Louisiana Coastal Wetlands Planning, Protection and Restoration News

WaterMarks

Region Three: The Land and its People

The Coastal Crisis and Louisiana's Response

A Case Study: Atchafalaya Sediment Delivery Project

Looking to the FUTURE

REGION 3

May 2001 • Number 18

Number Two 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.

Please address all questions, comments, suggestions and changes of address to:

James D. Addison
WaterMarks Editor
New Orleans District
U.S. Army Corps of Engineers
P.O. Box 60267
New Orleans, LA 70160-0267
(504) 862-2201
e-mail: James.D.Addison@mvn02.usace.army.mil

About This Issue's Cover . . .

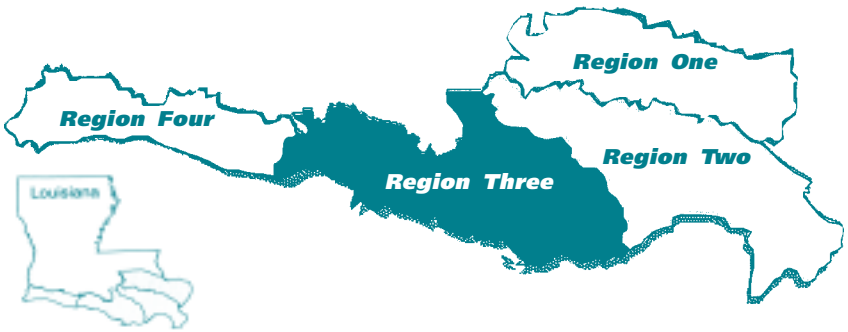
The aerial photo shows the Atchafalaya Sediment Delivery Project located at the mouth of the Atchafalaya River.

Photo Credit

Connor, P., Zganjar, C., and Penland, P., 2000. Beneficial Use of Dredge Material Monitoring Program. Coastal Research Laboratory, University of New Orleans, New Orleans, Louisiana. GIS/RS CD No.1.

In This Issue...

This is the second 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 Three.



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

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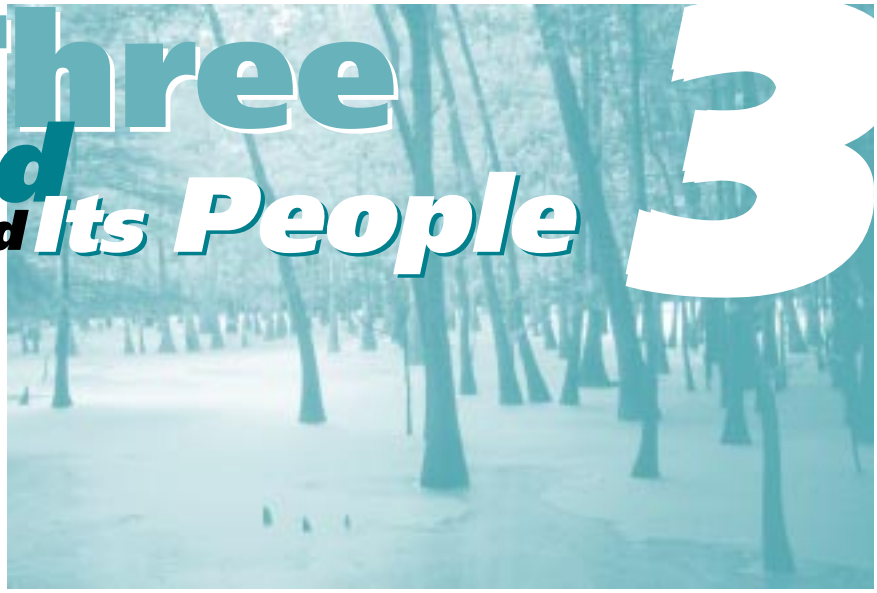
Region Three
The Land and Its People



Louisiana Office of Tourism Photo

Located within what has been characterized as one of the most productive ecosystems in the United States, Region Three contains over one million acres of vegetated wetlands that hold a rich diversity of habitat and wildlife.

Encompassing the Terrebonne, Atchafalaya and Teche-Vermilion basins, the region contains bays, ponds and bayous, marshes and cypress swamps, which, along with lakes, rivers and forested wetlands, represent integral components of a complex and fragile resource.

Louisiana Office of Tourism Photo

These varied habitats support a profusion of fish and wildlife. More than 300 species of birds, many of which are winter migrants, and over 50 species of mammals have been found in the region. Also located here is the nation's largest concentration of American Woodcock and some of the most extensive nesting habitat for Bald Eagles in the South Central United States. Both commercial and sport fisheries are supported by the region's waters, which hold more than 85 species of fish. Its commercial fisheries contribute over half a billion dollars annually to the Louisiana economy—the annual commercial harvest of crawfish from the Atchafalaya Basin alone has approached 22 million pounds. From the wind-swept marshes to the moss-draped cypress swamps, the region's wetlands abound with a diversity of life.

Bordered on the south by sandy barrier islands in the Gulf of Mexico and distinguished in the north by farmland and hardwoods, Region Three extends from Bayou Lafourche on the east to Freshwater Bayou Canal on the west, and northerly to the boundary of the coastal wetlands. Seven Acadiana parishes (Lafourche, Terrebonne, Assumption, St. Martin, Iberia,

St. Mary and Vermilion) are entirely or partially contained within its borders.

One of the strongest influences on the region is the Atchafalaya River. The Atchafalaya, the largest distributary of the Mississippi River, flows south from the Mississippi for over 140 miles through the Atchafalaya Basin to the Gulf of Mexico. Although the flow the river receives from the Mississippi is partly regulated by the Old River Control Structures, which divert 30 percent of the Mississippi flow to the Atchafalaya (it receives unregulated flow from the Red River), the Atchafalaya River's annual cycles of flood and ebb continue to affect not only the vast floodplain of the Atchafalaya Basin but the adjacent Terrebonne and Teche-Vermilion basins as well. Normally, each spring, high waters from the river deliver sediment, nutrients and fresh water, inundating land near the river. The renewal of the environment brought by the waters stimulates growth and reproduction within the wetlands, contributing to the vast diversity of plants and animal life.

The Terrebonne Basin, which lies east of the Atchafalaya, contains the western portion of the Barataria-Terrebonne estuary. This estuary is regarded as the most productive of all estuaries in the lower 48 states, supporting 19 percent of the nation's estuarine-dependent fisheries.

Louisiana Office of Tourism Photo

Louisiana Office of Tourism Photo

The abundant diversities that characterize this region are found not only in its lands and waters, but also in the culture and history of the people who call it their home. While the Acadian French history of the parishes is often reflected in expressions of Cajun culture, in fact, the area's cultural form has been shaped by the interaction of a broad range of nationalities. French, Spanish, Scottish, Irish, German, Italian and African influences have blended together and, over more than two centuries, evolved into a southern Louisiana culture that is both distinct and marvelously indefinable. WATER MARKS

The Coastal Crisis and Louisiana's Response

US Army Corps of Engineers Photo

Broad generalizations seldom have much validity, and that fact is clearly demonstrated by the complex and often contradictory character of Region Three. For example, Terrebonne, one of three basins in the region, endures the second highest land-loss rate in Louisiana, giving up 10.2 square miles per year. On the other hand, a sister basin, the Atchafalaya, ranks as the only basin in all of Louisiana to be naturally gaining land, thanks to the sediment-rich waters of the Atchafalaya River that run within its borders. And yet, even this isn't without complication. While the Atchafalaya River successfully builds land in the bay, it can also cause serious flooding in the Morgan City area.

Farthest west, the Teche-Vermilion Basin contends with severe shoreline erosion and the disruption of natural water flows caused by canal dredging and energy exploration. Here too, the Atchafalaya River's influence is diverse and complex. The flow of fresh water may be benefiting the basin's wetlands and agricultural irrigation, but it's also changing the salinity levels in

Region 3 Statistics	Fresh marsh acres	Intermediate marsh acres	Brackish marsh acres	Saline marsh acres	Total marsh acres
Acreage in 1990	298,300	92,700	240,700	140,200	**771,900**
Projected acreage in 2050	292,330	69,100	184,800	94,900	**641,130**
Net acres lost by 2050*	5,970	23,600	55,900	45,300	**130,770**
Percent 1990 marsh lost	2%	25%	23%	32%	**17%**

*includes acres preserved by Breaux Act Priority Lists 1-6 and Caernarvon and Davis Pond Diversions

the estuaries, causing concern among recreational fishers.

In spite of all the complexities and contradictions, there are some things that we do know for certain. From 1932 to 1990 over 247,000 acres of marsh were lost in Region Three. This is a loss of nearly one-fourth of the region's total marsh acreage, and even with the acres preserved by the Breaux Act projects on Priority Lists 1 through 6, an additional 17 percent (130,700 acres) of these vital marshes, including 32 percent of the region's saline marshes, could be lost in the next 50 years.

The effort to reverse this trend is guided by two broad objectives:

- Maintain present habitats above the Gulf Intracoastal Waterway (GIWW)
- Restore habitats below the GIWW

In response to these broad objectives, Coast 2050 has established 17 strategies that might be employed throughout the coastal areas of the region. These strategies include increasing delta building in Atchafalaya Bay, moving the excess water from the upper Penchant marshes to the south, developing a structure in the Houma Navigation Canal to control salinity, moving fresh water to the central Terrebonne marshes, dedicating delivery of sediment, building land by a conveyance channel from the Mississippi River, maintaining and stabilizing the bay and gulf shorelines, restoring the barrier islands, and resolving salinity and turbidity issues in Vermilion and Cote Blanche bays.

Louisiana Office of Tourism Photo

The chart on the next page describes current Breaux Act projects intended to reverse the trend of wetland loss in Region Three. WaterMarks

The WaterMarks Interview

continued from page 11

WaterMarks: And the possibility of wasted dollars?

Sagrera: We know it costs a lot more money to **restore** wetlands than it does to **protect** them. And each day that goes by, there's a lot less of coastal Louisiana to **protect** and a lot more to **restore**. So we're wasting far more on an inefficient process than we'd ever spend on the occasional project that doesn't quite live up to expectations.

But I see things from a local point of view. Cajuns like me work on these wetlands, sleep on them and die on them. What we have to offer isn't science, but it's real-life experience. And as much as I respect it, I can't help but think that science needs the sense of urgency that can only come from experiencing the collapse of our coastal wetlands firsthand. WaterMarks

Region Three CWPPRA Projects: Construction Status

Project Name	Description of Project Work	Acres Benefited	Completion Date	Construction Status
Atchafalaya Sediment Delivery	construction of distributary channel; use of dredged materials to create delta lobe islands and to facilitate sediment trapping	2232	21-Mar-98	construction complete; monitoring in progress
Big Island Mining (Increment 1)	construction of distributary channel; use of dredged materials to create delta lobe islands and to facilitate sediment trapping	1560	8-Oct-98	construction complete; monitoring in progress
Castille Pass Sediment Delivery	dredging and extension of Castille Pass to promote subdelta development and improve water and sediment delivery	589	1-Dec-02	engineering and design phase
Vermilion River Cutoff Bank Protection	rock armoring of east bank for shoreline protection	65	11-Feb-96	construction complete; monitoring in progress
Boston Canal Bank Protection	developing bank protection with structures and vegetative plantings; sediment fencing behind structures	378	30-Nov-95	construction complete; monitoring in progress
Cote Blanche Hydrologic Restoration	installation of low-level weirs and foreshore dike for shoreline protection; vegetative re-establishment	2223	15-Dec-98	construction complete; monitoring in progress
Little Vermilion Bay Sediment Trapping	dredging of distributary channels; use of dredge spoils to create low elevation terraces; vegetative plantings	441	20-Aug-99	construction complete; monitoring in progress
Sediment Trapping at the Jaws	dredging of distributary channels; construction of terraces; vegetative plantings	1999	1-Feb-02	engineering and design phase
Oaks/Avery Canals Hydrologic Restoration (Increment 1)	stabilization of bank line; installation of rock weir and earthen plug; spoilbank maintenance, sediment fencing, and vegetative plantings	160	30-Apr-02	construction phase
Marsh Island Hydrologic Restoration	construction of plugs in existing canals; shoreline stabilization; use of dredged material to isolate Lake Sand from Vermilion Bay	408	15-Oct-01	construction start scheduled May 01
Lake Portage Land Bridge (Increment 1)	armoring of the beach with rock to prevent the shoreline south of Lake Portage from breaching; creation of another pass from Vermillion Bay to the gulf; canal backfilling	24	30-Dec-01	engineering and design phase
Four-Mile Canal Terracing and Sediment Trapping	construction of terraces to reduce shoreline erosion; dredging of conveyance channels; vegetative plantings on terraces	327	1-Dec-02	engineering and design phase
Weeks Bay/Commercial Canal/GIWW SP	construction of a sheetpile wall; armoring of shore/bank areas with rock revetment to prevent shoreline and bank erosion; construction of a low sill weir across Commercial Canal to allow sediment laden freshwater to reach the marshes	138	unscheduled	engineering and design phase
Freshwater Bayou Canal HR/SP—Belle Isle to Lock	construction of a rock dike along the eastern bank of Freshwater Bayou Canal between Belle Isle Canal and Freshwater Bayou Lock	529	unscheduled	engineering and design phase
Isles Dernieres Restoration (Phase 0)	use of existing sand for dune build-up; closure of breaches and construction of side dikes; suction dredging to fill areas within structures; vegetative plantings	9	24-Oct-98	construction complete; monitoring in progress
Isles Dernieres Restoration (Phase 1)	dune build-up, breach closures, construction of side dikes; suction dredging; elevated-marsh platform creation; vegetative plantings	109	22-Oct-98	construction complete; monitoring in progress
Point Au Fer Canal Plugs	installation of seven plugs in Area 1 to restore flow through natural channels; limestone rip-rap in Area 2 to slow shoreline erosion	375	8-May-97	construction complete; monitoring in progress
West Belle Pass Headland Restoration	installation of water control structure in Evans Canal, plug placement on canals; use of dredged material for wetland creation; installation of rip-rap	474	17-Jul-98	construction complete; monitoring in progress
Whiskey Island Restoration	placement of dredged materials for wetland creation; closure of the breach at Coupe Nouvelle; vegetative plantings	1239	25-Aug-98	construction complete; monitoring in progress
East Timbalier Island Restoration (Phase 1)	placement of dredged sand to create wetland habitats; addition of rock to existing breakwater to reduce wave-induced erosion	1913	1-Jul-01	construction phase
Lake Chapeau Marsh Creation & Hydrologic Restoration	use of dredged material for wetland restoration; construction of plugs in man-made canals; restoration of natural hydrologic pathway by cutting gaps in spoil banks	509	18-May-99	construction complete; monitoring in progress
Brady Canal Hydrologic Restoration	replacement of fixed-crest weir; installation of rock plug in oil-field canal; construction of earthen embankment; and maintenance of overflow banks and existing structures	297	22-May-00	construction complete; monitoring in progress
East Timbalier Island Restoration (Phase 2)	pumping of dredged sand to create dune and intertidal wetland habitats	215	1-Jul-01	construction phase
Bayou Lafourche Siphon (revised)	first phase includes evaluation, engineering and design, with various potential alternatives	988	unscheduled	engineering and design phase
Grand Bayou / GIWW Freshwater Diversion (revised)	deepening of channel and installation of weir to reduce saltwater intrusion and retain freshwater	1808	1-Sep-02	engineering and design phase
Penchant Basin Plan (Increment 1)	replacement of existing structure in Brady Canal with bulkhead; installation of rock weir and variable-crest weir; use of dredged material for wetland creation	1155	30-Mar-04	engineering and design phase
Lake Boudreaux Freshwater Introduction	dredging and installation of sluice gates and outfall management structures for freshwater introduction; flood protection measures	619	1-Jan-03	engineering and design phase
New Cut Dune/Marsh Restoration	closure of the breach between Trinity and East Islands through direct creation of dune and marsh habitat	102	unscheduled	engineering and design phase
Timbalier Island Dune/Marsh Restoration	creation of dune and marsh to restore the eastern end of Timbalier Island	273	unscheduled	engineering and design phase
South Lake DeCade Freshwater Introduction	installation of a water control structure in the southern bank of Lake DeCade; provision of shoreline protection; weir removal	201	1-Jan-03	engineering and design phase

A Case Study:

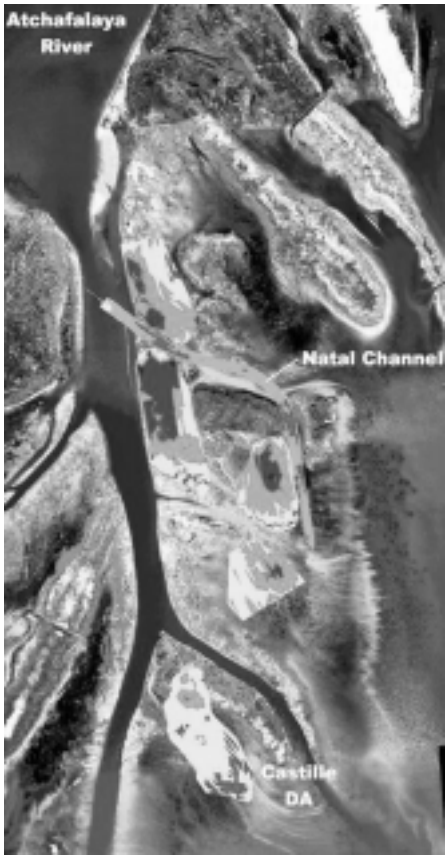
Atchafalaya Sediment Delivery Project

Louisiana Office of Tourism Photo

Although the Atchafalaya River is one of coastal Louisiana's few delta-building rivers, some of its sediment is either dredged to maintain navigation or carried through the channel and deposited farther out in the bay. The result is a loss of crucial land-building material in the lower Atchafalaya River delta.

The Atchafalaya Sediment Delivery project (ASD) is part of Louisiana's effort to address this problem. Located within Atchafalaya Bay, about 18 miles southwest of Morgan City, the project was completed in March of 1998. Its purpose is to increase the amount of fresh water and associated sediments delivered from the Atchafalaya River eastward to a 2,000-acre section of the Atchafalaya Delta Wildlife Management Area.

ASD consists of two channels constructed from East Pass, through Natal Channel and Castille Pass, extending out into the wildlife management area. The combined length



LA Department of Natural Resources Photos

The area marked in the photo above shows the project boundaries of the Atchafalaya Sediment Delivery Project in relationship to Morgan City. The photo at the right is an enlargement of the project area showing Natal Channel and Castille Pass.

of the channels is about two miles. According to Dr. Erik Zobrist, CWPPRA program officer for the National Marine Fisheries Service and project leader for ASD, the project was crucial because the freshwater flow from the Atchafalaya was being choked off. "The sediment carrying capacity of Natal Channel and Castille Pass was significantly less than it could have been," said Zobrist.

Part of the ASD project called for using dredged materials taken from Natal Channel and Castille Pass to create delta lobe islands and marsh habitat within the project area. Using natural deltas for a blueprint, 800,000 cubic yards of sediment were used to create land with elevations that would encourage the growth of marsh vegetation. This is an important component of the project since vegetation traps additional sediments during flooding and reduces both water velocity and erosion. These dredged sediments were deposited to build sites with higher elevations on the upper ends, to resemble a naturally formed delta. The project did not include vegetative plantings, with the hope that dredged sediments would carry their own seed source, which they did.

Soon after the sediment was placed, vegetation began to grow on the newly created wetlands. "Plant species that had not been seen in this area for years began to appear, but eventually the vegetation that you'd expect to dominate such as upland willows, shrublands and submerged aquatic vegetation really took hold," said Zobrist.

Project Area Habitat Class	1994	1997	1998
Fresh Open Water	1,251.9	849.7	660.2
Submerged Aquatics	0.0	643.3	864.8
Fresh Marsh	142.1	216.8	230.9
Beach/Bar/Flat	750.9	429.7	302.2
Wetland Forested	0.0	28.1	78.2
Upland Barren	0.0	0.0	14.2
Total	**2,181.6**	**2,181.6**	**2181.4**

Table 1 (Source: Atchafalaya Sediment Delivery Progress Report Number 1)

Not all project results were as immediate or noticeable as the islands' vegetative growth, but early monitoring results are promising. Table 1 provides a breakdown of habitat classes for the pre-construction years 1994 and 1997 and the first post-construction year, 1998. Based on November of 1998 photoimagery from the National Wetlands Inventory, 78.4 wetland acres were created by ASD, including 14.1 acres of fresh marsh, 14.2 acres of upland barren habitat, and 50.1 acres of forested wetland.

A second analysis of project results was also completed in late 1998 by Brown, Cunningham & Gannuch Inc. and reported in the engineering firm's "Engineering Closure Report." In this case, the survey showed that a total of 281 acres was created on the five sediment deposition areas in ASD's project area. Based on the elevations of these created lands, the breakdown was 211 acres of subaqueous marsh, 49 acres of emergent marsh and 21 acres of lobe island habitat.

Since project dollars are limited, the evaluation phase of the ASD has been reduced to basic monitoring, and the extent of delta-building improvement can now best be judged by how closely the results compare with the natural system. Zobrist is optimistic. "When you can build a project that works with the forces of nature rather than against them, you tend to get a bigger bang for your buck, you spend taxpayers' dollars more wisely, and you get better results in the long run." WaterMarks

Looking to the FUTURE

Although evaluative data is yet incomplete, the Atchafalaya Sediment Diversion Project offers hope to Region Three. The project appears to be doing exactly what is needed—using the sediment-rich fresh water of the Atchafalaya to build land in the eastern portion of the region. While this project is only a beginning, what's important is that it's on the ground, producing results and pointing the way.

However, the 17 regional strategies developed in *Coast 2050* will generate projects that will do even more. For example, the strategies call for the following major accomplishments:

- The alleviation of the backwater flooding in the Verret Subbasin caused by the Atchafalaya River—One of the keys to this strategy will be the implementation of the "Barrier Plan," which will manage water levels north of US Highway 90 between Morgan City and Houma to prevent flooding. Currently being evaluated is a water management plan that considers, in addition to flood control, needs of the productive freshwater fishery, access to estuarine organisms such as blue crab, and the benefits to the vast forested wetland area now stressed by excessive flooding.
- Establish multipurpose control of navigation channels—The Houma Navigation Canal Lock is being designed by the Corps of Engineers as a feature of the Morganza to the Gulf Project. The lock, with the planned connecting levee system, will control tidal flooding, allow better use of Atchafalaya River water and sediment flow, and aid in maintaining a salinity regime favorable to area wetlands.
- The continuation of the efforts to move Atchafalaya water to the east and move excess water in the upper Penchant Basin to the south.
- The completion of the planning phase for a conveyance channel running parallel to Bayou LaFourche—This complex project will use sediment transported from the Mississippi River to create a new subdelta in the Timbalier Subbasin. The sediment will be moved about 70 miles from the Mississippi River via a channel that will eventually carry 200,000 cubic feet of water per second. A feasibility study is expected to start in the very near future.
- The continued restoration of the Derniere and Timbalier barrier island chains—This effort continues work that was begun in response to previous priority lists.
- The continuation of the efforts to maintain shoreline integrity and stabilize critical areas of the bay and gulf shorelines throughout the region.

Although *Coast 2050* has clearly articulated strategies for the region, the critical question of how projects will be funded remains unanswered. The failure of federal legislation that would have brought millions of federal dollars for coastal restoration into Louisiana (the Conservation and Restoration Act, or CARA) will probably mean pushing back timetables and scaling back projects. In the meantime, the search for dollars continues, as does the unrelenting loss of Louisiana's wetlands. WATER MARKS

Southwest Louisiana Convention & Visitors Bureau Photo

The WaterMarks Interview continued from back cover

WaterMarks: And of course the wetlands are disappearing.

Sagrera: Without a doubt. During the five years it takes to get a project operational, we lose another 100 to 150 feet of coast in Vermilion Parish. And that's true all across the coastal zone. The process just takes too long.

WaterMarks: OK. So how do you speed it up?

Sagrera: I respect the people in federal agencies because they are talented and work very hard to do the work they're assigned. But we can't wait for every step of every project to be scrutinized by every agency involved in coastal restoration. Right now there are just too many hands stirring the pot.

Every project has a sponsoring agency. We need to give that agency the responsibility and authority to push the project through to completion without requiring every other federal agency to check and double-check what the sponsoring agency has already double-checked. I've got a flow chart that shows the steps that are supposed to take place during the course of a project. That flow chart is 20 feet long. No wonder it takes so long to get things done.

"But my biggest concern is that we study projects to death."

WaterMarks: But isn't the process meant to make sure only good projects get implemented and that tax dollars aren't wasted?

Sagrera: Cost management is a tool that can work. But my biggest concern is that we study projects to death. We spend $1 million and use up a lot of precious time on an initial study. Then we spend another $2 million and more time on a second study, and when we're done we still only have a study. If we would physically put the project on the ground, we'd have a real model, and we could start the monitoring and evaluation of results immediately. We need to prove to the nation that we can get things done with the available funds before we can expect additional dollars.

Now I understand that you can't do every project and that there has to be a process. What I'm saying is that we need to radically streamline that process and find ways to quickly get projects going.

"The coast slipping away isn't just a statistic—it's often happening just beyond our backyard."

WaterMarks: But isn't there a great danger of spending a whole lot of money on projects that don't live up to expectations or do damage to fisheries or wildlife in ways that weren't anticipated?

Sagrera: There are always dangers. And the last thing anyone in the coastal parishes wants to do is waste money or cause harm. But those of us living in and near the wetlands see the damage that's being done day-by-day, everyday. The coast slipping away isn't just a statistic—it's often happening just beyond our backyard. I wonder what kind of restoration or protection project could have caused more harm to coastal Louisiana than has been caused by 10 years of too much studying and not enough doing?

continued on the page 6...

The WATERMARKS Interview

Sherrill Sagrera

Sherrill Sagrera, a longtime landowner in Vermilion Parish, serves on the Vermilion Parish Coastal Zone Management Committee and serves on the board of directors for the Coalition to Restore Coastal Louisiana.

WaterMarks: Your family has lived and owned land in Vermilion Parish for over four generations. Tell us what's happening in the coastal wetlands?

Sagrera: I can tell you that we're losing 20 feet of gulf shore every year. But everybody knows that. I can tell you that we made a terrible mistake when we dug up the oyster reefs to open navigation passes and build roads because those reefs are the key to slowing down current and capturing sediment moving west in the gulf current. But that's something you've heard before. I can tell you that my father was in the Coast Guard, and when he patrolled this area Southwest Pass was nothing but a small reef-laden pass that could only be navigated by experienced pilots—now it's three-fourths of a mile wide and 120 feet deep. But a good historical map will say the same thing. What I will tell you that maybe others won't is that in spite of all the talk, all the programs and all the good intentions, we may be fighting a losing battle to save our wetlands unless we do something to change the process.

WaterMarks: By process, do you mean that there isn't enough money to do what's necessary?

Sagrera: It's true that we're never going to slow coastal loss without a huge increase in dollars. For example, the Cheniere-au-Tigre to Southwest Pass Stabilization Project would create breakwaters that would protect an important stretch of coastline. The problem is that it would cost $20 to $25 million, which is most of the CWPPRA money that's available for the entire coastal zone for a whole year.

So a major increase in funding is crucial. But I'm also concerned about the process involved in getting projects on the ground. The fact is we've had trouble making good use of the little money we've had. It's hard to believe, but it takes five years for a project to get through all the reviews and scrutiny required to put it in place—and that's if you're lucky. And while the analysis is going on, everyone's crying about how we're losing an acre of land every 30 minutes.

continued on the page 11...

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