



PEER-TO-PEER CASE STUDY

Out Of Harm's Way: Relocation Strategies To Reduce Flood Risk

Summary

Kinston, a city of about 20,000 in Lenoir County, North Carolina, suffered repeated flood losses during the 1990s. After Hurricanes Fran, Dennis, and Floyd damaged or flooded more than 75 percent of the county's homes, the community embarked upon a comprehensive approach to improve resilience. Flood-prone properties were purchased, and whole neighborhoods were relocated to higher ground. As a result, natural floodplain functions were restored, and the purchase of the first 100 homes saved approximately \$6 million in avoided flood losses during the next big storm.



"A community with seemingly limited resources, with a stagnant economy and large percentage of vulnerable populations, Kinston at the very least, serves as an inspiration for other communities facing similar situations."

- Adam Short, City of Kinston Planning Department

Lessons Learned

Kinston's experience provided many valuable lessons. Principal among them was discovering the community's ability to transform disasters into an opportunity to do something bold and enduring, reducing risk in perpetuity.

- **Be proactive with pre-disaster preparation.** Acquisitions were very slow in the wake of Hurricane Fran, taking over a year just to put together a funding application. When Hurricane Floyd hit three years later, the community had developed a pre-disaster project application package, which they promptly submitted. One week after the storm, their application for additional buyout funds was approved by the Federal Emergency Management Agency (FEMA) and the State of North Carolina.
- **Use GIS for analysis and outreach.** Kinston used GIS methods not just as analytical tools to guide decisions related to the buyout and relocation recovery effort, but also as an outreach tool to engage citizens, understand the needs of vulnerable populations, and build support for the initiative. The information provided through the GIS maps was a key tool in garnering public support for relocation, which was entirely voluntary.
- **Weigh buyout and relocation pros and cons.** Residents that opted for relocation remain satisfied with this choice a decade later, but there is some sense of loss for the old neighborhoods, such as Lincoln City, a close-knit, historically black neighborhood. The community also struggles with the restricted use of the floodplain. Community support and funding have been lacking for permissible uses such as those proposed in the green infrastructure plans. A small but vocal group would like to see something more substantial, perhaps income

generating, occur in the floodplain. The city advises others undertaking similar projects to be aware of and consistently communicate with its citizens about the restrictions, which are placed on the properties in perpetuity.

- **Pick solutions that avoid new problems.** Kinston's comprehensive approach integrated smart growth, green infrastructure, and hazard mitigation principles. Officials were deliberate about demonstrating the self-reinforcing benefits of moving people and development outside of the floodplain, relocating residents with minimal impact on the landscape, and allowing the protected lands to provide natural flood control. By drawing in these principles throughout the process, Kinston was able to avoid unintended consequences like sprawl, loss of open space, and impacts to water quality.

QUICK FACTS

TOPIC

Learn how Kinston, North Carolina, used buyouts and relocations to permanently reduce its flood risk

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SCALE

Municipality

LOCATION

Kinston, North Carolina

The Process

After experiencing repeated flooding, the City of Kinston committed to a comprehensive floodplain management approach. GIS was used to help the community understand and locate many of the important pieces of the puzzle: jurisdictional and ownership boundaries, flood vulnerability, infrastructure, and demographics, including social vulnerability. These data informed the hazard mitigation process (pre-disaster mitigation planning, risk reduction, disaster response, and disaster recovery) and helped the city determine acquisition and relocation priorities.

As its exclusive mitigation strategy, Kinston crafted a thoughtful buyout and relocation program, moving residents to higher ground and restoring floodplain function along the Neuse River. The goal was to remove all residences from the floodplain. Several programs made this possible, including FEMA's Hazard Mitigation Grant Program, Housing and Urban Development's Disaster Recovery Initiative, and North Carolina's State Acquisition and Relocation Fund.

Establishing Open Space

The floodplain properties are maintained as open space according to the requirements of the FEMA funding program. The next step involved other uses that might be found for this space to benefit the community. In the mid-2000s, the City of Kinston partnered with Lenoir County, the University of North Carolina's Department of City and Regional Planning, and the Conservation Fund to develop the Kinston-Lenoir County Green Infrastructure Plan for the Neuse River floodplain. This initiative was one of the first community-based efforts to find conservation-friendly ways to use this hazard mitigation property. Through this planning effort and a second effort, the Lenoir County Green Infrastructure Plan, greenways, water trails, walking and driving tours, and other options for appreciating the cultural and natural resources of the Neuse River were identified.

Relocating Neighborhoods

Relocation was the other side of the buyout coin, and Kinston carried this out thoughtfully, both in terms of preserving the community's tax base and its neighborhoods and applying smart growth principles. For example, the owners of floodplain properties could have easily been forced to relocate to areas that would have contributed to sprawl and water quality issues in the watershed. Instead, neighborhoods were relocated within the city's tax district. Residents

were enticed to stay in the community and were able to maintain their social fabric—with children able to attend schools with many of the same classmates from their previous neighborhoods, and friends formerly living in close proximity being relocated near each other.

TOOLS USED

Smart Growth – infill development, reuse of existing structures, creation of open space

Green Infrastructure – land acquisition of floodplain for reuse for habitat, ecosystem services (flood control), and potential for passive recreation

Hazard Mitigation – relocation of people and property out of vulnerable areas, pre-disaster preparedness, GIS-informed hazard mitigation

Outcome

The City of Kinston acquired the majority of the homes in the Neuse River floodplain and relocated 97 percent of those residents within the tax district, often to superior housing. The floodplain within the city limits is now overwhelmingly open space. A total of 1,600 homes have been purchased, leaving 73 percent of the city's floodplain as open space. Restoration of the floodplain has been passive; the land has been allowed to revert to its natural state, and the floodplain is now primarily forested.

MORE INFO

TO LEARN MORE

- Innovative Floodplain Management Case Studies: Kinston, North Carolina (http://www.fema.gov/media-library-data/20130726-1515-20490-7614/kinston_cs.pdf)
- Smart Growth and Resilience in Coastal Communities Webinar: Creating Sustainable and Disaster Resilient Communities (<https://www.youtube.com/watch?v=Lv9DgvDCojU>) (starting at 16:45 minutes)

FUNDING

Acquisition of flood-prone properties was provided through FEMA's Hazard Mitigation Grant Program, Housing and Urban Development's Disaster Recovery Initiative, and North Carolina's State Acquisition and Relocation Fund.

Additional funding for acquiring remaining vacant properties came from the Clearwater Management Trust Fund in 2005.

Contributing Partners

City of Kinston, North Carolina

The Conservation Fund

Federal Emergency Management Agency

Lenoir County, North Carolina

North Carolina Division of Emergency Management

University of North Carolina