Communities with Combined Sewers Adapting to a Changing Climate: Camden County, New Jersey

Background

Camden County Municipal Utilities Authority (CCMUA) provides wastewater services to approximately 500,000 people in 36 municipalities in Camden County, New Jersey. CCMUA has a joint long-term control plan (LTCP) to manage their combined sewer overflows (CSO) with the cities of Camden and Gloucester.

Key Information

- **Location:** Camden County, NJ
- **Population served:** 500,000
- **Permit Number:** NJ0108812
- **Key hazards:** increased storm frequency and intensity, rising river levels

Challenges

Due to its low elevation and historical underinvestment in its sewer system, some areas of the regional combined sewer system experience street flooding and basement backups. As Camden County expects to experience increases in the frequency and intensity of storms, as well as higher water levels in the Delaware River, CCMUA is taking an integrated approach to wet weather management, wastewater treatment, and equitable community development. To leverage additional funding sources, regional knowledge, and local stakeholder input, CCMUA has formed numerous partnerships and started several community-focused initiatives.

Example of a neighborhood that is routinely flooded from the one-year flood event.

Early in their LTCP development process, CCMUA and its partners used EPA's Augmented Alternatives Analysis to identify optimal and cost-effective mixes of green and grey infrastructure to support its LTCP. The approach is designed to engage community stakeholders and emphasizes environmental, social, and economic criteria in the decision-making process.

Climate Impacts

In 2015, CCMUA worked with EPA's Creating Resilient Water Utilities (CRWU) team to use EPA's Climate Resilience Evaluation and Awareness Tool (CREAT). According to CRWU's Adaptation Case Studies for Water Utilities, CCMUA's primary climate-related threat is flooding, based on the projected increase in the frequency and magnitude of intense rain events. CREAT also projects that the nearby river levels are likely to rise more than 18 inches within this century, which could potentially lead to increased flooding and backflow of the sewer system.

Solutions

Restoring Hydraulic Capacity

To address street flooding, CCMUA, in collaboration with its two municipal partners in the LTCP, has facilitated a more intensive collection system cleaning program in both the cities of Gloucester and Camden. This work, of which the Camden City component was recently completed, is intended to restore capacity to the system and enable CCMUA to accurately model current and future conditions. To maximize the impact of their cleaning efforts, CCMUA is piloting Cleanlet, an app developed by Drexel University that engages urban residents for 'just-in-time' inlet cleaning.

Leveraging Partnerships and Technical Resources

CCMUA has also partnered with researchers at Drexel University.[1] To better understand the existing and future flood hazards, as well as evaluate the effectiveness of implemented CSO projects, Drexel has developed a model of CCMUA's sewershed. Drexel is also implementing sensors in the sewershed to monitor flooding in real time, which will help validate results from the model. Drexel is also working to develop better local climate projections of future storm characteristics for the Camden area.

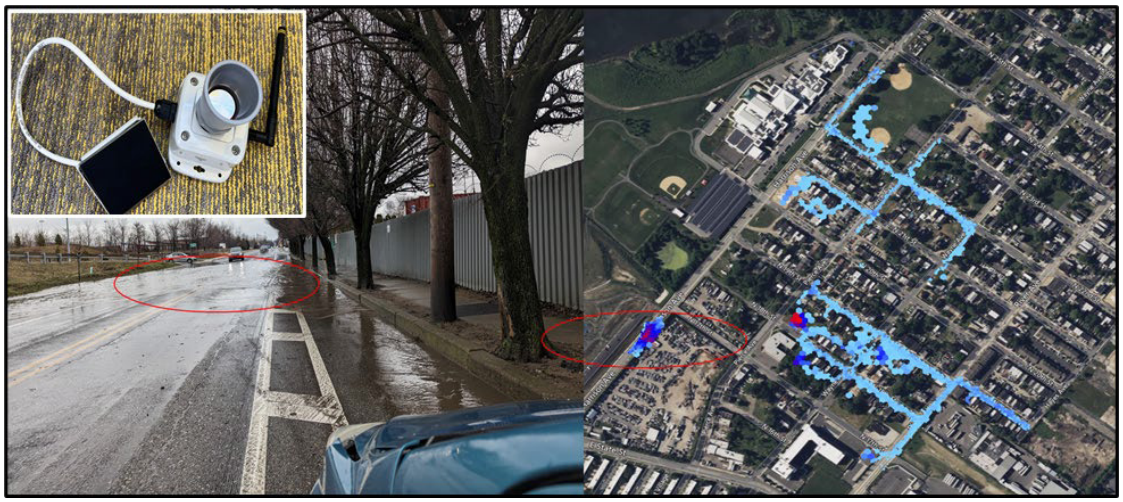

Illustration of Drexel's modeling results that are validated with detailed, real-time observations of flooding using Floodnet sensors (inset top left).

[1] Drexel University is a member of the Consortium for Climate Risk in the Urban Northeast (CCRUN). The CCRUN serves stakeholder needs in the Northeast by assessing and managing risks from climate variability and change. CCRUN conducts stakeholder-driven research that reduces climate-related vulnerability and advances opportunities for adaptation in the urban Northeast.

Collaboration in the Community

Since 2011, CCMUA has led the Camden Stormwater Management and Resource Training (SMART) Initiative, which seeks to address both stormwater management and community revitalization by combining a Complete Streets approach with green infrastructure (see EPA's Green Streets Handbook). The Initiative includes neighborhood green infrastructure projects, stormwater management policy development, and green infrastructure training programs. To date, over 60 green infrastructure projects have been installed with the support of multiple funding sources including a Clean Water Act 319(h) grant, a NJ state stormwater mitigation grant, and a FEMA hazard mitigation grant.

CCMUA's Complete Streets approach combines green infrastructure with other community revitalization aspects, such as improving pedestrian and bicyclist access.

Building off of the success of Camden SMART, the City of Camden, Camden Community Partnership, CCMUA, the New Jersey Department of Environmental Protection, and EPA launched the Camden Collaborative Initiative (CCI) to maintain, restore, and enhance the environmental resources in Camden, NJ. The initiative focuses on many priorities, including flooding and CSOs. The CCI framework aims to facilitate awareness and support for integrated solutions such as green infrastructure, which can improve air quality and revitalize communities in addition to reducing flooding and CSOs.

Additional Information

For more information on the Camden County Municipal Utilities Authority, contact Scott Schreiber, Executive Director at sschreiber@ccmua.org. For more information on Drexel University, contact Dr. Franco Montalto, Sustainable Water Resource Engineering Lab Director at fam26@drexel.edu. Additional information on CCMUA's permit, CSOs and climate adaptation can be found here:

- CCMUA's 2024 NPDES Permit (NJ0108812)
- CCMUA's 2020 LTCP
- CRWU's Adaptation Case Studies for Water Utilities
- CCMUA's Augmented Alternatives Analysis Case Study