**Environmental Focus 2008**

**Air & Waste Management Association, Louisiana Section**

in cooperation with

**Department of Environmental Quality**

November Dinner Meeting, 2008

Baton Rouge, Louisiana

# Implementing Louisiana's Comprehensive Master Plan for a Sustainable Coast

**David Miller**
**Director of Implementation**
**Office of Coastal Protection and Restoration**

CPRA
Coastal Protection and Restoration Authority of Louisiana

# Why do we live where we do?

***"There is on the globe one single spot…"***

**Thomas Jefferson to Robert R. Livingston,**
**Washington,**
**April 18, 1802**

***"There is on the globe one single spot , the possessor of which is our natural and habitual enemy."***

**Thomas Jefferson to Robert R. Livingston,**
**Washington,**
**April 18, 1802**

***"It is New Orleans, through which the produce of three-eighths of our territory must pass to market..."***

**Thomas Jefferson to Robert R. Livingston,**
**Washington,**
**April 18, 1802**

# National Perspective

- 1st: Top volume port in the hemisphere
- 1st: Top tonnage port in the nation
- 1st: Largest bulk cargo port in the world
- 1st: Largest port system in the world
- 1st: Five of the top 15 tonnage ports in the US
- Over 30 states depend upon Louisiana's ports for imports and exports…..

# Port of South Louisiana & Port of New Orleans

***"Together, these ports account for $150 billion and 20 percent of U.S. import/export cargo traffic annually"***

Department of Commerce Service Assessment, NOAA, *Hurricane Katrina August 23-31, 2005*

photo LA DOTD

# National Perspective

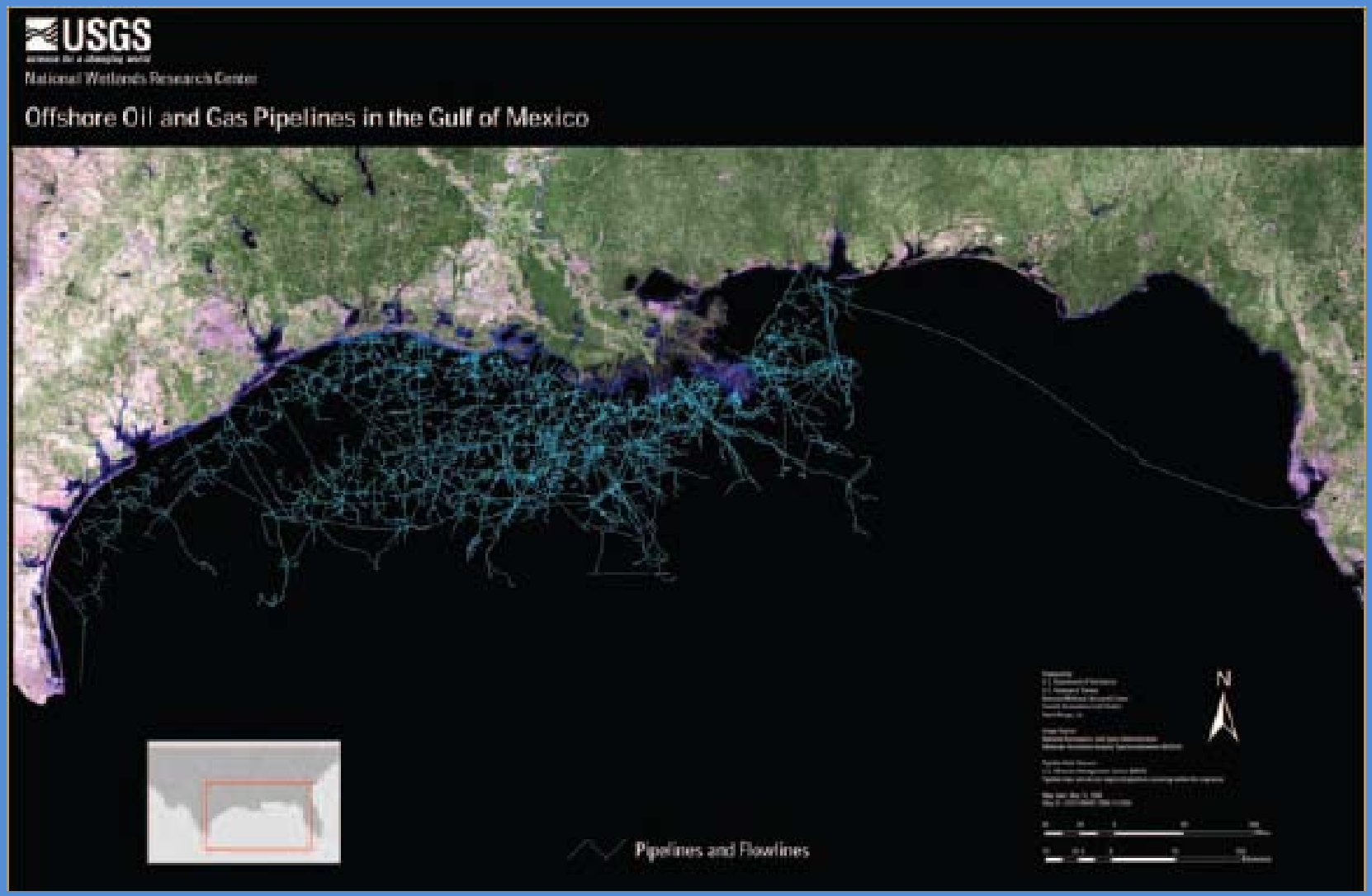
## ENERGY

- 1st: Top producer of domestic oil
- 1st: Top domestic reserves of oil and gas
- 1st: Top producer of offshore oil
- 1st: Top producer of offshore gas
- 1st: Top producer of offshore revenues for US Treasury

# National Perspective

## ENERGY

- 1st: Top Liquefied Natural Gas terminal capacity
- 1st: Top in foreign oil import volume
- 1st: Natural gas processing capacity
- 2nd: Producer of natural gas
- 2nd: Oil refining capacity




# Offshore oil and gas pipelines in Gulf of Mexico

courtesy USGS

# Louisiana Coastal
# Rare Plants, Animals & Natural Communities

- The Louisiana Natural Heritage Program (LNHP) database contains 159 elements in three classes in Louisiana's Coastal Zone:
  - 44 rare animal species,
  - 88 rare plant species and
  - 27 rare natural communities

*Louisiana Natural Heritage Program. 2008. Rare plants, animals and natural communities of the Louisiana Coastal Zone [website information]. Louisiana Department of Wildlife & Fisheries. Baton Rouge. LA.*

http://www.wlf.louisiana.gov/experience/naturalheritage/coastalzonefactsheets/

# Waterfowl/Migratory Birds

- Nearly 70% of all the ducks and geese that rely on the central and Mississippi flyways use Louisiana marshes.
- More than 5 million migratory waterfowl spend the winter in Louisiana's marshes
- Louisiana's coast provides stopover habitat for millions of neo-tropical migratory birds on their journeys across the Gulf of Mexico

# Coastal Loss

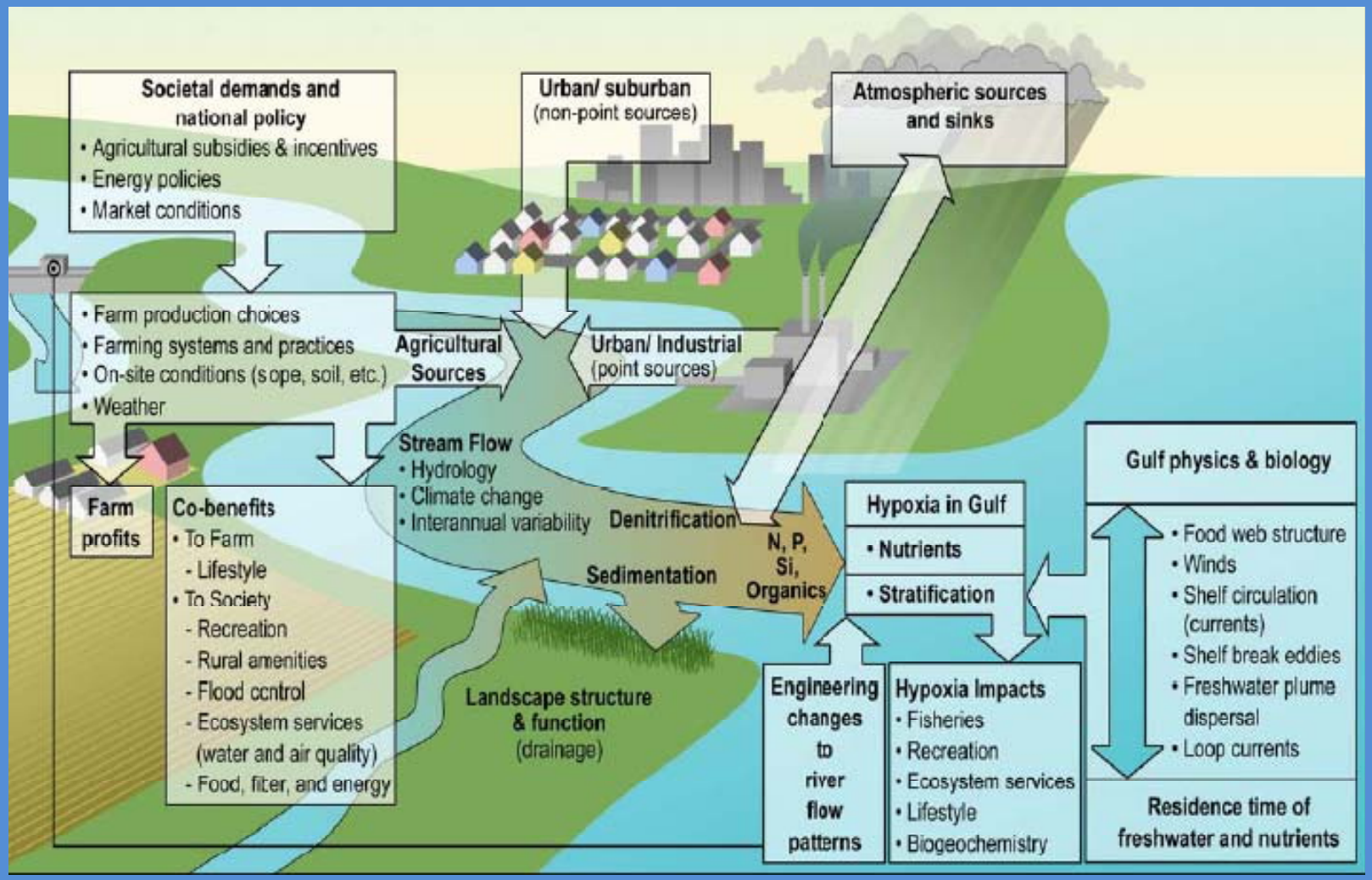
- Between 1932 and 2000, coastal Louisiana lost over 1,875 square miles of land.
- Approximately 24 square miles of Louisiana land turn to open water each year
- Hurricanes Katrina and Rita transformed 217 square miles of marsh to open water in coastal Louisiana in one season
- Currently Louisiana has 30% of the total coastal marsh- and accounts for 90% of the coastal marsh loss- in the lower 48 states

# Gulf Hypoxia

- Caused by the introduction into Gulf waters of excess nutrients from the Mississippi Atchafalaya River Basin system, this so called "dead zone", appears each spring, growing larger through the summer.

Map of the Mississippi-Atchafalaya River Basin. From *Hypoxia in the Northern Gulf of Mexico: An Update by the EPA Science Advisory Board*, EPA, 2008.

# Reducing Hypoxia



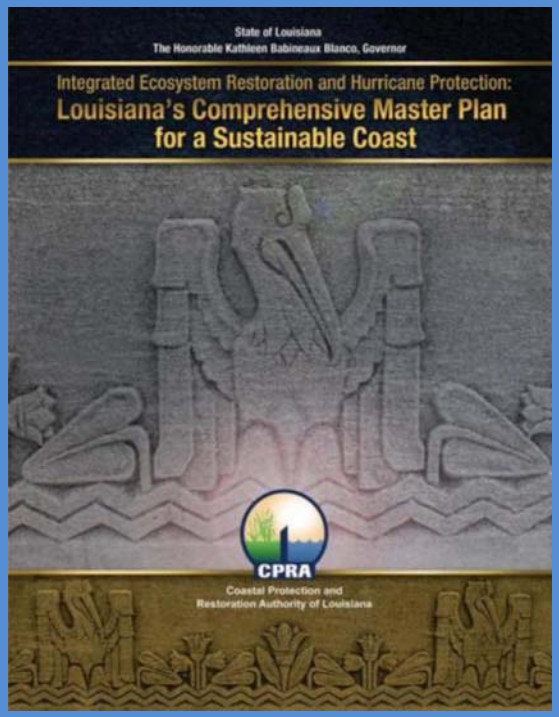

A conceptual framework for hypoxia in the northern Gulf of Mexico. From *Hypoxia in the Northern Gulf of Mexico: An Update by the EPA Science Advisory Board*, EPA, 2008

# Louisiana's Efforts to Reduce Hypoxia: Louisiana Environmental Leadership Pollution Prevention Program

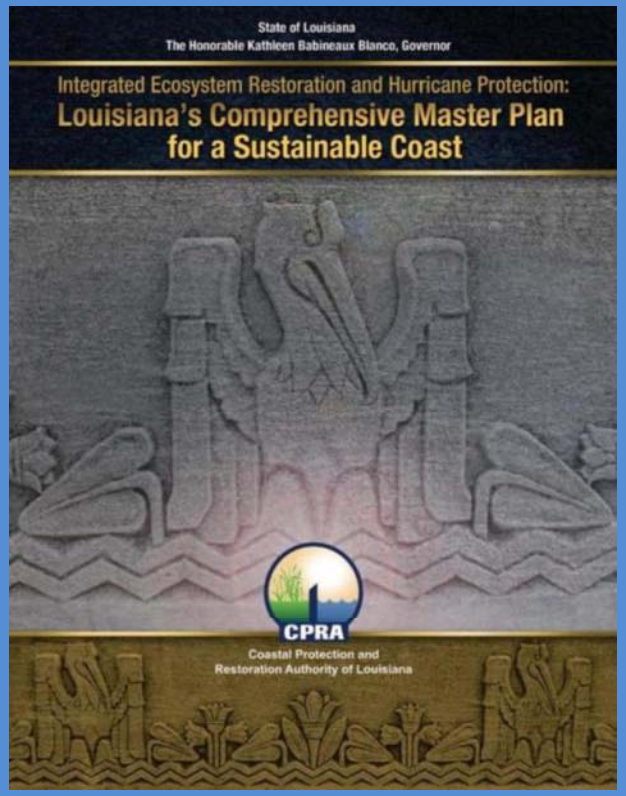
- This non-regulatory program administered by Louisiana's Department of Environmental Quality has worked closely with industry to encourage and effectively implement nutrient reduction.
- The program recognized BASF Corporation efforts that developed a biological treatment system to reduce nitrates in wastewater entering the Mississippi River.
- ExxonMobil Baton Rouge Refinery voluntarily reduced its annual nitrate discharges from 4.1 million lbs. in 1999 to 1.5 million lbs. in 2003. This reduction resulted from process modifications that did not require capital expenditure.

Integrated Ecosystem Restoration and Hurricane Protection:

# Louisiana's Comprehensive Master Plan for a Sustainable Coast



# What the Master Plan is…




**A Strategy for a Sustainable Coast**

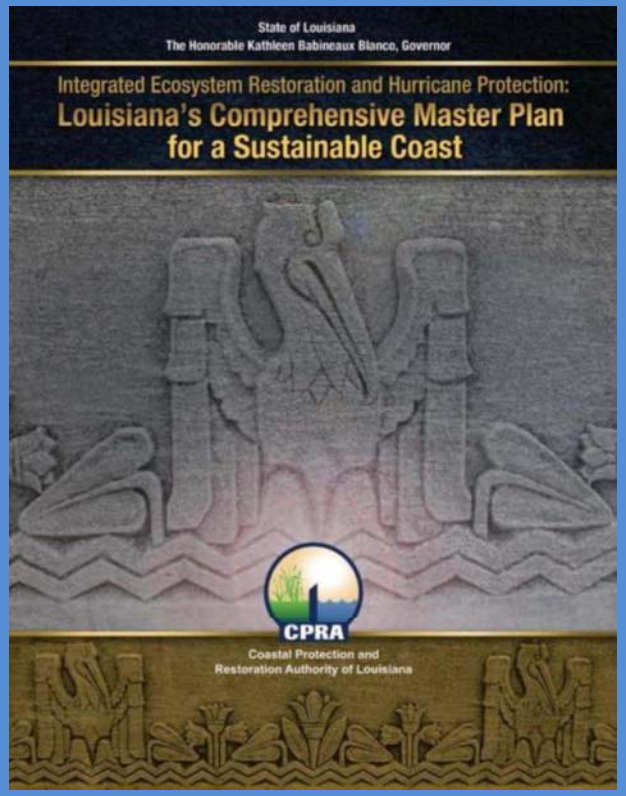
# What the Master Plan is…

**A Strategy for a Sustainable Coast**

**Four objectives:**

- **Reduce risk to communities**
- **Restore sustainability to the coastal ecosystem**
- **Maintain a diverse array of fish and wildlife habitats**
- **Sustain Louisiana's unique heritage and culture**

# What the Master Plan is…




## A Comprehensive Approach

- **Living Document**: Be a living document that changes over time as our understanding of the landscape improves and technical advances are made.
- **Sustainability**: Emphasize sustainability of ecosystems, flood protection, and communities.
- **Comprehensive**: Integrate flood control projects and coastal restoration initiatives to help both human and natural communities thrive over the long-term.
- **Uncertainties**: Be clear about what we don't know. In some areas, scientific and technical advancements will be needed before we can make definitive pronouncements as to what will happen

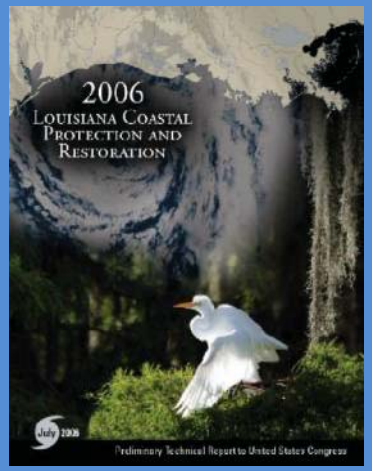
# Used & Built on Previous Work

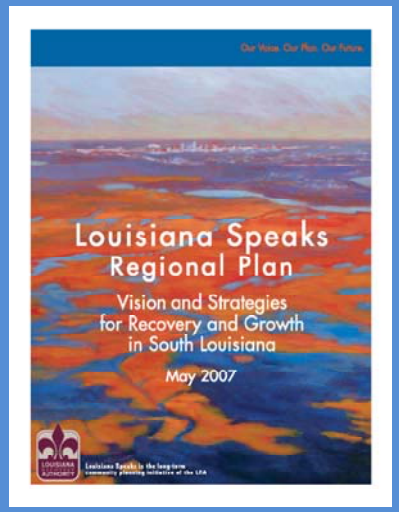
- Lake Pontchartrain and Vicinity Hurricane Protection Study
- West Bank and Vicinity Hurricane Protection Study
- New Orleans to Venice Hurricane Protection Study
- Coast 2050: Toward a Sustainable Coastal Louisiana
- Louisiana Coastal Area Ecosystem Restoration Study
- BTNEP Comprehensive Use Plan
- LPBF Comprehensive Use Plan
- Morganza to the Gulf Hurricane Protection Study
- Donaldsonville to the Gulf Hurricane Protection Study
- St. Bernard Parish Hurricane Protection and Coastal Restoration Plan
- CWPPRA Priority Project Lists

# Used the Best Available Science & Engineering

# Coordination with Other Planning Efforts

- US Army Corps of Engineers, *LA Coastal Protection Report (LACPR)*
- Louisiana Recovery Authority, *"Louisiana Speaks"*
- Unified New Orleans Plan
- Dutch Rijkswaterstaat and Province of Zeeland

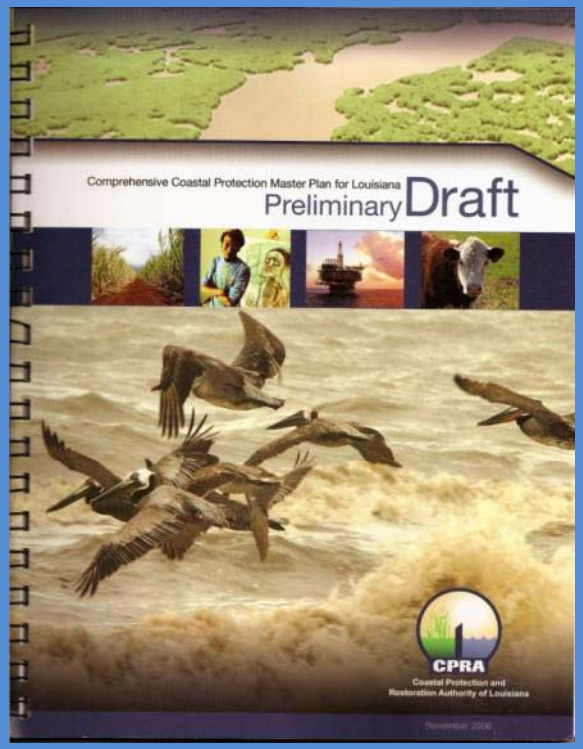


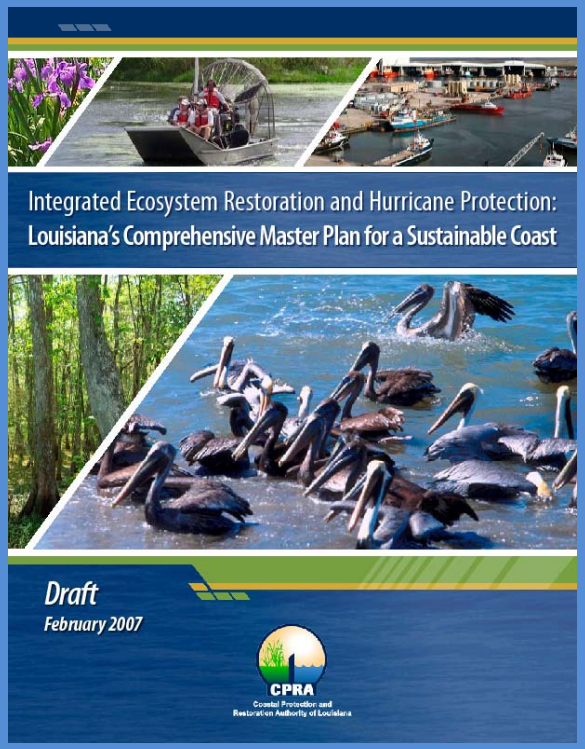
# Public Involvement and Input

- Nearly four dozen focused stakeholder sessions
- Two Interdisciplinary Technical Team Workshops
- 14 Public Hearings and Meetings
- Newsletters
- Website
- Partnered with Louisiana Speaks on outreach and input:
  - charrettes/public television documentary /telephone & internet surveys

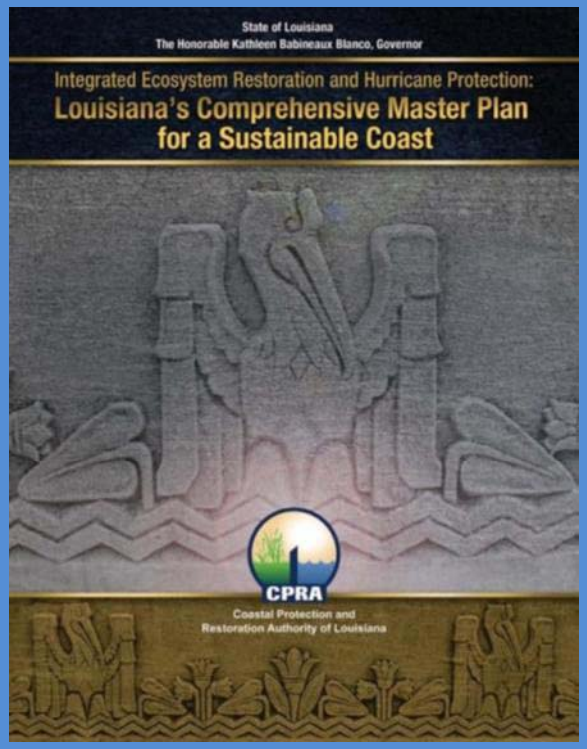
# Used Public Input



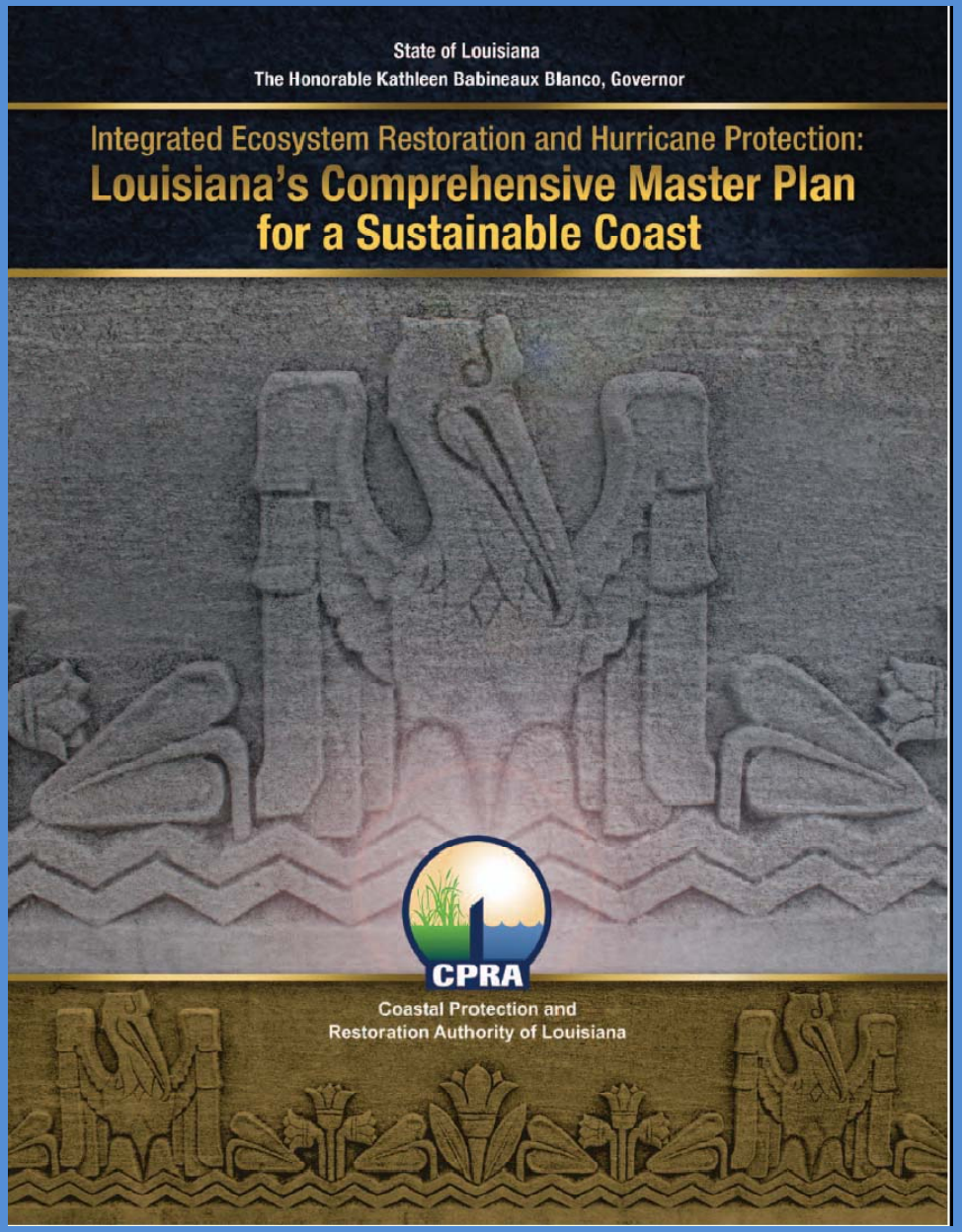

Preliminary Draft




Draft




Final Report




# Final Plan

Accepted April 12, 2007 by the CPRA

Submitted April 30, 2007 to the Louisiana legislature for approval

Approved unanimously by Senate (39/0) on May 15, 2007

Approved unanimously by House (99/0) on May 30, 2007

# Single Approach is Not the Solution

USACOE

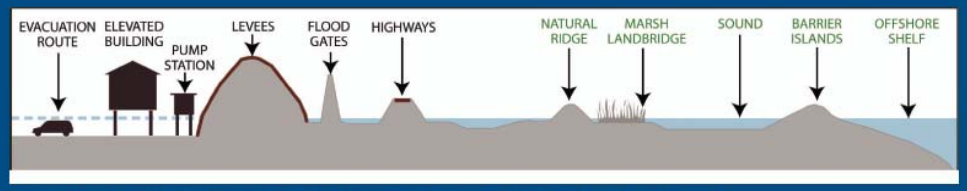



Figure 5: Multiple lines of defense concept (adapted from graphic produced by the Lake Pontchartrain Basin Foundation).

# Louisiana Applied Coastal Engineering and Science Program

# LACES

- The Master Plan recommends that an *Applied Engineering and Science Program* be established to resolve data and knowledge gaps and facilitate scientific, engineering and technical advancements.
- Would focus on research associated with both restoration and flood protection projects.

# Reducing Scientific and Technical Uncertainties

## Improve and Expand Modeling Capabilities:

- Conceptual models
- Physical models
- Analytical models

*Conceptual models.* A conceptual model is a visual or narrative summary that describes the important components of a system and the interactions among them. Establishing the basic assumptions behind system function is the goal of conceptual modeling. These assumptions must be reevaluated regularly, since conceptual models are often the basis for analytical modeling.

The state's small scale physical model shows potential effects of a land building diversion scenario. Blue indicates sediment deposition and land gain over a simulated 100 year period.

*Physical models.* Physical models are tangible representations of hydrologic processes in a given area. As such, the models can provide insights into how the system functions overall. Louisiana has a small-scale physical model of a portion of the Mississippi River's Deltaic Plain. The model has helped researchers better understand how major river diversions proposed for the area would spur land building.

# Science – Includes **Social and Economic** Science Perspectives

- Fisheries
- Community Resiliency
- Industry and Infrastructure Risk
- Transportation risk: ports, navigation, roadways, railroads
- Energy production and delivery

# Resiliency and Industry & Infrastructure Risk

- The ConocoPhillips Alliance Refinery located 20 miles south of New Orleans had to repair damage caused by extensive wind damage from Katrina as well as storm waters from both Katrina and Rita.
- The refinery's central control system, instrumentation and electrical infrastructure were badly damaged.
- ConocoPhillips decided to harden its new control center to withstand 200 mile-per-hour winds and raise instrumentation higher, where possible.

# Executive Order No. BJ 2008-7

**NOW THEREFORE, I, Bobby Jindal,** Governor of the state of Louisiana, by virtue of the authority vested by the Constitution and the laws of the state of Louisiana, do hereby order and direct as follows:

**SECTION 1:** All state agencies shall administer their regulatory practices, programs, contracts, grants, and all other functions vested in them in a manner consistent with the Master Plan and public interest to the maximum extent possible.

**SECTION 2:** This Order is effective upon signature and shall remain in effect until amended, modified, terminated, or rescinded by the governor, or terminated by operation of law.

**IN WITNESS WHEREOF**, I have set my hand officially and caused to be affixed the Great Seal of Louisiana, at the Capitol, in the city of Baton Rouge, on this 23rd day of January, 2008.

**/S/ Bobby Jindal**
**GOVERNOR OF LOUISIANA**

**ATTEST BY**
**THE GOVERNOR**

**/S/ Jay Dardenne**
**SECRETARY OF STATE**

# Moving forward

## CHALLENGES, POTENTIAL CONFLICTS, OPPORTUNITIES

# Challenges Remain

- **<u>Storm Trends</u>**: How are storm trends changing?
- **<u>Wetlands Buffer</u>**: How do wetlands affect storm surge and wave patterns?
- **<u>Resiliency</u>**: How often will the coastal landscape be able to recover from major storm damage?
- **<u>Social Adaptation</u>**: How do individuals, communities and cultures adapt to change in healthy manner?

# Challenges Remain

- **Climate Change and Sea Level Rise**: Identify sea level rise timeframe and associated critical issues
- **Data Management**: Identify ways to improve data collection and management for storm surge modeling
- **Land Use and Zoning**: Use of coastal land use codes and robust community and land use planning
- **Dedicated Pipelines**: Creating sustainable marsh with pipeline sediment delivery
- **Efficient and Effective Standards**: Materials research supporting affordable and stronger protection structures
- **Surge Models**: Improving protection predictive tools

# Potential Conflicts/Opportunities

- Offshore oil and gas production and mitigation of coastal impact – protect energy infrastructure

- Expensive/extensive mitigation required for hurricane protection footprint – coastal restoration projects mitigate for hurricane protection

- Hypoxia – Dead Zone (agriculture and fisheries) – diversions filter and restore wetlands

- Fisheries – diversions and oyster production – expand ecosystem opportunities

- Maritime and coastal restoration/protection – remove sediment from river

# Coastal Issues in the Public Eye

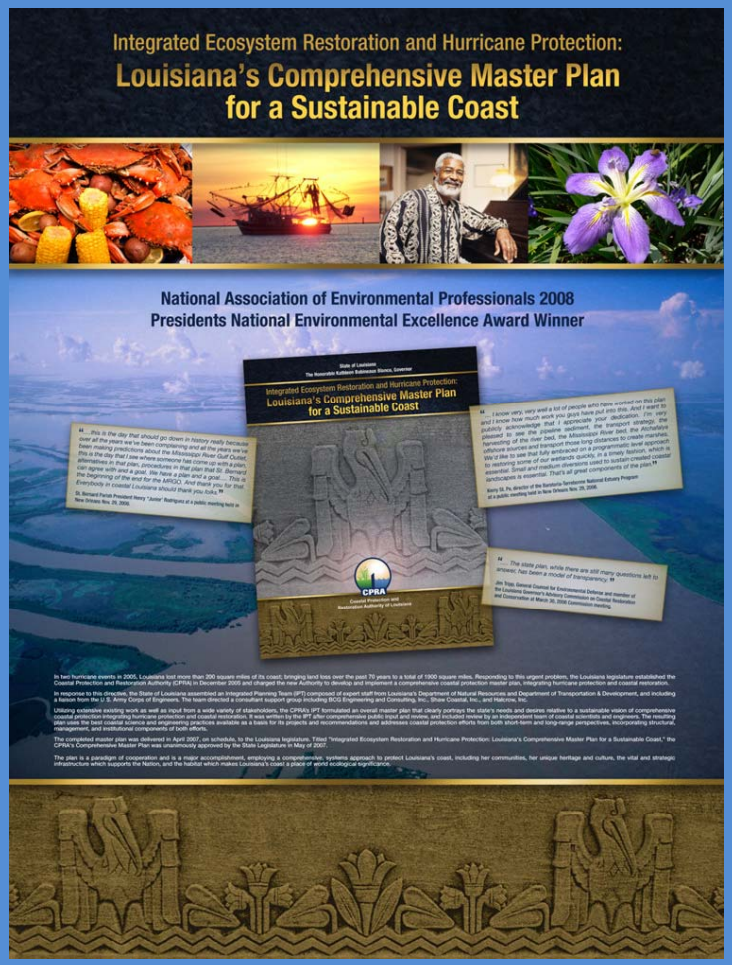
*EPA's*

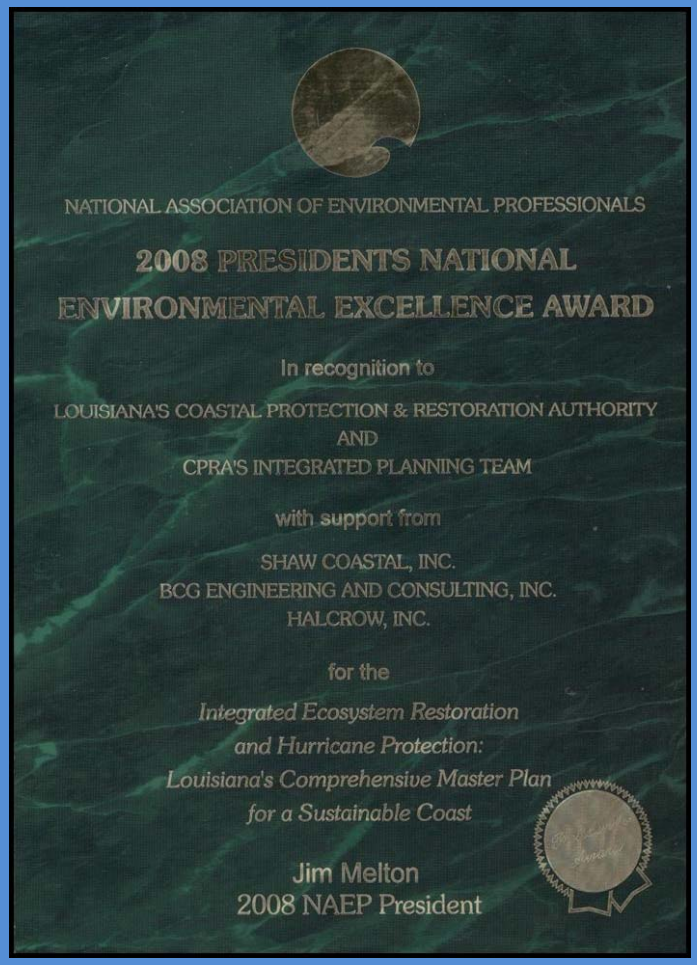
# *2007 Gulf Guardian Award*

**1st Place**

**Government**

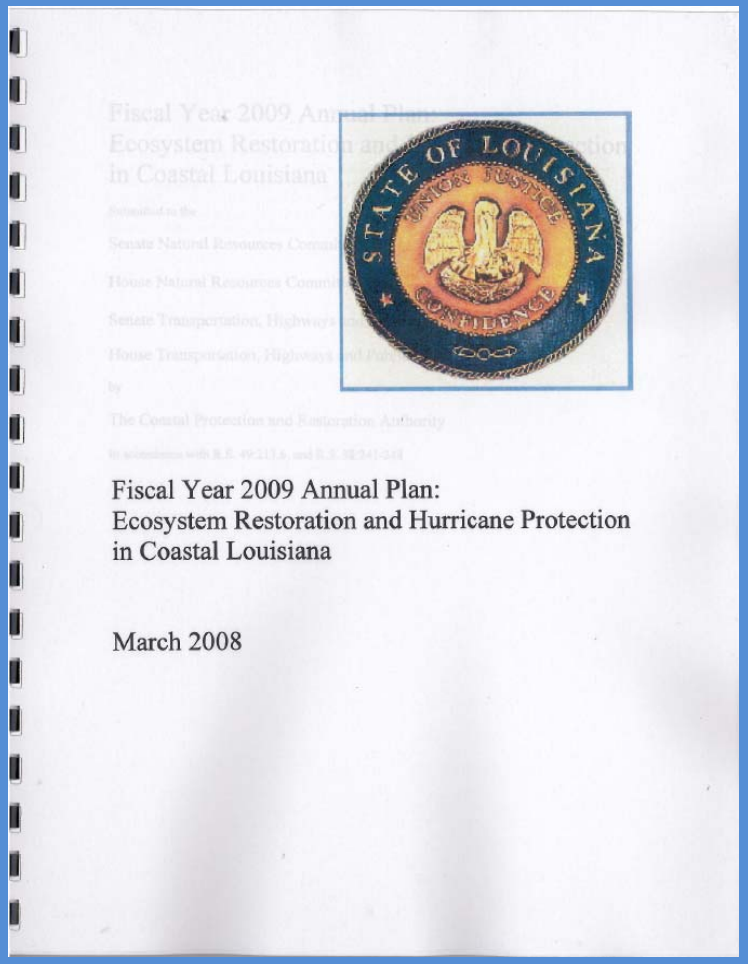
# National Association of Environmental Professionals
## *2008 Presidents' Award for National Excellence*



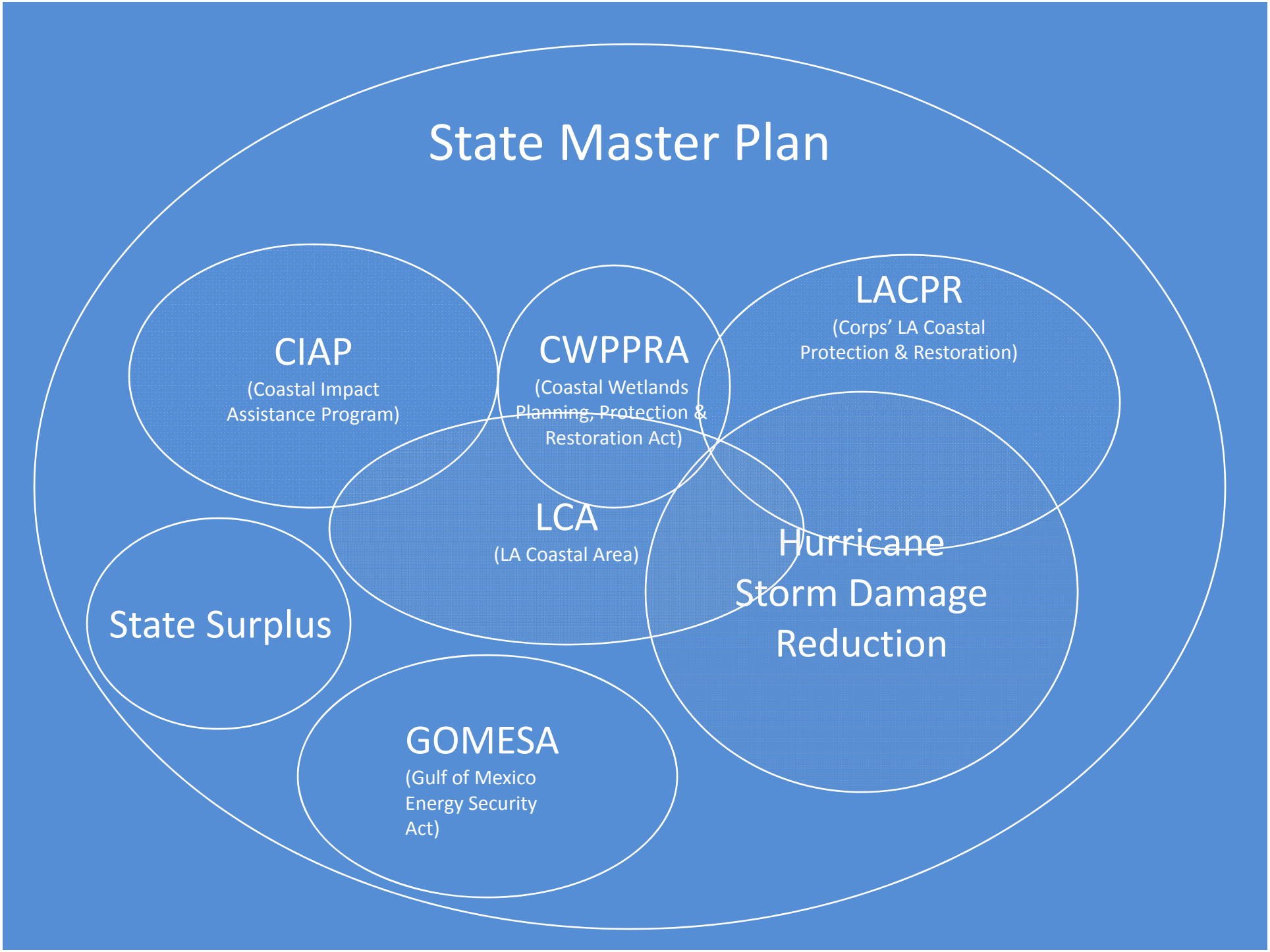



Renewable Natural Resources Foundation's

2008 Outstanding Achievement Award




- The State's Annual Plan is tool to move forward


State Master Plan
CIAP
(Coastal Impact Assistance Program)
CWPPRA
(Coastal Wetlands Planning, Protection & Restoration Act)
LACPR
(Corps' LA Coastal Protection & Restoration)
LCA
(LA Coastal Area)
Hurricane Storm Damage Reduction
State Surplus
GOMESA
(Gulf of Mexico Energy Security Act)

# Funding Sources

**Federal Funding (Corps)**

- Construction General Funding (includes SELA & LCA)
- General Investigations
- MR&T (Mississippi River & Tributaries)
- Operations and Maintenance
- Continuing Authorities Program
- Flood Control and Coastal Emergencies

**Federal Funding (other)**

- CIAP
- CWPPRA
- GOMESA
- NOAA Community Based Restoration Program
- NOAA Restoration Research Program
- NRCS programs
- North American Wetlands Conservation Act (NAWCA)

# Funding Sources

**Other**

- Statewide Flood Control Program
- Community Development Block Grants
- Hazard Mitigation
- Local Levee District taxing authority
- Ducks Unlimited
- National Fish & Wildlife Foundation

**State**

- LA Coastal Protection and Restoration Trust Fund
- Coastal Zone Management
- 2007 State Surplus
- 2008 State Surplus
- Capital Outlay

*“What is practicable must often control what is pure theory…"*

# Summary

- We must understand the risk
- We can’t wait to answer all questions before acting
- No single solution, multiple approaches as well as multiple objectives, are necessary
- Master Plan will change and evolve based on best available science