

Restoration of the Mississippi River Delta in a Post-BP Oil Spill Environment

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*Presentation to the Natural Floodplains Function Alliance
May 12, 2014*



RESTORE

THE MISSISSIPPI RIVER DELTA

*Reconnecting the Mississippi River
to its delta to protect
people, wildlife, and jobs*



Presentation outline

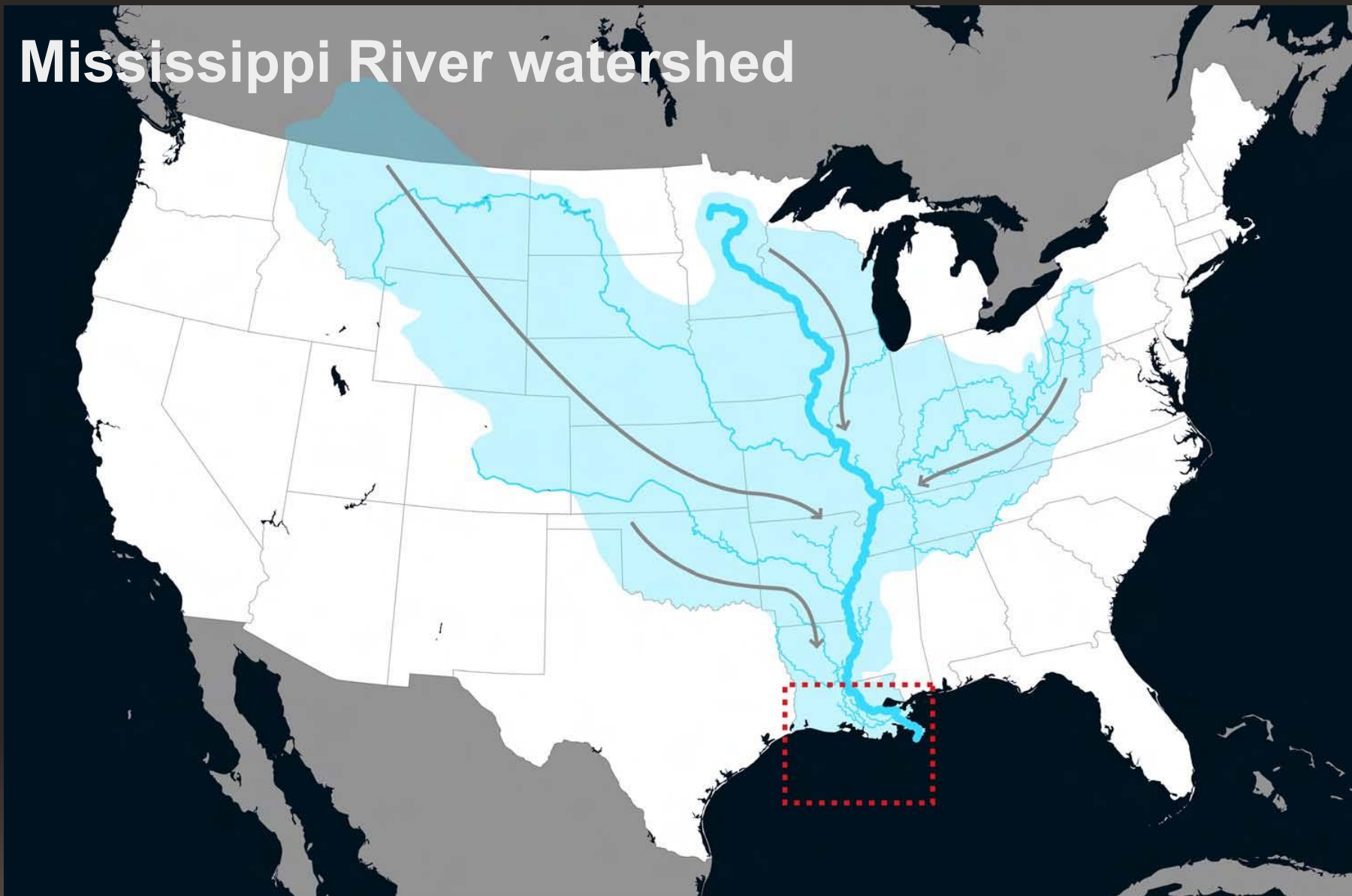
- Mississippi River Delta restoration
 - Overview of the delta
 - Louisiana Coastal Master Plan
 - Changing Course



- BP oil disaster
 - Overview
 - RESTORE Act
 - Funding restoration
 - Science & research

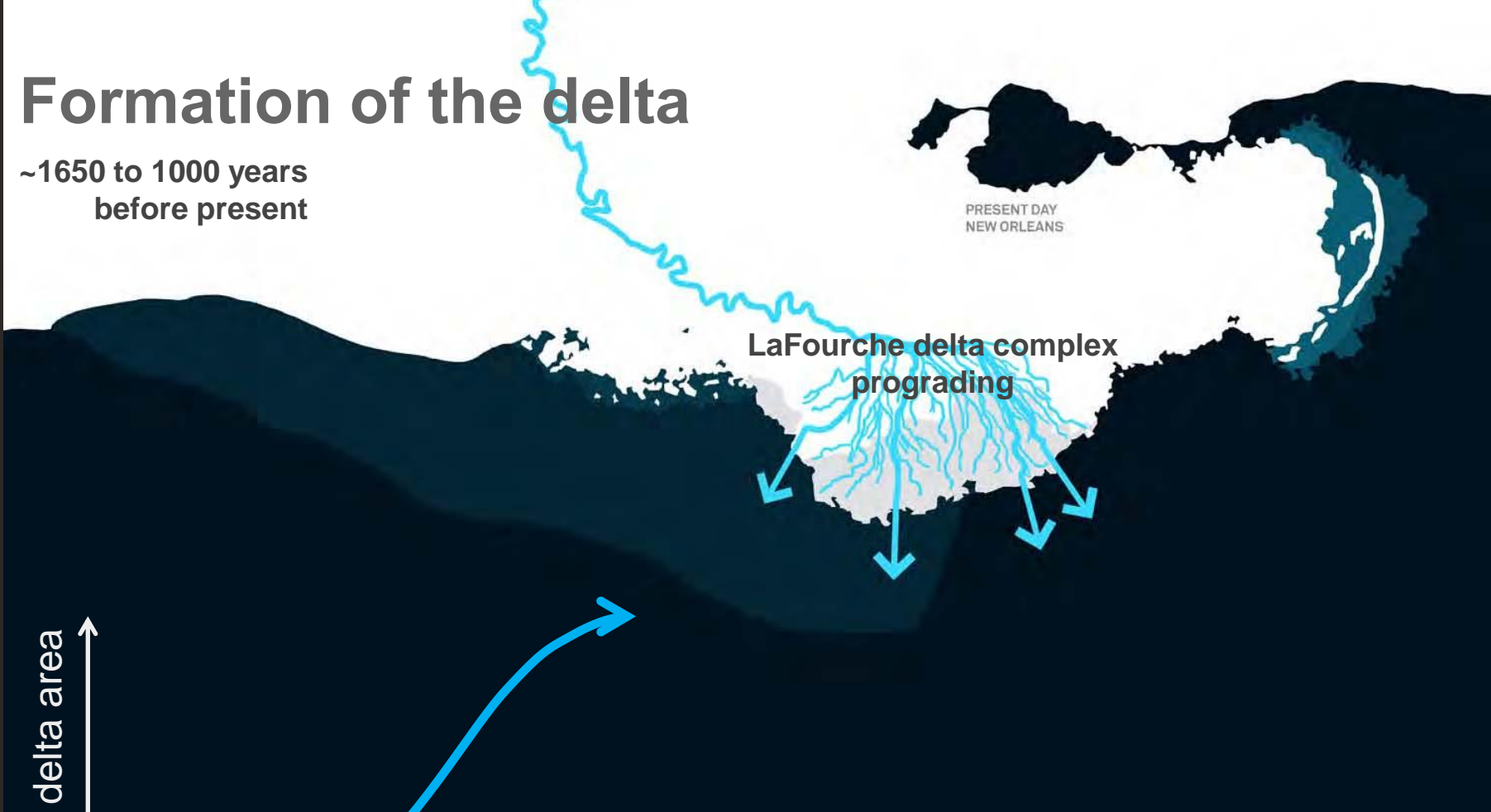


Mississippi River watershed



Formation of the delta

~1650 to 1000 years before present



LaFourche delta complex prograding

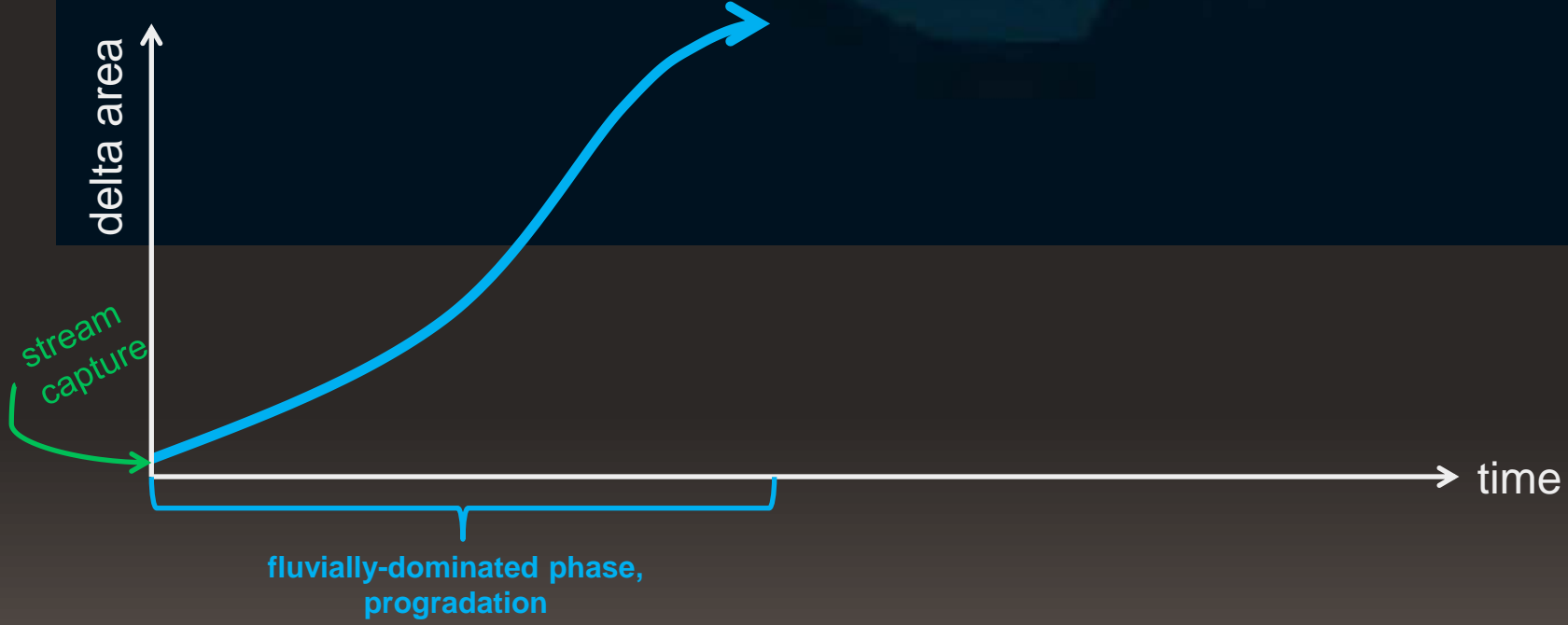
PRESENT DAY NEW ORLEANS

delta area

time

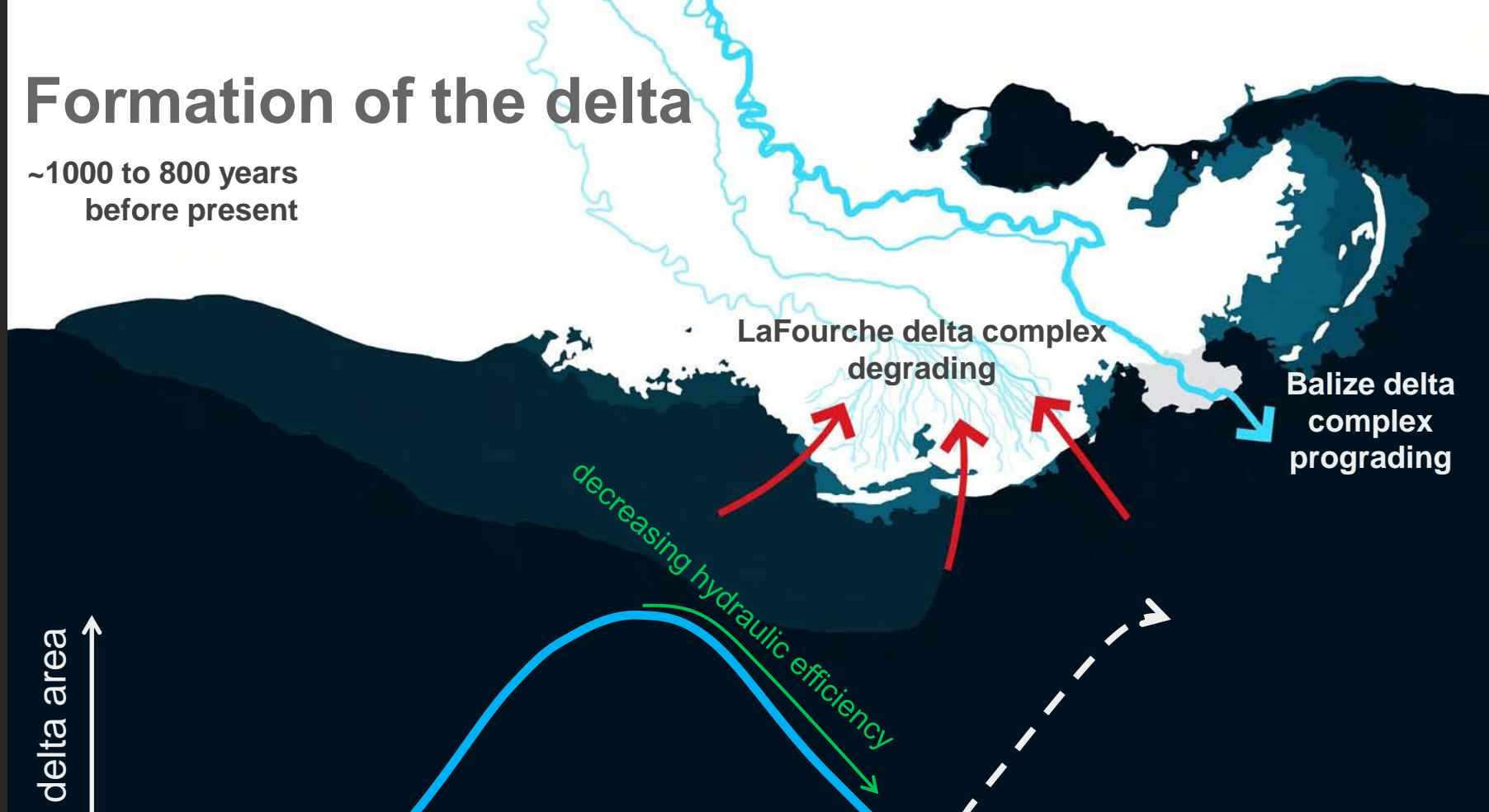
stream capture

fluviially-dominated phase, progradation



Formation of the delta

~1000 to 800 years
before present



LaFourche delta complex
degrading

Balize delta
complex
prograding

decreasing hydraulic efficiency

delta area

time

fluviially-dominated phase,
progradation

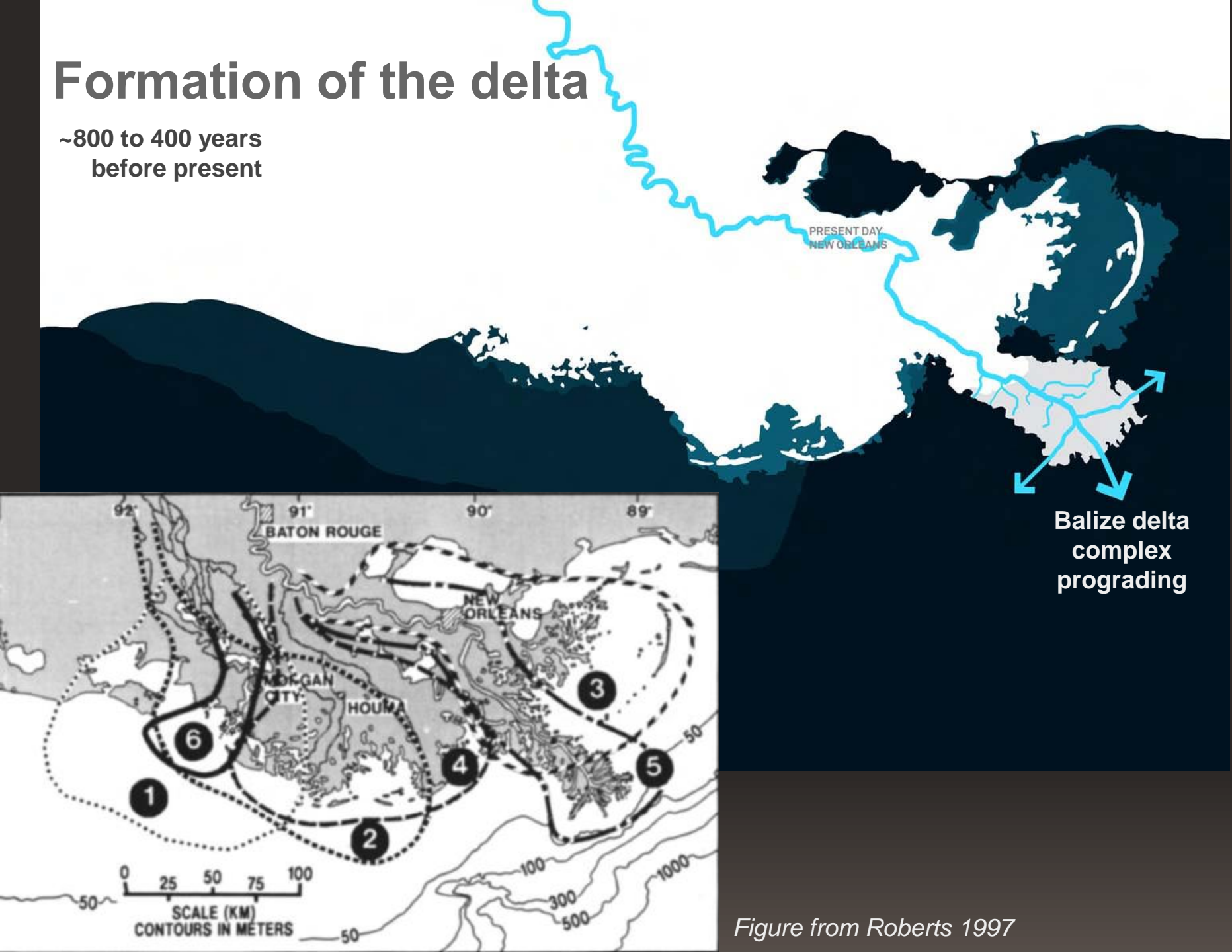
marine-dominated phase,
degradation

stream
capture

stream
capture

Formation of the delta

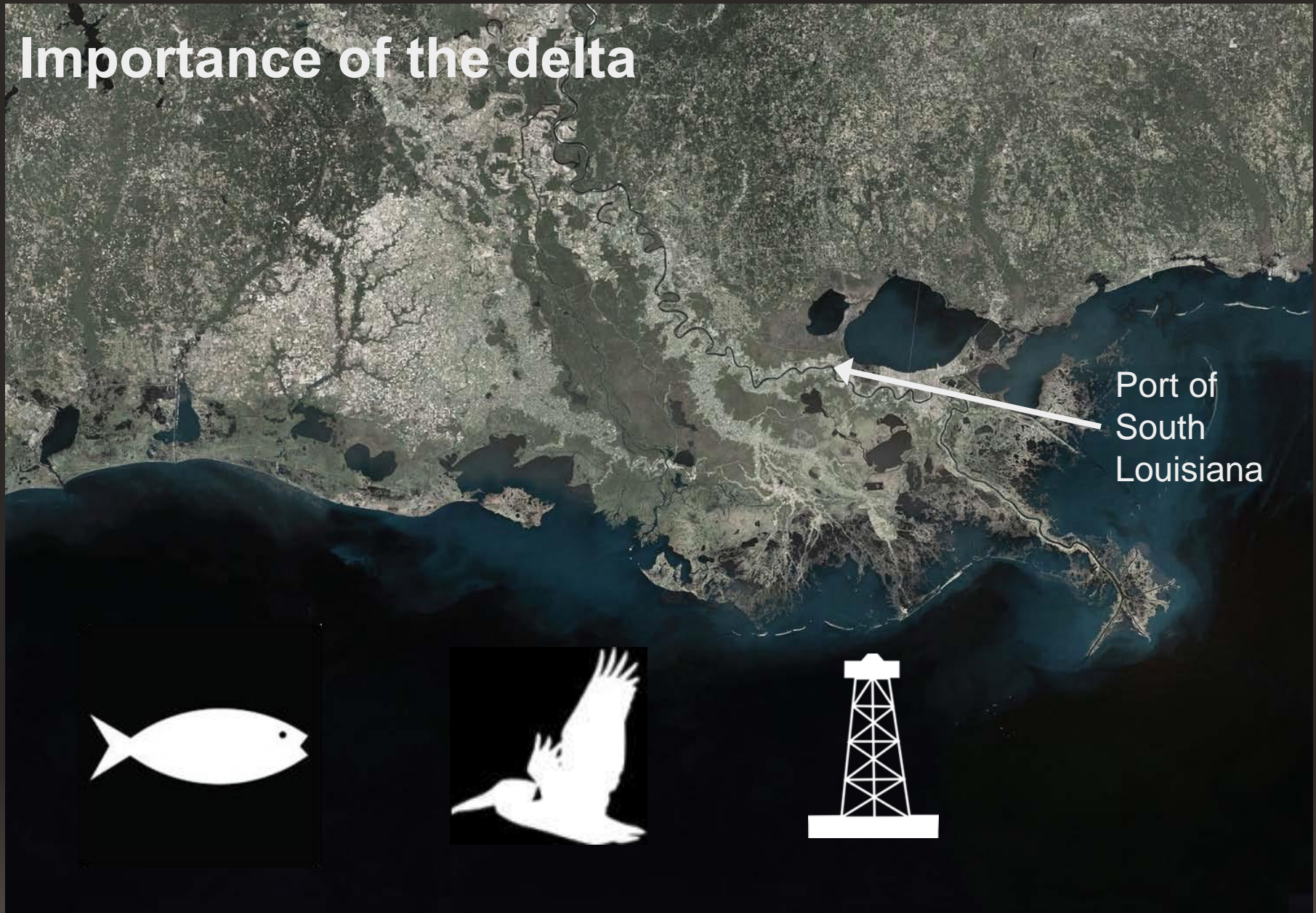
~800 to 400 years
before present



Balze delta
complex
prograding

Figure from Roberts 1997

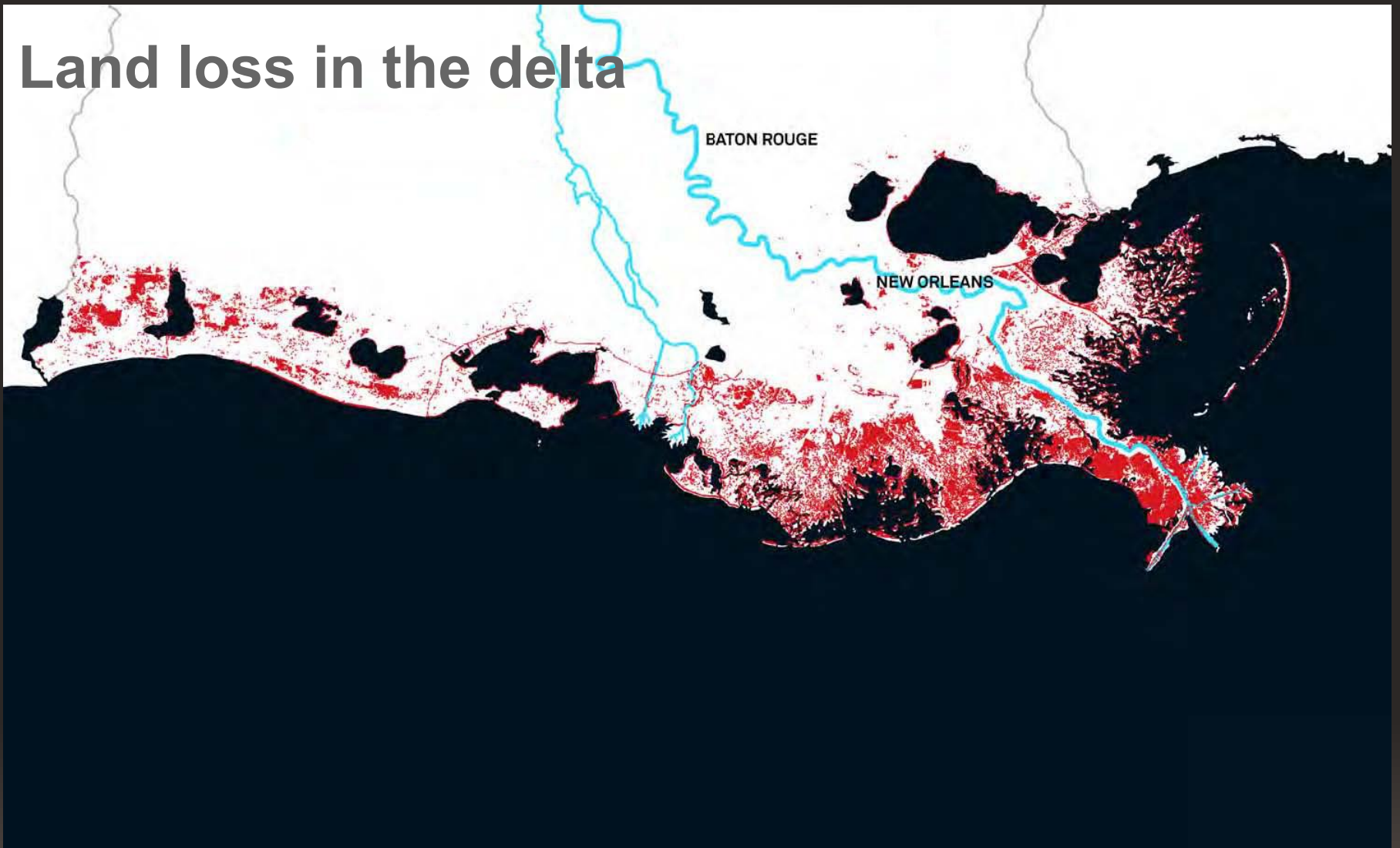
Importance of the delta



Port of
South
Louisiana

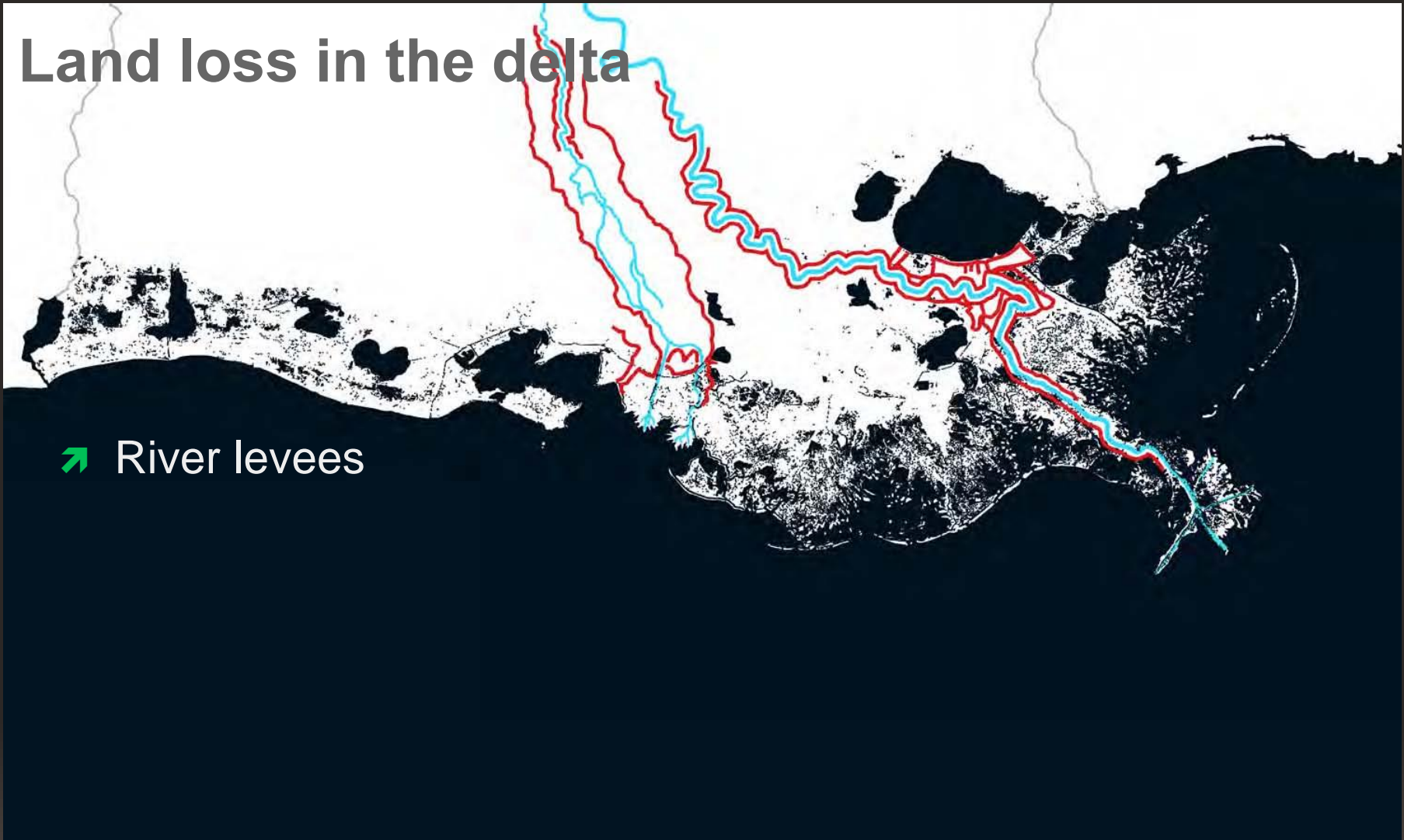


Land loss in the delta



Land loss in the delta

➔ River levees

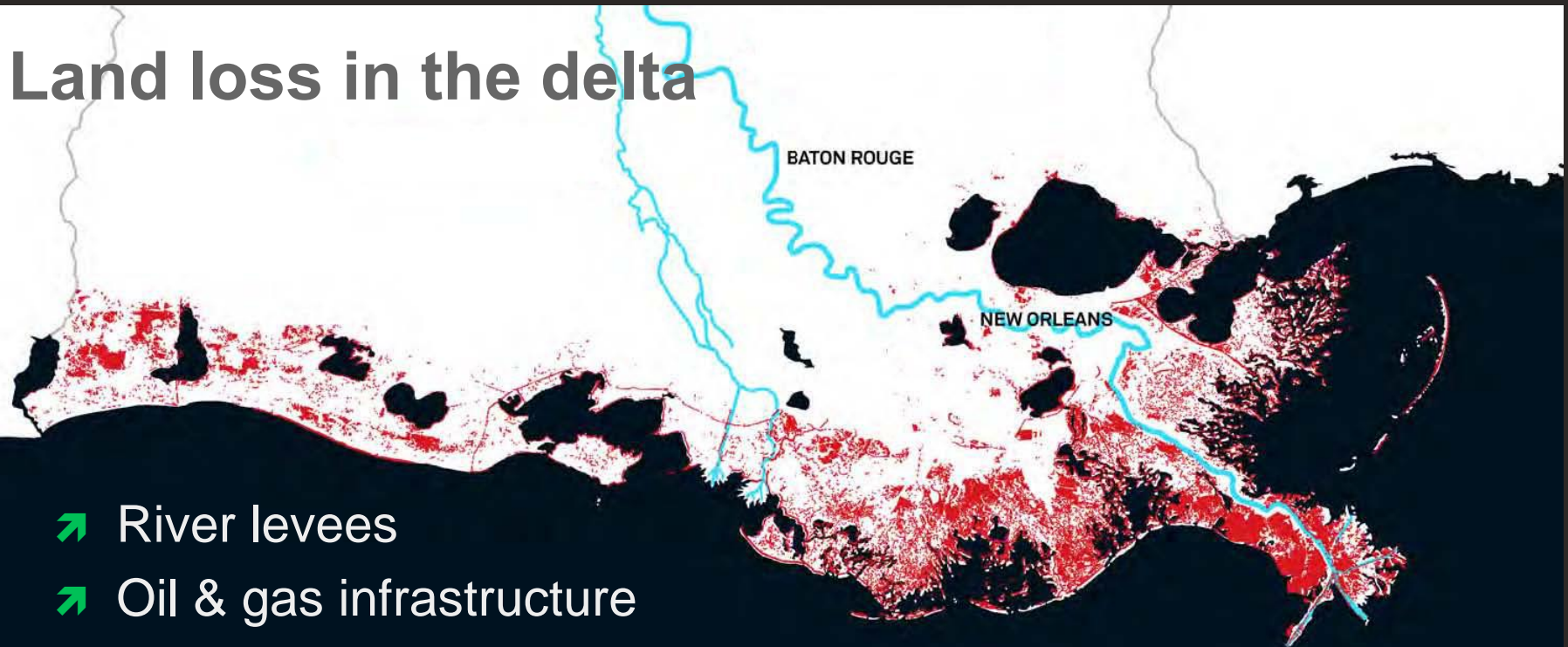


Land loss in the delta

An aerial photograph of a river delta, likely the Mississippi River Delta, showing a complex network of water channels and green marshland. The water is a dark, muted green, and the marshes are a lighter, vibrant green. The sky is overcast with grey clouds. A small boat is visible in the middle of a wide channel, leaving a white wake.

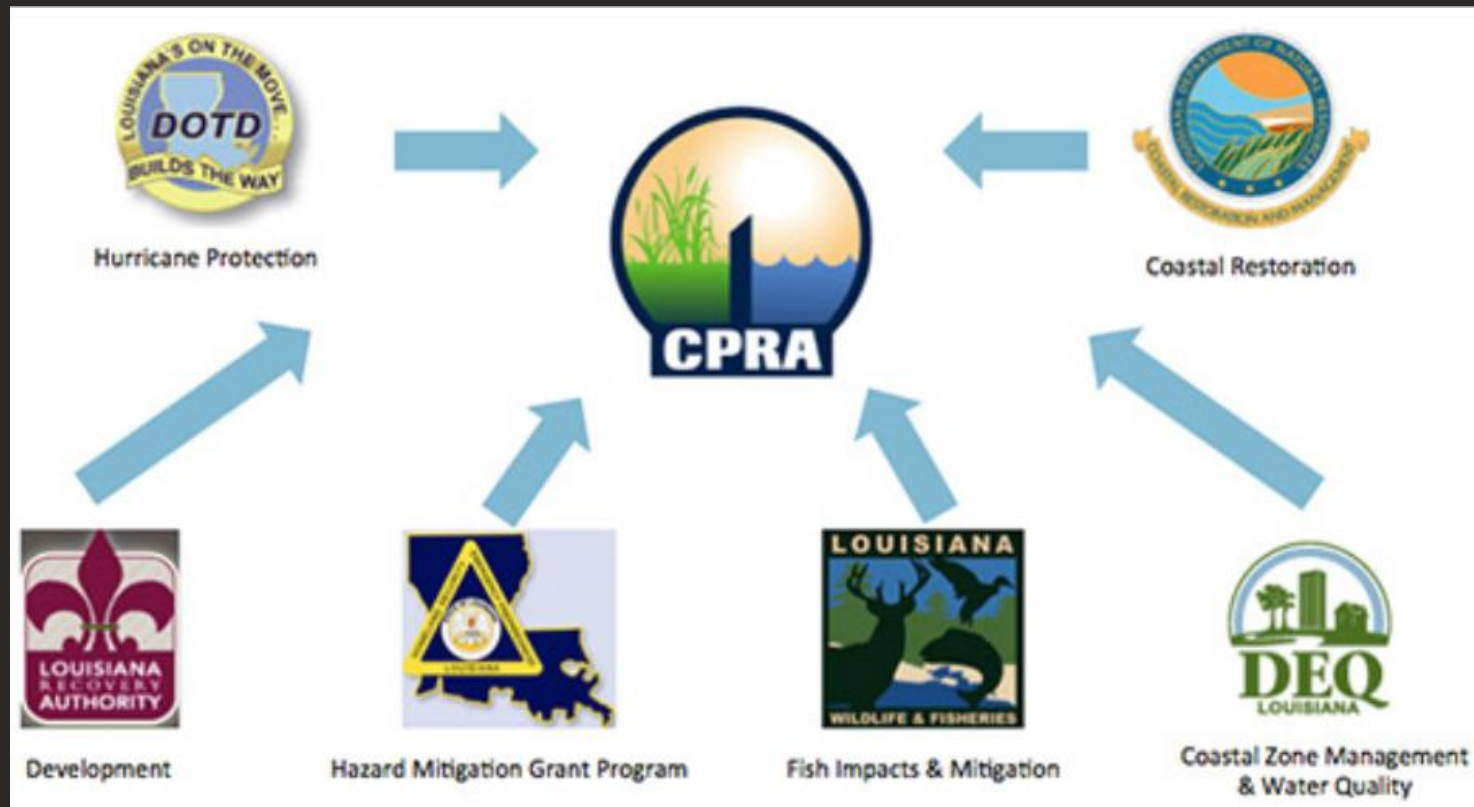
- River levees
- Oil & gas infrastructure

Land loss in the delta



- River levees
- Oil & gas infrastructure
- Navigation channels
- Sediment trapped upriver
- Sea level rise
- Subsidence
- Invasive species
- Hurricanes
- BP oil disaster

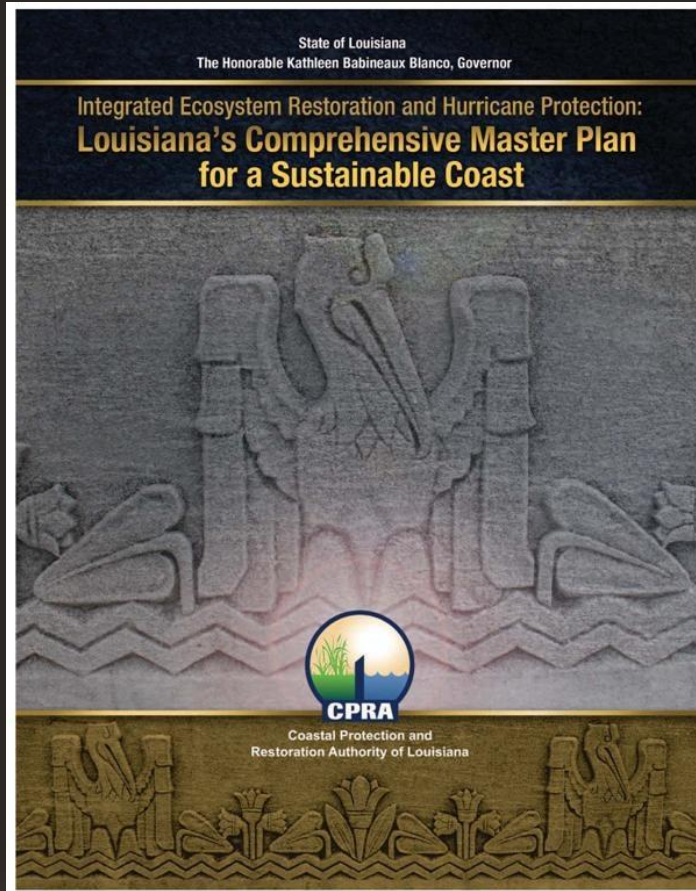
Coastal Protection and Restoration Authority



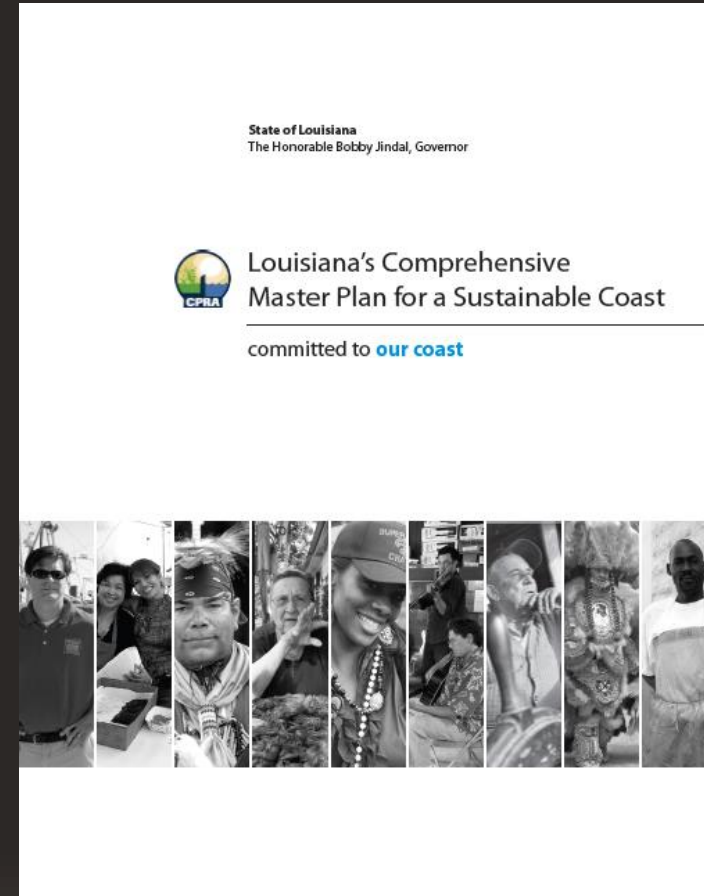
Mandate:

"hurricane protection and the protection, conservation, restoration, and enhancement of coastal wetlands and barrier shorelines or reefs."

Louisiana Coastal Master Plan

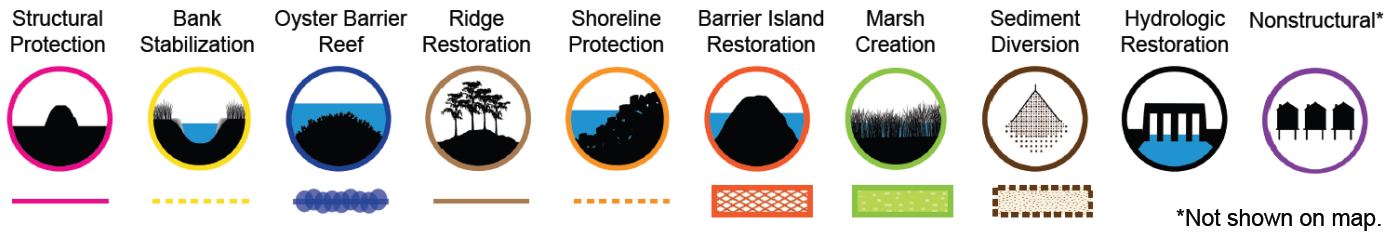
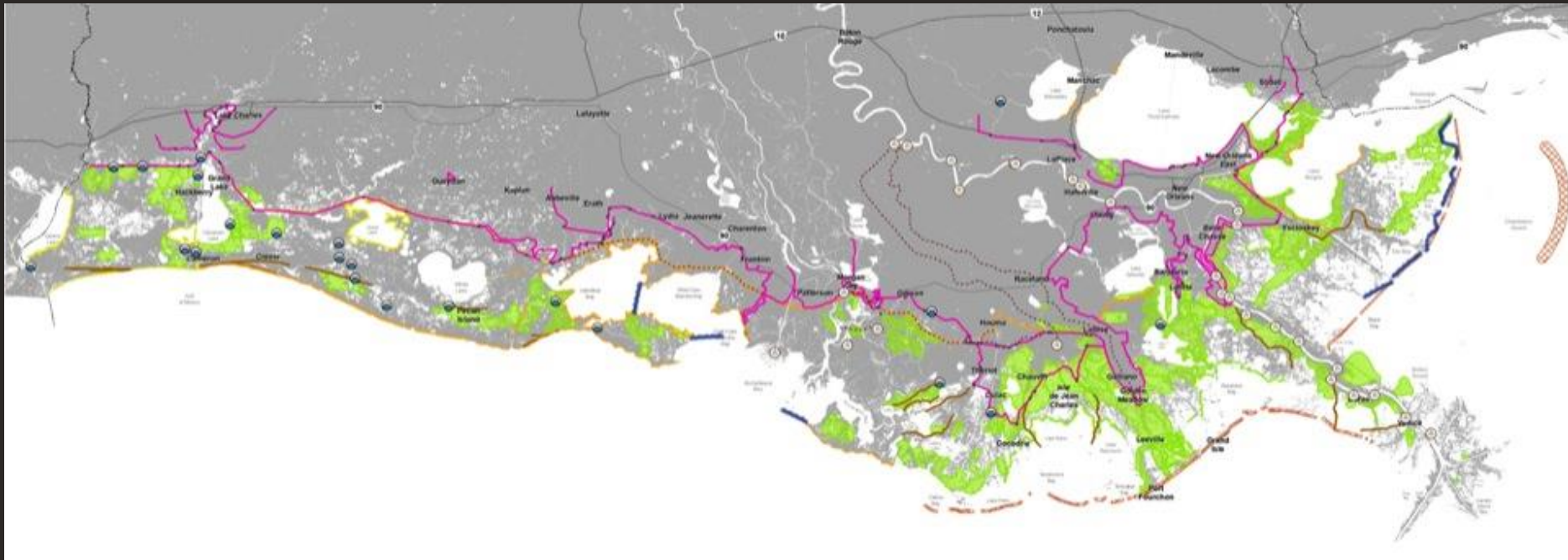


2007



2012

2012 Coastal Master Plan: Project evaluation



400 projects evaluated

2012 Coastal Master Plan: Project evaluation

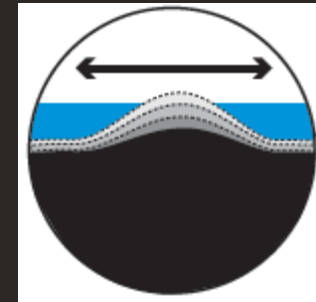
➤ Decision drivers

- Flood risk reduction
- Land building

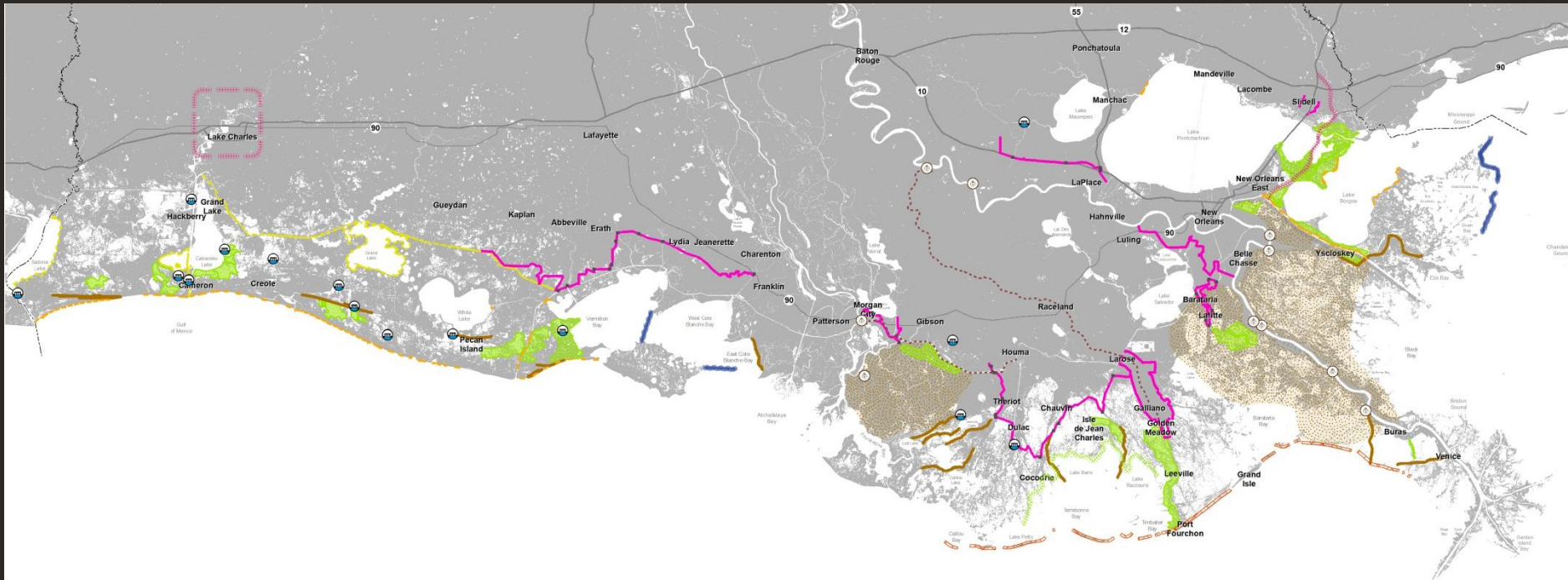


➤ Planning tool

- Maximize target benefits
- Project costs
- Available funding
- Landscape conditions
- Stakeholder preferences



2012 Coastal Master Plan: Selected projects



Projects Included:



➤ 109 projects

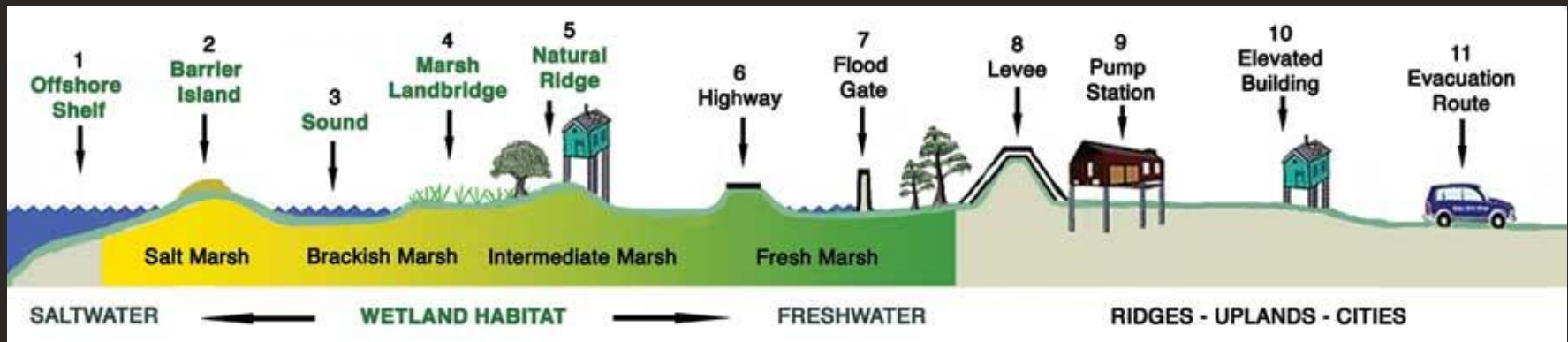
➤ 50 years

➤ \$50B

Decision driver: Flood risk reduction

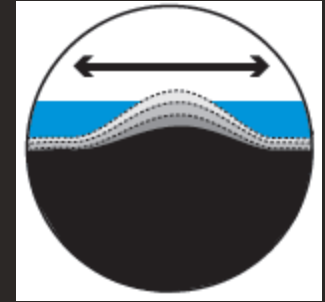


➔ Multiple lines of defense concept

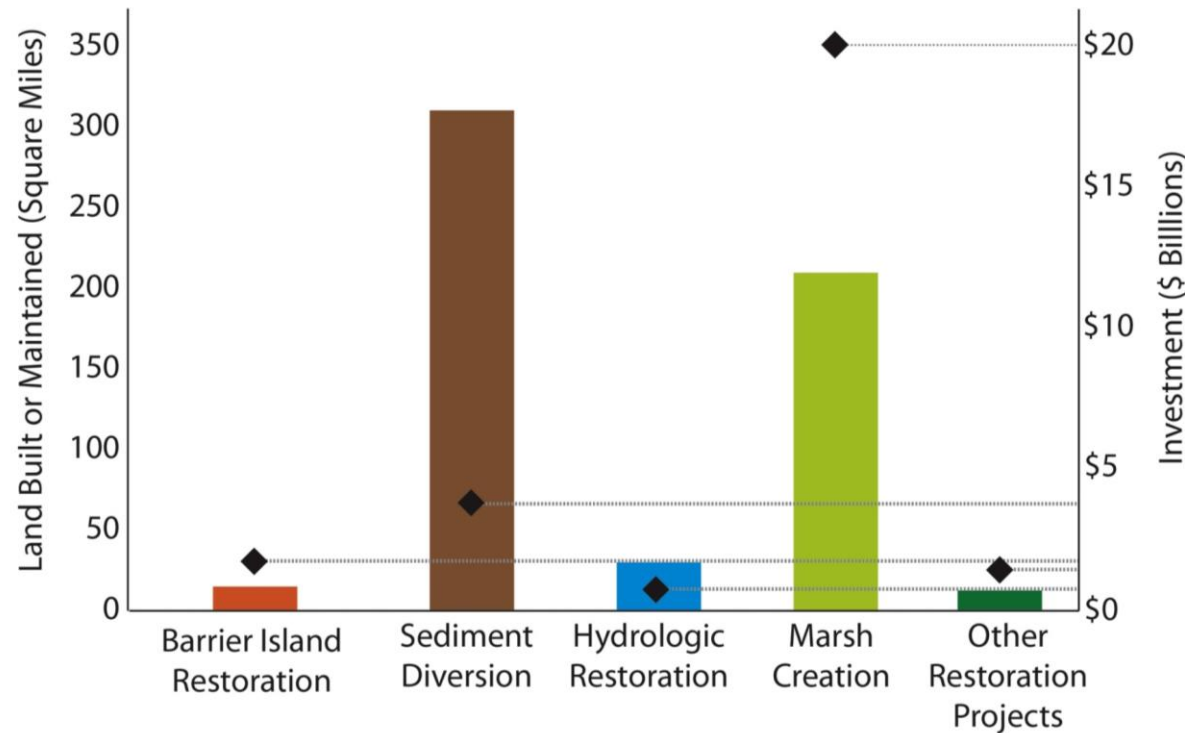


- Restoration
- Structural
- Nonstructural

Decision driver: Land building



**Long Term Land Building and Investment
by Project Type**



Building land with diversions: Wax Lake



Wax Lake Delta Formation



Building land with diversions: Atchafalaya



Wax Lake Delta

Atchafalaya Delta

Green = land gained

Building land with diversions: Big Mar



Image U.S. Geological Survey

1998



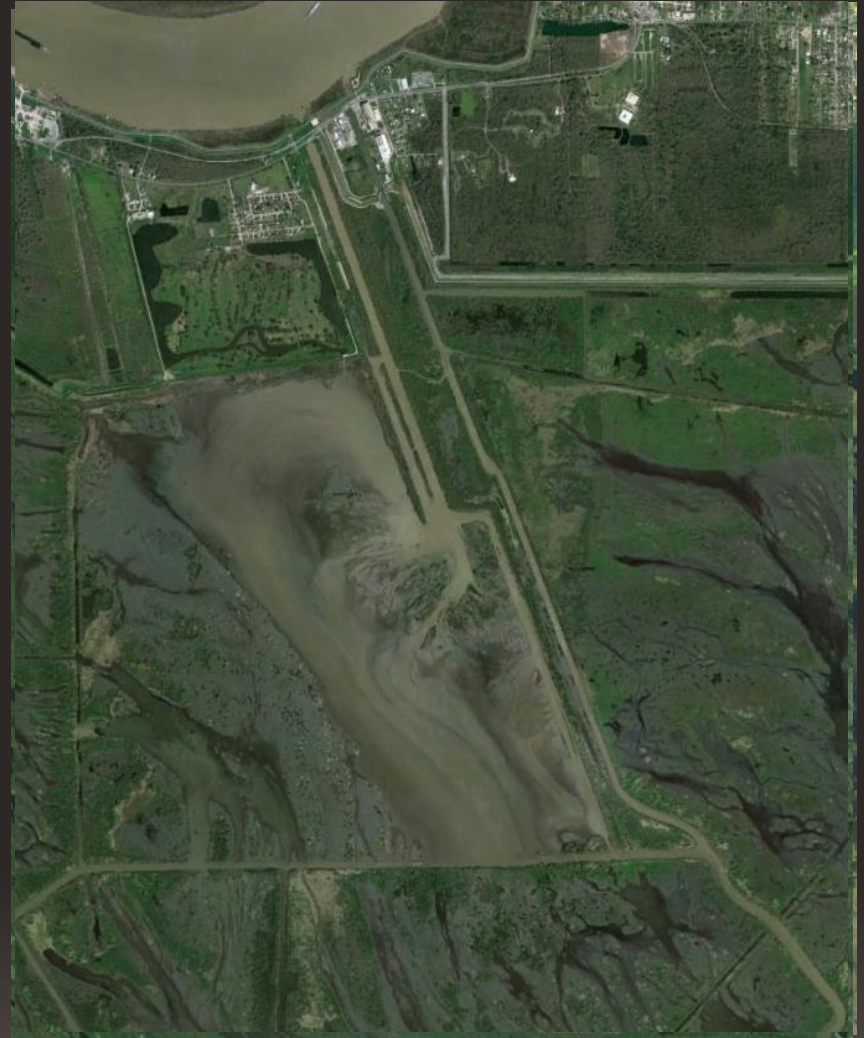
Image U.S. Geological Survey
Image © 2014 DigitalGlobe

October 2005

Building land with diversions: Big Mar



October 2005



November 2008

Building land with diversions: West Bay



Image U.S. Geological Survey

2005



Image USDA Farm Service Agency

2010

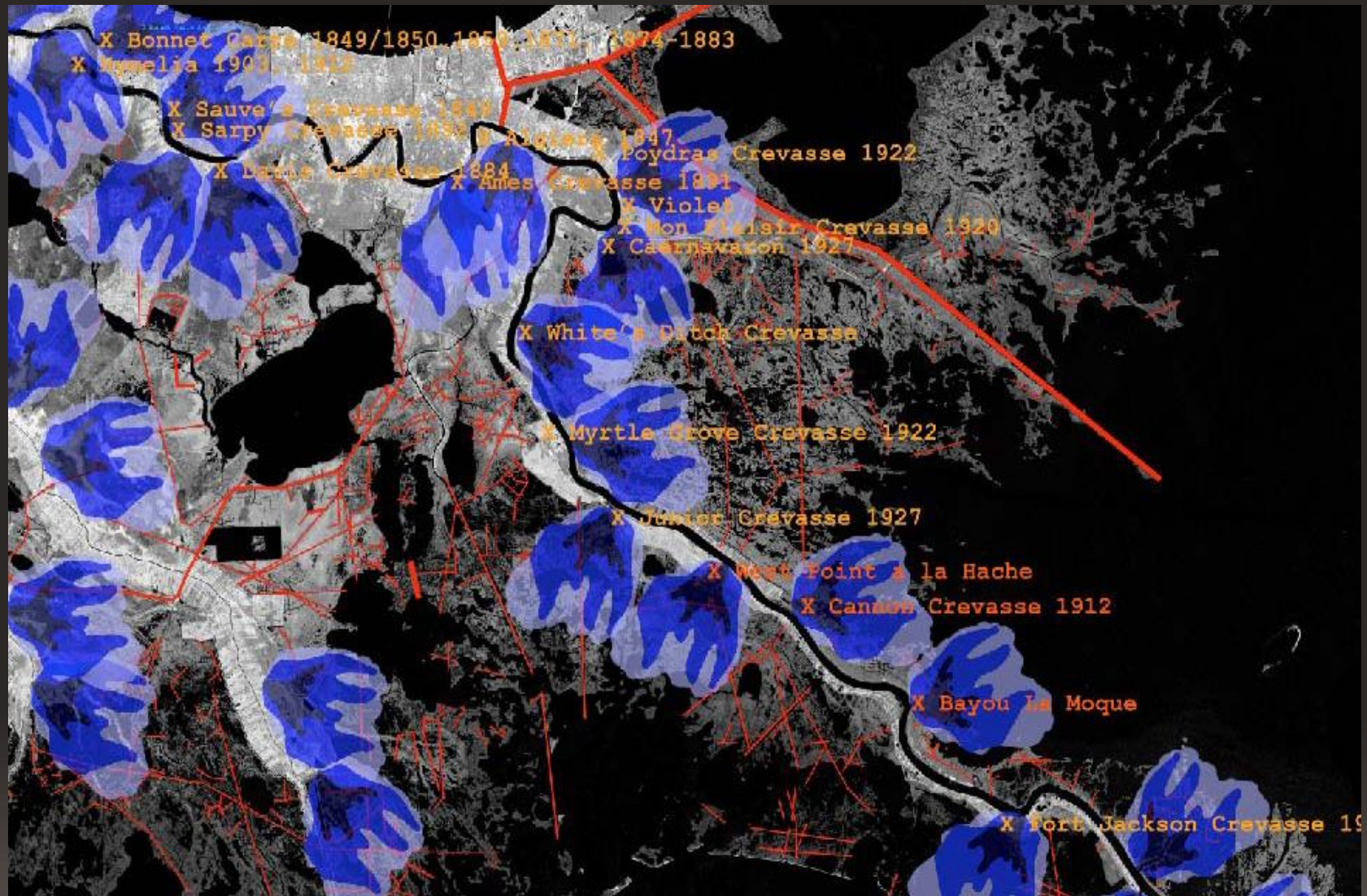


2012

Sediment diversions: Capturing sediment



Sediment diversions: Pulsing



What *is* a sediment diversion?



Old River Control Structure



Caernarvon Diversion



Bonnet
Carre
Spillway



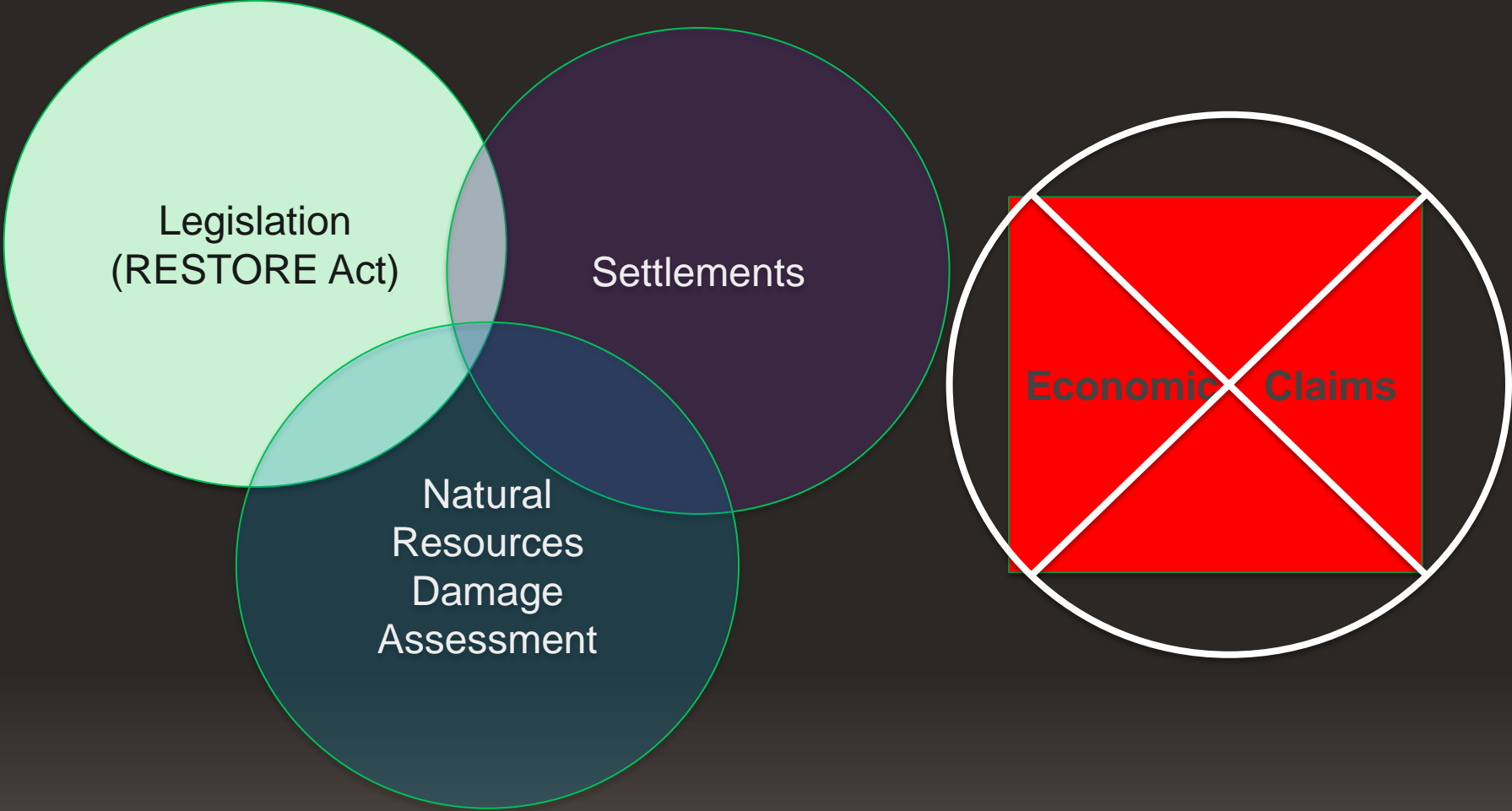
changing course

**navigating the future
of the Lower Mississippi
River Delta**

BP Deepwater Horizon Oil Disaster *April 20, 2010*



Funding sources following the BP oil spill



Executive Office response

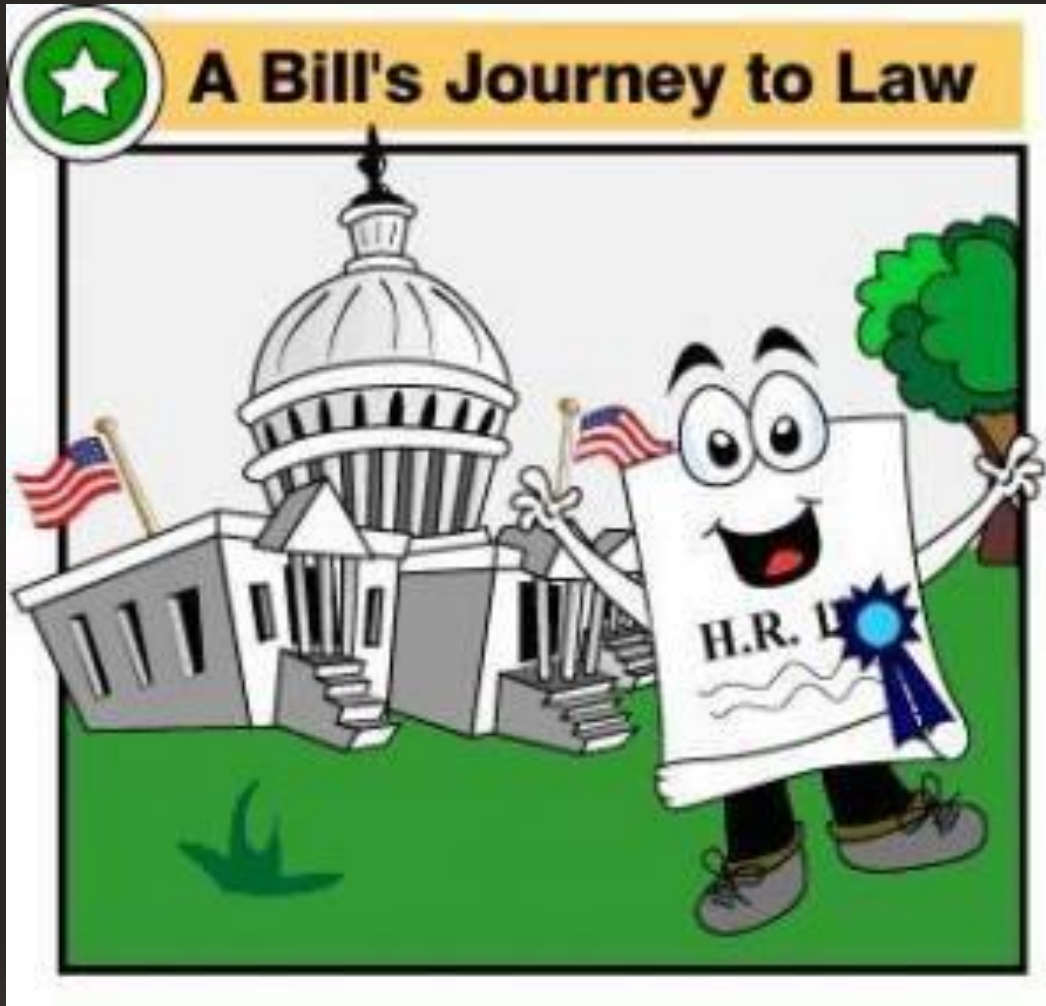
➔ Executive Order 13554- GCERTF

- Published October 4, 2010
- Establishes a Gulf Coast Ecosystem Restoration Task Force
 - Chaired by EPA with representatives from 11 federal agencies and five Gulf Coast states
 - Requires Task Force to develop a *“strategy that proposes a Gulf Coast ecosystem restoration agenda, including goals for ecosystem restoration, development of a set of performance indicators to track progress, and means of coordinating intergovernmental restoration efforts...”*

Legislative response

- Supported by two official governmental reports
 - Report from Secretary of the Navy Ray Mabus
 - National Commission on the BP Oil Spill report to the President

- RESTORE Act (S. 861)
 - First introduced by Senators Landrieu and Vitter
 - April 14, 2011 – six days before one year anniversary





April 2010

BP oil spill releases 4.9 million barrels of crude oil into the Gulf

September 2010

Secretary of Navy, Ray Mabus releases a long term recovery plan following the spill

January 2011

National commission on the BP oil spill disaster recommended CWA penalties go to the gulf

July 2011

Senators introduce RESTORE Act to Senate

September 2011

Senate EPW Committee reports out RESTORE Act

October 2011

Bipartisan group of House members introduce RESTORE Act to the House

December 2011

House Science Committee holds hearing on RESTORE Act

March 2012

Senate passes RESTORE Act as an amendment to the transportation bill with a strong bipartisan support

March 2012

House and Senate conference on transportation bill to consider RESTORE Act

June 2012

Congress passes RESTORE Act as a provision in the Surface Transportation Bill

July 2012

Congress passes RESTORE Act as a provision in the Surface Transportation Bill

Legislative response: Broadening support

- ➔ July 2011 a second version of the bill (S. 1400) was introduced by nine Gulf Coast Senators and referred to EPW
- ➔ September 2011 EPW marks up the bill and reports it out of committee by voice vote
- ➔ July 2012 Congress passes RESTORE Act as a part of MAP-21 and it is signed by the president in the Rose Garden

RND11755

S.L.C.

AMENDMENT NO. _____ Calendar No. _____

Purpose: In the nature of a substitute.

IN THE SENATE OF THE UNITED STATES—112th Cong., 1st Sess.

S. 1400

To restore the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of Gulf Coast States, to create jobs and revive the economic health of communities adversely affected by the explosion on, and sinking of, the mobile offshore drilling unit Deepwater Horizon, and for other purposes.

Referred to the Committee on _____ and ordered to be printed

Ordered to lie on the table and to be printed

AMENDMENT IN THE NATURE OF A SUBSTITUTE intended to be proposed by Mrs. BOXER (for herself, Mr. WHITEHOUSE, Mr. VITTER, and Mr. SESSIONS)

Viz:

1 Strike all after the enacting clause and insert the following:

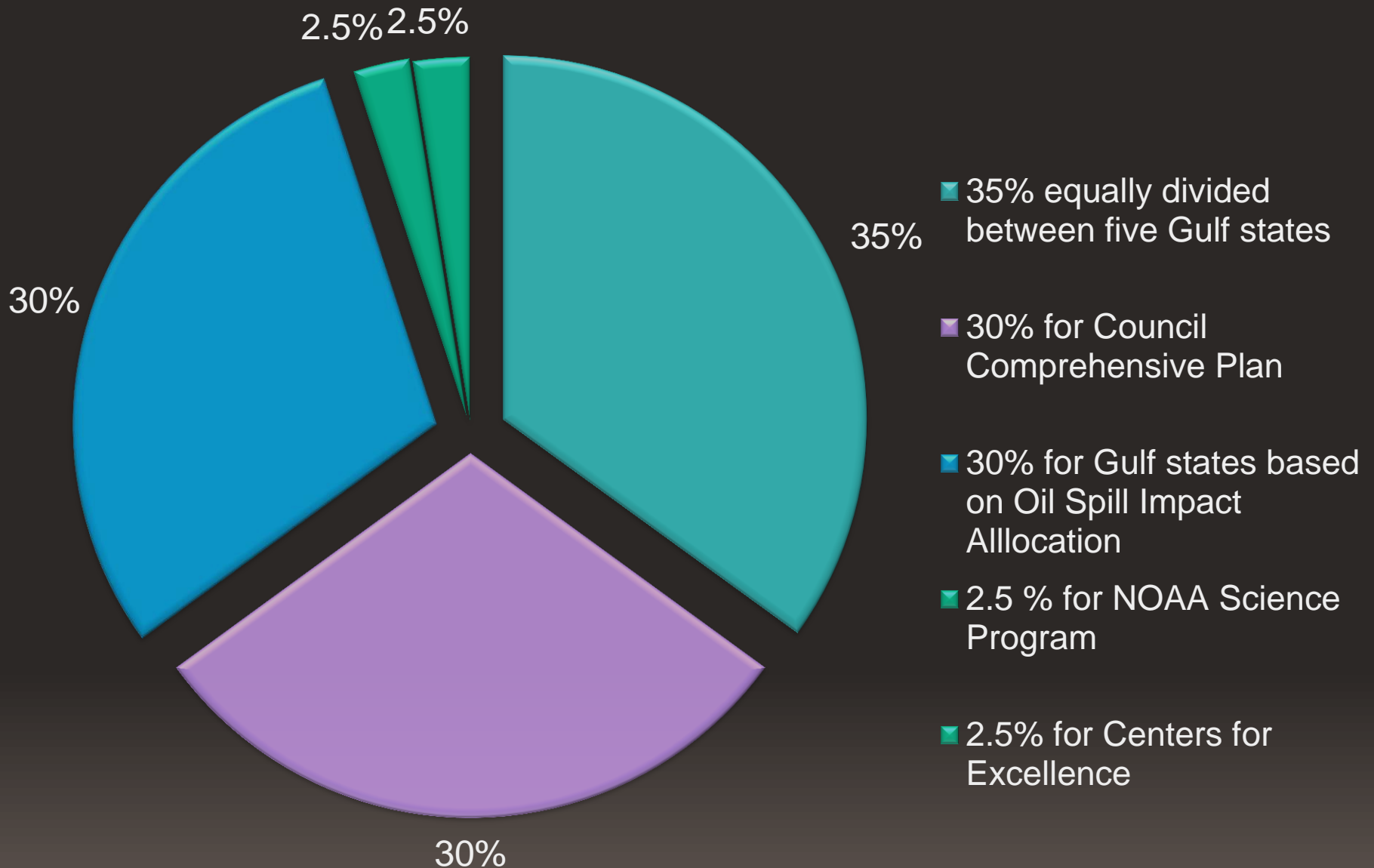
3 SECTION 1. SHORT TITLE.

4 This Act may be cited as the "Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2011".

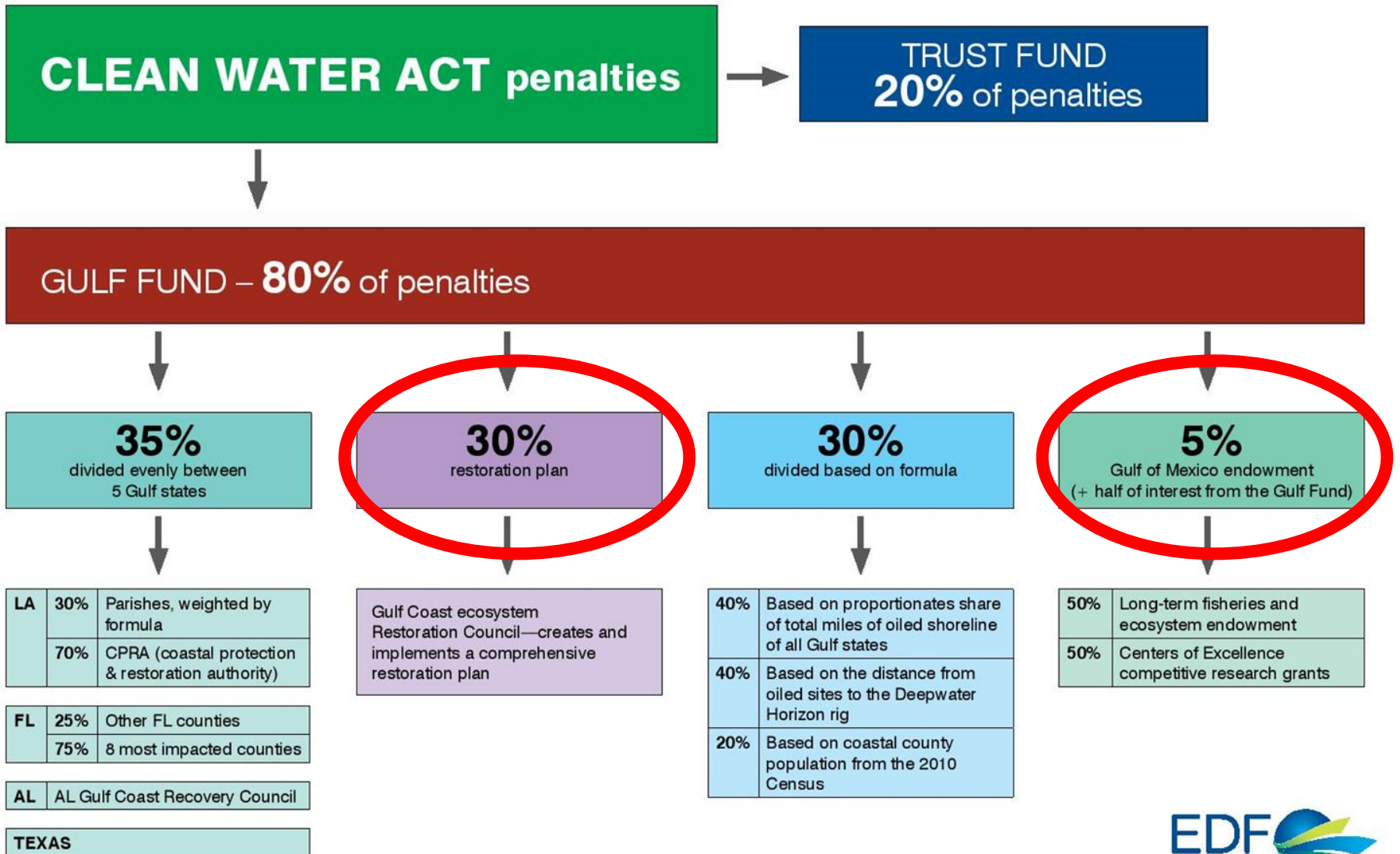
7 SEC. 2. FINDINGS.

8 Congress finds that—

Breakdown of the Gulf Coast Restoration Trust Fund



Clean Water Act penalties under the RESTORE Act



Gulf Coast Ecosystem Restoration Council

- Independent gov't entity with ties to the Dept. of Commerce
- Comprised of six federal agencies and the five Gulf Coast states
- Executive Director based in New Orleans with staff across the Gulf Coast
- Directly responsible for 30% of Trust fund to develop and implement a Comprehensive Plan to restore the Gulf Coast
- Must sign off on plans proposed by states for the 30% Spill Impact Component



<http://www.restorethegulf.gov/>

Initial Comprehensive Plan

- Draft plan released in May 2013
- Initial Comprehensive Plan released in August 2013 (22 pages)
- Adopts five goals:
 - 1) Restore and Conserve Habitat
 - 2) Restore Water Quality
 - 3) Replenish and Protect Living Coastal and Marine Resources
 - 4) Enhance Community Resilience
 - 5) Restore and Revitalize the Gulf Economy

- Plan DOES NOT include a project and program list as required by the statute

Where is the \$ coming from?

➔ Civil trial

- Federal District Court in New Orleans
 - At issue:
 - How much oil spilled?
 - What caused it? Why?
 - Who was responsible?
 - Three phases
 - Two already complete
 - Third scheduled for January 2015
- ➔ Parties include: Federal gov't, Gulf States, private citizens v. BP, Transocean, Halliburton, Anadarko
- ➔ \$2.6-17.6 billion

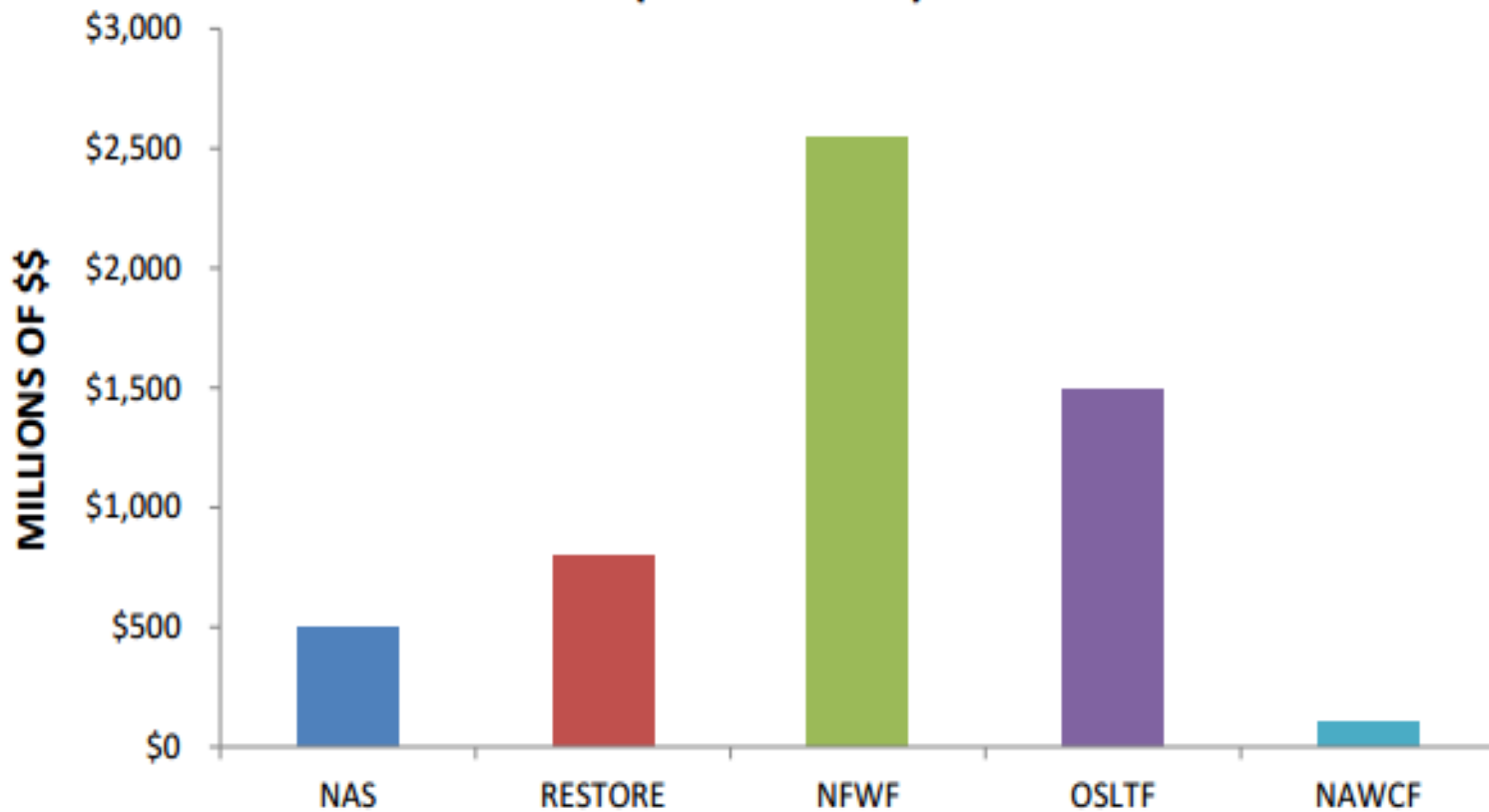
Where is the \$ coming from?

➔ Settlements

- MOEX \$90 million
- BP criminal \$4 billion
- Transocean, civil \$1 billion
- Transocean, criminal \$400 million
- Halliburton \$55 million

Where the \$ is going?

**PAYOUT OF SETTLEMENT MONIES
(BY RECIPIENT)**



Credit: ELI

Natural Resource Damage Assessment (NRDA)

- Scientific and legal process for restoration under the Oil Pollution Act
 - Different than removal actions
- Lead by the NRDA Trustees
 - Five Gulf Coast states
 - Four federal agencies
- Public is compensated for damage to natural resources, subsistence use & public services
- Return resources to pre-spill baseline

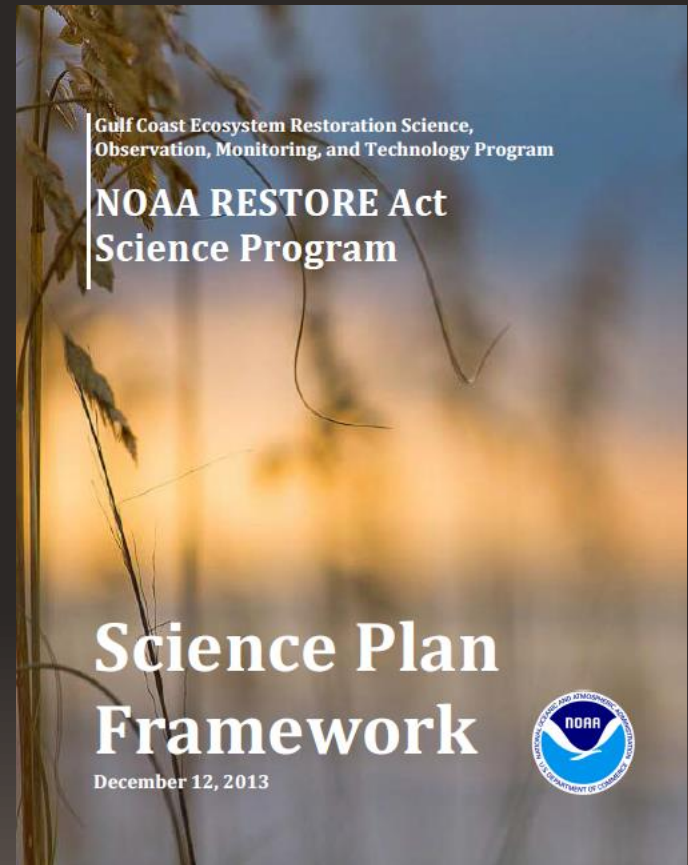
Natural Resource Damage Assessment (NRDA)

➤ Early Framework Agreement

- \$1B down payment, April 2011
- Three phases of projects
 - \$627 million
 - Barrier island restoration
 - Habitat restoration
 - Wetland creation
 - Lost human use projects
- Our role: Provide public comments encouraging ecosystem restoration
- Full assessment ongoing

1604 NOAA RESTORE Act Science Program

- 2.5% of RESTORE Act funding (+25% *i*)
- Gulf Coast Ecosystem Restoration Science, Observation, Monitoring and Technology Program
- Science Plan Framework, released December 2013
- Science Plan
 - Draft to be released for public comment, late summer 2014
 - Finalized, September 2014
- Primarily competitively awarded grants



1604 NOAA RESTORE Act Science Program

Mission:

“to initiate and sustain an integrative, holistic understanding of the Gulf of Mexico ecosystem and support, to the maximum extent practicable, restoration efforts and the long-term sustainability of the ecosystem, including its fish stocks, fishing industries, habitat, and wildlife through ecosystem research, observation, monitoring, and technology development.”

➤ Supporting research in:

- Estuarine, coastal and marine habitats
- Coastal and marine resources
- Coastal communities

➤ Approaches to scientific study:

- Ecosystem structure, functioning and connectivity
- Observing and monitoring
- Integrated analysis, data synthesis
- State of health assessments

Long-term science priorities, draft

1. Forecasting, analysis and modeling of climate change and weather effects on the sustainability and resiliency of Gulf ecosystems.
2. Construct accurate, actionable and accessible ecosystem models for the Gulf of Mexico.
3. Quantify sediment, nutrients, contaminants, and water flow (including currents, storm surge, and/or freshwater), interrelationships, variability and consequent impacts to health and function of coastal habitats.
4. Provide a more comprehensive understanding of life histories of living marine resources, food web dynamics, and habitat utilization (e.g., connecting habitats, ontogeny, and food webs) as guidance for living marine resources management.
5. Coordinate and integrate existing Gulf monitoring to develop a network of living marine resources monitoring systems including fisheries dependent and independent data collection.
6. Develop a better understanding of ecosystem services and other determinants of health and resilience for coupled social and ecological systems.
7. Collect information and develop decision support tools needed to implement, monitor and adaptively manage habitat including coastal and marine protected areas.
8. Develop and implement advanced engineering, tagging and biological technologies to improve monitoring.
9. Create an integrative, unified, and easily accessible data framework that tabulates, synthesizes and provides opportunity for analysis of new and existing social and environmental data in order to develop long-term trend information.
10. Identify or develop state of health indicators for the Gulf of Mexico ecosystem, including the socio-economic component.

Restoration Science Program Advisory Working Group

➔ RSPAWG, NOAA Science Advisory Board

➔ Terms of reference:

- Provide informed regional advice on ecosystem science and monitoring, relating to implementation of RESTORE Act Science Program
- Assist Science Program in establishing plans, assessing progress, and reviewing priorities
- Provide a formal forum for the discussion and coordination of RESTORE-related science outside of NOAA's program
- Coordinate with other NOAA SAB Working Groups

Restoration Science Program Advisory Working Group

- Working group members (26)
 - Science-related organizations in the GOM identified in RESTORE Act (7)
 - Ex officio members representing other funding organizations (4)
 - Rotating group of external subject matter experts (15)

- First meeting in Mississippi, June 2014

1605 Centers of Excellence

- ➔ 2.5% of RESTORE Act funding (+25% *i*)
- ➔ One in each Gulf Coast state
- ➔ Grant to establish Center of Excellence administered by Treasury Department
 - Selection processes determined by individual state, validated by Treasury Department
 - Selected Centers currently in entrance interviews with the Treasury Department
- ➔ The Water Institute of the Gulf
 - University partners, including LSU and Tulane



1605 Centers of Excellence

- Established to further enhance scientific research, monitoring and technology in the Gulf Coast relating to:
 - Coastal and deltaic sustainability, restoration, protection
 - Coastal fisheries and wildlife
 - Offshore energy development
 - Sustainability and resilient economic growth
 - Comprehensive observation, monitoring, mapping

National Academy of Sciences Gulf Research Program

- \$500M from criminal settlements
- 30-year research program in the Gulf region
 - Human health
 - Environmental protection
 - Oil system safety
- Program objectives
 - Environmental monitoring
 - Research and development
 - Education and training

GULF RESEARCH PROGRAM
INNOVATE | EDUCATE | COLLABORATE

National Academy of Sciences Gulf Research Program

- Advisory Group
 - 25 members
 - Ending one-year terms
 - Meeting of full AG, June 11-12, Tampa FL
- Establishment of standing Advisory Board during summer 2014
- “Vision document” in process
- Workshops in 2014
 - Human health
 - Environmental monitoring
 - Training



Courtesy of National Audubon Society

RESTORE

THE MISSISSIPPI RIVER DELTA

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