CASE STUDY OF FLOODPLAIN ACQUISITION/RELOCATION PROJECT IN KINSTON, NC AFTER HURRICANE FRAN (1996) AND HURRICANE FLOYD (1999)

BY

MONICA OLIVERA MCCANN

A Masters Project submitted to the faculty
of the University of North Carolina at Chapel Hill
in partial fulfillment of the requirements
for the degree of Master of Regional Planning
in the Department of City and Regional Planning.

Chapel Hill

2006

Approved by:

_____
ADVISOR

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

I would like to thank all the people in Kinston, North Carolina who generously gave their time to be interviewed and share their experiences with me. I would like to especially thank Tommy Lee, head of Kinston's planning department, who was always willing to take a few minutes to answer my questions and pleas for documents, pictures, maps and anything else I needed.

I would also like to acknowledge my advisor at the Department of City and Regional Planning, Phillip Berke, who guided me through this whole process. Always willing to give his time and expertise, he was an integral part in the development of my paper.

I would also like to express my thanks to my family: my parents, Feliciano and Socorro Olivera, and my brother, Aaron. My parents, especially, have always been an inspiration to me and have instilled in me the importance of education, hard work and doing what I love.

Finally, I would like to thank my husband, Jameson McCann, who supports me in everything thing I do and has been my greatest source of encouragement.

EXECUTIVE SUMMARY

Natural disasters cost the United States an average of over $50 billion dollars annually (NOAA, Mileti 1999). This figure does not take into account Hurricane Katrina, which to date, has cost the U.S. $105 billion[1] in repairs and reconstruction (St. Onge and Epstein 2006). Of these disasters, flooding is the most costly and most predictable (NWF 1998). From the early 1900's to the year 2000, flood damages in the United States have increased six fold, approaching $6 billion annually (ASFPM 2004); and although the U.S. annually spends over $1 billion to prevent flood damage in the U.S, the costs of floods and other disasters continue to rise (NWF 1998).

Over the past century, the federal government has periodically changed their approach to mitigating flood damage. For much of the first half of the 20th century, the federal government focused on structural solutions (e.g. levees and dams) to mitigate floods. In the 1960s, the government shifted toward non-structural approaches to mitigate flood damage with the advent of the National Flood Insurance Program (NFIP) and building and development regulations associated with the NFIP. These strategies were not entirely successful, however, as they were costly and did more to promote, rather than discourage floodplain development.

It was not until the devastating Midwestern floods in 1993, that the U.S. shifted its floodplain policies to focus on *mitigating* flood damage and voluntary acquisition became a major focus in FEMA's overall mitigation strategy (Fraser et al 2003). Acquisition is a valuable tool because it provides a *permanent* solution (the acquired land must forever remain as open space). Moreover, when acquisition is combined with other smart planning tools (such as land use planning, neighborhood revitalization and green infrastructure planning), the benefits extend beyond the elimination of flood hazards.

Kinston, North Carolina is a good example of how acquisition and relocation, when properly planned and combined with other smart growth strategies, can results in a better community overall. The city was struck by two devastating hurricanes in a relatively short period (Hurricane Fran in September 1996 and Hurricane Floyd in September 1999) and suffered major flooding, economic disruption, and environmental problems. In response, the city

[1] This figure does not account for damage to the economy caused by potential interruption of the oil supply and exports of commodities such as grain. In addition, the region supported approximately one million non-farm jobs, which could means the total economic impact could reach as high as $200 billion.

implemented a successful buyout and relocation initiative despite seemingly limited resources (the city struggles with a largely stagnant economy and a significant percentage of vulnerable populations). In addition, Kinston used the acquisition project as the implementation tool for a host of other smart growth projects including downtown revitalization efforts, promotion of affordable housing and the creation of an ambitious green infrastructure plan.

The purpose of this case study was to examine the process that Kinston undertook on its road to recovery in an attempt to determine why the city was so successful. The study suggests that one of the keys to success is a quick response time. The Hazard Mitigation Grant Program (HMPG), which funds acquisitions, has a long processing time. This, coupled with the large administrative tasks the community has to accomplish before a buyout can take place (title searches, legal property surveys, appraisals, etc.), allows a significant amount of time to pass during which the resolves of residents to participate wanes. Kinston was "fortunate" to experience its second hurricane only three years after the first. It not only motivated residents to participate in the program, but a large portion of the program was simply rolled over to begin including Hurricane Floyd victims, eliminating the long time lapse between disaster and deed transaction.

Kinston also demonstrated the importance of administrative, political, financial and technological capacity for a successful acquisition projects. Although the funding is received from the HMGP, Kinston had much more flexibility in its buyouts because the city advanced the funds and was later reimbursed. More importantly, however, is the administrative capacity to handle funding and the political will to even initiate a program such as this.

Communities often have reservations about implementing a buyout program because if participation rates are low, the community will be left providing expensive infrastructure and services (e.g. water, electricity, sewer) in an area where it wants to discourage development. Kinston's high rate of participation (97%) is a result of their commitment to the program. The city responded quickly to the disasters (especially after Hurricane Floyd) to prevent the waning of residents' resolve to move, earned residents' trust through constant counseling and meetings and ensured residents' success by preparing them for the relocation.

What makes Kinston stand out from other eastern North Carolina communities recovering from Hurricanes Fran and Floyd, however, is their acknowledgement that mitigation needed to be fully integrated into the planning and redevelopment process. Kinston used the

acquisition initiative as the implementation tool for its urban growth plan, which included many of the tenets of smart growth. The community took full advantage of the opportunities a major disaster brings to not only implement its acquisition and relocation initiative, but to implement a host of other smart growth projects, including:

- Creating affordable housing on vacant lots located in declining downtown neighborhoods;
- Rehabilitating an abandoned high school into senior apartments;
- Decommissioning a wastewater treatment plant located in the floodplain;
- Removing five of the six junkyards located in the floodplain;
- Creating a downtown business incubator through an economic development grant; and
- Drafting an ambitious green infrastructure plan that focuses on providing recreational, educational and economic opportunities for the community.

Kinston shows that one of the most important strategies to a successful recovery effort is integrating hazard mitigation into long-term goals. When disaster funding became available, Kinston did not have to plan extensively to create projects that could be funded. Instead, the collective thought was that finally there was funding to implement the projects the city had long waned to do. Kinston was proactive and immediately seized on the opportunities the disasters brought. Kinston has shown that communities not only stand a better chance of receiving funding if disaster recovery planning has already been done, but communities are also better equipped to ascertain needs and goals before a disaster strikes instead of during the recovery phase when immediate needs are more pressing.

CHAPTER 1: FLOODPLAIN MANAGEMENT IN THE UNITED STATES

I. HISTORY OF FLOOD CONTROL POLICY IN THE UNITED STATES

Natural disasters cost the United States on average over $50 billion dollars annually (NOAA, Mileti 1999). This figure does not take into account Hurricane Katrina, which to date, has cost the U.S. $105 billion[2] in repairs and reconstruction (St. Onge and Epstein 2006). Of these disasters, flooding is the most costly and most predictable (NWF 1998). From the early 1900's to the year 2000, flood damages in the United States have increased six fold, approaching $6 billion annually (ASFPM 2004); and although the U.S. annually spends over $1 billion to prevent flood damage in the U.S, the costs of floods and other disasters continue to rise (NWF 1998).

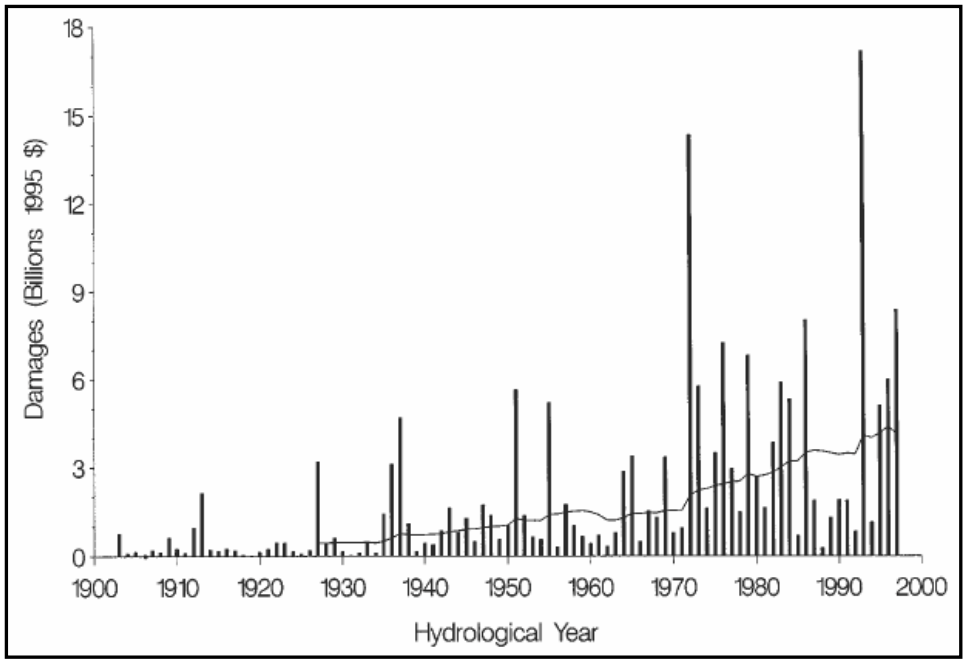

Figure 1: U.S. Flood Damages, 1903-1907, with a 25-year running mean. ***Source: Roger A. Pielke, Jr.***

As these costs have risen, the federal government has begun to seek new approaches for mitigating flood damage. For much of the first half of the 20th century, the federal government focused on structural solutions (e.g. levees and dams) as a means to prevent flood damage. The policies changed significantly in the mid-1960s, shifting to nonstructural approaches with the National Flood Insurance Program (NFIP) and building and development regulations associated with the NFIP (Burby and Kaiser 1987).

These approaches were not entirely successful, however, and flood losses continued to rise. After the record-breaking floods in the Midwest in 1993, the U.S. government changed

[2] This figure does not account for damage to the economy caused by potential interruption of the oil supply and exports of commodities such as grain. In addition, the region supported approximately one million non-farm jobs, which could means the total economic impact could reach as high as $200 billion.

policy tactics once again, focusing on *mitigating* flood damage. Voluntary buyouts (including the purchase of vacant property in floodplains to prevent it from future development, purchase and relocation of existing structures, and purchase and demolition of flood damaged structures) became a major new focus in FEMA's overall strategy to mitigate flood losses (Fraser et al 2003). An acquisition and relocation strategy has a major advantage over other mitigation strategies because it serves as a *permanent* solution. Moreover, when acquisition is combined with other smart planning tools (such as land use planning, neighborhood revitalization, and green infrastructure planning), the results extend beyond the elimination of flood hazards. Kinston, North Carolina is a good example of how acquisition and relocation, when properly planned and combined with other smart growth strategies, can result in a better community overall.

II. Effectiveness of Flood Control Policies

Despite increases in federal spending on flood control, the costs of floods and other natural disasters continues to rise.[3] During the last quarter of the 20th century, the Army Corps of Engineers spent more than $25 billion on flood control projects (including levees, dams, riprap, floodwalls and channelization projects). Floods are the most frequent, most predictable and most expensive natural disasters facing the U.S., accounting for most of the federal relief funds. Currently, about 150,000 square miles of the U.S. lies within floodprone areas (defined as area within the 100-year floodplain). In 1987, this area consisted of between 9 and 11 million families and property with an estimated value of $390 billion (NWF 1998).

It is arguable that most of the floodplain policies in place during the last century did more to promote floodplain losses than prevent them. Although building codes and other floodplain construction regulations have led to reductions in floodplain losses when compared to the development without such regulations in place, they also encourage floodplain development and in turn, floodplain damage.

[3] Progress has been made to prevent loss of life from natural disasters.

A. Flood Control Structures

Flood control structures (such as levees, floodwalls, etc.) were the most commonly used flood mitigation strategy up until the 1960s, but are still in place today. These structures, built by the Army Corps of Engineers, are mostly funded by the federal government, which pays about 75% of project costs. The state or local community is responsible for the rest, often substituting in-kind payments (e.g. providing public land along the project's riverbanks) to use towards its cost share. This costs structure, which relies heavily on the federal government, can be an inducement for communities to choose structural solutions for flood control over other mitigating strategies. Flood control structures also have the additional effect of giving floodplain residents a false sense of security, leading to more development. A report by the U.S. Army Corps of Engineers in 1995 stated: "It is clear to many observers of floodplain management issues that flood protection projects do encourage additional development of floodplains". If these structures fail, which has been known to occur, an even greater loss to flood damage occurs (NWF 1998).

B. Floodplain Insurance

The National Flood Insurance Program (NFIP) was created in 1968 by the federal government, signaling a shift from structural flood control policies towards nonstructural methods (Fraser et al 2003). Believing that private insurers would not provide floodplain coverage or if they did so, they would do so at premiums that most floodplain residents could not afford, the federal government stepped in. The program was intended to reduce disaster assistance spending overall because taxpayers would not have to pay for flood damages covered by flood insurance premiums. In addition, the NFIP promotes other flood mitigation strategies by requiring them as a condition for participation in the program. For example, communities must implement stricter building codes or require structure elevation above the 100-year flood level. Despite all these provisions in the NFIP, however, flood loss damage and associated costs have continued to rise. (NWF 1998)

Nevertheless, the program has had some success. The NFIP covered about $10.4 billion in flood damages during the last quarter century and the Federal Insurance Administration has estimated that $777 million in annual flood losses are avoided because of improved building

standards applied to new floodplain construction. Additionally, the program has spurred communities to implement other non-structural flood mitigation strategies (NWF 1998).

There are some inherent problems with the National Flood Insurance Program, however. Federally subsidized flood insurance can have the same effect flood control structures do—namely, encouraging floodplain development. In addition, it is estimated that only 30% of floodprone structures have flood insurance (leaving an estimated 8 million uninsured structures). Many people feel that the government will bail them out, regardless of whether they have insurance or not—making flood insurance seem like an unnecessary cost. Because flood insurance is subsidized, the premiums charged do not proportionally reflect the losses that may be incurred and therefore, floodplain residents do not pay the true cost of living in a floodprone region (NWF 1998).

A particular problem with the NFIP is "repetitive loss structures". The Federal Insurance Administration defines "repetitive loss structures" as properties that have received two or more insurance payments of at least $1,000 within a 10-year period. Repetitive loss structures represent only about two percent of the properties covered by flood insurance policies, but they accounted for 25% of the losses paid and 40% of the total dollars paid from the Flood Insurance Fund between 1978 and 1995 (NWF 1998).

C. ACQUISITION

The early 1990s marked the flood "mitigation era", shifting away from measures that protected residents living in the floodplain, and instead focusing on moving people out of the floodplain altogether. The Federal Emergency Management Agency (FEMA) created the Mitigation Directorate in November 1993, helping move mitigation into the cornerstone of emergency management. FEMA also created the Hazard Mitigation Grant Program (HMGP), which provides grants to state and local communities to reduce the risk of damage from natural hazards. These grants can be used for a variety of strategies, including acquisition, elevation or relocating homes (Fraser et al 2003).

Acquisition and relocation became a more prominent flood mitigation strategy following the devastating floods in the Midwest in 1993. While other means of hazard mitigation (such as flood insurance, building regulations and flood control structures) have had some success in

mitigating flood damage, buyouts are considered permanent solutions, as they remove people and structures out of the floodplain forever. In a property acquisition project, the community buys private property, acquires title to it (converting it to public property) and then clears it of the floodplain structures (FEMA 2004). By law, the community must dedicate and *forever* maintain the acquired property as open space. Any structures on the acquired property must be demolished or removed within 90 days of closing. The community may never again apply for or receive any additional disaster assistance for the acquired property. Additionally, any structures relocated from acquired property must be placed outside the 100-year floodplain (FEMA 1998). For this reason, this form of flood mitigation is considered the most permanent.

It is important to note that these buyouts are entirely *voluntary*. Communities can only acquire property from property owners who voluntarily agree to sell. In addition, they must notify property owners in writing that it will not use their power of eminent domain to acquire the property if a voluntary agreement is not reached. Homeowners are offered pre-flood fair market value for their home, as determined by a licensed appraiser. In addition, the community pays all closing costs and real estate transaction costs, including appraisals, title searches, and surveys. (FEMA 1998)

There are three principles on which the practice of acquisition and relocation is based (NWF 1998):

- People in floodprone regions will receive meaningful assistance. Through the voluntary purchase of their property, they can use these funds to acquire new housing outside the floodplain and out of harm's way.
- Acquisition can also be a cost-effective use of public funds. In return for a one-time purchase, the community gains a *permanent* solution for flood control. Not only is any future disaster relief expenditure prohibited for the property, but the community may not even apply.
- Both people and the environment benefit because all the property acquired reverts to open space. Many times, the community uses the space to create a wildlife refuge, public recreation area, wetland, or other such use. The area regains it natural value as a floodplain.

D. ACQUISITION COMPARED TO OTHER HAZARD MITIGATION TOOLS

Acquisition is a permanent solution to mitigating flood damage, but there are additional reasons why a community would choose acquisition over alternative strategies. Kusler (1979) identified a number of reasons why acquisition and relocation are more effective than other floodplain management measures:

- Compared to floodplain building regulations, buyout and relocation (1) can be used to prevent *all* damageable uses of the floodplain; (2) are permanent and not subject to political whim; (3) contribute to objectives other than flood damage prevention (such as wetland restoration and/or habitat protection); and (4) may be more politically palatable because landowners are compensated.
- Compared to structural flood control measures, buyout and relocation (1) are likely to be less costly (although they may be more expensive initially); (2) are less subject to physical constraints on their applicability; (3) do not require intensive and continuous maintenance; (4) do not threaten catastrophic losses when flood events exceed design standards; and (5) protect, rather than harm, the environment.
- Compared to flood insurance, buyout and relocation (1) do not encourage floodplain development; and (2) provide greater certainty that flood losses will be reduced.
- Compared to disaster relief, buyouts and relocation provide a permanent, rather than stopgap, solutions to floodplain problems.

Acquisition and relocation strategies are not without drawbacks, however. When properties are bought out, there is often an entire loss of community as former residents are dispersed to different locations. Additionally, if there is no available housing for residents to relocate within the same town or community, the town loses a portion of its tax base (FEMA 2004). More damaging is if there is a lack of full participation in a buyout program. Then some houses remain vulnerable to flooding while the local government must continue to provide services (such as sewer and water) for those that stay. The process can also be quite time consuming (at least seven to 18 months to complete the buyout process), as officials apply for funds, obtain approval, transfer funds, and conduct appraisals and closings (Fraser et al 2003).

This case study gives an example of a community in North Carolina, the City of Kinston, which has had success with an acquisition and relocation initiative. The initiative began after Hurricane Fran in 1996 and was expanded following Hurricane Floyd in 1999.

E. Acquisition in Other Communities

Acquisition and relocation initiatives began to take a more central role in flood mitigation following the devastating Midwest floods in 1993 and there are many examples of successful acquisition efforts made following these floods. In Valmeyer, Illinois, the mayor organized a group of citizen-led committees to research, plan and implement the relocation of the entire town. The city had experienced severe flooding (over 90% of the homes and businesses were substantially damaged) after levees failed in 1993. Although the acquisition was successful, the FEMA buyout process was not quick and efficient. The mayor and the committees had to continually keep federal and state officials aware that the longer the process took, the more its residents were returning to their floodprone homes—businesses, especially, could not tolerate long delays. (Scott 1996)

The city of Houston, Texas and its respective county, Harris County, have both had some success with buyouts. This area continually get flooded for a variety of reasons: poor soils, lack of floodplain development zoning which has allowed development to occur both in the floodplain and floodway, weak protection of wetlands, and stream alteration. This has resulted in flooding well outside the boundaries depicted in floodplain maps. The Harris County Engineering Department Permitting Office has administered a major buyout program, but funding has been the largest constraint on the program—more people have offered to sell than funds are available. The state hazard mitigation officer has said that there are numerous poorer communities and neighborhoods where residents with repetitive loss and substantially damaged properties have signed up for buyouts, but the communities have no funds to provide the 25 percent nonfederal match required under FEMA's HMGP. (NWF 1998)

Like Kinston, North Carolina, the city of Greenville, located in eastern North Carolina, also suffered major flooding damage following Hurricane Floyd in 1999. Over 1800 homes were damaged and of those, half declared uninhabitable. The city implemented an acquisition program, but was not entirely successful in removing all structures out of the floodplain. Because of its high demand for rental property (generated by the presence of East Carolina

University and its students), some landlord-owners did not participate. In addition, the Department of Housing and Urban Development (HUD) chose to elevate a low-income housing complex located in the floodplain instead of relocating. (Fraser et al. 2003)

These examples of acquisition projects in the U.S. display the relative success of buyout programs and some of the obstacles communities face. They illustrate the need for a timely response following a disaster to ensure success; demonstrate that buyout funding is much more readily available following a natural disaster than before; and show some of the constraints of the voluntary nature of buyouts—owners may opt not to participate.

III. METHODOLOGY

This paper uses case based research to identify the essential strategies and characteristics for a successful buyout and relocation initiative and identifies any potential obstacles a community may face in the process. The City of Kinston, North Carolina, which implemented such a program after Hurricane Fran in September 1996 and continued the program after Hurricane Floyd in September 1999, is used as a case study model. Not only did Kinston successfully implement an acquisition and relocation initiative, but it fully integrated mitigation into its planning, redevelopment and recovery efforts. By 1999, after a second hurricane (Floyd) had struck, the city was using mitigation as an implementation tool for its urban growth plan, which includes many of the tenets of smart growth, including downtown revitalization, promotion of affordable housing and environmental conservation.

Because of its success following two devastating hurricanes, Kinston can serve as a model for cities facing similar crises. The purpose of this study is to examine the process that Kinston undertook on its road to recovery in an attempt to determine the essential strategies for a successful recovery effort. As a community with seemingly limited resources, with a stagnant economy and large percentage of vulnerable populations, Kinston can serve as a paradigm for other cities or at the very least, serve as an inspiration for other communities facing similar situations.

This case study is based on qualitative interviews that analyzed the buyout process in Kinston, beginning about a decade ago. All interviews took place between January and March 2006, with a few additional follow-up interviews occurring in April 2006. The average length of the interviews was about 1.5 hours. In addition, two official-led tours of the city were also made

to help identify successful recovery projects in the city and to determine the current state of the acquired property. In total 14 people were interviewed:

- 3 Kinston city planners. All worked during some period of the recovery phase in Kinston.
- 2 Lenoir county planners who were involved with county and Kinston recovery efforts following Hurricane Floyd.
- The lawyer and paralegal that handled most of the deed transactions for the buyout.
- A representative from the *Pride of Kinston,* the downtown revitalization organization.
- A representative from the *Conservation Fund,* a non-profit organization that helped with initial development of Kinston's green infrastructure plan.
- 2 officials who were posted to the Governor's office following Hurricane Floyd.
- Official from the North Carolina Division of Emergency Management
- Official from the North Carolina Division of Community Assistance
- A real estate agent who helped relocated families find new homes.

Interview questions focused on four main issues: participation in the program, the role of agencies or organizations that helped administer recovery efforts, collaboration, and overall program effectiveness (including obstacles and key strategies for success). Interviewees were initially contacted either by phone or email and participation was voluntary. Actual interviews either took place by phone or in person (sometimes both). To protect the privacy of those interviewed, no names are disclosed in this paper. The interview guide can be found in Appendix 1.

In addition to interviews, data was also gathered. Much of information regarding Hazard Mitigation Grant Program (HMGP) applications and disaster mitigation planning came from both internal and external County Hazard Mitigation Planning Team (COHMIT) memos. Following the initiation of the acquisition and relocation program in Kinston, FEMA published a series of small case studies on the success of the Kinston buyout on its website, which were helpful in preparing for interviews. Also helpful were Kinston's Urban Growth Plan, Green Infrastructure Plan and a CD the city published in September 2002 on the importance of using Geographic Information Systems (GIS) in floodplain management (also a good source of maps).

CHAPTER 2: SERVING AS A MODEL FOR RECOVERY

I. KINSTON – A SUCCESSFUL RECOVERY EFFORT

In September 1996, Hurricane Fran drenched Kinston, NC with 16 inches of rain. The hurricane caused the Neuse River Basin to flood, wreaking major flood damage in Kinston, creating economic disruption and environmental problems as well. Losses were estimated in the tens of millions of dollars, with over 400 homes, dozens of businesses, and public infrastructure severely damaged. The Peachtree Wastewater Treatment Plant in Kinston also flooded (Figure 2), dumping raw and partially treated sewage into the Neuse River. Six junkyards located in Kinston's floodplain were also flooded, spilling oils and other chemicals into the flooded waters. These spills, combined with overflow from flooded farm-waste lagoons further upstream, created a toxic mess in the floodwaters inundating much of Kinston's floodplain (Tibbets 1999).

Figure 2: Peachtree Wastewater Treatment flooded after Hurricane Floyd. ***Source: City of Kinston, NC***

Figure 3: A flooded Kinston community after Floyd. ***Source: FEMA***

Three years later, in the midst of recovering from Hurricane Fran, Hurricane Floyd (Figure 3) caused even greater flood damage in Kinston, dumping 13 inches of rain in 24 hours. Hurricane Floyd struck Kinston in September 1999, causing the Neuse River to crest at 38.8 feet, more than 10 feet above the flood stage (Figure 4). The problem had been intensified by Hurricane Dennis, a previous storm which had brought rain for several days,

saturating the entire drainage basin. When Floyd hit, the rain could not be absorbed, resulting in flooding that substantially damaged over 700 homes and 200 businesses (FEMA 2002). The storm left over 20,000 residents without power and hundreds of people had to be rescued by National Guard troops. Once again, the wastewater treatment plant flooded, spilling untreated sewage into the Neuse River (Fraser et al 2003).

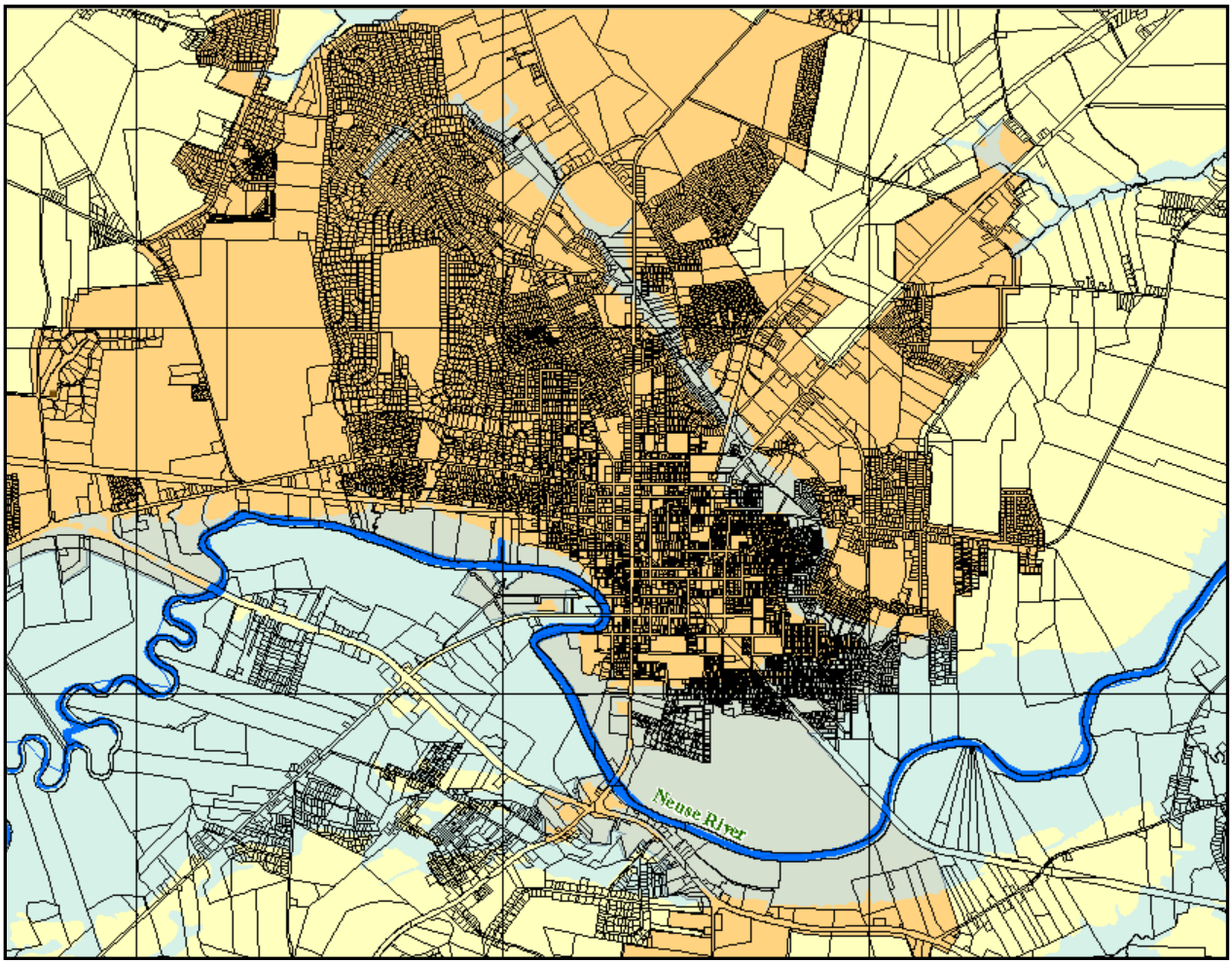

Figure 4: The blue shaded areas show the extent of flooding following Hurricane Floyd. The dark orange areas denote Kinston city boundaries. ***Source: City of Kinston***

After both of these hurricanes, Kinston faced a daunting challenge. In the midst of immediate rescue efforts, the city also had to deal with finding emergency housing, fixing infrastructure (roads, electricity, water, etc.) and neutralizing the environmental problems caused by toxic floodwaters. Kinston also had to decide when and how to begin the long-term recovery process. If they began too late, it might be more difficult to garner support for their efforts.

However, if they began too soon, they might inadvertently make hasty decisions that they would later regret.

Kinston was just one of the many small towns in eastern North Carolina that faced these challenges after Hurricanes Fran and Floyd. Yet, despite these adversities, Kinston is one of the communities that is looked to as an example of how a community can take advantage of the opportunities a disaster brings to create positive outcomes. Kinston responded to these disasters more effectively than others, exemplifying the motto that was touted after the hurricanes: "Building Back Better". It is an example of a resilient community that rebuilt after disaster struck and used these disasters as a catalyst to implement strategies that promote smart growth. The city implemented an acquisition and relocation program that not only moved residents out of the floodplain, but also incorporated strategies promoting sustainable development, affordable housing and community and economic development.

More impressive, however, is the fact that on the outset, Kinston does not look to be the most likely community to accomplish such a successful recovery effort. Kinston is a community that struggles with a largely stagnant economy and a significant percentage of vulnerable populations. Over 32 percent of Kinston's households earn less than $15,000 annually and over 47 percent make less than $25,000. This equates to about 23 percent of the population living below the poverty level. Over 60 percent of the population is African American and almost 20 percent of the population is over the age of 65. (U.S. Census 2000) However, many of these statistical groups were concentrated in the floodplain, where all but a few of the residents bought out were African American, with large concentrations of poor and elderly populations as well.

The purpose of this study is to examine the process that Kinston undertook on its road to recovery in an attempt to determine why the city was so successful in its recovery efforts. More specifically, this study focuses on the strategies that were essential for making the recovery effort a success. Examining the recovery process also reveals the challenges facing a community after a disaster and any obstacles (i.e. bureaucratic or administrative issues) communities must confront. Kinston, with its seemingly limited resources, can serve as a paradigm for other cities facing similar crises or at the very least, serve as an inspiration for communities in crisis.

II. MITIGATION PLANNING IN KINSTON BEFORE HURRICANE FRAN

In July 1996, Hurricane Bertha hit the City of Kinston. Although the eye of the hurricane passed over the community, it had weakened to a Category 1 or 2 storm by then, causing only some minor wind damage and localized flooding. Bertha is important to note, however, because up until then, Kinston had had no real experience of a hurricane or any other type of natural disaster (the last major disaster had been in 1964—over 30 years prior) and the city had done no hazard mitigation planning of any kind. Kinston did do a capable job of responding to Bertha, but most was in the way of emergency response and afterwards, it was simply back to business—Kinston had done very little to change the way it responded to disasters.

Before Hurricane Fran, many of the planning efforts in Kinston's floodplain involved small community development efforts (i.e. using development block grants for urban renewal and eliminating blight). It is ironic that much of the funding Kinston received before Hurricane Fran had been given for projects *in the floodplain*. It was not the ideal situation, of course, but these were the areas that needed funding the most—areas where dirt streets needed to be paved and where inadequate water and sewer service had to be addressed.

Prior to Hurricane Fran, the city had applied for funding to elevate structures in the floodplain but had been turned down. There was also an interest in wholesale acquisition, but the funding was not there. Although all of the people interviewed acknowledged that acquisition and relocation should be carried out *before* a major event occurs, there is very little pre-disaster assistance funding available. Kinston also had some previous relocation experience. It had relocated a total of about 200 to 300 families through different blight removal and revitalization projects over the previous decade, but had done nothing on the scale that would be required of them after Hurricanes Fran and Floyd.

In other words, Kinston began its recovery process with very little institutional knowledge of disaster recovery and hazard mitigation planning, mostly learning as it went along in the process. Yet in many ways, this proved to be beneficial to the city because it led to innovation. Innovation is one of the keys to Kinston's success and also one of the reasons Kinston can be held up as a model for other communities in disaster recovery. This innovation can be seen throughout the recovery process, in everything from its downtown revitalization efforts to its green infrastructure plan. Although each attempt was not entirely successful or

some projects merely fizzled out, Kinston stands out as one of the communities in eastern North Carolina that took full advantage of every opportunity natural disasters brought.

CHAPTER 3: INITIATING ACQUISITION AND RELOCATION

I. KINSTON'S ACCOMPLISHMENTS

Communities usually have many reservations about attempting an acquisition initiative, but two stand out. The first is that such a program may result in a loss to the city's tax base as people opt to move outside city limits (either because there is not enough available replacement housing or residents cannot afford to relocate within city limits with the amount they receive for their flooded home). The second is that the acquisition may not be entirely successful. Because the process is entirely voluntary, a few residents may choose not to participate. The city is left to maintain expense infrastructure that could otherwise be decommissioned.

Yet, Kinston was largely successful in its acquisition and relocation initiative, moving out over 90% of the residents in the 100-year floodplain and almost all of those residents who were most adversely affected. The city had a 97% participation rate in the program for those that were eligible (totaling about 775 acquisitions). This translated into about 1500-2000 people, or about 7% of Kinston's entire population. Only a handful of people remain in the floodplain, and those that do are relatively close to existing housing. About 90% of the participants relocated within Kinston city limits and since the equity on new homes was generally substantially higher, it created a net tax gain for the city. Figure 5 shows the location of the buyouts—almost all were concentrated in the southern portion of the city.

What makes Kinston stand out, however, is what it was able to accomplish *in addition* to its acquisition and relocation initiative. Not only was Kinston able to move a large portion of the population out of harm's way, but in the process, the city incorporated many of the tenets of smart growth. In conjunction with the acquisition and relocation initiative, Kinston was able to improve the livability of downtown and its surrounding communities, create affordable housing opportunities for the general population and the elderly, remove environmental hazards out of the floodplain and develop a green infrastructure plan that provides recreational opportunities while keeping the environmental function of the floodplain intact. In total, Kinston administered over $100 million in grant money to accomplish these goals.

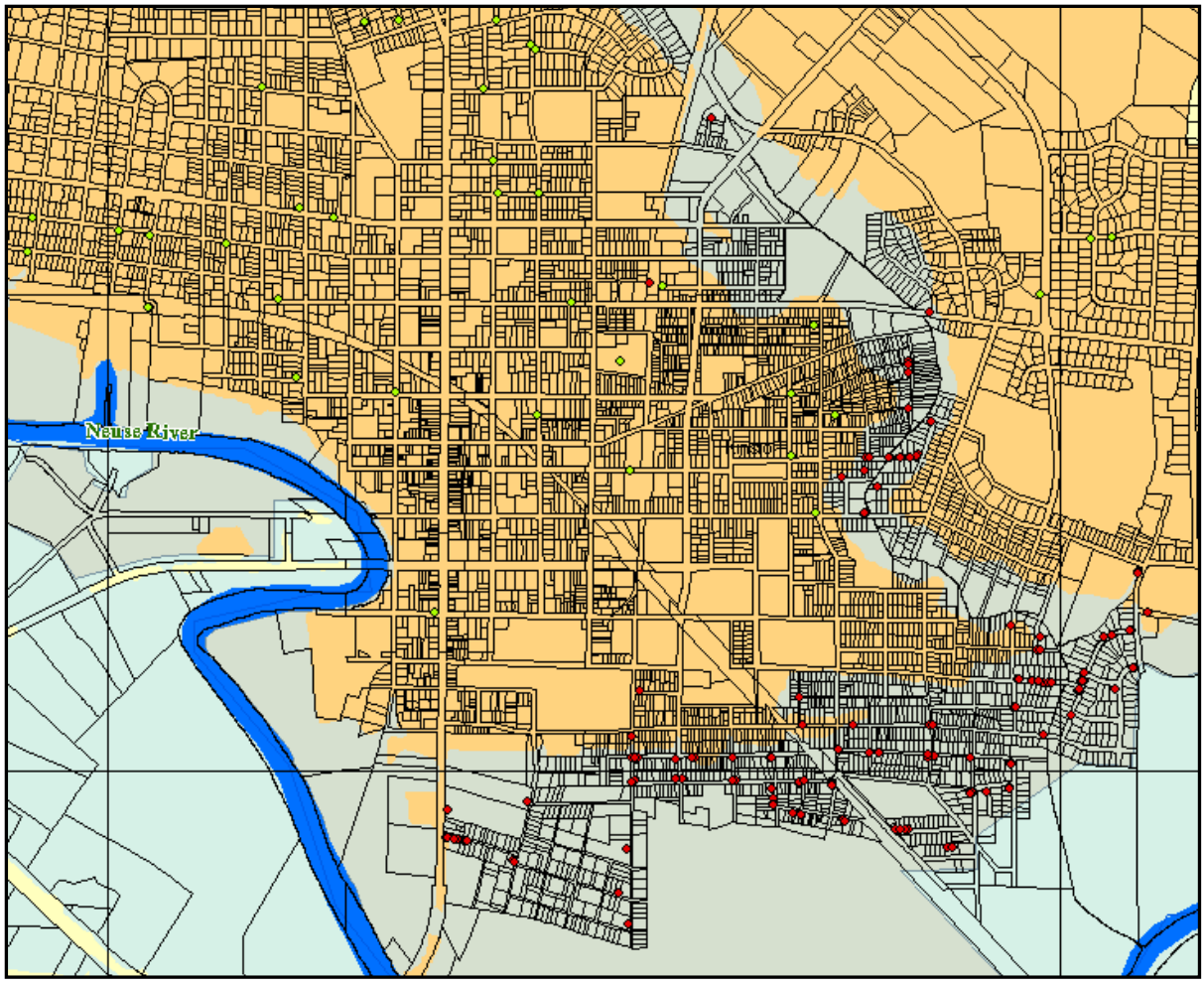

Figure 5: The red dots denote buyout areas. The majority are located in the southern portion of the city and all were located in the 100-year floodplain. ***Source: City of Kinston***

II. STRATEGIES FOR A SUCCESSFUL RECOVERY EFFORT

Over the course of many interviews, both state and local officials spoke of Kinston's recovery effort. The purpose of this study is to examine the recovery process Kinston underwent, illuminating key strategies the city implemented and obstacles it had to overcome—the *keys to success* in Kinston's recovery effort. These are the actions taken by Kinston and characteristics the city exhibited throughout the process that have led the city to its successful recovery.

The following section deals largely with Kinston's initial response to Hurricane Fran, the planning and preparation that went into their acquisition and relocation initiative, and the first phase of this initiative. With very little hazard mitigation planning experience, the city mostly

learned as it went along in the process. Although a general theme to their recovery begins to emerge (i.e. merging smart growth with their recovery efforts), it is not until Hurricane Floyd that this becomes the overall guiding principle to their recovery efforts.

A. Quick Response and Collaboration

When Hurricane Fran hit in September 1996, the city had very little disaster experience to draw from and they had to learn quickly. One key to their success was their quick recovery response to the flooding. There was both an immediate disaster response, but more importantly, Kinston, in conjunction with Lenoir County, began its long-term recovery process almost as quickly. At the time, state expertise was limited—North Carolina had only three people on its entire staff with hazard mitigation experience. Kinston decided to consult with other states (including Iowa and Florida), which had recently faced similar disasters to see what expertise they could offer. They also placed the state disaster and recovery office inside their planning office, so their expertise could be right on hand.

Within 30 days, the County Hazard Mitigation Planning Team (COHMIT) was created and had a strategy in place. COHMIT was a task force consisting of the city and county agencies (each with three representatives) that would oversee preparation of the hazard mitigation plan for Lenoir County and its communities, including Kinston. Every community would be fully involved in developing the policies, actions and improvement projects that would fit their particular needs. By pooling together the expertise and resources of the county and its communities, COHMIT increased access to state and federal resources and presented the best package of local resources needed to seek outside help. Although Kinston would eventually run a separate, but parallel, acquisition and relocation program from the county, this initial collaboration was essential to garnering the resources needed to develop and support an overall recovery strategy.

COHMIT hosted their first hazard mitigation workshop ("Hurricanes, Tornado and Floods, Oh My!") on November 19, 1996 for representatives of local agencies to get direct information and advice about recovery and mitigation opportunities from state, federal and other disaster assistance agencies. A panel composed of State Disaster Center members, FEMA, and others were able to offer insight into disaster recovery and how reducing future risks through

mitigation could be accomplished. Some of the topics addressed included the Hazard Mitigation Grant Program (HMGP), the National Flood Insurance Program (NFIP), the Community Rating System (CRS) incentives, buyouts and relocation, how to meet housing needs, and getting business and economic development assistance. Instead of each community having to reach out to disaster assistance agencies, these workshops provided an effective and efficient means for communities in Lenoir County to learn and work together on the recovery process.

Part of the reason COHMIT was created so quickly and was able to function so smoothly was because the previous year, Kinston had implemented a citywide strategic planning effort to develop better cooperation between the different county and city agencies. When Hurricane Fran hit, many of the usual barriers that result when local agencies begin to work together had already been dealt with and COHMIT was able to quickly get on with the task of recovery. Similarly, a secondary effort included a goal to create better cooperation between social services, volunteer groups and the private sector. When Fran hit, the Kinston Area Recovery Effort (KARE) was able to come together much more quickly. Made up of volunteers, churches, and other similar groups, KARE was largely responsible for many of the recovery volunteer efforts such as cleaning up and helping flooded residents with their immediate needs (Figure 6).

Figure 6: KARE volunteers helped with many of the immediate needs of flooded residents, such as cleaning up.

This collaboration and its subsequent efforts lead to rapid results. On December 16, 1996, the town Planning Director of Kinston had submitted 8 project applications under the FEMA Hazard Mitigation Grant Program (HMGP) for Kinston (and an additional 6 were submitted for Lenoir County). The largest and highest priority project consisted of a housing project to acquire and relocate homes in the floodplain. Kinston was seeking over $23.5 million from HMGP monies (the state would be responsible for $7.8 million of this project with another

$24.9 million from Community Development Block Grants). Other project applications included a wastewater sewer inflow/infiltration reduction project, a business acquisition/relocation project and a drainage mitigation project. In total, the eight applications would total over $36.5 million for HMGP funds.

B. CUTTING THROUGH THE BUREAUCRACY

Although Kinston was able to rapidly assess its needs and goals, city officials said the entire process was still agonizingly slow and bureaucratic. The acquisition and relocation process took time, especially because Kinston had to go through both state and federal channels for funding, which originates from and is administered by a variety of sources. The N.C. Department of Emergency Management administers the HMGP program, located under FEMA. HMGP funds could only be used to fund the acquisition portion of the program. The State Acquisition and Relocation Fund (SARF), which was needed to help most families find comparable housing outside the floodplain in Kinston, was administered by the N.C. Department of Commerce's Division of Community Assistance. Although HMGP applications were submitted relatively quickly, the first grant was not processed until 14 months after the flooding. Once this funding was procured, the city could not move on with the program until SARF funds were secured as the acquisition of the flooded home and the closing of the new home were done simultaneously. In addition, funds from Community Development Block Grants (CDBG) come from the U.S. Department of Housing and Urban Development (HUD) and are administered by the state Division of Community Assistance. (Tibbets 1999)

At the local level, Kinston had to organize an assessment of the property they wished to acquire, carry out title searches to assure the rightful owners, conduct a legal property survey, attain appraisals for each property, establish a process for just compensation and provide a written offer to purchase. Tracking "heir property" was some of the most time consuming work. Heir property occurs when there is no officiated property owner (i.e. the house has been passed down unofficially, without legal wills stating inheritance). In North Carolina, this means that every heir of the last person to hold the deed owns an equal portion in the property. In one case, the last officiated property owner had died in 1904 and every single one of his heirs had to sign

off before the property could be acquired. There were instances of having to track down up to 30 and 40 heirs for a single property.

The result was that the first property acquired in Kinston did not occur until April 1998, over one year and six months after Hurricane Floyd. This delay inevitably led to a decrease in participation, as owners of flooded homeowners wanted to get back to their homes and start the recovery process. Delays also made the perception of another hurricane less imminent and threatening, thereby weakening the resolve of participants to move out of the floodplain.

When Hurricane Floyd struck three years later, Kinston was still in the process of administering funds from Hurricane Fran and other grants from smaller, subsequent storms. Kinston was simply able to roll over the buyout program to begin including victims from Hurricane Floyd. Some who had been eligible before and opted not to participate decided to participate this time around. Much of the bureaucracy and time lag that generally occurs with a buyout program was eliminated after Floyd, which allowed for a much greater participation rate the second time around.

CHAPTER 4: WHAT IT TAKES TO ENSURE SUCCESS

I. CAPABILITY AND CAPACITY

Many Kinston officials spoke of implementing an acquisition project as a foregone conclusion, especially after Hurricane Floyd. Facing the devastating situation, they could not see the city go through this again. However, the decision to implement such a program was not take lightly. Officials had to consider a variety of issues, take stock of its capabilities, and decide if it had the capacity to implement a buyout program before finally deciding to go ahead with the initiative.

A. FUNDING

Kinston first had to decide on the type of recovery effort they wanted and could implement. A simple acquisition project might be easier to administer, but it would result in a huge loss to the city's tax base. An acquisition and relocation initiative would require much more funding, as most people would not be able to relocate within city limits without supplemental funding. The city could decide to physically move structures out of the floodplain or demolish them and rebuild elsewhere. Vacant lots also had to be acquired, but the funding for these was not as certain. Indeed, vacant lots were eligible to be bought from Hurricane Fran funding and not from Hurricane Floyd funding. It is only now, with a Clean Water Management Trust Fund grant that the city is in the process of buying some of the remaining vacant lots. Kinston could also choose to elevate structures. Most of these choices depended on the funding available, with high costs prohibiting certain programs. In the end, Kinston chose an acquisition and relocation initiative. Other communities chose different options. For example, the nearby town of Belhaven, located almost entirely in the floodplain, chose to elevate their structures, as it was their only feasible option—relocation would have involved moving most of the homes and businesses up to ten miles from the downtown area (FEMA 2000).

Before any community can implement an acquisition program, it has to ensure that the money and grants will be available to fund the programs. The HMGP program provides only 75% of the costs. The state has to come up with the rest. Even after the funding becomes available, the bureaucratic nature of the funds can sometimes be an obstacle. After a city fills

out the paperwork for property to be acquired, it has to be sent to Raleigh to be approved by the Department of Emergency Management. Once the FEMA money has been released, a community has three days to close on the home. This can prove to be an administrative nightmare for communities, especially small communities that have less capacity. Kinston officials were fortunate in that the city advanced money for the program (they were later reimbursed when the funds came in). This allowed administrators much more flexibility, as they were able to act independently of what was occurring at the state and federal levels.

B. Administrative Capacity and Political Will

Kinston also had the administrative capacity to handle an acquisition and relocation program. A community attempting an acquisition program needs a surprisingly large number of personnel. It needs the attorneys to deal with the legal work of deed transactions, appraisers and surveyors to evaluate each home, financial experts to deal with the funding aspects, as well as the planners to help administer the program. Communities also need the political will to assume such a program and be proactive in reaching out to state agencies for help. Kinston did this from the very beginning, garnering help from state and federal agencies, whether it was expertise, advise, or funding.

A few of the state officials interviewed addressed this issue. One agency official noted that while many state agencies wanted to help communities in eastern North Carolina after the flooding, these communities also had to be proactive in reaching out to state agencies. However, some communities did not step up. They had residents who were eligible for acquisition, but either through a lack of political will or lack of capacity, they were not willing or able to administer the program. In some cases, the state agency created a mechanism whereby the agency helped the community administer a mitigation program. One official likened it to "holding the community's hand through the entire process". Even in this instance, however, state officials are not able to evaluate a community's particular needs as well as the community itself, so some needs go unmet. Additionally, some of the money the community receives may not be put to its best use because the community does not have the capacity to take advantage of it. In the end, a community must decide if it has the capacity to administer such a program and must be willing to seek out assistance.

C. TECHNOLOGICAL CAPACITY

Many Kinston planners noted that Geographic Information Systems (GIS) was an invaluable tool in helping throughout the entire acquisition and relocation process. Given today's requirement for information, GIS becomes a necessity. FEMA even asks for latitude and longitude references of the property to be acquired. The database capacity embedded in GIS allows information to be stored as it is collected. The data could include demographic information, such as special needs population densities (elderly, infants, handicapped, etc.), socio-economic data (renters, homeowners), and information on each property (degree of damage, repetitive loss flood claim data, appraised values and HGMP acquisition costs). Kinston used GIS to develop a demographic profile of the floodplain to help determine relocation needs. It determined how many home were needed and their respective targeted price ranges for relocation within Kinston city limits. (FEMA 2002)

GIS also proved helpful when it became immediately obvious that the floodplain maps existing at the time of Hurricanes Fran and Floyd were grossly inaccurate. Although Hurricane Floyd was a devastating storm, it was only about a 55-year event. Yet homes that had been mapped outside the 100-year floodplain were flooded. Kinston has since remapped their floodplain, but inaccurate maps produced unnecessary obstacles during the acquisition process. Generally, only home within the 100-year floodplain were eligible to participate in the buyout. However, homes outside the *mapped* 100-year level were flooded, creating an extra bureaucratic hoop administrators had to jump through in order to acquire homes in this situation.

II. CONVINCING PEOPLE TO PARTICIPATE

One of the more difficult aspects of an acquisition initiative is that it is entirely voluntary. No homeowner can ever be forced to participate. This, however, makes Kinston's initiative all the more remarkable. Kinston's program had a very high participation rate and there are a variety of reasons for this. Although Kinston officials knew they could have used eminent domain to remove residents out of the floodplain, it was never seen as a viable option, especially since they would have been ineligible for HMGP funds had they taken that approach.

A recent study of acquisition programs found that the acquisition process is extremely sensitive and contentious because of certain factors including: the length of time between the buyout agreement and the settlement/relocation; miscommunication between the buyout staff and residents; a lack of trust in buyout staff, city officials and the process in general; and a feeling of pressure to sell among residents who see buyouts as their only alternative even though the program is entirely voluntary (Fraser et al 2003). In interviews with Kinston officials, all these factors were mentioned as hurdles that had to be overcome in order to be successful, but officials managed to address residents fears and concerns, beginning the process very early on in the recovery phase, when residents would be most amenable to a buyout.

A. A Quick Response

Soon after Hurricane Fran and once the COHMIT task force had decided to proceed with an acquisition and relocation program, the city made immediate efforts to educate residents about the benefits of such a program. The first meeting/workshop was held at the Nature Center in a nearby area called Harpersville, an area located right on a bend of the Neuse River that floods annually and which used to be inhabited by residents. Ten years prior, however, the county had managed to raise the funds to relocate the families living there. Afterwards, the Nature Center was built, creating the ideal space to hold the first meeting. Since this had only occurred a decade earlier, many residents, now facing similar situations, could remember what had occurred in Harpersville.

During this meeting, officials explained the acquisition and relocation process and FEMA representatives held a question and answer session. Officials explained that they were hopeful about getting funding if people were willing to move, but warned relocation assistance was not as certain. Nevertheless, residents were almost unanimous in wanting to move if they could. County and Kinston officials hoped to capitalize on this enthusiasm before it waned, knowing that the longer they had to wait to implement the program, the less people would want to participate.

This time lag can partially explain the higher participation rate following Hurricane Floyd than the rate following Hurricane Fran. The planning and preparation for the buyout was naturally a slower process the first time Kinston implemented its program. This, coupled with

the general time delay in processing applications, meant that the first home was not bought out until one year and seven months after Hurricane Fran struck. When Floyd hit three years later, the city was still in the process of buying out homes from Hurricane Fran and the city was able to simply roll the program over to include Hurricane Floyd victims. Much of the preparation, in terms of gathering data and determining areas to target, had already been accomplished. The long time lapse that occurred after Hurricane Fran did not exist after Floyd and therefore, not as many residents waned on their resolve to relocate.

B. EARNING RESIDENTS' TRUST

To help familiarize residents with the buyout process, Kinston officials created a video that aired on one of the local access channels that explained the buyout process. It showed every person a floodplain participant would have to meet during the buyout process, what would happen during each step, what information would be needed from them, and it explained the formula that was used to determine the financial benefit package. Creators of the video knew that residents would probably not be able to retain all the information. This was not the point, however. They wanted to help residents familiarize themselves with the buyout program so that when it came time to begin the process, they would be more comfortable with what was happening.

Kinston officials also had to gain the trust of buyout participants. Some believed the program to be "too good to be true." They were going to receive money for their flooded home, plus extra money to buy a nicer home, in a better neighborhood? It simply did not seem probable. The first residents who participated in the buyout program were good ambassadors for the program and helped allay these fears. Once residents saw the feasibility of the program, they became less wary.

Others felt the opposite, thinking that acquisition was a ploy to remove them from the area—the government was making an excuse to get a hold of their property. Even now, some residents believe that the U.S. Army Corps of Engineers and local officials purposely released water from a dam near Raleigh to flood out residents of Kinston and Lenoir County, hoping to force them out and then develop the acquired property at a profit. In addition, all but a handful of the bought out residents were black, while administers of the program were overwhelmingly

white, leading to wariness on the part of participants. It is not entirely certain how large a role race played in this recovery process, but more than one person interviewed mentioned that it underlied the entire process to some extent. In order to gain their trust, administrators had meeting after meeting with buyout participants. It helped that many of the administrators had been born and raised in Kinston or were longtime residents. This alone helped gain trust as outsiders may have had a harder time developing a relationship with residents.

Some residents were unwilling to participate because they felt the process was unfair, believing some residents got a better deal than others, particularly those residents who purchased flood insurance. At the time of Hurricane Fran, only 5 to 10 percent of those residents living in the floodplain had flood insurance. Those who received insurance payments, however, got the payment amount subtracted from their purchase price (called *duplication of benefits* by FEMA). Many insured owners felt this was an unfair practice, almost as if they were being punished for having insurance and held out of the buyout process. There was very little Kinston officials could do about this, however, as this is a stipulation imposed by the federal government. This was much less of an issue after Hurricane Floyd. The state had bought a blanket insurance coverage plan for all those who had received assistance after Hurricane Fran, raising the rate of flood insurance coverage overall.

Overall, the buyout process was successful, as the high participation rates demonstrate this. It is almost important to note that the buyout was continually being administered. It began in April 1998 continued until 2004. This allowed residents to become familiar with the program and see the results. Of course, as more and more people left the area, some residents began to feel they had little choice but to move as well. In the end, however, it was in the best interest of the community and the residents to move people out of the floodplain.

III. Ensuring Success for Relocated Residents

Another issue Kinston was very careful to consider before implementing any form of acquisition and relocation was how it would affect its floodplain residents. More specifically, if residents would be able to handle the money they received, the move, and their new homes and neighborhoods.

The process was done in a way that maintained the level of (mortgage) debt for every resident. Every resident was entitled to a commensurate home, which was determined in terms

of having the same number of rooms, the same types of rooms (e.g. bathrooms, bedrooms), etc. In addition, each resident had an additional relocation allowance of about $35,000 to put towards buying a commensurate home. As long as their new home cost less than the price they got for their old home plus the relocation assistance money, their mortgage remained the same. Their old mortgage was bought out and they automatically took on a new one. If the owners had no debt, then they remained debt free.

Although their debts would remain the same, this did not mean that their bills would remain the same. Bought out homes were usually smaller, used less electricity, had lower tax and insurance rates and had overall lower bills. Over the many meetings Kinston officials had with relocated residents, officials were able to counsel them and prepare them for higher bills. Similarly, most relocated residents also saw a large increase in home equity, even though their mortgages remained the same. Residents here were also counseled and advised about the inevitable offer for home equity loans. One Kinston official was proud to point out that not one relocated resident has lost their new home to foreclosure except in the case of death.

Kinston officials also feared that some residents who were bought out might find the temptation of such a large check too great and instead use the money for something other than a new home. In this instance, not only would the homeowner be unable to purchase a new home, but the city would lose part of its tax base. The solution to this was two-fold. First, bought out residents were not eligible for the extra relocation assistance money if they did not buy a house within Kinston city limits. This was actually a stipulation from the state, which was funding the State Acquisition and Relocation Fund (SARF) that Kinston could either choose to ignore or enforce. Kinston chose to retain this stipulation. The other part of the solution was to have simultaneous closings. The resident would close on their old home and get a check payable to both him or herself *and* the lawyer administering the process. Then the resident would close on their new relocation home, ensuring a smooth transition process.

CHAPTER 5: EARLY OUTCOMES OF ACQUISITION AND RELOCATION

I. DEMONSTRATING COMMITMENT

Three years after Hurricane Fran had swept through Kinston and people had moved back to their homes, Kinston officials were still in the process of buying people out and relocating them. This long process helped demonstrate Kinston's commitment to the project and although some residents had moved back and rebuilt, the city was dedicated to relocating people out of the floodplain.

Although it was devastating when a second storm, Hurricane Floyd, hit Kinston only three years later in September 1999, the city was able to see that their time, work, and commitment had paid off. At the time of Hurricane Floyd, the city had acquired and vacated approximately 100 homes. Of these homes, over 95 percent would have been inundated (and over 75 percent substantially damaged), had they not been bought out. In some of the homes, the flooding would have been severe, with flood levels over 10 feet high. At the time, the losses avoided through the acquisition project were estimate to be over $6 million (Table 1).

TABLE 1: Losses Avoided[4]

Depth of Flooding	#	Building*	Contents	Displacement	Total
Less than 2 feet	15	$184,000	$65,000	$59,000	$308,000
Between 2 and 5 feet	12	$596,000	$127,000	$183,000	$906,000
Greater than 5 feet	74	$3,117,000	$931,000	$1,125,000	$5,173,000
Total	101	$3,897,000	$1,123,000	$1,367,000	**$6,387,000**

* Costs estimates were based on the average construction costs of the region and damage formulas developed by FEMA (assumed to be $45 per square foot for Kinston)

The biggest savings come from the repair or replacement of flooded homes. The second largest saving come from reduction in displacement costs, which are defined as the costs allocated to households to support them while their homes are being repaired (approximately

[4] North Carolina Management Division. 2002. *Case Study – Kinston (Kinston-Lenoir County Acquisition Project - Sustainable Redevelopment).*

$1,250 per month per household). The program costs for the acquisition and relocation program up until this point were approximately $2.1 million, making the avoided losses substantially higher than the total costs, helping prove the benefits of this initiative early on in the process. Once Hurricane Floyd struck, making the benefits of this program quite clear, Kinston became even more committed to the program. (FEMA 2002)

Almost every state official interviewed mentioned the impression Kinston made with their continued commitment to the buyout program and to their community overall. They saw Kinston as a city that was engaged within their own community, being proactive and finding innovative ways to better their community. Even if they were not always successful, Kinston was never afraid to attempt an untried program. Indeed, it was one of the reasons it was chosen as a pilot for a housing program involving inmate-produced wall paneling. When Hurricane Floyd hit, state agencies, especially those involved closely with the recovery process in eastern North Carolina, felt that Kinston truly deserved all the help they needed. Knowing that Kinston had the ability to take full advantage of the help the state provided and had shown commitment to their hazard mitigation program made state agencies all the more willing to reach out.

II. "BENEFITS" OF HURRICANE FLOYD

Hurricane Floyd, striking only three years after the destructive Hurricane Fran, was a devastating blow to the community. However, the short time span between the two hurricanes did have some positive outcomes. It ensured the institutional knowledge of disaster recovery was still largely in place in Kinston. It allowed the city see to see the benefits of its acquisition program. The city was also able to roll over many of its buyout

Figure 7: The extent of the flooding following Hurricane Floyd was even greater than after Hurricane Fran. ***Source: City of Kinston, NC***

programs, eliminating the long time lapse between the hurricane event and actually buying people out, which many times is the cause of waning participation.

More importantly, however, the quick succession of Hurricane Floyd is a major reason for the higher participation rate in the buyout program after Floyd. Although the program had a relatively successful participation rate after Hurricane Fran, the rate was much higher after Floyd. Many of those residents who had declined to participate in the buyout after Hurricane Fran, thinking such a disaster would not happen again (at least not for a very long time), were flooded out a second time in only three years. They simply could not face having to deal with the flooding a third time. Residents began to feel that it did not make sense to go back to their homes, especially since an alternative existed. In some cases, residents did not even need to be approached again, but instead sought out buyout administrators to sign up for the program if they could.

Hurricane Floyd also allowed Kinston to implement a smarter recovery effort the second time around. The city sometimes took measures as a direct result of mistakes they made after Hurricane Fran. One thing they saw as essential to increasing buyout participation was to keep residents out of the area for as long as possible. They had wanted to do this after Fran, but did not have the political support to accomplish it and looking back, they saw this as one of their biggest mistakes. People returned, got resettled, and decided to stay in their homes instead of participating in the buyout. In addition, without monitoring, it was impossible to ensure that that everyone who was rebuilding was doing so with a permit. Therefore, right from the beginning after Hurricane Floyd, Kinston officials prevented people from going back to their homes and the flooded areas. Not only did they have the political support this time around, but since the devastation and flooding were more severe than Fran (the water

Figure 8: National Guard troops leading residents into the flood zone. ***Source: City of Kinston***

did not completely recede until about two weeks after the flooding), they could initially keep people out for health and safety reasons. Access to the area was extremely limited. Security checkpoints were in place for over a month and no one was allowed to go into the area without a pass. If people wanted to view their homes, they could only go with organized groups led by the National Guard (Figure 8). In emergency situations (e.g. someone needed to get their medication), people would be escorted by boat.

Once the water had receded, Kinston officials had to find another way to keep people from returning to their homes. Kinston planners had wanted a moratorium passed on new construction and additions after Hurricane Fran, but the political support did not exist at the time. After Floyd, however, the political atmosphere had changed. The flood damage was greater than had occurred after Fran, with over 700 homes substantially damaged. Seeing the devastation again, only three years later, lead officials to conclude a moratorium was in the best interest of the community and the city passed a six month moratorium on any new construction or additions, an act that was never officially rescinded. Officials said that even though it may have seemed severe, it had to be done. They had witnessed this after Fran. As time passed, people began to feel they had no place to go—they had overstayed their welcome with relatives or were tired of feeling out of place. All of sudden, the situation at their flooded homes started looking better and residents began moving back and rebuilding. Once this happened, it became much more difficult to buyout residents and the flood hazard was not eliminated, only delayed.

CHAPTER 6: PUTTING IT ALL TOGETHER – COMBINING DISASTER RECOVERY & SMART GROWTH PLANNING

I. THE GREATER KINSTON URBAN GROWTH PLAN

Kinston was on its way towards recovery when Hurricane Floyd struck only three years after Fran. The acquisition and relocation program was showing positive outcomes and the advent of Hurricane Floyd proved the program was the correct strategy to take. Building upon the positive results of the initiative, the city officially adopted the *Greater Kinston Urban Growth Plan* in October 1999. By adopting this plan, the city acknowledged that mitigation needed to be fully integrated into the planning and redevelopment process. In addition, the plan thoroughly incorporates the tenets of smart growth, including downtown revitalization, promotion of affordable housing, environmental conservation and economic development.

With this plan in place, the theme of the recovery effort began to take shape. The *Greater Kinston Urban Growth Plan*, with its smart growth policies, would guide the overall recovery effort. The acquisition and relocation program would not simply be an effort to move people out of the floodplain, but would be used as the implementation tool for the city's *Urban Growth Plan*. This is what sets Kinston apart from the other recovering communities in eastern North Carolina. It used the opportunities from two major disasters to not only implement an acquisition and relocation initiative, but revitalize downtown neighborhoods, remove environmental hazards out of the floodplain, create much needed housing for the elderly and implement a host of other projects that lead to the betterment of the entire community.

II. ADDRESSING HOUSING NEEDS

Nowhere does Kinston show its innovation and commitment to smart growth better than its response to the housing needs of relocated residents. The acquisition and relocation process could not go very far without addressing this immediate need as the relocation of the first 90 families had exhausted the existing housing stock in Kinston. The city was adamant that it wanted to keep as many residents as possible within the city limits, so it had to find alternatives to existing housing.

A. CALL KINSTON HOME

Kinston's ability for innovation is showcased in many of the alternatives it found for relocating its floodplain residents. They developed an initiative called "Call Kinston Home"—a combined neighborhood revitalization effort and affordable housing initiative. The program goal was to build affordable owner-occupied homes where infrastructure was already in place, focusing particularly in distressed neighborhoods where scattered vacant lots existed (Figure 10). By building new homes on these lots and relocating residents to these areas, Kinston hoped to revitalize areas in and around the downtown, thereby boosting the tax base in the area. In 1998, Call Kinston Home created a leadership team, developed an action plan and marketing strategy, and identified specific neighborhoods for a pilot program. When Hurricane Floyd struck in September 1999, the city was able to use the process already in place as a foundation for a broader initiative to construct permanent housing in targeted areas within the city limits. (FEMA 2000)

In the midst of initiating this program, the N.C. Emergency Management Division selected Kinston as a pilot for the North Carolina Permanent Housing Initiative. This was a partnership between the Office of the Governor, the Department of Correction, and the Division of Emergency Management to build replacement houses for Hurricane Floyd victims. The Governor's relief fund provided $1.5 million in funding for construction materials, while the Department of Corrections established a wall panel manufacturing operation within a prison. Using inmate labor, their goal was to produce high quality, low cost building components, while volunteers would erect and complete the home on site (Figure 9). This initiative produced thirteen homes in infill lots

Figure 9: One of the homes built on-site after inmates had constructed the panels in prison.

throughout Kinston. Although this was only a small fraction of the homes needed in the city, it shows the innovation of Kinston officials and their willingness to try anything that might solve its housing problems.

As a result of its Call Kinston Home initiative, the city was able to build 170 single-family homes on vacant infill lots located throughout the city. It is important to note, however, that the process did not always go smoothly. Often, existing homeowners in these targeted areas showed strong resistance to relocating floodplain residents into their communities. Although all but a few of those people relocated were African-American, this was not necessarily a racial issue because both white and African American neighbors resisted. It seemed to represent more of a disparity in socio-economic status than anything else. However, this mixing of the social strata is a concern that some Kinston officials brought up with when asked about any potential reservations about implementing an acquisition program. They noted it was something that should be considered, but should not be a major concern in implementing an initiative such as this.

Figure 10: An example of a new home constructed in what used to be a vacant lot. ***Source: Monica McCann***

B. GRAINGER PLACE

Figure 11: Grainger Place Senior Apartments

The city was also able to create 190 units of multi-family housing. One hundred of these units were created in a conventional apartment complex (mostly to renters who had previously lived inside the floodplain). More impressive, however, was what the city was able to do with an old abandoned high school building, a place where many of Kinston's residents had gone to

school. Located on a prime four-acre site downtown and covering almost an entire block, the high school had largely deteriorated. Filled with pigeons, the only useable part of the building was the auditorium that was used on occasion. The city had long had plans to revitalize the building, each time with different scenarios, but the project had been languishing for five or six years. It was not until Hurricane Floyd that recovery effort incentives led to the rehabilitation of this high school. Using low-income housing tax credits, historic preservation tax credits and FEMA disaster funds, a private developer was able to create "Grainger Place", a 57-unit housing complex for the elderly. Not only was this project able to provide housing for an elderly population in need of housing, but also it supported downtown revitalization efforts and helped boost the tax base in the area.

C. Making New Homeowners of Mobile Home Owners

Kinston was innovative in finding replacement housing in other ways as well. For example, during the acquisition process, the city had bought two mobile home parks totaling about 80 units, but the city had to find a place to relocate the families. The solution was a 50-acre wooded lot, partly in use as a cotton field. The city bought the land at a substantially reduced rate and then used grants to install the infrastructure (streets, sidewalks, sewer, water) needed to support the mobile homes. In addition, the city was able to get about 41 mobile units from federal and state agencies that had used the mobile homes as temporary work centers and housing. Once they were no longer needed, these agencies donated them to the city and county. More importantly, however, in this new development, mobile home owners owned both the house *and* the lot. As an added bonus, the city also got a tax break for each mobile home unit for making residents first time homeowners.

III. Taking Advantage of Every Opportunity

Although Hurricane Fran and Hurricane Floyd devastated the Kinston community, in the end, it proved to be beneficial as well. Looking back on it, many Kinston officials see the floods as one of the best things that could have happened to Kinston in the long-term because these disasters provided funds and opportunities they would not have otherwise have received. It is important to note, however, that the only reason these opportunities benefited the community

was because Kinston took advantage of every single opportunity presented to them. For example, not only did Kinston apply for funding available from Hurricane Fran and Floyd, but any other storm they could qualify for. One planner noted that if any part of Lenoir County were declared a disaster because of a storm, even if it was just some remote part of the county that suffered wind damage, then any community in the county could apply for the funding available for that storm. Kinston took advantage of this, receiving funds from Hurricanes Bertha, Dennis, and others.

The community used this funding for a variety of projects aside from its residential acquisition and relocation programs. The example of Grainger Place into apartments for the elderly has already been mentioned, but the community went even further in its rehabilitation of the old higher school. With the extra space in Grainger Place, they also housed a head start program, addressing a need for more daycare in that part of the city. They also created a large gym inside Grainger Place, where the local minor league baseball team, the Kinston Indians, can use for indoor practice on rainy days.

A. ELIMINATING ENVIRONMENTAL HAZARDS

For those communities who chose to take advantage of it, the hurricanes offered a lot of funding for a variety of recovery efforts and Kinston capitalized on these opportunities. For example, Kinston saw the flooding as a chance to eliminate two major environmental hazards in the floodplain—the Peachtree Wastewater Treatment Plant and the six junkyards located throughout the floodplain. Each time the area flooded, these sites would create massive water quality problems, spilling raw sewage, chemicals and other toxic substances into the water. After the floods, the city jumped on the chance to get the junkyards out floodplain. Using a variety of grants, the city was able to buy out five of the six junkyards in the floodplain, eliminating both an eyesore and a hazardous situation.

The Peachtree Wastewater Treatment Plant also needed to be eliminated. It flooded during both hurricanes, each time creating a substantial environmental hazard. The plant was also in bad shape—officials speculated that much of what the plant treated was actually rainwater. The sheer magnitude of the problem, especially in terms of the amount of money needed, meant it would be much more difficult to eliminate, as federal funding is almost

nonexistent for upgrading or building new wastewater treatment plants. However, Kinston took advantage of the spotlight that had shined on them after Hurricane Floyd. When former FEMA head, James Witt, came to tour the area, officials made sure that he toured the plant. Witt made a comment about wanting to see the plant taken out of the floodplain and used as an example of a positive outcome after Hurricane Floyd. Kinston officials, and especially the mayor, would not let James Witt and other FEMA officials forget that goal. Kinston was actually able to receive $8 million of the $10 million from FEMA needed to upgrade their newer wastewater treatment plant in order to allow the older Peachtree Plant to become decommissioned (which it recently did).

B. KINSTON ENTERPRISE CENTER

Kinston also used funding available after Hurricane Floyd in their downtown revitalization efforts. The *Pride of Kinston*, a downtown revitalization organization, received an economic development administration (EDA) grant worth $1.05 million dollars to renovate a 30,000 square foot downtown building into a business incubator, the Kinston Enterprise Center. Part of its purpose is to provide a 21st century office space for new, fledgling businesses. The building is equipped with wireless internet access, conference rooms, copiers, and any other equipment a new business may need. Opened in February 2003, the goal of the incubator is to give an affordable space in the downtown for new businesses to allow them to grow. When they are ready to relocate (generally in three to five years), the goal is that these businesses relocate to another downtown building, hopefully to an older building that they have renovated as well. This continues the revitalization and redevelopment efforts of the downtown.

Yet again, the business incubator is a project that Kinston had wanted to implement for some time. It had even been proposed as a project for the abandoned high school. It was not until after Hurricane Floyd, however, that Kinston was able to take advantage of hurricane recovery grants and the project could proceed. Although the business incubator is not yet financially self-sufficient, the occupancy rate jumped last year from 15 percent to 60 percent, housing a variety of tenants ranging from a professional basketball program to government agencies. Officials at the business incubator say the Enterprise Center is fulfilling its mission of

recruiting, developing and stimulating entrepreneurial talent in Kinston and Lenoir County. (Shiles 2005)

IV. Making the Most of the Acquired Property – Retrofitting Green

Another large part of the acquisition process is deciding what to do with the acquired property, which can become a major problem in some cases. The city did not want the area to become an unofficial dumping ground, but maintaining the area can become expensive. Currently, the bulk of acquired home sites are barricaded off and access is restricted. Because the area was secured for so long after the hurricane (people could not enter without a pass for over a month), the area became an "off limits" site in the public's eye and this has helped keep people out. There are very few problems with trespassing or littering.

A. Current State of Acquired Property Area and Its Surroundings

Kinston wants to do more with the area than simply letting it lie idle and the city has made active efforts to make the most use of the space without violating FEMA's rules for acquisitioned property. According to FEMA, any community implementing a property acquisition project using HGMP funds must dedicate and *forever* maintain the acquired property as open space. Much of the acquired area now exists as former neighborhoods, with narrow streets, utilities and open space remaining after the acquired homes were demolished. The former lawns and residential yards are being overtaken by invasive vegetation (Figure 12).

Figure 12: Former residential neighborhood. ***Source: City of Kinston***

In addition, the area is home to the now decommissioned wastewater treatment plant and a former landfill (now an open space field). There are a few remaining residences, vacant lots and a church. HMGP funds could be used to acquire vacant lots after Hurricane Fran, but not after Hurricane Floyd, leaving behind a checkerboard pattern of acquired property, with most of

the leftover property consisting of vacant lots. However, Kinston recently received a Clean Water Management Trust Fund (CWMTF) grant to begin buying out those vacant lots left in the floodplain as well as any remaining properties that were not bought out during the acquisition program. The church poses a bigger problem. Although the church has expressed interest in relocating, the possible funding sources currently available to the city cannot be used to acquire churches, which mean the church will probably remain in the floodplain for the foreseeable future. The remaining property in the floodplain consists of open fields and forests.

The neighborhoods surrounding the acquired properties vary as well. Three public parks border the area to the north and west. A high poverty area with several blocks of public housing, churches and stores exists to the north of the area. Downtown Kinston, with city and county offices, shops, a farmers market, the new business incubator and the Arts' Council are located northwest of the property. In addition, the Nature Center with a museum, planetarium, nature walks and stocked pond is located upstream of the area. Residential neighborhoods make up the bulk of the remaining surrounding land uses.

B. KINSTON'S GREEN INFRASTRUCTURE PLAN

Kinston created the Open Space Project Committee to develop a plan for utilization and management of the acquired property area. Their goal was to create a conservation based management plan that maintained the open space as an area that provided water quality benefits, food storage, habitat for wildlife and air quality benefits, but still remained accessible to the public and would serve as a learning tool. The result was the Kinston Green Infrastructure Plan that focuses on recreation and conservation uses, consists of sustainable projects, does not require large inputs of funds and labor by the city and will be a long-term asset to the community. (City of Kinston, 2005)

The committee made a decision that any project facilities implemented according to the plan will serve the local population first and visitors to the community as a lesser priority. For example, a goal of the Green Infrastructure Plan is create facilities and programs that reach out to children in the adjacent neighborhoods and public housing to introduce them to the beauty of the natural areas and to environmental concepts in creative and interactive ways. The Green Infrastructure Plan consists of a variety of projects that serve as learning tools, allow for passive

and active recreation, and maintain the ecological function of the floodplain. The projects include (City of Kinston, 2005):

- **Teaching Plots and Educational Features:** Bynum Elementary School is located adjacent to the acquired property area. The Green Infrastructure Plan calls for individual plots to be developed where school children can study and observe nature. The possibility for an outdoor classroom and nature paths with interpretative signage denoting plants, geology and animals also exists.
- **Arboretum**: To serve as an asset to future generations, the arboretum will features tree species that are not typically planted in current landscapes that favor faster-growing trees. Instead, it will feature trees that mature slowly, attain large size and are long-lived. In addition, the students and faculty of the nearby Lenoir County Community College horticulture program would use the arboretum as a teaching tool.
- **Education Garden:** The Master Gardeners of Lenoir County will create an education garden for children, focusing on plant life and wildlife it supports with flowering plants that attract birds and butterflies. The Master Gardeners will design, develop and maintain this area, helping to complement it with the teaching plots near Bynum Elementary School.
- **Skeet Range:** The Lenoir County Wildlife Club will develop and operate a skeet range on the former landfill where firearm and hunter safety will be taught and practice shooting with skeet will be offered. The skeet range will be surrounding by earthen berms and reinforced with permanent vegetation to provide for safety.
- **Demonstration Forest:** Three areas will be managed for sustainable timber production and protection of water quality. A trail leading to the area will have signage educating visitors about how tress grow and how a forest can be managed for production with environmentally responsible practices.
- **Floodplain Natural Forest:** A large area south of the former neighborhoods will be remain as natural forest. It contains wet areas, ponds and woods. The area is currently accessible by an existing trail and more trails are planned.
- **Pine Straw Production Area:** Two area with loblolly pines will be established for pine straw production and provide pine straw for the city to use or sell to offset the costs of the

Green Infrastructure Plan. Sustainable best management practices will be used and the areas will provide wildlife habitat to species that live in pine ecosystems.

- **Restoration of Atkins Branch:** This branch of the Neuse River has some of the highest intensity and volume of stormwater in the city, which has caused extreme erosion and greater downstream flooding. A project is in place to restore the channel to a more natural condition that will reduce downstream erosion and flooding and will capture urban pollutants. A 50-foot buffer in this area will also be implemented. The plan also calls for signage explaining streambed restoration and its benefits.
- **Active Recreation Area:** Recreation facilities will include a baseball field, softball field, bocce court, children's play area and a beach volleyball court with a concession stand and restrooms available to the public.
- **Amphitheatre**: This will be a low-impact facility modeled after National Park Service amphitheatres with a simple stage area and benches in a semicircle.
- **Park-like area:** Located near a residential neighborhood, which would be partly responsible for the cleanup and development of this area, this park will include a walking and bicycle trail. The trees in the area will be supplemented with shade trees and low maintenance ornamental plantings.
- **Picnic Area:** Located near the remaining church, this site will be equipped with parking, water, power, and a large picnic shelter. In return, the church will oversee the property and help with maintenance.
- **Nature Trails:** The nature trails planned include an educational trail, amateur eco loop, naturalist trail (which would feature the loblolly pines), deep woods trail (features dense wooded areas), amateur birding trail (features a pond where nesting herons can be spotted) and a demonstration forest trail.
- **Group Camp:** Connecting to planned trails and located near the arboretum, this would serve as a camping ground.

Although the Kinston Green Infrastructure Plan is only in the initial stages of implementation, the city has a successful track record with its many other recovery-related projects (it has recently received a grant to begin the skeet range portion of the plan). This plan manages to preserve the acquired area for conservation, while still creating a valuable asset for

its residents. Not only does the plan provide for varying recreational and economic opportunities, but it focuses on environmental education for a many of its residents and is clearly geared toward providing benefits for Kinston residents first, and outside residents second.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

I. CONCLUSIONS

Kinston, North Carolina was struck by two destructive hurricanes in a very short time span. Facing daunting challenges (major flood damage, economic disruption, and environmental problems), the city not only managed to recover from these disasters, but emerged as a better community overall, better prepared to face any future disasters. The mechanism for Kinston's recovery was its successful implementation of an acquisition and relocation initiative.

Kinston committed almost a decade to this initiative, and in many ways, the community is still working on efforts related to the buyout (e.g. finding grants to implement the green infrastructure plan and acquire the remaining vacant lots in the floodplain). The city devoted much of its time and administrative capacity on the acquisition initiative. Although Hurricane Floyd was even more devastating than Hurricane Fran three years earlier, Floyd was a significant reason for the success of the acquisition program. Not only was the city able to learn from the mistakes made after Hurricane Fran, but Floyd, which flooded out some residents twice in three years, was a major reason for the increased participation in the buyout program. Other communities are unlikely to experience two disasters in such a short time span, so other measures may need to be taken to increase participation rates in other floodplain buyout programs.

Other communities have implemented acquisition programs. What makes Kinston stand out, however, its what it accomplished in addition to its buyout program, or *because of* its program. The buyout program was not only used to move people out of the floodplain, but as the impetus and implementation tool for a host of other smart growth initiatives. By combining relocation housing with downtown revitalization efforts, the city was able to revive declining downtown subdivisions, eliminate vacant lots that were plaguing certain neighborhoods, rehabilitate an abandoned high school into much needed senior housing, and even create a mobile home park where residents owned both the lot and mobile home unit, making them first-time homeowners. By combining the buyout program with economic development, Kinston was able to create a downtown business incubator to foster community entrepreneurship and promote downtown revitalization efforts. By combining the buyout program with conservation efforts,

Kinston created its green infrastructure plan, which provides both recreational and education opportunities for the entire community. It also managed to eliminate environmental hazards in the floodplain by buying out five junkyards and decommissioning a wastewater treatment plant in the floodplain. This is what makes Kinston a model in recovery efforts—using a disaster as an opportunity to better your community.

II. RECOMMENDATIONS

Hurricanes, and subsequent flooding, can be devastating to communities—causing loss of life and property, wreaking economic disruption and creating environmental hazards. While communities have implemented flood control strategies ranging from structural controls (such as levees and dams) to flood insurance, research has clearly shown that acquisition programs provide a permanent and cost-effective measure for mitigating flood damage (NWF 1998, Kusler 1979). Nevertheless, communities may be hesitant to implement such a program. Without adequate relocation funding or replacement housing, a community may lose a significant portion of its tax base. If the buyout program is not entirely successful, a community will still have to maintain expensive infrastructure (sewer, water, electricity) in an area where it wants to discourage development. However, the case study of Kinston, North Carolina, has shown that, if successfully implemented, an acquisition program can not only move people out of the floodplain and out of harm's way, but can be used as an implementation tool for smart growth redevelopment. Kinston has shown that if a community is willing and able to take advantage of the funding and other resources a disaster brings, then the community will be rebuilt into a better community overall.

The purpose of this case study was to determine those strategies that were essential for a successful recovery effort, while highlighting any potential obstacles a community would have to overcome during its recovery. By using Kinston as model, certain strategies emerged, as well as general community characteristics, that seem to be necessary for a successful recovery program. These strategies include a quick response time to disasters, capacity building (including financial capacity), and fully integrating a disaster mitigation plan into a long-range community growth plan.

A. Ensuring A Quick Response to Disasters

Research has shown that the length of time between the buyout agreement and the settlement and relocation transaction plays a factor in the participation rate of a buyout program (Fraser et al 2003). Every Kinston planner interviewed also cited the time lag as a factor in the success of an acquisition program, either because the threat of another disaster became less imminent or people began to resettle into their old homes. In Kinston, the first home was not bought out until 19 months after Hurricane Fran had struck. When Hurricane Floyd struck three years later, planners witnessed firsthand the jump in participation rates when the time lag was eliminated because the buyout program that had begun with Hurricane Fran could simply be rolled over.

Because Kinston was unique in being struck by two hurricanes in such a short time period (which also motivated residents who had been flooded twice to participate in the program), it is unlikely other communities will be able shorten the time lapse so dramatically. However, communities can implement other measures to help shorten the time between a disaster and acquisition transactions. This includes having a mitigation plan already in place (with targeted buyout areas identified and plans for relocation housing). It may also include fostering relationships with other agencies (including state and federal agencies), so that resources can be pooled and collaborative efforts can quickly be made after a disaster. It is unlikely that the long processing time for Hazard Mitigation Grant Program applications will be significantly reduced, so efforts to reduce time lapses should be focused on the community end of the buyout process.

B. Capacity Building

State officials who were interviewed noted that after both hurricanes there were communities in eastern North Carolina who were eligible for acquisition funding, but either because of a lack of capacity or political will, did not implement a program. Clearly, efforts must be made to better prepare communities for hazard mitigation planning, especially eastern counties, which are more susceptible to hurricane disasters. This should include familiarizing communities about the Hazard Mitigation Grant Program, the National Flood Insurance

Program, the Community Rating System incentives, buyouts and relocation, and getting business and economic development assistance.

State agency personal must also be better educated about community needs and capabilities. One state official interviewed noted that after Hurricane Floyd, some state officials thought it helpful to give money to devastated communities, not realizing that without the political and administrative capacity to take advantage of the funds, the money would not be very beneficial. Many smaller communities may never be able to have sufficient administrative capacity to handle successful recovery efforts. For these cases, the state should develop some sort of mechanism to aid these communities in their recovery efforts.

Capacity also includes increased financial capacity. Almost every person interviewed, from local to state officials, said that more money would have helped in the recovery effort. It would have allowed Kinston to buy out more homes and many of the vacant lots it is only now trying to acquire. In addition, more funding is clearly needed to help communities implement a buyout initiative *before* a disaster strikes. Although a disaster helps motivate residents into participating in a buyout program, communities should not have to wait until after a disaster strikes (when it is already dealing with many other problems) to implement such a program.

C. Integrating Hazard Mitigation into Long-Term Goals

Kinston is now a stronger community than it was before Hurricane Fran struck because it was able to take advantage of the resources and funding available to communities after the hurricanes hit eastern North Carolina to implement other smart growth initiatives. The reason it was so successful in doing this, however, was because Kinston had already fully integrated hazard mitigation into its long-term growth plan. When disaster funding became available, the city did not have to plan extensively to create projects that could be funded. Instead, the collective thought was that finally there was funding to implement the projects the city had long wanted to do (e.g. removing junkyards out of the floodplain, rehabilitating the abandoned Grainger High School and creating a downtown business incubator). Not only do communities stand a better chance of receiving funding if disaster recovery planning has already been done, but communities are also better equipped to ascertain needs and goals *before* a disaster strikes instead of during the recovery phase when immediate needs are more pressing.

These recommendations, along with the recovery model that the City of Kinston presents, should be helpful for communities facing disasters. In addition, they highlight the need for hazard mitigation planning *before* a disaster strikes. Kinston had almost no hazard mitigation planning before Hurricane Fran and was relatively successful with its buyout program. However, the city had much greater recovery success after Hurricane Floyd—part of which is explained by its commitment to hazard mitigation planning and its integration with the community's overall long-term goals. The City of Kinston clearly demonstrates that a community cannot only recover from a devastating disaster, but can use such a disaster as a means to rebuild into a better and stronger community overall.

REFERENCES

Association of State Floodplain Managers (ASFPM). 2004. *No Adverse Impact Floodplain Management.* Accessed April 1, 2006. http://www.floods.org/NoAdverseImpact/whitepaper.asp

Burby, R., and E. Kaiser. 1987. *An Assessment of Urban Floodplain Management in the United States: The Case for Land Acquisition in Comprehensive Floodplain Management*. Technical Report No. 1, Madison, Wisconsin: Association of Floodplain Managers.

Burby, R. 1998. *Cooperating With Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.* Joseph Henry Press: Washington, D.C.

City of Kinston. 2005. *Kinston Open Space Project: Retrofitting Green – An Open Space Management Approach.* City of Kinston, NC.

Godschalk, D., T. Beatley, P. Berke, D. Brower, and E. Kaiser. 1999. *Natural Hazard Mitigation: Recasting Disaster Policy and Planning.* Island Press: Washington, D.C.

Faber, Scott. 1996. *On Borrowed Land: Public Policies for Floodplains.* Lincoln Institute of Land Policy, Cambridge, MA.

Federal Emergency Management Agency (FEMA). 1998. *Property Acquisition Handbook for Local Communities.* FEMA, Washington, D.C.

Federal Emergency Management Act (FEMA). 2000. *Hazard Mitigation in North Carolina: Measuring Success.*

Federal Emergency Management Act (FEMA). 2002. *Innovative Floodplain Management, Case Studies: Kinston, North Carolina.*

Federal Emergency Management Agency (FEMA). 2004. *HGMP: FEMA Property Acquisition Projects (Buyouts).* FEMA website: http://www.fema.gov/fima/hmgp/buyouts.shtm.

Fraser, J., R. Elmore, D. Godschalk, and W. Rohe. 2003. *Implementing Floodplain Land Acquisition Programs in Urban Localities.* Center for Urban & Regional Studies, UNC-Chapel Hill.

Kusler, J.A. 1979. *Floodplain Acquisition: Issues and Options in Strengthening Federal Policy.* Washington, D.C.: U.S. Water Resources Council

Mileti, D. 1999. *Disasters by Design: A reassessment of natural hazards in the United States.* Washington, DC: National Academies Press.

National Oceanic and Atmospheric Administration (NOAA). *Natural Disaster Reduction Initiative.* Accessed April 11, 2006. http://www.outlook.noaa.gov/floods98/ndri.htm

National Wildlife Federation (NWF). 1998. *Higher Ground: A Report on Voluntary Property Buyouts in the Nation's Floodplains*. NWF, Washington, D.C.

Pielke, R.A. 1999. *Nine Fallacies of Floods.* Environmental and Societal Impacts Group, National Center for Atmospheric Research, Boulder, CO.

Shiles, B. "Small business incubator is almost full." *Kinston Free Press*. March 21, 2005.

St.Onge J. and V. Epstein. "Ex-chief says FEMA readiness even worse." *Boston Globe*. April 1, 2006.

Tibbets, J. 1999. Raising Up and Moving Out. Elevation and Buyout of Floodprone Buildings: Do They Work? *America's Hurricane Threat.* South Carolina Sea Grant Consortium.

U.S. Census Bureau. 2000. *Fact Sheet: Kinston, North Carolina.* Accessed March 15, 2006.

APPENDIX 1: INTERVIEW GUIDE

- Participation:
  - What types of activities were used to make community members aware of the acquisition/relocation program?
  - What types of activities were used to educate participants of the details of the acquisition/relocation process?
  - Which activities were most effective and least effective in recruiting participants?
  - Was there any opposition to the program?
- Organizations/Administrators
  - What was your role in the acquisition process?
  - What was your role with participants in the program?
  - What was your goal in the acquisition process?
  - What obstacles hindered goal realization? What activities helped to attain goals?
- Collaboration
  - Who were other organizations and stakeholders who were part of this process?
  - Were these organizations' efforts coordinated and if so, how?
  - What were the obstacles to collaboration? What encouraged collaboration?
  - In what instances was collaboration effective? Where was it not?
- Acquisition/Relocation Program Effectiveness
  - What did you see as the goals of the program?
  - How effective was the program in terms of attaining these goals?
  - Did your organization have evaluation criteria for evaluating the effectiveness of this initiative?
  - How has the acquisition program helped flood victims and the community as a whole?
  - Out of those households that were eligible, how many people participated in the program? How many did not?
  - Of those who moved, where did most relocate?
  - What activities or strategies do you think were most effective in convincing residents to participate in this program?
  - Of those who chose not to participate, what were the most often cited reasons for not participating?
  - If you had to do this all over again, what would you do differently? Same?
  - What activities/actions expedited the process? What where the major obstacles?