Louisiana's Comprehensive Master Plan for a Sustainable Coast



Presentation 11/04/13 Jerome Zeringue Coastal Protection and Restoration Authority





We Know...



Our Coastal Crisis with Continue Over the Next 50 Years Unless We Act

Coastal Protection and Restoration Authority of Louisiana

Land Area Change in Coastal LA 1932 – 2010 SURVEY THE SCENE



Historic Land-Water Change from 1932-2010 Approx. 1,900 sq. mi. (492,100 ha.) Couvillion et al (USGS), 2011

HOW BAD IS IT- Future Without Action



More Extreme- Potential to lose an additional 1,765 square miles (455,000 ha.) of land over the next 50 years.

Utilized 0.45 m of sea level rise over 50 years, Subsidence rates 0 to 25 mm per year

Our Communities and Livelihoods at Risk

Predicted Future Flooding from a 100 Year Flood Event Future Without Action

0.5-5 ft 5-10 ft 10-15 ft 15-20 ft 20-25 ft

20-25 f

Potential for damages to reach **\$23.4 billion** annually

Increasing threats to lives, jobs, communities and the economy

We Know...

There are Multiple Causes of Wetland Loss



All have contributed some have compounded the loss and others have reduced the wetlands ability to recover from damage.

...And Multiple Solutions

All will contribute some are more effective and efficient solutions. Some are short-term and others are long-term solutions



Coastal Protection and Restoration Authority of Louisiana

LOUISIANA

#1 American producer of domestic oil #1 in American domestic reserves of oil & gas #2 producer of natural gas in America #2 in American oil refining capacity Has America's only supertanker energy port (LOOP) Has 5 of the top 15 tonnage ports in America Combined, make Louisiana the top tonnage port in America #1 fishery in lower 48 states of America #1 producer of BLUE CRABS & SHRIMP & OYSTERS & **CRAWFISH** #1 habitat for migratory waterfowl and songbirds

LOUISIANA

Ecosystem

- 97% of commercial seafood landings from the Gulf rely on estuaries and wetlands
- 75% of North American migratory birds depend on estuarine habitats during migration
- 1 acre of wetlands can sequester significant amounts of carbon dioxide and store 1.5 million gallons of water thereby reducing flooding impacts

Economic Impact of Energy, Ports and Maritime and Louisiana Seafood and Outdoor Recreation

Economic Sector or Industry	Total Economic Impact (billions)	Total Jobs	Total Wages (millions)	Total Tax (millions)
Energy ¹	\$77.3	310,000	\$16,100	\$2,500
Ports and Maritime	\$33	270,000	\$5,700	\$470
Seafood	\$2.4	21,000		
Seafood, Fishing, Boating and Wildlife Viewing ²	\$5.7	63,000		\$378
State Totals	\$213.6 ³	1,834,000	\$76,900	\$6,962

1. Oil and Gas Extraction, Pipeline, and Refinery Operations. 2. Select Industries from the 2008 Southwick Study. 3. Gross State Product 2010

Responding to the Crisis

- **2005** Hurricanes Katrina and Rita
 - CPRA Board Established
- 2007 Original Master Plan Developed
- 2008 Hurricanes Gustav and Ike
- **2009** CPRA Implementation Office Established
- **2010** Deepwater Horizon Oil Spill
- **2011** Mississippi River High Water Event
- **2012** Master Plan Updated

2012 Coastal Master Plan

- Built on world class science and engineering
- Evaluated hundreds of existing project concepts
- Incorporated extensive public input and review
- Resource constrained
 - Funding, water, sediment
- Identified investments that will pay off, not just for us, but for our children and grandchildren





Meet the Objectives of the Master Plan





Five Key Objectives







Flood Protection

Reduce economic losses from storm-based flooding Natural Processes

Promote a sustainable ecosystem by harnessing the processes of the natural system Coastal Habitats

Provide habitats suitable to support an array of commercial and recreational activities coast wide Cultural Heritage

Sustain Louisiana's unique heritage and culture **Working Coast**

Support regionally and nationally important businesses and industries

Formulating the Master Plan: Decision Drivers



Planning Tool selects combinations of projects to maximize land building and storm surge risk reduction.

Formulating the Master Plan: Other Key Factors

The Planning Tool evaluates how each group of projects effects key uses and resources across the coast

The Planning Tool can select projects based on preferences for these other key factors









Flood protection of strategic assets



Operation and maintenance costs

Sustainability







Support for cultural heritage







Investing in Land Building



Investing in Land Building







Economic Development Opportunities

- A recent LSU study found that the \$618 million spent in 2010 on coastal restoration had a total impact of 8,900 Louisiana jobs
- Louisiana investment in coastal restoration in the future is expected to be between \$400-\$750 million which would translate into 5,500 and 10,300 total jobs, \$270-\$520 million in wages, and between \$720 million and \$1.35 billion in total sales per year
- Another study by Duke University found that Louisiana is already a national leader in the creation of coastal restoration jobs
- A third study by Restore America's Estuaries found that coastal restoration can create more than 30 jobs for each million dollars invested. This is more than twice as many jobs as the oil and gas and road construction industries combined

Louisiana's 2012 Coastal Master Plan



Coastal Protection and Restoration Authority of Louisiana

We Need To Use All Available Restoration Tools to Sustain Our Coast



We Know...



Gather Funds

- Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Approx. \$75M per year
- Coastal Impact Assistance Program (CIAP) \$496M
- Louisiana Coastal Area Program (LCA) up to \$8B
- Greater New Orleans Hurricane Protection System - \$14.6 B
- State Surplus Funding \$790M
- Gulf of Mexico Energy Security Act (GOMESA) eventually up approximately \$180M per year
- Deepwater Horizon
 - Criminal- \$1.2B
 - Civil Penalties TBD
 - Natural Resources Damages TBD

Projected FY 2014 Expenditures by Project Phase



Notes

- Construction includes Beneficial Use (\$7 million)
- OM&M includes BIMP (\$3.4 million), Repair/Rehabilitation of Projects (\$305,000) and Marine Debris Removal (\$860,000)
- Ongoing Programs includes Project Support (\$4 million)
- Total excludes HSDRRS Payback (\$42.2 million)

TOTAL Expenditures \$701 million

Program Status

CWPPRA

Prioritize Projects, Focus Program = Bigger Projects

State Surplus ('07, '08, '09)

Hurricane Protection System \$293 M

Protection Projects \$152M

Restoration Projects- \$190 M

CIAP

More than 50% complete or 12% under construction

Berms and Berms to Barrier

\$360M almost complete

Early NRDA

First Phase under construction, Second Phase on their way









Cameron Parish Shoreline Restoration





525 acres of beach/dune habitat

Estimated Project Cost: \$45.8M Status: In construction Construction Contractor: Weeks Marine Inc.







Estimated Cost of Components Currently Being Pursued: \$315M

Status: Ongoing

Construction Contractor: Various





303 Acres of Beach Dune with 3.3 MCY of material from Ship Shoal Estimated Project Cost: \$70.6M

Status: In construction

Construction Contractor: Weeks Marine Inc.

South Pelto Borrow Area



Caminada Headland

- Former site of the mouth of the Mississippi River
- Approx. 14 miles long
- Consists of narrow, low lying sand dune and beach berm, barrier marshes and chenier ridges
- Shoreline erosion rate of 45 feet per year
- Critical habitat for Piping Plover in addition to other wildlife



Restoration Template



Coastal Protection and Restoration Authority

Construction Update

- Notice of Award to Weeks Marine March, 2013
- Pre Construction Activities May-July, 2013
- Pumping of Sediment Began August, 2013
- Approximately 25% complete
- Scheduled Construction Completion May, 2014

Ship Shoal Borrow Site 27 Nautical Miles Away

Patrick M. 0 www.gulfcoasta Slidell, LA 985

Barge Being Filled at Borrow Area

Patrick M. Quigley www.gulfcoastairphoto. Slidell, LA 985.788.34

Barge Being Filled at Borrow Area

CALL & CALLORING CONTRACT

Patrick M. Quigl www.gulfcoastairphc Slidell, LA 985.788

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Barge in Transit

Patrick M. Quigley www.gulfcoastairphoto.con Slidell, LA 985.788.3458

Unloader in Belle Pass

Sediment Being Pumped

Sediment Being Pumped





Headland Looking West



Biloxi Marsh Shoreline Protection



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Shoreline protection along a 7-mile stretch of Lake Borgne

Estimated Project Cost: \$22M

Status: In construction

Construction Contractor: Bertucci Contracting Co. LLC

Lake Hermitage Marsh Creation



653 acres of Marsh

Estimated Project Cost: \$39 M (CWPPRA Base Project) Status: In Construction

Construction Contractor: Pine Bluff Sand and Gravel Co.



August 2013





Estimated Project Cost: \$47.7 M

Status: In Construction

Construction Contractor: Great Lakes Dredge and Dock Co.



August 2013

NRDA Caillou Lake Headlands - Whiskey Island (TE-100)

Funding: NRDA

- **Project Purpose:**
- Restore Whiskey Island Barrier Island in order to retain its geomorphologic form and ecologic function

Project Features:

- Creation of 406 acres of Beach/Dune habitat (8.87 MCY)
- Creation of 131 acres of Intertidal Marsh habitat (0.82 MCY)
- Features Consistent with the LCA TBBSR NER Plan

Project Cost:

- Engineering and Design \$3,000,000
- Construction \$108,000,000

Status:

- Draft Final Design Report, Plans & Specifications Completed
- Coastal Use Permitting & BOEM Sand Lease in Progress
- Construction will commence when NRDA funds are received





\$1.3 B of dredging on 19 sq mi; Land Loss expected to be up to 35 sq mi per year

Implementing the Low Hanging Fruit

159 miles of built or improved levees

19,405 acres of coastal habitats benefited

\$17 billion in State & Federal funding for protection & restoration

Transitioning to the Hard Projects

Louisiana's 2012 Coastal Master Plan



Projects Included:



Projects for Further Planning: Lake Pontchartrain Barrier Lake Charles Protection Terrebonne Bay Rim Marsh Creation Channel Realignment (Not Shown)

Coastal Protection and Restoration Authority of Louisiana

Where We Are Focused

- Houma Navigation Canal Lock
- Calcasieu Ship Channel Salinity Control Structures

AND

• Diversions





Connecting to the Rivers

The Mississippi AN A ver Builds Land



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Figure Source: John Day/LSU

We Know 1949 1850

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We Know...

Diversions Can Build and Maintain Land



We also know that sediment diversions can increase the sustainability of marsh creation projects by supporting increased accretion and delivering nutrients to stimulate vegetation growth.





2012 Coastal Master Plan Freshwater and Sediment Diversions

Mississippi Sediment Diversions
Freshwater Diversions
Atchafalaya Sediment Diversions

Policies and Programs

• Transition Assistance:

 Master plan acknowledges that large scale restoration projects may create small and large dislocations of resources.

• The state is also committed to the following:

- Developing a planning framework to help communities, businesses and individuals adapt to anticipated changes in the landscape.
- Working with affected communities and stakeholders to design projects that consider ways to minimize unavoidable impacts while still meeting project and master plan objectives.
- Identifying public and private tools that may assist communities, businesses and individuals in the transition process.
- Assessing possible impacts and consulting with those affected, as the projects identified in the master plan move through project planning and design phases.

Invest in Our Foundation:

- Continue to Stabilize the Program
- Educate and Build Relationships
- Advance Internal Processes







Continue to Develop Tools to Investigate Uncertainties:

- System Wide Assessment Monitoring Program
- Data Management
- The Water Institute of the Gulf







Achieving Our Vision for Coastal Louisiana's Future

