Priority Project List Number 13
Candidate Projects

Public Meetings -- November 2003

Abbeville New Orleans

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The 13th Priority List Planning Process

- Citizens nominated 17 projects across the Louisiana coastal zone at Regional Planning Team (RPT) meetings held in February 2003.

- At the direction of the CWPPRA Task Force, the Technical Committee selected 8 candidate projects for detailed evaluation on March 26, 2003.

- Interagency project site visits were conducted with the participation of interested landowners and local government representatives during the late spring and early summer.

- Members of the Environmental and Engineering work groups met to review project features, aerial videotapes, and field notes to determine project boundaries.

- Environmental Work Group conducted Wetland Value Assessments (WVA) on each candidate project to estimate environmental benefits.

- Engineering Work Group reviewed designs and cost estimates for each project.

- The work groups met jointly to prioritize the candidate projects.

- Economics Work Group projected fully funded costs to construct, monitor and maintain each candidate project.

- Hold public meetings to present project evaluation results.

- On December 10, 2003, the Technical Committee will review project evaluation results and develop a recommendation to the Task Force for project selection.

- The CWPPRA Task Force will select the 13th Priority Project List on January 28, 2004.

Goose Point/Point Platte Marsh Creation

Coast 2050 Strategies
Coastwide: Dedicated Dredging to Create, Restore, or Protect Wetlands; Maintenance of Gulf, Bay and Lake Shoreline; Vegetative Planting.
Mapping Unit: Maintain Shoreline Integrity; Vegetative Plantings.

Project Location
Region 1, St. Tammany Parish, North Shore of Lake Pontchartrain between Fountainbleu State Park and Hwy 11, within the Big Branch Marsh National Wildlife Refuge.

Problem
Interior ponding and, to a lesser extent shoreline erosion, are the major causes of wetland loss in the project area. Loss rates were highest during the period from 1956 to 1978. Those high loss rates were associated with hydrologic alterations with allowed saltwater to penetrate the fresher marshes. During the transition to a more brackish plant community, large ponds were formed. A narrow strip of land separates those ponds from Lake Pontchartrain. Although the shoreline erosion rates are relatively low, the shoreline is already breached in several areas and marsh loss in the interior ponds would be expected to increase if the shoreline failed.

Goals
The goal of this project is to recreate marsh habitat in the open water behind the shoreline. This will maintain the lake-rim function along this section of the north shore of Lake Pontchartrain by preventing the formation of breaches into the interior marsh.

Proposed Solution
Sediment would be dredged from Lake Pontchartrain and placed in cells within the ponds and planted with vegetation to create approximately 437 acres of marsh. In addition, 114 acres of degraded marsh would be nourished with dredged material. Marsh would be created to widen the shoreline so that the ponds would not be breached during the course of normal shoreline retreat.

Project Benefits
The project would benefit about 1,384 acres of fresh marsh and open water. Approximately 436 acres of marsh would be created/protected over the 20-year project life.

Construction Costs
The estimated total fully funded cost is $21,747,400.

Risk/Uncertainty and Longevity/Sustainability
There is a low degree of risk associated with this project because current loss rates are relatively low. The project should continue providing benefits 20 – 30 years after construction because the created marsh would be lost slowly.

Preparer of Fact Sheet
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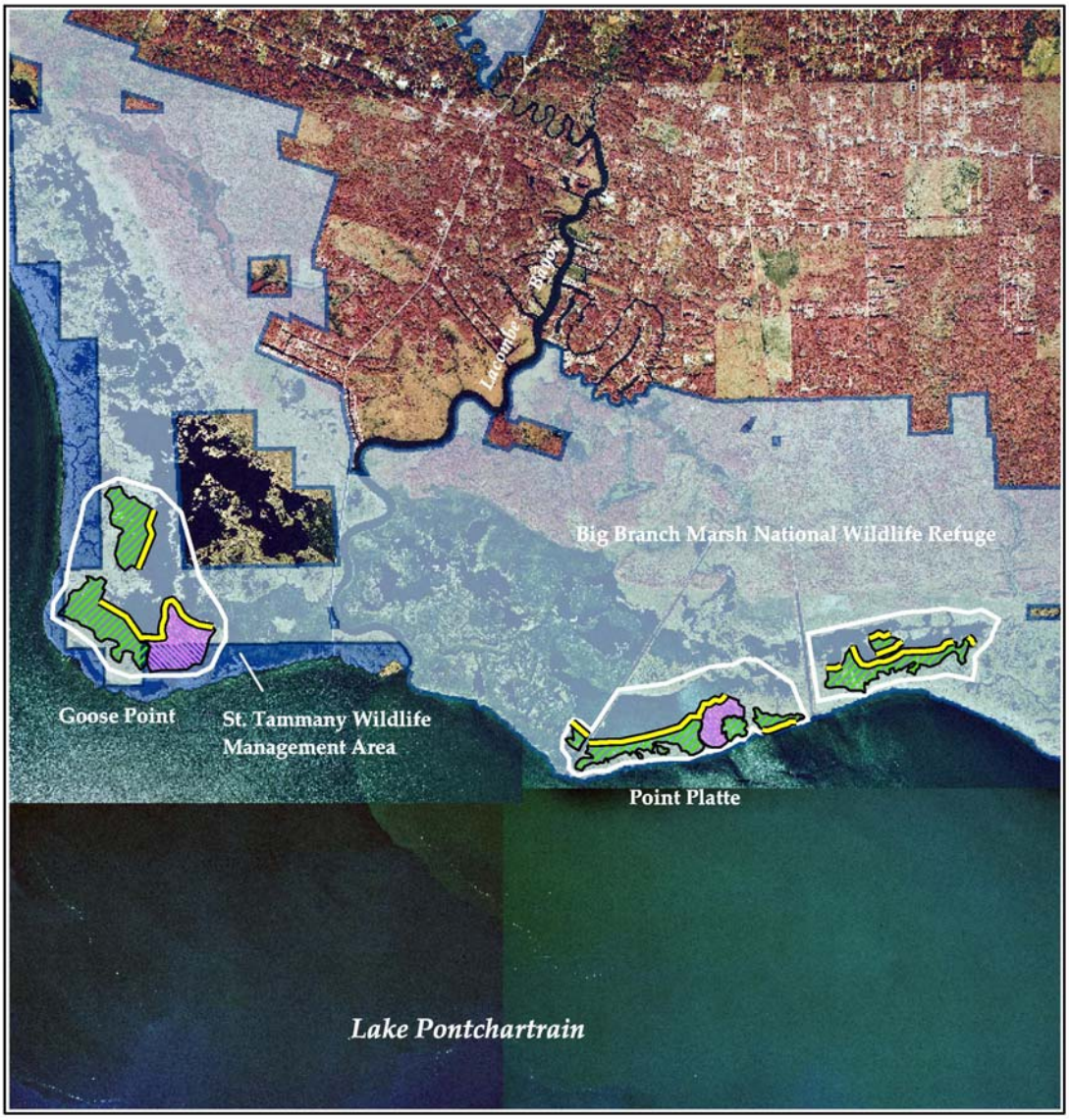

PPL13 Project Candidate:
Goose Point/Point Platte Marsh Creation

Containment Dike*
Marsh Creation*
Marsh Nourishment*
Big Branch Marsh National Wildlife Refuge
St. Tammany Wildlife Mangement Area
Project Boundary

** denotes proposed structures/features*

1 0.5 0 1 Kilometers

1 0.5 0 1 Miles

N

Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Baton Rouge, LA

Image Source:
1998 Digital Orthophoto Quarter Quadrangle

USGS science for a changing world

Map ID: USGS-NWRC 2004-11-0002
Map Date: October 02, 2003

Caernarvon Outfall Management (East)

Coast 2050 Strategy

- #5 "Operate existing diversions and manage their outfall"

Project Location

Region Two, St. Bernard Parish, southwest of Verret, La.

Problem

The historic Bayou Terre aux Boeufs / Bayou La Loutre distributary channel connection to the Mississippi River has been severed for over 100 years and is no longer available to deliver fluvial water to the benefit area (Roberts and Stone, MRSNFR report). The benefit area is located a few miles east of Caernarvon, La., and has been significantly affected due to a lack of river water, salinity intrusion and other factors. The benefit area is in the upper most reach of the sub-basin and was historically the least saline wetland of the sub-basin. This area now receives negligible fluvial water input. The Caernarvon Diversion structure has excess capacity during certain times of the year and is being underutilized. Even under higher discharge, freshwater from the existing Caernarvon Diversion structure is unlikely to significantly impact the target area.

Goals

To re-establish historic hydrology of northern reaches of Bayou Terre aux Boeufs; To deliver nutrients to areas of significant land loss or impoundment to promote marsh growth; To utilize the discharge capacity of the Caernarvon Diversion structure resulting in a net increase in discharge from the Caernarvon Diversion structure; To deliver freshwater to the historic fresher habitats of the sub-basin; To re-establish historic northeast-southwest orientation of habitat boundaries of Breton Basin; To enhance a natural levee and ridge habitat along Bayou Terre aux Boeufs

Proposed Solution

A 1,200 cfs pumping station would be constructed to discharge water from the Caernarvon Diversion Canal to a conveyance canal that parallels the existing borrow canal for the Lake Verret Levee without blocking navigation on Caernarvon Canal.

Project Benefits

The project would benefit approximately 6,839 acres of fresh marsh and open water. Approximately 320 acres of marsh would be created/protected over the 20-year project life.

Construction Costs

The estimated total fully funded cost is $44,736,100.

Risk/Uncertainty and Longevity/Sustainability

There is a moderate degree of risk associated with this project because of the uncertainty of the exact quantity of marsh that will be created/protected. The project should continue providing benefits 20 – 30 years after construction.

Preparers of Fact Sheet

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PPL13 Project Candidate: Caernarvon Outfall Management East

Plugs*
Conveyance Canal*
Pump Station*
Containment Dikes*
Project Boundary
* denotes proposed structures/features

1 0.5 0 1 Kilometers
1 0.5 0 1 Miles

N

Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Baton Rouge, LA

Image Source:
1998 Digital Orthophoto Quarter Quadrangle

Map ID: USGS-NWRC 2003-11-1893
Map Date: September 23, 2003

Naomi Siphon Outfall Area Marsh Creation/Nourishment

Coast 2050 Strategy
Coast wide: Dedicated dredging for wetland creation. Regional: Enrich existing diversions with sediment.

Project Location
The project is located in Coast 2050 Region 2, Barataria, Basin, Plaquemines Parish, at Naomi, LA, along the western bank of the Mississippi River.

Problem
The wetland area west of Naomi was converting rapidly to open water prior to construction of the Naomi Siphon, due to an accretion deficit, in turn caused by the elimination of input of inorganic sediment from overbank flooding of the Mississippi River. Other causes include reduction of sediment input due to altered hydrology caused by spoil banks along oil and gas pipeline and access canals. Reduction of flows through the wetlands due to semi-impoundment by the spoil banks may also have increased water levels and reduced flows through the marshes, possibly reducing plant health and productivity. Finally, saltwater intrusion along with increased hydraulic flow may have resulted in some conversion of fresh marsh to open water. The Naomi Siphon appears to be having positive environmental effects on the marsh. However, a large pond system on the northern side of the outfall area remains as shallow open water and does not appear to be filling in. Aerial photographs suggest that this area receives benefits from the siphon however. The proximity to the Mississippi River is an excellent opportunity to utilize sediment from the river to restore and create wetlands in this area. Finally, the Naomi Siphon area represents one of a few existing opportunities to test combining marsh creation with freshwater redistribution (diversion).

Goals
1) Restore 135 acres of fresh-intermediate marsh in the northern portion of the Naomi Siphon Outfall Area, using Mississippi River sediment; 2) Nourish 87 acres of existing fresh-intermediate marsh in a band surrounding the large open water area to be filled for marsh creation; 3) Increase sustainability of created and nourished marsh by locating the project close to the Naomi Siphon.

Proposed Solution
A dedicated dredge in the Mississippi River will pump sediment through a 2.5 mi pipeline to create approximately 135 acres of marsh in a large pond in the northern portion of the Naomi Siphon Project Area, and nourish 87 acres of marsh in a band around the large pond, with up to 6 inches of sediment. After settlement, newly-placed sediment at marsh elevation in the large pond will be planted with 2 species of marsh plants. The pipeline will go under the highway and the railroad.

Project Benefits
The project would benefit about 222 ac of fresh-intermediate marsh and open water. Approximately 137 acres of marsh would be created/protected over the 20-year project life.

Construction Costs
The estimated total fully funded cost is $9,192,000.

Risk/Uncertainty and Longevity/Sustainability
There is a low degree of risk because marsh creation has been practiced for some time with considerable success, and this marsh will be sustained by the beneficial effects of the Naomi Siphon. The project should continue providing benefits 30 – 40 years after construction because marsh loss rates are very low due to the effects of the Naomi Siphon.

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Louisiana

Study Area

PPL13 Project Candidate:
Naomi Siphon Outfall Area
Marsh Creation/Nourishment

Dredge
Delivery System*
Marsh Creation*
Project Boundary

** denotes proposed structures/features*

0.5 0.25 0 0.5 Miles

0.5 0.25 0 0.5 Kilometers

N

Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Baton Rouge, LA

Image Source:
1998 Digital Orthophoto Quarter Quadrangle

Map ID: USGS-NWRC 2003-11-1896
Map Date: September 24, 2003

Spanish Pass Diversion

Coast 2050 Strategy

- Regional #8 - Construct most effective small diversions into marsh with outfall management.

Project Location

Region 2, Mississippi River Delta Basin, Plaquemines Parish, The project is located near Venice, Louisiana.

Problem

Marsh in the project area is not receiving sediment and is becoming open water. The principle hydrologic changes in the area are due to the dredging of canals for the Venice Oil Field, roads and other infrastructure. This has caused Spanish and Red Pass to be cut-off from the influence of the Mississippi River thus starving the area of freshwater sediments and nutrients. These processes have resulted in the loss of more than 3,900 acres of fresh marsh and swamp.

Goals

The primary goal is to gain emergent marsh to the maximum extent practicable by diverting river water and sediments into an otherwise open water environment.

Proposed Solution

The project involves constructing a 7,000 cfs diversion channel from Grand Pass (a distributary of the Mississippi River) into the large open water receiving area shown on the project map. Outfall management measures will be evaluated and incorporated to increase benefits to aquatic habitats in the system.

Project Features Include:

1. 1,300 lf of diversion channel with containment levees
2. A bridge at Tidewater Road

Project Benefits

The project would benefit approximately 1,580 acres of fresh marsh and open water. Approximately 433 acres of marsh would be created/protected over the 20-year project life.

Construction Costs

The estimated total fully funded cost is $13,927,800.

Risk/Uncertainty and Longevity/Sustainability

There is a moderate degree of risk associated with this project because of the uncertainty of the exact quantity of marsh that will be created. The project should continue providing benefits 30 – 40 years after construction because it is an open channel diversion and has adequate O&M funds budgeted.

Preparer of Fact Sheet

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PPL13 Project Candidate:
Spanish Pass Diversion

Containment Levee*
Diversion Channel*
Project Boundary

**denotes proposed structures/features*

0.5 0.25 0 0.5 Kilometers
0.5 0.25 0 0.5 Miles

N

Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Baton Rouge, LA

Image Source:
1998 Digital Orthophoto Quarter Quadrangle

Map ID: USGS-NWRC 2003-11-1894
Map Date: September 23, 2003

Bayou Sale Shoreline Protection

Coast 2050 Strategies

- Protect bay shorelines
- Protection of ridge function
- Beneficial use of dredge material

Project Location

Region 3, Teche/Vermilion Basin, St. Mary Parish, along the eastern shoreline of East Cote Blanche Bay from British American Canal to the mouth of Bayou Sale.

Problem

Eroding shoreline at an estimated rate of 13.5 ft/yr caused by the open water fetch and resulting wave energy from East Cote Blanche Bay. The retreating shoreline has resulted in a substantial loss of live oak forest, emergent wetlands and critical habitat used by a multitude of fish and wildlife species including the endangered black bear.

Goals

The goal of this project is to reduce and/or reverse shoreline erosion and create marsh between the breakwater and existing shoreline.

Proposed Solution

Construction of a foreshore rock dike parallel to and approximately 150 feet out from the existing eastern shoreline of East Cote Blanche Bay. The linear footage of shoreline is approximately 35,776 feet. The rock dike will be tied into the banks of all substantial channels. Smaller channels and sloughs will have provisions for adequate drainage and aquatic organism access via openings through the dredge material and gaps in the dike. It is anticipated that approximately 123 acres of marsh will be created with the fill material from dredging of an access channel to accommodate construction equipment.

Project Benefits

The project would benefit 312 acres of marsh and 58 acres of bottomland hardwoods. Approximately 329 acres of marsh and bottomland hardwoods would be created and or protected over the 20-year project life.

Project Costs

The estimated total fully funded cost is $32,103,000.

Risk/Uncertainty and Longevity/Sustainability

There is a low degree of risks associated with this project because rock dikes are an effective technique for stopping shoreline erosion. The project should continue providing benefits 30 – 40 years after construction because adequate O&M funds are budgeted.

Sponsoring Agency and Contacts

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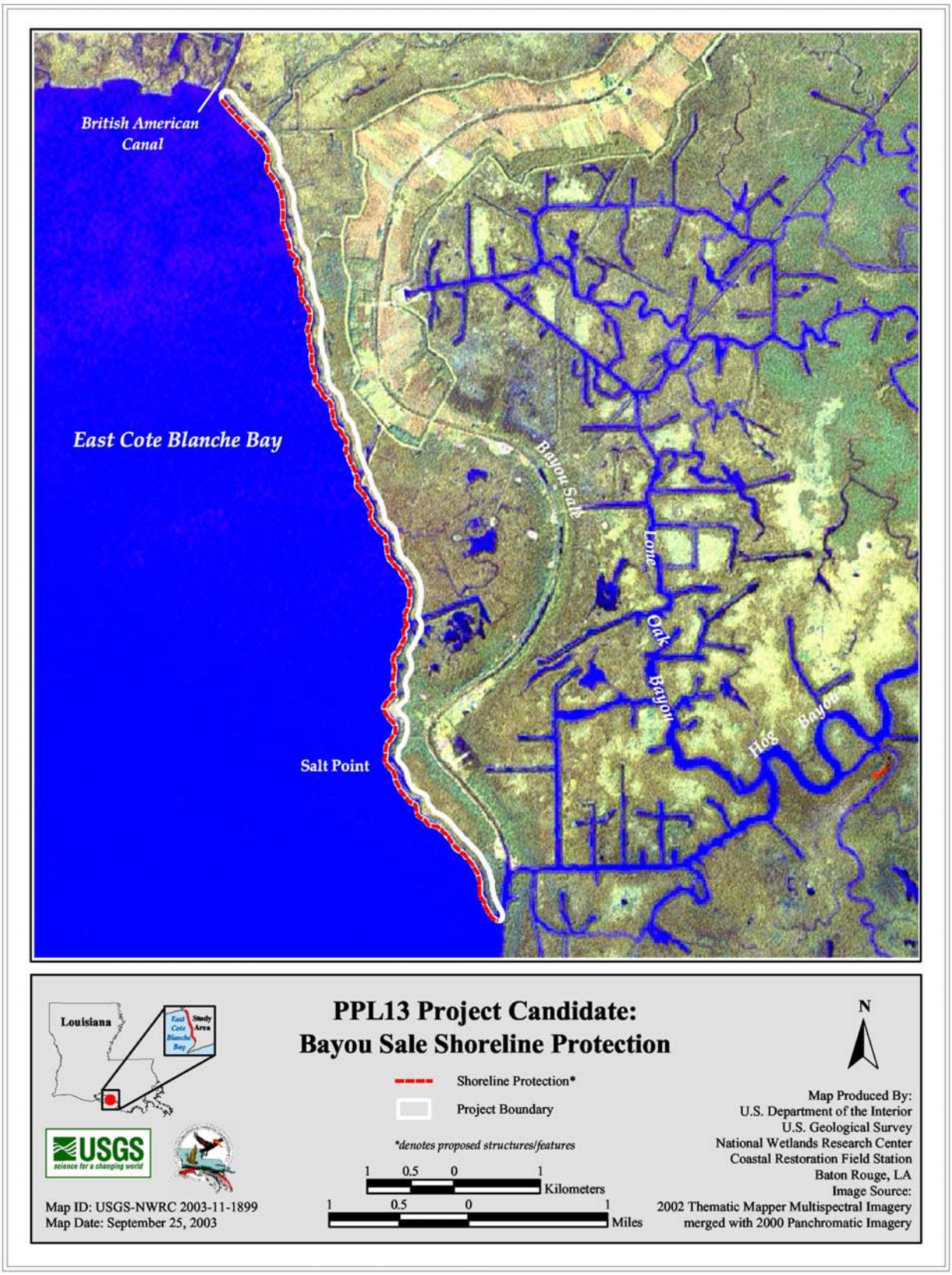
British American Canal
East Cote Blanche Bay
Salt Point
Bayou Sale
Lone Oak Bayou
Hog Bayou
Louisiana
Study Area
East Cote Blanche Bay
USGS
science for a changing world
Map ID: USGS-NWRC 2003-11-1899
Map Date: September 25, 2003
PPL13 Project Candidate:
Bayou Sale Shoreline Protection
Shoreline Protection*
Project Boundary
*denotes proposed structures/features
1 0.5 0 1
Kilometers
1 0.5 0 1
Miles
N
Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Baton Rouge, LA
Image Source:
2002 Thematic Mapper Multispectral Imagery
merged with 2000 Panchromatic Imagery

Shark Island Shoreline Protection

Coast 2050 Strategy
Regional Strategy #11; Maintain shoreline integrity and stabilize critical areas of Vermilion, E. and W. Cote Blanche, Atchafalaya , Caillou, Terrebonne, and Timbalier Bay systems including the gulf shoreline.

Project Location
Region 3, Teche-Vermilion Basin, Iberia Parish. The project boundary includes 40 feet of open water along the western shoreline of Shark Island (21,805 ft) and 20 years of projected erosion from Pelican Point down to Blue Point.

Problem
Analysis of georectified 1978 color infrared photography to 1998 DOQQs determined an average shoreline erosion rate of 23.7 feet/year. According to the Coast 2050 report, subsidence plays a minor role in interior wetland loss at a rate of only 1.1 to 2.0 feet/century (0.132 in. to 0.24 in.) Sea level rise calculated for the Vermilion/Cote Blanche Bay Complex is 0.05 ft/yr from 1942 to 1983 (USACE 2001).

Goals
Stabilize the western shoreline of Shark Island by eliminating or reducing shoreline erosion.

Proposed Solution
Due to poor soil stability and load bearing, the proposed project feature consists of constructing 21,805 feet of concrete sheetpile wall (with approximately 500 feet of tie-in) approximately 40 feet from shore. If authorized, all cost effective techniques would be evaluated as alternatives based on site specific geotechnical soils analysis. There would be a minimum of 25 feet gaps every 1,000 feet. Additionally, there would be a 50 feet wide gap at the water crossing just south of Pelican Point, a 50 feet wide gap at the oil and gas canal, and 2, 100 feet wide gaps at the tidal inlet located approximately half way between the oil and gas canal and Blue Point. Each gap would have an offset section of sheetpile installed with 20 feet of overlap on both ends to prevent waves from passing past the structure. Rock scour pads would be installed along the base of all structures and in the gaps. Existing sediment in the gaps would be dredged (mucked out) prior to installation of the rock scour pad so as to not decrease the water depth through the gaps.

Project Benefits
The project would protect 178 acres of existing intermediate marsh from conversion to open water with erosion over the 20-year project life.

Construction Costs
The estimated total fully funded cost is $19,246,100.

Risk/Uncertainty and Longevity/Sustainability
There is a moderate degree of risk and uncertainty associated with this project because of poor soil stability. The project should continue providing benefits 30 – 40 years after construction because of design features and moderate Operations and Maintenance funds are budgeted.

Preparer of Fact Sheet
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PPL13 Project Candidate: Shark Island Shoreline Protection

N

Shoreline Protection*
Project Boundary

*denotes proposed structures/features

0.5 0.25 0 0.5 Kilometers

0.5 0.25 0 0.5 Miles

Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Baton Rouge, LA

Image Source:
1998 Digital Orthophoto Quarter Quadrangle

Map ID: USGS-NWRC 2003-11-1898
Map Date: September 25, 2003

Whiskey Island Back Barrier Marsh Creation

Coast 2050 Strategy
Regional Strategy #14: Restore and maintain the barrier islands and gulf shoreline such as Isle Dernieres, Timbalier barrier island chains, Marsh Island, Point au Fer, and Cheniere Au Tigre (including back barrier beaches).

Project Location
The proposed project would be in Region 3, Terrebonne Basin, Terrebonne Parish, Lake Pelto Mapping Unit. The project would be located north of the previous restoration project, TE-27.

Problem
Gulfside and bayside erosion combined has resulted in Whiskey Island (and the entire Isles Dernieres) narrowing as the two shorelines migrate toward each other, resulting in a 68% decrease in average width for the Isles Dernieres (McBride and Byrnes 1997. Within 100 years, the entire subaerial portion of the of the Isles Dernieres barrier island system is projected to disappear except small land fragments associated with the western end of Whiskey Island and the eastern end of East Island. However, if the area change extrapolation method is used, the Isles Dernieres are projected to disappear much earlier, in 2017 (McBride and Byrnes 1997). Other predictions suggest that without restoration, the island would become subaqueous sand shoals between 2007 (McBride et al. 1991) and 2019 (Penland et al. 1988). In June, 2000 a CWPPRA restoration project (TE-27) was completed here, including dredging/placement (February, 1998), vegetative planting (July, 1998 and June, 1999), sand fencing (June 2000).

Goals
1) To create approximately 300 acres of back barrier, intertidal marsh; 2) To create a minimum of six 1-acre tidal ponds and 10,000 ft of tidal creeks; 3) To increase the longevity of the previously-restored and natural portions of the island by increasing the island width; 4) To maintain the longevity of the island by conserving sand volume and elevation by increasing the island width.

Proposed Solution
Approximately 300 acres of intertidal, back barrier marsh would be created by semi-confined disposal and placement of dredged material to +2 ft NAVD 88 (! 0.5ft). A minimum of six 1-acre tidal ponds and 10,000 ft of tidal creeks would be constructed. The area would be planted with smooth cordgrass (*Spartina alterniflora)*. The boundary of the disposal area generally would follow the –3.5' contour. Because the project only involves marsh creation, high quality sand is not needed. This will allow sediment to be mined from a sediment source nearer the island than Ship Shoal, for example. A large area of silty sand lies directly to the south of the island, at a distance of three or four kilometers at a depth of two to four meters.

Project Benefits
The project would benefit about 1,038 acres of barrier island habitat. Approximately 272 acres of intertidal saltmarsh would be created/protected over the 20-year project life.

Construction Costs
The estimated total fully funded cost is $21,786,300.

Risk/Uncertainty and Longevity/Sustainability
There is a high degree of risk associated with this project because barrier islands have high loss rates due to their role in absorbing/dissipating energy from the Gulf. The project should continue providing benefits 20 – 30 years after construction.

Preparers of Fact Sheet
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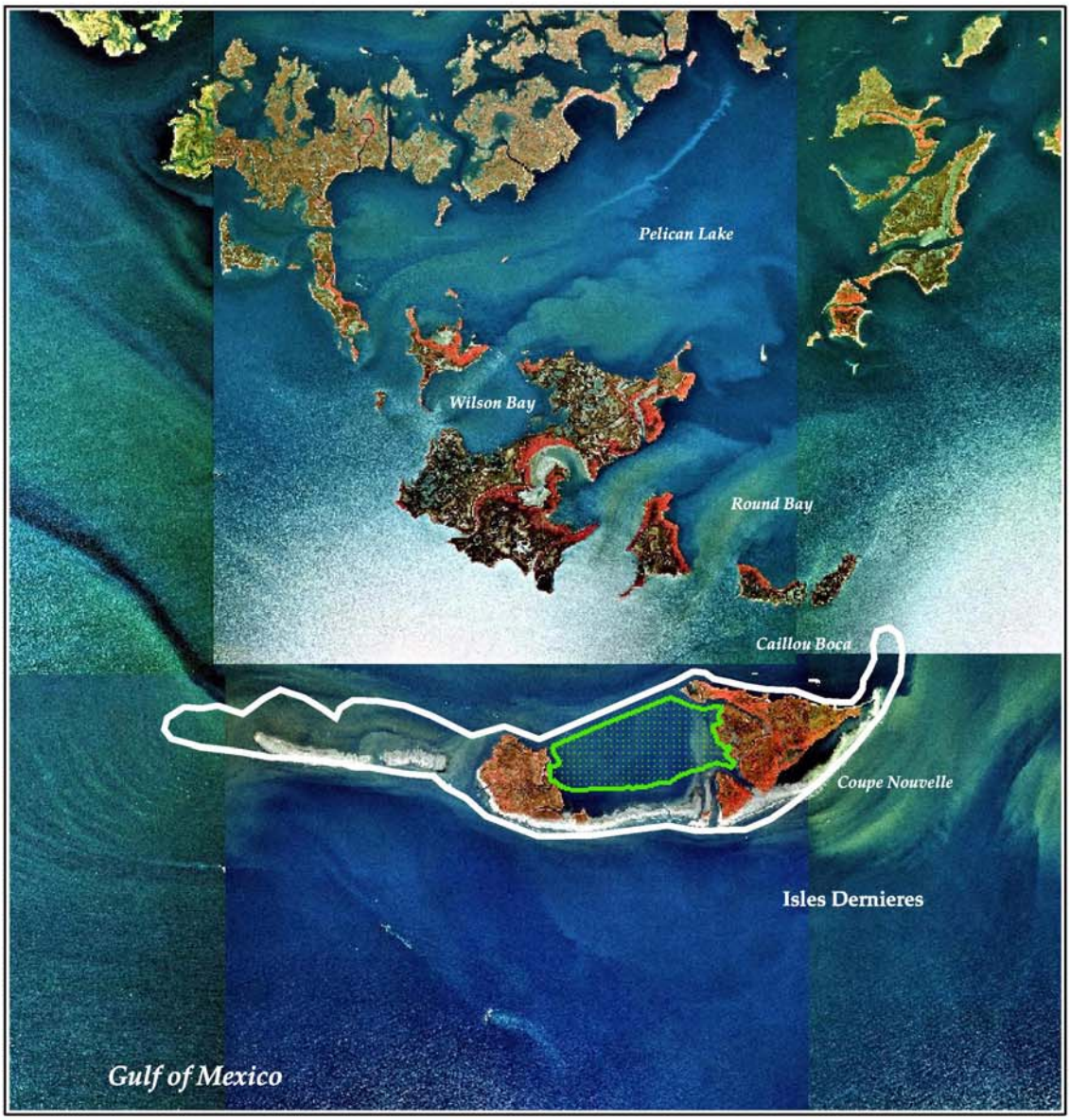

Louisiana

Study Area

Gulf of Mexico

USGS science for a changing world

Map ID: USGS-NWRC 2004-11-0003
Map Date: October 02, 2004

PPL13 Project Candidate: Whiskey Island Backbarrier Marsh Creation

Marsh Creation*

Project Boundary

** denotes proposed structures/features*

0.50.25 0 0.5
Kilometers

0.5 0.25 0 0.5
Miles

N

Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Baton Rouge, LA

Image Source:
1998 Digital Orthophoto Quarter Quadrangle

Oyster Bayou Terracing

Coast 2050 Strategy
Coast-wide Strategies: Terracing; Vegetative Planting.

Project Location
Region 4; Calcasieu-Sabine Basin; Cameron Parish; 2.5 miles west of Cameron. The project is located between East Mud Lake, the Calcasieu Ship Channel, Highway 82, and the West Fork of the Calcasieu River.

Problem
Saltwater intrusion and drought stress are contributing to interior marsh breakup. Evidence of fragmentation and brown marsh like syndrome was observed during 2003, interagency inspections. As ponds have coalesced, water bodies have grown which may be increasing marsh breakup from wave action. Based on USGS and analysis of 1978 to 2000 data and Corps of Engineers data from 1974 to 1990, landloss ranges from 4.8 acres to 18.8 acres for the project area. Subsidence rates for the mapping unit are 0 to 1 ft per century (i.e., maximum of 0.12"/yr or 2.4" in 20 years) (Coast 2050).

Goals
Create approximately 55.5 acres of brackish marsh (after settlement) and protect some existing marsh from erosion.

Proposed Solution
Construct approximately 124,967 ft of earthen terraces. Terraces would have a 10 ft crown and 1:4 side slopes and a 4 ft fill height to settle primarily to intertidal elevations. Layout of the terrace field would include 50 ft gaps every 500 ft. Terrace orientation and layout would be re-evaluated through coordiantion with the landowners during Phase I. Terraces would be planted with four rows of *Spartina alterniflora* cv. Vermilion (smooth cordgrass) plugs. Two rows would be installed at the mean water line on 5-ft centers. The other 2 rows would be installed on 10 ft offset centers at the crest of the terrace side slope at the crown.
In year 15, funding is included to reconstruct up to 25% of the terraces which is similar to a 1 foot lift for all terraces. Also, funding for up to 50% replacement of the original plants has been included.

Project Benefits
The project would result in a net of 61 acres of brackish marsh from the terraces and protection of adjacent marsh over the 20-year project life.

Construction Costs
The estimated total fully funded cost is $4,209,900.

Risk/Uncertainty and Longevity/Sustainability
There is a low degree of risk and uncertainty associated with this project based on the shallow waters and relatively firm soils. The project should continue providing benefits 20 – 30 years after construction.

Preparer of Fact Sheet
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PPL13 Project Candidate:
Oyster Bayou Terracing

Terracing*

Project Boundary

**denotes proposed structures/features*

0.5 0.25 0 0.5 Kilometers

0.5 0.25 0 0.5 Miles

N

Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Baton Rouge, LA
Image Source:
1998 Digital Orthophoto Quarter Quadrangle

USGS
science for a changing world

Map ID: USGS-NWRC 2003-11-1897
Map Date: September 24, 2003

DEMONSTRATION PROJECTS

Section 303(a) of the CWPPRA states that in the development of Priority Project List, ". . . [should include] due allowance for small-scale projects necessary to **demonstrate the use of new techniques or materials for coastal wetlands restoration**."

The CWPPRA Task Force on April 6, 1993, stated that: "The Task Force directs the Technical Committee to limit spending on demonstration projects to $2,000,000 annually. The Task Force will entertain exceptions to this guidance for projects that the Technical Committee determines merit special consideration. The Task Force waives the cap on monitoring cost for demonstration projects."

What constitutes a demonstration project:

1. Demonstration projects contain technology that has not been fully developed for routine application in coastal Louisiana or in certain regions of the coastal zone.

2. Demonstration projects contain technology which can be transferred to other areas of the coastal zone.

3. Demonstration projects are unique and are not duplicative in nature.

PPL 13 Demonstration Project Candidates

The following proposed demonstration projects were evaluated for the 13th Priority Project List.

- Shoreline Protection Foundation Improvements Demonstration Project
- Flowable Fill Demonstration Project
- Interior Shoreline Protection Demonstration Project
- Soil Salinity Remediation Demonstration Project
- Hackberry Bay Oyster Reef Demonstration Project

Shoreline Protection Foundation Improvements Demonstration Project

Coast 2050 Strategy: n/a

Project Location: n/a

Problem: Poor soil conditions in coastal Louisiana limit the effectiveness of shoreline protection dikes because of high rates of subsidence. High subsidence rates require frequent and expensive project maintenance, lowering overall project cost effectiveness.

Goals: The goal of the project is to bring into the realm of feasibility shoreline protection where it is currently challenged in terms of cost effectiveness over a 20-yr project life cycle by investigating a ground improvement method to reduce subsidence.

Proposed Solution: The objective is to develop foundation improvements using a sand foundation beneath rock dikes for application in coastal Louisiana to demonstrate alternative means to achieve bearing capacity and consolidation settlement design tolerances in ways that lessen 20-year project life cycle costs, as compared to traditional approaches.

This demonstration project is proposed to "piggy back" on a funded shoreline protection project, that would be selected by the Task Force, which uses a traditionally designed and constructed rock dike section. The potential test region should be in an environment where soil conditions are very poor; the wave climate is harsh; and wetland loss is high.

This demonstration project proposes seven sections, which would each be approximately 300-ft-long. The first section is a reference section to the ground improvement test sections, having an unimproved foundation. The remaining six sections would consist of a sand foundation involving two construction methods. In the first construction case, containing 3 sections, the sand will displace the soft material near the surface. In the second construction case, containing 3 sections, the soft material near the surface will be dredged prior to sand placement. All of these sections will be instrumented with settlement plates, inclinometers, and extensometers to determine the effectiveness of these foundation improvements.

Project Benefits: From the results of this proposed demonstration project, a more effective and economical method can be established in the design and construction of shoreline protection. Therefore, shoreline protection could be provided in areas not currently protected due to project cost limitations thus protecting precious wetlands by preventing coastal erosion and aiding in marsh creation.

Project Costs: The estimated total fully funded cost is $1,335,200.

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Flowable Fill Demonstration Project

Coast 2050 Strategy: n/a

Project Location: n/a

Problem: Several post constructed projects suffer from high maintenance due to rock slippage caused by storms, incessant wave energy or high tides coupled with high wake energy which shear off the top-most part of rock structures. A rock structure which has been bonded together will also be resistant to vandalism. Fresh spoil used to construct the seaward face of terraces or other earthen structures are very vulnerable to erosion until such time that protective vegetation on the terrace is established. Both of these scenarios sometimes call for the affected works to be repaired or have intensive maintenance soon after initial construction.

Goals: To test a technique whereby rock structures have increased integral strength without adding to overall structure weight, and earthen works are afforded protection from erosion on the windward edge of the project in the period immediately following initial and post construction.

Proposed Solution: For rock structures, slippage can be controlled by injecting/applying a flowable, fill material consisting of Portland cement, sand, water, re-cycled fly-ash, and a plasticizer. This material will bond rocks together and reduce the incidence of re-working or adding new material to the structure due to rock loss, an example of which is occurring at the structure along Freshwater Bayou. This material has an approximate weight of 2,615 lbs./cu yd and an approximate strength of 1,500 pounds per square inch (psi). Flowable Fill could eliminate or reduce maintenance on existing and future projects. This Flowable Fill can also be applied to the erosive face of freshly constructed and existing earthen works to provide protection against wave energy. This material will set-up and cure in underwater applications.

Project Benefits: Eliminate or minimize post construction (re-working) or yearly maintenance of structures built for the control of shoreline erosion. Control marsh, bay, lake, gulf shoreline and navigation bank erosion. A layer of flowable fill on the erosive face of earthen terraces will extend the life of the structure allowing for increased sedimentation within protected areas, which, over time which may allow the formation of emergent marsh vegetation.
The application of flowable fill over existing or new rock type structures will assist in bonding the structure together resulting in less rock slippage and eventual loss which diminishes the effectiveness of the structures designed use and results in increased costs during the operation/maintenance phase of the project.
Successful demonstration of this project may also have ramifications for inclusion on new projects, especially rock structures whereby planned or additional structure height may be achieved with flowable fill instead of rock material. The substitution of flowable fill, in place of rock, could possibly lower project costs or increase structure coverage.

Project Costs: The estimated total fully funded cost is $1,789,900.

Sponsoring Agency and Contact Person:
Bart Devillier, NRCS, 337-893-5664, bart.devillier@la.usda.gov.

Interior Shoreline Protection Demonstration Project

Coast 2050 Strategy: n/a

Project Location: n/a

Problem: Interior marsh loss has lead to the coalescence of many small ponds into a few large ponds. At Lake Fearman, wind generated waves from the lake will soon coalesce into a small, unnamed lake along the southwest shoreline. At Rockefeller Refuge, wind generated wave energy is now focused on the containment levee of the north east corner of Unit 6. Poor load bearing capacity of the soils in both cases eliminates traditional rock shoreline stabilization techniques.

Goals: Demonstrate the effectiveness of fiberglass sheet pile to stop erosion and re-establishing lake shoreline in shallow water (2 feet or less) interior lakes.

Proposed Solution: Install approximately 2,640 linear feet of fiberglass sheet pile along the shoreline following the –2.0 contour, with a top elevation of +3.0 (NAVD-88). Organism and material linkages will be maintained through a 10" by 30" window within the sheet pile every 100 feet for 1,320 feet of the 2,640 foot long system.

Project Benefits: Stop shoreline erosion.

Project Costs: The estimated total fully funded cost is $1,121,900.

Sponsoring Agency and Contact Person:
John D. Foret, NOAA Fisheries, John.Foret@noaa.gov

Soil Salinity Remediation Demonstration Project

Coast 2050 Strategy: n/a

Project Location: n/a

Problem: The CWPPRA program along the Louisiana coast is increasingly going to the use of dredge material for marsh creation. In some cases, the dredge material comes as a result of maintenance dredging of a ship channel or river bottom in which soil salinity is significantly higher than salinities in the receiving area. Project planners are left with the choice of either planting the area with a plant species with higher salt tolerances (which may not be the dominant plant type in the area) or wait until enough dilution takes place, via rainfall, to plant with a target species for the receiving area. Reclamation of salt (NaCl) burdened soils in place (in-situ) using calcium has been practiced for many decades in terrestrial environments, but the most utilized form of calcium has been the use of gypsum (hydrated calcium sulfate) which is a slow process at best and involves extensive logistical and application expense as gypsum is a solid, powdery calcium salt. The objective of this project is to lower sodium ion concentrations to a point equivalent to a target habitat type of the surrounding marsh.

Goals: 1) Test the efficiency of a calcium soil amendment to lower sodium concentrations such that the indigenous plant community can thrive on dredge spoils that originate from a higher salinity regime; and, 2) Improve the permeability of soils to air and water by displacement of sodium ions from the rooting zone, thus improving survivability of emergent vegetation volunteers and increasing marsh stability.

Proposed Solution: A 45 acre test area is to be partitioned into 9 discrete, 5 acre areas by the construction of earthen levees with a finished elevation of + 0.3 meters above settled grade and 1.5 meter finished crown width. The acquisition, transportation and deposition of the spoils are not considered herein with regard to estimating total costs associated with the testing of this soil treatment method as this demonstration project will be associated with a scheduled maintenance dredging project. The spoils will be deposited is such a manner as to create a consolidated elevation of not greater than 6 inches above surrounding marsh.
This proposal calls for the application at 2 treatment rates of salt remediating, calcium soil amendment and the establishing of a triplicate of "control" impoundments. There is to be no discharge of water from the impoundments after the cells are filled with spoils thus allowing for downward percolation and evaporation of water accumulated during spoils deposition. The treatment methodology is to involve the pumping of surface water through a plastic pipe, distribution system using diesel engine powered pumps while injecting known rates of soil amendment. After the soil treatments have been made, vegetative plantings with appropriate target species to match the surrounding dominant marsh type will be made. Planting layout calls for 5' OC spacing (2,400 plants), diagonally across each cell forming an "x" in each test cell.

Project Benefits: Improving survivability of emergent vegetation.

Project Costs: The estimated total fully funded cost is $1,840,700.

Sponsoring Agency and Contact Person:
John D. Foret, NOAA Fisheries, John.Foret@noaa.gov

Hackberry Bay Oyster Reef Demonstration Project

Coast 2050 Strategy: n/a

Project Location: n/a

Problem: The head of coastal bays are experiencing shoreline erosion and enlargement of passes resulting in increased saltwater intrusion, increased subsidence, reduced sediment accretion, and conversion to open water of the interior marshes. Barataria Bay has coalesced into Hackberry Bay, with only a few remnant islands separating the bays. Evidence of the magnitude of the problem is recognized in the restoration strategies of the Coast 2050 Regions 1, 2, and 3 for the protection of shoreline integrity at the head of bays. A current CWPPRA Demonstration project, Terrebonne Bay Shoreline Protection Demonstration Project, is addressing the same goals as this proposed project. However, the Terrebonne Bay Project is only focusing on structural applications. This project will focus on reef development.

Goals: The goal of the project would be the protection of shorelines by creating a living, self sustainable oyster reef. Reefs can be constructed with low profiled aerial features that would provide wave attenuation by absorbing wave energy and protecting fringing marshes. Increases in essential fish habitat would be accomplished, as well as increases in water quality.

Proposed Solution: This project would attempt to construct oyster reefs. Reef orientation would resemble staggered breakwaters. Reef design would incorporate Geotubes or other suitable and cost effective alternatives as the nucleus or core with oyster shells as cover. Adequate engineering analysis and solutions are to be derived to properly place the oyster shells. The reef would be shaped to accommodate wave run-up and provide optimum habitat conducive to spat attachment and oyster reef development. Seed oysters may be applied to expedite reef development. Possibilities of planting SAV's on the landward side will be explored. This will also provide stability to the reef and enhance the fish habitat.

Project Benefits: Possible general benefits include restoration of area-wide hydrology, valuable reef habitat, improved water quality, and protection of fringing marsh areas. Additional benefits include improvements in the salinity gradient which will make the areas more suitable for oyster cultivation as well as the creation of ecologically valuable reef habitat for crabs, fish and other aquatic species (Comprehensive Oyster Management Plan, Chesapeake Bay, 2002). Non-mechanical, recreational public harvesting of oysters, suitable to the Louisiana Department of Wildlife and Fisheries concerns, will also be explored. Benefits of harvesting may result in promoting eco-tourism as well as enhancing oyster reef growth.

Project Costs: The estimated total fully funded cost is $1,687,500.

Sponsoring Agency and Contact Person:
Ronny Paille, USFWS, 337-291-3117, Ronald_paille@fws.gov

PPL 13 Candidate Project Evaluation Matrix

Project Name	Parish	Project Area	Average Annual Habitat Unit (AAHU)	Net Acres	Prioritization Score	Longevity & Sustainability	Risk & Uncertainty	Total Fully Funded Cost	Fully-Funded Phase I Cost	Fully-Funded Phase II Cost	Average Annual Cost (AAC)	Cost Effectiveness (AAC/AAHU)	Cost Effectiveness (Cost/Net Acre)
Spanish Pass Diversion	Plaquemines	1,580	79	433	67.5	30 - 40 years	Moderate	$13,927,800	$1,137,344	$12,790,456	$1,113,200	$14,091	$32,166
Goose Point/Point Platte Marsh Creation	St. Tammany	1,384	297	436	53	30 - 40 years	Low	$21,747,400	$1,930,596	$19,816,804	$2,029,400	$6,833	$49,879
Whiskey Island Backbarrier Marsh Creation	Terrebonne	1,038	292	272	50.5	20 - 30 years	High	$21,786,300	$2,293,893	$19,492,407	$1,910,000	$6,541	$80,097
Oyster Bayou Terracing	Cameron	1,417	37	61	43.5	20 - 30 years	Low	$4,209,900	$590,012	$3,619,888	$291,000	$7,865	$69,015
Bayou Sale Ridge Protection	St. Mary	370	153	329	42.2	30 - 40 years	Low	$32,103,000	$2,254,912	$29,848,088	$2,397,200	$15,671	$97,578
Shark Island Shoreline Protection	Iberia	248	54	178	44.5	30 - 40 years	Moderate	$19,246,100	$1,764,788	$17,481,312	$1,539,800	$28,515	$108,124
Naomi Siphon Outfall Area Marsh Creation/ Nourishment	Plaquemines	222	77	135	45	30 - 40 years	Low	$9,192,000	$1,195,676	$7,996,324	$803,500	$10,435	$68,089
Caernarvon Outfall Management East	St. Bernard / Plaquemines	6,839	103	320	45.5	20 - 30 years	Moderate	$44,736,100	$3,462,404	$41,273,696	$3,296,000	$32,000	$139,800

PPL 13 Demonstration Project Evaluation Matrix

Demonstration Project Name	Objectives	Lead Agency	Total Fully Funded Cost	P1 Innovativeness	P2 Applicability or Transferability	P3 Potential Cost Effectiveness	P4 Potential Env Benefits	P5 Recognized Need for Info	P6 Potential for Technological Advancement	Total Score
Shoreline Protection Foundation Improvements Demo	Shoreline Protection	USACE	$1,335,200	10	10	10	7	7	7	51
Flowable Fill Demo	Shoreline Protection	NRCS	$1,789,900	10	7	3	7	7	7	41
Interior Shoreline Protection Demo	Shoreline Protection	NMFS	$1,121,900	3	7	10	7	3	3	33
Soil Salinity Remediation Demo	Marsh Creation	NMFS	$1,840,700	10	3	3	7	3	7	33
Hackberry Bay Oyster Reef Demo	Shoreline Protection	USFWS	$1,687,500	7	3	3	7	7	3	30

Notes:
1. The following parameters constitute a demonstration project and were evaluated:
(P1) Innovativeness - Demonstration projects contain technology that has not been fully developed for routine application in coastal Louisiana or in certain regions of the coastal zone.
(P2) Applicability or Transferability - Demonstration projects contain technology which can be transferred to other areas of the coastal zone.
(P3) Potential Cost Effectiveness - An evaluation of the project must be made to compare the demonstration project's method of achieving the project objectives vs. a traditional method of accomplishing the project objective.
(P4) Potential Environmental Benefits - No Wetland Value Assessment (WVA) will be performed on candidate demonstration projects. Instead, the project will be evaluated on the pros and cons of the demonstration vs. traditional or other methods.
(P5) Recognized Need for the Information to be Acquired - Demonstration Projects should be unique and are not duplicative in nature. They do not need to be in the Restoration Plan, but must contain technology that has not been fully developed for routine application in coastal Louisiana and can be transferred to other parts of the coastal zone.
(P6) Potential for Technological Advancement - Demonstration project must clearly show what objectives will be gained from project and a evaluation must be made of the demonstration project's method for achieving these objectives compared to a traditional project's methods of achieving the same objectives.
2. The "Beneficial Use of Dredge Sediments Demonstration Project" was not included because it does not test/evaluate an innovative/untested coastal restoration technique/technology which could be compared to the traditional technique/technology.