Make It Right

A Post-Katrina Rebuilding Initiative

The 2005 hurricane season’s devastating effect on the city of New Orleans is well-documented, as is the government’s failed response. The Lower Ninth Ward was among the neighborhoods that sustained the most property damage and loss of life. Brad Pitt founded the Make It Right Foundation to build homes and bring displaced homeowners back to the Lower Ninth. With the help of some of the world’s most famous architects, they are working to rebuild a resilient community that will be the greenest neighborhood in the world. This initiative is not without its challenges and critics. This analysis outlines recommendations for future rebuilding efforts and examines the legacy of Make It Right and the role they might play after the houses are built. At a time when energy costs are rising and concern about climate change is mounting, these homes seek to provide the kind of practical, accessible design and technological solutions that are becoming more relevant as natural disasters become more frequent.

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1. Purpose
The 2005 hurricane season’s devastating effect on the city of New Orleans is well-documented, as is the government’s failed response. Since then, we have seen the 2008 Myanmar cyclone, the 2010 Haiti earthquake, and most recently, the 2011 Japan earthquake and tsunamis. These are just a few of the most devastating natural disasters of the last decade, but disasters of all sizes are becoming increasingly prevalent. A 2007 report found that the number of annual natural disasters has increased four-fold since the 1980s (Magrath, 2007). Furthermore, disasters affect poor populations disproportionately, which was certainly true in New Orleans. These poor communities tend to take longer to recover, and frequently, their vulnerability is not diminished through the recovery process (Magrath, 2007). Instead, the communities are rebuilt to their former condition, only to be devastated again in the future. In 2007, it appeared that this was happening in New Orleans’ Lower Ninth Ward, the neighborhood that sustained the most property damage and loss of life during Hurricanes Katrina and Rita. Seeing this, Brad Pitt founded the Make It Right Foundation (MIR) to build homes and bring displaced homeowners back to the Lower Ninth Ward. With the help of some of the world’s most famous architects, they are working to rebuild a resilient community that will be the one of the most environmentally sustainable neighborhood in the world (Sustainability in Practice, 2010). The project is an example of how private initiatives can fill the gaps in government assistance by using community-based models to create long-term recovery.

Additionally, the project’s impact will extend beyond the Lower Ninth; MIR is innovating to find a balance between four seemingly contradictory elements of homebuilding—high design, hurricane resistance, affordability and the highest standards of green building. At a time when energy costs are rising and concern about climate change is mounting, these homes seek to provide the kind of practical, accessible design and technological solutions that are becoming more relevant as natural disasters become more frequent. MIR’s methods and technologies have the potential to impact rebuilding efforts worldwide. One can extract lessons from MIR about the progress it has made on issues ranging from community engagement to construction techniques. MIR is not just relevant from a community resiliency or disaster rebuilding perspective; there are lessons to be learned for future affordable housing initiatives in general.
2. Literature Review

This paper involves two well-documented topics in the field of urban planning. The first is disaster rebuilding and community resilience; the second is the dynamics of neighborhood development from a land use perspective.

Disaster Rebuilding and Resilience

Steinberg, T. (2006) provides a solid background on the events leading up to Katrina. He explains that even though natural disasters derive from nature, the social and cultural context turns these phenomena into disasters. Steinberg outlines the sociopolitical conditions that led to such a massive failure of preparedness and response after Katrina.

Allen, K. M. (2006) defines “community-based disaster preparedness” (CBDP) approaches as being increasingly important elements of vulnerability reduction and disaster management strategies. Her article advocates tactics that value the knowledge and capacities of local people and build on local resources, including social capital. CBDP can be very effective, and its results are influenced by factors including: “the procedures and funding arrangements of supporting organizations; the divergent worldviews of the various players involved and their relative negotiating power; and the socio-economic and political context in which the initiatives operate.” MIR is closely aligned with the principles of CBDP because their model supports participant empowerment and offers a “compelling mechanism” for encouraging the transmission of ideas and priorities from the bottom up. Allen, K. M. (2006) also points out that in addition to these benefits, many donors prefer to fund initiatives with a community-based component.

The planning process for the Lower Ninth Ward, conducted under the umbrella of the Unified New Orleans Plan (UNOP), resulted in a vision called Sustainable Resilience. Resiliency, much like sustainability, is a term that has taken on many applications and meanings (see Norris, F. H. et al., 2008), but for the purposes of this plan, resiliency means “the ability to absorb disturbances, to be changed and then to re-organize and still have the same identity” (UNOP, 2007). MIR seeks to be part of this resilience, but it is a concept that has proved difficult to measure. Cutter, S. L., et al. (2008) seek to identify standards and metrics for measuring disaster resilience. They provide a new framework, the disaster resilience of place (DROP) model, “designed to improve comparative assessments of disaster resilience at the local or community level.” DROP also includes a set of implementation variables. Because MIR was not founded until two years after the storm, this paper will focus only on the post-disaster portion of the resilience model. In the words of Cutter, S. L., et al., the community’s absorptive capacity for natural disasters was undoubtedly exceeded by Katrina because of the sheer amount of damage and loss of life. Therefore, in order to execute resiliency or to respond to the prior absence of resiliency, the community must engage in impromptu actions that will aid in the
recovery process. Initially, the Lower Ninth was very slow to recover, leaving it still fully devastated two years later and only minimally recovered now. MIR is one of several impromptu organizations contributing to the ongoing recovery process.

The next step toward resiliency is to ensure that social learning (the formalization or institutionalization of resilient responses) takes place to safeguard the community from future events (Cutter, S. L., et al., 2008). This sets MIR apart from other rebuilding initiatives—the care they take in sharing and exchanging knowledge—so that houses will not be the only legacy of their work in the Lower Ninth. This type of social learning improves the inherent resilience against the next event that comes. One of MIR’s biggest investments has been in “community competence,” which encompasses sense of community, attachment to place and understanding of future risks (Cutter, S. L., et al., 2008).

Norris, F. H. et al. (2008) seeks to answer difficult questions surrounding community resilience—by what standard do we conclude that a community has adapted, and what specific resources appear to have influenced resilience? Using Bruneau M., et al. (2003) as a base, the authors modify his framework to measure attributes of specific resources rather than properties of whole systems. Thus, the Norris, et al. (2008) version can be applied to examine the resiliency of MIR’s contributions to the neighborhood. This discussion will take place in Section 7.

Related to community resilience, Ritchie, L. A. and Gill, D. A. (2011) also provide a framework against which we can measure MIR. Viewing disasters as opportunities for transformation and community improvement, they developed the Community Capitals Framework (CCF) based on existing community development research. This involves examining community capacity as a combination of seven forms of “capital:” natural, financial, built, political, social, human, and cultural. This examination will occur in Section 7 as well.

**Neighborhood Dynamics**

In 1974, Sternlieb, G. outlined what constituted a successful neighborhood, and much of it holds true today. It is important that residents not be burdened by severe economic hardship. They generally must be pleased with the level of public services they receive. Schools are very important to residents’ level of contentment, as is a sense of security. Sternlieb observes that security is often a result of homogeneity among residents. Not that all the residents are of the same class or race, but that the socioeconomic make-up of the neighborhood remains the same over time. If lower status groups grow quickly in proportion to the whole neighborhood, neighborhood confidence and security is undermined (Sternlieb, G., 1974). According to Sternlieb, the high value homes MIR is installing should greatly increase resident morale and confidence in the neighborhood. He asserts that families’ moving into and out of the
neighborhood is not negative because this maintains vigor and zeal. Sternlieb was not studying a neighborhood that was completely wiped out, where a change in composition is inevitable and where families’ moving back is the most basic first step in recovery.

Galster, G. (2001) conceptualizes the definition of a neighborhood as a “bundle of spatially based attributes.” The strength of a neighborhood is dependent on a number of factors related to the physical buildings and attributes of its residents. The following characteristics, as quoted from Galster, G. (2001), are especially relevant to the MIR project and will be included in Section 6, regarding making the neighborhood whole.

- “Structural characteristics of the residential and non-residential buildings: type, scale, materials, design, state of repair, density, landscaping, etc.
- Infrastructural characteristics: roads, sidewalks, street-scaping, utility services, etc.
- Tax/public service package characteristics: the quality of safety forces, public schools, public administration, parks and recreation, etc., in relation to the local taxes assessed
- Environmental characteristics: degree of land, air, water and noise pollution, topographical features, views, etc.
- Proximity characteristics: access to major destinations of employment, entertainment, shopping, etc., as influenced by both distance and transport infrastructure.
- Political characteristics: the degree to which local political networks are mobilized, residents exert influence in local affairs through spatially rooted channels or elected representatives.
- Social-interactive characteristics: local friend and kin networks, degree of inter-household familiarity, type and quality of interpersonal associations, residents’ perceived commonality, participation in locally based voluntary associations, strength of socialization and social control forces, etc.
- Sentimental characteristics: residents’ sense of identification with place, historical significance of buildings or district, etc.”

Jun, T. and Sethi, R. (2007) apply evolutionary economics to the degree of cooperation among residents of neighborhoods. Community engagement is one of MIR’s most important activities, so understanding the way individuals choose to cooperate is important. Essentially, Jun and Sethi break down cooperation into a matter of a benefit-cost ratio. When the benefit-cost ratio is too low, cooperators switch to opportunistic behavior, which harms the sense of community within the neighborhood. This causes “cooperative clusters” to be degraded from within, leading to ever smaller cooperative clusters that eventually disappear if the number of “opportunist” neighbors continues to increase. However, if the benefit-cost ratio is greater than a threshold level, cooperative clusters expand and opportunistic clusters shrink. But the key lesson for MIR is that the threshold benefit-cost ratio (above which cooperation can be sustained) falls as you widen the radius of residents in the community. Therefore, dense
networks are more conducive to the evolution of cooperation than sparse networks.

Finally, Flint, A. (2006) address the importance of and growing interest in "safe growth," which is a term to accompany Smart Growth and encompasses factors ranging from indoor air pollution to speeding cars and crime. Storm and flood resistant housing is certainly a part of safe growth in areas like the Lower Ninth Ward, and in this case MIR treats the safety of the houses as a prerequisite or baseline on which to improve.

Methods
I selected MIR as a case study of a post disaster rebuilding project because of its community centric approach to bottom-up site planning. In addition, its ambitious goal of building these types of homes in an affordable manner makes it very unique among rebuilding initiatives. In constructing this report, I first conducted a literature review using existing literature on disaster recovery, New Orleans specific planning, community resilience, and neighborhood characteristics and development. Disaster recovery is an extremely well-established field of planning literature, so in deciding which sources to use in this paper, I chose books and articles that were either specific to Hurricane Katrina or focused on community capacity and resiliency (the two subtopics most directly related to MIR). Since MIR is also an example of neighborhood evolution, I looked for resources that provided insight as to what attributes are important for a thriving neighborhood. In terms of New Orleans planning specifically, Olshansky and Johnson (2010) compiled the most complete account of planning efforts after the storm.

This research, along with City of New Orleans planning documents and the Unified New Orleans Plan, provided background knowledge and a framework to evaluate MIR. I chose the Unified New Orleans Plan as my primary source of reference among the other post-Katrina plans because it was created as an attempt to merge the previous planning efforts into one unified plan. It was the most recently completed plan, and it is still being used in the Lower Ninth.

My objective in completing this paper is to understand the planning process under post-disaster restrictive conditions and under MIR’s self-imposed restrictions pertaining to safety, sustainability, high design and affordability. Therefore, an important component of my research was to spend a week in New Orleans talking to the people involved. In total, I interviewed seven professionals who I selected because either they are presently or were in the past, directly involved with MIR, or they were directly involved in post-Katrina planning. These individuals consist of MIR employees, architects, planners, and landscape architects. Using the literature as a framework, I asked them questions pertaining to their expertise as it relates to MIR, seeking to gain a variety of perspectives on the decisions they made, methods they used, and lessons they learned throughout the process. I synthesized the information from these resources into this paper, written as my Masters Project for the Department of City and
3. Background

On the morning of August 29th, 2005, Category 3 Hurricane Katrina pounded the City of New Orleans (the “city”) for hours with rain and winds close to 100 miles per hour. Governor Kathleen Blanco had announced a voluntary evacuation two days prior to Katrina’s landfall, and just the day before, Mayor Ray Nagin ordered the first ever mandatory evacuation. Still, around 100,000 people remained in the city either out of stubbornness or from lack of resources to evacuate. The city opened the Superdome to house those who could not leave, but only about 10% of the population that stayed for the storm was in the Superdome (Olshansky and Johnson, 2010).

The Category 5 storm surge caused 53 levee breaches throughout the city. Two days after Katrina’s landfall more than 80% of the city was underwater, over 20 feet deep in some areas. While pumping stations worked to get water out the city and engineers worked to fix the breaches in the levees, another storm was brewing in the Gulf of Mexico. Hurricane Rita struck the coast of Louisiana and Texas on September 24th as another Category 3 storm and, combined with Katrina, resulted in 225 billion gallons of water that needed to be pumped out of the city. Combined, the two storms impacted a land area larger than Great Britain. Over 1800 people died and estimated damages totaled more than $200 billion (Olshansky and Johnson, 2010).
Leaders at the time, from President George W. Bush to Michael Chertoff, Secretary of the Department of Homeland Security, called the disaster a surprise act of Mother Nature. But the truth is that Katrina and Rita were much more easily predicted than most natural disasters (Steinberg, 2006). Experts knew that the levees could not withstand a major hurricane and that over a quarter of New Orleanians did not have a car, yet no accommodations were made for their evacuation (Steinberg, 2006).

**A Tragedy Waiting to Happen**

When New Orleans was founded by French traders in the beginning of the eighteenth century, development was concentrated on the elevated portion than ran along the north bank of the Mississippi River, which became known as the “sliver by the river” after it was the only area that escaped flooding in 2005 (Feireiss, 2009). Regular flooding of the river had allowed soil replenishment to keep this area relatively high. But in the beginning of the twentieth century, the first levees were constructed to protect the growing port city from natural flooding. The levees succeeded but created a new problem. They effectively stopped the repeated flooding, and thereby stopped the soil replenishment, that had kept the city above sea level thus far. As the city became one of the most important ports in the country, and the levees performed their duty and kept the city dry, development pressure pushed people into lower-lying areas. At the same time, more of the surrounding marshes and wetlands were being filled and developed. Ongoing compaction and subsidence of the soil under the city caused all of New Orleans to sink, and there was no soil replenishment to counteract this process (Olshansky and Johnson, 2010). Because most of the land in New Orleans is below the level of the river, as well as below sea level, the city is completely dependent on a complicated system of levees and pumps to stay dry (H3 Studio, Inc., 2007).

After Hurricane Betsy flooded the city in 1965, the U.S. Army Corps of Engineers was charged with expanding the levee system, now called the Louisiana Hurricane Protection system. It still was not complete by 2005, and some say that adequate protection from a Category 3 storm like Katrina would not have been completed until 2015. And with the soil compaction, many areas are lower currently than they were when the levees were built (Olshansky and Johnson, 2010).

Much of the surrounding marshland that was not filled in for development was dredged for oil and gas exploration or cleared for shipping canals, as the Gulf became an increasingly important source of oil. Combined with natural erosion, this led to a loss of up to 25 square miles of wetlands per year. These wetlands would have acted as a natural “speed bump” for hurricanes, absorbing the storm surge and slowing the storm the same way any land mass does. Instead, there were not enough wetlands to weaken Katrina before it reached New Orleans (Olshansky and Johnson, 2010).
A Man-Made Disaster—Disguised As a Natural Disaster

After September 11, 2001, the Bush administration made some changes in an attempt to better prepare the nation for another catastrophic event. It created the Department of Homeland Security; this restructuring was detrimental to the Federal Emergency Management Agency (FEMA). Although it kept the same name, FEMA lost its status as an independent entity, it was no longer a cabinet-level agency, and it began to focus much more on man-made disasters. Much of the personnel reorganization had not been completed by the time Katrina struck, so when the Gulf turned to FEMA on August 29th, 2005, they were met with confusion over leadership and responsibilities. FEMA’s failure to adequately respond to the crisis is well-documented (See Rubin, C. B., & Harrald, J. (2007)). FEMA’s director at the time, Michael Brown, who resigned after the storm, said himself, “There was a complete breakdown of government at every level—federal, state and local” (Olshansky and Johnson, 2010).

In addition to being unprepared after Katrina, we failed to prepare beforehand for a disaster that was well-forecasted. Six months before the storm, at a workshop entitled, “Lessons Learned Between Hurricanes,” Dr. Shirley Laska, a professor at the University of New Orleans, presented a scenario eerily similar to Katrina and concluded that New Orleans was hoping for the best but failing to prepare for the worst by not investing in wetland restoration and levee and pump station improvements. In 2004, Representative W. J. Tauzin (R-La.) testified in support of a wetland restoration bill, saying “We’ll be faced one day with thousands of our citizens drowned and killed—people drowned like rats in the city of New Orleans...Please don’t

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let’s have a commission where all of us, red-faced, say we saw it coming and didn’t do anything” (Olshansky and Johnson, 2010).

But nothing is exactly what they did. The bill failed, and the next year, again trying to get coastal restoration funding, Senator David Vitter (R-La.) was quoted at a Senate hearing saying, “It’s not a question of if; it’s a question of when...Instead of spending millions now, we are going to spend billions later.” His foreshadowing words were pronounced just two months prior to storm (Olshansky and Johnson, 2010).

The Army Corps of Engineers was well aware of the importance of the Gulf’s natural storm-absorbing wetlands and the inadequacy of the current levee system. They had prepared proposals to improve on both accounts as early as the 1980s but lacked any political or financial support until the 1990s. In 1999, Congress finally funded a reconnaissance study to investigate how to protect Southeastern Louisiana, which was completed in 2002. The Corps proposed a $12 million feasibility study, which was unfunded as of Katrina (Olshansky and Johnson, 2010).

**The Lower Ninth Ward**

Of the roughly 1800 people killed in the storm, over 1000 of them were residents of the Lower Ninth Ward (Feireiss, 2009). The community literally was wiped clean because one of the largest levee breaches was at the Industrial Canal, which runs along the western border. The Lower Ninth is not among the lowest lying neighborhoods in New Orleans, and other areas of New Orleans experienced greater flood depths and took longer to drain. Nevertheless, the Lower Ninth Ward has become a symbol of Katrina’s destruction because of the lives lost and the extent of devastation caused by the velocity of the water rushing through the huge levee break (Sustainability in Practice, 2010).

The Ninth Ward was a political unit established in 1852, and it was mostly undeveloped at that time. In the early 1920s, the city opened a canal that connected the Mississippi River to Lake Pontchartrain, running north to south through the Ninth Ward. The Industrial Canal cut off the Lower Ninth Ward from the Upper Ninth Ward, and the two neighborhoods have been physically and socioeconomically separate ever since. During slavery, the African American population was dispersed throughout the city because slaves usually lived close to their owners. Since abolition and under the auspices of the Jim Crow laws, African Americans moved to the East because most of the white population lived in the western parts of the city. Since the Lower Ninth Ward was prone to flooding, its land could be acquired cheaply. In segregated New Orleans in the middle of the twentieth century, the eastern portions of the city (including the Ninth Ward) became predominantly African American (Feireiss, 2009). Today, the Lower Ninth Ward is defined as the area east of the Industrial Canal, north of St. Claude Avenue (the bridge to the Upper Ninth), and bordered to the West by the parish boundary separating
Orleans Parish from St. Bernard Parish. Some consider the Holy Cross neighborhood south of St. Claude Avenue as a part of the Lower Ninth, as shown on the map below.

It is important to understand the deep-seated mistrust between African American residents of areas like the Lower Ninth Ward and the white residents of higher elevation areas, like the French Quarter and the Garden District. This mistrust goes beyond mere racism. In fact, it can be traced to a flood in 1927 during which white leaders negotiated the deliberate destruction of a portion of the levee, allowing the Lower Ninth (along with portions of St. Bernard Parish) to flood in order to protect the rest of the city. Therefore, it was not a huge leap for residents to believe that the same thing happened during Katrina. Historically, the Lower Ninth Ward also has been a convenient location for industrial uses that the city did not want to locate on higher ground for fear of contaminating the water source. This theme was carried on throughout the community’s history—“first on the list for urban nuisances, last in line for amenities” (Feireiss, 2009).
Topographically, the land in Holy Cross, the Lower Ninth’s neighbor to the south, is higher near the banks of the river, and gradually decreases in elevation as you move closer to Bayou Bienvenue. Historically, floodwater would exit the community northward, into Bayou Bienvenue, but the levee system undermined this natural pattern. Meanwhile, Bayou Bienvenue was affected by dredging shipping canals, allowing saltwater intrusion which devastated the protective wetlands of the bayou (Feireiss, 2009).

Knowing that Bayou Bienvenue is a crucial buffer for the long term survival of the community, MIR and other organizations are advocating for the restoration of the Bayou as part of a holistic approach to protecting the community from future disasters (J. Williams, personal communication, March 10, 2011).

The 2000 Census reported that 98% of the population of the Lower Ninth was African American, and 36% were living in poverty, while the poverty rate for the entire U.S. is just 12%. Only 6% had college degrees. The average income was $27,499, compared to the entire U.S. at $56,644. However, prior to Katrina, more families owned their own homes in the Lower Ninth than in any other New Orleans community. Their homeownership rate was 59%, compared to 47% for Orleans Parish as a whole (Feireiss, 2009). And despite the poverty and hardships, these were proud people with deep roots, not just to the city, but to the Lower Ninth Ward in particular and to the plots of land they were so proud to own.

**Post-Katrina Planning**

Prior to 2005, the State of Louisiana did not require comprehensive plans or building codes. In spite of this, the city of New Orleans did have a master plan and a comprehensive zoning ordinance (CZO), among other planning documents including a comprehensive emergency management plan. However, the master plan consisted merely of guidelines; it did not give the city authority to enforce compliance. And the CZO was inconsistent with the land use section of the master plan; it had not been updated since the 1970s (J. Williams, personal communication, March 10, 2011). But the devastation following the storm led to multiple planning initiatives, and since then the city has released an updated master plan and is currently working on a new CZO to accompany it (B. Hill, personal communication, March 11, 2011).

Unlike engineers or ecologists, planners can approach disaster recovery from a generalist perspective. This is part of what makes their role so vital after a disturbance. These processes
usually consist of four phases: damage assessment, plan preparation, citizen input, funding and implementation (Johnson, 2011). However, the initial attempts post-Katrina all were missing one or more of these elements.

After the storm, numerous agencies began work on redevelopment plans for New Orleans, seeing the devastation as an opportunity to rebuild in a better way. Mayor Ray Nagin formed the Bring New Orleans Back (BNOB) committee, comprised of attorneys, academicians, business people and church leaders. BNOB developed a very detailed planning process to produce a plan that would allow them to access federal funding. The land-use subcommittee, chaired by real estate developer Joe Canizaro, brought on the Urban Land Institute (ULI) to develop a set of recommendations. Although the ULI plan was meant only to be a starting point for a well-thought-out community-based planning process, it ignited a heated debate about how much of the city should be rebuilt. It made the politically contentious suggestion of developing a smaller New Orleans by turning the low lying neighborhoods into green space. The Lower Ninth Ward was one of these neighborhoods, and in one issue of the local newspaper describing the new BNOB plan, those areas proposed to be converted to parks were marked with large green dots (Olshansky and Johnson, 2010). This caused such uproar among residents that to this day, residents and the organizations working in the Lower Ninth refer to that plan as the “green dot map.” Ultimately, the BNOB plan could not get FEMA funding, so aside from a set of general guidelines about which areas were more viable than others, the BNOB controversy was for naught and only bred more mistrust among low-income residents.

The State put its Community Development Block Grants to work using the Road Home Program. Road Home would pay estimated damage costs up to $150,000, after subtracting insurance payments or any other assistance the homeowner had already obtained. The goal was to allow homeowners to decide whether to rebuild with the money or sell their property to the State and relocate (Olshansky and Johnson, 2010). Another beneficial program was the Lot Next Door Program, which allowed homeowners to purchase adjacent, abandoned lots affordably. The purpose was to ensure that the land of people who did not intend to return would be productively utilized by neighboring residents. Adjacent property owners were granted ownership of neighboring vacant lots by simply agreeing to maintain those properties (T. Duggan, personal communication, Mach 25, 2011).

Meanwhile, the City Council was working on its own neighborhood planning process (with its consultant, Lambert Advisory, LLC), which it distinguished from BNOB’s process because the Council’s process would be a means of facilitating the recovery of all neighborhoods, instead of determining which were more viable than others. Ultimately, the prospect of this process resulting in a comprehensive and systematic consolidated plan looked bleak. But both of these efforts highlighted three main challenges that could inform the next planning process:
obtaining demographically representative citizen participation, addressing uncertainty about sources of funding for the rebuilding and uncertainty about repopulation and future flood risk (Johnson, 2011).

It became clear that neither BNOB’s nor the City Council’s efforts were going to succeed in isolation. The Rockefeller Foundation was interested in leveraged funding for the long term recovery of New Orleans, and the City Planning Commission was looking to start its own planning initiative. Rockefeller’s funding seemed like the perfect opportunity to bring the two existing (albeit stalled) planning efforts together. Even though an official merger never occurred, the process went forward building on both prior plans, with the Greater New Orleans Foundation as the fiduciary agent. A local architecture firm, Concordia, provided staff to oversee this new, unified plan, having established themselves as experts in community based planning and design. The vision was a plan to create and unite roughly 73 neighborhood plans into 13 district plans (Olshansky and Johnson, 2010). Of all of these plans, the Unified New Orleans Plan (UNOP) is most relevant to MIR because it includes a separate plan for the Lower Ninth and provides an understanding of the planning context in which MIR operates. The UNOP process began in September of 2006, and they set the ambitious deadline of having it completed by January 2007.

The District 8 plan contains the Lower Ninth Ward and Holy Cross communities. Public involvement in this process was the biggest challenge because fewer than 300 of the 20,000 residents of this district had returned at the time of this plan’s formation. The planning process succeeded in holding four public meetings with about 100 people in attendance each time and six stakeholder meetings with about 30 stakeholders attending. The project team identified seven characteristics of the Lower Ninth Ward, which it took into consideration when formulating the vision, goals and principles of recovery (UNOP, 2007).

- Physical Isolation: hemmed in by water on three sides with industrial land uses at each of these borders, preventing easy access to both the city and open space.
- Historical Significance: contains a rich array of historically-significant and aesthetically-pleasing examples of vernacular residential, commercial and industrial architecture.
- African-American Heritage: diversity – racial, economic, and cultural – has created unique residential neighborhoods with strong individual identities.
- Active and networked civic organizations: vital fraternal associations, cultural groups, religious institutions and Mardi Gras Krewes offer residents opportunities to make their voices heard on critical issues affecting their neighborhoods, city and region.
- Deep Religious Faith: a large number of religious organizations help residents cope with the tremendous personal losses and traumas related to Hurricanes Katrina and Rita.
- Entrepreneurial Spirit: a small business sector includes a large number of store-front businesses and home-based enterprises operating within the area, some of which were launched in the
post-Katrina era.

- **Vacant & Under-used Property:** A large number of city-owned, vacant lots and buildings—many vacant pre-Katrina—represent significant community resources that can be used to attract new investment to the neighborhood. The vacant area totals about 40 blocks or 90 acres.
- **Waterfront Proximity:** The river levee provides an opportunity to promote future development, recreational and open-space amenities. This is the only riverfront area that does not have rail.
- **Desire to Return:** Many displaced residents hold an intense desire to return to their neighborhoods, to rebuild their homes, communities and lives.

(Adapted from UNOP, 2007)

The citizens involved in the UNOP process underwent a priority ranking exercise about their general needs. 29% rated poor infrastructure (water, sewer, electricity, streets, etc.) as an issue to deal with first. 42% rated it as the most important issue, and 21% selected it as one of the most catalytic aspects. Other needs many residents identified as important included crime (42%), poor school facilities (33%), a lack of city services (33%), an abundance of vacant, blighted housing (33%) and a lack of public facilities (29%). Building on this public input and the results from their assessment of the district’s current conditions, UNOP identified four major variables (funding, flood control, population growth, policy/approach and implementation time frame) and used those variables to come up with three scenarios for the recovery of the Lower Ninth. The three original scenarios fell on a scale from most pessimistic to most optimistic, and the District Project Team called them: RE Pair, RE Hab and RE Vision (UNOP, 2007). Like most scenario planning exercises, the middle option was most favorable, but the community wanted to incorporate some aspects of RE Vision, so the result was called Sustainable Resilience.

The largest part of UNOP is the proposed projects section. The plan has five to ten proposed projects in the categories of flood protection, housing, transportation, economic development, etc. The architect John Williams and others currently are working on the funding and implementation of these projects, and MIR is included throughout the implementation strategy report. It shows MIR having contributed to more than just the housing section, including flood protection, public infrastructure and community services (J. Williams, personal communication, March 10, 2011).

After four rounds of district meetings, three “community congresses,” two “student congresses,”
and numerous neighborhood meetings, UNOP was accepted finally by the City Council in June 2007. Three of the biggest lessons from the process are: (1) information can be a currency as valuable as money; (2) communication and public participation are often underestimated; and (3) allow NGOs to play a role in providing capacity building for communities and fill the gaps where government falls short (Johnson, 2011). The latter is exactly the role MIR set out to fill, two years after the storm.

4. A Call to Action: Make It Right
Actor Brad Pitt watched the destruction of New Orleans with the rest of the world, but unlike the rest of the world, he was in a unique position to do something about it. Pitt spent time in New Orleans prior to the storm filming several movies, including Interview with the Vampire (1994), and he fell in love with the city. He saw the catastrophe as a social justice issue and felt compelled to do what he could to fix it. While government at all levels was telling New Orleanians to come home and rebuild, the government assistance available through Road Home was not sufficient to make it possible for residents to come back and rebuild sustainably, or even to pre-storm standards. Pitt noticed this incongruity between what the government was telling residents of New Orleans and the inadequate assistance they were providing. He was concerned that residents would have to hastily build houses with cheap materials in place of the homes their grandfathers once built by hand. Didn’t the residents have a right to come back to homes safer than those that were destroyed? What they needed was someone to build better houses adapted for their environment (Feireiss, 2009).

Brad Pitt decided to address this need through a new nonprofit called Make It Right (MIR). Its mission would be to rebuild the Lower Ninth with safe, sustainable and architecturally beautiful homes. However, after decades of wetland loss and subsiding soil, many planners and civil engineers had other ideas about rebuilding the city and the Lower Ninth in particular. They saw an opportunity to rebuild the city in a more practical way, which might entail greatly reducing the city’s footprint by developing only on land that is above sea level (Olshansky and Johnson, 2010).

In addition, planners weren’t the only ones questioning whether the entire city should be rebuilt to its prior extent. From National Geographic to CNN, people called for additional urban planning to avoid a repeat disaster by restricting rebuilding in flooded areas. In the beginning, this was the number one complaint of MIR’s opponents. But, while it is perhaps an important question to ask from an academic or philosophical perspective, the fact is that the decision to rebuild New Orleans, including the Lower Ninth Ward, was made even before MIR arrived. Residents seeking to rebuild had no choice but to come back to their previously flooded neighborhoods. The government told people to come home but failed to provide programs to
facilitate their return, other than Road Home which facilitated scattered redevelopment and took years to reach a level of effectiveness. Further, the City Council encouraged the use of neighborhood planning to facilitate the survival of all neighborhoods (Olshansky and Johnson, 2010). MIR embraced this bottom-up approach and took on the role to provide a more survivable, greener alternative to what former homeowners could have built on their own.

Residents were coming home one way or another, so Brad Pitt set out to offer a better alternative to the same “slab on grade” construction that was washed away in the storm. In fact, when MIR was formed, a few residents already had begun to move into mobile and low-quality, mostly prefabricated homes in the Lower Ninth (T. Darden, personal communication, March 9, 2011).

Still, two years after the storm, the neighborhood was a wasteland. The young organization had to resist the temptation to put up conventional houses quickly to get people home as soon as possible because their hope was that the meaning of their work would extend beyond this small neighborhood. They wanted to become a model for affordable housing development all over the world, while tailoring their solutions to the community they served. MIR is not a disaster response organization. Out of necessity, their role came later when the community was ready to rebuild a resilient, sustainable neighborhood but lacked necessary resources; MIR is
effectively facilitating a transition from temporary to permanent sustainable housing (T. Darden, personal communication, March 9, 2011).

MIR strives to achieve a balance of four pillars: (1) high design, (2) survivability, (3) sustainability, and (4) affordability. It is a project that set out to defy traditional contradictions and blend them together to create a resilient neighborhood. Further, they aspired to prove that these four pillars did not have to be mutually exclusive.

**High Design**

Architecture has always been a passion of Pitt’s, so he saw the rebuilding as a unique opportunity to combine visionary architecture with the needs of New Orleans’ poor. A key recurring theme throughout MIR’s history is the influential power of Pitt’s celebrity status. He had an existing relationship with GRAFT, a German architecture firm, and was able to recruit twelve other famous architects to design houses. Those original thirteen included five local, four national and four international firms. William McDonough + Partners worked with all thirteen firms to educate them about Cradle to Cradle standards and ensure the highest level of compliance possible. They were selected from over fifty firms based on the extent to which they met the following criteria (adapted from Feireiss, 2009):

- Prior interest or involvement in New Orleans, preferably post-Katrina and/or other disaster recovery
- Familiarity and interest in sustainability
- Experience with residential and multi-family housing
- Proven to be skilled innovators on low-budget projects
- Experience designing structures that successfully addressed water-based or low-lying environments

MIR currently has over twenty architects involved in the process. At the start of the design process, MIR knew that, since they were soliciting designs from architects all over the world, it would be important to develop processes and guidelines that would incorporate the needs of this specific community and feedback from the citizens. As GRAFT put it, MIR wanted to use “New Orleans vernacular as a point of departure” to ensure “contextual relevance” and to build on the neighborhood’s “already vivacious and renowned cultural foundation” (Feireiss, 2009). GRAFT assembled a design handbook that provided this background information on historical architecture and cultural context.

Each MIR homeowner chooses from a menu of designs, which range from houses with many features reminiscent of the traditional style to designs which bear little resemblance to anything found in New Orleans. The front porch, “as the conduit to the street” and as a “point
of neighborhood connectivity,” was one aspect of the designs that remained particularly important to the residents. The architects were asked to maintain this manner of connecting neighbors (Sustainability in Practice, 2010). 12 of the 13 original designs have been chosen to date, in addition to new designs added to the catalog. Many are depicted throughout this paper, but all of the designs can be found on MIR’s website. 

Although New Orleans’ neighborhoods typically consist of a mixture of “shotgun” houses, Creole cottages and Creole townhouses, most people think of rows of “shotgun” houses when they picture pre-Katrina New Orleans. The term “shotgun” refers to the idea that you could fire a gun through the front door, and the shot would exit through the back door without hitting any walls. While this design has become romanticized as a beautiful, historic style of low income communities, in reality it was an inexpensive way to build houses initially intended for slaves. Over time, land plans evolved to accommodate shotgun-style houses, with long, narrow lots (Feireiss, 2009). MIR asked the architects to design homes that meet the needs of the community, while encouraging the “evolution of aesthetic distinctiveness and an awareness of natural surroundings” (Sustainability in Practice, 2010). Most architects chose to embody MIR’s “clean-slate” approach by designing modern interpretations of the shotgun house so that the homes would fit on the lots and retain some connection to the past. As one might expect, many of the designs turned out to be quite eccentric and non-traditional. The designs were criticized as veering so sharply from the shotgun style that MIR’s rebuilt homes might not mesh with the character of the community. But in MIR’s neighborhood, the community no longer existed. It literally was washed entirely away, so continuity was in fact a non-issue. Additionally, the city of New Orleans has a history of embracing many different architectural styles (T. Duggan, personal communication, March 10, 2011). From a larger context, while some may disapprove of the modernistic architectural designs, the fact is that residents were directly engaged in the design process and selected their homes. If none were selected, MIR would have needed new designs. Further, unique architecture brought the organization more publicity to attract donations.
Survivability

Mandating that rebuilt houses be survivable was not a matter of choice for MIR. The only logical way to rebuild in the Lower Ninth is to build houses that can withstand another Katrina or worse. Homes would need to be elevated to a threshold level, and hurricane-resistant construction methods and materials would need to be used. To meet these requirements, MIR could have built traditional homes, elevated high enough above sea level on pilings, as can be seen in some of the other recovering areas. Their mission was to build the best houses possible for the environment in the Lower Ninth, while in the process proving that the four pillars of high design, survivability, sustainability and affordability do not have to exist in isolation. In doing so, MIR has developed methods of construction and design that will extend beyond this current project to impact the way houses are built in all contexts. MIR has become an incubator for engineering and construction innovations, including those having to do with storm and flood safety (Sustainability in Practice, 2010). Consequently, all homes have rooftop escape hatches, are built to withstand 160 miles per hour wind force and have protective window coverings to be applied when a storm is approaching. See Appendix 1 for details on these innovations. These survivability elements are potentially the most valuable ideas that MIR can share with the world. The survivability of the first six houses was tested in September of 2008 when Hurricane Gustav hit New Orleans. The houses sustained no damage (Sustainability in Practice, 2010).

Sustainability

MIR insisted on a new standard of green building—all houses would be certified to the highest level under the U.S. Green Building Council’s LEED (Leadership in Energy and Environmental Design) rating system. In addition, all the materials used in the houses would undergo a Cradle to Cradle assessment. The LEED rating system has become the de facto standard for assessing green building, but it fails to address adequately the environmental impact of the building materials themselves. Michael Braungart and William McDonough, authors of the book, Cradle to Cradle, helped to ensure that MIR lived up to this assessment of materials to the greatest extent currently possible. Cradle to Cradle design seeks to maximize economic, ecological, and social value by following principles inspired by nature, which for MIR essentially means that the
materials in the homes can be recycled as either a biological (biodegradable) or a technical nutrient (reused over and over in a closed-loop manufacturing system) (McDonough, 2002).

So why take on this rigorous level of environmental responsibility when it is in direct contrast to the affordability required by the low income population of the Lower Ninth? On one hand, it was a matter of philosophy. The leadership of the organization believes that it is the right thing to do to minimize their impact on the environment. It is also best for the residents. It keeps their utility costs low, and their homes are healthy inside and out. Anecdotally, one resident, whose child had severe asthma in their previous home, no longer has to pay for her daughter’s medicine each month because her asthma symptoms have gone away (Sustainability in Practice, 2010). The general principle is that houses should positively impact the health and safety of the environment and the inhabitants.

**Affordability**

Cost is the most challenging component to MIR’s mission. It is one thing to build a hurricane proof LEED Platinum house, designed by famous architects, but to combine all of these elements with the affordability objective is seemingly impossible. In fact, each of these components alone presents affordability challenges. The budget for base construction costs was established as $200 per square foot for the first prototypes and $130 for each house thereafter. This did not include site preparation costs and unusual building systems like solar energy or gray water capture. Each architect proposed a prototype design which was then value-engineered by MIR’s staff architects, engineers, solar contractors, cost estimators and community representatives (Feireiss, 2009).

MIR was highly committed to affordability because this is where they can have the longest
lasting impact. If they can figure out how to achieve this blend of objectives, their methods will have lasting implications for other affordable housing projects. Pushing to achieve this blend of conflicting objectives, the organization was able to innovate within the construction industry, finding ways to cut costs without sacrificing safety, sustainability or quality (Sustainability in Practice, 2010). Examples of the innovations are available in the Appendices 1, 2 and 3.

As MIR was engaged in the planning process, there were rumors of outsiders buying up valuable land in the Lower Ninth at distressed prices, in order to make a big profit later. MIR realized that it would increase residents’ fears if they started to acquire large numbers of properties. So, they first became a homebuilder for individual lot owners. Another challenge was that for the first set of homes, the Road Home Program had not yet begun to pay grants to residents, so their only equity was their land. Finally, the homeowners’ credit quality varied greatly, especially given financial disruptions following Katrina. Therefore, creativity was required in structuring the financing of these homes to the residents. Renting was not considered an early option because based on resident feedback, MIR was committed to maintaining pre-Katrina home ownership levels, which were close to 60 percent.

Their solution is a combination of three sources of funds. The residents contribute any funding they receive through programs like Road Home, insurance payments or other cash resources. The second source is a market rate mortgage. For the first 15 homes or so, MIR did not use any outside funding resources—they issued the mortgages themselves at market rates due mostly to residents whose credit scores were negatively affected by Katrina. As MIR now has more time to help repair credit, currently most of the homeowners have affordable mortgages through outside institutions. These loans are based on the sale prices of the houses, which are approximately $120,000, $140,000 or $160,000 for one, two and three bedroom houses, respectively. These prices are set at levels that approximate normal pricing for conventional new homes in the area. Homeowners are asked to contribute as much as they can afford to the cost of the home. That affordability is assessed by MIR homeowner counselors, certified by HUD and trained by NeighborWorks America, the largest homeownership agency in the country (Sustainability in Practice, 2010).

Any remaining gap between sale prices and what the resident can afford is provided by MIR in the form of a soft-second, forgivable mortgage. As long as the homeowner remains in the house for at least ten years and up to twenty years depending on need, the loan for the gap amount is incrementally and proportionally forgiven. The purpose of the forgivable loan is to prevent people from “flipping” the house to make a profit (because the house is worth more than what they are paying through the first mortgage). The amount the homeowner owes on the forgivable loan decreases over time, so if a homeowner moves out before the second mortgage is completely forgiven, he or she will owe an amount proportional to the time he or
she spent in the house. This model allows the value of the home to appreciate over time while preventing the homeowner from unfairly benefitting from the value premium of MIR homes through an early sale (T. Darden, personal communication, March 9, 2011).

Any additional cost gap between the sales price and the actual construction cost theoretically represents the cost premium of high design, energy and water systems, and building to Cradle to Cradle and LEED Platinum standards. This cost is not passed on to the homeowner, and motivates MIR to lower this gap as much as possible through innovative design and construction practices. Currently, that premium averages $50,000 on a typical MIR home, and the organization uses charitable contributions to cover that added cost. Even with the “green premium,” the construction cost of MIR homes is comparable to those of traditional nonprofit, single-family homebuilders in the area. In other words, MIR is building LEED Platinum homes for a similar cost to conventional homes built by other nonprofits (T. Darden, personal communication, March 9, 2011).

5. Making it Happen: A Planning Perspective in Retrospect
In the winter of 2006, Brad Pitt met with John Williams, an architect who had been working in the Lower Ninth since the storm. Pitt told Williams that he wanted to build 1000 homes in the Lower Ninth Ward to bring back the vibrant community. Williams and other team members felt this was aggressive, and over time the goal became a more reasonable 150 homes to start, with the potential for more after that goal had been reached. The team assembled to take on this challenge needed to be capable on the local level, but MIR also wanted the national and international input associated with bringing in renowned architects. Aside from the architects, MIR needed a core team with the expertise, network and determination to take on the challenge. The initial team consisted of Pitt, GRAFT (an international award-winning architectural firm), William McDonough + Partners (led by the pioneer in Cradle to Cradle design), and Cherokee Gives Back (the charitable branch of the world’s largest brownfield redevelopment firm) who provided back office and accounting support in the beginning (Feireiss, 2009).

Tom Darden joined the effort first as a volunteer, with a background in sustainable real estate
development. His business partner was from New Orleans, so they both offered to help at the beginning. Darden later was named Executive Director and became the first MIR employee. In the beginning his role was to determine the feasibility of the project by examining existing infrastructure, safety, community resources, planning efforts and political restrictions. Initially, everyone worked on a volunteer basis, and Darden kept working with his real estate firm during the week while travelling to New Orleans when necessary. After becoming more established and securing initial funding, MIR began to contract for services. Over time, their staff grew to include internal people capable of providing the services previously donated by the initial team of volunteers. Currently, the organization is undergoing further evolution to outsource more of its construction services, now that a core base of local contractors know how to build a MIR house, and to streamline internal operations and reduce overhead cost (T. Darden, personal communication, March 9, 2011).

Choosing the Site
After establishing the core philosophy of MIR, focusing on the four principles of high design, survivability, sustainability and affordability, the team set out to identify where to build.

The Lower Ninth tragically had become the poster child for injustice and government failure: the failure of New Orleans, the absence of State initiatives and FEMA’s delayed reaction time. Visiting this neighborhood is what made Pitt pledge to do something in the first place, so it made sense symbolically to start here. From that consensus, they had to decide on a target area within the neighborhood. The added symbolism of building right next to where the barge broke through the levee appealed to the organization’s leaders, but they had to justify it from a site planning perspective as well. A number of factors played into this decision. For one thing, there were already organizations working in the Lower Ninth Ward, but the area next to the levee breach was largely unclaimed (except for a grass-roots nonprofit rehabbing the few homes not completely destroyed), probably because it was completely wiped out and everyone assumed it would be the least likely to come back. While the other organizations probably looked at this as a negative thing, MIR actually considered it a positive. Having been completely cleared by the flood, the former residents would not have been able to afford to rebuild, so their need for MIR’s assistance was greatest. Also, the “clean slate” meant that the project did not have to worry about conforming to existing structures (T. Duggan, personal communication, March 25, 2011). An area just east of the site had been designated a “Priority Rebuilding Area” by the City of New Orleans, so MIR put the site’s eastern border adjacent to this area in anticipation of services and redevelopment returning faster here. The northern boundary of the target area was determined by Galvez Street, beyond which the flooding was so severe and the elevation low enough that the houses would have needed to be elevated higher than MIR deemed practical to be safe. Of course, the Industrial Canal levee formed the western
boundary, and Claiborne Avenue was a logical southern boundary, and it was zoned for mixed use and previously had been commercial. Thinking that the residents would eventually have access to some commercial services here, the last consideration was transportation, and the area contained two transit stops, which had sufficiently served a much larger population before the storm (T. Darden, personal communication, March 9, 2011).

This analysis left approximately 20 square blocks within those boundaries, which was too large of an area to achieve reasonable density with 150 houses. To narrow the area further, MIR eliminated those blocks within this area that still had many existing structures or that previously housed churches or businesses. In addition, some areas had higher concentrations of former residents who were still alive or able to be located in the Katrina Diaspora. Using these parameters, MIR reduced the site to 12 square blocks, leaving about 200 possible lots for building MIR houses.

Over time, they have expanded the target area twice. The first time was due to pressure from community members and outreach coordinators. The coordinators had identified pockets of neighbors adjacent to the existing site that needed homes or wanted them built nearby, so MIR expanded to meet their needs. The second time was because the New Orleans Recovery
Authority (NORA) had acquired some lots through the Road Home program. Residents who did not want to return had sold their lots to NORA, and NORA wanted MIR to buy the lots and build on them. Initially, to qualify for a MIR house, a potential home buyer was required to have owned a lot within the target area. To incorporate the lots identified by NORA, MIR expanded the site to its current 16 square blocks and relaxed the participation requirement to family members of former Lower Ninth residents. Currently, MIR has control over about one third of the lots within the current target area, but they are constantly working to gain access to more (T. Darden, personal communication, March 9, 2011).

Although it is true that MIR had a “clean slate” because there were very few existing structures, they were limited by the preexisting street and lot layout. They could not seek to acquire the entire target area, which would have been expensive, slow and impractical due to the individual ownership, loss of ownership records during Katrina, and displacement of families across the country with inaccurate forwarding information. It also was infeasible due to the culture of ownership and community mistrust of outsiders. MIR would not have been able to gain the citizen’s trust if they were proposing to exert complete control over the land (T. Darden, personal communication, March 9, 2011).

After defining a target area, MIR could focus on homeowner recruitment. Sticking to their
original target area proved to be an ongoing challenge as the organization struggled to locate former homeowners and to determine who owned which lot. Since so many of these families had lived in the Lower Ninth for generations, parents had passed the house down to their children without documenting the change in ownership. In addition, many former residents’ ownership documents were lost in the flood. Besides a lack of documentation, there were problems in working from a distance with former residents in the target area who were elderly or had disabilities (Sustainability in Practice, 2010).

Despite these challenges, MIR recruited a core group of about 10 families who were interested in participating in the program and who lived in a relative cluster within the defined target area.

**Initial Funding and The Pink Project**

When filming movies that involve a lot of computer graphics, set designers build temporary structures to film in front of, and they add in the computer graphics later. Much like the “green screen” weathermen report in front of, bright pink fabric-covered structures are used because a computer can easily distinguish the pink from the natural surroundings. Because Brad Pitt was filmed in front of a pink house while filming *The Curious Case of Benjamin Button* (2008) in New Orleans, he came up with the idea for a “Pink Project” as a tool to publicize MIR, to inform the public about what happened in the Lower Ninth Ward and to commemorate the loss of its residents. When asked why pink, Brad Pitt was quoted as saying, “Because it screams the loudest” (Feireiss, 2009).

His brainchild resulted in 150 pink “houses.” 429 pink geometric shapes were scattered over the target area where real MIR homes would later be built. MIR asked the public for $150,000 to build each house, and, as donations reached that amount, the symbolic pink houses were “righted” on their lots. The Pink Project was a huge undertaking, involving 164 tons of rented steel scaffolding, 40,000 pounds of recyclable aluminum, and 55,000 square yards of recyclable Earthtex pink fabric. Herve Descottes, world famous lighting designer, came on board to design the lighting scheme. Nine solar units throughout the site made the pink shapes glow at night, while 1000 solar candle lights formed a pattern that mimicked the stars on the night of August 29, 2005, as a tribute to the residents who died (Feireiss, 2009).
The Pink Project, among other publicity efforts, inspired tens of thousands of people to contribute 12 million dollars in total. It also succeeded in bringing global attention to the Lower Ninth Ward (MIR, 2011).

**Community Engagement Challenges**

The neighborhood has such a strong culture of homeownership and such a deep mistrust of outsiders that community engagement turned out to be the most important challenge MIR would face. Learning as they went along, MIR’s strategy was to gain the community’s trust as a whole and then work with each resident individually, without ever owning the land on which they are building. Whether they knew it or not, much of their approach to community engagement was aligned with community-based disaster preparedness principles outlined by Allen, K. M. (2006).

As one of the first steps in this community engagement process, on June 16th 2007, MIR signed an unprecedented memorandum of understanding with a coalition of nine nonprofit groups already working in the Lower Ninth; the objective was to work together to restore the neighborhood through collaboration and sharing resources. The result was the Lower Ninth Ward Stakeholders Coalition, a collection of organizations working in the community and current and former residents. Important elements of this MOU included building local organizational capacity, employing locals when possible, and an equitable and participatory rebuilding process (Feireiss, 2009). The Coalition still meets biweekly to this day, although they have switched their focus to other community issues, like attaining a high school for the neighborhood (J. Williams, personal communication, March 10, 2011).

The residents were skeptical of outside help of any kind, but especially help in the form of a celebrity and his predominantly white team who say they want to build expensive houses and sell them at an affordable price. To break through this barrier, MIR developed extensive lines of communication between the residents, the architects, the staff, all the way to the construction managers. This took the form of public meetings, design charrettes, and
“conversations on the front porch,” where MIR met with the families on a centrally located, abandoned lot where the only part that remains is the concrete front porch. Their partnership with the residents manifested itself in many beneficial ways. The existing community organizations were helpful in identifying and locating the residents because they knew their neighbors and wanted to see them come home. Leaders who believed in what MIR was doing stepped forward and acted as de facto spokespeople for the organization. Support is more powerful when it comes from people you already know and trust, so these supportive community leaders were crucial to promoting effective communication (T. Darden, personal communication, March 9, 2011).

MIR sought to make these homes affordable beyond just the cost of acquiring the house. To achieve this goal requires a process termed Homeownership Counseling. This is the education portion of community engagement, through which MIR residents work with MIR to choose, finance, and prepare for life in their new home. The counselor helps the resident identify the various sources of funding he or she can apply to the new home, and explains how MIR will help them make up the gap. Equally as important, counselors also educate homeowners about sustainable features of their homes, so they can learn how to maintain and operate the systems to achieve maximum benefit (Feireiss, 2009).

Community engagement stretches beyond just the home buying process. After receiving a grant from the Louisiana Disaster Recovery Foundation to build demonstration community gardens, MIR engaged in a number of public dialogues about what the residents wanted to see happen to the vacant lots in the community. Among other uses, residents indicated that they wanted gardens to education visitors about the surrounding wetlands and urban farming. Two of these gardens have been completed and related curriculum will be worked into local schools to teach kids about micro-farming and how it can enhance a community. Urban Farming Coalition provides information on how residents can acquire vacant lots and create a community garden of their own (T. Duggan, personal communication, March 25, 2011).
High Design Cost Premium
One of the most important indicators of success for this project is to be able to accomplish high standards of design, sustainability and safety at a price that is comparable to other affordable homes. However, these benefits come at a cost premium, so MIR has had to find ways to increase efficiency and modify the traditional homebuilding process to cut costs. They have lowered the cost of building by modifying the home designs to eliminate waste, educating the staff and construction labor on site, and negotiating the costs of materials and labor, contractor profit margins, insurance, legal and governmental fees, and the speed of construction. While they have not yet met their goal of $150,000 per house, they have made huge strides and are building homes that would normally cost as much as $500,000 for $200,000 on average. One design can now be built for as little as $180,000. These prices are consistent with the prices charged by other homebuilders working in the Lower Ninth, even though MIR is building much higher quality homes (T. Darden, personal communication, March 9, 2011).

Community Cohesiveness
Overall, MIR is a unique project because of its “starting from scratch” aspect. It’s not greenfield development by any stretch of the definition, but it is not a typical infill development either. Although the designers did not have to worry about compatibility with existing structures, this facet of the project created new challenges. For example, they are currently confronting the challenge of what to do to foster community cohesiveness beyond just building the houses. The residents need more schools, stores, permanent police and fire stations and more functional public spaces, and they are turning to MIR to provide these things. This is a burden not usually faced by single-family infill developers, and though they have planners and landscape designers on staff, it has not been their primary area of expertise up to this point.

The organization has been thinking about connectivity and cohesiveness since the beginning, but they have never quite been in a position to focus on issues not related to housing. With that said, they have built a playground and what they call the “Depot,” which is one of the demonstration community gardens that contains rain gardens and a plant nursery. They have developed plans for parks, open spaces and public resources in addition to economic development plans that examine the Lower Ninth Ward as a whole. See Appendix 4, 5 and 6 for illustrations of these. Consequently, while they have the know-how to address the issue of making the community whole, they lack the staff and financial capacity for implementing these strategies when they are still focusing on getting the houses built (T. Duggan, personal communication, March 25, 2011).
However, MIR is confident that the community has the baseline requirements to start thinking about these issues. For instance, Claiborne Avenue, the main commercial corridor, has a traffic count of 30,000 per day, which is enough to justify basic necessities like grocery and convenience stores. Additionally, the MIR project is visited by as many as 40 tour buses per day. This unanticipated traffic could help support a store and/or visitor’s center. MIR also sees tremendous opportunity in connecting the network of parks throughout the community with the restoration of Bayou Bienvenue, the neighboring wetlands. An observation deck is already completed looking out over the wetland, but MIR, in cooperation with New Orleans universities and landscape architects has even bigger visions for making this an ecotourism destination and success story (T. Duggan, personal communication, March 10, 2011).

**Bottom-up Planning Process**

MIR did not have the luxury of putting together a master plan for this neighborhood. There were three major constraints to approaching the project from this perspective, even though it might have been the preferred method. First, due to the general nature of mistrust among the community, members never would have allowed any organization to come in and complete a master planned community. The residents were unwilling to relinquish any control over their
land. Second, MIR faced legal and contractual constraints surrounding the ownership of the lots. Since they were not attempting to acquire any land (much less large tracts of land), they were confined to the street structure and lot structure that existed before the storm. Finally, when MIR arrived on the scene, the community was next to deserted; there was no market for a large, master-planned, mixed use development. For these reasons, MIR’s strategy is to start at the scale of the homes and create the density necessary to support the other facilities needed to make a neighborhood successful.

But just because all of the planning did not happen up front doesn’t mean there was a complete absence thereof. Staff members have referred to the planning process as “adaptive management planning,” “incremental planning,” and “inverted planning.” Essentially, the organization started with goals and objectives like any other large scale project, but MIR did not initially have the power to affect change at that scale. They had to begin at the scale of a house, then a block, then a dozen blocks. Only currently are they potentially reaching a level of density where they can begin to put resources into helping the neighborhood become the sustainable community they envisioned (T. Duggan, personal communication, March 10, 2011).

For MIR’s situation in particular, there were some benefits to this approach. In the Lower Ninth Ward, the last thing the community needs is an organization that is going to focus on looking backward. Post disaster, everything is in a state of turmoil and constant, accelerated change. Making a master plan and referring back to it might have been detrimental to the ever-evolving neighborhood. MIR’s method meant that they were always looking forward and learning as they went along, making progress instead of waiting until everything was figured out before beginning. When planning incrementally, there is flexibility for change at every stage of the process. This was a highly planning-intensive process, but instead of starting with the macro level and working down to the micro, MIR started at the micro level and is working on transitioning to the macro. This is why it is referred to it as an inverted planning process (T. Duggan, personal communication, March 10, 2011).

In terms of results, MIR has completed 75 homes occupied by approximately 400 residents, and they have identified another 25 lots that they expect to build on next. Their progress in building efficiently has resulted in a 30% reduction in materials used and 21% cut in construction costs from the first phase of construction to the second phase, followed by another 16% reduction in the third phase (Sustainability in Practice, 2010). But finding another 50 lots in order to reach the goal of 150 houses will continue to be a challenge for the organization. There are still approximately one third of the lots within the target area for which MIR has not been able to make contact with the former homeowners (T. Darden, personal communication, March 9, 2011.) It is surprising that five years after the storm there are still families who have not attempted to return and who have not sold their lots yet. MIR believes
many want to return but are waiting to see how the community takes shape before making a final decision.

6. What’s next for Make It Right?
MIR will need to decide how expansive their role should be in the overall revitalization of the Lower Ninth Ward. Some would say this is beyond their scope, and if they were Habitat for Humanity, this would be true. Habitat typically does not build entire neighborhoods on the scale of MIR, and they do not normally take on responsibility for building commercial centers or schools. On the other hand, MIR would like to do more than just build houses for disadvantaged families. They consider the real question to be: if you are going to encourage people to come back to an abandoned community, is it not also your responsibility to help the neighborhood evolve into a complete community? Galster’s (2006) definition of community includes buildings, public infrastructure, public services, environmental health, access to employment and commercial centers, political capacity, social capacity and sentimental characteristics. Obviously, it will be difficult for MIR to take on these multiple roles.

This is a fundamental question of strategy, and experts advocate sticking to what you are good at (Porter, 1996). Making decisions about what not to pursue is just as important as the decisions about what to do. This idea is that no organization can excel at everything, and the more one dilutes strategy by adding responsibilities, the more all of those responsibilities suffer (Porter, 1996). MIR needs to find ways to help the Lower Ninth become a community while also not stretching beyond their core skills.

Potentially, MIR might be best suited to act as the facilitator of this neighborhood’s transition to a complete community. They have assembled a valuable network of people and organizations throughout this process, and they have harnessed significant political capital at the same time. Going forward, MIR could become an advocate for its families to receive the public services they are warranted. They have the ability to become coordinators and facilitators, identifying funding and bringing people together who can assist in the evolution of this neighborhood (T. Duggan, personal communication, March 10, 2011).

Services and non-residential land uses will not return to the Lower Ninth without density to support them, and MIR is helping to build this necessary
density. Also, the MIR team has been very intentional about including public facilities and transportation in their plans. The neighborhood is part of a dedicated parks and greenway system, and soon there will be 15 miles of linear trails along the levee. Local and regional transportation is available in the neighborhood. The “Lil’ Easy” bus line stops at Tennessee Street and Derbigny Street, the regional bus stops at Tennessee and Claiborne Avenue, and the school is also within easy walking distance.

John Williams, the executive architect on the MIR project, has designed a high school pro bono, which is currently missing from the city plans for the Lower Ninth. If completed, it would be the first Living Building (a green building standard that goes beyond LEED to include beauty and inspiration characteristics) school in the country, and there is a site for it just north of MIR. Senator Mary Landrieu (D-La.) has expressed interest in backing the proposal, and Williams hopes to get a piece of the $1.8 billion dollars awarded by FEMA to reconstruct schools in New Orleans (J. Williams, personal communication, March 10, 2011). Without MIR, the community would not have enough density to justify a high school (B. Hill, personal communication, March 11, 2011). Additionally, a high school might attract more families to move back, thereby increasing density further.

For now, MIR is working to affect change at the scale of the houses. Most early LEED certified projects, and certainly most LEED Platinum certified projects, have been iconic commercial buildings such as corporate headquarters. MIR’s goal was to bring these building principles down to the scale of the working class home, “the architecture of daily life,” and something that can be replicated all over the world (Feireiss, 2009). The MIR neighborhood is the greenest community of single family homes in America (according to the USGBC), but only because they are the first-movers. Eventually, this project could be replicated anywhere, and MIR building tactics could become the standard for affordable homes, especially those located in floodplains.

Two MIR Houses (Photo: MIR)
7. Evaluation from the Literature

The literature on resiliency and community capacity is useful in systematically evaluating MIR’s work. Norris et al. (2008) propose that the resiliency of community resources have three dynamic properties: robustness, redundancy and rapidity. Robustness is the ability to keep out or counteract dangers. Redundancy is the extent to which the resource is substitutable in the event of damage. If a community is dependent on a small set of resources, that undermines resiliency. Finally, rapidity is self-explanatory; it means the ability to accomplish things quickly. One could answer whether MIR is contributing to the resiliency of the Lower Ninth Ward by evaluating their project by these three properties.

Regarding robustness, this factor was the primary prerequisite behind the whole project. MIR homes are designed to withstand 160 mile per hour winds and five to eight feet deep floodwaters (MIR, 2011). In terms of redundancy, MIR acts as a living laboratory for a new standard of homebuilding and attempts to disseminate this knowledge. One of the project’s goals is to create a replicable model. They are educating residents, increasing redundancy by decreasing the homeowners’ dependency on MIR. Instead of only providing the homes, MIR invests in counseling and education to create a more replicable impact. They have created human resources who can rebuild or repair in case of future damage. On the rapidity dimension, one could argue either side of this issue: MIR and the residents feel that the process has been painfully slow, but they have built more homes in the Lower Ninth than anyone else, and are second only to Habitat in building single-family, detached homes in New Orleans as a whole (T. Darden, personal communication, March 9, 2011).

Norris et al. (2008) discuss the components of a resilient community. They characterize four facets of resiliency on a larger scale than just individual resources: economic development, social capital, community competence and information and communication. The fourth factor, information and communication, consists of providing prompt and trustworthy information to the public following a disaster and is obviously not applicable to MIR’s role, but MIR has contributed to the existence of the three other factors and has thereby increased the resiliency of the Lower Ninth.

Economic development encompasses diverse attributes such as land and raw materials, physical capital, accessible housing, health services, schools and employment opportunities. Poorer communities are much more vulnerable than wealthy communities, which Katrina demonstrated tragically; but MIR is filling the gap by providing higher quality houses that should create greater overall community wealth, both because of their higher value but also because of their lower utility operating costs. However, although MIR is improving the residents’ housing economics, they have not yet been able to influence economic development.
factors such as health services, schools or employment.

Social capital post-disaster takes the form of a network of people and organizations who come together to support each other and the community. If relief organizations fail to work together, the result is failure of the service delivery system. Though MIR is a rebuilding organization as opposed to a relief organization, they have served to bring the organizations working in the Lower Ninth together. Social capital also captures the importance of sense of community, place attachment and citizen participation. MIR residents have deep connections to the Lower Ninth, and the fact that their neighborhood now attracts visitors who want to see the new homes enhances their community pride. Furthermore, a high percentage of residents participated in planning processes by MIR and also UNOP, evidencing engagement. People were engaged throughout the planning process and exhibit a high degree of involvement in churches and other groups. This social capital undoubtedly contributes to the Lower Ninth’s resiliency. MIR has contributed to this, although it strongly existed before Katrina.

Community competency is a third factor influencing resiliency. A competent community identifies where it wants to go, determines the implementation steps required to get there, and then works together to make progress. MIR’s community engagement efforts have enhanced this process by using it continuously. Another aspect of community competence is a shared belief that the community can overcome obstacles. MIR is providing this to the community by showing the residents that they can not only return home and become homeowners again, but they also can attain a better standard of living than before. Furthermore, because of the high priority MIR places on catering to the needs of the neighborhood and building community networks, the neighborhood will be stronger when the next disaster strikes, so the process of recovery will be easier.

Another method of evaluating MIR is to apply the Community Capitals Framework proposed by Ritchie, L. A. and Gill, D. A. (2011), consisting of seven types of “capital.” Natural capital encompasses a community’s environmental resources and ecosystems, which, when well-maintained, can protect against disasters. Wetland degradation and levee construction undermined the natural systems in New Orleans, but MIR is working to restore these elements.
Their rain gardens, pervious pavement and restoration of Bayou Bienvenue all are strengthening the Lower Ninth’s natural capital. Beyond the neighborhood, by spreading the Cradle to Cradle assessment, green building principles and renewable energy to other areas, MIR is making some contribution to environmental capital more regionally.

Built capital (public infrastructure and services) is another of the Community Capital Framework’s components. In this area, MIR’s contributions have been modest because most of these are beyond the scope of MIR’s direct influence. However, MIR is pursuing partnerships with public entities to work on projects such as the Pilot Streets Initiative (Appendix 7). With a goal of zero stormwater run-off on the site, they partnered with the New Orleans Department of Public Works to experiment with using pervious concrete for sidewalks and small streets (T. Duggan, personal communication, March 10, 2011). It is called the Pilot Streets Project, and the idea was to create innovative streetscapes in a way that could be replicated throughout the city. So far, the project has proven to decrease stormwater runoff entering the neighborhood’s pumping station to one-third or less of the average peak capacity, and preliminary projections show that it could reduce the city’s pumping costs by at least $413,600 annually (MIR, 2011). The MIR team is also incorporating open space and transportation into their plan, and without the neighborhood density to support these services, there would have been no hope of seeing them become a reality. Likewise, MIR has indirectly affected political capital, which includes both the ability to access government agencies and the quality of internal power and authority. Bringing the stakeholders together perhaps has enhanced political capital by providing the community with an organizational structure.

Financial capital is perhaps the most obvious asset MIR brought to the community. By providing gap financing, MIR is allowing the residents to own better homes than they had before the storm. By bringing residents home to the Lower Ninth, MIR certainly is improving cultural capital. Cultural capital was strong before the storm, and sharing the experience of Katrina will only strengthen it further. But without MIR, many residents, the key ingredients in cultural capital, would not have been able to return—much less be able to rebuild in a sustainable manner. The construction methods MIR uses will ensure that cultural capital does not have to be disrupted to that extent again.

The sixth “capital” outlined by Ritchie, L. A. and Gill, D. A. (2011) is social capital, addressed earlier in this section. But the seventh, human capital, is perhaps the least obvious of MIR’s
contributions but arguably the most important. Human capital consists of knowledge, skills, education, health, etc. In the case of Katrina, where people were forced to relocate for a long period of time, human capital is significantly diminished. And in places like the Lower Ninth Ward where the socioeconomic and political attributes have been persistent for so long, human capital can be hard to cultivate. Programs like MIR’s homeowner counseling provide education to the residents about finances and sustainability. And MIR has employed locals and invests in job training for New Orleanians. Specifically, MIR has supported over 30 local contractors, with over 350 workers on-site and provided work for hundreds of suppliers and vendors. They have conducted training seminars on using pervious concrete and have provided builders with hands-on training in solar panel installation. As an example, when MIR started building, there were no local contractors trained to install pervious concrete, but now there are over 20 certified pervious concrete installers in Louisiana (MIR, 2011).

8. Lessons for Future Building Efforts
Katrina, Rita, and failure of engineering created the opportunity for MIR to innovate, but innovating by definition means doing something unproven. As one architect put it, they were building the plane as they were flying it (B. Hill, personal communication, March 11, 2011). There are lessons to be learned from the initiative, whether from a disaster rebuilding angle, a construction technology angle or a neighborhood building angle.

Community Relations
Learning how to work with the community was instrumental to MIR’s success. In their case, it was helpful that they did not come to the initial meetings with a plan in place. Community members were involved at every step in the “incremental planning” process, and because it was incremental (or inverted) the public was able to feel truly engaged. They could see their input included and their reservations addressed at each stage. For example, when MIR first arrived, rumors were running rampant about their intentions for the neighborhood—a symptom of the ingrained mistrust of outsiders. One such myth went so far as to speculate that MIR was working with Donald Trump to buy the land for a large golf course. MIR decided to act as homebuilders and not acquire any land, to assuage these fears of the community. Later, once they had gained the community’s trust, MIR was able to purchase lots
from Road Home without any suspicions from the public.

Strategic partnerships played a large role in the organization’s success within the community. Naming John Williams as the project’s Executive Architect was beneficial from a community relations perspective. John Williams had been working in the neighborhood since the storm, so he had relationships with the residents and other stakeholders that carried over once he started working with MIR (J. Williams, personal communication, March 10, 2011). Of course, creating the Lower Ninth Ward Stakeholders Coalition was instrumental in merging the interests of various groups already working in the Lower Ninth. The connections and relationships made by MIR allowed them to be the ones to form this group.

Finally, communication and collaboration within MIR was crucial to the success of community engagement. Every part of the team, from the designers to the construction managers, needed to benefit from public participation. The architecture firms held public meetings to gather insight on preliminary designs because the residents know the neighborhood and what works there. Distilling information gathered through the participation process and distributing it throughout the organization allowed everyone to incorporate community input.

**Standardization Tradeoff**

Because of the community’s fear of “land grabbing,” MIR became a custom homebuilder, in a sense. After expanding their design offerings to increase the attractiveness of the neighborhood, the team had to become experts in building over twenty different architectural designs, all of which were atypical. In addition, the designs were always evolving as MIR worked to reduce costs and improve efficiency. Each homeowner had significant options that could be added to the designs, like elevators for handicapped residents, or further increased height of the house above FEMA’s base flood elevations. This customization presented a tradeoff with efficiency and used more staff resources. Also, this caused some homeowners to be less satisfied with their houses, compared with the new versions that came later, or vice versa.

The other area where customization comes into play is in the gap financing. The amount of assistance each homeowner receives is determined on a case by case basis, depending on prior governmental assistance received and personal financial resources. This is administratively burdensome and subjective by nature. Although it does serve the residents best on an individual basis, as a whole some degree of standardization might be beneficial.

**Inverted and Incremental Planning**

MIR used a combination of inverted and incremental planning. Their incremental plans began at the level of only a few houses and then developed and adapted, with the plans maturing as
the project progressed. Inverted planning, referring to the concept of planning the micro first and the macro later, as opposed to the macro level first, was used out of necessity for MIR. But in similar circumstances, the way MIR went about building houses might be the best way. Faced with a dysfunctional public sector two years after the storm, MIR had to figure out how to build houses without going through a difficult bureaucratic process. The political environment made it extremely challenging to accomplish anything at all during this time, much less accomplish anything quickly. This environment drove MIR to find ways to expedite complicated processes. Starting at the scale of the house allowed them to move quickly.

**Innovations in Building**

Although technical details are beyond the scope of this paper, perhaps the most valuable contributions for MIR to share with the world are the technological, engineering and construction innovations they have made. Some combination of these innovations is applicable to houses built anywhere. The survivability aspects are applicable to houses built in coastal communities and floodplains; the sustainable construction methods can be used in any context but especially in affordable housing developments. And sharing these innovations has always been a priority of the organization. There is actually a “learning” clause in the contractors’ contracts. They agree to attend workshops and try new methods and materials, and they are required to share the new knowledge they gain from working on MIR (T. Duggan, personal communication, March 10, 2011). Details about these innovations are in Appendices 1, 2 and 3 and on MIR’s website.

**Importance of Planning Prior to Disasters**

New Orleans’ did not have an up-to-date comprehensive plan, and its Comprehensive Zoning Ordinance was last updated in the 1970s. The Planning Department lacked the staff and resources to plan sufficiently before the storm, which made planning after the storm much more difficult. When it comes to disasters, the best preparation is prevention—in this case, investing in wetland restoration and updating FEMA’s base flood elevations and building codes. But in places like New Orleans, disasters are inevitable to some degree, so a necessary preparation “is to have active planning processes beforehand that include networks of well-established community organizations, clear lines of communication, and a variety of planning documents and tools” (Olshansky and Johnson, 2010).

Organizations like MIR would benefit from strong pre-disaster planning resources. MIR has compiled economic development strategies, public space plans, and proposals for restoring Bayou Bienvenue, among other planning initiatives. Since the city’s plans were out of date, MIR needed to create these types of plans to supersede the existing documents. The UNOP District 8 plan assisted MIR’s planning process. If something like it existed before the storm, the Lower Ninth Ward could have recovered much faster. While it is important to consider the ways an
area can be improved following a disaster, an existing comprehensive plan can provide much of the necessary information to start a post-disaster plan, thereby speeding up the process. Additionally, if the city had undergone any degree of public participation through updating the CZO or comprehensive plan, MIR would have been able to use that as a launch pad for additional conversation about the community’s priorities and vision.

Conclusion
The opportunities created by natural disasters are often touted as silver linings amidst tragedies. Planners, especially, see opportunities for smarter land use, urban design, and change in general. However, the change they envision usually is not implemented in the end and the landscape is built back the same way (Haas, et al., 1977). For the most part, this is what happened in New Orleans, for better or for worse, but at least in one neighborhood, Make It Right is working to prove this area can be rebuilt safely, sustainably, affordably, and using principles of high design. Using new methods and the best materials, this project brought one of the poorest, lowest lying, most neglected areas of New Orleans back to life. If it can be done here, it could be done anywhere in the world. It remains to be seen how the Make It Right neighborhood will evolve into a complete community and what role Make It Right will play in that evolution. If the past four years are any indication of their commitment to the community, Make It Right will not leave this neighborhood until it is the sustainable, resilient place that the community envisioned in the Unified New Orleans Plan.
Appendix 1: Survivability Features
(Quoted from MIR’s website: makeitrightnola.org)

Rooftop access

Many New Orleanians were trapped in their houses by the rising flood waters. MIR houses include either escape hatches or attic windows to ensure that homeowners can get onto the roof safely if a storm surge ever strikes again.

Hurricane Window Fabric

Traditionally, when a hurricane approaches, residents board up their windows with plywood, a process that is cumbersome and time consuming. MIR homeowners instead fasten hurricane fabric that is fitted to their window frames, a safety and time saving measure that allows them to evacuate quickly.

Increased Durability

MIR builders use advanced framing techniques and specially engineered wall sections to increase the durability of the homes, building them to withstand winds of 160 mph. By switching from conventional 16-inch to 24-inch on-center spacing, aligning the structural members of the house and using metal fasteners and hurricane straps at corners, headers and intersecting walls, MIR is able to build stronger homes through engineering instead of simply using more lumber.

Raised Elevation

After Hurricane Katrina, federal officials raised the base flood elevation requirements for the Lower Ninth Ward to three feet above grade. MIR homes are raised either five or eight feet above grade, depending on the homeowners’ preference.

Native Landscaping

MIR’s team of landscape architects plant rain gardens and urban micro farms and work to restore the wetlands that edge the neighborhood using native plants and ecology that accept stormwater as a resource and reduce flooding impacts.

Pervious Concrete

Pervious concrete is used in MIR sidewalks and driveways to help combat localized flooding. The concrete allows stormwater to filter through the pavement where it is stored in the gravel substrate below until it is reabsorbed by deep-rooted plants. This enables MIR lots to collect and manage their own stormwater as well as accept stormwater from neighboring lots.
Appendix 2: Innovations in Affordable, Green Building
(Quoted from MIR’s website: makeitrightnola.org)

The drive to make energy efficient, solar powered, disaster resistant homes more affordable for working families has led to a series of innovations by MIR contractors, engineers, landscape architects and architects that could transform the green building industry. Traditionally, building green has added to the upfront costs of a home. However, MIR’s work helping to rebuild New Orleans Lower 9th Ward, a low-income neighborhood devastated by Hurricane Katrina, has yielded a number of breakthroughs that have brought construction costs down.

**Advanced Framing**

MIR builders implement “Advanced Framing Techniques” that minimize waste while simultaneously increasing the framing system’s strength through some simple methods. Advanced framing has allowed MIR to cut the amount of lumber used in the houses. By switching from conventional 16-inch on-center spacing to 24-inch on-center, aligning the structural members of the house, and using metal fasteners in place of excess lumber at corners, headers, and intersecting walls, MIR is able to reduce material and labor costs, save energy, and make the house stronger.

**Construction Type Testing**

With six different construction types being implemented on a single jobsite, the MIR project is both a showcase and a laboratory for the construction industry. Structural Insulated Panel (SIP) is foam insulation sandwiched between two sheets of material, either wood or steel. To date, MIR has utilized steel SIP, and two different types of wood SIP, each with unique components and installation systems that can be compared and evaluated. The manufacturers of these SIP variations have natural incentive to prove their system is superior, which has already led to some improvements in these products. MIR has also implemented modular construction, site-built stick construction with advanced framing techniques, and the Saebi Alternative Building System (SABS), which uses concrete-coated foam to create a strong, light-weight, and versatile foundation. A SABS foundation is currently being constructed for MIR’s floating house, which will be the first of its kind in America.

**Foundation Building**

MIR uses “friction piles,” timber posts that extend 40 feet into the ground. These piles do not rest on subsurface bedrock (which does not exist in New Orleans) but rather relies on the post’s surface creating friction with the soil to hold it in place. Concrete grade beams (also known as “footers”) rest on top of the piles just below the surface and interlock the piles to prevent lateral movement. The footer supports eight-foot tall columns – well above the minimum elevation to allow the house to withstand a 100-year storm event – and all concrete used has a high recycled content. By creating an engineering model of each house, MIR is able to achieve the maximum strength with minimum material, meaning that the MIR foundation uses about 1/3 the concrete of a foundation designed with “rules of thumb”. This saves substantial cost and energy.
Specially-engineered wall sections

The University of New Orleans Engineering Division has executed a series of structural tests on MIR-engineered wall sections that use 30 percent fewer materials than traditional wall sections. Test results have proven the wall sections to be five times stronger than required by code.

Appendix 3: Home Features and Materials
(Quoted from MIR’s website: makeitrightnola.org)

Exterior Features

Metal Roofs – MIR uses 26 gauge metal roofs that absorb less heat and reduce the need to cool a home by 20 to 70 percent. Metal roofs are durable, long lasting and require minimal maintenance. Metal is also an excellent surface from which to capture rainwater.

Solar Power – Photovoltaic panels on the roof use light from the sun’s rays to generate electricity. Using photovoltaic as a source of electricity saves money and decreases dependence on conventional fossil fuels. Each MIR house is equipped with a system that generates 2.7 to 3.0 KW of energy. The systems over-produce energy which is then sold to the Entergy grid, allowing homeowners to gain credits that reduce their monthly energy.

Roof Hatches – All homes have a safe way to access a secure area of the roof.

Elevation – MIR elevates house up to 5 or 8 feet depending on the homeowner. This is done to assure the homes will be out of the sustained flood levels. This exceeds FEMA requirements while creating a parking area underneath the home at the 8 foot elevation.

Storm Fabric – Hurricane Fabric, made from Kevlar that is also used in bullet-proof vests, is fitted to all MIR windows and eliminates the lengthy and cumbersome process of boarding up windows with plywood.

Advanced framing techniques and specially engineered wall sections are used to increase the durability of homes, allowing them to withstand winds of at least 130mph.

Green Guard Rain Drop Building Wrap – RainDrop’s innovative drainage channels keeps water out of the wall system. The channels will not crimp, collapse or flatten, ensuring water will drain no matter how tightly cladding is nailed to the wall. Because it is not perforated, RainDrop resists air and water infiltration, plus it breathes to allow water vapor to escape, preventing rot and mold. RainDrop is an ideal secondary weather barrier for fiber cement, vinyl, foam-backed vinyl and wood siding.

Fiber Cement Board Siding – MIR uses James Hardie Fiber Cement Board siding. This siding is design to last 50 years against cracking, rotting, hail damage, termites and many other possible problems. The reason we use fiber cement board siding is to help reduces maintenance worries of our homeowners.

Bluwood is a line of structural framing components treated with a two-part system designed to
safeguard homes against the elements. BluWood is environmentally friendly and a smart building choice in the Gulf South region. BluWood is a revolutionary new lumber product that resists:

- moisture
- mold & fungus
- wood rot
- wood-ingesting insects, including Formosan termites

*TimberSil* – All exterior porches and stairs are built from TimberSil treated wood. TimberSil is a non-toxic glass-wood fusion which helps prevent, rot, mold and termites. TimberSil wood also has a class A fire rating and is 50% stronger than conventional treated wood.

*Landscaping* – MIR’s Landscape Architects design strategies that reduces the need for irrigation, requires minimal maintenance and handles droughts or temporary inundation. They do this by introducing native plants, rain gardens and green roofs.

*Rainwater Harvesting* – Each MIR House comes equipped with two cisterns that collects 600 gallons of water from the roof. Homeowners can later use this water to wash their cars and water their plants. Capturing and reusing rainwater from the roof is an economically efficient practice. One of its benefits is that it reduces stormwater runoff which can erode topsoil, spread contaminants and overwhelm the city’s storm water management system during heavy rains.

*Pervious concrete* sidewalks and driveways allow the stormwater to drain freely through the pavement and to be stored in the substructure. This approach to stormwater helps combat localizes flooding.

**Interior Features**

*Tankless Water heaters* – heat water instantaneously while at the same time being 83 to 93 percent more energy efficient. These can reduce annual water heating cost by 50 percent.

*Energy Star Rated Appliances & Light Fixtures* – All appliances and light fixtures in MIR homes use 30 percent less energy than conventional appliances and fixtures.

*Spray Foam Insulation* – All MIR homes are insulated using closed cell spray foam. The insulation is used on the underside of the roof, walls and floor to assure that the house envelope is properly sealed.

*Low E Windows & Doors* – provide proper Solar Heat Gain Coefficient, helping to keep the home cool during the summer months as well as Low U-Factor that help keep the home warm during the winter.

*Low Flow Plumbing fixtures* – The faucets and showerheads in MIR homes reduces water flow while maintaining the water pressure and “feel” of a typical shower. Low-flow aerator showerheads and faucets can reduce water consumption and energy cost of heating water by up to 50%.

*Dual Flush Toilets* – The dual-flush design gives users the option to use less water to flush liquid waste than solid waste and can reduce water usage up to 67 percent.

*Mold Resistant Drywall* - Gold Bond® BRAND XP® Gypsum Board with Sporgard™® was developed as an
improved moisture resistant board offering the same advantages of a traditional moisture resistant board, with added mold resistance in the core and paper. XP Gypsum Board panels consist of a specially treated fire resistant gypsum core encased in a heavy mold/mildew/moisture resistant 100% recycled purple paper on the face side and a heavy mold/mildew/moisture resistant 100% recycled gray paper on the back side.

*Benjamin Moore ZERO-VOC Paint* – Benjamin Moore Natura and Aura paints have zero VOCs and help create better air quality by limiting off-gassing. Volatile Organic Compounds (VOCs) produce a gas that is harmful to human health. VOCs are found in many traditional paints and finishes. Such paints “off-gas” vapors that mix with the air you breathe.

*Sustainable Cabinets with No Added Formaldehyde* – Our cabinets are made from wood that is certified by the Forest Stewardship Council. FSC certified wood is harvested in a sustainable way which encourages responsible management of our world’s forests.

*Shaw Green Edge Carpet* is a Cradle to Cradle Certified product that uses safer materials and dyes. This carpet contains recycled content and can also be recycled into new carpet when it is removed from the home.

*Uponor Fire Safety System* features Uponor AquaPEX® crosslinked polyethylene (PEX) tubing, a flexible, durable, potable plumbing pipe that has been used in residential and commercial construction for more than 20 years. Fire sprinklers activate in the presence of extreme heat and only the sprinkler nearest the fire will activate. Another benefit is the fact that our homeowners will save more on their homeowners insurance because of the fire sprinkler system installation.

*Uponor Plumbing* features Engel-method crosslinked polyethylene (PEX) tubing. This is a flexible plastic tubing product that has been used for more than 35 years in radiant floor heating, plumbing and fire safety systems. Key benefits of PEX Plumbing are:

- Corrosion resistant
- Free of metal contaminants
- Resists pitting and scale buildup
- Dampens rushing water noise
- Eliminates water hammer and singing pipes
- Retains heat in hot-water lines
- Resists condensation on cold-water lines
- NSF International Certification for water purity
Appendix 4: Public Space Network

Graphic: MIR
Appendix 5: Claiborne Avenue Economic Development Plan

Graphic: MIR
Appendix 6: Landscape Design Strategies

In addition to providing residents with affordable, comfortable, environmentally-friendly homes, Make It Right is enhancing the neighborhood fabric with performative site-specific residential landscapes.

Design strategies reduce the need for irrigation, require minimal weekly maintenance, handle droughts or temporary inundation, provide habitat for birds and beneficial wildlife, and provide edible and medicinal gardens.

**Native Plants**
Louisiana native plantings do much more than add beauty to the surrounding landscape. They help conserve water, reduce mowing costs, provide habitat for birds, butterflies and other wildlife, protect the soil and don’t require chemical fertilizers and pesticides.

**Rain Gardens**
These subtle depressions in the landscape collect rainwater, encouraging absorption by plantings and infiltration into the groundwater table. The water loving plants provide habitat and food for ecologically beneficial insects and wildlife.

**Xeric Plantings**
The term ‘xeriscape’ comes from the Greek word ‘xero’ which means dry. Xeriscaping refers to site-specific landscaping and gardening in ways that reduce or eliminate the need for supplemental irrigation.

**Edible Gardens**
Local food sources and healthy, affordable options are important for the well-being of communities. Make It Right is intermittently using vacant lots as food-producing gardens, and individual residential landscapes include fruit and vegetable producing plants.

**Green Roof**
Green roofs consist of plants being grown on roofs, reducing the vegetated footprint that was destroyed when the building was constructed. Numerous benefits that result are both ecological and economical: the recovery of green space, moderation of the urban heat island effect, improved stormwater management, water and air purification, and a reduction in energy consumption.

**Street Trees**
Coordinated street tree plantings using native flood and drought tolerant species will assist with stormwater management, reduce urban heat island effect, create habitat for wildlife, and provide an amenity for future generations.
Appendix 7: Artist’s Rendering of the Pilot Streets Project

Graphic: MIR
References


