Coastal Restoration Project Efforts

By: Troy Constance
Protection & Restoration Office,
New Orleans District

April 2009

The Corps of Engineers manages the Mississippi River, but its resources have not been allocated.

- Mark Davis, Tulane Institute on Water Resources Law & Policy

Water Resource Missions of the Corps of Engineers

In Order of Implementation

- Navigation
- Flood Damage Risk Reduction
- Ecosystem Restoration

Mississippi River in 1800

The mouth often shoaled

The river was full of snags

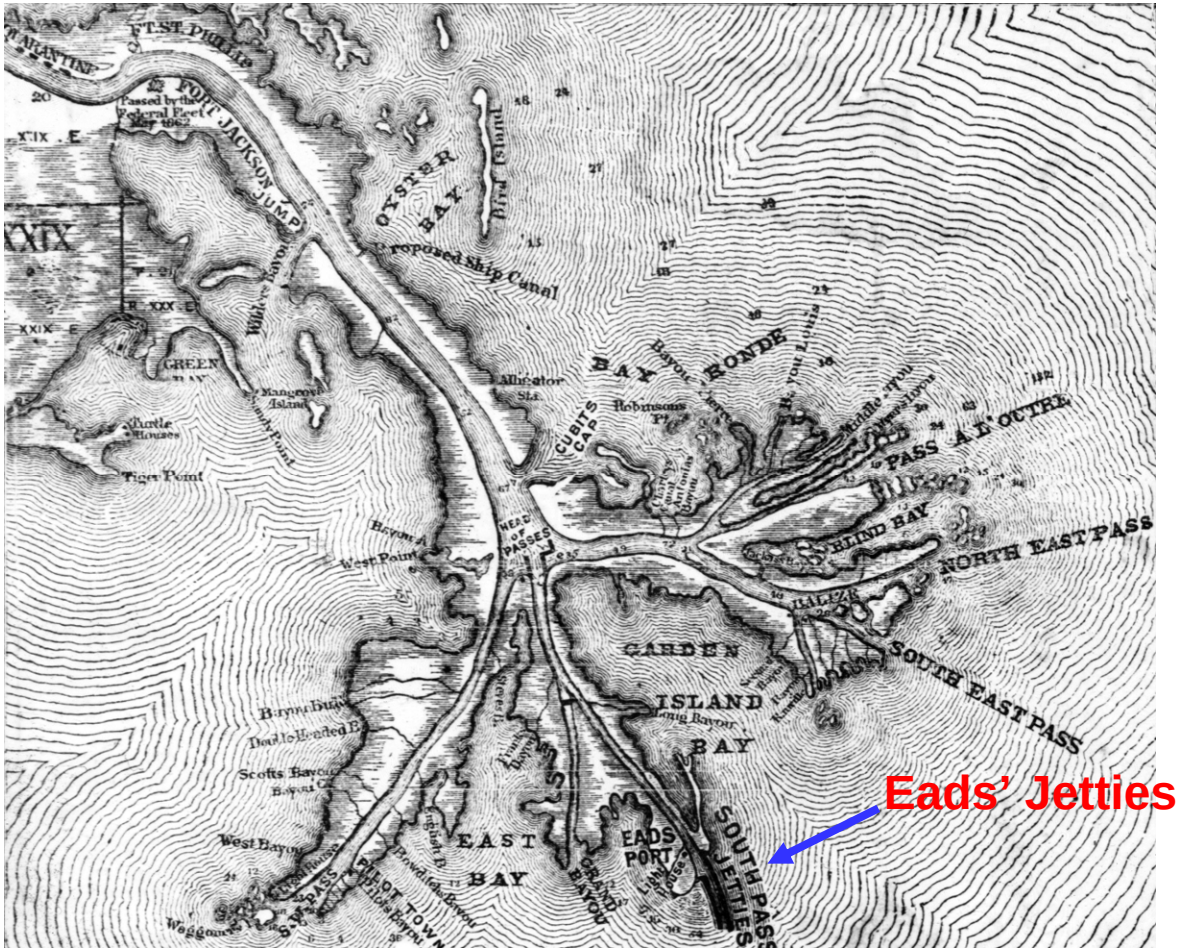
Was not navigable year-round

Access was through Bayou St John

Captain Eads Improves Access

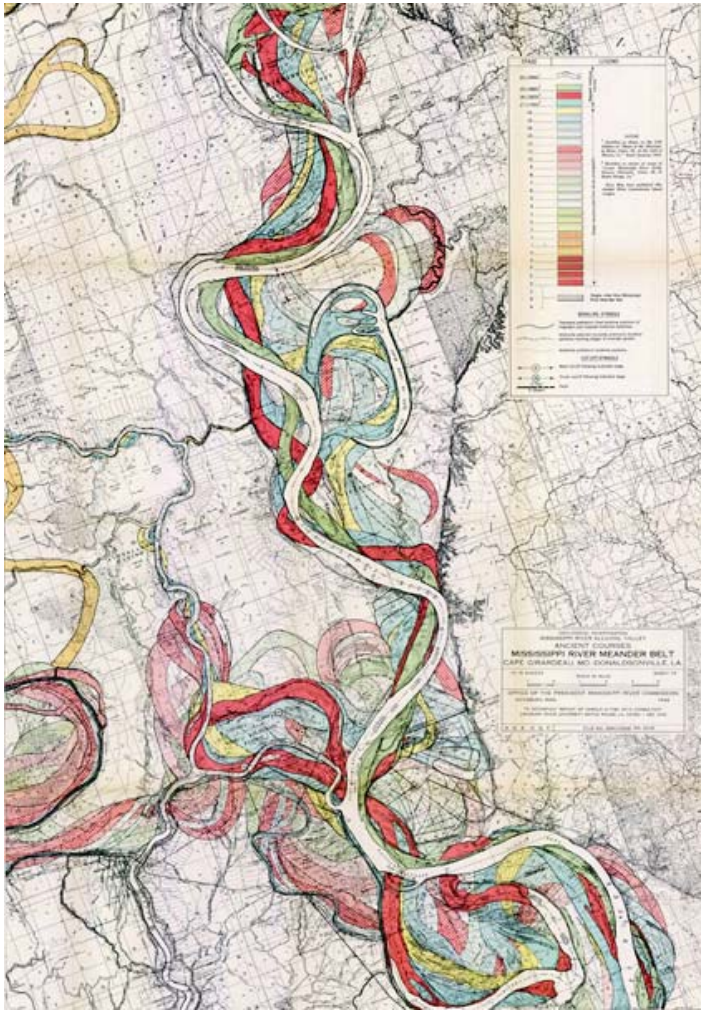
Jetties increased velocities to preventing sediment deposition in the delta

The sediment was shunted into deep water of the Gulf of Mexico



Snags Were a Continuous Safety Concern Along the River

The River Meandered Rapidly



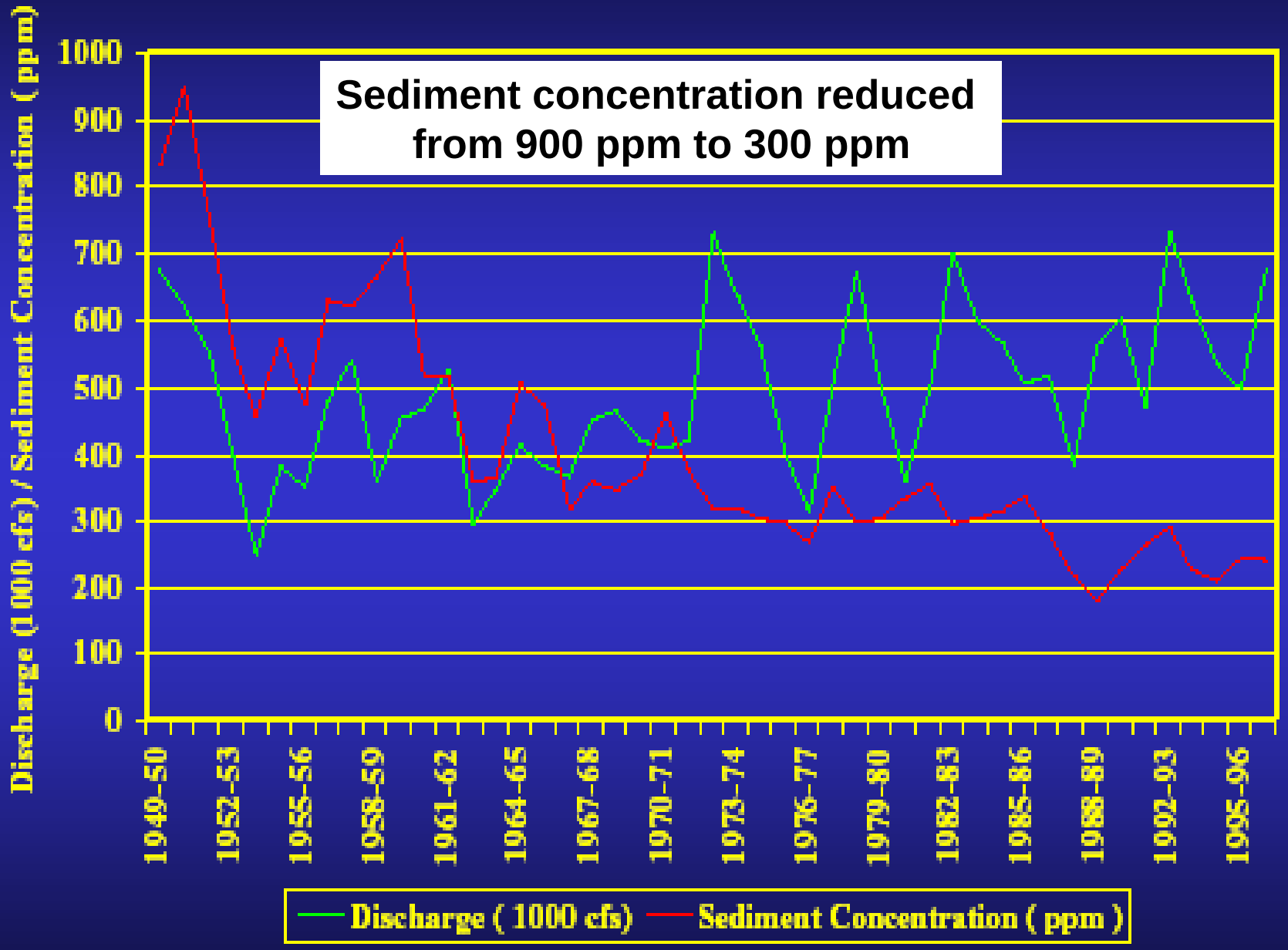
- **This slide shows the river meander in Louisiana for about 100 year period (1765-1880)**
- **Continuous Meandering meant groundings common**
- **The life expectancy of a river boat in the 1800s was about 18 months**

Floods of the Mississippi

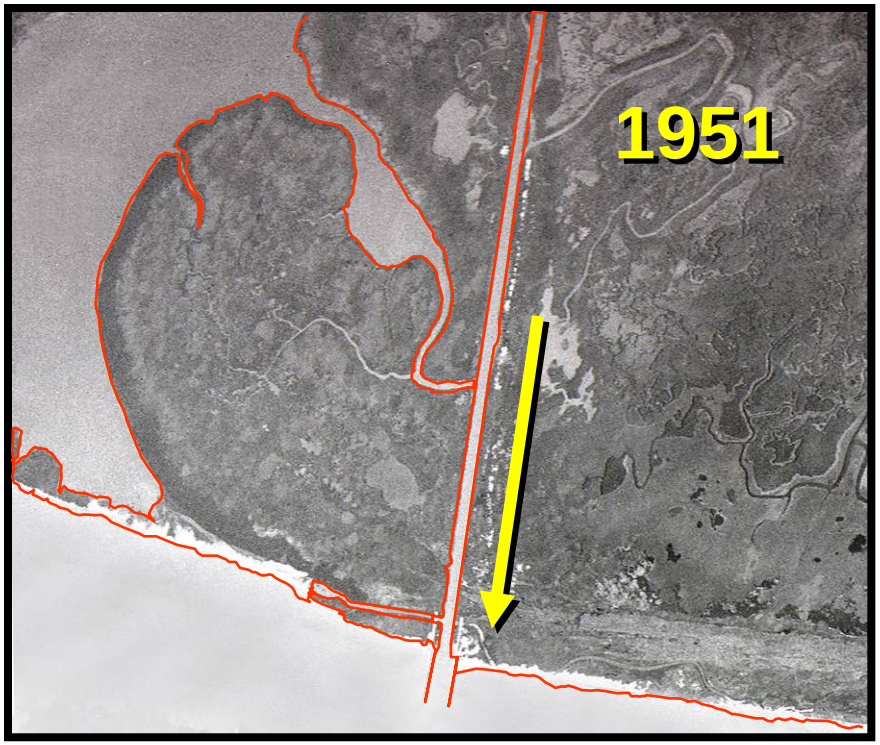
- Expansion of the nation into the Mississippi Valley in the early 1800s resulted in significant population in the late 1800s and early 1900s
- Floods of the river became more problematic to investments
- Floods of 1915 and the Great Flood of 1927 prompted Congress to act

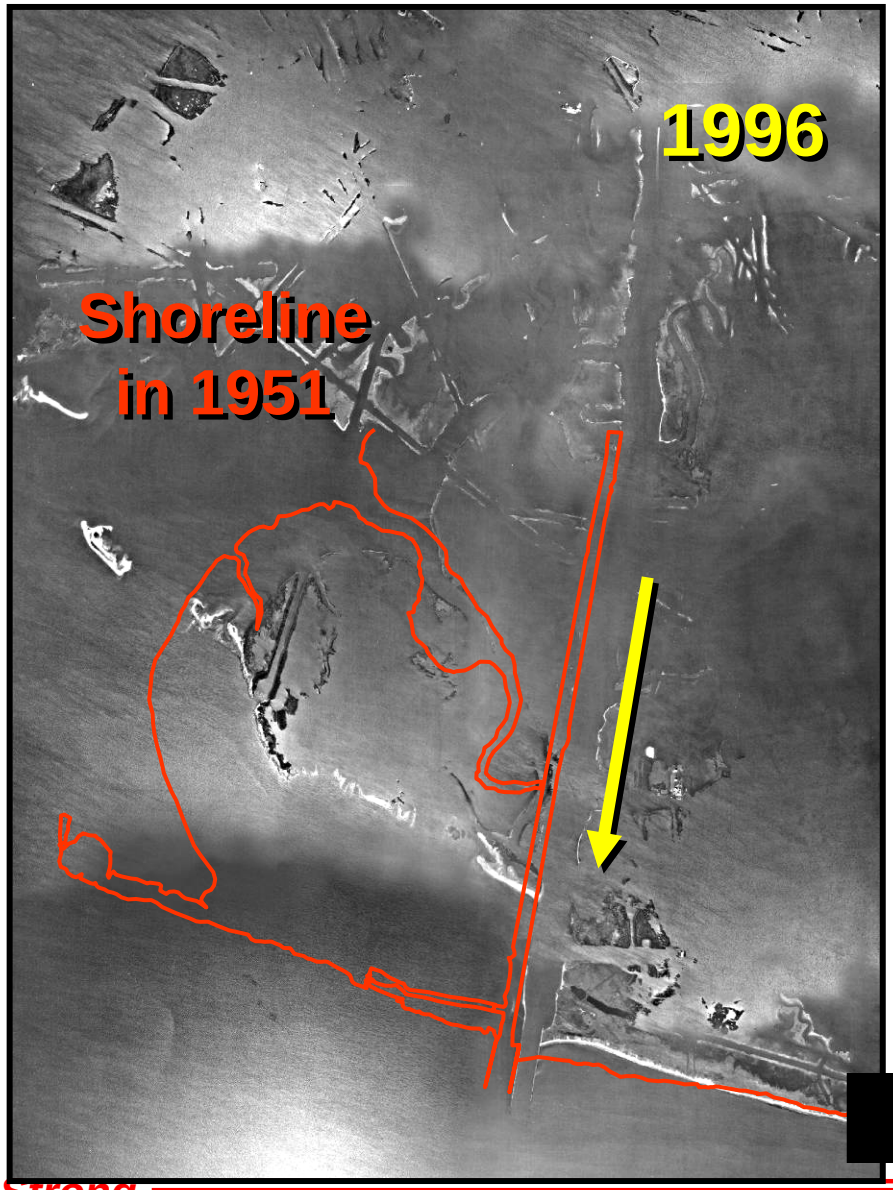
MAP OF
FLOODED SECTIONS IN
LOUISIANA
SCALE - 1 INCH = 18 STATUTE MILES
Date, June 22, 1927
W. K. Grant, Mun. Eng
ISSUED BY
LOUISIANA RATING AND FIRE PREVENTION BUREAU
N.O. LA
NOTE - DATA SHOWN HEREWITH IS AS OF JUNE 8, 1927. AT THAT TIME MANY TOWNS WERE INACCESSIBLE AND THE INFORMATION IS NECESSARILY APPROXIMATE BUT IS THE BEST OBTAINABLE FROM UNOFFICIAL SOURCES. CROSS-HATCHED AREAS ARE THOSE PRESUMED OR REPORTED AFFECTED BY FLOOD WATER. NUMBERS IN CIRCLES INDICATE CREVASSES IN THE ORDER OF THEIR OCCURRENCE.
ARKANSAS
TEXAS
MISSISSIPPI
GULF OF MEXICO
CADDO
BOSSIER
WEBSTER
CLAIBORNE
UNION
MOREHOUSE
WEST CARROLL
EAST CARROLL
LINCOLN
OUACHITA
RICHLAND
MADISON
BIENVILLE
JACKSON
FRANKLIN
DE SOTO
RED RIVER
CALDWELL
TENSAS
WINN
NATCHITOCHES
SABINE
GRANT
CATAHOULA
CONCORDIA
RAPIDES
VERNON
AVOYELLES
WEST FELICIANA
EAST FELICIANA
SAINT HELENA
TANGIPAHOA
WASHINGTON
BEAUREGARD
ALLEN
EVANGELINE
ST LANDRY
POINTE COUPEE
EAST BATON ROUGE
LIVINGSTON
ST TAMMANY
JEFFERSON DAVIS
ACADIA
LAFAYETTE
ASCENSION
LAKE PONCHARTRAIN
CALCASIEU
CAMERON
VERMILION
ST MARTIN
IBERVILLE
ST CHARLES
JEFFERSON
ORLEANS
ST BERNARD
PLAQUEMINES
LAFOURCHE
TERRE BONNE
ST MARY
7 BAYVILLE
4 MILLIKEN BEND
5 WINTER QUARTERS
1 GLASSCOCK
2 BOUGERE
3 VICK
4 BORDELONVILLE
5 COTTONPORT
11 MCCREA
12 MELVILLE
8 CAERNARVON
6 JUNIOR

Suspended Sediment Concentration vs. Discharge

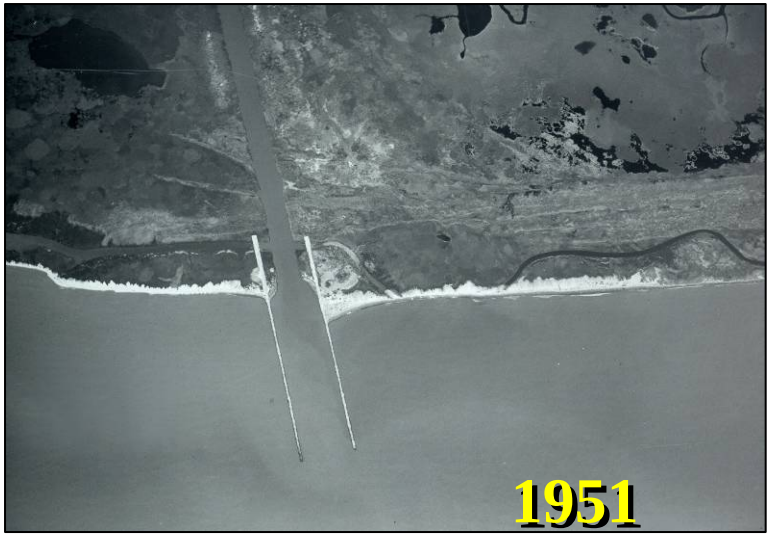


Empire Waterway, Vicinity of Pelican Island





Empire Jetties



Authorization - Mandates

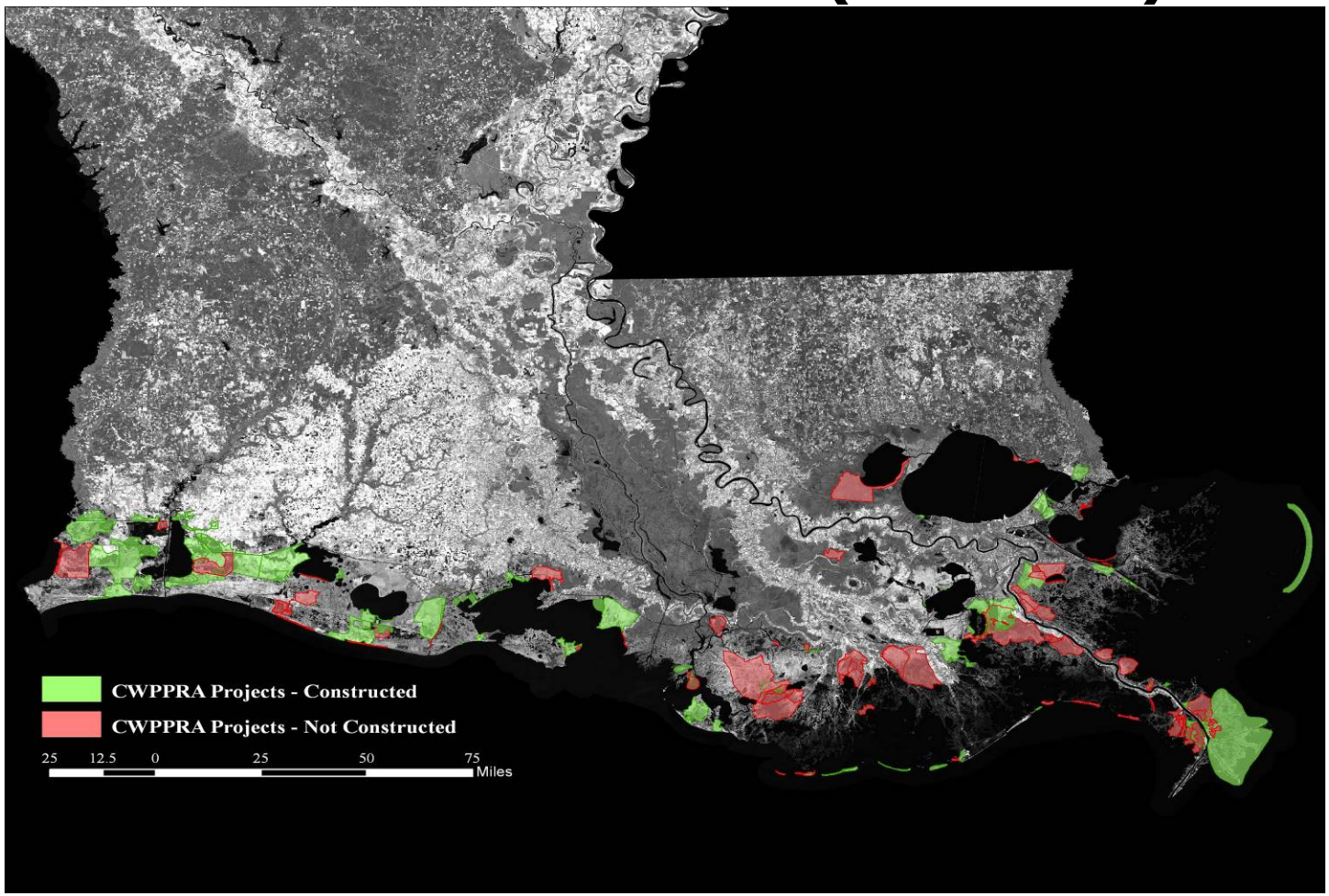
Breaux Act (Nov 1990)

- *Secretary of the Army to convene a Task Force to prepare plan for restoring and preventing loss of coastal wetlands*
- *Comprehensive Restoration Plan (1993)*
- *Annual Priority Project Lists (PPL)*
- *State Conservation Plan (approved Nov 97)*
- *Cost sharing:*
  - *PPL1-4 (75% Fed/25% non-Fed for expenditures thru Nov 97)*
  - *PPL 5-6 (90% Federal/10% non-Federal)*
  - *PPL 7 onward (85% Federal/15% non-Federal)*

What is CWPPRA --- In a Nutshell

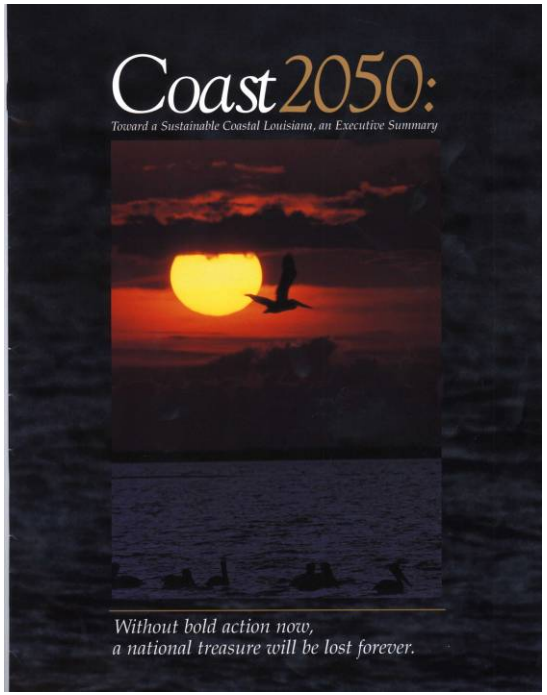
- Plans, designs, and builds projects to create or restore Louisiana coastal wetlands
- Original authorization in Nov 1990 - extended 3 times - resulting in authorization through 2019 (estimated $2.0B Fed/non-Fed)
- Five federal agencies sponsor projects, LA Department of Natural Resources (LDNR) serves as local sponsor
- Develops annual list of projects, Priority Project Lists (PPLs)
- Governed by a “Task Force”, chaired by the District Engineer of the New Orleans District (delegated by ASA(CW))
  - Corps is the administrative lead agency for the program

Coastal Wetland Protection and Restoration Act (CWPRA)



Development of Coast 2050

- Resulted in the development of the Coast 2050 Plan in Dec 1998
- Other federal agencies involved in development
- Regional approach to strategic planning
- Involved public through 65 workshops
- Looked at “big picture” strategies
- Vision of what we wanted the coast to be in 2050



Linkage to LCA

CWPPRA Actions

- Once Coast 2050 Plan was completed, CWPPRA changed it's annual planning process
- Process now included addressing regional and mapping unit strategies in projects

LCA Actions

- Coast 2050 Plan used as "reconnaissance" study in order to start Louisiana Coastal Area (LCA) feasibility study
- Authorized the LCA feasibility effort that we know today

Louisiana Coastal Area

LCA – WRDA 2007

Recent Chronology

- Mississippi River Commission Report signed on December 15th 2004
- Chief of Engineers Report & Federal / State partnering agreement signed on January 31st 2005
- Science Program Initiated & Eight Studies Initiated

Chief's Report Recommendations

Conditional Authorization

1. MRGO Environmental Restoration Features

2. Small Diversion at Hope Canal Diversion (CWPPRA)

3. Barataria Barrier Shoreline Restoration (FY09 in construction phase): Caminada Headland, Shell Island

4. Small Bayou Lafourche Reintroduction (CWPPRA)

5. Medium Diversion with Dedicated Dredging at Myrtle Grove (CWPPRA)

To be submitted for Future Authorization

6. Multi-purpose Operation of Houma Navigation Canal Lock
7. Terrebonne Basin Barrier Shoreline Restoration
8. Small Diversion at Convent / Blind River
9. Increase Amite River Diversion Canal Influence by Gapping Banks
10. Convey Atchafalaya River to Northern Terrebonne Marshes
11. Maintain Land bridge between Caillou Lake and Gulf of Mexico
12. Medium Diversion at White's Ditch
13. Stabilize Gulf Shoreline at Pointe Au Fer Island
14. Modification of Caernarvon Diversion
15. Modification of Davis Pond Diversion

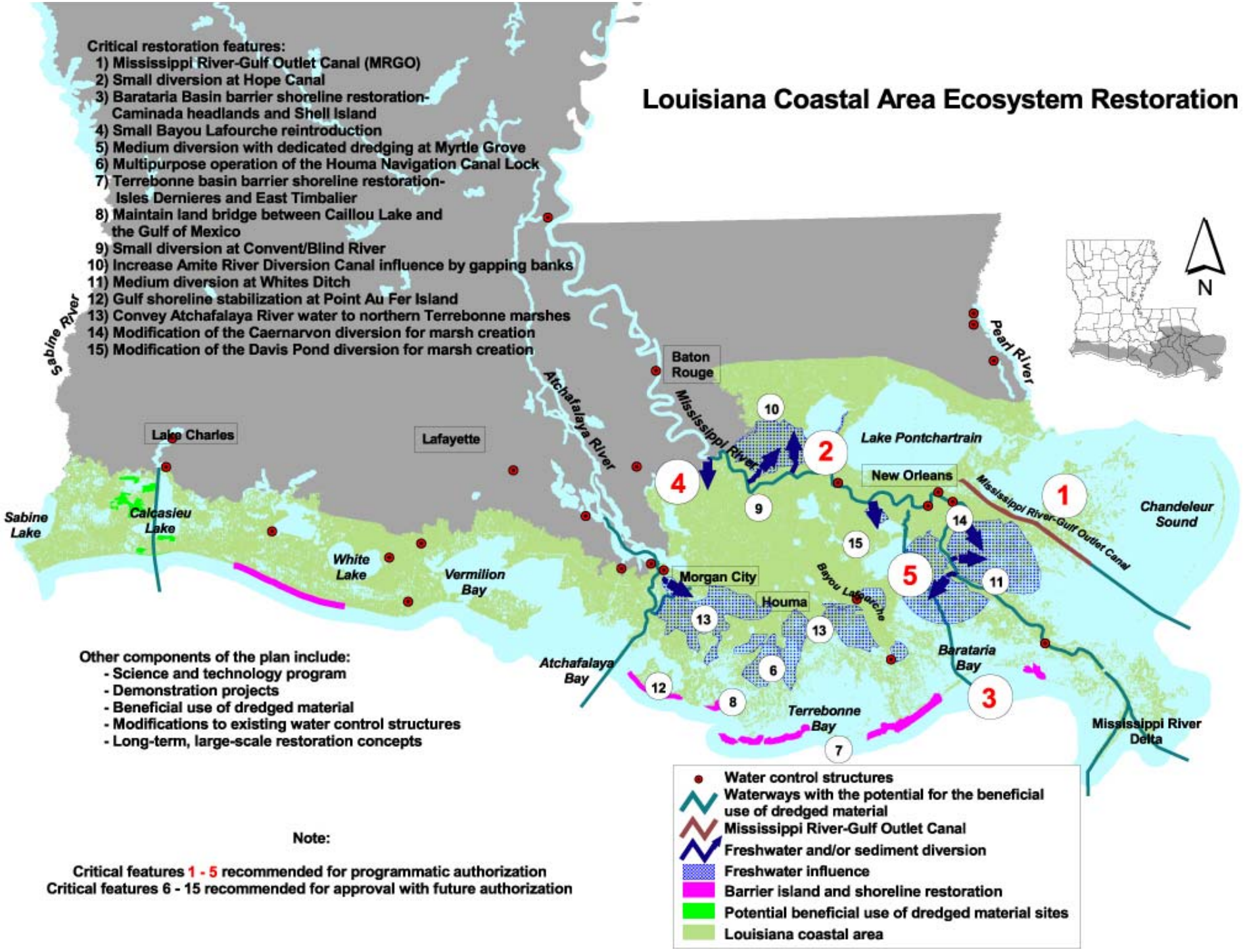
WRDA 2007

Authorized:

- Projects 1-5 for construction subject to Secretary submitting updated report to Committees
- Projects 6-10 for construction subject to Feasibility report and Chief's report in Dec 10
- Projects 11-15 for construction subject to Feasibility report and Chief's Report

Conditionally Authorized Near-term Features	**$828,300,000**
Science Program (active)	***$100,000,000***
Demonstration Projects Program	**$ 95,000,000**
Beneficial Use Dredged Material Program (active)	***$100,000,000***
Investigation of Modifications to Existing Structures	**$10,000,000**
Total Conditionally Authorized Components	**$1,123,300,000**
Near-term Feature Decision Documents	**$70,000,000**
Large-scale, Long-term Studies	**$60,000,000**
Investigations of Modification to Existing Structures	**$10,000,000**
Demonstration Project Decision Documents	**$5,000,000**
Total Currently Authorized Investigations	**$145,000,000**
Total Congressionally Authorized Components	**$728,200,000**
Total LCA Ecosystem Restoration	**$1,996,500,000**

Louisiana Coastal Area Ecosystem Restoration



Consequences of the Single Mission Approach

- Implementation has been reactionary
  - Navigation
  - Flood Damage Risk Reduction
  - Ecosystem Restoration
- Focus on limited users for specific purposes
  - Sometimes to the exclusion of other users
- Conflicts in water resource use are difficult to manage


Hurricane Katrina

Louisiana Coastal Protection and Restoration

Compliance with LACPR Authorizing Legislation

The response to direction provided in SEC. 5009. Public Law 109–103 includes…

*"…Chief of Engineers, is directed to conduct a **comprehensive hurricane protection analysis and design** … present a **full range of flood control, coastal restoration, and hurricane protection measures"***

- The report contains a complete hydrodynamic analysis and technical assessment of a full range of comprehensive risk reduction alternatives incorporating a range of coastal, structural, and non-structural measures.

"exclusive of normal policy considerations…"

- The report ranks and screens plans in a risk informed process utilizing multiple criteria decision analysis and additional comparisons of various performance metrics to express cost efficiency, risk reduction effectiveness, and "category 5 compiance.

*"…**consider providing protection for a storm surge equivalent to a Category 5 hurricane** within the project area …"*

- The report evaluates and considers alternative design levels that reflect risk reduction for events within the "category 5" range

The response to direction provided in SEC. 5009. Public Law 109–103 includes…

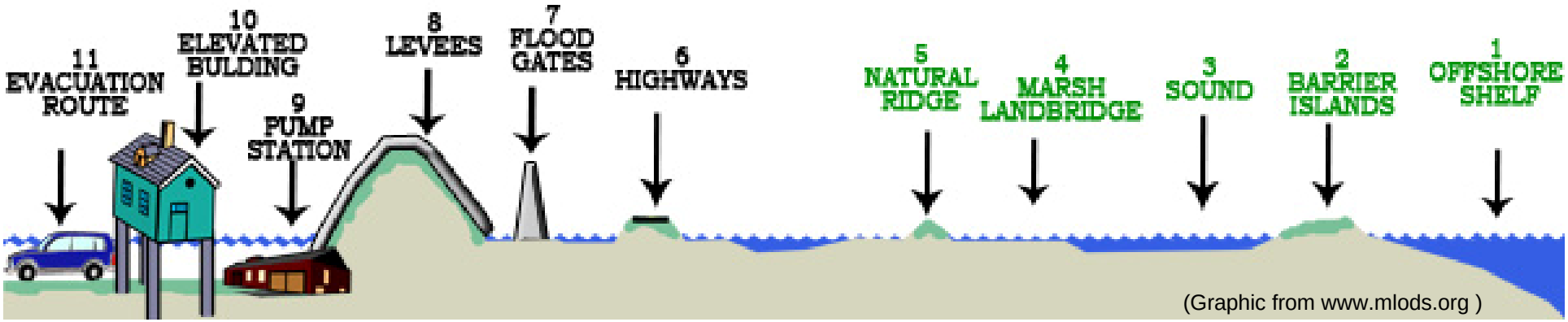
"…may submit reports on component areas of the larger protection program for authorization *as soon as practicable…"*

- The implementation strategy included in the report provides a method for delivering implementation studies and reports in an expedited manner utilizing existing authorities.

"…analysis shall be **conducted in close coordination with the State of Louisiana and its appropriate agencies."**

- The plan formulation and proposed implementation documented in the report utilizes the State Master Plan as the foundation for defining and prioritizing federal action.

Multiple Lines of Defense



Elements include:

Coastal restoration/protection

Structural measures

Non-structural features

LACPR Technical Report Findings

Multi-Criteria Decision Analysis (MCDA) Technique

- Uses multiple metrics to evaluate and compare alternatives
- Allows stakeholders to assign relative weights to metrics based on their values and risk tolerance
- Presents results to allow tradeoff analysis

Tradeoffs within Risk

Framework

- A multiple lines of defense strategy has advantages over single strategy approaches.
- Structural measures are not always the best solution.
- Nonstructural measures are a key component for risk reduction.
  - Relocation of all residents out of the floodplain is not a viable option.
- Individual and community decisions will play a strong role in determining future risks to both life and property.
- Restoration measures are integral to all plans

Realities

- The river is the main resource to be share
- Holistic changes in management of the lower Mississippi River and tributaries may be required.
- Regional tradeoffs across state boundaries must be considered

Summary

- A system-wide approach is needed
- Develop a master plan for the basin
  - engaging multiple users
  - predicting future uses
  - predicting multiple future scenarios
- No single right answer
- Build adaptability into the plan
- Continuous stakeholder engagement

Success requires all stakeholders at the table with equal contributions.

What We Need You To Do

- Engage at the stakeholder level
- Recognize navigation, flood damage risk reduction and ecosystem restoration are now an integrated approach to system management
- Louisiana's coast is essential to viable navigation and flood damage risk reduction system on America's River

Questions