A Recipe for Rebuilding and Mitigation in New Orleans

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Summary

There are variety of reasons to rebuild a community damaged by a natural disaster. However, care needs to be taken to ensure that (1) the repaired and restored properties are safe and sanitary and (2) everything that can be done to mitigate damage from future disasters is done. The following paper explores these issues and offers 10 ingredients toward a recipe for reconstruction and mitigation:

1. *Assess the level of damage after the water goes down.* Typical buildings should be examined to develop repair or reconstruction scenarios. But only a building by building analysis can determine which ones can be restored and which ones should go.

2. *Involve those affected in the planning.* The residents and businesses must be involved in the process that determines the future of their homes, schools, businesses, and neighborhoods.

3. *Ensure full repairs and reconstruction.* Given the expected level of sediment and chemicals in the water and the length of time the buildings were soaked, it is likely that clean up and repairs will require extensive work. However, it must be done.

4. *Mitigate to the extent feasible.* We can't say the area will never be flooded again, but we can afford protection from the smaller, more frequent occurrences that, over the long run, can cost us just as much as the "big one."

5. *Adopt higher standards for future development.* The development criteria of the National Flood Insurance Program are minimums.

6. *Improve emergency management operations.*

7. *Educate citizens to the hazards and protection measures.*

Given the special circumstances facing the New Orleans area, I recommend three additional ingredients. These are generally beyond local resources and should be designed and administered at the State or Federal level.

8. *Provide better levee protection.*

9. *Protect and restore the wetlands.*

10. *Set and charge actuarial insurance rates.*

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Circulating in the media and many people's thoughts is the question "Should we allow reconstruction of a place as exposed to damage as New Orleans?" As floodplain managers, we discourage development in floodprone areas. It's refreshing to hear this question raised by non-floodplain managers.

However, as floodplain managers, we need to recognize that there's more to a community than the damage caused by its latest natural disaster. To say that a city "doesn't belong there" ignores the benefits it has brought over the years to its citizens, society and the national economy. It is a common attitude these days to "blame the French," in this case, the Iberville brothers who founded New Orleans in 1718. However, just as there is a New York City, a Montreal, a Rotterdam, and a Shanghai, some day, someone would have established a great port city at the mouth of the largest river system in North America.

The city would have grown and thrived on commerce alone. Its economy has been augmented by service to the nearby oil fields and fisheries and by the tourists who are attracted by the many things that have made New Orleans unique. One cannot say "you don't belong here" to the busiest port in the United States, the home of 500,000 people whose contributions to our culture's food and music are unequaled by any other city in the country.

Therefore, one should not decide the future of a community solely on the basis of its exposure to natural hazards. Before relocation of the City is promoted, we need to consider the following:

- How much of the rest of the country is dependent on New Orleans? We are just now learning of the impact that closing the port can have on exports of Midwestern farm products, imports of oil, and other aspects of the nation's economy. In today's world, communities are tied to, and dependent on, each other as never before.

- Not all of the metropolitan area was damaged by the levee breaks. The Westbank and parts of the Eastbank were not flooded. Do we relocate all or just some of the community?

- Depending on the on-site investigations, there may be a lot of sound buildings, streets, and utilities that can be made usable at an affordable cost. Is it preferable to replace this existing infrastructure with new ones that would have to be built in Baton Rouge, Houston, and elsewhere? Or, does it make more sense to preserve this investment?

- What is the likelihood of a recurrence? We know everywhere in the country can be damaged by a 1,000-year flood. But we know the odds are low, so, in most cases, we don't take protection measures from the 1,000-year flood. New York City is likely to get another terrorist attack some day, but we haven't bomb proofed all the buildings, nor do we ask New Yorkers why they would live in such a hazardous area. In short, we accept certain levels of risk. We protect ourselves from the hazards most likely to occur and

cause damage and we prepare less for those that are less likely to occur, even though they may cause extensive damage (e.g., nuclear war or another New Madrid earthquake).

There are some regulations, notably those required for participation in the National Flood Insurance Program, that include flood protection standards for new construction and substantially damaged buildings. However, there are no current state or Federal requirements that prohibit occupying floodplains, even those subject to high hazards such as coastal storms or levee failures. Therefore, under current laws, "Should we allow reconstruction?" is really a theoretical statement, not a mandate that anyone can enforce.

So what should we do with a flooded city? FEMA and professional floodplain managers have dealt with this question in the past, although not at such a scale. After hurricanes or river floods have devastated areas of a community, reconstruction has been preceded with some level of thought and planning that weighs the costs of reoccupying the damaged area with the benefits of vacating it. In some cases, the decision has been made quickly, but lately there have been more cases where there has been considerable care and planning before reconstruction has proceeded.

In all recent cases, there have been assurances that the reconstruction will be protected from some level of future flooding. Some local post-disaster mitigation strategies and plans have raised that level of protection higher than the minimum Federal requirements. For example, they may require protection to one or two feet above the level of the flood that caused the damage, if it was higher than the 100-year flood used in the NFIP criteria.

In a few cases, the entire flooded areas have been evacuated. However, except for smaller communities like Valmeyer, Illinois (after the 1993 Mississippi River flood) and Shawneetown, Illinois (a Federal relocation project that followed the devastating Ohio River flood of 1937), only parts of a community have been moved. Even Grand Forks, North Dakota, which had the Red River inundate most of the city, acquired and relocated a number homes but rebuilt its flooded and burned downtown after its 1997 Red River flood.

I submit that the recipe that has worked in the past should be applied in New Orleans before decisions on the future of the City are made by outsiders. Here are the key ingredients:

1. *Assess the level of damage after the water goes down.* It is easy to react to news reports made from limited knowledge of what is happening and seem to focus on the worst cases. But, a full assessment will show that the City has not been demolished or destroyed and has not been subject to the storm surge that ravaged the Mississippi Gulf Coast. It has been flooded. Buildings got wet. Wet buildings can be cleaned and repaired, as can flooded infrastructure, such as streets, sewer lines, telephone and power lines.

   The fact is, we don't know how bad it is until an on-site assessment is made by experts in repairing flooded structures and infrastructure. Typical buildings should be examined to develop repair or reconstruction scenarios. It may be expensive to clean up and restore some structures and, in some cases, it may be more economical to get rid of a building and replace it with a new one.

However, in many cases, the basic structure, the foundation, frame, plumbing, utilities, and even the roof, will still be sound. Given the costs and the attachment of the owners to their homes, it may make more sense to carefully clean the buildings, even those substantially damaged, instead of tearing them down. And, depending on the type and condition of the structure, it may make sense to demolish some. But only a building by building analysis can determine which ones can be restored and which ones should go.

2. *Involve those affected in the planning.* Whether a building is repaired, improved or demolished is not something that should be left solely to government bureaucrats. The residents and businesses must be involved in the process that determines the future of their homes, schools, businesses, and neighborhoods. A participatory planning process is needed to ensure that all locally important factors are considered when decisions will be made about whether a building or block is repaired or replaced. Factors such as the structure's historic value, the desires of the owners, and people's ties to others in the neighborhood cannot be known or measured by outsiders or building contractors.

   Such involvement in the planning and decision making will be very difficult in these circumstances, but given our technology, we should be able to find ways to communicate with people and help them communicate with their former neighbors, wherever they are. The result should be neighborhood redevelopment plans that identify which areas have buildings appropriate for restoration, which areas have buildings that should be demolished and rebuilt, and which areas should be cleared and redeveloped.

3. *Ensure full repairs and reconstruction.* Should there be structures that can be repaired, we must make certain that they are made safe and sanitary before anyone reoccupies them. Given the expected level of sediment and chemicals in the water and the length of time the buildings were soaked, it is likely that clean up and repairs will require extensive work.

   Everything that can absorb water or grow mold, especially insulation and wallboard, must be removed. The wood frames must be thoroughly cleaned and dried and must be tested for bacteria and moisture before they are recovered. There should be no shortcuts to restoring what can be preserved. While this can be expensive, there may be savings through economies of scale if entire blocks were addressed at the same time.

4. *Mitigate to the extent feasible.* As noted above, every area of the country is exposed to some hazards. We cannot offer 100% protection against all of them, but we do offer "mitigation," i.e., those actions that can *reduce* the long term risk to life and property. We can't say the area will never be flooded again, but we can afford protection from the smaller, more frequent occurrences that, over the long run, can cost us just as much as the "big one."

   Before restoration and reconstruction are initiated, appropriate and feasible mitigation measures should be incorporated into each building. While the news has been of the deep flooding caused by a levee failure, New Orleans has had chronic local flooding problems caused by rain. Due to the topography and the drainage system, after a heavy local storm, the runoff cannot drain away fast enough, so streets and buildings are flooded. Because of this situation, Orleans and Jefferson Parishes account for 20% of all the repetitive loss properties tracked by the National Flood Insurance Program.

While it may be infeasible to elevate all repaired buildings 10 - 20 feet to get them above the levee failure flood level, it may be quite economical to elevate wood frame homes on posts or piles two feet above the ground, enough to protect most of them from these local repetitive flooding problems.

Mitigation efforts should not be limited to flood hazards. We have the expertise to prepare standard repair plans that would be based on the type of structure. When the walls and ceilings have been opened up, it would not be hard to incorporate relatively small modifications that increase a building's resistance to damage by high winds, fire, termites, and hot and cold weather (and their energy costs). If the roof will be replaced, additional wind and hail mitigation measures can be included.

5. *Adopt higher standards for future development.* It's long been recognized by floodplain managers that the 100-year flood standard and the development criteria of the National Flood Insurance Program are minimums. In other states, severe floods have prompted state and local legislatures to enact higher standards, such as prohibiting residences or other buildings from high hazard areas, requiring "freeboard" or a higher level of protection than the 100-year flood level, and zoning areas to limit development to those uses that are compatible with the hazards.

   The Louisiana State Legislature and the parish and city councils should review these safer alternatives and not rely on minimum nation-wide standards to determine what is adequate to protect future development from their local hazards. FEMA, by the way, recognizes that higher standards save money, and has several mechanisms to provide lower insurance premiums for properties and communities that use them.

6. *Improve emergency management operations.* No emergency preparedness plan is foolproof and every disaster teaches lessons. New Orleans should go beyond the typical after action report and adjustments. The City needs to make a major investment in emergency management, perhaps elevating the operations to department level or an assistant to the mayor. A well-staffed office does not have to be an expensive one. The emergency manager works most efficiently when he or she is a coordinator of the many resources already at the City's disposal, including State and Federal agencies, the Orleans Levee Board, universities, and non government organizations.

7. *Educate citizens to the hazards and protection measures.* It would be naïve to think that no one will ever again ignore an evacuation warning. Memories are short and issuing an evacuation order does not provide the means to evacuate. An effort is needed to instill in each person that they are responsible for their own safety. The effort also needs to include information about safety measures, building mitigation, maintaining the measures that were incorporated during reconstruction, and, above all, insurance.

These seven ingredients have been shown to work before and should be used by any community facing a disaster recovery effort. As with other communities hit with extensive flooding, the City of New Orleans will need a great deal of financial support in the form of insurance claim payments, disaster assistance, and mitigation funding.

Given the special circumstances facing the New Orleans area, I recommend three additional ingredients to the recipe for reconstruction and mitigation. These are generally beyond the City's resources and should be designed and administered at the State or Federal level.

8. *Provide better levee protection.* The levees around New Orleans have kept the Mississippi River and Lake Pontchartrain out of the City since Hurricane Betsy in 1965. The current system, built to withstand a Category 3 hurricane, worked to its design protection level (a category 3 hurricane is usually equated to a 100-year flood). Our political system accepted that level of risk. Having seen what can happen to an American central city that suffers extensive inundation, we should raise the bar.

   It was too low by other standards, anyway. Most urban areas are protected to the "standard project flood" which is a higher standard than the 100-year flood. The Mississippi River levees are surely to the "standard project flood." Why not build the rest of the levee system to at least the same flood protection standard the Federal government has supported in other urban areas?

   Even higher standards can be justified. The national standard for high hazard dams is the "probable maximum flood." The effect of a failure of a 20-foot high levee during a flood is similar to that of a 20-foot high dam. Or, we could look to Holland, another place where much of the land is below sea level. The Dutch standard for oceanic dikes is higher than the 1,000-year event and they build additional dikes that help control internal flooding if one fails.

9. *Protect and restore the wetlands.* Much has been said about the loss of wetlands between New Orleans and the Gulf of Mexico. The America's Wetlands campaign has brought this message to many around the country. There are different preventive and restoration actions that can be taken at the State and Federal level that should be pursued.

   One such action that was implemented after the 1993 Midwest flood was to purchase wetland areas that have been flooded and remove the levees that protect them. There are sparsely settled areas south of the City that could be purchased. The levees protecting them could be removed, allowing the Mississippi River to do its natural job of periodically flooding and depositing the sediment that is needed to maintain the wetlands.

10. *Set and charge actuarial insurance rates.* Even with a higher and stronger levee, we are uncomfortable about supporting redevelopment of a floodprone area. Residents of such areas should have their own insurance policies and not rely on Federal disaster assistance. And, they should pay their fair share of the insurance premium, i.e., one that reflects the true hazard. There are three impediments to doing this in a situation like New Orleans.

    First, the National Flood Insurance Program is based on an all or nothing 100-year flood protection standard. This has resulted in a false sense of security for those in areas protected by 100-year levees because they are not required to purchase flood insurance. And if they are flooded, there is no requirement that they purchase insurance coverage in the future.

Second, the insurance rates do not account for the "residual" hazard of a flood overtopping a 100-year levee. Everyone outside the mapped 100-year floodplain pays the same rates, even though a 200-year flood will be only inches deep for some while those in leveed areas will be under 10 or more feet of water. The NFIP should be given the authority and encouragement to set more appropriate site-specific premium rates in areas like Orleans and Jefferson Parishes that have well over 100,000 flood insurance policies and a hazard that is not recognized in the insurance schedules.

Third, the NFIP's rate making policies have politically-set limits. The program's actuarial rates do not account for all flood threats. To keep the cost of flood insurance down, they are based on what is expected of "normal loss years" over a ten year period. They do not build up a reserve for the type of worst case catastrophe such as we have just seen. As a result, even if everyone in New Orleans had flood insurance and was paying "actuarial" rates under the current procedures, the nation's taxpayers would still pay part of the bill.

It is hoped that this recipe provides food for thought. It is also hoped that the appropriate level of care, technical input, and resident involvement are incorporated into the decisions made during the recovery from this disaster.