

Bioswales Maintenance Program Strives to Reduce Urban Flooding in New York

The Challenge:

Heavy rains and rising floodwaters during major storm events can quickly overwhelm urban city streets and sewer systems, severely impacting water quality. New York City is the most densely populated metropolitan area in the United States. With such high concentrations of buildings, roadways, and parking areas, there are too few natural areas available to help reduce the amount of water that enters New York City waterways when storms occur. The storm-generated water that can't be contained by a sewage system is called combined sewage overflow. Bioswales are small, vegetated "sponges" that are capable of diverting significant amounts of storm water from a combined sewage system. They are an engineered solution to curbing overflow and urban flooding when storms occur. Maintaining bioswales after installation can be a stretch on the resources of a city, however.

The Solution:

The goal of a grant administered by the Northeastern Area State and Private Forestry unit of the U.S. Forest Service was to develop a Bioswales Maintenance Program in New York City and a course to train at least 30 volunteers over 3 years to help maintain bioswales. The Gowanus Canal Conservancy (GCC) partnered with Trees New York for this effort. They trained volunteers to maintain 11 bioswales constructed in 2014 on the 6th Street Green Corridor in Gowanus, a neighborhood surrounding the industrial Gowanus Canal in New York City. Gowanus is a priority watershed that receives 377 million gallons of combined sewage overflow each year. GCC hoped to provide volunteer stewardship of additional, newly constructed bioswales in the Gowanus watershed as permitted by the New York City Department of Environmental Protection.

The New York City bioswale initiative outcomes far exceeded the planned results.

Resulting Benefits:

The project's outcomes far exceeded the planned results. Project organizers initially planned only 8 hours of classroom instruction and 4 hours of field training for 30 new volunteers for a total of 360 hours of training. However, the final tally included 25 hours of class instruction and 30 hours of field work for 60 new volunteers, as well as 16 youth, for a total of 76 trained participants and 4,180 hours of training.



A woman waters lush vegetation in a bioswale designed to help reduce urban flooding. (Courtesy photo by Gowanus Canal Conservancy)

In addition, GCC also led 62 walking tours for a total of 1,288 participants, as well as 6 conferences for 233 participants. On the tours, GCC emphasized green infrastructure and led visits to the 6th Street Green Corridor bioswales. Tour audiences included K-12 students, undergraduate and graduate students, and local residents. GCC has presented at local and regional conferences and workshops to share information about the bioswales maintenance course and training program. GCC developed an easy-to-use manual for maintaining bioswales and created signs to explain the importance of green infrastructure in reducing combined sewage overflows, mitigating flooding, and providing other benefits such as reducing the heat island effect and creating pollinator habitat.

Sharing Success:

With thousands of bioswales under construction in New York City in the last 3 years, other organizations could replicate this course and use it as a training resource for volunteers throughout the New York City area. Organizations can contact amy@gowanuscanalconservancy.org for access to curriculum materials, including the New York City Bioswale Stewardship Manual.

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