Flooding in Broome County: Threatening the Environment, the Economy, and Human Health

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Thesis

Flooding in Broome County is increasing due to global climate change and the increase of impermeable surfaces. No Adverse Impact floodplain management should be implemented by local municipalities/agencies (DPW, EMC, Department of Planning/Economic Development) to improve community resiliency and reduce flood damages.

Background & Analysis

Flooding is a significant problem facing Broome County. Approximately 26 square miles of Broome County are found within the Special Flood Hazard Area (SFHA), with around 3.7 square miles located within the 500-year floodplains, including several urban areas. Increased floods and heavy rainfall caused a "100 year flood" in 2005, only to be followed by a "500 year flood" in 2006 and an even larger flood in 2011.[1] Ultimately, Broome and Tioga County experienced $1 billion worth of damages[2] and 20,000 people were evacuated.[3] While the City of Binghamton attempted to invest in floodgate infrastructure to mitigate damages, the city lacks the financial capital needed for such expensive pursuits. There is an urgent need to design development around flooding issues, with municipalities/agencies considering the impact of a property owner's decisions upon others. When one property owner builds or increases impermeable surfaces, surface water is unable to percolate into the ground, placing a burden on stormwater systems and exacerbating flood events. The increase of impermeable surfaces is extremely hazardous when combined with increased precipitation levels. Between 1958 and 2012, the Northeast saw more than a 70% increase in the amount of rainfall measured during heavy precipitation events, more than in any other region in the United States. [4] Moreover, Broome County has struggled to attract new business opportunities following the departure of prominent industry such as the Endicott Johnson Corporation and IBM. NAI standards will make Broome County a more desirable location, incentivizing business development and revitalizing the area, which is a top priority for Broome County.

Talking Points

- Flooding in Broome County has created significant negative economic impacts
- The implementation of NAI floodplain management will be extremely cost effective and successful in mitigating flooding on a long term scale
- NAI offers a variety of positive side effects such as increased community resilience, improved property values, increased incentivization for development/business, improved air/water quality, improved groundwater recharge rates, and improved aesthetic value

- Traditional approaches to flooding mitigation in Broome County have failed from a practical and economic standpoint

The Policy Idea

Broome County needs to implement a No Adverse Impact (NAI) strategy to ensure that preexisting/future developments don't exacerbate flooding. Local Departments in Broome County (DPW, EMC, Department of Planning/Economic Development) can establish what constitutes an "adverse impact" based on increased flood peaks, increased flood stages, higher flood velocities, increased erosion/sedimentation, or what impacts the community considers important. Minimum green space requirements should be developed for properties, based on effectiveness in preventing flooding and feasibility of implementation. NAI would be legally enforceable, with violators being heavily fined.

Policy Analysis

This policy is the most practical and effective long term approach to flooding in Broome County. While the county is taking significant steps towards improving community resiliency, it is imperative to approach flooding on a longer time scale, as precipitation levels will continue to increase in the Northeast. NAI is cost effective, as it is more economically feasible to invest in the root causes of flooding, such as land management, rather than spending money on floodgate infrastructure that will become obsolete. Binghamton, New York's 2016 budget allocated only $50,000 dollars to repairing flood walls, which is insufficient for proper floodwater mitigation.[5] In the U.S., development in flood prone areas is almost incentivized due to Federal flood insurance programs and disaster assistance programs which place the economic burden of flooding on the Federal Government rather than those building in flood sensitive areas. Currently, the National Flood Insurance Program is $25 billion in debt.[6] Implementing NAI standards would drastically reduce both local financial damages, as well as the massive federal debt. In addition, every dollar invested in stormwater infrastructure has been shown to save five dollars. [7] While NAI is more effective on a longer time scale, requiring pre existing developments to maintain a set standard of green space will immediately reduce flooding damages. Moreover, there is a variety of positive economic externalities from increased green space such as improved water/air quality, improved property values, improved mental health, increased groundwater recharge rates, etc. While NAI floodplain management creates more initial work for local municipalities/agencies, the environmental/economic/health benefits are outstanding. In addition, implementing NAI will reduce the burden on local municipalities/agencies in the event of a disaster, which is infinitely important. lIt is essential to mitigate flooding damages in Broome County, creating a resilient community that anticipates problems, reduces vulnerabilities, and encourages opportunities.

Key Facts

- From flooding in 2011 alone, Broome and Tioga County experienced $1 billion worth of damages and 20,000 people were evacuated
- Every dollar invested in stormwater infrastructure has been shown to save five dollars
- Between 1958 and 2012, the Northeast saw more than a 70% increase in the amount of rainfall measured during heavy precipitation events, more than in any other region in the United States
- Areas of green space such as trees and pastureland can decrease peak flows by up to 60%[8]

NEXT STEPS

Broome County Department of Planning should first hold a panel to engage with the local community to evaluate community members needs/concerns. The leaders of the Broome County Environmental Management Council, Broome County Health Department, Broome County Department of Economic Development, and Broome County Department of Public Works should all be extremely active in the panel. Afterwards, the aforementioned agencies/municipalities should create a plan for Broome County that specifically defines what qualifies as an “adverse impact”. Furthermore, they need to analyze what standards will be most effective in reducing flooding, most feasible for current/future developments to implement, and what will be most cost effective.

[1] Jeff Masters. "Tropical Storm Lee's Flood in Binghamton: Was Global Warming the Final Straw?" Weather Underground. December 14, 2011. Accessed September 21, 2016. https://www.wunderground.com/blog/JeffMasters/tropical-storm-lees-flood-in-binghamton-was-global-warming-the-final.

[2] Ibid.

[3] Haley Burton. "Thursday Flooding: Sheltering Thousands." WBNG-TV. September 8, 2011. Accessed October 27, 2016. http://www.wbng.com/news/video/Thursday-Flooding-Event-Evacuation-129488923.html.

[4] Environmental Protection Agency, "Climate Impacts in the Northeast," Climate Change Impacts, last modified January 19, 2017, https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-northeast_.html.

[5] City of Binghamton. 2016 Adopted Budget. http://www.binghamton-ny.gov/sites/default/files/documents/files/2016%20Adopted%20Budget-rev2015.12.27.pdf

[6] Diane Katz, "The National Flood Insurance Program: Drowning in Debt and Due for Phase-out," *The Heritage Foundation*, last modified June 22, 2017, http://www.heritage.org/government-regulation/report/the-national-flood-insurance-program-drowning-debt-and-due-phase-out.

[7] The Nature Conservancy, “Natural Solutions for Reducing Flood Risk.” The Nature Conservancy. Accessed September 25, 2016. http://www.nature.org/ourinitiatives/habitats/riverslakes/natu- ral-solutions-for-reducing-flood-risk.xml.

[8] CIRIA Open Space, "Flood Risk Management," last modified 2017, http://www.opengreenspace.com/opportunities-and-challenges/climate-change/flood-management/.