

# STORMWATER MANAGEMENT

Source Control  
Sustainability for a  
Cleaner and Greener  
NYC

## THE PROBLEM

More than 27 billion gallons of raw sewage and polluted stormwater discharge out of 460 combined sewage overflows (“CSOs”) into New York Harbor each year. Although water quality in the Harbor has improved significantly over the last few decades, most parts of the waterfront and its beaches are still unsafe for recreation after it rains. As little as one-twentieth of an inch of rain can overload the system! In addition to preventing safe recreation, CSO discharges impair navigation and damage fish habitat. The main culprit is New York City’s outmoded sewer system, which combines sewage from buildings with dirty stormwater from streets. This extraordinary degree of pollution imposes steep environmental, human health, and economic costs on the City and its residents.

## SUSTAINABLE SOLUTIONS

Currently, the DEP favors investing billions of dollars in end-of-pipe tanks to reduce CSO pollution. Yet, as the City’s Sustainable Stormwater Management Plan of 2008 notes, “While effective, the ‘end of the pipe’ solutions that the City has built or will build will not completely eliminate untreated discharges. These large installations are costly to construct, operate and maintain, take years to complete, and are ultimately limited by physical constraints in the sewers that lead to the WPCPs.”

Source control technologies (“SCTs”) are preventative measures designed to keep stormwater from entering the sewage system in the first place. Any excess stormwater that is not captured by source controls would then enter the sewage system for eventual treatment – effectively mitigating the threat of overflow.

## IT'S COST EFFECTIVE !

Source controls are long-term, economically viable alternatives that can be used in concert with end-of-pipe systems. Additionally, source controls can be more cost effective than end-of-pipe systems.

*For \$1,000 invested in the DEP's end-of-pipe projects, CSOs might decrease by 2,400 gallons. In comparison, the same \$1,000 investment in...*

- **Greenstreets** could decrease CSOs by 14,800 gallons
- **Street trees** could decrease CSOs by 13,170 gallons
- **Incentivized green roofs** could decrease CSOs by 12,000 gallons
- **Rain barrels** could decrease CSOs by 9,000 gallons.

**WANT TO KNOW  
MORE ABOUT  
CSOS AND SCTS?**

**ACCESS RVK'S  
"SUSTAINABLE  
RAINDROPS  
REPORT" ON  
OUR WEBSITE**

## Types of Source Control

### Detention



By slowly releasing stormwater to the sewer system, these controls increase the system's capacity, thus allowing WPCPs time to process and treat combined sewage and stormwater flows.

*Includes: blue roofs and underground storage tanks*

### Retention



These techniques remove stormwater permanently from the system for use or infiltration on-site.

*Includes: rain barrels, cisterns, permeable pavements, and systems that collect rainwater for use in cooling towers, truck washes, drip irrigation, toilet flushing, and other non-potable uses*

### Biofiltration



These vegetated source control techniques work through the infiltration of water to the soil and the transpiration of water by plants. They have the potential to withhold significant amounts of water from the sewer system and filter out or eliminate pollutants – acting as a network of distributed pre-treatment plants.

*Includes: greenstreets, green roofs, green walls, planters, swales, tree pits, and rain gardens*

## BEYOND WASTE MANAGEMENT

Source control regards stormwater as a resource to be utilized for diverse sustainability purposes, rather than a waste that must be disposed. Unlike end-of-pipe infrastructure, source control creates opportunities to improve New Yorkers' quality of life. These include environmental, water quality, public health, aesthetic and economic benefits such as:

- **Cleaner Water** – Vegetation and green space reduce the amount of stormwater runoff and the volume of combined sewer overflows.
- **Cleaner Air** – Trees and vegetation improve air quality by filtering many airborne pollutants and can help reduce the amount of respiratory illness.
- **Reduced Urban Temperatures** – Summer city temperatures can average 10°F higher than nearby suburban temperatures. High temperatures are linked to higher ground level ozone concentrations. Vegetation creates shade, reduces the amount of heat absorbing materials, and emits water vapor – all of which cool hot air.
- **Increased Energy Efficiency** – Green space lowers ambient temperatures and helps shade and insulate buildings, decreasing energy needed for heating and cooling.
- **Community Enhancement** – Trees and plants improve urban aesthetics and community livability by providing recreational and wildlife areas and raising property values.
- **Cost Savings** – Green infrastructure may save capital costs of digging tunnels and stormwater ponds, operations and maintenance expenses for treatment plants, pipes, and other hard infrastructure; energy costs for pumping water; and costs of wet weather treatment and of repairing stormwater and sewage pollution impacts, such as streambank restoration.
- **Enhanced Water Supplies** – Most green infiltration approaches result in stormwater percolation through the soil to recharge the groundwater and base flow for streams.

Courtesy of Benjamin H. Grumbles, Assistant Administrator EPA