



FLOOD PROTECTION AND COASTAL RESTORATION Transition New Orleans Task Force

Presented to
Mayor-elect Mitch Landrieu
City of New Orleans

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Section I: Acknowledgments

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Section II: Executive Summary

The Coastal Restoration and Flood Protection Task Force's mission was to identify the opportunities and make recommendations in the broadly defined areas of coastal restoration and flood protection. An executive summary of the Task Force's key findings and recommendations follows.

Key Findings and Recommendations

Leadership and Execution Since the failure of the levees on Aug 29, 2005 there have been numerous plans put forward to better protect our City and region from flooding. Indeed, the City's Master Plan has already addressed many flood protection issues.

However, up to this point, what has been lacking is not plans, projects, and proposals. Rather, what has been lacking is leadership, vision, and execution. Thus, our first two recommendations:

- **Recommendation:** The Mayor of New Orleans must assume a central leadership role in making the City and region safe and resilient from floods and project a vision of a City that is protected, resilient and sustainable.
- **Recommendation:** The Mayor should create a cabinet-level position for coastal restoration, flood protection and urban water management. With respect to broadly defined issues, this individual would be (i) in charge of formulating the City's plan, (ii) be the empowered representative of the Mayor across City agencies, and (iii) be the point person for coordination with federal and state agencies.

Flood control and water management issues are complex and integrated. This is not just about a list of projects. It is about developing an integrated multiple lines flood defense and urban water management system.

Healthy Coast—Healthy City Coastal wetlands and barrier islands provide important storm protection for the City and define the conditions that the City's perimeter defenses and internal water management system must be plan for. The conservation and restoration of the coast is crucial to the safety and well being of the City. The City must play an active, leading role in the development of coastal plans, projects, and programs that affect it and the region.

- **Recommendation:** The Mayor and the City must advocate for aggressive efforts to save the coast and pay special attention to the conservation and restoration of wetlands within and outside of the City, particularly in the Bayou Bienvenue, Mississippi River Gulf Outlet and Lake St. Catherine areas.

A Robust Reliable Perimeter We must have a robust and resilient perimeter flood protection system of levees and barriers to protect the City from catastrophic flooding. The

current 2011 goal of 100-year protection (63% chance of overtopping in 100 years) is totally insufficient and egregiously inappropriate for a major urban area.

- Recommendation: The Mayor and the City must aggressively advocate for both a comprehensive regional protection at the 500- or 1,000-year level and for high-benefit, low-cost improvements that can greatly improve protection to our City's flood basins and sub-basins.

World Class Urban Water Management A flood protection system is not just levees, pumps, and coastal wetlands. An urban water management system, developed with input from the Dutch approach, will reduce our exposure to both catastrophic and chronic flooding while improving our quality of life and redefining our City.

- Recommendation: The City should implement an urban water management system to direct, control and circulate water both to manage overtopping and intense rainfall and to arrest subsidence. The system should borrow from the best domestic and international expertise but be tailored to New Orleans' unique circumstances.

Section III: Overview of Mission and Process

A. Mission

1. *Transition New Orleans Task Forces*

Five days after his election as the Mayor of New Orleans, Mitch Landrieu launched Transition New Orleans. Led by Co-chairs Judy Reese Morse and Doug Thornton, the transition team worked to identify challenges and opportunities for the City and provide information to guide the new administration.

Transition New Orleans created 17 Task Forces, gathering hundreds of community leaders and experts to help shape the transformation of a great American city. Unprecedented public input was received through 16 community meetings held throughout New Orleans. Hundreds of people voiced their thoughts at these public forums and over a thousand more have shared ideas at transitionneworleans.com and through surveys and questions posed by the Task Forces. The Task Forces have worked hard, diligently gathering information and applying their expertise to develop recommendations for the Mayor-elect's consideration.

The Task Forces' recommendations:

- identify the most important opportunities and challenges for New Orleans upon which the administration should act during the first 100 days;
- identify the mid- to long-term policy priorities that the administration should consider in the first six months and beyond; and
- recommend ways to measure success in order for the City to track progress going forward.

2. *Flood Protection and Coastal Restoration Task Force*

Mayor-elect Landrieu created the Flood Protection and Coastal Restoration Task Force in recognition that New Orleans is not safe unless its coastline is protected and restored and its levees and floodwalls are secure. The Task Force was called upon to (a) identify actions that the Mayor can take to enhance the security of our coastline and levees and floodwalls and the resilience and sustainability of our City, (b) identify any time-sensitive issues that require action or monitoring by City Hall, and (c) frame the long-term issues, challenges and obstacles and identify potential reforms and solutions.

B. Process

The Task Force worked in two sub-committees: Coastal Restoration/Water Management and Levees/Perimeter protection. Each subcommittee held a series of meetings were held over a four-week period beginning in mid-March. The Task Force also solicited public comment via the Transition website, and circulated drafts and documents for comment. All work was then synthesized into a single report and set of recommendations.

Section IV: Assessment of Current State

A. Introduction and Background

The survival and prosperity of New Orleans is closely tied to City's relationship with water and coastal wetlands. The City faces profound challenges and exciting opportunities on both fronts and must proceed with a combination of focus and urgency. At the heart of this are two concepts: Multiple Lines of Defense and Living With Water. These concepts are grounded both in the City's history and in current policy as evidenced by the Army Corps of Engineers' Louisiana Coastal Protection and Restoration Report (LACPR); the State of Louisiana's Comprehensive Master Plan for a Sustainable Coast (State Master Plan); and New Orleans 2030, A Master Plan for the 21st Century as recently approved by the City Planning Commission (City Master Plan). For those policies to shape positive action, it will be essential for the City to give them purpose and meaning through its words, plans, and deeds.

The City of New Orleans has always had a complex relationship with water. The settlement's proximity to the Gulf of Mexico and the Mississippi River was central to its founding and growth. For most of its history, the City of New Orleans devoted much of its civic energy to developing its water-oriented assets and managing its water-related risks. The result was one of the world's great cities and one of its most distinctive cultures.

During the latter half of the Twentieth Century, there was a general belief that, with the advent of federal levee projects and national flood insurance, the City finally had gotten the better of water-driven risk. This attitude was perhaps best exemplified by the fact that, until Hurricane Georges in 1998, New Orleans was seen as a place to evacuate TO in the face of an approaching hurricane, not a place to evacuate FROM.

Growing evidence of Louisiana's collapsing coast, rising seas and storm vulnerability was already beginning to change attitudes and practices in the City when Hurricane Katrina emphatically made the point that New Orleans had to redefine its relationship to water and risk if she were to recover and prosper. This will require a comprehensive approach that blends structural, non structural and ecosystem-focused efforts at all scales, integrating federal, State, regional, and City programs and authorities.

Simply put, the City must have levees and floodwalls to protect against catastrophic flooding, but it also has residual flooding risks and water-related values that are best served by the conservation and restoration of coastal wetlands and a comprehensive adaptive approach to how the City lives and develops relative to water-related risk.

The City must also "walk the walk." The area inside the levees is under our control, and how we live, build and grow in that area has a significant impact on how protected and resilient the City is to water-driven risk. In the near term, this is the realm in which the City has the greatest opportunity to increase its level of protection and resilience. As recognized in the City's new Master Plan and the State's Comprehensive Master Plan for a Sustainable Coastal, this entails using both urban water management and broader issues of land use, zoning, building codes and urban planning. The City must acknowledge and utilize the

authorities and resources at its disposal to make itself safer. We must send a clear message to the rest of the country that we recognize our share of responsibility and take it seriously.

B. Public Comments

The Task Force received public comments and considered them in making its recommendations. The themes that emerged from the public comments included:

*Work to help the various
Authorities coordinate their efforts*

*Work to support recovery of a
healthy coast to protect New Orleans*

*Look to the Netherlands
and other examples of
successful water management*

*Better educate the public
on the importance of
flood protection and coastal restoration*

*Advocate for 500-year protection or better,
100 year-protection is not adequate*

*Advocate for the difficult choices
that will best protect New Orleans*

Section V: Findings and Recommendations

A. Levees and Perimeter Flood Protection

The City of New Orleans must have a reliable and resilient perimeter flood protection system (levees, floodwalls, and barriers) to protect from catastrophic flooding.

The U.S. Army Corps of Engineers is currently building a “100 year” system with a planned completion date of June 2011. While this system will be far better than the actual “as built” levee system prior to the levee failures of August 29, 2005, it is still woefully inadequate.

In fact, the very term “100 Year” is misleading and inappropriate. The system is designed to a 1% chance of overtopping in any given year. This means that there is a 27% chance of overtopping during a typical 30-year mortgage, or a 63% chance of overtopping in 100 years.

On the other hand, overtopping is not necessarily serious, much less catastrophic. If we have levees and floodwalls that are resilient; an urban water management system that can direct, control, and pump the water that overtops the levees; and homes that are built to withstand moderate levels of flooding; then overtopping is manageable or even a non-event.

We believe the City’s goal should be a minimum of 500-year protection from catastrophic flooding for all areas of the City and 1,000-year protection from catastrophic flooding for the heavily populated and easily protected Main Basin (bounded by the IHNC, Lake Pontchartrain, 17th Street Canal, and the Mississippi River).

One solution is a regional levee and barrier plan and currently under study by the USACE LACPR. The City of New Orleans should aggressively advocate for such regional protection.

The combined cost for the East and West Banks (Planning units 1 and 2) is estimated to be approximately \$50 billion for 400-year protection and \$75 Billion for 1,000-year protection. (Source: USACE LACPR Final Draft Report dated March 2009, Engineering Appendix, pp. 61, 62). The time required for study, authorization, funding and construction is likely to be measured in decades.

In the meantime, New Orleans, working in conjunction with our regional partners, must push for relatively low-cost, high-benefit projects to increase the protection and resiliency of the protection system. It may well be possible to significantly improve protection to the City at a relatively low cost.

Some specific projects merit study and consideration:

- IPET and LACPR modeling indicates that the Main Basin’s perimeter system will limit overtopping in a 1,000-year event. However, system resiliency is not sufficient to handle such an event. The lakefront levees must be improved to

1,000-year resiliency, and all I-walls, including those on along the IHNC, should be replaced with more resilient and reliable structures.

- The parish line levee between Jefferson and Orleans must be completed. This levee is currently 95% complete with gaps at Airline Drive and Jefferson Hwy that need to be addressed.
- It may be possible to significantly increase protection to New Orleans East by using a north-south levee to create two sub basins and through improvements to the lakefront levees. Similarly, the Lower 9th Ward and St Bernard might both be better protected by completion of the New Orleans – St. Bernard parish by raising the 40 Arpent levee.

This list is not meant to be exhaustive. Rather it illustrates that for a very small fraction of the proposed cost of a regional 500- or 1,000-year system, it might be possible to significantly improve protection from catastrophic flooding to all areas of the City.

Recommendations:

- 1. The City’s goal should be a minimum of 500-year protection from catastrophic flooding for all areas of the City and 1,000-year protection from catastrophic flooding for the heavily populated and easily protected Main Basin.**
- 2. New Orleans, working in conjunction with our regional partners, must push for relatively low-cost, high-benefit projects to increase the protection and resiliency of the perimeter protection system.**
- 3. In the Main Basin, lakefront levees should be improved to 1,000-year resiliency, all perimeter I-Walls, including those along the IHNC should be replaced with more resilient structures, and the Orleans-Jefferson levee should be completed at Airline Drive and Jefferson Hwy.**
- 4. We need to find, study, and advocate for low cost solutions that have potential to significantly improve protection from catastrophic flooding in eastern New Orleans, the Lower 9th Ward, and Algiers.**

B. Coastal Conservation and Restoration

New Orleans has always been and will always be dependent on the coastal wetlands, waters and barrier islands that surround it. The coast has protected the City, shaped its culture, and been key to its economic development—and it remains vital to the City’s future. That coast is also collapsing and unless that collapse is stopped, the prospects for a resurgent New Orleans will dim significantly. Bold and effective action to save the coast is essential to creating a meaningful future for New Orleans and other coastal communities. The City must commit itself to advancing coastal conservation and restoration, and it should base its commitment on the following eight points:

- A. The coast is an integral part of the City's and region's "multiple lines of defense" as recognized by the LACPR, the State Master Plan, and the City Master Plan.
- B. The nature and extent of coastal wetlands and barrier shorelines are critical factors that inform both how levees, floodwalls and pumps should be designed and where they should be located and how communities might act to protect themselves and become resilient to water driven risk. No community has more to lose or more to gain than New Orleans.
- C. The scientific and technical capacity exists to slow coastal land loss and restore a functionally sustainable coast.
- D. In the near term, there is no practical possibility of upgrading the current levee system around New Orleans to provide protection beyond the 1-in-100 year risk level (though it may be possible for certain sections of the City).
- E. The City of New Orleans lacks the resources and jurisdiction to undertake any meaningful coastal conservation and restoration effort on its own. A partnered approach is essential.
- F. The City can and must use the resources and jurisdiction it does have to conserve the remaining coastal wetlands of southeastern Louisiana and expedite restoration efforts.
- G. The City can and must make coastal conservation and restoration a high priority that is reflected in its advocacy, regional cooperative efforts, and governmental affairs agenda.
- H. This is a matter of the highest possible urgency.

It is not acceptable for the City to entrust coastal planning and action to others. The City has vital interests and opportunities that no one else can assert. Accordingly, the City will need to play a much more prominent role in those efforts. This will require a commitment of its human, fiscal, and political capital orders of magnitude greater than has been the case over at least the past 25 years. The City's engagement will greatly enhance the potential for the successful coastal conservation and restoration while also demonstrating the City's seriousness about its future to an often skeptical state and nation.

Recommendations:

1. **The City must frame a clear and purposeful vision of how safe and resilient the City wants to be and how coastal wetlands conservation and restoration fit into that vision.** This is directly related to the discussion and recommendations in the flood protection and perimeter section above. It is elementary that the coast must be the cornerstone of a multiple lines of defense strategy for the City and that strategy must itself be rooted in a clearly expressed vision of protection and resilience. Historically this was a great strength of New Orleans. The City's levees, pumps, architecture, and land-use decisions were not driven by a desire to have flood insurance or protection against a 1-in-100 year storms. Its decisions were rooted in a vision that this City should grow, thrive and endure and that it would take the actions necessary to ensure that. No less is required today. The State Master Plan and the City Master Plan both recognize the need for a much higher degree of hurricane protection for New Orleans with the City Master Plan specifically calling for no less than protection against a 1-in-500 year storm. These targets should be

affirmed and built upon. Keeping and enhancing the coast we have is vital to both maintaining the City's current levels of protection and ultimately enhancing it.

- 2. The City must identify those coastal conservation and restoration decisions the City wants to shape or compel.** Coastal conservation and restoration projects do not just happen; they are the result of decisions made largely at the State and federal levels. Since the coastal restoration effort began in 1989, the City has been a mostly passive player in that program. While it has occasionally pursued a specific project under some preexisting program such as the Coastal Impact Assistance Program, it has never taken an active role in shaping the federal and State plans or programs that are now recognized as being vital to the City's safety and well being. The City must dramatically expand its field of view and prepare to engage at the state and federal level on policy, budgeting, authorizing and appropriation discussions such as the following:

- i. Water Resource Development Act (federal)
- ii. Economic stimulus packages (federal and state)
- iii. Army Corps of Engineers reform measures (federal)
- iv. Development of a national water resources agenda
- v. Climate change and sea level rise policies and legislation (state and federal)
- vi. Regular and supplemental appropriations (state and federal)

This can and should be done in collaboration with the State, neighboring parishes, community organizations, the City's congressional and legislative delegations, local flood protection authorities (such as the State Coastal Protection and Restoration Authority, the East and West Bank flood protection authorities, the Lake Pontchartrain Basin Foundation, the Flood Protection Alliance and others). At a minimum, the City should focus on projects and programs that target wetland conservation and restoration efforts along the Lake St. Catherine land bridge, the wetlands adjacent to the Mississippi River Gulf Outlet and the Gulf Intracoastal Waterway, the Bayou Bienvenue/Central Wetlands Unit in the Lower 9th Ward and upper St. Bernard Parish, and the Barataria Basin (which is vital to the well being of Algiers and the West Bank).

- 3. The City must speak with a clear informed voice on coastal matters.** This recommendation mirrors similar recommendations in the other sections of this report. For the City to engage the coastal conservation and restoration effort effectively it must speak with a clear and authoritative voice. The voice must be that of a representative who clearly speaks for the City and the message must be unequivocal that the City is committed to being safe and resilient and that a conserved and restored coast is essential to that. To carry weight, it is vital that the message is embraced by the City through the Mayor's office, the City Council, and the City's legislative delegation. It is also essential that the City's coastal restoration needs not just be an addition to the City's traditional requests for State and federal assistance-- it must make clear that improved water resource management is a City priority. If the City does not define and prioritize these issues and requests, it cannot expect the State or the Federal governments to do the job for us.

The City Master Plan contains an action item for consolidating these functions in an expanded and revitalized Mayor's Office of Environmental Affairs that would coordinate, among other things, the City's coastal zone management program and its coastal conservation and restoration agenda. This important recommendation would be a significant step in the right direction if the office is elevated within the Mayor's office and given adequate staffing and support.

4. **The City Must Identify and Implement Current Coastal Projects.** The first step to knowing what and how to improve is to know what is already being done and by whom. An early action item for the Mayor should be to review the coastal projects and programs the City already has and assess their status, effectiveness and any obstacles to progress. This will inform the Mayor about the strengths and weakness of the team and programs he is inheriting as well as informing him about expectations, opportunities and schedules that he will need to know. This will keep important projects and programs moving and allow the City to plan more effectively to engage the broader aspects of the coastal conservation and restoration effort, as noted above. Another benefit of this review will be to identify impediments to progress that the City can address as it takes on its other tasks thus avoiding some of the "stovepiping" that tends to develop within governmental agencies. The implementation of the City Master Plan and the development of a complementary Comprehensive Zoning Ordinance are good examples of tasks that would be profit from this review.

C. *World-Class Urban Water Management*

No matter how robust the City's coastal and perimeter defenses are, water management inside the levees will be an essential part of the City's resilience and protection. At present, New Orleans manages water almost exclusively for rainwater drainage purposes. Rainwater is an important and ongoing challenge for New Orleans but the City's future demands a more varied and capable urban water management system. This system would deal not only with rainwater, but also complement perimeter defenses by accommodating water that might enter the City in the event of levee overtopping or even isolated structural failures.

In order to realize this priority, an integrated approach to living with -- rather than against -- water needs to be developed. Space for storage and movement of water must be consciously allocated. Beginning with Bayou St. John and redesigned outfall canals through a managed, intelligent network of water-related landscape elements, spatial quality and real estate values can be enhanced, particularly in low-lying, slow-recovering areas.

Additionally, the City's water management system must address the issue of reducing soil subsidence by managing ground water levels to reduce future risk as well as ongoing infrastructure and property damage. The City can borrow the expertise developed around the world, notably in the Netherlands, but will need to adapt that experience to our own unique conditions and circumstances. The development and implementation of this water management system is largely within the City's jurisdiction. By acting promptly to develop a comprehensive urban water strategy and system, the City would not only maximize its ability make itself stronger and more desirable but also send a strong message to the state, the nation and the world that New Orleans is committed to reclaiming its place in the league of

world delta cities, and becoming a world leader in water management and sustainable development.

Recommendations:

1. The development and implementation of a world-class comprehensive urban water management program must be made a priority.
2. The development and implementation of that water management program must be made a City responsibility with an appropriately qualified professional in charge. International expertise should be identified and adapted to the unique circumstances of New Orleans
3. Immediate emphasis should be placed on developing an approach to managing the City's outfall canals so as to both meet short-term flood protection needs and longer term urban water management goals.
4. The City should make it its goal to be the world leader in water management.

D. Summary of Recommendations and Progress Measures

1. *For the first 100 days*

- **Recommendation:** The Mayor of New Orleans must assume a central leadership role in making the City and region safe and resilient from floods and project a vision of a city that is protected, resilient and sustainable.

Progress measure: The Mayor will have given a major address in which he states the long-term priority of flood control and coastal restoration and has projected a vision for a protected, resilient and sustainable city.

- **Recommendation:** The creation of a cabinet level position for coastal restoration, flood protection and urban water management. With respect to broadly defined issues, this person would be (i) in charge of formulating the City's plan, (ii) the empowered representative of the Mayor across City agencies, and (iii) the point person for coordination with federal and state agencies

Progress measure: The position will have been defined, created, and either filled or an active search will be underway.

2. *For the first 6 to 12 months*

- **Recommendation:** Within one year of taking office, the Mayor and his team should develop a clear strategy on coastal restoration, perimeter protection, and water management that seeks to produce actual outcomes consistent with his vision for a protected, resilient and sustainable city. The balance of our

recommendations should help define and inform the development of this strategy.

a. Levees and Perimeter Protection

The Mayor and the City must aggressively advocate for both a comprehensive regional protection and for high benefit low cost improvements that can greatly improve protection to our City's flood basins and sub-basins

- The City's goal should be a minimum of 500-year protection from catastrophic flooding for all areas of the City and 1,000-year protection from catastrophic flooding for the heavily populated and easily protected Main Basin.
- New Orleans, working in conjunction with our regional partners, must push for relatively low-cost, high-benefit projects to increase the protection and resiliency of the perimeter protection system.
- In the Main Basin, lakefront levees should be improved to 1,000-year resiliency, all perimeter I-Walls, including those along the IHNC should be replaced with more resilient structures, and the Orleans Jefferson levee should be completed at Airline Drive and Jefferson Hwy.
- We need to find, study, and advocate for low cost solutions that have potential to significantly improve protection from catastrophic flooding in New Orleans East, the Lower 9th Ward, and Algiers.

b. Coastal Restoration

The Mayor and the City must advocate for aggressive efforts to save the coast and pay special attention the conservation and restoration of wetlands within and outside of the City, particularly in the Bayou Bienvenue, Mississippi River Gulf Outlet, and Lake St. Catherine areas

- The City must frame a clear and purposeful vision of how safe and resilient the City wants to be and how coastal wetlands conservation and restoration fit into that vision.
- The City must identify those coastal conservation and restoration decisions that the City wants to shape or compel.
- The City must speak with a clear informed voice on coastal matters.
- The City must identify and implement current coastal projects.

c. World-Class Urban Water Management

The City must implement an urban water management system to direct, control, and circulate water both to manage overtopping and intense rainfall, and to arrest subsidence.

- The development and implementation of a world-class comprehensive urban water management program must be made a priority.
- The development and implementation of that water management program must be made a City responsibility with an appropriately qualified professional in charge. International expertise should be identified and adapted to the unique circumstances of New Orleans.
- Immediate emphasis should be placed on developing an approach to managing the City's outfall canals so as to both meet short-term flood protection needs and longer-term urban water management goals.
- The City should make it its goal to be the world leader in water management.