

GREEN INFRASTRUCTURE

SAVE MONEY AND DELIVER LOCAL BENEFITS

STORMWATER SOLUTIONS FOR NEW JERSEY | 2020



With a heavy rain or snowfall, stormwater overflows from New Jersey's water infrastructure systems. These Combined Sewer Overflow (CSO) events create pollution and flooding that puts communities at risk. In fact, CSO events discharge 7 to 23 billion gallons of sewage each year into NJ waterways, enough to fill the Empire State Building at least 25 times. The EPA estimates that the costs of correcting NJ's CSO problems are some of the highest in the United States.

THE SEWAGE-FREE STREETS AND RIVERS CAMPAIGN IS INFORMING AND CONNECTING LOCAL COMMUNITIES, ORGANIZATIONS, PERMIT HOLDERS, AND POLICYMAKERS AS THEY CONSIDER SOLUTIONS FOR MANAGING STORMWATER-RELATED FLOODING AND SEWAGE IMPACTS.

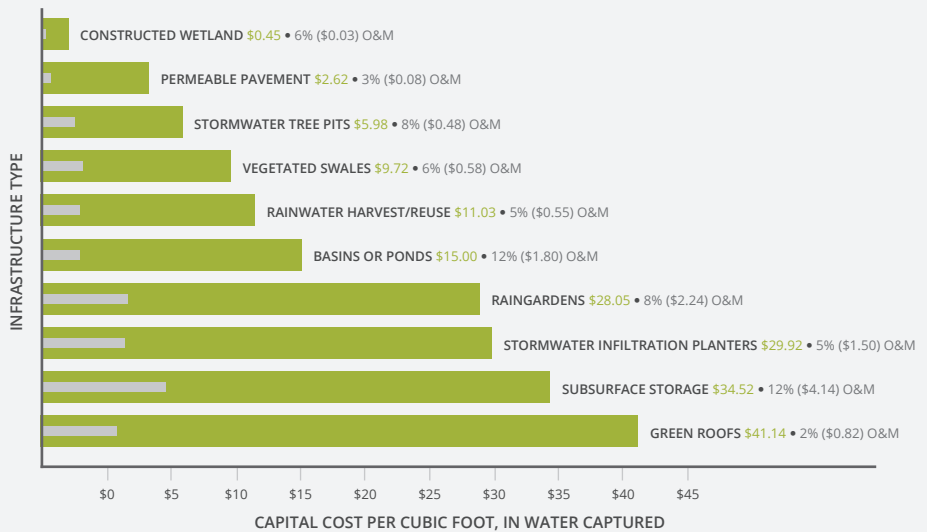
GREEN INFRASTRUCTURE IS PART OF THE SOLUTION

From rain gardens to permeable pavement, green infrastructure includes practices that use or mimic natural processes to slow down and reduce the amount of stormwater flowing into drains. To manage CSO impacts, agencies across the country are increasingly adopting a range of green infrastructure options in combination with traditional gray infrastructure. In Camden, NJ, for example, green infrastructure projects are estimated to capture around 125 million gallons of stormwater per year.



GREEN INFRASTRUCTURE IS A COST-EFFECTIVE SOLUTION FOR COMBINED SEWER OVERFLOWS

Green infrastructure is a cost-effective solution from both a capital and operations and maintenance (O&M) perspective, particularly when integrated with established gray infrastructure systems. By capturing and slowing water where it lands, green infrastructure reduces the strain on centralized conveyance and treatment systems downstream. Green infrastructure projects tend to store more gallons of stormwater per dollar invested than conventional gray infrastructure. Also, O&M costs tend to be similar or lower than gray infrastructure as a percentage of capital costs.



Graphic adapted from *Together North Jersey*, 2013. *Hoboken Green Infrastructure Strategic Plan*, Hoboken, NJ.



COSTS
 Capital \$1,047,387
 O&M \$147,666



BENEFITS
 CSO Reduction \$872,043
 Net Present Value \$670,729
 Stormwater Quality \$116,796
 Aesthetic Value \$841,134
 Jobs 8.7-11.3 FTE
 Heat Island Reduction \$21,756
 Carbon Sequestration \$6,880
 Flood Risk Reduction \$7,174

RAIN GARDEN COSTS & BENEFITS

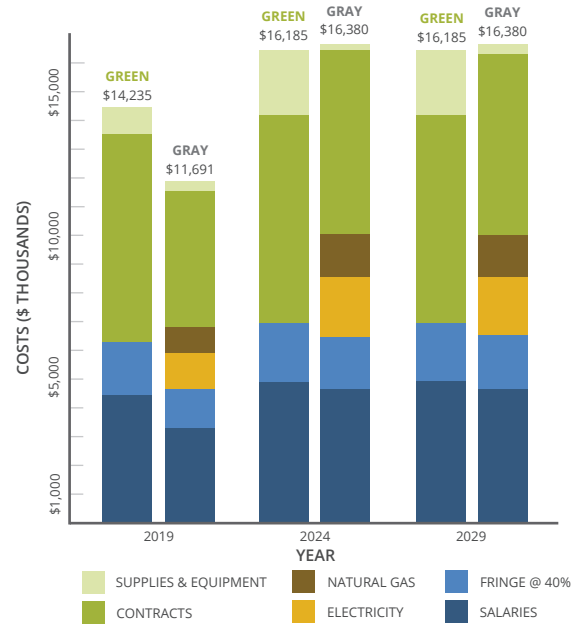
When green infrastructure is properly incorporated and maintained it can support utility stormwater management targets and generate a range of community benefits. For example, a distributed rain garden installation in New Jersey measuring 44,000 sq. ft. (1 acre) could provide environmental, social, and economic benefits including cleaner air, reduced flooding, support jobs, and increase property value.

GI SUPPORTS EMISSIONS REDUCTIONS AND UTILITY ENERGY BILL SAVINGS

The conveyance of wastewater and stormwater using traditional gray infrastructure requires tremendous amounts of energy. When sited correctly, green infrastructure reduces the burden on centralized systems, thereby reducing utility energy bills. Energy bill savings can then be allocated towards job creation. New York City's 2010 Green Infrastructure Plan projected a green approach would save millions of dollars in annual energy bills compared to a conventional gray approach. These savings are being redistributed towards contract labor and supplies to create additional jobs. Similarly, the Camden County Municipal Utilities Authority (CCMUA) achieved significant energy savings from upgrading wastewater treatment without increasing user fees. Stormwater management from green infrastructure saved Camden City and CCMUA around \$250,000 per year in pumping and treatment costs.

Reduced water conveyance-related energy usage reduces pollution and greenhouse gas emissions. In California, a 24.5% statewide reduction in water consumption during a drought in 2015 to 2016 led to an emissions reduction of 521,000 metric tons of carbon dioxide equivalent, which is the same as taking 111,000 cars off the road annually.

Graphic adapted from *The City of New York, 2010. NYC Green Infrastructure Plan: A Sustainable Strategy for Clean Waterways*, Figure 11: O&M Costs to the City of CSO Control Scenarios.

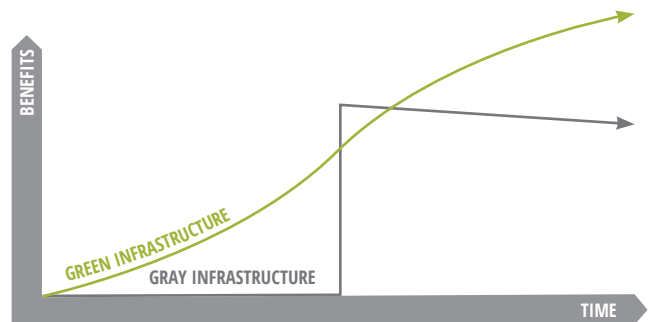


GI CREATES JOBS AND LOCAL ECONOMIC DEVELOPMENT

The economic activity spurred by green infrastructure projects drives spending and support indirect and induced jobs in other important industry sectors, ranging from retail to manufacturing. Per million dollars invested, green infrastructure programs support between 11-13 total (direct, indirect, induced) jobs compared to around 7 total jobs for traditional water and wastewater programs. When green infrastructure investments are planned in tandem with local workforce development efforts and permit holders prioritize local hiring programs, green infrastructure investments lead to local spending and circulation of funds in the local economy.

GI SUPPORTS ADAPTATION AND RESILIENCE

Given the uncertainty of future climate impacts, green infrastructure can be scaled up over time, which is less risky and cheaper than making "big bets" on conventional gray infrastructure. Because utilities often are unable to issue large bonds as the financial impacts of COVID-19 unfold, the adaptable approach of green infrastructure is also appealing from a funding perspective. The use of green infrastructure for stormwater management additionally supports ancillary climate resilience benefits, such as urban heat island mitigation and sea-level rise adaptation.



EARTH ECONOMICS
 TAKING NATURE INTO ACCOUNT



**SEWAGE FREE
 STREETS AND RIVERS**
 Your Waterways. Your Neighborhood. Your Money. Your Voice.

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