

4.0 PLAN IMPLEMENTATION

Within plan implementation, there are several key individuals and organizations that are introduced and discussed in detail. For clarity, the following abbreviated terms apply:

- Assistant Secretary of the Army for Civil Works: the Assistant Secretary
- U.S. Army Corps of Engineers, Headquarters: Headquarters
- U.S. Army Corps of Engineers, Mississippi Valley Division: the Division
- U.S. Army Corps of Engineers-Mississippi Valley, Mississippi Valley New Orleans District: the District
- Coastal Louisiana Ecosystem Protection and Restoration Task Force: the Task Force
- State of Louisiana: the state

4.1 Evaluation of PBMO Implementation

The PBMO required sequencing and scheduling for implementation. This implementation evaluation is based on the near-term (5 to 10 years) and critical needs determinations. These criteria necessitated sequencing of the PBMO based on highest priority first and scheduled according to resource capabilities. The PDT established a set of assumptions and rules to sequence and schedule implementation of all components of the plan. The results of this evaluation are discussed in greater detail in a later part of this section.

4.1.1. Assumptions and Rules

There are five major assumptions made in the preparation of the implementation schedule prepared for this report. They are related to project authorizations, large-scale and long-term studies, demonstration projects, and Funding and Manpower Resources. These are described in the following bullets. A set of sequencing rules was also developed to guide development of the implementation schedule. These rules are also described in more detail in the following bullets.

Assumptions

- Near-term critical restoration feature feasibility-level decision documents and feasibility studies can begin in October 2004 based upon existing authority;
- Large-scale, long-term studies can begin in October 2004 based upon existing authority;
- Feasibility-level decision document preparation for demonstration projects can begin in January 2005 based upon successful completion of the Chief's Report in December 2004;

- The annual execution capability of the District and non-Federal sponsor is approximately \$200 million; and
- All components should be ready for construction with the next 10 years.

Sequencing Rules

- Near-term critical restoration features that if delayed, mean “Loss of Opportunity” to restore a critical needs area;
- Modifications to existing structures already identified as opportunities for significant contribution to LCA objectives;
- Critical restoration features that already have design initiated or completed; and
- Qualitative valuations that resulted in determining the features resident in the PBMO also allow for a prioritized ordering of the remaining features.

4.1.2 Sequencing of the PBMO

Utilizing these sequencing rules, the elements of the PBMO were prioritized as shown in **table MR-18**.

Table MR-18. Sequenced PBMO Components.

<u>Near-term Critical Restoration Features</u>
<ul style="list-style-type: none"> • (1) MRGO Environmental Restoration features • (2) Small Diversion at Hope Canal • (3) Barataria Basin Barrier shoreline restoration, Caminada Headland, Shell Island • (4) Small Bayou Lafourche Reintroduction • (5) Medium Diversion at Myrtle Grove with Dedicated Dredging • (6) Multi-purpose Operation of the Houma Navigation Canal Lock • (7) Terrebonne Basin Barrier-shoreline Restoration, E. Timbalier, Isle Dernieres • (8) Maintain Land Bridge between Caillou Lake and Gulf of Mexico • (9) Small Diversion at Convent / Blind River • (10) Increase Amite River Diversion Canal Influence by gapping banks • (11) Medium Diversion at White’s Ditch • (12) Stabilize Gulf Shoreline at Pointe Au Fer Island • (13) Convey Atchafalaya River water to Northern Terrebonne Marshes • (14) Re-authorization of Caernarvon Diversion – optimize for marsh creation • (15) Re-authorization of Davis Pond – optimize for marsh creation • (16) Penchant Basin Restoration • (17) Lac Des Allemands Reintroductions

4.1.3 Implementation Scheduling Evaluation

Following sequencing, the PDT used its experience and technical implementation solutions for scheduling components using the guidelines, assumptions, and rules described previously. While the PDT attempted to include all PBMO components into the ten-year implementation schedule, the assumptions and rules precluded the simultaneous implementation of all the PBMO components. Discussions with the non-Federal sponsor led to the conclusion of the PDT that a limitation of approximately \$200

million annual project expenditures was appropriate (attachment 3 NON-FEDERAL SPONSOR FINANCIAL CAPABILITY). The inclusion of all plan components would force the implementation schedule to either exceed the maximum funding limitation of approximately \$200 million per year, or would force initial construction of some features in the PBMO beyond the first 10 years.

In all of the implementation sequences, the Penchant Basin Restoration and the Lac Des Allemands Reintroductions were found to be beyond the 10-year implementation window. Because of the study purpose to detail a plan that includes restoration features brought to construction within the first 10 years, these two, while in the PBMO, are not in the tentatively selected plan (TSP).

4.1.4 Project Authorization Process Analysis

After applying the governing assumptions and implementation sequencing rules for all of the remaining restoration features within the subset of the PBMO, the PDT evaluated alternative implementation scenarios using two different authorization procedures: programmatic authorization for all critical features, and with standard authorization (no programmatic authority, i.e., WRDA authorization necessary for all critical features). In this first scheduling iteration, the comparison of the implementation schedule results indicate that the major difference between the authorization scenarios was in the execution capability within the first five years. Beyond Year 5, both scenarios indicate execution at the annual capability of approximately \$200 million. Another iteration was conducted to investigate the effects of programmatic authorization for only the top five highly critical opportunities. This scheduling iteration identified that partial programmatic authorization of the PBMO features (i.e., only the top five restoration features) provided the same increased execution capability in the first five years as the 100 percent programmatic authorization (all 15 restoration features). It became apparent that the annual funding limitations, not WRDA authorization of projects, limited the plan's annual execution in the second five-year period. The implementation scenario supported by partial programmatic authorization is optimal for expediting implementation of features that address the most urgent needs of the coastal area, allowing for the increased annual execution in fiscal years 07 (point A) and 08 (point B) (**figure MR-38**).

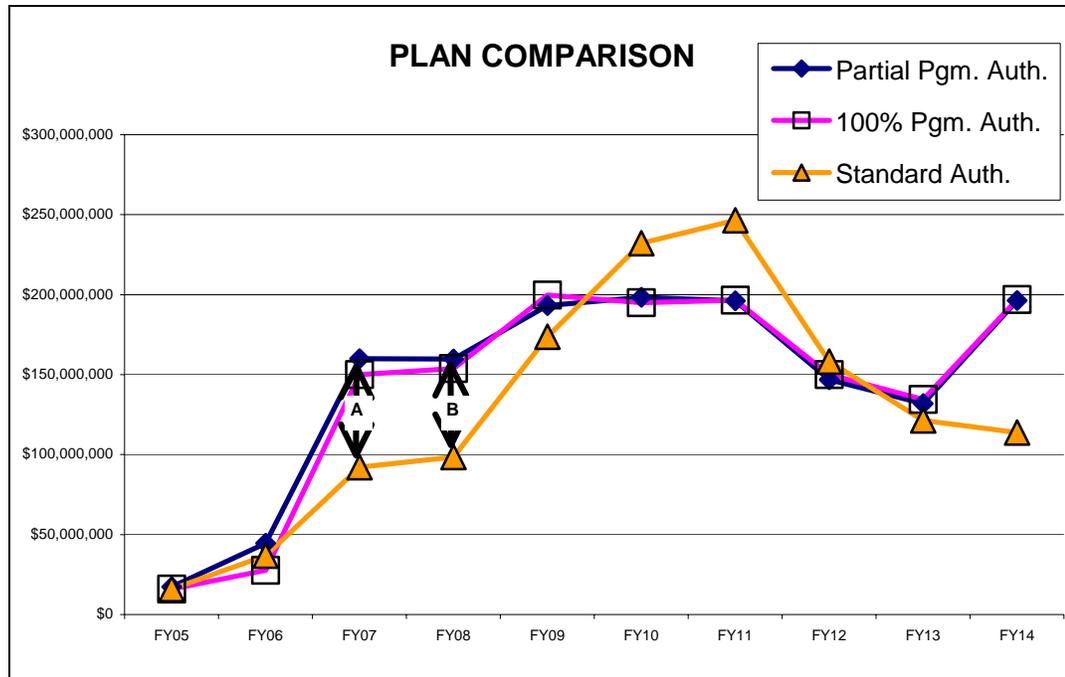


Figure MR-38. Alternative Implementation Sequences: shows the varying annual execution capability under each scenario.

Table MR-19 shows the PBMO components recommended for programmatic authorization and approval with future authorization.

Table MR-19. Scheduled PBMO Components.

<p>Recommended for Programmatic Authorization <i>(Implemented with Programmatic Approval Authority)</i></p>
<p><u>Near-term Critical Restoration Features</u></p> <ul style="list-style-type: none"> • (1) MRGO Environmental Restoration features • (2) Small Diversion at Hope Canal • (3) Barataria Basin Barrier shoreline restoration, Caminada Headland, Shell Island • (4) Small Bayou Lafourche Reintroduction • (5) Medium Diversion at Myrtle Grove with Dedicated Dredging
<p>Recommended for Approval With Future Authorization <i>(Implemented with Standard Approval Authority)</i></p>
<p><u>Other Near-term Critical Restoration Features</u></p> <ul style="list-style-type: none"> • (6) Multi-purpose Operation of the Houma Navigation Canal Lock • (7) Terrebonne Basin Barrier-shoreline Restoration, E. Timbalier, Isle Dernieres • (8) Maintain Land Bridge between Caillou Lake and Gulf of Mexico • (9) Small Diversion at Convent / Blind River • (10) Increase Amite River Diversion Canal Influence by gapping banks • (11) Medium Diversion at White’s Ditch • (12) Stabilize Gulf Shoreline at Pointe Au Fer Island • (13) Convey Atchafalaya River water to Northern Terrebonne Marshes • (14) Re-authorization of Caernarvon Diversion – optimize for marsh creation • (15) Re-authorization of Davis Pond – optimize for marsh creation

4.2 Summary of the Tentatively Selected Plan (TSP) Components and Implementation Schedule

4.2.1 Description of the TSP

As stated in section 3.1 PLANNING CONSTRAINTS, S&T uncertainties necessitate the need for strong and continued science and technology development supported by demonstration projects. In addition the existence of significant existing water resource projects offer the opportunity for modifications of these projects to advance restoration (modifications to existing structures and increased beneficial use). To better achieve completeness and effectiveness, the PDT incorporated these two additional programmatic plan components. This multi-component TSP represents the best near-term approach for addressing ecosystem degradation in Louisiana. The LCA program relies on Congressional approval of the TSP as a framework for programmatic and future authorization actions. Components of the TSP are:

- Programmatic authorization of initial Near-term Critical Restoration Features;
- Programmatic authorization of S&T Program;
- Programmatic authorization of S&T Program Demonstration Projects;
- Programmatic authorization for the Beneficial Use of Dredged Material, and programmatic authorization to Initiate Studies of Modifications to Existing Water Control Structures;
- Future Congressional authorization required for the remaining components of the TSP in subsequent WRDAs; and
- Feasibility studies for the continued development of long-term and large-scale restoration concepts.

Figure MR-39 and **tables MR-20a** and **MR-20b** list the components of the TSP.

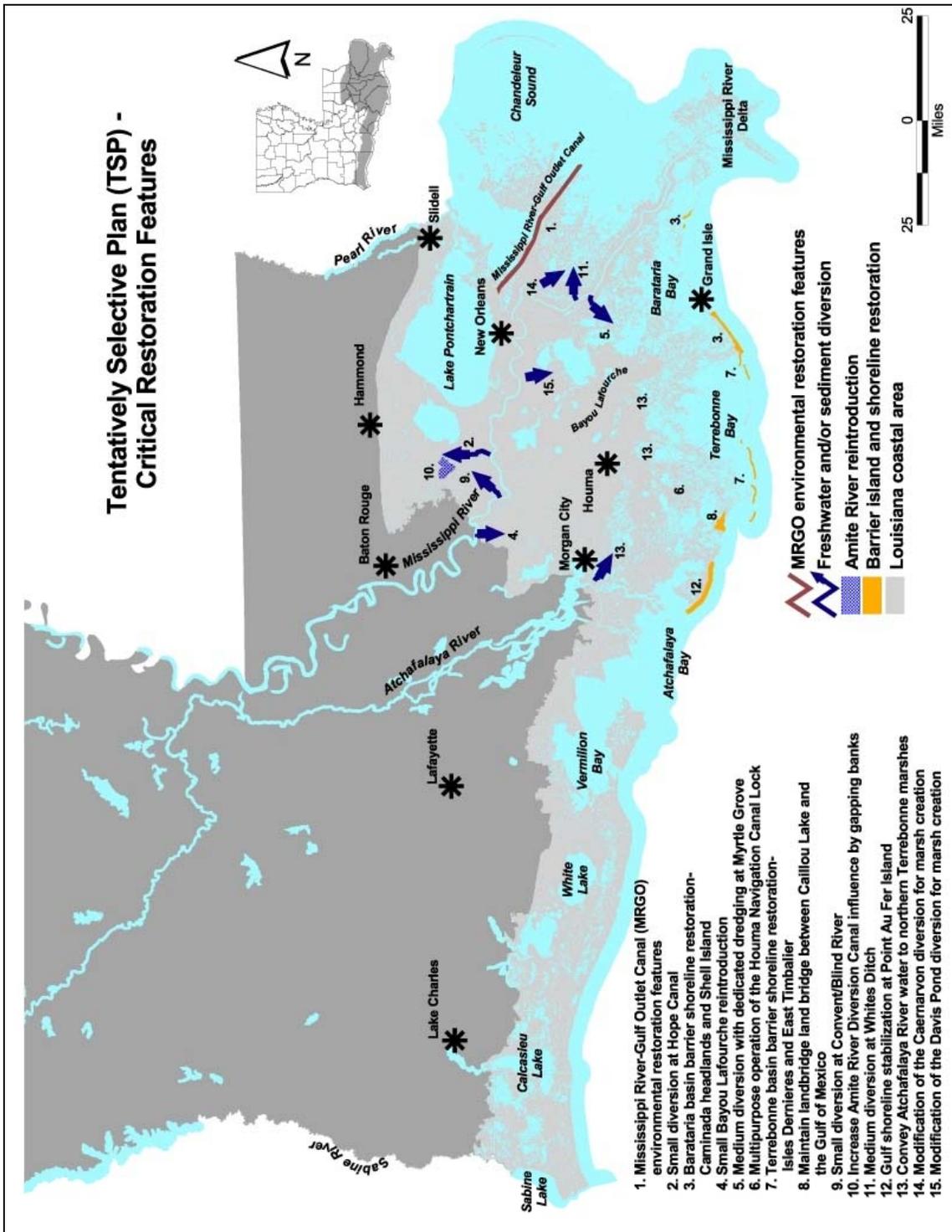


Figure MR-39. LCA Tentatively Selected Plan.

Table MR-20a. Components of the LCA Tentatively Selected Plan.

Recommended for Programmatic Authorization (Implemented with Programmatic Approval Authority)
<p>1. <u>Near-term Critical Restoration Features</u></p> <ul style="list-style-type: none"> • (1) MRGO Environmental Restoration features • (2) Small Diversion at Hope Canal • (3) Barataria Basin Barrier shoreline restoration, Caminada Headland, Shell Island • (4) Small Bayou Lafourche Reintroduction • (5) Medium Diversion at Myrtle Grove with Dedicated Dredging <p>2. <u>S&T Program</u></p> <p>3. <u>Initial S&T Program Demonstration Projects</u></p> <ul style="list-style-type: none"> • Wetland Creation in Vicinity of Barataria Chenier Unit (freshwater chenier restoration) • Pipeline Conveyance of Sediment to Maintain Land Bridge • Pipeline Canal Restoration (various methods and locations) • Shoreline Erosion Protection Test Sections in the Vicinity of Rockefeller Refuge • Barrier Island Sediment Sources Demo in Vicinity of Terrebonne Barrier Islands <p>4. <u>Programmatic Authority for the Beneficial Use of Dredged Material</u></p> <p>5. <u>Programmatic Authority to Initiate Studies of Modifications to Existing Water Control Structures</u></p>

Table MR-20b. Components of the LCA Tentatively Selected Plan.

Recommended for Approval With Future Authorization (Implemented with Standard Approval Authority)
<p>6. <u>Other Near-term Critical Restoration Features</u></p> <ul style="list-style-type: none"> • (6) Multi-purpose Operation of the Houma Navigation Canal Lock • (7) Terrebonne Basin Barrier-shoreline Restoration, E. Timbalier, Isle Dernieres • (8) Maintain Land Bridge between Caillou Lake and Gulf of Mexico • (9) Small Diversion at Convent / Blind River • (10) Increase Amite River Diversion Canal Influence by gapping banks • (11) Medium Diversion at White's Ditch • (12) Stabilize Gulf Shoreline at Pointe Au Fer Island • (13) Convey Atchafalaya River water to Northern Terrebonne Marshes • (14) Re-authorization of Caernarvon Diversion – optimize for marsh creation • (15) Re-authorization of Davis Pond – optimize for marsh creation <p>7. <u>Large-scale and Long-term Concepts Requiring Detailed Study</u></p> <ul style="list-style-type: none"> • Mississippi River Hydrodynamic Model <ul style="list-style-type: none"> ▪ Mississippi River Delta Management Study ▪ Third Delta Study ▪ Upper Atchafalaya Basin Study including evaluation of alternative operational schemes of Old River Control Structure <i>funded under MR&T</i> • Chenier Plain Freshwater Management and Allocation Reassessment Study • Acadiana Bay Estuarine Restoration Study

4.2.2 Sequencing of the TSP

Tables 21a-c show the implementation schedule for the TSP, developed with programmatic authorization for critical features 1 through 5, and standard authorization process for features 6 through 15.

Table MR-21a.

TSP Implementation Alternative (W/ Partial Programmatic Authority)					1 of 3																							
ID	Activity Desc.	Original Duration	Early Start	Early Finish	Planned																							
					2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024			
A01A	MRGO Environmental Restoration Features (SP1) DD	520d	10/01/04	09/28/06	[Gantt bar: 10/01/04 to 09/28/06]																							
A01B	MRGO Environmental Restoration Features (SP1) PED	520d	10/03/05	09/28/07	[Gantt bar: 10/03/05 to 09/28/07]																							
A01C	MRGO Enviro. Rest. Construction	1040d	10/02/06	09/24/10	[Gantt bar: 10/02/06 to 09/24/10]																							
A01C2	MRGO Enviro. Rest. E&D, S&A	1040d	10/02/06	09/24/10	[Gantt bar: 10/02/06 to 09/24/10]																							
A01C3	MRGO Enviro. Rest. RE	1040d	10/02/06	09/24/10	[Gantt bar: 10/02/06 to 09/24/10]																							
B02A	Small Diversion at Hope Canal (SP1) DD	460d	10/01/04	07/06/06	[Gantt bar: 10/01/04 to 07/06/06]																							
B02B	Small Diversion at Hope Canal -PED	460d	07/07/06	04/10/08	[Gantt bar: 07/07/06 to 04/10/08]																							
B02C	Div. at Hope Canal Construction	1210d	04/11/08	11/29/12	[Gantt bar: 04/11/08 to 11/29/12]																							
B02C2	Div. at Hope Canal E&D, S&A	1210d	04/11/08	11/29/12	[Gantt bar: 04/11/08 to 11/29/12]																							
B02C3	Div. at Hope Canal RE	1210d	04/11/08	11/29/12	[Gantt bar: 04/11/08 to 11/29/12]																							
C03A	Barataria Basin Barrier Shore Rest. -Caminada ,Shell Is. SP2	1415d	05/01/00	09/30/05	[Gantt bar: 05/01/00 to 09/30/05]																							
C03B	Barat Basin Barrier Shore Rest. Cam., Shell-DD	520d	10/01/04	09/28/06	[Gantt bar: 10/01/04 to 09/28/06]																							
C03BA	Barat. Basin Barrier Shore Rest. Cam., Shell-PED	520d	10/03/05	09/28/07	[Gantt bar: 10/03/05 to 09/28/07]																							
C03C	Barat Basin Barrier Shore. Rest. Cam, Shell Is Const	1300d	10/02/06	09/23/11	[Gantt bar: 10/02/06 to 09/23/11]																							
C03C2	Barat Basin Barrier Shore. Rest. Cam, Shell Is E&D, S&A	1300d	10/02/06	09/23/11	[Gantt bar: 10/02/06 to 09/23/11]																							
C03C3	Barat Basin Barrier Shore. Rest. Cam, Shell Is RE	1300d	10/02/06	09/23/11	[Gantt bar: 10/02/06 to 09/23/11]																							
D06A	Small Bayou LaFourche Reintroduction (SP3)-DD	330d	10/03/05	01/05/07	[Gantt bar: 10/03/05 to 01/05/07]																							
D06B	Small Bayou LaFouche Reintroduction (SP3)-PED	330d	01/08/07	04/11/08	[Gantt bar: 01/08/07 to 04/11/08]																							
D06C	Small Bayou La Fourche Reintro Construction	1210d	04/14/08	11/30/12	[Gantt bar: 04/14/08 to 11/30/12]																							
D06C2	Small Bayou La Fourche Reintro E&D, S&A	1210d	04/14/08	11/30/12	[Gantt bar: 04/14/08 to 11/30/12]																							
D06C3	Small Bayou La Fourche Reintro RE	1210d	04/14/08	11/30/12	[Gantt bar: 04/14/08 to 11/30/12]																							
E07A	Medium Diversion w/ Dedicated Dredging at Myrtle Grove- DD	650d	10/03/05	03/28/08	[Gantt bar: 10/03/05 to 03/28/08]																							
E07B	Medium Diversion W/ Dedicated Dredging at Myrtle Grove-PED	650d	03/31/08	09/24/10	[Gantt bar: 03/31/08 to 09/24/10]																							
E07C	Med. Div. at Myrtle Grove Construction	1210d	09/27/10	05/15/15	[Gantt bar: 09/27/10 to 05/15/15]																							
E07C2	Med. Div. at Myrtle Grove E&D, S&A	1210d	09/27/10	05/15/15	[Gantt bar: 09/27/10 to 05/15/15]																							
E07C3	Med. Div. at Myrtle Grove RE	1210d	09/27/10	05/15/15	[Gantt bar: 09/27/10 to 05/15/15]																							
FST01	Science & Tech Program FY05-FY15	2608d	10/01/04	09/30/14	[Gantt bar: 10/01/04 to 09/30/14]																							
GDEMO1A	Small Marsh Creation to Eval. Saltwater Sediment-DD	521d	01/03/05	01/01/07	[Gantt bar: 01/03/05 to 01/01/07]																							
GDEMO1B	Small Marsh Creation to Eval. Saltwater Sediment Construct.	660d	01/02/07	07/13/09	[Gantt bar: 01/02/07 to 07/13/09]																							
GDEMO2A	Pipeline Conv. of Sed. to Maintain Land Bridge-DD	455d	01/03/05	09/29/06	[Gantt bar: 01/03/05 to 09/29/06]																							
GDEMO2B	Pipeline Convey of Sed. to Maintain Land Bridge Construction	1305d	10/02/06	09/30/11	[Gantt bar: 10/02/06 to 09/30/11]																							
GDEMO3A	Restor. Pipeline Canals (Test Diff. Methods) - REPORT	521d	10/02/06	09/29/08	[Gantt bar: 10/02/06 to 09/29/08]																							

Table MR-21b.

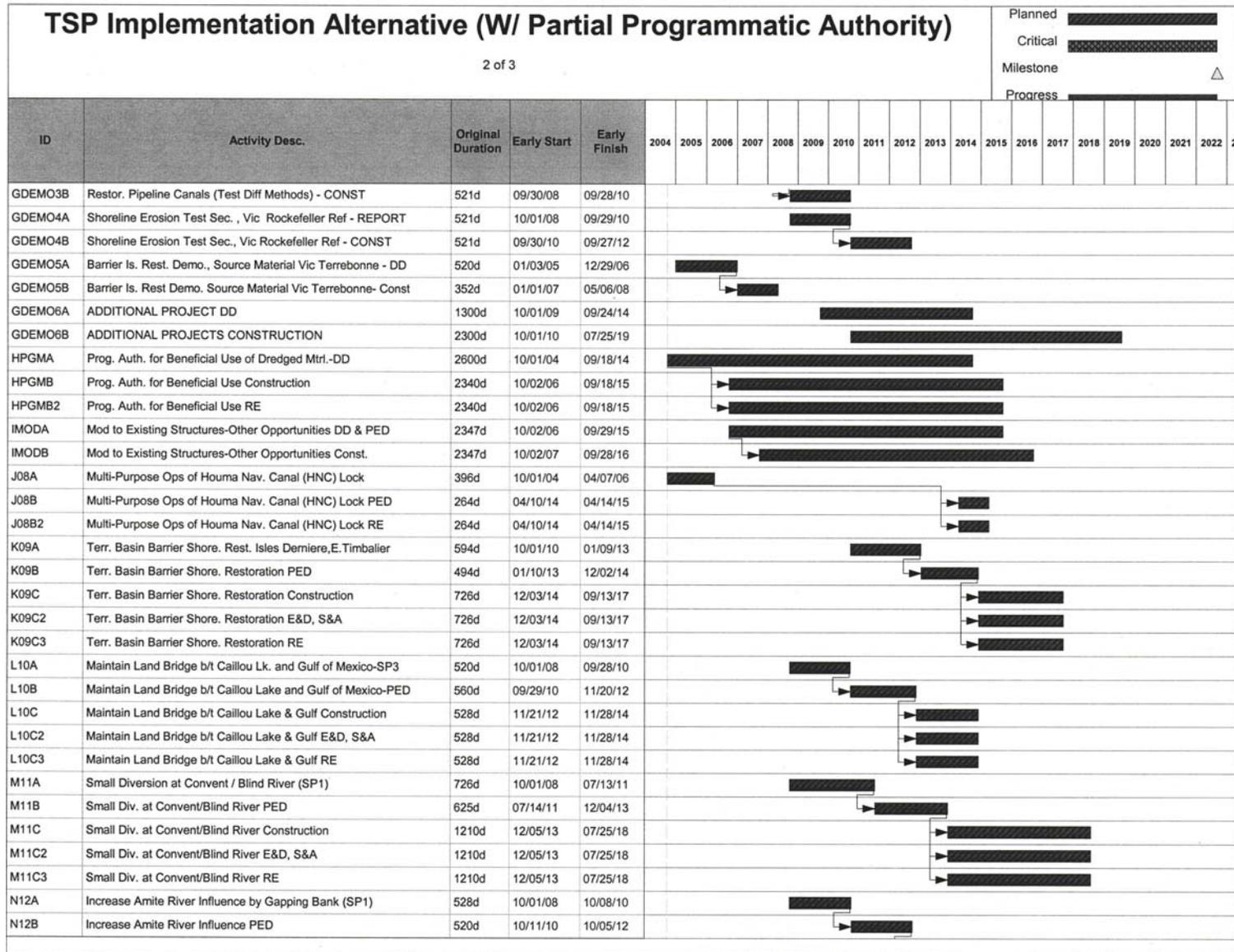
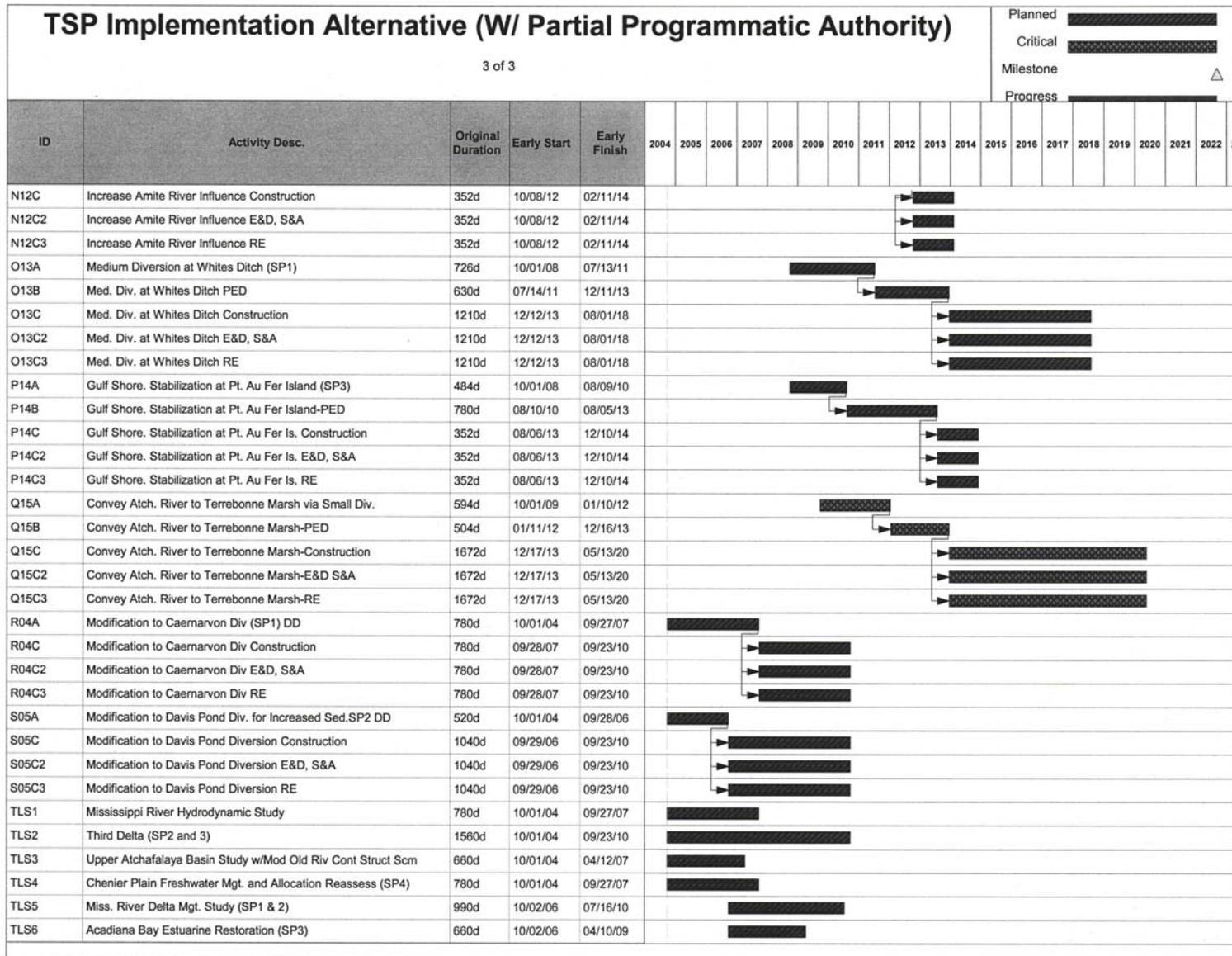


Table MR-21c.



4.2.3. Near-Term Critical Restoration Features

4.2.3.1 Programmatic authority for implementation of critical restoration features

Feasibility-level decision documents will be developed for each of the initial near-term critical restoration features. These feasibility-level decision documents will document planning; engineering and design; real estate analyses; and supplemental requirements under the NEPA. It is recommended that Congress authorize implementation of the five near-term restoration features described below, subject to review and approval of the feasibility-level decision documents by the Secretary of the Army.

The feature descriptions below explain the justification for the requested programmatic authorization for the initial near-term critical restoration features. All of these features have a basis in cost effectiveness and in their value to significantly address critical natural and human ecological needs. These five critical near-term features present a range of effects essential for success in restoring the Louisiana coast. The benefits provided by these features include the sustainable reintroduction of riverine resources, rebuilding of wetlands in areas at high risk for future loss, the preservation and maintenance of critical coastal geomorphic structure, and perhaps most importantly, the preservation of critical areas within the coastal ecosystem, and the opportunity to begin to identify and evaluate potential long-term solutions. Based on a body of work both preceding and including this study effort, the PDT produced an estimate of average annual costs and benefits for these five features. This information shows that average annual environmental output for this programmatically authorized feature package would be on the order of 22,000 habitat units at an average annualized cost of \$2,600 per unit provided.

4.2.3.1.1 *Mississippi River Gulf Outlet (MRGO) environmental restoration features*

Construction and maintenance of the MRGO began in 1958 and was completed in 1968. Construction of the MRGO has caused widespread wetlands loss and damages to estuarine habitats from the outer barrier islands in the lower Chandeleur chain up to cypress forests and tidal fresh marshes in the western reaches of the Lake Borgne Basin. During construction of the MRGO, dredging and filling destroyed more than 17,000 acres of wetlands, and an important hydrologic boundary was breached when the channel cut through the ridge at Bayou LaLoutre. After the MRGO was completed, significant habitat shifts occurred because the impacted area converted to a higher salinity system as a result of saltwater intrusion. Continued operation of the MRGO results in high rates of shoreline erosion from ship wakes, which destroy wetlands and threatens the integrity of the Lake Borgne shoreline and adjacent communities, infrastructure, and cultural resources. In addition, severe erosion of the MRGO channel continues to facilitate the transition of the upper Pontchartrain Basin estuary toward a more saline system.

Annual erosion rates in excess of 35 feet along the MRGO result in the direct loss of approximately 100 acres of shoreline brackish marsh every year and additional losses of interior wetlands and shallow ponds as a result of high tidal ranges and rapid water exchange. These vegetated habitats and shallow waters are important for estuarine biological resources and serve as critical habitat for the threatened Gulf sturgeon. Erosion and saltwater intrusion are also

impacting ridge habitat that is important for mammals, reptiles, and birds. The highest rates of erosion in the area occur along the north bank of the MRGO channel. The southern shoreline of Lake Borgne is eroding at approximately 15 feet per year resulting in the loss of 27 acres of wetlands per year. Continuing erosion along the channel and the shoreline of Lake Borgne is threatening to breach the lake marsh rim, which would result in the coalescence of the two water bodies. Such a breach would accelerate marsh loss in the area.

Rapid action is required to protect the integrity of the southern Lake Borgne shoreline and to prevent continued erosion of the MRGO channel banks from ocean going vessel wakes. Without action, critical landscape components that make up the estuary would be lost and future efforts to restore other parts of the ecosystem would be much more difficult and expensive.

This feature has been identified as a near-term critical effort based first on its inclusion in seven of the seven cost-effective, coast wide restoration frameworks, and on its ability to meet specified critical need criteria. It has been recommended for programmatic implementation based on the sequencing rule that identifies features at potential risk for loss of opportunity if near-term action is not taken. The identification of ecological solutions in the ecosystem does not necessarily equate to identification of cost effective solutions. While this feature was not specifically evaluated for cost effectiveness, it was found to be a critical feature of seven feasible and cost-effective, coast wide restoration frameworks. In addition, the feature addresses an identified, imminent, and critical need and/or opportunity for restoration.

Critical action points to avoid near-term (3 to 5 years) threats of shoreline and bayou breaches are located at Bayou Bienvenue, Bayou Mercier, Proctor Point, Alligator Point, Bayou Biloxi, Bayou Magill, and Antonio's Lagoon. These sites face significant risk of losing the integrity of bayou banks along the lake shoreline and a potential major breach of the navigation channel into the lake. Loss of bayou bankline stability would result in higher rates of erosion and destruction of limited and diverse habitats that offer fish and wildlife refuge from open lake conditions. A breach between the lake and the MRGO navigation channel at Antonio's Lagoon would result in rapid wetlands loss as storm waves from the lake and ship wakes from the channel impact sensitive interior wetlands and submerged grass beds in protected ponds. Further impacts from breaches would occur as scarce sediments are exported into deeper water and out of the wetland system.

This critical restoration feature proposes to construct rock breakwaters along the entire north bank of the MRGO and along important segments of the southern shoreline of Lake Borgne that may breach in the near future. Strategic placement of these similar protective breakwaters has been effectively used along the MRGO to prevent shoreline retreat and would preserve large amounts of estuarine marshes from further erosion. The placement of rock dikes can also enhance marsh creation efforts, such as those that employ dedicated dredging and/or beneficial use of dredged material, because they serve to contain and protect the restored wetlands.

The benefits of the proposed shoreline protection features include preserving large amounts of wetlands, protecting critical habitat in Lake Borgne for the Federally-threatened Gulf sturgeon, avoiding significantly higher long-term restoration costs, protecting critical

infrastructure, and providing opportunities for value added wetland restoration in conjunction with other ongoing programs. By stopping shoreline erosion, the feature would benefit approximately 100 acres per year along the MRGO channel and an additional 27 acres per year along the southern shoreline of Lake Borgne producing an estimated 528 Average AAHU. In addition, several critical points along both the channel and lake shoreline are threatening to breach in the near-term and could result in rapid acceleration of interior marsh loss. Over the next 50-years, the feature would protect approximately 6,350 acres of wetlands that are threatened from shoreline erosion along the MRGO and the lake. This feature addresses identified, imminent, and critical needs by preventing wetland loss where it is predicted to occur, preserving critical, endangered geomorphic structure, and protecting vital socio-economic resources. Programmatic authorization would expedite attainment of these environmental benefits.

The estimated cost for constructing critical rock breakwaters along the MRGO and Lake Borgne is:

Component	Cost (see details below)
DD	\$5,400,000
PED	\$3,600,000
Construction	\$80,000,000
E&D/S&A	\$14,240,000
Real Estate	\$4,188,000
<i>Total</i>	<i>\$107,428,000</i>

Feature costs are based upon completed construction of similar projects funded under the New Orleans District's channel operations and maintenance program. Approximately 12 miles of rock breakwaters were constructed under this program as part of a best management plan for channel maintenance dredging. Experience documented in the construction completion reports and the as-built surveys of those projects has been valuable for the design of other similar projects in the area. Additional cost information has been developed from ongoing design work conducted in the Coastal Wetlands Planning, Protection and Restoration Act. Information from these design and construction efforts indicates that rock breakwaters constructed for shoreline protection range from \$1 million to \$4 million per mile depending upon soil conditions and other site specifics.

4.2.3.1.2 *Small diversion at Hope Canal*

The Maurepas Swamp is an area of considerable ecological, socioeconomic, and cultural importance. Since the construction of the Mississippi River flood control levees, large portions of the Maurepas Swamp have largely been cut off from freshwater, sediment, or nutrient input. Lacking this riverine input, soil building in the swamp has been minimal and insufficient to keep pace with subsidence. As a result, much of the swamp is persistently flooded, the existing trees are highly stressed, and there is little to no natural regeneration of cypress and tupelo trees that make up a large portion of this hardwood-swamp ecosystem. These factors, combined with increasing occurrences of high salinities have resulted in a highly degraded swamp system, which is at risk of eventual conversion to open water.

The combination of little to no regeneration of swamp hardwoods and more frequent incidence of higher than tolerable salinity place this system at high risk. In 1988, drought conditions, coupled with sustained easterly winds, produced conditions of intermediate to brackish salinity in this normally fresh system. Recent tropical storm events occurring at a rate of one to two a year have also produced measurable spikes in salinity in the area. With subsidence, the lack of substrate accretion, and reduced organic productivity, this area has very little chance to avoid the die-off that is already occurring in similar lake rim areas in western Lake Pontchartrain. With the increasing water depth in these areas, it is highly likely that habitat will be converted to broken open water rather than intermediate or brackish marsh. The degradation and potential loss of cypress/tupelo swamp is significant because tree regeneration to replace those portions of the swamp that experience a die-off can take several decades, at a minimum.

Delaying action would expose the project area to potential risks of additional high salinity events (associated with droughts and tropical storms), which in the past have resulted in high mortality of cypress and tupelo trees and fresh marsh understory. Without action, the area would remain highly stressed, productivity of existing trees would continue to decline, the existing trees would remain vulnerable to predation and disease, and an opportunity would be missed to remove nutrients from the Mississippi River that would otherwise contribute to hypoxia in the Gulf of Mexico. Failure to protect the existing forest could result in the long-term disappearance of this important ecosystem. The loss of this freshwater retaining portion of the system would eventually result in a shallow, seasonally brackish open water system extending to the heavily developed Interstate 10 corridor.

This feature has been identified as a near-term critical effort based first on its inclusion in 5 of the seven cost-effective, coast wide restoration frameworks, and on its ability to meet specified critical need criteria. It has been recommended for programmatic implementation based primarily on its capability to address critical ecological needs, as well as the fact that significant design efforts are already underway. The identification of ecological solutions in the ecosystem does not necessarily equate to identification of cost effective solutions. While this feature was not specifically evaluated for cost effectiveness, it was found to be a critical feature of 5 feasible and cost-effective, coast wide restoration frameworks. In addition, the feature addresses an identified, imminent, and critical need and/or opportunity for restoration.

The purpose of the small diversion at Hope Canal is to restore and maintain the health and productivity of the swamps south of Lake Maurepas. This restoration feature proposes to restore the cypress/tupelo swamps in the southern portion of the Maurepas Swamp by reintroducing 1,000 to 2,000 cubic feet per second of nutrient-rich water from the Mississippi River. The specific objectives of this restoration feature are to: restore natural swamp hydrology; increase sediment and nutrient loading to the project area; increase substrate accretion; retain and increase existing areas of swamp vegetation, including overstory cover; and reduce salinity levels.

The proposed Hope Canal feature includes: two gated box culverts; a receiving pond reinforced with riprap; and an outflow channel roughly 27,500 feet long that would run from the receiving pond to U.S. Interstate 10. Outflow channel banks would be built up to retain 90 percent of the diverted flow within the channel until passing under Interstate 10.

The Hope Canal project would enhance approximately 36,000 acres of swamp. The Wetland Value Assessment (WVA) performed for the CWPPRA PPL-11 project submission estimated a project output of 8,486 AAHU over the project influence area. The maintenance of the swamp would in turn aid in maintaining the ecological health and diversity of the entire upper Pontchartrain Basin estuary. This feature addresses identified, imminent, and critical needs by preventing degradation of cypress tupelo swamp where it is predicted to occur, reintroducing riverine water and sediments, and protecting vital socio-economic resources. Programmatic authorization would expedite attainment of these environmental benefits.

The estimated cost of the Hope Canal feature is as follows:

Component	Cost (see details below)
DD	\$4,504,000
PED	\$3,002,000
Construction	\$30,025,000
E&D/S&A	\$6,005,000
Real Estate	\$26,383,000
<i>Total</i>	<i>\$69,919,000</i>

There is an ongoing CWPPRA feasibility study of the proposed actions in the vicinity of Hope Canal that has completed scoping and initial hydrologic modeling. Several previous study efforts have identified the Hope Canal vicinity as an appropriate and critical location, relative to the overall Pontchartrain Basin, for the introduction of riverine sediments, nutrients, and freshwater. The CE/ICA analysis of The Mississippi River, Sediment, Nutrient, and Freshwater Redistribution Study identified a diversion in the vicinity of Hope Canal as cost-effective means of utilizing Mississippi River resources for restoration.

4.2.3.1.3 Barataria Basin barrier shoreline restoration

Restoration of Caminada Headlands Reach

The Caminada Headlands Reach stretches 12 miles from Belle Pass to Caminada Pass and forms the western boundary of the Barataria Basin. The reach contains several important coastal habitats, including the largest Black Mangrove forest in coastal LA, one of the only maritime forests of Live Oaks, and highly productive marsh communities. The Black Mangrove forest forms a critical Caminada Landbridge that protects vast salt marshes, oyster resources, and other Essential Fish Habitat (EFH) elements. Separated by long linear salt marsh ponds filled with submerged aquatic vegetation, the Chenier Caminada maritime forest is important neotropical bird habitat. The marshes are highly significant nurseries to many important recreation and commercial species of fish, oysters, and shrimp.

The reach has had high rates of recession and, in the future, will begin to breach and fragment, which will significantly reduce the protection to both economic and ecologic elements afforded by this natural beach. The erosion along this reach of the coast is some of the highest and most chronic in the State of Louisiana. Between 1884 and 2002, the long-term average erosion rate averaged 41 ft/yr with a range of 51.9 ft/yr to 8.6 ft/yr (see appendix D SHORELINE RESTORATION STUDY TEAM REPORT). **Figure MR-40** displays the long-term erosional history of the Caminada Headland area. In 2003, the passage of Tropical Storm Bill eroded the beaches back as far as 50 to 80 ft. This pattern of shoreline erosion will continue because tropical storms impact coastal Louisiana every 1.2 years, on average. Historic estuarine bays, such as Bay Marchand, and bayous, such as Pass Fourchon, no longer exist due to this rapid, persistent erosion.

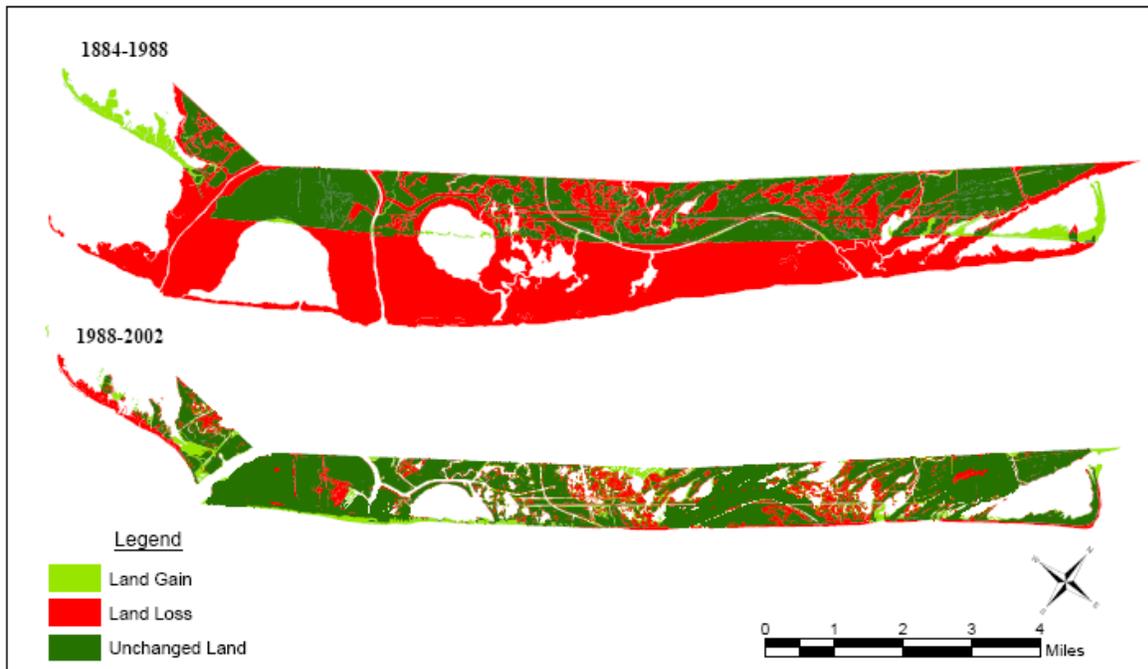


Figure MR-40. Caminada Headland Erosional History 1884 to 2002.

Breakwaters have exacerbated the erosion problem by creating an erosional shadow, resulting in multiple storm breaches during the 2002-2003 hurricane seasons. Inland, these breaches are allowing increasingly higher wave energy conditions to attack the Caminada Land bridge, which threatens critical natural and human resources landward. Located on the lee side of this shoreline, Highway 1 is an evacuation route for Louisiana's only town located on a barrier island at Grand Isle. Continued erosion also threatens the largest onshore oil and gas base in coastal Louisiana at Port Fourchon, the largest fishing port located on the coast, major oil and gas infrastructure, the largest coastal community, the LOOP, Inc. Super Port, LA, and Highways 1 and 3090.

Restoration of Caminada Headland Reach is advantageous since it is in a condition more amenable to restoration than many other reaches. A beach is still present over much of the reach and fragments of marsh and ridges are present behind the beach. These residual elements

provide critical foundation for restoration of the Caminada Headland Reach. Delaying the project would allow further deterioration of this foundation, which would result in higher cost and would likely preclude some restoration elements. Without restorative action in the next 1-3 years, the Bay Champagne barrier beach would erode away, resulting in the failure of the Caminada Landbridge and the direct exposure of Port Fourchon, recreational and commercial fishing ports, highways 1 and 3090, and residential and commercial promontories to daily wave and tidal erosion action and the ever present summer hurricanes and winter storms. This scenario is also likely to result in a costly and less ecologically-sound need to develop hard shoreline protection measures to protect navigation canals and highways.

This feature has been identified as a near-term critical effort based first on its inclusion in all seven of the cost-effective, coast wide restoration frameworks, and on its ability to meet specified critical need criteria. It has been recommended for programmatic implementation based primarily on its capability to address critical ecological needs. This feature addresses historic erosion and the potential for increased erosion, which threaten existing natural and human resources, if near-term action is not taken. The identification of ecological solutions in the ecosystem does not necessarily equate to identification of cost effective solutions. While this feature was not specifically evaluated for cost effectiveness, it was found to be a critical feature of 7 feasible and cost-effective, coast wide restoration frameworks. In addition, the feature addresses an identified, imminent, and critical need and/or opportunity for restoration.

Restoration of the Caminada Headlands Reach of the Barataria Barrier Shoreline provides critical needs restoration by preventing land loss where it is predicted to occur, restoring endangered critical geomorphic structure, and by providing some storm surge protection to populated areas, critical oil and gas infrastructure, and marsh habitat residents in southwest Barataria Bay. Initial analysis (see attachment 4 for additional information) indicates that the most effective restoration alternative for this reach produces approximately 732 AAHUs, and about 1,500 more acres at project year 50. This benefit would include restoration of beach (dune and shoreface) habitats as well as emergent saline marsh. The beach restoration would provide fisheries and aviary habitats. The emergent saline marsh would provide additional nursery area for commercial and recreational species. Indirect benefits would be to maintain the gulf shoreline integrity of a highly critical reach of ecologic and economic significance. The restoration of this barrier shoreline reach would provide ecologic benefit and protection and sustainability to the western boundary of the Barataria Basin, including all of the natural and human resources it supports.

The proposed Caminada Headland Reach restoration project includes both beach restoration and marsh creation features. Material for beach restoration would be pumped from an offshore site and deposited on the gulfward side of the existing headland. Material for marsh creation would be pumped from interior open-water sites and deposited in various cells defined by existing marsh and canals. The combined width of the marsh creation and beach restoration would be at least 3,000 feet. This width should reduce the chance of breaching and fragmentation of the headland beach. Marsh creation would reduce bayside marsh fragmentation and bayside erosion of the beach. The beach restoration would provide gulfward protection to the existing fragile emergent marshes and those newly developed by marsh creation efforts.

Restoration of Shell Islands Reach

The Shell Islands Reach stretches 2.5 miles to the west from Fontanelle Pass to Grand Bayou Pass. Bayou Fontanelle and its pass is the largest headland in the eastern border of the Barataria Basin. The Shell Islands Reach is currently highly fragmented into small shoals and islands, which altogether represent a fraction of the once continuous shoreline developed along a spit extending northwest from the Empire Jetty. The residual shoals and islands have migrated northward into Shell Island Bay.

The Shell Islands Reach is important in terms of its location in the Plaquemines's Shoreline. The Bayou Fontanelle Headland/Shell Island system establishes the geologic framework for the orientation of the downdraft barrier islands of Bay Joe Wise, Chalant Island, and Cheneiere. For the management of the Plaquemines's barrier shoreline it is important to understand that the alongshore sediment transport is towards the northwest along this shoreline. Shell Island Bay and Bastion Bay are some of the most productive oyster habitat and they have traditionally supported important recreational and commercial fisheries.

The long-term erosion rate for the Shell Islands Reach is 38.5 ft/yr with a range of 8.0 to 101.5 ft/yr. **Figure MR-41** shows the long-term erosional history of the Shell Island area. Historically, Lanoux or Shell Island has migrated onshore and merged with the small barrier island at Grand Bayou Pass. By 1956, Bayou Fontanelle had been jettied and Lanoux Island or Shell Island migrated onshore and attached to the new Empire jetties. An erosional shadow extended from the western Empire Pass jetty. This erosional shadow began affecting Shell Island because western alongshore sediment transport along the Plaquemines shoreline was disrupted. The erosion rates along Shell Island accelerated from 8ft/yr to 79.5 ft/yr. Shell Island narrowed rapidly and Hurricane Bob, in 1979, breached Shell Island, forming Coupe Bob. The shoreline erosion rates accelerated further to 101.5 ft/yr and Shell Island Bay was exposed to the erosive forces of the gulf. This pattern of barrier island degradation continued with the enlargement of Coupe Bob, and by 2003 Bastion Bay was also exposed to gulf forces, including full saltwater inflow from the Gulf of Mexico. These changes resulted in significant degradation to the oyster reefs, on which many local residents depend.

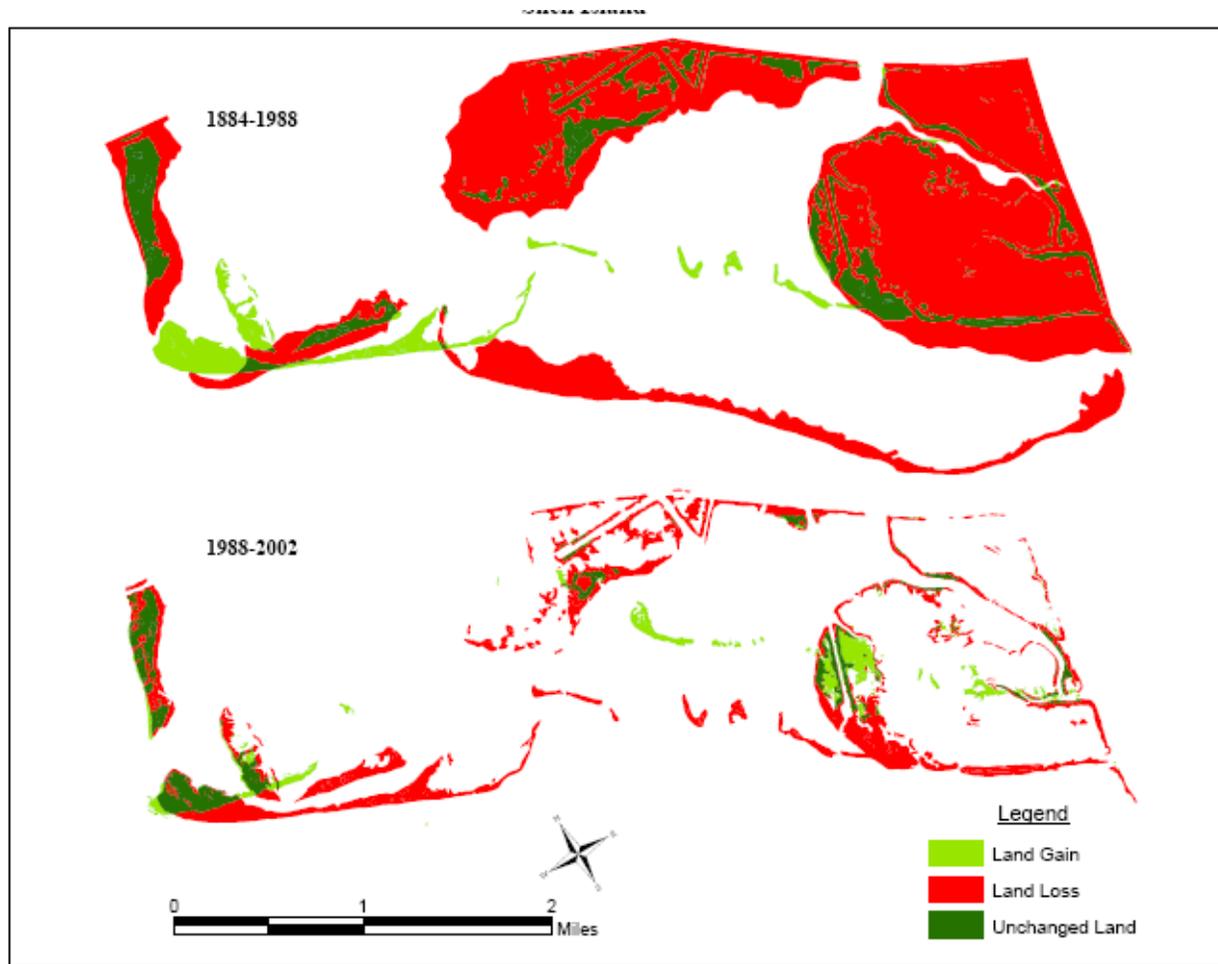


Figure MR-41. Shell Island Erosional History 1884 to 2002.

The re-establishment and maintenance of Shell Island is critically important now. Shell Island restoration would bring back the oyster fishery lost when Shell Island was washed away by a combination of the disruptive updrift Empire Pass jetties, Hurricane Bob in 1979 and the subsequent storms in the following years. The traditional recreational and commercial shrimp and finfish fishery would also return. Shell Island was a historic rookery for Threatened and Endangered shore birds, which would return with the restoration of Shell Island. Shell Island is a critical storm and hurricane protection buffer for the Empire, Sunrise, Buras, and Triumph communities. The tropical storm turned into a weak category 1 hurricane, Danny in 1997, and caused tremendous damage to Empire and the surrounding communities in part due to the absence of Shell Island. The tropical storms and hurricanes in 2002 and 2003 demonstrated the importance of restoring Shell Island. Monitoring the impacts of these storms validated the supposition that historic storms of the same strength were having a greater and greater impact as the barrier islands and back barrier marshes erode away.

Delay in the Shell Islands Reach jeopardizes the remaining framework of interior bays north of the Shell Islands Reach. Shell Island Bay north of Shell Islands Reach is nearly open into the adjacent Bastian Bay. Complete opening would nearly double open water and fetch

within these bays, decreasing their use by some fishermen. North of Bastian Bay, only a few marsh islands and small ridges separate it from the much larger Bay Adams. Coalescence of the three bays would continue and accelerate without this project. Without the project, a large sound would develop open to the Gulf of Mexico. This sound would have a profound impact on the entire region. Ecologic changes would occur and be less productive. Storm surges would increase and require greater levels of flood and wave erosion protection. The further this scenario progresses toward a development of a sound, the more expensive restoration would be to address.

This feature has been identified as a near-term critical effort based first on its inclusion in all seven of the cost-effective, coast wide restoration frameworks, and on its ability to meet specified critical need criteria. It has been recommended for programmatic implementation based primarily on its capability to address critical ecological needs. The identification of ecological solutions in the ecosystem does not necessarily equate to identification of cost effective solutions. While this feature was not specifically evaluated for cost effectiveness, it was found to be a critical feature of 7 feasible and cost-effective, coast wide restoration frameworks. In addition, the feature addresses an identified, imminent, and critical need and/or opportunity for restoration.

The extremely degraded condition of this reach requires a restoration project comprised of several features. The primary feature is shoreline restoration. However, current water depth and exposure to gulf sea conditions require containment of placed material. Geotubes, terminal groins and other shore protection features are required to first allow the material to be placed and to then reduce erosion. Back marsh creation would be developed behind the restored beach. Since the Shell Islands Reach affords protection to the Empire waterway, an additional element is included to rebuild the platform west of the waterway. This would help maintain the integrity of this commercial waterway.

Initial benefits analysis (see attachment 4 for more detailed information) indicates that the most effective restoration alternative produces approximately 230 additional Average Annual Habitat Units over the no action condition, and roughly 280 more acres at project year 50. The beach restoration and marsh creation features would provide dune aviary habitat and shoreface fisheries habitat. Other significant benefits are the protection of the interior bays. Without this restoration project, Shell Island Bay, Bastian Bay and Bay Adams would likely coalesce and become a sound. A sound would be open to the Gulf of Mexico and extend northward to the back levee along the Mississippi River at Empire, LA. This sound would represent a dramatically changed ecology and hydrology in the southeastern portion of Barataria Bay. Oyster beds and fisheries productivity would decrease and storm surges would rise. Within these sounds and adjacent marsh are oil and gas pipelines and fields. The restored Shell Island would also serve as protection for the Empire waterway, an important navigation canal to both the oil industry, commercial and recreation fishing industries.

The estimated combined cost of Caminada Headlands Reach and Shell Islands Reach features is as follows:

Component	Cost (see details below)
DD	\$10,200,000
PED	\$6,800,000
Construction	
<i>Beach Restoration (Caminada)</i>	\$125,000,000
<i>Marsh Creation (Caminada)</i>	\$11,000,000
<i>Beach Restoration (Shell Island)</i>	\$45,000,000
E&D/S&A	\$31,680,000
Real Estate	\$15,558,000
<i>Total</i>	<i>\$245,238,000</i>

The estimated Average Annual Cost for this feature based on the implementation sequencing effort undertaken for the study is \$17,221,000. The two restored barrier island reaches are estimated to produce a combined benefit of 962 AAHUs over the period of analysis. This equates to an annualized cost of \$17,901 per habitat unit.

4.2.3.1.4 *Small Bayou Lafourche reintroduction*

Bayou Lafourche is a historic distributary of the Mississippi River. After the river switched its course, the bayou continued to serve as a connection between the river and coastal wetlands until 1904, when water control structures were installed to protect area communities from flooding. Pumps and a siphon with a 340 cfs capacity were built in 1955 to provide fresh water, mainly for residential and industrial use.

Bayou Lafourche is located in the Barataria/ Terrebonne National Estuary, which currently experiences the highest wetland loss rates in the Nation. The isolation of these coastal wetlands from a freshwater and sediment source has accelerated land loss in the Barataria/Terrebonne area. In the next three years alone, an additional 1500 acres could be lost there. By the year 2050, this National Estuary is predicted to have lost 265,000 acres in the next 50 years. 81% of Louisiana's wetland loss is estimated to occur there. By reconnecting the river to the bayou, this feature would nourish marshes, contribute to soil building through mineral sediment accretion and organic matter production, and combat saltwater intrusion during droughts or prolonged southerly winds. The associated increased vegetative health and vertical accumulation of the marsh surface would counterbalance subsidence and reduce future wetland loss in the area.

This is an ongoing CWPPRA project and has had extensive study and initial engineering efforts completed. This critical needs feature has wide public support and is consistent with the Barataria/Terrebonne National Estuary Program Comprehensive Coastal Management Plan. This feature has been identified as a near-term critical effort based first on its inclusion in all seven of the cost-effective, coast wide restoration frameworks, and on its ability to meet specified critical need criteria. It has been recommended for programmatic implementation based primarily on its capability to address critical ecological needs, as well as the fact that

significant design efforts are already underway. The identification of ecological solutions in the ecosystem does not necessarily equate to identification of cost effective solutions. While this feature was not specifically evaluated for cost effectiveness, it was found to be a critical feature of all seven feasible and cost-effective, coast wide restoration frameworks. In addition, the feature addresses an identified, imminent, and critical need and provides an opportunity to expedite restoration.

The purpose of the Small Bayou Lafourche Reintroduction is to increase riverine influence in surrounding wetlands. E&D has been initiated on this project. Several alternatives are being considered which would provide year-round flow into the bayou, including gated culverts and a pump/siphon station at Donaldsonville. Additional features that would be required, regardless of the type of diversion structure built, include modification of existing infrastructure, bank stabilization, dredging, and channel improvements.

At the end of 50 years, there would be approximately 2,500 more acres of marsh than if the project had not been built (1998 WVA). A WVA performed for the Bayou Lafourche Freshwater Reintroduction Detailed Design Study authorized under CWPPRA estimated a project output of 705 AAHU over the project influence area. A project area of 85,000 acres (nearly 49,000 acres of wetlands and 36,000 acres of water) could benefit from this diversion. Salinities would be slightly reduced over this wide area, submerged aquatic vegetation would be increased as would fish and wildlife populations. Other project benefits would include continuation of recreational opportunities and maintenance of storm protection for surrounding communities as well as for vital petroleum and navigation infrastructure. Salinities would be reduced in upper Bayou Lafourche throughout the year. Thus, water intakes on Bayou Lafourche may not need to be closed during future salinity spikes up the bayou. In the recent drought of 1999-2001, a paper mill was forced to temporarily close because of excess salinity in the bayou. EPA has estimated that the area would receive enough clay sediments to sustain the needs of about 5,250 acres of brackish marsh per year if the efficiency of transferring this sediment to the marsh surface was 100%. The flow also would deliver enough nitrogen, which if applied to salt marsh with 100% efficiency could double the standing crop biomass on about 4,100 acres per year. The predicted removal of nitrogen by the wetlands would slightly reduce hypoxia in the Gulf of Mexico.

Another advantage would be that monitoring of this small diversion would provide data that could be used to estimate the benefits of the much larger Third Delta feature being proposed for a long-term study. Since the cost of restoring lost land is far greater than that of sustaining existing land, a major impact of delaying action could be result in a substantial increase in the costs of future restoration projects in the same area. Beyond increased project costs, delayed action would also likely result in additional costs to repair or replace infrastructure that may be compromised by lost land. The small Bayou Lafourche diversion addresses identified, imminent, and critical needs by preventing wetland loss where it is predicted to occur, reintroducing riverine water and sediments, and protecting vital socio-economic resources. Programmatic authorization would expedite attainment of these environmental benefits.

The Office of the Chief of Engineers conducted a Value Engineering study of the Bayou Lafourche Siphon Restoration project in July 2001. The cost estimate for this restoration feature is as follows:

Component	Cost (see details below)
DD	\$13,500,000
PED	\$9,000,000
Construction	\$90,000,000
E&D/S&A	\$18,000,000
Real Estate	<u>\$12,590,000</u>
<i>Total</i>	<i>\$143,090,000</i>

The estimate Average Annual Cost for this feature based on the implementation sequencing effort undertaken for the study is \$11,727,000. The two restored barrier island reaches are estimated to produce a combined benefit of 705 AAHUs over the period of analysis. This equates to an annualized cost of \$16,634 per habitat unit.

4.2.3.1.5 *Medium diversion with dedicated dredging at Myrtle Grove*

This area is a transitional zone in the estuary where brackish and intermediate marshes merge, transitioning from saline marsh in the south and to fresh marsh at the northern extent near the GIWW. The future without-project condition forecasts that in the next fifty years, all saline and brackish marsh and approximately 40 percent of the intermediate marsh in this area would be lost.

Land loss data do not provide sufficient detail to project near-term impacts for anything less than a 10-year period; however, under the future without- project condition, the model estimates a loss of 152,000 acres over the next fifty years. This simulation also estimates that approximately 24 percent of this loss would occur in the first ten years. Because the majority of the wetland loss without action is projected to occur in the areas of intermediate to saline marsh, the central area of the Barataria Basin is likely to experience significant losses in the near-term. In addition, these marsh types typically represent the most biologically diverse and productive portion of the estuary. This would also indicate that the residential development in the vicinity of the central area of the basin would be placed at more immediate risk.

The proposed Myrtle Grove feature would include two major components: a diversion of freshwater, sediments, and nutrients from the Mississippi River and the creation of new wetlands or geomorphic marsh building platforms using sediments from the Mississippi River. The diversion would consist of a gated box culvert diversion structure, outfall channel, and guide levees connecting the MR&T flood protection levee with the privately constructed hurricane protection levee. The dedicated dredging would create marsh or marsh building platforms in shallow open water areas throughout the receiving area of the diversion.

The components of this feature are intended to function synergistically to produce a rapid and sustainable response in the critical central portion of the Barataria Basin. A diversion of

2,500 to 15,000 cfs would provide not only a significantly beneficial input of sediments and nutrients to the remaining wetlands in this area of the Barataria Basin, but also stabilize the composition of those existing marsh classes. The largest scale of potential diversion would produce up to 13,000 acres of new emergent marsh. The associated dedicated dredging would produce approximately 5,600 acres of new marsh or marsh platform across the diversion influence area, thus further stabilizing this transitional area of the basin. The diversion would be designed and operated to support the growth and expansion of marsh created through dredge material placement to allow more efficient use of dredge material and other restoration resources.

This feature has been identified as a near-term critical effort based first on its inclusion in all seven of the cost-effective, coast wide restoration frameworks, and on its ability to meet specified critical need criteria. It has been recommended for programmatic implementation based on sequencing rules that identify the feature as either a potential risk for loss of opportunity, as being in an advanced state of design, or as an existing opportunity that could be capitalized on to expedite restoration. The identification of ecological solutions in the ecosystem does not necessarily equate to identification of cost effective solutions. While this feature was not specifically evaluated for cost effectiveness, it was found to be a critical feature of 7 feasible and cost-effective, coast wide restoration frameworks. In addition, the feature addresses an identified, imminent, and critical need and/or opportunity for restoration.

The proposed feature takes advantage of the resource available from the Mississippi River to meet other study objectives by reconnecting the river to the estuary and placing river borne sediments into the system, thus promoting long-term ecosystem sustainability. The feature also addresses the improvement of overall water quality both within the basin and by reducing nitrogen delivery to the Gulf of Mexico. The restoration of wetlands in this area would help protect vital socio-economic resources located in the central and upper portions of the Barataria basin. The communities of Lafitte and Barataria represent the southern most development in the interior of the Barataria Basin and lay outside of any existing hurricane protection works. Loss of the existing wetland structure would have an immediate impact on the sustainability of these communities. Industries located along the Mississippi River in the vicinity of Myrtle Grove would also become threatened with the loss of interior wetlands in this area. Currently, there is no federal hurricane protection levee parallel to the river in this area. The absence of this protection is due, in part, to the historic presence of the wetlands.

There is an ongoing CWPPRA feasibility study of the proposed actions in the vicinity of Myrtle Grove that has completed scoping and initial salinity modeling. The modeling of alternative plans and assessments of ecologic benefits are pending. Barataria basin-wide modeling is being undertaken to better coordinate the proposed actions with the operation of the Davis Pond diversion structure. Several previous study efforts have identified the Myrtle Grove vicinity as a historic crevasse site and as an appropriate and critical location, relative to the overall Barataria Basin, for the introduction of riverine sediments, nutrients, and freshwater. The CE/ICA analysis of the Mississippi River, Sediment, Nutrient, and Freshwater Redistribution (MRSNFR) Study identified two scales of diversions in the vicinity of Myrtle Grove as cost-effective means of utilizing Mississippi River resources for restoration.

The following information is provided from the 2000 MRSNFR Study. That study was developed to a Draft report stage and adopted by the CWPPRA Task Force as the basis for a number of diversion projects that were approved for detailed design. Many of those same projects were considered in the LCA Ecosystem Restoration study and the MRSNFR report provided the basis for design and cost of those features as well as a basis for scaling designs and costs for additional project alternatives.

Benefits were estimated in MRSNFR using a community based HEP that was titled the WVA. This model is driven by multiple user professional judgment supported by available habitat data and user observation. This model expands upon professional judgment by formalizing consensus, and standardization, of methodology. The model does not mathematically interpolate expressions of biologic response over the defined spatial extent of the project area in the manner of a numeric model. In this regard there is an understood limitation to these projections of beneficial output. This restoration feature doe address identified, imminent, and critical needs by preventing wetland loss where it is predicted to occur, reintroducing riverine water and sediments, and protecting vital socio-economic resources. Programmatic authorization would expedite attainment of these environmental benefits.

The diversions of freshwater and sediment would flow into the rapidly subsiding marsh area near Round Lake and Lake Laurier to the west of Bayou Grand Chenier and east of Louisiana Highway 23. This area consists of remnant brackish marsh and shallow bays. The project area is divided into five separate geographical subareas for analysis (**figure MR-42**).

The net WVA-projected benefits 9,281 AAHUs (1,897 - Area 1; 4,783 - Area 2; 1,238 - Area 3; 1,118 - Area 4; and 245 - Area 5). This alternative would create 6,000 acres of wetlands, with a net gain of 27,970 acres over the 50-year project life.

The WVA Team assumed a current, future without-project, and future with project land loss rates and % shallow water as shown in **table MR-22**.

Table MR-22. Land Loss Rates and Shallow Water Conditions.

	Land Loss Rate (%)		% Shallow Water (<1.5 ft)		
	Current and future w/o project	Future with project	Current	Future w/o project	Future with project
Area 1	1.88	0.28	50	25	90
Area 2	0.63	0.06	50	30	65
Area 3	1.10	0.55	20	10	18
Area 4	0.91	0.46	10	5	8
Area 5	0.94	0.38	10	5	8

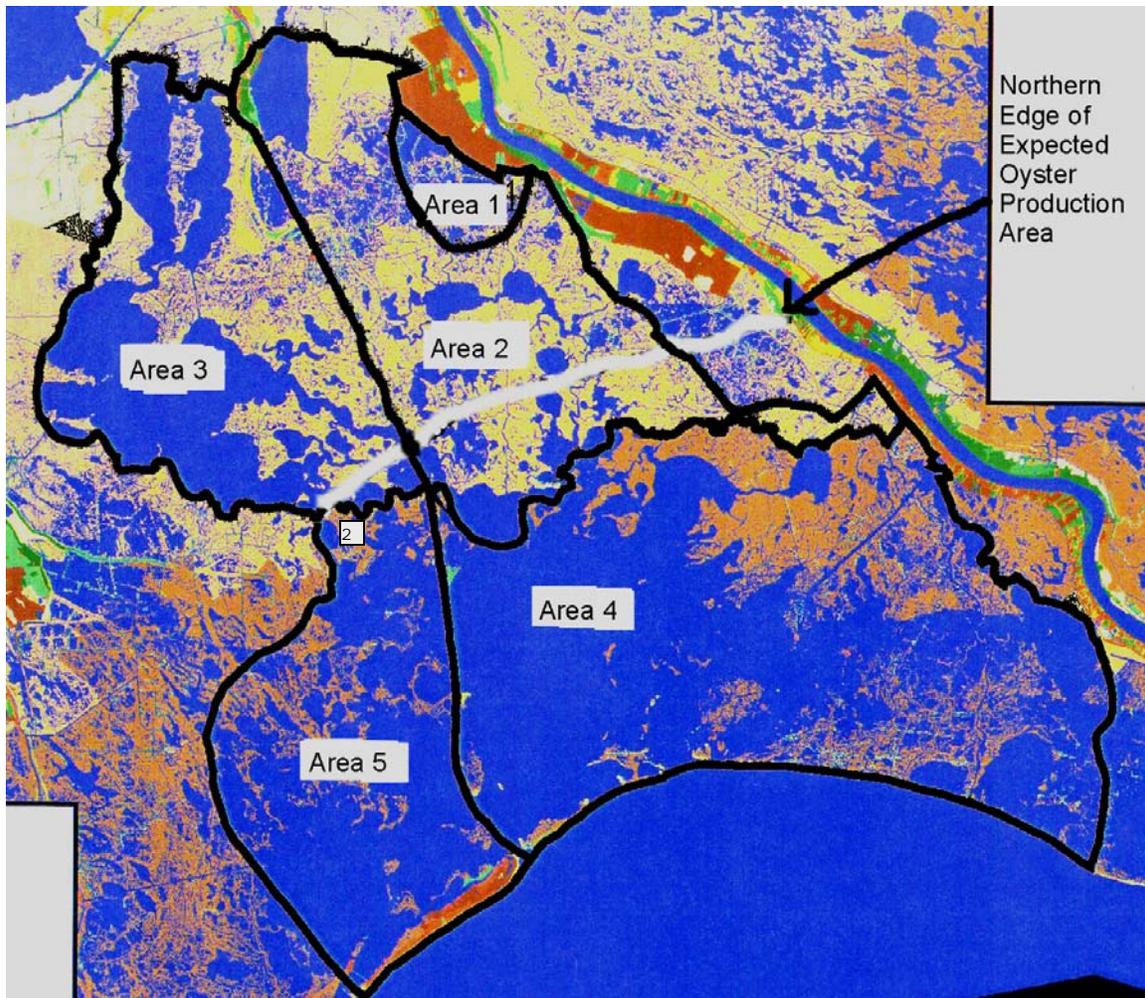


Figure MR-42. Map of Myrtle Grove Benefit Area (from USGS/LDNR).

The estimated cost of the Myrtle Grove feature is as follows:

Component	Cost (see details below)
DD	\$22,005,000
PED	\$14,670,000
Construction	
<i>Diversion Structure (estimated for 15,000 cfs)</i>	\$49,200,000
<i>Pipeline Relocation</i>	\$530,000
<i>Dedicated Dredging</i>	\$96,970,000
E&D/S&A	\$29,340,000
Real Estate	\$7,720,000
<i>Total</i>	<i>\$220,435,000</i>

The estimated Average Annual Cost for this feature based on the implementation sequencing effort undertaken for the study is \$15,885,000. The 15,000 cfs diversion component of this feature was estimated to produce a benefit of 9,281 AAHUs over the period of analysis. This equates to an annualized cost of \$1,712 per habitat unit. WVA analysis has not been

completed for all variations of dedicated dredge material placement but a currently approved CWPPRA project to create 538 acres of new marsh resulting in 189 AAHUs. Extrapolating this estimate a larger 5,600 acre dedicated dredging project might produce roughly 1,950 AAHUs. The combination of dedicate dredging and freshwater diversion would increase habitat quality and sustainability further increasing habitat unit productivity.

4.2.3.2 Standard process for implementation of critical restoration features

The near term critical restoration features within the TSP that are not programmatically authorized would be submitted to Congress for standard authorization in future WRDAs. Based on an analysis of the current TSP schedule, components would have feasibility-level decision documents or Feasibility Reports completed and ready to submit to Congress through FY 2013, with construction starting no later than FY 2014. TSP implementation would begin with basin by basin studies evaluating hydrodynamic and ecological responses of the non-programmatically authorized critical restoration features. The outputs would be evaluated by CE/ICA to determine the cost-effective alternatives for implementation. This CE/ICA analysis would support the restoration features feasibility-level decision documents submitted for Congressional authorization.

4.2.4 Large-Scale and Long-Term Concepts Requiring Detailed Study

During plan formulation, the PDT identified several candidate large-scale and long-term concepts for potential incorporation into the TSP. These restoration concepts exhibited significant potential to contribute to achieving restoration objectives in 1) the subprovince within which they would be located, 2) adjacent subprovince(s), and/or 3) substantial portions of Louisiana's coastal ecosystem. Accordingly, the corresponding benefits and costs for these potential plan features should be further analyzed and confirmed to determine how best to incorporate them, if at all, with other plan features. Upon completion of detailed feasibility studies, recommendations for action would be documented in the manner specified for other features not qualifying for programmatic authority and would be subject to the standard review and authorization process for USACE water resources projects.

4.2.5 Science and Technology Program

Section 3.1 PLANNING CONSTRAINTS detailed the key scientific uncertainties and engineering technology challenges in LCA implementation. Appendix A SCIENCE AND TECHNOLOGY PROGRAM details the proposed plan and program to resolve these challenges and facilitate effective implementation. It is proposed that a 10-year S&T Program be funded as an authorized item subject to construction cost share percentages (65 percent Federal and 35 percent non-Federal would be applied for construction features and the science and technology plan) at a total amount not to exceed \$100,000,000. A major component of the S&T Program would be programmatically authorized demonstration projects, as explained below.

The LCA S&T Program would provide a strategy, organizational structure, and process to facilitate integration of science and technology into the decision-making processes of the Program Management and the Program Execution Teams. Implementation of this S&T Program

would ensure that the best available science and technology are available for use in the planning, design, construction, and operation of TSP features, as well as other coastal restoration projects and programs, such as CWPPRA. There are five primary components in the LCA S&T Program, and each component has a different emphasis and requirement. These components include: (1) Science Information Needs, (2) Data Acquisition and Monitoring, (3) Data and Information Management, (4) Modeling and Adaptive Management, and (5) Research. Determining Science Information Needs requires a continuous process in place that solicits and organizes science needs from Program Managers, the Program Execution Team, and scientists. Data Acquisition and Monitoring requires an organized plan with standard operating procedures and rigorous adherence to those standards. Data and Information Management requires standards and procedures to assure that data can be shared or compiled from a variety of sources. Modeling and Adaptive Management requires broad interactions among scientists, Program Management, and the Program Execution Team. Research requires clear hypothesis identification and clarification, testing, and documentation with a substantial degree of scientific independence but close coordination with the Program Execution Team.

The LCA S&T Program would perform the following:

- Work with LCA Program Management and the LCA Program Execution Teams to review and assess goals, objectives, and key documents of the LCA Program;
- Identify science needs to assist in the attainment of program goals and objectives;
- Establish and maintain independent science and technology advisory and peer review committees;
- Through scientific evaluations, assessments, and peer reviews, assure that the best available science is implemented, conducted or produced by the S&T Program and that this science meets an acceptable standard of quality, credibility, and integrity;
- Establish performance measures for restoration projects and monitor and evaluate the performance of program elements;
- Improve scientific understanding of coastal restoration issues within the context of Adaptive Environmental Assessment and Management (AEAM) and infuse this improved information into ongoing or future restoration planning, projects and processes conducted by the Program Execution Team;
- Prepare scientific documents including a periodic Science and Technology Report and conduct technical workshops and conferences; and
- Provide reports on science projects to support the Government Performance and Results Act (GPRA).

Monies allocated for the S&T Program would be used to:

- Establish and staff the S&T Office;
- Develop a comprehensive data management structure and process;
- Establish, in concert with the CRMS, key monitoring stations to collect critical baseline data for planned projects;
- Identify key S&T uncertainties and focus efforts (e.g. monitoring and assessment, demonstration projects, research) to resolve them; and

- Develop analytical tools (i.e., hydrodynamic, ecological, and socioeconomic models) to help the Program Execution Team more effectively predict potential feature outcomes

Data collection and monitoring and assessment efforts to fully support the implementation of the TSP and the S&T Program would require extensive collaboration between and funding support from Federal and state agencies, NGOs, and universities. Further details regarding the S&T program can be found in appendix A: SCIENCE AND TECHNOLOGY PLAN.

4.2.6 Programmatic Authority for Demonstration Projects

The purpose of LCA S&T Program demonstration projects is to resolve critical areas of scientific, technical, or engineering uncertainty while providing meaningful restoration benefits whenever possible. The types of uncertainty that are best resolved through implementation of appropriately scaled demonstration projects are the “Type 2” uncertainties introduced in section 3.1 PLANNING CONSTRAINTS. After design, construction, monitoring, and assessment of individual demonstration projects, the LCA program will leverage the lessons learned to improve the planning, design, and implementation of other LCA restoration projects.

Beyond serving to resolve the list of “Type 2” uncertainties detailed in this report, demonstration projects may be necessary to address uncertainties not yet known and discovered in the course of individual project implementation or during the course of studies of large-scale and long-term restoration concepts. Demonstration projects can be nominated by either the Program Execution Team or the LCA S&T Program Director to the Program Manager. The Program Manager would forward candidate demonstration projects to the Secretary of the Army for approval. Once approved, construction funding can be budgeted. In addition to standard decision document information, the demonstration project feasibility-level decision documents would address:

- Major scientific or technological uncertainties to be resolved; and
- A monitoring and assessment plan to ensure that the demonstration project would provide results that contribute to overall LCA program effectiveness.

4.2.6.1 Demo 1 – Marsh restoration and/or creation using saline sediments

This demonstration project would address the uncertainty involved in selecting sources of material for marsh creation, restoration of maritime forests, and restoration of freshwater cheniers. There is uncertainty regarding the efficacy of using saline mineral soils to support freshwater habitats. Uncertainties regarding the time required for soil to leach out salts and increase organic matter content in order to make the soils suitable for the establishment of freshwater vegetation would need to be resolved prior to using this technique on a large scale.

This demonstration project would be located in the southwestern Barataria Basin, just north of Port Fourchon, in the “Chenier Unit” of the partially completed Barataria Basin Marsh Creation Study. This project would be constructed in four 200-acre cells, each one constructed

using different methods for thin placement including spray dredge and unconfined/semi-confined traditional hydraulic techniques at varying depths.

The demonstration project would be monitored to determine plant mortality, landform stability occurring within the different cells. Monitoring would also evaluate impacts related to the acquisition of borrow material and its effect on the local ecosystem. Approximate design and construction costs for DEMO1 would total \$12 million.

4.2.6.2 Demo 2 – Land bridge restoration using long-distance conveyance of sediments

This demonstration project would address the uncertainty involved in land bridge restoration through long distance conveyance of sediments via pipeline. Concerns about the cost effectiveness of using conventional dredging techniques to transport large quantities of sediments long distances from sediment sources must be addressed. Conventional dredging equipment typically requires large pipelines for transport of sediments. However, there are uncertainties about how the material can be effectively transported efficiently over long distances and distributed. Variability in the sections of the land bridge would facilitate monitoring to determine optimal final grade vs. design grade, dewatering periods, and potential water quality effects of transported materials. Tests should also be conducted to apply a two-tiered approach whereby large pipeline systems are used to convey high volumes of material but smaller dredges could be used to then disperse the material into final locations.

This demonstration project would be located along the degrading land bridge between Bayous Dularge and Grand Caillou in the lower Terrebonne Basin. Approximate design and construction costs for DEMO2 would be \$10.3 million.

4.2.6.3 Demo 3 – Pipeline canal restoration using different methods

This demonstration project would address uncertainties involved in restoration of pipeline canals. Pipeline canals have been cut throughout the coastal marshes and have resulted in fragmentation and accelerated erosion of many of the marshes. There has been considerable uncertainty and debate about the most effective approach to restoring existing and future pipeline canals. There are also uncertainties about the viability of restoration efforts and the timing of restoration. Different approaches to restoration should be examined and monitored including: 1) backfill with small hydraulic dredge; 2) cross dikes to construct cells and improvements on effluent discharge location; 3) mechanical backfill; 4) gaps in the spoil bank to restore natural hydrology; and 5) test plugs as stand alone features to reduce erosion within the canal. If backfill is used, impacts related to the acquisition of borrow material and its effect on the local ecosystem must be addressed.

This demonstration project would be constructed in locations in both Barataria and Terrebonne basins, with planned closure of twenty different canal sections via the five different methods described above. Approximate design and construction costs for DEMO3 would be \$20 million, within each test section at approximately \$1 million.

4.2.6.4 Demo 4 – Shoreline erosion prevention using different methods

This demonstration project would address uncertainties involved in restoration of eroding shorelines throughout the coastal area. Erosion along open bays and channels has led to wetland losses across the coast. Different approaches to impede future erosion would be examined and monitored for long-term effectiveness and sustainability. Project monitoring would include comparative evaluations of settlement occurring within the various erosion protection/foreshore protection features.

This demonstration project would be implemented through construction and monitoring of a variety of erosion protection/foreshore protection features in a variety of foundation conditions. This demonstration project would be constructed along fifteen different one-mile stretches of the rapidly eroding Rockefeller Refuge shoreline in the Chenier Plain.

Approximate design and construction costs for DEMO4 would be \$20 million. Depending on the protective measure used, reconnaissance level estimates indicate that costs for one-mile test sections will vary between \$1.5 to .75 million.

4.2.6.5 Demo 5 – Barrier island restoration using offshore sources of sediments

This demonstration project would address uncertainties involved in restoration of barrier islands with offshore sources of sand. Focused research and restoration projects already completed in the LCA have contributed to an understanding about the most effective and sustainable island geometry design. However, several issues remain regarding the potential sources of the large quantities of sediment that would be required to re-establish or restore coastal barrier islands. Two sand sources already identified are Ship Shoal and the Lower Mississippi River. Issues related to Ship Shoal are the quantity of available material and the cost-effectiveness of using this source relative to other sources. The sources of sands must be quantified and different transport mechanisms tested to determine a cost-effective approach to establishment. The demonstration project test sections would also vary in the types of sediment (percentage of sand/silt/clay) used for barrier islands and back barrier marsh creation. Monitoring would focus on vegetation growth and island stability.

This demonstration project would be constructed along sections of the Terrebonne barrier islands. Approximate design and construction cost for DEMO5 would be \$20 million.

It is proposed that demonstration projects developed by the S&T program be funded as a construction item at an amount not to exceed \$175 million over 10 years, including a maximum cost of \$25 million per project. The five initial candidate demonstration projects developed by the PDT have an estimated total project cost of \$82,300,000. For responsiveness to the need for an additional 5 to 20 demonstration projects to be defined during implementation, the LCA Programmatic Authority for demonstration projects would include an additional \$92,700,000.

4.2.7 Programmatic Authority for the Beneficial Use of Dredged Material

The District has the largest annual channel O&M program in the USACE, with an annual average of 70 mcy of material dredged. Currently, approximately 14.5 mcy of this material is used beneficially in the surrounding environment with funding from either the O&M program itself or the Continuing Authorities Program (CAP) defined by the WRDA 1992 Section 204 for beneficial use of dredged material. Within the O&M program, beneficial use may be funded if the cost increment increase for the beneficial use transport and disposal is a minimal percentage increase above the O&M Base Plan for standard transport and disposal. The CAP Section 204 provides another funding source to “carry out projects for the protection, restoration, and creation of aquatic and ecologically related habitats, including wetlands, in conjunction with dredging for construction, operation, or maintenance by the Secretary [of the Army] of an authorized navigation project.” Section 204 projects are completed in conjunction with existing O&M contracts and pay for the incremental cost above the Base Plan for the beneficial use alternative. The Base Plan is defined as “Disposal of dredged material ... in the least costly manner consistent with sound engineering practice and meeting all Federal environmental requirements.” Combined, the existing O&M program and the CAP Section 204 (with \$15,000,000 in annual funding spread throughout USACE) do not provide the resources for the District to take full advantage of the available sediment resources.

The TSP would be enhanced by a programmatic authority for beneficial use of dredged material. This program would allow the District to take greater advantage of existing sediment resources made available by maintenance activities to achieve restoration objectives. Annualized, there is reasonable potential to use an additional 30 mcy of material beneficially if funding were made available. (A portion of the average annual material total of 70 mcy is not available for beneficial use because it is resuspended material from upstream maintenance; if taken out of the system upstream, it is not available for downstream beneficial use.) Other limitations within particular areas include threatened and endangered species operating restrictions; cultural resource site operating restrictions; and unfavorable maritime working conditions. Areas with significant opportunity for additional beneficial use of material include:

- The bar channel of the MRGO, LA, project;
- The bay reach of the Barataria Bay Waterway, LA project;
- The [lower] MR&T project, Head of Passes and Southwest Pass;
- The bar channel of the Atchafalaya River and Bayous Chene, Boeuf, and Black, LA, project; and
- The inland reach of the Calcasieu River and Pass, LA, project.

The TSP recommends \$100,000,000 in programmatic authority to allow for the extra cost needed for beneficial use of dredged material. Approximately 15 percent would be used for feasibility studies, and the remaining \$85,000,000 would be used for placement of dredged material within the acquired disposal sites. Past Section 204 projects have demonstrated an incremental cost of \$1.00 per CY for placement. Additionally, these projects have demonstrated approximately 0.00025 acres per CY created. Based on the requested funds and a ten-year period of implementation, it is expected that the LCA beneficial use of dredged material could attain approximately 21,000 acres of newly created wetlands. This beneficial use program

represents a significant opportunity to contribute to the attainment of the LCA objectives. Programmatic authority would allow for the application of funds appropriated for LCA for beneficial use of dredged material under guidelines established by the Secretary of the Army, which may be similar to the current guidelines specified for the Section 204 Continuing Authorities Program. Approval of individual beneficial use projects would be delegated by the Secretary of the Army and managed by Division based on the appropriated annual funds. Implementation would proceed with a more detailed analysis of the potential beneficial use disposal sites. Additional funds should not exceed \$100,000,000 over the initial 10 years of the LCA program and would support a significant increase in achieving restoration objectives with the existing sediment resources from LCA navigation channels.

4.2.8 Programmatic Authority to Initiate Studies for Modifications to Existing Water Control Structures and/or Operation Management Plans

Coastal Louisiana is a dynamic environment that requires continual adaptation of restoration plans. With this recognition, opportunities for modifying or rehabilitating existing structures and/or their operation management plans to contribute to the LCA ecosystem restoration objectives may be required in the future.

Initiation of studies of restoration opportunities relative to such modifications requires advanced budgeting. Standard budget sequencing may limit responsiveness to recommendations made within the TSP. As a result, the TSP seeks programmatic authorities to initiate studies of existing structures utilizing funds within the LCA appropriations, not to exceed \$10,000,000.

4.2.9 Cost Estimates for Components of the TSP

Estimated costs for each of component of the TSP are shown in **table MR-23**. Cost estimates are based on June 2004 price levels.

Table MR-23
TSP Recommended Component Cost Estimates
(June 2004 Price Levels)

Item	Cost (\$)
MRGO environmental restoration features	\$ 80,000,000
Small diversion at Hope Canal	\$ 30,025,000
Barataria Basin Barrier shoreline restoration, Caminada Headland, Shell Isl.	\$ 181,000,000
Small Bayou Lafourche reintroduction	\$ 90,000,000
Medium diversion at Myrtle Grove w/ possible dedicated dredging	\$ 146,700,000
SUBTOTAL	\$ 527,725,000
Real Estate	\$ 66,439,000
First cost	SUBTOTAL \$ 594,164,000
Feasibility Level Decision Investigations and NEPA Documentation	\$ 55,609,000
PED	\$ 37,072,000
Near-term Approval and Implementation Documentation Cost	SUBTOTAL \$ 92,681,000
Engineering & Design (E&D) / Supervision & Administration (S&A)	\$ 99,265,000
Programmatically Authorized TSP Cost	\$ 786,110,000
Science & Technology Program Cost (10 year Program)	\$ 100,000,000
Demonstration Program Cost (10 year Program)*	\$ 175,000,000
Beneficial Use Dredge Material Program*	\$ 100,000,000
Modification of Existing Structures	\$ 10,000,000
Total Programmatically Authorized TSP Cost	\$ 1,171,110,000
Multi-purpose operation of the Houma Navigation Canal Lock #	\$ -
Terrebonne Basin Barrier shoreline restoration E. Timbalier, Isle Dernieres	\$ 84,850,000
Maintain Land Bridge between Caillou Lake & Gulf of Mexico	\$ 41,000,000
Small diversion at Convent / Blind River.	\$ 28,564,000
Amite River diversion (spoil banks gapping)	\$ 2,855,000
Medium diversion at White's Ditch	\$ 35,200,000
Stabilize Gulf Shoreline at Pointe Au Fer Island	\$ 32,000,000
Convey Atchafalaya River Water to Northern Terrebonne marshes	\$ 132,200,000
Caernarvon - optimize for marsh creation (project modification)	\$ 1,800,000
Davis Pond - optimize for marsh creation (project modification)	\$ 1,800,000
SUBTOTAL	\$ 360,269,000
Real Estate	\$ 208,100,000
First cost	SUBTOTAL \$ 568,369,000
Feasibility Level Decision Investigations and NEPA Documentation	\$ 54,100,000
PED	\$ 36,067,000
Near-term Approval and Implementation Documentation Cost	SUBTOTAL \$ 90,167,000
Engineering & Design (E&D) / Supervision & Administration (S&A)	\$ 71,734,000
Conventionally Authorized TSP Cost	\$ 730,270,000
Mississippi River Hydrodynamic Study	\$ 10,250,000
Third Delta	\$ 15,290,000
Upper Atchafalaya Basin Study w/ Mod Operations of Old Riv Control ^	\$ -
Chenier Plain Freshwater Management and Allocation Reassessment	\$ 12,000,000
Mississippi River Delta Management Study	\$ 15,350,000
Acadiana Bay Estuarine Restoration	\$ 7,110,000
Large-scale Studies Cost	\$ 60,000,000
Total Conventionally Authorized TSP Cost	\$ 790,270,000
Total LCA Restoration TSP Cost	\$ 1,961,380,000

*Program total costs include any estimated Real Estate costs for these activities

Feature of the Mississippi River and Tributaries, Morganza Louisiana to the Gulf of Mexico Hurricane Protection project recommended in the reports of the Chief of Engineers dated 23 August 2002 and 22 July 2003.

^ Study to be funded under the Mississippi River and Tributaries authority

4.2 Plan Management

The purpose of the LCA Management Plan (Management Plan) is to maximize attainment of the planning objectives for restoration of Louisiana's coastal wetlands. This management plan and structure describe how various entities would be integrated into the planning and decision-making process during the TSP implementation. This proposed management structure would also facilitate communication and coordination between the Federal and state agencies in the implementation of broader coastal restoration efforts and programs.

This section of the report describes the working relationships between the various entities and their respective roles and responsibilities to facilitate efficient management of coastal restoration activities. Due to the significance and magnitude of wetlands losses and the far-reaching national extent of the problems generated by coastal Louisiana land losses over the next 50 years, a Washington-level Task Force is needed to fully address the issues.

For each of the groups involved in the implementation of the LCA program (**figure MR - 43**), the purpose, structure, and roles and responsibilities are described. The groups include: Headquarters, a Program Management Team, a Program Execution Team, a proposed Task Force, the Assistant Secretary, a Regional Working Group, and a S&T Office. **Figure MR - 43** depicts their overall relationship and the interaction that would be needed to achieve coastal restoration and consistency.

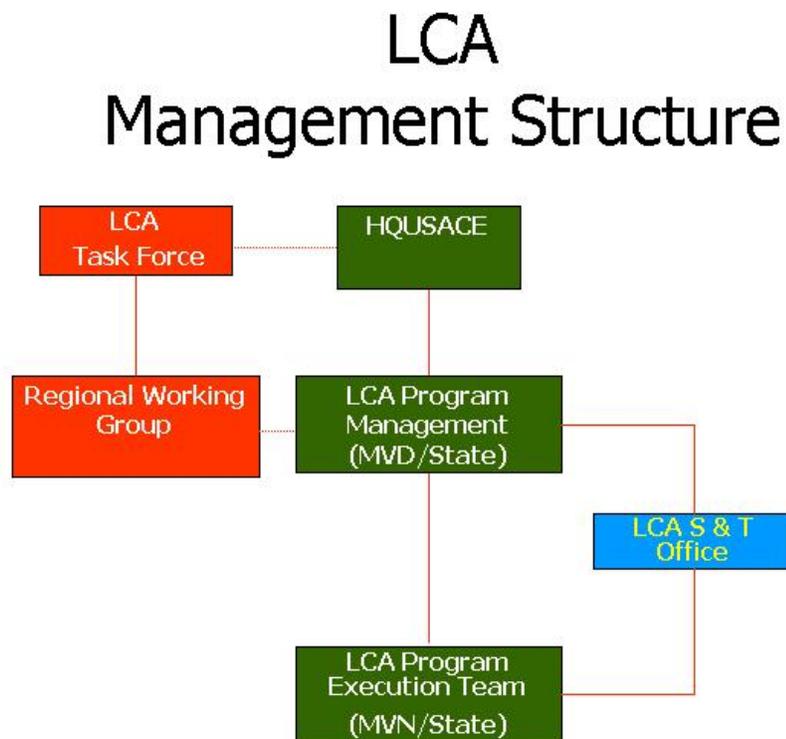


Figure MR-43. Coastal Restoration Management Structure.

4.2.1 Headquarters, US Army Corps of Engineers

Headquarters would provide leadership in policy review, compliance, and funding strategies for Louisiana coastal restoration. Headquarters formed an interdisciplinary regional integration team that would participate in the study, comprised of policy, planning, and programs staff. Headquarters would also:

- Expedite review and policy decisions;
- Coordinate with agencies at the Washington level;
- Provide leadership in the resolution of issues;
- Recommend approval to the Assistant Secretary for annual LCA budget requirements;
- Prepare Chief's reports for obtaining authorizations;
- Review requests for approval under programmatic authority; and
- Provide lead for administrative support to the Task Force.

4.2.2 Program Management Team

The Program Management Team would include representatives from Division, the State of Louisiana, and the S&T Office. With the support of the Program Management Team, the Program Manager (Commander, Mississippi Valley Division/President, Mississippi River Commission) would manage the LCA program in close coordination with the State of Louisiana, and perform the following duties:

- Coordinate interagency program efforts through RWG forum;
- Complete upward reporting requirements to Headquarters;
- Submit the annual LCA program budget to Headquarters;
- Provide annual program funding to the Program Execution Team with program execution guidance;
- Review annual AEAM and program reports to develop future programmatic guidance;
- Approve S&T Office efforts in support of the LCA Program;
- Prioritize S&T Office efforts in support of on-going studies and construction;
- Support the District's need for technical resources within and outside the Division including independent technical review teams;
- Provide reports to the Task Force on LCA Program activities and execution;
- Participate in issue resolution conferences, alternative formulation briefings, teleconferences and other formal briefings;
- Provide leadership in ensuring quality assurance and policy compliance; and
- Establish program review teams as necessary.

4.2.3 Program Execution Team

The purpose of the Program Execution Team is to formulate, design, and implement the TSP components. It would also provide a forum for the many Federal and state agencies working on coastal restoration efforts to interact and to share resources.

Program Execution Management would be performed by the District and the state (through LDNR). Program Execution Management would provide oversight of all coastal restoration activities. The overall Program Execution Team would include additional Federal and state agency members and manage studies and construction through appropriate implementation strategies in order to complete necessary work in the most efficient and expeditious manner possible. Each organization brings to the team a particular area(s) of expertise.

The Program Execution Team may make recommendations that it deems warranted to the District Engineer on matters that the Program Execution Team generally oversees, including suggestions to avoid potential sources of dispute. The Government in good faith shall consider the recommendations of the Program Execution Team. The Government has the discretion to accept, reject, or modify the Program Execution Team's recommendations.

Team members would assist in the preparation of reports and the reports' submission to the Program Manager. One specific reporting responsibility of the Program Execution Team would be the Program Report to Congress (RTC). The purpose of the RTC would be to provide Congress with 1) the status and progress of implementation of the TSP, 2) any recommended changes to procedures for implementing the TSP, 3) changes to the scope, cost, and structure of the TSP, including the addition or removal of projects, 4) recommendations to improve the overall execution and management of the plan, and 5) any other information or recommendations regarding the plan. A RTC would be prepared by the Division and the District, and would be approved by Headquarters and the Secretary of the Army prior to submittal to Congress.

The Program Execution Team would make recommendations to the District Engineer and the Program Manager for the following:

- Coordinate and conduct coastal consistency review of reports and documents for all District activities (i.e. feasibility reports) in the LCA;
- Prepare LCA Program Reports to Congress as required (for approval through the Program Manager);
- Prepare project cost share agreements for approval and execution by designated authority;
- Produce Project Management Plans (PMPs), Project Feasibility-Level Decision Documents/feasibility reports for authorization of projects;
- Dialogue with the S&T Office during scoping of feasibility studies to identify S&T support requirements;
- Produce PED scope documents, Plans & Specifications (P&S), and environmental compliance documents;

- Review periodic AEAM monitoring reports, provide recommendations to the Program Manager, and implement guidance provided;
- Conduct all scoping meetings, public information meetings, and issue resolution activities;
- Prepare the Program Execution annual budget; and
- Submit the consolidated Program Execution and Science and Technology budget to the Program Manager.

4.2.4 Coastal Louisiana Ecosystem Protection and Restoration Task Force

The purpose of the proposed Task Force would be to facilitate coordination and collaboration among various agencies involved in implementation of major coastal restoration activities and provide recommendations to the Secretary of the Army. The Task Force would be formed by specific Congressional authorization.

The Task Force would include the following members or designees - in the case of a Federal agency, members or designees would be at the level of an Assistant Secretary:

- The Secretary of the Army, who shall serve as Chairperson;
- The Secretary of Interior;
- The Secretary of Commerce;
- The Administrator of the Environmental Protection Agency;
- The Secretary of Agriculture;
- The Secretary of Transportation;
- The Secretary of Energy;
- The Secretary of Homeland Security; and
- The Governor of the State of Louisiana

The Task Force would meet to discuss actions and recommendations to the Secretary of the Army regarding:

- Policies, strategies, plans, programs, projects, and activities for addressing the conservation, protection, restoration, and maintenance of the Coastal Louisiana Ecosystem;
- Integrated financial plans of the agencies represented on the Task Force. Such recommendations shall identify funds from available existing programs, and include recommendations for coordinated budget requests;
- Submission of a biennial report to Congress that summarizes the activities of the Task Force;
- Task Force actions to facilitate public participation, including providing advance notice of meetings, providing adequate opportunity for public input and comment, maintaining appropriate records, and making available a record of proceedings for public inspection.

4.2.5 Assistant Secretary

The Assistant Secretary would serve as the chair of the Task Force and would ultimately be responsible for recommendations to Congress on authorization and appropriation of funds. The Assistant Secretary's office includes the Principal Deputy Assistant Secretary of the Army (Civil Works), the Deputy Assistant Secretary of the Army (Policy and Legislation), the Deputy Assistant Secretary of the Army (Project Planning and Review), the Deputy Assistant Secretary of the Army (Management and Budget), and their staffs who would participate in policy determinations and reviews, and other activities related to LCA restoration.

4.2.6 Regional Working Group

The RWG would support the Task Force and facilitate regional level collaboration and coordination with the LCA Program Management Team and with all Federal and state agencies involved in ecosystem restoration. The RWG membership mirrors the composition of the Task Force, but at the regional level.

The RWG would:

- Advise Program Management Team;
- Identify opportunities for leveraging agency resources to support the S&T Program; and
- Coordinate with other on-going ecosystem restoration actions, such as CWPPRA and State Wetlands Authority projects.

4.2.7 Science and Technology Office

The S&T Office is the focal point for activities of the S&T Program. It provides a physical location and single point of contact for all agencies and individuals with interests in science and technology. It must communicate regularly and efficiently with LCA Program Management and the Program Execution Team while maintaining a separate identity and independence from the day-to-day activities of implementation. The S&T Office must also be responsive to the technical needs of the Program Execution Team and provide analytical tools responsive to the Team (e.g., hydrodynamic and ecological models) and frequently assess the effectiveness of those tools through close communication. Funds would be allocated to the Science Program by the Program Manager to support the Program Execution Team, and address science needs of the Science Director to meet the goals and objectives of the LCA Program. For example, funds could be used to: 1) develop necessary scientific data and information to implement features found in the near-term course of action; and 2) fund coastal restoration science and technology proposals to address uncertainties related to enhancing system-wide understanding, engineering concepts, and operational methods. The strategy to facilitate that communication and critical responsiveness would be through application of an AEAM framework. The main structural elements of the LCA S&T Program and its relationship to program management are shown in **figure MR-44**.

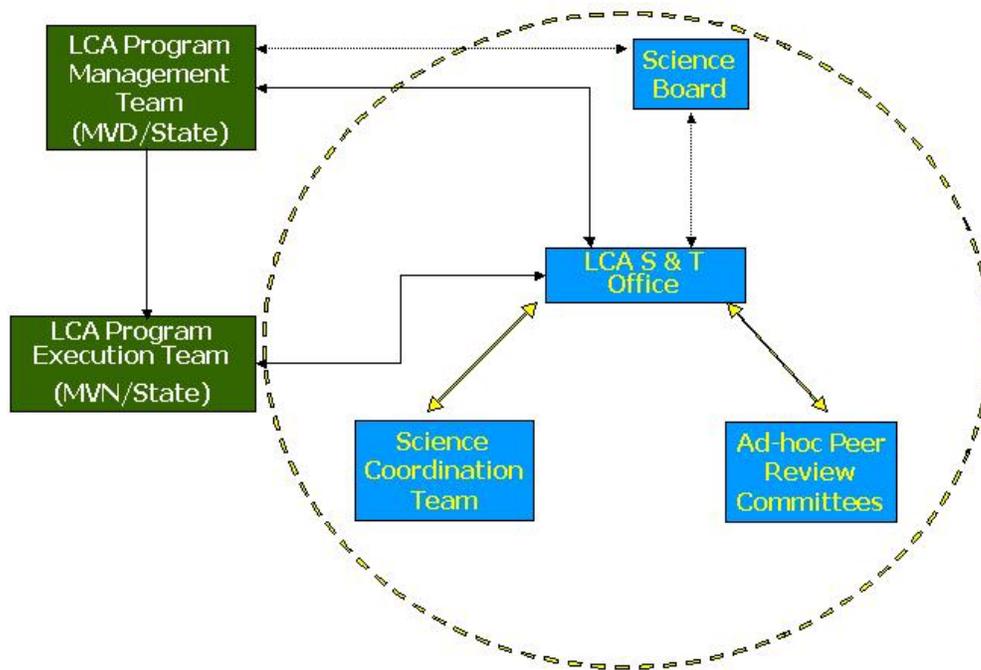


Figure MR-44. Relationship of the S&T Program with LCA Program Management and the Program Execution Team.

4.2.7.1 Science Board (SB)

The Science Board (SB) would be a small group that would meet periodically and would be knowledgeable of the ongoing activities of the program. The SB would consist of the appropriate number of members depending on scope of particular review, including:

- Several National Academy of Science-level academics (convened on a contract basis)
- A representative of the Corps of Engineers (Federal lead agency)
- A representative of the State of Louisiana (non-Federal lead)
- A representative of appropriate additional Federal agencies

Each member of the SB would hold high level scientific credentials (e.g., a Ph.D. in an appropriate field of science or engineering), have experience in science program coordination, and have a background in the science and technology issues surrounding coastal restoration.

The role of the SB would be to periodically review the S&T Program and prepare reports that provide recommendations and advice to the Program Manager and Director of the S&T Office. The purpose of these reviews and reports would be to provide an independent assessment of the program. The Director of the S&T Office would keep regular communication with the SB between formal review sessions. Additionally, the SB would:

- Review the LCA program to identify gaps in scientific information and adaptive management tools and strategies;
- Recommend tools, processes, and methodologies from a review of current research to improve ongoing LCA restoration efforts;
- Work closely with the Director to review recommended changes that are needed in the applied science strategies of the restoration program;
- Possibly recommend establishing new science initiatives, innovative restoration tools, and other challenging research and development issues; and
- Report to Program Management and the Director of the S&T Office regarding the effectiveness of science and technology program to meet the science and information needs of the restoration program.

4.2.7.2 Science Coordination Team (SCT)

The SCT would provide the S&T Program with a mechanism for coordinating LCA Plan science initiatives with ongoing and planned work being undertaken in state and Federal agencies, other restoration efforts, and within the broader scientific community. An inventory of ongoing Federal and state agencies and academic institutions was initiated in 2004 to expedite this effort. The SCT members would assist with information transfer efforts, planning periodic science symposia, and would advise the S&T Office of new scientific developments and technological advances occurring within their agencies. The SCT would be an inclusive body with members representing Federal, state and local governmental agencies with scientific interests, NGOs, academic institutions, and private interests. The S&T Director would chair the SCT.

4.2.7.3 Ad hoc peer review committees

All scientific investigations and project studies would be subject to a peer review by an independent panel of experts as determined by the S&T Director. A panel of experts shall be composed of independent experts who represent a balance of areas of expertise suitable for the review being conducted. The peer review could include a review of the economic and environmental assumptions and projections, project evaluation data, economic analyses, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in evaluation of economic or environmental impacts of proposed projects, and any biological opinions of the project study.

4.3 Consistency and Coordination Between Development and Coastal Restoration and Protection Efforts

From navigation improvements and hurricane protection to residential and commercial construction, development activities can harm or complement the Louisiana coastal environment. Yet, such activities are critical for a healthy and vibrant economy in coastal Louisiana. The challenge, therefore, is to ensure that economic development does not undermine the sustainability of wetlands and coastal ecosystems that are also vital to long-term economic health

of the region and Nation. The solution is neither a moratorium on growth in the coastal zone, nor “business as usual.”

Project purposes such as hurricane protection, navigation, and economic development must be addressed in a way that is, at a minimum, consistent with coastal restoration and protection efforts. Indeed, Section 303(d) of CWPPRA mandates consistency for some important activities:

Consistency---(1) In implementing, maintaining, modifying, or rehabilitating navigation, flood control or irrigation projects, other than emergency actions, under other authorities, the Secretary [of the Army], in consultation with the Director [of the USFWS] and the Administrator [of the EPA], shall ensure that such actions are consistent with the purposes of the restoration plan submitted pursuant to this section.

Despite efforts to address this important provision, it is acknowledged by many stakeholders that a more thorough and comprehensive effort is needed to ensure consistency across the coast. It is further recognized that the TSP is the appropriate vehicle for initiating such an effort. In order to move towards such consistency, implementation of the TSP would include:

- “Coastal Consistency” reviews of all District feasibility reports and significant regulatory actions by the LCA Program Execution Team;
- Early coordination between both the state and District on all projects in the Coastal Area that have potential impacts upon restoration activities;
- Adherence to the Coastal Zone Management Act Federal Consistency Regulations (15 CFR Part 930 Subpart C---Consistency for Federal Agency Activities, 16 U.S.C. 1451 et seq.)

These efforts to enhance internal and external coordination would build upon the significant progress that has already been made as a result of the formation of the interagency (Federal and state) collocated restoration team housed within the District. In implementing the TSP, the state would also work towards consistency with their Coastal Zone Management Plan. A more detailed Consistency Action Plan is included in chapter 6 of the LCA PDEIS. The **figure MR-45** indicates the coordination that would be necessary to achieve coastal consistency. Most of these state and Federal programs involving coastal management are under the purview of the agencies represented on the Task Force.

Some of the features identified in the LCA Study as having the potential to address areas of critical ecological need already have some level of investigation and design effort completed under CWPPRA. Approval of the TSP, especially the programmatically authorized elements, would present an opportunity to expeditiously move towards implementation of some of these features that would take longer if they proceeded under the funding-constrained CWPPRA program. This would enable CWPPRA to potentially refocus or prioritize its program elements towards other important restoration efforts that complement LCA program elements. The CWPPRA features would continue to provide restoration benefits, as well as lessons learned to the larger-scale and longer-term restoration efforts undertaken within LCA.

The following Federal agencies are formal Cooperating Agencies for the LCA Study: MMS, NRCS, NMFS, USEPA, USFWS, and the USGS. The technical input from these agencies has greatly contributed to the completeness and correctness of the study. Continued cooperation and collaboration will greatly assist in effective plan implementation as well.

Consistency and Coordination



Figure MR-45. Consistency and Coordination.

4.3.1 CWPPRA Task Force

As the lead decision maker in coastal projects pursued under CWPPRA, the CWPPRA Task Force would interact and support the Task Force. Primary support and interaction would be to ensure that efforts pursued under CWPPRA are complimentary to efforts pursued under LCA. This interaction and support would include:

- CWPPRA Task Force members would be briefed on Task Force actions through their respective agency's chain of command;
- Attendance at Task Force quarterly meetings, as necessary; and
- Attendance at Governor's Advisory Commission meetings, as necessary.

4.3.2 State of Louisiana Coastal Restoration Program Efforts

4.3.2.1 Louisiana Wetlands Conservation and Restoration Authority

The Louisiana Wetlands Conservation and Restoration Authority (State Wetlands Authority or Authority) is a cabinet level body legislatively established in 1989 (R.S. 49:213.1 et seq) within the Office of the Governor. Its functions include promulgation of policy with respect to coastal restoration, development of an annual coastal plan subject to the approval of the Louisiana legislature, and approval of funds proposed for appropriation from the Wetlands Conservation and Restoration Fund.

The Governor's appointed Executive Assistant for Coastal Activities serves as Chair of the Authority to develop procedures for the operation of the Authority, and to perform any tasks delegated to him by the Authority. The State Wetlands Authority is composed of the Governor's Executive Assistant for Coastal Activities, the director of the State Soil and Water Conservation Committee, the Commissioner of Administration and the Secretaries of the Departments of Natural Resources, Wildlife and Fisheries (LDWF), Environmental Quality (LDEQ), and Transportation and Development (LDOTD).

The Authority must approve any request by any state agency for funds to finance research, programs or projects involving coastal wetlands, except those to be funded from self-generating sources. Acting for the Authority, the Executive Assistant is responsible for overseeing and coordinating "all state departmental budget requests for programs and projects pertaining to coastal wetlands conservation and restoration, as well as all requests for funds to be appropriated from the Wetlands Conservation and Restoration Fund." Furthermore, the roles of the Executive Assistant include "review and reconcile state agency comments on Federally sponsored water resource development projects" and "represent the policy and consensus viewpoint of the state at the federal, regional, state and local levels with respect to wetlands conservation and restoration," and is expected to "report annually to the legislative committees on natural resources as to the progress of the projects and programs enumerated in the plan," providing such details as "estimated construction and maintenance costs, progress reports, and estimated completion timetables" (R.S. 49:213.1 et seq).

4.3.2.2 Louisiana Advisory Commission on Coastal Restoration and Conservation

Created within the Office of the Governor in the public interest, the Advisory Commission on Coastal Restoration and Conservation (the Commission) acts to advise the Governor of Louisiana and the Executive Assistant for Coastal Activities on coastal issues relative to the overall status and direction of the state's restoration program. The Governor's Office of Coastal Activities provides staffing functions for the Commission.

A broad range of groups and stakeholders comprise the 31-member Commission, representing numerous and diverse interests that live, work, and recreate in the LCA. Leaders in finance, banking and business, agriculture and farming, academia, non-governmental organizations and the conservation community, energy production and distribution, industry,

political subdivisions, landowners, legislators, and commercial and recreational fishing are all represented on the Commission.

Commission meetings provide a forum for coordinating activities and exchanging information on the status of various state and Federal efforts affecting coastal preservation and conservation, fostering collaboration between various stakeholder groups and involved state and Federal agencies, identifying and resolving conflicts, and identifying potential sources of funding for coastal projects and programs.

4.4 Adaptive Environmental Assessment and Management

As detailed in section 2.2 EXISTING AND FUTURE WITHOUT-PROJECT CONDITIONS, large coastal ecosystems like the LCA are dynamic systems that integrate terrestrial and marine processes nested in scale from global to local influences against a backdrop of historical conditions. The scientific and technological uncertainties outlined in section 3.1 PLANNING CONSTRAINTS, as well as watershed influences that affect delivery of water, sediments, and nutrients, and uncertainty in the timing and magnitude of infrequent, but high-energy events such as floods and storms, make these large ecosystems inherently difficult to manage. Integration of an AEAM system within the LCA program would facilitate management of this complex system to best meet the planning objectives.

AEAM prescribes a management process wherein future actions can be changed as the efficacy of past actions on the ecosystem is determined through monitoring and other means to improve knowledge about the response of the system (Holling and Gunderson, 2002). The AEAM approach recognizes that uncertainty is unavoidable in managing large-scale ecological systems. If properly planned and maintained, the feedback element can be used to sequentially improve management actions so that future system conditions become more consistent with program goals and objectives than past actions. AEAM allows development of an iterative and flexible approach to management and decision-making.

All organizations within the LCA Management Structure have a role in implementing AEAM. The LCA S&T Office would make AEAM recommendations based on assessment of monitoring data and the development of new tools or technologies. Specifically, the Program Execution Team would be responsible for reviewing the overall program and preparing annual reports and recommendations to the Program Manager so that necessary adjustments to better meet program objectives could be made. The Program Manager would issue updated programmatic guidance to both the Program Execution Team and the S&T Office. **Figure MR-46** depicts this iterative process and the roles of the different groups. It is important to note that the scale of decisions dealt with in the “decision process” highlighted in **figure MR-46** would differ in scale. One way of expressing this is to distinguish between strategic decision and tactical decisions. Strategic decisions comprise the decisions about the nature and timing of large projects and major policies related to the overall programmatic effort. Tactical decisions comprise those decisions about implementation and operation that are necessary for the projects and policies to succeed. The AEAM framework applies to both strategic and tactical decisions about coastal restoration.

The implementation of AEAM within LCA Program management would build upon lessons learned over the past several years in CWPPRA. Along with informing LCA management methods, CWPPRA-initiated tool development, such as the Coast-wide Reference Monitoring System (Steyer et al., 2003), would be useful within the LCA AEAM effort.

The structures and general process outlined for the LCA S&T Program provide the basic elements of an AEAM program. However, making AEAM work means that all participants involved in the TSP acknowledge that implementation is a learning process, and adaptation is a necessity. The key to this is timely and effective communication of information to assist all participants in furthering attainment of program objectives. Examples of communication tools are project-specific report cards, annual programmatic AEAM report, and science symposia convened on an annual or biennial basis. Appendix A SCIENCE AND TECHNOLOGY PROGRAM expands on this general discussion of AEAM.

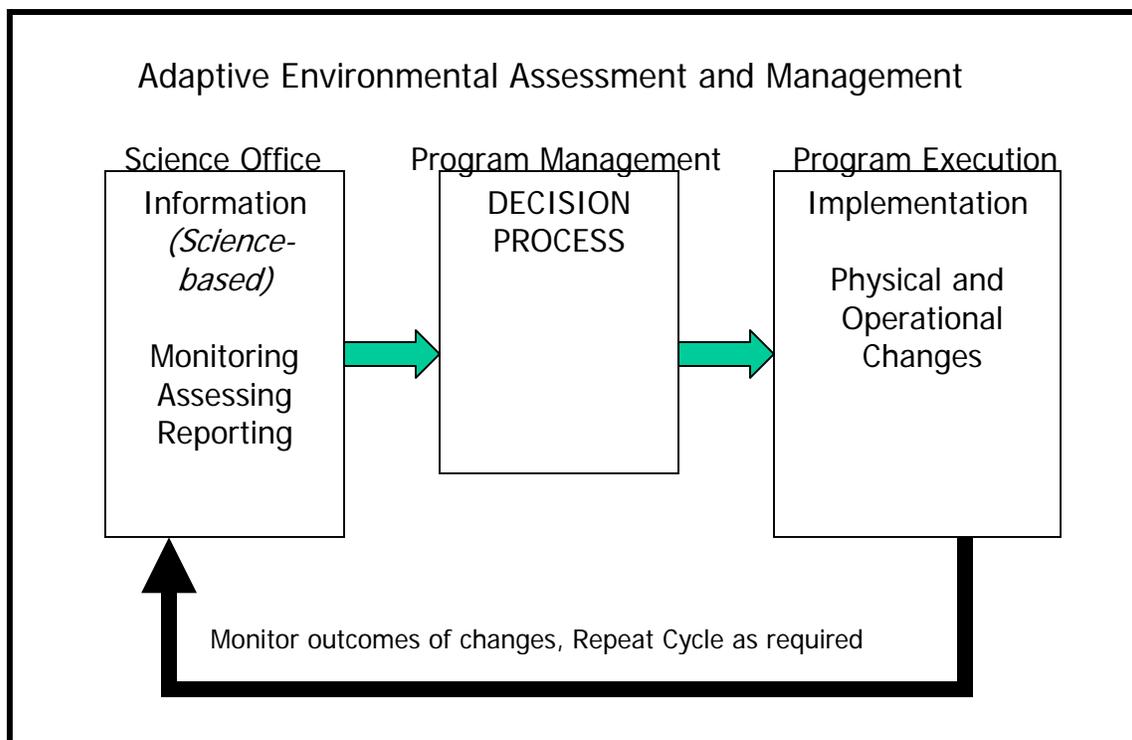


Figure MR-46. Adaptive Environmental Assessment and Management Process.

4.5 Institutional Requirements

The WRDA of 1986 comprehensively reestablished and redefined the Federal interest in water resources development and, in recognition of the limitations on Federal financial resources, instituted requirements for proportionately greater non-Federal cost-sharing in USACE projects.

4.6 Division Of Responsibilities

4.6.1 Non-Federal Sponsor

The non-Federal sponsor is the State of Louisiana, acting through its LDNR. LDNR would sponsor further planning studies, preparation of comprehensive plans and specifications developed during the detailed preconstruction engineering and design phase, and implementation of authorized projects under the LCA program. The non-Federal sponsor has been made aware of and has expressed a complete understanding of the ultimate requirements for plan implementation.

4.6.2 Cost Sharing Requirements

The plan recommended in the report would require non-Federal cost-sharing for implementation. A standard cost share percentage of 65 percent Federal and 35 percent non-Federal would be applied for construction features, including demonstration projects and the science and technology plan, 75 percent Federal and 25 percent non-Federal would be applied for beneficial use of dredged material, 50 percent Federal and 50 percent non-Federal for general investigations, studies, and feasibility-level decision documents, and 100 percent of land, easements, rights of way, relocation, and disposal (LERRDs) and operations, maintenance, repair, rehabilitation, and replacement (OMRR&R) costs would be the responsibility of the non-Federal sponsor (**table MR-24**).

As shown, the total cost consists of four major elements. The general investigations (GI) costs are those associated with preparation of the feasibility-level decision document. The PED phase is the phase during which the project design is finalized, plans and specifications are completed, and the construction contract is prepared for award. The construction cost includes all costs associated with project construction, as well as costs for monitoring and adaptive management. Operation and maintenance costs are those associated with operating and maintaining a project; this category includes costs of induced dredging.

4.6.3 Federal Obligations

1. Subject to receiving funds appropriated by the Congress of the United States and using those funds and funds provided by the non-Federal Sponsor, expeditiously constructing the Project, applying those procedures usually applied to Federal projects, pursuant to Federal laws, regulations, and policies.
2. Affording the non-Federal sponsor the opportunity to review and comment on the solicitations for all contracts, including relevant plans and specifications, prior to the Government's issuance of such solicitations. The Government shall consider in good faith the comments of the non-Federal sponsor, but the contents of solicitations and award of contracts shall be exclusively within the control of the Government.
3. To the extent possible, affording the non-Federal sponsor the opportunity to review and comment on all contract modifications, including change orders, prior to the issuance to the contractor of a Notice to Proceed. In those cases where providing the non-Federal

sponsor with notification of the contract modification or change order is not possible prior to issuance of the Notice to Proceed, such notification would be provided in writing after the fact at the earliest date possible. The Government shall consider in good faith the comments of the non-Federal sponsor, but the execution of contract modifications, and issuance of change orders, shall be exclusively within the control of the Government.

4. To the extent possible, affording the non-Federal sponsor the opportunity to review and comment on all contract claims prior to resolution thereof. The Government shall consider in good faith the comments of the non-Federal sponsor, but the resolution of contract claims, and performance of all work on the Project (whether the work is performed under contract or by Government personnel), shall be exclusively within the control of the Government.
5. Throughout the period of construction, furnishing the non-Federal sponsor with a copy of the Government's Written Notice of Acceptance of Completed Work for each contract for the Project.
6. After the Government determines that construction of the Project, or functional portion of the Project, is complete: 1) notifying the non-Federal sponsor in writing of such determination; 2) furnishing the non-Federal sponsor with an Operation, Maintenance, Repair, Replacement, and Rehabilitation Manual; and 3) turning the Project, or functional portion of the Project, over to the non-Federal sponsor for operation, maintenance, repair, replacement, and rehabilitation.
7. Performing a final accounting to determine the contributions provided by the non-Federal sponsor, and to determine whether the non-Federal sponsor has met its obligations.

**Table MR-24.
TSP Cost Sharing Distribution.
(June 2004 Price Levels)**

Item	Federal Share	Non-Federal Share	Total Cost (\$)
Feasibility Decision and NEPA Documentation - (50/50)	\$ 27,804,500	\$ 27,804,500	\$ 55,609,000
Near-term Feature First Construction Cost - (65/35)	\$ 343,021,250	\$ 184,703,750	\$ 527,725,000
PED - (65/35)	\$ 24,096,800	\$ 12,975,200	\$ 37,072,000
(E&D) / (S&A) - (65/35)	\$ 64,522,250	\$ 34,742,750	\$ 99,265,000
Real Estate - (0/100)	\$ -	\$ 66,439,000	\$ 66,439,000
Programmatically Authorized TSP Implementation Subtotal	\$ 431,640,300	\$ 298,860,700	\$ 730,501,000
Science & Technology Program (10 year Program) - (65/35)	\$ 65,000,000	\$ 35,000,000	\$ 100,000,000
Demonstration Program (10 year Program) - (65/35)	\$ 113,750,000	\$ 61,250,000	\$ 175,000,000
Beneficial Use Dredge Material Program - (75/25)	\$ 75,000,000	\$ 25,000,000	\$ 100,000,000
Modification of Existing Structures - (65/35)	\$ 6,500,000	\$ 3,500,000	\$ 10,000,000
Total Programmatically Authorized TSP Subtotal	\$ 719,694,800	\$ 451,415,200	\$ 1,171,110,000
Feasibility Decision and NEPA Documentation - (50/50)	\$ 27,050,000	\$ 27,050,000	\$ 54,100,000
Near-term Feature First Construction Cost - (65/35)	\$ 234,174,850	\$ 126,094,150	\$ 360,269,000
PED - (65/35)	\$ 23,443,550	\$ 12,623,450	\$ 36,067,000
(E&D) / (S&A) - (65/35)	\$ 46,627,100	\$ 25,106,900	\$ 71,734,000
Real Estate - (0/100)	\$ -	\$ 208,100,000	\$ 208,100,000
Conventionally Authorized TSP Implementation Subtotal	\$ 304,245,500	\$ 371,924,500	\$ 676,170,000
Large-scale Studies - (50/50)	\$ 30,000,000	\$ 30,000,000	\$ 60,000,000
Total Coventionally Authorized TSP Subtotal	\$ 361,295,500	\$ 428,974,500	\$ 790,270,000
Total Tentatively Selected Plan Cost Share	\$ 1,080,990,300	\$ 880,389,700	\$ 1,961,380,000

4.6.4 Non-Federal Responsibilities

The non-Federal sponsor shall, prior to implementation, agree to perform all of the local cooperation requirements and non-Federal obligations. Local cooperation requirements and non-Federal sponsor obligations include, but are not necessarily limited to:

1. Provide a minimum of 50 percent of costs allocated to general investigations, studies, and feasibility-level decision documents.
2. Provide a minimum of 35 percent of total project costs allocated to ecosystem restoration/environmental protection project costs, including demonstration projects, a minimum of 25 percent of total project costs allocated to beneficial use of dredged material, and 50 percent costs allocated to feasibility-level decision documents:
 - a. Enter into an agreement which provides, prior to execution of the project cooperation agreement, 25 percent of design costs;
 - b. Provide, during the first year of construction, any additional funds needed to cover the non-Federal share of design costs;
 - c. Provide all lands, easements, and rights-of-way, including suitable borrow and dredged or excavated material disposal areas, and perform or assure the performance of all relocations determined by the Federal Government, in consultation with the non-Federal sponsor, to be necessary for the construction, operation, and maintenance of the project;
 - d. Provide or pay to the Federal Government any additional funds needed to cover the cost of providing all retaining dikes, wasteweirs, bulkheads, and embankments, including all monitoring features and stilling basins, that may be required at any dredged or excavated material disposal areas required for the construction, operation, and maintenance of the project;
 - e. Provide, during construction, any additional funds necessary to make its total contribution attributable to ecosystem restoration/environmental protection equal to 35 percent of total project costs allocated to ecosystem restoration/environmental protection;
2. Provide 35 percent of the costs allocated to the Science Program;
3. Provide the non-Federal share of that portion of the costs of mitigation and data recovery activities associated with historic preservation, that are in excess of 1 percent of the total amount authorized to be appropriated for the project;
4. Not use Federal funds to meet the non-Federal sponsor's share of total project costs unless the Federal granting agency verifies in writing that the expenditure of such funds is authorized;

5. Operate, maintain, repair, replace, and rehabilitate the project, or functional portion of the project, including mitigation, at no cost to the Federal Government, in a manner compatible with the project's authorized purposes and in accordance with applicable Federal and state laws and regulations and any specific directions prescribed by the Federal Government;
6. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-Federal sponsor, now or hereafter, owns or controls for access to the project for the purpose of inspecting, operating, maintaining, repairing, replacing, rehabilitating, or completing the project. No completion, operation, maintenance, repair, replacement, or rehabilitation by the Federal Government shall relieve the non-Federal sponsor of responsibility to meet the non-Federal sponsor's obligations, or to preclude the Federal Government from pursuing any other remedy at law or equity to ensure faithful performance;
7. Hold and save the United States free from all damages arising from the construction, operation, maintenance, repair, replacement, and rehabilitation of the project and any project-related betterments, except for damages due to the fault or negligence of the United States or its contractors;
8. Perform, or cause to be performed, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 96-510, as amended (42 U.S.C. 9601-9675), that may exist in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be required for the initial construction, periodic nourishment, operation, and maintenance of the project. However, for lands that the Federal Government determines to be subject to the navigation servitude, only the Federal Government shall perform such investigations unless the Federal Government provides the non-Federal sponsor with prior specific written direction, in which case the non-Federal sponsor shall perform such investigations in accordance with such written direction;
9. Assume, as between the Federal Government and the non-Federal sponsor, complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the initial construction, periodic nourishment, operation, or maintenance of the project;
10. Agree that, as between the Federal Government and the non-Federal sponsor, the non-Federal sponsor shall be considered the operator of the project for the purpose of CERCLA liability, and to the maximum extent practicable, operate, maintain, and repair the project in a manner that would not cause liability to arise under CERCLA;
11. Prevent obstructions of or encroachments on the project (including prescribing and enforcing regulations to prevent such obstruction or encroachments) which might

- reduce ecosystem restoration benefits, hinder operation and maintenance, or interfere with the project's proper function, such as any new developments on project lands or the addition of facilities which would degrade the benefits of the project;
12. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project, for a minimum of 3 years after completion of the accounting for which such books, records, documents, and other evidence is required, to the extent and in such detail as would properly reflect total costs of construction of the project, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 Code of Federal Regulations (CFR) Section 33.20;
 13. Comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended (42 U.S.C. 1962d-5), and Section 103 of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. 2213), which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element;
 14. Comply with all applicable Federal and state laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army," and all applicable Federal labor standards and requirements, including but not limited to 40 U.S.C. 3141- 3148 and 40 U.S.C. 3701 – 3708 (revising, codifying, and enacting without substantial change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a et seq.), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 et seq.) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c et seq.); and
 15. Comply with all applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended (42 U.S.C. 4601-4655), and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way necessary for the initial construction, periodic nourishment, operation, and maintenance of the project, including those necessary for relocations, borrow materials, and dredged or excavated material disposal, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

4.7 Real Estate

The purpose of this section is to discuss the real estate issues involved in pursuing the TSP (hereafter referred to as “plan”) described in this report.

4.7.1 Estates

The following estates are proposed to be acquired over real property, as appropriate for particular project features. Each feasibility report/decision document will more particularly propose the exact estates to be acquired. The brackets indicate optional language for rights that may need to be acquired, if necessary for a project feature.

4.7.1.1 Fee excluding minerals (with prohibition on use of the surface)

This estate will be acquired, as needed for fee title, e.g., structures, barrier islands, and shoreline protection. Public access would generally be allowed on fee-owned sites, except where prohibited due to safety or security concerns or otherwise inconsistent with project purposes. Shoreline projects would include the right of public use of the shoreline below the ordinary high water mark.

4.7.1.2 Flowage easement (permanent flooding)

This estate will be acquired to secure the perpetual right to permanently overflow, flood and submerge lands and may allow existing and new camps within flowage areas, e.g., outlying areas over which the only project impact would be the overflow of water, such as the outermost areas affected by freshwater diversion.

4.7.1.3 Channel or channel improvement easement

This estate allows the perpetual right to construct, operate, and maintain a channel or channel improvement work, e.g., channels for freshwater and/or sediment diversion, relocated navigation channels, and improvements to existing channels. Habitable structures will not be allowed to remain. Although mineral interests will be reserved to the owner, mineral exploration and extraction will not be allowed on the surface.

4.7.1.4 Wetland creation and restoration easement

This estate will be acquired to secure the perpetual right to construct, operate and maintain the creation and/or restoration of wetlands and associated coastal habitats on the land; the right to deposit dredged material sediment or other beneficial materials thereon; to construct dikes and to install, alter, relocate, repair or plug cuts in the banks of dikes; to accomplish any alterations of contours; to clear, trim, cut, fell, and remove therefrom any or all [trees, timber], underbrush, obstructions and any other vegetation, structures, or obstacles as required; to clear, borrow, excavate and remove therefrom all soil, dirt and any other materials; to construct, operate and maintain pipelines; to place, move and utilize machinery; to plant or cause the growth of vegetation; provided that existing habitable structures may remain, but new habitable

structures may not be constructed on the land; excepting and excluding from the taking all minerals, in and under said land and all appurtenant rights for the exploration, development, production and removal of said minerals, but exploration or drilling on the surface requires prior written approval. This estate would be acquired for marsh creation, land bridge work, and other restoration features.

For those areas currently in State ownership where land is anticipated to be created as a result of the deposition of inorganic material from a diversion project, the right of public access will be provided by the State. However, in such areas, public access would not be allowed until the land has been created and stabilized.

4.7.1.5 Flowage and deposition easement

This estate will be acquired to secure the perpetual right to overflow, flood and submerge the land, including the right to deposit dredged or sediment material on, over and across the land; the right to clear and remove any brush, debris and natural obstructions; provided that existing habitable structures may be maintained on the land, and new structures may be constructed as long as they are consistent with the construction, operation and maintenance of the authorized project, provided prior written approval is obtained; excepting and excluding from the taking all minerals, in and under said land and all appurtenant rights for the exploration, development, production and removal of said minerals, but exploration or drilling on the surface requires prior written approval. This estate will be acquired in areas over which there may be overflow of water and deposition of sediment, e.g., ponding areas resulting from diversions of freshwater or sediments and /or placing gaps in canals.

4.7.1.6 Dredged material pipeline easement

This easement is a temporary and assignable easement and right-of-way in, on, over and across the land for the location, construction, operation, maintenance, alteration, repair and patrol of an [underground] [above ground] dredged material pipeline. This estate will be acquired if a pipeline will be used for the transport of dredged material.

4.7.1.7 Dredged material disposal easement

This easement allows perpetual rights to construct, operate and maintain a dredged material disposal area on the land, [including the right to construct dikes]; to deposit dredged material thereon; [to accomplish any alterations of contours on said land for the purpose of accommodating the deposit of dredged material as necessary in connection with such works]; [to borrow, excavate and remove soil, dirt and other materials, including dredged material, from said land]; [to undertake any management practice designed to enhance use of or extend the life of said land for the deposit of dredged material]; to clear, cut, fell and remove any and all trees, timber, underbrush or other obstructions; provided that existing habitable structures may be maintained on the land, and new structures may be constructed as long as they are consistent with the construction, operation and maintenance of the project, provided prior written approval is obtained; excepting and excluding from the taking all minerals, in and under said land and all appurtenant rights for the exploration, development, production and removal of said minerals,

but exploration or drilling on the surface must be consistent with the construction, operation and maintenance of the authorized project and requires prior written approval. This estate will be acquired for the disposal of dredged material and would allow management practices, e.g., beneficial use.

4.7.1.8 Dike (and/or weir) easement

This easement allows perpetual and exclusive right to construct, maintain, repair, operate, patrol and replace [an earthen] [a stone] dike and/or weir; provided that no habitable structures shall be constructed or maintained on the land; excepting and excluding from the taking all minerals, in and under said land and all appurtenant rights for the exploration, development, production and removal of said minerals, but without the right to enter upon or over the surface of said land for the purpose of drilling and extracting therefrom said minerals.

4.7.1.9 Levee and channel easement

This easement combines two estates and will be acquired to secure the perpetual and assignable right to construct, maintain, repair, operate, patrol and replace a levee, rock weir, drainage ditch, channel and/or channel improvement works; provided that no habitable structures shall be constructed, existing structures may be maintained on the land, no other habitable structures shall be constructed or maintained on the land; excepting and excluding from the taking all minerals, in and under said land and all appurtenant rights for the exploration, development, production and removal of said minerals, but without the right to enter upon or over the surface of said land for the purpose of drilling and extracting therefrom said minerals.

4.7.1.10 Access easement

The estate would be acquired to ensure access to project features. In appropriate areas, the estate would expressly include the right of public access, e.g., access to the shoreline and navigational elements of a project.

4.7.1.11 Canal alteration easement

This estate would be acquired to secure the right to deposit materials within and around the canal, to place plugs or fully close the canal, to cut gaps in the canal, or make other alterations to a canal, in order to restore the hydrology and /or to stabilize the spoil banks along the canal. In appropriate areas, it may include the right to remove from the canal any plug in order to accommodate passage through the canal, provided the user replaces the plug thereafter. The estate will expressly provide that the original canal (or pipeline) easement or right of way is subordinate to the canal alteration easement.

4.7.2 Non-Federal Sponsor

The non-Federal Sponsor is the LDNR, acting on behalf of the State of Louisiana. As the non-Federal Sponsor, LDNR must provide all real estate interests required for each project implemented under the plan, i.e., all lands, easements, rights of way, relocations, and any other

interests, including suitable borrow and dredged or excavated material disposal areas (LERRDs). LDNR has indicated it will provide all lands, water bodies, and/or waterbottoms that are owned, claimed, or controlled by the State, including the voluntary acquisition of oyster leases but has requested the New Orleans District to acquire other real estate interests on its behalf, including condemning such interests if necessary. LDNR also has requested that the District perform all relocations and/or removals of public facilities and utilities, if required, except as said relocations and/or removals traverse State owned lands and/or water bottoms, in which the State will make every effort to resolve such actions.

The decision whether or not to acquire on behalf of a non-Federal sponsor is within the Government's discretion. Acquisition on behalf of the non-Federal sponsor will be discussed on a case-by-case basis in each decision document.

4.7.3 Non-Federal Sponsor-owned Real Property (LERRD's)

Given the time constraints for this report preparation, there was insufficient time for coordination with the Louisiana State Land Office to confirm State-owned real property. For purposes of this report, the following position is adopted: the State of Louisiana is the owner of the bed and bottom of all waterways within the State that were navigable in fact, in 1812, when Louisiana was admitted to the United States. It is acknowledged that the State may have transferred ownership of certain water bodies to private interests. For planning purposes, it is assumed that the State owns the bed and bottoms of navigable waterways, including areas of open water, and that all land within the plan area is privately-owned. A detailed determination of ownership of the State, including any political subdivisions of the State, will be made for each particular plan.

4.7.4 Real Estate Cost Estimates

Cost estimates include the estimated value of the LERRD's. The Federal appraisal method has been used to estimate the value of the LERRD's, including oyster leases, as State law provides that "compensation for the taking of property rights affected by coastal wetlands conservation, management, preservation, enhancement, creation or restoration activities shall be governed by, and strictly limited to, the amount and circumstances required by the Fifth Amendment of the Constitution of the United States of America." La.R.S. 49:213.10.B. To account for changes in the future, the real estate cost estimates include a 50 percent contingency, which is found to be reasonable. The decision was based on the uncertainties associated with the study such as future design changes; areas that have not been identified yet such as mitigation areas; borrow sources beyond those of the Gulf of Mexico, the Mississippi River, and the Calcasieu River; and access locations for dredged material disposal pipelines; unforeseen severance damages; possible cemetery relocations; the impact, if any, of project footprints on mineral exploration and/or extraction rights; settlement of possible land reclamation rights, if allowed as project costs; and unknown court awards. In addition, the estimated number of the landowners is based on outdated ownership Tobin maps, many of which were last updated 40 to 60 years ago. Other costs included are contracting side-scan sonar for oysters, oyster report review, mapping by contractor, review of contractor mapping, title binders, intermediate certificates, final title insurance policy, temporary permits, review of plans and specifications,

title review, appraisals and appraisal review, negotiations, field trips, meetings with landowners, reimbursement for relocation expenses for displaced persons, e.g., moving of personal property and reestablishment expenses for eligible businesses (PL 91-646), crediting, estimated percentage for condemnations, review of acquisitions by non-Federal sponsor, and administrative costs such as coordination with engineers, project management, contractors, and contracting division, drafting/ mailing letters, estates, just compensation letters, deeds, etc.

4.7.5 Navigation Servitude

Derived from the Commerce Clause of the U.S. Constitution, article I, section 8, clause 3, the navigation servitude is the dominant right of the United States to use, control and regulate the navigable waters and submerged lands thereunder. The applicability of the navigation servitude depends on both legal and factual determinations. If the legal determination supports assertion of the navigation servitude, then the second step is to determine the geographical area over which the servitude can be asserted. In tidal areas, the servitude extends to all lands below the mean high water mark, whereas in non-tidal areas, the servitude extends to all lands within the bed and banks of a navigable stream that lie below the ordinary high water mark. For planning purposes, the real estate cost estimates do not consider the effect of the navigation servitude, given the extensive technical analysis required for such a factual determination. The navigation servitude will be asserted where restoration is related to navigation. This includes new restoration feature opportunities or projects as well as modifications to existing projects.

4.7.6 Public Law (PL) 91-646 Relocations

Title II of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, PL 91-646, as amended, will apply if the project displaces any residences, businesses, or farms. The assumption taken at the time of plan preparation was that minimal displacement would occur.

4.7.7 Habitable Structures

Historically, coastal Louisiana has a rich tradition of hunting, fishing, trapping, and waterfowl activity. Recreational type camps, often consisting of crude structures accessible only by water, are scattered throughout the marshes. Because of the low elevation, tidal influence, and susceptibility to hurricane damage, the camps are placed on stilts or otherwise raised. In many of the proposed plan areas, the restoration measures, such as the flowage of water and sediment, indicate that the camps would not be adversely impacted, given the level of flowage in which case the existing camps within such areas may be allowed to remain. However, camps may not be able to remain in areas in which there are adverse impacts to the camps such as, but not limited to: camps located within the rights-of-way for channels, pipelines, or levees; camps that due to changes in elevation of the surface water become uninhabitable or unsafe; or camps that can no longer be accessed due to plan features. A case-by-case analysis of existing camps will be made prior to the initiation of real estate activities. For purposes of the real estate estimate, it is assumed that existing habitable structures, including camps, will be allowed to remain within the plan areas, except in areas where fee title must be acquired or where the habitable structures would be directly impacted by a plan feature, e.g., within a new channel or

levee. New habitable structures may be allowed within the plan footprints, provided they do not interfere with the construction, operation or maintenance of the plan. Owners will need to obtain prior written approval from the U.S. and the non-Federal sponsor for construction of new camps/habitable structures in the plan area. In addition, all camps must comply with Federal, state, and local laws, e.g., section 404 permits under the Clean Water Act. Camp owners will also be required to hold the Government harmless from damage or injury relating to the plan.

4.7.8 Relocation of Roads, Bridges, Facilities/Utilities, Towns, and Cemeteries

Based on available information, a preliminary list of possible relocations has been prepared. Relocations consist of pipelines, roads, new bridges, and utilities. Relocation of towns is not planned. It is not known if cemeteries will be within the rights-of-way of the plan. Determinations of compensability will be prepared for each report. For planning purposes, it is assumed that the facility owners will have compensable interests in their respective facilities. Costs associated with the subordination agreement are included in the real estate cost estimate.

4.7.9 Minerals

Under Louisiana law, a landowner does not own oil, gas, or other minerals "occurring naturally in liquid or gaseous form." However, the owner does have the exclusive right to explore and develop the land for the production of minerals. A landowner cannot transfer the mineral estate independent of the surface property, but the owner may lease the right to produce the minerals. The owner may also convey a mineral servitude to another, thereby giving that person the right to grant a mineral lease. It is common practice in Louisiana for a landowner to reserve a prescriptible mineral servitude for himself when he sells a tract of land to another. Between private parties, if a mineral owner does not exercise the right within ten years, the servitude is extinguished for "non-use," and reverts to the then surface owner. This "prescription of non-use" does not apply, however, in instances when the United States or the State of Louisiana, or any subdivision or agency of either, acquires property but reserves the mineral interests to the landowner. La R.S. 31:149. This statute allows the prior landowner to enjoy the right to minerals in perpetuity.

Mineral rights will not be acquired. The estates will expressly reserve to the landowner all mineral interests. Although the mineral interest owner will be allowed to continue ongoing mineral activities, in some areas there may be prohibitions or restrictions on future use of the surface of the property for mineral purposes. Alternative drilling methods may allow access to the minerals, e.g., via directional drilling. Specifically, in areas where fee title will be acquired and where permanent features would preclude surface access, e.g., channel or levee easements, the estates would expressly prohibit surface exploration or extraction. In other areas, the estates would restrict, rather than prohibit, the surface use, and would require prior written approval by the Corps and the non-Federal sponsor for mineral activities on the surface. Such approval would be granted if the surface activity does not interfere with the construction, operation, or maintenance of the project.

If it is not feasible for a landowner to use alternative methods to extract minerals, the landowner might try to assert a takings claim. This assertion might be contingent upon the size of the ownership and the area impacted by the project. At present, there are insufficient funds and time to identify possible locations of mineral deposits and the size of ownerships impacted by the plan. During the Feasibility Report Phase, when a more definitive plan footprint is known, ownership research will be conducted to determine the presence of existing mineral leases and to quantify the impact, if any, of the plan alignment upon those leases.

It is assumed that remote access to the minerals would be feasible, e.g., via directional drilling or other methods. However, as for any outstanding third party mineral interests, releases or subordinations will be secured from these mineral interest holders, to ensure acknowledgment of these future surface use restrictions. The real estate costs include sufficient funds to cover negotiations with outstanding third party mineral interest holders.

4.7.10 Ownership of Accreted and Emergent Lands and Mineral Rights

The State claims ownership over navigable water bottom, including areas over which land had historically been located but where such lands have been submerged through erosion or subsidence. Pursuant to Article IX, Section 3 of the Louisiana Constitution, owners of land contiguous to and abutting navigable waters, bays, arms of the sea, the Gulf of Mexico, and navigable lakes belonging to the State shall have the right to reclaim or recover land lost through erosion, compaction, subsidence, or sea level rise occurring on or after July 1, 1921. Such private efforts to reclaim or restore lost lands can be made at any time. Coastal restoration projects implemented pursuant to R.S. 49:214.1 et seq. (Act 6, Louisiana Wetlands Conservation and Restoration Act, 1989) might, if successful, impinge upon those private reclamation rights. Accordingly, R.S. 41:1702.D (2)(a) provides that LDNR may enter into negotiated boundary agreements with such disaffected landowners to address the anticipated loss of their ownership and reclamation rights in the area of the proposed plan where the creation of land is anticipated.

In most cases, the State is not asserting or claiming ownership in subsided interior marshes. As such, the appropriate estate(s) will be acquired in these areas to allow restoration and conservation activities over not only on the submerged lands, but also on any emergent lands.

By contrast, in other areas of open water, the state claims ownership of the water bottoms. LDNR will provide the real estate interests necessary for construction, operation and, maintenance, repair, replacement, and rehabilitation of a project, including such water bottoms. In the event that land emerges from water bottoms claimed by the State, the State acknowledges that the previous landowner may attempt to claim that it was deprived of its reclamation rights to the emergent land. The State believes that the value of such a reclamation rights, if there is any, is too speculative to assess. If a landowner raises a reclamation issue, the State will handle such a claim on a case-by-case basis. The State has asserted that a specific claim may be denied on the basis of lack of evidence of value, or, if warranted by the circumstances, compromised pursuant to rather complex legal provisions. LDNR has proposed that it be afforded credit towards its cost share for any costs it might incur in asserting ownership over emergent lands. This proposal would have to be consistent with all of the obligations of the non-Federal sponsor,

especially the LERRD and indemnification obligations. The real estate cost estimate does not consider these possible future costs.

4.7.11 Timber Activity

It is the general intent of the plan to reserve to the landowner the right to harvest timber. Where the estate prohibits timber harvesting, the market value of the timber is included as part of the overall estimate of land value based upon comparable sales of woodlands. Otherwise, the estimate of value includes an estimate of compensation for the adverse impact of the project on timber.

4.7.12 Row Crop Activity

It is assumed that landowners would be allowed to harvest mature crops prior to construction of the plan. In that instance, compensation would be for the impact of the easement on the value of the property. If time constraints do not permit the landowner to harvest crops, the landowner would also be compensated for the market value of the crops.

4.7.13 Valuation and Acquisition of Existing Oyster Leases

The construction and operation of many LCA plans would require the acquisition of oyster leases throughout coastal Louisiana. The LDWF leases State water bottoms for oyster production for \$2.00 per acre per year plus survey fees, for a 15-year initial term, which gives the leaseholder the exclusive right to harvest oysters within the leased area. There is no midterm termination clause. For oyster leases located within the projected impact area of a coastal restoration plan, at the end of its current lease term, a lease may be renewed for a full 15 years, La. R.S. 56:428, a term between 1 and 14 years (bobtail lease) La. R.S. 56:428.1, or on an annual basis (operational lease) La. R.S. 56:428.2 (See later discussion about operational leases).

An oyster lease has been recognized as a real estate interest by both statute and case law. The State would therefore get LERRD credit for the acquisition of oyster leases within the plan impact area, including incidental costs, in accordance with the PCA and Chapter 12, ER 405-1-12.

LDNR has indicated that for LCA it will acquire oyster leases anticipated to be adversely impacted by a project. With acceptance of payment for an affected lease, the lessee will execute a purchase agreement with the State of Louisiana and a receipt, release, indemnity and hold harmless agreement in favor of the United States, including the USACE, and the State of Louisiana, including LDNR and LDWF, indicating that full and fair compensation has been made in complete satisfaction of all claims against the state and the U.S., related to past, present, or future damages to the affected lease. The state shall be afforded credit in accordance with the PCA and Chapter 12 of ER 405-1-12.

Depending on the plan schedule, the oyster lessee may be allowed to harvest the oysters at his own expense. However, if the plan schedule prevents the oyster lessee from removing the oysters, then the lessee will be compensated for the oyster crop. The lessee would not be

allowed to harvest the crop if payment has been made for the oysters. Under the Federal method, no payment would be made for loss of future crop. Compensation for the oysters would be limited to the contributory value of the crop. Real Estate costs include the costs associated with oyster lease acquisition.

The state would be obligated to provide real estates as necessary for the construction, operation, and maintenance, repair, rehabilitation, and replacement of a project. As such, the state must acquire existing oyster leases, including operational and bobtail leases anticipated to be adversely impacted by a project, and the state must not enter into any new oyster leases or operational or bobtail leases within oyster impact areas.

4.7.14 Induced Flooding

If a taking is determined from increased water levels, a flowage easement would be acquired.

4.7.15 Zoning Ordinances

No application or enactment of zoning ordinances would be proposed in lieu of, or to facilitate, acquisition.

4.7.16 Acquisition Schedules

Acquisition schedules will be prepared for each feasibility report.

4.7.17 Landowner Concerns

Attitudes of landowners within the study areas would vary. Some landowners would be totally in favor of the plan, while others would be totally against it or components thereof. Public access over certain features may be an issue for private landowners. The most vocal group thus far has been the oyster fishermen. Although they understand that the project would be beneficial to the oyster industry in the long-run, they are concerned about the impact of their individual businesses in the interim. Some fishermen have been in this business for generations and have invested much in their leased sites. Some landowners are also concerned about a plan's potential impact on existing camps and on new camp construction, as well as possible impacts on minerals.

4.7.18 Operation and Maintenance

The operation and maintenance for this plan will consist of OMRR&R of the structures, channels (other than existing navigation channels), and other project features. The non-Federal sponsor will have the OMRR&R responsibility.

4.7.19 Real Estate Costs*TSP Components Summary***Programmatically Justified Features:**

MRGO environmental restoration features	\$ 4,188,000
Small* diversion at Hope Canal (CWPPRA Maurepas diversion)	\$26,383,000
Barataria Basin barrier shoreline restoration, Caminada Headland, Shell Island	\$15,558,000
Small* Bayou Lafourche reintroduction	\$12,590,000
Medium* diversion with dedicated dredging at Myrtle Grove	<u>\$ 7,720,000</u>
RE Subtotal:	\$66,439,000

Demonstration Program:**(Costs captured within total \$175,000,000 program request)**

Marsh creation project (vic. Chenier Unit marsh creation site)	\$ 1,500,000
Barrier Island restoration demonstration	
Restoration of pipeline canals (testing various methods)	
Shoreline erosion test sections (vic. Rockefeller Refuge)	\$183,000
Pipeline conveyance of sediments to maintain land bridge (vic. of Bayous Dularge and Grand Caillou)	<u>\$288,000</u>
RE Subtotal:	\$ 1,971,000

Beneficial Use of Dredged Material Program:

RE Subtotal: \$12,039,000

(Costs captured within total \$100,000,000 program request)**Conventionally Authorized Features**

Multi-purpose operation of Houma Navigation Canal (HNC) Lock	\$15,035,000
Terrebonne Basin barrier shoreline restoration, E. Timbalier, Isle Dernieres (SP3)	\$ 9,175,000
Maintain Land Bridge between Caillou Lake & Gulf of Mexico	\$ 892,000
Small diversion at Convent/Blind River	\$41,138,000
Increase Amite River Diversion Canal influence by gapping banks	\$ 1,494,000
Medium diversion at Whites Ditch	\$33,046,000
Stabilize Gulf shoreline stabilization at Pt. Au Fer Island	\$ 272,000
Convey Atchafalaya River Water to Terrebonne marshes	\$38,598,000
Modification to Caernarvon diversion	\$15,650,000
Modification to Davis Pond diversion	<u>\$52,800,000</u>
RE Subtotal:	<u>\$208,100,000</u>

TSP Total Real Estate (RE): \$288,549,000

*Diversion sizes:

Small diversion: 1000 cfs - 5000 cfs

Medium diversion: 5001 cfs - 15000 cfs

Large diversion - > 15000 cfs

4.8 Views of the Non-Federal Sponsor

The State of Louisiana has expressed an understanding of the current law and administration policy regarding implementation of Federal water resources projects. In a letter of intent dated June 3, 2004, Governor Kathleen Babineaux Blanco expressed the State of Louisiana's intention to share in the costs of implementing the recommendations of this report (attachment 4 NON-FEDERAL SPONSOR NOTICE OF INTENT). That letter referenced several outstanding issues that would need to be addressed prior to program implementation, and those issues are detailed in this section.

4.8.1 First Phase of Program Implementation

Because of the urgent need for Federal action to address the rate of land loss and the scale of effort necessary to sustain this vital landscape, we believe the near-term plan [course] of action presented in this report is a necessary first step in the restoration of the Coastal Louisiana Ecosystem. We would like to emphasize, however, that we see this first step in the context of a long-term, comprehensive effort that will require continuous Federal and non-Federal support. This first phase of implementation is an opportunity to begin construction of projects in areas of most critical need, to provide the sustained level of science and technology needed to support the scale and complexity of restoration activities, and to provide us with the tools and data required to support the continued effort. We believe the plan should be updated as new circumstances arise, especially as long-term studies recommended in the report move toward completion and we enter into the next phases of restoration.

4.8.2 Streamlined Implementation Processes

While it is important to maintain checks and balances to ensure wise and efficient use of resources, it is also important that program requirements do not preclude a timely response to this urgent problem. The Corps should develop procedures for preparation and submittal of streamlined decision documents. These procedures should include expedited mechanisms for incorporating projects that have undergone extensive engineering and design efforts under other state and Federal programs. These decision documents should provide adequate assurances that the projects will be effective and cost-efficient in meeting their objectives, but should not be traditional feasibility reports. In addition, these projects should be justified solely on National Ecosystem Restoration benefits; ancillary economic impacts and benefits should be reported.

The programmatic authority recommended in this report for construction of five near-term critical projects is a good example of streamlined implementation. All of these projects meet the criteria specified in the President's FY 2005 Budget Request—they address some of the most critical needs in the Coastal Louisiana Ecosystem and are implementable in the very near-term. In addition, implementation of similar projects through other Federal and state programs has proven that the technology utilized is effective and cost-efficient in meeting the ecological goals of the restoration program. Incorporating and completing the extensive scientific and technological analysis already accomplished for these projects under other Federal and state efforts provides for the most expedient mechanism to address these identified critical needs. We believe that the preparation of decision documents on these five projects has proceeded to the

point where it is possible to begin budgeting construction funds for them, and we urge the Corps to update their budget projections for Federal Fiscal Years 2006 and beyond to include sufficient funds to support timely implementation of the report recommendations.

4.8.3 Program Implementation Cost Share

Although current law requires a cost share ratio of 65 percent Federal, 35 percent non-Federal for construction of ecosystem restoration projects, with operations, maintenance, monitoring, repair, replacement and rehabilitation being 100 percent non-Federal responsibility, we believe that alternative cost share scenarios are appropriate and justified. We are requesting the non-Federal share of total program implementation be set at 25 percent, including operations, maintenance, monitoring, repair, replacement, and rehabilitation costs. Much of the need for restoration can be tied to disruptions of natural processes caused by implementation of existing Federally-authorized projects, which were built under different cost share ratios. Without modification of these projects, further decline of the coastal ecosystem is a certainty. In addition, the nation derives significant benefits from the coastal Louisiana ecosystem: protection for the production and transport infrastructure for about 30 percent of the nation's oil and gas supply; the nation's second largest commercial fishery; and navigation and port facilities which together support America's number one port complex by tonnage. If the land loss is not addressed aggressively, there will certainly be national impacts as well, not the least of which is putting the country's energy security at increased risk. Past precedent also shows that Water Resources Development Act projects to restore the coastal Louisiana ecosystem have been implemented at a 25 percent non-Federal cost. In addition, similarly to provisions in the Comprehensive Everglades Restoration Program, the non-Federal sponsor should be allowed to deviate from its cost share percentage for individual program elements as long as the required share of total costs for program implementation is provided.

4.8.4 Monitoring and Adaptive Management

Monitoring of the overall functioning of the ecosystem will be needed to facilitate engineering, design, and operation of program features. This monitoring is different, and potentially more costly, than monitoring specific projects for performance. Under current Corps of Engineers regulations, monitoring is limited to one percent of project cost and has a limit of five years, and adaptive management costs are limited to 3 percent of project costs. Both of these regulations are tied to implementation of specific projects, and may limit our ability to continually improve program and project outputs if applied to monitoring and adaptive management of the LCA program. We request that these limitations not be applied to implementation of the LCA program.

4.9 Recommended Credit for Non-Federal Work-in-Kind

Ecosystem Restoration projects do not currently include provisions to afford the non-Federal sponsor credit towards its cost-sharing for work-in-kind, other than the standard LERRD credit. Given the scope and nature of the TSP, the demonstrated successes resulting from the current collocation team at the New Orleans District, and the opportunities to utilize the

knowledge base in Louisiana, the TSP recommends that the non-Federal sponsor be afforded credit for the value of the following work-in-kind:

1. Feasibility level decision documents conducted for programmatically authorized features, estimated at 50% of study cost expended within the first ten years of authorization;
2. PED for the programmatically authorized features that are approved by the Secretary of the Army, estimated at 25% of PED costs within the first ten years of authorization;
3. Academic and field research to support the Science and Technology Program estimated to be 35% of the S&T Program costs within the first ten years of authorization; and
4. Study costs associated with investigations conducted by the State, regarding the following large-scale, long-term concepts identified in the TSP as requiring detailed study, estimated to be 50% of the study costs within the first ten years of authorization:
 - a. Third Delta Conveyance channel
 - b. Acadiana Bay Estuarine restoration
 - c. Mississippi River Delta management.

Credit for such work-in-kind will require approval by the Secretary of the Army, based on the Secretary's determination that such work-in-kind is compatible and integral to the project and the costs of such work are allocable, allowable, and reasonable. The total amount of work-in-kind credit shall not exceed the relevant non-Federal share, and there shall be no reimbursement for the value of work that may exceed the relevant non-Federal share.

Crediting for the above items is allowable only for work-in-kind that occurs after the signing of the appropriate agreements, except that the Feasibility Cost Sharing Agreements for those studies identified above in item 4 may allow credit for work-in-kind that occurred between March 2002, when the Feasibility Cost Sharing Agreement was executed for the LCA Comprehensive Study, and the date of authorization of the TSP.

When the non-Federal sponsor requests credit for work-in-kind services, the source of any funds not originating from the non-Federal sponsor must be identified.