

Testimony of

Robert R.M. Verchick

**Gauthier-St. Martin Eminent Scholar Chair in Environmental Law
Loyola University New Orleans**

**Board Member and Scholar
of the Center for Progressive Reform**

before the

Committee on the Environment and Public Works

of the

U.S. Senate

regarding

Preliminary Findings on the Failure of Louisiana's Levees

Washington, D.C.
November 17, 2005

Mr. Chairman and members of the Committee, thank you for the opportunity to appear before you today to testify on how preliminary findings on the failure of the levees should be incorporated into future plans for hurricane □ protection. I testify today as an expert in environmental law and policy and a resident of New Orleans.

As you know, I am an evacuee. My wife and children are living this fall in the state of Washington, and I have taken up temporary residence in Houston, Texas, where my Law School, Loyola New Orleans, is continuing its fall semester in space donated by the University of Houston.

I hold the Gauthier-St. Martin Chair in Environmental Law at Loyola University New Orleans, where I teach on issues concerning environmental law and natural resource management. One of my primary areas of research and teaching concerns resource issues in southern Louisiana, including the state's coastal wetlands and levees. I have also been a visiting professor of law at Aarhus University in Denmark and a guest professor at Beijing University in China. I hold an A.B. degree from Stanford University and a J.D. degree from the Harvard Law School. My expertise is in environmental law and property

law. I am the Chair of the Environmental Law Section of the Association of American Law Schools (AALS) and immediate-past Chair of the Property Section of the AALS.

Finally, I am a Scholar and Board member of the Center for Progressive Reform (CPR). Founded in 2002 as the Center for Progressive Regulation, CPR is a 501(c)(3) nonprofit research and educational organization dedicated to protecting health, safety, and the environment through analysis and commentary. CPR is a network of university-affiliated academics with expertise in the legal, economic, and scientific issues related to regulation of health, safety, and the environment. CPR believes sensible safeguards in these areas serve important shared values, including doing the best we can to prevent harm to people and the environment, distributing environmental harms and benefits fairly, and protecting the earth for future generations. CPR further believes that people play a crucial role in helping the private and public sectors make decisions that result in improved protection of consumers, public health and safety, and the environment.

Last September, CPR published two reports on Hurricane Katrina, the first titled "An Unnatural Disaster: The Aftermath of Hurricane Katrina," and the second titled, "Broken Levees: Why They Failed." Both are available on CPR's Web site at: <http://www.progresivereform.org>.

A. Introduction

My testimony today focuses on how preliminary findings on the failure of the levees "should be incorporated into future plans for hurricane" protection. After reviewing what we now know about the failures of Louisiana's levees and the destruction of its protective wetlands and barrier islands, I draw four lessons, each accompanied with a recommendation:

1. Focusing only on levees is a fool's gamble. Any new hurricane protection vision must be *integrated* and must consider *simultaneously* levee and gate construction, wetlands restoration, habitat preservation, canal navigation, and patterns of residential and commercial development.

2. Strong plans are adaptive plans. A new hurricane protection vision should incorporate a formal mechanism by which an independent, scientific board regularly assesses the design, condition, and performance of hurricane protection features (from levees to barrier islands) to call attention to areas in need of maintenance or improvement.

3. What's good for the environment is good for hurricane protection. A new hurricane protection vision must adhere to current environmental and procedural standards, including the National Environmental Policy Act (NEPA).

4. The Corps can't do it alone. Effective hurricane protection in the Gulf may require the establishment of an independent commission made up of federal, state, and local officials, with expertise in policy, land use, science, and engineering to supervise the work of the Corps and other governmental and private entities whose work relates to hurricane protection.

B. Broken Levees: Predictions That Came True

The failure of the levees in New Orleans was catastrophic for the city and for its most vulnerable citizens. In the aftermath of Hurricane Katrina, it is important to understand why the levees failed and what actions, had they been taken, would have prevented, or reduced, the flooding of New Orleans.

1. The Facts: Inadequate Levees

New Orleans is protected from Lake Pontchartrain and Lake Borgne, which are located almost side-by-side on the North side of New Orleans, by an interconnected series of levees that extends along the lakes. (A map of the lakes and levees by the *Times Picayune* can be found at http://www.nola.com/hurricane/popup/nolalevees_jpg.html.) These levees are considerably smaller than the ones that protect New Orleans from flooding of the Mississippi. While the levees on the Mississippi average 25 feet above sea level, these levees range from 13.5 to 18 feet above sea level in height. Another series of somewhat lower levees provides protection to St. Bernard Parish, which is located to the north and east of New Orleans, from Lake Pontchartrain on the north and from Lake Borgne and the Gulf on the east. Parts of the parish are located between the two lakes.

Because New Orleans is below sea level and rapidly sinking, rainwater that flows into the city must be removed not by natural drainage, but with huge pumps that force the water to move along three man-made canals, called “outfall canals,” to Lake Pontchartrain. The canals are lined with concrete walls that prevent the water from spilling into the city. Water flowing through the canals is nearly as high as the rooftops of some houses adjoining the canals.¹ All of the levees were built by the Corps and are maintained by various local levee districts.²

In addition to the drainage canals, the Corps of Engineers constructed two very large canals that permit ocean-going vessels to move from the Mississippi River through the city to Lake Pontchartrain or the Intracoastal Canal near Lake Borgne. The Industrial Canal slices north/south across the city between the river and the lake at the point where they are closest to each other. The MRGO canal bisects the Industrial Canal and travels east/west to the Intracoastal Canal near Lake Borgne. The shipping canal levees consist primarily of concrete floodwalls and earthen levees.

The water that flooded New Orleans did not flow over the levees situated between the lake and the city. Instead, it appears that the surge flowed up the 17th Street and London Avenue canals and caused floodwall breaches along the 17th Street canal and the London Avenue canal.

¹ Graphic, *First Line of Defense: Hoping the Levees Hold*, TIMES-PICAYUNE (New Orleans), available at http://www.nola.com/hurricane/popup/nolalevees_jpg.html.

² *Id.*

The city also flooded because the levee system did not protect it from the “end around” exposure that occurred during Hurricane Katrina. The hurricane surge entered Lake Borgne from the Gulf of Mexico and proceeded up the MRGO canal to the Industrial canal in the heart of New Orleans. Hurricane Katrina appears to have destroyed as much as 90 percent of the levees and flood walls along the MRGO canal in St. Bernard Parish as it pushed up the narrowing canal from Lake Borgne to the conjunction of the MRGO canal with the Industrial canal. Colonel Richard Wagenaar, the Corps head engineer for the New Orleans district, reported that the eastern levees were “literally leveled in places.”³

2. We Knew This Would Happen

Not long after the levees broke and water from Lake Pontchartrain on the north and Lake Borgne on the east began to fill New Orleans, President Bush told television correspondent Diane Sawyer that no one could have foreseen the breach of those levees.⁴ In fact, over a period of many years, scientists had predicted that a strong storm could also breach the levees. Scientists especially feared that even a relatively weak storm coming from the right direction would push a wall of water into the heart of New Orleans from Lake Borgne through the funnel-shaped MRGO canal and into the Industrial canal, destroying the levees along the canal and flooding much of St. Bernard Parrish and the Lower Ninth Ward. It now appears that this is exactly what happened.⁵

Moreover, the risks posed by the MRGO canal were evident. In 2002, the Corps of Engineers acknowledged that “[t]he MRGO levee is more likely to be affected than the area on the lake itself.”⁶ Proponents of closing the canal pointed out that, with the erosion of the wetlands in the unleveed stretches south and east of the city, it had “evolved into a shotgun pointed straight at New Orleans.”⁷

3. Bad Planning and Skewed Priorities

The failure to protect New Orleans resulted from inadequate planning by the Corps to save the city, and from the failure of federal government to fund badly needed improvements once those limitations were recognized. Neither the Corps nor Congress

³ Ralph Vartabedian, *Much Wider Damage to Levees Is Disclosed*, L.A. TIMES, Sept. 13, 2005, available at <http://www.latimes.com/news/nationworld/nation/la-na-corps13sep13.0.5962987.story?coll=la-home-headlines> (last visited Sept. 21, 2005).

⁴ Dan Froomkin, *White House Briefing: A Dearth of Answers*, WASH. POST, Sept. 1, 2005, available at http://www.washingtonpost.com/wp-dyn/content/blog/2005/09/01/BL2005090100915.html?nav=rss_politics (last visited Sept. 21, 2005).

⁵ Michael Grunwald, *Canal May Have Worsened City's Flooding*, WASH. POST, Sept. 14, 2005, at A21.

⁶ Jerry Mitchell, *E-Mail Suggests Government Seeking to Blame Groups*, CLARION-LEDGER (Miss.), Sept. 16, 2005, at A1, available at <http://www.clarionledger.com/apps/pbcs.dll/article?AID=/20050916/NEWS0110/509160369/1260> (last visited Sept. 21, 2005) (quoting Corps of Engineers spokesperson John Hall); John McQuaid & Mark Schleifstein, *Evolving Danger*, TIMES-PICAYUNE (New Orleans), June 23, 2002, at J12.

⁷ McQuaid & Schleifstein, *Evolving Danger*, *supra*.

adequately accounted for the loss of life and property that would occur if a catastrophic hurricane hit New Orleans.

The hurricane protection plan that was implemented after 1985 by the Corps was designed to protect the city against the “standard project” hurricane that roughly corresponds to a fast-moving Category 3 storm.⁸ Scientists had for years prior to the storm predicted that the levee system could not withstand a Category 4 or Category 5 storm.⁹ Hurricane Katrina struck the Louisiana/Mississippi coast as a Category 4 storm, although its force had weakened to a Category 3 storm when it hit New Orleans.

Moreover, although the MRGO canal was a primary cause of the flooding, it is seldom used and heavily subsidized by taxpayers. The canal, which was completed in 1968, is a deep draft seaway channel that extends for approximately 76 miles east and southeast of New Orleans into Breton Sound and the Gulf of Mexico. It was designed to shorten the distance for ships from the eastern shipping lanes of the Gulf to New Orleans, but it has never lived up to its predicted economic expectations. Less than three percent of the New Orleans port’s cargo traffic uses the MRGO; this amounts to less than one ship per day.¹⁰ According to one estimate, the government spends \$7 to 8 million dollars per year (about \$10,000 for every large vessel that uses the canal) just to maintain the canal.¹¹

Although the vulnerability of New Orleans to a catastrophe was well known and widely predicted, the Corps floundered in its efforts to enhance the protection of New Orleans from Lake Pontchartrain. In an award winning series of articles on the levee system, *The Times-Picayune* concluded that the Corps of Engineers declined to move forward with enhancements to the levee and floodwall system because “no clear bureaucratic mandate exists for reassessing the blueprints once levees are built.”¹² For example, an attempt in 1996 to reevaluate the Lake Pontchartrain levees broke down in disputes over modeling and other bureaucratic disagreements.¹³ When Congress appropriated money to protect New Orleans better, the Corps was not been in a hurry to get the job done. For example, Congress in 1999 appropriated money for a \$12 million study to determine how much it would cost to protect New Orleans from a Category 5 hurricane, but the study had not even been launched as of September 2005.¹⁴

In addition, the Bush Administration failed to fund Corps requests. Mike Parker, a former Republican Congressman from Mississippi who was until 2002 the chief of the Corps, was forced to resign when he publicly stated to the Senate Budget Committee that the national interest was being harmed by President Bush’s proposal to cut over \$2 billion

⁸ Mitchell, *supra*; McQuaid & Schleifstein, *Evolving Danger*, *supra*.

⁹ Mitchell, *supra*; McQuaid & Schleifstein, *Evolving Danger*, *supra*.

¹⁰ Grunwald, *supra*.

¹¹ LAKE PONTCHARTRAIN BASIN FOUND., MARTELLO CASTLE WETMAAP, *Background Information*, available at http://wetmaap.org/Martello_Castle/Supplement/mc_background.html.

¹² McQuaid & Schleifstein, *Evolving Danger*, *supra*.

¹³ *Id.*

¹⁴ Andrew Martin & Andrew Zajac, *Corps: Lack of Funds Did Not Contribute to Flooding*, CHI. TRIB., Sept. 2, 2005, at 1.

from the Corps' \$6 billion budget.¹⁵ The Bush Administration rejected a Corps request for \$27 million to pay for hurricane protection projects along Lake Pontchartrain and proposed a budget of only \$3.7 million. Congress ultimately appropriated \$5.7 million for the projects, but the Corps still had to delay seven levee improvement contracts.¹⁶ After Hurricane Katrina struck, Mr. Parker stated that President Bush had not adequately funded improvements to the very levees in New Orleans that had been breached; indeed, Mr. Parker stated that had full funding been authorized "there would be less flooding than you have."¹⁷ An official Corps memo dated May 2005, long after Parker left the agency, seemed to corroborate this possibility. It stated that the Bush Administration's funding levels for fiscal years 2005 and 2006 were not enough to pay for new construction on the New Orleans levees.¹⁸

Although the current administration bears blame for the failure to fund critical levee improvement projects, the truth is that improving the Lake Pontchartrain levees has been a low priority for many administrations, Democratic and Republican, and for Congress. The Bush Administration and Congress have had other priorities over a longer period of time than the last four years. In fact, it seems clear that even the Louisiana congressional delegation has on occasion insisted that the Corps direct its resources to projects like a \$194 million project for deepening the Port of Iberia and replacing the lock on the Industrial canal.¹⁹

The Bush Administration and Congress are influential in setting budget priorities because the Corps is very reluctant to participate in the process of setting priorities for its projects. Moreover, once the Corps has determined that the benefits of a proposed project exceed its costs, the Corps leaves it to Congress to decide through the appropriations process which projects receive funding and which do not.²⁰ Congress is ordinarily willing to consider passing appropriations for large public works projects, however, only in the wake of major disasters or after years and years of study.²¹

4. Poor Design and Construction

Sadly, it now appears that one of the most direct causes of levee failure was faulty design and construction. There are now strong indications that the critical floodwalls along the outlet canals on 17th Street and Industrial Avenue did not breach because the water surged over them and eroded away their support but because they were not capable of withstanding even the surge of a Category 3 hurricane.²² (In contrast, evidence

¹⁵ John McQuaid & Mark Schleifstein, *Shifting Tides*, TIMES-PICAYUNE (New Orleans), June 26, 2002, at 14.

¹⁶ Andrew Martin & Andrew Zajac, *Flood-Control Funds Short of Requests*, CHI. TRIB., Sept. 1, 2005, at 7.

¹⁷ *Id.*

¹⁸ Reuters, Andy Sullivan, *Budget Cuts Delayed New Orleans Flood Control Work*, Sept. 1 2005, available at <http://www.alertnet.org/thenews/newsdesk/N01279059.htm> (last visited Sept. 21, 2005).

¹⁹ Michael Grunwald, *Money Flowed to Questionable Projects*, WASH. POST, Sept. 8, 2005, at A1.

²⁰ *Id.*

²¹ McQuaid & Schleifstein, *supra*.

²² Michael Grunwald & Susan B. Glasser, *Experts Say Faulty Levees Caused Much of Flooding*, WASH. POST, Sept. 21, 2005, at A1.

suggests that the Industrial Canal levee was, in fact, topped.) According to Ivar van Heerden, Deputy Director of Louisiana State University's Hurricane Center, his investigative team found no fewer than 27 major breaches in the of the canal levees.²³ The 17th Street levee appears to have ruptured in response to storm surges no stronger than those associated with a Category 1 storm.²⁴

Independent engineers have said that pockets of swampy soil and shallow steel pilings contributed to ruptures in the levees' earthen walls.²⁵ Preliminary findings suggest that while the Corps's design for the 17th Street levee required steel pilings buried 17 feet below sea level, the actual pilings were buried only 10 feet below sea level.²⁶ Earlier this month, an engineering expert told a Congressional panel that "malfeasance" may have also played a role in levee failure.²⁷ As a result, the Corps and its contractors are now targets of civil and criminal investigations.²⁸

C. Wetlands Policy and Erosion: Decades of Neglect

1. The Importance of Coastal Wetlands

It is impossible to think about hurricane protection in Louisiana without also thinking about coastal wetlands. Just as any discussion of automobile safety must go beyond seatbelts, any discussion of hurricane protection must include discussions of marshes, swamps, and navigational channels.

Louisiana's coastal plain contains one of the largest expanses of coastal wetlands in the contiguous United States.²⁹ Sadly, 90 percent of the nation's coastal wetlands *loss* occurs here too.³⁰ Built by the deltaic processes of the Mississippi River, Louisiana's coastal plain hosts an extraordinary diversity of coastal habitats, ranging from natural levees and beach ridges to large swaths of forested swamps, to freshwater, intermediate, brackish, and saline marshes. These features – which nourish wildlife, filter water, and dampen storm surges – help make the coastal plain, to use the Corps' words, one of "the most productive and important natural assets" in the country.³¹

While most people do not realize it, one of the most important services provided

²³ Remarks by Ivor van Heerden, Deputy Director of Louisiana State University Hurricane Center, at Annual Conference of Louisiana Environmental Action Network, Baton Rouge, LA (Nov. 12, 2005) (notes on file with the author).

²⁴ *Id.*

²⁵ Christopher Drew, *Inquiry to Seek Cause of Levee Failure*, N.Y. TIMES, Nov. 9, 2005.

²⁶ Brett Martell, *Prosecutor to Follow up on Tips of Corruption in Levee-Building*, PHIL. INQUIRER, Nov. 11, 2005 (from Associated Press).

²⁷ Drew, *supra*.

²⁸ See Drew, *supra*, Martell, *supra*.

²⁹ Twenty-five percent of the nation's coastal wetlands reside in southern Louisiana. MIKE TIDWELL, BAYOU BLUES: THE RICH LIFE AND TRAGIC DEATH OF LOUISIANA'S CAJUN COAST 6 (2003).

³⁰ U.S. ARMY CORPS OF ENG'RS, 1 LOUISIANA COASTAL AREA (LCA), LOUISIANA: ECOSYSTEM RESTORATION STUDY, FINAL § 1.1 (Nov. 2004), available at http://www.lca.gov/final/main_report1.aspx.

³¹ *Id.*

by coastal marshes involves storm protection. Imagine blasting water through a garden hose at full force onto a cement driveway. The water splashes and surges, fanning out in many directions. Now imagine spraying water from the same hose onto a thick, dense lawn. The difference between the cement and the lawn is the difference between a storm path composed of open water and denuded coast and one composed of lush forests and marsh. Louisiana's coastal wetlands act as vast sponges, absorbing billions of gallons of rainfall and shielding people and property from storms. The effect is impressive, even for city dwellers who have never seen a marsh: every two miles of wetlands south of New Orleans reduces tropical storm surges there by half a foot.³² Louisiana's coastal wetlands and barrier islands also help shield an internationally significant commercial-industrial complex from the destructive forces of storm-driven waves and tides.³³

In addition to storm protection services, the Louisiana coastal plain also provides numerous other benefits. It offers habitat for countless species, including commercially significant sea life and waterfowl.³⁴ With more than five million birds wintering in Louisiana, the Louisiana coastal plain provides crucial rest stops to migrating birds.³⁵ Finally, Louisiana's coastal marshes provide services vital to water quality. The marshes function as giant "water treatment plants," filtering out vast quantities of nitrogen, phosphorous, and other pollutants from incoming water bodies.³⁶ Taken together, the many services of Louisiana's coastal wetlands make them a treasure every bit as unique and breathtaking as the city of New Orleans itself. The coast's storm protection, habitat, and water treatment services, while impossible to precisely quantify, surely amount to billions of dollars of commercial benefit per year.³⁷

2. The Failures of Wetlands Law and Policy

³² Sydney Blumenthal, *No One Can Say They Didn't See It Coming*, SALON, Aug. 31, 2005, available at http://www.salon.com/opinion/blumenthal/2005/08/31/disaster_preparation/ (last visited Sept. 21, 2005).

³³ U.S. ARMY CORPS OF ENG'RS, *supra*, at § 1.1. A complex of deep-draft ports, including the Port of South Louisiana, handles more tonnage than any other port in the Nation. *Id.* Five years ago, "Louisiana led the Nation with production of 592 million barrels of oil and condensate (including the outer continental shelf), valued at \$17 billion, and was second in the Nation in natural gas production with \$1.3 billion (excluding the outer continental shelf)." *Id.* In addition, more than 29% of the country's crude oil supply and nearly 34% of its natural gas supply moves through Louisiana, which, incidentally, also hosts about half of the nation's refining capacity. *Id.* This relationship helps explain the dramatic surges in fuel prices that immediately followed Katrina.

³⁴ Fisheries in the Gulf of Mexico provide about 20% of all seafood consumed in the United States. Nearly all of that catch is dependent, in some way, on the universe of microscopic plant and animal life first nurtured in the Louisiana Coastal Plain. Oliver A. Houck, *Land Loss in Coastal Louisiana: Causes, Consequences, and Remedies*, 58 TUL. L. REV. 3, 84-86 (1983).

³⁵ About 70% of all birds that migrate through the United States use the Mississippi and Central flyways. U.S. ARMY CORPS OF ENG'RS, *supra*, at § 1.1. The coastal plain also supports several endangered or previously endangered species, including bald eagles, brown pelicans, alligators, and various kinds of whales. Houck, *supra*, at 90. The birdlife moving through southern Louisiana supports significant commercial enterprises, including tourism, birding, and hunting. Houck, *supra*, at 88-90.

³⁶ *Id.* at 78-79. The marshes' natural store of fresh water also acts as a bulwark against intruding salt water, which, were it allowed to flow uninhibited up the bayous, would destroy crucial shellfish habitat and poison groundwater supplies south of New Orleans. *Id.* at 80-81.

³⁷ *Id.* at 99 (estimating an annual value of around \$10 billion in 1983, using two different valuation methods).

Unbelievably, this giant of all coastal wetlands, this biotic and commercial treasure, is disappearing before our very eyes. Since the 1930s Louisiana has lost more than 1.2 million acres of coastal wetlands.³⁸ Before Katrina, the Corps has estimated that Louisiana was losing about 6,600 acres per year, a rate that if unchecked would result in a net loss of 328,000 acres – or an area roughly the size of Rhode Island – by 2050.³⁹

Why is this happening? The effect is partly due to natural subsidence: the soft soils of the coastal plain naturally shift and sink over time.⁴⁰ But this phenomenon, at best, explains only a small fraction of the loss.⁴¹ The real culprits are human-made: Louisiana’s vast network of levees, navigational channels, and oil-and-gas infrastructure. While all of these things are important to safety and commerce, their significant effects on Louisiana’s wetlands require intense study, mitigation, and remediation.

The levee system accelerates coastal land loss by reducing the natural flow of a river’s freshwater and sediment to wetland areas where lost land would then naturally be replenished.⁴² Instead, that valuable water and sediment is funneled down the Mississippi and shot into the Gulf, toward the outer continental shelf, where the formation of barrier islands is impossible.

Louisiana’s coastal plain is crisscrossed with a vast matrix of navigational canals, including ten major navigational channels⁴³ and literally thousands of smaller access canals serving navigation, allowing oil rig access, and cradling oil and gas pipelines.⁴⁴ This network severely disrupts the natural flow of water and nutrients in wetland areas, isolating and starving them.⁴⁵ The major navigational channels pose their own special threat to flood control by sometimes acting as “hurricane highways,” allowing storms to sweep inland, past marshland, like liquid bulldozers.

In the 1980s, prompted by scientific studies documenting Louisiana’s land loss, local groups made up of environmentalists, shrimpers, scientists, and business people began pushing for plans to save what would later be called “America’s Wetland.”⁴⁶ One result of such efforts was the federal Coastal Wetlands Planning, Protection and Restoration Act of 1990 (the “Breux Act”), which created a federal and state task force

³⁸ U.S. ARMY CORPS OF ENG’RS, *supra*, at iii. In the 1970s, Louisiana was losing an estimated 25,200 acres per year from a combination of natural and human process. *Id.* From 1990 to 2000, the rate slowed to 15,300 acres per year. *Id.*

³⁹ *Id.* That loss would represent ten percent of Louisiana’s remaining coastal plain. *Id.*

⁴⁰ *Id.* § 2.1.1.4.

⁴¹ Houck, *supra*, at 15.

⁴² U.S. ARMY CORPS OF ENG’RS, *supra*, § 2.1.1.4.

⁴³ *Id.* § 2.1.2.2.

⁴⁴ Hydraulic forces erode the banks of such canals, causing them to widen at sometimes alarming rates. The surface area of the coast’s artificial waterways may, itself, account for “two to four percent of [the coast’s] total land mass.” Houck, *supra*, at 37.

⁴⁵ *Id.* at 39-40.

⁴⁶ See TIDWELL, *supra*, at 131-32.

to implement wetlands restoration projects with annual funds of around \$40 million.⁴⁷ Although the projects saved hundreds of acres of wetlands, advocates soon realized that a \$40 million program was insufficient. A much more ambitious plan was needed if the coast would ever be saved.

In 1998, state and federal agencies, with the participation of a diverse group of local churches, scientists, environmentalists, and fishermen, developed a book length plan called “Coast 2050: Toward a Sustainable Coastal Louisiana,” which offered a host of ecosystem restoration strategies.⁴⁸ The underlying principles of the Coast 2050 Plan were to restore or mimic the natural processes that built and maintained coastal Louisiana. The complete plan, to be implemented over the next 50 years carried a price tag of \$14 billion, more than twice as much as the Everglades restoration project (nearly \$8 billion) and about the same as Boston’s new underground highway, “The Big Dig.” Though expensive, Coast 2050 actually seemed a bargain, considering the costs of doing nothing threatened to exceed \$100 billion in lost jobs, lost infrastructure, lost fishing, and increased hurricane damage.⁴⁹

But Coast 2050 was never funded. In 2004, hamstrung by climbing deficits, the White House demanded, under pressure from the Office of Management and Budget and the Council for Environmental Quality, that the Corps lower its sights and propose a scaled-down 10-year plan that focused only on a few projects that would cost between \$1 to 2 billion.⁵⁰ That proposed plan, which would take 10 years and cost an estimated \$1.9 billion, is now known as the Louisiana Coastal Area (LCA) plan.

Still, state officials had hopes of securing more funds to restore the wetlands’ storm-shielding capabilities. Louisiana Governor Kathleen Blanco pleaded with the federal government to grant her state “just a fraction” of the \$5 billion it annually received from oil and gases leases on the outer continental shelf off of Louisiana’s coast.⁵¹ Louisiana, of course, never received a greater share of oil and gas royalties for wetlands protection. Indeed, it has not yet receive the anticipated \$1 to 2 billion. The President’s 2005 Energy Bill provided only \$540 million for Louisiana’s coastal restoration over four years.⁵²

This month a report by the National Research Council (NRC) of the National Academy of Sciences reviewed the LCA plan and recommended its approval, although it

⁴⁷ The projects included restoring wetlands near New Orleans with mechanical pumps, shoring up the eroding coast of Cameron Parish, and revitalizing beaches on select barrier islands. *Id.* at 132-33.

⁴⁸ TIDWELL, *supra*, at 134.

⁴⁹ *Id.* at 134.

⁵⁰ Mark Schleifstein, *Corps Seeks Help to Scale Down Plan*, TIMES-PICAYUNE (New Orleans), Apr. 10, 2004. Money was not the only thing siphoned off from Louisiana’s coastal restoration efforts. In the spring of 2004, New Orleans’s *Times-Picayune* reported that Army Corps officials involved in restoring Louisiana’s wetlands had “been sent to assist those fighting in and rebuilding Iraq, including oversight of a similar wetlands restoration project there” at the mouth of the Tigris and Euphrates River. *Id.*

⁵¹ Kathleen Babineaux Blanco, *Saving America’s Wetland*, WASH. POST, Dec. 8, 2004, at A31 (op-ed).

⁵² Michael Scherer, *Bush Fought Funding in Energy Bill for Gulf Coast Protection*, SALON, Sept. 1, 2005 available at http://www.salon.com/news/feature/2005/09/01/against_funding/ (last visited Sept. 21, 2005).

cautioned that the proposed plan was, alone, insufficient to address the full scope of erosion concerns.⁵³ The NRC report also recommended that the Corps consider more comprehensive, long-term plans, perhaps 20-30 years in duration.⁵⁴ Perhaps most importantly, the report emphasized the point that wetlands restoration projects be planned in conjunction with levee projects and land use planning.⁵⁵

D. Lessons and Recommendations

What should we learn from these events? With the help of experts across the country now studying the issues, a few lessons become apparent. I list these lessons below, each accompanied by a recommendation.

1. Focusing only on levees is a fool's gamble. Any new hurricane protection vision must be *integrated* and must consider *simultaneously* levee and gate construction, wetlands restoration, habitat preservation, canal navigation, and patterns of residential and commercial development.

Levees don't protect people, flood protection *systems* do. Those systems are made of multiple layers of defense all working together -- some natural, some enhanced by human engineering, and some completely artificial. Moving from the Gulf toward the land, South Louisiana's system begins with the outer continental shelf (which cuts surge dramatically), sand bars and barrier islands, marshes, cypress swamps, and finally levees (and, perhaps one day, surge barriers). Canal placement protects or destroys the integrity of those barriers. Residential and commercial development in threatened areas control the risk of disaster. A levee system, without these other layers of protection, could never protect New Orleans from the ravages of a Category 5 storm. And engineers designing levees cannot predict the burdens on their structures without being able to predict (and thus control) the integrity of the outer lines of defense.

The Dutch, who have revolutionized flood control, recognized years ago that a levee strategy, by itself, cannot protect a sinking city. Thus they have learned to design systems of flood control that are consistent with the natural features of the land, using islands, lakes, grassy plains, dikes, gates, and smart development policy to protect residents and commercial infrastructure.⁵⁶ The NRC report, based on expert science, agrees.

Looking at hurricane protection in an integrated way will not only save lives, but will save money, by allowing designers to choose lines of defense that make the most sense and that are cost-effective.

⁵³ Mark Schleifstein, *Report Gives Nod to Plan for Coast*, NEW ORLEANS TIMES-PICAYUNE, Nov. 10, 2005.

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ See John McQuaid, *Beating Back the Sea: How the Dutch Fight to Save their Low-Lying Land*, NEW ORLEANS TIMES-PICAYUNE, Nov. 14, 2005, at A1.

2. Strong plans are adaptive plans. A new hurricane protection vision should incorporate a formal mechanism by which an independent, scientific board regularly assesses the design, condition, and performance of hurricane protection features (from levees to barrier islands) to call attention to areas in need of maintenance or improvement.

Such a scientific board might be patterned after the Environmental Protection Agency's Scientific Advisory Board. The goal would be to create a means of regular independent, scientific review of hurricane protection features and requiring the Corps to respond to such reviews. Such a review board could be made part of the independent hurricane protection commission offered later in Recommendation 4.

3. What's good for the environment is good for hurricane protection. A new hurricane protection vision must adhere to current environmental and procedural standards, including the National Environmental Policy Act (NEPA).

An effective hurricane protection strategy must rely on the health and effectiveness of natural features like marshes, swamps, and barrier islands. Laws like NEPA and the Clean Water Act's wetlands protection program, when followed faithfully, help to protect natural resources and their important ecological services. The procedural standards in such laws insure public notification and involvement, while making sure that large and expensive proposals are debated and thought through upon before being enacted.

4. The Corps can't do it alone. Effective hurricane protection in the Gulf may require the establishment of an independent commission made up of federal, state, and local officials, with expertise in policy, land use, science, and engineering to supervise the work of the Corps and other governmental and private entities whose work relates to hurricane protection.

There are three main reasons for an independent commission. First, an integrated approach to hurricane protection will involve areas of expertise outside primary Corps functions, such as land-use planning. Second, such a large, ongoing project probably requires the full attention of a single organization whose sole function is to monitor its effectiveness. Third, the Corps is likely to be seriously distracted by ongoing civil and criminal investigations that are likely to result in lawsuits. These events will make it difficult for the Corps to be open and forthcoming with its own levee assessments, particularly if they find faults in the Corps's implementation. Whatever the results of such lawsuits or investigations, the Corps will have lost public credibility. An independent commission could bring needed direction and credibility to flood protection efforts.

Thank you for the opportunity to appear before your committee today.