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Can We Save New Orleans?

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> *[A]ny calm person who is not blind or idiotic, can see that in the Old Oölitic Silurian Period, just a million years ago next November, the Lower Mississippi River was upward of one million three hundred thousand miles long, and stuck out over the Gulf of Mexico like a fishing rod. And by the same token any person can see that seven hundred and forty-two years from now the Lower Mississippi will be only a mile and three quarters long, and Cairo [Illinois] and New Orleans will have joined their streets together, and be plodding along comfortably under a single mayor and a mutual board of aldermen.*
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> —Mark Twain, 1883[1]

I. FANTASY ISLAND

On Sunday, November 20, 2005, the television program "60 Minutes" aired a piece on New Orleans in which a geology professor from St. Louis predicted the unthinkable: that at current rates of subsidence and land loss, the city had about 80 years to live.[2] It would at that point be about 15 feet below sea level, and protected by gigantic levees 50 feet tall, and more. Hurricane force rains could even alter the course of the Mississippi River.[3] It was time to think about a gradual retreat.

Unhappy timing. The city and state were having difficulty (much of it of their own making) persuading Congress to spend heroic sums of money to save them, and the message could not have been more unkind. The governor's office quickly denounced the program for not airing a brighter side.[4] The *Times-Picayune* conducted overnight interviews with Louisiana coastal scientists who, variously, attacked the geology professor's credentials and his conclusions.[5] He wasn't from here. Nor had he done any serious research here. The rates of coastal subsidence were lessening. He had overlooked "lots of things" between New Orleans and the Gulf which "were not going to go away." He hadn't factored in the successes and potential for coastal restoration.

Fair enough (although the lots of things that protect New Orleans from the Gulf and that are not going to go away remain a little opaque). But one of the scientists interviewed, Joe Suhayda, went on to make a

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1. MARK TWAIN, LIFE ON THE MISSISSIPPI 208 (1996).
2. *60 Minutes: New Orleans Is Sinking* (CBS television broadcast Nov. 20, 2005).
3. *Id.*
4. *N.O. Doomed To Sink, Expert Tells TV Show: Story Is Broadcast over La. Objections*, TIMES-PICAYUNE (New Orleans), Nov. 21, 2005, at A2. (quoting Andy Koppling, executive director of the Louisiana Recovery Authority).
5. Mark Schleifstein, *Not So Fast "60 Minutes,"* TIMES-PICAYUNE (New Orleans), Nov. 22, 2005, at A-1.

recommendation that he had made on public television NOVA less than a year before: the city itself should harbor a super-levee inside, to protect its most vital parts—the inner keep of the castle.[6] The recommendation was not exactly a vote of confidence (who, among other things, would get to come inside the keep?). Suhayda was hedging his bets. So were others whom "60 Minutes" had apparently interviewed to vet the piece.

Sensing, accurately, that the urgency of the moment was federal funding rather than nuanced analysis, the *Times-Picayune* followed its reporting with a lead editorial entitled "Fantasy Island," taking "60 Minutes" head on.[7] Its "logic was absent," the editorial concluded, more in line with pop television than "sound science."[8] As a matter of politics, the paper was correct: if this thesis got traction it could doom the expenditures necessary to save New Orleans and the Louisiana coast.

On the other hand, for the City That Care Forgot to call anything "fantasy" is a bit bold, and everything about the run-up to the Katrina disaster had fantasy written all over it: on slab development, on fill development, subdivisions in wetlands (protected by wooden fences), condos on beaches (protected by nothing), canals as senseless as the Mississippi River Gulf Outlet (MRGO), oil and gas channels by the thousands, coastal mitigation programs that failed to work (failed even to materialize), disappearing levee money, tinker-toy levee plans, what-the-hell levee construction, drive-by-and-when's-lunch levee inspections—and we haven't even gotten to FEMA yet. Detailed reporting in local papers, science colloquiums, National Geographic, NOVA, and government planning sessions predicting this very storm in this very way with these very results were tossed away like so many Mardi Gras beads. So there is plenty of fantasy to go around.

Here is what we also know. New Orleans is an island. I have a map in my office captioned "New Orleans and Vicinity" prepared from Landsat satellite data taken in 1992 (we can wind the clock back on land loss by 13 years) from an altitude of 400 miles.[9] It shows the city in white, compact, not that big, bleached out by roads and buildings. On two sides are the river and the lake. To the north and south are ribbons of dry land along the Mississippi. Everything else is green and blue,

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6. *NOW with Bill Moyers: The City in a Bowl* (PBS television broadcast Sept. 20, 2002), *transcript available at* http://www.pbs.org/now/transcript/transcript_neworleans.html.

7. "60 Minutes Head On"—Editorial, *Fantasy Island*, TIMES-PICAYUNE (New Orleans), Nov. 25, 2005, at B-6.

8. *Id.*

9. New Orleans and Vicinity, Oct. 1992, produced by ERIM International, now Altarum Institute, http://www.altarum.org.

wetland and open water. It is a beautiful photo. It is not exactly an advertisement, however, for investment in real estate.

We know a couple of things more, going in. For openers, we are short on land building materials. We live on a sinking delta, and the silts and plant mass that created it and offset its natural rate of subsidence are down to a fraction of their volumes a century ago.[10] We have a lot less to work with than Mother Nature did. Even within the city, we are sinking. Post-Katrina surveys are finding many buildings about half a foot lower than they were thought to be, and down by two feet in the East.[11] Which is not good.

We also know that we are terribly late to the restoration game, about 1,900 square miles late,[12] what is left is largely sick, and what we've managed to recoup over the past few years couldn't stand up to the latest storms. The newly restored marshes of the $80 million Canaervon diversion project ended up on rooftops in St Bernard.[13]

We know, worse news, that hurricanes are coming more frequently now and with greater anger, that our levees are subpar, and—although it still seems to escape the grasp of the President and the Louisiana congressional delegation in Washington, D.C.—that the seas are rising and that global warming will raise them by more than a foot within the lifetimes of our children.

Lastly we know that, in their short history, some of America's great cities have taken tremendous hits—the Chicago fire, the San Francisco earthquake—and recovered. But others, particularly ones on the wrong lip of floods, cities as celebrated and full of promise in their day as Galveston and New Madrid, did not make it back. Then again, there is the case of the Netherlands. Then again, there is the case of Humpty Dumpty. The challenge of South Louisiana is to move away from one model towards the other. But not, as we will see, all the way.

I have invested my life in New Orleans. I started working down here in 1971, raised two boys here, came back after Katrina as soon as the lights came on and could not bear the thought of leaving. I hope "60 Minutes" was wrong, and I have spent a lot of time with others trying to

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10. NAT'L RES. COUNCIL, DRAWING LOUISIANA'S NEW MAP: ADDRESSING LAND LOSS IN COASTAL LOUISIANA 27 (2006) [hereinafter NRC REPORT], *available at* http://www.nap.edu/books/0309100542/html/27.html.

11. Coleman Warner, *Sinking Homes Stymie Flood Survey Experts*, TIMES-PICAYUNE (New Orleans), Dec. 5, 2005, at B1.

12. Mathew Brown, *Coastal Losses Greater Than Thought*, TIMES-PICAYUNE (New Orleans), Feb. 15, 2006, at A2.

13. Cornelia Dean, *Louisiana's Marshes Fight for Their Lives*, N.Y. TIMES, Nov. 15, 2005, at D4.

stave off exactly what it predicted will happen. But I am not ready to kill the messenger. The professor may have gotten his data points wrong, jumped to conclusions and been seduced by a few minutes of fame, but his question hangs in the air like the smell of mold and bad refrigerators. We're going to have to deal with it on the merits.

II. REALITY ISLAND

A. Prologue: The Pelican Bill

> *It is Tuesday afternoon and we don't know a thing. The storm has blown through, some trees are down, poles, wires, pieces of roof. The only station we can get on the radio is a call-in and they begin Oh Jerry I've Always Loved Your Show and then they say something about water coming up to the front steps. I go stand outside. A couple comes down the street with plastic bags in both hands, full of clothes, picking their way over the branches. I say, just making conversation, where's the water? He says, its about four blocks up. Then she says, and there's a body in it, shot through the head. Then he says, and they ain't coming to pick him up. Then I say to Lisa, ok, you win, I think we'd better go.*

Here is a very Louisiana story. It's just that most of it took place in Washington, D.C. In September 2005, the body count from hurricanes Katrina and Rita not yet in, the cream of Louisiana's lobbyists began confecting an astonishing piece of legislation.[14] They were all inter-connected, and they were coordinated by the staffs of Louisiana's two sitting senators (somewhat independently; the two senators don't get along very well). What they all knew was that Louisiana was a hot issue, it had overwhelming national sympathy, and they would get one good shot on Capitol Hill.

They formed working groups composed entirely of lobbyists: former Louisiana senators and representatives, former legislative aides, and the wives of former aides, some put on industry payrolls only days before. They included lobbyists for timber companies, Entergy, Cleco, leading corporate law firms in New Orleans, and business coalitions behind a half-dozen highway projects across the state. Above all, they included lobbyists for an aggressive set of water projects, several of which had been red-lined by the Bush Administration as economic losers, including the $748 million Industrial Canal Lock.[15] In their ranks

14. Alan C. Miller & Ken Silverstein, *A Long Road to Recovery*, L.A. TIMES, Oct. 10, 2005, at A1.

15. *Id.*

were some of the most generous donors to both of Louisiana's current senators (Vitter slightly ahead). They saw their chance and they took it.

What emerged was something called the Louisiana Katrina Reconstruction Act, aka the Pelican Bill.[16] The pelicans should sue. There was not much in there for pelicans. But there were billions of dollars in there for timber companies, energy companies, highways to everywhere, and a cornucopia of canals from Calcasieu to Port Fourchon, including the Industrial Canal Lock.[17] Also tucked in there were $25 million for a sugarcane research lab, $35 million for the Louisiana Seafood Marketing Board, and $25 million for dairy cattle.[18] The totals were impressive, a quarter of a *trillion* (this is not a typo) dollars in one swoop.[19] The U.S. Army Corps of Engineers' $40 billion for flood control was ten times the Corps' annual budget for the entire country.[20] It was a Christmas list, much of which had absolutely nothing to do with flood control or attending to the victims of the storms.

It got better. The bill also created a new entity to advance the fortunes of these projects unlike anything on the American scene. A nine-member board, six of whom would be Louisianans (imagine their selection; the levee boards come to mind), would decide what to approve and fund.[21] Cost-benefit requirements were waived. Public information and sunshine laws were waived. Environmental impact assessment and clean water laws were waived, by name. School was out; this was as good as it gets.

Scrambling for a little credibility, the lobbies recruited LSU professor Ivor van Heerdin, formerly head of the Governor's Office of Coastal Affairs, and the author John Barry, whose history, *Rising Tide*, took the Corps to the woodshed for its blinders-on management of the Mississippi River. According to Van Heerdin, he was shut out of the process early on, after objecting to the warmed-up-old-beans nature of

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16. Louisiana Katrina Reconstruction Act, S.1766, 109th Cong. (2005) (sponsored by Sen. Vitter, cosponsored by Sen. Landrieu); S.1765, 109th Cong. (2005) (sponsored by Sen. Landrieu, cosponsored by Sen. Vitter); *see also Hurricanes Katrina and Rita's Effects on Energy: Before the S. Comm. on Energy & Natural Resources*, 109th Cong. (2005) (statement of Curt Hébert, Executive VP Entergy Corp.) (referring to the proposed legislation as the "Pelican Bill").

17. *See* sources cited *supra* note 16; *see also* Miller & Silverstein, *supra* note 14.

18. *See* sources cited *supra* note 16; *see also* Miller & Silverstein, *supra* note 14.

19. *See* sources cited *supra* note 16; *see also* Miller & Silverstein, *supra* note 14.

20. *Id.*; Jim VandeHei & Peter Baker, *Critics Say Bush Undercut New Orleans Flood Control*, WASH. POST, Sept. 2, 2005, at A16.

21. S. 1766 (109th Cong.) (2005) (giving the nine-member board the title "Pelican Commission").

the projects.[22] Barry's insistence that the planning include the National Academy of Sciences was dropped as well.[23] No need to muck up this party with outsiders.

Within days, the wheels came off. "Louisiana's Looters" read the lead editorial of the *Washington Post*, which went on to liken our congressional delegation to thieves who "seize six televisions when their homes have room for only two."[24] Other media chimed in. Former House Speaker Newt Gingrich authored an opinion piece in the *Washington Times* entitled "Pork, Pelicans and Louisiana," and subtitled "Landrieu's Bill is a Category 5" (somehow the Republican participation in drafting it dropped out).[25] The Governor of Mississippi subsequently complained that, but for the evident overreaching of this bill, his state needs would have received a more welcome reception in Washington.[26] Everyone saw it as another Louisiana hayride. Bushels of goodwill went down the drain.

The Pelican Bill is history. Within days Senator Vitter was saying that he never intended it to pass as written, and Senator Landrieu was insisting that she never intended to waive public and environmental laws.[27] It is hard to blame them; they were relatively new hands as seniority goes in the upper chamber, and they were surrounded by an old guard of mentors with a tried and true game plan. To the current delegation this collection of their predecessors, former Corps officials and industry lobbyists was real expertise, and free. For their part, the lobbyists had doubtless convinced themselves that their clients' projects were just what was needed to save Louisiana. One of them subsequently told the *L.A. Times* that they were "not intending to stuff pork in a barrel"; instead, they were "looking for creative outside-the-box ideas."[28] Kind of a funny way to go looking for them, though.

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22. Telephone Interview with Dr. Ivor van Heerden, Dir. of the Ctr. for the Study of Pub. Health Impact of Hurricanes (CSPHIH) and Deputy Dir. of the La. State Univ. Hurricane Ctr. (Jan. 6, 2006).

23. Telephone Interview with John Barry (Dec. 27, 2005).

24. Editorial, *Louisiana's Looters*, WASH. POST, Sept. 27, 2005, at A22.

25. Newt Gingrich & Veronique de Rugy, Op-Ed, *Pork, Pelicans and Louisiana*, WASH. TIMES, Oct. 18, 2005, at A19.

26. Geoff Pender & Don Hammack, *Bridges on Hold Until Feds Offer More Help*, SUN HERALD (Biloxi, Miss.) Nov. 24, 2005, at A1.

27. John Maginnis, Editorial, *Two States, Two Ways to Get Paid*, TIMES-PICAYUNE (New Orleans), Oct. 5, 2005, at B7; David Pace, *$40B La. Protection Plan Sparks Debate*, USA TODAY, Oct. 2, 2005, *available at* http://www.usatoday.com/news/nation/2005-10-02-louisiana-protection_x.htm.

28. Miller & Silverstein, *supra* note 14.

Perhaps the most troubling aspect of the whole episode is that it was *not* unusual, just a little exaggerated. It is the name of the game, and in particular the water resources development game, and that is a problem. The game is not about flood control.

B. Flood Control: The Bridesmaid

> *At about 5 on Tuesday morning we get a call from our younger boy. The phone still works. He is out in California glued to the television. We know absolutely nothing. He says, get out, the levee has broken. I say, Gabe, calm down. I say, when the Corps builds levees they don't fall down.*

You would think that flood control and the protection of the City of New Orleans would be job one for the U.S. Army Corps of Engineers. And you would be wrong. It isn't, and it never was.

The Corps grew out of the need to float flatboats and steamboats down the shoaling, snag-filled stretches of the lower Mississippi River and its bayous back in the early 1800s.[29] Mark Twain's descriptions in *Life on the Mississippi* make pretty harrowing reading. The Army's field engineers were the only government entity around with the ability to blow things up and move dirt around, and so this became their job, to maintain navigation on the navigable waters of the United States.[30] Navigation was interstate commerce, *the* means of interstate commerce, and it made money for people. Flood control, by contrast, was seen as a form of land use, a local affair, cemented in place when the federal government ceded lands to local levee boards in the 1850s, in part to persuade them to stay loyal to the Union.[31] That part didn't work so well, but it set a mold for local levee boards that we have yet to change. It also further cemented the mindset that navigation comes first.

Case in point: In 1999 Congress appropriated money for a $12 million study to determine how much it would cost to protect New

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29. J.P. KEMPER, REBELLIOUS RIVER 59-60 (1972); *see also* MARTY REUSS, DESIGNING THE BAYOUS: THE CONTROL OF THE WATER IN THE ATCHAFALAYA BASIN, 1800-1995, at 14-47 (1998).

30. *See generally* REUSS, *supra* note 29, at 10-11; JOHN M. BARRY, RISING TIDE: THE GREAT MISSISSIPPI FLOOD OF 1927 AND HOW IT CHANGED AMERICA 35-37 (1997).

31. Shea Penland, *Taming the River To Let in the Sea: Southern Louisiana Is Sinking into the Gulf of Mexico. The Surprising Culprit Is Overambitious Flood Control*, NAT. HIST., Feb. 2005, *available at* http://www.naturalhistorymag.com/. The Swamp Land Act, 43 U.S.C. § 982 (2000), took effect in 1850 and gave states federal land to sell to finance levee construction and development; it was pushed my members of Louisiana's congressional delegation. *See* MISSISSIPPI RIVER COMM'N, U.S. ARMY CORPS OF ENGINEERS, MISSISSIPPI RIVER ENGINEERING CHRONOLOGY, http://www.mvd.usace.army.mil/mrc/index.php?pid=timeline (last visited Jan. 28, 2006).

Orleans from a Category 5 hurricane. When Katrina came in 2005, the study had not yet been launched.[32] Old habits die hard.

Old habits did, however, facilitate a colossal amount of navigation. The coastal zone was turned into a navigation complex that only begins with major port facilities on the Mississippi at New Orleans and Baton Rouge.[33] No fewer than 18 other deepwater ports and port commissions are sprinkled up and down the River and across to New Iberia, Houma, Abbeville, Morgan City, Mermentau and Lake Charles. The names of the yet smaller ports make Cajun music—Petit Anse, Tigre, Lacarpe, Dulac, Grand Caillou, Segnette—and yet additional facilities serve the Atchafalaya, Pearl and Vermilion Rivers, Pass Manchac, and the Franklin Canal.

Take home: it's *all* ports and canals out there, each one rivaling the other for traffic and money to expand. The Mississippi River delta below the City of New Orleans alone is cut by more than a dozen commercial waterways averaging at least 8 feet deep (some up to 20 feet), about 100 feet wide (some up to 300 feet), and totaling more than 300 miles. Nobody ever really thought about what, in the aggregate, they were doing to the future of the delta, and the future of New Orleans. In terms of floating boats, however, what we had done to the Louisiana coastal zone was an unblemished success.

Meanwhile, rising flood losses along the lower Mississippi River in the late 1800s prompted repeated calls for federal intervention. In 1879, Congress relented,[34] creating the Mississippi River Commission to "prevent destructive floods," through the Army Corp of Engineers. From the outset, and with dogged determination, the Commission's approach to the River was to put it in a box, the "hold by levees" system.[35] Building ever bigger and longer levees, the Commission stiff-armed an alternative, "outlets," approach that would let floodwaters escape through natural distributaries and floodways.[36] When the legendary civil engineer, James B. Eads, won his famous bet with the Corps and proved that levees at the mouth of the River would help maintain its channel and reduce the need for dredging,[37] the levees-only strategy seemed confirmed.[38] The Corps would keep the River in its box. A memory worth holding onto.

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32. Andrew Martin & Andrew Zajac, *Corps: Lack of Funds Did Not Contribute to Flooding*, CHI. TRIB., Sept. 2, 2005, at C7.

33. Oliver Houck, *Land Loss in Coastal Louisiana: Causes, Consequences, and Remedies*, 58 TUL. L. REV. 3, 45 (1983).

34. JOHN MCPHEE, THE CONTROL OF NATURE 37 (1989).

35. *Id.*

36. *Id.* at 41.

37. BARRY, *supra* note 30, at 67-89.

The floods, however, continued. So in 1917, Congress detailed the Corps to build the ultimate levee system along the lower Mississippi, protecting the river parishes and the Crescent City.[39] Ten years later, the Corps reported back with confidence: mission accomplished. That following spring 1927, the River jumped its box and wreaked the greatest disaster on Louisiana until Katrina, hundreds of lives lost, entire parishes of land and property.[40] In response, and once again, the battle raged between bigger levees and the use of natural floodways, only this time the outlets won their due and have proven their effectiveness since, many times.[41] We use the Bonnet Carre Spillway about every four or five years to take the immediate pressure off of New Orleans at high-water time. We have used the larger Atchafalaya floodway once, back in 1973, when river stages were even more threatening, and it did what it was supposed to do. Ceding nature its space worked.

But the 1973 flood surfaced another unhappy fact. We had given nature its space, but we were now taking it away. The Atchafalaya floodway remained privately owned and people were beginning to settle in with towns, schools, churches, the whole nine yards.[42] As the Mississippi waters raged down on Louisiana in the spring of '73, dangerously high and still rising, the Corps faced the unenviable choice of whether to open up the full floodway and drown these towns—shades of Plaquemines and St. Barnard—or to open only a part of the floodway below them and hope for the best.[43] The Corps opened part, hoped, and lucked out. At which point, blinders-on, the Corps marched forward with a channel project that would dry up the floodway and invite wall-to-wall development along the entire length of the Lower Atchafalaya from guide levee to guide levee, fifteen miles wide and sixty miles long.[44] I remember a New Orleans District official telling me at the time, stars in his eyes, "Oliver, this is going to be another Ruhr Valley!"[45] I said I couldn't wait for him to pull the plug on all that new investment the next time the Mississippi rose.

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38. MCPHEE, *supra* note 34, at 38.
39. *See* Houck, *supra* note 33, at 19 and sources cited therein.
40. BARRY, *supra* note 30, at 238-58.
41. *Id.* at 423-26.
42. REUSS, *supra* note 29, at 285-86.
43. BARRY, *supra* note 30, at 424; MCPHEE, *supra* note 34, at 26-30.
44. REUSS, *supra* note 29, at 251.
45. Conversation with Warren B. "Buzzy" Dodd, Executive Assistant to the District Engineer, U.S. Army Corps of Engineers (Fall 1971). The Executive Assistant to the New Orleans District serves, inter alia, as the political advisor to the District Engineer, whose tour of duty does not exceed three years.

The idea of drying up the Atchafalaya basin kicked up a hornet's nest of opposition from fishing clubs and hunting groups, but those kinds of hornets rarely deflect the Army Corps of Engineers. What changed the Atchafalaya project, and it changed massively, was the realization by a series of New Orleans district engineers, over the protests of their the-way-we've-always-done-it civilian staff, that the increasing habitation of the flood zone ran exactly contrary to the idea of using it for a floodway, on which they were spending over a billion dollars.[46] The answer, they came to realize, was not to dig deeper ditches and build higher levees. It was, rather, and far more simply, to let the natural flooding happen and that flooding, along with easements, would keep human development at bay. Not all development: landowners still harvest timber, lease oil and rent camps in the Atchafalaya, quite profitably, to this day.[47] It is a very successful multiple use flood zone. Minus roads and towns. That's also a thought worth holding onto.

Meanwhile, along the lower Mississippi River, the Corps of Engineers had little problem coupling flood control with its main navigation game. The same levees that kept the river flowing fast and deep protected the surrounding landscape. It would be decades before we realized what those same levees and navigation canals were doing to that same landscape, and at this point the rates of land loss were soaring and the responses were puny. Meanwhile, the Corps of Engineers water resources development program had morphed into a multiple use mish-mash, driven by one of the most unique and unalterable political systems in America. Flood control was about to get more competition.

C. Working To Please Hill Commanders: The Congress Takes Over

> *We have picked our way down Freret Street and over the bridge and up Route 1 towards Baton Rouge. Curious, some people on the bridge are walking, carrying clothing and sheparding children, back into the city. Why would they be doing that? They were turned back by the Gretna police, but we don't know a thing. We find a radio station and it is saying that people with boats are being asked to come to the I-10/I-12 split first thing in the morning. We pass some trucks hauling boats coming the other way. Up in Mississippi we begin to hear about the drownings. I think, Jesus Christ, I have a fourteen foot flat boat in the back yard with a 15 hp motor. It stayed there, every day. People died in their attics and my boat stayed in the back yard.*

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46. REUSS, *supra* note 29, at 343.
47. *Id.* at 324-25.

The Flood Control Act of 1936 opened a huge candy store, something like the discovery of gold at Sutters Mill, only this time the miners were in Washington and wearing suits. Ostensibly authorizing the Corps to pursue projects for "flood control and related purposes,"[48] the other purposes quickly took over and by the 1960s the country was being dammed, drained, pumped, and leveed by hundreds of Corps projects feeding real estate development, energy production, soybean crops and right on down to recreational lakes with wave machines and the McCurtain County Catfish Farm.[49] The Act's one caveat, that the benefits of these projects "to whomsoever they may accrue,"[50] was turned into a weapon of mass destruction, with the Corps discovering benefits so chimeric that they became legend in the fields of government and political science, the object of ridicule in the press that the government should participate in these projects "if the benefits to whomever they may accrue are in excess of the estimated costs,"[51] and recurrent calls for

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48. 33 U.S.C. § 701a (2000).

Declaration of policy of 1936 Act

> It is recognized that destructive floods upon the rivers of the United States, upsetting orderly processes and causing loss of life and property, including the erosion of lands, and impairing and obstructing navigation, highways, railroads, and other channels of commerce between the States, constitute a menace to national welfare; that it is the sense of Congress that flood control on navigable waters or their tributaries is a proper activity of the Federal Government in cooperation with States, their political subdivisions, and localities thereof; that investigations and improvements of rivers and other waterways, including watersheds thereof, for flood-control purposes are in the interest of the general welfare; that the Federal Government should improve or participate in the improvement of navigable waters or their tributaries, including watersheds thereof, for flood-control purposes if the benefits to whomsoever they may accrue are in excess of the estimated costs, and if the lives and social security of people are otherwise adversely affected.

For related history, see JOSEPH L. ARNOLD, OFFICE OF HISTORY, U.S. ARMY CORPS OF ENGINEERS, THE EVOLUTION OF THE 1936 FLOOD CONTROL ACT (1988).

49. For descriptions of the Corps' water resources program, see generally MARC REISNER, CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER (1986); ARTHUR E. MORGAN, DAMS AND OTHER DISASTERS: A CENTURY OF THE ARMY CORPS OF ENGINEERS IN CIVIL WORKS (1971); Michael Grunwald, *Working To Please Hill Commanders*, WASH. POST, Sept. 11, 2000, at A1 (part 2 of a 5-part series, including Michael Grunwald, *An Agency of Unchecked Clout*, WASH. POST, Sept. 10, 2000, at A1; Michael Grunwald, *A Race to the Bottom*, WASH. POST, Sept. 12, 2000, at A1; Michael Grunwald, *Reluctant Regulator on Alaska's North Slope*, WASH. POST, Sept. 13, 2000, at A1; Michael Grunwald, *In Everglades, a Chance for Redemption*, WASH. POST, Sept. 14, 2000, at A1).

50. 33 U.S.C. § 701a.

51. *See* Editorial, *West Pearl Dredging Necessary?*, TIMES-PICAYUNE (New Orleans), Mar. 21, 1993, at B6; GEORGE FISHER, U.S. CORPS OF ENGINEERS COLORING BOOK (circa. 1973) (on file with author); SERGEANT SILT, U.S. CORPS OF ENGINEERS, 'ORDEAL AT OKEECHOBEE!' (A.C.E. Comics, undated) (on file with author).

Corps Reform.[52] Not to worry; the Corps had the ally that mattered, the Congress of the United States.

Early on in the spree, the state of Oklahoma brought a lawsuit challenging a Corps project that would supply electric power to Texas by flooding some 30,000 acres of good Oklahoma farmland.[53] Whatever Denison Dam was, Oklahoma argued, it wasn't about flood control; it was more like theft, covered with a thin veneer of flim-flam. Indeed, the Corps' own calculations showed the project reducing the flood level at New Orleans by about 1 inch.[54] That was enough for the Supreme Court, however, which went on to say that the calculation of the costs and benefits of these projects was solely up to Congress.[55] There would be no judicial review.

The effect of the case was to remove the burglar bars and take the cops off the beat. It produced a new and strange beast in American politics, a federal agency housed within the United States Army that worked directly for the United States Congress. It is described in the literature as an "iron triangle," composed of your local congressmen, your local Corps, and your local shippers, real estate developers and other beneficiaries who contributed generously to these same congressmen, and received generously in return.[56] The courts were out of the picture. Even the White House was on the sidelines, as Presidents from Truman to Reagan found out, kibitzing, but not in control.[57]

And so it is that, twice a year in South Louisiana, the Corps hierarchy boards its barge and floats the lower reaches of the Mississippi, attracting suitors with project proposals from every port and stop along the way like some combination of Cleopatra and Santa Claus.[58] The flood control proposals come in pieces, like everything else. A levee

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52. Editorial, *Katrina's Message on the Corps*, N.Y. TIMES, Sept. 13, 2005, at A28.

53. Oklahoma v. Guy F. Atkinson Co., 313 U.S. 508, 512-15 (1941).

54. *Id.* at 526-27.

55. *Id.* at 527.

56. ZYGMUT J.B. PLATER, ENVIRONMENTAL LAW AND POLICY: NATURE, LAW, AND SOCIETY 400-01 (3d ed. 2004) (discussing similar iron triangle behind interstate highway program).

57.

> President Truman . . . was strong enough to fire General Douglas MacArthur but, so far, the Army Engineers have successfully defied him. . . . A small, powerful and exclusive clique of about two hundred Army officers controls some fifty thousand civilian employees. . . . No more lawless or irresponsible Federal group than the Corps of Army Engineers has ever attempted to operate in the United States, either outside of or within the law.

Oliver Houck, *New Roles for the Old Dam Builder?*, NAT'L WILDLIFE, Aug.-Sept. 1975, at 13 (quoting U.S. Interior Secretary Harold L. Ickes).

58. *See* MCPHEE, *supra* note 34, at 22.

from here to there. A drainage canal. If the drainage means building another levee downstream a few years ahead, all the better; we'll do that, too. The Corps proposes these projects to Congress, which then authorizes the Corps to build them, creating a cycle of happiness across the region. Happiest of all are those whose names grace some of the most expensive and uneconomical public works monuments in the American south: the Richard B. Russell Dam, the Tom Bevill Lock and Dam, and the J. Bennett Johnston Waterway. The rise of the water project bonanza has had several large consequences for flood control in south Louisiana. Basically, it eclipsed it.

The first consequence is that flood control has no head. Unlike every other federal activity in the country, this one is overseen and directed by the Corps, members of Congress, local levee districts and lobbyists among which are found some of Louisiana's most illustrious power brokers: Bob Livingston, Bennett Johnston, John Breaux, Jimmy Hayes, just to start the list. Congress determines budgets, and promotion from Colonel to General. For Colonels heading the New Orleans District, it has been a trial by fire that has made and ended careers. It also produces conformity. When project funding for hurricane protection along Lake Pontchartrain dwindled in the 1990s, nobody squawked out loud: a former director of the Corps Waterways Experiment Center in Vicksburg explained to the New York Times, "I don't think it was culturally in the system for the corps to say 'this is crazy.'"[59] Whatever the merits of this diffusion of authority, it does not produce coherent flood control.

All of which works, as long as there are no floods. Then, they become somebody else's fault. They didn't fund me. Well, you didn't ask. So it goes, and so it went after Katrina.

The second impact is that the program is not based on the completion of a few major projects but, rather, on spreading construction money and benefits around as many projects and about-to-be-made-happy constituencies as possible. This is true at the national level, where water resources bills are passed in "omnibus" fashion, meaning that they are approved in one big lump with something inside for everyone's district.[60] Those brave or fiscally minded souls who object to a particularly sad entry end up ostracized or worse; one year the leadership

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59. Christopher Drew & Andrew C. Revkin, *Storm and Crisis: The Defenses; Design Flaws Seen in New Orleans Flood Walls*, N.Y. TIMES, Sept. 21, 2005, at A1.

60. Grunwald, *supra* note 49.

announced the "Pinocchio award" for members who stuck their noses into other members' water resources projects.[61]

Case in point: Representative Bob Livingston opens his last session as Chair of the powerful House Appropriations Committee wielding a hatchet. We will cut the fat, he announces, waiving the instrument. We will cut down to the bone. Within a few weeks he was asking (read: telling) the Corps to dredge the Pearl River for the budding port of Bogalusa.[62]

Case in point: the New Orleans District recently, and with some courage, found two dredging projects for ports in New Iberia and Morgan City, unjustifiable. A quick bill by the Louisiana delegation directed the Corps to go out and find new benefits.[63]

So it is at the Louisiana level as well. Every cycle there is something in there for everyone, your new port, my new waterway, their pumps and drainage upstream. In this mix, New Orleans is just one more open beak among the chicks. It is not in the Corps' political interest and it is not in the Congress's political interest to satisfy one beak at the expense of others. The political objective is to spread the food around as widely as possible, and if that takes more time it also keeps more contractors working in more parts of the state. Inviolate Rule of Politics: More happy people is better than fewer happy people. Inevitable Effect of Rule: Short change for hurricane protection for the City of New Orleans.

Case in point: Louisiana has received nearly $2 billion for Corps water projects over the past 5 years.[64] It has for time immemorial received the lion's share of water resources funding, with California, Texas, Illinois and Florida distant seconds (around $1.2 billion each over the last 5 years), and no one else even close.[65] It's not a question of getting money down here.[66] It's where it goes.[67] In 2002, the Bush

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61. Ward Sinclair, *Meddling Members of Congress Warned Off Other's Pet Projects*, WASH. POST, June 16, 1979, at A9.

62. Bruce Alpert, *Pork: Citizens Squealing over La. Drainage Project*, TIMES-PICAYUNE (New Orleans), Mar. 7, 1996, at A3. For Livingston's support for the Pearl River dredging project in particular, see conversation with Robert Wiygul, Attorney, Biloxi, Miss., Dec. 27, 2005 (notes on file with author). Mr. Wiygul represented opponents to the Pearl River dredging project.

63. Michael Grunwald, *Money Flowed to Questionable Projects*, WASH. POST, Sept. 8, 2005, at A1.

64. Editorial, *supra* note 52.

65. *Id.*

66. DAVID CONRAD, NAT'L WILDLIFE FED., CIVIL WORKS CONSTRUCTION APPROPRIATIONS 2001-2005 (2005) (on file with author). Mr. Conrad is the Senior Water Resources Specialist at the National Wildlife Federation.

67. Editorial, *supra* note 52:

Administration rejected a Corps request for $27 million for additional hurricane protection along Lake Pontchartrain, of which the Congress only restored $5.7 million in its appropriations.[68] Meanwhile, Congress was boosting funding for the $780 million Industrial Canal Lock (the most expensive on record), a $194 million dredging project for the New Iberia, and tens of millions more on canals like the MRGO.[69]

A third consequence of the game is that flood control for developed urban areas comes in last. The sad fact is, it doesn't make money for anyone. But leveeing off wetlands for *new* development makes lots of money in real estate (set aside the fact that the homes and streets will subside and begin to flood from spring rains). Floating boats also produces identifiable payouts (albeit they are calculated by asking shippers if they would like to use the canal once it is built, which is a little like using Monopoly money; very few Corps waterways live up to their traffic predictions, and some are ludicrously underused). Even converting cypress swamps to soybeans has a market price. By contrast, lives saved by levees don't receive economic benefits in the decisions that justify Corps projects and determine their funding priorities.[70] Nor do they attract powerful lobbyists. The Industrial Canal lobby can afford to put ex-senators, congressmen and entire law firms on its payroll. The City of New Orleans, on the other hand is broke, and one doubts that St. Bernard and Plaquemine even field full-time representatives in Washington. Money talks.

A final and most perverse effect of the water resources game is that it produces projects that not only conflict with flood control for money and fame, but that cause floods as well. Big ones. The role of the MRGO in the Katrina and Rita flooding is by now undeniable.[71] What remains impressive, however, is the tenacity with which the Corps and

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> But there is another question worth asking: has the Army Corps made wise use of the money it has? Louisiana has received about $1.9 billion over the past four years for corps civil work projects, more than any other state. Although much of this has been spent to protect New Orleans, a lot has also been spent on unrelated water projects—a new and unnecessary lock in the New Orleans Industrial Canal, for instance, and dredging little-used waterways like the Red River—mainly to service the barge industry and other commercial interests.

68. CTR. FOR PROGRESSIVE REFORM, BROKEN LEVEES: WHY THEY FAILED 8 (2005) [hereinafter CPR REPORT], http://www.progressivereform.org/articles/CPR_Special_Levee_Report.pdf (citing Andrew Martin & Andrew Zajac, *Flood Control Funds Short of Requests*, CHI. TRIB., Sept. 1, 2005, at 7).

69. Grunwald, *supra* note 63.

70. *See* GOV'T ACCOUNTABILITY OFFICE (GAO-04-3), IMPROVED ANALYSIS OF COSTS AND BENEFITS NEEDED FOR SACRAMENTO FLOOD PROTECTION PROJECT 20 n.13 (2003)).

71. Editorial, *Call it MR-GONE*, TIMES-PICAYUNE (New Orleans), Nov. 27, 2005, at B14.

the Louisiana congressional delegation hung on to this project—indeed, continue to hang onto it[72]—against the pleas of the St. Bernard Police Jury, the Lake Pontchartrain Basin Foundation, and coastal scientists who have been complaining that it had destroyed 20,000 acres of the Parish, was killing much of the lakeshore, and was going to bring major hurricanes right into the city. These claims were never rebutted. They were simply ignored.

What we have here, then, is a game that is not focused on flood control, and never has been. It has been focused on making money first for people with boats and then for as many people as possible, even when that has meant increasing hurricane risks and putting other people right into harm's way. It has been in denial about its impacts, and remains largely in denial. And it has been accompanied by a similar series of body blows to the coastal zone from another source which is even more powerful and more difficult to turn around: the oil and gas industry.

D. Oil and Gas: Death by a Thousand Blows

> *We left the cat. Couldn't find it when we left. Didn't even think to leave food behind. Just fled. Lisa tells a friend named Charlie in Mississippi that she misses her cat. Then we move on to the north. One night we get a phone call. Ollie, he says, it's Charlie, we're going in to get your cat. You're going in to get arrested and there aren't any courts, I tell him. They'll send you to Guantanamo. I got a pass, he says, and an AK-47. True, about the gun anyway; I'd seen it, jumping up turf on his country lawn. Next night we get another call. Ollie, says Charlie, put Lisa on. She takes the phone. I hear a loud meow. Lisa starts crying.*

Here is the elephant in the room. It is sitting very quietly. We have an understanding. We don't make it mad. We'll get along just fine.

Oil was first discovered down in Plaquemines in 1902, but it took three decades to figure out how to drill in water.[73] By the 1940s we had the submersible drilling rigs and barge-mounted draglines were excavating access canals through the wetlands and laying pipelines when a hit was scored. As the big play moved offshore, it was supported by more canals for crew boats, mud barges and equipment.

By the 1970s, Louisiana had over 600 producing oil fields surrounded by a massive network of canals, which, with their associated

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72. Matthew Brown, *Corps Says It Won't Dredge the MR-GO*, TIMES-PICAYUNE (New Orleans), Nov. 22, 2005, at A1.

73. *See generally* Donald Davis, Louisiana Canals and Their Influence on Wetland Development 122 (1973) (unpublished Ph.D. dissertation, Louisiana State University) (on file with Hill Memorial Library, Louisiana State University).

spoil banks constituted "the dominant geomorphic features" of the landscape.[74] Drive by them on a coastal road and you see the butt end of one, and then more marsh. Fly over them and they look like a roadmap of northern New Jersey: it's *all* canals and open water, bordered by patches of marsh.

The impact of oil and gas extraction on the natural systems of the Louisiana coast is hard to exaggerate.[75] The initial space of the access canals is relatively minor. It's what happens next that matters. The canals erode, exacerbated by wave wash from passing boats. In 10 years the widths have doubled; then they double again. While intact, the spoil banks cut off the natural drainage for hundreds of yards around, impounding half of the marsh and drowning the other half. Up the canal comes saltwater from the Gulf. The grasses go belly up, the root masses die, the soils are released, the whole thing falls apart. Recent studies by the United States Geological Survey discover a related phenomenon.[76] The industry has excavated billions of gallons of brines, salts and minerals from under the wetlands, much of it close to the surface, following which—surprise!—they caved in. Marsh erosion or subsurface extraction: pick your weapon, they both kill.

The sum is daunting. Apart from the major navigation systems across the coastal zone, we have another 8000 miles of canals and pipelines and they are all eroding.[77] They are all speeding salt water into freshwater systems, which are already on life-support and imploding. It's hard to find your fishing spots these days out of Hopedale, Delacroix and Yclosky. After Katrina, it's even hard to find the towns. Every scientific study available places the cumulative impacts of oil and gas activities ahead of even the Mississippi levees as a leading cause of land loss in Louisiana, with responsibility above 50% overall,[78] and up to 90% in heavily exploited fields.[79]

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74. *See* R. Eugene Turner, Robert Costanza & W.W. Scaife, *Canals and Wetland Erosion Rates in Coastal Louisiana*, *in* PROCEEDINGS OF THE CONFERENCE ON COASTAL EROSION AND WETLAND MODIFICATION IN LOUISIANA: CAUSES, CONSEQUENCES, AND OPTIONS 73 (D. Boesch ed., 1982) (saying the oil rigs "stand out as dominant geomorphic features"); *see also* Davis, *supra* note 73 (saying that over 600 oil rigs were built in the 1970s surrounded by a massive network of canals).

75. For a detailed discussion of oil and gas extraction in the coastal zone, see Houck, *supra* note 33, at 55-62 and sources cited therein.

76. NRC REPORT, *supra* note 10, at 30 (citing Robert Morton & Noreen A. Purcell, *Wetland Subsidence, Fault Reactivation, and Hydrocarbon Production in the U.S. Gulf Coast Region*, USGS Fact Sheet FS-091-01 (Sept. 2001), *available at* http://pubs.usgs.gov/fs/fs091-01/FS091_screen.pdf).

77. *Id.*

78. *See, e.g.*, Shea Penland, Paul F. Connor Jr. & Andrew Beall, *Changes in Louisiana's Shoreline: 1855-2002*, *in* U.S. ARMY CORPS OF ENGINEERS, LOUISIANA COASTAL AREA,

And here is the mystery: nobody talks about it. It's like this big secret. Daddy's got a drinking problem. We walk quietly around him. After all, Daddy is very big. And he is also paying the bills.

It's a matter of attitude. Years ago I represented the Florida Wildlife Federation, which had problems with some oil drilling permits near the Everglades. Exxon rushed its A team up from Houston to persuade us that there would be no environmental problems. We're doing everything by the book, they assured us, board access roads, run-off controls, waste disposal. Seeing a little skepticism remaining, they took their best shot: "This is in Florida," they told us, "and they have strict regulations over there. They're not . . . Louisiana!"

Louisiana could have required that the canals be backfilled after their time was up, but industry resisted and so we never did.[80] Louisiana could have required them to spray dredged material over the marsh, rather than piling it on spoil banks, but industry resisted and so we didn't do that either.[81] Louisiana could have required that the industry access its sites by over-marsh vehicles, which have been available for decades.[82] No such requirement was even proposed. We could have had our oil and our marshes too. But frankly, my dear, we didn't give a damn.

LOUISIANA, ECOSYSTEM RESTORATION STUDY app. D.3 (2004), *available at* http://www.lca.gov/nearterm/app_d/Ch_3ChangesinShoreline.pdf.

79. Turner, Costanza & Scaife, *supra* note 74:

> In general, where canal density is high, land losses are high; where land losses are low, canal density are low. Further, the land loss rates at zero canal density for all six regions [of the Louisiana Coast] average 0.091 ± 0.139% annually (mean±std. dev.) or about 11% of overall land loss rates from 1955 to 1978 (0.8% annually) for the whole coast. The implication is that this annual rate of 0.09% represents the combined influence of all factors except canals. Canals, therefore, may be responsible for 89% of the total land loss.

80. *See* R. Eugene Turner, James M. Lee & Christopher Neill, *Backfilling Canals To Resolve Wetlands: Empirical Results in Coastal Louisiana*, 3 WETLAND ECOLOGY & MGMT. 63-78 (1994); *see also* Christopher Neill & R. Eugene Turner, *Backfilling Canals To Mitigate Wetland Dredging in Louisiana Coastal Marshes*, 11 ENVTL. MGMT. 823-36 (1987); Letter from J.B. Miller, President of Continental Land & Fur Co., Inc., to Joel L. Lindsey, CMS/DNR Administrator of La. Dep't of Natural Resources (Dec. 15, 1983) (on file with author). For industry resistance, see Letter from Continental Land & Fur Co. to Mr. Joel L. Lindsey, Coastal Mgmt. Section Adm'r. (Dec. 15, 1983) (re: "Backfilling Phase II Draft Report") (on file with author).

81. *See generally* R.E. Turner, E.M. Swenson & J.M. Lee, *Issues and Recommendations Regarding Wetland Changes, Dredging, and Restoration in Coastal Louisiana*, *in* BARATARIA—TERREBONNE NATIONAL ESTUARY PROGRAM SCIENTIFIC/TECHNICAL COMMITTEE DATA INVENTORY WORKSHOP PROCEEDINGS (Oct. 1991).

82. WALTER B. SIKORA, WILDLIFE RESOURCES, AIR CUSHION VEHICLES FOR THE TRANSPORT OF DRILLING RIGS, SUPPLIES, AND OIL FIELD EXPLORATION OPERATIONS IN THE COASTAL MARSHES OF LOUISIANA: FINAL REPORT (Dec. 1988).

Today, we tell Congress that we "sacrificed" ourselves for the national good.[83] Never has there been such a willing, complicit sacrifice. We made a bundle of money, wasted most of it, and blackballed anyone who questioned what it was doing to the Louisiana coast.

About 70 years ago, Louisiana made a deal with the oil and gas industry. The industry would get what it wanted; the state would get a piece of the take.[84] In Plaquemines Parish the industry took nearly everything, save what it paid back to Leander Perez.[85] The state's near slavish defense of the industry since that time is a matter of legend; Bennett Johnston was commonly referred to as the Senator from Oil, and his successor was one of three Democratic votes to open the arctic wildlife refuge to oil and gas and to remove the rights of states to decide on drilling off their coasts.[86] It's in the genes. As Louisiana moved forward on its coastal restoration plan, it would ask the federal government for massive amounts of money. Part of the rationale, no small part, was to protect the oil and gas industry's pipelines and infrastructure through the coastal zone. Nowhere, however, did the state ask the industry to pay a penny for the restoration that would save its base.[87]

Over 10,000 miles of canals are now eroding and the marshes are caving in and somebody big is walking away from the table.

E. The Development Game: Easy Money in the Hit Zone

> *We have moved on to Virginia, near Richmond, the only city in the country unquestionably farther south than New Orleans. We are in a town called Crozet, maybe 300 people with a sidewalk café with a single waiter. We*

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83. Kimberly Solet, *Lots of Coastal Projects, Little To Show for It*, HOUMA COURIER (Louisiana), Feb. 14, 2005 (on file with author).

84. JOHN MAGINNIS, THE LAST HAYRIDE 4-9 (1984).

85. Bill Walsh & Bruce Alpert, *La. Has Better Shot at Oil, Gas Royalties But Fiscal Hawks Still Are Skeptical of Plan*, TIMES-PICAYUNE (New Orleans), May 21, 2005, at A1.

86. Bruce Alpert & Bill Walsh, *On the Hill News from the Louisiana Delegation in the Nation's Capital*, TIMES-PICAYUNE (New Orleans), Apr. 23, 2000, at A6 (remarking that Chevron had named an oil tanker after former Senator Johnston); Bruce Alpert, *Senate OKs Drilling in Alaskan Refuge: Landrieu Trades Vote for GOP Pledges of Coastal Aid*, TIMES-PICAYUNE (New Orleans), Mar. 17, 2005, at A1; Bill Walsh, *Louisiana's Argument for Getting a Bigger Share of Oil Royalties is Simple: Give Coastal States the Same Deal Given to Western States in 1920*, TIMES-PICAYUNE (New Orleans), June 12, 2005, at A1.

87. Senator Landrieu has lobbied hard for Louisiana to receive a greater share of federal oil and gas royalties in proportion to those received by other states. *See* Bob Marshall, *Landrieu Was Forced To Make Tough Decision*, TIMES-PICAYUNE (New Orleans), Mar. 20, 2005, at A18. What neither the senator nor other politicians have dared to suggest, however, is that over and above these royalties which the industry already pays to the United States Treasury, that industry pay damages for destroying the Louisiana coastal zone.

> *say we're from the hurricane. He says, did you see the President on television that week? We say we didn't. Oh my yes, he says, New Orleans style, the President said that he was going to ask everyone to pray for those people in the city and I said right back to him Mr. President those people don't want you to pray for them, they want you to get them off their fucking roofs!*

It starts with another attitude. The next time you drive over the Mississippi River Bridge, take a turn down Route 45 towards Lafitte—which also got clobbered by Katrina and Rita—at the edge of Lake Salvador and Barataria Bay. Properties along 45 rise only a foot or so above water level and quickly slope back into bogs, sloughs and cypress swamps. About two miles above Bayou Lafitte a cluster of live oak trees struggles to survive, its root systems several feet above the ground, which continues to sink beneath them. During Hurricane Juan, a Category 1 that simply hung around for a while, this area was covered by water so deep that television camera crews were shooting down on the roofs of houses and parked cars. Now take a look at the street names of the subdivisions on both sides, "Oak Ridge," Highland Street," and (my personal favorite) "Mount Rushmore Drive." What are these signs telling us?

There is something special about Louisianans when it comes to flood control. We could call it courage. We could call it denial. Or we could call it anything in between and probably all of them and not be wrong. But Louisianans settled a state that flooded regularly from the north and from the south, from rivers and the Gulf, and some of its most gripping stories—Lanterns on the Levee,[88] Last Island[89]—are scenes of tragedy from high winds and waters that no book or film could fully capture. And yet we built, and built again. For a long while, we tended to build elevated homes, on ridges, and kept the boats handy for what we knew would come. Then we raised levees. When they didn't work we got the federal government to raise levees and built out back into the swamps and put in pumps. Before long we were building on slab. And still we flooded. We lead the nation in flood losses.[90] No reason not to. The federal government pays us for it.

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88. WILLIAM ALEXANDER PERCY, LANTERNS ON THE LEVEE: RECOLLECTIONS OF A PLANTER'S SON (1941).

89. JAMES M. SOTHERN, LAST ISLAND (2d ed. 1990).

90. While Texas leads the nation in total reported losses, Louisiana has the more unenviable lead in flood losses per capita and in repetitive losses for the same properties. RAWLE O. KING, CONGRESSIONAL RESEARCH SERVICE REPORT FOR CONGRESS, FEDERAL FLOOD INSURANCE: THE REPETITIVE LOSS PROBLEM 36-37 (June 30, 2005), *available at* http://www.fas.org/sgp/crs/misc/RL32972.pdf; Fed. Emergency Mgmt. Agency, Nat'l Flood Insurance Program,

One of the federal government's new loss leaders is the flood insurance program,[91] which is running post-Katrina deficit rivaling welfare.[92] The program seemed like such a good idea at the time. Its premises were as undeniably true then as they are now; from a report to Congress 40 years ago: The customary sequence of events generally continues to be (1) flooding, (2) flood losses, (3) disaster relief, (4) flood control projects attempting to modify the flood potential through provisions for storing, accelerating, blocking, or diverting flood waters, (5) renewed encroachment and development onto the floodplain and upstream watershed, (6) flooding, (7) flood losses, (8) disaster relief, (9) more projects, (10) more encroachment and development, ad infinitum.[93] Has anything changed?

To this extent, yes: Now we provide insurance at (way) below market costs so that everyone can rebuild more easily. The idea was—and it continues to stick like old wrapping tape—that communities would flood-proof themselves in order to get the insurance. Basically that meant building above base flood elevations, purportedly the 1-year frequency flood line, but in reality something of a bargain number whittled down by political compromise. Every foot up costs developers money. Now add the pressure of rebuilding post-Katrina. The City of New Orleans has announced that, with FEMA's blessing, it will ignore new readings of actual building elevations—down from a few inches to a few feet—in favor of maps dating back to 1929.[94]

If the federal standards for community programs have been weak, actual compliance with them has been weaker, finally provoking a lawsuit by FEMA against several Louisiana parishes for having welched on the promises they made in their ordinances, in order to get the cheap rates.[95] The courts finally agreed that Louisiana was ripping off the system—in fact we were leading the country in federal payouts—but ruled that the federal government had no recourse short of proving

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Loss Statistics from Jan. 1, 1978 through 9/30/2004, http://www.fema.gov/nfip/10400409.shtm (last visited Jan. 29, 2006).

91. 42 U.S.C. §§ 4001-4128 (2000). For a fuller description of this program in Louisiana, *see* Oliver Houck, *Rising Water: The National Flood Insurance Program and Louisiana*, 60 TUL. L. REV. 61 (1985). The description of the program that follows is taken from this article and sources cited therein.

92. KING, *supra* note 90, at 6.

93. Houck, *supra* note 91, at 64 n.9 (citing U.S. WATER RESOURCES COUNCIL, A UNIFIED NATIONAL PROGRAM FOR FLOOD PLAIN MANAGEMENT, at II-3 (Sept. 1979)).

94. Warner, *supra* note 11.

95. United States v. Parish of St. Bernard, 756 F.2d 1116 (5th Cir. 1985).

outright and intentional fraud.[96] Which, once again, took the cops off of the beat.

And so we had a cozy game of build-flood-and-get-paid going until coastal erosion weighed in, and the onset of an awesome and unanticipated season of hurricanes that, apparently, has only just begun. Louisiana towns that used to sit well inland were finding themselves on the front line with the Gulf of Mexico, which has been coming north at about 10 to 30 meters a year.[97] A 1990 report by the National Academy of Sciences recommended mapping the erosion zones and moving new construction away from them through the flood insurance program.[98] There were no takers. Five years later, FEMA recommended that the government at least chart the zones. No takers either.[99] Nor on its almost annual pleas to raise the flood insurance rates to something close to real life. Louisiana knows a good thing when it sees it. The northeast gets its railroad subsidies, the far west gets grazing and timber subsidies; this one is ours.[100]

Then the hurricanes came. They have, of course, always come, and when Betsy and Camille came ashore in the late 1960s the nation gasped. These were record storms, record damages, record loss of life, we must do something. What we did was go back on the same beaches and vulnerable strips of coastal wetlands and build the same stuff, only more expensive. There was a lull while it all came together—the casinos, the highrises, a building boom on Grand Isle, ditto Holly Beach, ditto a boomlette that was just starting down in the marshes of St Bernard, ditto all around Lake Pontchartrain—all subsidized by people who don't enjoy houses on the shore. No longer quaint low-end bungalows. Some very expensive housing for our wealthiest fellow citizens who get below cost flood insurance *and* income tax deductions for their second home mortgages.[101] Another hayride.

Let us remember their names: Opal, Danny, Juan, Georges, Frances, Isadore, Lili, Ivan, Katrina, Rita—and these are only in the Gulf, within the last 10 years.[102] Seven of history's most damaging

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96. *Id.* at 1128.

97. Joel K. Bourne, Jr., *Gone with the Water*, NAT'L GEOGRAPHIC MAG., Nov. 2004, at 88.

98. Bettina Boxall, *Gulf Coast Rebuilding Creates Its Own Storm*, L.A. TIMES, Oct. 23, 2005, at A32.

99. *Id.*

100. To be sure, our passion for flood insurance is shaved by other states with high-risk, high-end coastal development such as New Jersey, Florida, and the Carolinas.

101. Anne Applebaum, *Back to Trent Lott's House*, WASH. POST, Sept. 21, 2005, at A23.

102. David Roth, *Louisiana Hurricane History: Late 20th Century*, Nat'l Weather Serv. Forecast Office, http://www.srh.noaa.gov./lch/research/lalate20hur/php (last visited Jan. 5, 2006).

hurricanes have come ashore in the last 10 years.[103] Two years ago, we set a record for hurricane damages. Last year we doubled it.[104] The first year the federal flood insurance payouts topped a billion dollars was 2001.[105] Last year some 50,000 claims hit two billion.[106] This year some 200,000 claims will hit $22 billion easy, maybe up to $30.[107] We've broken the bank. But hey, it's somebody else's money. And it's only the beginning of the subsidies we're paying.

Case in point: A few years ago I did a study of federal benefits to the residents of Grand Isle, which has seen some of the most continuous, expensive, bizarre and fruitless attempts at storm protection of any spot in America.[108] They include: rock jetties (washed away), sand levees (washed away), cement and rock sea walls (washed away), large boulders dropped directly into the sea (washed away), and old automobile tires strung together on steel cables (the cables broke, the tires ended up on the beaches and then the parking lot of the municipal building where they drew massive amounts of mosquitoes and complaints). There was even a plan to run electricity through a chicken wire fence to precipitate out sea salts (the chicken wire rusted and fell apart).[109]

Disclaimer: I love Grand Isle, was friends with its legendary Mayor Andy Valence, have birded and wade-fished and hung out at the tarpon rodeo there and cracked beers in the late day light. But here are some numbers, *before* Katrina and Rita:[110]

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103. Nat'l Oceanic & Atmospheric Admin., *The Retirement of Hurricane Names*, http://www.aoml.noaa.gov/general/lib/retiram.html (last visited Jan. 5, 2006).

104. Mike Buckley, Acting Deputy Dir., FEMA Mitigation, Presentation at the Conference of Ass'n of State Wetland Managers, Ass'n of State Floodplain Managers, and Coastal States Org., *Opportunities For Rebuilding After Katrina: Protecting People from Future Hurt and Loss; Restoring Wetlands and Broader Ecosystems* (Sept. 30, 2005).

105. *Id.*

106. *Id.*

107. *Id.*; *see also* Raymond J. Burby, *Hurricane Katrina and the Paradoxes of Government Disaster Policy, Bringing About Wise Governmental Decisions for Hazardous Areas*, *in* ANNALS OF THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE (forthcoming Mar. 2006) ("Economic losses from Hurricane Katrina, estimated to be over $200 billion, are the largest for any disaster in U.S. history. Katrina captured national and world attention, but it is just the most recent in a series of increasingly severe catastrophic events (Cutter and Emrich, 2005). The 460 presidential disaster declarations of the 1900s were double the number of the previous decade. That trend has continued during the present decade, with 299 disaster declarations through September 2005 (Federal Emergency Management Agency, 2005a, 2005b, 2005c). Of the 62 weather-related disasters that have resulted in $1 billion or more in damages over the twenty-five years between 1980 and 2004, a quarter have occurred since 2000 (U.S. Department of Commerce, 2005).").

108. Oliver A. Houck, *More Unfinished Stories: Lucas, Atlanta Coalition and Palila/Sweet Home*, 75 U. COLO. L. REV. 331, 361-62 n.200 (2004).

109. Solet, *supra* note 83.

110. Houck, *supra* note 108, at 361-62 n.200.

Major storms in last century:	18
Major storms in last ten years	10
Total federal investment	$800 million
Investment per residence:	$439 thousand
Investment per permanent residence	$1.2 million

So, naturally, back into the hurricanes we go.[111] Who wouldn't? About half the buildings on Grand Isle were swept away by Katrina and Rita. But "[w]e're not about to leave," said one resident, sweeping up the cement pad below his dwelling, nothing left above but the pilings. "If we have another hurricane that does the same thing, we're not leaving."[112] Mississippi is poised to rebuild a $200 million six-lane bridge between Biloxi and Ocean Springs, fueling new beachfront development. The casinos are rebuilding in Biloxi, too, about 500 feet in from the beach this time.[113] Not much refuge; Hurricane Katrina wiped out virtually every standing structure inland for half a mile. Gulfport's mayor enthusiastically told the *L.A. Times* that he had just gotten off the phone with a condominium investor who was "just very, very excited, very anxious to get going right there on that beachfront—actually in one of the lower elevations."[114] The executive director of the Biloxi chamber of commerce assured the same newspaper that they would be rebuilding businesses right on the beaches, but "they'll just be built smarter."[115]

It is interesting to contemplate exactly what building "smarter" means against a wall of water three stories tall. The federal flood insurance program version of smart is elevations, the bigger the threat the higher you build. But stilts don't work so well either. One of the more vigorous, if parochial, projects of the Louisiana coastal restoration program has been to construct rock jetties in Cameron Parish. Katrina didn't affect the town of Cameron with its houses perched safely on piers, but Rita did. From the photos, there is nothing left.[116] Not even the roofs and the sidewalls remain. Only a few pilings sticking up in the air. It looks like Ozymandius. And the eyewall of Rita went by 100 miles offshore.

Oh, there is one more fact. Within this century, EPA has predicted relative sea level rise at over 40 inches along the Louisiana coast. It

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111. Bruce Hamilton, *Hope Amid Heartache*, TIMES-PICAYUNE (New Orleans), Nov. 22, 2005, Metro Section at 1.

112. *Id.*

113. *See, e.g.*, Boxall, *supra* note 98.

114. *Id.*

115. *Id.*

116. Manuel Roig-Franzia, *Where Bayou Towns Stood, Only Bayou Remains*, WASH. POST, Sept. 28, 2005, at A1.

predicts the rise at Grand Isle at 55 inches.[117] Part of it is subsidence. Part of it is climate change and rising seas.

F. Global Warming: The Other Elephant

> *The cat lost all of its hair. Probably hadn't eaten in two weeks. Charlie and his friends nursed it back to health on warm milk. It ended up sleeping on the family bed, up by the pillows. Got its hair back. Got fat. Walked out into the street one day and got run over by a car.*

There is yet another elephant in the room, and the problem with this one is that it is still growing. It is hard to say which is more impressive about the phenomenon of global warming, its particularly harsh consequences for Louisiana or the degree to which it is stonewalled by the Administration and Louisiana's congressional delegation. Granted, we are an oil and gas state and never did cotton much to new-fangled ideas, but the mindset has gotten absurd. The state with the most to lose in the western hemisphere is out there pumping business as usual and calling climate change fantasy. As the rest of the world knows, though, it is coming and we are indeed bringing it on.

Global temperatures rise and fall over geologic time. As they rise and fall, they produce sea changes in life history, species go extinct, civilizations advance and disappear. There is a normal range of variation. But the current climate is warming at a rate without precedent for the last several hundred thousand years.[118]

It doesn't take much. Over the past century, global temperatures rose by only one degree, which doesn't sound too bad.[119] But that's quick work, geologic time. The last Ice Age was only 7 degrees cooler than today, and that was 18,000 years ago.[120] Over the next century—and we are thinking here in terms of New Orleans and coastal protection projects that will last perhaps 10 centuries—temperatures could go up from 2.5 to as many as 10 degrees more, depending on location.[121] By all prediction, U.S. temperatures will go up on the high side.[122]

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117. ENVTL. PROT. AGENCY, CLIMATE CHANGE AND LOUISIANA 3 (1997) *available at* http://yosemite.epa.gov/OAR/globalwarming.nsf/UniqueKeyLookup/SHSU5BURCA/$File/la_impct.pdf.

118. Micah Walker Parkin, Alliance for Affordable Energy, *Climate Change, and Louisiana*, http://www.all4energy.org/climatechange.html (last visited Jan. 5, 2006) (Power Point Presentation).

119. *Id.*

120. *Id.*

121. *Id.*

122. Envtl. Prot. Agency, *supra* note 117, at 2.

So what? Here in Louisiana we will be warmer in summer (think, maybe, 103 degrees at Jazz Fest), warmer in winter, and considerably drier (think about sugar, soybeans, rice and other wet-soil crops).[123] Without winter freezes we'll have a lot more insects—mosquitoes, termite and cockroach numbers soared between 1990 and 1995 when there were no killing frosts—and the bayous will be blanketed with algae blooms.[124] We're tough. We can handle that. Pass the pesticides.

What will be a little harder to handle is sea level rise. A heated ocean expands, and—according to the most definitive international panel on climate change yet assembled—the oceans rise will rise from a half a foot to three feet, absolute.[125] That's before we get to subsidence in places like Louisiana, where the relative rise could go to four feet.[126] And that's before adding increasing snowmelt and the run from polar glaciers. For which we add another half a foot.[127] It's already happening. Rocky Mountain peaks are going dry. The famed snows of Kilimanjaro have about disappeared. Temperatures around the North Pole are rising so rapidly that a new sea route is opening between the oceans, expected to be clear even for unarmored ships within the next 30 years.[128] Native Inuit report seeing warm weather birds, beyond anything in the legends of their people.[129]

Four feet is a killer for South Louisiana. On a landscape as flat as the coastal zone, and where building elevations are in the single digits, relative sea rise of only a few inches covers an enormous amount of ground.[130] Worse for New Orleans, which is buffered by coastal systems, for coastal towns that fish, trap and work their natural resources, and even for the oil and gas industry whose wells and pipelines lie increasingly exposed in open water above sinking bottoms, a few inches of relative sea rise will be enormously hard to match with coastal

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123. *Id.* at 4.

124. *Id.* at 3.

125. Parkin, *supra* note 118.

126. *Id.*

127. *Id.*; *see also* JAMES G. TITUS & VIJAY K. NARAYANAN, ENVTL. PROT. AGENCY, THE PROBABILITY OF SEA LEVEL RISE (1995), *available at* http://yosemite.epa.gov/oar/globalwarming.

128. Agence France Presse, *Melting Arctic Ice Risks Canada-US Territorial Dispute* (Dec. 1, 2005), *available at* http://www.copvcia.com/free/ww3/120505_world_stories.shtml.

129. *See, e.g.*, Tom Bissell, *A Polar Turn of Mind*, 81 VA. Q. REV. 4 (2005).

130. E-mail from Tim Osborn, National Oceanographic & Atmospheric Administrator, to author (Jan. 17, 2006, 19:55 CST) (on file with author):

> Estimates by the Parish and local surveying companies find 70-80% of Terrebonne Parish with an elevation of 2 feet or less. With a 1 foot tide range and little flood protection in place, the movement of the Parish downward by 10 centimeters could mean the loss of almost 1/3rd the available elevation above a high tide range.

restoration programs. The game is not static. It's like trying to score touchdowns but they keep moving the goalposts back. Way back. Think about trying to devise a way to rebuild 1,000 square miles of Louisiana wetlands already lost and another 20 to 30 each year, against the relentless pressure of the Gulf of Mexico. Now add this: you will have to build and maintain the whole thing several more feet into the air.

And now we add this. An increasing body of data shows a strong correlation between warmer seas and violent hurricanes.[131] And more frequent ones. It makes sense: warm waters are hurricane food, which is why the season comes at the end of the summer. The doubters have since weighed in with their list of unprovens—which is the way science works, healthy science anyway—and the case is not ironclad.[132] But there seems to be good evidence that global warming is not only destroying Louisiana's defenses, it is also fueling what could be, any year, its ultimate storms.

Here is the sad fact. Global warming and sea level rise are no more natural calamities than Katrina and Rita were. They are natural consequences of human actions, short term profits and to-hell-with-the-rest. They are produced by excessive emissions of carbon, primarily in the industrialized world, primarily from motor vehicles and fossil fuel power plants.[133] And these two heavyweights would rather fight than switch. The Administration has weakened the emission requirements for power plants. It refuses to sign a treaty setting targets for greenhouse gas reductions (which Europe is already putting into effect).[134] When California and other states established more responsive carbon emission and fuel standards on their own, the industry sued them, *joined* by the United States Department of Justice.[135] Detroit continues to build cars that burn gas like wildfires. We get fewer miles per gallon today than our parents did. It's considered progress, freedom, whatever. Any mention of it brings angry denial.

Case in point: "Could it be that manmade global warming is the greatest hoax ever perpetrated on the American people? It sure sounds

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131. Juliet Eilperin, *Warming To Cause Harsher Weather, Study Says*, WASH. POST., Oct. 18, 2005, at A2.

132. Peter Whoriskey, *Hurricanes Set Global Warming Debate Swirling*, TIMES-PICAYUNE (New Orleans), Nov. 28, 2005, at. A6.

133. *See, e.g.*, Chris Clarke, *Bushed Again: What Can We Expect in the Next Four Years?*, 25 EARTH ISLAND J. 25-28 (2005).

134. *See, e.g.*, Andrew Revkin, *U.S. Under Fire, Eases Its Stance in Climate Talks*, N.Y. TIMES, Dec. 10, 2005, at A1.

135. *See* Massachusetts v. EPA, No. 03-1361 (D.C. Cir. filed Dec. 2, 2005).

like it."[136] This is not Rush Limbaugh. (Although it might have come from Rush). This is the Chair of the Senate Committee on Environment and Public Works.

Case in point: In a press briefing following Katrina, the director of the National Weather Service described the record number of hurricanes that had hit the Gulf this year, and even more record number in very recent years.[137] It was part of a "multidecade cycle," explained retired General David Johnson, whose credentials are apparently that he once headed U.S. forces in Bosnia.[138] He went on, "It was not related to greenhouse warming."[139] How would he know? And if he knew differently, and said differently, would he still have his job?

Now we come to the anomaly. Pre-Katrina, Louisiana was asking the federal government to spend $14 billion for coastal restoration. Big-sounding money at the time. Post-Katrina we can add one more zero to that sum. But there is no way even the most ambitious of those plans would offset the relative rate of sea level rise in coastal Louisiana for the next, say, 500 years.

You would think, then, that Louisiana's representatives would be in the forefront of efforts to reverse the trend. And of course you would be wrong. Senator Landrieu was instead on the floor of the chamber urging her colleagues to open the Arctic Refuge to oil and gas drilling so that our boys would not have to go fight for it in some godforsaken country,[140] despite the fact that the most optimistic prospects up there would supply U.S. demands for less than half a year, would not come on line for a decade, and could be easily offset by upping the MPGs of the American vehicle fleet.[141] In November 2003, both Louisiana Senators voted against Senators McCain and Lieberman's bill that called for a national plan to reduce climate change, and for an increase in fuel efficiency standards.[142] In more than 30 years, I do not believe I have heard a Louisiana politician say the words "energy conservation." By some gap in the neurons, the fact that reversing climate change will save coastal

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136. Paul Krugman, *Salt of the Earth*, N.Y. TIMES, Aug. 8, 2003, at A17 (quoting Sen. James Inhofe, R. Okla.).

137. Bruce Alpert, *2005 Hurricane Season Finally Comes to an End*, TIMES-PICAYUNE (New Orleans), Nov. 30, 2005, at A4.

138. *Id.*

139. *Id.*

140. Interview of Darryl Malek-Wiley, Delta Chapter, Sierra Club, Dec. 20, 2005. Mr. Malek-Wiley was a lobbyist for the Sierra Club at the time and recalls the Senator's statement on the chamber floor.

141. JAMES J. MACKENZIE, WORLD SOURCE INST., WOULD OPENING UP ANWR MAKE A DIFFERENCE? (Feb. 2001), *available at* http://www.earthscape.org/r1/maj02/maj02.html.

142. Parkin, *supra* note 118.

communities and the oil and gas infrastructure in Louisiana doesn't seem to reach the head.

As long as these neurons fail to fire, New Orleans and south Louisiana will be running hard towards goal posts that get farther and farther away.

G. Are We Serious Yet?

> *We say we're from New Orleans and they won't charge us for the shirt. I ask directions and the fellow comes out to the street with a map and marks the route on it and then gives us the map. We are walking on the tow path in Washington, D.C. and Lisa has a hat that says New Orleans and we pass a couple, middle-age-plus, and she says are you from New Orleans and I say yes and she says do you need a place to stay? Everywhere we go, it's the same.*

Because we certainly haven't been serious up to this point at all. Katrina and Rita have to be the most well predicted and publicized disasters in history, and we did next to nothing to stave them off or to prepare for the hits. In August 2005, a couple of weeks before the storms, a Homeland Security brochure came in the mail on hurricane preparedness.[143] It consisted of a map marking evacuation routes out of town, with major revelations like the existence of I-10 and I-59.

Meanwhile, we continued to treat flood control as the stepchild of navigation projects that were in large part boondoggles, and in full measure drained monies and attention away from the hurricane protection needs of the Crescent City. We treated the whole water resources effort more like a re-election machine than a serious program, run by local interests, lobbyists, congressmen and ex-congressmen who are glued to the status quo. We let the largest party in coastal destruction walk away from the table without paying, while we in turn pay no end of public subsidies for people to build and live in the hurricane hit zone. We turn our back on the pall of jeopardy that global warming and rising seas throw over the future of the region; worse, we advocate against doing anything about it. And that's just in Washington.

Back home, the scene is little more encouraging. We have a dysfunctional system for building levees, an even more dysfunctional one for maintaining them, aggravated by a Byzantine arrangement of levee boards, port authorities, and other bodies that so fragment the process that it seems primarily directed towards maintaining political

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143. U.S. DEP'T OF HOMELAND SEC., LOUISIANA CITIZEN AWARENESS & DISASTER EVACUATION GUIDE (2005).

alliances and local perks. Post-Katrina down here has been like the Wizard of Oz. When the curtain is finally pulled back, there are a couple of flood control guys in suits and uniforms and they haven't a clue. If they are not protected by sovereign immunity, they are facing the largest negligence verdict in history.

And dead bodies. As of early December we were still discovering a few. And all of those dead houses. And all of those dead dreams. Including the dream we all have of bringing back New Orleans, writ large. It can be done, but it will require changing things we have yet to dream about changing. To which we now turn.

III. RESURRECTION

Our story begins in the 1960s at two stations, miles (and mindsets) apart. Leaving from one was a project to protect New Orleans and the surrounding parishes from hurricanes, and to maximize the development of the wetlands between the city and open water. The other was a series of projects intended to address the opposite phenomenon, the disappearance of wetlands between New Orleans and open water. On August 28, 2005, amended, failed and weakened versions of both efforts would collide at the city gates and break them in.

A. From Barriers to Levees: Protection on Short Rations

> *The night before Katrina I get a call from a reporter in public radio. You're still there, he says. I say yes. He says, will you talk about the storm when it comes? I say ok. Then he says, what is it about hurricanes you don't get? I have no answer. He says, don't you believe what you have written about these things? I have no answer to this either. He says, are you still on the line? I say, this is going to be a difficult interview.*

Hurricane Betsy brought a rude awakening to New Orleans and the Army Corps of Engineers. For more than a century they had been putting bigger and better locks on the front door, against the high spring floods of the Mississippi River. Now it was plain that the big one would come in the back door, with the capricious, violent, and increasingly frequent hurricanes of late summer and fall. And so, in 1965, Congress authorized the Corps to proceed with a plan to protect the city and the region from the east and south: the Lake Pontchartrain and Vicinity Hurricane Protection Project.[144] It would defend against a Betsy-type

144. Anu Mittal, *Testimony Before the Subcommittee on Energy and Water Development, Committee on Appropriations, House of Representatives: Army Corps of Engineers, Lake Pontchartrain and Vicinity Hurricane Protection Project*, (GAO-05-1050T), *available at*

storm, winds up to 100 mph, waves at maybe ten feet.[145] It would take about 13 years to complete, with an estimated price tag of $85 million.

The Corps had two basic options, a high-level plan relying on levees fronting Pontchartrain along New Orleans and Jefferson Parish, or a lower set of levees, fronted by barriers 40 miles out at the inlets to Lake Pontchartrain across the Rigolets and the Chef Menteur pass. Initially, the barriers prevailed. They were seen as less costly, quicker to build (higher levees would require more time for the fill to settle), and—what many considered to be the driving factor at the time—they would allow for the drainage and development of wetlands in St. Charles Parish and New Orleans East where, in the Corp's words, "protection would not be incrementally justified."[146] Indeed, some 79% of benefits came from protecting new wetland development;[147] protecting New Orleans came in a distant second.[148]

Developing the wetlands was in high swing at the time. New Orleans itself had just finished expanding over marshes and swamps to the edge of the lake. (The streets and houses hadn't started to crack open yet.) President Lyndon Johnson was partner (with his wife and Dallas Cowboys owner Clint Murchison) in a project to develop New Orleans East (a Lenin's tomb-like monument along I–10 still bears the name), and had managed to finesse federal highway regulations to build three interchanges for the venture.[149] A similar venture along the St Charles lakefront advertised scenes of upland development complete with contented dairy cows so obviously deceptive that it was shut down after protest by the Louisiana Attorney General.[150] What these developers wanted, of course, was exactly what environmentalists feared. The

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http://appropriations.house.gov/_files/AnuMittalTestimony.pdf.; *see also* CPR REPORT, *supra* note 68, at 3.

145. Mittal, *supra* note 144.

146. U.S. ARMY CORPS OF ENGINEERS, MISSISSIPPI RIVER—GULF OUTLET NEW LOCK AND CONNECTING CHANNELS EVALUATION REPORT, OVERVIEW (Mar. 1997), http://www.mvn.usace.army.mil/prj/ihnc/EvaluationReport/ihnc_eval.htm.

147. *See* Burby, *supra* note 107.

148. *Id.*

149. *See generally* Jane W. Apffel, *The Bayou Sauvage Urban Wildlife Refuge: A Definition of Land Use Through Collaboration* (1990) (on file with author).

150. Conversation with Doris Falkenheiner, Attorney, Baton Rouge, La., Jan. 10, 2006. Ms. Falkenheiner and an employee of the Louisiana Department of Game and Fish visited the site as prospective buyers; they presented a recording of the representations they received to the Louisiana Attorney General, who made complaint to federal authorities. *Id.* The development was subsequently abandoned.

barrier plan looked like a stalking horse for wetland development, New Orleans piggybacking the scheme.[151]

The plan had another problem. It would block off most of the Rigolets and Chef passes, which were the migration corridors for the aquatic life of the interior lakes.[152] Lake Pontchartrain had been the seafood market for the city, and crabbing along its banks was in the family memory of thousands of local families. Commercial fishers were worried as well and, despite Corps statements that gates in the barriers would maintain necessary flows, a groundswell of opposition grew on both sides of the lake. A poll by Congressman Bob Livingston showed his constituents doubting the barriers, causing him to express reservations as well.[153] An environmental lawsuit challenged the impact statement on the plan, which the Corps later admitted was a cursory job.[154] Like so many such lawsuits at the time, the court found the statement inadequate and required the Corps to write a new one. Most of the time the Corps did just that, and then proceeded with its original plan. In this case, though, the Corps changed its mind.

In 1982, its review completed, the Corps announced for the high levee option.[155] It would turn out to be less expensive after all, they found, less harmful to the environment and more protective as well. (Among other things it would guard against waves kicked up by hurricane-force winds across the lake itself). And so the project marched forward, its costs ballooning to an estimated $757 million, towards a pre-Katrina estimated completion date of 2015.[156] At that point the Corps had thrown up 125 miles of levees around the city, in various stages of readiness. The all-important interior canal walls—the ones that failed—were parts of the project declared to be complete.[157] Appropriations for the project were declining, however, from some $15-20 million annually in the early years to about $5-7 million in recent years.[158] The monies were going elsewhere.

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151. William A. Fontenot, Why New Orleans Flooded and Why So Many Poor People Were Stranded There, at 1 (Oct. 2005) (unpublished essay, on file with author). Mr. Fontenot was the Community Liaison Officer to the Louisiana Attorney General from 1981 to 2005.

152. CPR REPORT, *supra* note 68, at 4.

153. *Id.*

154. Ralph Vartabedian & Peter Pae, *Katrina's Aftermath; A Barrier That Could Have Been*, L.A. TIMES, Sept. 9, 2005, at A10.

155. Gen. Accounting Office, Improved Planning Needed by the Corps of Engineering To Resolve Environmental, Technical, and Financial Issues on the Lake Pontchartrain Hurricane Protection Project 2 (GAO/MASAD-82-39) (Aug. 17, 1982).

156. Mittal, *supra* note 144, at 2.

157. CPR REPORT, *supra* note 68, at 8.

158. *Id.*

So when Katrina and Rita hit the fan, it was a little surprising that two former Corps employees, high level ones at that, told the *L.A. Times* that environmentalists had drowned the city with their lawsuit.[159] The *Wall Street Journal*, ever eager for news like that, and a pack of right wing blogs picked up the cry, which carried to Washington DC and the House Resources Committee.[160] The Committee, in turn, ever eager for news like that, held hearings on it, absent the benefit of witnesses who had participated either in the project or the case.[161] The United States Justice Department, ever eager for news like that, even asked its field offices to report any and all environmental cases that had obstructed Corps flood projects.[162] None were ever disclosed.

In the end, the story flopped. The Chief of Engineers and the Government Accounting Office, which had been bird-dogging the project for years, both testified before other committees that the barrier plan would not have protected New Orleans any better than functioning levees, and in fact could have worsened the flooding by trapping the storm surge against the city.[163] As serious investigations proceeded, it became clear that the problem was not the high levee plan. Category 3 levees would have kept the city dry. Instead, the city got tinker toys and they fell apart.[164]

B. The Restoration Game: Ideas on Short Rations

I am in the check out line at Rite Aid, buying flashlight batteries and last minute stuff. The fellow ahead of me has a huge bag, getting ready for

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159. Vartabedian & Pae, *supra* note 154.

160. David Schoenbrod, Op-ed, *The Lawsuit That Sank New Orleans*, WALL ST. J., SEPT. 26, 2005, at A18.

161. *See* Witness Testimony, Task Force on Improving the National Environmental Policy Act (NEPA), House Resources Committee, Hearings on "NEPA Litigation: The Causes, Effects and Solutions," http://resourcescommittee.house.gov/nepataskforce/archives/index_dc.htm (last visited Feb. 10, 2006). The Committee did receive written testimony from a former Corps counsel who had participated in the case and indeed triggered the *L.A. Times* story. *Id.* (statement of Joseph Towers).

162. Mike Dunne, *Environmentalist Suits Eyed in Levee's Failure*, THE ADVOC. (Baton Rouge), Sept. 17, 2005, at 7A; Sue Lindsey, *Task Force To Examine Environmental Review Law Following Katrina*, CLARIAN-LEDGER (Jackson, Miss.), Oct. 20, 2005, *available at* http://www.wavy.com/global/story.asp?S=3863973&nav=menu45_2.htm.

163. *See* U.S. GEN. ACCOUNTABILITY OFFICE, LAKE PONTCHARTRAIN AND VICINITY HURRICANE PROTECTION PROJECT GAO-05-1050T (Sept. 28, 2005), *available at* http://www.saveourwetlands.org/gaoreport.pdf (last visited Feb. 17, 2006); Lieutenant General Carl Strock, Defense Department News Briefing on Hurricane Recovery (Oct. 6, 2005), *available at* http://www.defenselink.mil/transcripts/2005/tr20051006-4041.html. (last visited Feb. 17, 2006).

164. Michael Grunwald & Susan B. Glasser, *Experts Say Faulty Levees Caused Much of Flooding*, WASH. POST, Sept 8, 2005, at A1.

Katrina, he says. He empties his bag on the counter, one by one. A fifth of Jim Bean. Another fifth of Jim Bean.

The coast is sinking. We have known it for a long time. Only the rates have changed. When I first came to Louisiana in 1971, Sherwood Gagliano, the leading coastal expert at the time, was estimating land loss at about 10 square miles a year.[165] By the 1980s the rate had soared to close to 50, and then dropped back to what appears to be a steady 20 to 25.[166] It's not that we've offset the losses yet in any major way. But oil and gas dredging is down, and there is less marsh to lose.

We have also known that the coastal marshes act just like a levee, only a flat one.[167] They knock down storm surges, and over the 80-some miles between New Orleans and the Gulf that amounts to the height of a tall man, 6 feet or more.[168] That's a lot of free levee. All we had to do is nurture it and leave it alone. Instead, of course, we starved the marshes from the main River and then started cutting them up with canals. The combination was devastating.

The first impetus to do something about it—beyond the scientific and environmental community, regarded at the time as two flakes off of the same snowball—came from the oyster industry.[169] Oyster beds depend on just enough salinity to grow spat but not so much as to attract the oyster drill and other predators. With the marshes eroding the saltier Gulf waters were taking over and killing the value of the leases. In the 1960s, Congress asked the Corps to look into it.

All answers depend on what you think the problem is, and in this case the problem was identified as the Mississippi River levees, shutting off fresh water to the leases. The Corps' answer, strongly supported by federal and state fish and wildlife agencies, was to build diversion structures to let the Mississippi back out.[170] These diversions, for these modest purposes, would later become the main restoration game.

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165. *See* Sherwood M. Gagliano, Klaus J. Meyer-Arendt & Karen M. Wicker, Land Loss in the Mississippi Deltaic Plain, in Transactions?, 31st Annual Meeting, Gulf Coast Association of Geological Societies 298 (1981).

166. La. Coastal Wetlands Conservation & Restoration Task Force & Wetlands Conservation & Restoration Auth., *Coast 2050: Towards a Sustainable Coastal Louisiana* 55 (1998) [hereinafter *Coast 2050*], *available at* http://www.lacoast.gov/Programs/2050/MainReport/report1.pdf.

167. *Id.*

168. Mike Tidwell, *Indifference to Marsh Is the Kiss of Death*, TIMES-PICAYUNE (New Orleans), Dec. 9, 2005, at B7.

169. Avenal v. State of La., Dep't of Natural Res., 886 So. 2d 1085, 1088-91 (La. 2004).

170. *Restoring the Natural Flow: Diversions Rebuild Wetlands*, WATERMARKS (La. Coastal Wetlands Conservation & Restoration Task Force, New Orleans, La.), Aug. 2003, at 3-4,

Difficulty with science: it moves. By the time a theory is proven and accepted, it is also often no longer fully true. But meanwhile it has become dogma, and highly resistant to change. The freshwater diversion structures would prove beneficial, but fresh water would not solve the problem. At best, it would keep salinity at bay.

The diversion projects went through an odyssey of controversy, back burner funding and on-again-off-again development. A diversion into Lake Pontchartrain was blocked by commercial fishers.[171] A diversion into Breton Sound ran into a $2 billion damages verdict from the very oyster growers who had asked for it in the first place, undone only by order of the Louisiana Supreme Court.[172] A later diversion, on the west side, is limping along at about 20% capacity.[173] A mini-diversion into the dying cypress swamps of Lake Maurepas has yet to see daylight, although it will only protect a minimal amount of habitat.[174]

Difficulty with environmental projects that depend on humans for management: they will get compromised by politics and the environment loses out.

Meanwhile, federal and state authorities were beginning to raise the ante. In 1981, the Louisiana legislature appropriated $35 million for coastal protection.[175] Eight years later the state established a wetlands trust fund from mineral revenues providing from $15 to 25 million a year, earnest money for the federal funding that would be the prize.[176] In 1990, the United States Congress came through with the Breaux Act, partnering the state with the Corps and other agencies, and the upshot was Coast 2050, a conceptual restoration plan that divided the coast into four hydrological basins, each with its set of goals and projects.[177] At last, we were down to site-specific projects, meeting local conditions.[178] As a

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available at http://www.lacoast.gov/watermarks/2003-08/watermarks-2003-08.pdf (providing a general description of freshwater diversions).

171. Jerald Horst, *Panel Seeks Solutions to Freshwater Diversion*, TIMES-PICAYUNE (New Orleans), Oct. 13, 1996, at G8.

172. *Avenal*, 886 So. 2d at 1104, 1109-10.

173. Mary Swerczek, *River Gushing into Basin in Coastal Restoration Test; Flow Kicked up to See Fresh Water's Effects*, TIMES-PICAYUNE (New Orleans), Dec. 3, 2003, at B1.

174. LEE WILSON & ASSOC. ET AL., DIVERSION INTO THE MAUREPAS SWAMPS (2001), *available at* http://dnr.louisiana.gov/crm/coastres/projectdata/po29/epa_report/a_maur_report2.pdf.

175. *Coast 2050*, *supra* note 167, at 12.

176. *Id.* at 13; LA. REV. STAT. ANN. § 49:213.11 (2005); *Louisiana Searches for CWPPRA Funding*, WATERMARKS (La. Coastal Wetlands Conservation & Restoration Task Force, New Orleans, La.), Spring 1996, at 10-11, *available at* http://www.lacoast.gov/watermarks/1996a-spring/7funding/.

177. Coastal Wetlands Planning, Protection & Restoration (Breaux) Act (CWPPRA), 16 U.S.C. §§ 3951-3955 (2000).

178. *Coast 2050*, *supra* note 167, at 12.

process, it was transparent and science-driven. Below the science, however, it also turned on meeting local expectations and whiffs of the same I-get-mine-and-you-get-yours decisionmaking that has plagued the water resources development game.

Coast 2050 is an ongoing process, with new projects vetted annually by panels of experts, open to public comment, and then set into motion.[179] The basic document is impressive, the work plans are targeted and their particulars are for the most part unimpeachable. But not all. There is a distressing amount of armoring and rip-rap which, as any coastal engineer (or fisherman) knows, last about as long as it takes for the land behind it to subside. The same could be said for beach nourishment, which is a more elaborate form of sand castle building, nice in the short run, then you have to do it again. And at the bottom, it continues to rely on large freshwater diversion structures that may—or may not—do the job.

But there is a more fundamental problem with Coast 2050, its mission, stated as "to sustain coastal resources and provide an integrated multiple use approach to ecosystem management."[180] Who could object to that? Only someone familiar with the practice of multiple use management in the United States. The term first appeared in federal legislation attempting to insert environmental protection into rangeland and forest decisions, and it was shortly chewed to pieces by its very vagueness.[181] Landscapes as vast as southern Alaska could commit 99% of the Tongass National Forest to clearcutting and still be "multiple use";[182] large and biologically unique areas of the California Desert could be turned over to off-road vehicle races.[183] The concept of "multiple use" failed so utterly to protect the environment that more recent laws have imposed specific environmental baselines (e.g., regeneration within 5 years) instead.[184] In short, multiple use has become a code word for let'er rip and Katy-bar-the-door.

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179. *See id.* at 13; *see also Priority Project List Number 15: Candidate Projects*, Coastal Wetlands Planning, Protection, and Restoration Act (Public Meetings, Nov. 2005).

180. *Coast 2050*, *supra* note 167, at 7.

181. *See generally* Michael C. Blumm, *Public Choice Theory and the Public Lands: Why Multiple Use Failed*, 18 HARV. ENVTL. L. REV. 405 (1994) (criticizing multiple use as a management standard); George Cameron Coggins, *Of Succotash Syndromes and Vacuous Platitudes: The Meaning of 'Multiple Use, Sustained Yield' for Public Land Management*, 53 U. COLO. L. REV. 226 (1982) (analyzing the dismal record of multiple use as a management standard).

182. Sierra Club v. Hardin, 325 F. Supp. 99, 122-27 (D. Alaska 1971).

183. Sierra Club v. Clark, 756 F.2d 686 (9th Cir. 1985); *see also* Norton v. S. Utah Wilderness Alliance, 542 U.S. 55 (2004).

184. National Forest Management Act § 6, 16 U.S.C. § 1604 (2000).

The same inherent conflict can be seen in the Louisiana coastal management statute, which seeks both to "protect" and to "develop" the coastal zone.[185] So what comes first? According to one of its first administrators, it is a "resource management" program that "practically precludes the Secretary from stopping any activity per se in the coastal zone."[186] At which point we know very well what comes first, and it will not be coastal protection. So when Coast 2050 also states its intention to provide a "clear vision" for the coast, it is calling for something that it can't deliver.

A second problem with Coast 2050 is its inability to deal with projects that run counter to its objectives. The Breaux Act directs the Corps and other federal agencies to ensure that all of the activities are "consistent" with the "purposes of the restoration plan."[187] Some activities are clearly not. But rather than calling for closure of the Mississippi Gulf Outlet, for example, the current 2050 work plan calls for—with an alarmingly straight face—the placement of rocks along its eroding banks. They are called "environmental improvements."[188] Nor has 2050 insisted on accessing oil and gas deposits by means other than dredging, or raised a peep over government permitting for new wetland development. Indeed, 2050 has yet even to develop a *process* to determine the consistency of any of this stuff with coastal restoration.[189] It is still, like the rest of the state, in the mitigation-based, we-can-have-our-cake-and-eat-it-too mode that has presided over the destruction of the coastal zone for more than three decades. Are we serious yet?

The most obvious shortcoming of 2050, however, is that, even under the best of circumstances—its projects fully funded and the adverse consequences of new levees, canals and urban development magically wished away—it would not restore the coast. It would reduce the rate of loss. Not by all that much. About 500,000 acres would be lost without 2050's restoration projects, and about 400,000 acres with them. Under 2050, three of the four coastal regions would continue to experience a seriously disappearing landscape.[190] The one that gains is next to the Mississippi and the subject of a new diversion project.[191] This

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185. *See* LA. REV. STAT. ANN. §§ 49.214.21.

186. *See* Houck, *supra* note 33, at 3 (citing Memorandum from Sec'y, La. Dep't of Natural Resources, to Members of Coastal Management Section, Dep't of Natural Resources, entitled *CZM Objectives* (Mar. 10, 1983) (on file with author)).

187. *Coast 2050*, *supra* note 167, at 2.

188. NRC REPORT, *supra* note 10, at 3, 94.

189. *Id.* at 6-7, 70-91, 136.

190. *Coast 2050*, *supra* note 167, at 47-50.

191. *Id.*

is before Katrina and Rita came along and took out 100 square miles in a single blow.[192] Post-Katrina, a goal of reducing loss is no longer sufficient.

These shortcomings noted, Coast 2050 was still a credible game plan until it had a terrible accident, and barely emerged alive. In the summer of 2005, it ran into a highly skeptical Office of Management and Budget in Washington, D.C., and, after much haggling, its $14 billion asking price was whittled down to $250 million.[193] Worse, the monies would be restricted to projects that could be implemented in the near term, the next 5 to 10 years, and to studies of "long range feature concepts."[194] Rome is burning. They sent a fiddle.

Katrina and Rita, in turn, had several impacts of their own on Coast 2050. On the positive side, they highlighted the relationship between coastal restoration and hurricane protection for all the country to see. Case in point: One evening this November, I was walking my dog down on the levee and met a group of workers from Minnesota (it was already cold up there). One of them began telling me about the river and how it was carrying all this silt and the coast was collapsing at three football fields an hour—*seven* football fields, said another—and so they argued about it. A bunch of twenty-somethings from 1,000 miles away had the message.

Second, Katrina and Rita opened the money faucet. Unimaginable sums will now be pouring into South Louisiana, much of it for the coast. For good or ill.

By the same token, the two hurricanes exploded the rate of loss. The Lake Pontchartrain basin lost 50 square miles (they'd been averaging 4 square miles a year).[195] Southeast Louisiana, below New Orleans, may have lost 100 square miles, 40 years worth by current rates.[196] Two months after the storm more than half a million acres of the coast were

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192. Joe Gyan, *Corps Predicts Years of Levee Work*, THE ADVOC. (Baton Rouge), Nov. 12, 2005, at A9 (quoting Sidney Coffee, executive assistant to the Governor of Louisiana for Coastal Activities).

193. Tidwell, *supra* note 168. Mr. Tidwell is the author of BAYOU FAREWELL: THE RICH LIFE AND TRAGIC DEATH OF LOUISIANA'S CAJUN COAST (2003). *See also* Cain Burdeau, *Aid Requested for Wetlands Criticized*, TIMES-PICAYUNE (New Orleans), Nov. 2, 2005, at A9.

194. Mark Schleifstein, *Report Gives Nod to Plan for Coast; But Other Measures Needed Too, It Says*, TIMES-PICAYUNE (New Orleans), Nov. 10, 2005, at A1.

195. Carlton Dufrechou, Presentation at Conference Louisiana Environmental Action Network (Nov. 12, 2005).

196. Kerry St. Pe, Barataria Estuary Project, Presentation at Conference of Louisiana Environmental Action Network (Nov. 12, 2005).

still under water.[197] These were tremendous hits. More hurricanes are coming. So what do we do?

C. So What Do We Do?

> *So how'd you do? The guy who is asking me lost everything and his family is somewhere in Oklahoma. The only people I see on the street are Mexican roofers and the National Guard. Out in Gentilly there are two guys throwing destroyed stuff out of their living room window, a mattress, tangled underclothing, kids books. The water line's at the roof. They are the only people I see in ten blocks.*

Here is what we know. It is not just the tire, it's the car. And it's not just the car, it's the driver. Nothing in the system has made a numero uno priority either of protecting New Orleans from hurricanes or to restoring even hanging onto—the Louisiana coast. We have a flood control program, a navigation program, a permitting program, a coastal management program, a flood insurance program, a coastal restoration program—just for openers—and they do not talk to each other. They are riddled with conflicts, basically headless, basically goal-less, weakened by compromises and refuse outright to deal with first causes and first needs. So, this is a tall order.

We also know this. As they came ashore, there were really two Katrinas. One blew through the levees into New Orleans and St. Bernard, and topped the ones further south. The other smashed into coast-front development in a wide swath from Alabama to Texas, wiping out the first half-mile or so of Pass Christian, Waveland, Gulfport, Biloxi, half of Grand Isle, and all the way over to Holly Beach. Same set of storms, but the run-up for one was negligence, and the run-up for the other was arrogance. Building behind levees is one thing; you have (some) reason to think they'll hold up. Building on the edge of the Gulf and thumbing your nose at it is another.[198] Which opens up a different set of questions.

1. Two Visions

Here is a surprising truth: we have never decided what we wanted. There is no book, no report, no agency and no law that maps what we

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197. *Id.*

198. *See* Applebaum, *supra* note 101. Describing Senator Lott's beach house during Katrina, the author states that "Lott's house was on the beach because you and I paid for it." *Id.* As to the likely governmental response, she opines that "[b]arring an unforeseen dose of political sanity, we're about to subsidize the reconstruction and even the expansion of more susceptible beach front communities, too." *Id.*

think South Louisiana will be in 50 years, or several hundred. The question is less urgent in other parts of the country where we are not literally making, and losing, the landscape as we go along. In Louisiana we are. We will change South Louisiana entirely by what we do and don't do in the next decade or so. And for this, there is no guide at all.[199] There are, however, competing visions. On them hangs much of the future of New Orleans.

The vision for New Orleans is relatively clean. The city is a given, fixed in its history, architecture, economy and culture and these contributions call for maintaining it, as is, for as long as we can. Nobody needs to reinvent New Orleans: we simply need to get it back. Its protection will cost a fortune, and will take more than anyone wants to concede (and no small amount of luck, as we race the clock against the near-term hurricane seasons). But at least we know what we are driving at. Whether we succeed will depend on levees, flood gates, rational storm water management within the city walls, conservative building elevations, levees and one thing more: a viable coastal zone to buffer them, without which the system will not hold over time.[200]

Eighty miles of wetlands and associated ridges, bayous and estuaries extend from New Orleans to the Gulf in a wide arc from the Pearl River to the Sabine, from Mississippi to Texas. The numbers vary with the type of terrain but, generally speaking, a couple of miles of these marshes will knock down a hurricane storm surge by a foot. You can do the math. In effect, we have a horizontal levee. We also have the richest ecosystem in North America, mother lode for the New Orleans seafood, the backbone of Acadiana, money in the bank spinning off dividends, as long as we do not destroy the bank.[201] Which is of course what we have been very busy doing.

So here is the starting point: exactly what we do want the Louisiana coast to *look* like, to *do* for us, for, say, the next century? Here is Answer *A*. We can dedicate it to navigation, to oil and gas extraction, to as much urban expansion as lenders will bankroll, to new highways masquerading

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199. Denise Reed, *Seeing the Future of the Louisiana Coast, After the Storm: Restoring America's Gulf Coast Wetlands*, ENVTL. LAW INST. (forthcoming 2006) (manuscript at 45-57, on file with author). Dr. Reed, of the Louisiana State University Marine Consortium and the University of New Orleans, has been involved in Louisiana coastal restoration issues for more than a decade.

200. By now, even the Corps of Engineers recognizes the need to restore the coastal zone as vital to its levee systems and hurricane protection. *See* Mathew Brown, *Closing One Channel Won't Solve Everything: MR-GO Just One Item on Storm Defense List*, TIMES-PICAYUNE (New Orleans), Jan. 8, 2006, at A1.

201. The capitalized value of the ecosystem services of the Louisiana coastal zone have been estimated at $216 billion (1980 dollars). *See* Houck, *supra* note 33, at 98.

as hurricane evacuation routes (case in point: the proposed Lafitte-LaRose highway, cutting across the marshes of Lafourche Parish, an evacuation highway, I was told; for whom? I asked; for the people who are going to build down there, I was told); to golf courses and subdivisions and castles on the sea (recent homes on Grand Isle sold for a half million dollars and up), and supported by more levees, more drainage canals, more pumping stations, more dredge and fill. It is called "a working coastal zone."

Here is what is not working. The fisheries are getting squeezed out. The mouth of the Mississippi harbors a "dead zone" of oxygen-starved water larger than the state of Delaware.[202] The oyster beds are so contaminated with fecal coliforms that about half of them are closed for health standards at any given time, every day of the week.[203] Commercial fishers are shutting down. The processing plants are shutting down. The interior marshes are collapsing. The natural storm buffers are disappearing. Cypress forests along the MRGO, Des Allemandes and in Terrebonne are now open lakes with dead sticks poking up in the air. Boat docks are separating from dry land. Every coastal community inland 50 miles or more is now threatened by coastal storms, even mild ones.

Earth to Louisianans: you really can't have this cake and eat it too. With all due respect, it is not just a matter of doing everything we want "smarter." It is a matter of getting straight what we want, and what comes first.

There are really two choices. One is to continue to squeeze every short-term dollar we can out of the coastal zone, to include a relentless press of industrial and residential development. And to throw up whatever protections for it the federal government will give us. Basically, pumps and levees. In this view, the natural environment may not be the enemy but it is at least an impediment. We wall it off, and then feed it through the bars of diversion structures like some beast in a zoo. At best, a century from now, it will not take five centuries, we will look something like Metairie extending down to somewhere like route 90, flanked by a huge wall, subsiding continuously on our side of it, and on other side are some collapsing deltas and the Gulf of Mexico. The walls,

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202. Mark Schleifstein, *Storm-Stirred Waters Help Shrink Gulf's Low-Oxygen Dead Zone; But It's Still Too Big, Marine Scientists Say*, TIMES-PICAYUNE (New Orleans), Aug. 2, 2005, at A1.

203. La. Dep't of Health & Hosp., Office of Pub. Health, Molluscan Shellfish Program, http://www.oph.dhh.louisiana.gov/sanitarianservices/molluscanshellfish/news094d.html (last visited Jan. 29, 2006).

including those around the City of New Orleans, will have to be made more huge about every 5 years or so. Lest the doomsday predictions start coming true.

The other choice is to decide that perpetuating the coastal zone itself over the long term is the goal. Then, we tailor what we do to that goal. But there is no hiding the scale of the question. It would be one of the largest land use decisions in U.S. history, and the most consequential. It may also be the only way—as a matter of economics and sustainable engineering—that New Orleans and the major communities of South Louisiana can survive. It is certainly the only way that the coastal zone as a living system will survive. Problem is, it requires the almost unthinkable.

2. Vision by Default

What comes next is the hardest step for any American community to take, and all but heresy in South Louisiana. A plan. The mere mention of planning raises blood pressures and brings on cries of Godless Communism. The property rights movement is nowhere stronger than on the American coastline, stoked by folks who are either constructing, selling or occupying condos on places like Hilton Head, Pensacola and Padre Island, and it loves insurance payouts and second home mortgage deductions and it hates planning. Now we add the prevailing attitude of a state like Louisiana where most towns do not even have zoning, and a city like New Orleans whose tout ensemble is absolutely critical to its economy but which has spent the last 10 years avoiding the preparation of a master plan. To this we add the very human fact that everybody wants to live everywhere, most of all where they always have. And as close to water as possible.

What we have had in the city of New Orleans and along the entire Gulf coast is planning by default (local attorney Bill Borah calls it "planning by surprise"). Planning takes place. It's just that we haven't taken part in it. Where water resources are concerned, it starts with real estate developers, port authorities, levee boards and other outside-the-ballot-box enterprises, their projects facilitated and funded by the Army Corps of Engineers. In their minds, the only question is a technical one: what kind of engineering do we need to get our project done? The system has produced the expected results: more rip-rap here, more drainage there, and levees to the horizon. The goal is—although it is never stated anywhere—to develop as much of the coast as possible. When you add the projects up, they determine the destiny of the city and South Louisiana.

Case in point: There are three, mind-blowing maps in South Louisiana right now.[204] One shows how Katrina and Rita came into New Orleans (wide arrows pointing in at the city, it looks like the Blitzkrieg). A second shows what these same storms did to the coastal zone south of New Orleans (it goes from a green carpet of grass to a hole in the ground).[205] The third map hasn't gotten much play. It shows a levee stretching from the Mississippi border to Texas, cutting across the belly of South Louisiana like a tourniquet.[206] About half the wetlands of coastal Louisiana are above it, the other half below. The first piece of this levee to move forward is called Morganza to the Gulf.

The Morganza project loops down from Larose to within a mile or so of the open Gulf, and then back up to Houma.[207] It is a considerable undertaking, with 72 miles of levees, gates and other structures, at a cost of $40.5 million (probably twice that, if history is any guide).[208] It will destroy 3,743 acres of wetlands outright in construction and enclose the greater part of another 270,000-plus wetland acres in its study area, along with three good-sized lakes.[209] Gates will be provided in an attempt to maintain the hydrological connection between the wetlands within the system and those to the south—but you have to perform a kind of auto-lobotomy not to see the consequences over time.

Natural History: widespread natural flows do not do well through culverts and passes. Neither do fish and plankton. Neither do sediments, large volumes of which are provided to the interior marshes from the *south*, by the very coastal storms that will close the gates and keep them out. And that's just the surface water. Water is moving underground as well, and the levees press down on that circulation like a boot on a rabbit. The rabbit doesn't fare so well.

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204. John McQuaid, Bob Marshall & Mark Schleifstein, *Evidence Points to Man-Made Disaster; Human Mistakes Led to N.O. Levee Breaches*, TIMES-PICAYUNE (New Orleans), Dec. 8, 2005, at A1 (depicting invasion of floodwaters into the City of New Orleans and St. Bernard Parish).

205. Juliet Eilperin, *Natural Buffers Took a Beating: Gulf's Woods and Wetlands Experienced Lasting Damage*, WASH. POST, Sept. 21, 2005, at A10; *see also* Press Release, U.S. Dep't of the Interior, U.S. Geological Survey, *USGS Reports New Wetland Loss from Hurricane Katrina in Southeastern Louisiana* (Sept. 14, 2005), *available at* http://www.usgs.gov/newsroom/article.asp?ID=997.

206. Unnamed Map, distributed for review at the La. Governor's Advisory Comm'n on Coastal Restoration and Conservation, Oct. 24, 2005 (on file with author).

207. U.S. ARMY CORPS OF ENGINEERS, FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT, MISSISSIPPI RIVER & TRIBUTARIES—MORGANZA, LOUISIANA TO THE GULF OF MEXICO HURRICANE PROTECTION 18, 42 (2002) [hereinafter MORGANZA].

208. *Id.* at 15, 18.

209. *Id.* at 19, 42, 106.

Human History: the day a levee goes up is the day before large machines are in draining wetlands and laying slab behind it.[210] When real estate possibilities are on the table, what is behind a levee is going to get developed and no human institution will stem that tide. Indeed, the approved Louisiana coastal management program writes off wetlands behind levees as "fastland," fair game for development and beyond the reach of the permitting program.[211] When you look at this last map, the first thing you notice is 270,000-plus acres of wetlands behind the levees. And no one is thinking about a little venture in real estate?

Now we can think about the rest of it. The Morganza to the Gulf project logically does not stop at Larose and Houma. It is part of an imagined Maginot Line of levees that begin at the Pearl River and end up at Morgan City.[212] At least for now. No reason comes to mind why they should not continue on Lake Charles. Or for that matter, west to Brownsville, Texas. Or east to Tampa, Florida.

What is apparent is that these levees, designed by engineers and approved by Congress, are the basic planning documents for the future of South Louisiana. What is north of these levees will be developed. What is south of them will be anyone's guess, although not for long; the map on global warming shows these coastal marshes gone within a century. De facto, we end up with a wall. Not all that adequate a wall, by the way. Only Category three, if that. Can you imagine the costs of maintaining even a Category three levee system winding back and forth to the Gulf from New Orleans to Texas? Can we imagine what will happen when development piles in behind it, and then gets flooded? Do we already know, from Lakeview and New Orleans East, what happens to land elevations behind levees once they are drained and paved?

Our choice is to start this process from the other end. If we do, another range of options open. There are a dozen major towns across the southern tier with thousands of homes and residents, and they deserve protection. But the way to provide it may be with the same kind of ring levee systems that protects (or should) New Orleans and its surrounding parishes, supplemented by flood gates at the mouths of the main canals. Or, it may mean peninsular levee systems down the historic ridges of the

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210. *See* Michelle Krupa, *Katrina Speeds Up Plans To Build Westward; Officials Foresee Opportunity, Challenge*, TIME-PICAYUNE (New Orleans), Dec. 11, 2005, at A1 (discussing the recent proposal to develop 20,000 units of housing in wetlands on the West Bank of New Orleans behind a recently constructed hurricane protection levee). The levee stands at perhaps eight feet currently, and is already visibly sagging in parts. Personal observation of the author (Jan. 3, 2006).

211. LA. REV. STAT. ANN. § 49:214.3 (2005).

212. Unnamed Map, *supra* note 206.

bayous, protecting what has always been the high ground. That doesn't mean Louisianans can't live outside the levees. It doesn't mean we can't elevate and meet FEMA standards (inadequate as they may be) for flood insurance. It doesn't mean we can't live in town and drive 20 minutes down the bayou to the boat dock in the morning either. It just means that there is no need, and no way over time, to make a ring levee around all of south Louisiana and hope to retain the coastal zone.

Problem is, we have lacked the process—we have lacked even the language—for such a discussion. In addition to scientists and engineers, we may need some social workers. In saying this, I am most serious.

3. Alternative Future 1

We have two points of departure, then. We know what the first one looks like. The goal is to maximize human development in the coastal zone and protect it with a complex of levees, gates, drainage canals and pumping stations for the ever-subsiding lands behind them. We may add to these structures, as we wish, if monies are available, some environmental amendments. Holes in the levees for water flow (the current term is "leaky levees"), movable gates. But there is no doubt what comes first, and what will come next: maximum development.

One piece of this vision emerged in the 1960s with the barrier hurricane protection plan across the Rigolets, four-fifths of which was about new development in the wetlands.[213] It will doubtless surface again. Another piece has surfaced with the Morganza to the Gulf project.[214] There is no grand plan. It will happen by increments, by default. What is behind these barriers will, over time, turn agricultural, then into strip malls, cul-de-sacs and urbanization. Whatever is outside the barriers will live on borrowed time.

The Netherlands offer a more systematic approach to this same end. The Dutch have been fighting the North Sea for a thousand years, and their historic methods—dikes, drainage canals and pumps—look quite familiar, as does their continuing and accelerated rate of subsidence.[215]

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213. *See* Burby, *supra* note 107.

214. *See supra* text accompanying notes 207-212.

215. John McQuaid, *Ruin and Recovery; Beating Back the Sea; How the Dutch Fight To Save Their Low-Lying Land*, TIMES-PICAYUNE (New Orleans), Nov. 13, 2005, at A1. Like Louisiana, the Netherlands has also contributed mightily to its own demise, in earlier centuries by mining the peat from its coastal plan and more recently by mining it for oil and gas. Presentation of Jan H. deJager, Coastal Strategy Workshop, New Orleans, La. (Jan. 18, 2005). Dr. deJager is a civil engineer in the Netherlands with experience in the Delta Project.

Parts of the coast are now 23 feet below the level of the sea.[216] The temporary successes of this engineering look familiar too, always followed by greater, catastrophic losses. Finally, in 1953 a major hurricane blew in and left 1,800 bodies in its wake, 50,000 destroyed homes and 350,000 acres of flooded land.[217] In a country half the size of Louisiana.

Vowing "Never Again," the country devised a new plan. Back in 1932, they had dikes off the Zuiderzee, an estuary twice the size of Lake Pontchartrain, with a barrier more than 20 miles long.[218] Their new Delta Plan would apply that same strategy to the entire Atlantic Coast. They dammed every one of their major rivers, some of them multiple times.[219] They diked off their estuaries, diked off entire seas,[220] and reduced their coastline by more than two-thirds.[221] "[T]he water is the enemy," explained a professor of engineering. "You don't let the enemy, before the fight starts, penetrate your territory."[222]

They won. At a cost of about $18 billion over some 40 years, they completed their first rounds of the Delta plan and they haven't flooded since.[223] They predict their strategy to hold for the next 500 years. At the same time they moved aggressively to fill lands behind their coastal barriers, "polders" created literally from the sea.[224] The polders produced fruit and vegetables. So far, it was all win-win.

Then another bill came in. Over half the estuaries disappeared, and those remaining were in trouble.[225] Coastal fisheries were hammered. At the mouth of two of Europe's major rivers, the Meuse and the Rhine, the Grevelingen was the largest and most productive estuary on the Atlantic Coast.[226] Within two weeks of completing the barrier across it the mussels and shellfish were dead.[227] The government tried to turn what is now a lake behind the barrier to tourism, but the water was, and remains,

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216. H.E. Boudewijn van Eenennaam, Ambassador of the Netherlands to the United States, Remarks at the Wyndham New Orleans Hotel (Nov. 27, 2005), *available at* http://kerrn.org/pdf/Eenennaam.pdf; *see also* McQuaid, *supra* note 215.

217. *See* van Eenennaam, *supra* note 216.

218. McQuaid, *supra* note 215.

219. *Id.*

220. *Id.*

221. *See* van Eenennaam, *supra* note 216; *see also* McQuaid, *supra* note 215.

222. McQuaid, *supra* note 215; van Eenennaam, *supra* note 216.

223. See van Eenennaam, *supra* note 216; *see also* Keith Darcé, *Outer Ring of Flood Protection Proposed; But Cost Is Barrier, Visiting Senator Says*, TIMES-PICAYUNE (New Orleans), Nov. 15, 2005, at A1.

224. McQuaid, *supra* note 220.

225. *Id.*

226. *Id.*

227. *Id.*

so contaminated that it is unfit for human contact.[228] It is covered with toxic algae and more than 5 billion feet of polluted sludge has settled on the bottom.[229] They had made a dead zone.[230]

The story repeats up and down Holland's coastline, dying estuaries outside, dying lakes inside, and a series of costly and difficult remedies.[231] The most dramatic adaptations have been the construction of movable gates at the mouths of several estuaries.[232] The gates have restored part of the tidal interchange. But they have so reduced sediment loads that islands are disappearing, and now scientists are calling for one of the largest gates to be removed entirely.[233] "Interfering with natural processes and natural systems is always a bad thing," says one. "Mother nature is the best engineer."[234]

The transferability of the Delta Plan to South Louisiana is an open question. The floodgates solution seems readily adaptable to passes the size of the Rigoletes and the Chef Menteur, but gating off rivers the size of the Mississippi and the Atchafalaya would be a larger challenge. The Dutch Coast is not, further, abutting a subsiding continental shelf, and its soils are composed of harder stuff than Louisiana marsh and muck.[235] Fixed structures, like levees, will hold up there; we have seen what they do here. We have also seen the risks they present to the environment, and that's before we factor in an environment like that of coastal Louisiana which is already on a lose-lose trajectory.

There is also a question of commitment. The Netherlands is a small country, and it has dedicated itself to fighting the sea. It cannot afford *not* to. Sixty percent of its land is below sea level.[236] Louisiana, as valuable as it is to the nation and to those of us who live here, is only one piece of America, and America's attention span for this or any other

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228. *Id.*

229. *Id.*

230. *Id.*

231. *See* John McQuaid, *Ruin and Recovery; Beating Back the Sea; Bigger, Better, Bolder*, TIMES-PICAYUNE (New Orleans), Nov. 14, 2005, at A1; *see also* McQuaid, *supra* note 215; van Eenennaam, *supra* note 216.

232. McQuaid, *supra* note 231.

233. McQuaid, *supra* note 220.

234. John McQuaid, *Give & Take; The Dutch Found Out the Hard Way: Flood Control Can Cause as Many Problems as It Solves*, TIMES-PICAYUNE (New Orleans), Nov. 15, 2005, at A1. (quoting Arnold van der Wees, Environmental Engineer, Dutch Ministry of Transp., Pub. Works & Water Mgmt.).

235. Telephone Communications with Dr. R. Eugene Turner, La. State Univ., Dec. 27, 2005, and Dr. John Day, La. State Univ., Jan. 4, 2006. Turner and Day are two of Louisiana's leading scientists on the Louisiana coastal zone; Day took a sabbatical year in the Netherlands where inter alia he studied the impacts of its flood control system.

236. van Eenennaam, *supra* note 216.

endeavor is limited. So will be federal funding, and we are still in the heyday of a petroleum economy that cannot and will not, last. Unless Louisiana goes in a direction that is more self-sustaining over the long term, it could up with a large white elephant on its hands.

Perhaps the most important lesson from the Netherlands experience is how it has since evolved. As noted, Dutch engineers nave tried to retrofit their structures to accommodate natural process, to recreate natural processes, with mixed success. Easier to do that from the start. As a matter of engineering strategy, they have now explicitly rejected bit-levee and big-drainage solutions as unworkable.[237] They have instead come to rely on multiple layers of defense, redundant in the safety they provide, and none designed to provide full protection on their own.[238] Most significantly, they have changed their philosophy from "flood control" to "water management,"[239] and are tiptoeing to the next logical, indeed the only logical step: people management. It is rather remarkable.

Delegations of enthusiastic Louisiana engineers, politicians and media reporters are now visiting the impressive water works of the Netherlands Delta project. They see big gates and levees and come home dazzled and inspired for heroic works of engineering. Meanwhile, in its most recent report, under the title "Lessons Learned," the Netherlands Water Partnership says: "The Netherlands is changing its approach to water."[240] The country will have to "make more frequent concessions."[241] The report explains, "We will have to relinquish open space to water, and not take back existing open spaces, in order to curb the growing risk of disaster due to flooding."[242] Giving space does not mean "the height of ever taller levees" or depth by "channel dredging."[243] Rather, "space in the sense of [flood plains]."[244] The report concludes—in words one hopes that its Louisiana visitors will also read and understand– "Only by relinquishing our space can we set things right; if this is not done in a

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237. *See generally* NETH. WATER P'SHIP, DUTCH EXPERTISE: WATER MANAGEMENT AND FLOOD CONTROL (2005) [hereinafter DUTCH EXPERTISE], *available at* http://www.netherlands-embassy.org/files/pdf/DutchWaterExpertise_Nov05.pdf; *see also* McQuaid, *supra* note 215.

238. *See* DUTCH EXPERTISE, *supra* note 237; *see also* McQuaid, *supra* note 231; van Eenennaam, *supra* note 216.

239. van Eenennaam, *supra* note 216.

240. DUTCH EXPERTISE, *supra* note 237.

241. *Id.*

242. *Id.*

243. *Id.*

244. *Id.*

timely manner, water will sooner or later reclaim the space on its own, perhaps [in a] dramatic manner."[245]

This is the director of the most modern, complex and successful flood control project in the modern world.[246] Is anybody listening?

4. Alternative Future 2

Suppose, now, we were to start from a different point of departure. We aim to maximize the sustainability of the natural systems of the Louisiana coastal zone. We accept that hurricanes and major floods are going to come, and that attempts to confine them are as self-defeating as those of Persian King Xerxes, sending his sailors down to the beach with whips to beat down a stormy sea. Better to cede the waves some space. The goal here is not maximum human development but a coastal zone that will maintain itself and its inhabitants for generations to come. The mechanism is to use the coast as a first line of defense. And to cede it, including the violence of floods and storms, the space it needs to protect us, and thrive.

Fact is, there are many lines of defense out there, starting with the barrier islands and moving inland to ridges, natural land bridges, estuaries, interior roads and railroads, locks and floodgates, then levees, and then things we always did and then forgot how, like elevating houses.[247] The point is that no one defense has to do the whole job. New Orleans might live quite safely surrounded by valid Category three levees, if over time its buildings were raised a few feet, as they historically were, and far barriers, both natural and manmade, served to knock down wave heights before they arrived. If the danger points for maximum storm surge are the Rigolets and the Chef passes, they might be gated in ways that do not require a continuous levee from the Pearl River to the Mississippi. The same incremental protections would be gained from closing the MRGO. We have a mix of options in which structures do not come first, they come last.

Here is a problem. With all the attention of coastal scientists, engineers and federal and state agencies to this question over the years, we still have no idea how much of the coast we can save, and where.

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245. *Id.*

246. These conclusions are echoed by other Dutch engineering experts. *See* deJager, *supra* note 215. "We must give flood plains back to our major rivers and we even allow the sea to enter the coastal dunes again." Indeed, he continues "[w]e are now also contemplating to just let the water come-in in certain area[s] and buil[d] floating houses and roads, instead of continuing raising the dikes and the necessary [sic] to increase the capacity of the drainage systems." *Id.*

247. JOHN A. LOPEZ, THE MULTIPLE LINES OF DEFENSE STRATEGIES TO SUSTAIN LOUISIANA'S COAST (Dec. 12, 2005) (on file with author).

Instead we have Coast 2050 which, despite its price tag, is a losing game plan, nearly half a million acres in the next few decades.[248] We are entitled to know more. If a sustainable coast is the goal, we need a map of what we can sustain.[249] That map, in turn, should drive what we do for restoration and for human development, and for its protections.

Here is the second problem. If we are not going to try to protect everything with large structural works, then we are going to have to give water its space, as the Dutch themselves have concluded.[250] The idea is not revolutionary. We routinely take space for highways and other public works, with compensation, but with no greater rationale than the public good. The Supreme Court has recently approved takings for such dubiously public ventures as shopping malls,[251] which makes taking private property to protect the general public, and the private owners themselves, from hurricanes seem like a no-brainer. Truth is we rarely buy space for natural processes, but there is no reason not to. In fact, always in response to disasters and never without pain, we have actually gone in this direction several times.

One story starts on the upper Mississippi River, and with another record storm. It rained, rained again and then raised more from May to September 1993, across the Dakotas, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin and Illinois.[252] Nearly 150 major rivers went into flood, and they stayed that way for half a year. All interstate highways were closed at one point or another that summer, as were the railroads and commercial airports. Sewage treatment plants washed out. Barge traffic on the Missouri and Mississippi was stopped for two months. Eighty people died, 54,000 homeless, 100,000 houses destroyed, $18 billion in damages. The magnitude of the disaster provoked a new response.

FEMA, a new and not-yet-co-opted agency at the time, moved quickly with response relief. It also moved quickly with offers to buy out properties next to the rivers. By the time the water receded, FEMA and state and local governments had moved 13,000 houses and businesses

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248. *See* Coast 2050, *supra* note 167.

249. The call for such a map comes from several quarters. NRC REPORT, *supra* note 10, at 128; LOPEZ, *supra* note 247, at 20; Editorial, *Mapping Protection*, TIMES-PICAYUNE (New Orleans), Jan. 13, 2006, at B6.

250. *See Dutch Expertise*, *supra* note 237.

251. Kelo v. New London, 126 S. Ct. 24 (2005).

252. Lee W. Larson, Chief, Hydrologic Research Lab., Nat'l Oceanic & Atmospheric Admin./Nat'l Weather Serv., The Great USA Flood of 1993, Presentation at International Association of Hydrological Sciences Conference: *Destructive Water: Water-Caused Natural Disasters—Their Abatement and Control* (June 24-28, 1996); Brett Hulsey, Presentation at Annual Conference of Louisiana Environmental Action Network (Nov. 12, 2005).

out of the floodplain. Two years later, another heavy rain season produced flooding, but no flood losses. People were out of the hit zone.

In 1997, almost in miniature, the story repeated on the Red River flowing north towards Canada.[253] Out of its banks and out of control, the floodwaters covered 80% of the largest cities in the area, Grand Forks, South Dakota and East Grand Forks, Minnesota.[254] No deaths this time, but huge financial losses.[255] As with the Upper Mississippi floods a few years earlier, the Red River was already confined by levees; they simply couldn't hold back that much water.[256] The Corps had predicted flood height at 49 feet.[257] It topped 54 feet.[258] Graffiti on an abandoned refrigerator read, "49 feet my ass!"[259] There is something about words on refrigerators that speaks truth to power.

Same solution. FEMA and the Corps proposed to buy people out of the floodplain and move the levees back, giving the river more room. The residents were badly divided, but the mayor of Grand Forks persevered, taking the unpopular step of supporting the buyouts. Her successor, who ran on a platform of opposing the buyouts, now acknowledges that they saved his city. Land purchases started within four months. When they ended, 1,700 homes and businesses had been moved out of harm's way. "If you try to do a recovery by consensus," said a participating engineer, "nobody will agree and nothing will happen. So you do what's right, and it may not be popular."[260] Over time, though, what was controversial became popular. It just took some fortitude at the beginning.[261]

Stepping back in time, the Corps of Engineers came to similar conclusions itself, twice, on the Lower Mississippi River. Not easily, of course. To the engineer mind, a solution that concedes anything to Mother Nature is conceding first downs to the other team. But as we have seen earlier, after decades of pursuing a levees-only strategy to confine the Mississippi River, only to bring disaster, the agency was finally embarrassed into the idea of a floodway that would give the river

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253. Gordon Russell, *Rising from the Tide*, TIMES-PICAYUNE (New Orleans), Dec. 11, 2005, at A1.

254. *Id.*

255. *Id.*

256. *Id.*

257. *Id.*

258. *Id.*

259. *Id.*

260. *Id.*

261. *Id.*; Gordon Russell, *Fallout from Flood Dooms One City's Leaders; Grand Forks Voters Resent Lack of Input*, TIMES-PICAYUNE (New Orleans), Dec. 11, 2005, at A1.

space.[262] Three floodways, in fact, at the Atchafalaya, Bonnet Carre, and New Madrid. The Bonnet Carre was small in scope and never presented a conflict, but the New Madrid was prime farmland and so quickly occupied to the point that it was almost never used.[263] Soon, all that investment was clamoring for more drainage pumps and levees to protect it. No flood water ever passed down New Madrid.

It was the Atchafalaya, however, that bought the point home. As seen earlier, the Corps ultimately conceded that in order to give the floodwaters their space, it would have to restrict human development in the floodway.[264] Dredging and walling off the Atchafalaya River at its banks was counterproductive; it simply encouraged more people into the hit zone. And so, about 15 years ago, the corps begin purchasing no-development easements across nearly half a million acres of the lower Atchafalaya Basin.[265] They will be a bargain. When the next big Mississippi River flood comes, the Corps will be able to blow the plug on the Atchafalaya, place no one in there at risk, and save New Orleans.

Here, then, are some things we can learn. If we start from the position of protecting as much human occupation and investment as we can, we can probably do it, at least for a while, at enormous economic and environmental cost. With enough money we can grow tomatoes on the moon. The question should occur whether that's a good way to grow tomatoes. The question should also occur whether the country is going to want to continue to spend heroic sums of money to grow those tomatoes over decades, as the Gulf moves in and the oil runs out. And the question should also occur, even if we go for tomatoes and even if the federal monies will flow like water from a permanent spring, what do we want to look like? A region of cul-de-sacs and strip malls behind floodwalls, or an open, viable coastal zone? After all, New Orleans restaurants can always import seafood from Maryland and Vietnam.

If, on the other hand, we start from the position of maintaining as much of the coastal zone and its natural storm barriers as we can, we meet a different set of possibilities. We interfere with natural processes as little as possible, remove barriers to them, and over time move to the

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262. BARRY, *supra* note 30, at 423-24.

263. See U.S. Army Corps of Engineers Public Affairs Office, Corps Fights Flooding in Mississippi and Ohio Valleys, http://www.hq.usace.army.mil/cepa/pubs/oldpubs/apr97/story2.htm (last visited Jan. 31, 2006); *see also* U.S. Army Corps of Engineers, New Orleans District, The Mississippi River and Tributaries Project, http://www.mvn.usace.army.mil/pao/bro/misstrib.htm (last visited Jan. 31, 2006).

264. *See* Oklahoma v. Guy F. Atkinson Co., 313 U.S. 508, 512-15 (1941).

265. U.S. Army Corps of Engineers, New Orleans District, Atchafalaya Basin Master Plan §§ 3-6 to 3-8 (Draft, Mar. 2000).

traditional places Louisianans have always lived, the ridges of the natural bayous and distributaries leading to the Gulf. We protect those zones. We also protect critical infrastructure for oil and gas, fisheries and essential navigation canals. For the rest, we let nature have the space it needs to rebuild and it will protect us in turn.

5. Reconciliation

We start with the map. In fact, two maps. One shows the ecosystem we can restore and maintain over time. The other shows the human development we will protect within it. They may be entirely reconcilable, but the restoration map comes first. Together, they drive the engineering. The first drives the second, and the second drives the third, and without the first two we are flying blind.[266]

These maps do not exist. What we have are engineering drawings like Morganza to the Gulf. The Corps has hundreds, and together, de facto, they plan South Louisiana. Now the Corps is preparing more. By default we will end up with a maximum development scenario, heroic engineering and some environmental accommodations (think: leaky levees). Coastal restoration is invited to the party, but it is not the host.

We also need new mapmakers. We have always thought of coastal management in terms of engineering, and engineering agencies are well funded at every level from the Corps to local levee districts, politically supported from top to bottom, and largely autonomous. Even Coast 2050, the state coastal restoration plan, operates under the baton of the Army Corps of Engineers. Coastal scientists, on the other hand, are found in universities, small consulting firms or environmental agencies, on short political leashes and tied to research on particular sponsored projects (often funded by the Corps). One challenge, then, is to elevate science to the role of map-maker. A challenge within that challenge is to get scientists on the same page.

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266. There is a tendency to fuse these steps, making hurricane protection and coastal restoration "equal partners" in the planning process. Unfortunately, it doesn't turn out that way. As long as the construction agencies have the major monies, authorization authority and development constituencies beyond them, they will eat their mates like the female spider. Such has been the history of similar "equal consideration" efforts in the past. *See* Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661-667e (2000) (calling for equal consideration of fish and wildlife in water resources plan); Oliver Houck, *Promises, Promises: Has Mitigation Failed?*, WATER SPECTRUM, Spring 1987, at 31. This is not to say that the came construction juggernaut will not end up dominating here as well. But for science-based restoration to have a fair hearing it needs to come first. Otherwise, it becomes an afterthought to a levee system that might well foreclose the best options for restoration *and* hurricane protection over time.

The nice thing about engineering is that it seems so certain. It may be faulty and the building may fall over, but it responds to numbers and rules of physics. We are comforted by it. Usually, it works, or we would never take an airplane ride. And so we like engineering solutions. Among other things, they made living in this part of the world possible. They also look impressive, big dams and canals. And, down inside, they allow us to move dirt and water around which we have all done and enjoyed from early childhood. Hard structure engineering has a great deal of history, money and human nature going for it. Which is why we have lots of engineering maps.

The most unnerving thing about science, on the other hand, is that it is a moving target. The very nature of the discipline is to posit a thesis and then everyone else tears it apart. Once they can no longer do that, the thesis stands until later revelations require modifications. There was a time in Louisiana, not very long ago when the U.S. Fish and Wildlife Service was contending that oil and gas canals benefited the environment.[267] We also thought that impounding coastal marshes was a good idea.[268] There was a time, just a little longer ago, when we believed that cigarettes were good for your "T-zone," and not much longer still when scientists were proclaiming that "rainfall follows the plough," just before the ploughed-over grasslands of Kansas and Nebraska blew away in the great dust bowl. For this reason, science is a difficult standard, and it is not easy to arrive at a consensus on what is and what should be done.

So it has been with the restoration of coastal Louisiana. Doing a necessary injustice to the gamut of scientists involved—who include some of the best in the world—there are two ways of looking at the coast and they can lead to different outcomes. Over-simplifying at high risk, some see the coast as soil; others see it as plants. To coastal geologists, hydrologists and a majority of others, the Mississippi River made the Louisiana deltas by depositing phenomenal levels of silt and sediments over long periods of time.[269] Those deliveries have offset the natural rates of subsidence and built five million acres of land, an impressive feat. To

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267. At least part of this support came from Louisiana fish and wildlife agencies, for whom more canals meant more boating access. *See* Letter from Jesse J. Guidry, Sec'y, State of La. Dep't of Wildlife & Fisheries, to Joel Lindsey, La. Dep't of Natural Res., Coastal Zone Mgmt. Section (Nov. 29, 1983) (on file with author) (questioning the backfilling of access canals).

268. *See generally* U.S. Army Corps of Engineers, New Orleans District, Programmatic Hydrolic Management, Environmental Impact Statement (Oct. 1996).

269. Sherwood M. Gagliano, Controlled Diversions in the Mississippi River Deltaic Plain, presented at International Symposium, Wetlands and River Corridor Management (July 1989) (on file with author); *see also* Sherwood M. Gagliano, Governor's Office of Coastal Activities, *An Environmental-Economic Blueprint for Restoring the Louisiana Coastal Zone: The State Plan* (1994).

this school, the basic remedy for coastal restoration is to open up the rivers and restore that function, while there is still time to do so.[270] Granted, vegetation is also necessary, but without the river silts the coast will disappear.

To other coastal scientists, however, the coast is a complex of vegetation growing on its own; the complex is largely self-sustaining and holds everything else together.[271] The marshes, as known by anyone who has stepped out on them from a boat can attest, are a tangle of root systems that sink under foot and float in a dense mass above muds largely composed of centuries of their predecessors, reef-like accretions of vegetation. When the plants die, the soil disappears. Whatever kills the marshes—be it canal dredging or high loads of nutrients—kills the coast. And if the delivery system for that pollution is the Mississippi River, then we have a problem. The Mississippi is famously heavy in industrial discharges of heavy metals and highly complex, persistent toxins.[272] It is heavier still in fertilizer run-off from as far north as Ohio and the Dakotas, and its nutrient levels have created a semi-permanent dead zone of oxygen-less water the size of Delaware at the mouth of the river.[273] Within which virtually nothing lives.

Seemingly, then, this conflict in science leads to opposite conclusions: keep the river out, or set the river free. It also leads to different priorities for restoration, the delivery of sediments, hydrology and vegetation.[274] The conflict is real, but unnecessary. It is also resolvable in a post-Katrina climate that recognizes the need for greater commitments, from many players, to save the Louisiana coastal zone. The answer is not to deny the necessary role of the river. After all, the Mississippi helped make this place, and when it changed course the deltas it had created began to degrade, long before humans began

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270. *See* Sherwood M. Gagliano & Johannes L. Van Beek, *A Long-Term Plan for Louisiana's Coastal Wetlands* (1993) (on file with author); *see also* Sherwood M. Gagliano, *Restructuring Coastal Louisiana: Issues and Problems*, American Bar Association Section of Environment, Energy, and Resources, 8th Section Fall Meeting, New Orleans, La. (Sept. 20-24, 2000); *Freshwater Diversion Projects May Help Nourish Louisiana's Vanishing Wetlands*, GULFWATCH, Spring 1999, at 1; Mark Chatry, *Freshwater Diversion*, 37 LA. CONSERVATIONIST 4-8 (May-June 1985)

271. *See* R.E. Turner, *Wetland Loss in the Northern Gulf of Mexico: Multiple Working Hypotheses*, 20 ESTUARIES, 1-4 (Mar. 1997). *See generally* Houck, *supra* note 33, at 7-9, 12-16, and sources cited therein.

272. PAT COSTNER & JOE THORNTON, GREENPEACE, WE ALL LIVE DOWNSTREAM: THE MISSISSIPPI RIVER AND THE NATIONAL TOXICS CRISIS 91-98 (1989).

273. Schleifstein, *supra* note 202, at A1.

274. These uncertainties include the actual contributions of diversions and the relative merits of sediment-based and hydroponics re-vegetation. For fuller identification of scientific questions concerning coastal restoration, see NRC REPORT, *supra* note 10, at 116-26.

intervening. On the other hand, the contamination of the river is a clear and present danger to the survival of the coastal marshes. We can all agree on is that the danger is real and that it has to be removed. What we need is a good river to work with. We don't have one. That, too, becomes part of the new plan.

6. Coast 2100

We can now put the puzzle together. In a post-Katrina world of greater urgency, funding and public awareness of the plight of New Orleans and the Louisiana coastal zone, we have the opportunity to go beyond Coast 2050, take it off the leash and see where we can really go: Coast 2100. Before suggesting a few principles for that new plan, let us reach two understandings.

The first is that restoring coastal Louisiana is a national issue and will require remedies beyond this state. We lie at the receiving end of a large watershed, and some of what we need has been turned off and other stuff that is hurting us has been turned on. The Corps districts need to talk to each other, the EPA has to step up to the plate, upstream states have to change some habits too. If the nation's taxpayers are going to be asked to spend more money than America spent of the Marshall Plan to fix all of post-war Europe,[275] then they have a right to expect a national effort.

The second is the funding. When it comes to restoring the city of New Orleans itself, the funding should be federal. Not just restoring the levees, the city. However you look at it, and with plenty of supporting actors, the Corps of Engineers drowned New Orleans and the sight of individual homeowners trying to rip out, detoxify and rebuild their homes is one of the most unjust features of a post-Katrina world. New Orleans is a federal responsibility. You flood somebody, you pay.[276]

Beyond the city, the responsibility is more shared, but the final bill may be even larger. Whatever the mix of structures, restoration and compensation for relocating people out of harm's way, the bills will be large and federal appropriations cannot be relied on, over time, to

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275. Coleman Warner, *History of Help*, TIMES-PICAYUNE (New Orleans), Dec. 28, 2005, at A1.

276. Conventional wisdom holds that the Corps is immune from liability for its role in the levee failures, and case law supports that conclusion. United States v. James, 478 U.S. 597, 612 (1986). On the other hand, it seems a far stretch to say that 1929 statute dealing exclusively with Corps works on the Mississippi River should minimize the corps for activities in a different location, of a different nature, at a later time. Whatever the legal merits, the federal government's *moral* obligation to repair the catastrophic damage caused by its own agents seems clear. The obligation is not simply to provide better flood control; it is to repair the harm.

maintain them. As mentioned earlier, Senator Landrieu has proposed tapping a greater percentage of offshore royalties, which would be welcome.[277] Given the damage it has caused directly to Louisiana, however, more direct contribution by the oil and gas industry is also in order.[278] You destroy, you pay.

With these understandings, here are ten criteria for a coastal plan with the maximum long-term chance of success:

1. *Draw the maps*. Not just a flood protection plan. At the direction of Congress, the Corps of Engineers is presently engaged in a hurry-up offense to design hurricane protection for New Orleans and South Louisiana. Without knowing what our restoration goals can and will be, and without making any conscious decisions about human development in response. To be sure, we need to know what the engineering possibilities are. But they beg the question, engineering to do what? Right now, we have the cart before the horse.
2. *Review the bidding*. The Corps and other agencies have projects pending that could seriously compromise an all-out effort to restore the coastal zone. Morganza to the Gulf is one; several port and waterway expansions are in the wings as well, new MRGO's in the making. That Congress already authorized them is not persuasive. Like MRGO, they were authorized in a very different day under very different circumstances. Katrina changes the equation. They need to be looked at again, new restoration map in hand. They should be consistent with the future, not the past.[279]
3. *Free the upstream sediments*. The Mississippi today at the latitude of New Orleans carries about 80 million tons of sediment a year.[280] An impressive figure, until we realize that a century and half ago it

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277. *See* Marshall, supra note 87.

278. For a fuller discussion of his proposition, see Houck, *supra* note 33, at 165-67. Here the obligation is both moral *and* legal. A leading Dutch expert on coastal restoration has recommended the same. *See* deJager, *supra* note 215, at 4.

279. The Louisiana delegation bears responsibility here for advocating projects that directly conflict with coastal restoration. Earlier noted is Senator Landrieu's support for unjustified canal expansion. *See* Press Release, Sen. Mary L. Landrieu Amendments Included in Supplemental Appropriations Passed by House (May 5, 2005), http://landrieu.senate.gov/~landrieu/releases/04/2005505D06.html. Senator Vitter, for his part, has been supporting the clear-cutting of the cypress swamps that shield many communities as far north as Baton Rouge. *See* Editorial, *Putting the Coast First*, TIMES-PICAYUNE (New Orleans), May 10, 2005, at B4. Representative Jefferson continues to oppose closing the MRGO. *See* Matthew Brown, *Katrina May Mean MR-GO Has To Go*, TIMES-PICAYUNE (New Orleans), Oct. 24, 2005, at A1. We need to get on the same page here.

280. NRC REPORT, *supra* note 10, at 25-27.

carried about 400 million. We can set aside whether those 400 million tons were natural background or were bumped up by land clearing (although the diaries of Marquette and Joliet, floating down the Mississippi in the 1600s, reported silt and mud raging in from the Missouri so violently that it made their passage dangerous and discolored the waters for days).[281] The point is that most of those silts today lie behind dams on the upper watershed. We need them, and the Mississippi is their natural conveyor belt.[282] The bumper sticker should read: Free the Mississippi 400 Million.

4. *Free the rivers*. Which, until today, we have tiptoed around with a few, very expensive freshwater diversion structures whose efficacy has been further compromised by their capacity and politics.[283] Too much money goes to too much hardware with too little output. We do not need to regulate outflows from the Mississippi with complex machinery. We can cut sills in the levees to replicate natural crevasses, and let the river do its thing.
5. *Cut the upstream fertilizers*. Which can be reduced by 50% within 5 years, then by 50% again.[284] Upstream agriculture is locked into a prisoner's dilemma of chemical nutrients, most of which end up polluting the Louisiana coastal zone. The upstream states are in denial, so is Louisiana for that matter, and EPA is in hiding. It is time to insist. A less polluted river is not a matter of aesthetics. It is a matter of survival.
6. *Heal the marsh*. Which is hemorrhaging from the inside out. Push in the spoil banks. Crevasse the ones that remain. Plant grass. Pretend we're farmers. We can build wetlands, if necessary, by hand. Not fully—manmade marshes still come out looking a little weird—but we need to rebuild a base for natural processes to then improve upon. A coast fully ceded to open water will be harder to restore.

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281. BERNARD DEVOTO, THE COURSE OF AN EMPIRE (Sentry ed., Houghton Mifflin Co. 1960) (1952) (quoting from Marquette's diary):

> I have seen nothing more dreadful. An accumulation of large and entire trees, branches, and floating islands was issuing from the mouth of the Pekistanouï with such impetuosity that we could not without great danger risk passing through it. So great was the agitation that the water was very muddy and could not become clear.

282. The state of Louisiana is reportedly now negotiating to barge down dredged materials for coastal restoration from as far away as Illinois. *See, e.g.*, Philip Ewing, *Illinois' Next Big Export Product Could Be . . . Mud*, ST. LOUIS POST DISPATCH, Jan. 5, 2006, at A1.

283. *See* Gagliano, *supra* note 269.

284. MISSISSIPPI RIVER/GULF OF MEXICO WATERSHED NUTRIENT TASK FORCE, ACTION PLAN FOR REDUCING, MITIGATING, AND CONTROLLING HYPOXIA IN THE NORTHERN GULF OF MEXICO 21 (Jan. 2001).

7. *Stop the bleeding*. We will have to make historic commitments to hold onto even the base of coastal wetlands we currently enjoy, an order of magnitude beyond the ambition of Coast 2050. Meanwhile, we continue to permit dredging and filling of the same wetlands for access canals, waste dumps, new subdivisions and the like. Every acre of the coast we allow to be destroyed is certain loss. Attempts to mitigate these losses produce poorly, when they produce at all.[285] More often they simply produce payments to the state, a sort of coastal-destruction tax. An ounce of prevention is worth a ton of restoration.
8. *Make space for natural processes*. Elevate roads and railroads. Open new floodways. Move oyster leases, consolidate energy, port and navigation facilities, zone development within protected areas and let the rest rebuild. We shouldn't try to storm-proof the coastal zone, and the more we try to storm-proof the more we will lose.
9. *Dare to think retreat*. Coastal residents should be able to live where they wish, for as long as they wish. But they are also threatened, more each year. Some were wiped out entirely by Katrina and Rita. The hurricanes predicted for the next two decades will obliterate more. We should be able to maintain, on a sustainable basis, the docks, processing plants and other investment of a working bayou, if only through insurance. A sustainable economy is compatible with a sustainable zone. But residential development another thing. People and structures in the most vulnerable areas should be offered the opportunity to relocate in protected areas, at full and fair compensation. The costs of such a program will be more than offset by the savings in the attempt to protect these same residences forever, and in reduced losses to future storms. The more we delay this process, the harder it will be.
10. *Face global warming*. It is real. And it makes everything else we do to save the coast infinitely more difficult, if not impossible.

What would such a plan look like, and what are its chances? Impossible to say, but not hard to guess. With enough bed load, use of the main rivers, active marsh healing and zero-base tolerance for new

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285. For the uncertainty of wetland mitigation, see Stephen Crooks & Laure Ledoux, *Mitigation Banking as a Tool for Strategic Coastal Zone Management: A UK Perspective* 3 (Center for Social and Economic Research on the Global Environment Working Paper GEC 99-02, 1999), http://www.uea.ac.uk/env/cserge/pub/wp/gec/gec_1999_02.pdf. For the uncertainty in Louisiana mitigation requirements even being implemented, much less working, see Mark Schleifstein, *Wetlands Policy Changes Filter Down Louisiana Groups Review Federal Move*, TIMES-PICAYUNE (New Orleans), Dec. 28, 2002, at A2. *See also* Cain Burdeau, *Audit: Coastal Policy Unenforced*, TIMES-PICAYUNE (New Orleans), Mar. 9, 2004, at A2.

harms, we should be able to hold our own, building some deltas, shrinking some others, a process not unlike the one that created South Louisiana over many thousands of years. We could maintain. We could even grow the zone in places vital to the protection of New Orleans. And in that growing and maintaining we would support, once again, a renewable resource-based coastal community long after the oil and gas industry has run its string.[286]

Where would we live? In the natural corridors we always lived, before we had the arrogance to think we could build on every cheap piece of wetland and then call on the government for flood control. We can protect the natural ridges along the Mississippi and Bayou Lafourche, and we can protect individual towns like Morgan City with floodgates and ring levees. Up to a point. If people want to live on Grand Isle, Holly Beach or any other hurricane bulls' eye, however, they can be our guest. Just not our paid guest. No more levees. No more rock walls. No more dredged sand. We are, as a matter of public monies, going to cede nature its space.

There are no cost estimates for such a plan. We haven't even imagined such a plan yet. It seems certain, though, that the engineering and construction costs of this approach, over time, will be considerably less than those of the maximum development model. Given space and the ingredients to work with, nature is low-maintenance. Once we get this in place, we have it forever. The difficulty with this approach—and it is huge—is that it requires accepting the fact that we as red-blooded Americans cannot have it all. The conversation over this approach in Grand Forks, South Dakota, was difficult; it will be nearly insane in a region that equates planning with socialism and has always looked to the Corps for another, bigger fix.

At the very bottom, these are the choices ahead of us.

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286. The concept of planning for restoring the resource first, and then for human development within it, is not without precedent. It is the basic principle of biosphere reserves in Europe—inhabited natural areas—and is found as well in habitat conservation planning (HCP) under the Endangered Species Act, 16 U.S.C. §§ 1531, 1539. *See* Peter Aengst et al., *Introduction to Habitat Conservation Planning*, 14 ENDANGERED SPECIES UPDATE 5 (1997). Such planning starts with the habitat needs of the species and then determines those human activities that can best accommodate them, reversing the old mode of planning human activities and then considering what can be done about the environment. *See* Oliver Houck, *Are Humans Part of Ecosystems?*, 28 ENVTL. L. 1 (1998). Humans come into the HCP equation, indeed they will end up predominating, but they don't start it, lest they stifle the options. *See id.* It is not a leap to consider the Louisiana coastal zone an endangered species, and follow the same game plan.

7. Making Decisions

We have a plethora of decision-makers here, from the Corps (always active, and more active now with its prestige in jeopardy and a lifetime of new work for the taking) , to FEMA (very passive, but with a surprising ace-in-the-hole), a federal reconstruction czar (a cipher, so far, but he apparently talks to the President), the New Orleans mayor and the city council (by no means the same thing), ditto for each parish, the state Governor, the Louisiana Reconstruction Authority, the Coastal Wetland Restoration and Protection Authority, the Advisory Commission on Coastal Restoration and Conservation, the Department of Transportation (levees), the Department of Natural Resources (coastal zone), the parish coastal programs, the levee districts, the Louisiana state legislature, our U.S. congressional delegation and several committees of the United States Congress. Every one has a piece of the elephant, but no one has the elephant. No one has even described the elephant.

We also have a preexisting mindset. Land use is local. Which usually boils down to the favor of a local official, where the law requires a decision to be made at all. In New Orleans, individual city council members make land use decisions like mafia dons, conferring or denying their blessings. The rest of the city planning system lies somewhere between advisory and pantomime. If Katrina breaks up this tradition and results in a clear and enforceable city plan, it will have done one good thing in an ocean of grief. If it facilitates the idea of zoning in rural areas of the state that'll be another win as well.

But of course the decisions ahead are not local. They are not even confined to the state. We will need massive federal monies, and may need changes in practices in states nearly 1,000 river miles away. The question is, who does this?

So far, no one. As for who should, we have dueling Senators here. Senator Landrieu inserted an $800 million appropriation into the 2005-06 budget, directing the Corps to conduct such a study for both New Orleans and all of South Louisiana on a very tight schedule; a scant six months for a draft plan. It may seem curious to some that, for these purposes, we would go back to the very agency that built failing levees in the first place and has shown historic resistance to thinking outside the box. Such is the abiding faith of the congressional delegation in its historic water resources partner. It is what Congress knows. The output of such a process is likely to be the maximum development model. It is what the Corps knows. An alternative model is not yet on the table.

Senator Vitter, on the other hand, has called for a new coastal restoration commission composed of federal and state appointees. A first version of this idea surfaced in the Pelican Bill and left much to be desired. It was painfully short on independent judgment (this was before evidence of engineering shortcomings came rolling in). The Bill was also short on public involvement, even public knowledge. The Senator has since supported a more autonomous authority with the expertise to receive and critique Corps and other proposals. Which gets us closer to the goal.

We have one more step to go. The technical decisions here, from the outset, call for a broader base than that of the Corps. The Corps is qualified to make engineering and technical decisions. But as history shows, decisions of this magnitude should be reviewed by an entity that is truly independent, also expert, and with the authority to remand an unsupported conclusion.[287] It could be the National Academy of Sciences, although the Academy is not structured to provide long-term services. It could be an empowered state agency. Whatever the vehicle, well-qualified and independent review seems essential.

The overall planning that integrates technical flood control decisions with coastal restoration and development, however, is better led by a new entity with fewer competing priorities and greater interdisciplinary expertise. We have a special case here, a larger restoration project than the Florida Everglades, larger than ever attempted in the United States. As the Katrina relief debacle illustrated, shared responsibilities are necessary, but joint command is fatal. It could be state, it could be federal, it could more effectively be both state *and* federal,[288] but our job calls for a new command with a single, unfragmented mandate—to save the Louisiana coastal zone—and the capacity to ensure that all other players are working towards that goal.[289]

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287. John McQuaid, *Real Failures May Lie Within the Corps of Engineers, Some Say*, TIMES-PICAYUNE (New Orleans), Dec. 8, 2005, at A1.

288. Similar state-federal authorities exist for the restoration of the Everglades and the Sacramento Delta. *See* U.S. Army Corps of Engineers, Jacksonville District, Central and Southern Florida Project, Final Integrated Feasibility Report and Programmatic Environmental Impact Statement Summary 9, http://www.evergladesplan.org/docs/comp_plan_apr99/summary.pdf ("All applicable Federal, tribal, state, and local agencies will be full partners . . . ."); *see also* CALFED Bay-Delta Program, Final Environmental Impact Statement/Environmental Report 2 (July 2000), http://calwater.ca.gov/CALFEDDocuments/July2000_EIS_EIR/301/301_intro.pdf ("The CALFED Bay-Delta Program . . . is a cooperative effort of 18 state and federal agencies with regulatory and management responsibilities in the San Francisco Bay/San Joaquin River Bay-Delta. . . .").

289. The State is already evolving in this direction. La. R.S. 49:213.1 (2005). In late 2005, the Legislature created the Coastal Protection and Restoration Authority within the Governor's office, directing it to "develop the plan which shall serve as the state's overall strategy

This authority's first job is to prepare the maps that guide all that follows. Its second job is to review ongoing projects, flood-control and otherwise, that could affect the success of their plans. Its third job is to integrate restoration, development and flood control initiatives—in that order—to achieve long term sustainability. An agency with less autonomy, or with a different order of priorities, will not succeed.[290]

The decisions ahead are awesome. But they need not stop the train. Simply bringing the existing levees for New Orleans and the lower river parishes up to a grade is a daunting job, and runs the risk of haste.[291] Just to the west, the entire Atchafalaya floodway system is topped by floodwalls suspiciously similar-looking to those of the failed New Orleans canals, and on their safety hangs the fate of another half-million people from Donaldsonville to Pierre Part and Lafayette to Morgan City. In this context, new plans for all of South Louisiana in a 6-month boot, or a 2-year boot, needs a better idea. It invites the old. It invites mistakes with the new. Whatever we do will take a decade to put in place, probably more.[292] We have several centuries ahead of us in play. There is time to get it right.

8. Decisions from Another Quarter

When we last saw the national flood insurance program, it was limping forward towards Armageddon handing out bushels of money that broke its budget utterly in 2004, again in 2005, and with every

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for conserving and restoring coastal wetlands through the construction and management of coastal wetlands enhancement projects." La. R.S. 49:213.6. Existing responsibilities of other agencies (e.g., Transportation over levees, Natural Resources over coastal management) remain untouched, however, and so the actual power of this new entity remains to be *seen*. Whatever its authority within the galaxy of state agencies, the state agency remains largely powerless vis-à-vis federal programs, except to the point that it may withhold local cost-sharing for unwanted projects. This negative authority, such as it is, falls far short of a co-equal, federal-state partnership on coastal restoration, development and protection.

290. At the time of this writing, the new state coastal authority had launched a planning process leading to an "integrated revitalization proposal" for the coastal zone. *See* Laura Maggi, *California Firm To Lead Recovery Plan*, TIMES-PICAYUNE (New Orleans), Jan. 20, 2006, at A12. The process will begin with community workshops, much as was done by the City of New Orleans rebuilding commission, and is to present its scenarios within a year. *Id.* In the parlance of the instant article, this is map two: human habitation and development. Which leaves us with two maps in preparation on very fast tracks: hurricane protection (Corps of Engineers) and "integrated revitalization," (State of Louisiana). What is missing of course is the most important map of all, map one: how much of the coastal zone as a matter of science and engineering we can hope to restore and maintain.

291. John McQuaid, *Levee Materials, Techniques Question*, TIMES-PICAYUNE (New Orleans), Nov. 3, 2005, at 1.

292. Sheila Grissett, *Corps Fighting Clock To Fix Levees*, TIMES-PICAYUNE (New Orleans), Jan. 1, 2006, at A1.

prospect of paying out even larger sums in the near future. The program had reduced flood losses in river floodplains, but it had failed quite obviously to reduce them in the hurricane hit zone. The case is much stronger that with the promise of below-cost insurance it induced those losses as directly as if it had passed out explosives instead. Its requirements, even where structures were virtually destroyed, were little more than new elevations, and its "mitigation" program went forward on peanuts, on monies insufficient to persuade most communities to forego the big bucks in hit zone development.[293]

Then came Katrina. If ever there were an event to motivate those poor souls in the bowels of this forsaken program to promulgate real rules and start stepping people out of harm's way, this was it. One look at the photos of several hundred miles of coast was enough to delineate the real hit zone and to communicate the urgency of a new approach.[294] On the right side of the photos was the Gulf. On the left side was a quarter to a half mile of matchsticks, roof tiles and pure wreckage. All you had to do was buy a newspaper.

The flood insurance response seems to be half-a-loaf. Still in the vice-grip of an Administration that sees FEMA in terms of catching terrorists and equates government regulation of any type with the regime of Fidel Castro, the program's brass would still like its role to be strictly informational, a technical aid to local decision making.[295] But, at the same time, and perhaps because not doing so would be nearly criminal, Katrina pried loose new calculations of flood elevations that had remained bottled up for years. The new elevations on the Mississippi coast rise to from a few feet to 20 feet.[296] The elevations in coastal Louisiana might rise correspondingly.[297]

With two important caveats. At the time of this writing, no new elevations had yet been released for Jefferson Parish and New Orleans, where rebuilding decisions are going on right now. And there is good evidence that New Orleans officials are allowing residents to finesse

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293. Ass'n of State Floodplain Managers, *Testimony Association of State Floodplain Managers Before the Senate Committee on Banking, Housing, and Urban Affairs, The Future of the National Flood Insurance Program* 8-12 (Oct. 18, 2005), *available at* http://www.floods.org/PDF/ASFPM_Future_NFIP_SenBanking_101805.pdf.

294. Dr. Rod Emmer, La. Floodplain Mgt. Ass'n, A Setting for Tragedy: A Physical History of South Louisiana and New Orleans, Presentation at the Katrina Lectures, Tulane Law School (Jan. 20, 2006).

295. Buckley, *supra* note 104.

296. Eric Lipton, *Residents Fight Shift in Zoning for Gulf Coast*, N.Y. TIMES, Dec. 12, 2005, at A1.

297. *Id.*

compliance with even the *existing* flood elevations.[298] By no coincidence, the high-volume political message in these two parishes is "come on back home" and rebuild. Perhaps for the same reasons, the insurance program has made another huge concession across the Gulf coast: despite the widespread losses and evidence from the photos—you can see the surge mark by the debris—its new elevations are only "advisory" for at least the next year.[299] Until, goes the story, they can be more thoroughly confirmed. Of course, a great many new building decisions will be made within a year, putting the entire onus for flood safety on hard-pressed local officials. That's not federal policy; it's cowardice.

This said, the new elevations, effective or not, binding or not, send a message to lenders and others who will be involved in the re-development of the coastal zone. It's not all going to get done in a year. Some people at least will be genuinely more interested in building safe than in building low. Increasingly, though, the idea of living from 8 to 20 feet up off the ground may not seem so attractive.[300] That's a long flight of stairs for the grandparents. It's an even longer drop for the kids.

And so, the option of moving back from the coast—not way back, just enough for nature to begin to work in their favor—may look more and more attractive. If the disincentive of realistic flood insurance requirements were coupled with genuine enforcement and with serious relocation money—monies that would seem exorbitant until you begin to tally the costs of paying flood claims and rebuilding after the next Katrinas, to say nothing of the cost in human lives—we just might move towards sustainable development both in New Orleans on the coast. If we could also refuse, at last, to support hurricane hit-zone development with new beach nourishment projects, levees, groins, highways, bridges, sewage treatment plants and other free infrastructure, we could move

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298. Jeffery Meitrodt, *Permit Appeals Pay Off for N.O. Residents*, TIMES-PICAYUNE (New Orleans), Jan. 15, 2006, at A1:

> After glancing at 16 pictures of [a] gutted property, which showed mud and mold climbing the walls, the inspector reversed the findings of a field inspection that said the home was substantially damaged—meaning more than 50 percent of its value—and must be raised to meet the current elevation standards mandated by the Federal Emergency Management Agency. . . .
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> For [the homeowner], who said she expects to spend $100,000 to repair her $135,000 home, not having to pay additional money to raise her house is critical to being able to afford the repairs.

299. Sandra Barbier, Richard Boyd & Charlie Chapple, *Elevation Advisory Makes Waves*, TIMES-PICAYUNE (New Orleans), Dec. 3, 2005, at A1.

300. *'Cajun Riviera' Towns Would Be Moved North*, TIMES-PICAYUNE (New Orleans), Dec. 27, 2005, at A1.

there with more conviction. The fact is, we can live on the coast, safely, and enjoy it fully. Just not at the edge of the water.

Of course, the chances of this happening run from slim to none. But they ran from *none* to none prior to Katrina. Realistic flood insurance requirements, a return to natural protections and granting Mother Nature a little space just might start us on that road. As ace-reliever Tug McGraw often said during the New York Mets miracle season, "Ya gotta believe."

D. Can We Save New Orleans?

> *We drive away from New Orleans through Mississippi and it looked like it had been cut by a lawnmower, with blades about 40 miles wide. But driving back into the city it looks like Hiroshima. There are no street lights. We stop at a stop sign. The other guy is already stopped. I wave him forward. Then it's my turn. Another guy waves me forward. It's the new drill. We are actually looking at each other, making eye contact, giving way. Maybe this is the end. Maybe this is the beginning.*

Here is our choice. We can live with nature next time around, or we can fight it for all the turf we can take and spend fortunes trying to defend it. When it comes to floods and hurricanes, a little space goes a long way.

For the moment, it's in the balance. Within the city, planners calling for a smaller footprint are fighting the momentum to rebuild everywhere.[301] It's what we've always done, it's what we know, and it avoids making difficult decisions. To the city's credit, its rebuilding planning process calls for more rational development with expert planners and direct community involvement.[302] More problematically, we are likely to propose large outer barriers to protect the city as well, a second ring across the Rigoletes and to the south. We are likely to extend these barriers, leaky or otherwise, across the entire Louisiana coast, for as far as the money will go. That is what we have always done, it is what the Corps of Engineers knows how to do, it avoids the need to plan, it sets up killings in real estate, and it is the easy path for politicians. Of course, it will be increasingly hard to maintain for even this century, the costs in trying will be enormous, and when there are failures more

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301. Bruce Eggler, *No Neighborhood Left Behind, Council Vows*, TIMES-PICAYUNE (New Orleans), Dec. 17, 2005, at B1.

302. Frank Donze & Gordon Russell, *Four Months to Decide*, TIMES-PICAYUNE (New Orleans), Jan. 11, 2006, at A1. At the time of this writing, however, the City had made no final choice on a rebuilding plan.

people will die. But those consequences are for another day. We are living now.

The point of this Essay is that we have a choice. Rather than start with the premise that we are going to protect as much of the Louisiana coast as we can from hurricanes and then graft on some restoration measures, we can start with the premise that we are going to restore as much of the Louisiana coast as we can and then see what we need to do, within that context, to protect people from hurricanes. The approaches are not the same, and they will lead to two very different futures. We are entitled to see the second one, before we are handed the first as a fait accompli. The first one is being prepared, by the Corps, on an unrealistically hasty schedule, as we speak.[303]

There is another engineering outfit on the scene, however. Mother Nature. The best way to restore coastal Louisiana and to provide long-term safety for New Orleans and other coastal residents is to help nature get back in the game, and then stand back. Not very far back. Just far enough for it to work for us: a natural, self-sustaining, horizontal, first and major line of defense spinning off renewable resource dividends for generations to come. We can have our coast and live and work in it safely for a very long time. Just not everywhere, and doing every damn thing we want.

Can we save New Orleans? It'll be a journey. Will we? Depends on no rain in the morning, and the path we choose.

303. Sheila Grissett, *Corps Fighting Clock To Fix Levees; Investigator: Repairs Won't Be 'Pretty or Permanent'*, TIMES-PICAYUNE (New Orleans), Jan. 1, 2006, at A1.