

## **Municipal Vulnerability Preparedness Program Action Grant Case Study**

**Municipality:** City of Northampton

**Project Title:** Protecting Downtown: Northampton's Flood Control Levees

**Award Year (FY):** 2019-2020

**Grant Award:** \$315,000

**Match:** \$105,000

**Match Source:** City staff time (in-kind) plus Stormwater Enterprise Fund

**One or Two Year Project:** Two year (extended to three years by amendment)

**Municipal Department Leading Project:** Planning & Sustainability working with DPW

**Project Website URL:**

<http://archive.northamptonma.gov/WebLink/Browse.aspx?id=695912&dbid=0&repo=CityOfNorthampton>

### **Community Overview:**

Northampton is a small city of 28,500 people, located in the Connecticut River Valley in Western Massachusetts. Although small, it has a strong and vibrant downtown, dense urban housing, suburban and rural area, with 25% of the city protected open space.

Northampton has several environmental justice areas, both with majority minority populations and majority low and moderate income. Employment varies from medical jobs at all levels, with Cooley Dickinson Hospital located in the city, to higher education (both Smith College located in the City and the University of Massachusetts-Amherst and other colleges nearby), to manufacturing (which used to dominate the Connecticut River Valley), to a strong service sector dominated by its vibrant downtown.

### **Project Description and Goals:**

The project is located at the flood control levee system that surrounds downtown (Connecticut River and Mill River levees).

Those levees face some risks from climate changed increases in peak storm events (tropical rain storms, hurricanes, and other intense storms) both outside the flood control levees (Connecticut and Mill Rivers) and within the levee system (historic Mill River watershed).

The project was designed to ensure that the 80 -year-old levees are secure against water breaching the levees, water flowing under the levees, and/or flooding over the levees. The city needs to ensure that the levees are adequate to protect the city from floods and for FEMA to certify the levees and accept that they are adequate to protect downtown.

The project provided all of the required background information. With the completion of the MVP funded research, we are now waiting for an on-going FEMA flood insurance rate map modernization program. That project will give us FEMA's assessment of the current 100 year flood level (1% flood) and 500 year flood level (0.2% flood). At that point, we will use the data

we already have to assess whether the levees will withstand the 1% and 0.2% annual risk of extreme flood events.

Because the flood control levees protect downtown, with its environmental justice population on the south side of Main Street, our EJ populations are especially at risk if the levees ever failed.

The MVP and match funded portions of the project were completed before the grant deadline set in an amended contract (which provided more time for projects because of COVID). The next phase of the project cannot proceed until the FEMA map modernization data is available.

**Results and Deliverables:**

The project provided as-built plans of both the Connecticut River and Mill River flood control levees, analysis of interior flooding (levee failure or overtopping) risks, assessment of capital, maintenance and operations needs.

These deliverables have been completed in accordance to what we expected when we applied for the MVP grant. We consider these products “interim” for our own purposes, however, because when we receive additional data from the FEMA map modernization program on expected flood levels we will need to go back and revise the documents. (I.e., we have completed all the assessment we can without knowing whether the predicted flood elevations have changed from the 1974 mapping, and whether the additional freeboard, or design safety, built into the levees is adequate to protect the city from the expected increase in storm frequency and intensity.)

**Lessons Learned:**

The project has been an enormous success in terms of collecting raw information and analysis. The lack of control of the timeline of the FEMA FIRM map modernization program has created some hurry-up-and-wait stages and uncertainty as to when we can take the MVP project deliverables to the next stage, but this was not unexpected.

The project is a more technical project than most of our stormwater and flood control projects. For example, our previous MVP-supported "Northampton Designs with Nature" project involved deep community engagement. We shared the lessons of this project during our FEMA Hazard Mitigation Plan update last year and while there was a great deal of interest in the concept (making sure the levees do not fail) there was very little interest in discussions of the technical details. That said, at the concept level, there was interest in a more limited audience about the steps needed to protect our flood control system (e.g., ensure the core and skin of the levees are secure, ensure drainage from the levees is sufficient, ensure water does not seep under the levees and undermine them, ensure that the levees are sufficient to prevent overtopping and erosion of the levees, ensure that water falling within downtown is pumped out, and retaining and recharging stormwater into the ground when feasible.)

For technical people, the raw data on our website provides the details of the project. We have shared some of the lessons learned in presentations, most recently at a stormwater conference. Find that data here: <http://www.northamptonma.gov/2069/Climate>

**Partners and Other Support:**

- Northampton Planning & Sustainability oversaw project management
- Northampton Department of Public Works oversaw technical aspects of the project
- GZA was the project engineer, overseeing the drilling sub-contractor
- FEMA and their engineers engaged with the City and our consultants as we shared data and coordinated the City efforts with FEMA.
- Our entire team worked with the community stakeholders, FEMA, and MEMA, as we updated our FEMA Hazard Mitigation Plan during the process, using the lessons learned to update that plan.
- The Mayor's office worked with DPW and Planning during the process to address lessons learned in capital improvements programming, including upgrading of flood control pumps which are not part of the MVP process but are related to the comprehensive assessment.
- Our entire team worked with community stakeholders as we updated our MVP resilience planning process, using lessons learned from this and other projects, most importantly in the past year to identify the need for a community resilience hub.

**Project Photos:**

Photos attached. Drilling photos are from our contractors.