



Integrating Education and Stormwater Management for Healthy Rivers and Residents

The City of Ann Arbor recognized stormwater runoff as a growing threat to the quality of their water supply. They're addressing the issue with two complementary strategies.

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The challenge

Situated on the Huron River in southeastern Michigan, the city of Ann Arbor is a leader in sustainable planning and climate action. However, changes in both average precipitation and the intensity of extreme storm events over the last century threaten the health of the city's residents and the community's treasured environmental features.

The Huron River provides 85 percent of the city's drinking water, and when it rains nearly 100 percent of the city's stormwater flows back into the river. Pollution from stormwater runoff decreases the quality of water available for human use, and also has a negative impact downstream on aquatic and wetland ecosystems.

Over the last sixty years (1950–1981 versus 1981–2010), Ann Arbor's average annual precipitation increased by 25 percent. This dramatic increase, along with an increase in the severity of extreme rain events across the region, creates a need for more on-site stormwater management solutions to reduce runoff and maintain a healthy and vibrant river system.

The solution

In 2006, the City of Ann Arbor updated the rate structure for its stormwater utility. To encourage property owners to manage stormwater on-site, they set new rates based on the amount of impervious surface on each property. The new, more equitable rate structure provides an incentive to manage stormwater on-site.

The utility, which generates over \$5 million per year, funds operations and maintenance projects for the stormwater system, water quality improvement projects, stormwater education, implementation of

environmental regulatory or remediation plans, and green infrastructure projects that reduce strain on the stormwater system. Additionally, the city offers stormwater credits to both commercial and residential property owners who take steps to reduce stormwater runoff on their property.

Educating the public and building support

In addition to offering a financial incentive to reduce stormwater runoff, the city formed a partnership with the Great Lakes Integrated Sciences and Assessments (GLISA) program, NOAA's Regional Integrated Sciences and Assessments (RISA) program for the Great Lakes region. Working together, the two groups sought to build community support for climate adaptation efforts and to educate residents on climate change and local impacts.

A series of fact sheets, annual sustainability forums, and a 2014 video campaign address local climate impacts, including increased precipitation, extended heat events, changing growing seasons, and impacts on ecosystem and community health.

Best practices

Based on their experience, Ann Arbor's stormwater utility offers the following lessons for communities that could benefit from a similar program:

- **Start with education**—Laying the education groundwork to make sure the community understands the connection between rainfall and water quality is a crucial first step in addressing a stormwater issue. Fostering a connection to the river or lake that stormwater enters forms the basis for peoples' willingness to pay for stormwater system improvements because they understand the water quality benefits. Partnership opportunities can begin with the public schools, local watershed groups, and/or federal agency partners, such as a RISA.
- **Empower residents to make a difference**—The rate structure gives residents an opportunity to manage their own property to improve water quality and receive recognition for their efforts. These residents can become ambassadors to their neighbors about the benefits of rain barrels, rain gardens, and other strategies to manage stormwater on-site.
- **Use high-quality data**—Invest in technology to get accurate flyover data for estimating the area of impervious surfaces. This helps ensure that rates are fair and minimizes

disputes. Images from Google Earth do not provide enough detail, in part because the flyover should happen during leafless conditions. Ann Arbor obtains imagery in which each pixel represents a six-inch square on the ground, and it updates its maps every three years. The maps (and the cost for generating them) are shared with other units of the city's government.

- **Emphasize transparency**—Through the city's website, residents can view an aerial photo of their parcel with impervious areas marked. They can also see the calculations used to determine their rate. The site also describes a process for property owners to dispute the city's calculations if they believe there are errors in the aerial photograph or its interpretation. After visiting the property in question, field staff make corrections and adjust rates, if necessary.
- **Leverage partnerships**—The City of Ann Arbor, Washtenaw County, and the University of Michigan all own and operate portions of the stormwater system within city limits. Ann Arbor has kept program costs low and streamlined administration by partnering with the county Water Resources Commissioner's office on stormwater improvement projects as well as education and outreach programs.
- **Raise the bar for municipal operations**—Ann Arbor works to integrate best practices for stormwater management into its own operations as well. For instance, a newly constructed municipal center includes a rain garden, cistern, infiltration beds, green roof, planter boxes, and permeable pavers in the parking lot. These features help the site achieve net zero runoff.

Story Credit

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