Ann Arbor adopts 'green streets' policy to address stormwater runoff, pollution

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In its latest attempt to be eco-friendly, the city of Ann Arbor has adopted an official "green streets" policy. That essentially means every time a city street is constructed or reconstructed, improved stormwater management will be a top priority. "It's something we've already been doing on so many of our projects, but now we can kind of have documentation that we're doing the right thing," said Jennifer Lawson, the city's water quality manager.

A green street uses a combination of vegetation and engineering strategies to manage stormwater, allowing it to soak into the soil, filtering it, and reducing the volume and rate at which stormwater leaves the street. Ann Arbor is among cities like Lansing, Philadelphia, Portland and Seattle that have gotten behind the green streets philosophy. "The green streets policy statement is a really exciting thing to happen for the city of Ann Arbor," Lawson said. "We're one of the first municipalities in the state of Michigan to take a stand to ensure that not only our private developers are following stormwater rules and improving water quality, but we're looking within our own walls."

Allowing for onsite infiltration of at least the first inch of rainfall will be the new baseline standard for design of new and reconstructed city streets. Depending on site conditions, the standard could go up to 2.35 inches or 3.26 inches on some streets. "This is more looking for a base level of infiltration, so that first one inch of rainfall, and then what else can we do on top of that to improve water quality," Lawson said.

The City Council unanimously adopted the new policy Tuesday night, roughly a year and a half after the council passed a resolution directing the city's staff to work with the Environmental Commission to come up with a green streets policy. Council Member Sabra Briere, D-1st Ward, co-sponsored the resolution in July 2012.

Lawson said adoption of the policy means there will be more streets like Madison Street, Miller Avenue, Fourth Avenue and Forest Avenue, where the city made major stormwater improvements last year as the streets were reconstructed. The new policy will come into play as the city moves ahead with four more street reconstruction projects in 2014:

- Pontiac Trail (M-14 to Skydale)
- Stone School Road (I-94 to Ellsworth)
- Nordman (Packard to Redwood)
- Butternut (Cardinal to Springbrook)

Lawson said the work done on Madison Street last year was a great example of collaboration among different city departments on innovative stormwater design that meets the green streets infiltration goals.

A number of stormwater management features were included in the project, including rain gardens and upsized storm sewer pipes to improve stormwater quality and reduce and delay flows into Allen Creek. The city also placed a large rock bed below some sections of the street to better capture and infiltrate stormwater. "The big floods, it's not really going to address," Lawson acknowledged. "It's looking at those smaller storms, which is what carries a lot of the pollutants."

The resolution adopted by council Tuesday night acknowledges impervious surfaces are major contributors to stormwater runoff pollution and volume, and public streets are a part of the stormwater management system, as they receive runoff from adjacent lands and convey the stormwater to the piped stormwater system.

It's estimated that 50 percent of all stormwater runoff within the city is generated from the city's street right-of-way. The resolution notes that weather models are predicting increased frequency and intensity of stormwater events.The resolution, which came to council from the Environmental Commission, also notes that under the federal Clean Water Act, the Michigan

Infiltration Standard Flowchart
City of Ann Arbor, Michigan
Stormwater Management Guidelines for Public Street Construction and Reconstruction

Site Conditions — Infiltration Standard

- Within the floodplain — Yes → First 1 inch
- No ↓
- Slope > 20% — Yes → First 1 inch
- No ↓
- Infiltration rate < 0.6 in/hr — Yes → First 1 inch
- No ↓
- Infiltration rate 0.6 in/hr - 2.0 in/hr — Yes → 50% annual chance 24 hr event (2.35")
- No ↓
- Infiltration rate > 2.0 in/hr — Yes → 10% annual chance 24 hr event (3.26")

Department of Environmental Quality has identified the Huron River and several of its tributaries within Ann Arbor as waterbodies not meeting water quality standards. Based on an analysis of soil conditions, the new policy requires city staff to determine the areas of street projects with the most favorable infiltration potential. Where site conditions allow, infiltration beyond the minimum standard is encouraged. In situations where the first inch cannot be infiltrated, the policy allows a lower standard to be used if approved by the city's public services administrator.

Using green streets techniques may or may not be more expensive than other approaches, said Craig Hupy, the city's public services administrator. "I believe when we did either Forest or Fourth, it was at the same cost or less when we did it, so it's not an automatic assumption that it's more expensive," he said.

Hupy said the city is moving away from porous pavement, which it has experimented with on some streets, and instead doing rock beds underneath streets. "We have some issues with porous pavement having a different maintenance need than all the other roadways," he explained.

Council Member Chuck Warpehoski, D-5th Ward, said city staff have been doing "amazing work" to "generate very innovative ways to implement green streets."

Briere, who pushed for the green streets policy two years ago, said the greatest rewards will be seen in the years to come, including decreased flooding along the Allen Creek and other tributaries of the Huron River, as well as improved street conditions with fewer potholes and longer maintenance schedules. "I'm no hydrologist, but all the folks I respect on this issue — including those outside the halls of government — are excited that we have established this policy," she said. "I look forward to more streets being designed to fit their local drainage conditions. Of course, I also look forward to using these calculations in other ways to help those neighborhoods already impacted by stormwater flooding."