Re-Imagining Lower Mississippi River Management Responding to a Crisis in Slow Motion September 23, 2015 WPN

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Lake Pontchartrain Basin Foundation SAVE OUR COAST SAVE OUR LAKE



Mississippi River Delta Restoration Campaign

National Wildlife Federation Environmental Defense Fund National Audubon Society Coalition to Restore Coastal Louisiana Lake Pontchartrain Basin Foundation



Our campaign's overarching aim is to activate a large-scale, long-term restoration program to re-establish a self-sustaining Mississippi River Delta ecosystem that:

- Supports Louisiana's people and natural resources;
- Contributes to the regional and national economy; and
- Includes implementation of significant near-term changes and projects.









Lake Pontchartrain Basin Foundation SAVE OUR COAST SAVE OUR LAKE Eric Johnson

Mississippi River Delta Restoration Coalition Partners

to have and have all a mode









Louisiana's Coastal Land Loss is a Human Tragedy



An Area the Size of Delaware (The *Entire* State of Delaware)

RESTORE THE MISSISSIPPI

It is a Potential International Tragedy for Wildlife





Potential to lose an additional 770 – 1,750 square miles of land over the next 50 years

Terrebonne Parish 1971



Terrebonne Parish 1998



Terrebonne Parish 2010



Comparison 1971-2010







RESTORE THE MISSISSIPPI

Projected Sea Level Rise



Blum and Roberts 2009 Nature Geoscience

Based on 1 meter of sea level rise with no sediment input and no catastrophic events

www.mississippiriverdelta.org



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@RestoreDelta

We Know How We Got Here: The River Built a Series of Deltas.



$\mathsf{RESTORE}_{\mathsf{RIVER}}^{\mathsf{THE}} \overset{\mathsf{mississippi}}{\underset{\mathsf{RIVER}}{\mathsf{Delta}}}$

Building Land – the ABCs.





The Newly Emergent Caernarvon Sub-Delta

Gagliano et al., 1981 Kesel, 1989 Wells and Coleman, 1987

Wetland Loss Problems:

- 1. Distributary Closure
- 2. Flood Control Levees
- 3. Modification to the River and the Passes for Navigation
- 4. Oil and Gas Drill Canals
- 5. Pipeline Canals
- 6. Subsidence
- 7. Sub-surface Fluid Withdrawal
- 8. Drainage Projects
- 9. Saltwater Intrusion
- 10. Hydrologic Disruption
 - a) Venice
 - b) The Wagon Wheel—Subsurface Salt Dome
 - c) Grand Pass Sub-Delta Complex

RESTORE THE MISSISSIPPI



Distributary Closure



Levee Building: Constricting the River



The River Today





• Distributary closures and MRT improvements to man-made levees halted crevassing and overbank flooding that once built and maintained the delta. The deep draft navigation channel shunted sediment to the deep gulf.

Head of Passes Artificial Extension of Navigation Channels by Jetties



The 1879 Solution to Navigation Problems

Southwest Pass: The Road to Nowhere for Fine Sediment



We Understand the Problem and We've Been Planning Solutions for Over 30 Years





Because of 300 Years of Manipulation, River-Borne Sediment is not going where it Needs to go.



CWPPRA EIS: 1993

SEDIMENT DIVERSIONS (p.46).

- Sediment diversions restore fluvial processes in the wetland environment.
- It is clear that additional projects are needed, at least some of which must operate on an unprecedented scale.
- Because of the scale at which future sediment diversions may operate, and in recognition of possible constraints to such projects ..., it is evident that detailed feasibility studies will be needed to evaluate how best to rebuild the Mississippi Delta.
- Beyond issues associated with any particular project, these studies must determine the upper limit to the amount of water and sediment which can be diverted from the Mississippi River system without significantly affecting navigation channel maintenance, municipal and industrial water supplies, and other aspects of human activity, such as commercial and recreational fishing.

Hypothetical Diversion at Myrtle Grove



Coast 2050: 1998



Figure 7-5. Coast 2050 Region 2 regional ecosystem strategies.

WRDA 2007 Priorities: Congress Responds to Katrina/Rita

4. Section 7003 - Priorities. Section 7003 provides that in carrying out the restoration plan set out in the Chief's Report, priority shall be given to: the five critical restoration features; any Mississippi River diversion project that will protect a major population area of the Pontchartrain, Pearl, Breton Sound, Barataria, or Terrebonne basins and produce environmental benefit to the coastal Louisiana ecosystem; any barrier island, or barrier shoreline project that will be carried out in conjunction with a Mississippi River diversion project and protect a major population area; any project that will reduce storm surge and prevent or reduce the risk of loss of human life and the risk to public safety; and a project to physically modify the Mississippi River-Gulf Outlet (MRGO) and to restore the areas affected by the MRGO in accordance with the comprehensive plan to be developed under section 7002(a) and consistent with sections 7006(c)(1)(A) and 7013.





Home in Street, Arabi, Louisiana post-Katrina.

LACPR 2009: The Corps Responding to Katrina/Rita

- Diversions are critical for sustaining the coast.
 (ii)
- Diversion of Mississippi River freshwater, nutrients, and sediment is essential for the restoration of natural deltaic processes to sustain coastal wetlands in the areas of greatest land loss across coastal Louisiana.
- Projects to divert freshwater and sediments from the Mississippi River into adjacent estuaries are integral components of coastal protection and restoration plans.
- The LACPR report identifies critical features within the coastal landscape, i.e. wetlands, land bridges, highways, etc. that have a measureable influence on surges.
- Protecting and restoring coastal wetlands in some areas of the coast provides significant risk reduction potential and ecologic benefit, while in other areas primarily ecological benefits are derived.
- On a planning unit scale, the LACPR analysis has determined where maintaining the current landscape has a significant contribution to risk reduction.
- For those areas, measures to balance the projected net loss have been included in the final recommended alternatives.



They *Look Like* diversions to Maintain "Critical Landscape Features" for Storm Surge Protection.



Louisiana Coastal Protection and Restoration (LACPR)

Figure 16-1. Coastal restoration measures in Planning Units 1 and 2.

Haven't They Done This Before?

Given that history, one might have assumed that when Louisiana completed its Master Plan and was awarded a minimum of \$7.2 billion from the BP and Transocean settlements, some of earmarked by the court for sediment diversions, the next steps would be routine.

Alas, to those of us on the outside, the Corps' response implies that they'd never before heard of such a radical idea!





Bonnet Carré Spillway? Isn't that a diversion structure built through the MRT levee?

Five Years After LACPR, Corps Presentation to CPRA's Expert Diversion Panel January 2014



USACE Perspective on Mississippi River Sediment Diversions

BG Duke DeLuca

Commander, Mississippi Valley Division President-designee, Mississippi River Commission

January, 2014



US Army Corps of Engineers BUILDING STRONG

A Sample from the Presentation. Note the Lack of Metrics....or a Time Scale (about 20 years vs. 200 years)



RESTORE THE MISSISSIPPI

Typical Life Cycle of a Marsh Creation Project



Life Cycle of a Marsh Creation Project Near a Diversion



So, Why Are You Asking Us?

Can We Quantify and Mitigate for the Unintended Consequences of Diversions?





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The Corps of Thoughtful Engineers

Summary: LMR Diversion Principles

- Consider All Coastal Loss Mechanisms
- Balance Competing Uses of the River and River Resources
- Apply Sound Science
- Reasonable Use of River Resources
- Evaluate State's Diversion Portfolio as a System
- Utilize Controlled Diversions
- Employ Diversion Adaptive Management
- Consider Mississippi River Commission Recommendations







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It is not Rocket Science!

Reconnect the River to its Dying Delta



Keystone of the 2012 Master Plan: Reconnecting the River





The projects in the plan would use up to 50% of the Mississippi River's peak flow for sediment diversions, in addition to using water and sediment from the Atchafalaya River.

A Closer Look: Southeast Coast FINAL PLAN





House Floated Into a Street in Arabi, Louisiana, September 2005



To Learn More, Visit:

- Our website: <u>http://www.mississippiriverdelta.org/</u>
- Our blog, Delta Dispatches: <u>http://www.mississippiriverdelta.org/blog/</u>
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