Louisiana Coastal Wetlands Planning, Protection and Restoration News

WaterMarks

Region Two: The Land and its People

The Coastal Crisis and Louisiana's Response

A Case Study:
Channel Armor Gap Crevasse

Looking to the FUTURE

REGION 2 June 2002 • Number 20

Number Three in a Series of Four

WaterMarks

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Louisiana Coastal Wetlands Planning, Protection and Restoration News

WaterMarks is published quarterly by the Louisiana Coastal Wetlands Conservation and Restoration Task Force to communicate news and issues of interest related to the Coastal Wetlands Planning, Protection and Restoration Act of 1990. This legislation funds wetlands enhancement projects nationwide, designating approximately $35 million annually for work in Louisiana. The state contributes 15 percent of the cost of project construction.

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ABOUT THIS ISSUE'S COVER . . .
Lush cypress swamps like this once abounded in Region Two.

Louisiana Office of Tourism Photo

In This Issue...

This is the third of a four-part series presenting an in-depth look at each of the four regions defined in Coast 2050. Each issue offers a casebook for a single region providing a historical overview, articles on current and future interests, and a detailed look at a regional project. This issue covers Region Two.

Contents

For more information about Louisiana's coastal wetlands and the efforts planned and under way to ensure their survival, check out these sites on the World Wide Web:

www.lacoast.gov
www.savelawetlands.org
www.btnep.org
www.crcl.org

For current meetings, events, and other news concerning Louisiana's coastal wetlands, subscribe to the Breaux Act Newsflash, our e-mail newsletter, at:
www.lacoast.gov/newsletter.htm

Region Two
The Land and Its People

Louisiana Office of Tourism Photo

Both shaped and threatened by the influence of the Mississippi River and Gulf of Mexico, Region Two comprises the Barataria, the Breton Sound and the Mississippi River Delta basins and sits at the southeastern tip of Louisiana. Encompassing all or part of eight parishes (St. Bernard, Plaquemines, Jefferson, Lafourche, St. Charles, St. James, St. John the Baptist and Assumption) and stretching from the Mississippi River Gulf Outlet to Bayou Lafourche, this land is rich in cultural diversity and natural resources.

With its bottomland hardwood forests (90,000 acres), cypress-tupelo swamps (146,000 acres), vast marshes (658,000 acres) and coastal barrier islands, the region reflects the habitat diversity characteristic of Louisiana's fragile and complex ecosystems—systems that are inextricably connected to the muddy Mississippi.

Louisiana Office of Tourism Photo

For thousands of years, as it served to drain 40 percent of the continental United States, the Mississippi River has applied a rich load of nutrients and sediment to the Louisiana lowlands, forming, changing and replenishing the rich wetland habitats that flourish on Louisiana's coast.

In Region Two, however, that elementary connection between river and land has been strained. Here the nation and the region's people have struggled with the river for dominance—confining it between levees for flood protection, dredging its channel for commercial navigation to the heartland, and blocking the river's constant urge to change course.

While this century-long struggle for dominance between man and river may

seem to be eternal, it is, in fact, comparatively recent. It was surely not an issue with Louisiana's earliest known residents, the Chitimachas, a Native American culture dating back over 1,000 years, or with the French explorers who first arrived at the Mississippi Delta in 1682. The earliest settlers also accepted and endured the whims of the river and the coastal storms. But this was to change as a diverse group of Europeans, Acadians, African slaves and Isleños from the Canary Islands arrived to make coastal Louisiana their home.

Louisiana Office of Tourism Photo

French settlers, beginning in 1717, were the first recorded builders of flood control works in the Lower Mississippi Valley, constructing a series of levees to protect the French Quarter in New Orleans. By 1735 the new residents of the area had built levees on both sides of the river, extending 30 miles above and 12 miles below the city of New Orleans. As the 19th century approached, the work to control the Mississippi was in full swing. The Barataria and Breton Sound basins were logged and the cypress transported to satisfy New Orleans' appetite for lumber. The early 20th century oil and natural gas discoveries off-shore and in the coastal wetlands demanded that new channels be dredged and the natural waterways modified for navigation and pipelines. New communities formed around commercial fishing, tourism and the needs of the oil and gas industry, which eventually would generate more than 18,000 wells and 2,200 miles of pipeline in the region's marshland.

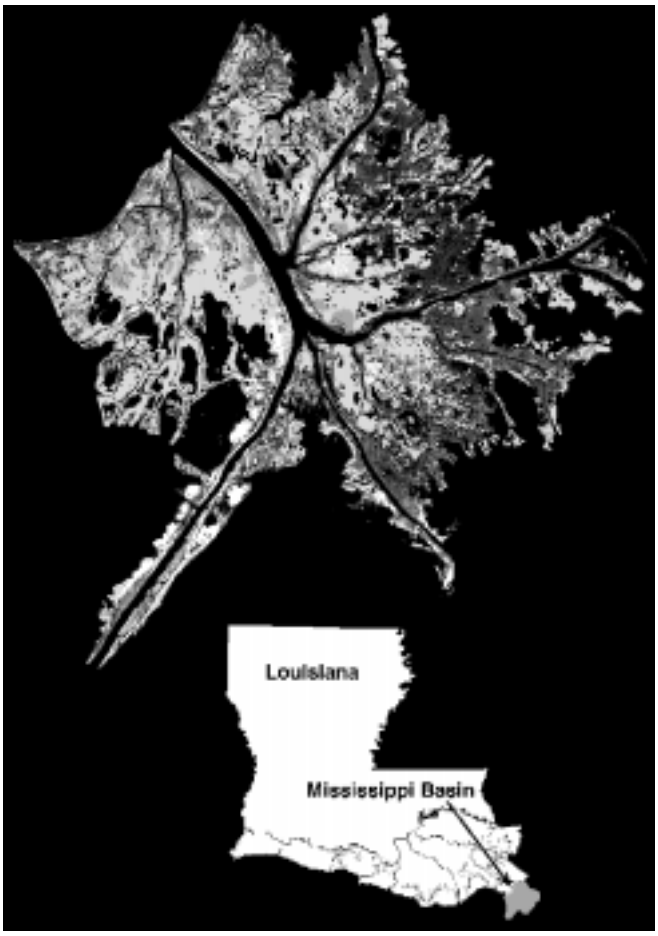
US Army Corps of Engineers

But with hardly a notice, a destructive alliance had formed between the influence of man and the natural forces of subsidence, wind and water. Louisiana's coastal marshland was under assault. Now the state and the nation confront this reality: the protection and opportunities bestowed by these wetlands are vanishing, and the economy, infrastructure and culture of Region Two risk collapse. WATER MARKS

The Coastal Crisis and Louisiana's Response

Louisiana Office of Tourism Photo

With abundant fresh water and suspended sediment, the muddy Mississippi should be a life-giving boon, delivering nutrients and land-building silt to starved coastal wetlands. In fact, each day the river carries over half a million metric tons of sediment out to sea while 48 acres of precious coastal wetlands vanish from Region Two. Ironically, although more sediment passes through this region than any other, it also suffers the highest erosion rates of the entire Louisiana coast. The region's Barataria Basin lost more than 10.5 square miles of marshland every year from 1974 to 1990. Overall, Region Two faces a loss of about 20 percent of its coastal marsh by the year 2050.



NWRC Photo

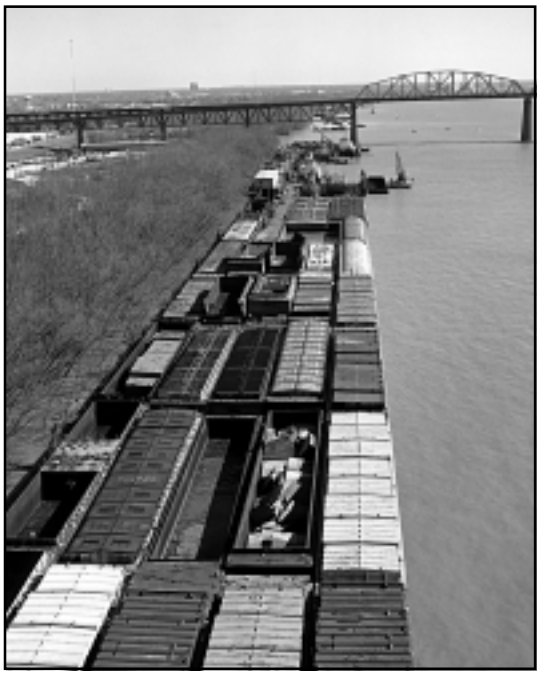
While Region Two could once boast of a wide green expanse of lush wetlands, current land-loss maps of the region now reflect an image not unlike the lacy skeleton of a fallen and decayed leaf, showing little but the faint outline of its former life.

A Controlled Response

Beginning in the early 1980s, growing numbers of Louisianans realized that the development of oil and gas infrastructure through the coastal marsh and the constraint of the river were causing serious coastal problems. The many projects created to control flooding and protect lives and property were playing a vital role, but they were also contributing to the destruction of the wetlands. In response, projects were conceived that would mimic the natural processes

of river diversion through levee breaches or crevasses, and do so in a controlled fashion. By diverting a portion of the Mississippi's flow into its neighboring basins, supplies of fresh water, sediments and nutrients could be restored within the coastal areas.

In the mid-1980s, two major freshwater diversions were aggressively planned by the U.S. Army Corps of Engineers and state of Louisiana for Region Two: Caernarvon and Davis Pond. The Caernarvon Diversion, completed in 1991, directs water from the Mississippi into the Breton Sound Basin at a maximum flow of 8,000 cubic feet per second (cfs) and has already created significant improvements in the local marshland. The recently completed Davis Pond Diversion project will feed the upper part of the Barataria Basin with a maximum flow capacity of 10,650 cfs. Together, these two diversions are expected to prevent the loss of 49,000 acres of wetland over the next 50 years.



Louisiana Office of Tourism Photo

The chart on the next page describes current Breaux Act projects intended to slow the trend of wetland loss in Region Two. WATER MARKS

Lane Lefort, U.S. Army Corps of Engineers, New Orleans District

Region Two CWPPRA Projects: Construction Status

Region Two

Project Number	Project Title	Description of Project Work	Net Acres at 20 years	Completion Date	Construction Status
BA-02	GIWW to Clovelly Hydrologic Restoration	Installation of five weirs and four canal plugs; re-establishment of lakeshore rim; maintenance of canal/marsh banks to manage freshwater flow and reduce erosion	2,052	Oct-2000	construction complete; monitoring in progress
BA-3c	Naomi Outfall Management	Construction of weirs with boat bays to maximize sediment retention and nutrient uptake	633	unscheduled	engineering and design
BA-4c	West Pointe a la Hache Outfall Management	Installation of three plugs and three weirs; restoration of channel banks to enhance sediment and nutrient distribution and reduce saltwater intrusion	1,087	unscheduled	engineering and design
BA-15	Lake Salvador Shore Protection Demonstration—Phase I, II	Construction and testing of four types of shoreline protection structures to protect the shoreline and adjacent marsh from wave-induced erosion	N/A	1998	construction complete
BA-19	Barataria Bay Waterway Wetland Restoration	Use of maintenance-dredged sediments to create marsh; purchase of oyster leases	445	31-Dec-99 (Phase I)	construction complete; monitoring in progress
BA-20	Jonathan Davis Wetland Protection	Installation of five weirs, eight plugs, breach armoring and rock dike shoreline protection to reduce erosion	510	unscheduled	Unit 1 & 2—complete Unit 3—engineering and design
BA-21-2	Pass Chaland to Grand Bayou Pass Barrier Shoreline Restoration	Creation of marsh platform and six, one-acre ponds to be seeded aerially	161	unscheduled	engineering and design
BA-22	Bayou L'Ours Ridge Hydrologic Restoration	Installation of six plugs and two water control structures to restore hydrologic integrity of the ridge	737	unscheduled	engineering and design
BA-23	Barataria Bay Waterway West Side Shoreline Protection	Construction of rock dike; installation of water control structure to provide drainage and fisheries access	232	2-Nov-00	construction complete; monitoring in progress
BA-24	Myrtle Grove Siphon	Installation of eight siphon pipes and vacuum pipe; construction of leveed outfall channel to facilitate distribution of water and sediments	1,119	unscheduled	engineering and design
BA-24-1	Little Lake Shoreline Protection/Dedicated Dredging near Round Lake	Installation of shoreline protection and dedicated dredging	713	unscheduled	engineering and design
BA-24-4	Northeast Extension of Barataria Landbridge Shoreline Protection	Installation of foreshore rock dike with a lightweight aggregate core or concrete sheetpile and will incorporate fish dips	334	unscheduled	engineering and design
BA-25	Bayou Lafourche Siphon	Installation of pump/siphon system, a receiving intake structure, discharge settling pond/sediment basin, weir structures and bank stabilization	988	unscheduled	engineering and design
BA-26	Barataria Bay Waterway East Bank Protection	Installation of foreshore rock dike	217	1-Jun-01	construction complete; monitoring in progress
BA-27	Barataria Basin Landbridge Shoreline Protection—Phase 1 & 2	Stabilization of shoreline with rock riprap; maintenance of vegetation with PVC sheetpile; construction of breakwater to bridge discontinuous marsh	1,304	19-Jul-01	Phase 1—complete Phase 2—construction
BA-27c	Barataria Basin Landbridge Shoreline Protection—Phase 3	Installation of rock shoreline protection	264	unscheduled	engineering and design
BA-28	Vegetative Plantings of a Dredged Material Disposal Site on Grand Terre Island	Vegetative plantings; degradation of retention dikes to enhance fisheries; construction of fencing to reduce grazing	127	31-May-01	construction complete; monitoring in progress
BA-29	LA Highway 1 Marsh Creation	Dredge material from a nearby area for use to create marsh habitat in a large open water area adjacent to LA Highway 1	146	unscheduled	engineering and design
BA-30	East/West Grand Terre Restoration Project	Construction of 40 acres of dune and dune will be planted with vegetation	472	unscheduled	engineering and design
BA-33	Delta-Building Diversion at Myrtle Grove	Installation of five gated box culverts and a conveyance channel; construction of a pump station	8,891	unscheduled	engineering and design
BA-34	Small Freshwater Diversion to Northwestern Barataria	Installation of two small siphons, gap spoil banks and culverts	*	unscheduled	engineering and design
BA-CW-3	Dedicated Dredging on the Barataria Basin Landbridge	Hydrologic dredging and placement of dredged material in open water areas in the marsh interior; vegetative planting	564	unscheduled	engineering and design
BS-3a	Caernarvon Diversion Outfall Management	Construction of six armored plugs and maintenance of one plug; install culverts in seven existing plugs; restoration of spoilbanks to enhance freshwater flow and retention	802	unscheduled	construction
BS-08	Upper Oak River Freshwater Siphon—Phase 1	Installation of a freshwater siphon; create openings in ridge and road to allow water flow; vegetative plantings	339	unscheduled	engineering and design
BS-10	Delta-Building Diversion North of Fort St. Philip	Installation of a new diversion channel and cuts made into the channel will divert water and sediments into adjacent open waters	2,473	unscheduled	engineering and design
BS-11	Delta Management at Fort St. Philip	Construction of terraces and six crevasses	267	unscheduled	engineering and design
MR-3	West Bay Sediment Diversion	Construction of a conveyance channel for diversion of sediments from the Mississippi River	9,831	unscheduled	engineering and design
MR-6	Channel Armor Gap Crevasse	Enlargement of existing crevasse to allow additional flow and sediment deposition	936	2-Dec-97	construction complete; monitoring in progress
MR-9	Delta-Wide Crevasses	Construction of five new crevasses; dredging of existing crevasses; installation of the plug in the Raphael Pass crevasse to force more water through other crevasses	2386	unscheduled	construction
MR-10	Combination Dustpan and Cutterhead Maintenance Dredging Operations for Marsh Creation in the Mississippi River Delta Demonstration	Project will use dredge material from routine maintenance of the Mississippi River Navigation Channel to create and restore adjacent marsh	N/A	unscheduled	construction
MR-11	Periodic Introduction of Sediment and Nutrients at Selected Diversion Sites Demonstration	Demonstrate the effectiveness of using a dredge to provide sediment input into a diversion structure. A dustpan dredge would be employed for the project causing no impact	N/A	unscheduled	engineering and design
MR-13	Benny's Bay Diversion	Installation of a conveyance channel for an uncontrolled sediment diversion	5,828	unscheduled	engineering and design

*No net acres are calculated for swamp projects. This project would benefit 5134 acres.

A Case Study:

Channel Armor Gap Crevasse

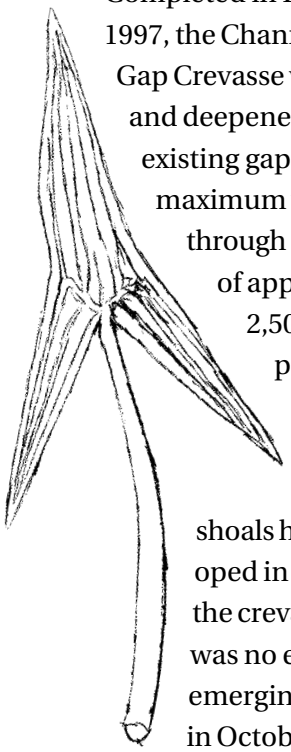
US Army Corps of Engineers

When river water scours a crevasse through a levee and spreads over the land, the fresh water, nutrients and sediment rejuvenate the coastal habitat. While crevasses caused by floods have been vital to wetlands, they are also dangerous and destructive. Today, fresh water and sediment can be re-introduced through the levees in a safe and controlled fashion. The Channel Armor Gap Crevasse that allows water from the Mississippi to flow into Mary Bowers Pond is an example of a planned crevasse that is beginning to restore wetlands of the Delta National Wildlife Refuge in the Mississippi River Birdsfoot Delta.

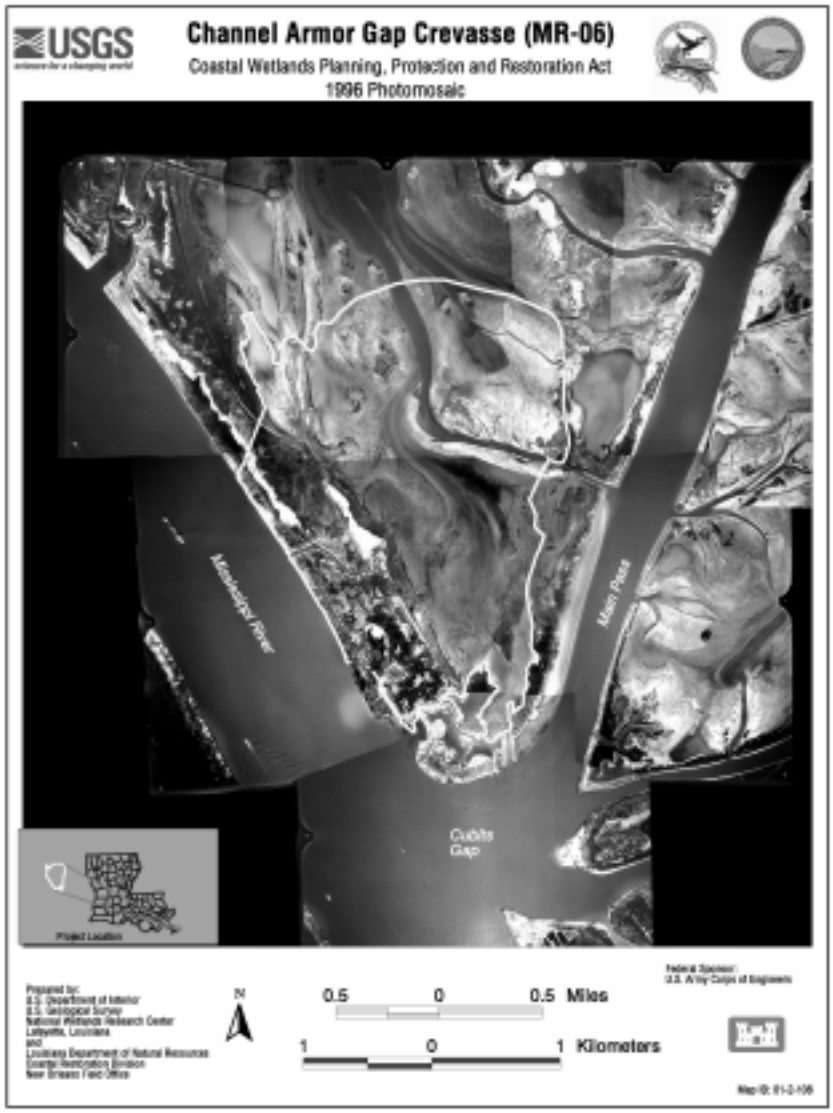
US Army Corps of Engineers

Prior to 1997, Mary Bowers Pond was receiving inadequate fresh water and sediment from the Mississippi. Although some water from the river reached the pond through three openings (an oil company crevasse, and two

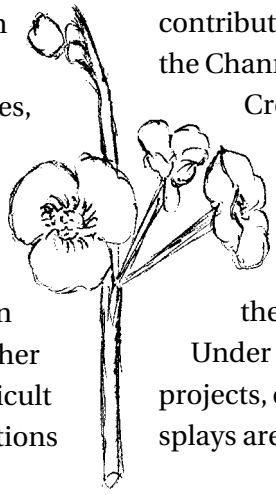
opened by the Corps of Engineers), the supply was not sufficient. Consequently, the area degenerated into barren mudflats.



Completed in December 1997, the Channel Armor Gap Crevasse widened and deepened one of the existing gaps, allowing a maximum water flow through the crevasse of approximately 2,500 cubic feet per second. By 1999, although new shoals had developed in the area of the crevasse, there was no evidence of emerging land. But in October 2001, field trips to the area revealed that the first small area of land had appeared. The 2001 first post-construction vegetation surveys showed a pioneering plant species, *Sagittaria*, commonly known as arrowhead, colonizing the emergent land.



USGS Photo



Although the addition of sediment from the other two splays makes it difficult to ascertain the proportions contributed from each source, the Channel Armor Gap Crevasse is expected to eventually create 936 acres of freshwater marsh over the 20 years of the project.

Under similar Breaux Act projects, other small crevasse splays are planned. In concert with the large diversions, and equally vital to the goal of restoring sediment and fresh water to Region Two's wetlands, these small, low-cost projects have the potential of creating or restoring an additional 2,400 acres of land by 2020. WATERMARKS

Looking to the FUTURE

There are seven other diversion projects on the Breaux Act priority project list for Region Two, bringing the total to nine. The seven diversions, now in the design and engineering stage, are the West Bay Sediment Diversion (MR-3), Benny's Bay Diversion (MR-13), Delta-Building Diversion at Myrtle Grove (BA-33), Delta-Building Diversion North of Fort St. Philip (BS-10), Myrtle Grove Siphon (BA-24), Bayou Lafourche Siphon (BA-25) and the Small Freshwater Diversion to Northwestern Barataria (BA-34). The West Bay Sediment Diversion is among the largest of these. Environmental compliance, engineering and design, and real estate planning are completed. Construction could start as early as spring of 2003. This diversion will allow from 20,000 to 50,000 cfs to enter an area of ponds, and should create nearly 10,000 acres of marsh over 20 years. The successful completion of these projects in the coming years should play a significant role in the restoration of Region Two's coastal wetlands.

Louisiana Office of Tourism Photo

A major contribution to marsh restoration in Region Two could be made by the Bayou Lafourche Conveyance Channel, proposed in the Coast 2050 Plan. A very large channel that would divert a significant amount of water from the Mississippi River into Regions Two and Three is proposed. This would be an expensive project, but it would create large amounts of marsh.

The need for wetlands restoration has taken on new urgency in light of recent estimates of sea level rise, which show that coastal Louisiana could be inundated by 21 to 44 inches of seawater in the next 50 to 100 years. This depth far exceeds estimates for elsewhere on the Gulf Coast and is due to the extraordinary erosion and natural subsidence experienced by these under-nourished wetlands. However, if enough fresh river water and sediment can be captured and distributed before flowing out to the sea, the natural processes that have sustained the region may be restored. Thus, as always, the future of Region Two will, in large part, be determined by the big river that dominates this land. WATER MARKS

The WaterMarks Interview *continued from back cover*

wetland loss. When we dredge channels and build levees to support our ports, the entire nation benefits from the imported oil, but Louisiana pays a price. If we have another Hurricane Andrew without the wetlands and barrier islands to protect us, the pain will certainly be felt across our state, but it's also going to spread out across the whole nation when energy prices soar.

WaterMarks: Given the magnitude of the problem, where do you go for solutions?

Rousselle: The best solution in the world is running right through Plaquemines Parish. The Mississippi River is a naturally occurring source for the two things we need to begin bringing back our coastal wetlands and restoring barrier islands—sediment and fresh water. But we have to get aggressive about using it. For example, I don't think we've looked hard enough at possibilities connected to dredging. I've watched as mountains of dredged materials have been taken from the river in less than 30 days and used for highway construction. If dredging is cost-effective for building highways, then maybe it can be cost-effective for building barrier islands. We need to be willing to dredge and lay rock —do whatever it takes to get things moving.

WaterMarks: But isn't the idea to work with the natural processes?

Rousselle: Sometimes the idea of working with the natural processes keeps us from putting projects on line. Sometimes we can't wait for nature to take its course. Working with nature also means shaping it by taking advantage of whatever it has to offer. The point is that the Mississippi is the solution. We don't need to reinvent the wheel. We don't need another study. I can assure you that I'm frustrated and the people of my parish are frustrated with studies.

> *"Sometimes we can't wait for nature to take its course."*

WaterMarks: Freshwater diversions seem to dominate the solutions for your region. Does that make sense to you?

Rousselle: Freshwater diversions are a part of the solution, but they don't make sense if we haven't built up the barrier islands first. Barrier islands are crucial to controlling saltwater intrusion and creating a buffer to take the worst of the storm surge out of hurricanes. They're even important when we're in a drought cycle like we've been through because they slow the tide, which in turn reduces the amount of salt water that moves into the wetlands.

WaterMarks: So you must agree with the addition of the three barrier island projects to the CWPPRA priority lists?

Rousselle: Adding those three projects has given me real hope. The restoration of barrier islands needs to be the number one priority in our parish because without them we lose, no matter what else we do. For example, it doesn't matter how much fresh water you push through a marsh. If you don't have a cork in the end of the bottle, the effort is wasted. The barrier islands are the cork for southern Louisiana and will be the foundation of any restoration plan that has a chance for long-term success. WaterMarks

The WATERMARKS Interview

Benny Rousselle

Benny Rousselle serves as President of Plaquemines Parish and was elected in 1998.

WaterMarks: Newspapers, magazines and television have been talking about the crisis in Louisiana's coastal wetlands for over a quarter of a century. Is it possible that the message has become so common in Louisiana that it's not taken seriously?

Rousselle: Maybe that's possible for people who haven't gotten off the highways or live in the northern part of the state. But not for those of us who spend time outside the levees and get out into the wetlands. The evidence of the problem is everywhere—exposed oil and gas pipelines, passes and points that have disappeared, oyster beds that have moved farther and farther inland. For the people of Plaquemines Parish, it's always on their mind. We know the statistics; we know it's happening in our own backyard and we know that it's a crisis.

WaterMarks: And what about those who don't recognize what's happening?

Rousselle: I doubt that there's anyone in Louisiana that doesn't know that the problem of coastal wetlands loss is serious. What they may not understand is just how serious and that it will affect them personally. Without barrier islands and the marsh as protection, the storm surge from the next big hurricane is going to wash through the streets of New Orleans. When we say we're losing wetlands in Plaquemines Parish, what we're really saying is that the millions of people living north of us are in grave danger. We're saying that the oil and gas industry, the shipping industry and commercial fisheries are all at risk.

WaterMarks: So each acre lost is a threat to the entire state.

Rousselle: The loss puts not only the state but the entire country at risk. What I hope is that people in Washington come to understand that Louisiana has subsidized the low price of energy in this country at the peril of its marshes. If you've flown over our parish, you've seen the miles of canals cut through the marsh, leading to well heads. The canals have brought plentiful supplies of gas and oil, but they've also brought the salt water that's been the catalyst for much of the

continued on the page 11...

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