DC Utilizes Green Infrastructure to Manage Stormwater

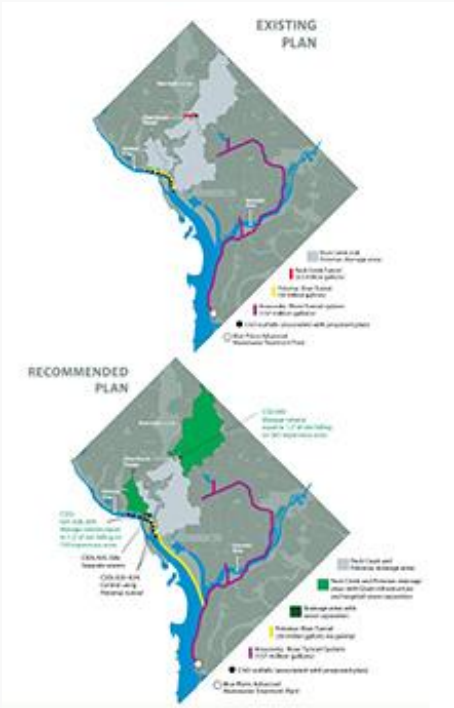
epa.gov/arc-x/dc-utilizes-green-infrastructure-manage-stormwater

Under a consent decree from the EPA to reduce combined sewer overflows (CSOs), the District of Columbia Water and Sewer Authority (DC Water) developed a plan to construct three large holding tunnels to provide extra capacity during high precipitation events. Upon further consideration of the uncertainties regarding future precipitation extremes and the costs associated with developing three large infrastructure projects, DC Water requested to revise the agreement.

The revised plan replaces one tunnel with green infrastructure projects to reduce the amount of stormwater runoff that the system has to handle. A capacity metric (i.e., amount of stormwater runoff managed) associated with the green infrastructure projects was adopted rather than an initial plan requiring a defined financial commitment ($90 million) to better ensure the expected stormwater reduction improvements.

Green infrastructure project: Blue Plains Wastewater Facility in Washington DC Reinforces Facility Against Floods

DC Water reviewed the National Climate Assessment projections for the Northeast to better understand potential future conditions, however no such projections were included in the capacity agreement. While no climate projections were included, the agreement does provides the District of Columbia greater adaptive flexibility to scale and increase green infrastructure to accommodate future precipitation extremes.



Comparison of existing and modified plans.

DC Long-Term Control Plan, May 2015 (PDF) (890 pp, 40 K,)

With the installation of green infrastructure projects in the Rock Creek Park corridor, the revised plan provides substantive environmental, economic, and health benefits as early as 2017 as compared with the original project projection of 2024. The revised plan, upon completion in 2030, is expected to reduce CSO releases by 96% (based upon current precipitation levels).

How did they do it?	Applicable EPA Tools
Realized current approach was insufficient to meet current and future climate extremes	The Climate Resilience Evaluation and Awareness Tool (CREAT) can help communities identify expected vulnerabilities from a changing climate. Climate Resilience Evaluation and Awareness Tool (CREAT)

Selected a unique adaptation option specific to local conditions

- DC Water developed and proposed a plan utilizing a mix of grey and green infrastructure. The District has identified a variety of green infrastructure and low impact development measures with potential for use, including rain barrels, grassed swales, cisterns infiltration trenches, permeable pavements, increased tree cover, and rooftop greening.

The Green Infrastructure Wizard Tool can help communities identify and select green infrastructure adaptation strategies according to local conditions.

Green Infrastructure Wizard Tool

Defined performance-based metrics rather than financial

- DC Water committed to installing Green Infrastructure (PDF) (890 pp, 40 MB) to absorb "…1.2 inches of rain falling on 365 impervious acres of land that currently does not absorb stormwater…" If this commitment proves infeasible, the plan will revert to using underground storage. This plan is projected to reduce CSO's by 96% and is expected to be capable of handling more than 90% of storms (under baseline climate conditions). DC Water has already completed preliminary green infrastructure demonstration projects and is expected to complete an additional 44 acres of by June 2019.

The EPA SWMM and Stormwater Calculator Climate Assessment Tools can help communities simulate and evaluate green infrastructure performance against projected climate impacts:

Storm Water Management Model (SWMM)

Stormwater Calculator

Similar Cases and More Information

Increased precipitation events may lead to increased sewer overflows as well as threaten the water or wastewater utility facilities themselves. For more information on what a Washington, D.C. wastewater facility is doing to adapt to climate change and the threats from flooding, view Blue Plains Wastewater Facility Case. For information on a city that is moving wastewater services away from an area vulnerable to flooding view the Iowa City Riverfront Master Plan.

- Blue Plains Wastewater Facility in Washington DC Reinforces Facility Against Floods
- Iowa City, Iowa Closes Vulnerable Wastewater Facility