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# Green Infrastructure Prevents Sewer Overflows and Protects Water Quality

## What is Green Infrastructure?

Green infrastructure is an interconnected network of green space that provides benefits to the community and the environment. Green infrastructure techniques typically utilize natural or engineered systems that mimic natural landscapes in order to capture, cleanse and reduce stormwater runoff. Green infrastructure can include parks and nature preserves, rain gardens, rain barrels, green roofs, wetlands, permeable pavement and other methods intended to significantly reduce the amount of stormwater runoff entering the sewer system and our waterways.



A rain garden at Homestead Park in Central Ohio absorbs runoff from a parking lot. Photo courtesy of Franklin County Soil and Water Conservation District.



The green roof atop the Lazarus Government Center in downtown Columbus, OH keeps the building cooler and recycles rain water for toilets.

## Community Benefits

**The benefits of green infrastructure techniques are far reaching in many areas including the environment, the economy, and public health.**

**Fewer Sewer Overflows, Reduced Flooding** - Green infrastructure reduces stormwater runoff by capturing and absorbing water. This can result in fewer sewer overflows, cleaner water, and reduced flooding or wet basements.

**Reduced Water Pollution** - Stormwater runoff is a major source of water pollution in the United States. In urban areas, rain water runs off of buildings and pavement, picking up chemicals and a variety of other pollutants. Green Infrastructure techniques help prevent pollutants from entering nearby storm drains and sewers, which then flow into our waterways.

**Improved Air Quality** - The plants and soils included in green infrastructure not only look good, but they also help improve the surrounding air quality by removing CO<sub>2</sub> and other pollutants from the air.

**Reduced Energy Demands** – Cities and dense urban environments trap heat from the sun, increasing average air temperature and leading to heat related deaths. Green infrastructure techniques, especially green roofs, can help alleviate this heat build-up and reduce the need for air conditioning in buildings. This saves money and reduces global warming pollution.

**Additional Wildlife Habitat and Recreational Space** - All forms of green infrastructure can provide increased access to recreational space and create new wildlife habitat.

# Green Infrastructure at Work

Across the country, cities are realizing the benefits of green infrastructure in addressing water quality problems from stormwater runoff and sewer overflows. Many innovative solutions can be used to protect water quality.

## Cincinnati, OH



The Metropolitan Sewer District (MSD) of Greater Cincinnati has adopted green infrastructure as a key means to reducing combined sewer overflows. MSD's combined

sewers overflow over 14 billion gallons of sewage and stormwater a year. By using green infrastructure, MSD intends to reduce the stormwater runoff going into the combined system, and thereby reduce the volume and frequency of overflows. This will also mean a reduction in the size and costs of conventional pipes and treatment plant systems as well as a reduction in energy use. MSD is in the process of developing new ordinances, zoning and incentives for green infrastructure. MSD's current plan is on the web at [www.msdc.org/wetweather/greenreport.htm](http://www.msdc.org/wetweather/greenreport.htm).

*Photo of rain garden provided by the Sierra Club.*

## Chicago, IL



As one of the most innovative cities when it comes to green infrastructure, Chicago has implemented green roofs, rain gardens, permeable pavement, and downspout disconnection/ rainwater collection. The Chicago

Green Roof Program began with a 20,300 square foot demonstration on city hall, which retains more than 75% of the volume from a one-inch rain storm, preventing this water from reaching the combined sewer system. In 2005, Chicago began providing \$5,000 grants for residential and commercial buildings, resulting in more than one million square feet of green roofs. The city has seen benefits such as reducing the heat island effect and improving energy efficiency in buildings, along with water quality benefits. *Image source [www.cityofchicago.org](http://www.cityofchicago.org).*

## Columbus, OH

The Community Watershed Stewardship Project of the Columbus Department of Public Utilities partnered with the Friends of the Lower Olentangy Watershed to offer a rain barrel program. Participants in the program receive a rain barrel at a significant discount of \$30 when they attend a workshop. The program includes 11 workshops during 2007-2008 with more than 250 rain barrels purchased by residents. The average home can collect anywhere from 50-200 gallons of water every time it rains, depending on how many rain barrels they use. Another notable green project is a 15,000-square-foot rooftop garden on the Lazarus building in downtown Columbus, which keeps the building cooler and recycles rain water for toilets. *Rain barrel photo courtesy of Rain Brothers.*



## Washington, D.C.

Using a grant from the EPA, Washington, D.C. created a program to quantify the stormwater management benefits of green roofs and trees. The study determined that moderate coverage for green roofs and trees could prevent over 311 million gallons of stormwater from entering the sewer system, reducing sewer discharges into the river by 282 gallons and combined sewer overflow frequencies by 16 individual events. Results from a more intense coverage of green roofs and trees showed a reduction of 1 billion gallons of combined sewer overflows into local rivers. From the results of the program, Casey Trees strongly recommended the use of green roofs and trees throughout the city, stating that they could potentially provide significant savings, ranging from \$1.4 to \$5.1 million annually, because of the decreased amount of water treatment required in addition to improved water quality. *Photo of community tree planting courtesy of Casey Trees, a partner in this project.*

