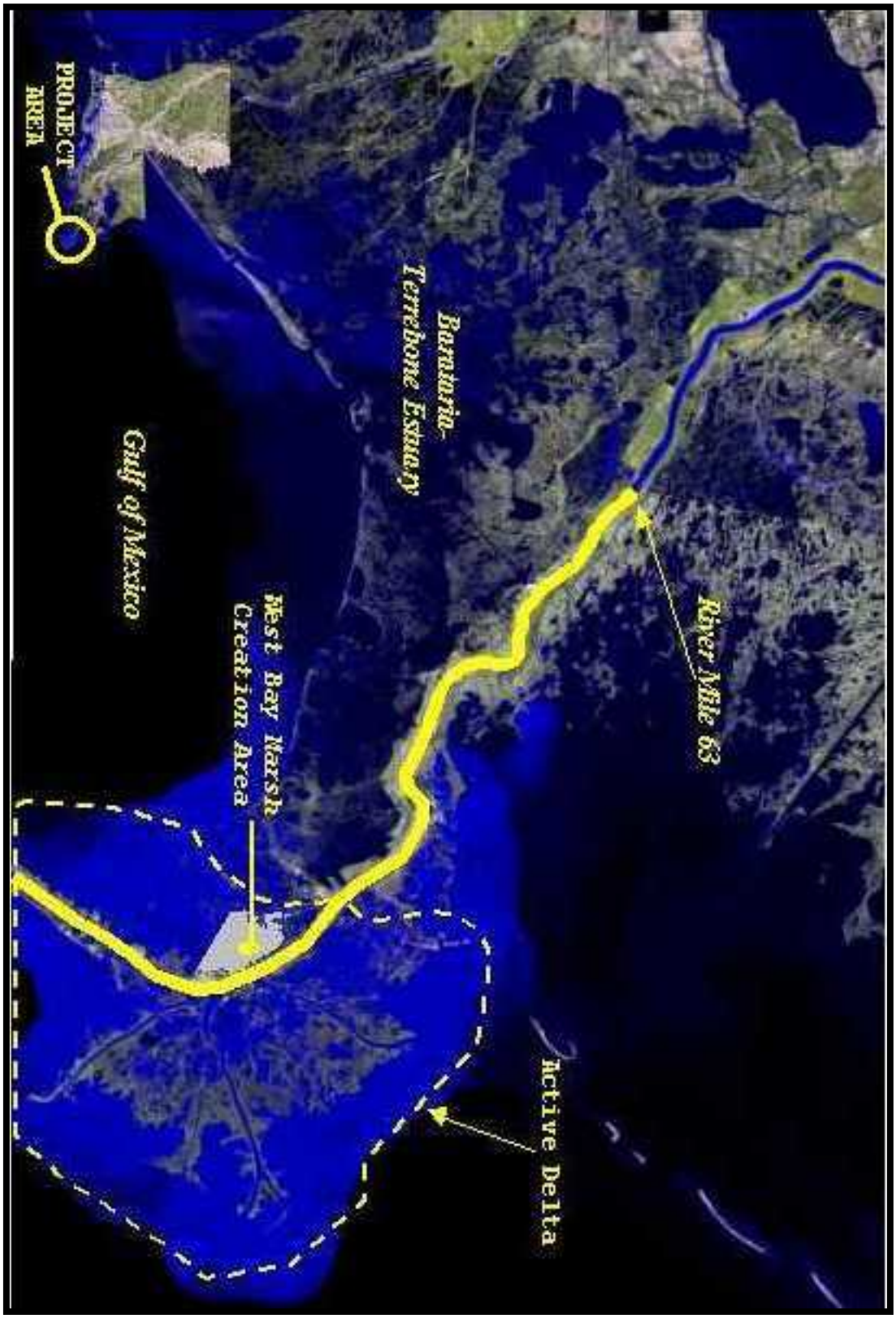
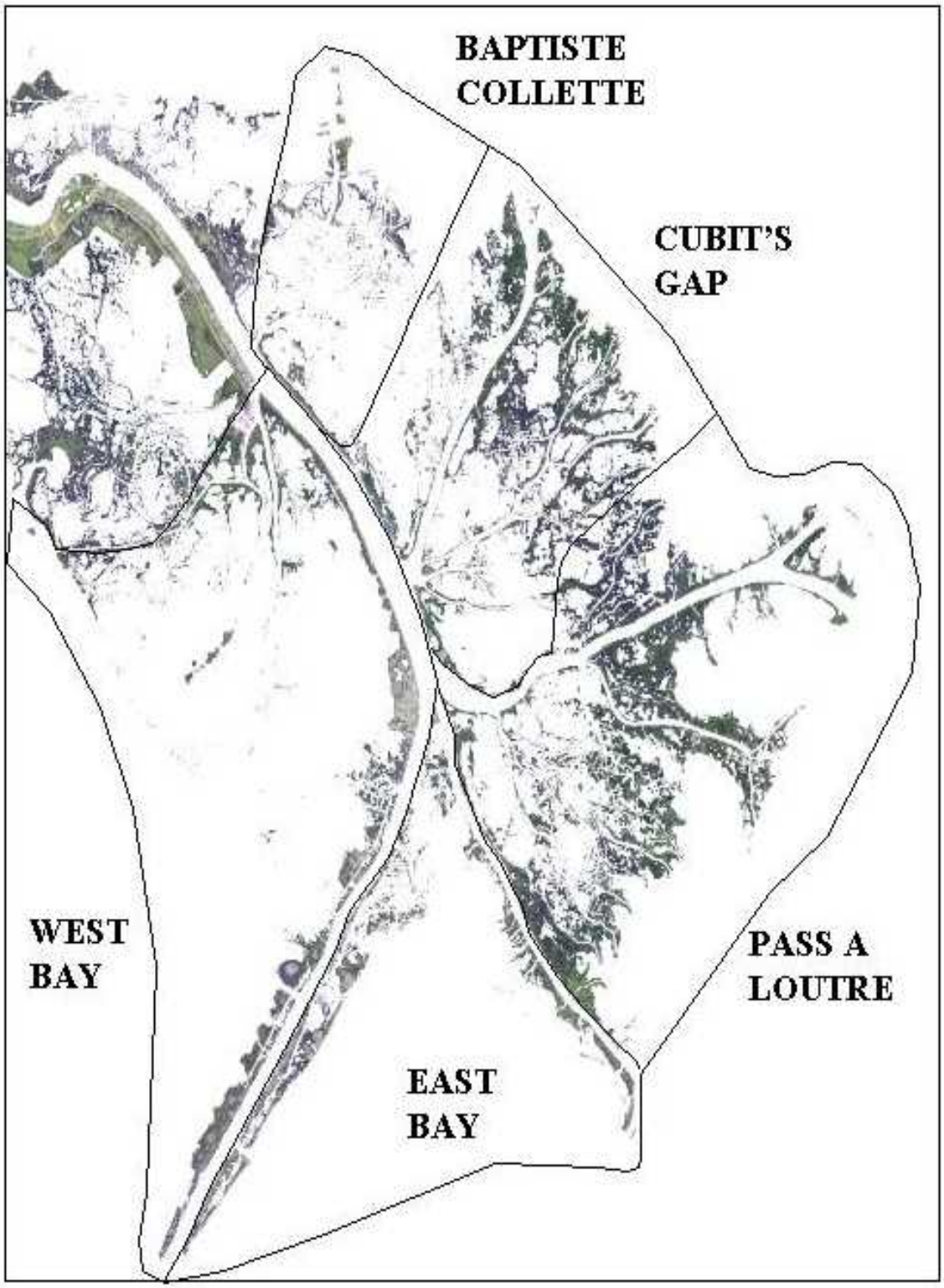


Figure 18. Alternative Diversion Sites (West Bay Included).

Figure 19. Coast 2050 Active Delta Management Units.



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SUITE 320
LAFAYETTE, LA 70503

9. APPENDIX

LIST OF APPENDICES

Appendix	Title
A	Monitoring Plan
B	Natural Resources
C	Cultural Resources
D	Public Comments and Responses
E	HTRW Analysis

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Appendix A

Monitoring Plan

Phase 1 Monitoring Plan (20,000 cfs diversion):

The initial phase of the monitoring program, as a minimum, will last approximately 1 year and consist of:

1) Discharge and suspended sediment measurements on the Mississippi River above and below the diversion. At least two measurements will be taken before the opening; and, then measurements will be taken twice a month after the opening.

2) Concurrent discharge and suspended sediment measurements will be taken in the diversion.

3) A hydrographic survey of the diversion will be taken once a month.

4) Bathymetric/hydrographic surveys, consisting of five ranges across the receiving waters, will be taken three times.

5) Aerial photography to be taken prior to construction and at 4 month intervals following construction for the duration of the prototype test.

Phase 2 Monitoring Plan (50,000 cfs diversion):

Subsequent monitoring of the diversion in Phase 2 will consist of the same methods as employed during Phase 1 monitoring. The duration of Phase 2 monitoring will last approximately 1 year.

Diversion Contingency Closure:
Borrow material, excavated by a hydraulic cutterhead pipeline dredge, would be obtained from the Mississippi River and pumped into the diversion to an elevation approximately +5.0 feet NGVD over a crown width of approximately 50 feet and extend 200 feet into the marsh creation area. The closure would be constructed with slopes of 1V on 25H along each side of the closure parallel to the river bank.

Appendix B

Natural Resources

Section 1

Environmental Compliance

Environmental Compliance

Legislation	Compliance Document	Status
Clean Air Act	EIS	Complete
Clean Water Act	404(b)(1) evaluation	Complete
	State Water Quality Certification	Complete
Endangered Species Act	Endangered Species Assessment	Complete
US Fish & Wildlife Coordination Act*	EIS	Complete
National Environmental Policy Act	EIS	Complete
National Historic Preservation Act	EIS	Complete
River and Harbor Act	EIS	Complete
Wild & Scenic Rivers Act	EIS	Complete
Water Resources Development Act	EIS	Complete
LA Air Control Law	EIS	Complete
LA Scenic Streams Act	EIS	Complete
LA Coastal Zone Management Act	Consistency Determination	Complete
Marine Protection, Research, & Sanctuary Act	EIS	Complete
Land & Water Conservation Fund Act	EIS	Complete
Estuary Protection Act	EIS	Complete
Preservation of Historic & Archeological Data Act	EIS	Complete

* Louisiana Coastal Wetlands Restoration Plan, US Fish and Wildlife Service Coordination Act Letter, Exhibit 7 (November 1993).

Section 2

404(b)(1) evaluation

Delta Area
Tiger Pass Marsh Creation
Mississippi River Sediment Diversions

The following short form 404(b)(1) evaluation follows the format designed by the Office of the Chief of Engineers, (OCE). As a measure to avoid unnecessary paperwork and to streamline regulation procedures while fulfilling the spirit and intent of environmental statutes, New Orleans District is using this format for all proposed project elements requiring 404 evaluation, but involving no significant impact.

PROJECT DESCRIPTION. The proposed project consists of depositing dredged material excavated from the degradation of existing Mississippi River banks at two locations, RM 7.5L and 4.7R Above Head of Passes (AHP) in Plaquemines Parish (Figure 1). Approximately 1,690,000 cubic yards would be deposited by hydraulic dredge at each site in shallow, open water. At site RM 4.7 AHP, 95 acres of marsh would be created by dredged material placement. At site RM 7.5L AHP, 105 acres of marsh would be created. Disposal material would be placed to an elevation of approximately +4.5 feet National Geodetic Vertical Datum (NGVD), with a final design elevation of +1.5-2.5 feet NGVD. A portion of the dredged material at each site would be deposited in the immediate vicinity of the bank cut to maintain the stability of the proposed sediment diversion cut. Water depth at disposal sites is not greater than 5 feet.

1. **Review of Compliance (§230.10 (a)-(d)).**

	Preliminary	Final
A review of this project indicates that:		
a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and information gathered for environmental assessment alternative);	(YES) NO	(YES) NO
b. The activity does not appear to: (1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the Clean Water Act; (2) jeopardize the existence of Federally listed endangered or threatened species or their habitat; and (3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies);	(YES) NO	(YES) NO
c. The activity will not cause or contribute to significant degradation of waters of the United States including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values (if no, see section 2);	(YES) NO	(YES) NO
d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5).	(YES) NO	(YES) NO

2. **Technical Evaluation Factors (Subparts C-F).**

	N/A	Not Significant	Significant
a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).			
(1) Substrate impacts.		X	
(2) Suspended particulates/turbidity impacts.		X	
(3) Water column impacts.		X	
(4) Alteration of current patterns and water circulation.		X	
(5) Alteration of normal water fluctuations/ hydroperiod.		X	
(6) Alteration of salinity gradients.		X	

N/A Not Significant Significant

b. Biological Characteristics of the Aquatic Ecosystem (Subpart B).

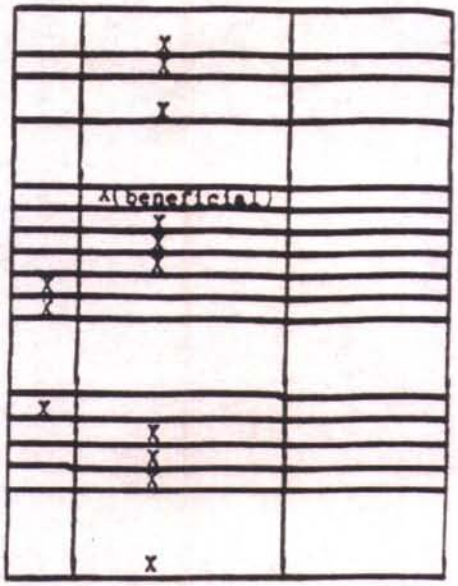
(1) Effect on threatened/endangered species and their habitat.
(2) Effect on the aquatic food web.
(3) Effect on other wildlife (mammals, birds, reptiles, and amphibians.

c. Special Aquatic Sites (Subpart E).

(1) Sanctuaries and refuges.
(2) Wetlands.
(3) Mud flats.
(4) Vegetated shallows.
(5) Coral reefs.
(6) Riffle and pool complexes.

d. Human Use Characteristics (Subpart F).

(1) Effects on municipal and private water supplies.
(2) Recreational and commercial fisheries impacts.
(3) Effects on water-related recreation.
(4) Esthetic impacts.
(5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves.



Remarks. Where a check is placed under the significant category, preparer has attached explanation.

3. Evaluation of Dredged or Fill Material (Subpart G).

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material.

(1) Physical characteristics	X
(2) Hydrography in relation to known or anticipated sources of contaminants	X
(3) Results from previous testing of the material or similar material in the vicinity of the project	X
(4) Known, significant sources of persistent pesticides from land runoff or percolation	—
(5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances	—
(6) Other public records of significant introduction of contaminants from industries, municipalities, or other sources	X
(7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	—
(8) Other sources (specify)	X

Appropriate references:

(1) U.S. Army Corps of Engineers. 1983. Bioavailability and Bioaccumulation Potential of Love: Mississippi River Delta Sediments Under Upland, Intertidal and Subaqueous Disposal. DACW29-82-D-0187, No. 12. Unpublished Report, U.S. Army Engineer District, New Orleans, L
(2) Section 404(b)(1) Evaluation of the Venice, LA to the Gulf of Mexico Reach for the Mississippi River Ship Channel, Gulf to Baton Rouge (Deep-Draft) Project.

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or the material meets the testing exclusion criteria.

YES NO

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

(1) Depth of water at disposal site .....
(2) Current velocity, direction, and variability at disposal site .....
(3) Degree of turbulence .....
(4) Water column stratification .....
(5) Discharge vessel speed and direction .....
(6) Rate of discharge .....
(7) Dredged material characteristics (constituents, amount, and type of material, settling velocities .....
(8) Number of discharges per unit of time .....
(9) Other factors affecting rates and patterns of mixing (specify) .....

Appropriate references:

1) U.S. Army Corps of Engineers. 1981. Mississippi River Channel Enlargement and iton Rouge to the Gulf Supplement #2: Marsh Investigations. Delivery Order \CW29-82-D-0187, No. 5. Unpublished Final Report. U.S. Army Engineer District, iw Orleans, LA.
2) Section 404(b)(1) Evaluation of the Venice, LA to the Gulf of Mexico Reach for ie Mississippi River Ship Channel, Gulf to Baton-Rouge (Deep-Draft) Project.

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable.

(YES) NO

5. Actions to Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of the recommendations of §230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

(YES) NO

Actions taken:

1) Material will be placed at appropriate elevations to create marsh.
2) Available data shows material not to be a carrier of contaminants.

6. Factual Determination (§230.11).

A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge as related to:

a. Physical substrate at the disposal site (review sections 2a, 3, 4, and 5 above) (YES) NO

b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5) (YES) NO

c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5) (YES) NO

d. Contaminant availability (review sections 2a, 3, and 4). (YES) NO

e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5). (YES) NO

f. Disposal sites (review sections 2, 4, and 5). (YES) NO

g. Cumulative impact on the aquatic ecosystem. (YES) NO

h. Secondary impacts on the aquatic ecosystem. (YES) NO

7. Evaluation Responsibility.

a. This evaluation was prepared by: Mr. Bill Hicks & Dr. David Vigh

Position: Hydraulic Engineer & Biologist

Date: 12/15/89

b. This evaluation was reviewed by: Mr. Ken Froehlich; Mrs. Sue Hawes

Position: Environmental Resources Specialist; C/Environmental Section

Date: 1/19/90

8. Findings.

a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines X

b. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following conditions ..... ___

c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reason(s):

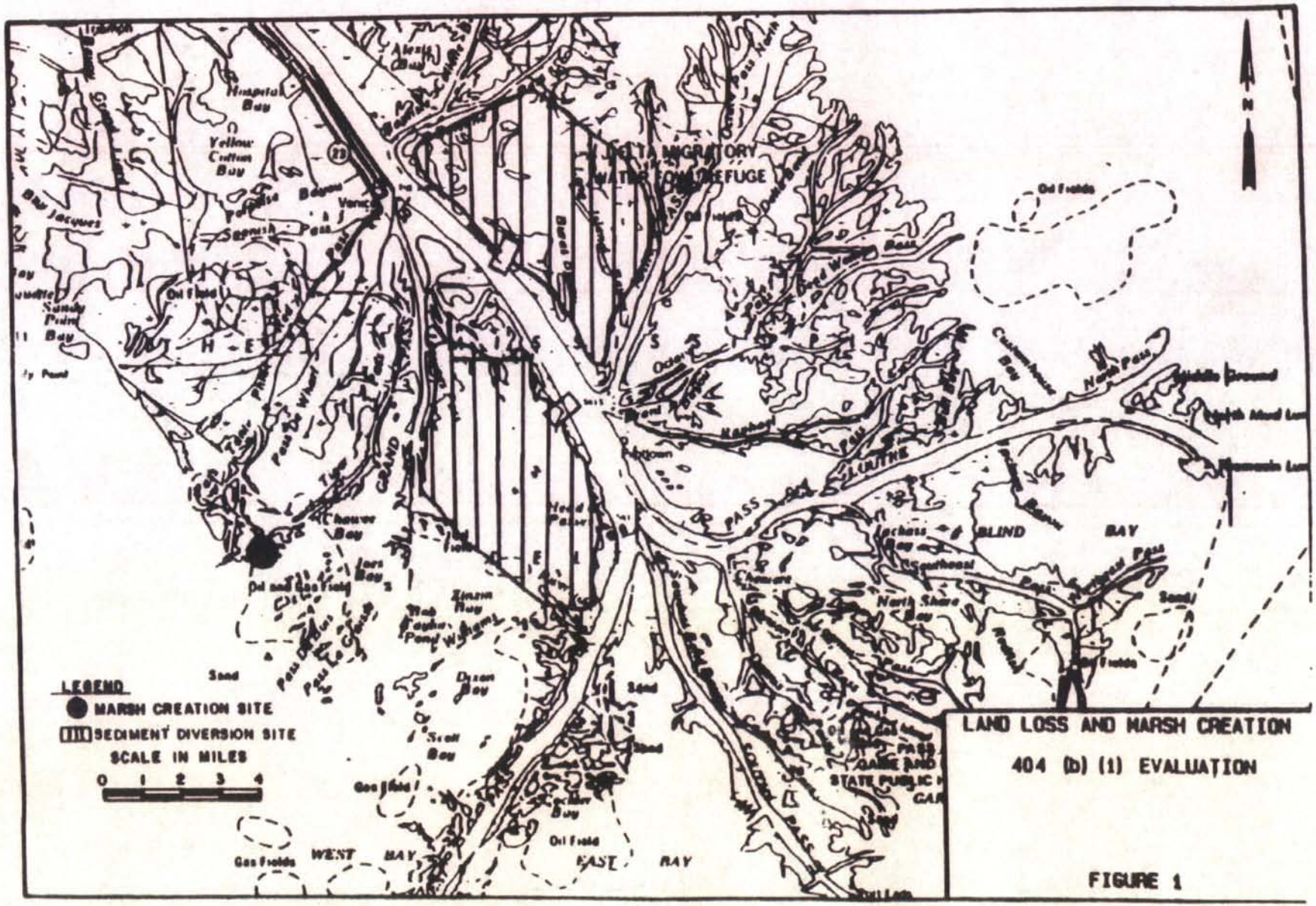
(1) There is a less damaging practicable alternative ..... ___
(2) The proposed discharge will result in significant degradation of the aquatic ecosystem ..... ___
(3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem ..... ___

Date: 7-17-90

Richard V. Gorski
Colonel, Corps of Engineers
District Engineer

PROJECT DESCRIPTION

The sediment diversion site at RM 4.7R AHP would create approximately 11,557 acres over the 50 year project life. The site at RM 7.5L AHP would create approximately 10,237 acres over the 50 year project life. Dredged material obtained from routine maintenance dredging in Tiger Pass (Figure 1) would be available for marsh creation. Approximately 1,097,000 cy of material would be deposited by hydraulic dredge in a shallow, open water site during a dredging cycle of 2-3 years. Approximately 85 acres of marsh would be created during each dredging cycle, with a total projection of 300 acres being created during the 50-year project life. Disposal material initially would be placed to an elevation of +4.5 feet NGVD, with a final design elevation of +1.5-2.5 feet NGVD. Water depth at the disposal site is not greater than 5 feet.


LEGEND
MARSH CREATION SITE
SEDIMENT DIVERSION SITE
SCALE IN MILES
0 1 2 3 4
DELTA MIGRATORY WATERFOWL REFUGE
BLIND BAY
WEST BAY
EAST BAY
LAND LOSS AND MARSH CREATION
404 (b) (1) EVALUATION
FIGURE 1

Section 3

Water Quality Certification

State of Louisiana

Department of Environmental Quality

BUDDY ROEMER
Governor

PAUL TEMPLET
Secretary

AUG 1 0 1990

WQC 900620-12

U.S. Army Corps of Engineers
New Orleans District
P. O. Box 60267
New Orleans, LA 70160
Attn: CELMN-PD-RE

Attention: Mr. Ken Froehlich

RE: Proposal to deposit degraded Mississippi River bank material at two locations in Plaquemines Parish to create vegetated wetlands to offset coastal land loss.

Gentlemen:

This is to acknowledge receipt of "Proof of Publication" of public notice, above reference, forwarded to you with our letter dated July 9, 1990 and to advise that no complaints relative to this project have been received by this agency within the ten day period stipulated in the notice.

It is our opinion that your proposed project will not violate water quality standards of the State of Louisiana, therefore, we offer no objection to this project provided that turbidity during dredging in waters of the State is kept to a practicable minimum.

In accordance with statutory authority contained in the Louisiana Revised Statutes of 1950, Title 30, Chapter 11, Part IV, Section 2074 A(3) and provisions of Section 401 of the Clean Water Act (P.L. 95-217), the Office of Water Resources certifies that it is reasonable to expect that water quality standards of Louisiana provided for under Section 303 of P.L. 95-217 will not be violated.

Sincerely,

Marion T. Fannaly
Administrator

MTF:LW:JL

cc: U. S. Army Corps of Engineers
Coastal Management Division

OFFICE OF WATER RESOURCES P.O. BOX 44091 BATON ROUGE, LOUISIANA 70804

Section 4

Endangered Species Coordination

4-7-01-153

FACSIMILE TRANSMITTAL HEADER SHEET

For use of this form, see AR 25-11; the proponent agency is ODISC4

COMMAND/ OFFICE	NAME/ OFFICE SYMBOL	OFFICE TELEPHONE NO. (AUTOVON/Comm.)	FAX NO. (AUTOVON/Comm.)
FROM: USACE/ NEW ORLEANS DISTRICT	SEAN MICKAL/ CEMVN-PM-RS	504 862-2319	504 862-2572
TO: USFWS/ LAFAYETTE	DEBORAH FULLER	337 291-3124	337 291-3139

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		3	30 AUG 01			

REMARKS
RE-INITIATION OF THREATENED/ENDANGERED SPECIES CONSULTATION FOR THE CWPPRA, WEST BAY SEDIMENT DIVERSION, PROJECT.

Space Below For Communications Center Use Only

DA FORM 3918-R, JUL 90 DA FORM 3918-R, AUG 72 IS OBSOLETE USAPPC V2.10

CONSTRUCTION OF THE PROPOSED ACTION HAS NOT COMMENCED SINCE THE EAST E/TS CONSULTATION WAS INITIATED WITH YOUR AGENCY. REFERENCE AUGUST 10, 1992, USFWS CORRESPONDENCE REGARDING INITIAL CONSULTATION FOR PROPOSED ACTION AND NOVEMBER 8, 1999, USFWS FAX TO NEW ORLEANS DISTRICT REGARDING RE-INITIATION OF E/TS CONSULTATION (BOTH ATTACHED). THE PROPOSED ACTION REMAINS UNCHANGED FROM THE ORIGINAL CONSULTATION REQUESTS LISTED.

SINCERELY,

SEAN MICKAL
3PMD, ECOLOGICAL PLANNING
AND RESTORATION SECTION
USACE, NEW ORLEANS DISTRICT

THE PROPOSED ACTIVITIES WOULD NOT SIGNIFICANTLY AFFECT LISTED OR PROPOSED THREATENED OR ENDANGERED SPECIES

Debra A Fuller

ENDANGERED SPECIES COORDINATOR
U.S. FISH & WILDLIFE SERVICE
LAFAYETTE, LOUISIANA
DATE: August 29, 2001

United States Department of the Interior
FISH AND WILDLIFE SERVICE
825 Kaliste Saloom Road
Brandywine Bldg. II, Suite 102
Lafayette, Louisiana 70508

August 10, 1992

Mr. R.H. Schroeder, Jr.
Chief, Planning Division
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160

Dear Mr. Schroeder:

Please refer to your July 30, 1992, letter and attached Biological Assessment (BA) for the Land Loss and Marsh Creation Project, St. Bernard, Plaquemines, and Jefferson Parishes, Louisiana. The proposed work includes dredging small- and large-scale sediment diversions in the Mississippi River delta to create marshes. The following comments are provided in accordance with provisions of the Endangered Species Act of 1973 (as amended).

The Service concurs with your finding that the proposed project will not adversely affect any threatened or endangered species. Should the scope or location of the project change, or if project construction has not commenced within one year, the Corps should reinitiate consultation with the Fish and Wildlife Service. A phone call to this office will suffice for follow-up consultation.

Thank you for the opportunity to review and comment on the project BA. If you require further information, please contact Jane Ledwin of this office.

Sincerely yours,

David W. Frugé
Field Supervisor

BIOLOGICAL ASSESSMENT OF IMPACTS TO BROWN PELICANS, BALD EAGLES, PIPING PLOVERS, AND ARTIC PEREGRINE FALCONS BY THE PROPOSED LAND LOSS AND MARSH CREATION, ST. BERNARD, PLAQUEMINES, AND JEFFERSON PARISHES, LOUISIANA PROJECT

Introduction

This assessment addresses the threatened and endangered species under purview of the US Fish and Wildlife Service (FWS) that may be affected by the Land Loss and Marsh Creation, St. Bernard, Plaquemines, and Jefferson Parishes, Louisiana project.

Impacts of the project are those associated with use of dredged material and uncontrolled small-scale and large-scale sediment diversions in the Mississippi River delta to create marshes. This assessment is the result of reviewing published and unpublished literature.

In response to a request from the New Orleans District, Corps of Engineers, the FWS by letter dated June 22, 1992 identified four threatened and endangered species that may occur in the vicinity of the proposed project. These species are the endangered brown pelican and bald eagle, and the threatened piping plover and Artic peregrine falcon. The FWS mentioned that threatened or endangered sea turtles may also be present in the project area, and recommended contacting the National Marine Fisheries Service (NMFS). A Separate Biological Assessment of the proposed project impacts to sea turtles and marine mammals identified by the NMFS will be prepared and included in the Environmental Impact Statement.

Description of Tentatively Selected Plan

The proposed project involves marsh creation through use of dredged material and small-scale and large-scale diversions of sediment-laden Mississippi River waters.

Tiger Pass in the Mississippi River Delta from mile 11.9 to mile 14.0 would be dredged once every two and one-half to three years. Approximately 1,097,000 cubic yards would be removed from within the jetty and bar during each dredging cycle. The dredged material would be placed inland of the shoreline, in open water, on both sides of Tiger Pass. The material would be used to reestablish marsh lost to subsidence and erosion.

Small shallow crevasses in Pass a Loutre, South Pass, Main Pass, Grand Pass, Octave Pass, and Raphael Pass would divert Mississippi River water. These small-scale uncontrolled sediment diversions

would allow small delta splays to develop in adjacent shallow water areas. Over a 50-year period ten crevasses could be constructed in each of the six passes. Only one crevasse would be operational in each pass at any time. The present flow distribution among the passes would be preserved by limiting discharges through the crevasses to ten percent of the average flow in that pass. The design length of the conveyance channel would vary from 160 to 1,200 feet depending upon the specific location and bank condition at the time of construction.

A large-scale uncontrolled sediment diversion would be constructed along the Mississippi River at mile 7.5L AHP. The sediment diversion conveyance channel would be dredged to a theoretical cross section of -45 feet NGVD, a bottom width of 10 feet and side slopes 1V on 7H, over specified lengths. The excavated material would be transported and placed adjacent to the existing river banks to produce marsh. To enhance development of marsh within the receiving waters, earthen dikes would be constructed within these waters to assist in retaining discharged sediments. To help monitor optimal performance of the large-scale sediment diversion, and assist in extending the growth of the delta, additional bifurcations would be dredged in the new delta. This crevasse would be capable of diverting 50,000 cfs.

Alternatives include dredged material deposition along Barataria Bay Waterway and a large-scale diversion of Mississippi River water at mile 4.7R AHP. These two alternatives have been approved for construction funding through the Coastal Wetlands, Planning, Protection, and Restoration Act (CWPPRA) and are not recommended components of this Tentatively Selected Plan.

BROWN PELICANS (Pelecanus occidentalis)

Brown pelicans, a gregarious species, feed by plunge-diving, primarily in near-shore, shallow, coastal waters (0 - 25 m) (Williams, 1980). The majority (90 - 95 percent) of the diet of birds examined from South Carolina to Texas is menhaden (Clapp et al., 1982).

In Louisiana, brown pelicans nest colonially on the ground or in mangroves on islands inaccessible to mammalian predators and where they are also removed from human disturbance (Hingten et al., 1985). Their exposed nests are vulnerable to human visitation, as well as other disturbances that disrupt nesting behavior. If adults leave the nest, eggs or young are vulnerable to predators and temperature extremes. Human activity within 100 m (330 feet) has been reported to disturb a colony; even a single event may disrupt reproduction (Schreiber, 1979). Reproduction is also related to adult foraging success, with success generally related to nestling and fledgling survival rather than to clutch size or hatching success (Hingten et al., 1985). Pelican reproduction rates, based on fledging rates, have been suggested to be related

to both large scale and local aspects of food supplies (Anderson et al., 1982). A commercially exploited fishery affecting prey abundance could potentially influence seabird populations (Crawford and Shelton, 1978). However, young brown pelicans are capable of withstanding short periods of starvation, and reduction in local prey abundance could be countered by increasing distance from roosting or nesting area to foraging area (Crawford and Shelton, 1978; Schreiber, 1979).

Brown pelicans and their offspring presently in Louisiana are those restocked from Florida in 1968. Imported Florida birds were released at Rockefeller Refuge and on Grand Terre Island in 1968 and 1969 through the combined efforts of Louisiana Department of Wildlife and Fisheries and Florida Game and Freshwater Fish Commission. Those released at Rockefeller Refuge did not survive; hence, subsequent releases were made at Grand Terre (Clapp et al., 1982; Blus et al., 1979). Although some brown pelican populations are somewhat migratory, Louisiana pelicans remain in the area (Clapp et al., 1982). The introduced birds first nested when approximately three years old (Williams and Joanen, 1974). Transplanted Florida pelicans and their offspring have retained the Atlantic Coast breeding schedule, with reproduction beginning in November and continuing into late spring (Blus et al., 1979). Breeding of the existing birds in Louisiana occurs earlier than the original native population (Portnoy, 1977; Clapp et al., 1982). Breeding of the original native population was last observed in 1961, with disappearance by 1963 (Clapp et al., 1982). Successful pelican nesting in Louisiana is presently confined to Queen Bess Island, Raccoon Point on Isles Dernieres, and on mud lumps near the mouth of the Mississippi River. Since breeding colony size (number of nests) is related to area of suitable nesting habitat, increased numbers of nests occur where few suitable islands exist (Williams and Martin, 1968). The few suitable islands off the coast of Louisiana are shrinking in size. Queen Bess Island has been elevated with dredged material recently and is a suitable habitat for brown pelicans. Nest failure of the Louisiana pelican has been attributed to flooding, cold weather, and pesticides.

Extirpation of the original Louisiana population was due to a number of factors, including freezing temperatures, hurricanes, disease, and endrin (Blus et al., 1979). Prior to disappearance, shooting by hunters and fishermen, as well as deliberate colony destruction, had resulted in declining population numbers in Louisiana (King et al., 1977). Lethal levels of endrin were found in dead or dying fish in 1966, and endrin was a major factor in the 1975 pelican die-off. In 1975, when 30 - 40 percent of the population was lost, endrin residue levels found in the brains of pelicans were similar to those of moribund experimental birds. Abundance of age 1 menhaden, a major prey species, in commercial catches between 1964 and 1978 was lowest in 1975, especially along the central coast of Louisiana in the vicinity of Barataria Bay. Menhaden catch was reduced 53 - 73 percent during 1975 (Guillory et

al., 1983). Pelicans appear to be highly sensitive to environmental contamination, and it is suggested that endrin acts primarily through direct toxicity and secondarily, through food shortages resulting from short-term reductions in prey fish populations (Nesbitt et al., 1978).

The wide distribution of the species, rather than its absolute numbers, may be their strength against extinction (Williams, 1980). Types of limiting factors have been described for brown pelicans as a part of the Recovery Plan for the Brown Pelican developed by the U.S. Fish and Wildlife Service. Negative factors are always detrimental, with impact in proportion to magnitude and duration of the factor(s). Welfare factors are limiting only when a particular resource is in short supply. Negative factors, in addition to natural factors affecting populations, include pollution (pesticides and other chronic chemical contamination, decreased water quality, oil, and other chemical spills) and human interference (directly through destruction or disturbance of nesting, feeding, or loafing sites and indirectly through introduction of trash, fishing lines, and lures). Negative factors intrinsic in a population are low population numbers, disease, parasitism, and natural variation in environment (factors such as habitat availability and climate). Welfare factors that are limiting are either habitat or food related, including reduction in amount of suitable feeding, loafing, or nesting areas, inadequate supply and availability of food, as well as synergistic effects of physiological stresses on birds (Williams, 1980).

Effects of Proposed Project on BROWN PELICANS

Brown pelicans commonly use the estuarine and near shore waters of the proposed project area for foraging. Their nearest nesting site, on mud lumps off the mouth of the Mississippi River, would not be affected. Brown pelicans feed and loaf in the general project area. During construction, temporary displacement of pelican loafing areas may occur. However, after project completion, loafing sites would increase and usage by pelicans would resume. Feeding by brown pelicans in the immediate project area may be temporarily disrupted due to turbidity from sediments suspended during construction. Prey items of the brown pelican are generally taken in less than 25 cm (10 inches) and the majority are taken in the top 1 meter (3.3 feet) of water (Hingten et al., 1985). Lassuy (1983) found no empirical data, however, on the relationship of Gulf menhaden to turbidity.

A potential indirect effect of turbidity from suspended sediments on local prey abundance (menhaden) could result if it interfered with feeding of larval menhaden. Gulf menhaden larvae migrate inshore into estuarine nursery areas in late winter. If feeding of visually-oriented Gulf menhaden is significantly affected or if larvae ingest large quantities of non-nutritive sediment particles, the local survival of a particular year class may be affected.

Foraging areas for brown pelicans in the project area are vast and are probably not a limiting factor to the population. Loafing and resting sites are also abundant.

During two field trips to the area by Corps of Engineers personnel, no brown pelicans were seen in the immediate areas of the proposed marsh creation sites, although several flocks were seen in the general vicinity.

Although the proposed project would cause temporary increases in turbidity near the dredging sites and at disposal areas, this should not have a detrimental effect on the brown pelicans normally found in the area.

BALD EAGLES (Haliaeetus leucocephalus)

The southern bald eagle is a large raptor that has undergone a pronounced population decline since the late 1940's. Including the northern races, there were an estimated 750 active nests in the continental United States in 1973 (Snow, 1973).

The greatest factor in the eagle decline is the reduced reproduction success caused by pesticide accumulation through the food chain. It appears that high residue levels, especially of dieldrin, have resulted in thin eggshells. Organochlorine residue analysis of four prey species indicated 86 percent contained residues (Dugoni, 1980). Subnormal clutch size and hatching items failure may also be responsible for the reduced reproductive output in Louisiana. Other factors affecting the population are shooting, electrocution, severe weather, habitat loss, and human disturbance.

The opportunistic bald eagle is generally found in coastal areas or along rivers and lakes where the birds feed on dead, dying, or live prey. Although the eagle's food is variable, they forage largely on fish and birds. The fish species eaten include shad, bass, catfish, mullet, and sunfish. Birds in the eagle's diet consist primarily of ducks and coots. Of 10 active Louisiana nests examined, the eagles were found to feed primarily on birds (42 percent); and fish (42 percent). The predominant prey, accounting for about half the birds' diet, is freshwater catfish and American coots (Dugoni, 1980). Their prey is typical of that found in shallow waters.

Eagles prefer to nest in the largest tree of a stand, commonly placing their nest below the crown. Usually a clear flight path to water, a good perching tree, and an open view of the surrounding area are major factors in nesting location. In the southeast, nests are generally constructed in living trees. The eagle is highly site tenacious and their territorial area varies from 28 to 112 acres.

During the turn of the century, the bald eagle was common along the coastal and wetland areas of southern Louisiana (Bailey, 1919, in Dugoni, 1980). Concern for the eagle began in the 1930's and by the early 1970's, the bird was uncommon (Lowery, 1974). Eagles' nests in Louisiana are predominately located in flooded, second growth baldcypress-tupelogum and mixed hardwood swamps. These areas are common on the backslopes of remnant deltaic distributaries and most of the nests are in the old delta between the Mississippi River and Atchafalaya River. During the 1986-1987 breeding seasons, 35 active eagle nests were known to exist in Louisiana, and all of these but one were located in Terrebonne, Assumption, St. Mary, Jefferson, and St. Charles Parishes. From these 35 nests, 49 young were fledged. The predominant nesting tree in Louisiana is the baldcypress (93 percent) and the remainder, live oaks. The nesting season in Louisiana is from October through May (Dugoni, 1980).

Effects of Proposed Project on BALD EAGLES

There are no known bald eagle nests in the immediate areas of the proposed marsh creation sites. The project would not impact nesting behavior or critical habitat of the bald eagle.

PIPING PLOVER (Charadrius melodus)

The piping plover was listed in 1986 as threatened in its winter range and in its Atlantic Coast and Northern Plains breeding range. Its Great Lakes breeding population was listed as endangered. Hunting of piping plovers in the early 1900's reduced the piping plover population. This was followed by the continued destruction of historic nesting sites, further reducing the piping plover population (USFWS, 1988).

Piping plovers wintering along the Gulf of Mexico nest in the Great Lakes and Northern Great Plains region. Between 1986-1987, seventeen pairs bred on the Great Lakes, while 1,258-1,326 bred on the Northern Great Plains. The amount of time spent on the breeding range is equal to or less than 30 percent of the year.

Piping plovers in Louisiana winter along the Gulf of Mexico in Cameron and Jefferson Parishes. Nicholls (1989) recorded piping plovers at numerous stations along the Louisiana coast including Fourchon Pass (the entrance to Bayou Lafourche). The Louisiana Natural Heritage Program has records of piping plovers observed on mud flats behind the beach at Fourchon. Occasionally, the birds are seen in Orleans and Union Parishes (USFWS, 1988). Piping plovers while on their winter range use beaches, sand flats, and dunes along the Gulf of Mexico coastal beaches and adjacent offshore islands (Haig and Oring, 1985).

Published literature indicates that many factors have collectively

contributed to the current status of the piping plover. Probably the most commonly mentioned cause of the population decline is the loss of nesting habitat due to human-induced disturbance. Specific problems are loss of sandy beaches and other littoral habitats due to recreational and commercial development, disturbance of nesting plovers by off-road vehicular traffic, construction of reservoirs, channelization of rivers, modification of river flows, mining operations, and the mere presence of humans near the nesting areas.

Piping plovers forage predominately in intertidal areas having a substrate composed primarily of sand. Their diet consists mainly of invertebrates. Idealized wintering habitat for the piping plover on the Gulf Coast would contain a large sand flat or sand mud flat adjacent to a tidal pass or tidal inlet. A thin layer of mud covering the sand seems to attract plovers. Barrier beaches with over-wash areas or old marshes seem to attract piping plovers, but a Gulf-facing beach having a very low gradient, thus an increased intertidal zone, offers an almost equally attractive area. All sites should have a dry sand area above the wrack line to be used as a roosting area and should be large in size with little or no human activity within the area. This diversity of habitats, all in proximity, has been correlated to plover abundance (Nicholls, 1989).

Effects of Proposed Project on PIPING PLOVERS

The barren tidal mudflats created by this project would be considered ideal feeding habitat for the piping plover. The short term impacts of dredging operations could temporarily displace any piping plovers, but they should return when dredging operations are over. Habitat created by this project would be beneficial to the piping plover.

ARTIC PEREGRINE FALCON (Falco peregrinus tundrius)

The Artic peregrine falcon or duck hawk is a highly migratory subspecies of the peregrine falcon. The Artic peregrine falcon winters along the western Gulf Coast and parts of Central and South America. It nests in the northern tundra regions of Alaska, Canada, and Greenland (USFWS, 1982).

The use of chlorinated hydrocarbons, especially DDT, as pesticides caused falcons to produce eggs with abnormally thin shells. Nesting failure occurred to numerous peregrine falcons, eventually resulting in a decline of the population. The continued use and residual effect of these pesticides hampers the recovery of peregrine falcon populations.

Habitat needs for wintering and migrating falcons are essentially the same. These needs can be reduced to two basic requirements: (1) roosting habitat, and (2) an avian prey source. The roosting

habitat should be an area where the falcon can remain relatively undisturbed (USFWS, 1982). Various elevated structures can be used for roosting. The avian prey source can consist of a wide variety of species with the majority of the prey being shorebirds, waterfowl, doves, and pigeons. Shorebirds and waterfowl provide the majority of the prey species on the wintering grounds. Although no critical wintering habitat areas in the United States have been defined, areas along the Texas Gulf Coast and Louisiana/Texas border have been noted as major wintering areas and staging areas for further migration.

Effects of Proposed Project on ARTIC PEREGRINE FALCON

Artic peregrine falcons have been documented in the area of the proposed project during Audubon Christmas Bird Counts. Whether falcons remain in the area during winter or only use the area during migrations is unknown. The falcons probably hunt their prey in the marshes and open water areas where ducks, coots, and shorebirds are plentiful. Dredging operations could cause a temporary displacement of prey species to suitable nearby habitats, but falcons would not be affected.

Methods to Reduce Impacts on Brown Pelicans and Bald Eagles by Sediment Diversion

If it is determined that pelicans or eagles are nesting in the areas of project construction, the U.S. Fish and Wildlife Service would be contacted for further coordination and action.

Conclusions

1. Nesting sites of brown pelicans and bald eagles would not be impacted by the proposed project.

2. Some portion of the outermost forage range of these birds may be impacted by sediments and/or salinity changes as a result of this marsh creation project.

3. Resulting marshes and mudflats from this project will provide additional forage area for those endangered and threatened birds that may occur in the area.

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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(727) 570-5312, FAX 570-5517

DEC 28 1999 F/SER3:EGH

Mr. Sean Mickal
U.S. Army Corps of Engineers
CEMVN-PM-R
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Mr. Mickal:

This responds to your agency's undated letter from Mr. David Carney to Mr. Charles Oravetz, Protected Species Management Branch (received November 29, 1999) and additional information provided in your December 1, 1999 facsimile to Mr. Eric Hawk. You requested our agency's endangered/threatened species comments and concerns on a proposed large-scale sediment diversion into West Bay at river mile 4.7 along the right-descending bank of the Mississippi River above Head of Passes in southeastern Louisiana. The proposed project objective is to create emergent marsh in West Bay. The project would convert 9,831 acres of shallow open water to vegetated wetlands over the 20-year life of the project. A relatively small amount, approximately 5.5 acres, of riverbank and adjacent wetlands would be excavated for construction of a diversion channel. A Biological Assessment (BA) was submitted pursuant to section 7 of the Endangered Species Act (ESA).

NMFS Protected Resources Division previously commented on this project in August 1992 and found that no adverse impacts to federally listed species under NMFS purview would occur. The revised project currently being considered is reduced in scope from the previously consulted project. We have reviewed the BA written for the original project and concur with your determination that populations of endangered/threatened species under our purview would not be adversely affected by the proposed action. This conclusion is contingent upon dredging being accomplished with nonhopper-type dredges.

This concludes consultation responsibilities under section 7 of the Endangered Species Act (ESA). Consultation should be reinitiated if new information reveals impacts of the identified activity that may affect listed species or their critical habitat, a new species is listed, the identified activity is subsequently modified or critical habitat determined that may be affected by the identified activity. Please contact our Habitat Conservation Division at 850/234-5061 for information, recommendations and guidelines and on how the Corps can avoid/minimize potential adverse impacts of the project on NMFS trust resources and essential fish habitat.

We appreciate the opportunity to comment and work with Corps of Engineers, New Orleans District. Please contact me 727/570-5312 if you have any questions or if I may be of assistance.

Sincerely,

Eric G. Hawkins for

William T. Hogarth, Ph.D.
Regional Administrator

cc: F/SER4 - A. Mager
F/PR3
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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9450 Koger Boulevard
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August 11, 1992 F/SE013:TLD

Mr. R. H. Schroeder, Jr.
Chief, Planning Division
U.S. Dept. of the Army
New Orleans District, COE
Post Office Box 60267
New Orleans, LA 70160-0267

Dear Mr. Schroeder:

This responds to your letter of July 30, 1992, regarding the proposed Land Loss and Marsh Creation, St. Bernard, Plaquemines, and Jefferson Parishes, Louisiana, project. A Biological Assessment (BA) was submitted pursuant to Section 7 of the Endangered Species Act of 1973 (ESA).

We have reviewed the BA and concur with your determination that populations of endangered/threatened species under our purview would not be adversely affected by the proposed action.

This concludes consultation responsibilities under Section 7 of the ESA. However, consultation should be reinitiated if new information reveals impacts of the identified activity that may affect listed species or their critical habitat, a new species is listed, the identified activity is subsequently modified or critical habitat determined that may be affected by the proposed activity.

If you have any questions please contact Dr. Terry Henwood, Fishery Biologist, at 813/893-3366.

Sincerely yours,

Terry Henwood

for Andrew J. Kemmerer
Regional Director

cc: F/SE02
F/PR2

BIOLOGICAL ASSESSMENT OF IMPACTS TO WHALES AND SEA TURTLES BY THE PROPOSED LAND LOSS AND MARSH CREATION, ST. BERNARD, PLAQUEMINES, AND JEFFERSON PARISHES, LOUISIANA PROJECT

Introduction

This assessment addresses the threatened and endangered species of whales and sea turtles under purview of the National Marine Fisheries Service (NMFS) that may be affected by the Land Loss and Marsh Creation, St. Bernard, Plaquemines, and Jefferson Parishes, Louisiana project.

Five species of whales and five species of sea turtles were listed by the National Marine Fisheries Service (NMFS) in a FAX dated July 2, 1992, as possibly occurring in the project area. Endangered species are the finback whale, humpback whale, right whale, sei whale, sperm whale, hawksbill sea turtle, Kemp's (Atlantic) ridley sea turtle, and leatherback sea turtle. Threatened species include the green sea turtle and the loggerhead sea turtle. Knowledge of whales in the Gulf of Mexico comes largely from stranding reports. These animals are normally found only in the far offshore waters and will be discussed briefly. Since sea turtles are known to occasionally occur in the nearshore and inshore waters of Louisiana, a more detailed review of each species was performed.

This assessment is based on extensive literature reviews and biological assessments performed for other Corps projects in Louisiana.

Description of Tentatively Selected Plan

The proposed project involves marsh creation through use of dredged material and small-scale and large-scale diversions of sediment-laden Mississippi River waters.

Tiger Pass in the Mississippi River Delta from mile 11.9 to mile 14.0 would be dredged once every two and one-half to three years. Approximately 1,097,000 cubic yards would be removed from within the jetty and bar during each dredging cycle. The dredged material would be placed inland of the shoreline, in open water, on both sides of Tiger Pass. The material would be used to reestablish marsh lost to subsidence and erosion.

Small shallow crevasses in Pass a Loutre, South Pass, Main Pass, Grand Pass, Octave Pass, and Raphael Pass would divert Mississippi River water. These small-scale uncontrolled sediment diversions would allow small delta splays to develop in adjacent shallow water areas. Over a 50-year period ten crevasses could be constructed in each of the six passes. Only one crevasse would be operational in

each pass at any time. The present flow distribution among the passes would be preserved by limiting discharges through the crevasses to ten percent of the average flow in that pass. The design length of the conveyance channel would vary from 160 to 1,200 feet depending upon the specific location and bank condition at the time of construction.

A large-scale uncontrolled sediment diversion would be constructed along the Mississippi River at mile 7.5L AHP. The sediment diversion conveyance channel would be dredged to a theoretical cross section of -45 feet NGVD, a bottom width of 10 feet and side slopes 1V on 7H, over specified lengths. The excavated material would be transported and placed adjacent to the existing river banks to produce marsh. To enhance development of marsh within the receiving waters, earthen dikes would be constructed within these waters to assist in retaining discharged sediments. To help monitor optimal performance of the large-scale sediment diversion, and assist in extending the growth of the delta, additional bifurcations would be dredged in the new delta. This crevasse would be capable of diverting 50,000 cfs.

WHALES

FINBACK WHALE (Balaenoptera physalus)

The finback whale is the second largest baleen whale and feeds primarily on krill and small schooling fish. In the western North Atlantic they occur from Greenland south to the Gulf of Mexico and the Caribbean Sea (Leatherwood et al., 1976 in Schmidly, 1981). They may occur year-round in the Gulf of Mexico; however, no finbacks were sighted in aerial surveys during 1980-81 (Fritts et al., 1983b).

Finbacks have stranded in the Gulf of Mexico along the coasts of Florida, Louisiana, and Texas. Stranding records for Louisiana include Isles Dernieres off Terrebonne Parish in 1915, Pelican Island on the western edge of Breton Sound in 1917, near Sabine Pass in 1924, the Chandeleur Islands in 1928, and in the marsh west of Venice in 1968 (Lowery, 1974). A whale that stranded in Mississippi Sound in 1967 was originally reported as a finback but was later determined to be a sei whale.

HUMPBACK WHALE (Megaptera novaeangliae)

Humpback whales occur in all oceans. They are a coastal species

and feed primarily on krill and fish. The western North Atlantic stock is migratory. Their summer range is from Cape Cod to Iceland, and their winter calving grounds are in the Caribbean Sea (Schmidly, 1981).

The only recent record for the Gulf of Mexico is of an individual sighted in 1962 at the mouth of Tampa Bay (Layne, 1965 in Schmidly, 1981).

RIGHT WHALE (Eubaleana glacialis)

Right whales occur in the temperate waters of the North Atlantic, the North Pacific, and the Southern Hemisphere. In the western North Atlantic, right whales are distributed from Iceland to Florida and the Gulf of Mexico (Leatherwood et al., 1976 in Schmidly, 1981).

They have been recorded only twice from the Gulf of Mexico, and their status there is questionable. Two right whales were reported off New Pass, Florida in 1963, and in 1972 one washed ashore near Freeport, Texas (Schmidly, 1981).

SEI WHALE (Balaenoptera borealis)

Sei whales occur in all oceans but are rare in tropical and polar seas. They are widely distributed in nearshore and offshore waters of the western North Atlantic from the Gulf of Mexico and the Caribbean Sea to Nova Scotia and Newfoundland (Leatherwood et al., 1976, in Schmidly, 1981).

Records from the Gulf of Mexico are limited to strandings near Campeche, Mexico and the coasts of Louisiana and Mississippi. The record from Louisiana is of an individual that stranded near Fort Bayou on the western edge of Breton Sound in 1956. The record from Mississippi is of the speciman originally reported as a finback whale. This whale entered Mississippi Sound in 1967 and subsequently died near the entrance to the harbor at Gulfport, Mississippi (Gunter and Christmas, 1973). The authors believed this occurrence would not have been possible except for the deep navigation channel leading into Gulfport.

SPERM WHALE (Physeter catodon)

Sperm whales were once quite numerous in the Gulf of Mexico, enough so to justify full-scale commercial whaling operations (Lowery, 1974). Although no longer common in the Gulf of Mexico, the species has been observed on several occasions in recent years off the mouth of the Mississippi River by fishermen and personnel on exploratory research vessels of the National Marine Fisheries Service (Lowery, 1974). Sperm whales were observed 229 miles off the coast of central Louisiana in 1980 by Fritts et al. (1983b).

Three strandings along the coast of Louisiana have been reported. An individual stranded near Sabine Pass in 1910, another stranded in 1960 at the mouth of the Mississippi River near Pass a Loutre, and a third stranded on the central coast of Louisiana in Terrebonne Parish in 1977 (Schmidly, 1981).

WHALES IN THE GULF OF MEXICO

From review of available literature, whales would normally be expected in the far offshore waters of Louisiana, but not in nearshore or inland waters.

IMPACTS OF PROPOSED PROJECT ON WHALES

The use of dredged material and diversion of river water would occur in the delta and would have no direct impact upon whales. In the gulf, whales do not occur in nearshore waters except when they become stranded. Since whales are species that normally occur only in the far offshore waters, the proposed project should not affect any of these species.

SEA TURTLES

KEMP'S (ATLANTIC) RIDLEY SEA TURTLE (Lepidochelys kempi)

Occurrence in the project area

Kemp's Ridley sea turtles may be expected to occur in the area of sediment diversion, since they are the most likely sea turtle to enter coastal bays and estuaries. Ridleys are commonly captured by trawlers in heavily trawled areas off the Louisiana coast, but this number has been declining in the past 25 years.

General Biology

The major nesting beach of the Kemp's ridley is located at Rancho Nuevo, Mexico, 30 km south of the Rio Grande, with sporadic nesting along the Texas coast. Females arrive in small aggregations known as arribadas from mid-April through August (Rabalais and Rabalais, 1980). Population declines of the ridley have been attributed to egg stealing on the localized nesting beach, capture of diurnal nesting females, fishing, and accidental capture in shrimp trawls (Fuller, 1978). Nesting of ridleys in coastal Louisiana is insignificant. However, Hildebrand (1981) mentions that Isle Derniere may have been a nesting place prior to the major hurricane of 1856, which destroyed favorable nesting habitats. Viosca (1961) felt ridleys preferred to nest in the loose sand of the Chandeleur Islands rather than the compacted beaches west of the Mississippi River. However, Ogren (1977a) observed a small turtle, thought to be a ridley, crawling on the beach of Timbalier Island.

Inshore areas of the Gulf of Mexico appear to be important habitats

for the ridley. Members of this genus are characteristically found in waters of low salinity, high turbidity, high organic content, and where shrimp are abundant (Zwinenberg, 1977). Kemp's ridley in the Gulf of Mexico tends to be concentrated around major river mouths, specifically the Rio Grande and the Mississippi (Frazier, 1980). Based on returns of females tagged on the nesting beach, adult ridleys move to major foraging grounds, to the south in the Campeche-Tabasco region, and to the north off coastal Louisiana. Adults tagged at Ranch Nuevo were recaptured off coastal Louisiana as well as in Vermilion Bay, and animals have been reported from Vermilion Parish to Terrebonne Parish (Pritchard and Marquez, 1973; Chavez, 1969; Keiser, 1976; Zwinenberg, 1977). Ridleys are commonly captured by shrimpers off the Texas coast, as well as in heavily trawled areas of the Louisiana and Alabama coast (Carr, 1980). However, occurrence of young ridleys in shrimp trawls in coastal Louisiana has declined in the past 25 years (Hildebrand, 1981). Similarly, ridleys are no longer abundant in coastal Florida (Carr and Carr, 1977).

Kemp's ridley, labeled the "Louisiana turtle" by Hildebrand (1981), is thought to be the most abundant turtle off the Louisiana coast (Gunter, 1981). The highly productive white shrimp-portunid crab beds of Louisiana from Marsh Island to the Mississippi Delta are thought to be the major feeding grounds for subadult and adult ridleys. The current patterns in the Gulf of Mexico could aid in transport of individuals, where small turtles swimming offshore until reaching sargassum mats would enter the major clockwise loop current of the western Gulf of Mexico carrying individuals north and east along Texas, Louisiana, and subsequent coastal areas (Hildebrand, 1981).

Although Hildebrand (1983) feels that ridley is not a resident of bays and estuaries, Keiser (1976) suggests that the ridley is the most likely sea turtle to enter bays with movements related to or controlled by salinity and food availability. Stomach analysis of specimens collected in shrimp trawls off Louisiana includes crabs (Callinectes), gastropods (Nassarius), and clams (Nuculana), (Corbula), and probably (Mulinia) as well as mud balls, indicating feeding near a mud bottom in an estuarine or bay area (Dobie et al., 1961). Although considered primarily carnivorous benthic feeders (Ernst and Barbour, 1972), jellyfish have also been reported as part of their diet (Fritts et al., 1983a). Presence of fish, such as croaker and spotted seatrout, in the gut of stranded individuals in Texas may suggest that turtles feed on the by-catch of shrimp trawlers (Landry, 1986). In Cedar Key, Florida, ridleys were commonly captured at the entrance to sloughs and were thought to feed on invertebrates in the shallow tidal flats and channels (Carr and Caldwell, 1956). Occurrence of ridleys in coastal bays and estuaries of Louisiana would not be unexpected since many of their primary food items occur in estuarine and inshore areas with silt bottoms (National Fish and Wildlife Laboratory).

LOGGERHEAD SEA TURTLE (Caretta caretta)

Occurrence in the project area

Loggerhead sea turtles are not expected to occur in the area of the proposed project. The majority of sightings have occurred off the Florida coast. Louisiana sightings have been offshore, particularly near oil platforms and oyster reefs.

General Biology

The principal nesting range of the loggerhead is from Cape Lookout, North Carolina to Mexico; however, the majority (90%) of the reproductive effort in the coastal United States occurs along the south-central coast of Florida (Hildebrand, 1981). The turtle does have a world-wide distribution in temperate and tropical waters. Nesting in the northern Gulf outside Florida occurs primarily on the Chandeleur Islands and to a lesser extent on adjacent Ship, Horn, and Petit Bois Islands in Mississippi and Alabama (Ogren, et al. 1977). Loggerhead eggs were collected from Grand Isle, Louisiana 50 years ago (Hildebrand, 1981). Ogren et al. (1977) reported historical reproductive assemblages of sea turtles that nested seasonally on remote barrier islands of eastern Louisiana, Mississippi, and Alabama. This included Bird, Breton, and Chandeleur Islands in Louisiana. Loss or degradation of suitable nesting habitat may be the most important factor affecting the nesting population in Louisiana today.

Loggerhead turtles are considered turtles of shallow water, less than 50 m (Rabalais and Rabalais, 1980). Juvenile loggerheads are thought to utilize bays and estuaries for feeding, while adult surveys of the Gulf of Mexico showed that the majority (97%) of loggerheads were seen off the east and west coasts of Florida (Fritts, et al. 1983a). Most were observed near mid-day near the surface, possibly related to surface basking behavior (Nelson, 1986). Although low numbers of loggerheads were seen regularly off the coast of Louisiana and Texas, they were 50 times more abundant in Florida than in the western Gulf. The majority of the sightings were in the summer (Fritts et al., 1983a). Loggerheads will migrate west along shallow coastal waters, as indicated by telemetry data from an individual tagged in the Mississippi Delta moving to Corpus Cristi (Solt, 1981).

Loggerheads are omnivorous, consuming molluska, crabs, shrimp, sea urchins, sponges, squid, basket stars, jellyfish, and even mangrove leaves in the shallows (Hendrickson, 1980; Nelson, 1986). Caldwell et al. (1955), suggested that the willingness of the loggerhead to consume any type of invertebrate food permits its range to be limited only by cold water. In shallow Florida lagoons, loggerheads were found during the morning and evening, leaving the area during mid-day when temperatures reached 31 C. At dusk, turtles moved to a sleeping site and remained there until morning,

possibly in response to changes in light or water temperature (Nelson, 1986).

In Texas, loggerheads were frequently observed near offshore oil platforms, natural rock reefs, and rock jetties (Rabalais and Rabalais, 1980). Oyster fishermen have reported large turtles near oyster reefs in Louisiana. In Texas, large numbers of stranded individuals were observed in areas where numbers of turtles were observed offshore over hard substrates (Rabalais and Rabalais, 1980).

GREEN SEA TURTLE (Chelonia mydas)

Occurrence in the project area

Green sea turtles are not expected to occur in the area of the proposed project. The turtles prefer a rocky bottom substrate, particularly shallow water inside reefs. This project will not effect any rock bottom substrate or barrier island. The majority of Louisiana sightings have been in the Gulf of Mexico and around barrier islands.

General Biology

The green sea turtle has a worldwide distribution, primarily concentrated between 35 north and 35 south latitudes. In the western Atlantic, it has been recorded as far north as Massachusetts south to Necochea, Argentina (Carr, 1952). It has occasionally been seen along the Long Island and New Jersey coasts (Rebel, 1974). This was the most common sea turtle found in Bermuda (Mowbray and Caldwell, 1958). In the Caribbean, green turtles were found throughout the Windward and Leeward Islands and were abundant off the coasts of Nicaragua and Costa Rica (Rebel, 1974). Immature green turtles were found along the Florida west coast (Carr and Caldwell, 1956). The green turtle was also extensively located throughout the Hawaiian Archipelago (Balazs, 1980).

Some green turtle nestings occur in Florida. Carr and Ingle (1959, cited by Rebel, 1974) recorded two nestings on Hutchinson Island in 1957 and 1958. Gallagher et al. (1972) reported 25 nests in 1971. It is believed that about 50 females nest in southeastern Florida each year (43 F.R. 32603). Nesting takes place there from May through August (Routa, 1967). An important nesting area in the Gulf of Mexico is on the eastern shores of the Yucatan Peninsula (Parsons, 1962) and the Triangulos Reef area (Carranza, 1967). A synopsis of Hawaiian Island green turtle nesting showed that turtles will lay as many as six egg clutches in a season, each clutch containing a mean of 104 eggs (Balazs, 1980).

One estimate of sixteenth to eighteenth century world populations was 50 million turtles (Lund, 1973). Estimates of recent

populations size are 62,500 sexually mature turtles in the west Caribbean and 100,000 to 400,000 sexually mature turtles of both sexes worldwide (Anon., 1978). The age at sexual maturity is not known, but a minimum estimate would be in the range of 10 to 15 years (Bjorndal, 1980). The loss of coastal nesting areas to tourism and industry and the incidental capture of green turtles by shrimp trawls are two major factors adversely affecting populations. Under natural conditions, the adult green turtle is a long-lived animal with high reproductive output, whose only predators are sharks.

Green turtles usually frequent shallow water inside reefs. They also are found where marine grasses and algae are plentiful in shoals, lagoons, and bays (Rebel, 1974). Carr (1967) observed mature turtles sleeping on the bottom with their shells lodged under a ledge or rock. Mainly herbivores, feeding upon marine grasses (i.e., Thalassia) and algae (i.e., Codium), green turtles are the only reptilian seagrass consumer. Prior to man's over-exploitation of green turtle populations, this reptile was certainly the major seagrass consumer in tropical and subtropical waters (Bjorndal, 1980). Small mollusks and crustaceans also are part of the diet. The young, apparently more carnivorous than adults during the first year of life, feed primarily on weak marine invertebrates (Carr, 1965).

Important developmental (growing) habitats that, until recently, were well populated by green sea turtles are the Florida Bay and Keys and the Gulf coast of midpeninsula Florida, especially from the mouth of the Suwanee River south to the mouth of the Waccasassa. Immature green turtles are very common during early spring and summer in the Cedar Keys-Crystal River area, but numbers have "decreased drastically" since the 1950's (Carr and Carr, 1977). Tagged green turtles have been recovered in Marquesas and the Gulf Of Mexico off the Yucatan (Carr, 1965). Hildebrand (1979) stated that the greatest concentration of green sea turtles in the western Gulf of Mexico is in the Laguna Madre (TX) near Port Isabel. There are no reliable estimates of the population size of the green sea turtle in the Gulf of Mexico.

Green sea turtles have been historically sighted along the Louisiana coastline, but are very rare. Indeed, this species seems to prefer rocky bottom substrate, which is not common along the Louisiana coast. If they were to occur in the project area, the most likely areas for them to be would be near or in the submerged aquatic vegetation beds around marsh fringes of barrier islands. These marsh fringes of barrier islands would not be affected by the project.

LEATHERBACK SEA TURTLE (Dermochelys coriacea)

Occurrence in the project area

No nesting of leatherback sea turtles has been reported from Louisiana (Gunter, 1981). Low numbers of leatherbacks reported by fishermen may reflect low numbers in the area, or lack of fishing effort where the species occurs (Fuller and Tappan, 1986). Leatherbacks are apparently uncommon in the offshore waters of Louisiana, since very few strandings have been reported and live leatherbacks are seldom seen. They have not been reported from inshore waters of Louisiana. Leatherback sea turtles are not found in the project area and therefore this species would not be affected.

General Biology

The leatherback is the largest sea turtle and is highly migratory, most commonly occurring in the continental shelf waters (Pritchard, 1971; Hirth, 1980; Fritts et al., 1983a). It is a temperate zone species with a tropical nesting range (Ross, 1981). Distribution of this species has been linked to thermal preference and seasonal fluctuations in the Gulf Stream and other warm water features (Fritts et al., 1983a). General decline of this species is attributed to the exploitation of its eggs (Ross, 1981).

Nesting of leatherback turtles is nocturnal. A small number nest on the west coast of Florida from April to late July (Pritchard, 1971; Fuller, 1978; Fritts et al., 1983a).

Leatherbacks feed primarily on jellyfish and coelenterates. They will also injest plastic bags and other plastic debris apparently mistaking these items for food.

HAWKSBILL SEA TURTLE (Eretmochelys imbricata)

Occurrence in the project area

Of the five turtles listed as possibly occurring in the project area, the hawksbill is the least commonly seen sea turtle in the northern Gulf of Mexico. They are normally found far to the south of Louisiana in the southern Gulf of Mexico and in the Caribbean Sea. They do not nest in Louisiana and the few sightings and captures that have been recorded from Louisiana waters have all been offshore. Only one hawksbill was recorded by Fuller and Tappen (1986). It was captured in a gill net set offshore of Cameron, Louisiana. Hawksbills are not found in the project area and therefore this species would not be affected.

General Biology

The hawksbill is probably the least studied of the five turtles listed. Reasons for this are the wide and dispersed nesting areas, secretive nature of the species while nesting, and the rarity of the species in waters of the United States.

This species is an omnivore, feeding primarily on sponges and other organisms associated with coral reefs (Hendrickson, 1980). This may explain its rarity in the northern Gulf of Mexico. It is a solitary nester and does not undertake extensive migrations (Hendrickson, 1980).

SEA TURTLES IN THE GULF OF MEXICO

Factors that cause impacts to sea turtles in the Gulf of Mexico and the Caribbean Sea include loss of sea turtle nesting beaches to commercial, recreational, and residential development; mortality caused by commercial trawling, longline fishing gear, and entanglement in crab pot lines; entanglement/ingestion of plastic debris; natural and man-induced predation of turtles and eggs on nesting beaches; oil spills from offshore platforms; oil/tar balls from natural seeps, bilge cleaning, and tanker spills; compaction, subsidence, and flooding of nesting beaches; dumping of contaminated wastes into the sea; coastal dredging; and collision with vessels. These impact-producing factors, in aggregate, are judged to result in a substantial (but not readily quantifiable) adverse effect on the sea turtles by destruction, alteration, and/or disturbance of feeding and nesting areas, and injury and mortality to numerous turtles (Minerals Management Service, 1988).

The majority of the general information on abundance of sea turtles in the Gulf of Mexico, and in Louisiana in particular, is based on aerial survey sightings and stranding information. Fritts et al. (1983a) did not observe any ridleys in the vicinity of Marsh Island or offshore during aerial surveys. It has been suggested that aerial surveys would not provide information on turtles in nearshore Louisiana waters because low densities, behavorial patterns, or water turbidity can reduce effectiveness of aerial observations (Owens, 1983). Stranding and capture records do indicate that Kemp's ridley occurs in Louisiana waters. Shrimp trawling activities have been responsible for most of the captures and possibly many of the strandings (Fritts et al., 1983a). Recent strandings of ridleys on Louisiana and Texas beaches may be the result of intense localized shrimping activities, although possible effects on sea turtles of the explosives used in removal of oil rigs in the Gulf of Mexico are presently a concern (O'Byrne, 1986). With loggerhead turtles in Georgia, Texas, and North Carolina, the highest incidence of strandings paralleled periods of increased trawling activities in nearshore waters (Ogren, 1977; Crouse, 1985; Hillestad et al., 1978). Comparison of aerial survey data and stranding data in the Gulf of Mexico is limited in value for estimates of local abundance because the number stranded reflects intensity of trawling rather than actual abundance (Fritts et al., 1983a). In addition, differences in sampling effort and presence of longshore and nearshore currents may account for localized differences in strandings (Hillestad et al., 1978). In Louisiana, the coastal areas are less accessible and probably less utilized by humans so that stranded animals may go unnoticed (Fritts et al.,

1983a). Efforts to increase information on strandings in Louisiana have intensified and several individuals now routinely patrol several areas of the Louisiana coastline and supply any information they find to the Sea Turtle Strandings Network.

It has been suggested that ridleys and loggerheads may burrow in estuarine mud along the gulf coast during the winter, when water temperatures are too low for normal activity, and remain buried in the mud until warmer weather. Observations by turtle fishermen at Cedar Key, Florida, noted their absence in the winter and reappearance in the spring covered with mud (Pritchard and Marquez, 1973), although not all turtles are mud-covered, suggesting that not all individuals bury themselves in the mud. The winter capture of torpid loggerheads and fewer ridleys in the Port Canaveral Ship Channel off eastern Florida (Joyce, 1982), as well as torpid individuals by Carr et al. (1980), strongly suggests that the animals may be hibernating in the soft bottom sediments and walls of the ship channel. There is no information on whether turtles do bury themselves in the coastal bays or lakes of Louisiana.

IMPACT OF PROJECT ON SEA TURTLES

Sea turtles are rare in Louisiana's inshore waters. Most reported occurrences of sea turtles in Louisiana are in offshore waters.

During the warm months of the year when the turtles are active, it is not thought that this project will have any direct impact on any turtles that might occur in the area. The turtles will avoid any highly turbid areas created by the diversions. While recognizing the possibility that sea turtles forage in the project area, the turtles should be able to escape any of the short term impacts that the project would produce. Short term impacts would include increased turbidity and a decrease in the number of benthic organisms present. While these impacts could cause a temporary problem for benthic and plantonic organisms, mobile organisms such as sea turtles would be able to escape the area during dredging operations. On a long-term basis, the created marsh will provide additional fringe forage and protection areas for marine turtles.

There is no evidence of hibernation of sea turtles in Louisiana. Any turtles occurring in the areas of the diversions might be permanently buried if the diversion site is constructed during the cooler months when turtles may already be buried in the sediments to their normal depths. There is no reliable information on what features are suitable for hibernation.

During two recent field trips to the area by Corps of Engineers personnel, no endangered or threatened sea turtles or whales were seen in the immediate areas of the proposed project or in any of the other waterways of the Mississippi River delta that were inspected.

If it is determined that turtles are hibernating in the areas of diversion construction or sediment deposition, attempts would be made to physically remove turtles in a manner similar to that used in Florida where the area to be impacted was trawled prior to dredging and captured individuals were released away from the area. This could be ineffective, however, because if water temperatures are low enough to produce torpor, they are too low to permit turtles to re-bury themselves.

CONCLUSIONS

1. Based on the above information and general knowledge of the status of whales and sea turtles in Louisiana waters, the proposed project is considered unlikely to adversely impact whales or sea turtles.

2. Kemp's ridley turtle may occur in the project area based on historical sighting information. No leatherback, hawksbill, loggerhead or green sea turtles have been sighted in the project area, although they may occur at marsh fringes.

3. Sea turtles would be expected to avoid the highly turbid areas of sediment diversion.

4. There is no evidence of hibernation of sea turtles in Louisiana.

5. Resulting fringe marshes from this project will provide additional forage and hiding areas for turtles that occur in the area.

6. Hibernating sea turtles, if present, could be subject to damage or elimination if buried deeper than normal by sediment diversion or deposition.

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Section 5

Coastal Zone Consistency Determination

State of Louisiana

M.J. "MIKE" FOSTER, JR.
GOVERNOR

JACK C. CALDWELL
SECRETARY

DEPARTMENT OF NATURAL RESOURCES

June 8, 2001

David F. Carney
Chief, Environmental Planning
U.S. Army Corps of Engineers
New Orleans District
P. O. Box 60267
New Orleans, LA 70160-0267

RE: **C20010144,** Coastal Zone Consistency
New Orleans District, Corps of Engineers
Direct Federal Action
West Bay Sediment Diversion CWPPRA Project MR-3
Plaquemines Parish, Louisiana

Dear Mr. Carney:

The above referenced project has been reviewed by this office and has been found to be consistent to the maximum extent practicable with the Louisiana Coastal Resources Program (LCRP) as required Section 307(c) of the Federal Coastal Zone Management Act of 1972, as amended.

If you have any questions concerning this determination please contact Jeff Harris of the Consistency Section at (225) 342-7949 or (800) 267-4019.

Sincerely,

Terry W. Howey,
Administrator

cc: Fred Dunham, LDWF
Frank Cole, CMD/FI

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AN EQUAL OPPORTUNITY EMPLOYER

CONSISTENCY DETERMINATION

Louisiana Coastal Use Guidelines

West Bay Sediment Diversion Project,

Plaquemines Parish, Louisiana

Draft Environmental Impact Statement

INTRODUCTION

Section 307 of the Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et. seq. requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." In accordance with Section 307, a Consistency Determination has been prepared for the proposed sediment diversion. Coastal Use Guidelines were written in order to implement the policies and goals of the Louisiana Coastal Resources Program, and serve as a set of performance standards for evaluating projects. Compliance with the Louisiana Coastal Resources Program, and therefore, Section 307, requires compliance with applicable Coastal Use Guidelines.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of this project is to restore vegetated wetlands within the active Mississippi River delta using a large-scale, uncontrolled sediment diversion channel. This project has been authorized and funded for construction under the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA, Public Law 101-646, Title III). The proposed project was selected from a number of candidate projects evaluated under the first Priority Project List developed under authority of CWPPRA. Alternatives for the proposed project were developed during a feasibility study for the Land Loss and Marsh Creation (LLMC) feature investigated under the Louisiana Coastal Area authority. Alternatives include different sizes, locations, and features for sediment diversions from the Mississippi River. This project was selected because of ease of implementation, minimal adverse impacts, and significant beneficial effects.

Vegetated wetlands are disappearing in coastal Louisiana at the rate of approximately 25 square miles per year. This project would restore wetlands in the river delta where land loss has been great. The proposed project was compared to a number of other sediment diversions that varied in size, location, and features during the LLMC feasibility study. However, that study was never distributed for public review.

DESCRIPTION OF THE PROPOSED ACTION

The proposed project consists of a large-scale, uncontrolled sediment diversion channel into West Bay through the west bank (right descending bank) of the Mississippi River at mile 4.7 above Head of Passes (AHP), in southeastern Louisiana. The project objective is to restore vegetated wetlands in shallow open water. The sediment diversion channel would be constructed in two phases: 1.) Construction of an interim diversion channel to accommodate a discharge of 20,000 cubic feet per second (cfs) at the 50 percent duration stage of the

Mississippi River, and 2.) Modification of the interim diversion channel design to accommodate full-scale diversion of 50,000 cfs at the 50 percent duration stage of the Mississippi River immediately upon completion of a period of intensive monitoring of diversion operations. Contingency plans for closing the diversion conveyance channel would be implemented if hydrographic monitoring of the Mississippi River navigation channel indicates the channel of the river migrating toward the diversion channel or if the shoaling substantially increases in the navigation channel downstream of the diversion. The sediment diversion would induce shoaling in Southwest Pass of the Mississippi River and increase saltwater intrusion in the river. The project would convert 9,831 acres of shallow open water to vegetated wetlands over the 20-year life of the project. A relatively small amount of riverbank and adjacent wetlands would be excavated for construction of the diversion channel. No other coastal wetlands would be adversely affected by the project, and the project would not conflict with other wetland creation or protection projects. No environmental mitigation features are proposed for this project.

GUIDELINES APPLICABLE TO ALL USES

Guideline 1.1: The guidelines must be read in their entirety. Any proposed use may be subject to the requirements of more than one guideline or section of guidelines and all applicable guidelines must be complied with.

Response 1.1: Acknowledged.

Guideline 1.2: Conformance with applicable water and air quality laws, standards and regulations, and with those other laws, standards and regulations which have been incorporated into the coastal resources program shall be deemed in conformance with the program except to the extent that these guidelines would impose additional requirements.

Response 1.2: Acknowledged.

Guideline 1.3: The guidelines include both general provisions applicable to all uses and specific provisions applicable only to certain types of uses. The general guidelines apply in all situations. The specific guidelines apply only to the situations they address. Specific and general guidelines should be interpreted to be consistent with each other. In the event there is an inconsistency, the specific should prevail.

Response 1.3: Acknowledged.

Guideline 1.4: These guidelines are not intended to nor shall they be interpreted so as to result in an involuntary acquisition or taking of property.

Response 1.4: Acknowledged.

Guideline 1.5: No use or activity shall be carried out or conducted in such a manner as to constitute a violation of the terms of a grant or donation of any lands or water-bottoms to the State or any subdivision thereof. Revocations of such grants and donations shall be avoided.

Response 1.5: Acknowledged.

Guideline 1.6: Information regarding the following general factors shall be utilized by the permitting authority in evaluating whether the proposed use is in compliance with the guidelines.

a) type, nature and location of use.

b) elevation, soil and water conditions and flood and storm hazard characteristics of site.

c) techniques and materials used in construction, operation and maintenance of use.

d) existing drainage patterns and water regimes of surrounding area including flow, circulation, quality, quantity and salinity; and impacts on them.

e) availability of feasible alternative sites or methods – for implementing the use.

f) designation of the area for certain uses as part of a local program.

g) economic need for use and extent of impacts of use on economy of locality.

h) extent of resulting public and private benefits.

i) extent of coastal water dependency of the use.

j) existence of necessary infrastructure to support the use and public costs resulting from use.

k) extent of impacts on existing and traditional uses of the area and on future uses for which the area is suited.

1) proximity to, and extent of impacts on important natural features such as beaches, barrier islands, tidal passes, wildlife and aquatic habitats, and forest lands.
m) the extent to which regional, state and national interests are served including the national interest in resources and the siting of facilities in the coastal zones as identified in the coastal resources program.

n) proximity to, and extent of impacts on, special areas, particular areas, or other areas of particular concern of the state program or local programs.

o) likelihood of, and extent of impacts of, resulting secondary impacts and cumulative impacts.

p) proximity to and extent of impacts on public lands or works, or historic, recreational or cultural resources.

q) extent of impacts on navigation, fishing, public access, and recreational opportunities.

r) extent of compatibility with natural and cultural setting.

extent of long term benefits or adverse impacts.

Response 1.6: Acknowledged.

Guideline 1.7: It is the policy of the coastal resources program to avoid the following adverse impacts. To this end, all uses and activities shall be planned, sited, designed, constructed, operated and maintained to avoid to the maximum extent practicable significant:

Guideline 1.7: a) reductions in the natural supply of sediment and nutrients to the coastal system by alterations of freshwater flow.

Response 1.7: a) The supply of sediment and nutrients to the delta would be enhanced by the diversion. Less land building sediment would be lost through South West Pass. The

construction of sediment retention enhancement devices (SREDs) in West Bay will aid in trapping sediments and releasing nutrients to the coastal system.

Guideline 1.7: b) adverse economic impacts on the locality of the use and affected governmental bodies.

Response 1.7: b) There would be no significant adverse economic impacts.

Guideline 1.7: c) detrimental discharges of inorganic nutrient compounds into coastal waters.

Response 1.7: c) The diversion would transmit Mississippi River water and sediment into West Bay, which could raise the levels of fertilizer compounds and metals in the receiving area due to the higher levels of fertilizer compounds and metals typically found in Mississippi River water and sediment.

Guideline 1.7: d) alterations in the natural concentration of oxygen in coastal waters.

Response 1.7: d) During construction of the diversion, suspended sediments would be released into the remaining wetlands and the open water of West Bay. This release could decrease oxygen levels in the waters immediately surrounding the construction site by inhibiting photosynthesis or heating of the water. Some particles could contain chemically reduced substances, such as sulfides, which have a high chemical oxygen demand (COD) while other particles may have micro-organisms attached that could decompose organic matter and create a biological oxygen demand (BOD). A localized and temporary reduction in dissolved oxygen would occur in the immediate areas of discharge. Once the diversion is operational, there should be minimal to no alteration of oxygen content in West Bay.

Guideline 1.7: e) destruction or adverse alterations of streams, wetland, tidal passes, inshore waters and waterbottoms, beaches, dunes, barrier islands, and other natural biologically valuable areas or protective coastal features.

Response 1.7: e) The initial sediment diversion channel would be dredged to a depth of –45 feet NGVD, have a bottom width of 30 feet and side slopes of 1-foot vertical on 3-feet horizontal. Construction of the diversion channel will be accomplished by hydraulic pipeline dredge. Excavation of approximately 650,000 cubic yards of material would be removed during construction of the phase one 20,000 cfs diversion. Phase two of the construction will consist of excavating approximately 1,450,000 cubic yards of material to achieve the final 50,000 cfs design section. Phase two would not be constructed until phase one has been monitored for one or two complete hydrologic cycles. Material excavated during construction would be hydraulically transported and placed along the marsh side of the existing river banks and pumped to an elevation, conducive to marsh creation in West Bay, of +4.28 NGVD[1] (+3.5 feet MLG[2]), and at no time will exceed +4.78 feet NGVD (+4.0 MLG). No other coastal wetlands would be adversely affected by the proposed diversion. Approximately 9,831 acres of shallow open water in West Bay would be converted to emergent marsh.

Guideline 1.7: f) adverse disruption of existing social patterns.

Response 1.7: f) Construction of the marsh is not expected to significantly disrupt existing social patterns.

Guideline 1.7: g) alterations of the natural temperature regime of coastal waters.

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[1] National Geodetic Vertical Datum of 1929 (formerly referred to as mean sea level, MSL)
[2] Mean Low Gulf

Response 1.7: g) No significant changes in the temperature regimes are expected. Increased suspended solids produced during sediment diversion operation could absorb incident radiation and slightly increase the temperatures of local water bodies, especially near the surface, which would help offset the cooler river waters entering the diversion areas.

Guideline 1.7: h) detrimental changes in existing salinity regimes.

Response 1.7: h) There would be no detrimental change in existing salinity regimes. This project diverts freshwater into an existing freshwater area. Isohaline lines may be moved seaward at the delta/Gulf interface due to the increased flow of freshwater through the diversion.

Guideline 1.7: i) detrimental changes in littoral and sediment transport processes.

Response 1.7: i) There would be no detrimental change in existing littoral and sediment transport processes. Both processes would be enhanced by the sediment diversion.

Guideline 1.7: j) adverse effects of cumulative impacts.

Response 1.7: j) Wetland destruction has been reduced to the maximum extent practicable for the diversion construction. Marsh creation in West Bay would have a positive cumulative effect in the delta region.

Guideline 1.7: k) detrimental discharges of suspended solids into coastal waters, including turbidity resulting from dredging.

Response 1.7: k) The construction of this sediment diversion would have a minimal, short-term effect on turbidity.

Guideline 1.7: l) reductions or blockage of water flow or natural circulation patterns within or into an estuarine system or a wetland forest.

Response 1.7: l) There would be no reductions or blockage of water flow within the limits of the West Bay marsh area. Natural circulation patterns would be changed within the marsh creation area.

Guideline 1.7: m) discharges of pathogens or toxic substances into coastal waters.

Response 1.7: m) Based on available analysis and the 404(b)(1) evaluation, various pollutants already present in the river environment would be relocated to the receiving area, but levels would not be increased significantly.

Guideline 1.7: n) adverse alteration or destruction of archaeological, historical, or other cultural resources.

Response 1.7: n) At present, no such resources are recorded within the project area.

Guideline 1.7: o) fostering of detrimental secondary impacts in undisturbed or biologically highly productive wetland areas.

Response 1.7: o) The sediment diversion, anchorage dredging, and contingency plan will have no detrimental secondary impacts.

Guideline 1.7: p) adverse alteration or destruction of unique or valuable habitats, critical habitat for endangered species, important wildlife or fishery breeding or nursery areas, designated wildlife management or sanctuary areas, or forestlands.

Response 1.7: p) This diversion would not adversely alter or destroy unique, valuable, or critical habitat; wildlife or fishery breeding or nursery areas; designated wildlife management or sanctuary areas; or forestlands. Existing habitat within the marsh creation area will benefit from the sediment diversion.

Guideline 1.7: q) adverse alteration or destruction of public parks, shoreline access points, public works, designated recreation areas, scenic rivers, or other areas of public use and concern.

Response 1.7: q) This project would not have any adverse alteration or destruction of public parks, shoreline access points, public works, designated recreation areas, scenic rivers, or other areas of public use and concern.

Guideline 1.7: r) adverse disruptions of coastal wildlife and fishery migratory patterns.

Response 1.7: r) The sediment diversion is not expected to significantly disrupt any wildlife or fishery migration patterns. Resultant marsh would add to the range and patterns of migration

Guideline 1.7: s) land loss, erosion and subsidence.

Response 1.7: s) The project would not increase land loss, erosion, and subsidence. It would create marsh, and offset erosion and subsidence problems in the marsh creation area during the 20 year project life.

Guideline 1.7: t) increases in the potential for flood, hurricane or other storm damage, or increases in the likelihood that damage will occur from such hazards.

Response 1.7: t) There would be a decrease in the potential for flood, hurricane or other storm damage, and a decrease in the likelihood that damage will occur from such hazards.

Guideline 1.7: u) reductions in the long-term biological productivity of the coastal ecosystem.

Response 1.7: u) There would be an increase in the long-term biological productivity of the coastal ecosystem during and after the 20 year project life.

Guideline 1.8: In those guidelines in which the modifier "maximum extent practicable" is used, the proposed use is in compliance with the guideline if the standard modified by the term is complied with. If the modified standard is not complied with, the use will be in compliance with the guideline if the permitting authority finds, after a systematic consideration of all pertinent information regarding the use, the site and the impacts of the use as set forth in guideline 1.6, and a balancing of their relative significance, that the benefits resulting from the proposed use would clearly outweigh the adverse impacts resulting from non-compliance with the modified standard and there are no feasible and practical alternative locations, methods and practices for the use that are in compliance with the modified standard and:

a) significant public benefits will result from the use, or;

b) the use would serve important regional, state or national interests, including the national interest in resources and the siting of facilities in the coastal zone identified in the coastal resources program, or;

the use is coastal water dependent.

Response 1.8: Acknowledged.

The systematic consideration process shall also result in a determination of those conditions necessary for the use to be in compliance with the guideline. Those conditions shall assure that the use is carried out utilizing those locations, methods and practices which maximize conformance to the modified standard; are technically, economically, environmentally, socially and legally feasible and practical and minimize or offset those adverse impacts listed in guideline 1.7 and in the guideline at issue.

Guideline 1.9: Uses shall to the maximum extent practicable be designed and carried out to permit multiple concurrent uses which are appropriate for the location and to avoid unnecessary conflicts with other uses of the vicinity.

Response 1.9: Acknowledged.

Guideline 1.10: These guidelines are not intended to be, nor shall they be, interpreted to allow expansion of governmental authority beyond that established by La. R.S. 49:213.1 through 213.21, as amended; nor shall these guidelines be interpreted so as to require permits for specific uses legally commenced or established prior to the effective date of the coastal use permit program nor to normal maintenance or repair of such uses.

Response 1.10: Acknowledged.

GUIDELINES FOR LEVEES

2. Not Applicable

GUIDELINES FOR LINEAR FACILITIES

3. Chevron Pipeline Company owns and operates a 10 inch crude pipeline within the marsh creation area near the diversion. 3000 linear feet of pipeline will be relocated to a depth of, at its deepest point, -80 feet NGVD within the existing pipeline corridor. Chevron will apply for a coastal use permit to obtain consistency with state coastal zone regulations.

GUIDELINES FOR DREDGED MATERIAL DEPOSITION

Guideline 4.1: Spoil shall be deposited utilizing the best practical techniques to avoid disruption of water movement, flow, circulation and quality.

Response 4.1: Excavated material from the construction of the diversion would be placed on existing banks for stabilization and in shallow water behind the diversion for marsh creation.

Guideline 4.2: Spoil shall be used beneficially to the maximum extent practicable to improve productivity or create new habitat, reduce or compensate for environmental damage done by dredging activities, or prevent environmental damage. Otherwise, existing spoil disposal areas or upland disposal shall be utilized to the maximum extent practicable rather than creating new disposal areas.

Response 4.2: Diversion excavation material is required for stabilization and to eliminate the need for armoring, while some material will be used for marsh creation.

Guideline 4.3: Spoil shall not be disposed of in a manner which could result in the impounding or draining of wetlands or the creation of development sites unless the spoil deposition is part of an approved levee or land surface alteration project.

Response 4.3: Deposition of excavated material within the marsh creation area would not impound or drain wetlands and would not create development.

Guideline 4.4: Excavated material shall not be disposed of on marsh, known oyster or clam reefs or in areas of submersed vegetation to the maximum extent practicable.

Response 4.4: Excavated material would not be placed on marsh, known oyster or clam reefs or in areas of submersed vegetation to the maximum extent practicable.

Guideline 4.5: Spoil shall not be disposed of in such a manner as to create a hindrance to navigation or fishing, or hinder timber growth.

Response 4.5: Excavated material would not be disposed of in such a manner as to create a hindrance to navigation or fishing, or hinder timber growth.

Guideline 4.6: Spoil disposal areas shall be designed and constructed and maintained using the best practical techniques to retain the spoil at the site, reduce turbidity, and reduce shoreline erosion when appropriate.

Response 4.6: Turbidity and associated impacts would be reduced to a minimum as much as practicable.

Guideline 4.7: The alienation of state-owned property shall not result from spoil deposition activities without the consent of the Department of Natural Resources.

Response 4.7: The deposition of excavated material on state-owned property, the open shallow water bottoms, is acknowledged.

GUIDELINES FOR HYDROLOGIC AND SEDIMENT TRANSPORT MODIFICATIONS

5. Not Applicable

GUIDELINES FOR SURFACE ALTERATIONS

6. Not Applicable

GUIDELINES FOR HYDROLOGIC AND SEDIMENT TRANSPORT MODIFICATIONS

7. Not Applicable.

GUIDELINES FOR DISPOSAL OF WASTES

8. Not Applicable.

GUIDELINES FOR USES THAT RESULT IN THE ALTERATION OF WATERS DRAINING INTO COASTAL WATERS

9. Not Applicable.

GUIDELINES FOR OIL, GAS, AND OTHER MINERAL ACTIVITIES

10. Not Applicable.

GUIDELINE DEFINITIONS

Levees - any use or activity which creates an embankment to control or prevent water movement, to retain water or other material, or to raise a road or other lineal use above normal or flood water levels. Examples include levees, dikes and embankments of any sort.

Linear Facilities - those uses and activities which result in creation of structures or works which are primarily linear in nature. Examples include pipelines, roads, canals, channels, and powerlines.

Shoreline Modifications - those uses and activities planned or constructed with the intention of directly or indirectly changing or preventing change of a shoreline. Examples include bulkheading, piers, docks, wharves, slips and short canals, and jetties.

Spoil Deposition - the deposition of any excavated or dredged material.

Surface Alterations - those uses and activities which change the surface or usability of a land area or water bottom. Examples include fill deposition, land reclamation, beach nourishment, dredging (primarily areal), clearing, draining, surface mining, construction and operation of transportation, mineral, energy and industrial facilities, and industrial, commercial and urban developments.

Hydrologic and Sediment Transport Modifications - those uses and activities intended to change water circulation, direction of flow, velocity, level, or quality or quantity of transported sediment. Examples include locks, water gates, impoundments, jetties, groins, fixed and variable weirs, dams, diversion pipes, siphons, canals, and surface and groundwater withdrawals.

Waste Disposal - those uses and activities which involve the collections, storage and discarding or disposing of any solid or liquid material. Examples include littering; landfill; open dumping; incineration; industrial waste treatment facilities; sewerage treatment; storage in pits, ponds or lagoons; ocean dumping and subsurface disposal.

Alterations of Waters Draining in Coastal Waters - those uses or activities that would alter, change, or introduce polluting substances into runoff and thereby modify the quality of coastal waters. Examples include water control impoundments, upland and water management programs, and drainage projects from urban, agricultural and industrial developments.

Oil, Gas and Other Mineral Activities - those uses and activities which are directly involved in the exploration, production, and refining of oil, gas and other minerals. Examples include geophysical surveying, establishment of drill sites and access to them, drilling, on site storage of supplies, products and waste materials, production, refining, and spill cleanup.

Coastal Water Dependent Uses - those which must be carried out on, in or adjacent to coastal water areas or wetlands because the use requires access to the water body or wetland or requires the consumption, harvesting or other direct use of coastal resources, or requires the use of coastal water in the manufacturing or transportation of goods. Examples include surface and subsurface mineral extraction, fishing, ports and necessary supporting commercial and industrial facilities, facilities for the construction, repair and maintenance of vessels, navigation projects, and fishery processing plants.

Best Practical Techniques - best practical techniques shall mean those methods or techniques which would result in the greatest possible minimization of the adverse impacts listed in Guideline 1.7 and in specific guidelines applicable to the proposed use. Those methods or techniques shall be the best methods or techniques which are in use in the industry or trade or among practitioners of the use, and which are feasible and practical for utilization.

Water or Marsh Management Plan - a systematic development and control plan to improve and increase biological productivity, or to minimize land loss, saltwater intrusion, erosion or other such environmental problems, or to enhance recreation.

Impoundment Levees - those levees and associated water control structures whose primary purpose is to contain water within the levee system either for the prevention of the release of pollutants, to create fresh water reservoirs, or for management of fish or wildlife resources.

Hurricane or Flood Protection Levees - those levees and associated water control structures whose primary purpose is to prevent occasional surges of flood or storm generated high water. Such levee systems do not include those built to permit drainage or development of enclosed wetland areas.

Development Levees - those levees and associated water control structures whose purpose is to allow control of water levels within the area enclosed by the levees to facilitate drainage or development within the leveed areas. Such levee systems also commonly serve for hurricane or flood protection, but are not so defined for purposes of these guidelines.

Feasible and Practical - those locations, methods and/or practices which are of established usefulness and efficiency and allow the use or activity to be carried out successfully.

Minerals - oil, gas, sulfur, geothermal, geopressured, salt, or other naturally occurring energy or chemical resources which are produced from below the surface in the coastal zone. Not included are such surface resources as clam or oyster shells, dirt, sand, or gravel.

Sediment Deposition Systems - controlled diversions of sediment-laden water in order to initiate land building or sediment nourishment or to minimize undesirable deposition of sediment in navigation channels or habitat areas. Typical activities include diversion channels, jetties, groins or sediment pumps.

Radioactive Wastes - Wastes containing source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923).

OTHER STATE POLICIES INCORPORATED INTO THE PROGRAM

Section 213.8A of Act 361 directs the Secretary of DOTD, in developing the LCRP, to include all applicable legal and management provisions that affect the coastal zone or are necessary to achieve the purposes of Act 361 or to implement the guidelines effectively. It states:

The Secretary shall develop the overall state coastal management program consisting of all applicable constitutional provisions, laws and regulations of this state which affect the coastal zone in accordance with the provisions of this Part and shall include within the program such other applicable constitutional or statutory provisions, or other regulatory or management programs or activities as may be necessary to achieve the purposes of this Part or necessary to implement the guidelines hereinafter set forth.

The constitutional provisions and other statutory provisions, regulations, and management and regulatory programs incorporated into the LCRP are identified and described in Appendix 1. A description of how these other authorities are integrated into the LCRP and coordinated during program implementation is presented in Chapter IV. Since all of these policies are incorporated into the LCRP, federal agencies must ensure that their proposed actions are consistent with these policies as well as the coastal use guidelines. (CZMA, Section 307)

CONSISTENCY DETERMINATION

This proposed action would create marsh in the shallow open waters of West Bay by constructing a sediment diversion through the right-descending bankline of the Mississippi River at approximate river mile 4.7. Over the 20 year life-span of this project, approximately 9,831 acres of emergent marsh would be created in the shallow open waters of West Bay. Based on this evaluation, the U. S. Army Corps of Engineers, New Orleans District, has determined that the proposed action is consistent, to the maximum extent practicable, with the State of Louisiana's Coastal Resources Program.

Appendix C

Cultural Resources

Coordination Letters with the Louisiana State Historic Preservation Office.

Edwin W. Edwards
Governor

Melinda Schwegmann
Lieutenant Governor
and Commissioner

State of Louisiana
Department of Culture, Recreation and Tourism
OFFICE OF CULTURAL DEVELOPMENT

Mark H. Hilzim
Secretary

Gerri Hobdy
Assistant Secretary

December 7, 1992

Mr. R.H. Schroeder, Jr.
Chief, Planning Division
Department of the Army
New Orleans District
Corps of Engineers
P.O. Box 60267
New Orleans, LA 70160-0267

Re: West Bay Sediment Diversion Project
Plaquemines Parish, Louisiana

Dear Mr. Schroeder:

Reference is made to your letter dated October 15, 1992, concerning the above. We have carefully reviewed the information contained in your letter and do not object to your conclusion that additional cultural resources investigations are not warranted prior to construction of the West Bay Sediment Diversion Project due to the fact that significant cultural resources are not likely to be affected.

If we may be of additional assistance, please contact Mr. Duke Rivet in the Division of Archaeology at (504) 342-8170.

Sincerely,

Gerri Hobdy

Gerri Hobdy
State Historic Preservation Officer

GH:PR:s

"An Equal Opportunity Employer"
Kathleen M. Byrd, Ph.D., Director
Division of Archaeology
P.O. Box 44247 (1051 N. Third Street)
Baton Rouge, LA 70804
(504) 342-8170
Fax: (504) 342-3207

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

July 1, 2000

Ms. Gerri Hobdy
State Historic Preservation Officer
Department of Culture, Recreation and Tourism
Office of Cultural Development
P.O. Box 44247
Baton Rouge, Louisiana 70804

Dear Ms. Hobdy

Enclosed for your review and comment are two copies of a draft report entitled Phase I Remote Sensing Marine Archeological Survey of Proposed West Bay Diversion, Anchorage Area, Louisiana. R. Christopher Goodwin and Associates, Incorporated prepared the subject report, under contract to this office.

The New Orleans District is planning to divert sediment from the Mississippi River at mile 4.7 above Head of Passes (AHP). The project objective is to restore vegetated wetlands in shallow open water areas of West Bay that have experienced massive erosion by cutting a diversion canal from the bankline on the West Bank of the Mississippi River. As part of a contingency plan for emergency closure of the diversion soil could be dredged from the MR channel and placed on the bankline to close the gap. In order to reach the gap a floatation channel would be dredged for barge access for the gap closure.

In October 1992, the Corps of Engineers consulted your office regarding the original elements of this project. It was our recommendation that no cultural resource surveys needed to be conducted at that time. Your office concurred with this recommendation in a letter dated December 7, 1992. Since then, the plans have been changed to include a contingency plan that would include dredging the channel of the river to a depth of -59 feet to obtain sediment to close the gap in the bankline in case of an emergency. The Final Environmental Impact Statement, "Deep-Draft Access to the Ports of New Orleans and Baton Rouge, Louisiana" included a marine survey conducted by Mueller of the Mississippi River channel. This survey is not up to current standards for conducting a submerged cultural resources survey. A survey of the main line channel and the access channel to the west bank was recently conducted in February 2000. This report provides the results of the archival research as well as the remote sensing investigation. The survey located one magnetic anomaly suggestive of a shipwreck in the access channel. The geophysical analysis of the anomaly along the historic research, and interviews with the Coast Guard and locals indicate that this vessel went down between 1960 and 1973. The anomaly is a modern vessel that appears to be highly fragmented based on the geophysical analysis of its magnetic pattern. The anomaly does not meet the criteria of Section 106 of the National Historic Preservation Act since it is neither intact nor older than 50years old. No significant historic resources were identified in the project areas.

We are confident that no significant cultural resources exist in the project area and we do not plan to undertake additional cultural resources work for this project. Please contact Ms. Joan Exnicios at (504) 862-1760 if you have any questions.

Sincerely,

Dave Carney
Chief, Environmental Planning and Compliance Branch

Enclosures

Appendix D

Public Comments and Responses

The following two sections of Appendix D provide a listing of public comments received on the DEIS during the public meeting and during the public comment period. All comments and letters are provided on the left hand page of this document. Reponses for comments are provided on the right hand side of the pages. All materials received during the comment period are provided in this document.

L = Letter

RL = Response to Letter

TIMOTHY B. LIEBAERT*

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Army Corps of Engineers
Environmental Planing and Compliance Branch
CEMVN-PM-RS
P.O. Box 60267
New Orleans, LA 70160
By Fax (504) 862-2572
By Email: sean.p.mickal@usace.army.mil

Re: West Bay Sediment Diversion Project,
Comments to Draft Environmental Impact Statement

Dear Army Corps of Engineers:

I am writing to you on behalf of the Azby Fund, which owns land in Plaquemines Parish, Louisiana.

The Azby Fund would like the following specific questions answered:

L 1.1 **1. Has the Corps identified the lands lying within Plaquemines Parish that will be affected, either *positively* or *negatively*, as a result of the project?**

L 1.2 **2. If the Corps has identified the lands lying within Plaquemines Parish that will be affected, either positively or negatively, as a result of the project, what lands are those, by Township and Range.**

L 1.3 **3. What will be the likely effect to lands lying within Township 23 South, Range 31 East?**

L 1.4 **4. Has the Corps identified any pollutants that will be distributed into lands within Plaquemines Parish as a result of the project?**

L 1.5 **5. If the Corps has identified any pollutants that will be distributed into lands within Plaquemines Parish as a result of the project, please identify those pollutants?**

RL 1.1 The goal of the proposed action is to restore or create marsh in open water. Placing material directly on existing lands in Plaquemines Parish is not a feature of the proposed action. The only lands that would be impacted by the proposed action are those lands where the diversion will be located.

RL 1.2 Lands and open water that may be positively or negatively impacted are: T21S, R31E open water sections 28, 33, & 34, open water irregular section 35, and riverfront irregular sections 24, 25, & 26. T22S, R31E open water sections 3 - 5, 8 - 11, 14 - 17, 20 - 23, 26, & 27, open water irregular sections 2, 12, 13, 24, 25, & 36, and riverfront irregular sections 1 – 20.

RL 1.3 The effect on lands lying with T23S, R31E would be minor if at all. The nearest the project benefit area approaches T23S, R31E is approximately 0.5 mile to T23S, R31E open water irregular section 1 from T22S, R31E open water irregular section 36.

RL 1.4 - .5 Any pollutants that may be present, at any detectable level, would not be distributed onto existing lands as a direct result of the proposed action. Water quality in regards to EPA listed pollutants in the river is acceptable.

L 1.6	**6.** **Has the Corps identified any animal species within the project area that will be negatively impacted as a result of the project?**	RL 1.6 No animal species have been identified that would be impacted by the proposed action
L 1.7	**7.** **If the Corps has identified any animal species within the project area that will be negatively impacted as a result of the project, please identify those species.**	RL 1.7 See answer to question #6.
L 1.8	**8.** **Has the Corps identified any animal species within the project area that will benefit as a result of the project?**	RL 1.8 Any animal species that utilize coastal wetlands (i.e., salt marsh, intermediate marsh, etc.) would benefit from the proposed action.
L 1.9	**9.** **If the Corps has identified any animal species within the project area that will benefit as a result of the project, please identify those species.**	RL 1.9 See answer to question #8.
L 1.10	**10.** **Has the Corps identified any animal or fish habitat within the project area that will be negatively impacted as a result of the project?**	
L 1.11	**11.** **If the Corps has identified any animal or fish habitat within the project area that will be negatively impacted as a result of the project, please identify that habitat.**	
L 1.12	**12.** **Has the Corps identified any animal or fish habitat within the project area that will benefit as a result of the project, please identify those species.**	RL 1.10 - .13 Various types of fish habitat exist throughout the project area; such as, open fresh water to brackish water, submerged aquatic vegetation, etc. Those habitats that exist in West Bay would persist, but might be displaced or replaced as the diversion is opened and water depths change and emergent marsh progrades gulfward. Numerous fish species currently utilize the open waters of West Bay. Some of those species that would be impacted by the proposed action can be found in section 3.2.7 through section 3.2.11.
L 1.13	**13.** **If the Corps has identified any animal or fish habitat within the project area that will benefit as a result of the project, please identify that habitat.**	
L 1.14	**14.** **Will turbidity of the diversion result in any negative impacts within the project area?**	RL 1.14 No. Existing water conditions in West Bay are already turbid.
L 1.15	**15.** **Will turbidity of the diversion result in any negative impacts within lands lying within Township 23 South, Range 31 East, Plaquemines Parish, Louisiana?**	RL 1.15 No. Turbidity is a hydrological product and will not impact existing lands.
L 1.16	**16.** **Is the project expected to enhance environmental values within lands lying within Township 23 South, Range 31 East, Plaquemines Parish, Louisiana?**	RL 1.16 No. Project benefits were derived from the predicted creation of marsh acres within the limits of the proposed action for a 50-year project life as illustrated in figure(s) 2, 3, 15, & 16.
L 1.17	**17.** **If the project is expected to enhance environmental values within lands lying within Township 23 South, Range 31 East, Plaquemines Parish, Louisiana, please identify all such values enhanced.**	RL 1.17 No lands have been identified lying within T23S, R31E that would benefit from the proposed action.
L 1.18	**18.** **Does the Corps expect the project to result in the creation of new marsh land within the project area?**	RL 1.18 The Corps has estimated approximately 9,831 acres of vegetated wetlands would be created over the twenty-year project life of the proposed action.

L 1.19 **19. Does the Corps expect the project to result in the creation of new marsh land within Township 23 South, Range 31 East, Plaquemines Parish, Louisiana?**

RL 1.19 The Corps does not expect the creation of any vegetated wetlands in T23S, R31E as a direct result of the proposed action.

L 1.20 **20. If the Corps expects the project to result in the creation of new marsh land within Township 23 South, Range 31 East, Plaquemines Parish, Louisiana, has an estimate of the acreage expected to be gained been determined?**

L 1.21 **21. If the Corps expects the project to result in the creation of new marsh land within Township 23 South, Range 31 East, Plaquemines Parish, Louisiana, how much acreage of marsh land is expected to be created?**

L 1.22 **22. If the Corps expects the project to result in the creation of new marsh land within Township 23 South, Range 31 East, Plaquemines Parish, Louisiana, what species of vegetation will inhabit that area?**

L 1.23 **23. If the Corps expects the project to result in the creation of new marsh land within Township 23 South, Range 31 East, Plaquemines Parish, Louisiana, will any animal species not presently inhabiting that area be attracted as a result of the project?**

RL 1.20 - .23 See answer to question #19.

The Azby Fund appreciates this opportunity to submit these comments. Should you have any questions you may contact the undersigned.

Very truly yours,

Timothy B. Gebbia
Attorney at Law

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

June 20, 2001

Mr. Sean P. Mackle
Project Manager
U. S. Army Corps of Engineers
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Mr. Mackle:

In accordance with our responsibilities under Section 309 of the Clean Air Act, the National Environmental Policy Act (NEPA), and the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA, the Region 6 Office of the U.S. Environmental Protection Agency (EPA) has completed the review of the Draft Environmental Impact Statement (DEIS) for the proposed sediment diversion channel into West Bay through the West Bank of the Mississippi River at mile 4.7 above Head of Passes, in southeastern Louisiana.

The proposed phased construction project consists of an uncontrolled sediment diversion channel. The first phase of construction is for a discharge of 20,000 cubic feet per second (cfs); the second phase consists of modifying the first phase channel for a 50,000 cfs diversion. This modification will be based on monitoring of diversion operations. Both flows are based on 50 percent duration stage of the river. Approximately 9,831 acres of wetlands will be created in shallow open water over the next 20 years.

The following comments are offered for your consideration in the development of the Final EIS (FEIS).

L 2.1. 1. In reference to the Clean Water Act (CWA) 404(b)(1) Guidelines, Section 2 of the DEIS provides a CWA 404(b)(1) evaluation dated 1990. Our review notes that the project description in the permit application is substantially different from the description in the DEIS and should be revised. However, based on our knowledge of the project at present, we believe that the project would be in compliance with the 404(b)(1) Guidelines. Please address this concern in the FEIS.

RL 2.1. The project description found in the 404(b)(1) evaluation includes the proposed diversion at mile 4.7 as well as a diversion at mile 7.5. There is no difference between the proposed project description in the EIS and the completed 404(b)(1) analysis and provides adequate coverage for the proposed action as it is currently proposed.

L 2.2. 2. The Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Task Force action on this proposal is to determine if Federal and non-Federal funds should be expended for construction of the project. The costs associated with the project should be provided to the public and others, as well as the source of the funds. Please include this information in the FEIS.

RL 2.2. Current funding of the proposed action is 85% Federal – 15% State. The current estimate of the proposed action is approximately $22,000,000. This information is now included in the EIS.

L 2.3. 3. DEIS-Page 12: The table presented is titled "Comparative Impacts of Alternatives", however it appears that only the selected alternative and no action are provided. Is there comparative information for any other alternative that was developed? Originally, placement of the sediment diversion was considered on the east side of the Mississippi River and later changed

RL 2.3. Other alternatives were evaluated and not selected for further analysis. Because of the existence of a preferred alternative prior to the implementation of CWPPRA in 1990, the proposed action was authorized for construction by the CWPPRA task force as part of the 1st Priority Project List. Through a review of file documents it is not apparent that a formal request was not made by any one agency or entity. However, it is evident that the proposed action was selected based upon the proximity of the sediment diversion to a vast open body of water without interference from wildlife management areas, landowners, or oil and gas facilities.

to the west side based on request of the State. Please provide information in the FEIS discussing the basis for the requested location change for the agencies' and public information.

L 2.4. 4. DEIS-Page 16: The information on water quality could be more factual. Standards and existing or projected water quality levels could be included. Please provide the data that demonstrates the water quality of the receiving area. There appears to be a contradiction on water quality statements made here with those on DEIS-Page 22 which indicate designated uses exist for the area which would require a better water quality. Please clarify in the FEIS.

RL 2.4. Previous studies in Southwest Pass of the Mississippi River indicated that water quality is acceptable (Espey, 1995; Batelle, 1999). Ambient water quality was reported in Batelle, 1999, section 5.1, as follows: "Ambient water samples collected at the in-channel and reference sites were generally clean and only contained trace levels of PAHs and metals. Concentrations of these organic and metal analytes were similar in ambient water samples collected from the reference and in-channel sites. Copper, which was detected at higher concentrations in ambient water from the reference site, was the only exception." Water in the marsh creation (receiving) area is significantly influenced by water from the Mississippi River and especially so during high river events. It is unclear what contradictions are referred to between the two water quality sections and after further review the NOD has not found any contradictions.

L 2.5. 5. DEIS-Page 18 Table 3: The DEIS seems to state that low real estate property values would be maintained with the project. Does this mean that the marsh that is created would have a low vaiue? There also appears to be a contradiction between population and community growth with one having a sharp decline and the other stated as having a growth rate that is relatively low. Please address this concern in the FEIS.

RL 2.5. The marsh, as it relates to real estate value, would maintain a low market value. The marsh, as it relates to habitat value, would increase in value. While the rate of population growth may be in sharp decline, the community as a whole continues to grow, albeit at a slow rate.

L 2.6. 6. DEIS-Page 24, Table 6: The Table is titled "Cumulative Effects of Constructing a Large-scale Sediment Diversion for Marsh Creation in the Mississippi River Delta". Please attempt to address the total of cumulative **benefits**, or possibly synergisms that relate to ecosystem productivity. Please have the FEIS address the benefits to the people of Louisiana related to cultural values which are distinct from the academic analysis of specific historic or archeological sites.

RL 2.6. Cumulative benefits analysis is not a feature of the cumulative impacts analysis. According to the EPA document "Consideration of Cumulative Impacts in EPA Review of NEPA Documents," (EPA 315-R-99-002) cumulative impacts are identified as "The combined, incremental effects of human activity, referred to as cumulative impacts, pose a serious threat to the environment. While they may be insignificant by themselves, cumulative impacts accumulate over time, from one or more sources, and can result in the degradation of important resources." Furthermore, it is stated "Cumulative impacts result when the effects of an action are added to or interact with other effects in a particular place within a particular time. It is the combination of these effects, and any resulting environmental degradation, that should be the focus of cumulative impact analysis." The Corps believes that the cumulative impacts analysis for the proposed action adequately addresses threats to the environment. A brief section addressing the cultural benefits to the citizens of the State of Louisiana and the nation as a result of the proposed action has been added to Table 2. Comparative Impacts of Alternatives.

L 2.7. 7. DEIS-Page 60: The first sentence indicates that the CWPPRA project will recommend the first cost be shared on 75 % Federal and 25% non-Federal basis. This should be revised to present-day percentages of CWPPRA. Please correct the FEIS.

RL 2.7. Correction made.

EPA classifies your DEIS as "EC-2," i.e., EPA has "Environmental Concerns and Requests Additional Information". EPA has requested additional information on project site selection, water quality, CWA Section 404(b)(1) assessment, costs, comparative impact analysis, cumulative benefits, and cost sharing requirements. Our classification will be published in the Federal Register according to our responsibility under Section 309 of the Clean Air Act, to inform the public of our views on proposed Federal actions.

We appreciate the opportunity to review the DEIS. We request that you send our office five (5) copies of the FEIS at the same time that it is sent to the Office of Federal Activities (2251A), EPA, 1200 Pennsylvania Avenue, N.W., Washington, D.C. 20044.

Sincerely yours,

Robert D. Lawrence, Chief
Office of Planning and Coordination

West Bay Sediment Diversion D7-FEIS

SUMMARY PARAGRAPH FORM

ERP NUMBER D-COE-G29033-LA

TITLE: WEST BAY SEDIMENT DIVERSION, PLAQUEMINES PARISH, LOUISIANA

RATING ASSIGNED TO PROJECT EC-2

NAME OF EPA OFFICIAL RESPONSIBLE Robert D. Lawrence
Chief, Office of Planning
and Coordination

SUMMARY OF COMMENT LETTER

EPA has expressed environmental concerns and has requested additional information on project site selection, water quality, CWA Section 404(b)(1) assessment, costs, comparative impact analysis, cumulative benefits, and cost sharing requirements.

PARAGRAPH APPROVED FOR PUBLICATION RDL

(Initials of
Approving Official)

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

May 1, 2001 F/SER44/RS:jk
225/389-0508

Mr. David Carney, Chief
Environmental Planning and Compliance Branch
CEMVN-PM-RS
Post Office Box 70267
New Orleans, Louisiana

Dear Mr. Carney:

The National Marine Fisheries Service (NMFS) has received the draft Environmental Impact Statement (EIS) titled **"West Bay Sediment Diversion, Plaquemines Parish, Louisiana,"** provided by your April 3, 2001, letter. The draft EIS evaluates the potential impacts of the proposed construction of a large-scale sediment diversion south of Venice on the right descending bank of the Mississippi River. The proposed restoration project has been authorized under the auspices of the Coastal Wetlands Planning, Protection and Restoration Act and is jointly sponsored by the U.S. Army Corps of Engineers and the Louisiana Department of Natural Resources.

The NMFS finds this document to be clearly written, well-organized and inclusive of information regarding the existing conditions, proposed action, and potential impacts of that action. We note that your April 3, 2001, letter initiates Essential Fish Habitat (EFH) consultation as required by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and its implementing regulations as specified at 50 CFR 600.920(g)(2). Based on our review of the document, we believe the draft EIS is in need of only the following revisions:

Specific Comments

3.0 AFFECTED ENVIRONMENT
3.2.11. Essential Fish Habitat
Existing Conditions

L 3.1. Page 32, paragraph 4. The NMFS notes that although EFH has been designated throughout the northern Gulf of Mexico, it is, by definition, specific to the habitat requirements of the individual life stages of each Federally-managed species. EFH is more accurately described as being those waters and substrates necessary for Federally-managed species to spawn, breed, feed, and grow to maturity. For the northern Gulf of Mexico, EFH has been generally identified as areas where individual life stages of specific managed species are common, abundant or highly abundant. Due to the overlapping habitat requirements of a broad array of Federally-managed species, EFH is pervasive throughout the northern Gulf of Mexico. The NMFS recommends that this section of the draft EIS be revised to more accurately describe the basis for EFH designation.

RL 3.1. Document revised.

L 3.2. Page 32, paragraph 3. While the draft EIS includes a section briefly describing EFH resources in the vicinity of the project area, this section of the document does not correctly list the life stages of managed species which would be impacted by the proposed project. We recommend this section be expanded to specify the habitat types which provide EFH for the life stages of Federally-managed species which commonly occur in the project area as follows:

SPECIES	LIFE STAGE	EFH
brown shrimp	postlarval/juveniles	marsh edge, SAV, tidal creeks, inner marsh
	subadults	estuarine mud bottoms, marsh edge
white shrimp	postlarval/juveniles	marsh edge, SAV, marsh ponds, inner marsh
	subadults	marsh edge, SAV, marsh ponds, inner marsh
gray snapper	postlarval/juveniles	estuarine SAV, mud bottoms
red drum	postlarval/juveniles	SAV, estuarine mud bottoms, marsh/water interfaces
	subadults	estuarine mud bottoms
	adults	estuarine mud bottoms

RL 3.2. Document revised.

3.2.11. Essential Fish Habitat

Future with project

L 3.3. Page 33, paragraph 3 This section of the document suggests that the proposed project would have beneficial effect on EFH. Although the NMFS generally concurs with this conclusion, the document should be revised to include a discussion of the conversion of specific types of EFH (i.e., mud bottom or SAV to inner marsh or marsh edge), and to summarize information supporting conclusion that such habitat conversion is likely to have a net benefit on EFH.

RL 3.3. Sections 3.2.7 - 3.2.14 provides supporting information that the net benefits of the proposed action will have a net positive benefit on EFH.

Based on our knowledge of the project and our review of the draft EIS, we agree with the assessment that project implementation should, over the long term, benefit EFH and associated marine fishery resources. Therefore, while we recommend the document be revised as suggested above, we support rapid implementation of this project.

We appreciate the opportunity to review and comment on the draft EIS. If you wish to discuss this project further or have questions concerning our recommendations, please contact Rachel Sweeney at (225) 389-0508.

Sincerely,

Richard Hartman

for Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division

c: FWS, Daryl Clark
NRCS, Brit Paul
EPA, Wes McQuiddy
LA DNR, Jeff Harris
F/SER4, Mager
File

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Post Office Box 649
Albuquerque, New Mexico 87103

IN REPLY REFER TO:

June 18, 2001

ER 01/358

District Engineer
U.S. Army Corps of Engineers
ATTN: Sean P. Mickal
PO Box 60267
New Orleans, LA 70160-0267

Dear Sir:

The U.S. Department of the Interior has reviewed the West Bay Sediment Diversion, Plaquemines Parish, Louisiana, Draft Environmental Impact Statement (EIS) and, in this regard, the following comments are provided for your consideration. The Draft EIS is very well-written, provides an excellent description of fish and wildlife resources in the project area and, from our perspective, fully addresses the anticipated project impacts on those resources.

D11-FEIS
West Bay Sediment Diversion

L 4.1. Page 14, Table 2, Threatened and Endangered Species – This section of the table briefly describes current and future conditions as they relate to threatened and endangered species. Although we recognize that the table is meant to be brief, the future "with-project" conditions should describe expected project effects on all, rather than most, threatened and endangered species and should contain a description of project impacts on proposed or designated critical habitats for those species. The reference to the "Endangered and Threatened Species" section should also be corrected.

RL 4.1. The table is a summary. Endangered and threatened species have been addressed in section 4.2.14 and appendix B of the Environmental Impact Statement. Threatened and endangered status and impacts have been coordinated with the US Fish and Wildlife Service Regional Office located in Lafayette, Louisiana.

L 4.2. Page 38, Section 3.2.13, Nesting Colonies - This section lists the colonial nesting birds known to occur in the project area. We recommend that the Draft EIS be revised to indicate that construction or maintenance work and related surveys will not be conducted within 1,500 feet of any waterbird nesting colonies during the nesting season (i.e., mid-February to September, depending on the species present). Prior to beginning any work, surveys should be conducted by qualified personnel during the colonial waterbird nesting season to identify the presence and location of any such colonies. Any colonies identified should be reported immediately to the Field Supervisor, U.S. Fish and Wildlife Service (FWS), 646 Cajundome Boulevard, Suite 400, Lafayette, LA 70506, telephone (337) 291-3100. We also recommend that this section be revised to state that on-site agency and contract personnel will be informed of the need to identify and avoid impacting colonial waterbirds during the nesting season and that all contracts will contain a statement prohibiting work within 1,500 feet of any active nesting colonies.

RL 4.2. Document revised accordingly.

L 4.3. Page 38, Section 3.2.14, Endangered and Threatened Species - This section lists the threatened and endangered species that may occur in the area. It should be revised to indicate that the peregrine falcon (*Falco peregrinus*) is no longer a federally-listed species and therefore does not need to be included. The text should also be revised to include the presence of the bald eagle (*Haliaeetus leucocephalus*) and Gulf sturgeon (*Acipenser oxyrhynchus desotoi*), federally-listed threatened species, which are not addressed in this section. The anticipated project effects to these two species should be fully discussed herein. The reference to Appendix A should be corrected to refer to Appendix B for endangered and threatened species assessments.

RL 4.3. Comments noted.

L 4.4. Also, the FWS published a proposed rule in the *Federal Register* on July 7, 2000, proposing critical habitat for wintering piping plovers (*Charadrius melodus*). The FWS anticipates finalizing that designation in the near future. An analysis of proposed project impacts to piping plover critical habitat should, therefore, be included in this section and a determination of the proposed project effects on critical habitat should also be included in the "future with-project" section of subsequent documentation.

RL 4.4. Due to the nature of the proposed action, an analysis of what effects on critical habitat may result would be highly speculative and inaccurate. Current conditions in the Mississippi River delta are such that the area is currently and will continue to degrade as a habitat resource for many species that are endangered, threatened, or stable. As with any prograding delta, the different types of habitat that is created or restored will likely change daily, seasonally, and annually over the life of the project. If the diversion proves to be successful, as part of the proposed action, bifurcation dredging would occur as necessary to continue the gulfward progression of marsh, if necessary. Currently, critical habitat as described by the final rule (50 CFR Part 17) on habitat for wintering plovers, does not exist by any appreciable amount in the marsh creation area of West Bay. This proposed action would only serve to possibly create or improve critical habitat. The New Orleans District will coordinate with responsible officials of the US Fish and Wildlife Service as necessary throughout the lifespan of the project.

L 4.5. In addition, this section states that the project is "not likely to adversely impact any endangered or threatened species." Consultation with the FWS on threatened and endangered species should occur within one year of project construction; however, the most recent consultation for this project occurred in 1999. Because more than one year has passed since the most recent consultation, we recommend that consultation be reinitiated with the FWS (address above) in order to obtain current information on threatened and endangered species and their critical habitats (particularly for the piping plover) in the project area and that the text be revised accordingly.

RL 4.5. Endangered species coordination re-initiated with U.S. Fish and Wildlife Service August 30, 2001. See appendix B, section 4, B14-FEIS for coordination documentation.

In summary, we support implementation of the proposed West Bay Sediment Diversion Project. Marshes in the project area provide important habitat for numerous federal trust species, including wading birds, Neotropical migrants, and migratory waterfowl. We agree that without implementation of the proposed action, improvements in the quantity and the quality of habitats as a result of the sediment diversion project would not be realized by a number of wetland-dependent species. Thank you for the opportunity to review this Draft EIS and provide these comments.

Sincerely,

Glenn B. Sekavec
Regional Environmental Officer

VINTAGE PETROLEUM, INC.

May 23, 2001

U.S. Army Corps of Engineers
New Orleans District
Environmental Planning and Compliance Branch: CEMVN-PM-RS
P.O. Box 60267
New Orleans, Louisiana 70160-0267

RE: Proposed West Bay Sediment Diversion Project

Attn: Sean Mickal

Gentlemen:

Vintage Petroleum, Inc. is pleased to receive information from the U.S. Army Corps of Engineers, and being offered the opportunity to participate in the public meetings to provide verbal and written comments related to the proposed West Bay Sediment Diversion Project. Provided herein are written comments related to the proposed project some of which Vintage Petroleum verbalized in the public meeting held in Buras, Louisiana on May 15, 2001. Although Vintage Petroleum, Inc. does not object to projects that should create, nourish or maintain wetlands within the state of Louisiana, we do object to the detrimental effects of this project upon Vintage Petroluem's production operations. Vintage Petroleum, Inc. presently operates two (2) oil and gas fields in the immediate vicinity of the proposed project, the West Bay and South Pass Block 24 fields. These two fields already experience some silting of well access canals that mandates periodic dredging. We are of the opinion that implementation of the proposed West Sediment Diversion project will significantly increase our dredging requirements. This situation was also recognized in your Environmental Impact Study, but was dismissed as insignificant. We believe this is actually a significant detrimental condition as it relates to our operations. Your Environmental Impact Study concluded that the solution to this problem would be to maintain access to existing wells in the delta if sediment from the diversion fills any oil well access canals.

L 5.1. Vintage would ask that the Corps of Engineers recognize this potential problem and take steps to assure that we are not adversely affected and if we are to devise a plan to maintain our canal access to each and every well that we now have access to. Additionally we suggest that the Corps of Engineers install monitoring stations within our fields to measure present sedimentation rates to compare to the post project sedimentation rates and implement a plan of action to maintain the canal access accordingly. As you may be aware, access to these well sites are not only a critical economic necessity for Vintage Petroleum and other interest and royalty owners such as the Parish and State of Louisiana, but is also of critical importance to the safe and legal operations of these wells.

L 5.2. In addition to the actual dredging requirements, Vintage presently experiences increasing difficulty in receiving Corp of Engineers permit approvals to our requests for dredging permits. One solution may be the approval of field-wide maintenance dredging permits for these fields to speed up the process and allow for more expedient dredging to maintain access where additional sediment is being placed by this diversion project. We would like to work with you to address these issues and construct a plan of mutual agreement to maintain our well access. Please advise as to what steps Vintage can take to accomplish this goal with the Corps of Engineers. Should you have any questions related to this subject matter please call or write the undersigned.

Thank you,

Donald A. Williams

Donald A Williams
Production Manager
Vintage Petroleum, Inc.

RL 5.1. It is currently the position of the U.S. Army Corps of Engineers, New Orleans District, to not provide compensation for entities located outside the marsh creation area project limits.

RL 5.2. The process of applying for and obtaining 404(b)(1) permits is administered by the U.S. Army Corps of Engineers, New Orleans District, Regulatory Branch. Your company's concerns have been noted and a copy of this correspondence has been forwarded to the responsible office.

Federal Emergency Management Agency

Washington, D.C. 20472

MAY 23 2001

Mr. Sean Mickal
U.S. Army Corps of Engineers
Planning, Programs, and Project Management Division
Environmental Planning and Compliance Branch
CEMVN-PM-RS
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Mr. Mickal:

This is in response to a letter from Mr. David F. Carney of your office dated April 3, 2001, to the Federal Emergency Management Agency (FEMA) regarding the construction of an uncontrolled sediment diversion channel on the right-descending bank of the Mississippi River, as proposed by the New Orleans District, U.S. Army Corps of Engineers. Accompanying Mr. Carney's letter was a draft Environmental Impact Statement (EIS), which evaluates the environmental impacts of the proposed action. Specifically, the project would convert 9,831 acres of shallow open water to vegetated wetlands over the 20-year life of the project. In the letter, it was requested that we review the draft EIS for this project and provide comments.

D14-FEIS
West Bay Sediment Diversion

L 6. To better respond to this request, we would first like to provide some background information concerning the National Flood Insurance Program (NFIP), the applicable NFIP Flood Insurance Rate Maps (FIRMs), and floodplain management issues that pertain to the proposed sediment diversion project.

The NFIP is a Federal program that enables property owners to purchase flood insurance and is designed to reduce the escalating costs of property damage caused by floods. The program is based on an agreement between local communities and the Federal Government that if a community will implement programs to reduce future flood risks, the Federal Government will make flood insurance available within the community as a financial protection against flood losses that occur.

The regulatory requirements set forth by FEMA are the minimum floodplain management criteria established under the NFIP. The community is responsible for approving all proposed floodplain development and for ensuring that permits required by Federal or State law have been received. State and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If the State of Louisiana or Plaquemines Parish has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

The area of the proposed sediment diversion project would be found on FIRM number 220139, panels 1150 B and 1250 B, but the panels were not printed. Areas downstream of the site, on

RL 6. All comments are noted. However, due to the relative remote location of the proposed action and the location of the proposed action in an open body of water, flood events would not increase above the frequency of occurrence as dictated by the seasonal rise and fall of the Mississippi River and the Gulf of Mexico. The goal of the proposed action is to build and restore marsh in an open water environment where marsh once existed. As can be observed on attached plates there is very little or no land that will be impacted adversely by the proposed action. The only anticipated development that may occur is oil & gas related activities, which would be regulated by the state and the Federal government separately from this project.

L 6.

panels 1175 B, 1200 B, 1275 B, and 1300 B, which were not printed, could potentially be affected by the sediment diversion project. The project site and downstream areas can be located on the FIRM index, dated September 30, 1993, for Plaquemines Parish, Louisiana. All land areas on the unprinted panels are designated as Zone V21, which are portions of the Special Flood Hazard Areas that are subject to inundation by the base (1-percent-annual-chance) flood with additional hazards due to velocity (wave action).

The area of the proposed project is located within the SFHA. The EIS does not provide the technical data necessary to evaluate the impacts, if any, of the proposed project on the SFHA or Base Flood Elevations (BFEs) depicted on the effective FIRM. Under Section 65.3 of the NFIP regulations, if the project causes any change in the BFE or in the delineation of the SFHA, it is the responsibility of the community to furnish to FEMA the data reflecting the nature and effects of the changes within six months of project completion. Once these data are provided, FEMA will review the information and make any necessary revisions to the flood maps. The map-revision procedure is accomplished by either physically changing the FIRM or issuing a Letter of Map Revision (LOMR).

A LOMR is a document issued to officially revise the currently effective NFIP map. It is used to change flood risk zones, floodplain boundary delineations, flood elevations, and planimetric features. A LOMR has the effect of revising the map without actually revising and reprinting the map itself. Depending on the size of the area affected, the change may or may not be reflected in future physical revisions or on subsequent printings of the map. All requests for LOMRs should be made to FEMA through the Chief Executive Officer of the community, because it is the community that must adopt any changes and revisions to the map.

If development in this area is to be considered at any time in the future, be aware that FEMA has regulations regarding building on fill. Subparagraph 65.5(a)(4) of the NFIP regulations stipulates that if a structure is involved in a request for a Letter of Map Revision based on Fill (LOMR-F), FEMA's determination is based on comparisons of the lowest floor (including basement/crawl space) and the lowest adjacent grade elevations with the BFE. If the entire structure is at or above the elevation of the base flood, the structure may be excluded from the SFHA.

We recommend that you consult with the community to ensure that the sediment diversion project will not adversely impact existing or proposed development, and to determine whether it will be necessary for the community to submit technical data concerning any changes to BFEs or the SFHA. The Floodplain Administrator for Plaquemines Parish is Ms. Sheila Robeaux, Permit Officer, who can be reached at the following:

Plaquemines Parish Council
P. O. Box 829
Port Sulphur, LA 70083
(504) 392-6690

L 6.

Application forms, instructions, and additional information on the LOMR process are available from FEMA's website at www.fema.gov/mit/tsd/DL_MT-2.htm. As fees may also be required to support the LOMR request, please see www.fema.gov/mit/tsd/FRM_fees.htm.

I trust that we have adequately responded to your request. If you need further assistance regarding this matter, please contact Katie Paulson of my staff at (202) 646-2585. If you have any additional questions, you may call our toll-free FEMA Map Assistance Center information line at 1-877-FEMA MAP (1-877-336-2627).

Sincerely,

Matthew B. Miller For

Michael K. Buckley, P.E., Director
Technical Services Division
Mitigation Directorate

cc: FEMA Region VI Office

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, FL 33702
(727) 570-5312, FAX 570-5517
http://caldera.sero.nmfs.gov

F/SER3:EGH:mdh

MAY 16 2001

Mr. David F. Carney
New Orleans District Corps of Engineers
Department of the Army
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Mr. Carney:

This responds to your April 3, 2001, request for comments on a draft Environmental Impact Statement on the proposed wetlands restoration project by the Army Corps of Engineers, New Orleans District (COE-NOD), to construct an uncontrolled sediment diversion on the right-descending bank of the Mississippi River in Plaquemines Parish, Louisiana, to restore vegetated wetlands in shallow open water. We have assigned consultation No. I/SER/2001/00464 to this project. Please refer to this number in future consultations regarding this project. We had previously consulted on this project by letter to the COE-NOD dated December 28, 1999 (copy enclosed), and made a determination that the proposed action was not likely to adversely affect listed species under the purview of the National Marine Fisheries Service (NMFS) if non-hopper-type dredges were used.

The proposed project consists of a large-scale, uncontrolled sediment diversion channel into West Bay through the west bank (right descending bank) of the Mississippi River at mile 4.7 above Head of Passes, southeast of Venice, Louisiana. The project would convert 9,831 acres of shallow open water to vegetated wetlands over the 20-year life of the project.

L 7.

NMFS believes that loggerhead (*Caretta caretta*), green (*Chelonia mydas*), and Kemp's ridley (*Lepidochelys kempii*), as well as gulf sturgeon (*Acipenser oxyrinchus desotoi*), may be occasionally present in the project area. There is no designated critical habitat in the project area.

NMFS has concluded in a previous biological opinion to COE-NOD that hopper-type dredges may adversely affect sea turtles, but pipeline dredges will not (September 22, 1995, NMFS Biological Opinion to the Corps of Engineers, New Orleans and Galveston Districts, on hopper dredging of channels in Texas and Louisiana). NMFS believes that the pumping and deposition of dredged materials will not adversely affect the above-listed endangered and threatened species under the purview of NMFS *if non-hopper-type dredges* (e.g., cutterhead, clamshell, pipeline, etc.) *are used* to obtain the dredged material, because of the slow operating speeds of these types of dredges. However, if a hopper dredge is used, the Corps of Engineers shall be bound by the reasonable and prudent measures, and implementing terms and conditions, of the September 22, 1995, NMFS Biological Opinion, since hopper dredges are known to adversely affect sea turtles.

This concludes your consultation responsibilities under section 7 of the Endangered Species Act for the proposed activity. Consultation should be reinitiated if new information reveals impacts of the identified activity that may affect listed species or their critical habitat, a new species is

RL 7. Comments noted.

L 7.

listed, the identified activity is subsequently modified, or critical habitat is determined that may be affected by the identified activity.

If you have any questions, please contact Mr. Eric G. Hawk, fishery biologist, at the number listed above, or by e-mail at eric.hawk@noaa.gov.

Sincerely,

Joseph E. Powers, Ph.D.
Acting Regional Administrator

Enclosure

cc: F/PR3, F/SER4

o:\section7\informal\west-bay.wpd
File: 1514-22.f.1 New Orleans District

CHRON

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, FL 33702
(727) 570-5312, FAX 570-5517

DEC 28 1999

F/SER3:EGH

Mr. Sean Mickal
U.S. Army Corps of Engineers
CEMVN-PM-R
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Mr. Mickal:

This responds to your agency's undated letter from Mr. David Carney to Mr. Charles Oravetz, Protected Species Management Branch (received November 29, 1999) and additional information provided in your December 1, 1999 facsimile to Mr. Eric Hawk. You requested our agency's endangered/threatened species comments and concerns on a proposed large-scale sediment diversion into West Bay at river mile 4.7 along the right-descending bank of the Mississippi River above Head of Passes in southeastern Louisiana. The proposed project objective is to create emergent marsh in West Bay. The project would convert 9,831 acres of shallow open water to vegetated wetlands over the 20-year life of the project. A relatively small amount, approximately 5.5 acres, of riverbank and adjacent wetlands would be excavated for construction of a diversion channel. A Biological Assessment (BA) was submitted pursuant to section 7 of the
L 8. Endangered Species Act (ESA).

NMFS Protected Resources Division previously commented on this project in August 1992 and found that no adverse impacts to federally listed species under NMFS purview would occur. The revised project currently being considered is reduced in scope from the previously consulted project. We have reviewed the BA written for the original project and concur with your determination that populations of endangered/threatened species under our purview would not be adversely affected by the proposed action. This conclusion is contingent upon dredging being accomplished with nonhopper-type dredges.

This concludes consultation responsibilities under section 7 of the Endangered Species Act (ESA). Consultation should be reinitiated if new information reveals impacts of the identified activity that may affect listed species or their critical habitat, a new species is listed, the identified activity is subsequently modified or critical habitat determined that may be affected by the identified activity. Please contact our Habitat Conservation Division at 850/234-5061 for information, recommendations and guidelines and on how the Corps can avoid/minimize potential adverse impacts of the project on NMFS trust resources and essential fish habitat.

RL 8. Comments noted.

L 8.

We appreciate the opportunity to comment and work with Corps of Engineers, New Orleans District. Please contact me 727/570-5312 if you have any questions or if I may be of assistance.

Sincerely,

Eric G. Hawk for

William T. Hogarth, Ph.D.
Regional Administrator

cc: F/SER4 - A. Mager
F/PR3
o:\section7\informal\westbay.nod File: 1514-22 f.1.

The following are comments were recorded during a public meeting held on 15 May 2001. The meeting focused on public review of the Draft EIS.

C = Comment

RC = Response to Comment

Honorable Benny Rousselle, Plaquemines Parish President:

"Thank You. I believe I had the question marked on there whether or not I was going to speak or not, but I will speak. The project from the initial phase, to me, well naturally ten years old, I think that it is time we do something. I can sympathize with those who have concerns…Vintage and anybody else in the area. But the reason that we're here is trying to rebuild some of what was destroyed by dredging and dredging and dredging. And I would hope that if you decide to continue to dredge, that you use whatever you do to a beneficial use or something. And that is going to be the policy that we have set as far as the Parish of Plaquemines permits. Especially in the area where West Bay is and we own the property and we are faced with lawsuits from the state of Louisiana taking it away because it has turned to water. Now that is an issue we deal with on a daily basis. We've been in court and are still in court.

C 1. As far as the project, if it does benefit 10,000 acres. I wish it would start tomorrow. We have a long history of debating and saying what coulda been done, what shoulda been done, and what woulda been done. I want to see you do it. And if there would be another project I would comment on it the same way, because we are getting really no benefit from all of the efforts that we see in the area, other than saying that we are the jumping off spot for the deepwater or for whatever. And in this area, if it's going to be benefiting 9,000 acres, I would say do it. If it would be a rock project, I know some people think we should do all rock projects and re-establish the coastline, we're for that as well, but if it takes ten years to get through just this project which effects very few people, I think that takes too long. And I would hope that you could find ways to shortcut the process in the future to not being able to having a project around for ten years and not get anything done.

And part of the issue is the land issue and who owns what and we're comfortable with who owns what at this point. And I would hope that in the future that the state and the Corps not let land issues stand in the way of projects when it benefits everybody. So that will be the end of my comments.

Thank you for coming down to Buras tonight and hopefully we'll see you real soon to start the project."

RC 1. { Comments Noted

Honorable Samuel Pizzolato

"Thank you. Let me start off by saying I'm not a newcomer to West Bay. I worked in West Bay for about 35 years. I saw it when you could walk across it as a marsh. And I have seen it deteriorate over the past 35 years. I worked at one time for British Petroleum Oil Company as a supervisor and after that I went into the boat business. I frequent this area, at least once, sometimes 3 times a week fishing, so I know the area.

This picture is halfway turned around in my mind.

I don't think that half the people here, or some of them, don't realize exactly what the project is. The fact is I am not aware of what exactly your project is.

I had called last week to the Corps, and it wasn't about this issue, about sedimentation in Tiger Pass, trying to get the placed dredged out. It was dredged last year and it's filled up again this year at the mouth of the pass and the boats can't come in and out. I was trying to get that taken care of, but that's not anything to do with this project.

C 2.1 This project as I understand it, is to cut a diversion to divert water across the West Bay area to fill in some of the land, approximately 9,861 acres. That being the case, with $22 million, we're proposing to spend $2,300/acre to fill in land, which I think is remarkable. However, I wonder why we need to cut a cut going into Grand Pass or thereabouts, when we already have a cut at Grand Pass at Venice. Why can't we use what we have? There's 61 feet of water at Grand Pass at Elder's Point. At the point where it goes down Grand Pass there is close to 35 feet of water. We can divert that water straight down within 4 miles of where you are cutting on the river. There is as much silt at Venice, as there is 5 miles further down the river. I believe… So to cut an extra cut that will dig to 61 feet, and this will dig to 61 feet or more.

RC 2.1 Grand Pass is geologically past its ability to effectively develop new land in the active delta of the Mississippi River. Delta growth and loss is a cyclical process that alternates through time. Dredging of Tiger Pass is a navigation channel that is part of the US Army Corps of Engineers, New Orleans District, Operation & Maintenance program.

C 2.2 We have also, I understand, some pilot programs along that river that had riprap and bulkheading. Why didn't we first eliminate some and see what we would get. As far as I know, we haven't. They're still blocking the water flow from the river.

RC 2.2 Alteration of current pilot programs is currently not a feature of the proposed action.

C 2.3 In conclusion, I'd like to state that I'm in favor of the sediment diversion, I'm in favor of building the marsh, I'm in favor of improving our environment, and stopping the floodwaters from coming into the landmass in anyway possible. I just would like to get the biggest bang for our buck. And 22 million for this project, I think we could have spent and gotten more bang for our buck.

RC 2.3 Comments noted.

Thank you."

Honorable Steve Vaughn, Plaquemines Parish Council:

"We'll, I'm kind of the new kid on the block. I've been around in the Plaquemines Parish Government in the last years 2 years. And the only comment I would have tonight is that I see where the project life is for 20 years and that if the Corps, basically, gets going with this project and it's beneficial to the parish. I hope that the 9,831 cares can be maintained to the point where we don't see any future land loss 30, 40, or 50 years down the road. Because I think that's basically what everybody, as far as coastal restoration, I think everyone is looking at resolutions or solutions to not only rebuild the coast, coastal wetlands, but also to maintain and preserve. I know there are a lot of issues involved that some people may be on different sides of the fence, but I just want to make a comment that if we are going to build wetlands, especially spending 22 million dollars and be beneficial to everyone that we maintain the progress that was created. And at the same time also continue to work with people who have problems, such as the gentlemen that was up here earlier talking about his access to wells that maybe in the future that a compromise can be reached. We live in an area where the Hurricanes are eventually inevitable and I think we missed the big one for about 30 years or so or better and I think that eventually we will get one and I am hoping that we have more land besides just the levees to protect us."

C 3.

RC 3. Comments Noted

Mr. Earl Armstrong:

"My name is Earl Armstrong. I'm from the area and have seen it go, from growing up as a kid. A lot of the land that's lost on the West Bay is mostly land that was lost between Betsy and Camille. We lost a lot of land between Betsy and Camille. I think this project is gonna really help us. What I wanted to ask the Corps was…we have a lot of hopper dredges that work every year. When you do your first phase, which is I think 25 feet is that what your gonna build and that works out, then your going to dredge it deeper. Is this right? Is there anyway that when these hopper dredges are working, can they come in the mouth of this channel and drop that silt and let it go back? It would build up twice as fast. There is one dredge that dredges constantly at Cubit's Gap right there where that hump is right below Cubit's Gap…we're not looking at but a mile? I think this project will really help us because from the Jump to the Head of passes along that west bank the tree line is decaying real bad. And I've been in every storm down there and if that tree line goes that's like the backbone to the river…we're gonna be in trouble. Locally, I'm talking about, Venice and the rest of the places down there. I think it will work."

C 4.

RC 4. Comments Noted

Mr. Earl Thibodeaux:

"Yes, sir, my name is Earl Thibodeaux. I represent Vintage Petroleum. We have two oil and gas fields right in this area, the West Bay Field and South Pass 24 Field. At the present time we're spending roughly a half-a-million dollars dredging canals and we're having difficulty in getting permits to dredge our canals from the Corps. Right now we have a demand to plug two wells by the Office of Conservation and the Corps refusing us permits to get to our wells. And if you divert water right there in the middle of West Bay, we won't be able to operate and our dredging costs are going to triple to 2 or 3 million
C 5. dollars per year…if we can get the permits to do it. So, we'd just like to express our concerns that if you do this, we won't be able to operate our fields and we won't have any sort of repercussions against the Corps.

Originally, these were dredge canals in marsh areas with no spoils and they were done by hydraulic dredge and now the spoils are just filling us up everyday. We'd like to see that the Corps would either grant us continuous maintenance permits so that we could keep our canals open. I know we had these for a while, we don't have them anymore, but you could get a maintenance-dredging permit, maybe compensate us if we're spending a half-a-million, we're a small company and to dredge canals, compensate us for the additional dredging that we have to do or something of that nature. And I will be sending in a written comment."

RC 5. It is currently the position of the U.S. Army Corps of Engineers, New Orleans District, to not provide compensation for entities located outside the marsh creation area project limits. The process of applying for and obtaining 404(b)(1) permits is administered by the U.S. Army Corps of Engineers, New Orleans District, Regulatory Branch. Your company's concerns have been noted and will be forwarded to the NOD, Regulatory Branch office.

Appendix E

HTRW Analysis

INITIAL HAZARDOUS, TOXIC AND RADIOACTIVE WASTE (HTRW) ASSESSMENT

WEST BAY SEDIMENT DIVERSION, LOUSIANA

HTRW # 179

U.S. Army Corps of Engineers
New Orleans District
Planning Division
10 Oct, 2000

TABLE OF CONTENTS

SUMMARY

This assessment relies on site visits, existing literature, historic aerial photography, work already completed, and agency coordination. Based on results of this initial investigation, HTRW risk is low. No further HTRW investigation is warranted for this sediment diversion project.

INTRODUCTION

The purpose of this initial assessment is to gather and evaluate data regarding the existence or potential for encountering HTRW located in, or close to, U.S. Army Corps of Engineers civil works projects. The assessment relies on researching existing documentation prepared by the Corps, other Federal agencies, the State of Louisiana and local entities. Early identification of encountering sanitary and industrial waste disposal sites or permitted discharges within the project area can be accomplished prior to any land acquisition. In addition, the assessment would minimize the liability of the Federal Government, minimize the health and safety risks of field personnel by undocumented HTRW, and document the existence of sites that are in need of remediation or evaluation.

This primary site assessment is prepared under guidance of the Corps of Engineers Regulation ER 1165-2-132, Water Resources Policies and Authorities for Hazardous, Toxic and Radioactive Waste for Civil Works Projects, June 26, 1992, Lower Mississippi Valley Regulation 1165-2-9, Water Resources Policies and Authorities for Hazardous, Toxic, and Radioactive Waste for Civil Works Projects, 14 June 1996, ASTM E-1527-97 (Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process), and ASTM E 1528-96 (Standard Practice for Environmental Site Assessments: Transaction Screen Process), as applicable.

PROJECT DESCRIPTION

Project Purpose

This HTRW assessment will evaluate the health and safety risk of construction at the proposed site. Figures 1 and 2 show the location of the project. The purpose of this project is to restore vegetated wetlands within the active Mississippi River delta using a large-scale, uncontrolled sediment diversion channel.

Figure 1.

Figure 2.

Project Need

Vegetated wetlands are disappearing in coastal Louisiana at the rate of approximately 25 square miles per year. This project would restore wetlands in the river delta where land loss has been great. Without the project, continued land loss will cause serious economic and development

problems for coastal communities, as well as loss of fish and wildlife resources important to the state and nation. With the project constructed, overall land loss in the delta will continue, but at a slower rate.

Project Authority

The project is proposed under the authority of Title III, Public Law 101-646, the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA. This marsh creation project, using a large-scale uncontrolled sediment diversion through the west bank of the Mississippi River at Mile 4.7 Above Head of Passes (AHP), is approved for construction funding through the first CWPPRA Priority List.

Project Action

The U.S. Army Corps of Engineers (or its contractor) will construct a sediment diversion channel in two phases: 1) Construction of an interim diversion channel to accommodate a discharge of 20,000 cubic feet per second (cfs) at the 50 percent duration stage of the Mississippi River, and 2) Modification of the interim diversion channel design to accommodate full-scale diversion of 50,000 cfs at the 50 percent duration stage of the Mississippi River immediately upon completion of a period of intensive monitoring of diversion operations. Contingency plans for closing the diversion conveyance channel would be implemented if hydrographic monitoring of the Mississippi River navigation channel indicates the thalweg of the river migrating toward the diversion channel or if the shoaling substantially increases in the navigation channel downstream of the diversion. The sediment diversion would induce shoaling between river miles 1.5 and 5 Above Head of Passes (AHP)in the navigation channel of the Mississippi River and increase saltwater intrusion in the river. The project would convert 9,831 acres of shallow open water to vegetated wetlands over the 20-year life of the project. A relatively small amount of riverbank and adjacent wetlands would be excavated for construction of the diversion channel. No other coastal wetlands would be adversely affected by the project, and the project would not conflict with other wetland creation or protection projects. No environmental mitigation features are proposed for this project.

ENVIRONMENTAL SETTING

For environmental analysis purposes, the project area encompasses the active Mississippi River Delta (see Figure1). The major source of water in the area is the Mississippi River. Three Federally maintained navigation channels, Mississippi River - Baton Rouge to the Gulf of Mexico ship channel - South and Southwest Passes, Baptiste Collette Bayou, and Tiger Pass, are located within the active delta. Due to its location in the Gulf of Mexico, the area has a subtropical marine climate.

Existing habitat types in the project area include all marsh types and associated open water bodies, beach, shrub/scrub, bare land, forest, and upland. Up to 90 percent of the habitat within the project area consists of fresh and intermediate marsh.

Many species of fishes are found in the river. Common commercial fish include include blue, channel, and flathead catfish; smallmouth buffalo; and freshwater drum. Common sport fish include largemouth bass, striped bass and white crappie. Gizzard shad, shiners, and silversides are common forage fish.

Important terrestrial animals in the area include nutria, muskrat, raccoon, mink, and otter, all of which are harvested for fur. White-tailed deer, rabbits, various small mammals, and a variety of birds, reptiles, and amphibians also are present. The American alligator is harvested throughout the area for its meat and hide, especially in fresh and intermediate marshes. The marshes and shallow bays function as nursery grounds for valuable stocks of shrimp, oysters, crabs, and

finfishes. These resources provide excellent opportunities for sport and commercial fishing. Popular recreational activities include fishing, hunting, and boating.

Oil and Gas Infrastructure

Numerous oil and gas pipelines traverse the project area. These pipelines are shown on Figure 2. Oil and gas exploration and production operations are currently conducted in the shallow water areas where new marsh would be created. These operations would be impacted by the large- scale sediment diversion. Sediments that escape capture in the marsh development areas would accelerate natural shoaling of oil field canals and boat slips.

There are approximately 277,000 linear feet of existing canals and slips, occupying about 445 acres, in the marsh development area at the sediment diversion site. Not all of these canals and slips are actively used. Further, all of the canals would not be affected equally by the sediment diversion operations.

Climate

Conditions in the project area are largely determined by its subtropical location and its proximity to the Gulf of Mexico. Northeasterly winds are prevalent in the fall, and southeasterly winds are dominant in the spring and summer. Mean annual precipitation in coastal Louisiana is fairly high at about 160 cm. Mean annual temperature is about 20.6 °C. Occasional freezes occur, but thawing occurs fairly rapidly after daybreak. Hurricanes and tropical storms occasionally occur in Louisiana, between June and November.

Hydrology

The Mississippi River discharges the headwater flows from about 41 percent of the contiguous 48 states. Discharge at Baton Rouge ranges from 1,500,000 cfs once every 16 years, on average, to a low of 75,000 cfs recorded once during the period 1930 to the present, and average annual discharge is 450,000 cfs. Deep-draft navigation is a major component of waterborne traffic on the river. Currently, the river is maintained to a depth of –45 feet for deep-draft access from mile marker –22 in the bar channel reach up to river mile 232.4 at Baton Rouge, LA. The Mississippi River is a source for drinking water, recreation, and commerce.

ENVIRONMENTAL CONCERNS

General

The general public is concerned with construction project impacts and the potential environmental hazards a project may pose or uncover. Sources of potential HTRW, as much as practicable, should be identified prior to project construction and the appropriate design changes, clean-up, or safety precautions taken. Unanticipated HTRW sites at a project can lead to construction delays, safety risks for personnel and associated populations, increased coordination with regulatory agencies, and increased project costs.

ASSESSMENT METHODOLOGY

HTRW Objective

The objective of this assessment is to minimize through early detection the exposure from any undiscovered waste site or contaminated material during the construction of the project. The intent of this study is to provide a reasonable assessment of potential problem areas that can be considered by project management and the local sponsor in decisions of property transfer or

future testing requirements. The focus of this preliminary assessment is to identify information that would: (1) identify known sites adjacent to or within the proposed construction site, and (2) determine relative probabilities for potential contamination adjacent to or within the proposed construction site.

Aerial Photographic Analysis

Historic aerial photographs from 1978 to 1995 were reviewed. Aerial photography can reveal activities that may indicate industrial or commercial locations in the project area. Aerial photography can also provide a series of chronological reference points for the appearance, alteration, and disappearance of structures, and can indicate altered or stressed vegetation, as well as changes in landform.

Land Use Studies

Maps, aerial photographs, and published books were utilized for the land use research. The land use data are in Appendix B, including some historic photography.

Historic Records

The work site was first reviewed for superfund locations and RCRA Treatment, Storage, and Disposal sites, as well as underground storage tanks. In addition, an electronic search was conducted of the online databases maintained by the Unison Institute of Washington, DC; these databases include almost all of the information on HTRW publicly available from the Environmental Protection Agency. This information is found in Appendix C, Agency Review.

Site Visit

A site visit was conducted on August 15, 2000 by Bruce Baird, Joseph Giliberti, Paul Hughbanks, and Michael Saucier. The site was accessed from the river side, using a GPS to locate the site of the proposed diversion channel. The proposed site of the diversion channel was traversed on foot from the river bank to the open water of West Bay. The receiving waters of West Bay were observed from a small boat via Grand Pass and the camp canal.

ASSESSMENT RESULTS AND FINDINGS

Aerial Photographic Analysis

The aerial photographs reviewed showed no evidence of any facilities other than oil production platforms and associated equipment in the marsh creation area. No evidence of any facilities were observed in the proposed diversion channel location.

Land Use Studies

The result of archival and historic record research, along with reconnaissance survey and assessment of previous impacts did not indicate any known or documented HTRW concern.

Historic Records

Searching for potential and actual environmental threats to the project area, the detailed information contained in the following federal and state databases was utilized, as applicable: the National Priorities List (NPL), or Superfund; the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS); the Louisiana Site Remediation Information System (LASRIS); the Toxic Release Inventory (TRI); the Resource Conservation and Recovery Information System (RCRIS); Permit Compliance System (PCS); RCRA Biennial

Reporting System (BRS); Accidental Release Information Program (ARIP); and the Emergency Response Notification System (ERNS).

The project site is remote and inaccessible by road, with no facilities in the vicinity except for oil wells and pipelines. However, numerous oil and gas support facilities occur in Venice, and the databases that were searched include extensive listings of spills (3,330 ERNS Reports) RCRIS handlers (46), PCS Permits (41), BRS facilities (7), CUS submissions (8), CERCLA sites (2), and ARIP reports (1). Spills were primarily of crude oil, with diesel, lubricating oil, and numerous other oil products reported spilled in the Mississippi River. The CERCLA sites were
Gulf Oil-Venice Gas Plant (Warren Petrol) and Warren Petroleum Co., Venice La, both of which are "No Further Remedial Action Planned" sites.

In summary, an extensive history of spills has occurred in the Venice Area, and Venice has numerous potential sources of HTRW contamination. However, Venice is located approximately 6 miles upriver from the project area. Since the database report is 206 pages long, it has been included as a file on 2 3.5 inch disks with this report. See the records in this file for further details. The area pipeline maps are included in Appendix B.

Site Visit

Vegetation along the river was approximately 7 to 8 feet high, consisting of primarily coffeeweeed. West of a band of thick vegetation was a more open, sandy area, with sparse vegetation including goldenrod sp. Continuing westward towards the open water of West Bay, ground cover was thick, preventing a thorough examination for possible sources of contamination. Vegetation included willow and cypress trees, cattails, morning glory sp., ladies eardrops, deerpea, bulltongue, elephant ear, and pickerel weed. West Bay itself was characterized by shallow open water, with clumps of pickerel weed, and large expanses of American lotus.

Debris possibly left by the tides or wind was observed in the area, including ice chests and five gallon buckets. No visible evidence of contamination, or possible sources of HTRW were observed. No stressed or discolored vegetation indicative of contamination was observed. However, vegetative cover in the project area was such that sources of contamination could have been present, but obscured from view.

ASSESSMENT DISCOVERY

The aerial photography, land use, agency review, and site investigation studies revealed no data or indications of an HTRW problem associated with the proposed marsh creation/dredge material disposal project. The presence of pipelines in the work area poses no special risk, provided normal safety precautions are taken to avoid rupturing the pipelines.

RELATIVE RISK ASSESSMENT

Based upon field inspection, agency coordination, aerial photography, and land use history, there is a low risk of encountering an HTRW problem during the construction of this project as currently planned.

PREPARERS

The primary assessment was compiled and prepared by Mr. Bruce Baird, Biologist, U.S. Army Corps of Engineers, New Orleans District, Planning, Programs and Project Management Division.

Land use research and supporting historical documentation were prepared by Ms. Joan Exnicious Archeologist, U.S. Army Corps of Engineers, New Orleans District, Planning, Programs and Project Management Division.

CONCLUSION AND RECOMMENDATION

Limitations

Compilation of historical environmental data within the State of Louisiana has not been a continuing effort. Comprehensive historical environmental databases have not been maintained which would provide a complete HTRW history.

Conclusion and Recommendation

Based on information gathered during the preparation of this preliminary assessment, there is a low risk of encountering an HTRW problem. The project should proceed as scheduled with construction. Should the construction methods change, or the area of construction be more than evaluated, the HTRW risk will require re-evaluation.

Report
Prepared by: _____ Date: _____

Land Use
Prepared by: _____ Date: _____

Reviewed by: _____ Date: _____

APPENDIX A
Site Photography

Photographs

1. West Bank of the Mississippi River, at the diversion channel site, facing West.

2. West Bank of the Mississippi River, at the diversion channel site, facing North, Northwest along the river bank.

3. Approximately 100 yards west of the river bank at the diversion channel, facing South, Southeast.

4. Approximately 100 yards west of the river bank at the diversion channel, facing North, Northwest.

5. Approximately 100 yards west of the river bank at the diversion channel, facing West, Southwest.

6. Approximately 300 yards west of the river bank at the diversion channel, facing West, Southwest.

7. Approximately 350 yards west of the river bank at the diversion channel, facing South, Southwest.

8 –9. Approximately 300 yards west of the river bank at the diversion channel, facing East, Northeast.

10. Approximately 175 yards west of the river bank at the diversion channel, facing East, Northeast.

11. At Camp canal near intersection of Grand Pass, facing northeast.

12. Camps along Camp Canal.

13 -14. Unnamed canal between Camp Canal and West Bay, facing South.

15 -22. Marshes of West Bay, along an unnamed bayou.

23. American lotus, marshes of West Bay.

24 -25. Abandoned oil well in canal north of West Bay.

Photograph 1.

Photograph 2.

Photograph 3.

Photograph 4.

Photograph 5.

Photograph 6.

Photograph 7.

Photograph 8.

Photograph 9.

Photograph 10.

Photograph 11.

Photograph 12.

Photograph 13.

Photograph 14.

Photograph 15.

Photograph 16.

Photograph 17.

Photograph 18.

Photograph 19.

Photograph 20.

Photograph 21.

Photograph 22.

Photograph 23.

Photograph 24.

Photograph 25.

APPENDIX B
Land Use

West Bay Sediment Diversion Land Use History

Historic Land Use

The West Bay Sediment Diversion area has seen only sporadic use by man. In the colonial period, Southwest Pass did not provide the best passage up the Mississippi River. Even as late as the 1850's, vessels were stranded at the shallows and mud lumps just outside the pass (Gould 1889:315). Only small vessel types attempted to enter the Pass by way of Scott's Canal and Double Bayou and then through the West Bay Diversion study area above the Head of Passes. Since the pass could not be entered without difficulty, the levees along the pass did not experience settlement or land usage as did the other passes.

It was not until the 1850's, when fishing became more profitable that you begin to see activity in the project area. There was a demand for fresh seafood for the markets in New Orleans. Seafood preservation methods improved and fish, shrimp, and oysters could be processed for shipment to the City and other ports. In 1854, a packet would travel up Southwest Pass from Balize thorough Plaquemines Parish and on to New Orleans.

While vessels plied the waters of Southwest Pass the West Bay Diversion area remained uninhabited. The shoaling that occurred in the pass made it difficult for larger vessels. After the Civil War, there were attempts to deepen the channel. In the 1870's, James B. Eads tested his theory of deepening the channel by constructing jetties at the mouth of Southwest Pass. The jetties scoured out the channel and helped maintain the channel depth. Eads project was so successful that the port of New Orleans moved up from 11th in the nation to 2nd place by 1875 (Morgan 1971:167).

The demand for products produced or harvested in Plaquemines Parish increased. The oysters found in the numerous bays, bayous, inlets were large and of a high quality increasing the demand for this product (Biographical and Historical Memoirs of Louisiana, 1892). In time, the bays that were close to settlements developed into oyster farms. Oyster processing factories opened as the quantity of oysters increased. These factories would steam and can the oysters. Most of the processing stations were located up river near Olga, Ostrica, and Myrtle Grove.

Shrimp was also important seafood that was harvested in the 1800's. The fishing boats that were used by the fisherman were rigged to harvest both shrimp and oysters. Fleets of luggers harvested oysters and other seafood in the bays. Even today these fleets anchor in the bayous and canals in the West Bay Diversion Area (Stringfield 2000)
Besides seafood, wild animals such as muskrat were hunted and trapped for in the marshes in the area. The trappers also hunted for otter, raccoons, mink, and beaver. Their fur pelts were highly valued.

The West Bay Diversion area was utilized by these various industries, but mostly as an area to pass though or by and not for settlement. No buildings are indicated on historic maps from the 1800's such as the United States Geological Survey quad of 1891.

As the port of New Orleans grew there was a greater need for a deeper channel so larger vessels could navigate the channel. In 1898, Congress authorized funds for a study to determine the feasibility of creating a 35-foot channel. In 1911, the channel was completed and has been maintained regularly since 1920. Various support facilities, which included residences, administrative, and industrial buildings were established just downriver at Burrwood. These buildings are indicated on the 1921 Mississippi River Commission Chart.

In the 1930's and 1940's sulphur and oil were discovered in Plaquemines Parish and quickly became a major industry for the state. Oil platforms and sulphur mines began to dot the landscape. In the late 1940's Louisiana began to exploit offshore oil and gas fields. The

pipeline industry grew with numerous oil production facilities and submarine pipelines throughout the region including the project area (Meyer 1981:84)

Major oil and gas companies such as United Gas Line operate facilities throughout the region. Close to 1000 miles of oil pipelines exist in the parish. Supporting oil storage facilities such as Ostrica Terminal, Grand Bay Station, Empire Terminal and West Bay station exist outside the project area upriver.

Throughout the years, this region of the river has been greatly affected by man through the shaping of the banks and maintenance of the Mississippi River channel. These activities have led to the creation of numerous man-made obstructions that include vessel wrecks, submerged pipes, cable areas, spoil areas, and dump sites (District Engineering Office 1916).

Even today the water transportation industry affects this area. Water transportation in its many forms is still important. The shipping of freight, cargo handling, transportation of cargoes and passengers, towing and tugboat activities has resulted in various support facilities.

Just prior to World War II, a Navy Section Base was constructed just below Burrwood to protect the Pass from German submarines. German submarines posed a great threat to the commercial activity on the Mississippi River. Activity picked up in the area after World War II as a result of the oil and gas industry

Results of Historic and Geomorphic Analysis

Documented changes in land area (both loss and gain) in the project area shows that the project area has deteriorated from a marsh environment into large open water areas (Morgan 1977,and May and British 1987). Over 472 feet of bank line erosion has occurred along the natural levee and along Double Bayou between circa 1878 and 1971. Bank line erosion and subsequent foreshore protection (in the 1960's) would have destroyed any terrestrial sites, which might once have been located within this portion of the project area.

Historic map and records research included a review of the various maps, topographic quadrangles, and aerial photographic coverage dating from 1945 to the present. A review of conveyance records and Notarial Acts was also undertaken to attempt to identify any evidence of dwellings, structures, or other improvements, which may have once been present within the project area. This research failed to identify any evidence of dwellings, structures, or other improvements within the limits of the project area. An 1891 United State Geological Survey map of Southwest Pass indicates that there was a more substantial land surface between Scott's Canal and Double Bayou. A small, unnamed bay exited just above Scott's Canal. By 1935, the land surface around Scott's Canal has eroded and expanded into a larger bay, which is listed on the 1935 United States Geological Survey quad as Scott's Bay. Both the 1891 and the 1935 USGS quads do not indicate any settlements in or near the project area. The closest activity area is downriver on the east bank of Southwest Pass at Customhouse Bayou. The 1958 USGS quad shows even more erosion has taken place. A Lookout telegraph stations is located in West Bay and appears to have been used by the United States Coast Guard and Geological Survey. The West Bay area is referred to as Block 52 and listed as being a gas field. Directly below this block is Block 53 and 54. These two blocks are oil and gas fields. While there are definite indications that the area is being used for oil and gas exploitation, no structures are indicated on the maps. Two cuts in the Mississippi River labeled Outlet 1 and 2 are indicated just below Double Bayou. Some debris from this industry could exist but is not indicated by historic map and aerial photographs.

Recent Investigations in the Project Area

No previous HTRW studies have been conducted in the West Bay Diversion Area. Several cultural resources surveys have been conducted for portions of the project area. These studies did not identify any significant cultural resources in the West Bay Diversion Area.

A submerged cultural resources survey was conducted in February 2000 for the channel and for the anchorage area for this project. The study involved conducting a magnetic and sonar survey of the West Bay Diversion portion of the Mississippi River Channel and the anchorage area. The survey located one magnetic anomaly in the project area that was suggestive of a shipwreck. The analysis of the anomaly along with the historic research and interviews with the Coast Guard and locals indicate that a vessel went down at this location between 1960 to 1973. The anomaly is a modern vessel that appears to be highly fragmented based on pattern analysis of the geophysical data. It is believed that a rock dike that was constructed sometime in the 1960's to provide foreshore protection on the riverside of the proposed conveyance channel broke up the remains of the ship.
Numerous other anomalies were located and determined to represent modern debris. The contractor recorded a total of 128 magnetic and 25 acoustic anomalies. These are believed to represent modern man-made debris that had washed into the river, fallen off vessels or that had been deliberately discarded into the channel. As for the terrestrial portions of the project area, any human activity areas, which may have existed within what is now the receiving water portion of project area, are presumed to have been destroyed or obscured to a point where their detection is no longer feasible.

Conclusion

Field reconnaissance conducted in August 2000 failed to encounter any areas within the limits of the proposed project that could be an HTRW hazard. The historic land use analysis indicates that there was no permanent settlement in the project area. This does not preclude that some HTRW material may exist as a result of dumping by vessels or oil activity in the area. The portion of the project area designated for receiving waters exhibits a low probability for containing significant cultural resources. This is due in part due to erosion and the recent formation of the land surfaces, and the present condition of the project area. The result of archival and historic record research, along with reconnaissance survey and assessment of previous impacts did not indicate any known or documented HTRW concern.

References Cited

Goodspeed Publishing Company
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District Engineering Office
1916 Letter to the Chief of Engineers, From the District Engineer Office, Mobile Alabama, United States Engineer Office, Mobile Alabama, September 15, 1916. Record Group 77, Entry 78957/239 (General Correspondence).

Goodwin , R. Christopher and Associates
2000 Phase I Remote Sensing Marine Archeological Survey of the Proposed West Bay Diversion Anchorage Area, Plaquemines Parish , Louisiana.

Gould, E. W.
1889 Fifty Years on the Mississippi: or Gould's History of River Navigation. Nixon-Jones Printing Company, St. Louis

May, J. R. and L. D. Britsch

1987 Geologic Investigation of the Mississippi River Deltaic Plain: Land Lass and Land Accretion. Technical Report No. GS-87-13, U.S. Army Engineer Waterways Experiment Station, Vicksburg.

Meyer, J. Ben Sr.
1981 Plaquemines: The Empire Parish. Laborde Printing Company, Inc.

Stringfield, William Richard
2000 Pays des Fleurs Oranges. Internet Site: ftp. Rootsweb.com/pub/usgenweb/la/plaquemi/book.

Maps

1866 Hydrology of Part of Mississippi River, Louisiana. Geerdes

1875 United States Coast Survey Map. Head of Passes, Mississippi River Delta and Up the River to Cubbitt's Crevasse.

1891 United States Geological Survey Quad Southwest Pass,LA. 1:62,500

1935 United States Geological Survey Quad Southwest Pass,LA. 1:62,500.

1958 United States Geological Survey Quad Southwest Pass,LA. 1:62,500.

Aerial Photographs

On File in Engineering File Room
DIXON BAY QUAD

1929 1:10,000. Photo take date: 17-Nov-29

1950 1:20,000. Photo take date: 07-Dec-50

1970 1:10,000. Photo take date: 20-Nov-70

1983 1:10,000. Photo take date: 11-Jan-83

APPENDIX C

Agency Review

A record search of potential sources of contamination was performed through contact with several of the following agencies, or a search of their databases (*). An electronic search was conducted of the online databases maintained by the Unison Institute of Washington, DC; these databases include almost all of the information on HTRW publicly available from the Environmental Protection Agency, and the results of the search are included here.

State Offices

Department of Natural Resources
Office of Coastal Restoration and Management
Division of Coastal Management
Fred Olive
1-504-342-7591

Office of Conservation
Division of Pipeline Operations *
Joel E. Kohler, P.E.
1-504-342-5513
Pipeline Safety
Dana Arabie
1-504-342-5585

Division of Geological Files *
Shile Macarty
1-504-342-5557
Staff of the Well Files
1-504-342-5555

Division of Injection and Mining *
Joe Ball
1-504-342-5515

Office of Management and Finance
Information Processing
Ethel Mae Pierce
1-504-342-1972

Office of Mineral Resources
Division of Geology and Engineering
Mike Killeen 1-504-342-5641

Department of Agriculture and Forestry
Office of Agricultural and Environmental Sciences
Pesticide Enforcement Coordinator
John E. McPherson
1-504-925-3960

Department of Health and Hospitals
Office of Public Health
Environmental Consultant (Baton Rouge)
Bobby Savoie
1-504-342-6726

Public Health, New Orleans Office
Charlie Anderson
568-8343; 568-8348

Environmental Epidemiology Section (New Orleans)
Jennifer Goodwin
568-8537

Department of Environmental Quality
Office of the Secretary
Emergency Response/Community Right to Know Coordinator
1-504-765-0720

Office of Solid and Hazardous Waste
Underground Storage Tank Division
Fay Crawford, 1-504-765-0253

Hazardous Waste Division *
Environmental Quality Program Analyst
Peggy Moak, 1-504-765-0355

Inactive and Abandoned Sites Division *
Lisa Griffin, 1-504-765-0487
Solid Waste Division *
John Rogers; John Glenn
1-504-765-0249

Office of Water Resources *
Water Pollution Control Division
Marilyn Murry, Permits Section
1-504-765-0532
Office of Air Quality and Radiation Protection *
Air Quality Compliance Division
Enforcement Program Manager
B. J. Pritchard
1-504-765-0186

Federal Offices

Environmental Protection Agency
EPA Hotlines
Asbestos and Small Business Ombudsman
1-800-368-5888

Solid and Hazardous Waste (RCRA) and Superfund *
1-800-424-9345

EPA Region VI, 1445 Ross Avenue, Dallas, Texas
Site Assessment [for preliminary assessments and site investigation reports for CERCLIS listings in Louisiana]
1-214-655-6740
Vern McFarland
1-214-655-2240

Freedom of Information Officer
Jerva Walker
FAX 1-214-655-2146

AIRS Manager Betsy Metcalf

1-214-655-7272

CERCLIS Manager
Mava Elliot
1 -214-655-6484

FINDS Manager
Matt Loesel
1-214-655-8544

ERNS [Emergency Response Notification System]
Office of Solid Waste and Emergency Response
1-202-260-7731

U.S. Coast Guard Hotline
National Response Center (for reporting oil spills and accidental hazardous substance releases),
1-800-424-8802.

Emergency Response Notification System (ERNS) *
Under the Freedom of Information Act [FOIA], citizens may obtain data from ERNS by submitting a request in writing to:

L. B. Franck, Chief Petty Officer,
U.S. Coast Guard
Freedom of Information Act Coordinator
2100 Second Street, S.W., Washington, D.C., 20593
Telephone 1-202-267-6929.

The retrievable records begin in 1982.

APPENDIX D

References

29 CFR 1910.120, U.S. Department of Labor, OSHA General Industry, Hazardous Waste Operations, 1 July 92.

ASTM E-1527-97, American Society for Testing and Materials, Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process.

ASTM E 1528-96 (Standard Practice for Environmental Site Assessments: Transaction Screen Process.

ER 385-1-92, Safety and Occupational Health Document Requirements for Hazardous, Toxic and Radioactive Waste (HTRW) Activities, 13 Dec 91.

ER 1110-1-263, Chemical Data Quality Management for Hazardous Waste Remedial Activities, 1 Oct 90.

ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste Guidance for Civil Works Projects, CECW-PO, 26 June 92.

RTK NET Master Area Report (search of RTK NET's copies of various EPA databases). Maintained online by Unison Institute, Washington, DC.

Shineldecker, C.L. 1992. Handbook of Environmental Contaminants. A Guide for Site Assessment. Lewis Publishers, Boca Raton.

SR EC-94/11, Environmental Review Guide for Operations (ERGO), March 1994.

Toxics Release Inventory, 1997, Tenth Annual Edition [1999]. Louisiana Department of Environmental Quality, Baton Rouge.

See Appendix B for more references.