

# SAVE OUR LAKE

LAKE PONTCHARTRAIN BASIN FOUNDATION

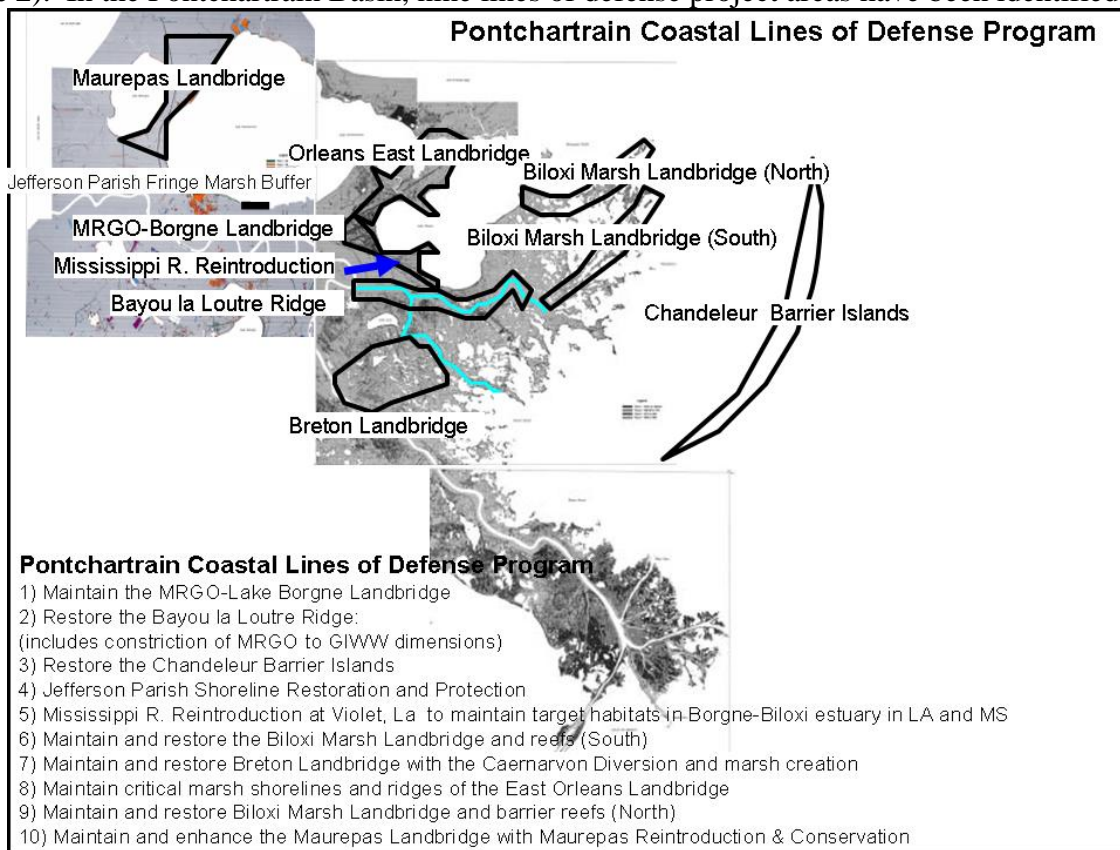
## Pontchartrain Coastal Lines of Defense Program

Lake Pontchartrain Basin Foundation – Coastal Sustainability Program

February 2006

The Pontchartrain Coastal Lines of Defense Program consists of ten priority project areas within the Pontchartrain Basin. These ten coastal restoration project areas were chosen from the Comprehensive Habitat Management Plan (LPBF, 2006), because of their importance to the regional habitat restoration and because they may provide important flood protection to residents of the Pontchartrain Basin. This approach is consistent with the “Multiple Lines of Defense Strategy” being adopted by LPBF (Lopez, 2006) to prioritize the recommendations of the Comprehensive Habitat Management Plan (CHMP).

Under the Multiple Lines of Defense Strategy, coastal sustainability may be achieved with a restoration program utilizing maps which delineate two sets of landscape goals. The first landscape goal is the critical natural Lines of Defense such as barrier islands or marsh land bridges (**Figure 1**). The second is the target habitat distribution such as fresh, intermediate, brackish and salt marsh (**Figure 2**). In the Pontchartrain Basin, nine lines of defense project areas have been identified for

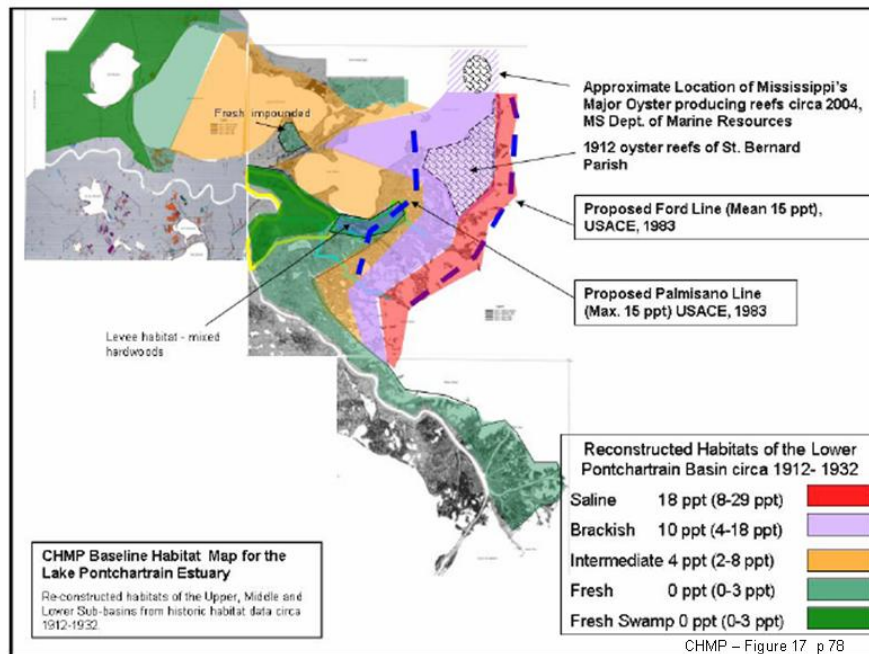


**Figure 1:** The ten project areas in the Pontchartrain Coastal Lines of Defense Program including nine coastal Lines of Defense and a Mississippi River reintroduction at Violet, LA. These projects restore and sustain the lines of defense providing ecologic and flood protection benefits.

restoration. These include the Chandeleur Islands, two Biloxi Marsh landbridges, the Bayou la Loutre ridge, the MRGO/Lake Borgne land bridge, the Breton Landbridge, the East Orleans landbridge, a Jefferson Parish wetland buffer, and the Maurepas landbridge. All nine of these lines of defense are in

need of some restoration and define nine project areas. A tenth project area is included to achieve the target habitat goals and help sustain the Lines of Defense in the Pontchartrain Basin. This project is an enlarged diversion located at Violet, La. (**Figure 3**). The complete list of ten projects areas are given in **Table 1** and individual **project summaries (attached)**.

LPBF considers restoration of all ten of these project areas to be exceptionally significant and beneficial. Funding restoration within these project areas provides the dual benefits of habitat restoration and flood protection. Therefore, the project summaries include a description of these dual goals.



**Figure 2:** Habitat goals as defined in the Comprehensive Habitat Management plan for the Pontchartrain Basin.

LPBF plans to be opportunistic in achieving Pontchartrain Coastal Lines of Defense Program goals by working with any existing or new authorization that may provide expertise and funding for these projects. The ten project areas may ultimately consist of numerous projects within a single Line of Defense. LPBF suggests that emphasis should be placed on execution of these projects due to the state of urgency to enhance flood protection for Louisiana. Each project summary provides guidance for institutional participation with emphasis on project requirements for effective and expeditious project completion. LPBF welcomes the opportunity to partner with parishes, and state or federal agencies to further develop the Pontchartrain Coastal Lines of Defense Program.

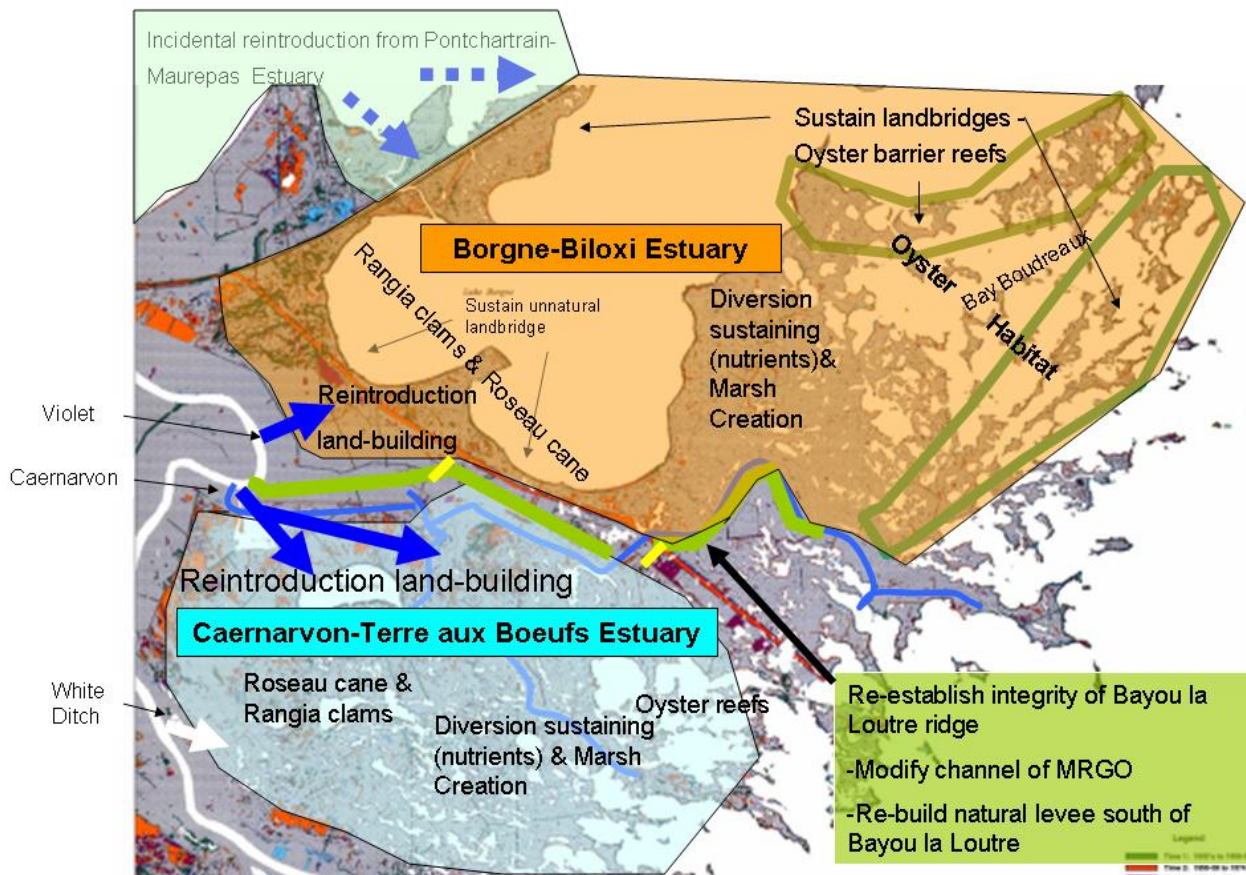
A PowerPoint presentation of this program may be found at [saveourlake.org](http://saveourlake.org). A more complete restoration context of baseline conditions, historical impacts and recommendations for the projects is contained in the CHMP, which may be also found online.

For more information or other inquiries, please contact the Coastal Sustainability Program Director – John Lopez at 504 421-7348 or [johnlopez@pobox.com](mailto:johnlopez@pobox.com), or Carlton Dufrechou - Executive Director at 504 836-2215.

**Table 1: Pontchartrain Coastal Lines of Defense Program:**

Prioritized Projects Utilizing the Multiple Lines of Defense Strategy in the Pontchartrain Basin, i.e. providing dual benefits of habitat restoration and flood protection

1. Maintain the MRGO-Lake Borgne Landbridge
2. Restore the Bayou la Loutre Ridge (includes constriction of MRGO to GIWW dimensions)
3. Restore the Chandeleur Barrier Islands
4. Construct the Jefferson Parish fringe marsh buffer
5. Construct the Violet Reintroduction to maintain target salinity in LA and MS
6. Maintain and restore the Biloxi Marsh Landbridge and reefs (South)
7. Maintain and restore Breton Landbridge with Caernarvon and marsh creation
8. Maintain critical marsh shorelines and ridges of the East Orleans Landbridge
9. Maintain and restore Biloxi Marsh Landbridge and barrier reefs (North)
10. Maintain and enhance the Maurepas Landbridge with Maurepas Reintroduction



**Figure 3:** Hydrologic restoration recommendations to sustain the Lines of Defense as proposed in the Comprehensive Habitat Management Plan. Recommendations include an enlarged Violet reintroduction to manage the “Borgne-Biloxi Estuary” (Table 1 # 5) . It is also recommended that the MRGO channel is reduced to GIWW dimensions at Bayou la Loutre and re-build Bayou la Loutre ridge. The existing Caernarvon Diversion would be used to manage the “Caernarvon-Terre aux Boeufs Estuary” (Table 1 # 2).



**Where:** Maintain the MRGO-Borgne Land Bridge  
**What:** Extensive Rock armoring, local marsh creation, Intermediate marsh  
**Who:** Proposed Construction Team  
 US Army Corps of Engineers  
 EPA  
 LSU Hurricane Center  
 St. Bernard Parish  
 DNR  
 Lake Pontchartrain Basin Foundation  
**Estimated Cost:** \$80,000,000

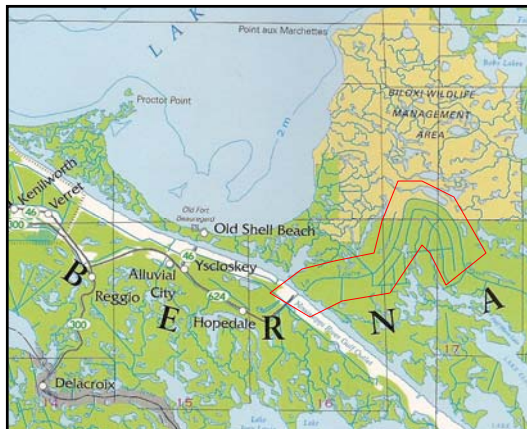
**Performance Goals**

**Flood Protection:** Wetland buffer to St. Bernard levees and minimize encroachment of Lake Borgne into the MRGO

**Habitat Restoration:** Typical intermediate marsh nursery and fringe marsh benefiting recreational and commercial fishing



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**Where:** Restore the Bayou la Loutre Ridge  
**What:** Constrict MRGO channel (GIWW dimensions), rebuild and re-forest natural ridge, natural ridge and intermediate marsh  
**Who:**  
 US Army Corps of Engineers  
 LSU SRC  
 LSU Hurricane Center  
 St. Bernard Parish  
 The Nature Conservancy  
 DNR  
 Lake Pontchartrain Basin Foundation  
**Estimated Cost:** \$200,000,000

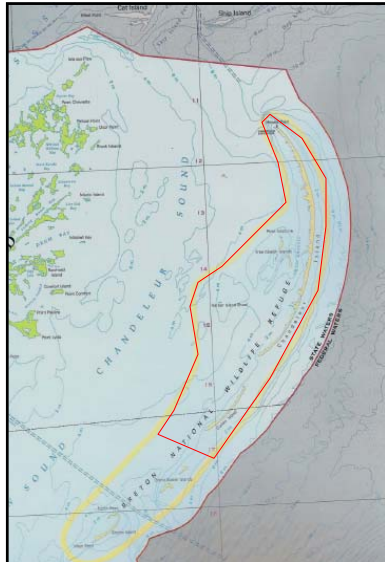
**Performance Goals (see slides 24 & 25)**

**Flood Protection:** Impede northward movement of storm surges and reduce surge water elevation north of Bayou la Loutre ridge with soil foundation and ridge forest

**Habitat Restoration:** Restore the natural ridge and hydrologic barrier between the Borgne-Biloxi estuary and the Caernarvon-Terre aux Boeufs estuary, restore the Natural levee ridge habitat of oak, black willow providing refuge of indigenous ridge species



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**Where:** Restore the Chandeleur (barrier) Islands

**What:** Beach nourishment with sand and shell, saline habitat

**Who:**

- US Fish & Wildlife Service
- National Marine Fisheries Service
- USACE (Mobile District)
- Minerals Management Service
- US Geological Survey (Tampa Bay Office)
- St. Bernard Parish
- Pontchartrain Institute for Environmental Sciences
- DNR
- MS Dept. of Marine Resources
- Lake Pontchartrain Basin Foundation

**Estimated Cost:** \$150,000,000



**Performance Goals**

**Flood Protection:** Reduce wave heights and wave energy entering Chandeleur Sound (fair weather and storm generated) and impacting the Biloxi Marsh, reduce storm surge elevations east of barrier islands

**Habitat Restoration:** Barrier Island dune and lagoon habitats, Saline marsh, bird rookery, recreational and commercial fishing, maintain benefits of National Wildlife Refuge

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**Where:** Jefferson Parish Shoreline Restoration and Protection

**What:** Rock armoring, marsh creation, SAV habitat, reef balls, Intermediate marsh

**Who:**

- National Marine Fisheries Service
- US Army Corps of Engineers
- LSU Ag Center
- LSU - SRC
- Jefferson Parish
- DNR
- Lake Pontchartrain Basin Foundation

**Estimated Cost:** \$62,500,000

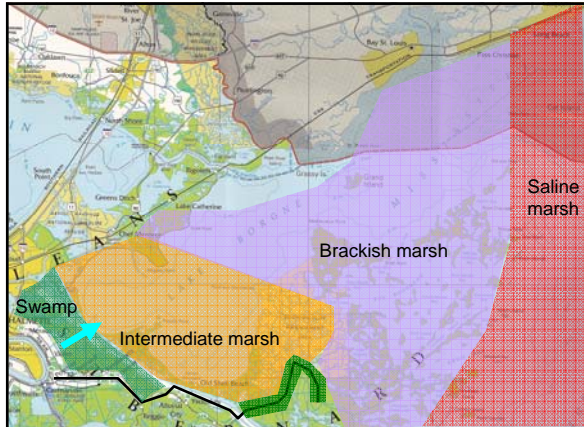
**Performance Goals**

**Flood Protection:** Wetland buffer to levees in East Jefferson Parish by reducing risk of levee failure and reducing shoreline or berm erosion lake ward of the levee

**Habitat Restoration:** Establish intermediate, fringe marsh providing critical marsh nursery, recreational fishing, birding and other outdoor activities



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**Where:** Mississippi R. Reintroduction at Violet, LA

**What:** Reintroduce Mississippi R. water to achieve habitat goals of baseline, re-establish cypress forest, Swamp, intermediate to saline marsh

**Who:**  
 National Marine Fisheries Service  
 EPA  
 MS Dept. of Marine Resources  
 St. Bernard Parish  
 DNR  
 Lake Pontchartrain Basin Foundation

**Estimated Cost:** \$135,000,000

### Performance Goals

**Flood Protection:** maintain salinity targets to develop a denser and more mature wetland forest east of Chalmette to buffer to St. Bernard levees, and to enhance oyster growth in the outer Biloxi marsh to maintain marsh reduce surge into Mississippi Sound and Lake Borgne

**Habitat Restoration:** Reduce salinity intrusion into swamp or fresh marsh habitat, increase primary and secondary productivity including commercial species such as shrimp, blue crab and oysters. Typical intermediate marsh nursery and fringe marsh benefiting recreational and commercial fishing

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**Where:** Maintain and Restore the Biloxi Marsh Landbridge and reef (south)

**What:** Salinity management, Oyster reef propagation (reef balls, etc.), rock armoring, marsh creation, terracing, brackish to saline

**Who:** Construction Team  
 US Fish and Wildlife Service  
 Natural Resource Conservation Service - Lead agency  
 St. Bernard Parish  
 LSU SC&E  
 LSU Ag Center  
 LA Dept. of Wildlife & Fisheries  
 DNR  
 MS Dept. of Marine Resources  
 Lake Pontchartrain Basin Foundation

**Estimated Cost:** \$60,000,000

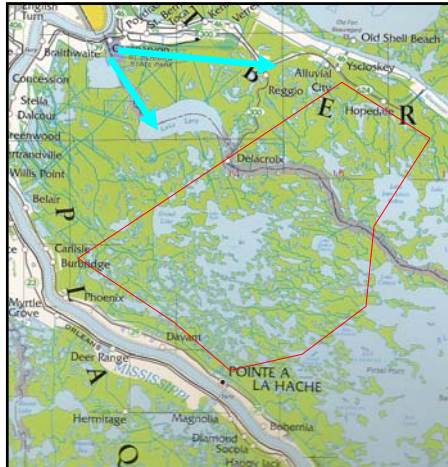
### Performance Goals

**Flood Protection:** Maintain integrity of the marsh landbridge and natural ridges preventing Bay Boudreaux developing into a tidal pass or merging into Chandeleur sound which would increase storm surges in Mississippi Sound and Lake Borgne

**Habitat Restoration:** Preserve and restore brackish marsh including robust oyster beds throughout the outer Biloxi marsh. Develop oyster barrier reefs within the or along the Fishing Smack Bay

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**Where:** Maintain and Restore the Breton Landbridge

**What:** marsh creation (Sediment trap), land building (diversions), reefs, Intermediate to brackish marsh

**Who:** Construction Team

US Army Corps of Engineers

Natural Resource Conservation Service

US Fish and Wildlife Service

Caernarvon Inter-Agency Advisory Committee

Plaquemines Parish

St. Bernard Parish

LSU SC&E

DNR

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**Estimated Cost:** \$40,000,000

(Due to Hurricane Katrina this may be insufficient)

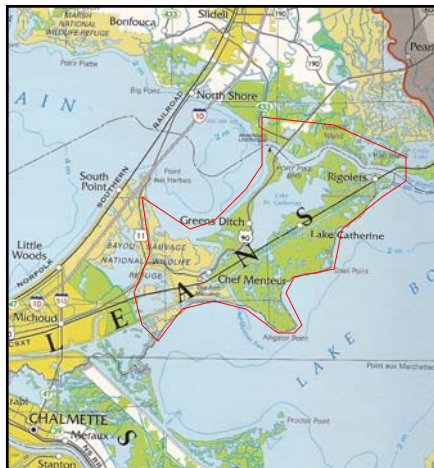
### Performance Goals

**Flood Protection:** Wetland buffer to levees in St. Bernard and Plaquemines Parish by reducing storm surge height and energy

**Habitat Restoration:** Typical intermediate to brackish marsh nursery benefiting recreational and commercial fishing



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**Where:** Maintain critical marsh, shorelines and ridges within the East Orleans Corridor Landbridge

**What:** conservation, local rock armoring, marsh creation for critical areas of shoreline, Intermediate marsh

**Who:**

US Army Corps of Engineers

LSU SRC

LSU Hurricane Center

UNO – Social Sciences

Orleans Parish

St. Tammany Parish

DNR

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**Estimated Cost:** \$87,500,000

### Performance Goals

**Flood Protection:** reduce storm surges into Lake St. Catherine and Lake Pontchartrain by maintaining or enhancing landbridge elements of marsh and Pine Island natural ridges

**Habitat Restoration:** Typical intermediate marsh nursery benefiting recreational and commercial fishing, Maintain natural ridge habitat of the Pine Island ridges



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**Where:** Maintain and Restore the Biloxi Marsh Landbridge and reef (north)

**What:** Salinity management, Oyster reef propagation (reef balls, etc.), rock armoring, marsh creation, terracing, brackish to saline

**Who:** Construction Team  
 Natural Resource Conservation Service  
 US Fish and Wildlife Service  
 St. Bernard Parish  
 LSU SC&E  
 LSU Ag Center  
 LA Dept. of Wildlife & Fisheries  
 DNR –Coastal Restoration Division  
 MS Dept. of Marine Resources  
 Lake Pontchartrain Basin Foundation

**Estimated Cost:** \$60,000,000

**Performance Goals**

**Flood Protection:** Maintain integrity of the marsh landbridge preventing Bay Boudreaux developing into a tidal pass and merging into Mississippi Sound which would increase storm surges in Mississippi Sound and Lake Borgne

**Habitat Restoration:** Preserve and restore brackish marsh including robust oyster beds throughout the outer Biloxi marsh. Develop oyster barrier reefs within Mississippi Sound shoreline of the Biloxi marsh

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**Where:** Maintain and enhance the Maurepas Landbridge & Maurepas Reintroduction

**What:** conservation of forests, River reintroductions, hydrologic restoration, marsh creation, swamp & fresh marsh

**Who:**  
 EPA  
 Southeastern Louisiana University  
 Tangipahoa Parish  
 St. John the Baptist Parish  
 LA DWF  
 DNR  
 DNR Coastal Management Division  
 Lake Pontchartrain Basin Foundation

**Estimated Cost:** \$50,000,000 for conservation & \$80,000,000 for diversion

**Performance Goals**

**Flood Protection:** Reduce storm surges into Lake Maurepas and adjacent shoreline regions by maintaining or enhancing landbridge elements of swamp and fresh marsh

**Habitat Restoration:** Develop mature swamp and swamp canopy by increasing primary productivity. Increase productivity of fresh marsh. Enhance recreational and commercial fishing. Increase detrital export into Lake Pontchartrain

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