

CLIMATE ADAPTATION STORY:

Bringing Stormwater Management Down to the Neighborhood



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Melissa Damaschke, Sierra Club, Great Lakes Program

In the Great Lakes region, climate change is likely to bring more intense rainstorms, and with them, more flooding. For the City of Detroit, flooding brings an added problem: sewage overflows. The Detroit Water and Sewerage Department's (DWSD) Wastewater Treatment Plant is the largest single-site wastewater treatment facility in the U.S. Detroit has combined sewers, meaning that sewage and stormwater runoff run together through a single collection system. Anything more than an inch of rain in a short period of time can overwhelm the system, causing

raw sewage to overflow into rivers and streams.

"So if it's true that we're going to have more intense rainfall in a shorter period of time, that's going to mean we're more likely to have more combined sewage overflow events. And of course that means more sewage pollution in our Great Lakes," says Melissa Damaschke, the Great Lakes Program Organizing Representative for the Sierra Club.

Take Issues Important to Local Residents into Account

This realization inspired the Sierra Club Great Lakes Program to get involved in the sewer overflow issue. As they began thinking about how to convince local municipalities to invest in technology that would deal with the

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Sierra Club, Maxi Container and Brightmoor community teamed up to host a free workshop & rain barrel sale in Detroit. At the event, participants learned how to make rain barrels out of old pepper containers. They also learned how to disconnect their downspouts and connect the barrels.

sewage pollution problem while also preparing for climate change, they realized they had another challenge—affordability. In Detroit, as in the rest of the country, many residents had been hit hard by the declining economy and were struggling to pay their water bills. So while getting DWSD to invest in state-of-the-art technology to improve their wastewater treatment plant might solve the overflow problem, it would also likely raise the costs of water and sewage treatment for residents.

“How do we make sure that we improve our wastewater system so that we’re preventing these sewage overflows and that we’re also preparing for climate change and we’re keeping water affordable?” asks Damaschke. “It became very apparent that we can’t just keep advocating for the same solution—the solutions of the past—we’ve got to be creative and look for new solutions.”

That’s when Damaschke and others started looking into green

infrastructure and the benefits of creating rainwater infiltration right at the surface, keeping rainwater from entering the sewer system. “We’re seeing a lot more flooding this past year with some of the storms we had...so if we’re creating more infiltration points for water to be absorbed during these heavy rain falls, that’s going to help with

some of the flooding problems that we have as well....and of course just overall, it’ll help prevent those sewage overflows if we can do it at a larger scale,” says Damaschke.

Win-Win: Saving Money, Improving the System

Green infrastructure includes everything from rain barrels and cisterns to rain gardens, constructed wetlands, landscaping with native vegetation and using permeable pavers. Green infrastructure solutions are often cheaper than traditional infrastructure options and they can also help beautify the community, and provide opportunities for community engagement and empower-



Challenge: Sewage overflow pollution ■
Tools: ■ **Outcome:** Community engagement and action ■

ment. Rain barrels and cisterns collect rainwater from downspouts on homes or businesses, keeping it out of the sewers and providing water that can be used to water gardens or lawns, wash cars, and other such uses. Rain gardens, native vegetation landscaping, constructed wetlands, and permeable pavers allow rainwater to filter through the soil rather than flooding parking lots and roads and carrying polluted runoff into the sewer system.

In addition to promoting green infrastructure solutions, the Sierra Club is working on a calculation to determine how many rain gardens or constructed wetlands would be needed to reduce the overall amount of sewage going into the Detroit and Rouge Rivers. Sierra Club is also working with a local

non-profit, Data Driven Detroit, to start mapping sewage outfalls on the rivers to identify more strategic places to install green infrastructure.



Volunteers worked hard and had fun installing the beautiful vegetation and art work that made up the rain gardens at the Detroit Library's Duffield Branch.



West Grand Boulevard Collaborative installed rain gardens at their local library branch.



Sierra Club along with the Detroit Branch of NAACP sponsored a bike tour of Detroit to show off green water infrastructure that helps mitigate stormwater and sewage pollution in our Great Lakes. Starting at the Detroit River in downtown Detroit, the tour traveled throughout the city to see rain gardens, cisterns, rain barrels, bioswales, constructed wetlands, and permeable pavers.

Lessons Learned

1. *Build partnerships to leverage resources.* Partnering with others in the community has been key to their success. Sierra Club worked with Freshwater Future to offer a workshop to educate community groups about climate change adaptation strategies and green infrastructure solutions. As a result, one community group, the West Grand Boulevard Collaborative, received a grant from Freshwater Future to install a rain garden at a branch of the Detroit Public Library, and that project has spawned an interest and partners for other green infrastructure projects in the neighborhood.
2. *Be creative about sharing information.* "It's been a lot about education this year...trying to find creative ways to do that" Damaschke says. Sierra Club partnered with a local bike store, Wheelhouse Detroit to offer two Detroit Green Water Infrastructure Bike Tours. During a 12 mile bike ride, participants learned about rainwater, Detroit's combined sewer system, and saw some of the solutions in use to help prevent flooding and sewage

pollution. Rain during one tour even gave participants a chance to see the green infrastructure in action!

3. *Share solutions with the community.* Sierra Club has been working with communities throughout Detroit, talking to residents and community groups about the benefits and cost-effectiveness of green infrastructure. In the summer of 2011, they began offering rain garden tours of successful projects in different communities, leading to the creation of an 8-step rain garden guide which others can use. The guide also covers climate change, increased precipitation, Detroit's combined sewer system, and what residents can do about it.

This approach to education and engagement—not just bringing the issue down to the local level, but giving people both problems and solutions they can observe in their own neighborhoods—seems to be paying off. Says Damaschke, "When we start talking about sewage going into the Detroit and Rouge Rivers...and how it only gets worse with heavy rainfall—that resonates."



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