Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA)

The 2006
Evaluation Report
to the U.S. Congress
on the
Effectiveness of Coastal Wetlands Planning, Protection and Restoration Act Projects


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Documentation

This report is submitted by the Louisiana Coastal Wetlands Conservation and Restoration Task Force in accordance with the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA), Title III of Public Law 101-646, commonly referred to as the "Breaux Act." This report fulfills the Breaux Act mandate, which requires a report to the U.S. Congress every three years on the effectiveness of Louisiana's coastal wetland restoration projects.

CWPPRA Task Force Member Agencies

• U.S. Army Corps of Engineers (represented by New Orleans District): contact tel. 504-862-2204 or URL at http://www.mvn.usace.army.mil/pd/cwppra_mission.htm
• U.S. Department of the Interior (represented by U.S. Fish and Wildlife Service): contact tel. 337-291-3100 or URL at http://www.fws.gov/coastal/CoastalGrants/
• U.S. Department of Agriculture (represented by Natural Resources Conservation Service): contact tel. 318-473-7690 or URL at http://www.la.nrcs.usda.gov/programs/cwppra.html
• U.S. Department of Commerce (represented by NOAA National Marine Fisheries Service): contact tel. 225-389-0508 or URL at http://www.nmfs.noaa.gov/habitat/restoration/projects_programs/CWPPRA/
• U.S. Environmental Protection Agency (represented by Water Quality Protection Division of EPA Region 6): contact tel. 214-665-7275 or URL at http://www.epa.gov/region06/6wq/at/cwppra.htm
• Louisiana's Governor's Office (represented by Governor's Office of Coastal Activities): contact tel. 225-342-3968 or URL at http://www.goca.state.la.us/CWPPRA-Home.html

Websites

LaCoast is the official CWPPRA website and has a complete project listing and technical documents online URL at http://www.lacoast.gov/cwppra/index.htm

The CWPPRA program is administered through the U.S. Army Corps of Engineers. A CWPPRA Organizational Chart, Standard Operating Procedures, Annual Priority Project List (PPL) reports, and Administrative Proceedings documentation are publicly available on the New Orleans District website at URL at http://www.mvn.usace.army.mil/pd/cwppra_mission.htm.

Acknowledgements

The CWPPRA Task Force wishes to thank Governor Kathleen Babineaux Blanco and the State and Federal Louisiana Delegations for their support of this crucial program.

List of Acronyms & Terms

CIAP	Coastal Impact Assistance Program
CPRA	Coastal Protection and Restoration Authority
CRCL	Coalition to Restore Coastal Louisiana
CWPPRA	Coastal Wetlands Planning, Protection and Restoration Act
EPA	Environmental Protection Agency
GIWW	Gulf Intracoastal Waterway
Gulf	Gulf of Mexico
LaCPR	Louisiana Coastal Protection and Restoration
LCA Study	Louisiana Coastal Area, Louisiana Ecosystem Restoration Study
LDNR	Louisiana Department of Natural Resources
LOOP	Louisiana Offshore Oil Port
MRGO	Mississippi River Gulf Outlet
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
OCS	Outer Continental Shelf
PPL	Priority Project List
State	State of Louisiana
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WVA	Wetland Value Assessment

Table of Contents

Executive Summary

The Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA), enacted in 1990, authorizes a committee to select wetland restoration projects in Louisiana which are considered most beneficial, and then designs, constructs, and monitors these projects. The multi-agency committee directing CWPPRA's activities is the Task Force. The Task Force is comprised of the Departments of Army, Agriculture, Commerce and the Interior, along with the U.S. Environmental Protection Agency. The Louisiana Governor's Office of Coastal Activities represents the State of Louisiana (State) on the Task Force while the local cost share partner for project implementation is the Louisiana Department of Natural Resources. CWPPRA's governing structure is a successful collaboration between governmental agencies. In 2004, the CWPPRA program and participating agencies received the Coastal America Partnership Award from Coastal America - a partnership program among Federal, State, and local governments, and private alliances to collaboratively address environmental issues.

Louisiana's coast is appropriately referred to as a "working coast" due to the close relationship between the coast and its people. The coastal landscape is dominated by wetlands. Therefore, it is inevitable that human endeavors are affected by these wetlands and the wetlands themselves are affected by the combination of human activities and natural causes. This working coast is in crisis due to prolonged and continuing periods of wetland loss. CWPPRA has a record of successful restoration projects, but the scale of these projects and the entire program are not sufficient to offset the high rates of ongoing wetland loss. The wetland loss crisis in Louisiana existed before the two major hurricanes, Katrina and Rita, of 2005. Making the situation worse, the devastating effects of these two hurricanes have created new levels of concern for the ecology, culture and economies, not only to the coastal region, but also at the national level.

During the 20th century, coastal Louisiana lost over 1.2 million acres (1,875 square miles), an area more than 25 times larger than Washington, D.C. Scientists estimate that the State will lose an additional 431,000 acres (673 square miles) by 2050. Preliminary estimates from the U.S. Geological Survey indicate that, as a result of Hurricanes Katrina and Rita, 138,880 acres (217 square miles) of land has been transformed to new open water areas in coastal Louisiana. In localized areas, potential wetland losses incurred from these two hurricanes exceed the estimated future land loss for the next 50 years.

CWPPRA project development and implementation is a transparent public process with regular public meetings and publicly accessible program documentation. The public gets involved and understands the process of selecting and designing projects. Although larger restoration programs are being considered, CWPPRA is a mature program that allows incremental adjustments as needed.

Approximately 90% of CWPPRA's funds are spent on direct project costs. In the last 15 years, the program has constructed, is constructing, or has approved for construction 78 projects at a total cost of over $624.5 million. These projects are expected to re-establish or protect a total of approximately 70,616 net acres and enhance 320,354 acres of additional

wetlands. Additionally, 47 projects at a total cost of approximately $913 million are in the engineering and design phase. These projects are anticipated to re-establish or protect approximately 32,665 net acres and enhance 194,859 acres of additional wetlands. Eleven of these projects (with a total cost of $245M) have been designed but have not been approved for construction due to CWPPRA's annual funding limitations.

The five Federal CWPPRA (Task Force) agencies have continued to work with the State to identify wetland areas in need of restoration that can be addressed through CWPPRA as well as needs for additional restoration beyond CWPPRA. Recognizing the deficiency in comprehensive planning, the CWPPRA program produced the State's first comprehensive plan in 1993. In 1998, this comprehensive plan was updated with a more integrated, ecosystem-level plan called *Coast 2050: Toward a Sustainable Coastal Louisiana*. Through cooperative support of the CWPPRA agencies, the U.S. Army Corps of Engineers and the State of Louisiana completed the Louisiana Coastal Area (LCA), Louisiana Ecosystem Restoration Study in 2003. This study expands upon the Coast 2050 plan to facilitate the implementation of critical restoration features. In 2005, the State, in conjunction with coastal parishes, began to develop plans for implementing the Coastal Impact Assistance Program (CIAP) authorized by Congress through the Energy Policy Act of 2005. These funds are designated to address the impact of Outer Continental Shelf (OCS) oil and gas production on the natural resources of the coastal area.

Since Hurricanes Katrina and Rita, statewide coastal planning has accelerated with emphasis on both coastal restoration activities benefiting coastal habitats and hurricane protection. The Louisiana Coastal Protection and Restoration Project (LaCPR) was authorized by Congress late in 2005 and directed the Army Corps of Engineers (New Orleans District), in partnership with the State of Louisiana, to identify, describe and propose a full range of flood control, coastal restoration, and hurricane protection measures for south Louisiana within a 24-month period.

Under Act 8 of the First Extraordinary Session of the 2005 State Legislature, the Louisiana Wetlands Conservation and Restoration Authority was expanded to become the Louisiana Coastal Protection and Restoration Authority (CPRA) and authorized to integrate coastal restoration and hurricane protection activities. A State coastal master plan is being developed that will include all coastal projects regardless of funding or authorization. This master plan will integrate coastal restoration and hurricane protection and will be the general blueprint for coastal restoration and management activities in Louisiana.

The CWPPRA Task Force committee coordinates its activities with all of these programs and complements other coastal programs in Louisiana by working together to restore and sustain Louisiana's coast. CWPPRA is the only program in which all five Federal agencies formally participate and provide an integral network of technical expertise and coastal planning resources. Other programs are planned with the expectation that the CWPPRA program will continue to fulfill its role as a program that can react quickly with relatively smaller-scale projects that effectively address local needs and complement regional planning. The CWPPRA program has a distinctive niche in Louisiana's coastal planning that is well understood and appreciated by the public.

As the only joint Federal/State coastal restoration effort with a regular and recurring funding stream, the immediate future role of the CWPPRA program is to continue to pursue a full slate of coastal restoration activities. In addition to its ongoing activities, the CWPPRA program will pursue a partnership with CIAP to increase the effectiveness of both programs. The CWPPRA program will also strive to increase the exchange of "lessons learned" to improve project design, construction, and management. If the LCA Study, the LaCPR Project, the Louisiana Master Plan, and/or any other large scale Louisiana coastal restoration program becomes approved, sufficiently funded, and successful at constructing major restoration projects, the CWPPRA program will re-evaluate its focus in coordination with other restoration programs. It may be appropriate for the CWPPRA program to shift its efforts away from any larger scale restoration project(s) to be constructed via one of those efforts and focus on its remaining slate of restoration activities, including but not limited to stabilizing the landscape in areas targeted by future larger scale restoration efforts and constructing synergistic projects to achieve landscape-level benefits in areas that may lack benefit from the larger scale restoration efforts. With funding constraints removed, the CWPPRA program could greatly increase its "on the ground" restoration by constructing all of those projects not yet funded for construction, plus additional restoration projects that are not yet part of the CWPPRA program.

Whether or not any large scale Louisiana coastal restoration program gets approved and funded, the CWPPRA Task Force stands ready and has a vision to increase its contribution to reestablishing a sustainable ecosystem in coastal Louisiana.

Introduction

Louisiana's Working Coast in Crisis

Louisiana's coast is appropriately referred to as a "working coast" due to its close relationship between the coast and its people. The coastal landscape is dominated by wetlands (Coleman 1998) and therefore, it is inevitable that human endeavors are affected by these wetlands and the wetlands themselves are affected by the combination of human activities and natural causes. In the 300 years since European settlement, major industries have grown allowing development of a significant coastal infrastructure and unique coastal cultures. In addition to the natural resources, the coastal landscape provides an important buffer to impacts from hurricanes and storm surges. In response to the need to restore or protect Louisiana's wetlands, Congress passed the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) in 1990. Additionally in 2005, the Congress reauthorized the funding for the CWPPRA program through 2019. The CWPPRA program selects coastal wetland restoration projects in Louisiana which are considered most beneficial, and then designs, constructs, and monitors these projects within the limitation of CWPPRA's allowable funding.

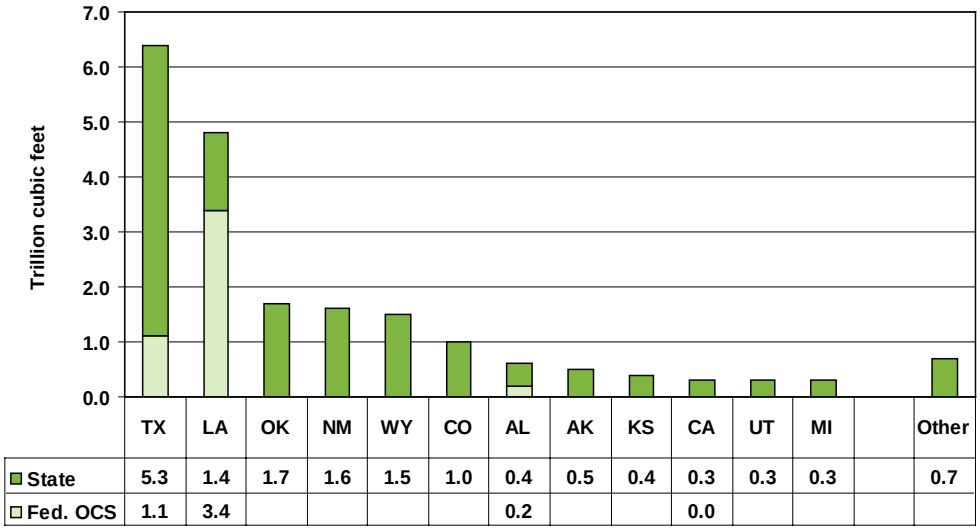
The 2003 CWPPRA Report to Congress stated:

> ***"Without the wetlands, all of these assets—and the national security they provide—would be located in the open water of the Gulf of Mexico and at high risk from storms. Halting Louisiana's rate of wetland loss, therefore, is about more than saving a world-renowned ecosystem. It's about preventing a national catastrophe with associated liabilities that could well exceed $100 billion."***

Louisiana's coast is susceptible to hurricanes (Stone 1997, Stone et al. 2003). Fortunately, its wetlands provide a natural buffer during storms by absorbing surging water. While wetlands can not prevent the devastating effects of major hurricanes such as Hurricanes Katrina and Rita in 2005, wetlands are known to significantly reduce the storm surges associated with the more frequent tropical storms and smaller hurricanes. Observations by the U.S. Army Corps of Engineers on hurricanes striking the Louisiana coast suggest that coastal habitats have historically reduced storm surge elevation as surge water moved inland. In Louisiana's flat, low-lying coastal areas, these reductions in storm surge can mean the difference between an area that survives a storm and one that suffers significant damage. The wetlands also enhance protection of infrastructure, much of which directly serves the Nation's needs for energy, navigation, and fisheries.

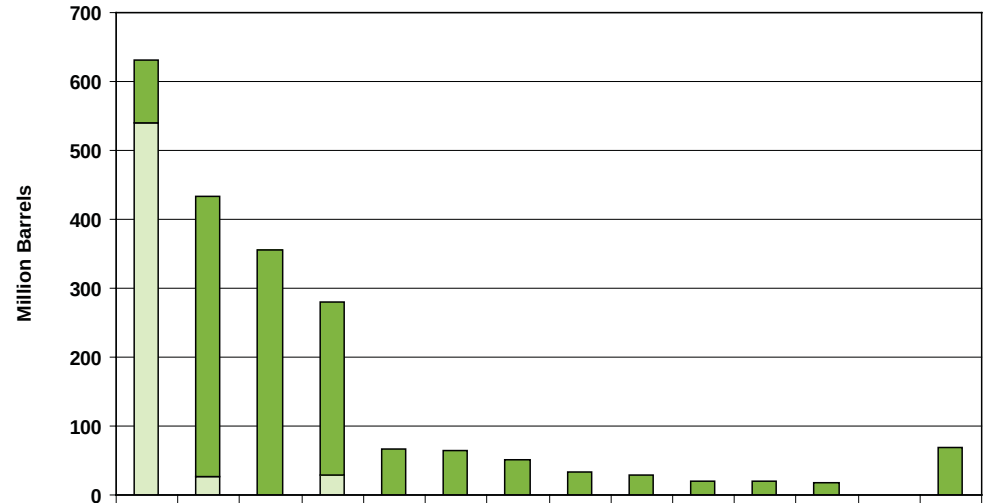
Shrimp boats in Cocodrie, Louisiana.
Photo provided by J. Visser.

Energy is vital to the U.S. economy, and Louisiana's coastal wetlands enhance protection of the Nation's primary supplier. The oil and gas industries have concentrated their activities within south Louisiana to take advantage of the nearby refining facilities as well as the coast's proximity to offshore exploration zones. Louisiana's 18 petroleum refineries distill a combined crude oil capacity of more than 2.7 million barrels per day, which is second only to Texas. The network of energy facilities located in and around Louisiana's wetlands delivers more than 26% of both the Nation's natural gas and crude oil supplies (Figures 1 and 2). A great deal of infrastructure is required to support this level of activity. For example, approximately 14,000 miles of pipelines run through the marshes of coastal Louisiana (USACE 2004). The wetlands enhance protection of these and other energy infrastructure from storm damage. Without the shelter provided by the wetlands, Louisiana's energy infrastructure would be crippled, and the security of the Nation's energy supply would be compromised.



	TX	LA	OK	NM	WY	CO	AL	AK	KS	CA	UT	MI		Other
State	5.3	1.4	1.7	1.6	1.5	1.0	0.4	0.5	0.4	0.3	0.3	0.3		0.7
Fed. OCS	1.1	3.4					0.2			0.0				

Figure 1. 2003 US Marketed Gas Production by State



	LA	TX	AK	CA	NM	OK	WY	KS	ND	CO	MO	MS		Other
State	90	406	356	250	66	65	52	34	29	21	19	17		69
Fed. OCS	541	27		30								1		

Figure 2. 2003 US Oil Production by State

Thousands of miles of navigation channels are located in Louisiana's wetlands. Thirty-three percent of the busiest ports in the U.S., ranked by total tons, are located in south Louisiana, handling cargo valued at over $75 billion. The wetlands protect these waterways from hurricanes and storm surge, and in doing so ensure the flow of goods to and from U.S. markets. This flow directly affects the ability of thousands of U.S. workers to do their jobs and obtain needed services.

Port Fourchon along the Louisiana Gulf Shoreline is a major support facility for offshore oil and gas activities in Federal OCS waters. These facilities are threatened by retreat of the shoreline, which increases their risk to hurricane damage and oil supply shut-downs.

No other region in the U.S. supports the diverse fish and shellfish species seen in Louisiana's wetlands. Louisiana is by far the Nation's largest shrimp, oyster, and blue crab producer. Besides Alaska, Louisiana produced the Nation's highest commercial marine fish landings (approximately $343 million) excluding mollusk landings (NMFS 2003). The region also provides almost one-third (by weight) of the fish harvested in the lower 48 states. These resources are gathered in south Louisiana and shipped throughout the world, providing jobs for 40,000 Louisiana citizens alone, not to mention the thousands of jobs outside of Louisiana. In 2003, the retail sales level for the total commercial and recreational fisheries harvest in coastal Louisiana was $2.85 billion. A preliminary estimate of the Louisiana Department of Wildlife and Fisheries indicates that the retail level losses to the State's fisheries industries due to Hurricanes Katrina and Rita will be at $2.3 billion over the next two years.

The Mississippi Flyway passes directly over coastal Louisiana. More than 3.5 million migratory waterfowl spend the winter in Louisiana's coastal wetlands. In addition, the woodlands provide stopover habitat to millions of neotropical migratory birds on their journeys across the Gulf of Mexico. Hundreds of bird species, as well as the jobs and recreational opportunities associated with birding, hunting, and eco-tourism, depend on coastal Louisiana habitats. In 2001, $1.6 billion was expended for fish and wildlife recreation with a return total economic benefit of $6.2 billion.

Louisiana's coast directly supports national goals of energy security and trade enhancement, and facilitates fisheries and wildlife conservation. However, this unique region

is disappearing before our eyes, eliminating benefits that our Nation has relied on for decades.

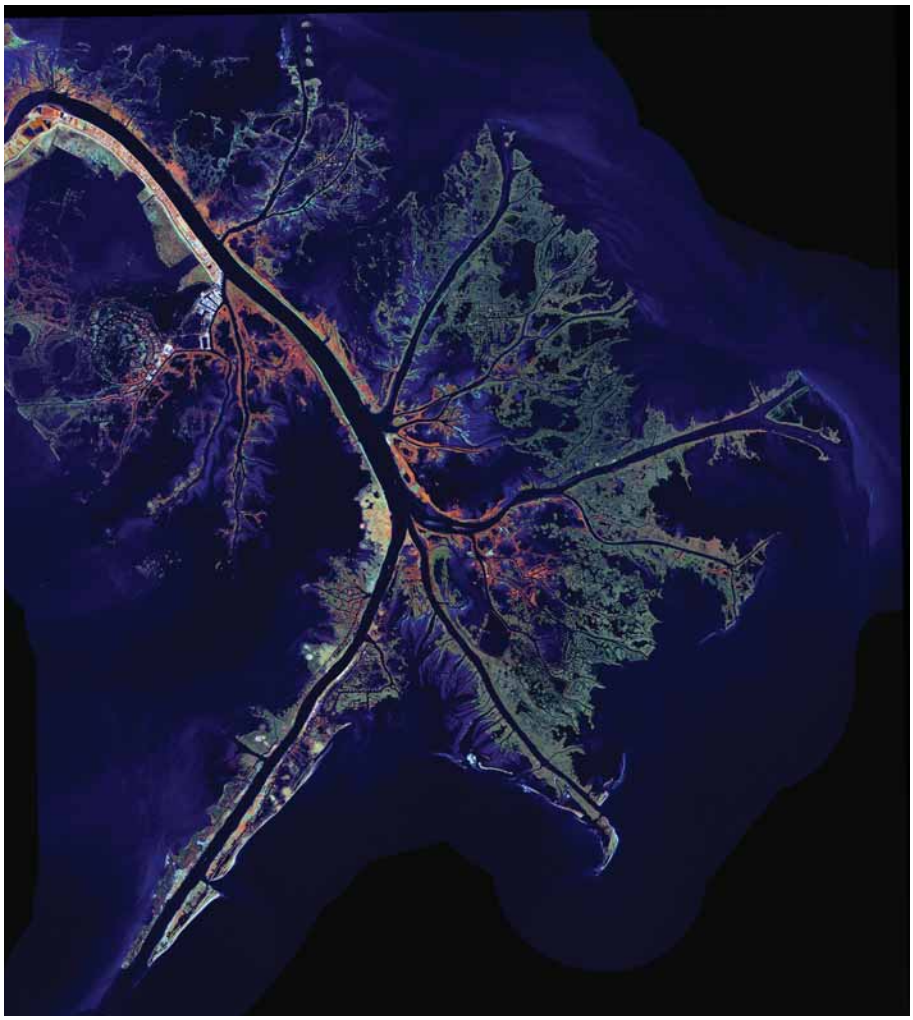
During the 20th century, coastal Louisiana lost over 1.2 million acres of wetlands or other coastal habitats. This land was converted to open water and generally will not return to its former condition without restoration. The loss of land is so intense that even elevated landforms such as natural levee ridges and cheniers are disappearing along the Louisiana coast. In some areas, the gulf shoreline is broken so the Gulf of Mexico is now moving into the estuarine areas. CWPPRA has successfully offset some of these losses by building critically important projects. Rates of land loss have generally declined from 1990 to 2000. However, the severity of recent hurricanes has caused significant additional loss.

Damage caused by Hurricanes Katrina and Rita illustrated the national consequences of coastal land loss and the importance of integrating coastal restoration with hurricane protection. The 2005 hurricane season, which brought great devastation to the Gulf Coast, substantiated the peril to the Louisiana coast and to the Nation. In spite of the economic damage and ecologic loss by Hurricanes Katrina and Rita, there are many assets remaining that are beneficial and essential to the Nation. The CWPPRA program continues to be a successful and vital wetland restoration program for Louisiana's "working coast."

Wetland Loss and Coastal Louisiana Functions and Values

Coastal wetlands protect all the natural resources generated within Louisiana's coastal zone. However, these protective wetlands are vanishing rapidly, exposing more inland areas to the open waters of the Gulf of Mexico. The cumulative effects of human and natural activities in the coastal area have severely impaired the deltaic processes and shifted the coastal area from a condition of net land building to net land loss. While many studies have been conducted to identify the major contributing factors, most studies agree that land loss and the degradation of the coastal ecosystem are the result of both natural and human induced factors, producing conditions where wetland vegetation can no longer survive and wetlands are lost by conversion to open water (Boesch et al. 1994).

Establishing the relative contribution of natural and human-induced factors is difficult. Changes in hydrology and ecologic processes manifest gradually over decades and in large areas, while other effects, such as storm damage, can occur in a single day and impact relatively localized areas. For barrier shorelines, complex interactions between storm events, longshore sediment supply, coastal structures, and inlet dynamics contribute to the erosion and migration of beaches, islands, and cheniers. When the Mississippi River built the wetlands, its annual floods spread tons of water and sediment across south Louisiana, creating an ecosystem that endured for thousands of years. But in the last century, the river's floods were contained by levees. Because the water and sediments from the river are channeled into the Gulf of Mexico, the wetlands do not receive the sediment and nutrients necessary to allow them



Satellite imagery of the Mississippi River birdsfoot delta in 2003.

to be sustainable. Rising sea level, saltwater intrusion from petroleum exploration and navigation channels, subsidence, and a host of other contributing factors have resulted in land loss and degradation. As a result, the wetlands are rapidly converting to open water.

The loss of coastal Louisiana communities and habitats presents a high cost to the Nation. We are losing a vital and unique region of our country. Whether one considers the human cost, the risks to infrastructure, the danger to wildlife and landscape, or the loss of an entire way of life for many, it is clear that bold action must be taken (CRCL 2000).

How Much Land Is Louisiana Losing?

While Louisiana contains 30% of the Nation's coastal marshes, 90% of all coastal marsh loss in the continental U.S. occurs in Louisiana. During the 20th century, coastal Louisiana lost over 1.2 million acres (1,875 square miles), an area more than 25 times larger than Washington, D.C. Scientists estimate that the State will lose an additional 431,000 acres (673 square miles) by 2050 (Barras et al. 2003, 2004) (Figure 3). During the decade of 1990 to 2000, land loss was approximately 15,300 acres (24 square miles) per year, largely through conversion of vital coastal wetlands to open water. Preliminary estimates from the U.S. Geological Survey indicate that 138,880 acres (217 square miles) of land has been transformed to new open water areas in coastal Louisiana as a result of Hurricanes Katrina and Rita (Barras 2006). The creation of vast areas of new open water further exposes the coast to the detrimental effects of powerful storms (USACE 2006). In localized areas, the potential wetland losses from these two hurricanes exceed the estimated future land loss for the next 50 years. Unfortunately, it has become common to hear south Louisiana

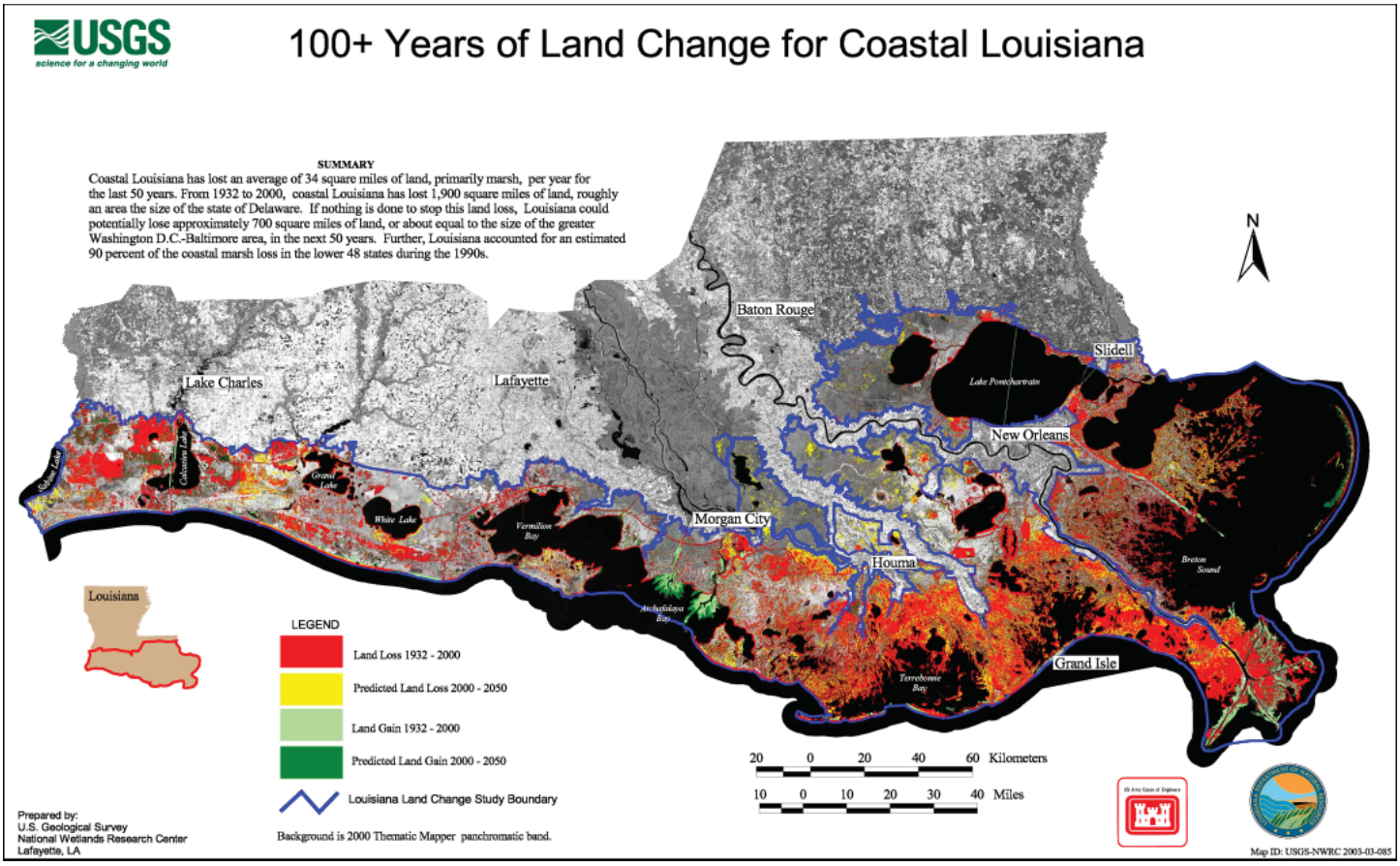


Figure 3. Coastal land change from 1930 to 2000 and predictions of land change through the year 2050.

residents reminisce about tracts of land their families used to cultivate just 10 or 20 years ago that are now underwater.

As evidenced by recent events, the increased risk from hurricanes to infrastructure and human life due to the loss of these valuable wetlands cannot be ignored. According to 2000 census data, approximately two million people, or over 50% of Louisiana's citizens, live in Louisiana's coastal parishes. The wetlands are an integral part of life for many residents. In addition, the cultural impact of the ecosystem can be traced to traditions of music, food, and living off the land that continue to this day. Much of what gives Louisiana its unique heritage finds its roots in the coast and the bayous.

National Energy and Economic Implications

Louisiana's coastal wetlands provide the setting for the region's primary economic activities, such as oil and gas production and transportation, navigation, and commercial and recreational fishing (Figure 4). If the rate of loss is not reduced, critical energy infrastructure may be damaged or destroyed. Oil and gas infrastructure constructed for inland conditions such as pipelines, offshore support centers, and components of the Strategic Petroleum Reserve will be exposed to the open waters of the Gulf of Mexico. As a result, the Nation can expect storm induced spills similar to those scattered throughout coastal Louisiana following the hurricanes of 2005. Should present trends continue, the Nation could experience further disruptions in the delivery and pricing of crude oil and gas. In addition to the inconvenience and expense of disruptions in energy supply, the long-term environmental impacts of recent oil spills have not been determined. The ability of wetlands to enhance protection of energy infrastructure is needed now more than ever.

Observations by the U.S. Army Corps of Engineers on hurricanes striking the Louisiana coast suggest that every 2.75-miles of coastal habitats may reduce surge elevation an average of one foot (Figure 5) (USACE 1965). Research investigations on Hurricane Andrew (1992) support the storm buffering capabilities of wetlands. Louisiana's wetlands thus create a natural buffer zone on which all of

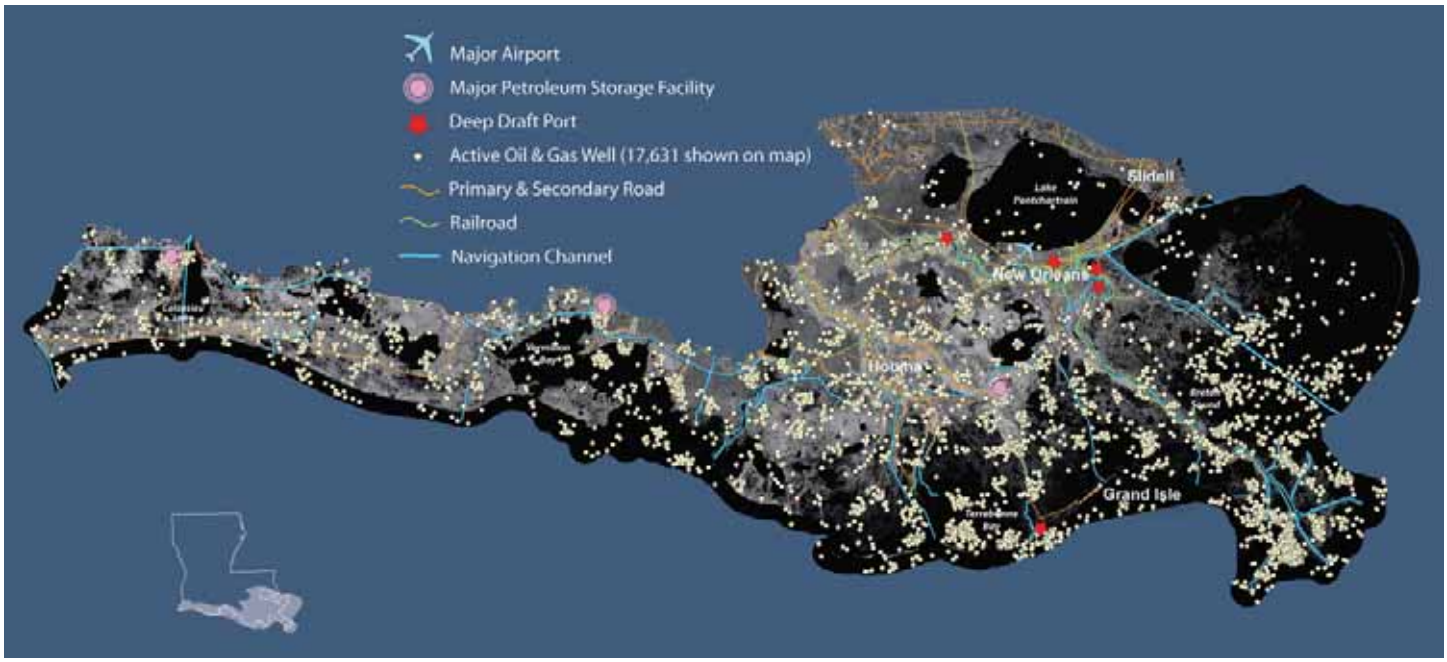


Figure 4. Infrastructure located in Louisiana's coastal zone.

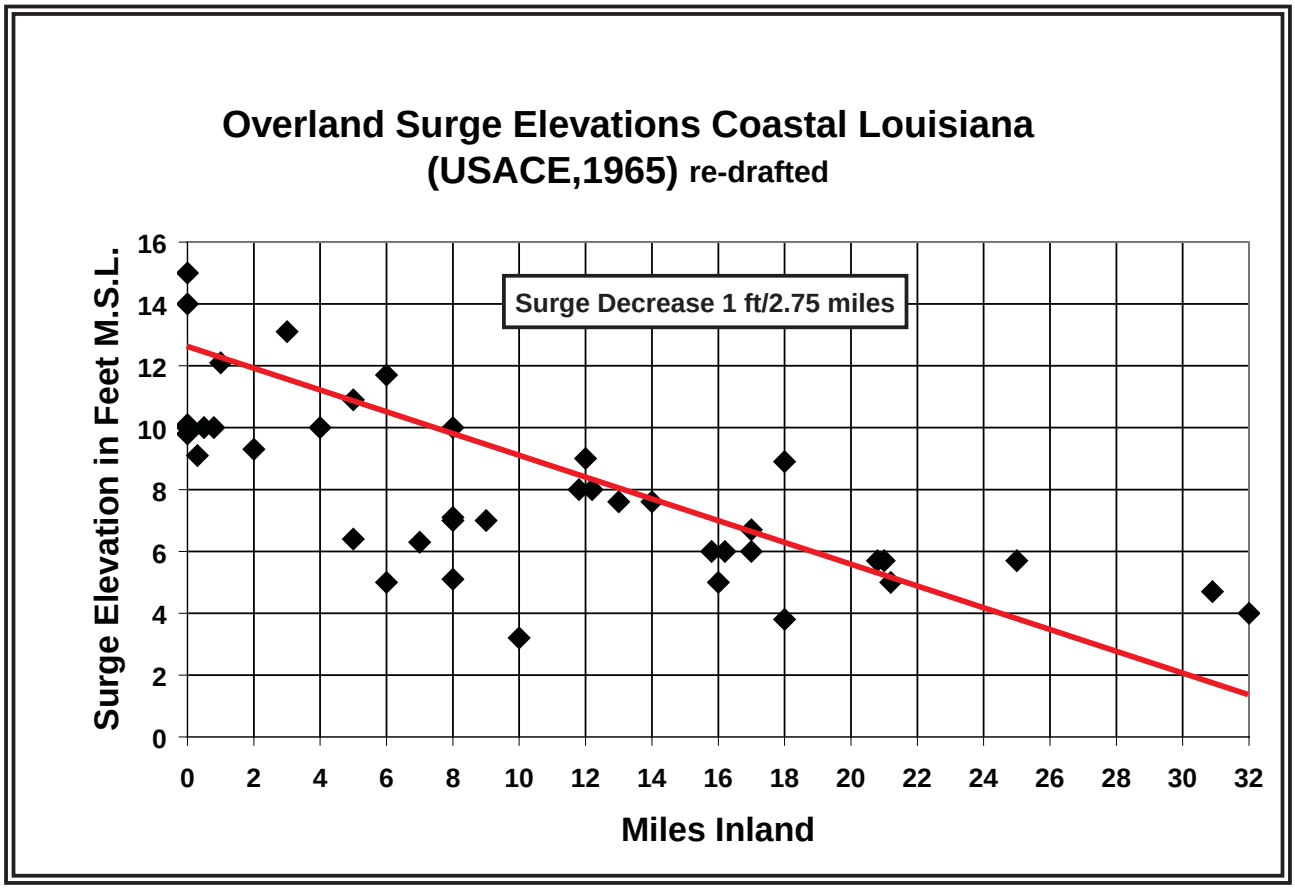


Figure 5. Observed storm surge elevation relative to the position inland for seven hurricanes impacting south Louisiana from 1909 to 1957 (re-drafted). Relationship implies coastal habitats can generally reduce surge by one foot for every 2.75 miles of coastal habitat (USACE, 1965).

the infrastructure and communities located in the coastal zone depend. Costanza et al. (1989) estimate the coast's 2.5 million acres of wetlands have annual storm protection values of between $520 million and $2.2 billion.

Besides the needed protection Louisiana's wetlands offer energy infrastructure, the coastal wetlands also contain nearly 3,000 miles of deep and shallow-draft channels. Five of the 15 busiest ports in the U.S., ranked by total tons, are located in south Louisiana, handling cargo valued at over $75 billion. South Louisiana ports carry 21% of all U.S. waterborne commerce and ship 57% of U.S. grain exports. The ports and shipping lanes of coastal Louisiana serve as vital linkages between producers and consumers throughout the Nation and as gateways for international trade (USACE 2004). Two of the Nation's most commercially important waterways, the Mississippi River and the Gulf Intracoastal Waterway (GIWW), traverse coastal Louisiana. As wetlands erode, it will become much more expensive to maintain national waterways and ports in south Louisiana. The

Typical ship traffic within Louisiana waterways. Photo provided by T. Carruthers, IAN Image Library.

wetlands protect these waterways from exposure to the open waters of the Gulf, including hurricanes and storm surge, and in doing so

they ensure the flow of goods to and from U.S. markets.

Coastal Louisiana contains 30% of U.S. coastal marshes and a vast majority of the Gulf coast marshes. The same coastal wetlands which protect energy infrastructure and facilitate the flow of commerce, are also essential habitats for fish and wildlife species. Louisiana's coastal marshes are primary nursery grounds for commercially and recreationally important fisheries species. In addition, coastal habitats support other recreational activities that contribute more than $220 million annually to Louisiana's economy through swamp tours, hunting, hiking, bird watching, photography, and camping (Coreil 1994). In order for the fishing industry and outdoor recreational activities to continue, Louisiana's diverse coastal habitats must be restored, preserved, and well maintained. A healthy estuary is the foundation for maintaining these valuable habitats.

A healthy estuary provides a range of wetland habitat types that are largely dependent on the salinity of the surface water (Chabreck et al. 2001). This gradient of water and habitats are the ecosystems that local and migratory fish utilize. A central characteristic of estuaries is their high productivity. Each wetland habitat type has plants, fish and wildlife that thrive in their unique environments within the estuarine gradient. Therefore, the productivity of the estuary is dependent on a balance of inputs of fresh water and gulf seawater.

The historic loss of wetlands and altered hydrology due to deep, straight navigation channels allow greater water movement from the Gulf of Mexico into the coastal wetlands. Seawater from the Gulf is allowed to move into the coast more easily and quickly. Continued wetland loss facilitates further movement of seawater into traditionally fresher habitat types. This movement facilitates conversion of fresher habitat types towards more saline habitat types. River reintroductions can offset salinity intrusion by introducing additional freshwater into the estuary. Estuary decline in places is dramatic where barrier islands or the gulf shoreline is compromised and the Gulf of Mexico is now expanding into the former estuary.

The Louisiana coastal wetland system represents critical breeding, spawning, foraging, and/or nursery grounds for a variety of fish

Major Louisiana Estuarine Wetland Types

Habitat Type	*Plants*	*Animals*
Swamp (~1/20 the salinity of seawater)	Baldcypress, water tupelo, and swamp red maple	Catfish, crawfish, ducks, song birds, mink, and black bears
Fresh marsh (~1/20 the salinity of seawater)	Maidencane, bulltongue, reed, and cattail	Bass, frogs, ducks, wading birds, rabbits, and alligators
Intermediate marsh (~1/10 the salinity of seawater)	Bulltongue, sedges, and marshhay cordgrass	Blue crabs, wading birds, muskrats, and alligators
Brackish marsh (~1/3 the salinity of seawater)	Marshhay cordgrass and saltgrass	Oysters, shrimp, wading birds, and river otter
Saline marsh (~1/2 the salinity of seawater)	Smooth cordgrass, saltgrass, and black mangrove	Seatrout, menhaden, pelicans, and dolphins

and shellfish species. No other state or area in the country supports the number and kind of species Louisiana produces. Louisiana is the Nation's largest shrimp (~36%), oyster (~50%), and blue crab (~26%) producer. Dockside revenues for commercial fisheries in coastal Louisiana were $274 million in 2005, the latest year for which statistics are available (USDOC 2005). The fish and shellfish harvested from Louisiana waters are shipped to local, state, national, and international markets. Coastal Louisiana's wetlands contain a diversity of habitats and populations of fish and wildlife resources. In 2001, 1.6 million people engaged in fishing, hunting and wildlife watching activities, expending a total of $1.6 billion in Louisiana. Total recreational retail sales for hunting, fishing, boating, and wildlife watching in 2001 were estimated at $3.1 billion, with a total economic benefit of $6.2 billion. Dramatic declines in commercial fishing harvests have been predicted due to coastal wetland loss. Additionally, there are 25 threatened or endangered species in the Louisiana coastal zone, including near-shore Gulf waters, which are dependent on coastal wetlands for their continued existence. The intrinsic value of these lands as a haven for thousands of plant and animal species is felt by all who visit coastal Louisiana.

The wetlands and other coastal habitats represent a precious asset not only because they support nationally and internationally important industries, but also because they provide direct storm protection for residents, and are a portion of our Nation's natural heritage.

Freshwater wetlands within the Mississippi River hydrologic basin. *Photo provided by USGS.*

CWPPRA Program

In 1990, awareness about the impacts of Louisiana's land loss crisis was growing. In response, Congress enacted the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA), the first Federal statutorily mandated restoration of Louisiana's coastal wetlands and the first stable source of Federal funds dedicated exclusively to the long-term restoration of coastal wetlands. Since then, Louisiana has received an average of approximately $50 million each year for coastal restoration projects through CWPPRA. In 2004, Congress reauthorized the funding for the CWPPRA program through 2019. These Federal funds are currently matched by a 15% State contribution.

The CWPPRA program has been the State's primary tool for responding to coastal wetland loss. It emphasizes practical benefits to habitats and human communities while supporting the economic use of this region which is exceptionally valuable to the Nation. Through CWPPRA, the Congress provides a consistent funding source for coastal wetlands restoration efforts which enables program managers to plan for the future. CWPPRA is well known for employing a wide array of restoration techniques (Table 1). CWPPRA project areas range in size from less than 100 acres up to tens of thousands of acres. The use of different project types and sizes has enabled the program to respond more fully to the individual circumstances in each project area.

The program limits expenditures for planning to $5 million each year. Therefore, the remaining 90% of CWPPRA's funds are spent on direct project costs, facilitating the program's ability to respond to immediate restoration needs.

Evolution of the CWPPRA Program

1990	U.S. Congress passes the Breaux Act, which dedicates $50 million on average each year for restoration projects in Louisiana.
1993	Breaux Act Task Force submits the State's first comprehensive wetland restoration plan to Congress.
1994	Completion of the first CWPPRA funded project.
1998	Coast 2050 report completed. The CWPPRA Task Force and State Wetlands Authority jointly adopt the study as their official restoration plan.
1999	CWPPRA Task Force adopts a cash flow management system.
2000	Coordination with Coast 2050 plan used as a criterion for CWPPRA project selection.
2002	CWPPRA conducts the first cycle of Adaptive Management Review, another process for integrating lessons learned into the objectives and designs of new projects.
2002	The Corps of Engineers and State begin work on the LCA, Louisiana Ecosystem Restoration Study. Representatives from Breaux Act Task Force member agencies participate on the report writing team.
2003	The CWPPRA program adopts the Coastwide Reference Monitoring System, which uses a coastal ecosystem approach to evaluate project and program effectiveness.
2004	The CWPPRA program and participating agencies were awarded Coastal America Partnership Award from Coastal America.
2005	CWPPRA is re-authorized though 2019. The Louisiana Wildlife Federation, the Louisiana Association of Professional Biologists, and other organizations passed resolutions to increase funding of CWPPRA.

Table 1. CWPPRA Restoration Project Types

Freshwater Reintroduction Freshwater is channeled from a nearby river or waterbody into surrounding wetlands. This infusion of water, sediment, and nutrients helps slow saltwater intrusion, slows the loss of marsh and creates a limited amount of new marsh.

Outfall Management A variety of techniques are used to regulate the flow of freshwater reintroduction to ensure that water and sediment reach needed areas. These techniques maximize the benefits of freshwater reintroduction.

Sediment Diversion A controlled gap (called a crevasse) is cut into a river levee, allowing river water, nutrients and sediment to flow into nearby wetlands and mimic natural land-building processes.

Dredged Material/Marsh Creation Dredged sediment is placed at specified elevations in shallow open water and deteriorating marsh, high enough to encourage plant recolonization.

Shoreline Protection Eroding shorelines are protected by buttressing the land with rock berms, concrete, plantings, or by diffusing wave energy in front of the shore using breakwaters and/or fences.

Sediment and Nutrient Trapping Brush fences or low land ridges (terraces) are built to slow water flow and promote sediment accumulation.

Hydrologic Restoration Natural drainage patterns are restored as much as possible by blocking dredged canals and cutting gaps in artificial levees.

Marsh Management The water level and salinity in a contained marsh area are controlled by levees and gates or weirs to promote the regrowth of desired vegetation and re-establish historic wildlife habitat.

Barrier Island Restoration Several methods are used to stabilize and protect islands, including shoring up dunes with fences and vegetative plantings, rebuilding islands with dredged material, and using breakwaters to protect islands from waves.

Vegetative Planting Site appropriate marsh plants are established in project areas to reduce erosion, stabilize the soil, and accelerate wildlife habitat development.

Terracing Terracing is construction of low ridges, usually in patterns, which enclose open water areas. The ridges slow water flow and help trap sediment to rebuild marsh.

Long-Distance Conveyance of Dredged Material This technique is similar to other marsh creation techniques except different techniques are utilized to transport sediment greater distances, often using booster pumps.

Invasive Species Control Program A control program pays licensed trappers/hunters to harvest invasive species, such as nutria, that damage the marsh.

Delta Management Wetland creation on active deltas can be enhanced by altering flow patterns promoting land accretion.

Typically, CWPPRA projects are taken from the design phase to construction in three to five years. This quick turn-around time allows the program to meet urgent restoration needs and to react promptly to changing environmental conditions. CWPPRA addresses near-term restoration needs while other large-scale planning efforts are undertaken.

In the last 15 years, the program has constructed, is constructing, or has approved for construction 78 projects (66 are complete) at a total cost of over $624.5 million (Table 2). These projects are expected to re-establish or protect a total of approximately 70,616 net acres and enhance 320,354 acres of additional wetlands. Additionally, 47 projects at a total cost of approximately $913.4 million are in engineering and design. These projects are anticipated to re-establish or protect approximately 32,665 net acres and enhance 194,859 acres of additional wetlands. Of these 47 projects, the engineering and design is nearly complete for 11, but presently there are insufficient CWPPRA funds ($262.3 million) for their construction.

CWPPRA project development and funding is a transparent public process conducting approximately 14 public meetings per year. Public meeting

Table 2. CWPPRA projects constructed or approved for construction to date.

Basin	# Projects	Re-established Acres[1]	Protected Acres[2]	Total Net Acres[3]	Enhanced Acres[4]	Cost
Pontchartrain	9	2,223	3,199	5,422	8,868	$34,273,381
Breton Sound	2	1,069	0	1,069	12,987	$7,719,940
Miss. River Delta	3	12,740	413	13,153	1,185	$28,434,514
Barataria	13	1,750	3,742	5,492	26,500	$250,883,109
Terrebonne	14	1,307	4,552	5,859	45,304	$114,926,979
Atchafalaya	2	3,400	392	3,792	756	$9,609,551
Teche/Vermilion	9	2,417	3,448	5,865	30,671	$29,222,093
Mermentau	7	905	3,323	4,228	15,384	$40,457,657
Calcasieu/Sabine	18	6,534	13,217	19,751	178,699	$91,247,317
Coastwide[5]	1	0	5,985	5,985	0	$17,734,918
CONSTRUCTED[6] TOTALS	**78**	**32,345**	**38,271**	**70,616**	**320,354**	**$624,509,459**

[1] Areas with a net gain in wetlands over future without project conditions. Acres restored by marsh creation, terraces or river reintroductions.

[2] Areas protected from loss that would have been lost under future without project conditions.

[3] Sum of re-established and protected acres present at the end of 20 years.

[4] Areas in which specific functions have been intensified/improved. Project area marsh at year 20 minus total net acres.

[5] Coastwide Nutria Control Program.

[6] Constructed includes projects that are constructed, under construction or approved for construction.

notices are mailed and also announced via the "Breaux Act Newsflash" through email distribution to those who elect to be on the distribution list. A complete CWPPRA organizational structure, Standard Operating Procedures, and administrative proceedings are publicly available on the internet. Specific project documentation for all projects selected for a Priority Project List (PPL) may be found at the website http://www.LaCoast.gov. Annual reports of each PPL selection process and detailed evaluations of the selected and not selected projects are produced. Most of these annual reports are also publicly available on the CWPPRA website.

A Collaborative Interagency Approach

Through its governing structure, the program emphasizes intergovernmental cooperation. Five Federal agencies and the State of Louisiana sit on the Louisiana Coastal Wetlands Conservation and Restoration Task Force, commonly referred to as the CWPPRA Task Force, and each agency brings a different, but complementary, perspective to the table. These agencies include the U.S. Fish and Wildlife Service, the Natural Resources Conservation Service, the NOAA National Marine Fisheries Service, the U.S. Environmental Protection Agency, and the U.S. Army Corps of Engineers. The Louisiana Governor's Office represents the State on the Task Force while the Louisiana Department of Natural Resources is the local cost share sponsor for project implementation. A Technical Committee, Planning and Evaluation Subcommittee, Environmental and Engineering Work Groups, and similar entities are responsible for project planning and engineering (Figure 6). The CWPPRA Task Force also retains the services of Louisiana academic coastal scientists on the Academic Advisory Working Group to advise as needed.

Each of the constructed projects is assessed throughout its lifetime using an intensive

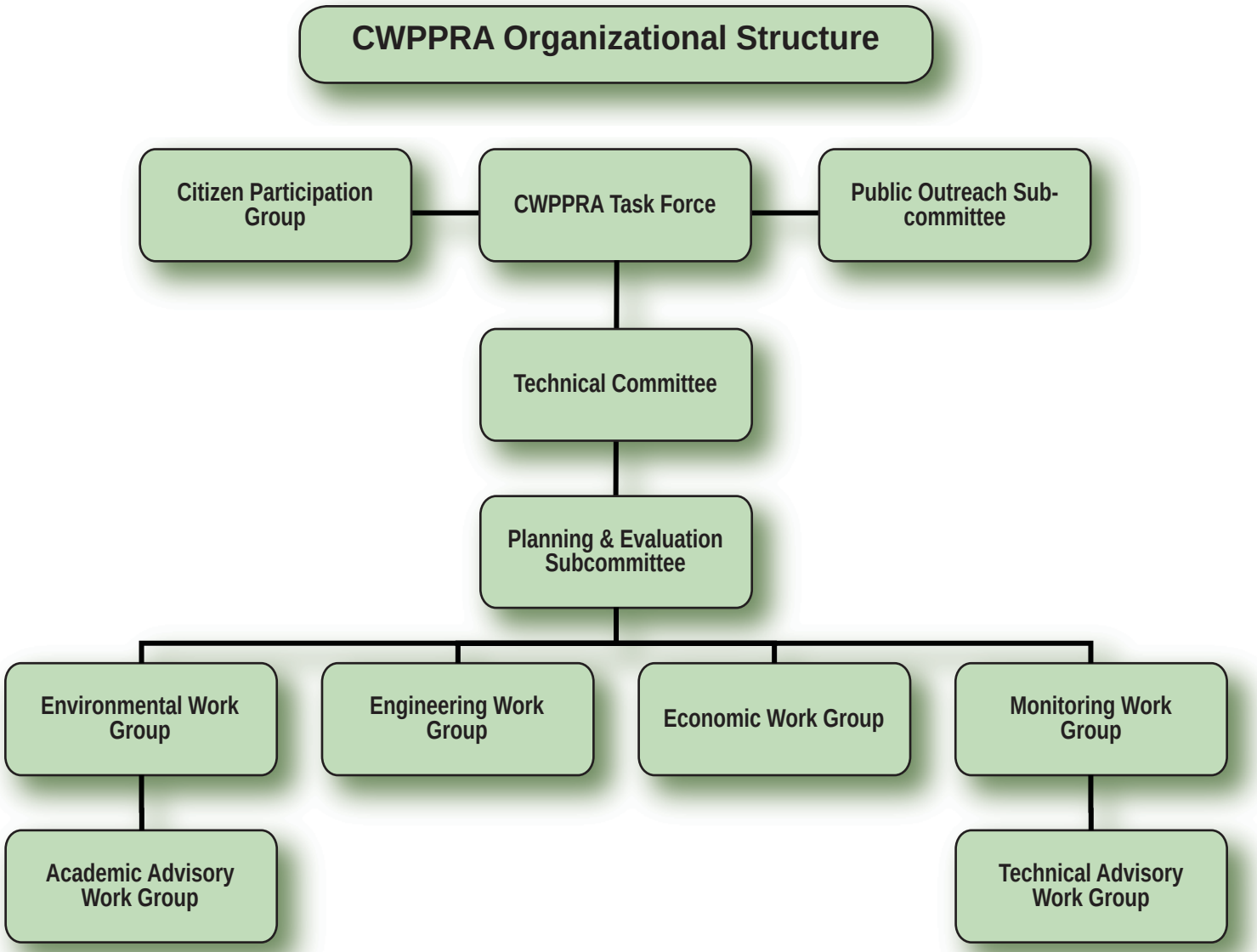


Figure 6. CWPPRA Organizational Structure

monitoring program. The feedback gained by monitoring allows the program to continually improve project designs and establishes information on the performance of restoration techniques under different local circumstances.

The process of identifying and selecting the projects to be built uses a "bottom-up" model that encourages local constituencies to contribute. This approach has created solid buy-in for projects from a broad array of interest groups throughout south Louisiana and has developed strong links among the Federal, State, and local government agencies, nongovernmental organizations, and the public. Although some projects may have localized stakeholder concerns, all agree that coastal restoration is an issue that needs to be addressed.

CWPPRA's emphasis on collaboration and grassroots participation has had other implications for restoration projects. CWPPRA projects have tended to provide local benefits, with a focus on enhancing habitat in areas of acute need. This approach has been totally appropriate given the program's budget and scope as well as the distress being felt by human and natural communities throughout the region. In recent years, CWPPRA has developed and implemented projects that, in combination, provide ecosystem-level benefits to large portions of the coastal zone.

Annual Priority Project List (PPL) Selection

Each year in January, a new PPL selection process begins with solicitation to the CWPPRA agencies, to the public, parish governments or other institutions to nominate projects for the CWPPRA program. Often locals will cooperatively develop project concepts with one of the Federal agencies. All of the CWPPRA agencies offer general assistance to locals and often provide some technical data or advice. Project nominations are proposed at CWPPRA's public meetings in which background technical information is provided to the public.

The "nominee projects" are screened by the CWPPRA workgroups and a set of "candidate projects" are chosen by the Technical Committee for more detailed evaluation. The Task Force pre-determines the number of candidate projects to be selected for evaluation for each PPL cycle. The candidate evaluations include field site visits by CWPPRA staff, State officials, landowners and managers, and sometimes interested local parties. A wetland value assessment (WVA) is conducted on each candidate project to predict the net habitat benefit over the 20 year project life. The WVA is conducted by the interagency working groups with input from university scientists. Preliminary cost estimates are also generated for all candidate projects. Due to insufficient funding to construct all projects, in recent years, a prioritization scoring system has been developed to aid in the selection of projects. This scoring emphasizes cost effectiveness, sustainability, compatibility with regional restoration planning and other factors.

The results of the detailed evaluations, prioritization and cost estimates are presented to the public later in the year. The public is allowed to comment on the project evaluations and their project preferences before the Task Force makes a final selection of projects. The final Task Force selection occurs in October completing the PPL selection cycle. At this time, most selected projects are assigned a lead Federal agency which has primary project management responsibility of the project through construction. An annual report is generated for each PPL cycle detailing the nominated projects, the evaluation of candidate projects, and the final selected PPL projects.

Since the implementation of a cash flow authorization process, selected PPL projects are only authorized for Phase I (design) funding. Phase I funding authorization typically occurs at the October Task Force meeting. Once a project completes Phase I, Phase II (construction) funding must be requested from the Task Force and much of the evaluation is redone using additional information gained since original analysis. Phase II funding is typically requested and approved at the January Task Force meeting.

Regional Planning

Recognizing the need for comprehensive planning, the CWPPRA program produced the State's first comprehensive plan in 1993 (Louisiana Coastal Wetlands Conservation and Restoration Task Force 1993). This was updated with a comprehensive ecosystem-level plan in 1998 called *Coast 2050: Toward a Sustainable Coastal Louisiana* (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). These studies clearly demonstrated the need for additional funding for large-scale restoration. As a consequence, through cooperative support of the CWPPRA agencies,

the U.S. Army Corps of Engineers and State of Louisiana developed the *Louisiana Coastal Area (LCA), Louisiana Ecosystem Restoration Study* (USACE 2004). On request of the Office of Management and Budget, a Near-Term LCA plan was developed and completed in 2004. This LCA Study proposes near-term restoration proposals that can be implemented within 5 to 10 years, but also presents a strategy for addressing the long-term needs for restoration of coastal Louisiana.

CWPPRA Effectiveness

The CWPPRA program divides the Louisiana Coast into four regions as shown in Figure 7. Each region has varying conditions that are described separately in the following sections. In addition to the regional conditions, two projects per region are highlighted in order to give specific examples of the types and locations of CWPPRA projects. CWPPRA also sponsors demonstration projects. Appendices I through IV contain the costs, benefits, and a brief description of the projects and demonstrations authorized on Priority Project Lists 1-15. Detailed documentation of all projects selected for a PPL can be found at the website http://www.LaCoast.gov. The website includes various types of information including project fact sheets, budgets, ecological reviews, and monitoring reports.

Although the majority of CWPPRA projects are located within a specific region, four coastwide projects have been implemented. The coastwide projects include three demonstration projects and one Coastwide Nutria Control Program (LA-03b). Demonstration projects use technologies or methods that have not been fully developed for coastal restoration in Louisiana. The coastwide demonstration projects include a variety of techniques to address marsh creation and improvements to shoreline protection.

LA-05 Floating Marsh Creation Demonstration Project. Bamboo and PVC structures planted with maidencane (Panicum hemitomon) are being evaluated on Mandalay National Wildlife Refuge. Photo provided by B. Milan.

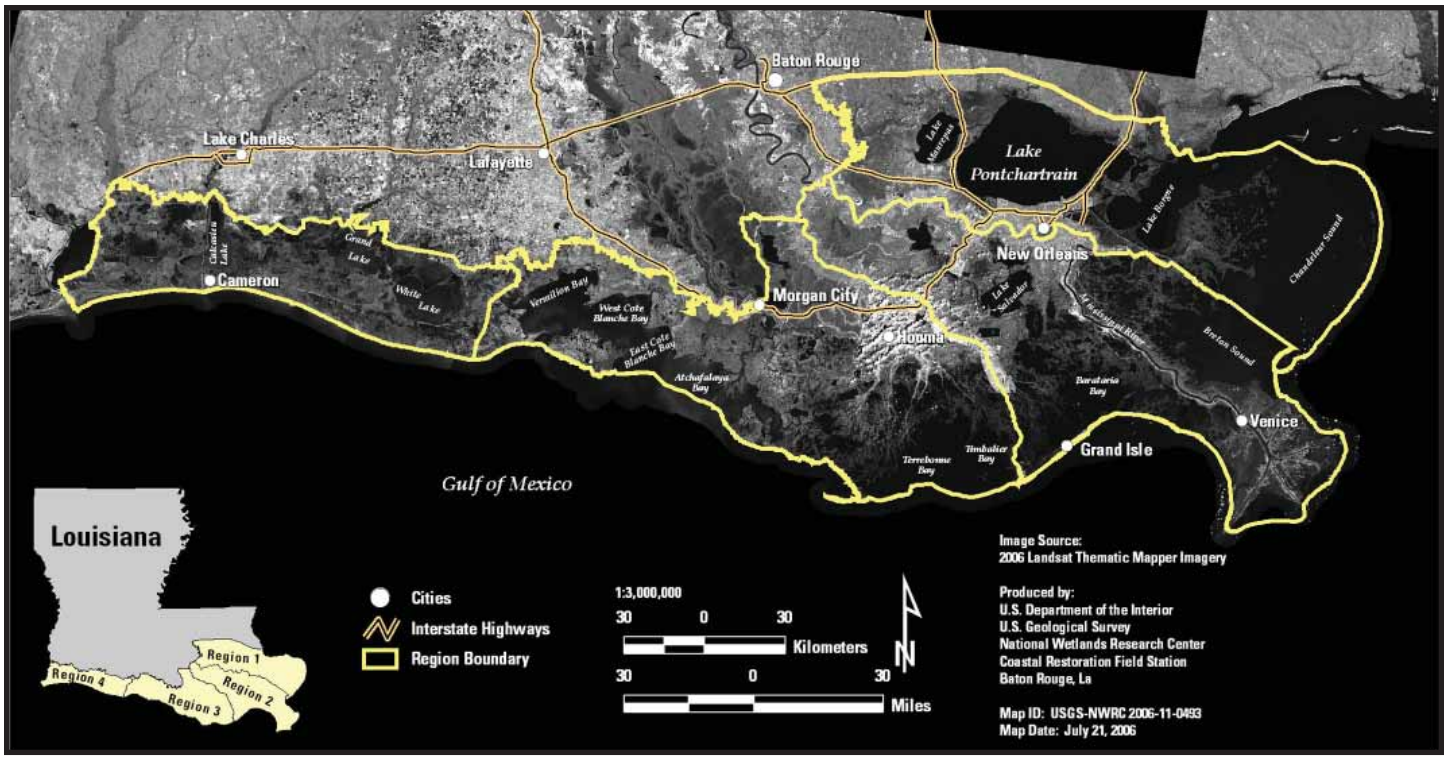


Figure 7. The CWPPRA program considers the Louisiana coast in four regions as indicated.

Region 1

Region 1 includes the Pontchartrain basin, and encompasses the New Orleans metropolitan area and St. Bernard and St. Tammany Parishes. In fact, all of Region 1 suffered major flooding and damage from Hurricane Katrina in 2005. A population of over one million people in this region is vulnerable to flooding from hurricanes and tropical storms. The natural landscape is dominated by low-lying swamps and marshes that are nourished by periodic flooding of rivers and bayous such as the Amite River, Pearl River, and Bayou Manchac. Influences of the metropolitan area and its development pressure make this region's wetland habitats particularly vulnerable to human impacts. Region 1 has several large and significant lakes such as Lakes Pontchartrain, Maurepas, and Borgne that support vast wetland complexes. There are an estimated 576,570 acres of coastal wetlands in this urban estuary.

Critical problems in Region 1 are reduced riverine input, increased salinities, erosion along ship channels and lake shorelines, and potential loss of land bridges. Estimates of wetland loss from Region 1 indicate that a total of 23,296 acres of wetlands were lost between 1990 and 2000, averaging 2,304 acres lost per year (Hill and Green 2005). Hurricanes Katrina and Rita produced dramatic land changes within the region. The USGS estimates 14,720 acres of new open water were formed during the 2005 hurricane season. Whether these wetlands will recover or persist as open water remains to be determined.

The primary challenges in this region center on preserving habitat and maintaining current levels of productivity. A map of constructed projects and additional selected projects which have not yet been constructed are illustrated in Figure 8.

The CWPPRA program has authorized 18 projects in Region 1 and 9 projects have been constructed or approved for construction (4 have subsequently been deauthorized). These projects are expected to benefit approximately 5,422 acres of wetlands at a cost of $34,273,381 (see Appendix I for project details).

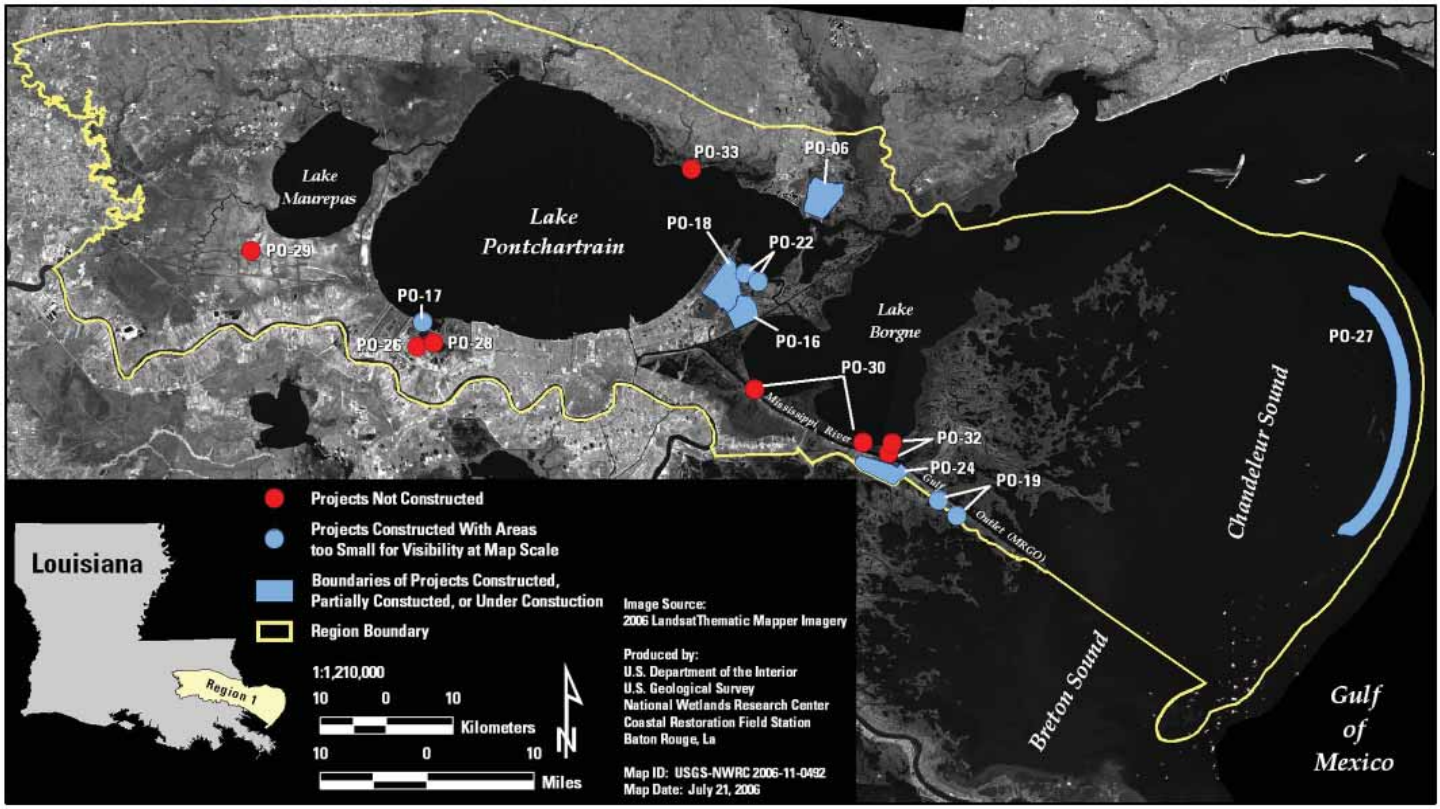
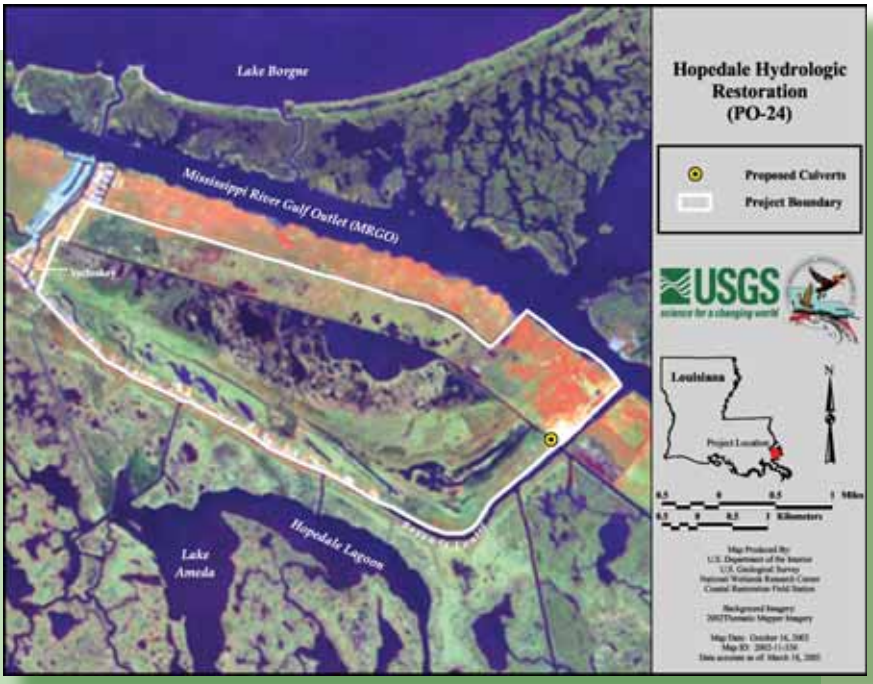


Figure 8. CWPPRA projects within Region 1 (Pontchartrain basin) that are constructed and approved for construction.

Hopedale Hydrologic Restoration (PO-24)



Project Type: Hydrologic Restoration

Federal Sponsor: National Marine Fisheries Service

Approval Date: 1999

Construction Completion Date: 2005

Net Benefit after 20 Years: 134 Acres

Cost: $2,432,958

Location: The project is located southeast of Yscloskey and north of Bayou La Loutre in St. Bernard Parish, Louisiana.

Problems: In the 1950s, a water control structure was placed in a canal leading from the project area to Bayou La Loutre. This canal parallels the back of the Mississippi River Gulf Outlet (MRGO) spoil containment dike. When the control structure was installed, it contained three culverts with flapgates. As time passed, the flapgates were removed and never replaced. During recent years, two of the three culverts have collapsed, adversely impacting wetlands in the project area through the loss of drainage capability. As a result of reduced drainage capacity, wind-driven tide and rainwater created pooling and ponding on the marsh surface reducing plant health and accelerating marsh loss.

Structure during construction in October 2004. *Photo provided by Louisiana Department of Natural Resources.*

The structure operating in December 2004. *Photo provided by Louisiana Department of Natural Resources.*

Restoration Strategy: This project will abate site-specific wetland loss by replacing collapsed culverts installed in the 1950s near Yscloskey. The degraded water control structures were preventing the drainage of high tides and stormwater runoff, resulting in impounded water on the marsh. Replacement of this structure would allow more rapid drainage of the area, improve fisheries access to the area, reduce wetland loss rates and protect nearly 3,000 acres of marsh. This project is very similar to East Mud Lake Marsh Management (CS-20) in the western Chenier Plain and provides an excellent opportunity to make comparisons within the two major geographic regions.

Project Status: The Louisiana Coastal Wetlands Conservation and Restoration Task Force approved construction funding in April 2003. Engineering and design, geo-technical investigations, and hydrologic modeling were completed. A construction contract was awarded in November 2003, and construction was initiated in March 2004. In January 2005, construction was completed, and the project is currently being operated by St. Bernard Parish under a cooperative agreement with the Louisiana Department of Natural Resources. The project area was impacted during Hurricane Katrina but the structure remained operational and is functioning post-hurricane.

Fritchie Marsh Restoration (PO-06)

Project Type: Hydrologic Restoration

Federal Sponsor: Natural Resources Conservation Service

Approval Date: 1992

Construction Completion Date: 2001

Net Benefit after 20 Years: 1,040 acres

Cost: $2,201,674

Location: The project is located approximately 3 miles southeast of the city of Slidell in St. Tammany Parish, Louisiana. The project area encompasses marsh near the north shore of Lake Pontchartrain and the Rigolets. It is bounded by U.S. Highway 90 to the east, Louisiana Highway 433 to the west and south, and uplands to the north.

Problems: Since 1956, 34% of the marsh in the project area has converted to shallow water. Much of the loss is likely a result of the disruption of the natural hydrology by the construction of surrounding highways. The surrounding highways impound the area and impede the transport of water and nutrients. In addition, salt water also intrudes from Lake Pontchartrain due to the tidal exchange occurring through the Rigolets.

Restoration Strategy: The project area would be restored to a more natural hydrologic regime by enlarging the Salt Bayou culvert under Highway 90. This would increase flow of fresh water, nutrients, and sediment from the West Pearl River and alleviate the stagnant conditions in the northern portion of the marsh.

Approximately one mile of Salt Bayou was dredged to improve its capacity to carry the projected increase of flow from the West Pearl River.

In addition, upland runoff from the city of Slidell was diverted through a weir on the W14 Canal into the marsh. The runoff will increase the overall productivity of the marsh by adding nutrients and fresh water to the marsh. It will also reduce nutrient loading into Lake Pontchartrain.

Project Status: The project was completed on February 28, 2001. The Operation and Maintenance plan was executed on January 29, 2003. Monitoring is ongoing and includes hydrologic, vegetation, and habitat mapping components. Hurricane Katrina impacted the project area filling in parts of Salt Bayou with sediment. However, the project structures remain operational.

Culverts installed in Salt Bayou to facilitate water flow from the West Pearl River. *Photo provided by Louisiana Department of Natural Resources.*

Constructed project weir, with boat bay, installed in the northwestern portion of the project area. *Photo provided by Louisiana Department of Natural Resources.*

Region 2

Region 2 includes the Breton Sound, Barataria, and Mississippi River Delta hydrologic basins. This region encompasses the coastal area east of the Mississippi River to the MRGO and the area west of the Mississippi to Bayou Lafourche. Port Fourchon is at the gulf shoreline and is the largest offshore supply port in Louisiana. It includes 894,700 acres of wetlands. Historically, annual flooding from the Mississippi and Bayou Lafourche provided nutrients, sediment, and water to the wetlands. However, levees were constructed thereby altering the natural hydrologic process and transport of sediment for marsh nourishment.

This region's major infrastructure includes the New Orleans west bank, the lower Mississippi River navigation channel, and important off-shore support bases such as Venice. Numerous oil and gas pipelines pass through this region to inland refineries or interstate transmission networks, including the Louisiana Offshore Oil Port (LOOP) pipeline. LOOP provides a deepwater port for some of the world's largest tankers.

Important features include the Birdsfoot delta of the Mississippi River, Little Lake, Lake Salvador, and Barataria Bay. Towns such as Lafitte, Venice, Port Sulphur, and Grand Isle support a robust commercial and recreational fishing industry.

This area has experienced one of the highest rates of land loss in coastal Louisiana. This region lost approximately 52,160 acres of wetlands between 1990 and 2000, averaging 5,184 acres lost per year (Hill and Green 2005). Breton Sound basin suffered the highest losses of any basin due to Hurricane Katrina. The USGS estimates 49,280 acres of new open water were formed during the 2005 hurricane season. Critical problems in Region 2 include subsidence combined with sediment and nutrient deprivation, compaction, saltwater intrusion, shoreline erosion, and barrier island erosion.

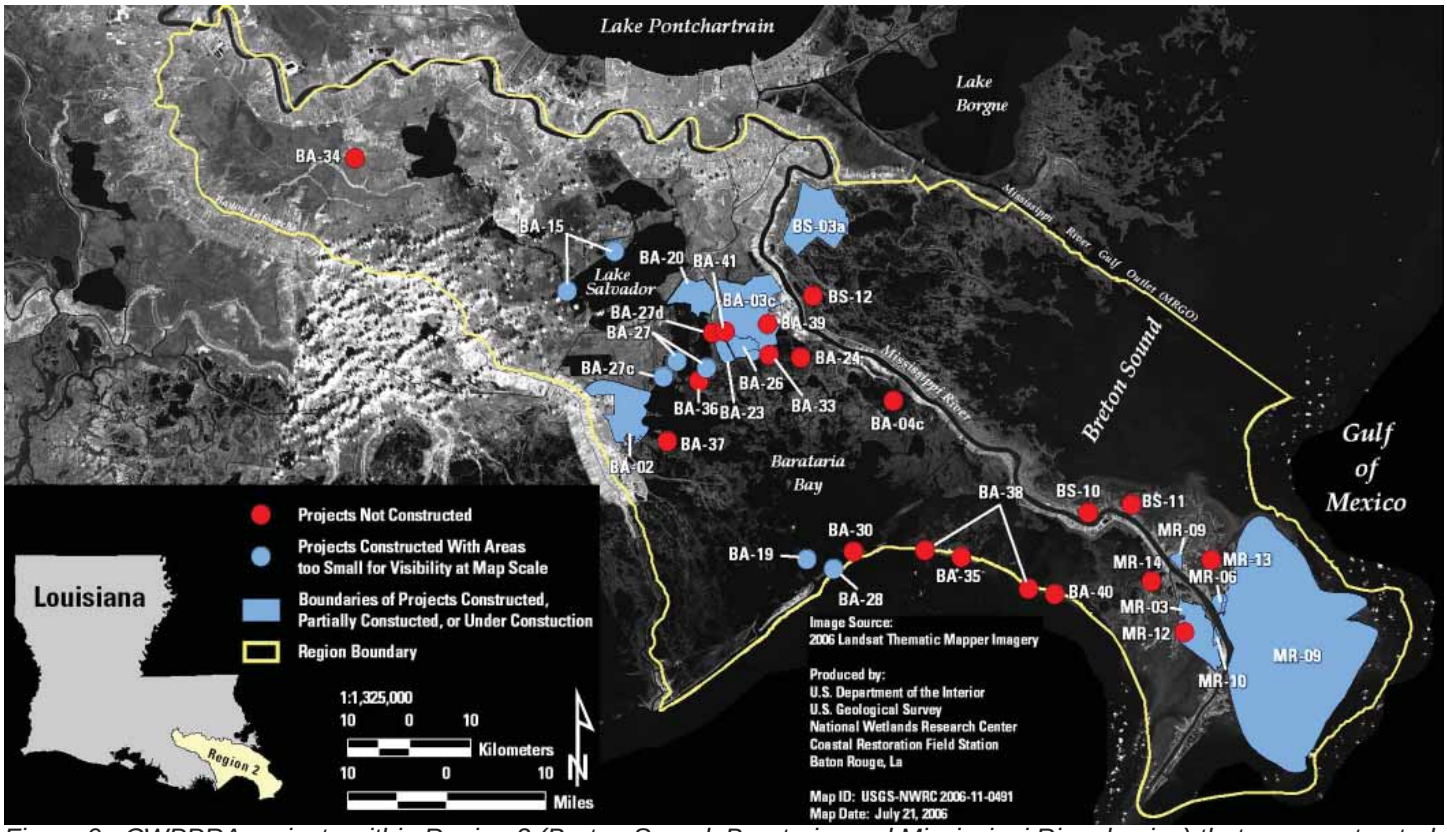


Figure 9. CWPPRA projects within Region 2 (Breton Sound, Barataria, and Mississippi River basins) that are constructed and approved for construction.

A map of constructed projects and additional selected projects which have not yet been constructed are illustrated in Figure 9. The Barataria Basin Landbridge is located within Region 2 and provides an example of landscape-scale integration of multiple CWPPRA projects. The integrated CWPPRA projects addressing the sinking and erosion of the Barataria Basin Landbridge are described in more detail in the next section of this document.

In Region 2, CWPPRA has authorized 48 projects (of which 3 are demonstration and 9 have been deauthorized) and 18 projects have been constructed or approved for construction. These projects are expected to benefit approximately 19,714 acres of wetlands at a cost of $287,037,563 (see Appendix II for project details).

West Bay Sediment Diversion (MR-03)

Project Type: Sediment Diversion

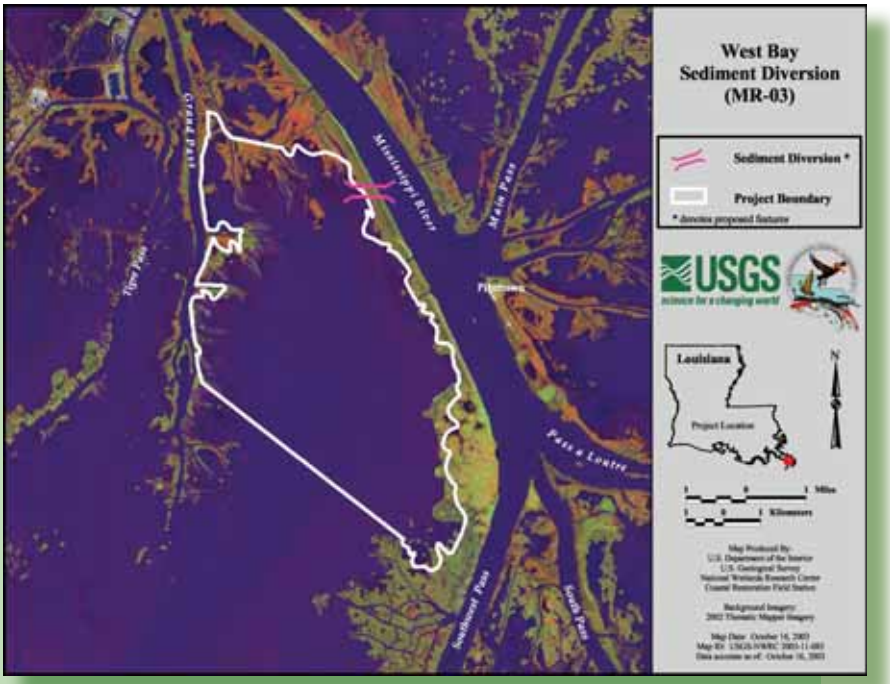
Federal Sponsor: U.S. Army Corps of Engineers, New Orleans District

Approval Date: 1991

Construction Completion Date: 2003

Net Benefit after 20 Years: 9,831 Acres

Cost: $22,792,876



Location: The diversion site is located approximately 4.7 miles above Head of Passes on the west bank of the Mississippi River, in Plaquemines Parish, Louisiana. The project diverts Mississippi River water and sediments into West Bay.

Problems: Marshes along the lower Mississippi River are subsiding and converting to open water because of a lack of riverine sediment inputs and fresh water.

Restoration Strategy: The objective of the project is to restore vegetated wetlands in an area that is currently shallow open water. The project diverts sediments to create, nourish, and maintain approximately 9,831 acres of fresh to intermediate marsh in the West Bay area over the 20-year project life.

The project consists of a conveyance channel for the large-scale diversion of sediments from the river. The conveyance channel is being constructed in two phases: (1) construction of an initial channel with an average discharge of 20,000 cubic feet per second (cfs); (2) after a period of intensive monitoring, enlargement of the channel to discharge 50,000 cfs. Materials from the construction of the initial channel were used to create wetlands in the diversion outfall area.

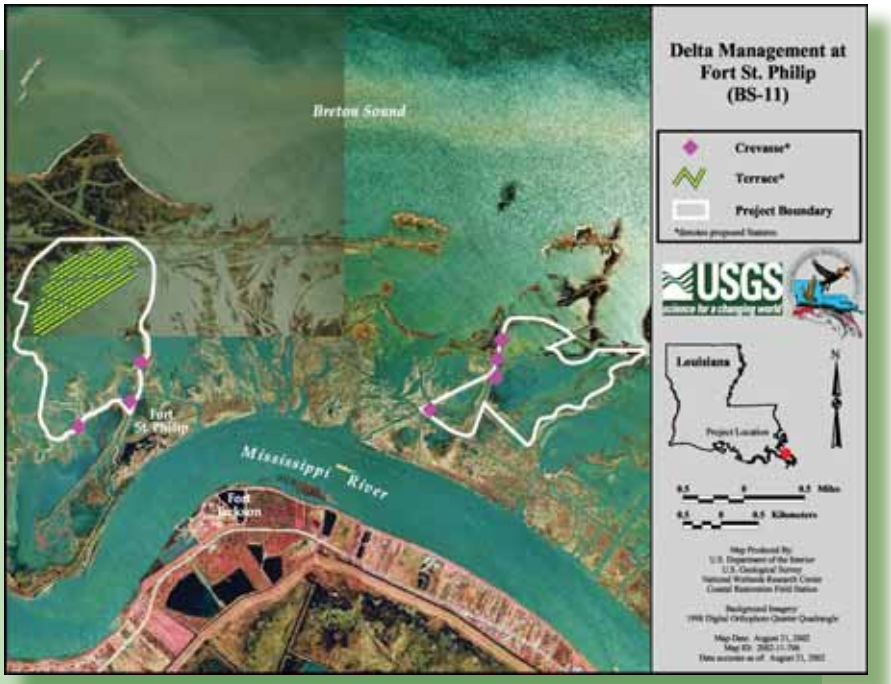
The diversion may induce shoaling in the main navigation channel of the Mississippi River and the adjacent Pilottown anchorage area. Dredging of the main channel is accomplished under the U.S. Army Corps of Engineers' ongoing Operations and Maintenance Program for the river, but additional dredging of the anchorage area would be an added feature and cost of the project. The material dredged from the anchorage area will be used to create wetlands in the West Bay diversion outfall area.

Project Status: As of January 2005, post-construction aerial photographs and surveys indicate that 186 acres of new marsh were created with the beneficial use of the diversion channel dredged material. LDNR surveyed the area in March 2004 and found about 70% vegetative coverage from natural colonization of the marsh creation site. Flow measurements taken in December 2004 recorded a discharge of 27,000 cfs of Mississippi River water through the diversion channel.

Hydraulic dredge digging the West Bay Sediment Diversion Channel during October 2003. The Mississippi River is in the foreground and the shallow waters of West Bay are in the background. The dredge is working to dig a 440-foot wide, -25-foot deep channel through the natural river bank. The sand is being pumped into a beneficial use marsh creation site in West Bay (upper left quarter of photo) to create nearly 200 acres of new wetlands. *Photo provided by New Orleans District Corps of Engineers.*

The conveyance channel allows fresh water and sediment to flow from the Mississippi River (left) to restore vegetated wetlands in an area that is currently shallow open water. *Photo provided by New Orleans District Corps of Engineers.*

Delta Management at Fort St. Philip (BS-11)



Project Type: Outfall Management, Sediment and Nutrient Trapping

Federal Sponsor: U.S. Fish and Wildlife Service

Approval Date: 2001

Construction Completion Date: In Progress

Net Benefit after 20 Years: 267 Acres

Cost: $2,055,703

Location: The project is located on the east side of the Mississippi River near the crevasse (a break in the levee) that formed during the 1973 flood at Fort St. Philip in Plaquemines Parish, Louisiana.

Problems: Because of the crevasse, the area has been in transition since the early 1970s. It was once an organic, low-energy system consisting of brackish-saline marsh that was in decline. It is now a deltaic environment dominated by the formation of fresh and intermediate marshes.

Recent aerial photography indicates that marsh loss has decreased considerably and marsh building now occurs over a substantial portion of the project area. Many areas that historically experienced marsh loss are now becoming shallower with the introduction of river sediments.

Emergent marsh is forming throughout the area on the newly accreted mineral soils. Even though this area is experiencing a net gain in emergent marsh, this project proposes to enhance the natural marsh-building processes and increase the growth rate of emergent wetlands.

Restoration Strategy: The objective of the project is to enhance the delta-building process occurring as a result of the crevasse at Fort St. Philip. Six artificial crevasses will be constructed to divert fresh water and sediments into areas currently restricted by spoil banks or natural ridges. The crevasses will be maintained during the project life. In addition, linear terraces will be constructed to enhance sediment retention and reduce wave energy in one of the large receiving bays. Vegetative plantings of seashore paspalum (*Paspalum vaginatum*) and smooth cordgrass (*Spartina alterniflora*) will be installed on the terraces.

Project Status: The Louisiana Coastal Wetlands Conservation and Restoration Task Force approved construction funding in August 2002. Construction plans and specifications for crevasses and terraces are complete. Permitting of the proposed features is complete and land rights have been obtained. Construction of project features began June 19, 2006.

Project terraces during construction in August 2006. *Photo provided by Louisiana Department of Natural Resources.*

Region 3

Region 3 includes the Atchafalaya, Terrebonne and Teche/Vermilion hydrologic basins. This region covers the significant municipalities of Houma and Thibodaux; and the major port of Morgan City. A major landscape element is Bayou Lafourche which has many miles of fishing communities developed along its banks. Terrebonne and Timbalier Bays are actually one large bay system with several large barrier islands separating it from the Gulf of Mexico. Two distinctive features are the Atchafalaya River and Morganza Floodway. The Atchafalaya River is building the only two actively growing deltas on the Louisiana coast. The Floodway is a part of the program under the Mississippi River and Tributaries Project and is designed to alleviate flood stage on the Mississippi River. Region 3 also has numerous oil and gas pipelines connecting to inland refineries or interstate natural gas transmission networks, such as the Henry Hub in the Teche/Vermilion basin. This region includes 1,078,800 acres of wetlands.

Estimates of wetland loss from Region 3 indicate that a total of 46,976 acres of wetlands were lost between 1990 and 2000, averaging 4,672 acres lost per year (Hill and Green 2005). Principal causes of land loss in this region include subsidence, shoreline erosion, altered hydrology, and barrier island deterioration. Although the active deltas of the Atchafalaya River are growing, they have not offset the land loss in Region 3.

Figure 10 illustrates constructed projects and additional selected projects which have not yet been constructed. Several significant barrier island restoration projects have been completed in Region 3. These include restoration projects on the Timbalier Islands and the Isles Dernieres. Most projects include vegetative planting, fencing and pumping of sediment. Offshore breakwaters were placed at Raccoon

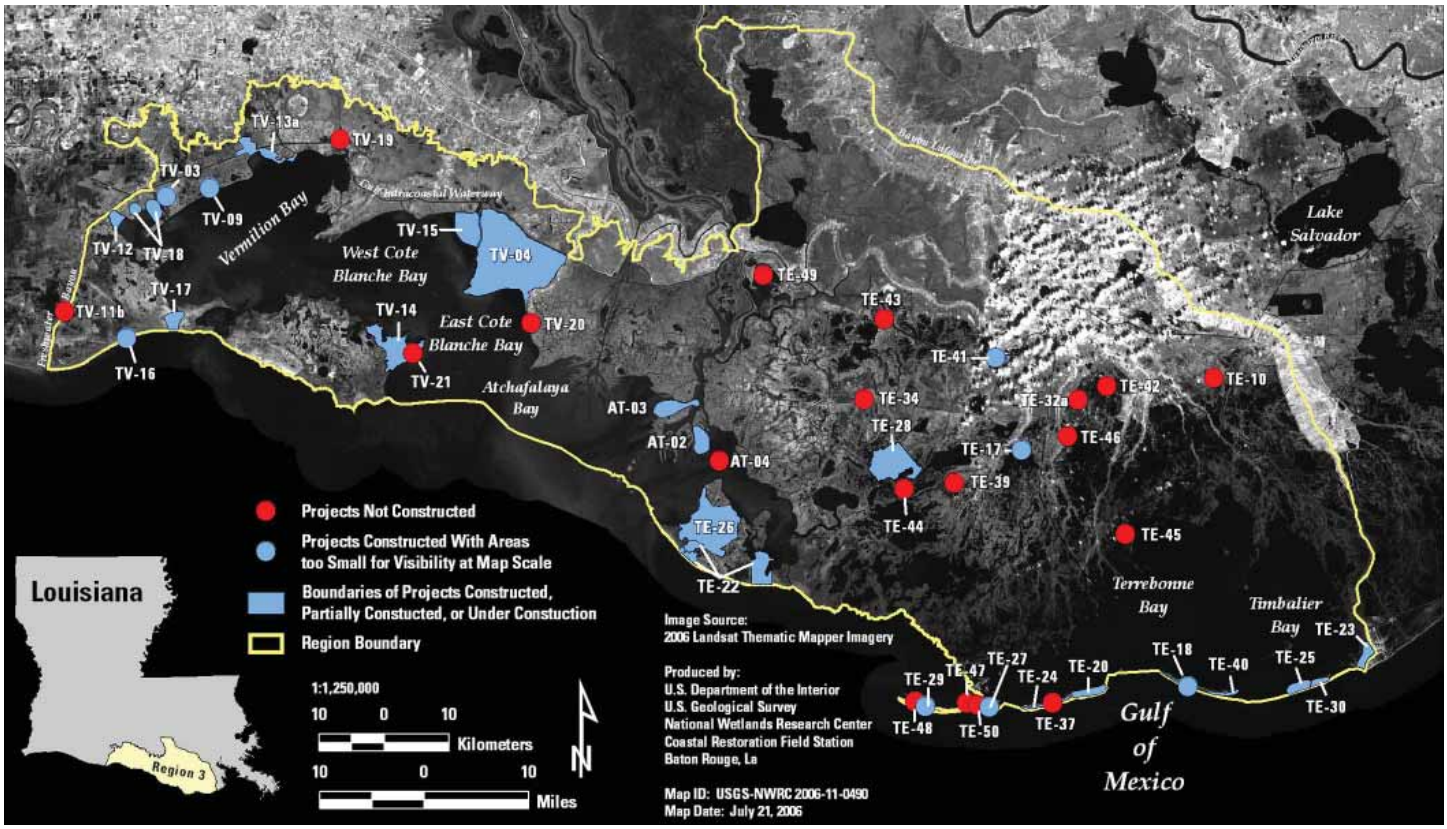


Figure 10. CWPPRA projects within Region 3 (Atchafalaya, Terrebonne, and Teche/Vermilion basins) that are constructed and approved for construction.

Island which has seen additional island accretion due to the project.

The CWPPRA program has authorized 49 projects in Region 3 (of which 7 are demonstration and 4 have been deauthorized) and 25 projects have been constructed or approved for construction. These projects are expected to benefit approximately 15,516 acres of wetlands at a cost of $153,758,623 (see Appendix III for project details).

Sediment Trapping at "The Jaws" (TV-15)

Project Type: Sediment and Nutrient Trapping

Federal Sponsor: National Marine Fisheries Service

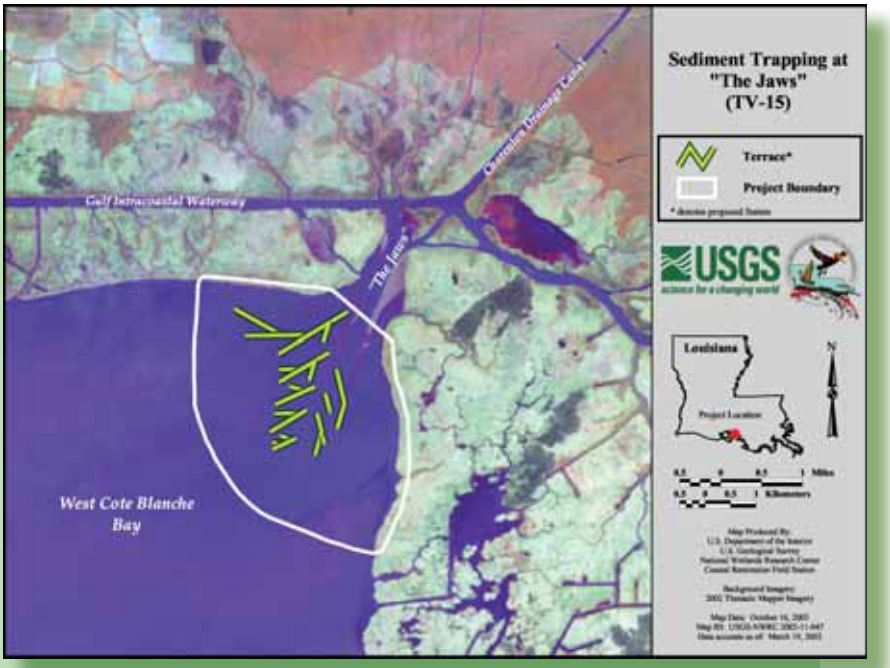
Approval Date: 1997

Construction Completion Date: 2004

Net Benefit after 20 Years: 1,999 Acres

Cost: $3,392,135

Location: This project is located in the northeast portion of West Cote Blanche Bay near "The Jaws" in St. Mary Parish, Louisiana.



Problems: Continuous wind and wave energy in West Cote Blanche Bay are preventing available sediments from the Gulf Intracoastal Waterway from becoming vegetated marsh. In addition, these energies are causing a shoreline erosion rate of 15 feet/year.

Restoration Strategy: This project was authorized to reduce wave-induced shoreline erosion and promote the deposition of sediment by creating vegetated wetland terraces and reducing wave fetch, or the distance waves can travel unimpeded. Distributary channels will be dredged to deliver water and sediment to the project area.

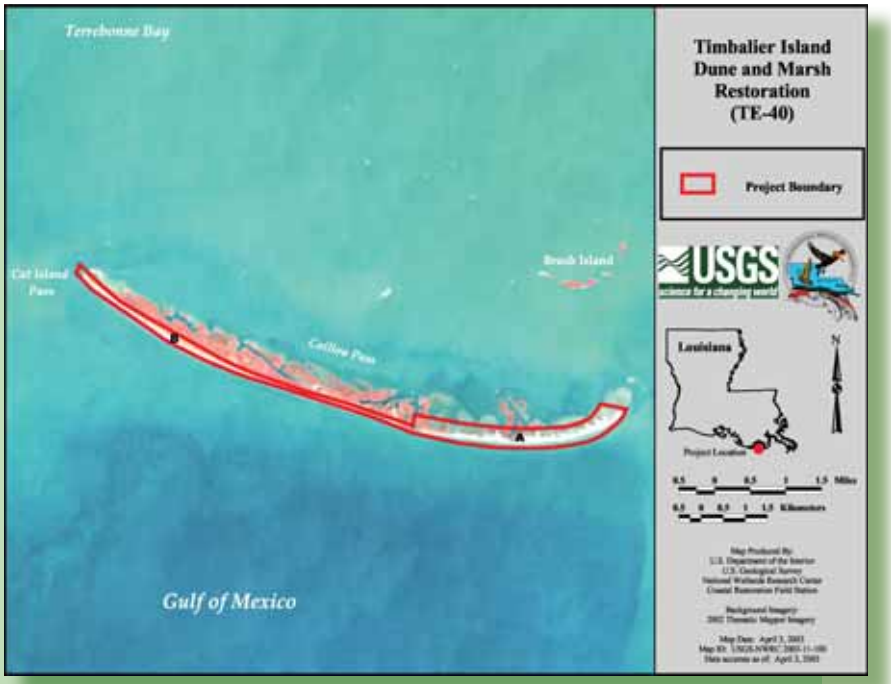
One way to trap sediments is to build both vegetated terraces to dissipate wave energy and distributary channels to direct sediments to the project area. Low wave and current energy allow sediments to drop out of the water column, thereby accreting and allowing wetland vegetation to establish. This project included dredging a distributary channel system to facilitate spreading the sediment load over a wide area. The distributary channels were dredged to 60 feet wide and 6 feet deep. Dredge spoil (844,444 cy) was used to create low elevation terraces along the landward flank of each dredged distributary to protect the depositional area associated with the channel landward of the terrace. Altogether, 145 terraces were constructed, each measuring 60 feet wide at an elevation of 2 feet above the mean sea level. California bulrush (*Schoenoplectus californicus*) and giant cutgrass (*Zizaniopsis miliacea*) were planted at the base of the terraces and along the existing shoreline to help stabilize these areas.

Project Status: Construction and final acceptance of the earthen terraces was completed on December 7, 2004. The terraces were seeded with rye grass on December 15, 2004. Vegetative plantings occurred at the base of the terraces in May 2005.

Earthen terraces in May 2005 after rye grass seeding established vegetation on the terrace crowns. Completed vegetative plantings of California bulrush (Schoenoplectus californicus) and giant cutgrass (Zizaniopsis miliacea) are at the base of terraces.
Photo provided by Louisiana Department of Natural Resources.

Vegetative plantings in progress in May 2005.
Photo provided by Louisiana Department of Natural Resources.

Timbalier Island Dune and Marsh Creation (TE-40)



Project Type: Barrier Island Restoration

Federal Sponsor: Environmental Protection Agency

Approval Date: 2000

Construction Completion Date: 2005

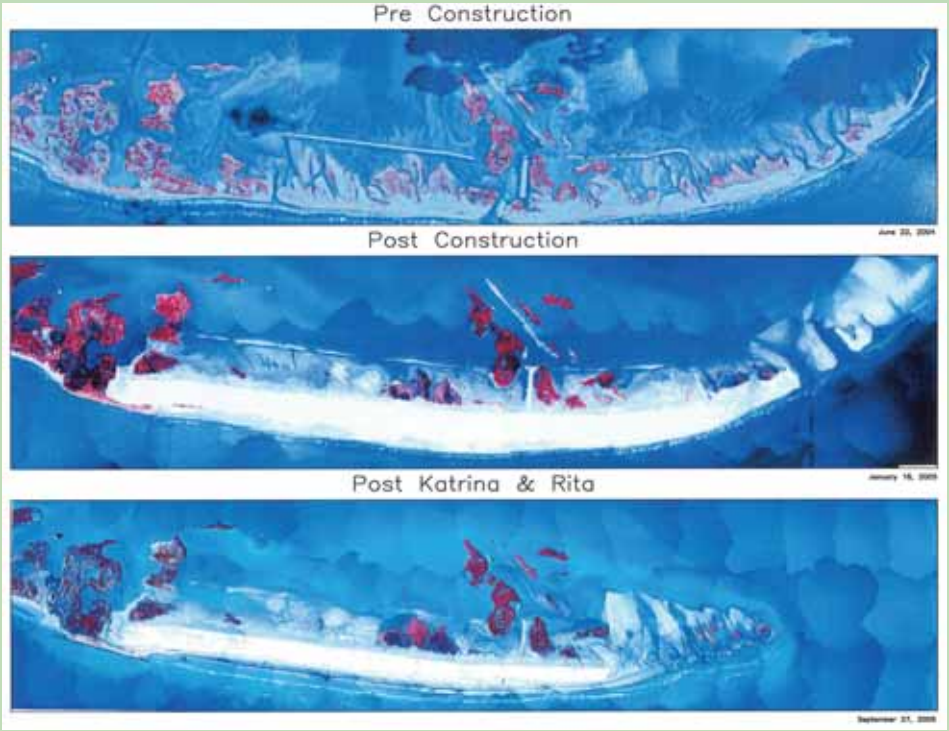
Net Benefit after 20 Years: 273 Acres

Cost: $16,657,706

Location: Timbalier Island is located south of Terrebonne and Timbalier Bays and west of East Timbalier Island in Terrebonne Parish, Louisiana.

Problems: Timbalier Island is migrating rapidly to the west/northwest, which is a clear indication of the dominant influence of longshore sediment transport processes (the movement of beach material by waves and currents) along the island. Thus, the western end of Timbalier Island is undergoing lateral migration by spit-building processes, at the expense of erosion along the eastern end, while the island overall is shortening and narrowing. This loss can be attributed to an inadequate sediment supply, relative sea-level rise, and the passage of storms. Once a leading edge of a delta lobe, it is now an island totally separated from the marsh farther inland. Without mitigating efforts, Timbalier Island is projected to disappear by the year 2050.

Restoration Strategy: The objective of this project was to restore the eastern end of Timbalier Island through the direct creation of dune and marsh habitat. The project boundary was divided into Areas A and B. Area A was restored through direct creation of dune and marsh on the east end of Timbalier Island. Area B was enhanced through addition of sediment into the nearshore system, maintaining the west/northwest migration of the island and attenuation of wave energy.



Aerial photography of Timbalier Island illustrating TE-40 Project Area A.

Specifically, the project included restoring the beach rim and dune system. The project also created a marsh platform on the bay side of the island. The marsh platform was built around existing marsh with minimal impact. Over three million cubic yards of dredge material was used in this project. Vegetation was planted and sand fencing was placed on the dune to help capture and retain wind blown sand.

Project Status: Construction funding was approved by the Louisiana Coastal Wetlands Conservation and Restoration Task Force in January 2003. Construction was completed in March 2005. In May 2006, an additional row of sand fencing was placed on the eastern-most end of the project area and 42,000 additional containers of native vegetation were planted.

Region 4

Region 4 includes the Calcasieu/Sabine and Mermentau hydrologic basins. This region covers several large lakes such as Grand Lake, White Lake, Sabine Lake and Calcasieu Lake. It also includes the Rockefeller Refuge, Paul J. Rainey Wildlife Sanctuary, Cameron Prairie National Wildlife Refuge, and Sabine National Wildlife Refuge. The natural landscape is dominated by chenier ridges and intervening wetlands. There are no hurricane protection levees to protect inland cities such as Lake Charles and the wetland buffer from storm surge is essential for the protection of local municipalities and highways. Even Interstate 10, located 30 miles inland, is vulnerable to hurricane surge from the Gulf of Mexico. This region also includes several coastal communities often used for recreational or commercial fishing bases. These communities were severely damaged, with some completely destroyed by Hurricane Rita in 2005. Region 4 also has numerous oil and gas pipelines connecting to inland refineries or interstate natural gas transmission networks. The region covers 768,210 acres of wetlands.

Principal causes of land loss in this region include gulf shoreline erosion, and altered hydrology. Estimates of wetland loss from Region 4 indicate that a total of 34,688 acres of wetlands were lost between 1990 and 2000, averaging 3,468 acres lost per year (Hill and Green 2005). Loss of wooded cheniers from erosion and development has greatly impacted resting and refueling areas vital to migrating neotropical birds that twice yearly cross the Gulf of Mexico. A map of constructed projects and additional selected projects which have not yet been constructed are illustrated in Figure 11.

The CWPPRA program has authorized 34 projects in Region 4, of which three are demonstration and one has been deauthorized, and 25 projects have been constructed or approved for construction. These projects are expected to benefit approximately 23,979 acres of wetlands at a cost of $131,704,974 (see Appendix IV for project details).

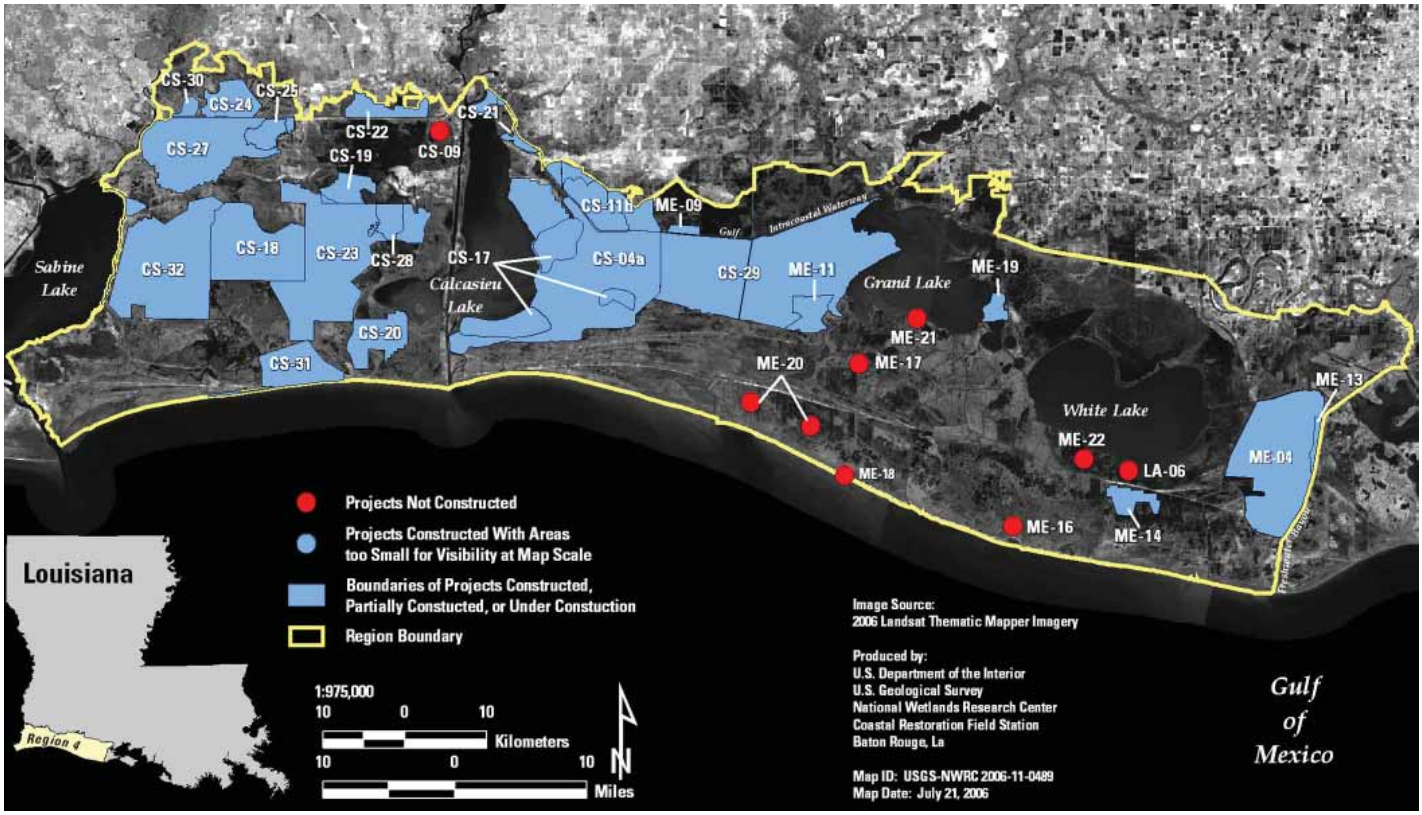
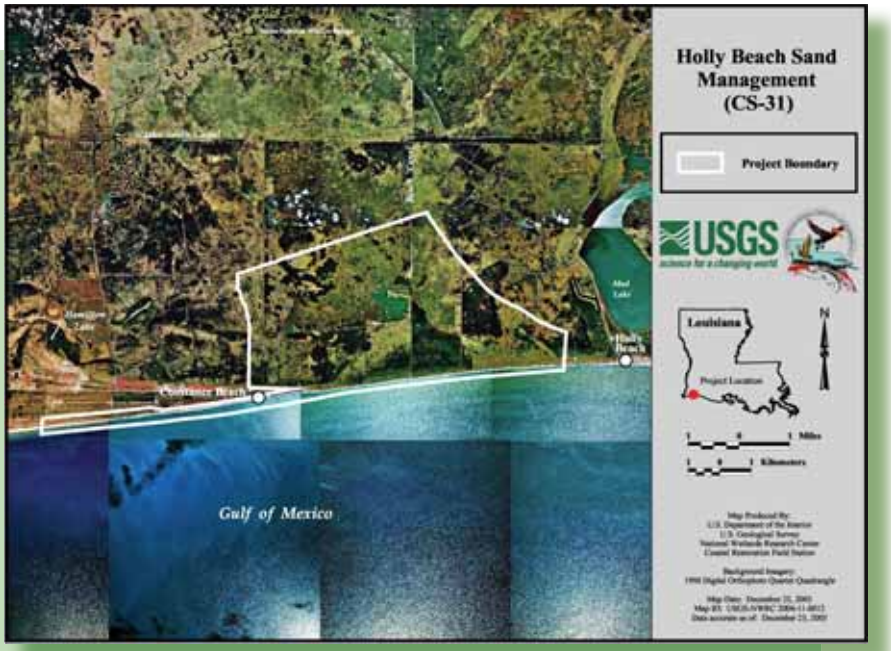


Figure 11. CWPPRA projects within Region 4 (Calcasieu/Sabine and Mermentau basins) that are constructed and approved for construction.

Holly Beach Sand Management (CS-31)



Project Type: Shoreline Protection

Federal Sponsor: Natural Resources Conservation Service

Approval Date: 2002

Construction Completion Date: 2003

Net Benefit after 20 Years: 330 Acres

Cost: $14,130,233

Location: The project is located west of Calcasieu Pass along the Gulf of Mexico shoreline, extending between Holly Beach and Constance Beach in Cameron Parish, Louisiana.

Problems: The Chenier Plain shoreline was created with sediment transported by the Mississippi River's periodic westward oscillation. The swales that characterize the Chenier Plain were created by the deposition of these alluvial sediments, and these same sediments also served to extend the shoreline gulfward and create the area's expansive mudflats.

Chronic erosion in this area is caused by a lack of sand and sediment caused by the channelization and regulation of the Atchafalaya River to the east. In addition, the Calcasieu and Mermentau rivers are not supplying coarse-grained sediment to the area. Furthermore, the Cameron Jetties, associated with the Calcasieu Ship Channel, deflect the little material that does exist away from the project area.

Restoration Strategy: The project's goals are: (1) to protect approximately 8,000 acres of existing, low energy intermediate and brackish marsh wetlands north of the forested ridge and (2) to create and protect roughly 300 acres of beach dune and coastal chenier habitat from erosion and degradation.

The project also provides protection for the wooded chenier to the west, some of which has been purchased by the Baton Rouge Audubon Society. This chenier is being maintained as a sanctuary because of its importance as habitat for neotropical migratory birds.

The project plan consists of placing approximately 1.7 million cubic yards of high quality sand on the beach to reestablish a more historical shoreline, as well as to improve the effectiveness of the existing segmented breakwater system.

Project Status: Construction funding was approved in August 2001. Since that time, 1.75 million cubic yards of sand were added to the beach. Sand placement was completed in March 2003. Project staff installed 102,000 linear feet of vegetative plantings at dune elevation on the Holly Beach dredge platform; 20,400 four-inch containers of bitter panicgrass (*Panicum amarum*) were planted. Plantings were completed in August 2003.

The project area was in the direct path of Hurricane Rita in September 2005. Damages included removal of sand fencing and roll back loss of 400,000 cubic yards of sand. Posts and sand fencing in the project area are on target for replacement before January 2007. The project has been credited with providing significant protection to LA Highway 82 during the storm, reducing potential damages to this major evacuation route.

Project area during construction in February 2003. The pipe is transporting sand to features within the project area. *Photo provided by Natural Resources Conservation Service.*

Final dressing of newly created beach in April 2003.
Photo provided by Natural Resources Conservation Service.

South White Lake Shoreline Protection (ME-22)

Project Type: Shoreline Protection

Federal Sponsor: U.S. Army Corps of Engineers, New Orleans District

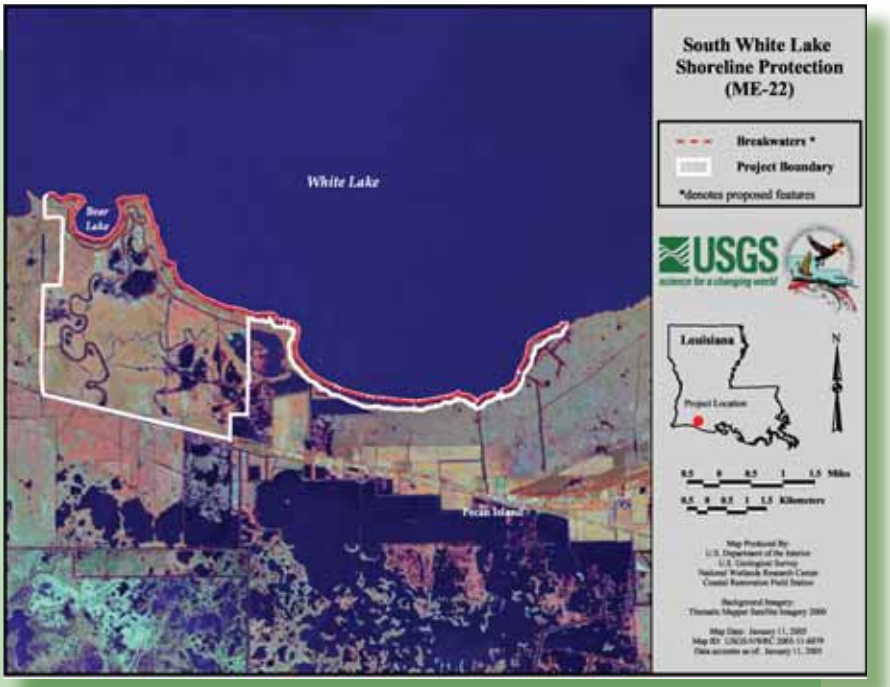
Approval Date: 2003

Construction Completion Date: 2006

Net Benefit after 20 Years: 844 Acres

Cost: $15,712,059

Location: The project is located along the southern shoreline of White Lake from Will's Point past the western shore of Bear Lake in Vermilion Parish, Louisiana.



Problems: The south shoreline of White Lake is retreating at an estimated average rate of 15 feet per year as a result of wind-induced wave energy. As the shoreline erodes, it could breach low marsh management levees and increase interior marsh loss rates in portions of the area.

Restoration Strategy: This project called for construction of segmented breakwaters to protect approximately 61,500 linear feet of shoreline. The breakwaters were constructed with gaps to allow aquatic organisms and water to move freely without having a negative impact on the resource it will protect. An estimated 270,000 tons of stone were placed on geotextile fabric. A flotation channel was required for construction access, and material dredged to build the access channel was placed beneficially behind the breakwaters to create approximately 157 acres of marsh substrate.

Project Status: The Louisiana Coastal Wetlands Conservation and Restoration Task Force approved engineering and design funding in January 2003 and construction funding in October 2004. Project construction was completed in 2006.

Pre-construction view of the project area in southern White Lake.

Post-construction project elements including rock dike and beneficial use of dredge material in May 2005.
Photo provided by USFWS.

Landscape-Level Planning

Some parts of coastal Louisiana need larger restoration efforts than a single CWPPRA project can provide. At current funding levels, the CWPPRA program cannot address all of the restoration needs in all areas. However, CWPPRA projects can meet some of the needs of certain areas by building several interrelated projects that collectively address a problem at hand. Two examples include the Barataria Basin Landbridge and Louisiana barrier island projects, which are described in case studies on the following pages. By implementing site-specific projects that are geographically grouped together, basin oriented goals of restoring critical landforms, restoring barrier shorelines, and restoring historical hydrologic patterns are presently being accomplished.

CWPPRA has led the effort toward landscape-level planning for coastal Louisiana through the following activities: (a) preparation of the *Louisiana Coastal Wetlands Restoration Plan* in 1993; (b) development of *Coast 2050: Toward a Sustainable Coastal Louisiana* in 1998, a restoration plan which was the basis for the reconnaissance level document for the current *Louisiana Coastal Area, Ecosystem Restoration Study* (LCA Study) effort; (c) preliminary investigation and engineering of a number of large scale projects that were precursors to features included in the proposed near-term LCA plan; and (d) development and implementation of synergistic projects to address regional needs.

In 2005, the State, in conjunction with coastal parishes, began to develop plans for implementing the Coastal Impact Assistance Program (CIAP), authorized by Congress in the Energy Policy Act of 2005. These funds are designated to address the impacts of Outer Continental Shelf (OCS) oil and gas production on the natural resources of the coastal area. The State's CIAP plan, upon approval by the U.S. Department of the Interior, has funding from 2007 to 2011.

Since Hurricanes Katrina and Rita, statewide coastal planning has accelerated with emphasis on coastal restoration activities benefiting both coastal habitats and also providing hurricane protection. The Louisiana Coastal Protection and Restoration program (LaCPR), authorized by Congress late in 2005, directed the Corps of Engineers (New Orleans District) in partnership with the State of Louisiana, to initiate the LaCPR Project. The project will identify, describe and propose a full range of flood control, coastal restoration, and hurricane protection measures for South Louisiana (USACE 2006) in a 24-month period.

Under Act 8 of the First Extraordinary Session of the 2005 State Legislature, the Louisiana Wetlands Conservation and Restoration Authority was expanded to become the Louisiana Coastal Protection and Restoration Authority (CPRA) and authorized to integrate coastal restoration and hurricane protection activities. A State coastal Master Plan is being developed that will include all coastal projects regardless of funding or authorization. This Master Plan will integrate coastal restoration and hurricane protection and will be the general blueprint for coastal restoration and management activities in Louisiana.

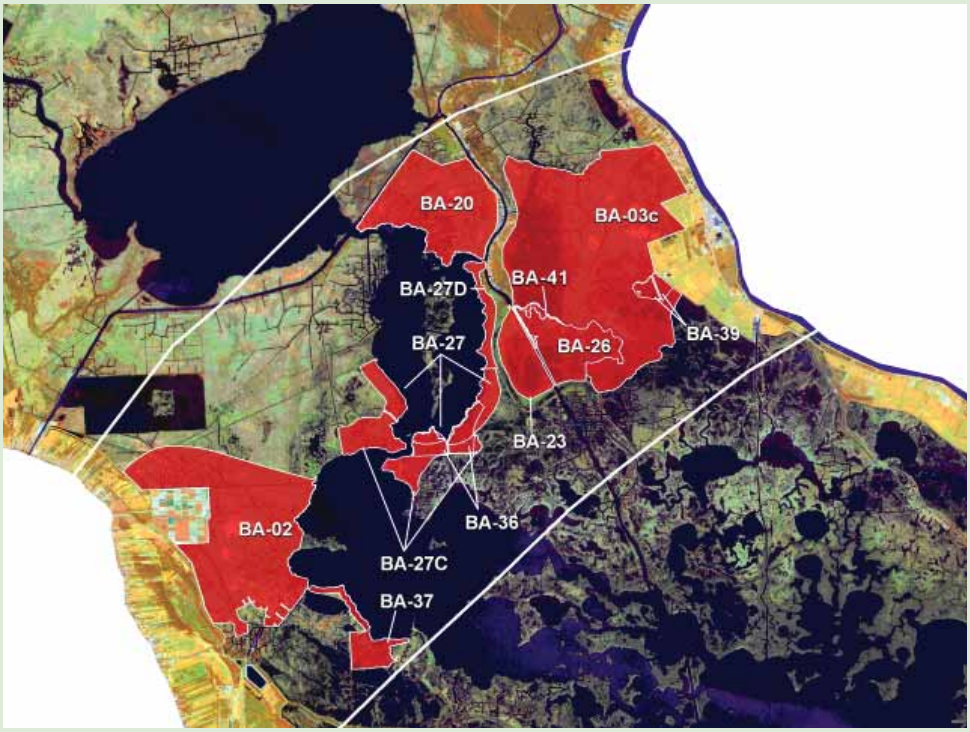
The CWPPRA Task Force has had regular reports by representatives of LaCPR, CPRA, LCA, and CIAP at their quarterly meetings, and initiatives have been undertaken to share information and coordinate activities. CWPPRA complements the LaCPR, CPRA, LCA and CIAP effort, which all work together to restore and sustain Louisiana's coast. CWPPRA is the only program in which all five Federal agencies formally participate and therefore is an integrated network of technical

expertise and coastal planning information. All of the other programs are planned with the expectation that the CWPPRA program will continue to fulfill its role as a program that can react quickly with relatively smaller-scale projects that effectively address local needs and complement regional planning. The CWPPRA program has a distinctive niche in Louisiana's coastal planning that is well understood and appreciated by the public.

CASE STUDY 1:

The "Barataria Landbridge" is a critical landform within the Barataria basin that extends from east to west between the Mississippi River ridge and the Bayou Lafourche ridge. This landbridge is an area of more continuous marsh separating Lake Salvador from the marshes of Barataria Bay. The upper portion of the Barataria basin is largely a freshwater-dominated system of natural levee ridges, baldcypress - water tupelo swamps, and fresh marsh habitats. The lower portion of the basin is dominated by marine/tidal processes, with barrier islands, saline and brackish marshes, tidal channels, and large bays and lakes.

Historically, the landmass presently referred to as the "Barataria Landbridge" allowed only limited hydrologic connection between the upper and lower Barataria basin, thereby maintaining a healthy and productive salinity gradient and habitat diversity. However, the hydrologic connections between upper and lower basin are much greater today due to the man-made waterways, substantial erosion, and interior marsh loss. Protecting the remaining landmass has been identified as a critical restoration goal for the Barataria basin in order to protect the communities of Barataria, Lafitte, and the west bank of New Orleans.



CWPPRA Projects supporting the Barataria Basin Landbridge

In addition to the communities that are threatened by continued degradation of the Landbridge, numerous oil and gas wells, pipelines, and storage facilities are also at risk. To address the problem, the CWPPRA Task Force approved a series of 12 geographically related projects costing over $241 million. Projects in areas needing more immediate attention were approved first. When complete, the projects will strengthen the Landbridge by re-establishing or protecting 5,200 acres and enhancing 27,500 acres of shorelines, ridges, and wetlands.

CASE STUDY 2:

The Louisiana barrier island chain represents a line of defense from storms and sea level rise that threaten coastal wetlands and communities. Once an almost continuous chain of beach and dune at the leading edge of the deltaic lobe, the barrier islands have significantly deteriorated and the loss of the barrier islands is beginning to expose inland bays and petrochemical infrastructure to the Gulf of Mexico. To address the problem, the CWPPRA Task Force approved a series of individual projects to help hold the line as ecosystem-wide barrier island restoration is planned. Current projects contain vegetative plantings including re-establishment of woody species that once were common on higher areas of the island. In all, 10 projects costing over $80.2 million have been implemented, with another 9 projects currently in construction or awaiting construction funds. Projects in areas needing more immediate attention were approved first. Combined, the implemented projects are re-establishing or protecting 6,200 acres and enhancing 29,800 acres of barrier features, as well as helping to fortify the Louisiana coast.

Louisiana Barrier Island Restoration

Projects supporting CWPPRA's landscape-level planning for the Louisiana Barrier Islands/Shoreline

Project Name	Project No.	Status
Timbalier Island Planting Demonstration	TE-18	Complete
Isles Dernieres Restoration - East Island	TE-20	Complete
West Belle Pass Headland Restoration	TE-23	Complete
Isles Dernieres Restoration - Trinity Island	TE-24	Complete
East Timbalier Island Sediment Restoration, Phase 1	TE-25	Complete
Whiskey Island Restoration	TE-27	Complete
Raccoon Island Breakwaters Demonstration	TE-29	Complete
East Timbalier Island Sediment Restoration, Phase 2	TE-30	Complete
New Cut Dune and Marsh Restoration	TE-37	Construction
Timbalier Island Dune and Marsh Creation	TE-40	Complete
Ship Shoal: Whiskey West Flank Restoration	TE-47	Engineering & Design
Raccoon Island Shoreline Protection/Marsh Creation	TE-48	Construction
Whiskey Island Back Barrier Marsh Creation	TE-50	Engineering & Design

Program Effectiveness in a Hurricane-Prone Coast

Louisiana's coast is one of the most hurricane-prone regions in the U.S. Fortunately, its wetlands provide a natural buffer during storms by absorbing surging water. While wetlands can not prevent the devastating effects of major hurricanes such as Katrina and Rita in 2005, wetlands are known to significantly reduce the storm surges associated with the more frequent tropical storms and smaller hurricanes. In Louisiana's flat, low-lying coastal areas, reductions in storm surge can mean the difference between an area that survives a storm and one that suffers significant damage.

CWPPRA projects are susceptible to hurricane damage but many provide protection features that can reduce the damaging impact of hurricanes. CWPPRA has constructed several shoreline protection projects protecting many miles of interior shoreline. The South White Lake Shoreline Protection project highlighted in the previous section is just one of the many CWPPRA projects aimed at reducing shoreline erosion that has demonstrated resilience to hurricane impacts.

CWPPRA projects can also protect coastal infrastructure and human safety. The Bayou LaBranche Wetland Creation project (PO-17) created 284 acres of land by pumping sediment from a shallow borrow area in Lake Pontchartrain. The project is located within an area of otherwise deteriorating marsh and swamp that lie directly in front of the St. Charles Parish Hurricane Protection levee. These wetlands buffer this levee from surge and wave attack from Lake Pontchartrain. During Hurricanes Katrina and Rita the St. Charles Parish levee was not overtopped nor damaged. This is due, in part, to the wetland buffer provided by the Bayou LaBranche wetland creation project. This project suffered no adverse effects from Hurricane Katrina or Rita and continues to provide important habitat and flood protection benefits.

A post-hurricane assessment of damage to constructed CWPPRA projects from Hurricanes Katrina and Rita revealed that 75% of all constructed CWPPRA projects did not suffer any obvious damage. Eighteen constructed projects received some degree of damages. Typical storm-induced damages included removal of sand fences, deposition of storm debris, and overtopping of water control structures. Only two projects, Cameron-Creole Maintenance (CS-04a) and Replace Sabine Refuge Structures (CS-23), were considered inoperable until post-hurricane repairs were made. The damaged projects are listed in Table 3.

CS-31 sand fencing damaged during Hurricane Rita. Photo provided by Louisiana Department of Natural Resources.

TV-14 project features including shoreline protection, canal closures, and isolation of Lake Sand from Vermilion Bay with a rock dike on the northeastern edge of Marsh Island. Photo provided by New Orleans District Corps of Engineers.

Table 3. Constructed CWPPRA projects damaged from Hurricanes Katrina and Rita* (based on preliminary assessment)

Hurricane Katrina:

Caernarvon Diversion Outfall Management (BS-03a)
Isles Dernieres Restoration East Island (TE-20)
GIWW to Clovelly Hydrologic Restoration (BA-02)
Hopedale Hydrologic Restoration (PO-24)

Hurricane Rita:

Cameron-Creole Maintenance (CS-04a)
Timbalier Island Dune and Marsh Restoration (TE-40)
Isles Dernieres Restoration Trinity Island (TE-24)
Whiskey Island Restoration (TE-27)
East Timbalier Island Sediment Restoration Phase I (TE-25)
East Timbalier Island Sediment Restoration Phase II (TE-30)
Marsh Island Hydrologic Restoration (TV-14)
Holly Beach Sand Management (CS-31)
Replace Sabine Refuge Water Control Structures (CS-23)**
East Mud Lake Marsh Management (CS-20)
East Sabine Lake Hydrologic Restoration (CS-32)
Highway 384 Hydrologic Restoration (CS-21)
Cameron Creole Plugs (CS-17)
Humble Canal Hydrologic Restoration (ME-11)

*Note 75% of constructed CWPPRA projects were undamaged

**The water control structures have remained inoperable since Hurricane Rita.

Critical Programmatic Features of CWPPRA

Through its Task Force, CWPPRA mandates an interagency approach to restoration planning and project nomination, selection, and implementation. The diverse mandates of agencies on the Task Force and its associated committees, in combination with the academic community, provide reviews of project evaluation, selection, design, and implementation from many perspectives. Early and close coordination throughout the project implementation process reduces surprises during environmental clearance.

The CWPPRA program has produced a unique, cooperative interagency effort in coastal restoration – creating a broad coalition with strengths that far exceed the sum of the strengths of the individual agencies. The selection and implementation of a wide variety of project types to address a diverse set of wetlands loss issues is fostered by the different, but complementary, capabilities of the participating agencies. The collaboration of Federal and State agencies brings a wide range of expertise to the CWPPRA program (e.g., engineers, hydrologists, ecologists, biologists, soil scientists, etc.), allowing for issues and projects to be sponsored by agencies having a "best fit" and ensuring efficient development and implementation.

The CWPPRA program has benefited from valuable public input from a broad range of coalitions and partnerships. Local governments, non-profit environmental groups, commercial and industrial interests, and private landowners all play active roles in project evaluation. Private landowners provide valuable information regarding wetlands under their ownership. CWPPRA public meetings are held throughout the year. All quarterly Task Force meetings, and those of their committees, are open to public comment to maximize the opportunity for public input. This transparent public process promotes program integrity and improves projects.

One of the major strengths of the CWPPRA program is the grassroots project development process. The bottom-up process ensures local interests (including citizens, landowners, and local governments) identify local restoration needs, fosters public "buy-in" to specific projects, provides critical support, and allows full public participation. Projects are evaluated and selected through a three-tier process beginning at the hydrologic basin level, progressing through regional levels, and finally competing at a coastwide level.

The CWPPRA program's annual PPL selection process reacts to the need for changes in the selection process itself and responds to developing coastal issues and areas of concern. The Task Force has improved the selection process several times by stipulating a minimum number of projects to be nominated or selected in basins experiencing higher rates of land loss and to allow the public to nominate projects for evaluation in regional

planning team meetings. Localized areas suffering acute land loss from storms have been addressed by the selection of projects on annual PPLs. Even though CWPPRA allows for flexibility in project selection, the program does have built in checks and balances. For example, the program uses Coast 2050 Strategies as a requirement for the consideration of projects. The annual identification, planning, design, and construction procedures include interagency and academic reviews based on developing information and provides for a phased approval and oversight at specific milestones. Project development standards are applied to each project at each stage to attain consistency among projects.

The CWPPRA program focuses on project implementation and limits expenditures for planning to $5M annually. More than 90% of CWPPRA's wetland restoration funding in Louisiana goes directly into the engineering and design, construction, monitoring, operation, and maintenance of restoration projects. There is an emphasis on the speed of project implementation. To date, the average time to complete a project from the time of its initial PPL selection and authorization is 5.2 years. The completion time for demonstration projects is slightly less at 4.1 years. Eighty-two percent of all projects completed were designed and constructed in less than six years. Recently CWPPRA has improved its efficiency in project development and implementation. Projects selected and completed since 2000, have been completed on average in 3.1 years.

The CWPPRA program has historically assessed the effects of constructed projects using a project-specific monitoring approach. Beginning in 2003, the Louisiana Department of Natural Resources and the U.S. Geological Survey (CWPPRA Monitoring Program Co-Chairs) received approval from the CWPPRA Task Force to use the Coastwide Reference Monitoring System (CRMS) as a means to provide more systemic monitoring of coastal wetlands (Steyer et al. 2003). The CRMS program approach uses hundreds of monitoring sites strategically placed across coastal Louisiana to provide extensive hydrologic, vegetative, soil property, water level, and salinity data (Figure 12). In combination with other comprehensive monitoring programs, the CRMS program will provide extensive data regarding coastal wetland structure and functions, and changes over time. Annual reports summarize project results to provide feedback to the planning and project development process. Data collection under CRMS began in 2005, and initial information gathered has been utilized by coastal restoration programs in Louisiana to support post-hurricane planning and assessment.

Section 303(a) of CWPPRA allows for small-scale projects necessary to demonstrate the use of technologies or methods that have not been fully developed for routine application in coastal Louisiana and address engineering and/or technical challenges in rebuilding coastal Louisiana. Approved CWPPRA demonstration projects address challenges related to barrier island restoration, shoreline protection, vegetative restoration, floating marsh restoration, and dredging technology for marsh creation. To date, 16 demonstration projects have been selected on PPLs 1–15 at a combined cost of $19.1 million.

In the 15 years since CWPPRA began, some restoration techniques have worked well, some needed to be modified, while others have been less successful. Lessons learned have resulted in increased knowledge regarding how to best design and construct freshwater and sediment diversion projects, marsh creation projects

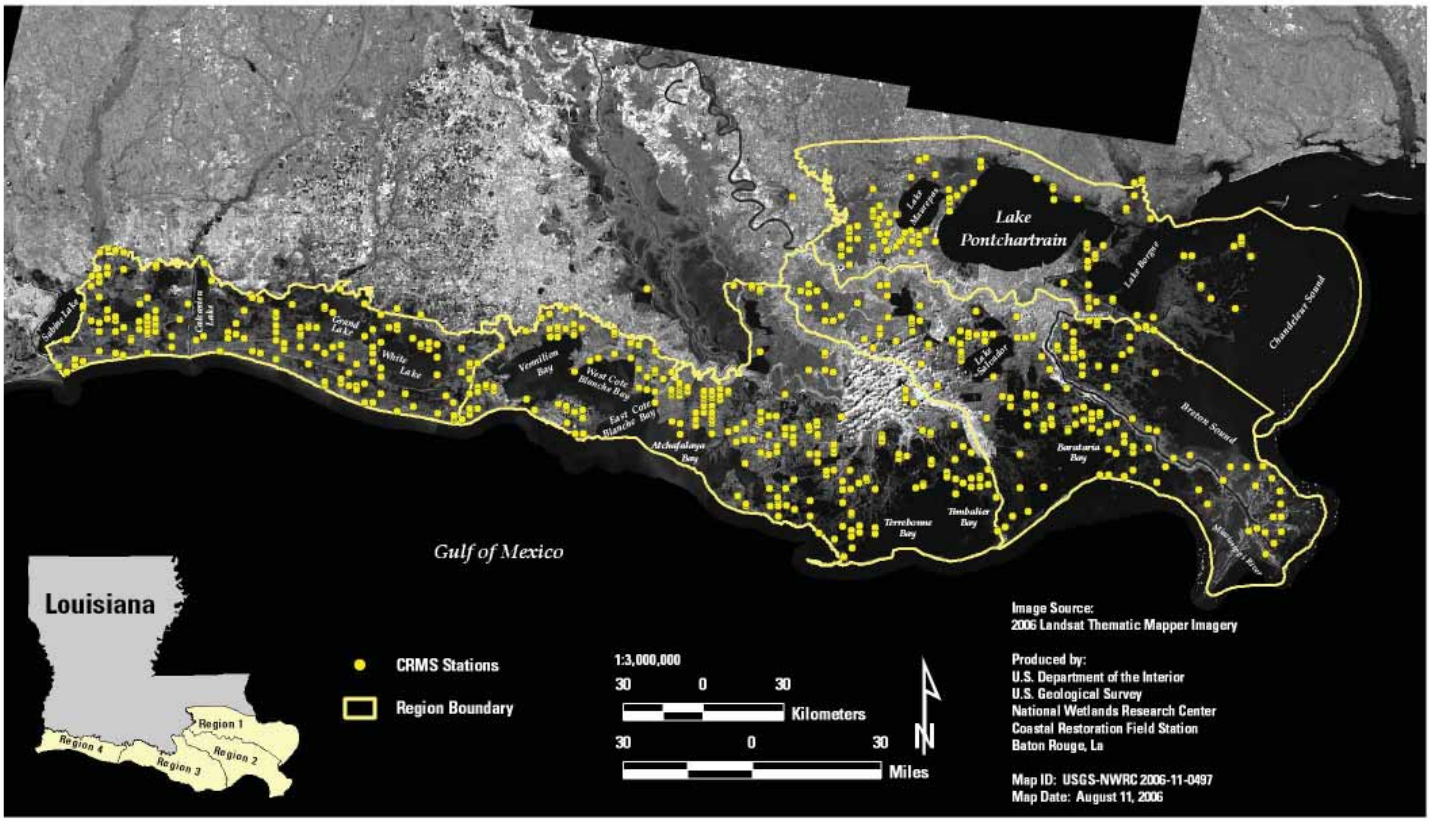


Figure 12. Map of the Coastwide Reference Monitoring System (CRMS) being developed by CWPPRA to monitor CWPPRA projects and coastwide conditions. CRMS will also assist in future monitoring of non-CWPPRA restoration projects throughout the Louisiana coast.

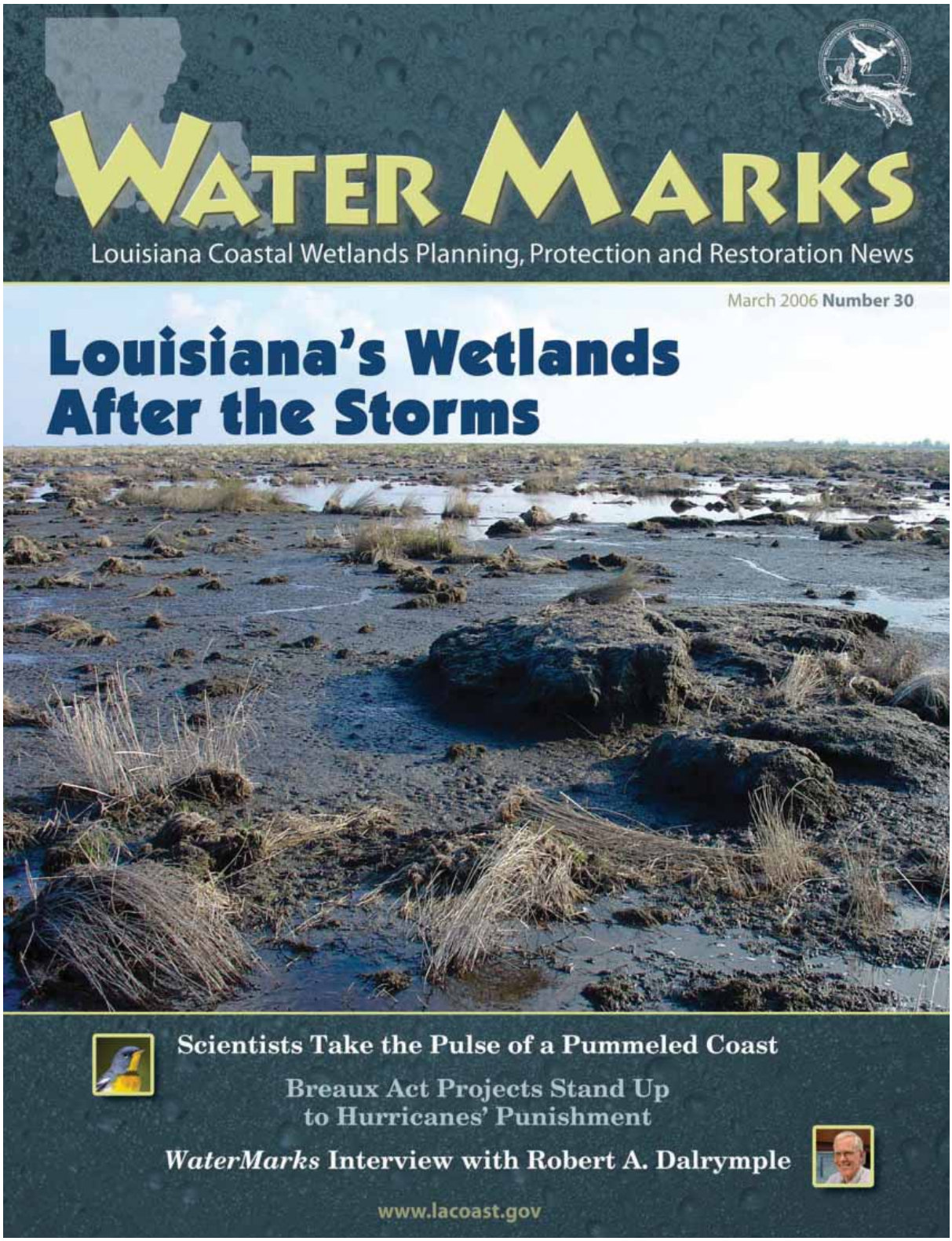
utilizing dredged material, barrier island restoration projects, foreshore rock dikes and segmented breakwaters, and vegetated earthen terraces. Adaptive management combined with lessons learned under CWPPRA's 20-year monitoring program have resulted in continuous improvement within the CWPPRA program.

CWPPRA also directs that a program be carried out "for the purpose of educating the public concerning the necessity to conserve wetlands." Therefore, the CWPPRA Public Outreach Committee was formed to guide this important program element. The committee is responsible for formulating information distribution strategies and public education initiatives; maintaining a web site of complex technical and educational materials; developing audio-visual presentations, exhibits, publications and news releases; and conducting special events such as project dedications and groundbreaking ceremonies. Additionally, the committee represents the CWPPRA Task Force at expositions and workshops to educate the public regarding coastal wetlands restoration. These activities and the regular public administrative meetings have greatly educated the public by raising awareness of coastal issues and restoration technology (and its limitations). This public awareness and

EPA CWPPRA team and the Estuarians (from America's Wetland Campaign to Save Coastal Louisiana) at a CWPPRA dedication ceremony on Grand Isle. Photo provided by the Environmental Protection Agency.

education has laid a solid foundation for other programs to effectively engage the public so that restoration efforts may be brought to a greater level of activity and scale.

CWPPRA is a mature program with a proven record of project execution. The public is engaged and understands a well-honed process of selecting and designing projects. Although larger restoration programs may be developing, CWPPRA is still the only coastal restoration program in Louisiana with secure funding and a well-developed process that allows incremental adjustments as needed.



A Strategic Vision for CWPPRA

Introduction

Since 1990, the CWPPRA program has been the backbone of Louisiana's coastal restoration efforts, constructing 78 projects, performing various levels of engineering and design for an additional 47 projects, and developing a comprehensive set of restoration strategies for restoring south Louisiana's coastal wetlands to a sustainable level in a plan known as "Coast 2050: Toward a Sustainable Coastal Louisiana". Because the CWPPRA program has been the only major joint Federal/State coastal restoration effort in Louisiana with a regular and recurring funding stream, the Program has taken on a full slate of coastal restoration activities including: a) planning at the local, regional, and coastwide levels; b) development, construction, maintenance and monitoring of small to moderately large coastal restoration projects; c) development and initiation of engineering and design of large and complex coastal restoration projects; d) project-specific and coastwide monitoring of hydrologic, vegetative, and landscape conditions; e) public participation, outreach, and education; and f) development and implementation of demonstration projects to advance restoration technology. The CWPPRA program has remained flexible and has periodically revised procedures to increase program efficiency, but it is evident that the Program, with its present funding level, cannot confront the scale and complexity of land loss problems facing coastal Louisiana.

For this reason, there are four major additional efforts related to the restoration of coastal Louisiana ongoing at this time:

- Coastal Impact Assistance Program (CIAP). CIAP was authorized by Section 384 of the Energy Policy Act of 2005 to assist coastal producing states and their political subdivisions in mitigating the impacts of Outer Continental Shelf (OCS) oil and gas production. It is estimated that from 2007 through 2010 the State of Louisiana will receive about $350 million and Louisiana coastal parishes will receive about $189 million. The State is presently developing its CIAP plan with a target submittal to Mineral Management Service in October 2006.
- Louisiana Coastal Area Comprehensive Coastwide Ecosystem Restoration Study (LCA Study). The Corps of Engineers has generated a Chief of Engineer's Report detailing a $1.9 billion "Near Term Plan" which is being considered for authorization by Congress. The Near Term Plan includes: a) five near-term critical ecosystem restoration projects, b) a science and technology program, c) demonstration projects, d) a beneficial use of dredged material program, and e) investigations of additional ecosystem restoration features. The LCA Study is currently funded at $21 million. Ongoing activities include: a) Barataria Barrier Shoreline Feasibility Study, b) Beneficial Use Feasibility Study, c) Chenier Plain Freshwater and Sediment Management and Allocation Reassessment Study, d) St. Bernard Parish Ecosystem Restoration Study, and e) Science and Technology Program.
- Louisiana Coastal Protection and Restoration Project (LaCPR). With a total appropriation to date of $20 mil-

lion, Congress has directed the Corps of Engineers, New Orleans District, in partnership with the State of Louisiana, to identify, describe and propose a full range of flood control, coastal restoration, and hurricane protection measures for South Louisiana. The Preliminary Report was completed in July 2006, and the Final Design Report is due to Congress in December 2007.

- State of Louisiana's Comprehensive Coastal Protection Plan (Master Plan). The Louisiana Coastal Protection and Restoration Authority is presently developing this Master Plan with the directive of combining hurricane protection with the protection, conservation, restoration, and enhancement of coastal wetlands and barrier shorelines or reefs. A draft of this Master Plan is scheduled to be completed by October 2006, with a final plan due February 2007.

With the CWPPRA program, the LCA Study, the LaCPR Project, the Louisiana Master Plan, and CIAP efforts moving concurrently, the CWPPRA Task Force is compelled to contemplate two important questions:

- What is the most effective coastal restoration role that the CWPPRA program can serve in the immediate future?
- With CWPPRA authorized and funded through 2019, what will be the future role of the CWPPRA program?

CWPPRA's Immediate Role in Louisiana's Coastal Restoration Efforts

Construct Sound, Cost-Effective Restoration Projects

The CWPPRA Task Force remains committed to the development, construction, maintenance, and monitoring of small to moderately large coastal restoration projects in accordance with Coast 2050 Strategies. The CWPPRA program shall continue to restore, preserve, and/or enhance habitat in areas that need immediate help due to chronic problems, hurricane-induced damage, or other event-driven marsh loss. In areas targeted for large scale restoration projects, the CWPPRA program can respond in a 3 to 5 year time frame to prevent larger problems and stabilize the landscape while waiting for the larger restoration projects to be built pursuant to other programs such as LCA, the LaCPR Project, and/or the Louisiana Master Plan . The CWPPRA Task Force shall consider a mechanism for further accelerating projects in critical, event-driven marsh loss areas.

The CWPPRA program shall also continue to conceive, design, and construct projects that work in concert (spatially and functionally) with other restoration projects to achieve landscape level benefits, with particular emphasis on accomplishing the Coast 2050 Regional Strategies.

Engineering and Design of Selected Projects

With the present CWPPRA funding level and the surplus of designed but unfunded projects, the Program shall 1) perform full engineering and design of small to moderately large projects, and 2) initiate planning and preliminary engineering of existing large and/or complex CWPPRA projects. For large and/or complex projects, the CWPPRA Task Force shall look for opportunities to transfer such projects to other program(s) with potential construction funding; such transfers would be pursued only in cases where the other program has authorization, funds, manpower, and ability to proceed without loss of project momentum.

Partnerships with Other Efforts

A CWPPRA-CIAP partnership is currently being developed whereby CWPPRA contributes planning, engineering and design, followed by CIAP performing construction, then CWPPRA taking on the responsibilities of operation, maintenance, and monitoring. The primary target projects for such a partnership would be those CWPPRA projects which have reached 95% completion of engineering and design, but for which there are insufficient CWPPRA funds for construction. A CWPPRA-CIAP partnership for a given project would have to be mutually agreed upon by both Programs.

The CWPPRA program shall consider partnerships with other coastal restoration programs whenever such a partnership would provide an opportunity to facilitate construction, operation, maintenance, and monitoring of quality projects.

The CWPPRA program also shall continue to participate in the LCA efforts, the LaCPR Project, and the Louisiana Master Plan to maximize the use and value of planning, ecological, and engineering personnel; eliminate program redundancy; and to minimize any programmatic, temporal, or spatial gaps that could arise among these budding restoration programs.

Operation, Maintenance, Monitoring, and Adaptive Management

The CWPPRA program shall remain committed to performing operation, maintenance, monitoring, and adaptive management on constructed CWPPRA projects.

Lessons Learned

Because the CWPPRA Task Force recognizes the need to learn from past and ongoing activities and to apply those lessons to improve the design, construction, and performance of CWPPRA projects, the CWPPRA program has embraced and applied monitoring and adaptive management principles to its projects and planning processes, and will continue to do so. The Task Force desires to improve information exchange among agencies and across project phases such as design, construction, monitoring, and adaptive management. The program is well positioned to participate in the proposed LCA Science and Technology program if authorized, and the LaCPR's emerging risk-based approach to project evaluations.

Public Participation, Outreach, and Education

The CWPPRA program shall maintain its close working relationship with the general public, local governments, and private entities, allowing their continued participation in shaping program policies, as well as nominating, developing, and implementing projects. The CWPPRA program's outreach and education efforts shall continue, while coordinating with other programs for consistency of message and to avoid duplication of efforts.

Demonstration Projects

The CWPPRA Task Force has authorized 16 demonstration projects since 1990 in an effort to advance restoration technology. Demonstration project results have been used to improve the design of full-scale projects. Due to funding constraints, the Task Force did not authorize any demonstration projects in Fiscal Year 2005 or Fiscal Year 2006. However, recognizing the importance of demonstration projects, the Task Force will consider funding at least one credible demonstration project annually.

CWPPRA's Future Role in Louisiana's Coastal Restoration Efforts

The CWPPRA Task Force is prepared to take any one of three future roles in Louisiana's coastal restoration efforts, largely dependent on potential Congressional coastal restoration legislation, and the outcome, funding, timing, and success of the LCA Study, the LaCPR Project, and/or the Louisiana Master Plan.

- Until such time that one or more of those efforts becomes approved, sufficiently funded, and successful at constructing major restoration projects, the CWPPRA program will continue to perform its current full slate of coastal restoration activities, and its role will remain largely as described above. The Program will attempt to increase the exchange of "lessons learned" to improve the design, construction, and performance of CWPPRA projects.
- When one or more of those efforts becomes approved, sufficiently funded, and successful at constructing major restoration projects, the CWPPRA program will shift its efforts away from any larger scale restoration project(s) to be constructed via one of those efforts. The CWPPRA program will continue to: a) protect and sustain the landscape in those areas targeted by the larger scale restoration efforts; b) restore and/or preserve habitat in areas of immediate need; c) construct synergistic projects to achieve landscape level benefits in areas that may not benefit from the larger scale restoration program(s); d) pursue partnerships to maximize "on-the-ground" restoration; e) perform operation, maintenance, monitoring, and adaptive management on constructed CWPPRA projects; f) increase the exchange of "lessons learned" to improve project design, construction, and management; g) seek public participation; h) conduct outreach and education activities; and i) develop and implement demonstration projects to advance restoration technology.
- Regardless of funding levels for the LCA Study, the LaCPR Project, the Louisiana Master Plan, and/or any other large scale Louisiana coastal restoration program, the CWPPRA Task Force stands ready to increase its construction/restoration activity. CWPPRA has 78 projects costing over $624.5M constructed or ready for construction, another 11 projects costing $262.3M are unfunded, but ready for construction and 36 more projects costing $651.1M are undergoing engineering and design. With those projects and the anticipated initiation of more Priority Project List projects each year during its current authorization which extends through 2019, the CWPPRA program is playing a significant, but constrained, role in combating coastal land loss in Louisiana. With funding constraints removed, the CWPPRA program could greatly increase its "on the ground" restoration by constructing all of those projects not yet funded for construction, plus additional restoration projects that are not yet part of the CWPPRA program.

With an exceptional record of success, a strong and effective programmatic structure, a strategy and vision, the CWPPRA Task Force has a strong desire to make an even more significant contribution to reestablishing a sustainable ecosystem in coastal Louisiana.

Conclusions

Project Execution

- Since its inception, CWPPRA has been executing projects to fulfill its legislated mandate to plan, restore and protect wetlands in south Louisiana.
- In the last 15 years, the program has selected, designed and constructed 66 projects with 12 currently under construction at a total cost of over $624.5 million. These projects are expected to re-establish or protect a total of approximately 70,616 net acres and enhance 320,354 acres of additional wetlands.
- Thirty-six CWPPRA projects at a total cost of approximately $651.1 million are in the engineering and design phase. These projects are anticipated to re-establish or protect approximately 29,153 net acres and enhance 190,374 acres of additional wetlands.
- Eleven CWPPRA projects have been designed but have not been approved for construction due to CWPPRA's annual funding limitations. These projects would cost approximately $262.3 million and re-establish or protect 3,512 net acres and enhance 4,485 acres of additional wetlands.
- Each constructed project is assessed throughout its lifetime using an intensive monitoring program. The feedback gained by monitoring allows the program to continually improve project designs and establishes information on the performance of restoration techniques under different local circumstances.
- The CWPPRA program designs and constructs projects efficiently with an average of 5.2 years to complete a project from the time of its initial authorization. Eighty-two percent of all completed projects have finished design and construction in six years or less.
- CWPPRA utilizes less expensive demonstration projects to develop technologies or methods that have not been fully developed for routine application in coastal Louisiana and to address engineering and/or technical challenges in rebuilding coastal Louisiana. To date, 16 demonstration projects have been selected on PPLs 1–15 at a combined cost of $19.1 million.

Program Administration

- CWPPRA's governing structure is a successful collaboration between governmental agencies. Five Federal agencies sit on the Louisiana Coastal Wetlands Conservation and Restoration Task Force, commonly referred to as the CWPPRA Task Force. These agencies include the U.S. Fish and Wildlife Service, the Natural Resources Conservation Service, the NOAA National Marine Fisheries Service, the U.S. Environmental Protection Agency, and the U.S. Army Corps of Engineers. The Louisiana Governor's Office represents the State on the Task Force while the Louisiana Department of Natural Resources is the local cost share sponsor for project implementation. In addition, academic advisors are involved in various stages such as environmental and monitoring workgroups.
- CWPPRA is an efficient program which limits expenditures for planning to $5 million each year. As a result, approximately 90% of CWPPRA's funds are spent on direct project costs.

- CWPPRA project development and funding is a transparent public process that includes at least 14 public meetings per year, traditional public outreach, and public internet website access.
- The interagency approach and continuous engagement with the public allows the program to respond to the evolving needs of the coast, and therefore has continuously made incremental adjustments to the program as appropriate.

Continuing Need for CWPPRA

- Coastal Louisiana is a "working coast" with a close relationship between the coast and its people, habitats, industry, and culture. Coastal restoration therefore, also supports the economy and culture of south Louisiana. Restoration of Louisiana's coast directly supports national goals of energy security, enhanced trade and fisheries and wildlife conservation.
- Coastal Louisiana is in a prolonged period of crisis due to high rates of wetland loss by conversion to open water. During the 20th century, coastal Louisiana has lost over 1.2 million acres (1,875 square miles), an area more than 25 times larger than Washington, D.C.
- Preliminary estimates from the U.S. Geological Survey indicate that 138,880 acres (217 square miles) of land has been transformed to new open water areas in coastal Louisiana as a result of Hurricanes Katrina and Rita. In localized areas, the potential wetland losses from these two hurricanes exceeded estimates of future land loss over the next 50 years.
- The CWPPRA program produced the State's first comprehensive plan in 1993 and has continued to promote and develop regional, comprehensive coastal restoration planning. In 1998, *Coast 2050: Toward a Sustainable Coastal Louisiana* was completed. The five Federal CWPPRA agencies also contributed to the development of the LCA plan and continue to coordinate their activities with emerging programs such as CIAP and LaCPR.
- The CWPPRA program has a proven track record in meeting near-term restoration needs along strategic areas of the coast. This effective program will continue to restore Louisiana's wetlands and work collaboratively with larger programs as they develop.
- The 2005 hurricane season amplified the need to link coastal restoration and flood protection in south Louisiana. Future coastal planning in CWPPRA and other coastal Louisiana programs will place additional priority on the wetland function as a buffer to storm surge.

Strategic Vision for CWPPRA

- As the only joint Federal/State coastal restoration effort with a regular and recurring funding stream, the immediate future of the CWPPRA program is to continue to pursue a full slate of coastal restoration activities.
- In addition to its ongoing activities, the CWPPRA program is pursing a partnership with CIAP to increase the effectiveness of both programs.
- The CWPPRA program will strive to increase the exchange of "lessons learned" to improve project design, construction, and management.
- If the LCA Study, the LaCPR Project, the Louisiana Master Plan, and/or any other large scale Louisiana coastal restoration program becomes approved, sufficiently

funded, functioning, and successful at constructing major restoration projects, the CWPPRA program will re-evaluate its focus in coordination with other restoration programs. It may be appropriate for the CWPPRA program to shift its efforts away from any larger scale restoration project(s) to be constructed via one of those efforts and focus on its remaining slate of restoration activities, including but not limited to stabilizing the landscape in areas targeted by the larger scale restoration efforts and constructing synergistic projects to achieve landscape-level benefits in areas that may not benefit from the larger scale restoration efforts.

- Finally, whether or not any large scale Louisiana coastal restoration program gets approved and funded, the CWPPRA Task Force stands ready and has a vision to increase its contribution to reestablishing a sustainable ecosystem in coastal Louisiana.

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Appendix I. CWPPRA Projects Authorized on Priority Lists 1-15 in Region 1 and Coastwide

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Fritchie Marsh Restoration (PO-06)	C	C	C	I	I	2	NRCS	HR	C	2001	1,040	$2,201,674
● The purpose of the project is to address wetland loss in the area and to improve habitat for wildlife and fisheries by increasing the flow of freshwater into the marsh and managing the outfall. Project features include diverting part of the W-14 canal and installing larger culverts under Highway 90 to increase the flow of the Lower Pearl River into the project area.												
Violet Freshwater Distribution (PO-09a)	I	I	N/A	N/A	N/A	3	NRCS	HR	D	N/A	N/A	$128,627
● The objective of the outfall management plan was to optimize the use of freshwater supplied by the existing siphons by managing water flow through the area. This would be accomplished by reducing channelized flow and routing the diverted flow across marshes or through shallow water areas instead of through larger channels. This project was officially deauthorized by the CWPPRA Task Force in October of 2001.												
Bayou Sauvage National Wildlife Refuge Hydrologic Restoration, Phase I (PO-16)	C	C	C	I	I	1	USFWS	HR	C	1996	1,550	$1,630,193
● The Lake Pontchartrain hurricane protection levee isolated Units 3 and 4 of the Bayou Sauvage Wildlife Refuge from the surrounding marsh complex and established a large freshwater impoundment. The project utilizes pumps to remove the excess water during the spring and summer.												
Bayou LaBranche Wetland Creation (PO-17)	C	C	C	I	N/A	1	USACE	MC	C	1994	203	$3,817,929
● The project goal was to create vegetated wetlands in an area bounded by I-10, Lake Pontchartrain, and Bayou LaBranche. This objective was accomplished by dredging sediment from Lake Pontchartrain.												
Bayou Sauvage National Wildlife Refuge Hydrologic Restoration, Phase II (PO-18)	C	C	C	I	I	2	USFWS	HR	C	1997	1,280	$1,642,552
● The hurricane protection levee system has impounded the marsh in the project area. The project increases the drainage capacity of the system to reduce water levels in the project area. Project features consist of two 36-inch pumps which operate to maintain water levels at 0.5 feet above or below marsh elevation.												
Mississippi River Gulf Outlet Disposal Area Marsh Protection (PO-19)	C	N/A	C	N/A	N/A	3	USACE	HR	C	1999	755	$313,145
● The objective of the project is to protect and preserve vegetated wetlands by repairing the lateral and rear dikes of the Mississippi River Gulf Outlet (MRGO) disposal areas. Repairs to a 28,000 linear-foot dike, in conjunction with the installation of metal box weirs with a single 40-inch pipe is used to control and divert water flow to prevent the perched marshes from draining.												
Red Mud (PO-20) Demonstration	C	C	C	I	N/A	3	EPA	MC	D	N/A	N/A	$470,500
● This project was authorized to determine whether red mud, produced as a by-product of removing alumina from bauxite, could be utilized as marsh-creation material in combination with compost and marsh sediment. Construction of the experimental units was initiated in 1997; however, due to unexpected problems with fill material, liners, and contaminants in the water source, the project was officially deauthorized by the CWPPRA Task Force in August 2001.												
Eden Isles East Marsh Restoration (PO-21)	I	N/A	N/A	N/A	N/A	4	NMFS	HR	D	N/A	N/A	$39,025
● The project was intended to restore 2,536 acres of drained fastlands by actively managing water levels to maximize marsh creation. There was a change in landowners of the project area during the planning phase of this project. Consequently, the project was officially deauthorized by the CWPPRA Task Force in January 1998.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Bayou Chevee Shoreline Protection (PO-22)	C	C	C	I	I	5	USACE	SP	C	2001	75	$2,589,403
● The project is designed to protect currently exposed wetlands areas from erosive wave energy from Lake Pontchartrain, and to enhance the establishment of submerged aquatic vegetation in the ponds behind the rock dikes. This is accomplished by constructing a 2,870 linear-foot rock dike across the mouth of the north cove and a 2,820 linear-foot rock dike, tying into an existing USFWS rock dike, across the south cove.												
Hopedale Hydrologic Restoration (PO-24)	C	C	C	I	I	8	NMFS	HR	C	2004	134	$2,432,958
● This project is designed to abate site-specific wetland loss by replacing collapsed culverts installed in the 1950s near Yscloskey, Louisiana. The project involves re-furbishment and construction of a water control structure designed to prevent tidal surges and reduce wetland deterioration within the project site. Replacement of this structure would allow more rapid drainage of the area, improve fisheries access, reduce wetland loss rates.												
Bayou Bienvenue Pump Station Diversion and Terracing (PO-25)	I	I	N/A	N/A	N/A	8	NMFS	HR/ MC	D	N/A	N/A	$212,142
● This project was intended to combine the use of existing pump stations with the construction of a diversion channel, water control structures, and earthen terraces planted with smooth cordgrass (*Spartina alterniflora*). This will force the flow of freshwater and nutrients through a deteriorated marsh area to abate site-specific marsh loss. The project was officially deauthorized by the CWPPRA Task Force in April 2002.												
Opportunistic Use of the Bonnet Carre´ Spillway (PO-26)	I	I	NI	NI	NI	9	USACE	FR	IP	Pending	177	$188,383
● This project is intended to abate high salinity stress on vegetated wetlands surrounding Lake Pontchartrain. This objective will be accomplished through the removal of pins from the Bonnet Carre´ Spillway structure during high flow periods in the Mississippi River to allow no more than 4,000 cubic feet per second of water to flow from the river into Lake Pontchartrain.												
Chandeleur Islands Marsh Restoration (PO-27)	C	C	C	I	N/A	9	NMFS	VP	C	2001	220	$937,977
● This project is intended to accelerate the recovery period of barrier island areas overwashed by Hurricane Georges in 1998 through vegetation plantings. The overwash areas, which encompass 364 acres, are located at 22 sites along the Chandeleur Sound side of the island chain and were planted with smooth cordgrass (*Spartina alterniflora*).												
LaBranche Wetlands, Terracing, Planting, and Shoreline Protection (PO-28)	NI	NI	NI	NI	NI	9	NMFS	SNT/ SP/ VP	IP	Pending	489	$306,836
● Located along Lake Pontchartrain, the project intends to reduce emergent marsh loss along the shoreline by restoring and creating 489 acres through marsh terracing, shoreline protection, and vegetation planting.												
River Reintroduction into Maurepas Swamp (PO-29) Complex Project	I	I	NI	NI	NI	11	EPA	FR	IP	Pending	5,438	$6,780,307
● This project is intended to restore a natural hydrologic regime and increase nutrient inputs in cypress-tupelo swamp tracts south of Lake Maurepas. This will be accomplished through the diversion of Mississippi River water into an area of degraded swamp.												
Lake Borgne Shoreline Protection (P0-30)	C	C	NI	NI	NI	10	EPA	SP	IP	Pending	165	$18,285,599
● The goal of this project is to maintain the integrity of the narrow strip of marsh that separates Lake Borgne from the Mississippi River Gulf Outlet (MRGO). This land protects the communities of Shell Beach, Yscloskey, and Hopedale from direct exposure to lake wave energy and storm surges. This will be accomplished through construction of a nearshore rock breakwater. A separately authorized adjoining project, Lake Borgne Shoreline Protection at Bayou Dupre (PO-31), has been merged with this project												
Lake Borgne and MRGO Shoreline Protection (PO-32)	C	C	NI	NI	NI	12	USACE	SP	IP	Pending	266	$1,348,345
● The objective of this project is to preserve the marsh between Lake Borgne and the Mississippi River Gulf Outlet (MRGO) by preventing shoreline erosion. A rock dike will be constructed along the Lake Borgne shoreline and along the north bank of the MRGO.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Goose Point/Point Platte Marsh Creation (PO-33)	I	I	NI	NI	NI	13	USFWS	MC	IP	Pending	436	$1,730,596
● The objective of this project is to create marsh habitat through the deposition of dredged material in open water areas in the vicinity of Goose Point and Point Platte as well as to maintain the lake rim function along this section of the north shore of Lake Pontchartrain.												
Nutria Harvest for Wetland Restoration (LA-03a) Demonstration	N/A	N/A	N/A	N/A	N/A	6	USFWS	N/A	C	N/A	N/A	$804,683
● This project enabled the Louisiana Department of Wildlife and Fisheries to promote the consumption of nutria meat by establishing an economic incentive program to trap and control nutria, which are contributing to coastal wetland loss.												
Coastwide Nutria Control Program (LA-03b)	N/A	N/A	N/A	N/A	N/A	11	NRCS	N/A	IP	N/A	14,963	$17,737,480
● The goal of the project is to eliminate or significantly reduce damage to coastal wetlands resulting from nutria herbivory. The implementation of an incentive payment program, beginning with the 2002-2003 trapping season, will compensate licensed trappers $4 for each nutria tail delivered to a collection center. In 2003, a total of 308,160 nutria tails, worth over 1.2 million dollars in incentive payments, were collected from 342 participants. 466,678 nutria tails were collected during 2004-2006.												
Floating Marsh Creation (LA-05) Demonstration	C	C	C	NI	NI	12	NRCS	N/A	IP	Pending	N/A	$1,080,891
● The goal of this project is to develop and test unique and previously untested technologies for creating floating marsh for potential use in fresh and intermediate zones. This project is a demo project that will be used to test the feasibility of buoyant vegetated mats/artificial islands to convert open water marsh areas and canals into fresh and intermediate marsh zones.												
Shoreline Protection Foundation Improvements (LA-06) Demonstration	C	C	C	I	NI	13	USACE	SP	IP	Pending	N/A	$1,055,000
● The goal of this demonstration project is to determine the feasibility of shoreline protection structures where a relatively poor soil foundation exists. This goal will be achieved using sand as a foundation beneath rock dike structures as a means to increase bearing capacity and consolidation settlement design tolerances. This project will be incorporated into the South White Lake Shoreline Protection (ME-22) project.												

[a]**Activities:** Initiated (I), Completed (C), Not Initiated (NI), or Not Applicable (N/A); Activity status as of 8/1/06.

[b]**Agency:** U.S. Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS), Natural Resources Conservation Service (NRCS), U.S. Army Corps of Engineers (USACE), and U.S. Fish and Wildlife Service (USFWS)

[c]**Project Type:** Hydrologic Restoration (HR), Marsh Creation (MC), Marsh Management (MM), Shoreline Protection (SP), Vegetative Planting (VP), Sediment and Nutrient Trapping (SNT), Freshwater Reintroduction (FR), Outfall Management (OM), Sediment Diversion (SD), Barrier Island Restoration (BI), and Beneficial Use of Dredged Material (DM)

[d]**Project Status:** Completed (C), In Progress (IP), Deauthorized (D)

[e]**Acres Created/Restored and Protected:** The net gain in emergent marsh as a result of project implementation as projected by the Environmental Working Group during the Wetland Value Assessment. This figure includes acres of emergent marsh to be protected, created, and restored as a result of project implementation estimated at the time the project was approved by the CWPPRA Task Force.

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
GIWW to Clovelly Hydrologic Restoration (BA-02)	C	C	C	I	I	1	NRCS	HR	C	2000	175	$8,916,131
● This project will protect intermediate wetlands by restoring natural hydrologic conditions. The project utilizes canal plugs, weirs, and the rebuilding of low overflow banks to better retain freshwater and prevent rapid salinity increases resulting from saltwater intrusion.												
Naomi Outfall Management (BA-03c)	C	C	C	I	I	5	NRCS	OM	C	2002	633	$2,181,427
● The goal of this project is to reduce saltwater intrusion and enhance wetland productivity by managing the outfall of eight existing siphons. The two fixed crest weirs assist in the management of existing siphon outfall water from the Mississippi River into adjacent west bank wetlands.												
West Pointe a la Hache Outfall Management (BA-04c)	I	NI	NI	NI	NI	3	NRCS	OM	IP	Pending	1,087	$4,068,045
● This project provides for management of the West Pointe a la Hache siphon outfall area to maximize the retention of freshwater, nutrients, and sediment within interior brackish marshes to counteract saltwater intrusion and wetland loss. This project utilizes water control structures to divert water from the main distributary channels to secondary channels and allow more efficient flow over the marsh.												
Lake Salvador Shoreline Protection (BA-15) Demonstration	C	C	C	C	I	3	NMFS	SP	C	1998	N/A	$2,810,353
● Phase I of the project was constructed to demonstrate the effectiveness of four separate types of segmented breakwaters in a poor soil environment. Phase II of the project included the installation of 8,000 feet of continuous rock structure along the western section of the lake.												
Fourchon Hydrologic Restoration (BA-18)	NI	NI	NI	NI	NI	1	NMFS	HR	D	N/A	N/A	$7,703
● The goal of this project was to restore tidal exchange to impounded wetlands. The project was officially deauthorized by the CWPPRA Task Force in July of 1994 at the request of the landowner.												
Barataria Bay Waterway Wetland Restoration (BA-19)	C	C	C	I	I	1	USACE	DM	C	1996	445	$1,167,832
● This project was authorized to create marsh in shallow water areas adjacent to the Barataria Bay Waterway. However, oyster leases prohibited the use of the dredged material at all of the marsh creation sites. As an alternative, approximately 9 acres of vegetated wetlands were created adjacent to the state-funded Queen Bess project by constructing a rock dike and filling the containment area with dredged material from the Barataria Bay Waterway.												
Jonathan Davis Wetland Protection (BA-20)	C	C	C	I	I	2	NRCS	HR/ SP	C	2001	510	$28,886,616
● The goal of this project was to restore the natural hydrologic conditions of the area and reduce shoreline erosion. This is accomplished through a constructed series of water control structures and a rock dike.												
Bayou Perot/Bayou Rigolettes Marsh Restoration (BA-21)	NI	I	NI	NI	NI	3	NMFS	MC	D	N/A	N/A	$20,963
● This project was authorized to protect deteriorated intermediate-to-brackish marsh located between Lake Salvador and Little Lake by using dredged material to re-establish the shoreline. Due to an unstable and rapidly eroding site, the project was deemed unfeasible and was officially deauthorized by the CWPPRA Task Force in January of 1998.												
Bayou L'Ours Ridge Hydrologic Restoration (BA-22)	I	I	NI	NI	NI	4	NRCS	HR	D	N/A	N/A	$371,232
● This project was proposed to restore natural hydrologic flow to the marsh by reinforcing breached areas of the Bayou L'Ours Ridge through a series of canal closures and two water control structures. The project was officially deauthorized by the CWPPRA Task Force in April 2003.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Barataria Bay Waterway West Side Shoreline Protection (BA-23)	C	C	C	I	I	4	NRCS	SP	C	2000	232	$3,013,365
● This project is intended to reduce erosion of the channel bank and protect exposed marsh from wake erosion, increased water exchange and rapid changes in salinity. The project strategies included armoring the western bank of the Barataria Bay Waterway with approximately 9,400 linear feet of rock material and installation of a water control structure to limit saltwater intrusion into the area.												
Myrtle Grove Siphon (BA-24)	NI	NI	NI	NI	NI	5	NMFS	FR	IP	Pending	1,119	$489,103
● The goal of the project is to reduce saltwater intrusion and to nourish existing marsh. This will be accomplished by diverting water through a siphon from the Mississippi River to adjacent wetlands.												
Mississippi River Reintroduction into Bayou Lafourche (BA-25b)	I	I	NI	NI	NI	11	EPA	FR	IP	Pending	988	$9,700,000
● The goal of the project is to restore and protect the health of marshes in the Barataria and Terrebonne basins through reintroduction of sediment- and nutrient-laden Mississippi River water via Bayou Lafourche. This project was originally authorized on the 5th PPL as BA-25.												
Barataria Bay Waterway East Side Shoreline Protection (BA-26)	C	C	C	I	I	6	NRCS	SP	C	2001	217	$5,224,477
● The objective of this project is to rebuild the banks of the Barataria Bay Waterway (BBWW), to protect the adjacent marsh from excessive tidal action, and to prevent saltwater intrusion. The project consists of installing a 17,600 linear-foot rock dike on the east bank of the BBWW.												
Barataria Basin Landbridge Shoreline Protection, Phases 1 and 2 (BA-27)	C	C	I	NI	I	7 and 8	NRCS	SP	IP	Pending	1,304	$29,429,358
● This project is designed to protect a deteriorated intermediate-to-brackish marsh located between Lake Salvador and Little Lake by reducing shoreline erosion. Phase 1 and 2 of this project will provide 35,000 linear feet of shoreline protection along Bayous Perot and Rigolettes within the Barataria basin.												
Barataria Basin Landbridge Shoreline Protection, Phase 3 (BA-27c)	C	C	NI	NI	I	9	NRCS	SP	IP	2004*	264	12,819,526
● Phase 3 of this project encompasses approximately 41,000 feet of shoreline protection. Approximately 26,000 feet of protection will be along the west bank of Bayou Perot and the north shore of Little Lake in Lafourche Parish. In Jefferson Parish, about 9,600 feet of the shoreline protection will be along the east bank of Bayou Rigolettes and approximately 2,700 feet along each bank of Harvey Cutoff. *Construction Units 1-3 have been completed.												
Barataria Basin Landbridge Shoreline Protection, Phase 4 (BA-27d)	C	C	C	I	NI	11	NRCS	SP	IP	Pending	256	$16,921,527
● Phase 4 of this project begins at the intersection of Bayou Rigolettes and Barataria Bay Waterway, and extends about 31,500 feet southward along the east bank of Bayou Rigolettes and ties into the northern limit of Phases 1 and 2.												
Vegetative Plantings of a Dredged Material Disposal Site on Grand Terre Island (BA-28)	C	C	C	I	N/A	7	NMFS	VP	C	2001	127	$493,753
● The goal of this project is to stabilize dredged material sites on the eastern end of Grand Terre Island. This objective was achieved through vegetation plantings and by purchasing grazing rights on the island for the life of the project (20 years).												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
LA Highway 1 Marsh Creation (BA-29)	I	I	N/A	N/A	N/A	9	EPA	MC	D	N/A	N/A	$343,551
● The objective of this project was to create marsh habitat in a large open water area adjacent to Louisiana Highway 1 using dredged material from two proposed borrow areas. This project was officially deauthorized by the CWPPRA Task Force in February of 2005.												
East Grand Terre Islands Restoration (BA-30)	C	C	NI	NI	NI	9	NMFS	BI	IP	Pending	335	$2,312,023
● The goal of this project is to stabilize and benefit barrier island habitat and extend the island's life expectancy. Dredged material will be used to create dune and marsh habitat.												
Delta Building Diversion at Myrtle Grove (BA-33)	I	I	NI	NI	NI	10	USACE	SD	IP	Pending	8,891	$3,002,114
● The objective of this project is to divert Mississippi River water and sediment for the creation of new emergent wetlands. The project would involve installation of gated box culverts on the west bank of the Mississippi River in the vicinity of Myrtle Grove; dedicated dredging from the Mississippi River to create marsh in the vicinity of Bayou Dupont, the Barataria Bay Waterway, and the Wilkinson Canal; or a combination of these actions.												
Mississippi River Reintroduction into Northwest Barataria Basin (BA-34)	I	I	NI	NI	NI	10	EPA	FR	IP	Pending	941	$2,362,687
● The goal of this project is to restore the natural hydrologic regime and add nutrients to adjacent swamp areas. The project will utilize a freshwater diversion/siphon from the Mississippi River to northwest Barataria basin wetlands, with gapping of spoil banks and placement of culverts under LA Highway 20.												
Pass Chaland to Grand Bayou Pass Barrier Shoreline Restoration (BA-35)	C	C	NI	NI	NI	11	NMFS	BI	IP	Pending	263	$29,248,688
● This project will prevent the barrier island from being breached through the deposition of dredged material, the creation of tidal creeks and ponds, and vegetation plantings. This will provide a continuous barrier to reduce wave and tidal energy, thereby protecting the mainland shoreline from continued erosion.												
Dedicated Dredging on the Barataria Basin Landbridge (BA-36)	C	C	NI	NI	NI	11	USFWS	MC	IP	Pending	605	$463,942
● This project, in conjunction with the Barataria Basin Landbridge Shoreline Protection project (BA-27, BA-27c), will protect the functional integrity of this critical area of the Barataria basin. This project will create emergent marsh through the deposition of dredged material into open water areas.												
Little Lake Shoreline Protection/ Dedicated Dredging Near Round Lake (BA-37)	C	C	I	NI	NI	11	NMFS	SP/ MC	IP	Pending	713	$33,991,940
● This project is designed to protect area wetlands which currently experience high rates of shoreline erosion. This project will protect approximately 21,000 feet of Little Lake shoreline, create 488 acres of intertidal wetlands, and nourish an additional 532 acres of fragmented, subsiding marsh.												
Barataria Barrier Island Complex Project: Pelican Island and Pass La Mer to Chaland Pass Restoration (BA-38)	C	C	I	NI	NI	11	NMFS	BI	IP	Pending	534	$66,493,789
● The objectives of this project are to create barrier island habitat, enhance storm-related surge and wave protection, prevent overtopping during storms, and increase the volume of sand within the active barrier system. Conceptual project plans envision dedicated dredging of local, nearshore sand sources to directly create beach, dune, and wetland habitats. This project was first authorized on the 9th PPL as Barrier Island Restoration Grand Terre to SW Pass (BA-32).												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Mississippi River Sediment Delivery System Bayou Dupont (BA-39)	I	I	NI	NI	NI	12	EPA	MC	IP	Pending	400	$2,731,479
● The goal of this project is to create/restore 538 acres of brackish marsh by delivering, via pipeline, dredged material from the Mississippi River to an adjacent area within the Barataria basin, and planting marsh vegetation.												
Riverine Sand Mining/ Scofield Island Restoration (BA-40)	NI	NI	NI	NI	NI	14	NMFS	BI	IP	Pending	234	$3,211,887
● The goals of this project are to repair breaches and tidal inlets in the shoreline, reinforce the existing shoreline with sand, and increase the island width with back barrier marsh creation to increase longevity. All necessary sand will be mined from the Mississippi River and pumped to the site.												
South Shore of the Pen Shoreline Protection and Marsh Creation (BA-41)	I	I	NI	NI	NI	14	NRCS	SP/ MC	IP	Pending	116	$1,311,146
● The goals of this project are to stop shoreline erosion and to create 74 acres and nourish 107 acres of marsh located between The Pen and Barataria Bay. Approximately 1,000 feet of concrete pile and panel wall and 10,900 feet of rock revetment will be constructed along the south shore of The Pen and Bayou Dupont.												
Lake Hermitage Marsh Creation (BA-42)	I	I	NI	NI	NI	15	USFWS	MC	IP	Pending	438	$1,197,590
● The goals of this project are to create wetlands, reduce tidal exchange in marshes surrounding Lake Hermitage, and reduce fetch and turbidity to enhance open water habitats.												
Caernarvon Diversion Outfall Management (BS-03a)	C	C	C	I	I	2	NRCS	OM	C	2002	802	$4,536,000
● The objective of this project is to promote better utilization of freshwater and nutrients from the Mississippi River via the Caernarvon diversion structure during low-discharge periods. The outfall management project includes installation of flow through culverts with water control at 8 sites, 3 plug closures with armor protection, 13,000 feet of spoil bank restoration, and vegetation plantings where applicable.												
White's Ditch Outfall Management (BS-04a)	NI	I	NI	NI	NI	3	NRCS	OM	D	N/A	N/A	$32,862
● This project was designed to direct the flow of Mississippi River nutrients and sediment into the deteriorating wetlands in the Breton Sound basin that are not directly benefited by the Caernarvon Freshwater Diversion project. Because of the failure to secure landrights, the project was officially deauthorized by the CWPPRA Task Force in January of 1998.												
Grand Bay Crevasse (BS-07)	NI	I	NI	NI	NI	4	USACE	SD	D	N/A	N/A	$65,747
● Project goals included construction of a rock-lined opening through the rocks at the head of the Jurjevich Canal to establish a pathway for freshwater and sediment into Grand Bay and the adjacent marshes to create, restore, and enhance wetlands in the area. The project was officially deauthorized by the CWPPRA Task Force in July of 1998.												
Upper Oak River Freshwater Siphon Phase 1 (BS-09)	N/A	N/A	N/A	N/A	N/A	8	NRCS	FR	D	N/A	N/A	$56,476
● The primary goal of this project was to reverse the trend of interior marsh deterioration in the project area due to saltwater intrusion, through installation of a freshwater siphon and outfall channel. These strategies would have provided freshwater, nutrients, and sediment to enhance marsh health. The project was officially deauthorized by the CWPPRA Task Force in January of 2003.												
Delta Building Diversion North of Fort St. Philip (BS-10)	I	I	NI	NI	NI	10	USACE	SD	IP	Pending	501	$1,444,000
● This project is intended to reduce the loss of existing marsh in the project area and enhance the integrity of the delta system. Project strategies include dredging a series of channel armor gaps that will be strategically located along the east descending bank of the Mississippi River in the vicinity of Fort St. Philip to divert sediment and nutrients to adjacent wetlands.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Delta Management at Fort St. Philip (BS-11)	C	C	I	I	NI	10	USFWS	SD/ SNT	IP	Pending	267	$2,055,703
● The objective of the project is to enhance the delta-building process occurring as a result of the crevasse at Fort St. Philip. Six additional artificial crevasses will be constructed to divert freshwater and sediment into areas currently restricted by spoil banks or natural ridges. In addition, linear vegetated terraces will be constructed to enhance sediment retention and reduce wave energy in one of the large receiving bays.												
White Ditch Resurrection and Outfall Management (BS-12)	I	I	NI	NI	NI	14	NRCS	OM	IP	Pending	189	$1,595,677
● The goal of this project is to reduce the erosion rate by introducing fresh water, nutrients, and limited sediment into the marsh. This will be accomplished through the rehabilitation or replacement of the existing siphon at White Ditch and the construction of an additional siphon of similar size. The project's proposed features also include installing a water control structure in the White Ditch outfall channel at the junction with River Aux Chenes in order to force water into the interior marsh.												
Bayou Lamoque Freshwater Diversion (BS-13)	NI	NI	NI	NI	NI	15	EPA	FR	IP	Pending	620	$1,205,354
● The goal of this project is to 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. In addition, gap construction in the natural levee ridges or spoil banks on Bayou Lamoque at strategic locations will facilitate distribution of diverted water and to promote the accretion of new wetlands through the deposition of diverted river sediments.												
West Bay Sediment Diversion (MR-03)	C	C	C	I	I	1	USACE	SD	C	2003	9,831	$22,792,876
● The objective of the project is to restore vegetated wetlands in the West Bay area that is currently shallow open water. A diversion channel will be constructed in two phases: (1) initial construction of an interim channel to accommodate a discharge of 20,000 cubic feet per second (cfs) at the 50% duration stages in the Mississippi River and marsh development areas and (2) modification of the interim diversion channel design to accommodate a full-scale diversion of 50,000 cubic feet per second at the 50% duration stage. Phase 1 was completed in 2003 and material from the initial conveyance channel was used to create the marsh.												
Channel Armor Gap Crevasse (MR-06)	C	C	C	I	N/A	3	USACE	SD	C	1997	936	$888,985
● This project is intended to restore vegetated wetlands by increasing freshwater and sediment from the Mississippi River to the Delta National Wildlife Refuge area. The project consisted of deepening the existing 150-foot wide gap in the Mississippi River channel bank armor and using 125,000 cubic yards of material from the outfall channel to create marsh.												
Pass-a-Loutre Crevasse (MR-07)	NI	NI	NI	NI	NI	3	USACE	SD	D	N/A	N/A	$119,835
● Marsh creation and restoration was the objective of this project. This was to be accomplished through construction of a crevasse on the left descending bank of the Mississippi River between Pass-a-Loutre and Raphael Pass. The project was officially deauthorized by the CWPPRA Task Force in July of 1998 due to high costs attributed to relocating underground utilities in the area.												
Beneficial Use of Hopper Dredge Material (MR-08) Demonstration	C	N/A	NI	I	N/A	4	USACE	DM	D	N/A	N/A	$58,310
● The goal of this project was to construct a crevasse to allow sediment to enter near the mouth of the pass and be deposited in the shallow open water area between Pass-a-Loutre and Raphael Pass to create new emergent marsh. Due to design problems, the project was officially deauthorized by the CWPPRA Task Force in November of 2000.												
Delta Wide Crevasses (MR-09)	C	C	C	I	I	6	NMFS	SD	C	1999	2,386	$4,752,653
● The objective of this project is to promote the formation of emergent freshwater and intermediate marsh in shallow, open water areas of the Pass-a-Loutre Wildlife Management Area and the Delta National Wildlife Refuge by either cleaning existing splays or creating new ones.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Dustpan Maintenance Dredging Operations for Marsh Creation in the Mississippi River Delta (MR-10) Demonstration	C	C	C	N/A	N/A	6	USACE	DM	C	2002	N/A	$1,911,487
● This project was intended to demonstrate the beneficial use of dredged material from routine maintenance of the Mississippi River Navigation Channel by using a dustpan hydraulic dredge to create and restore adjacent marsh. Approximately 40 acres of deteriorated marsh that had converted to shallow open water was restored with approximately 222,000 cubic yards of dredged material												
Periodic Introduction of Sediment and Nutrients at Selected Diversion Sites (MR-11) Demonstration	I	I	NI	NI	NI	9	USACE	SD	IP	Pending	N/A	$1,502,817
● The demonstration project is intended to show the effectiveness of using a hydraulic pipeline dredge to provide increased sediment through a diversion structure or siphon. Monitoring of the project will determine not only the characteristics of the sediment input concentrations, but also the subsequent effects in the outfall area.												
Mississippi River Sediment Trap (MR-12)	I	I	NI	NI	NI	12	USACE	DM	IP	Pending	1,190	$1,880,376
● This project was reauthorized on the 12th PPL to create emergent wetlands through the beneficial use of material dredged from a sediment trap located between miles 5 and 1 above Head of Passes in the Mississippi River. The proposed sediment trap would consist of an area dredged out of the riverbed that would force sediment deposition.												
Benneys Bay Diversion (MR-13)	I	I	NI	NI	NI	10	USACE	SD/ DM	IP	Pending	5,706	$1,076,328
● The objective of the project is to create vegetated wetlands in shallow open water areas in Benneys Bay. The project would divert sediment in an effort to create, nourish, and maintain fresh to intermediate marsh over the 20-year project life.												
Spanish Pass Diversion (MR-14)	I	NI	NI	NI	NI	13	USACE	SD	IP	Pending	433	$1,137,344
● The goal of this project is to create emergent marsh, to the maximum extent practicable, by diverting Mississippi River water and sediment from Grand Pass into open water receiving areas.												
Venice Ponds Marsh Creation and Crevasses (MR-15)	NI	NI	NI	NI	NI	15	EPA	MC/ HR / SD	IP	Pending	511	$1,421,680
● The goals of this project are to create, maintain, nourish, and replenish existing deteriorating wetlands through dedicated dredging, hydraulic restoration, crevasse construction, and crevasse enhancement.												

[a]**Activities:** Initiated (I), Completed (C), Not Initiated (NI), or Not Applicable (N/A); Activity status as of 8/1/06.

[b]**Agency:** U.S. Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS), Natural Resources Conservation Service (NRCS), U.S. Army Corps of Engineers (USACE), and U.S. Fish and Wildlife Service (USFWS)

[c]**Project Type:** Hydrologic Restoration (HR), Marsh Creation (MC), Marsh Management (MM), Shoreline Protection (SP), Vegetative Planting (VP), Sediment and Nutrient Trapping (SNT), Freshwater Reintroduction (FR), Outfall Management (OM), Sediment Diversion (SD), Barrier Island Restoration (BI), and Beneficial Use of Dredged Material (DM)

[d]**Project Status:** Completed (C), In Progress (IP), Deauthorized (D)

[e]**Acres Created/Restored and Protected:** The net gain in emergent marsh as a result of project implementation as projected by the Environmental Working Group during the Wetland Value Assessment. This figure includes acres of emergent marsh to be protected, created, and restored as a result of project implementation estimated at the time the project was approved by the CWPPRA Task Force.

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Atchafalaya Sediment Delivery (AT-02)	C	C	C	I	I	2	NMFS	DM/ MC/ HR/ SD	C	1998	2,232	$2,532,147
● The objective of this project is to enhance natural delta growth by re-opening Natal Channel and Castille Pass. Natal Channel was re-established with a 120-foot wide, 10-foot deep, 8,800-foot long channel and Castille Pass with a 190-foot wide, 10-foot deep, 2,000-foot long channel. Material dredged (700,925 cubic yards) as a result of construction was strategically placed at elevations mimicking natural delta lobes.												
Big Island Mining (AT-03)	C	C	C	I	I	2	NMFS	DM/ MC/ HR/ SD	C	1998	1,560	$7,077,404
● The project includes creating a new western delta lobe behind Big Island to enhance the accretion of land beyond the west bank of the Atchafalaya River. Construction included dredging of a main stem and five branch channels designed to mimic natural channel bifurcations. Dredged material was strategically placed at elevations mimicking natural delta lobes. Re-opening the channels is allowing continued natural sediment transport and marsh growth.												
Castille Pass Channel Sediment Delivery (AT-04)	C	C	NI	NI	NI	9	NMFS	SD	IP	Pending	577	$1,846,326
● The Castille Pass project is intended to re-establish the sedimentation processes that lead to subdelta development in this area of the Atchafalaya Delta. This project consists of dredging and extending Castille Pass to promote subdelta development.												
Grand Bayou Hydrologic Restoration (TE-10)	I	I	NI	NI	NI	5	USFWS	HR	IP	Pending	199	$8,209,722
● The objective of the project is to maintain emergent wetlands in this area by providing supplemental freshwater, nutrients, and sediment from the Atchafalaya River via the Gulf Intracoastal Waterway (GIWW). Project features include a water control structure on Bayou Pointe au Chien just south of its junction with St. Louis Canal, the relief structure on Grand Bayou, and the pipeline structure on Grand Bayou Canal.												
Falgout Canal Planting (TE-17) Demonstration	C	C	C	I	N/A	1	NRCS	VP	C	1997	N/A	$209,284
● For this demonstration project, smooth cordgrass (*Spartina alterniflora*) suited to the salinity and habitat type of the Falgout Canal area was planted along the canal and protected by 6 types of wave-stilling devices. This is a subproject of the Vegetation Plantings project.												
Timbalier Island Planting (TE-18) Demonstration	C	C	C	I	N/A	1	NRCS	VP	C	1996	N/A	$293,124
● For this demonstration project, sand fences were installed and vegetation suited to the salinity and habitat type of Timbalier Island was planted in several areas on the island to trap sand and buffer wind and wave energy.												
Lower Bayou LaCache Hydrologic Restoration (TE-19)	I	I	N/A	N/A	N/A	1	NMFS	HR	D	N/A	N/A	$99,625
● The project would have reduced marsh loss rates and improved fish and wildlife habitat quality by restoring natural north-south water exchange with estuarine water bodies and by reducing flow through the numerous dredged canals in the area. Because of problems with landrights and navigation, the project was officially deauthorized by the CWPPRA Force in February of 1996.												
Isles Dernieres Restoration, East Island (TE-20)	C	C	C	I	N/A	1	EPA	BI	C	1999	9	$8,762,416
● The project objective is to restore the coastal dunes and wetlands of the Isles Dernieres. Approximately 3,925,000 cubic yards of sand were dredged from adjacent waters and used to build a retaining dune which was then hydraulically filled to create an elevated marsh platform. Sand fences and vegetation were also installed to stabilize the sand and minimize wind-driven transport.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Point Au Fer Canal Plugs (TE-22)	C	C	C	I	I	2	NMFS	SP/ HR	C	1997	375	$2,855,208
● The project is intended to reduce saltwater intrusion and tidal flushing in the Point au Fer marshes, due to unplugged canals and beach overwash, without reducing freshwater back flooding from the Atchafalaya River. This project involved plugging a number of canals and stabilizing the Mobil Canal/Gulf of Mexico breach to prevent marsh loss and saltwater intrusion into the interior of the island.												
West Belle Pass Headland Restoration (TE-23)	C	C	C	I	I	2	USACE	DM/ SP	C	1998	474	$6,751,444
● The project goals include reducing the encroachment of the Gulf of Mexico into the marshes on the west side of Bayou Lafourche through the use of dedicated dredged materials to create marsh on the west side of Belle Pass. A water control structure was placed in the Evans Canal, and plugs on other canals. Rip rap was used to anchor 17,000 linear feet of the western side of Belle Pass and Bayou Lafourche.												
Isles Dernieres Restoration, Trinity Island (TE-24)	C	C	C	I	N/A	2	EPA	BI	C	1999	109	$10,774,974
● The project objectives include the restoration of Trinity Island (dunes and marsh) of the Isles Dernieres chain. Approximately 4,850,000 cubic yards of sand were dredged from adjacent waters and used to build a retaining dune which was then hydraulically filled to create an elevated marsh platform sloping from the dune to +4.0 feet at the bay side of the island. Sand fences and vegetation were also installed to stabilize the sand and minimize wind-driven transport.												
East Timbalier Island Sediment Restoration, Phase I (TE-25)	C	C	C	C	N/A	3	NMFS	BI	C	2000	1,913	$3,729,587
● The objective of this project is to strengthen and thus increase the life expectancy of East Timbalier Island. The project called for the mining of 890,000 cubic yards of sediment and placement of the material in three embayments along the landward shoreline of East Timbalier Island. The project also included aerial seeding of the dune platform, installation of sand fencing, and dune vegetation.												
Lake Chapeau Sediment Input and Hydrologic Restoration, Point Au Fer Island (TE-26)	C	C	C	I	I	3	NMFS	HR/ MC	C	1999	509	$5,379,987
● The objectives of the project are to restore the marshes west of Lake Chapeau, to re-establish the hydrologic separation of the Locust Bayou and Alligator Bayou watersheds, and to re-establish the natural drainage patterns within the Lake Chapeau area. The project components included the re-establishment of a hydrologic separation of the island's two major watersheds utilizing dredged material from Atchafalaya Bay and the restoration of the island hydrology by plugging oil field access canals and gapping artificial spoil banks to restore natural hydrologic pathways.												
Whiskey Island Restoration (TE-27)	C	C	C	I	N/A	3	EPA	BI	C	1999	1,239	$7,106,586
● The project created and restored beaches and back island marshes on Whiskey Island. The initial vegetation planting with smooth cordgrass (*Spartina alterniflora*) on the bay shore was completed in July 1998 and additional vegetation seeding/planting was carried out in Spring 2000.												
Brady Canal Hydrologic Restoration (TE-28)	C	C	C	I	I	3	NRCS	HR	C	2000	297	$5,279,558
● The objective of the project is to maintain the highly-fragmented transitional marshes between the fresh and estuarine zones by enhancing freshwater, sediment, and nutrient delivery into the area. The project promotes freshwater flow from Bayou Penchant into a fresh/intermediate marsh that encompasses the western-most segment of the Mauvais Bois Ridge. Tidal scouring and rapid water exchange rates were reduced by decreasing the cross-sectional areas of natural and man-made outlets and by maintaining the banks along Bayou De Cade, Turtle Bayou, and Superior Canal.												
Raccoon Island Breakwaters (TE-29) Demonstration	C	C	C	I	I	5	NRCS	BI	C	1997	N/A	$1,795,388
● This demonstration project's goal is to reduce shoreline erosion and increase land coverage. Eight segmented breakwaters were constructed along the eastern end of the island to reduce the rate of shoreline retreat, promote sediment deposition along the beach, and protect seabird habitat. Project effectiveness was determined by monitoring changes in the shoreline, wave energy, and elevations along the beach, and by surveys of the gulf floor between the shoreline and the breakwaters.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
East Timbalier Island Sediment Restoration, Phase II (TE-30)	C	C	C	I	N/A	4	NRCS	BI	C	2000	215	$7,600,863
● The project goal is to strengthen and increase the life expectancy of East Timbalier Island by placing dredged material along its landward shoreline. Additional rock has been placed on the existing breakwater in front of the island which will help protect the created area from erosion.												
Flotant Marsh Fencing (TE-31) Demonstration	I	I	N/A	N/A	N/A	4	NRCS	VP	D	N/A	N/A	$106,960
● The purpose of this demonstration project was to determine the effectiveness of different fencing techniques used to conserve and restore floating marshes. There was difficulty in locating an appropriate site for demonstration and in addressing engineering constraints. The restoration techniques that were originally suggested for this project were not feasible. The project was officially deauthorized by the CWPPRA Task Force in October of 2001.												
North Lake Boudreaux Basin Freshwater Introduction and Hydrologic Management (TE-32a)	I	I	NI	NI	NI	6	USFWS	FR	IP	Pending	603	$10,519,383
● The project objective is to seasonally introduce freshwater from the Houma Navigation Canal in order to reduce saltwater intrusion and promote vegetation diversity within the project area. Project plans include enlargement of a portion of Bayou Pelton, dredging of an outfall channel, installation of a major water control structure, building a bridge for Louisiana Highway 57 over the outfall canal, construction of water management structures, and a flood protection provision.												
Bayou Boeuf Pump Station (TE-33)	I	NI	NI	N/A	N/A	6	EPA	HR	D	N/A	N/A	$3,452
● The purpose of this project was to link the wetlands protection/restoration objectives of the Breaux Act with flood protection and navigation needs generally covered by WRDA. The project components consisted of implementing a long-term water management strategy for the Verret basin, and evaluating a long-term river water delivery strategy from Atchafalaya River to Terrebonne wetlands. The project was officially deauthorized by the CWPPRA Task Force in July of 1998.												
Penchant Basin Natural Resources Plan, Increment I (TE-34)	I	I	NI	NI	NI	6	NRCS	HR	IP	Pending	1,136	$14,103,051
● The objective of the project is to combine the long-term realignment of the Penchant basin hydrology with restoration and protection measures aimed at maintaining the physical integrity of the area during the transition toward greater riverine influence. The major problems in the project area include hydrologic alterations, interior marsh erosion, subsidence, saltwater intrusion, herbivory, and hurricane damages.												
Marsh Creation East of the Atchafalaya River - Avoca Island (TE-35)	I	NI	NI	N/A	N/A	6	USACE	DM	D	N/A	N/A	$66,869
● The project consisted of the beneficial use of dredged material from the "Crew Boat Chute" and placing it in the Avoca Island area. Although the project would have benefited 434 acres at a cost of $6,438,400, the cost of the project was estimated to be considerably higher than originally planned making it economically unjustifiable. The project was officially deauthorized by the CWPPRA Task Force in July of 1998.												
Thin Mat Floating Marsh Enhancement (TE-36) Demonstration	C	C	C	N/A	N/A	7	NRCS	SNT	C	2000	N/A	$530,283
● The purpose of this demonstration project is to evaluate techniques to create and enhance thin floating mats of marsh, as well as the effects of water movement and sediment on these marshes. The objective of the project is to induce development of thick, continually floating mats from a thin-mat flotant and to determine the effects of water movement on the floats in areas with and without available sediment.												
New Cut Dune and Marsh Restoration (TE-37)	C	C	I	NI	NI	9	EPA	BI	IP	Pending	102	$13,027,460
● The original objective of this project was to close the breach between East and Trinity Islands, that was originally created by Hurricane Carmen (1974) and subsequently enlarged by Hurricane Juan (1985). The project will create barrier island dunes and marsh habitat, and lengthen the structural integrity of the eastern Isles Dernieres by restoring the littoral drift and adding sediment into the near-shore system. However, New Cut closed naturally, but another cut appeared at the eastern end of the island. This cut will be filled.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
South Lake De Cade Freshwater Introduction (TE-39)	I	C	NI	NI	NI	9	NRCS	FR/ HR	IP	Pending	242	$670,611
● This project will include the construction of a water control structure in the southern bank of Lake De Cade. This will increase the amount of Atchafalaya River water and sediment introduced into the marshes south of the lake. In addition, shoreline protection will be implemented adjacent to the proposed structure and a weir in Lapeyrouse Bayou will be removed.												
Timbalier Island Dune and Marsh Creation (TE-40)	C	C	C	I	N/A	9	EPA	BI	C	2004	273	$16,657,706
● Timbalier Island is migrating rapidly to the west/northwest; therefore, the western end of Timbalier Island is undergoing lateral migration by spit-building processes at the expense of erosion along the eastern end. The objective of this project is to restore the eastern end of Timbalier Island by the direct creation of beach, dunes, and marsh.												
Mandalay Bank Protection (TE-41) Demonstration	C	C	C	I	I	9	USFWS	SP	C	2003	N/A	$1,767,214
● This demonstration project is intended to develop new techniques for protecting and restoring organic soils that can be easily eroded. Intact banks and breakthroughs were treated to determine the cost-effectiveness of demonstrated approaches. The project will evaluate several low-cost solutions for restoring habitat in blowout areas and preventing bank erosion.												
GIWW Bank Restoration of Critical Areas in Terrebonne (TE-43)	C	I	NI	NI	NI	10	NRCS	SP	IP	Pending	366	$1,735,983
● The project objective is to restore critical lengths of deteriorated channel banks and stabilize/armor selected critical lengths of deteriorated channel banks with hard shoreline stabilization materials.												
North Lake Mechant Landbridge Restoration (TE-44)	C	C	NI	I	NI	10	USFWS	SP/ MC/ VT/ HR	IP	Pending	604	$29,009,771
● The project will help to maintain and restore the landbridge (Lake Mechant north shoreline and the Small Bayou La Pointe Ridge) which provides a hydrologic barrier between brackish and low-salinity habitats. Project features include marsh creation, the planting of smooth cordgrass on the shoreline, the construction of various plugs, and repairing a fixed-crest weir along Bayou Raccourci.												
Terrebonne Bay Shore Protection (TE-45) Demonstration	C	C	NI	NI	NI	10	USFWS	SP	IP	Pending	N/A	$2,503,768
● This demonstration project is intended to test several applications of concrete mats, A-Jacks®, and techniques for establishing shoreline oyster reefs for their ability to prevent shoreline erosion while encouraging oyster reef formation. The project design includes three 230 to 300 foot-long replicates of each treatment.												
West Lake Boudreaux Shoreline Protection and Marsh Creation (TE-46)	C	I	NI	NI	NI	11	USFWS	SP/ MC	IP	Pending	277	$15,976,954
● This project is intended to protect the shoreline from erosion due to direct exposure to lake wave energy and to restore interior marsh lost from subsidence and saltwater intrusion. This objective will be accomplished through the construction of a rock dike to stop erosion along the western shoreline of Lake Boudreaux and the creation of marsh habitat through the deposition of dredged material.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Ship Shoal: Whiskey West Flank Restoration (TE-47)	C	C	NI	NI	NI	11	EPA	BI	IP	Pending	195	$3,742,053
● This project is intended to rebuild dunes and a marsh platform on the west flank of Whiskey Island through the deposition of dredged material transported from Ship Shoal. This project will provide a barrier to reduce wave and tidal energy, thereby protecting mainland shoreline from continued erosion.												
Raccoon Island Shoreline Protection/Marsh Creation (TE-48)	I	C	I	NI	NI	11	NRCS	SP/ MC	IP	Pending	183	$7,867,083
● The goal of this project is to protect the Raccoon Island rookery and seabird colonies from an encroaching shoreline by reducing the rate of erosion along the western end of the island and creating more land along the northern shoreline. This goal will be accomplished through the construction of eight additional segmented breakwaters and a terminal groin along the gulf side of the island, adjacent to the Raccoon Island Breakwaters Demonstration (TE-29) project. In addition, dredged material will be used to create marsh on the bay side of the island.												
Avoca Island Diversion and Land Building (TE-49)	I	I	NI	NI	NI	12	USACE	SD	IP	Pending	277	$2,229,876
● The project objective is to divert freshwater, sediment, and nutrients into the open water areas in central Avoca Island to create and protect emergent wetlands. The project design team is considering the addition of a marsh creation component utilizing dredged material to increase project wetland benefits.												
Whiskey Island Back Barrier Marsh Creation (TE-50)	I	I	NI	NI	NI	13	EPA	BI	IP	Pending	272	$2,751,494
● The goal of this project is to enhance the structural function of Whiskey Island as a protective barrier for back bay and inland areas. Dredged material will be deposited on the island's back barrier area to widen the marsh platform on the central and eastern portions of Whiskey Island.												
Vermilion River Cutoff Bank Protection (TV-03)	C	C	C	I	I	1	USACE	SP	C	1996	65	$2,022,987
● The east bank of the Vermilion River Cutoff was stabilized by armoring the shoreline with a 6,520-foot rock breakwater to maintain the shoreline position and protect the integrity of several thousand acres of the Onion Lake wetland complex.												
Cote Blanche Hydrologic Restoration (TV-04)	C	C	C	I	I	3	NRCS	HR	C	1999	2,223	$7,889,103
● The primary objectives of the project are to reduce shoreline loss from wave erosion, reduce excessive tidal fluctuations and rapid tidal exchange to prevent scouring of interior marsh, to develop a hydrologic regime conducive to sediment and nutrient deposition, and to re-establish vegetation in eroded areas. These objectives have been accomplished through the use of both structural and non-structural features.												
Boston Canal/Vermilion Bay Bank Protection (TV-09)	C	C	C	I	I	2	NRCS	SP	C	1995	378	$1,012,649
● The objective of this project is to conserve vegetated wetlands by reducing erosion through the dissipation of wave energy. The project will stabilize 15 miles of Vermilion Bay shoreline and prevent further regression of the Boston Canal banks. A rock bulkhead was installed parallel to the banks of Boston Canal on both sides of the channel from the existing shoreline at the mouth of the channel and extends into the bay. Sediment fences were installed behind the bulkhead to encourage sedimentation and land accretion.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Freshwater Bayou Bank Stabilization- Belle Isle Canal to Lock (TV-11b)	C	C	NI	NI	NI	9	USACE	SP	IP	Pending	241	$1,498,967
● The goal of this project is to stop erosion along the bank of Freshwater Bayou Canal, and to protect the interior wetlands from increased tidal exchange and wake-induced erosion. This objective will be achieved by constructing a rock dike along the eastern bank of Freshwater Bayou Canal, between Belle Isle Canal and Freshwater Bayou Lock.												
Little Vermilion Bay Sediment Trapping (TV-12)	C	C	C	I	I	5	NMFS	SNT	C	1999	441	$886,030
● This project is designed to optimize the retention of sediment from the Atchafalaya River to create new marsh areas in Little Vermilion Bay. Terraces were created to trap sediment and protect the existing shoreline from wind-induced wave erosion.												
Oaks/Avery Canal Hydrologic Restoration, Increment I (TV-13a)	C	C	C	I	I	6	NRCS	HR/ SP	C	2002	160	$2,925,216
● This project is designed to protect the Vermilion Bay shoreline and the Gulf Intracoastal Waterway (GIWW) banklines, and to stabilize water level fluctuation north of the GIWW and east of Oaks Canal. Vegetation was planted and rock dikes were constructed. An additional state-funded project (TV-13), located adjacent to this project, will incorporate the use of low-sill structures placed at the outfall of Avery Canal to redirect additional water flow through one particular section of Bayou Petite Anse.												
Marsh Island Hydrologic Restoration (TV-14)	C	C	C	I	I	6	USACE	HR/ SP	C	2001	408	$5,143,288
● The objective of the project is to stabilize the northeastern shoreline of Marsh Island, including the northern shoreline of Lake Sand, and to help to restore historical hydrology. The project included construction of nine plugs in oil and gas canals at the northeast end of Marsh Island, protection of the northeast shoreline with rock, and isolation of Lake Sand from Vermilion Bay with a rock dike.												
Sediment Trapping at "The Jaws" (TV-15)	C	C	C	I	I	6	NMFS	SNT	C	2004	1,999	$3,392,135
● The objective of the project is to induce sedimentation to create emergent vegetated wetlands. This was achieved by constructing wetland terraces, thereby reducing wave fetch. Distributary channels were dredged to deliver water and sediment to the project area.												
Cheniere Au Tigre Sediment Trapping (TV-16) Demonstration	C	C	C	I	N/A	6	NRCS	SNT/ SP	C	2001	N/A	$624,999
● This demonstration project is intended to test the effectiveness of rock breakwaters that are designed to trap and retain sediment from gulf tides, stabilize the existing shoreline from on-going erosion on Cheniere Au Tigre, and build up portions of the coastline that have already eroded. Increased sediment accretion on the Gulf of Mexico side of the chenier is expected to act as a buffer between the higher salinity gulf water and the brackish marsh, which lies immediately behind the chenier.												
Lake Portage Land Bridge (TV-17)	C	C	C	I	I	8	NRCS/ EPA	SP	C	2004	24	$1,181,129
● The objective of this project is to prevent the shoreline south of Lake Portage from breaching and creating another pass from Vermilion Bay to the Gulf. The project consisted of backfilling a canal and armoring the beach with rock.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Four Mile Canal Terracing and Sediment Trapping (TV-18)	C	C	C	I	I	9	NMFS	SNT	C	2004	167	$2,325,230
● This project included construction and planting of terraces with smooth cordgrass (*Spartina alterniflora*) within Little White Lake and Little Vermilion Bay, along Four Mile Canal, to abate wave-induced shoreline erosion and facilitate sedimentation in the open water areas between the terraces.												
Weeks Bay Marsh Creation and Shore Protection/ Commercial Canal Freshwater Redirection (TV-19)	I	I	NI	NI	NI	9	USACE	SP/ HR/ DM	IP	Pending	278	$1,229,337
● The objective of this project is to stop shoreline and bank erosion. This objective will be achieved by the construction of a retention levee and channel plugs, dedicated placement of dredged material, re-vegetating critical areas, and armoring shore/bank areas with sheetpile revetment. In addition, a low-sill weir will be placed across Commercial Canal to reduce tidal energy and redirect Atchafalaya River water.												
Bayou Sale Shoreline Protection (TV-20)	I	I	NI	NI	NI	13	NRCS	SP	IP	Pending	329	$2,254,912
● The project goal is to reduce and/or reverse shoreline erosion and create marsh between the breakwater and the existing shoreline. A foreshore rock dike will be constructed parallel to the existing eastern shoreline of East Cote Blanche Bay.												
East Marsh Island Marsh Creation (TV-21)	I	I	NI	NI	NI	14	EPA/ NRCS	MC	IP	Pending	189	$1,193,606
● The goal of the project is to re-create brackish marsh habitat in the open water areas of the interior marsh primarily caused by hurricane damage. The project will also create marsh behind the two easternmost existing rock dikes.												

[a]**Activities:** Initiated (I), Completed (C), Not Initiated (NI), or Not Applicable (N/A); Activity status as of 8/1/06.

[b]**Agency:** U.S. Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS), Natural Resources Conservation Service (NRCS), U.S. Army Corps of Engineers (USACE), and U.S. Fish and Wildlife Service (USFWS)

[c]**Project Type:** Hydrologic Restoration (HR), Marsh Creation (MC), Marsh Management (MM), Shoreline Protection (SP), Vegetative Planting (VP), Sediment and Nutrient Trapping (SNT), Freshwater Reintroduction (FR), Outfall Management (OM), Sediment Diversion (SD), Barrier Island Restoration (BI), and Beneficial Use of Dredged Material (DM)

[d]**Project Status:** Completed (C), In Progress (IP), Deauthorized (D)

[e]**Acres Created/Restored and Protected:** The net gain in emergent marsh as a result of project implementation as projected by the Environmental Working Group during the Wetland Value Assessment. This figure includes acres of emergent marsh to be protected, created, and restored as a result of project implementation estimated at the time the project was approved by the CWPPRA Task Force.

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Cameron-Creole Maintenance (CS-04a)	NI	I	C	N/A	I	3	NRCS	HR	C	1997	2,602	$3,736,718
● The project area falls within the Cameron-Creole watershed management area, which has been adversely impacted by saltwater intrusion and loss of sediment due to channelization and water diversion of the Calcasieu River. The project provides needed maintenance for the existing 19 miles of levee and five major structures which make up the Cameron-Creole Watershed Project.												
Brown Lake Hydrologic Restoration (CS-09)	C	C	C	I	NI	2	NRCS	HR/ DM	IP	Pending	282	$3,201,890
● The project is intended to restore, to the extent possible, the natural hydrology of the area. A reduction in marsh loss and improved water conditions are expected to occur following project implementation. The project includes rebuilding the Alkali Ditch levee, utilizing dredged material from the Calcasieu River when available, as well as rebuilding water control structures and canal plugs.												
Sweet Lake/Willow Lake Hydrologic Restoration (CS-11b)	C	C	C	I	I	5	NRCS	SP/ VP/ SNT	C	2001	247	$4,242,995
● The project objectives are to re-establish the shoreline (hydrologic boundary) between Sweet Lake and the Gulf Intracoastal Waterway (GIWW), to reduce lake turbidity and tidal exchange, and to halt erosion and trap sediment needed to rebuild marsh along the northern and northwestern shorelines of Sweet Lake. This project includes construction of rock embankments on the GIWW to close off the lakes, vegetation plantings to reduce erosion, and construction of earthen terraces combined with vegetation plantings in open water areas to promote revegetation.												
Cameron Creole Plugs (CS-17)	C	C	C	I	I	1	USFWS	HR	C	1996	865	$991,295
● The project goal is to restore historic water circulation patterns within the Cameron-Creole Watershed. This objective will be accomplished by slowing the rapid movement of saline waters that enter the watershed from Calcasieu Lake. The project consisted of the installation of two sheet-pile plugs in the lakeshore borrow canal.												
Sabine National Wildlife Refuge Erosion Protection (CS-18)	C	C	C	I	I	1	USFWS	SP	C	1995	5,542	$1,602,656
● The goal of this project is to protect leveed fresh marsh from deterioration associated with the anticipated failure of the existing west levee. The original design was to reconstruct 5.5 miles of eroded levee. The project was redesigned to include 1,000 feet of levee reconstruction and 5.5 miles of rock armor. Vegetation plantings were used to reduce erosion from boat traffic.												
West Hackberry Vegetative Planting (CS-19) Demonstration	C	C	C	I	N/A	1	NRCS	VP	C	1994	N/A	$258,804
● The goal of this demonstration project is to reduce marsh erosion from interior open water wave energy using vegetation plantings consisting of smooth cordgrass (*Spartina alterniflora*). In addition, wave-stilling hay bale fences were utilized to protect the vegetation plantings.												
East Mud Lake Marsh Management (CS-20)	C	C	C	I	I	2	NRCS	MM	C	1996	1,520	$4,095,936
● The project is intended to create a hydrologic regime conducive to restoration, protection, and enhancement of the Mud Lake area by using various types of water control structures and vegetation plantings. Structural components include culverts with flapgates, two variable crest weirs, three earthen plugs, and repair of an existing levee.												
Highway 384 Hydrologic Restoration (CS-21)	C	C	C	I	I	2	NRCS	MM	C	2000	150	$1,058,554
● The purpose of this project is to restore the natural hydrology of the project area and eliminate high salinities and severe water fluctuations to reduce marsh loss. The project features included the installation of flapgated culverts and a shell plug installed along the Calcasieu Lake shoreline to repair a breach.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Clear Marais Bank Protection (CS-22)	C	C	C	I	I	2	USACE	SP	C	1997	1,067	$3,696,088
● The goal of this project is to stabilize six miles of the Gulf Intracoastal Waterway (GIWW) channel bank with a rock armored breakwater. A 35,000 foot limestone breakwater was constructed to prevent continued erosion of the levee and to prevent encroachment of the GIWW into the project area. Vegetation plantings were used to enhance the bank protection and promote sediment trapping.												
Replace Sabine Refuge Water Control Structures at Headquarters Canal, West Cove Canal, and Hog Island Gully (CS-23)	C	C	C	I	I	3	USFWS	MM	C	2000	953	$4,528,418
● This project was authorized to replace the water control structures on three major avenues of water passage that allow water to flow from saline areas into the project area's interior marshes. The new structures on Hog Island Gully, West Cove Canal, and Headquarters Canal will be operated to effectively discharge excess water, increase cross sectional area for movement of estuarine species, and help to curtail saltwater intrusion into the interior marshes.												
Perry Ridge Shore Protection (CS-24)	C	C	C	I	I	4	NRCS	SP	C	1999	1,203	$2,289,090
● The project is intended to reduce tidal scour, wave action from boats, and other excessive energy impacts on interior marshes, and reduce the possibility of saltwater intrusion by repairing the northern spoil bank of the Gulf Intracoastal Waterway (GIWW). A rip-rap breakwater was placed along low areas of the northern bank of the GIWW from Perry Ridge to Vinton Drainage Canal.												
Plowed Terraces (CS-25) Demonstration	C	C	C	I	N/A	4	NRCS	SNT	C	2000	N/A	$325,641
● This demonstration project developed and demonstrated a non-traditional procedure for constructing earthen terraces in shallow open water areas. Thirty-eight earthen terraces served as wave-stilling, sediment-trapping structures and provide a base for the establishment of emergent vegetation.												
Compost (CS-26) Demonstration	C	C	NI	I	N/A	4	EPA	MC	D	N/A	N/A	$213,645
● This project was authorized to evaluate the effectiveness of using tree trimmings as compostable material, using compost amended material in providing a growth medium for emergent vegetation, and determining settlement rates of the compost amended materials and tree trimmings. The project was officially deauthorized by the CWPPRA Task Force in January 2002.												
Black Bayou Hydrologic Restoration (CS-27)	C	C	C	I	I	6	NMFS	HR	C	2001	3,594	$5,972,613
● The project goals are to reduce wetland loss resulting from hydrologic changes including reduced freshwater inflow, increased magnitude and duration of tidal fluctuations, increased salinities, higher water levels, and excessive water exchange. This project included the construction of spoil banks, weirs, plugs, and culverts designed to allow freshwater from the Gulf Intracoastal Waterway (GIWW) into the wetlands, and to create a hydrologic head that increases freshwater retention time and reduces saltwater intrusion.												
Sabine Refuge Marsh Creation Increments 1-5 (CS-28)	C	C	C	I	I	8	USFWS/ USACE	DM	C	Pending	916	$17,413,846
● The project is intended to strategically create marsh in large, open water areas to block the wind-induced introduction of saltwater. Additionally, it will increase nourishment in adjacent marshes while reducing open water fetch and erosion of marsh fringe. The project consists of 5 marsh creation sites (5 cycles) within the Sabine National Wildlife Refuge using material dredged from the Calcasieu River Ship Channel.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Black Bayou Culverts Hydrologic Restoration (CS-29)	C	C	I	NI	NI	9	NRCS	HR	IP	Pending	540	$5,387,703
● The project objective is to discharge and remove excess water, which has contributed to marsh loss and shoreline erosion. This project consists of installing box culverts with sluice gates in Black Bayou and relocating Louisiana Hwy 384 over the culverts. Operation of the structure will be in coordination with Calcasieu Lock and the Schooner Bayou and Catfish Point water control structures.												
GIWW - Perry Ridge West Bank Stabilization (CS-30)	C	C	C	I	I	9	NRCS	SP	C	2001	83	$1,746,831
● This project was authorized to install rip-rap along the northern bank of the Gulf Intracoastal Waterway (GIWW) in an area which was dredged to a depth of 30 feet to allow for the use of double barge traffic. The project consisted of installing rock along the bank to prevent further erosion.												
Holly Beach Sand Managemen (CS-31)	C	C	C	I	I	11	NRCS	SP	C	2002	330	$14,130,233
● The purpose of the project is to protect existing coastal wetlands by restoring and maintaining the integrity and functionality of the remaining chenier/beach ridge. This objective was accomplished through beach renourishment, installation of sand fencing, vegetation plantings, and monitoring of the shoreline response. This project was originally authorized on the 9th PPL as a complex project, Holly Beach Project, CS-01. An additional $4,728,125 was contributed by the Coastal Impact Assistance Program (CIAP) for the construction of this project.												
East Sabine Lake Hydrologic Restoration (CS-32)	C	C	I	NI	NI	10	NRCS/ USFWS	HR	IP	Pending	393	$5,496,580
● This project utilizes water control structures, shoreline protection, terraces, and vegetation plantings to restore the historical hydrologic regime to approximately 36,623 acres of the Sabine National Wildlife Refuge. Specific goals include reducing elevated salinities within fresh and intermediate marshes, reducing tidal scour, reducing erosion on the eastern shore of Sabine Lake, reducing the turbidity of open water areas, and restoring and protecting marsh.												
Freshwater Bayou Wetland Protection (ME-04)	C	C	C	I	I	2	NRCS	HR/ SP	C	1998	1,593	$3,455,303
● This project was constructed in two phases. Phase I was completed in 1995 and consisted of a 10,000 linear-foot rock dike to protect the west bank of Freshwater Bayou Canal from shoreline erosion. Phase II of the project was completed in 1998 and included the construction of several water control structures to mediate the effects of increased salinity and higher water level fluctuations on vegetation cover.												
Dewitt-Rollover Vegetative Plantings (ME-08) Demonstration	C	C	C	C	I	1	NRCS	VP	D	N/A	N/A	$92,012
● This demonstration project's purpose was to investigate the ability of vegetation plantings of smooth cordgrass (*Spartina alterniflora*) to colonize a newly accreted mudflat, thereby establishing a vegetation buffer between the Gulf of Mexico and coastal wetlands. This project was officially deauthorized by the Breaux Act Task Force in February 1996 because no plants remained.												
Cameron Prairie National Wildlife Refuge Shoreline Protection (ME-09)	C	C	C	I	I	1	USFWS	SP	C	1994	247	$1,227,123
● The project goals are to protect the emergent wetlands of the Cameron Prairie National Wildlife Refuge adjacent to the Gulf Intracoastal Waterway (GIWW). Project features included construction of approximately 2.5 miles of rock dike parallel to the existing spoil bank, thereby terminating the encroachment of the GIWW into the refuge.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Humble Canal Hydrologic Restoration (ME-11)	C	C	C	I	I	8	NRCS	HR	C	2003	378	$1,530,812
● The objective of this project is to restore historical hydrology to the project area by constructing a water control structure consisting of five 48-inch diameter by 50-foot long corrugated aluminum pipes with flap gates and weir drop inlets along with one 18-inch diameter corrugated aluminum pipe with screw gate. This structure will protect the area from Mermentau River saltwater intrusion and allow high water to drain from the marsh to the river.												
Southwest Shore White Lake Protection (ME-12) Demonstration	C	C	C	C	I	3	NRCS	SP	D	N/A	N/A	$103,468
● The objective of this demonstration project was to stabilize one mile of the White Lake shoreline and prevent breaching into Deep Lake. The project was initiated to determine if California bulrush (*Schoenoplectus californicus*) is effective at damping high energy wave action. The project was officially deauthorized by the CWPPRA Task Force in October of 1998.												
Freshwater Bayou Bank Stabilization (ME-13)	C	C	C	I	I	5	NRCS	SP	C	1998	511	$2,543,313
● The objective of this project is to protect the integrity of the Mermentau River basin by preventing interior ditches from connecting Freshwater Bayou Canal to the Old Intracoastal Canal. A 23,193 linear-foot rock dike was constructed approximately 100 feet from the existing shoreline to prevent Freshwater Bayou Canal from eroding into the intermediate marshes.												
Pecan Island Terracing (ME-14)	C	C	C	I	I	7	NMFS	SNT	C	2003	442	$2,391,953
● The goal of this project is to convert areas of open water back to vegetated marsh. Project features included the construction of earthen terraces to reduce wave action.												
Freshwater Introduction South of Highway 82 (ME-16)	C	C	I	I	NI	9	USFWS	FR/ HR	IP	Pending	296	$5,083,528
● This project was authorized to address saltwater intrusion and lack of freshwater and sediment input in the project area. Project components include the installation of approximately eight water control structures, breaching spoilbanks in areas near Louisiana Hwy 82 to allow water to flow across the chenier, and the removal of plugs to facilitate water flow from the lakes subbasin south into the chenier subbasin.												
Little Pecan Bayou Hydrologic Restoration (ME-17)	I	I	NI	NI	NI	9	NRCS	HR/ FR	IP	Pending	144	$1,556,598
● The project objectives include providing a means to remove excess water from the lakes subbasin by installing a water control structure within Little Pecan Bayou, constructing a freshwater conveyance channel with two water control structures through Grand Chenier Ridge to assist in excess water removal, and excavation of a collector channel within the marsh.												
Rockefeller Refuge Gulf Shoreline Stabilization (ME-18)	C	C	NI	NI	NI	10	NMFS	SP	IP	Pending	920	$2,408,478
● The project will address Rockefeller Refuge Gulf shoreline retreat, which averages approximately 39 feet per year with subsequent direct loss of saline marsh. The project would entail construction of a nearshore breakwater along the Gulf of Mexico shoreline, extending approximately from Beach Prong to Joseph Harbor.												

Project Name	Activities[a]					Priority List	Agency[b]	Project Type[c]	Project Status[d]	Year Completed	Anticipated Acres Created/ Restored and Protected[e]	Current Estimated Cost (20-yr)
	Engineering	Landrights	Construction	Monitoring	Operation & Maintenance							
Grand-White Lakes Landbridge Protection (ME-19)	C	C	C	I	I	10	USFWS	SP/ SNT	C	2004	213	$5,804,926
● This project is intended to protect freshwater wetlands by stopping the erosion of the southeastern shoreline of Grand Lake and the western shoreline of Collicon Lake. Project features include construction of hard structure shoreline stabilization and planted earthen terraces to protect the landbridge.												
South Grand Chenier Hydrologic Restoration (ME-20)	I	I	NI	NI	NI	11	USFWS	HR/ MC	IP	Pending	440	$2,358,420
● This project is intended to restore the Hog Bayou watershed hydrology through the use of dredged material to create two 200-acre cells that will stop saltwater intrusion into the project area. Freshwater, sediment, and nutrients from the Mermentau River will also be introduced into the project area at two separate locations.												
Grand Lake Shoreline Protection (ME-21)	C	C	NI	NI	NI	11	USACE	SP	IP	Pending	540	$1,049,029
● The objective of this project is to reduce erosion along the southern shoreline of Grand Lake, which is caused by high wave energy associated with storm winds and frontal passages. Project features will include construction of a rock breakwater from Superior Canal to Tebo Point.												
South White Lake Shoreline Protection (ME-22)	C	C	C	I	NI	12	USACE	SP	IP	2006	844	$15,712,059
● This project is intended to reduce erosion along the southern White Lake shoreline through the construction of a foreshore rock dike. Marsh accretion and submerged aquatic vegetation habitat creation is expected to occur behind the structure due to the occasional wave overwash and the reduction of turbidity in the interior open water areas.												
South Pecan Island Freshwater Introduction (ME-23)	NI	NI	NI	NI	NI	15	NMFS	FR	IP	Pending	98	$1,102,043
● The goals of this project are to provide fresh water flow and sediment from White Lake into the marsh south of Highway 82. The project will be constructed to allow excess fresh water to drain, while preventing saltwater intrusion.												

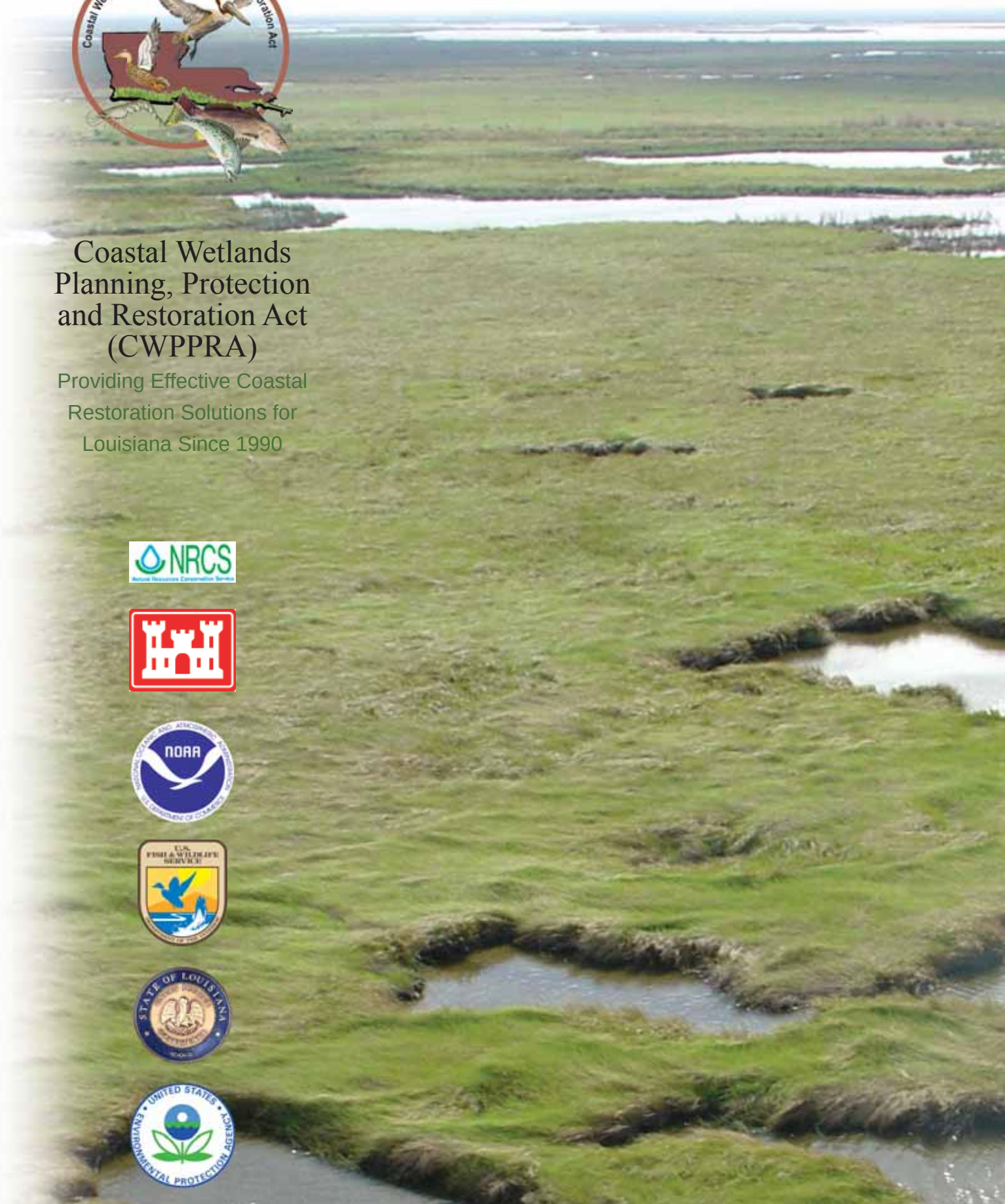
[a]**Activities:** Initiated (I), Completed (C), Not Initiated (NI), or Not Applicable (N/A); Activity status as of 8/1/06.

[b]**Agency:** U.S. Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS), Natural Resources Conservation Service (NRCS), U.S. Army Corps of Engineers (USACE), and U.S. Fish and Wildlife Service (USFWS)

[c]**Project Type:** Hydrologic Restoration (HR), Marsh Creation (MC), Marsh Management (MM), Shoreline Protection (SP), Vegetative Planting (VP), Sediment and Nutrient Trapping (SNT), Freshwater Reintroduction (FR), Outfall Management (OM), Sediment Diversion (SD), Barrier Island Restoration (BI), and Beneficial Use of Dredged Material (DM)

[d]**Project Status:** Completed (C), In Progress (IP), Deauthorized (D)

[e]**Acres Created/Restored and Protected:** The net gain in emergent marsh as a result of project implementation as projected by the Environmental Working Group during the Wetland Value Assessment. This figure includes acres of emergent marsh to be protected, created, and restored as a result of project implementation estimated at the time the project was approved by the CWPPRA Task Force.



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