

River, Dredge, and Drill



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Coastal Wetland
Specialist

Public Lab Lightning
Round

Cocodrie 2015

Thanks to Dr. Shea Penland, Dr. Shirley Laska, Dr. Martin O'Connell, UNO, PIES
Exposed New Orleans Project, Southwings

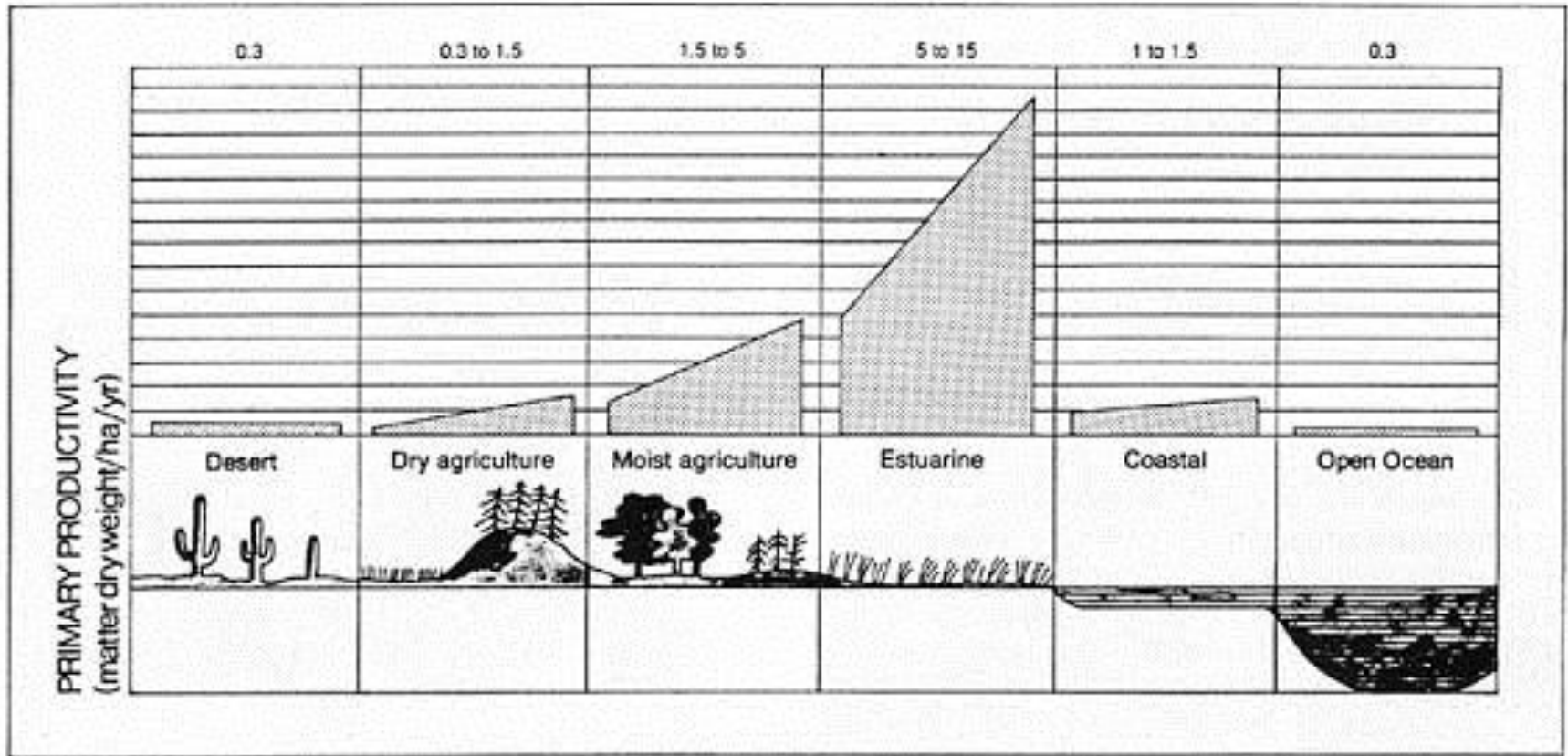




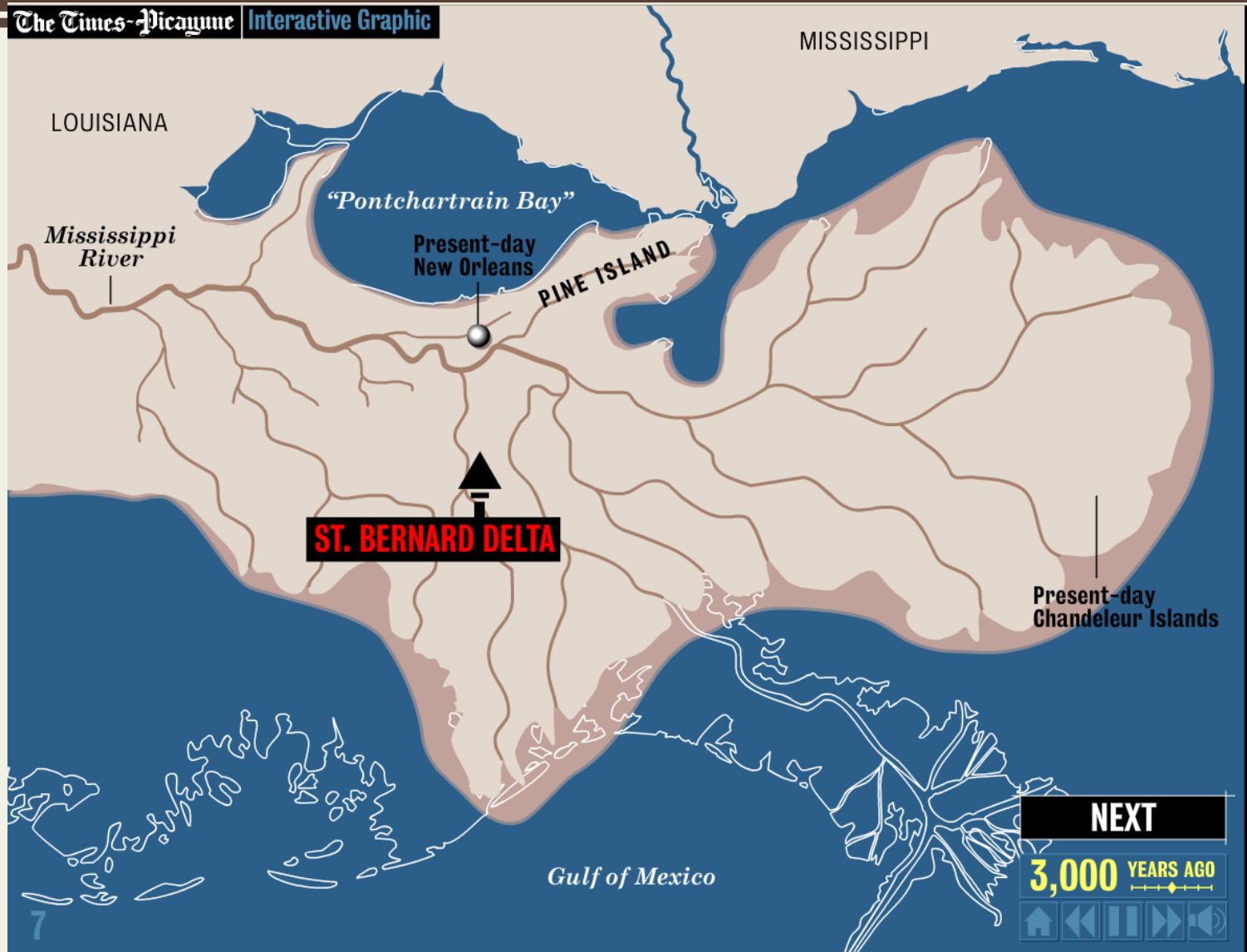
- Missouri River Basin
- Upper Mississippi River Basin
- Ohio River Basin
- Tennessee River Basin
- Arkansas / Red / White River Basin
- Lower Mississippi River Basin

Basins of the Mississippi River
40% of the U.S's run-off passes through New Orleans

The River Builds Wetlands



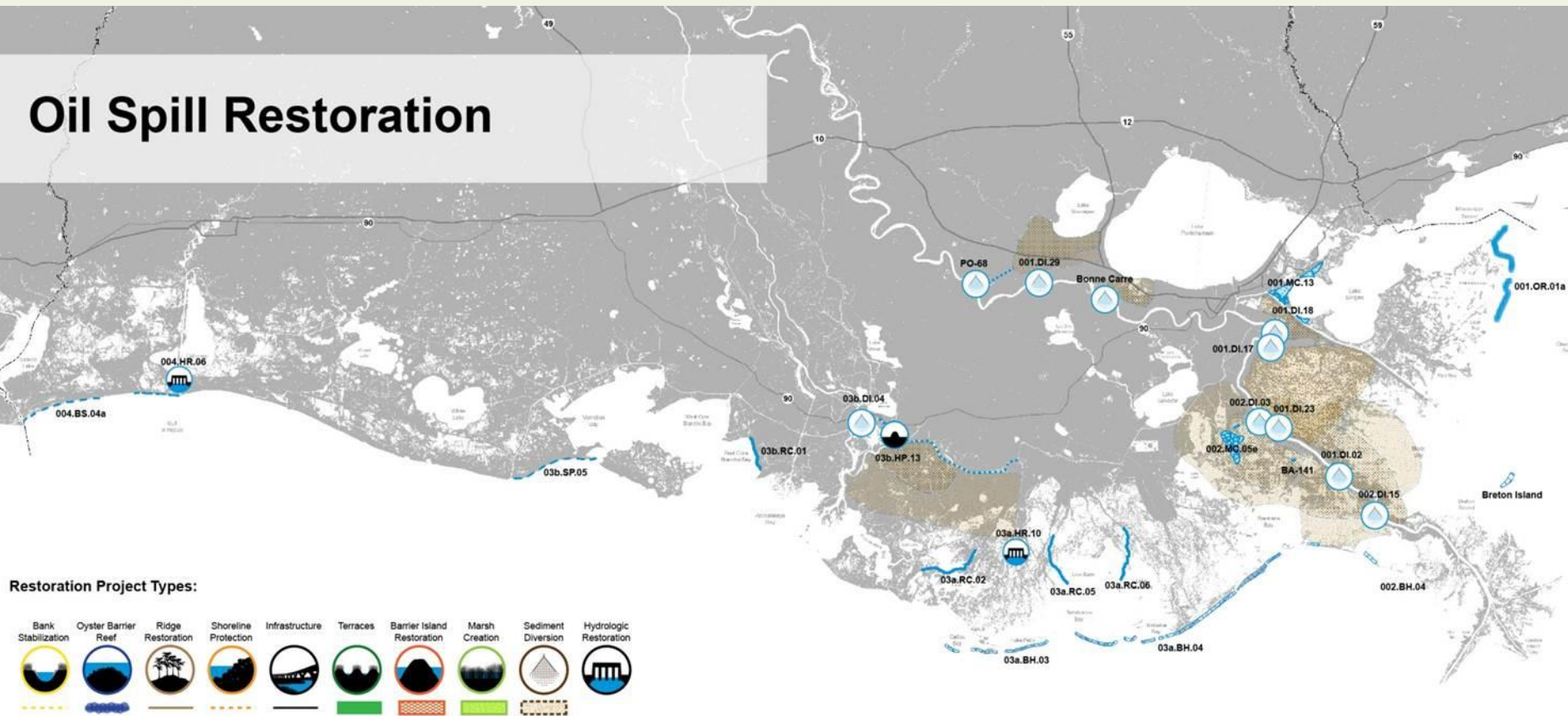
Estuaries are one of the most productive ecosystems on earth. Much of this productivity comes from coastal wetlands.
(From Knox, 1980).



The St. Bernard Delta continues to grow, stretching as far east as the present-day Chandeleur Islands.

Restoration uses the River and the Dredge

Oil Spill Restoration

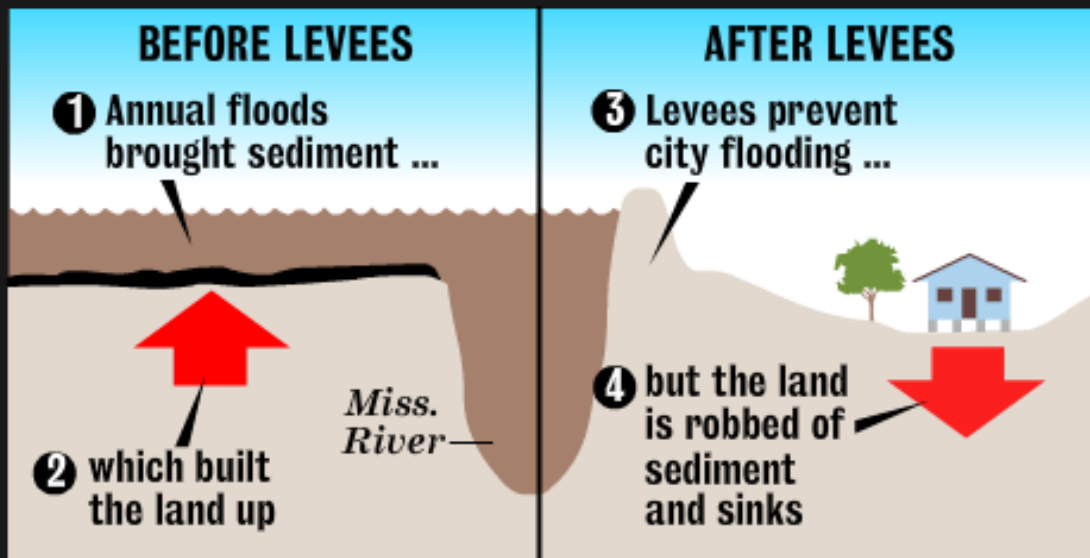


Coastal Crisis: Chronic

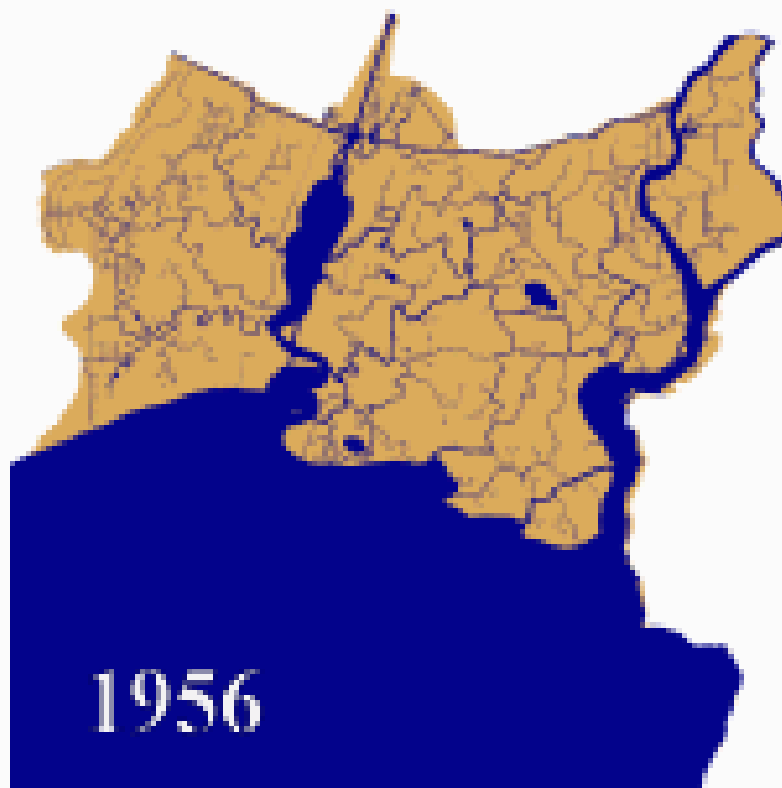
CONFINING THE RIVER



500 –yr problem



Atchafalaya Basin 1956-1993



USGS-NWRC

River Restoration: Long-term



DOJ ordered

1.2 Billion to LA

For River
Restoration and
Barrier Islands

Administered by
NFWF



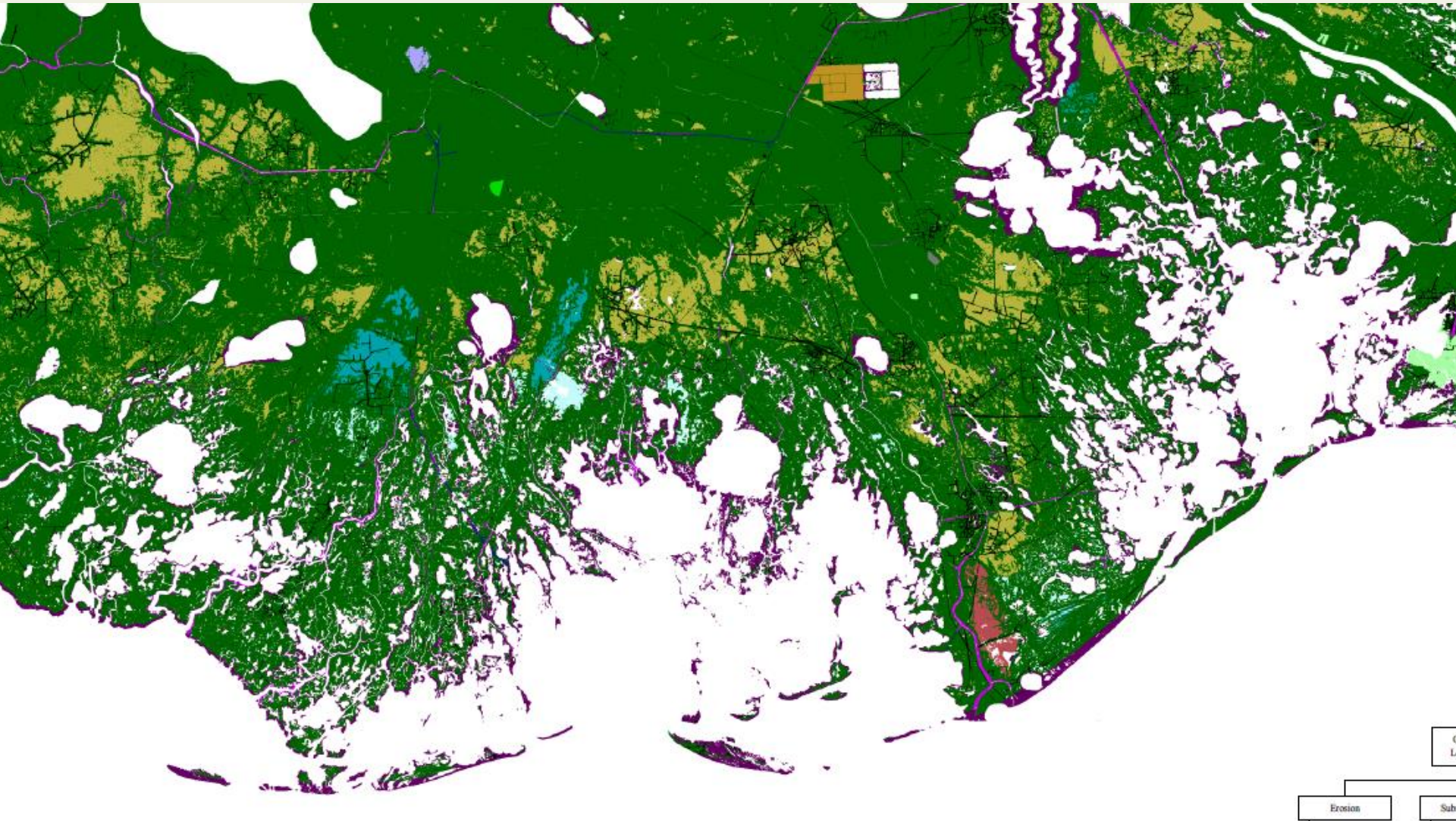
Stevie

Scott





Oil and Gas impacts in BTNE



Oil and Gas: Saltwater Drilling Waste



Lens Environmental Salon small



86 views

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“Intrusion”?
Or pumping?

“During the Roemer administration...That was the only time when I could have done such a study”

<http://youtu.be/CAbnlr8HFe0> minute 52

“An Assessment of Produced Water Impacts to Low-Energy, Brackish Water Systems in Southeast Louisiana” Kerry St Pé, Ed. DEQ WPC July 1990

Legacy Canals



- Direct Impact of Canal
- Direct Impact of Spoil
- Indirect Impact to hydrology (~2km)

Dredge and Pipe can fix it rapidly \$\$\$

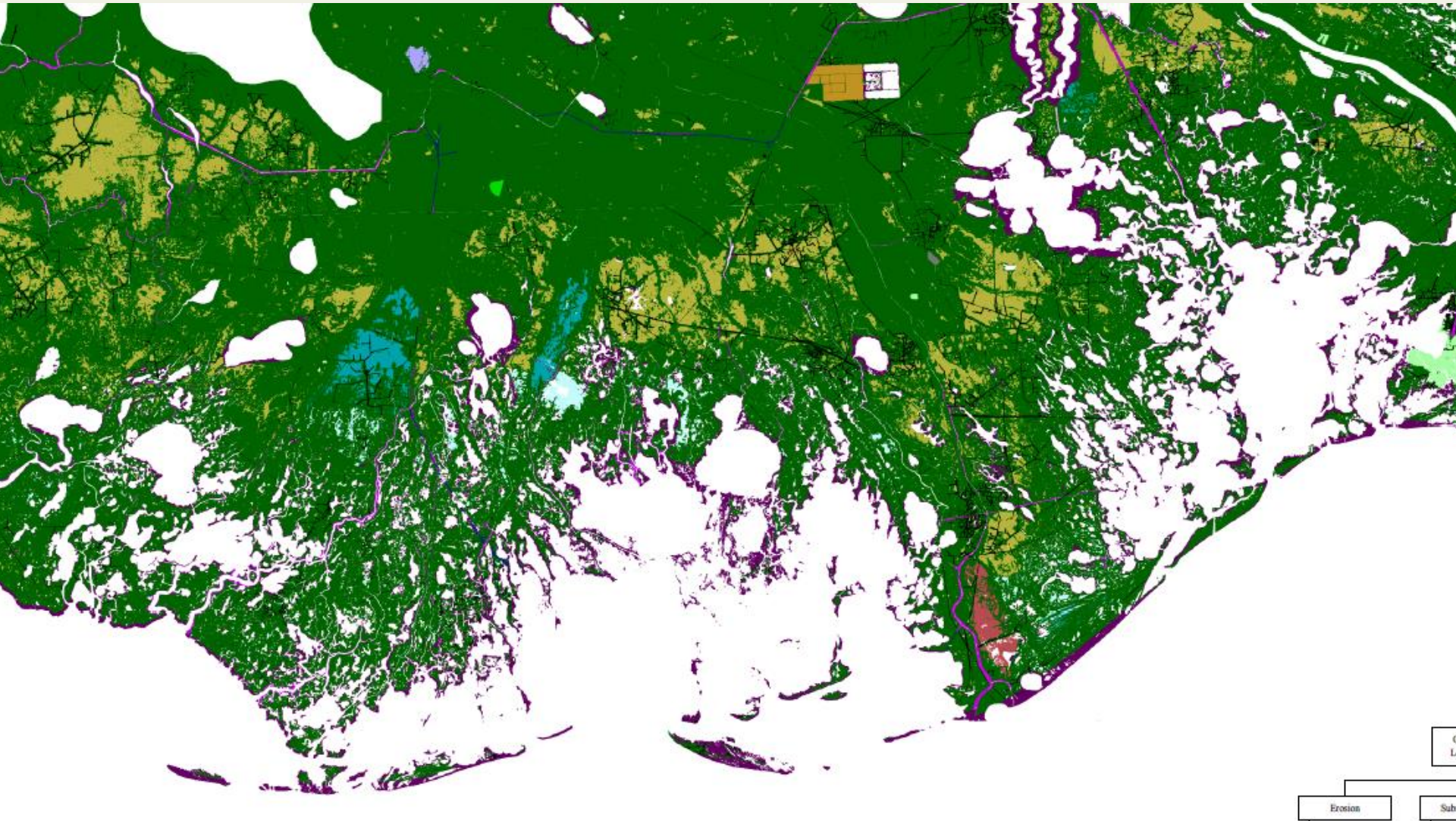




Jean Lafitte Park: fixing canals 10 square miles for cheap, one year



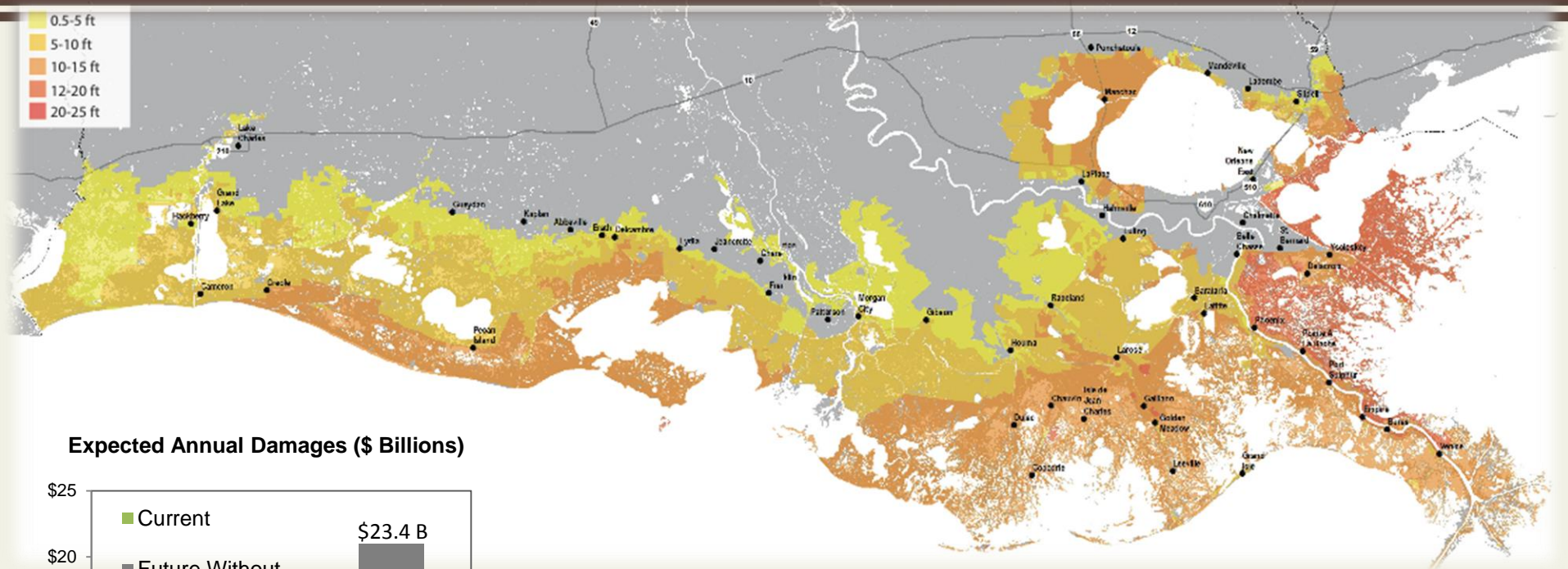
Oil and Gas impacts in BTNE



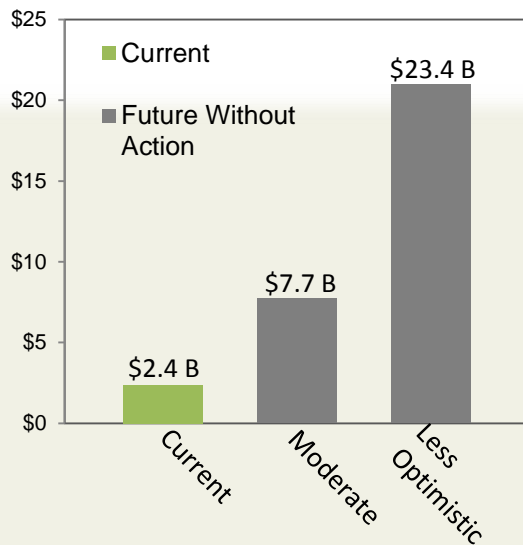


Future vision involves shipping
companies
Going along and pitching in

CPRA argument



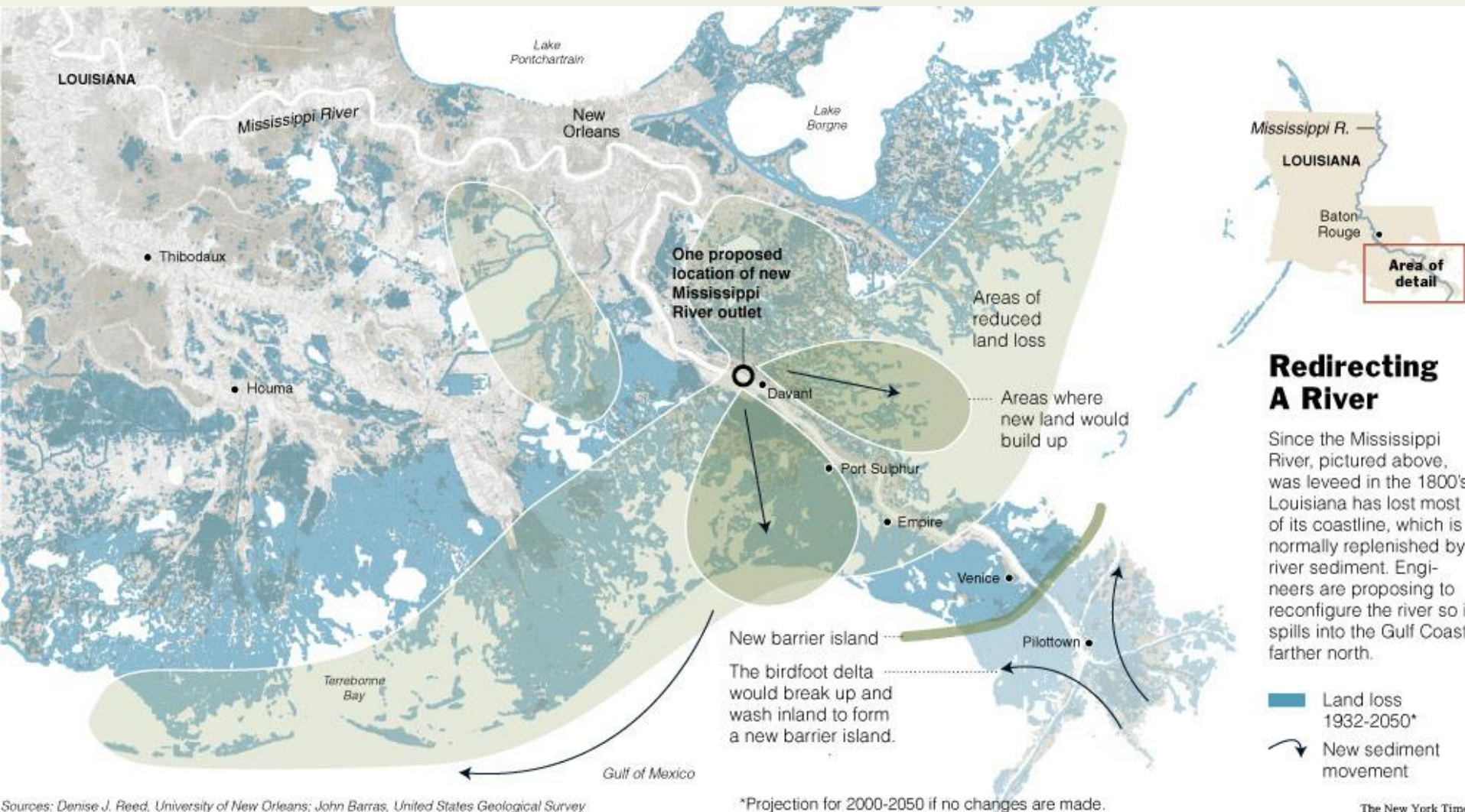
Expected Annual Damages (\$ Billions)



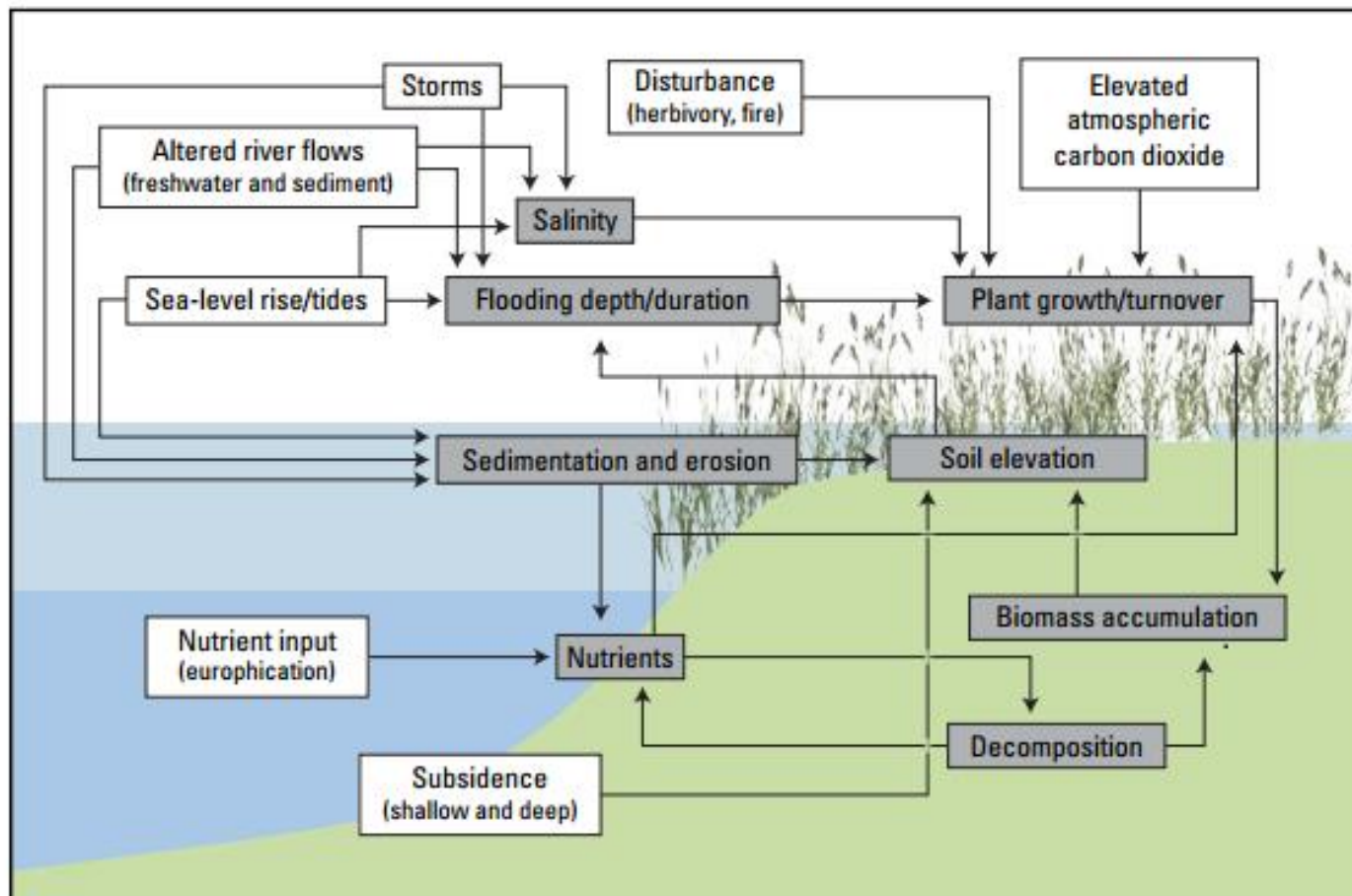
The Loss of Land Results in a Loss of Coastal Communities



- Stay Tuned
- Thank You

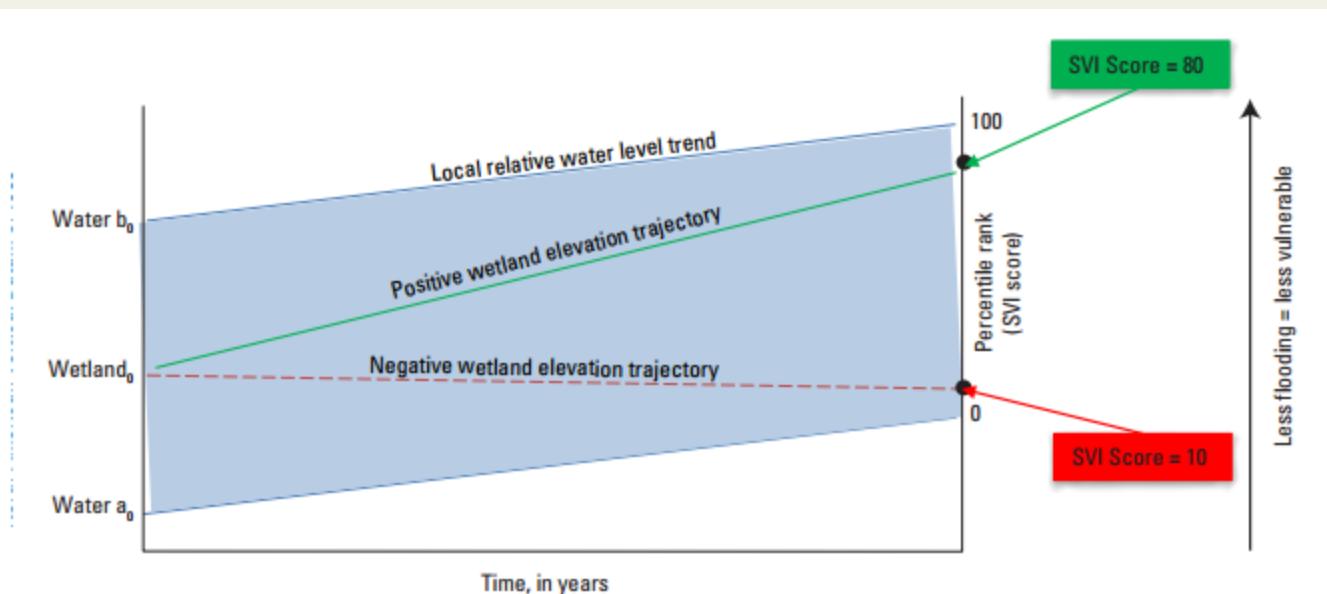






2. Conceptual model depicting how environmental processes (white boxes) and soil-development processes (grey boxes) act to influence wetland elevation and sustainability (from Cahoon and others, 2009).

The Hope is that we float



3. Conceptual model of Submergence Vulnerability Index (SVI), where wetland vulnerability is based on a projection of the vertical position of the wetland within the hydrologic frame. Left Y-axis represents wetland and water elevation. Wetland 0 represents the initial wetland elevation; Water a_0 and Water b_0 represent the upper and lower bounds of the current hydrologic frame, respectively. The right Y-axis represents the relative position of the projected wetland within the projected hydrologic frame as a percentile ranking of the wetland elevation compared to the water elevations. The x-axis represents time from the most recent wetland water elevation measurements to 5 years in the future. The green line represents a potential scenario, where a wetland with a positive elevation trajectory is projected to have an elevation that is ranked in the 80th percentile of water-level observations. The red line is an example of a potential scenario, where a wetland with a negative elevation trajectory is projected to have an elevation ranked among the 10th percentile of water-level observations. Higher scores represent wetlands that are flooded less often and are less vulnerable to submergence. In contrast, lower scores represent wetlands that are flooded more often and are more vulnerable to submergence.

MRGO Restoration



The Corps broke it,

The Corps have a
plan to replace it

The Corps can
move rapidly to
build square miles
of land

-Federal morass



The Drill: Oil and Gas

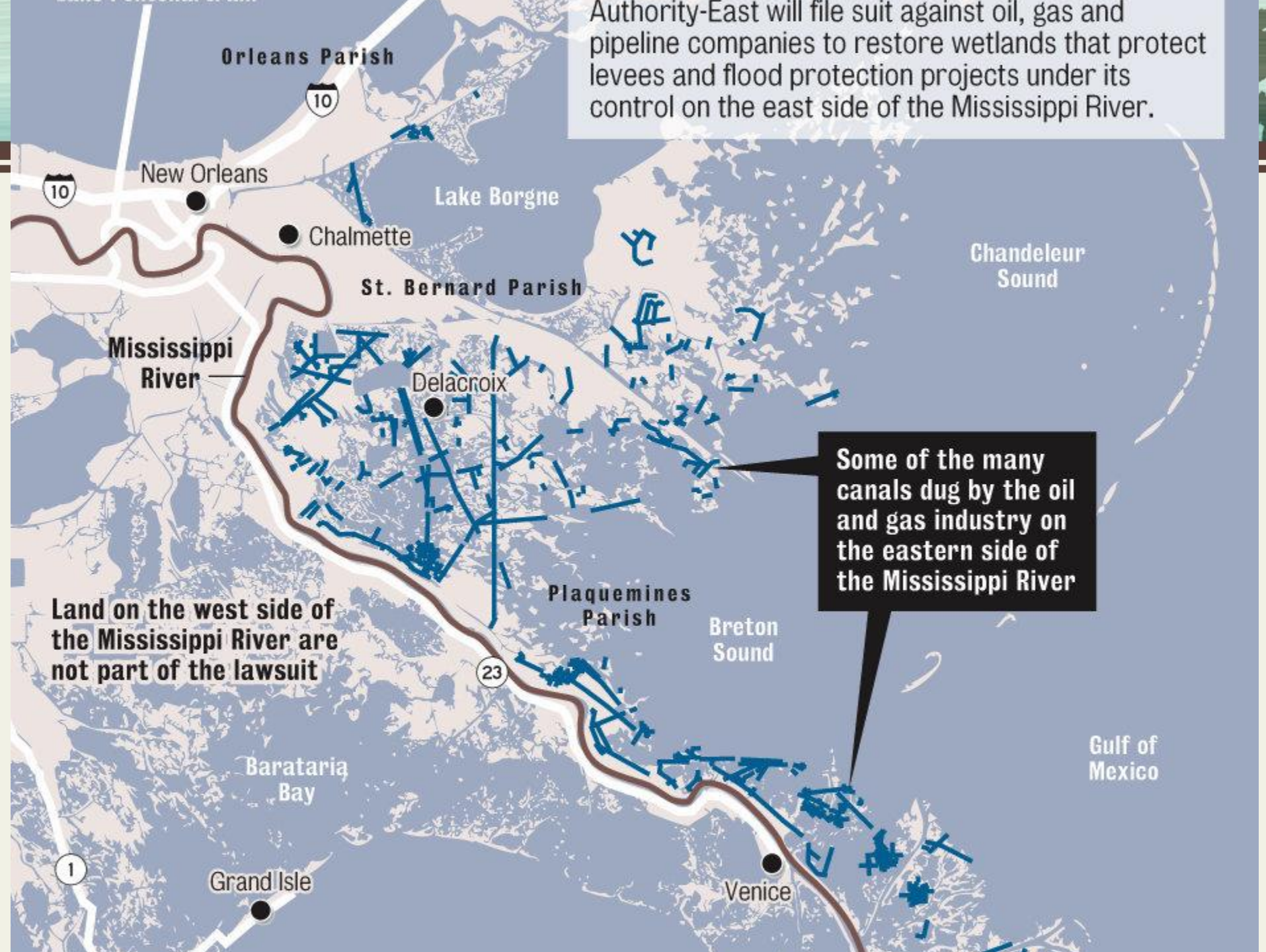
Four processes:

Canals: 11% of loss 1930-90

Altered Hydrology (Spoil)

Saltwater drilling waste

Induced Subsidence



Authority-East will file suit against oil, gas and pipeline companies to restore wetlands that protect levees and flood protection projects under its control on the east side of the Mississippi River.

Some of the many canals dug by the oil and gas industry on the eastern side of the Mississippi River

Land on the west side of the Mississippi River are not part of the lawsuit



Note MRGO up top in purple





note this is 1990 data, pre Caernarvon

Note areas around Delacroix are yellow

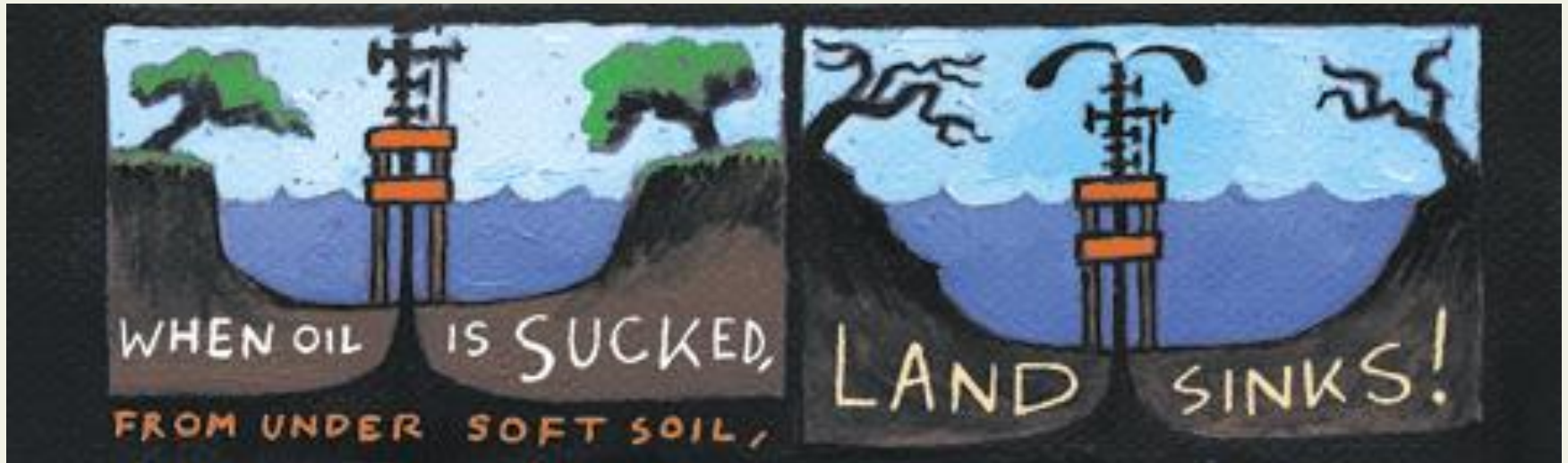
Note area adjacent to Braithwaite levee!
These wetlands would have protected the
levee that was overtopped and failed in
Isaac 2012

Note that Myrtle Grove area (Lafitte
oilfield in Barataria basin) is all oil and gas
damages.

Submergence

	Altered Hydrology: Impoundment
	Altered Hydrology: Oil/Gas
	Altered Hydrology: Road
	Altered Hydrology: Multiple

Oil and Gas: Subsidence From Extraction



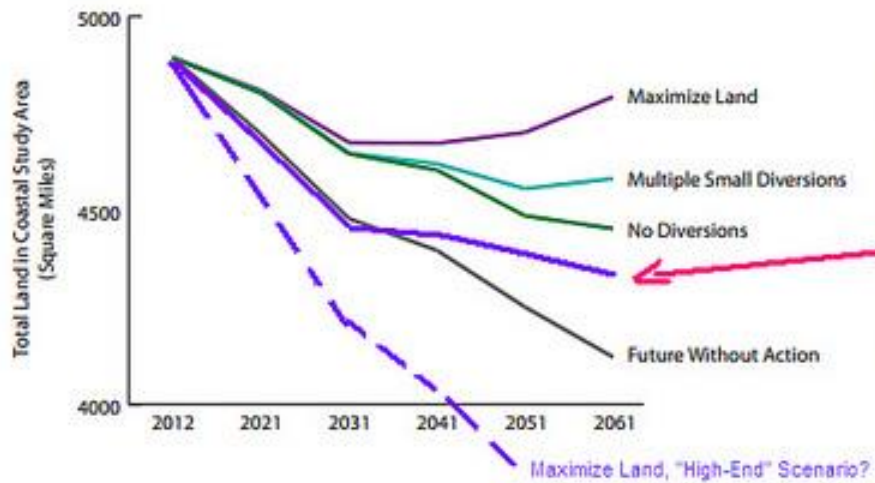


Coastal Crisis: Sea Level Rise

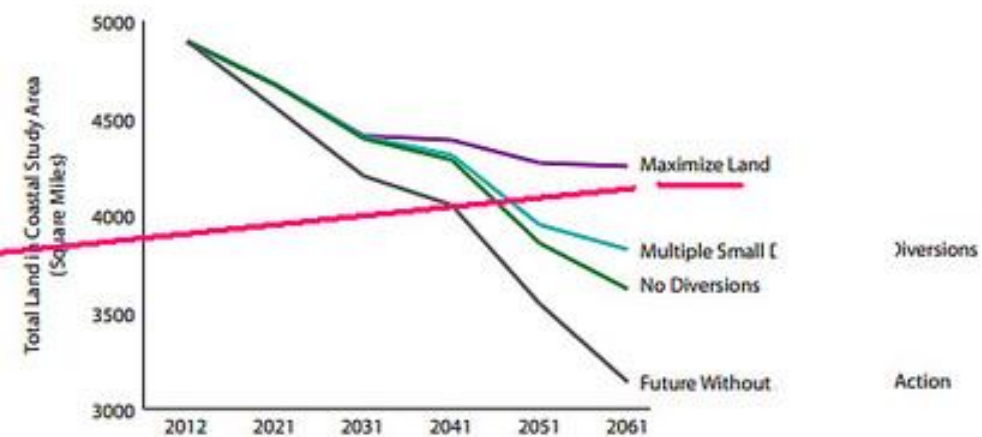
Very Important than anything else in
determining how much land is left

State wants to fund Restoration with
Offshore Gulf revenue, which
aggravates to Sea Level Rise

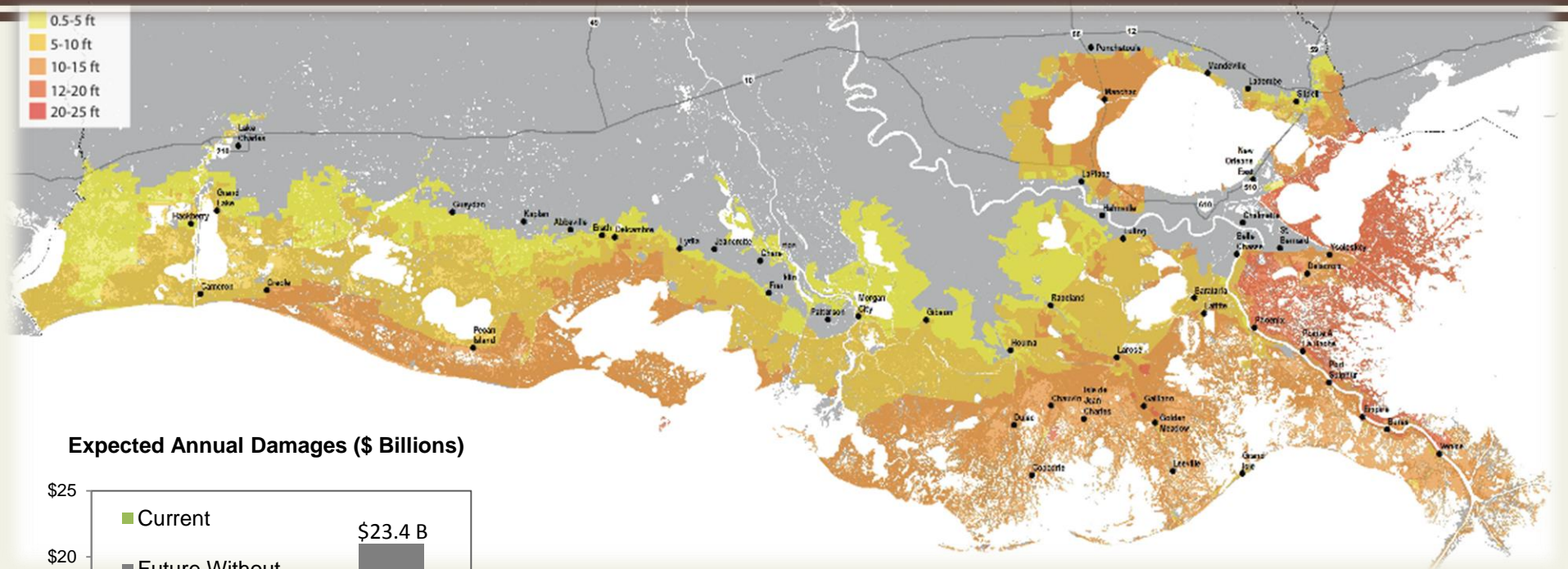
Potential Land Area Change Over Next 50 Years Moderate Scenario



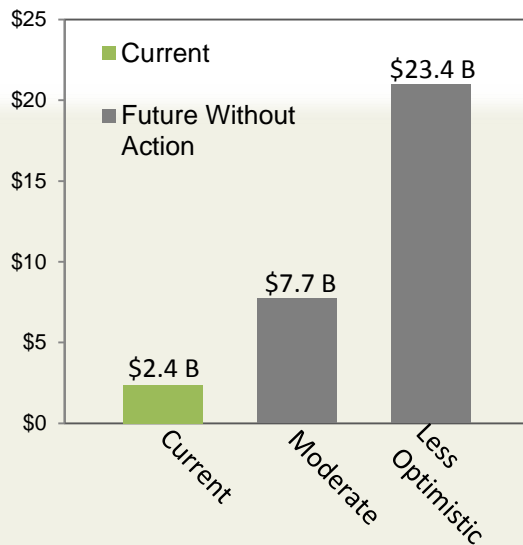
Potential Land Area Change Over Next 50 Years Less Optimistic Scenario



CPRA argument



Expected Annual Damages (\$ Billions)



The Loss of Land Results in a Loss of Coastal Communities



Problem: no role for Oil and Gas

- ~\$20 billion of 50 is marsh creation
- Most or all of pipeline marsh creation proposed is the restoration of old oil fields
- Fix the Coast
 - (P.S. Global Warming mitigation?)





Problem: what Money?

- One Third of CPRA revenue from Federal Government (CWPPRA, FEMA, etc)
- One Third from Environmental Compliance and Enforcement (BP / DWH)
- One Third from Deepwater Oil Revenue (GOMESA)
 - Still only half of what we need per year
 - Louisiana Congressmen are against the first two



Problem: lack of urgency on land use planning and resiliency

- Levee projects take decades
- Resilience Trust Fund –Bivouac
- Isle de Jean Charles is flooded by a levee
- Problems with home elevation grants after Katrina
- Problems with land use planning –can relocation be affordable?
- Clear title

The Hope:
we live with water
we will always have
the Water
we are merely the
first



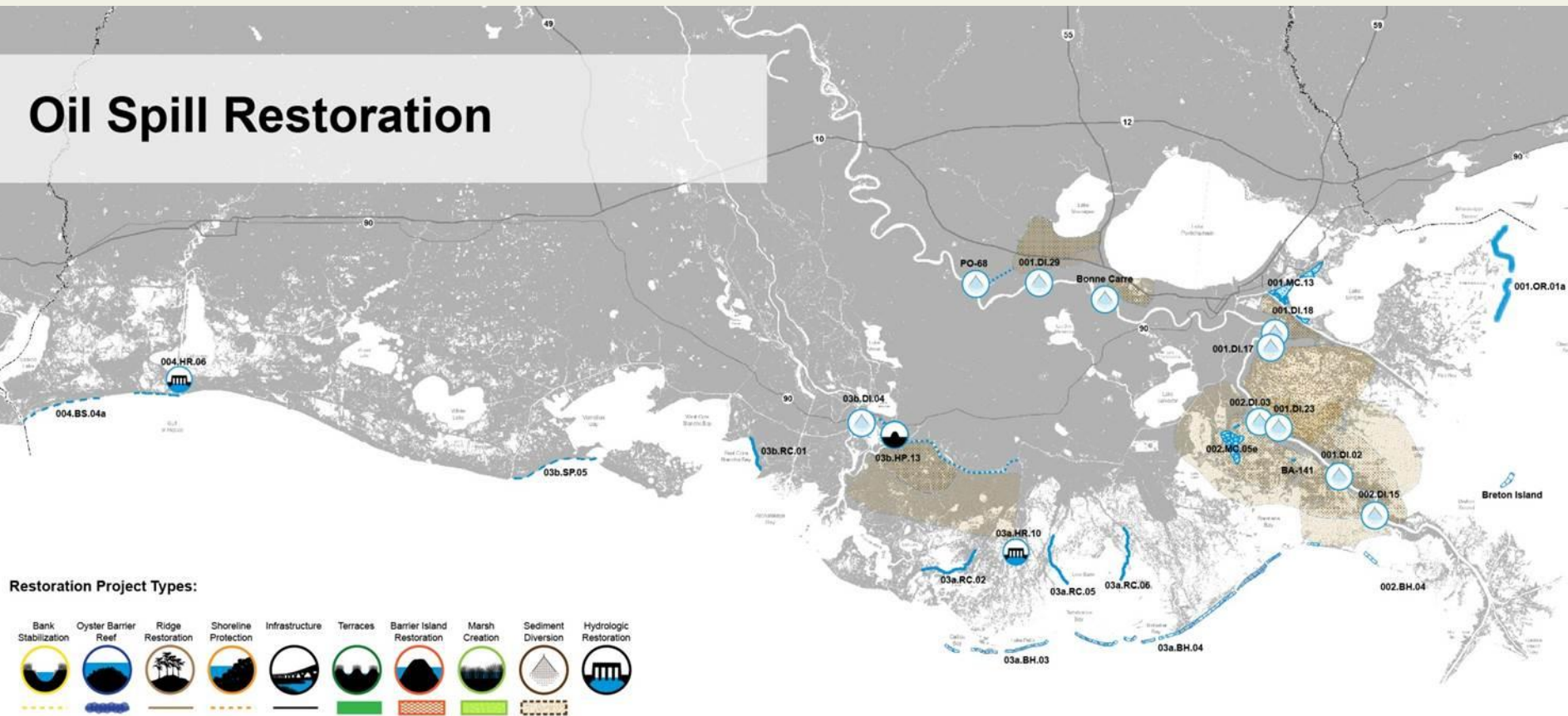


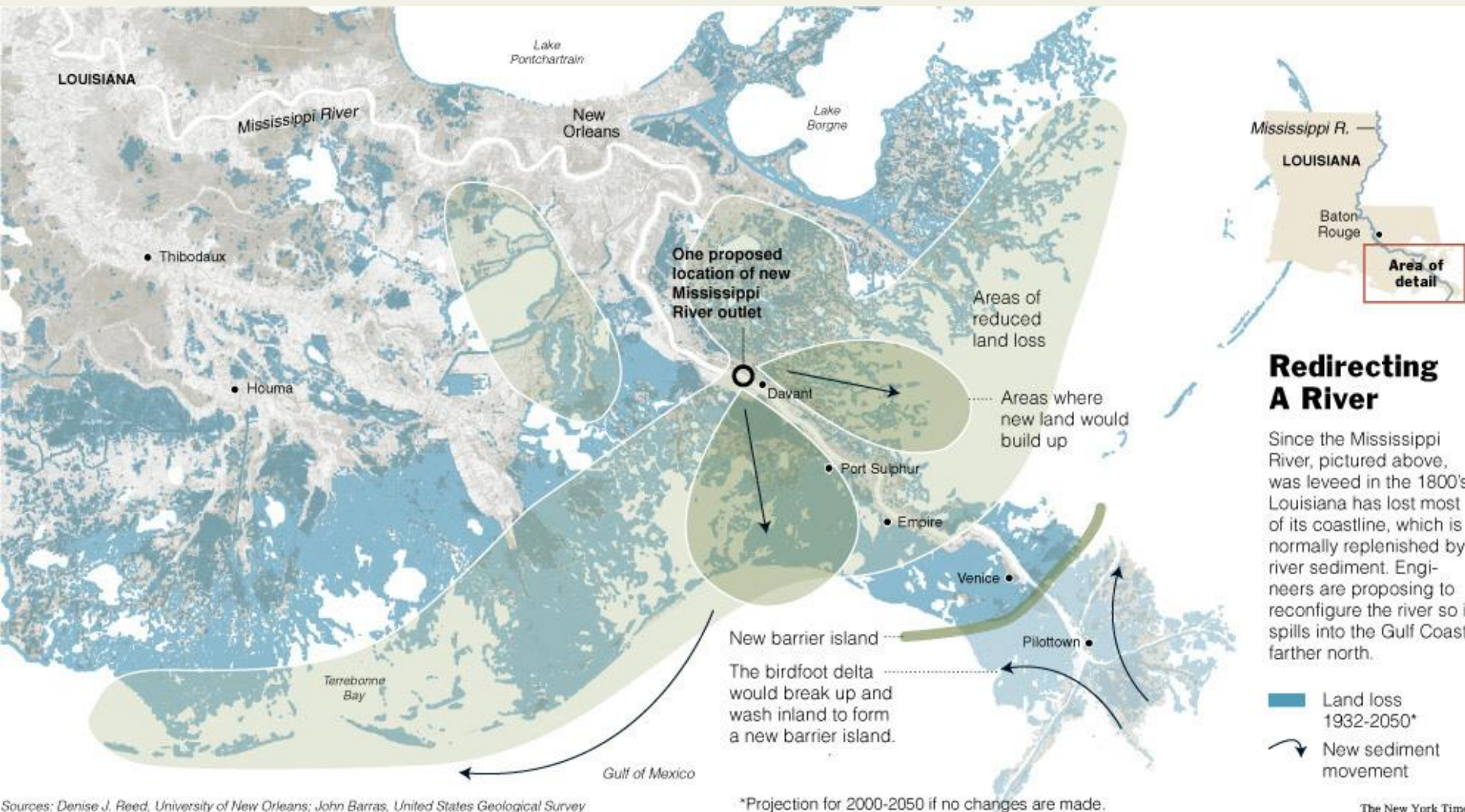
River Restoration



Restoration uses the River and the Dredge

Oil Spill Restoration





Jean Lafitte Park: fixing canals



COASTAL LAND PROCESS – DELTA PLAIN

healthygulf.org

CLASS NAME

ACREAGE

PERCENT

SUBMERGENCE

Alt. Hydro Oil/Gas	172,174	24.92%
Alt. Hydro Multiple	148,668	21.52%
Natural Waterlogging	21,069	3.05%
Failed Land Reclamation	16,403	2.37%
Alt. Hydro Impoundment	7,992	1.16%
Alt. Hydro Roads	4,825	0.70%
Faulting	3,921	0.57%
Herbivory	561	0.07%
<i>Subtotal</i>	<i>375,613</i>	<i>54.36%</i>

COASTAL LAND PROCESS – DELTA PLAIN

healthygulf.org

<u>CLASS NAME</u>	<u>ACREAGE</u>	<u>PERCENT</u>
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DIRECT REMOVAL

Oil/Gas Channel	76,978	11.14%
Navigation Channel	11,293	1.63%
Borrow Pit	11,130	1.61%
Access Channel	1,312	0.19%
Burned Area	729	0.11%
Sewage Pond	308	0.04%
Agricultural Pond	179	0.03%
Drainage Channel	109	0.02%
<i>Subtotal</i>	<i>102,038</i>	<i>14.77%</i>

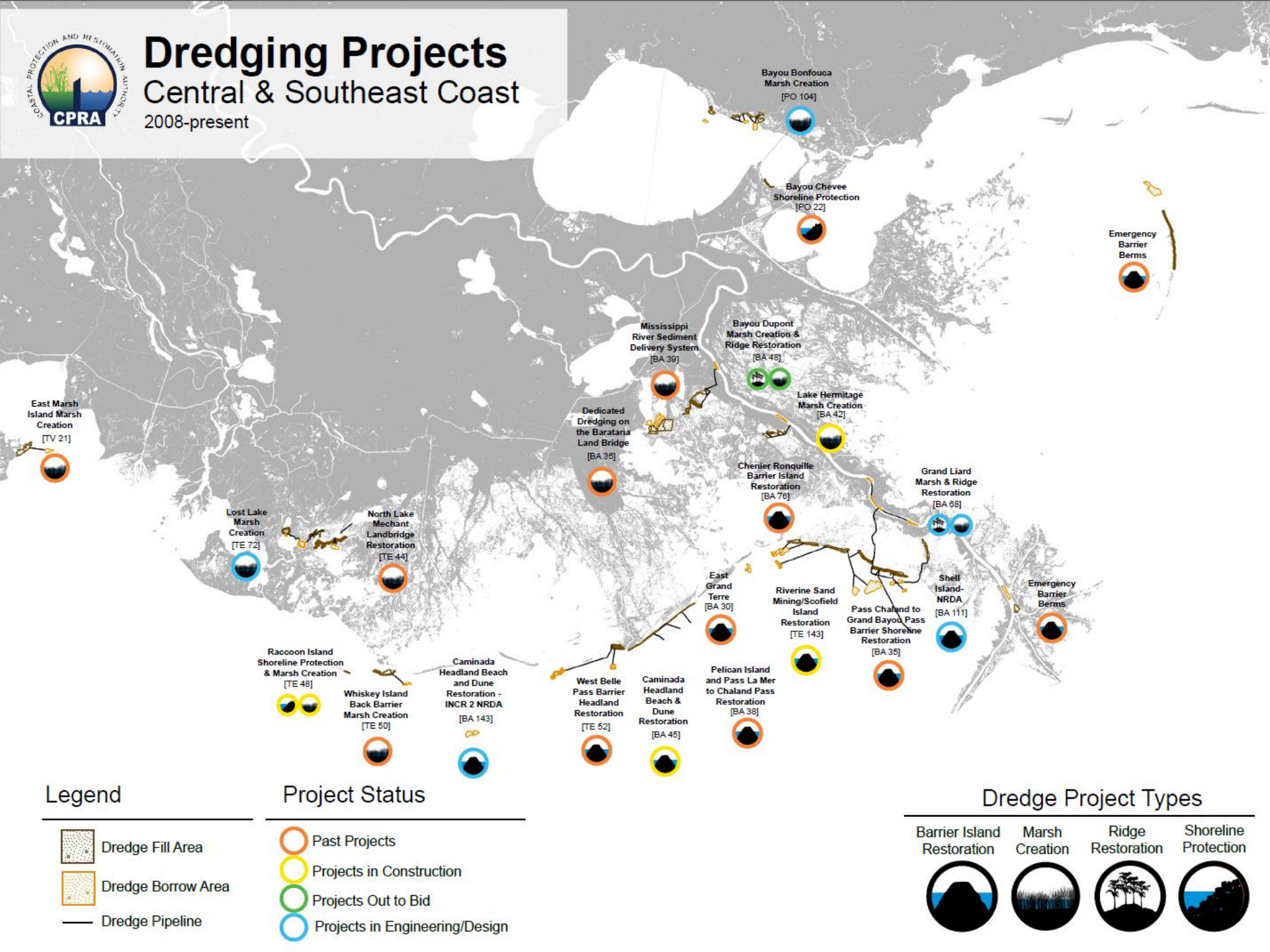
DELTA PLAIN COASTAL LAND LOSS RANKING

<u>CLASS NAME</u>	<u>ACREAGE</u>	<u>PERCENT</u>
Oil and Gas	249,152	36.06%
Natural Waves	181,090	26.21%
Alt. Hydro Multiple	148,668	21.52%
Navigation	33,114	4.79%
Natural Waterlogging	21,069	3.05%
Failed Land Reclamation	16,403	2.37%
Borrow Pits	11,130	1.61%
Channel Flow	10,369	1.50%
Alt. Hydro Impoundment	7,992	1.16%
Alt. Hydro Road	4,825	0.70%
Faulting	3,921	0.57%
Access Channel	1,312	0.19%
Burned Area	729	0.11%
Herbivory	561	0.07%
Sewage Pond	308	0.04%
Agricultural Pond	179	0.03%
Drainage Channel	109	0.02%
TOTAL	690,931	100.00%



Dredging Projects Central & Southeast Coast

2008-present



East Marsh
Island Marsh
Creation
[TV 21]

Lost Lake
Marsh
Creation
[TE 72]

North Lake
Mechant
Landbridge
Restoration
[TE 44]

Raccoon Island
Shoreline Protection
& Marsh Creation
[TE 48]

Whiskey Island
Back Barrier
Marsh Creation
[TE 50]

Caminada
Headland Beach
and Dune
Restoration -
INCR 2 NRDA
[BA 143]

West Belle
Pass Barrier
Headland
Restoration
[TE 52]

Caminada
Headland Beach
& Dune
Restoration
[BA 45]

Pelican Island
and Pass La Mer
to Chaland Pass
Restoration
[BA 38]

East
Grand
Terre
[BA 30]

Riverine Sand
Mining/Scofield
Island
Restoration
[TE 143]

Pass Chaland to
Grand Bayou Pass
Barrier Shoreline
Restoration
[BA 35]

Grand Liard
Marsh & Ridge
Restoration
[BA 68]

Shell
Island-
NRDA
[BA 111]

Emergency
Barrier
Berms

Mississippi
River Sediment
Delivery System
[BA 39]

Dedicated
Dredging on
the Barataria
Land Bridge
[BA 36]

Bayou Dupont
Marsh Creation &
Ridge Restoration
[BA 48]

Lake Hermitage
Marsh Creation
[BA 42]

Chenier Ronquille
Barrier Island
Restoration
[BA 78]

Bayou Bonfouca
Marsh Creation
[PO 104]

Bayou Chevee
Shoreline Protection
[PO 22]

Emergency
Barrier
Berms

Legend

- Dredge Fill Area
- Dredge Borrow Area
- Dredge Pipeline

Project Status

- Past Projects
- Projects in Construction
- Projects Out to Bid
- Projects in Engineering/Design

Dredge Project Types

- Barrier Island Restoration
- Marsh Creation
- Ridge Restoration
- Shoreline Protection

