

FALL 2017

The Story of North Carolina Counties

# County **QUARTERLY**

M A G A Z I N E

---

## WHERE DOES THE WATER FLOW?

Floodplain Management Expert Shares Insights  
and Ways Counties Can Reduce Flood Risk | pg 10



# A Bold Plan with Big Savings

How Mecklenburg County is Reducing Flood Risk and Saving Money

By Lacy Pate | NCACC Public Relations Manager

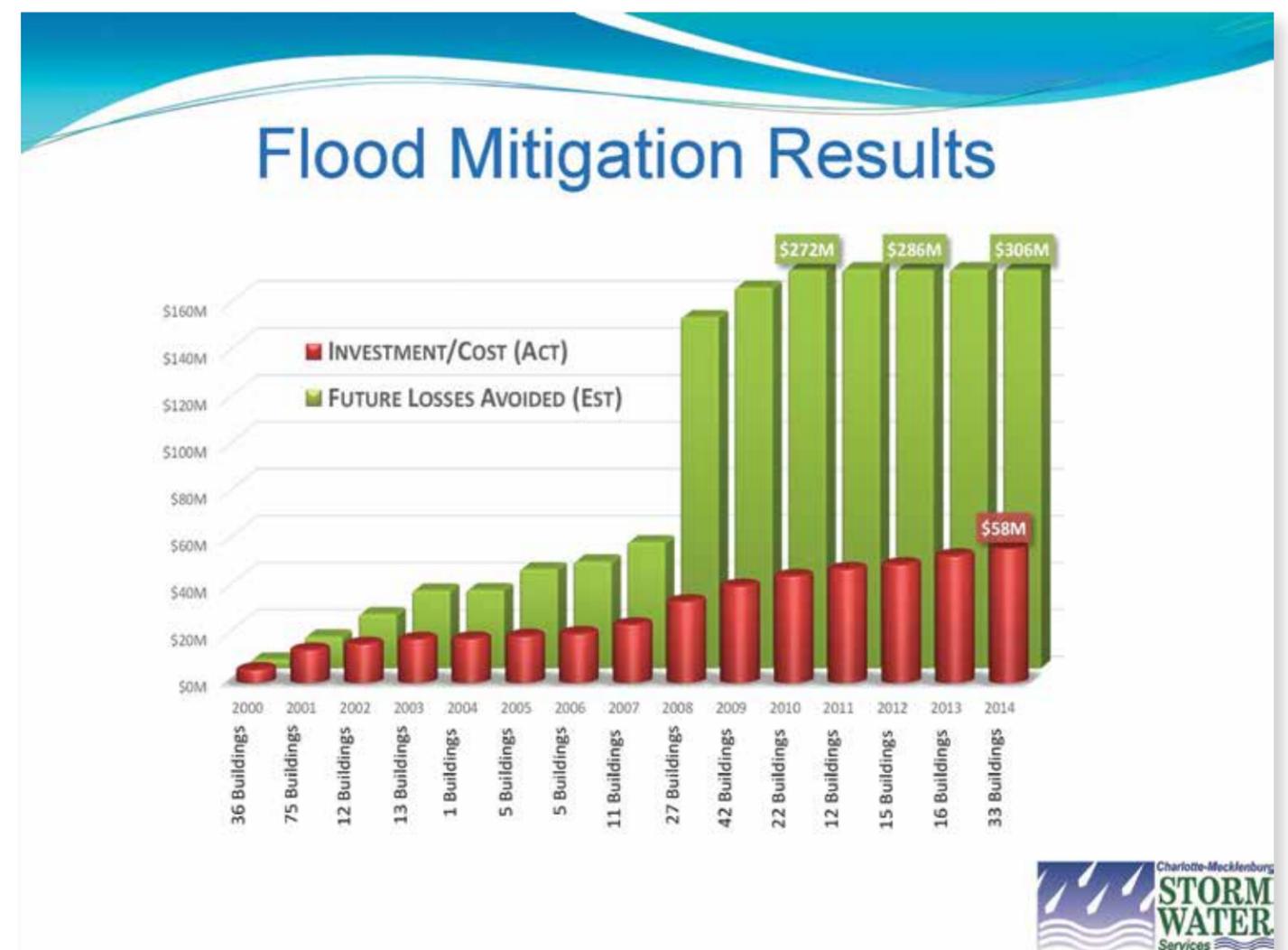
When NCACC discussed disaster preparedness and response with Michael Sprayberry, the Director of North Carolina Emergency Management, he had an important message for counties – promote personal preparedness, implement smart and responsible development practices with an eye toward mitigation and encourage property owners to get flood insurance coverage. He said, “if you invest a little bit of money on the front end [on flood mitigation]...the payoff is extraordinary on the back end.”

Mecklenburg County has received national attention for its flood mitigation programs – the acquisition or “buy out,” and RetroFIT programs – which were featured in a recent National Association of Counties publication focused on disaster mitigation: <http://www.naco.org/resources/managing-disasters-county-level-focus-flooding-0>. These locally run programs, which are administered by Charlotte-Mecklenburg Storm Water Services will continue to pay dividends for years to come.

The buy-out program, which was established in 1999, makes strategic

public investments to purchase properties in the floodplain and return them open space. The county has invested \$58 million in local, state and federal dollars to purchase 400 flood prone buildings and relocate nearly 700 families and businesses to safer locations. The return on investment is projected to be over \$300 million over the life of the project. Cost savings are calculated by measuring high water levels immediately after flooding events and conducting a damage assessment of the buy-out buildings that would have flooded. Additional safety benefits and cost avoidance will also be realized since swift rescue teams will no longer have to be dispatched to save these residents during future flooding events.

The move to invest in bold flood mitigation initiatives began about 20 years ago after Charlotte experienced significant flooding in 1995 and then again in 1997. Residents and business owners who suffered losses from repetitive flooding events spoke out to elected officials in Mecklenburg County about the need to address flood risk. Dave Canaan, County Director of Storm Water Services played an integral role in



the policy development and described how the mitigation programs were established. “Some of the same folks that flooded in ‘95 were hauling their couch and beds out to the curb and some of them still hadn’t been paid for. These folks were going...’how you’re managing the floodplains now just isn’t working,’ and they went to elected officials and said, ‘look, we need to do something different.”

### Adopting a new, forward-looking floodplain management plan

Pressure from flood victims sparked the beginning of a brand new development paradigm for Charlotte-Mecklenburg. Public officials responded by devising new floodplain management strategies, which were driven by data. Engineers started by assessing the existing flood maps, which were at least 10 years old at the time, along with the flood warning system and floodplain management policies. They crunched the numbers and found that updating the flood maps using existing land use data showed that the base flood elevation level would go up at least two feet. Knowing that Charlotte’s population was on the rise, an analysis was also conducted that quantified the impact of future development on floodplains.

Ultimately, Mecklenburg County decided that its floodplain management policies needed to account for growth. Otherwise, the county would be faced with the same problems it experienced in the wake of the ‘95 and ‘97 floods. Engineers loaded future land use for the whole county and ran flood analysis

based on future development projections. This time, the analysis showed that the base flood elevation rose another two feet – beyond the two foot increase as a result of updating the maps. After seeing the data that reflected projected growth, Mecklenburg County moved forward on a plan to cap the kind of development that puts more people at risk as development occurs. “That was the result of us basically throwing out our old playbook after the ‘95 and ‘97 floods,” said Dave Canaan.

Canaan recalled a key meeting that took place in 1997, in which developers and engineers got together to discuss development demands in Charlotte due to the growing population and the reality of increasing flood risk. Developers wanted to build more densely to accommodate population growth, but engineers had data showing that Charlotte’s floodplain was 50-75% wider than the existing flood maps showed. The data presented by the engineers was compelling and the development community was convinced it was in their best interest to avoid building in risky areas. An agreement was reached to allow increased density as long as it was outside the floodplain.

### Get people out of the way and let floodplains flood

Although the plan to implement responsible development practices won the support from the development and real estate communities, Mecklenburg County still needed to figure out what to do about those already in harm’s way. In the past, flood mitigation efforts focused on clearing vegetation to manage

David Love, Project Manager, Charlotte-Mecklenburg Storm Water Services shows map of stream gages in Mecklenburg County.



the storm drainage system. The county expended significant resources to hire maintenance crews to regularly clear vegetation from creek banks. However, basic analysis showed that there was only a one foot drop in flood elevation after the banks were cleared. And, the mitigation benefits were short-lived because the vegetation would grow back quickly. Additionally, vegetation clearing had negative environmental impacts, causing erosion and eliminating the canopy, which protects aquatic life from direct sunlight.

According to Mr. Canaan, the Mecklenburg County Board of Commissioners wanted a long-term solution and they saw an opportunity to eliminate repetitive flood losses by leveraging federal mitigation grant funding, provided by the Federal Emergency Management Agency (FEMA). “There was a recognition that you need to let the floodplains flood and not try to out engineer Mother Nature... you just need to get people out of the way,” said Canaan.

In 1999, the Mecklenburg County Board of Commissioners approved the use of a portion of storm water fees to cover FEMA’s 25% local matching requirement for buy-out projects. Mecklenburg County acknowledged that buy-out projects were valuable in reducing flood risk, but they could also could serve the public interest in other ways by creating new areas of green space.

Charlotte-Mecklenburg Storm Water Services was able to use local utility fees

to take advantage of FEMA’s annual federal grant mitigation program, which typically covers 75% of the cost of eligible mitigation projects, such as buy-outs, to reduce flood losses throughout the country. It is a nationally competitive program and communities that adopt floodplain management strategies that exceed FEMA’s standards get extra credit on their grant applications. The program is voluntary so if property owners disagree with the appraised value of their property, they can hire their own appraiser or request an independent appraiser. And, if there is still disagreement, the property owner can opt out of the grant.

David Love, Project Manager, Charlotte-Mecklenburg Storm Water Services described the buy-out process for annual FEMA mitigation grants, which typically takes about two years for the application, review, award and contracting phases. First the federal funding is announced around summertime, then applicants collect information to identify suitable properties that can meet the federal requirements. FEMA uses a complicated formula to determine which projects meet the threshold for providing sufficient mitigation benefits and flood reduction. Applicants must prove that the proposed project will save the government money.

Once suitable properties have been identified by the county, the information is submitted to NC Emergency Management for prioritization among other projects in the state. The state



These photos show the Doral and Cavalier apartment complexes, which were built in Charlotte's worst flood hazard area. The complexes were built in the 1960s before there were restrictions on construction in floodplains. Three devastating floods in nine years caused millions of dollars in damage to both complexes and to the belongings of people living there. Engineering studies confirmed there was no feasible way to stop Briar Creek from flooding the apartments. As part of a buy-out project, Mecklenburg County Storm Water Services purchased the highest risk buildings, relocated tenants and tore down the flood prone structures to eliminate future flood damage, which would have cost 400% more than the buyouts. The project, which restores the natural floodplain will preserve more than 24 acres of open-space land along Briar Creek, providing a sanctuary for waterfowl and a greenway trail.

then sends its recommended projects to FEMA for review. FEMA determines which projects to fund among applicants nationwide and approves grant awards subject to an environmental and historic preservation review. Once FEMA sends a grant award to the state, it takes the county about 4-6 months to execute it.

### Locally-run buy-outs, version 2.0

Since Mecklenburg County established the buy-out program in 1999, it has acquired the highest risk properties in the county first, leveraging FEMA grant funds. Now, it is focused on second tier flood prone properties – those that don't necessarily meet FEMA's stringent eligibility requirements. In 2012 Storm Water Services implemented its Flood Risk Assessment and Risk Reduction Plan using detailed local data and advanced floodplain mapping to perform property-specific risk assessments and rank properties for possible acquisition.

Since the risk based program doesn't use federal funds, the county has flexibility to determine its own eligibility

rules and priorities for purchasing flood prone properties, which allows for the purchase of properties that don't qualify for FEMA funding. The risk based program also allows the county to work with other local partners, like Mecklenburg County Parks and Recreation, which contributed \$2 million in 2008 to help purchase risky properties that could be converted into future greenways.

When demand for buy-outs exceeds funding, decisions regarding which properties to purchase can be challenging. For example, owning a flood damaged home can present a serious financial hardship for certain individuals, and they may be very eager to have their home purchased. FEMA-funded grants have clear federal eligibility and prioritization regulations to ensure that buy-out decisions are based on the public interest, not individual interests. This is why it's important for locally-run programs to establish clear priorities up front that make sense and a scoring system to assess public mitigation benefits and risk reduction. Dave Canaan explained how Mecklenburg County created an

advisory board with many community stakeholders including property owners located in the floodplain to help guide the process for establishing priorities for the program. The stakeholders were heavily involved in devising a consistent tool to measure flood loss reduction to guide the program, which was approved by the Board of Commissioners.

To complement the buy-out program, Mecklenburg County also established the RetroFIT program in 2015, to reduce flood risk for buildings that aren't suitable for the buy-out program. A portion of utility fees are set aside for competitive mitigation grants and technical assistance. The RetroFIT program can assist with elevating property, installing flood vents in crawl spaces, or moving critical building infrastructure (furnaces, duct work, HVAC) up from the ground-level. The program is cost shared with the property owner and can lower flood insurance rates.

### Find a champion and show me the money

Dave Canaan echoes what NCACC heard from the Chair of the NC chapter of the Association of State Floodplain Managers, David Key, and NC Emergency Management Director, Michael Sprayberry –future development and flood protection can work in harmony. Canaan said, "we love growth,

and we think we have a pretty good handle on doing it responsibly." Both David Love and David Canaan stressed the importance of their partnership with NC Emergency Management. They expressed their gratitude for all the support and guidance they received over the years, and Canaan credited the agency with playing an instrumental role in ensuring the early success of the buy-out program. "They [NC Emergency Management] deserve a great deal of credit for everything they have done to support our mitigation programs," said Canaan.

Canaan also noted that when it comes to resilience and mitigation initiatives, "there is always a local champion, an individual getting out in front and pushing the issue." Counties can learn from Mecklenburg's experience and as Mr. Canaan points out, "there is a lot of information out there for communities that want to do the research." And, based on his experience, analysis and numbers matter. He said that in the case of Mecklenburg County, policy makers and stakeholders were compelled by data. When you take the time to conduct a thorough cost-benefit analysis and you can show with specificity how the community will benefit and save money, the projects tend to sell themselves. ■