Priority Project List Number 15
Candidate Projects

Public Meetings -- November 2005

Abbeville Houma

Table of Contents

The 15th Priority List Planning Process

- Citizens nominated 11 projects across the Louisiana coastal zone at Regional Planning Team (RPT) meetings held in February 2005.

- At the direction of the CWPPRA Task Force, the Technical Committee selected 6 candidate projects for detailed evaluation on March 16, 2005.

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

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

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

- Engineering Workgroup reviewed designs and cost estimates for each project.

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

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

- Hold public meetings to present project evaluation results.

- On December 7, 2005, 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 15th Priority Project List on January 25, 2006.

Bayou Lamoque Freshwater Diversion

Coast 2050 Strategies:

- Coastwide-Restore/sustain marshes
- Regional-Restore natural drainage patterns, gap spoil banks and plug canals in lower bay marshes

Project Location: Region 2, Breton Sound Basin, Plaquemines Parish, American Bay Mapping Unit, along the east bank of the Mississippi River approx. 3.4 miles north of Empire across from "Sixty-mile Point."

Problem: Wetland loss rates are low, probably due to beneficial effects of occasional opening of the Bayou Lamoque structures, influence from the mouth of the Mississippi River, and possibly, stabilizing effect of being on the flanks of the Mississippi River natural levee. Two large freshwater diversion structures are located here. One was built in 1955 and is capable of diverting 4,000 cubic feet per second (cfs). The other was built in 1978 and is capable of diverting 8,000 cfs. Structures were operated periodically by the Louisiana Department of Wildlife and Fisheries until 1994. Neither structure is officially used any longer because of repair and operation issues and the lack of an interagency management plan. The structures are being operated "unofficially" to some extent, but it is not known how much. This proposed project area is best viewed not as having a problem, but as representing an opportunity to actually create new land by diverting Mississippi River water.

Goals: Achieve the following within 20 years, by continuously diverting up to 13,000 cfs (average 2500 cfs) of Mississippi River water into Bayou Lamoque, and by improving the distribution of diverted water in the benefit area by strategically gapping spoil banks along Bayou Lamoque: 1) Create approximately 620 acres of new marsh; 2) Increase the percent cover of aquatic vegetation in interior marsh ponds and channels; 3) Increase the area of shallow open water habitat in the project area; 4) Decrease mean salinity in the project area

Proposed Solution:
1) Repair the Bayou Lamoque freshwater diversion structures through the removal of the gates and their mechanical operating systems to allow free-flowing diversion at the maximum capacity of both structures;
2) Construct gaps in the natural levee ridges or spoil banks on Bayou Lamoque at strategic locations to facilitate distribution of diverted water and to promote the accretion of new wetlands through the deposition of diverted river sediments;

Project Benefits: The project would benefit approximately 9,435 acres of intermediate marsh, brackish marsh, and open water habitats. Approximately 620 acres of marsh would be created/protected over the 20-year project life.

Project Costs: The total fully funded cost for the project is $5,375,741.

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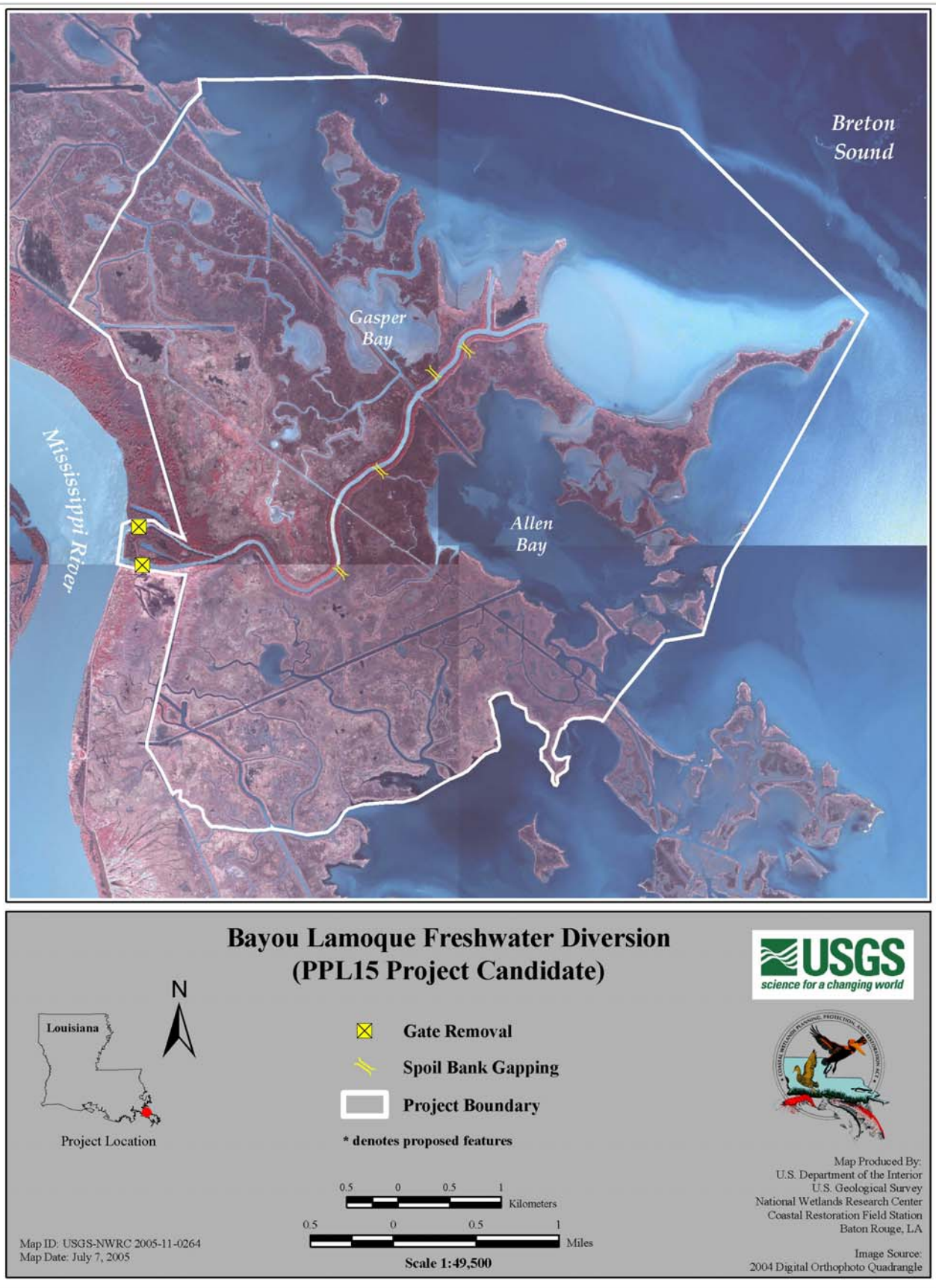
Breton Sound
Gasper Bay
Allen Bay
Mississippi River
Bayou Lamoque Freshwater Diversion
(PPL15 Project Candidate)
USGS
science for a changing world
N
Louisiana
Project Location
Gate Removal
Spoil Bank Gapping
Project Boundary
* denotes proposed features
0.5 0 0.5 1
Kilometers
0.5 0 0.5 1
Miles
Scale 1:49,500
Map ID: USGS-NWRC 2005-11-0264
Map Date: July 7, 2005
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:
2004 Digital Orthophoto Quadrangle

Lake Hermitage Marsh Creation

Coast 2050 Strategies:

- Coastwide: Dedicated dredging to create, restore, or protect wetlands
- Coastwide: Off-shore and riverine sand and sediment resources
- Coastwide: Maintenance of Gulf, bay and lake shoreline integrity

Project Location: Region 2, Barataria Basin, Plaquemines Parish, West Point a la Hache Mapping Unit, south and east of Lake Hermitage

Problem: From 1932 to 1990, the West Point a la Hache Mapping Unit lost 38% of its marsh. Through 2050, 28% of the 1990 marsh acreage is expected to be lost. That loss is expected to occur even with operation of the West Point a la Hache Siphon and implementation of the West Point a la Hache Outfall Management Project. Significant marsh loss has occurred south and east of Lake Hermitage and along the eastern lake shoreline. Deterioration of the lake rim will expose interior marshes to the wave energy of Lake Hermitage and increase tidal exchange.

Goals: The goals of this project are to create approximately 593 acres of wetlands, reduce tidal exchange in marshes surrounding Lake Hermitage, and reduce fetch and turbidity to enhance open water habitats.

Proposed Solution:

1. Riverine sediments will be hydraulically dredged and pumped via pipeline to create approximately 593 acres of marsh in the project area.

2. Approximately 25,000 linear feet of terraces (16 acres) will be constructed to reduce fetch and turbidity and promote submerged aquatic vegetation.

3. Approximately 6,000 linear feet of rock dike will be constructed along the eastern Lake Hermitage shoreline.

4. An earthen plug will be constructed on an oil and gas canal to return tidal exchange to natural waterways within the project area.

Project Benefits: The project would benefit approximately 1,581 acres of brackish marsh and open water habitats. Approximately 438 acres of marsh would be created/protected over the 20-year project life.

Project Costs: The total fully funded project cost is $32,673,327.

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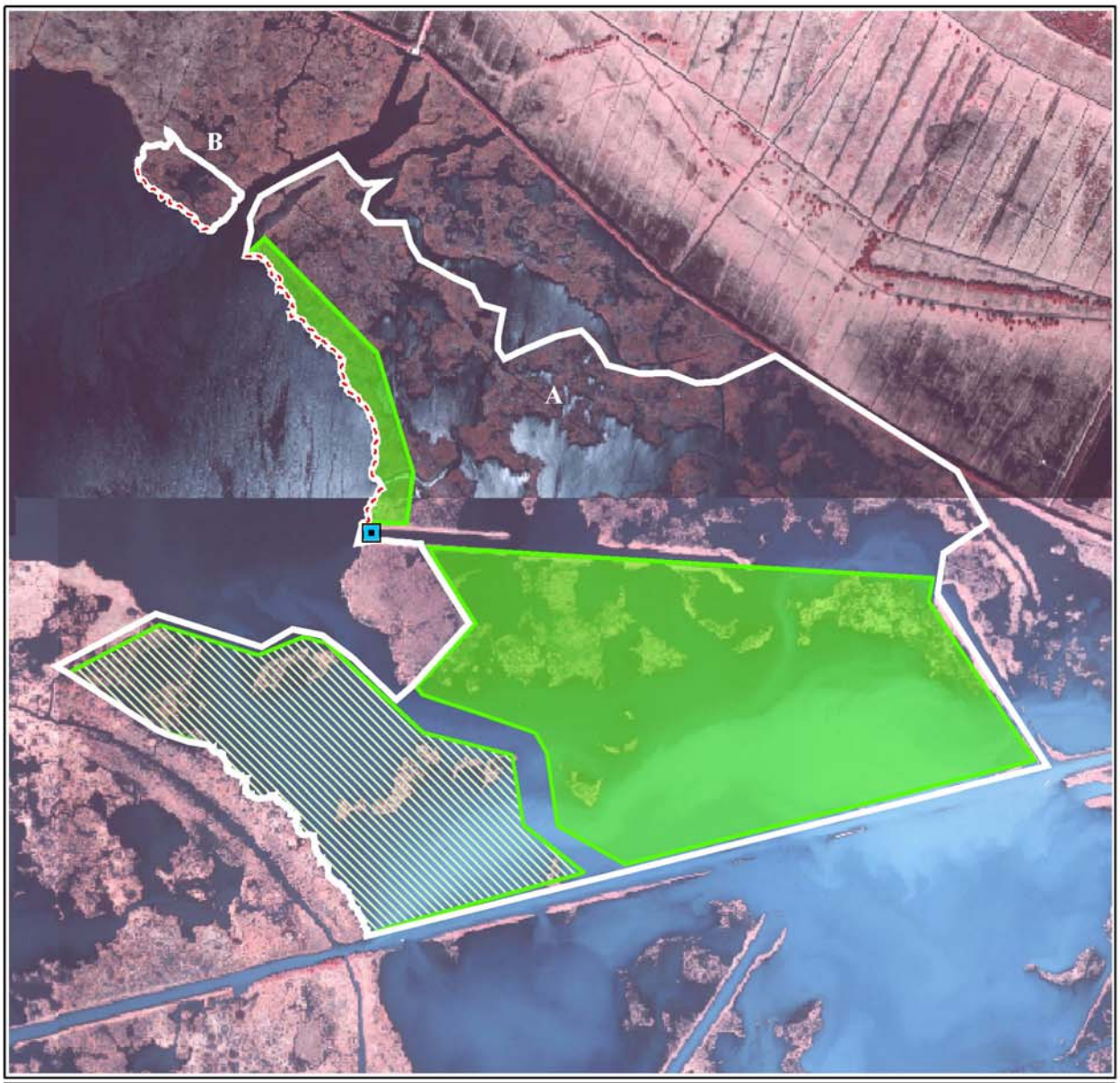

Lake Hermitage Marsh Creation (PPL15 Project Candidate)

USGS science for a changing world

Plug *

Terracing *

Shoreline Protection *

Marsh Creation *

Project Boundary

* denotes proposed features

0.5 0 0.5 Kilometers

0.5 0 0.5 Miles

Scale 1:26,000

Map ID: USGS-NWRC 2005-11-0250
Map Date: June 17, 2005

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:
2004 Digital Orthophoto Quarter Quadrangles

Venice Ponds Marsh Creation and Crevasses

Coast 2050 Strategies:
- Coastwide: Dedicated dredging to create, restore, or protect wetlands.
- Coastwide: Off-shore and Riverine Sand and Sediment Resources.

Project Location: Region 2, Mississippi River Delta Basin, Plaquemines Parish, south of Venice, Louisiana, adjacent to the Red, Tiger, and Grand Passes.

Problem: Between 1932 and 1974, the mapping unit lost 38,400 acres of the original 59,640 acres of marsh as a result of subsidence, tropical storm activity, canal creation and maintenance and hydrologic modification. Between 1974 and 1990 another 13,260 acres of land had been lost (LCWCRTF & WRCA 1998b). It is estimated that without restoration efforts over 91% of the remaining land would be lost by the year 2050. The project would create marsh in open water areas that were nearly solid wetlands in 1956 by construction of crevasses and performing dedicated dredging.

Goals: The goals of the project are to create, maintain, nourish, and replenish existing deteriorating wetlands through dedicated dredging, hydrologic restoration, crevasse construction, and crevasse enhancement.

Proposed Solution:
1. 178 acres of marsh will be created in Sites 1, 2 and 3 (see Project Map) by hydraulically dredging material from Grand and Tiger Passes. The target elevation after one year in the Sites will be a maximum of +2.5 ft. NAVD88 and a minimum of +0.5 ft. NAVD88. The marsh creation areas will be pumped unconfined into the open water areas identified in Sites 1, 2, and 3. Existing marsh boundaries will also aid in the retention of dredged material and re-establishment of marsh habitat.

2. Four crevasses, one into Site 3 and three into Site 4, will convey the sediment laden waters of Grand and Tiger Passes into the benefit areas.

3. Four existing crevasses off of Tiger Pass that discharge into Site 4 will be improved through bifurcation dredging.

4. Two sets of 2-36” diameter culverts will be installed under Venice Marina Road thereby increasing the hydrologic connection between Sites 1 and 2.

5. Two gaps will be installed between Pass Tante Phine and Site 2 thereby increasing hydrologic connectivity.

Project Benefits: The project would benefit approximately 1,944 acres of fresh marsh and open water. Approximately 511 acres of marsh would be created/protected over the 20-year project life.

Project Costs: The total fully funded cost for the project is $8,992,955.

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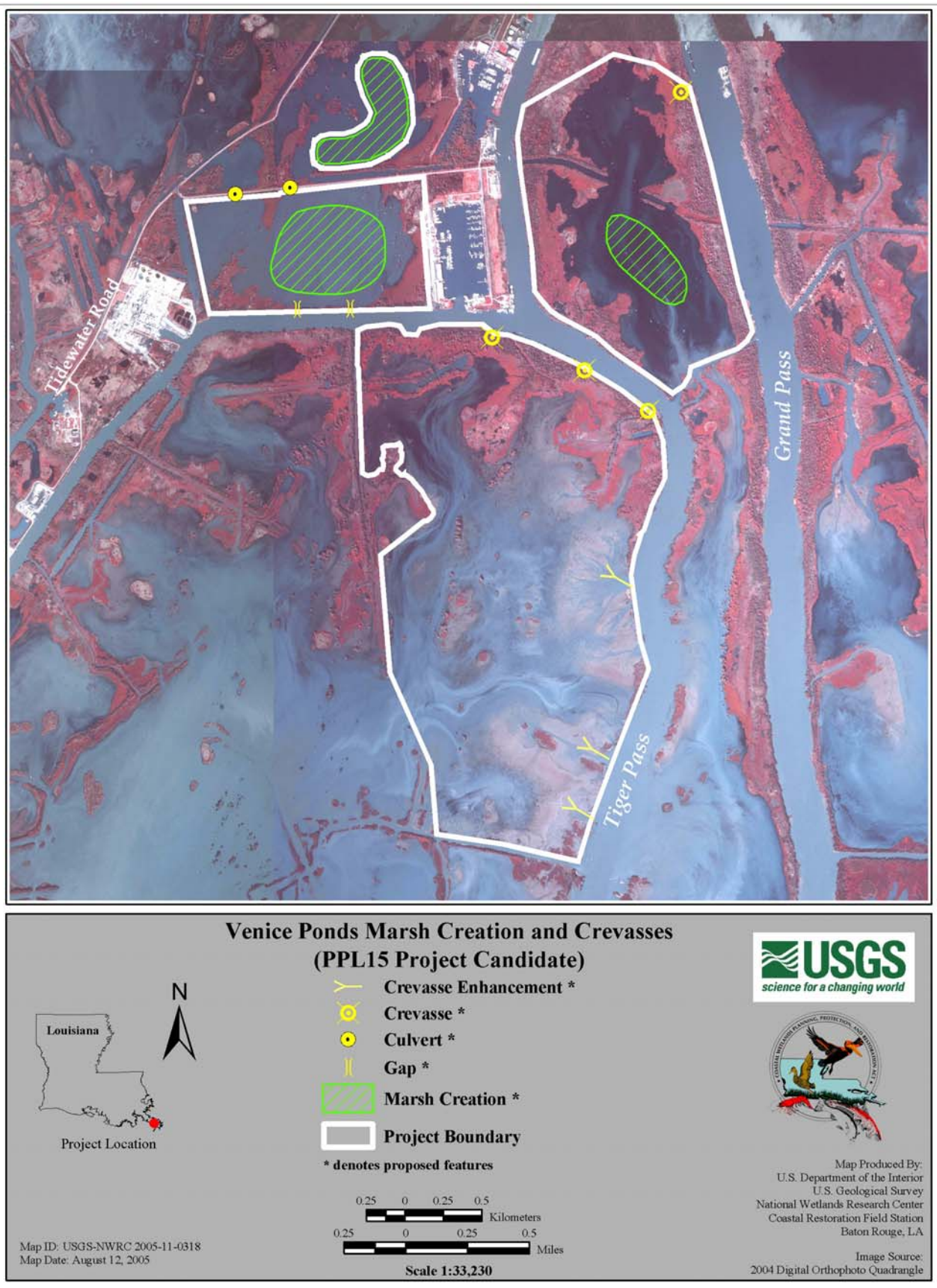
Tidewater Road
Grand Pass
Tiger Pass
Venice Ponds Marsh Creation and Crevasses
(PPL15 Project Candidate)
Crevasse Enhancement *
Crevasse *
Culvert *
Gap *
Marsh Creation *
Project Boundary
* denotes proposed features
N
Louisiana
Project Location
0.25 0 0.25 0.5
Kilometers
0.25 0 0.25 0.5
Miles
Scale 1:33,230
USGS
science for a changing world
Map ID: USGS-NWRC 2005-11-0318
Map Date: August 12, 2005
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:
2004 Digital Orthophoto Quadrangle

South Terrebonne Terracing

Coast 2050 Strategy:

- Terracing; Maintain marshes along Timbalier Bay

Project Location: Region 3, Terrebonne Parish; Madison Bay, Bayou Terrebonne, and Lake Boudreaux

Problem: These areas have experienced tremendous wetland loss due to a variety of forces including subsidence, saltwater intrusion, a lack of sediment supply, and oil and gas activities. The proposed project would re-establish marsh and some bay edge habitat. Loss rates range from –0.41%/yr to –4.9%/yr for the project subareas. The Boudreaux and Montegut mapping units have a 1.1 to 2.0 ft/century subsidence rate. Loss rates based on newer analyses of both aerial infrared photography and satellite imagery and evaluation of sediment cores support rapid loss predominantly caused by subsidence.

Goals: Project goals include creating emergent marsh and associated edge habitat and reduce the wave erosion of marshes along the fringes of Lake Boudreaux, Lake Quitman, and Madison Bay by constructing terraces and secondarily promote conditions more conducive to the colonization of submerged aquatic vegetation (SAV) than presently exist. Specific phase 0 goals include constructing approximately 113,340 ft of terraces, which would create a net of 60 acres of intertidal, and supratidal marsh elevations from the terraces and reducing shoreline erosion would protect 20 acres of existing marsh. Lastly, the percent cover of SAV is projected to increase in the project area.

Proposed Solution: Based on the survey information obtained, areas with an average water depth of 3.0 ft or less were targeted. Approximately 95,340 ft of small or interior terraces would be constructed and 18,000 ft of large or exterior terraces would be constructed near Madison Bay, Bayou Terrebonne, and Lake Boudreaux. The terraces would have a 1:4 side slope, an initial height of +4.0 ft NAVD88, and a settled height of +2.5 ft NAVD88. The small terraces would have 10 ft crown and the large terraces would have a 25 ft crown. The terraces would be planted with four rows of smooth cordgrass (i.e., 2 rows per side) and 2 rows of marshhay cordgrass on the crown. Sufficient funds are included in the cost estimate for replacement of 30% of the original terrace volumes at target year 14.

Project Benefits: The project would benefit approximately 1,369 acres of brackish marsh, saline marsh, and open water habitats. Approximately 80 acres of marsh would be created/protected over the 20-year project life.

Project Costs: The total fully funded cost for the project is $7,477,864.

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South Terrebonne Terracing
(PPL15 Project Candidate)

N

Louisiana

Project Location

Terracing *

Project Boundary

* denotes proposed features

0.5 0 0.5 1 Kilometers

0.5 0 0.5 1 Miles

Scale 1:68,000

Map ID: USGS-NWRC 2005-11-0267
Map Date: July 05, 2005

USGS science for a changing world

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:
2004 Digital Orthophoto Quater Quadrangle

Bird Island/Southwest Pass Marsh Creation and Shoreline Protection

Coast 2050 Strategies:

- Maintain shoreline integrity and stabilize critical areas of Teche-Vermilion Bay systems including the gulf shorelines.
- Dedicated delivery of sediment for marsh building by any feasible means.

Project Location: Region 3, Teche/Vermilion Basin, between the Marsh Island Wildlife Refuge in Iberia Parish, and Paul J. Rainey Wildlife Sanctuary in Vermilion Parish.

Problem: The shorelines associated with Lighthouse Point and Southwest Point have an average erosion rate of 13.5 feet per year and 9.5 feet per year respectively. This is reducing the ability of those landmasses to maintain a mainland barrier against gulf storm surges, wave energies, and tidal fluctuations. An existing colonial wading bird rookery (Bird Island) located north of Tojan Island within Southwest Pass has also sustained severe subsidence and erosion. Such impacts have reduced that island's effectiveness in providing nesting habitat for wading birds. Shoreline erosion of the Tojan Island land mass in combination with interior north/south oriented tidal creeks increase the vunerability of the island to withstand storm surges which threaten the peninsula's integrity.

Goals: The project goals are to protect and stabilize critical points within Southwest Pass and create wildlife habitat associated with emergent marsh.

Proposed Solution: The shoreline protection would consist of armored shoreline protection with onshore revetment at Southwest Point along the south shoreline of Vermilion Bay (8,759 linear ft), and a foreshore rock dike at the north shoreline of the Gulf of Mexico at Lighthouse Point (4,619 linear ft). The foreshore rock dike would be constructed near and parallel to the existing shoreline. Marsh creation would provide additional stabilization to this area and would be accomplished by hydraulically dredging material to an elevation that would settle at marsh height on Tojan Island, and one foot above marsh height on the New Bird Island.

Project Benefits: The project would benefit approximately 149 acres of brackish marsh and open water. Approximately 133 acres of marsh would be created/protected over the 20-year project life.

Project Costs: The total fully funded cost for the project is $17,765,314.

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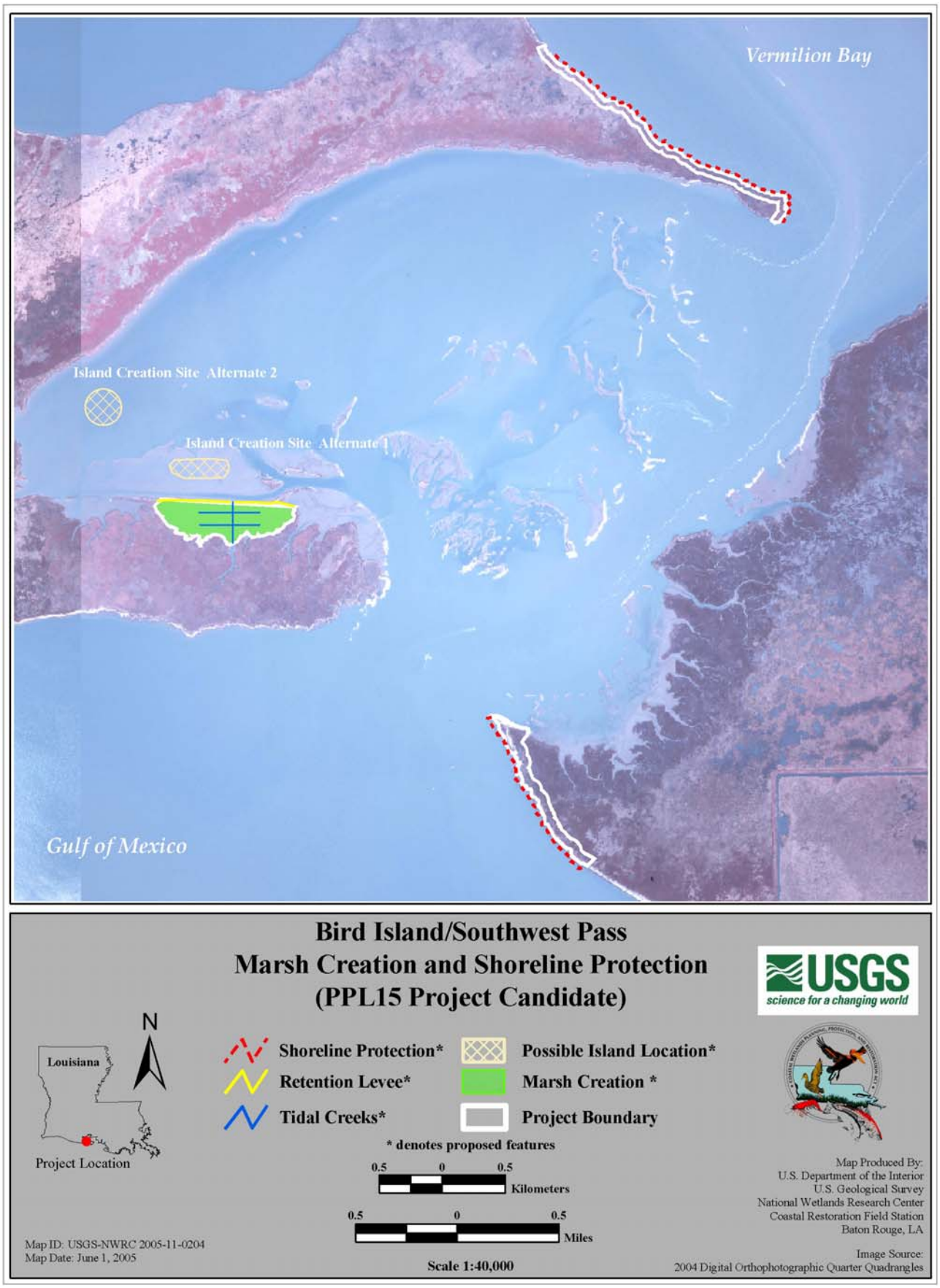
Vermilion Bay
Island Creation Site Alternate 2
Island Creation Site Alternate 1
Gulf of Mexico
Bird Island/Southwest Pass
Marsh Creation and Shoreline Protection
(PPL15 Project Candidate)
USGS
science for a changing world
N
Louisiana
Project Location
Shoreline Protection*
Retention Levee*
Tidal Creeks*
Possible Island Location*
Marsh Creation *
Project Boundary
* denotes proposed features
0.5 0 0.5
Kilometers
0.5 0 0.5
Miles
Scale 1:40,000
Map ID: USGS-NWRC 2005-11-0204
Map Date: June 1, 2005
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:
2004 Digital Orthophotographic Quarter Quadrangles

South Pecan Island Freshwater Introduction

Coast 2050 Strategies:

- Move water from north to south across Highway 82 with associated drainage improvements south of Highway 82.
- Maintain Lake's Subbasin target water level.

Project Location: Region 4, Mermentau Basin, Vermilion Parish, Conveyance channel from White Lake under LA Highway 82 into CWPPRA Pecan Island Terracing Project (ME-14).

Problem: The Chenier Subbasin south of Hwy 82 has been experiencing saltwater intrusion due to lack of freshwater and sediment input from the Lakes Subbasin north of Hwy 82, while north of the highway water is retained. Although culverts were installed in some areas along the highway during construction, those have filled in over the years and recent attempts to restore hydrology have been isolated.

Goals: Provide freshwater flow over 200cfs to 7,000 acres for at least 3 months/year, and create 98 acres of marsh.

Proposed Solution: The project would be constructed to allow excess freshwater to drain, while preventing saltwater intrusion into the Lakes Subbasin. At Hwy 82, four 48" pipes would be installed with south facing flap gates to allow freshwater and sediment introduction from White Lake into the marsh south of Hwy 82. To prevent erosion, 200 ft on each side of the new structure would be rock armored. An existing 7,000 linear ft channel north of HWY 82 would be excavated approximately 4 ft with a 25 ft bottom width (40 ft top width). The excavated material would be used to build a 1,300 ft section of bank needed along the northeast portion of the channel, and to refurbish existing banks. An existing plug would be removed at White Lake and rock armoring installed at the entrance. A pump would be relocated and an additional pump installed to maintain the landowners existing drainage needs that would be affected by the conveyance channel.

Project Benefits: The project would benefit approximately 7,005 acres of brackish marsh, submerged aquatic vegetation, and open water. Approximately 98 acres of marsh would be created over the 20-year project life.

Project Costs: The total fully funded cost for the project is $4,438,695.

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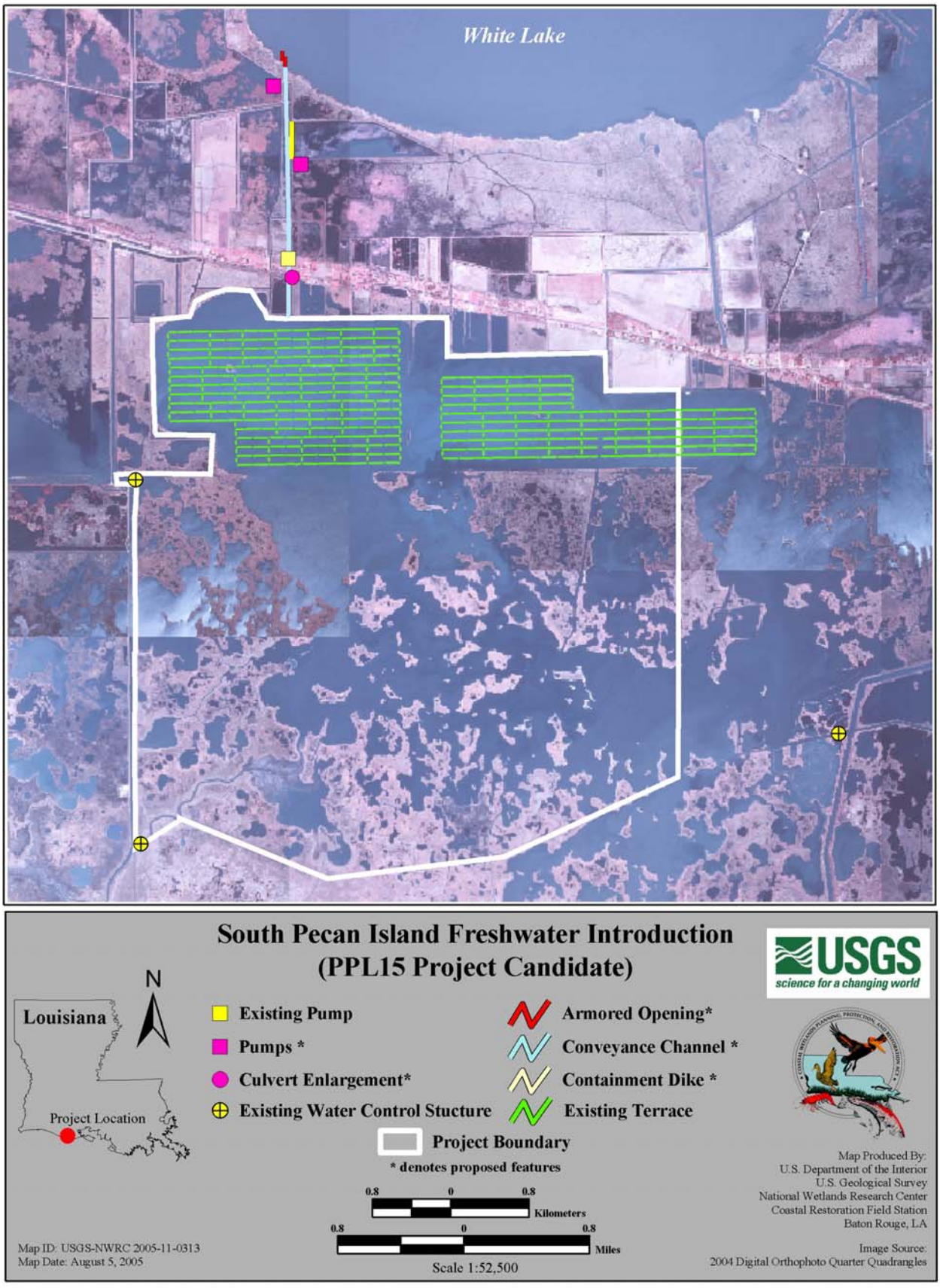
White Lake
South Pecan Island Freshwater Introduction
(PPL15 Project Candidate)
Louisiana
N
Project Location
Existing Pump
Pumps *
Culvert Enlargement*
Existing Water Control Stucture
Armored Opening*
Conveyance Channel *
Containment Dike *
Existing Terrace
Project Boundary
* denotes proposed features
0.8 0 0.8
Kilometers
0.8 0 0.8
Miles
Scale 1:52,500
USGS
science for a changing world
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:
2004 Digital Orthophoto Quarter Quadrangles
Map ID: USGS-NWRC 2005-11-0313
Map Date: August 5, 2005

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 new technology, which can be transferred to other areas of the coastal zone.

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

PPL 15 Demonstration Project Candidates

The following proposed demonstration projects were evaluated for the 15th Priority Project List.

- Enhancement of Barrier Island and Salt Marsh Vegetation Demonstration Project
- Barrier Island Sand Blowing Demonstration Project
- Nourishment of Permanently Flooded Cypress Swamps Through Dedicated Dredging Demonstration Project
- Dredge Containment System for Marsh Creation Demonstration Project
- Evaluation of Bioengineered Reefs Performing as Submerged Breakwaters Demonstration Project
- Thin Layer Dredge Disposal Demonstration Project
- Floating Wave Attenuator System Demonstration Project
- HESCO Concertainer Baskets for Shoreline Protection Demonstration Project
- Lake Pontchartrain Shoreline Protection and Habitat Enhancement Demonstration Project
- Backfilling Canals to Maximize Hydrologic Restoration Demonstration Project
- Delta Management Demonstration Project
- Flowable Fill Demonstration Project
- Backshore and Dune Stabilization Demonstration Project

Enhancement of Barrier Island and Salt Marsh Vegetation Demonstration Project

Coast 2050 Strategies:

- Coastwide Common Ecosystem Strategy; Restore/Maintain Barrier Islands, Headlands, Shorelands;
- Region 2 Strategy # 17 Caminada Bay – Maintain Shoreline Integrity e.g. vegetative plantings of mangroves or marsh;
- Region 3 Regional Ecosystem Strategy; Protect Bay/Lake Shorelines, #10 Maintain shoreline integrity and stabilize critical areas of Teche/Vermillion Bay Systems including the Gulf Shorelines (bay/lake/gulf)

Project Location: There are multiple projects planned and ongoing that fit within the strategies listed above, most of which include use of vegetative plantings on barrier islands. One possible project site in Region 3 is the Timbalier Island Dune and Marsh Restoration project (TE-40) that recently completed planting nearly 110,000 plants, eight different species. Additional project locations are available in Regions 2 and 3.

Problem: Barrier Islands provide critical habitat and are the first line of defense to not only day-to-day coastal erosion but also to the destructive forces of major storm events. Developing methodologies to enhance vegetation establishment and growth in barrier island restoration projects is important because healthy vegetative cover traps, binds, and stabilizes sand and sediment, thereby improving island integrity during storm and overwash events. Barrier islands are very stressful environments and there remains a critical need to develop cost-effective improvements to existing restoration methodologies that will enhance the successful establishment and spread of vegetation in these expensive and important restoration projects.

Goals: Test several technologies and/or products to enhance the cost-effective establishment and growth of key barrier island and salt marsh vegetation.

Proposed Solution: Humic acid and broadcast fertilization regimes will be applied. Humic acid benefits will be demonstrated in both intertidal and supratidal plantings, whereas broadcast fertilization benefits will only be demonstrated in supratidal plantings. Each product (humic acid and fertilizer) will be commercially available and off-the-shelf. Enhancing the establishment of woody vegetation (black mangrove and groundsel bush) will be achieved via high-density dispersal techniques of propagule and seeds. All treatment test sections and reference planting areas will be visually inspected and sampled quarterly (plant and soil variables) and compared to the reference area to develop recommendations for future planting projects.

Project Benefits: The humic acid amendment and broadcast fertilization regime techniques are intended to "jump start" and facilitate the rapid establishment and expansion of vegetation. Establishing woody vegetation (black mangrove and groundsel bush) via propagules and seeds is a cost-saving alternative to planting container-grown transplants of these trees. If successful, these techniques can be applied coastwide.

Project Costs: The total fully funded cost for the project is $845,187.

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Barrier Island Sand Blowing Demonstration Project

Coast 2050 Strategy:

- Region 1 – revised strategy 14 - restore and maintain barrier islands.

Project Location: It is recommended demonstrating this technology at Breton Island, although any other barrier island in Louisiana could be selected.

Problem: Barrier islands are rapidly disappearing as a result of tropical storm and hurricane activity. Storms cause surge that over-wash and often breach the islands. Many times breaches or gaps form in the island that continue to erode and eventually form large cuts in the island. Closing barrier island breaches quickly with high quality sediments is the easiest and least expensive strategy to maintain shoreline integrity. One of the challenges in barrier island restoration is finding the most cost effective and highest quality borrow source available. When a source of sand is found it is often times encumbered by pipeline networks and covered by layers of silts or organics and/or may be too far from the restoration site for cost effective mining and placement.

Goals:

1. To demonstrate the use of the sand blowing technology for the purposes of mining sand sites in the dry and placing (unloading) the sand in the dry.
2. To demonstrate the cost effectiveness of using confined upland disposal sites as a potential source of sand for barrier island restoration projects.
3. To demonstrate the effectiveness of using this placement method to close newly formed gaps (breaches) and/or over-wash areas resulting from Major Storm events such as tropical storms and hurricanes.
4. To demonstrate the effectiveness of using this placement method to place high quality sediments in precise areas, such as breaches or beaches, on eroding barrier islands

Proposed Solution: The demonstration project involves the mining of high quality sand (dry) from a USACE, Mobile District's upland confined disposal site using the sand blowing method. The sand will then be placed on a barge and towed to Breton Island. The sand will then be offloaded from the barges and placed on Breton Island using the sand blowing method. The sand will be used to close breaches or areas of over-wash on the island.

Project Benefits: This project allows use of material not being used beneficially, would decrease impacts to water quality at the disposal site, and avoid impacts resulting from containment dike construction.

Project Costs: The total fully funded cost for the project is $1,919,343.

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Nourishment of Permanently Flooded Cypress Swamps Through Dedicated Dredging Demonstration Project

Coast 2050 Strategy:

- Dedicated dredging for wetland creation

Project Location: Either side of the Houma Navigation Channel and multiple locations in Barataria Basin and Penchant Basin.

Problem: 1) Many cypress/tupelo swamps in coastal Louisiana have experienced altered hydrology either through the loss of sediments (i.e., flood control levees along the Mississippi river) causing increased subsidence rates or through impoundments (i.e., roads, levees, etc.). These swamps are also affected by saltwater intrusion (due to the construction of canals). These trees slowly die when they are exposed to prolonged, deep flooding for longer than normal duration and regeneration of new trees cannot occur under these flooded conditions. 2) Several State and Federal agencies have denied the possible use of dredged material to rehabilitate permanently flooded cypress/tupelo swamps because of the perception that it would harm those trees.

Goals: To demonstrate how the deposition of differing amounts (depths) of dredged material within a cypress/tupelo swamp would affect the growth of cypress trees and how that would affect the ability of those cypress trees to naturally regenerate. Survival rates of several methods of tree planting in newly deposited dredged material would be tested.

Proposed Solution: 1) Containment dikes at each of 3 study sites will be constructed to provide 3 contiguous 3-acre blocks (27 acres) with similar pre-project hydrology. Each study site will have 1 control block consisting of 3 acres (9 acres total). To the greatest degree possible dredge disposal areas will be chosen to include a range of bald cypress size classes (and hopefully age classes) in both stressed and healthy conditions within each block. At each study site the 3 blocks will be filled with 1 ft (30 cm), 2 ft (60 cm) and 3 ft (90 cm) of sediment. Only 1 sediment treatment per block will be used due to the cost of dike construction. **2)** Certain physiological and morphological measurements would be preformed pre/post sediment placement on selected mature trees within each plot to document the effects of placing sediment at differing depths on mature trees. Also, a detailed soil analysis will be carried out within each plot. **3)** Areas within these units with very little tree cover would be used to test methods of tree planting. Areas with mature trees will determine the effects of the addition of soil to natural regeneration.

Project Benefits: The total acres of forested wetlands in coastal Louisiana are over 500,000. Much of these cypress swamps are not currently sustainable because of the significant increase in the number of days flooded per year. This project would test the applicability of beneficially using dredge material in subsiding cypress swamp and answer questions ask in the Coastal Wetland Forest Conservation and Use Science Working Group, which was endorsed by Governor Blanco.

Project Costs: The total fully funded cost for the project is $1,550,188.

Preparer of Fact Sheet:
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Dredge Containment System for Marsh Creation Demonstration Project

Coast 2050 Strategy:

- Coastwide Stategy: Dedicated dredging for wetland creation

Project Location: Coastwide

Problem: Containment is one of the most critical and costly aspects associated with designing a beneficial use dredge project. If the environment in which the material is to be discharged does not have features conducive to natural containment, such as spoil banks, ridges, or enclosed marsh, then containment must be constructed using rock or earthen levee created from on-site materials. The problem with such containment is that it 1) requires heavy equipment, which increases cost, 2) is dependant upon the soil condition upon which it is placed, and 3) may be limited by subsurface features (e.g. pipelines) that prevent the building of containment by conventional means.

Goals: The overall goal of the project is to demonstrate a cost-effective alternative to traditional containment methods for beneficial use dredging, which potentially expands the feasibility of dredging in areas previously considered unsuitable by soil conditions or obstruction.

Proposed Solution: Net Gains LLC recently patented a new cost-effective containment technology. The containment system, which can be constructed in 2-3 feet of open water, consists of a filter cloth or geotextile fabric that is anchored by a chain and floated on the surface by an absorbent boom. The containment can be deployed from a small watercraft, such as an outboard or airboat, with minimal labor. To fasten the containment wall in place during hydraulic dredging anchoring poles are deployed around the perimeter of the containment boom. As sediments are introduced into the containment area, dewatering occurs via a stop-log weir located on the periphery of the boom. Boards are added to the weir to contain the material as sediment accretion occurs. Upon completion of the dredging, the material is allowed to settle and dewater and subsequently may be planted with vegetation. Once vegetation becomes established, the containment cloth as well as the flotation boom may be cut away and the anchor poles removed.

Project Benefits: The project provides a potentially cost-effective alternative to traditional containment systems and may also expand options for dredge projects in areas limited by poor soil conditions or contains obstructions such as pipelines.

Project Costs: The total fully funded cost for the project is $1,073,163.

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Evaluation of Bioengineered Reefs Performing as Submerged Breakwaters Demonstration Project

Coast 2050 Strategy

- Stabilize Gulf of Mexico shoreline from old Mermentau River to Dewitt Canal, preserve and stabilize the gulf shoreline, maintain integrity of Gulf of Mexico shoreline where needed.

Project Location: Region 4, Mermentau Basin, Cameron/Vermilion Parish, Rockefeller Refuge west of Rollover Bayou

Problem: Louisiana's coastline has received national attention for the past 2-3 decades due to its rapid erosion rates. Poor soil load bearing capacities is one example that could limit the use of more traditional restoration techniques along many areas of coastal Louisiana.

Goals: The goal of this project is to investigate specific designs of bioengineered reefs and their ability to mitigate erosion. Additional goals focus on environmental benefits both at the time of installation and over the development life of the oysterbreak; and investigation of stability and growth of the structures over time.

Proposed Solution: Many locations in coastal Louisiana would be appropriate. Because this is intended to be a biologically dominated engineered structure, there is a need for sufficient oyster spat and appropriate growing conditions. Maturity will be influenced by oyster growth rates. Thus, areas of high oyster growth would be preferred. The technology termed an "oysterbreak" is designed to stimulate the growth of biological structures in the shape of submerged breakwaters. The project would entail construction of a near-shore break-water along the Gulf of Mexico shoreline. The break-water would extend from the western bank of Joseph's Harbor canal westward for 600 feet. It would be designed to attenuate shoreline retreat along this stretch of Gulf shoreline, as well as promote shallowing, settling out, and natural vegetative colonization of over-wash material landward of the proposed structure. The resultant design would be placed offshore along the –3' contour. The crest height of the proposed structure would be 6 feet above the Gulf floor, with a 10 foot crown and 1:3 slope on both sides.

Project Benefits: This project is anticipated to benefit 2.4 acres of saline marsh (600 ln ft X 35 ft/yr X 5 yrs).

Project Costs: The total fully funded cost for the project is $1,421,702.

Preparer of Fact Sheet

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Thin Layer Dredge Disposal Demonstration Project

Coast 2050 Strategy:

- Beneficial Use of Dredged Material or Dedicated Dredging to Create, Restore or Protect Wetlands

Project Location: This project could be built in any deteriorating marsh in coastal Louisiana, Regions 1 - 4. Project areas will be sited in saline and/or possibly brackish marsh.

Problem: Wetland loss often begins with deterioration and fragmentation of wetland areas, however, most restoration projects to date have not focused on restoring deteriorating areas but rather re-creating wetlands that have converted to open water. Thin layer sediment nourishment has the potential to restore deteriorating marshes, reduce project costs, minimize adverse impacts and be more constructible. However, thin layer sediment nourishment use has been limited, in part due to lack of standard information regarding applicability, design, and implementation.

Goals: The project goal is evaluate the effectiveness of thin layer marsh nourishment designs and construction methods to develop design and implementation guidance and specifications. Technical guidance would assist in designing and implementing projects that optimize the benefits of this little used restoration technique while minimizing adverse impacts to existing marsh.

Proposed Solution: Construction of four to six, small (i.e., five to 10 acres each) controlled, unconfined, thin layer sediment nourishment projects. The nourishment projects will be constructed using three (high, medium and low) sediment-to-water slurry concentrations. Post-construction performance assessments (using elevation surveys, vegetative monitoring and aerial photography) will be conducted to determine the relationship between slurry concentration, geographical extent of sediment influence, and level of benefits. Technical guidance regarding project design, construction techniques, and construction implementation will be developed.

Project Benefits: The nourishment of approximately 20 - 60 acres of deteriorating marsh through the construction of four to six small (five to 10 acres each) controlled, unconfined, thin layer sediment nourishment projects. Additionally, more widespread and successful application of this little used technique will be encouraged by the development of design guidance and construction management practices that optimize wetland benefits.

Project Costs: The total fully funded cost for the project is $1,232,780.

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Floating Wave Attenuator System Demonstration Project

Coast 2050 Strategies:

- Coastwide Common Strategy; Maintenance of Bay and Lake Shoreline Integrity, Stabilization of Major Navigation Channels
- Region 1 Regional Ecosystem Strategy; Maintain shoreline integrity of Lake Borgne and Biloxi Marsh, Maintain Eastern Orleans Land Bridge by marsh creation and shoreline protection, Stabilize the entire north bank of the MRGO
- Region 2 Regional Ecosystem Strategy; Construct wave absorber at the heads of bays, Build entire Breaux Act land bridge shore protection project, Preserve bay and lake shoreline integrity on the land bridge,
- Region 3 Regional Ecosystem Strategy; maintain shoreline integrity and stabilize critical areas of Teche-Vermilion Bay systems including the gulf shorelines, Maintain shoreline integrity of marshes adjacent to Caillou, Terrebonne, and Timbalier Bays
- Region 4 Regional Ecosystem Strategy; Stabilize Grand Lake and White Lake shorelines, Stabilize Gulf of Mexico shoreline in the vicinity of Rockefeller Refuge, Stabilize Gulf of Mexico shoreline from Calcasieu Pass to Johnson's Bayou

Project Location: There are multiple projects planned and ongoing that fit within the strategies listed above. One possible application is in Region 1, Pontchartrain Basin, St. Bernard Parish, EPA's Lake Borgne Shoreline Protection Project (PO-30) near Bayou Dupre.

Problem: Shorelines throughout coastal Louisiana are eroding and exposing the interior marsh to breaches that form channels to convey saltwater into the interior marshes. The most common means of addressing this situation is installation of expensive rock dikes on or near the eroding shorelines. The poor soils common throughout the area result in sinking of the rock dikes, requiring maintenance and rebuilding in many cases. In addition, the installation of rock dikes often requires dredging of flotation channels, which can be problematic when there are submerged cultural or ecological resources in the area.

Goals: Test several floating wave attenuation systems with different mooring systems to determine the efficacy of this type of product in protecting shoreline.

Proposed Solution: Install three or four 500-foot long sections of floating wave attenuator systems as part of a project. Each product should be installed according to the specific manufacturer's installation recommendations, visually inspected once a year for structural integrity, sediment accretion, and wave energy reduction.

Project Benefits: If successful, the systems will protect the shorelines at a cost comparable to rock dikes, with less site disturbance and perhaps less operation and maintenance costs. In some cases, the system may be manufactured locally within Louisiana rather than importing stone from other states, resulting in a more environmentally preferred and sustainable alternative.

Project Costs: The total fully funded cost for the project is $1,792,804.

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HESCO Concertainer Baskets for Shoreline Protection Demonstration Project

Coast 2050 Strategies:

- Coastwide strategy: Maintenance of bay and lake shoreline integrity
- Regional strategy: Maintain shoreline integrity of Lake Pontchartrain

Project Location: The proposed demonstration could take place at almost any location in the coastal zone where eroding shorelines are a problem except along the gulf shoreline. The team working on the application of the system feels that high potential exists for demonstrating the technique in areas with poor soil conditions with low to moderate wave energies. Several locations in the Pontchartrain Basin along the East Orleans Landbridge have been evaluated. These sites include locations on Lake Pontchartrain, The Rigolets and in Lake St. Catherine.

Problem: The proposed demonstration would be used to address shoreline erosion in areas with generally poor soil conditions and that experience shoreline erosion as a result of moderate and low wave conditions. Land loss and shoreline change maps in the Pontchartrain basin have documented erosion rates ranging from 10 feet per year to 60 feet per year in various locations. Specific data along the shorelines of the East Orleans Landbridge show shoreline change rates of 54 feet per year at Chef Pass, 10 feet per year at Grand Coin Pocket, and 15 feet per year at Saw Mill Pass.

Goals: This project is intended to demonstrate that HESCO baskets can be employed to reduce or eliminate shoreline erosion in areas with low to moderate wave energies and poor soil conditions.

Proposed Solution: This demonstration project involves deploying HESCO concertainer baskets to evaluate their effectiveness in preventing shoreline erosion. HESCO baskets would be deployed in several configurations (single line, double line, and three units stacked) in locations with varying wave conditions. During deployment the baskets would be placed in approximately two feet of water and filled with sediment borrowed from adjacent onsite sources. The baskets are available in several sizes including the proposed 3 ft X 3 ft X 3ft group. The units can be bound in multiple lengths and are flexible to allow conformity to shorelines and depth contours.

Project Benefits: The system potentially offers a cost competitive advantage over traditional rock breakwater techniques without sacrificing long-term performance in combating erosion problems.

Project Costs: The total fully funded cost for the project is $1,462,854.

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Lake Pontchartrain Shoreline Protection and Habitat Enhancement Demonstration Project

Coast 2050 Strategies:

- #10 - Maintain shoreline integrity of Lake Pontchartrain to protect regional ecosystem values.
- Mapping unit strategy – Restore submerged aquatic vegetation beds and stabilize lake rim marshes and beaches.

Project Location: Region One, Pontchartrain Basin, Jefferson Parish, several areas along the southern shoreline of Lake Pontchartrain, Louisiana

Problem: Shoreline marshes in Lake Pontchartrain have been highly impacted through human development and natural erosion. While thousands of acres of wetland existed along the original southern shoreline of Lake Pontchartain, the Lake Pontchartrain Environmental Atlas indicates that less six acres of shoreline marsh remains along the lake between the Parish Line Canal in Jefferson and Paris Road in Orleans.

Goals: The goal is to test new materials (reef balls, HESCO concetainers, geo-textile sediment bags) and configurations (multiple tiering on a shoreline with different materials) for shoreline protection and compare the results and prices for each against traditionally used materials (limestone rocks, rip-rap) in a large lake with high energy. Some of these materials and configurations have never been test for these purposes in Louisiana. The reason for placing these materials near shore is to encourage sediment accretion, wetland creation and subsequent protection of these created wetlands along the southern shore of Lake Pontchartrain in Jefferson Parish. If successful, these techniques can be applied on a large scale in other similar areas in Louisiana.

Proposed Solution: Construct innovative shoreline protection measures to reduce wave energy and promote sediment accretion and vegetation colonization. Segments of the southern shoreline of Lake Pontchartrain contain patches of smooth cordgrass and submerged aquatic vegetation that have colonized small coves and other protected areas. The natural colonization of marsh vegetation in these areas indicates the ability of plants to grow on the southern lake shoreline given the proper low energy conditions. The objective of the project is to mimic these natural success stories through the construction of engineered features that would reduce wave energies. Potential construction methods include reef balls in shallow water, HESCO Concertainer baskets, sediment-filled geo-textile bags (“boudin-bags”), etc. Besides using unique materials, the configuration would be staggered shoreward to provide a more gradual breaking of the wave energy.

Project Benefits: These shoreline protection systems potentially offer a cost competitive advantage over traditional rock breakwater techniques without sacrificing long-term performance in combating erosion problems.

Project Costs: The total fully funded cost for the project is $2,596,584.

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Backfilling Canals to Maximize Hydrologic Restoration Demonstration Project

Coast 2050 Strategy:

- Coastwide-Restore/sustain marshes; Regional-Restore natural drainage patterns, gap spoil banks and plug canals in lower bay marshes

Project Location: This is a broadly applicable technique. Examples include:1) Region 3, Teche/Vermilion Basin, Vermilion Parish, East of Onion Lake, between GIWW and Green Island Bayou; 2) Region 3, Atchafalaya Basin, St. Mary Parish, Marone Point area, west of Hwy 317.

Problem: Canal dredging is known to contribute significantly to land loss in Louisiana, yet little has been done to reverse the damage caused by canals and spoil banks. Canals have turned marsh to open water, and spoil banks have replaced marsh with an upland environment. Indirectly, spoil banks restrict water flow above and below the marsh surface and cause increased periods of flooding and drying of the marsh behind them. Increased flooding leads to stress and mortality of marsh vegetation, while drying increases subsidence through oxidation of organic matter. These hydrologic alterations also limit sediment deposition in the adjacent marshes.

Goals: 1) To reverse damage done to coastal marshes by canal dredging and spoil bank placement; 2) To create marsh on former spoil bank areas and establish marsh or SAV in canals. 3) To restore natural hydrologic conditions and allow for more natural flooding and draining of marsh which would allow for marsh creation in surrounding open water areas; 4) To strategically target a cluster of canals at a given location to learn about the biological, geological and sociological opportunities for backfilling.

Proposed Solution: This project will backfill canals in strategic landscape positions to maximize the restoration of natural hydrologic conditions. Backfilling has been successful in the past at restoring single canals in a variety of locations, but it has never been attempted as a strategy to restore open water areas surrounding the canal. Removing the spoil banks in a strategic manner will allow the natural marsh drainage networks to reemerge, and allow for higher marsh sedimentation through a more natural flooding cycle. This would be done in phases: identification of clusters of canals that could be backfilled, working with landowners/agencies to rank identified sites, engineering cost, implementation, and monitoring. Monitoring of project success would include aerial photography analysis of land/water ratios every 5 years for 10-15 years.

Project Benefits: Emergent wetland, shallow water habitat, and submerged aquatic vegetation would be created. Degraded wetlands behind spoil banks would be restored over time.

Project Costs: The total fully funded cost for the project is $1,718,766.

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Delta Management Demonstration Project

Coast 2050 Strategies:

- Region 3, Strategy # 2 - Maximize land building in Atchafalaya Bay,
- Region 2, Strategy #6 – Enrich existing diversions with sediment,
- Region 2, Strategy #7 – Continue building and maintaining delta splays,
- Region 2, Strategy #8 – Construct most effective small diversions,
- Region 2, Strategy #10 – Construct a delta-building diversion at Myrtle Grove,
- Region 2, Strategy #11 – Construct delta-building diversion in Bastion Bay,
- Region 2, Strategy #12 – Construct delta-building diversion into Benny's Bay,
- Region 2, Strategy #13 – Construct delta-building diversion into American Bay,
- Region 2, Strategy #14 – Construct delta-building diversion at Quarantine Bay

Project Location: Region 3, Atchafalaya Basin, St. Mary Parish, Atchafalaya and/or Wax Lake Deltas

Problem: Growth of the Atchafalaya River and Wax Lake Outlet Deltas provides an opportunity to offset wetland loss occurring in other areas. Excluding sediment supply issues, growth of those deltas is diminished by the partial erosion during fall/winter high wave energy events of recently deposited subaqueous sediments. This in turn reduces formation of marsh along developing distributary and crevasse channels. Marsh formation and retention of valuable suspended sediments within the delta could be accelerated by installing sediment trapping features at the distal ends of distributary channels to facilitate sediment capture and associated vegetative colonization.

Goals: This demonstration project would seek to develop cost-efficient means for accelerating natural levee formation and possibly increasing sediment deposition within interdistributary areas. Accelerated natural levee formation would in turn provide opportunities for constructing crevasses to nourish interdistributary areas. Information gained through this project could be applied to future sediment diversion projects as well as in existing deltas.

Proposed Solution: This demonstration project would seek to develop cost-efficient means for accelerating natural levee formation and possibly increasing sediment deposition within interdistributary areas. Accelerated natural levee formation would in turn provide opportunities for constructing crevasses to nourish interdistributary areas. Information gained through this project could be applied to future sediment diversion projects as well as in existing deltas.

Project Benefits: In addition to increasing emergent wetlands, shallow water habitat, and submerged aquatic vegetation, the project, if successful, would provide the knowledge needed to increase the effectiveness of deltaic land-building and sediment diversion projects. If the most effective techniques are of low cost as hoped, then use of those techniques might also be applied as mitigation for development projects.

Project Costs: The total fully funded cost for the project is $1,131,096.

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Flowable Fill Demonstration Project

Coast 2050 Strategies:

- Maintenance of Bay and Lake Shoreline Integrity
- Stabilization of Major Navigation Channels
- Protect Wave/Wake Absorbers

Project Location: This project has one distinct location within Coast 2050, Region 3. The potential site would be the rock structure associated with the TV-11b Freshwater Bayou Bank Stabilization Project located in Vermilion Parish, Louisiana.

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. These scenarios sometimes call for the affected works to be repaired or have intensive maintenance soon after initial construction.

Goals: The goal of this demonstration is to test a technique whereby rock structures have increased integral strength without adding to overall structure weight.

Proposed Solution: For rock structures, slippage can be controlled by injecting/applying a flowable, fill material consisting of Portland cement, sand, water, 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) and will set-up and cure in underwater applications. Flowable Fill could eliminate or reduce maintenance on existing and future projects.

Project Benefits: Eliminate or minimize post construction (re-working) or yearly maintenance of structures built for the control of shoreline erosion. 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.

Project Costs: The total fully funded cost for the project is $926,986.

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Backshore and Dune Stabilization Demonstration Project

Coast 2050 Strategy:

- Stabilize Gulf of Mexico Shoreline (Regional Strategies 16 and 17)

Project Location: Region 4, Calcasieu-Sabine and Mermentau Basins, Cameron and Vermilion Parishes. A preferred site would be the Long Beach area in Cameron Parish, west of the existing Holly Beach to Constance Beach segmented breakwaters.

Problem: The problem is Gulf of Mexico shoreline erosion in the Chenier Plain and the need for a cost-effective shoreline stabilization technique that does not interfere with long shore sediment processes. Past solutions included the construction of hard shoreline stabilization structures (i.e., segmented breakwaters, jetties and groins) parallel or perpendicular to the Gulf shoreline that increased shoreline erosion down drift from those structures.

Goals: The goal of this project is to stop Gulf shoreline erosion without disturbing the natural long shore hydrologic and sediment processes.

Proposed Solution: Install 3,000 linear feet of wire sediment confinement (concertainers) structures (dimensions 2x2x10 feet, 3x3x15 feet, or 4x3x15 feet) in the backshore or dune/ridge beach area, fill with in situ materials, and then cover them with sand to create a natural dune/berm profile (Figure 1). The design consists of three units; two at the base and a third unit placed on top of the base layer. The concertainers would strengthen and stabilize the backshore preventing it from being eroded during storm events. The concertainers consist of rectangular galvanized coated wire baskets (life 38 years), lined with a polypropylene or other material geotextile fabric. Concertainers would be placed at the base of existing dune/berms, filed with in situ beach/shore materials (sand, broken shell, clays), and covered with imported sand. Concertainers come in a folded condition and are easily transported to the construction site reducing construction costs. The filled concertainers would add additional strength and integrity to the existing dune/berm shore.

Project Benefits: The small 3,000-foot demonstration project would protect 14 to 28 acres of beach shoreline in a 20-year life at existing shoreline erosion rates of 10 to 20 feet per year. The concertainer technique could prove to be a cost-effective Gulf shoreline stabilization method that does not interfere with natural beach and near shore geomorphic processes.

Project Costs: The total fully funded cost for the project is $883,536.

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PPL 15 Candidate Project Evaluation Matrix

Project Name	Region	Parish	Project Area	Average Annual Habitat Units (AAHU)	Net Acres	Prioritization Score	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)
Bayou Lamoque Freshwater Diversion	2	Plaquemines	9,435	560	620	74.00	$5,375,741	$1,205,354	$4,170,387	$382,950	$684	$8,671
Lake Hermitage Marsh Creation	2	Plaquemines	1,581	191	438	58.45	$32,673,327	$1,197,590	$31,475,737	$2,556,021	$13,382	$74,597
Venice Ponds Marsh Creation and Crevasses	2	Plaquemines	1,944	153	511	67.20	$8,992,955	$1,074,522	$7,918,433	$702,079	$4,589	$17,599
South Terrebonne Terracing	3	Terrebonne	1,369	54	80	33.05	$7,477,864	$1,243,192	$6,234,672	$549,512	$10,176	$93,473
Bird Island/Southwest Pass Marsh Creation and Shoreline Protection	3	Iberia & Vermilion	149	62	133	35.30	$17,765,314	$1,470,115	$16,295,199	$1,245,320	$20,086	$133,574
South Pecan Island Freshwater Introduction	4	Vermilion	7,005	100	98	51.50	$4,438,695	$1,102,043	$3,336,652	$331,331	$3,313	$45,293

PPL 15 Demonstration Project Evaluation Matrix

Demonstration Project Name	Lead Agency	Total Fully Funded Cost	Parameter (P_n)						Total Score
			P_1 Innovativeness	**P_2** Applicability or Transferability	**P_3** Potential Cost Effectiveness	**P_4** Potential Env Benefits	**P_5** Recognized Need for Info	**P_6** Potential for Technological Advancement	
Enhancement of Barrier Island Vegetation Demo	EPA	$845,187	3	3	3	3	2	2	16
Barrier Island Sand Blowing Demo	USACE	$1,919,343	3	2	2	3	3	2	15
Nourishment of Permanently Flooded Cypress Swamps Through Dedicated Dredging Demo	FWS	$1,550,188	3	2	2	3	3	2	15
Dredge Containment System for Marsh Creation Demo	NRCS	$1,073,163	3	3	2	2	2	2	14
Evaluation of Bioengineered Reefs Performing as Submerged Breakwaters Demo	NMFS	$1,421,702	2	2	2	2	3	3	14
Thin Layer Dredge Disposal Demo	NMFS	$1,232,780	2	3	2	2	3	2	14
Floating Wave Attenuator Demo	EPA	$1,792,804	3	2	2	2	2	2	13
HESCO Concertainer Baskets for Shoreline Protection Demo	USACE	$1,462,854	2	2	3	2	2	2	13
Lake Pontchartrain Shoreline Protection and Habitat Enhancement Demo	USACE	$2,596,584	2	2	2	2	2	2	12
Backfilling Canals to Maximize Hydrologic Restoration Demo	EPA	$1,718,766	1	2	2	3	2	1	11
Delta Management Demo	FWS	$1,131,096	2	1	2	2	2	2	11
Flowable Fill Demo	NRCS	$926,986	3	1	1	2	1	2	10
Backshore and Dune Stabilization Demo	FWS	$883,536	1	1	2	2	1	1	8

(Parameter grading as to effect: 1 = low; 2 = medium; 3 = high)