A Comprehensive Neighborhood Plan for New Orleans East: Repositioning in Place

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The Pratt Center for Community Development and the New Jersey Institute of Technology (NJIT), in association with its local partner, Acorn Housing Corporation, were awarded a HUD Community Outreach Partnership Grant (HUD COPC) in 2005 specifically directed at post-Katrina community planning in New Orleans to serve simultaneously the local population and pose larger environmental questions to students (this article's authors were the NJIT Principal Investigators). The Team undertook the conceptualization and design of a sustainable settlement that could serve as a model for rebuilding not only along Lake Pontchartrain's south shore but also in many low lying coastal areas bound to be affected by global warming. The Team selected the Plum Orchard neighborhood of New Orleans East, a largely post-war suburban section of the City northeast of the central business district, because it is typical of suburban developments throughout the Gulf Coast that sustained heavy damage from Katrina and Rita. HUD charged the team to develop a Neighborhood Plan based on community planning principles that would facilitate the resident's return and sustain the neighborhood's future (the Association for Community Design was a consultant to the grant). The efforts described here involved infrastructure, architecture, planning and landscape architecture studios guided by a diverse faculty of architects, planners, civil and environmental engineers, landscape architects and restoration ecologists. Their mission was to develop a model for affordable, sustainable, and achievable rehabilitation of the Neighborhood. The green moment seized upon by these efforts strove to "reposition in place," to recalibrate the area's relationship to its locale and the broader city, a goal to be achieved while fostering sustainable growth that preserved the neighborhood's essential physical and social structures. The question is not can you live in this land but how do you live in this land.

Plum Orchard suffered major flooding during Hurricane Katrina with many buildings severely damaged and others totally lost. Most residents evacuated, reluctantly, under mandatory orders from the Federal government, a national first. At this writing recovery is still in progress: less than 50% have returned to their homes. Some still live in FEMA trailers while rebuilding or awaiting aid. Federal, State and City efforts remain focused on grants and guaranteed loans to individuals to rebuild on their own in a deeply challenged market.

The 105 acre Neighborhood is south of Lake Ponchartrain and east of the Industrial Canal, whose floodwalls breached during Katrina. The Neighborhood is bounded by the I-10 Expressway, Dwyer Road, a largely undeveloped property occupied by St Mary's Academy and the Sisters of the Holy Name convent, and Chef Menteur Highway. Five north/south streets and six east/west streets grid the Neighborhood. Until the 1950's, the land was cypress swamp, home to informal fishing camps. Improvements to regional drainage and pumping

systems allowed for more permanent settlement and incorporation into the city.

It is notable that the Neighborhood, like much of greater New Orleans, has *some* topography. Chef Menteur Highway is above sea level, originally a natural levee of the Mississippi. From there the land slopes to well below sea level at Dwyer Road. Many planning proposals drafted immediately after Katrina recommended that the Neighborhood revert to wetland[1,2] without any consultation with the community or seemingly without a full understanding the subtle topography of New Orleans where a few inches of elevation can have major consequence. Chef Menteur Highway's relative elevation makes it an important resource that cannot be blithely disregarded. Indeed, for at least two blocks towards Lake Pontchartrain the Highway seldom exhibits significant flooding.

While the community was determined to return, they remained skeptical of the political motivations of those who argued that the Neighborhood should be abandoned. They were equally skeptical of the government's ability to fix a broken flood control system so that they could safely return. In response, the first action of the infrastructure studio was to confirm for residence the Neighborhood's geological and hydrological conditions and more critically, assess the credibility of the three regional flood control initiatives that were the foundations of the government's assurances. The first and most important initiative, the US Army Corps of Engineers' Hurricane Protection Plan,[3] included six major objectives:

1. Closing critical outfall canals.

2. Installing floodgates

3. Storm-proofing pump stations

4. Armoring existing levees

5. Incorporating all levees into one system.

6. Committing to the Coast 2050 Plan for coastal wetland restoration.

By the time the team began conducting fieldwork in August of 2006, the first five were approaching completion and the sixth was under serious discussion[4,5]. The second initiative studied, the South Eastern Louisiana Drainage Plan (SELA)[6], had been accelerated from its pre-Katrina pace and was on schedule to double the Neighborhood's pumping capacity by 2008. The third was to close the Mississippi River Gulf Outlet which produced the devastating funnel effect that breached nearby flood walls. Commonly known as MR-GO, this canal had ceased to function as a shipping channel and it was reasonable to anticipate that it would be blocked off and allowed to silt in - the question was when. As of this writing, most of these initiatives are well underway.

Given the green light, the team arrived at four overarching goals. These were:

1. Gradually increase density

2. Maintain affordability in housing options

3. Broaden mobility options and foster transportation oriented development.

4. Enhance drainage through landscape strategies

Density

The Neighborhood was made up of mostly detached single- and two-family homes. Pre-Katrina, the 600 households supported a family run convenience store located at the Neighborhood's geographic center. Commercial properties along Chef Menteur Highway were dominated by auto-oriented retail with two poorly appointed food stores. The Barbara Jordan Elementary School provided a civic focus. The presence of over thirteen small churches, far more than the Neighborhood could possibly support, revealed an extended community beyond the Neighborhood, showing that residents maintained family connections with those who could not or once lived in the Neighborhood. Significant among the reasons for leaving was a lack of diversity in housing that could accommodate different family types.

As all the studios began their field work, the store and school remained closed with no plans to reopen. Many Neighborhood residents had relocated to extended family and "commuted" back to rehabilitate their homes. Ironically, the family ties that had become distended prior to Katrina strength-

ened. After discussions with community members, the team developed a strategy of gradual increases in residential density that would enhance the viability of retail, lead to the school's reopening and eventually encourage a mixed use development along Chef Menteur that could provide multifamily housing.

Affordability

Pre-Katrina, the Neighborhood was affordable. Though it was home to more lower income families than surrounding communities, it did not share the markers of other poor communities. The Neighborhood's home ownership rate hovered over 70% compared to the more typical 30%. In many cases, family ownership went back generations sustained by the social and familial networks typical of older New Orleans's neighborhoods; mortgages had been long paid off. The Neighborhood also benefitted from low real estate taxes as residents paid almost no tax on homes assessed at less than $75 thousand.

While federally funded programs such as the Road Home and Welcome Back Home promised to give grants and insure loans for rebuilding or repair, taxes would be much higher. New post-Katrina homes will likely be assessed at $150 thousand or more, representing a monthly increase of $100. For families making $25 thousand a year, this represented a considerable increase in housing costs. Families were confronted with a difficult choice: increase their monthly income or leave a neighborhood that had been in the family for generations.

Rebuilding at higher density provided a possible solution. Reconstructing a home with one or two residential units could provide income that would offset the additional tax burden as well as increase the value of a home. These units could provide an affordable alternative to family members who desired to live in the Neighborhood but were forced to live elsewhere. Combined with higher density development on city-owned properties in the Neighborhood, the density increase could also lead to the economic viability of convenience retail.

A graduate planning studio at Pratt tested these development possibilities addressing typical difficulties associated with affordable residential development as well as Neighborhood-specific ones regarding economic resources, social resistance and political dynamics. Students began with a critical analysis of the physical, economic and legal constraints facing housing development in New Orleans East and then analyzed housing need and market demand to assess the viability of residential development. They performed basic financial calculations (interest rate, term, principal, payments, net present value, internal rate of return, etc) in order to create financial pro-formas for housing development (development and operating pro-formas, for rental & homeownership developments). They assessed risks and evaluated trade-offs surrounding affordability, finance, design, environmental, and managerial issues in housing development. Finally they created a comprehensive "housing development plan" using the block as a unit, concluding that multi-family development would be required to finance a range of aspirational features such as off-the-grid solar power. Multi-family housing could also support the diverse community of elderly, single and young residents served before the flood by the familial networks of rented flats and multi-generational homes.

The flood offered new opportunities to reorder the block and neighborhood and the team concluded that no individual should reclaim territory alone. Working at the scale of the neighborhood as a socially, economically and physically sustainable unit, the team identified the housing cluster as the most effective building block of recovery. This could mean the sustainable renovation of three or more pre-existing, contiguous houses. The designs developed in architectural studios explored a range of what such housing clusters might be.

Within these clusters, the studios pursued the affordable strategy of prefabrication for three reasons. First, the dearth of local labor and concomitant inflated construction costs demanded an alternative building method. Second, the economy required a price point that prefabrication could promise. Third, the great need in New Orleans suggested a scale of delivery that mass production could best solve. The studios proposed inventions that could personalize a prefabricated core. These included raised decks that united several homes using a single ramp. They organized prefab homes around cisterns, shaded yards, roofs oriented for solar gain, and natural ventilation; they create aggregated social typologies such as the mother-in-

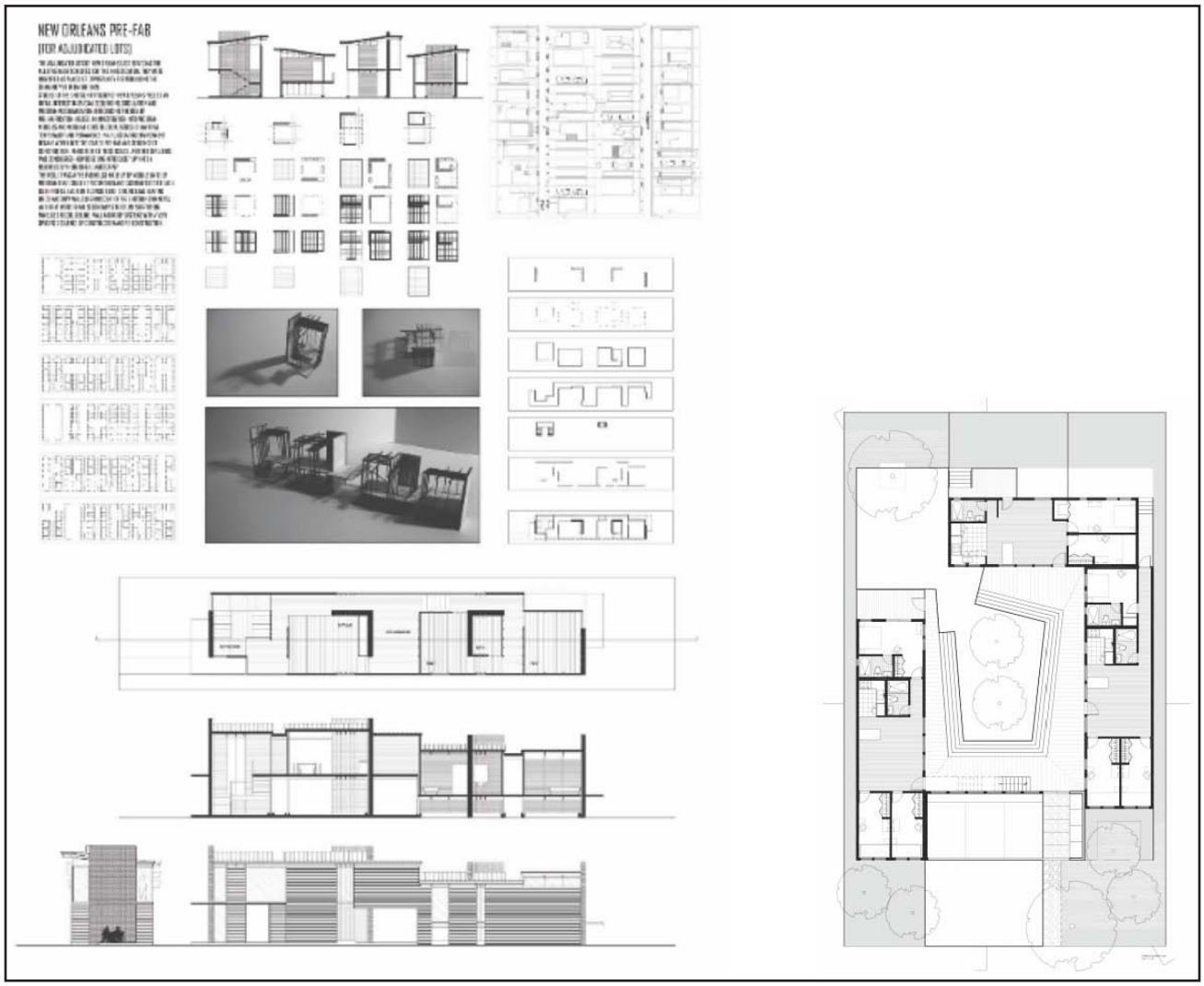

Figure 1 : Prefabricated Modular House Type

law house with an attached efficiency unit that can also serve as a store, and a version of a shotgun tuned for an elderly person who desires to age in place gracefully. (see Figure 1)

Mobility

Any increase in density impacts mobility. To increase density in a suburban portion of an already automobile-oriented City such as New Orleans triggers issues of congestion and parking. As a strategy, the team used Transit Oriented Development (TOD) as a template but adopted it to the unique conditions of the place. TOD strives to increase density and encourages a mix of uses and residential typologies often shepherded by an overall design strategy with a great emphasis on transit. TOD development affects every form of mobility including pedestrians, bicycles, automobiles and all forms of transit – buses jitneys, trolleys and trains. TOD strategies in the Neighborhood would focus on the walkability and livability of streets and on the development of Bus Rapid Transit (BRT).

The team developed different pedestrian oriented strategies for the 40, 50 and 60 foot wide north-south street typologies that would introduce sidewalks, bike paths, on-street parking and street furniture enhanced by the planting of indigenous trees.

The east-west streets would ultimately evolve into "Living Room Streets." This typology, borrowed from the Netherlands where it is called a "Woonerf," takes back the street from cars and turns it into a public, outdoor living room. It is premised on the idea that people drive more safely when they are forced to pay attention to the road by removing signs, sidewalks, curbs, and other visual cues. Cars are also slowed by the placement of obstacles, such as trees, in the driving lane. Average driving speeds of 10 mph create a safe atmosphere for pedestrians, bicyclists, vehicles, and children at play. In the Neighborhood, these Living Room Streets would be ad hoc gathering spaces, further strengthening cohesion. On one, the convenience store could evolve into a small restaurant with tables filling the street.

Today, these east-west streets terminate in dead ends at either the Interstate Highway or the academy/convent properties. In these currently underused spaces the team proposed new community areas that would serve as bookends to the Living Room Streets. Called "Lagniappes", derived from a local term meaning "a little something extra," these pedestrian only spaces could serve many functions from community gardens to playgrounds.

The greatest impact on the community will be the transformation of frontage on Chef Menteur Highway. While other plans recommended this as a light rail corridor connecting the Central Business District with outlying communities, the viability of this improvement remains uncertain, and even if Light Rail were fully approved, it might take decades to complete. Instead, the team recommended a BRT corridor that could be deployed almost immediately, providing regular and frequent access to job centers and an investment that could begin the transformation of the corridor from a strip highway to a high density, multi use destination. BRT running down the median (known locally as the neutral ground) would also foster other changes: uniform sidewalks, replanted foliage, vehicular entrances moved to side streets, and a safe pedestrian environment. BRT could set roots for higher density development that could anticipate Light Rail at a later date.[7] (see Figure 2)

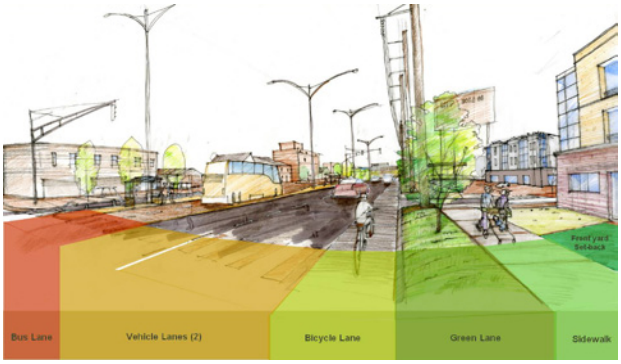

Figure 2: Chef Menteur BRT Corridor

Drainage

Katrina focused international media attention on the vulnerability of New Orleans to catastrophic hurricanes, yet this spotlight often overlooked the reality that each storm must be mechanically pumped from a basin that is largely below sea level. The speed with which the City was pumped out after Katrina, despite the crippling breaches of many flood walls, revealed the pumping infrastructure's prowess and defied expectations. On a local level, housing typologies, development patterns and both public and private behaviors have evolved to accommodate rainstorms that periodically flood many areas. The team not only had to assess the regional defense system of levees, wetlands and drainage canals against catastrophic events, it had to empirically assess local capacity to deal with more frequent storm events. This local capacity included active mechanical pumping systems as well as passive time-worn systems of home construction and landscaping strategies, many neglected in the post-WW 2 rush to develop.

The mechanism that evacuates storm water from the Neighborhood begins with catch basins that connect to 15-inch pipes and 36-inch culverts. These drain to the Dwyer Road box culvert that carries water to a pump station at the Industrial Canal. The team used a hydrology formula known as the Rational Method to compute the peak storm water run-off rate for the Neighborhood and the capacity of the mechanical system. The calculations revealed the peak runoff rate to be over 5 million gallons per hour for a 10 year storm and 12 million gallons per hour for a 100 year storm. After the SELA improvements, the drainage system would be able to handle approximately 8 million gallons. Thus, a 100 year storm would accumulate almost four feet of stormwater in the low point of the Neighborhood and roughly one third of

Figure 3: Layered Planting Strategy

the area would experience some degree of flooding. This calculation drew two conclusions. First, the notorious FEMA maps, considered by many to be a draconian assessment of potential flooding, where correct, if only for this neighborhood. This meant that in half the Neighborhood, the finished floor of dwellings would have to be at least four feet above grade. Second, while the outer defenses might protect the Neighborhood from a hurricane, it was vulnerable to storms that could happen with much greater frequency. Any complementary drainage strategies would be beneficial in securing the Neighborhood against future flooding.

While the practice of raising dwellings to ride out floods had been common to New Orleans for centuries, little definitively was known of the role of landscape in reducing flooding, and much had been forgotten in the post-war era of big infrastructure. Many anecdotes relayed to the team during the community outreach process regarding the ability of certain plants such as live oaks and native shrubs to absorb water while surround areas had standing water pointed toward a more rigorous examination. Working with landscape architects, botanists and restoration ecologists at the New York Botanical Gardens under the leadership of David Dew Brunner, a native of Louisiana, the team developed a plant list which ranged from grasses to trees, that if planted in a layered strategy of compatible native plants, could achieve the same results as those anecdotally conveyed. Through a process of evaporation and transpiration of moisture naturally through their leaf systems, these plants could store water during a storm and release it gradually over time.[9,10] Tallying these amounts

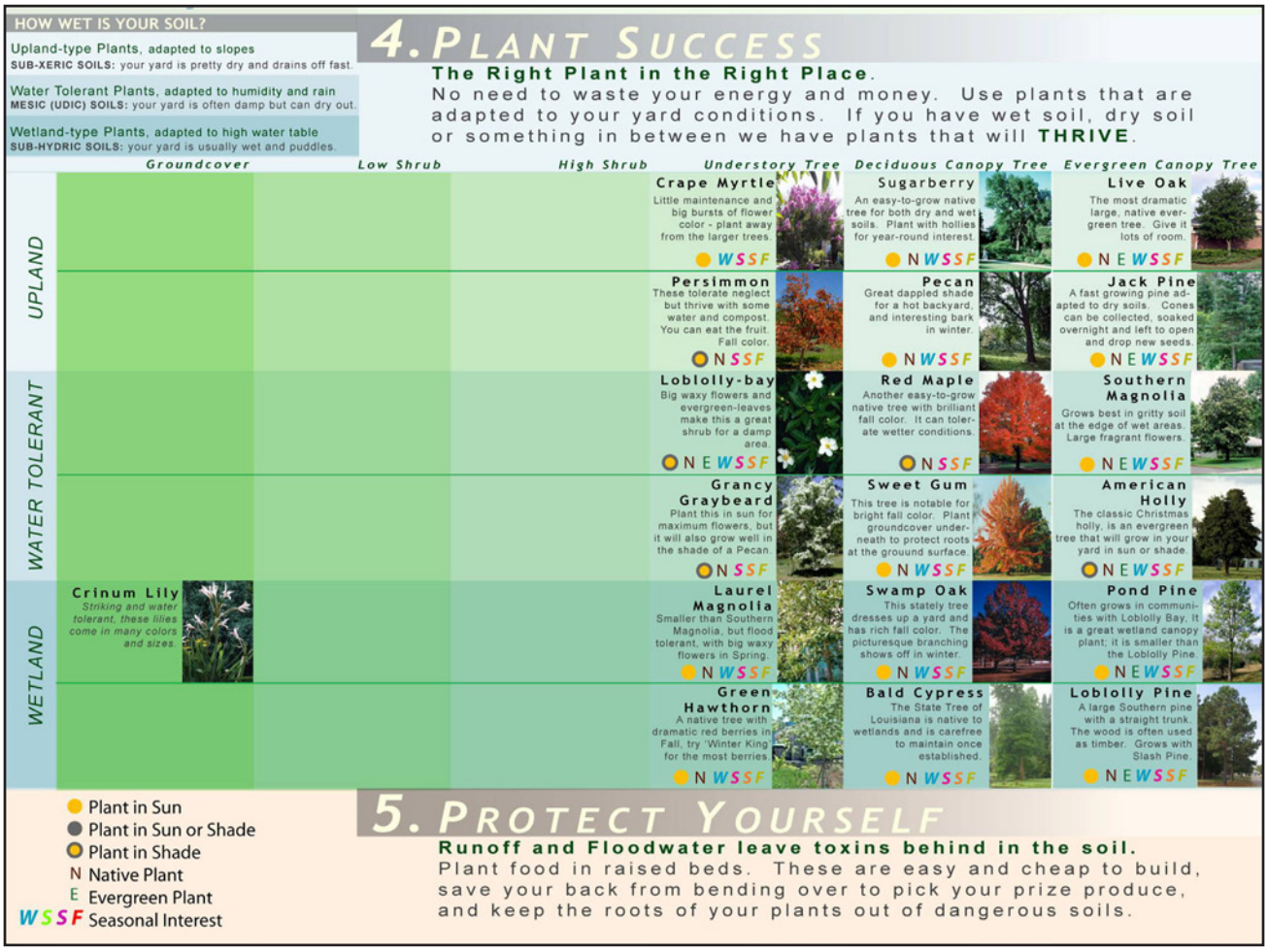

Figure 4: Layered Planting Strategy

plant by plant, the team estimated that if the entire 100 acre Neighborhood were planted according to this strategy, 5% of the 100 year storm hourly runoff, or up to 600 thousand gallons, could be kept out of the drainage system. (see Figures 3 and 4)

The team proposed another complementary strategy, one used in Broward County, Florida, where storage areas are pumped out to create additional capacity prior to major storms□ Little subsurface infrastructure was located below the six East-West streets of the Neighborhood, the location of the living room streets and *Lagniappes*. Excavating them to create semi-porous basins filled with gravel and capable of being pumped prior to a storm could provide enough storage capacity to hold the four feet of standing water that would otherwise appear in a 100 year storm.

The Density, Affordability and Mobility strategies proposed above can be the direct beneficiary of this comprehensive approach to landscape and hydrology. In a transportation strategy, streetscapes can benefit greatly from the planting of water loving street trees including the Crape Myrtle, Magnolia, Sycamore, Red Maple, River Birch, and Live Oak. In New Orleans, evacuation is a major component of all movement systems; the location of designated rights of way for BRT on the flood-free high ground of Chef Menteur could provide critical passage for buses leaving the City. The early absorption of flooding by a complementary drainage system can provide precious time to prepare for secure a property or evacuate. Even the 5% absorption provided by a landscape strategy, a proverbial 'drop in the bucket,' could provide an additional hour to save a home, a vehicle, a pet or a family. As in other cities like San Antonio,

Figure 5: A Comprehensive Strategy for the Plum Orchard Neighborhood

drainage canals can also double as pedestrian and bicycle paths. The ambient cooling provided by shade trees and moisture-holding plants are an important amenity to a Neighborhood that increases its value and allows it to grow. Katrina also proved, once again, that the Southern Bald Cypress and the iconic Live Oak create wind breaks that spare neighborhoods from wind damage.

Phasing

Each strategy was organized according to three phases that extended to a twenty year horizon.

Phase I plans called for simple drainage and landscaping initiatives to mitigate the effects of severe storms as homes would be rehabilitated and new construction begun. Improved pedestrian safety, combined with localized community services, would create an environment where walking and biking become viable options to driving. Retail within the Neighborhood would increase walkability, helping provide additional employment and keep dollars local. Current bus service would be enhanced in anticipation of BRT.

Phase II increased pedestrian oriented activities and gathering places, creating more retail and community services. Through the construction of more two family and three family dwellings, local residents would earn more income. As a result, the tax revenue stream would be strengthened, providing increased support to municipal services. More rental units would help fulfill the demand for affordable housing. A landscape strategy, including street trees, would now be fully deployed. BRT vehicles and stations would be introduced to run in traffic along Chef Menteur.

In Phase III the BRT would foster a full-fledged Transit Oriented Development providing direct links to employment outside the Neighborhood. More local employment would be provided through the growing retail opportunities at the transit node. The Neighborhood grows in population and municipal services would be demanded more effectively. If deemed necessary, a neighborhood-wide underground storm water detention system could be built, paid for with increased tax revenue as density increases. Better connectors, both pedestrian and auto would increase the catchment area for all services and business located in the area. The Neighborhood would no only be restored, but as a better one than it was prior to Hurricane Katrina. (see Figure 5)

Coda

The team concluded its work with HUD in the spring of 2007 as the global economy began its decline and Acorn's political problems their ascent. Notable outcomes occurred, but the overall promise remains delayed. District planners St. Martin, Brown incorporated the street guidelines and plant list recommendations into the multi family land use ordinances for New Orleans East. Team members James Dart and Deborah Gans designed homes for 225 tax adjudicated lots in the Neighborhood and the Lower Ninth Ward but external financial conditions and institutional problems at Acorn Housing continued to delay construction. Most notably, their designs took many cues from the Neighborhood Plan in promoting redevelopment in high density locations, yet the scattered lots forestalled any clustering. Further, the houses were to be financed and sold individually without the benefit of a

traditional subdivision development or of family networks. Still, each strategy maintains the latent potential to form future clusters and create other collective field conditions. Finally, without the critical mass of many homes being built, the ability to deploy the collective features of the block - playgrounds, corner stores, *Lagniappes*, Living Room Streets, etc. – remains unrealized, despite the Neighborhood's avid support.

Despite certain tactical victories, the comprehensive goal of our undertaking - the promise of a green design moment - remains unfulfilled. Speaking at Tulane University in October 2009, co-author James Dart summed up this reality, saying that: "*While the House Types advanced, and even reached some of the goals we set for performance and costs, the main objectives of our planning grant study, the reactivation of an environmentally performative field in which they sat, remained elusive*" [12]. We remain, however, confident that momentum will resume: the November 19th 2009 ruling against the Corps of Engineers in Federal District Court regarding MR-GO offers great optimism□. The question of what exactly the Neighborhood will look like is the question of what it means to be safe. It is the question posed by the academic portion of our

study and one we posed to our clients. We asked this in order to develop scenarios less Draconian than shrinking the city to high ground, scenarios in which safe haven includes new ways of living with climate and landscape, of living in one's house as part of a neighborhood, and when necessary, evacuating it. These scenarios decisively repositioned individual citizens and their local networks. And it is the marginal sites like New Orleans East that have become the decisive place, by breaking the nexus between political and physical safety, re-forming a new nexus of physical and socio-political factors so that they sustain one another.

ENDNOTES

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