



UNITED FOR A HEALTHY GULF

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RE: Gulf Restoration Network Comments on the Draft 2012 Master Plan

We are writing on behalf of the Gulf Restoration Network (GRN), a diverse coalition of individual citizens and local, regional, and national organizations committed to uniting and empowering people to protect and restore the resources of the Gulf of Mexico. Thank you for the efforts of the engagement team and for this opportunity to comment on the process.

We welcome The Louisiana Coastal Protection and Restoration Authority's (CPRA's) commitment to a science-based plan for restoring the coast of Louisiana. Loss of our coastal wetlands is an issue of national scale and national priority, for which the state has taken a leadership role through the establishment of the CPRA and the State Master Plan (SMP) process. The State Master Plan is a critical step toward integrating protection and restoration projects, predicting outcomes for our coast from the existing science, and evaluating different funding and policy scenarios.

We are excited that the state is ramping up piecemeal projects into larger scale restoration that truly and realistically addresses the crisis, and is pursuing a strategy that reconnects the engine of our land, the Mississippi River, with our productive estuaries. The kind of scientific leadership demonstrated in the research around the Myrtle Grove project is to be applauded.

The Master Plan could be improved in many ways to better tackle the environmental and social challenges of the coastal crisis.

THE STATE MASTER PLAN SHOULD OUTLINE THE ROLE FOR THE OIL AND GAS INDUSTRY IN COASTAL RESTORATION

The oil and gas industry owes a large debt to the land of Louisiana. This debt is measured in hundreds of thousands of acres of interior marshland¹, and loss of those marshes for decades. Every year that debt is unpaid, and those former marsh areas remain in disrepair, billions of dollars in ecosystem services are lost.² As the industry has moved out of the marshes and into deep water, the coastal crisis has decelerated.^{3,4}

The SMP prioritizes projects that protect oil and gas assets.⁵ Among the “Strategic Assets”⁶ considered, about half (minimum 88 of 179) are oil and gas facilities. The SMP is generous to this industry. The oil and gas industry has the capability to adapt solely on its own resources.⁷ But the SMP will require much more of many communities and industries that are without those resources, that were unjustly injured by this industry’s damages, and that were unjustly impacted by the ongoing threats of the coastal crisis.

The oil and gas industry has had a hand in the majority (389.3 – 621.6 square miles) of wetlands loss of the state from 1932-1990, through different mechanisms. The extraction of oil and gas has sunk the interior coastal marshes^{8,9,10} increasing the volume of tidal water eroding our exterior marshes and barrier islands.

¹ 249,152-397,818 acres, or 389.3 – 621.6 square miles of the Delta plain, 1932-1990. Penland et al, 2000. Process Classification of Land Loss in the Mississippi Delta Plan. USGS open file report [00-418](#).

² Batker, David, et al. Gaining Ground. Wetlands, Hurricanes and the Economy: The Value of Restoring the Mississippi River Delta [Earth Economics](#).

³ Morton, R.A., G. Tiling, and N.F. Ferina. 2003. Causes of hot-spot wetland loss in the Mississippi delta plain. Environmental Geosciences 10:71-8

⁴ Couvillion, B.R., Barras, J.A., Steyer, G.D., Sleavin, William, Fischer, Michelle, Beck, Holly, Trahan, Nadine, Griffin, Brad, and Heckman, David, 2011, Land area change in coastal Louisiana from 1932 to 2010: U.S. Geological Survey Scientific Investigations Map 3164, scale 1:265,000, 12 p. pamphlet.

⁵ SMP, p. 100

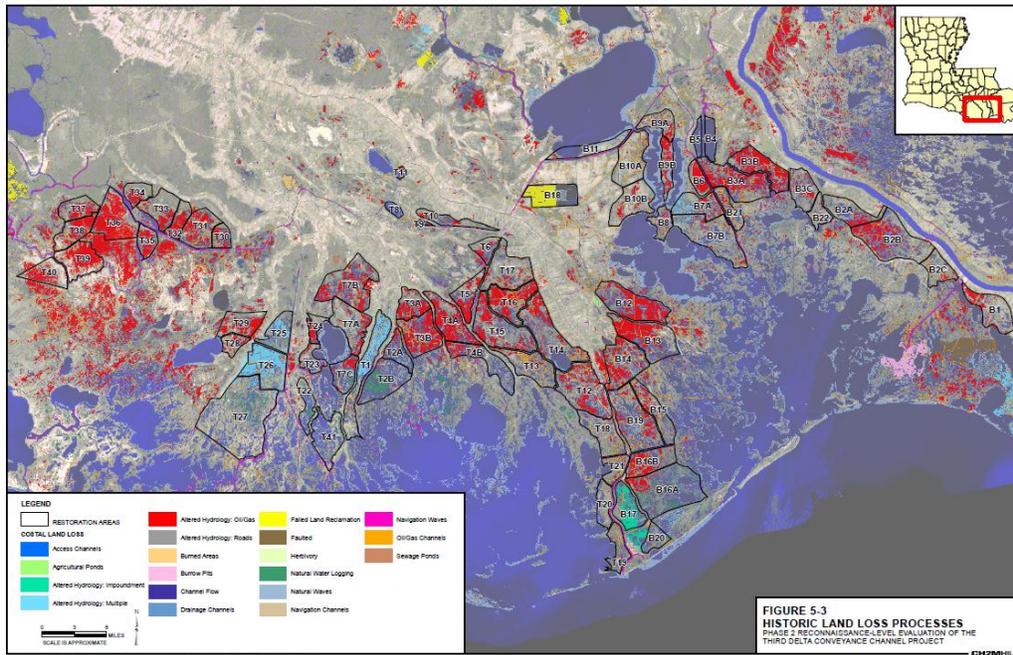
⁶ CPRA, Strategic Assets list. Received Feb 2012.

⁷ As an example: [Higher oil Prices Boost Conoco’s Profit by 66%](#) WSJ.com 26 jan 2012

⁸ Morton, R.A., G. Tiling, and N.F. Ferina. 2003. Causes of hot-spot wetland loss in the Mississippi delta plain. Environmental Geosciences 10:71-8

⁹ Robert A. Morton, Julie C. Bernier, John A. Barras, and Nicholas F. Ferina. USGS Open File Report 2005-1216 Rapid Subsidence and Historical Wetland Loss in the Mississippi Delta Plain: Likely Causes and Future Implications *see also USGS ofr 2009-1158 and ofr 2011-1169*

¹⁰ Reed and Yuill, 2009. Understanding Subsidence in Coastal Louisiana



Third Delta Phase II Reconnaissance Study, 2006, prepared for LA DNR. Adapted from Penland et al, 2000. Oil and Gas damage to marshes are marked in red. Areas affected by oil and gas as well as other factors are in baby blue. Oil and Gas access channels are in orange.

For the sake of the public trust, the SMP should outline potential roles for the oil and gas industry to play. For example, the oil and gas industry could fund marsh restoration projects selected for the \$100 billion scenario¹¹ within the footprint of historical oil and gas impact¹². Commonly, these wetlands are owned by oil and gas or affiliated land speculation companies. Despite Coastal Use law,¹³ the industry’s canals remain, decades after the oil bust, as ongoing, highly visible damage to the landscape. Many spoil banks still cover high-value edge marsh¹⁴ and interrupt natural hydrology.^{15,16} As the SMP attempts to restore fresh water and sediment sources from the river, as well as regular drainage regimes to our embattled marshes, these canals are an unnecessary hindrance to coastal restoration and the working coast.

¹¹ SMP p. 52

¹² SMP pp A2-3 to A2-9: 002.MC.05,.06,.10; 03a.MC.02,.05,.06,.07;.10

¹³ LAC Title 43 1.1 Chapter 7B §705.N *Areas dredged for linear facilities [Ch7A: including “pipelines, roads, canals, channels, and powerlines”] shall be backfilled or otherwise restored to the pre-existing conditions upon cessation of use for navigation purposes to the maximum extent practicable.*

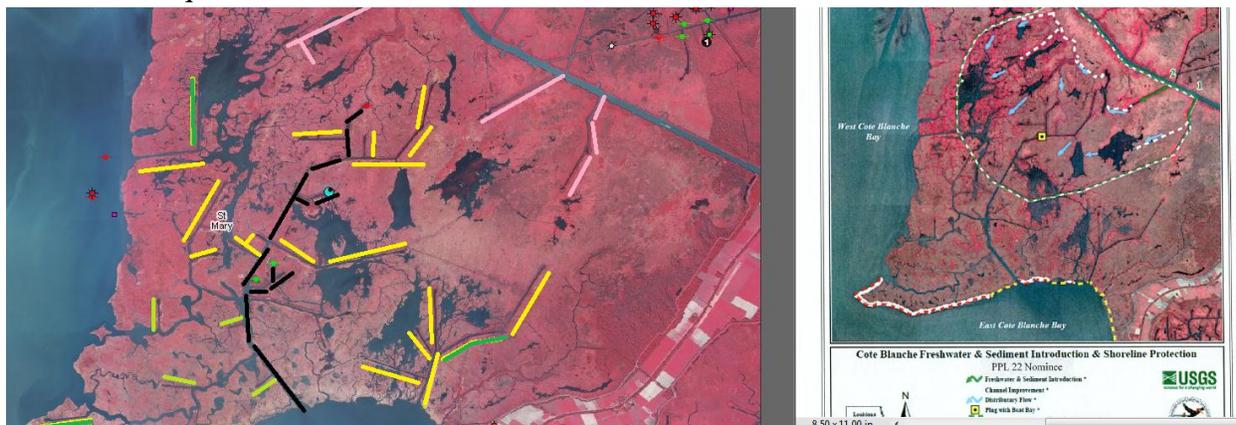
¹⁴ Peterson and Turner 1994 The value of salt marsh edge vs interior as a habitat for fish and decapod crustaceans in a Louisiana tidal marsh *Estuaries and Coasts* Volume 17, Number 1, 235-262, DOI: 10.2307/1352573

¹⁵ Swenson and Turner, 1987. Spoil banks: Effects on coastal marsh water level regime. *Estuarine, Coastal Shelf Science* 24:599-609.

¹⁶ Bahr et al. 1983 *Ecological characterization of the Mississippi Deltaic Plain Region : a narrative with management recommendations.* U .S . Fish and Wildlife Service, Division of Biological Services, Washington, D .C . [FWS/OBS-82/69](#) . 189 pp

The industry continues to argue for access for new extraction from rights that often have not been exercised in decades, with unseen “new drilling technology.” During those decades, well-access technologies have already emerged¹⁷ that eliminate the need for harmful canals and re-dredging to access mineral claims¹⁸. The SMP will work with landowner input¹⁹ and not restrict access to mineral rights²⁰, but this simple restoration will not necessarily conflict with access to wells.

It strains the credibility of Louisiana’s use of the word “Restoration” that the simple “backfilling” restoration technique is not applied to legacy plugged and abandoned wells, especially on lands where the State owns or leases surface rights. **The SMP should evaluate the impact of restoration of these legacy canals; at least on public lands.** This marsh restoration is cheap²¹ because it does not require pumping and dredging of sediment;²² it is proven to improve the soil layer quickly,²³ and it restores a more natural hydrology to many acres of marsh on the coast. This technique, if applied coastwide, could improve hydrology for hundreds of square miles of marshes.



Example of a rationale²⁴ for selective backfilling of inactive oil and gas canals north of East Cote Blanche Bay. Backfilling would assist hydrologically impacted marshes by re-establishing a more natural drainage pattern over a large area. Canals in black have a need to remain open. Canals in yellow are prioritized for hydrological restoration of the area in question. Canals in green are second priority. Canals in pink may remain deep for the sake of diverting fresh water from the Intercoastal Canal.

¹⁷ Two New Orleans-area companies team up to design eco-friendly, oil exploration hovercrafts [Source:](#)

¹⁸ Walter B. Sikora, Ph.D., Louisiana State University, Baton Rouge, Louisiana

"Assessing the Feasibility of Using Air Cushion Vehicles (Hovercraft) for Oil and Gas Exploration and Drilling in Louisiana's Coastal Wetlands"

¹⁹ SMP p 42, 154

²⁰ SMP p 154

²¹ \$7 million for 442 acres. PPL 22, R2-BA-10 Backfilling Canals in Jean Lafitte National Historical Park & Reserve

²² Baustian et al., 2009 Restoration of dredged canals in wetlands: a comparison of methods *Wetlands Ecol Manage* (2009) 17:445–453 DOI 10.1007/s11273-008-9122-6

²³ Baustian and Turner 2006. Restoration Success of Backfilling Canals in Coastal Louisiana Marshes. *Restoration Ecology* Vol. 14, No. 4, pp. 636–644

²⁴ Eustis et al, 2012 *submitted for presentation at State of the Coast 2012*

CLIMATE CHANGE MEANS INCREASING SEA LEVEL RISE, BUT ALSO INCREASING INSTABILITIES, FOR RAINFALL, THE RIVER, AND FINANCES

We support the revision of sea level rise estimates²⁵ to reflect updated scientific information. The LACES technical report and the SMP should encourage planning for an upper bound to sea level rise at 2 meters by 2100, in order to be better prepared for a “worst-case” predicted scenario.

However, changing the climate does not only mean increasing the rate of sea level rise. The changed climate will mean increased mean temperatures across the state, as well as increased frequency of intense rain events and prolonged periods of drought.²⁶

While an individual flood seems unpredictable, the new climate system contains an increased likelihood of large rain events due to the increased capacity for water in the hydrological cycle because of increased air temperatures.²⁷ The Mississippi Flood of 2011 was so large because of record rains in the Ohio valley,²⁸ even as Texas and western parts of Louisiana faced and still face an unprecedented period of intense drought.

The State Master Plan should recognize the possibility that oil and gas reserves represent a financial “bubble”²⁹ that will be revealed over the next fifty years. There is currently more fossil carbon under the earth than can be safely released into the air by 2050. To avoid climate catastrophe, the current carbon budget for the climate system should be set at 565 GtCO₂ to 2050.³⁰ Known global reserves of oil and gas are approximately 615 GtCO₂ and 363 GtCO₂, respectively; thus they exceed this budget.³¹ Reserves that exceed this budget are at risk of being devalued. **The SMP should consider this information when considering funding based upon oil revenues.**

²⁵ DRAFT Recommendations for anticipating Sea-Level Rise Impacts on Louisiana Coastal Resources during Project Planning and Design: Technical Report LACES Division 24 Jan 2012

²⁶ Twiley, Robert, 2007 [Gulf Coast Wetland Sustainability in a Changing Climate](#). Excerpted from the full report, Regional Impacts of Climate Change: Four Case Studies in the United States.

²⁷ Trenberth, K. E. 2011: Changes in precipitation with climate change. *Climate Research*, 47, 123-138, doi:[10.3354/cr00953](#).

²⁸ Dr. Jeff Masters, 2011 [Tornadoes, floods, and fires continue to pound U.S.](#) Meteorological weblog. Retrieved May 2011

²⁹ Mark Campanale & Jeremy Legget. Unburnable Carbon – Are the world’s financial markets carrying a carbon bubble? accessed at [carbontracker.org](#) Feb 2012

³⁰ *Id.*

³¹ *Id.*

WATER USE WILL AFFECT WATER QUANTITY AND DETERMINE LAND-BUILDING POTENTIAL

As has long been envisioned, the SMP prioritizes use of the river to rebuild Louisiana, by replacing large river flows³² back into the estuarine bays. The SMP should recognize the management challenges that threaten water quantity flowing through the lower Mississippi River. As the State develops more knowledge about the land-building possibilities of the River, it is apparent that large, pulsing masses of water are necessary to sustain the land-building forces that mobilize heavier sand particles.

The water available for regular uses will already be strained as the climate changes. The new water demands of hydraulic fracturing in Texas and Louisiana are enormous—2-4 million gallons per well—for thousands of wells that exist and the tens of thousands planned. Climate change means that Louisiana faces an increased potential for a severe, regional lack of surface water necessary for “hydro-fracking.”

Further, the threat of saltwater intrusion, especially in coastal Western Louisiana, should be addressed in the frame of water conservation and hydrologic restoration. Water conservation has the ability to allow aquifers to recharge, freshen water ways, and push out the salt water. The SMP should prioritize programs that conserve water.

The SMP should recommend that consumptive water uses not threaten our fresh water supply or the character of the Mississippi River, which is necessary for land building, sustaining created marsh, regular human use, commercial fisheries, and endangered species.

ENVIRONMENTAL COMPLIANCE IS COASTAL RESTORATION AND PROTECTION

The GRN does not believe that there is a need for alternative arrangements to NEPA in order to implement the Master Plan in a timely manner. As the SMP itself states, alternative arrangements are based upon emergencies and it is “[d]ifficult to demonstrate emergency for projects to be implemented over time.”³³

Moreover, because the NEPA process has a long history of improving projects, is an effective mechanism for ensuring that best available science is considered in project design.

³² Multiple re-introductions, each up to 250,000 cubic feet per second.

³³ SMP G3-3

Although we understand concerns with the “standard Corps timelines for NEPA compliance,” the SMP effort itself should speed the development of any EA, EIS, or PEIS necessary to implement projects. Given the background of Coast 2050, background studies like the Third Delta study,³⁴ and the continued refinement of the SMP ecosystem services modeling efforts, it is reasonable to expect that NEPA will not hamper implementation of the SMP.

A robust regulatory system, such as the Clean Water Act’s 404 enforcement, ensures coastal restoration. **The SMP should explicitly state that strong regulations protect wetlands, promote technological innovation,³⁵ and ensure ecological value by avoiding, minimizing, and mitigating damages.** Intact marshes are difficult to impossible to re-build. Intact marshes are not just the “icing on the cake” of dredged sediment, but the “wheels on the vehicle” that drive accretion against sea level rise,³⁶ wave-attenuation, carbon sequestration, and nutrient uptake.

The goal of mitigation is to keep ecosystem services from declining. This is also the goal of coastal restoration. A “lines of defense” strategy hinges on wetlands as a key protection feature. The current goal of the regulatory agencies is *no net loss* of wetlands. The SMP has a goal of a significant **net gain** of wetlands. Weakening of the mitigation rules³⁷ would run counter to this goal, undermining attempts to rebuild marshes and wetland forests to their former level of ecological function. Mitigation for wetlands impacted by protection features are not an added burden, but an opportunity to incorporate wetland restoration projects into the design of protection projects, according to the lines of defense strategy and as prioritized by the “Surge Wave Attenuation Habitat Suitability Index.”³⁸

Efforts to mitigate wetland losses are challenging, and are far too often unsuccessful.³⁹ The general failure of mitigation to replace ecosystem services⁴⁰ is argument for a more stringent mitigation policy, such as requiring mitigation at a ratio of greater than 1:1, probably greater than 2:1.

³⁴ Third Delta Phase II Reconnaissance Study. Accessed Dec 2011

³⁵ North Carolina Division of Coastal Management [Ret.](#) Jan 2012

³⁶ DRAFT Recommendations for anticipating Sea-Level Rise Impacts on Louisiana Coastal Resources during Project Planning and Design: Technical Report LACES Division 24 Jan 2012

³⁷ EPA/USACE “Compensatory Mitigation for Losses of Aquatic Resources; Final Rule” (33 CFR 322.4[c])

³⁸ SMP Appendix D-23

³⁹ Spieles, D. J. 2005. Vegetation Development in Created, Restored, and Enhanced Mitigation Wetland Banks of the United States. *Wetlands*. 25:51-63.

⁴⁰ Moreno-Mateos D , Power ME , Comín FA , Yockteng R , 2012 Structural and Functional Loss in Restored Wetland Ecosystems. *PLoS Biol* 10(1): e1001247. [doi:10.1371/journal.pbio.1001247](https://doi.org/10.1371/journal.pbio.1001247)

Recently, the New Orleans Corps District adopted the Modified Charleston Method⁴¹ (MCM) as the preferred method to determine mitigation requirements. **We favor the MCM method** over the less standardized and less protective Wetland Valuation Assessment (WVA).

The general lack of information on mitigation has made it difficult for independent scientists to track the success or failure of mitigation to compensate for ecosystem services in the Louisiana Delta⁴². Thus mitigation in the coastal zone has not been independently reviewed. While the Corps is not required to be in compliance with this Master Plan, the Department of Natural Resources is. **Therefore we request that the State, under this Plan, periodically publish the success rate of all mitigation projects that are under the authority of the State (e.g. Coastal Use Permits), or, the success of all the restoration projects that substitute as mitigation through the in-lieu fee program.**

Because of the rate of failure of mitigation, and the likelihood that forward levee alignments proposed in the SMP will destroy wetlands behind them, the GRN is strongly opposed to any attempt to set a separate, more lenient mitigation standard for civil works projects. **The SMP cannot be a restoration plan if it sacrifices mitigation rules and does away with regulations currently insufficient to sustain wetland values and acreages.**

THE MASTER PLAN SHOULD OUTLINE CARE FOR THE LANDS BUILT

Given the long history of industrial abuse of wetlands, the **SMP should recommend use of non-destructive access technologies for the oil and gas industry**, such as barges that avoid destructive canal maintenance by riding over the top of the marsh layer.⁴³ Local development of these access technologies is yet another way that the SMP can promote a restoration economy while allowing natural processes to restore ecological function.

The Nature-based Tourism Habitat Sustainability Index⁴⁴ prioritizes projects that contain beaches. However, building parking lots, roadways, and otherwise promoting or allowing vehicle access to dunes will destroy the dune. Allowing vehicles to drive on restored beaches and dunes will impair the dune's protective function for coastal communities, as well as its suitability as habitat for nature-based tourism and for endangered species.

Fourchon Beach, in particular, is an incredibly vulnerable landform with an extremely high erosion rate.^{45,46} This erosion has been aggravated by industrial uses—not only Port Fourchon,

⁴¹ Modified Charleston Method. [Accessed](#) Dec 2011

⁴² Spieles, D. J. 2005. Vegetation Development in Created, Restored, and Enhanced Mitigation Wetland Banks of the United States. *Wetlands*. 25:51-63.

⁴³ Two New Orleans-area companies team up to design eco-friendly, oil exploration hovercrafts [Source:](#)

⁴⁴ Nature-based Tourism Appendix, SMP D-21

⁴⁵ SMP Appx D-3 p. 10

but most recently vehicular access by BP cleanup vehicles. If vehicular access is allowed onto restored beaches, which are vulnerable to vehicles, part of CPRA's claim to BP response damages is undermined; and ultimately less funding for coastal restoration may be available. **The SMP should recommend limiting vehicular access to marsh creation, barrier island, and dune restoration sites.**

The SMP should respect the longstanding practices of landowners that have cared for the ecological function of their lands.⁴⁷ **The SMP should advise non-destructive use of the wetlands and islands we have, as well as prescribe limitations of use of the lands the SMP will build.**

THE LOUISIANA CONSTITUTION REQUIRES THE STATE TO ANALYZE THE ENVIRONMENTAL IMPACTS OF THE MASTER PLAN

The Louisiana Constitution requires the State, as public trustee, to analyze the environmental impacts of proposed projects. Article IX, Section 1 of Louisiana's Constitution states that:

The natural resources of the state, including air and water, and the healthful, scenic, historic, and esthetic quality of the environment shall be protected, conserved, and replenished insofar as possible and consistent with the health, safety, and welfare of the people. The legislature shall enact laws to implement this policy⁴⁸.

Louisiana courts explained this constitutional requirement in the Supreme Court's decision in *Save Ourselves, Inc. v. Louisiana Env't'l Control Comm'n*⁴⁹, and in the First Circuit's decision in *In re Rubicon, Inc.*⁵⁰. In *Save Ourselves*, the Louisiana Supreme Court outlined LDEQ's public trustee responsibilities under the Louisiana Constitution. The Supreme Court found that Article IX, Section 1 is a "rule of reasonableness which requires an agency or official, before granting approval of [the] proposed action affecting the environment, to determine that adverse environmental impacts have been minimized or avoided as much as possible consistently with the public welfare."⁵¹ The court expounded that the examination "requires a balancing process

⁴⁶ Miner M.D., Kulp M.A., Flocks J., Twichell D., Penland S., Weathers D., Martinez L., Motti J., DeWitt N., Reynolds B.J., Baldwin W., Danforth B., Worley C., Bergeron E., Ferina N., McCarty P., Brown, M., Torres J., (2009) [Louisiana Barrier Island Comprehensive Monitoring program](#) (BICM), vol 3. Bathymetry and historical seafloor change 1869–2007. Part 1. South-central Louisiana and northern Chandeleur Islands, bathymetry methods and uncertainty analysis. Univ. New Orleans Pontchartrain Inst. Environ Sci. Tech Rep.

⁴⁷ SMP p 42, 154

⁴⁸ Article IX, Section 1

⁴⁹ 452 So. 2d 1152 (La. 1984)

⁵⁰ 95-0108 (La. App. 1 Cir. 2/14/96), 570 So. 2d 475, 481

⁵¹ *Save Ourselves* at 452 So. 2d 1157

in which environmental costs and benefits must be given full and careful consideration, along with economic, social and other factors.”⁵²

The court in *Rubicon* further elucidated public trustee responsibilities by setting out a series of specific inquiries that the public trustee must address in order to satisfy the Constitutional mandate. Specifically, trustees must address:

Whether: 1) the potential and real adverse environmental effects of the proposed project have been avoided to the maximum extent possible; 2) a cost/benefit analysis of the environmental impact costs balanced against the social and economic benefits of the project demonstrate that the latter outweighs the former; and 3) there are alternative projects which would offer more protection to the environment than the proposed project without unduly curtailing non-environmental benefits to the extent applicable⁵³.

The State must therefore meet certain basic substantive and informational requirements before proceeding with large projects which will impact the environment. These include accurately assessing the real and potential environmental harms of the project, examining alternatives to the proposed action, and performing a cost/benefit analysis. The State is therefore obligated to ensure compliance, but with state water laws and Louisiana’s constitutional and statutory framework governing environmental decision-making.

While the SMP has attempted to address questions 1 and 3, the second question has not been thoroughly investigated. **The SMP needs to investigate the cost/benefit analysis of the environmental impact costs balanced against the social and economic benefits of the project.**

THE MASTER PLAN NEEDS TO BALANCE PROTECTION AND RESTORATION

We are happy to see non-structural projects get half of the protection funding in this plan.⁵⁴ Although some communities will move out, others can adapt by moving up and flood-proofing. This is a crucial step toward living with the water that surrounds and sustains us.

The SMP currently favors a 50 / 50 split between funding levees and wetlands.⁵⁵ The key lesson of the multiple lines of defense paradigm is that wetlands have always been Louisiana's flood protection, and levees have a more limited, short term role to play. Hurricane and tidal protection levees have not performed to their design against large storms. So we are glad to see

⁵² *Id.*

⁵³ *Id.* at 483.

⁵⁴ SMP p. 30

⁵⁵ *Id.*

the SMP acknowledges the high probabilities⁵⁶ that “100-year” levee protection will fail to protect homeowners. This information is critical to homeowners and coastal residents as they are making their own plans.

We are glad that the SMP CLARA modeling effort attempts to predict the rate of levee failure by levee position and evidence from soil borings. The SMP should attempt, in future modeling efforts, to model the wave attenuation service of wetland acreage directly. We understand that this value declines rapidly as deeper surge comes into the estuary. But because wetlands were the historical flood protection of southeastern Louisiana, and the wave attenuation service is a cornerstone of the “lines of defense” paradigm, **the SMP should make this wave attenuation value explicit in the CLARA model.**

The construction of levees in open water and / or across interdistributary basins is an unreasonable expense for little benefit. Ring levees, constructed inside the protection of exterior wetlands, would provide more protection for similar cost, allow more wetland restoration, and thus ultimately sustain the levees themselves. Ring levees built near natural ridges allows the levee to be built where local borrow material, as well as underlying material, is of sufficient quality. The USACE will not be able to incorporate locally-built levees if they are not built to meet the updated standards released after Katrina. **The SMP should explicitly state that the levee projects must meet the Post-Katrina soil standards.**

Contrary to some claims, levees around wetlands do not protect wetlands.⁵⁷ Hurricanes and other storms are often sediment redistribution sources⁵⁸—so disconnecting wetlands from tidal storms is akin to disconnecting them from the river. Connecting restored wetlands to tidal input improves their ecological function.⁵⁹

A “Lake Pontchartrain Barrier”⁶⁰ levee or structure across the flow through the Rigolets would have too large an ecosystem impact. Even a “sill” across the deep and swiftly flowing Rigolets would hamper the regular migration of estuarine species in and out of Lake Pontchartrain. A structure across one of the larger tidal passes in the Delta region would deviate from the “lines of defense” paradigm. We are glad to see that this project was not prioritized for the \$50 billion or \$100 billion selection.

⁵⁶ SMP p. 67

⁵⁷ Cahoon and Groat, ed. 1990. A Study of Marsh Management Practice in Coastal Louisiana. <http://www.gomr.boemre.gov/PI/PDFImages/ESPIS/3/3658.pdf>

⁵⁸ Poff, N.L., M.M. Brinson, and J.W. Day, Jr. 2002. Aquatic ecosystems and global climate change: potential impacts on inland freshwater and coastal wetland ecosystems in the United States. Pew Center on Global Climate Change, Arlington, VA

⁵⁹ Moreno-Mateos D , Power ME , Comín FA , Yockteng R , 2012 Structural and Functional Loss in Restored Wetland Ecosystems. PLoS Biol 10(1): e1001247. [doi:10.1371/journal.pbio.1001247](https://doi.org/10.1371/journal.pbio.1001247)

⁶⁰ SMP p A-28

Similarly, a Donaldsonville to the Gulf⁶¹ alignment that severs the tidal connection of the Upper Barataria Basin to the lower basin conflicts not only with tidal flows, but freshwater and sediment input from planned river restoration projects. We are glad to see that this project was not prioritized for the \$50 billion or \$100 billion selection.

The Morganza to the Gulf levee must not be built so far out into the estuary, in the middle of open water. A more conservative alignment for Morganza to the Gulf⁶² would provide the Houma area real protection. The current outward alignment will not function as desired, and will require more expensive maintenance. The residents of Terrebonne and Lafourche deserve a better levee, and the residents of the state and the nation deserve to have coastal dollars monies spent wisely. **The SMP should evaluate an alignment for Morganza to the Gulf that does not deviate from the lines of defense strategy.**

THE MASTER PLAN SHOULD RECOMMEND THE RE-EVALUATION OF THE AUTHORIZATION OF UNDER-USED SHIPPING CHANNELS

We urge the SMP to recommend a re-evaluation of the authorization of all shipping channels. Shipping channels have had a large negative impact upon our coastal wetlands.^{63,64} The West Pearl River and Bayou Segnette Waterway are a State Scenic River running through a National Wildlife Refuge and Wildlife Management Area, and a waterway through National Park land, respectively. These non-Federal waterways in particular deserve close re-evaluation.

THE MASTER PLAN SHOULD BE EXPLICIT ON THE LIMITS OF HABITAT SUITABILITY ANALYSES

We are glad to see that wetlands exterior to protection features will be prioritized by the SMP⁶⁵. In future revisions, the SMP should include the wave-dampening properties of wetlands and islands introduced into the CLARA modeling effort.

Many creatures could be selected as representatives of “other wildlife.” We suggest additional HSI’s for Tarpon, a historic sport fish, resident to Louisiana and the Gulf coast, that is important from a cultural, fisheries, and ecosystem perspective. Gulf Menhaden have previously been included in this type of HSI analysis for coastal Louisiana—they should be considered for

⁶¹ *Id.*

⁶² SMP A2-77-79, described in MLODS [planning unit 3a](#)

⁶³ Navigation Channel Policy Discussion: Funding for Federal Navigation Channel Maintenance in Louisiana, A Case for Reform. Avalyn Taylor & Kirk Rhinehart (June 15, 2011)

⁶⁴ Penland et al, 2000. Process Classification of Land Loss in the Mississippi Delta Plan. USGS open file report [00-418](#).

⁶⁵ SMP Appendix D-23

inclusion for their large role in both fisheries and the ecosystem as a whole. **The SMP should include Habitat Suitability Analyses for important finfishes of the Louisiana coast.**

Many of the appendices could benefit from a broader review; we applaud their inclusion in the SMP and encourage the CPRA to work with agencies relevant to the individual HSIs, as well as the LSU AgCenter and SeaGrant, to promote citizen science and education efforts to monitor species relevant to the SMP. **The SMP should recommend agency and independent review of Habitat Suitability Analyses and recommend citizen science programs where data is lacking.**

THE MASTER PLAN SHOULD OUTLINE THE PROCESS FOR IMPLEMENTING NEW RESTORATION TECHNOLOGIES

The state of Louisiana has a need to innovate restoration technologies if it wants to export these technologies and expertise as an economic development strategy. **The SMP should outline the decision-making process for incorporating new technologies into its project evaluation.** If CPRA wants to be seen as an innovator, it must phase out the practice of rock armoring in a region that has no natural rocks. Nationwide and on the Gulf Coast,⁶⁶ “living shorelines”^{67,68} are being promoted as alternative breakwaters and erosion control that provide ecosystem services that rock armoring lacks. The project descriptions in the SMP for “shoreline protection” and “bank stabilization” explicitly include rocks as part of their design.⁶⁹ Although it is useful to cost projects according to rock designs, because rocks are more expensive, the SMP should allow for improvements in breakwater design and technology that are underway, that have been evaluated,⁷⁰ and will certainly become more recognized in fifty years.

We have local scientists, and innovative engineers and companies that have designed, built, and tested oyster-based breakwaters.⁷¹ CPRA cannot afford to fall behind this trend. **The SMP should recommend that oyster breakwaters or “living shoreline” technology and practices be substituted for rock armoring wherever practicable.**

The SMP should evaluate the benefit to ecosystem services of implementing concrete and oyster-based breakwaters on a larger scale, for the vast majority of breakwater projects where a rock

⁶⁶ Swann, 2008. The Use of Living Shorelines to Mitigate the Effects of Storm Events on Dauphin Island, Alabama, USA. American Fisheries Society Symposium 64:000–000, 2008

⁶⁷ Currin, C.A., Chappell, W.S, and Deaton, A., 2010, Developing alternative shoreline armoring strategies: The living shoreline approach in North Carolina, in Shipman, H., Dethier, M.N., Gelfenbaum, G., Fresh, K.L., and Dinicola, R.S., eds., 2010, Puget Sound Shorelines and the Impacts of Armoring—Proceedings of a State of the Science Workshop, May 2009: U.S. Geological Survey [Scientific Investigations Report 2010-5254](#), p. 91-102.

⁶⁸ North Carolina Division of Coastal Management [Ret.](#) Jan 2012

⁶⁹ SMP A-2

⁷⁰ CWPPRA Terrebonne bay demo, TE-45

⁷¹ CWPPRA Terrebonne bay demo, TE-45

project has been proposed. Currently, the SMP prioritizes over 23 rock projects to 2 oyster barriers—a ratio that should be reversed.

Oyster production and harvest modeling also rely on services produced by these innovative breakwaters, and that **breakwaters should count toward variable V1 (percent hard-bottom) in the HSI modeling for oyster** if it has been shown to grow seed from spat in CWPPRA⁷² or other Demonstration projects across the Gulf Coast.

The SMP modeling is currently unable to capture effects of vegetative planting projects upon the persistence of land or ecosystem services. For example, the Coastwide Planting Project⁷³ does not include any features that can be evaluated by models.

And yet, many of the ecosystem services listed as project selection criteria are partially or wholly dependent upon ecosystem values embedded in plant growth and in soil and root development. Plantings are often funded to only 50% of their potential. Although soils and plants are often an afterthought, there is no marsh restoration without marsh grasses and soils. The SMP should prioritize marsh creation practices that create marsh soils. **The SMP should echo lessons learned from previous CWPPRA Coastal restoration projects⁷⁴—that marsh projects should include sufficient planting funds.**

If a technological innovation has great theoretical potential, and passes an initial evaluation, such as the Ecological Review of the CWPPRA process; then the SMP should evaluate the ecosystem services potential compared to the default projects, and should support the scaling up of these technologies if the evaluation is favorable. **The SMP should outline the process for implementing projects with greater ecosystem value as they are created and tested.**

THE MASTER PLAN SHOULD ADDRESS THE GULF HYPOXIC ZONE

The SMP should be more explicit as to what state agencies can do to reduce the large, annual hypoxic zone on the near shelf, commonly known as the “Dead Zone.” The Dead Zone is not just a hazard to our fisheries industry, but to the estuarine ecosystem services that produce those fisheries.

First, Louisiana can ramp up point source reduction of nitrogen and phosphorus pollution.

Through the Environmental Leadership Program administered by LDEQ, industries along the Mississippi River have reduced their nitrogen inputs into the Mississippi. These technologies should be considered best common practices for the industry. These reductions should be

⁷² CWPPRA project TE-45

⁷³ CWPPRA Project LA-39, SMP A2-2.

⁷⁴ Ecological Review of TE-44, North Lake Mechant LandBridge Restoration

incorporated into all petrochemical facility discharge permits as a way to reduce Dead Zone-causing pollution. This could, in a minor way, reduce the loading and more importantly show the rest of the watershed that Louisiana is serious about making reductions. Louisiana must lead by example.

Second, Louisiana must list its nearshore Gulf waters on its 2012 “Impaired Waters List” (303d List). Louisiana is impacted by the annual Dead Zone, and yet the Louisiana Department of Environmental Quality’s recently released list removed Louisiana Gulf waters, despite the low dissolved oxygen that this area regularly experiences. On one hand, the state is conceding that addressing the Dead Zone is an important piece of comprehensive coastal restoration, and on the other it is denying the Dead Zone impacts the state. In order for the Impaired Waters List to be consistent with the 2012 SMP and the original 2007 Master Plan, these waters should not be delisted.

Finally, diverting river water into wetlands, although it has potential, is not a proven solution to nitrogen and phosphorus pollution; in fact some scientists have suggested that diverting Mississippi River waters high in nutrients could be detrimental to wetlands. The SMP effort must consider the problem from its source, including upriver agriculture, animal feeding operations, and point sources. It is difficult to manage wetlands for multiple parameters (e.g. nutrient removal, storm protection, habitat, carbon sequestration, water quality), which is why Louisiana should demand reductions from upstream, which would remove one of these parameters, and increase restoration potential.

The SMP states that the state is exploring nutrient trading programs⁷⁵. We request that the conservation community be included as early as possible in the development of these programs. While we encourage the state to look at non-traditional ways to reduce pollution, there are many pitfalls in trading programs that must be thoroughly explored and publicly vetted.

CURRENT RESTORATION PROJECTS SHOULD BE INCLUDED IN THE MASTER PLAN

To avoid confusion, we encourage the state to include current restoration projects,⁷⁶ as well as federal projects, such as the MRGO restoration plan, as potential projects in the SMP. Projects were often marked “FWOA” in appendices or referred to in the document. Current projects should be included in the projects map or perhaps a separate map, for clarity.

⁷⁵ SMP p. 152

⁷⁶ for example, pp. 28-32; 44-46 Integrated Ecosystem Restoration and Hurricane Protection in Coastal Louisiana: **Draft Fiscal Year 2013 Annual Plan** Ret. Jan 2012

THE MASTER PLAN SHOULD CONSIDER ENVIRONMENTAL JUSTICE

Coastal communities that are in retreat⁷⁷ often have not received the benefits of the industries that have placed us into crisis. The economies that will remain in Louisiana after the oil and gas industry's bubble has burst must be sustained.

It is a basic injustice that fishing communities and native communities are to be sacrificed for the sake of the shipping and oil industries. The SMP prioritizes projects that protect oil and gas assets.⁷⁸ Among the “Strategic Assets”⁷⁹ considered, about half (minimum 88 of 179) are oil and gas facilities. Thus the SMP unfairly weighs one industry over the others. The SMP is currently silent about the tumult that use the River will incur upon Louisiana’s Fisheries. Although long-term benefits to fishes that are harvested will arrive, **fisheries that operate on business plans of 3-5 years will need clear lines of communication and support to weather the changes that a Restored River will bring.**

Our coastal heritage is more than nostalgia. Our coastal communities are repositories of contextual coastal knowledge that can improve coastal projects. **Coastal communities have traditional knowledgebases that can be integrated with more formal scientific efforts,**⁸⁰ to allow the state to rapidly determine whether our efforts at restoration are succeeding. **The SMP should work more closely with parish planning committees to ensure that local knowledge of an area is included in project planning, and that local communities are updated on the progress of projects.**

To ensure that our coastal heritage is not lost, **the SMP should suggest policy mechanisms by which coastal restoration activities can build an employment base for coastal communities.** Coastal restoration projects provide well-paying jobs;^{81,82} these jobs should be preferentially given to residents of coastal communities unjustly impacted by the coastal crisis. **The SMP should outline how the state will work with private contractors to ensure local hiring and how the state will coordinate with educational institutions to train and re-train our coastal workforce.**

⁷⁷ Laska, Shirley, George Woodell, Ronald Hagelman, Robert Gramling, Monica Teets Farris, with the assistance of Windell Curole, Becky Boudreaux, Traber Davis and William Kappel. 2005. “At Risk: The Human, Community and Infrastructure Resources of Coastal Louisiana.” *Journal of Coastal Research* (44): 90-111.

⁷⁸ SMP, p. 100

⁷⁹ CPRA, Strategic Assets list. Received Feb 2012.

⁸⁰ Bethel and others, 2011. Blending geospatial technology and traditional ecological knowledge to enhance restoration decision-support processes in coastal Louisiana. *Journal of Coastal Research*, 27(3), 555–571.

⁸¹ Lowe, Stokes, and Gereffi. 2011. Restoring the Gulf Coast: New Markets for Established Firms.

⁸² Pendleton and Baldera, 2010. Measuring and Monitoring the Economic Effects of Habitat Restoration: A Summary of a NOAA Blue Ribbon Panel

The SMP should work toward coordinated relocation of entire communities from areas that must be sacrificed because of the crisis and its solutions. **The land use planning suggested by the state and encouraged by the CPEX program should be required of coastal parishes and municipalities for the receipt of funds.**

The SMP lacks a “Community” focus group, separate from the parishes, for those communities at greatest risk from the coastal crisis. Proactive, ongoing communication with the people who will be evacuating, organized according to how groups actually prepare, evacuate, and rebuild, will serve the implementation, communication, and evaluation of projects.

THE MASTER PLAN SHOULD EVALUATE CENTRAL WETLANDS PROJECTS

There are many local projects up for consideration. However, **we encourage the SMP to evaluate the NGO-envisioned MRGO restoration projects in the Central Wetlands.** These projects have significant cultural and tourism value, given their proximity to a large population center. Thousands of people from around the world, including members of Congress and international religious leaders, have visited the platform overlooking the Central Wetlands. The educational value of this area is important to the State’s efforts to develop broad support at a national level for restoration. Moreover, the State has already made a commitment to the Bayou Bienvenue Triangle through the CIAP-funded cypress restoration project.

SUMMARY

The Master Plan should outline the role for the oil and gas industry in coastal restoration.

For the sake of the public trust, the SMP should outline potential roles for the oil and gas industry to play. For example, the oil and gas industry could fund marsh restoration projects selected for the \$100 billion scenario within the footprint of historical oil and gas impact.

The SMP should evaluate the impact of restoration of these legacy canals, or at the least the marsh restoration under their spoil banks; at least on public lands.

Climate change means increasing sea level rise, but also increasing instabilities, for rainfall, the river, and finances.

The LACES technical report and the SMP should encourage planning for an upper bound to global sea level rise at 2 meters by 2100.

The SMP should consider the oil and gas “bubble” when considering financing.

Water use will affect water quantity and determine land-building potential.

The SMP should recommend that consumptive water uses not threaten the character of the Mississippi River.

Environmental compliance ensures coastal restoration and protection.

There is no need for alternative arrangements to NEPA.

The SMP should periodically publish the success rate of State mitigation projects.

The Master Plan should outline care for the lands built.

The SMP should recommend use of non-destructive access technologies for the oil and gas industry.

The SMP should recommend limiting vehicular access to marsh creation, barrier island, and dune restoration sites.

The Louisiana constitution requires the state to balance the impacts of the Master Plan.

The SMP needs to analyze the environmental impact costs balanced against the social and economic benefits of the project.

The Master Plan needs to balance protection and restoration.

The SMP should make wave attenuation values explicit in the CLARA model.
The SMP should state that levee projects must meet Post-Katrina soil standards.
The SMP should evaluate an Morganza to the Gulf levee that does not enclose intertributary basins.

The Master Plan should recommend the re-evaluation of under-used shipping channels.

The Master Plan should be clear about the limits of habitat suitability analyses.

The SMP should recommend agency and independent review of Habitat Suitability Analyses and recommend citizen science programs where data is lacking.

The Master Plan should outline the process for implementing new restoration technologies.

The SMP should outline the decision-making process for incorporating new technologies into its project evaluation.
The SMP should recommend that oyster breakwaters or “living shoreline” technology and practices be substituted for rock armoring wherever practicable.

The Master Plan should address the Gulf Hypoxic Zone.

The SMP should recommend reduction of point source pollution.
The SMP should recommend that nearshore Gulf waters not be de-listed.
The SMP should solicit ENGO input on nutrient or water quality trading programs early.

The Master Plan should consider Environmental Justice.

The SMP should consider planning for impacts to fisheries.
The SMP should work closely with parish planning committees and update local communities on progress.
The SMP should suggest policy mechanisms by which coastal restoration activities can build an employment base for coastal communities.
The SMP should outline how the state will coordinate with educational institutions to train and re-train our coastal workforce.
The SMP should include a Community Focus Group.

The Master Plan should include current projects more clearly.

The Master Plan should evaluate NGO version of the Central Wetlands projects.

For a healthy Gulf,

Scott Eustis, M.S., Coastal Wetland Specialist, Gulf Restoration Network

Cc: Chuck Perrodin, CPRA