

## GREEN INFRASTRUCTURE FOR THE HOME

Rain barrels connect to a gutter's downspout and collect rainwater to be later used for watering. Rain barrels can be as simple as a garbage can or plastic drum or a wooden cask that can be decorated with paint.



RAIN  
BARREL

Rain gardens look like a regular flower garden but they are designed to collect rainwater and let it slowly drain into the ground. A rain garden is a few inches deep and planted with a variety of native plants to help absorb the rainwater that gathers in the garden.



Municipalities can incorporate green infrastructure by:

- Building rain gardens in parking and road islands, along sidewalks and in parks
- Offering incentives for rain barrels
- Using pervious pavers

*Below, a homeowner with a beautiful rain garden.*



RAIN  
GARDEN

## FOR MORE INFORMATION...

Please visit our website for more detailed information about green infrastructure and programs in your community.

Questions? Contact Christopher C. Obropta, Ph.D., P.E., Extension Specialist in Water Resources at [obropta@envsci.rutgers.edu](mailto:obropta@envsci.rutgers.edu)

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## THANKS TO OUR PARTNERS!



City of Camden  
Cooper's Ferry Partnership  
New Jersey Tree Foundation  
New Jersey Department of Environmental Protection  
Camden County Municipal Utilities Authority



Greater Newark Conservancy  
NY-NJ Baykeeper  
New Jersey Tree Foundation  
New Jersey Department of Environmental Protection  
Trust for Public Land  
City of Newark Office of Sustainability

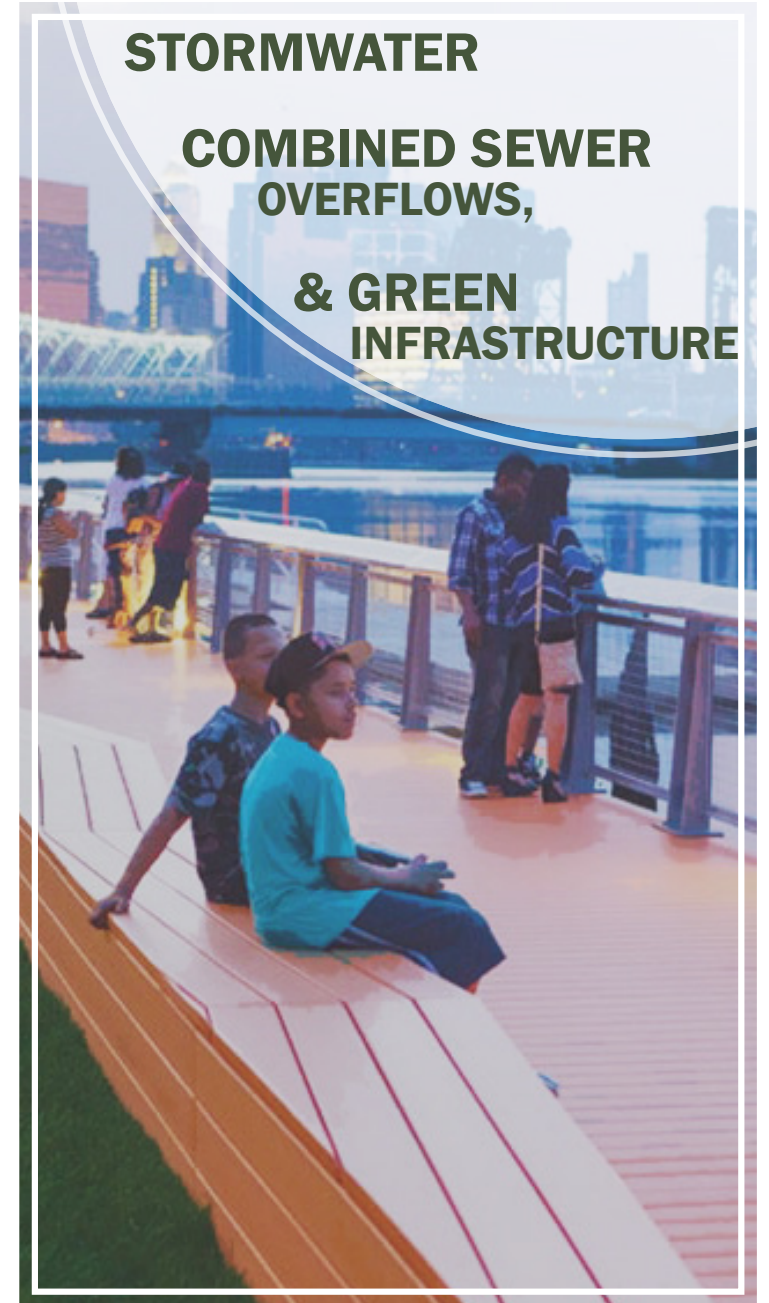
*Cover photo by Colin Cooke*

<sup>1</sup> New Jersey Department of Environmental Protection (NJDEP). 2013. *Combined Sewer Outfall (CSO) Individual NJDEP Discharge Permits FAQs* 2013. [http://www.nj.gov/dep/dwq/pdf/cso\\_faqs\\_062113.pdf](http://www.nj.gov/dep/dwq/pdf/cso_faqs_062113.pdf)

## STORMWATER

## COMBINED SEWER OVERFLOWS,

## & GREEN INFRASTRUCTURE



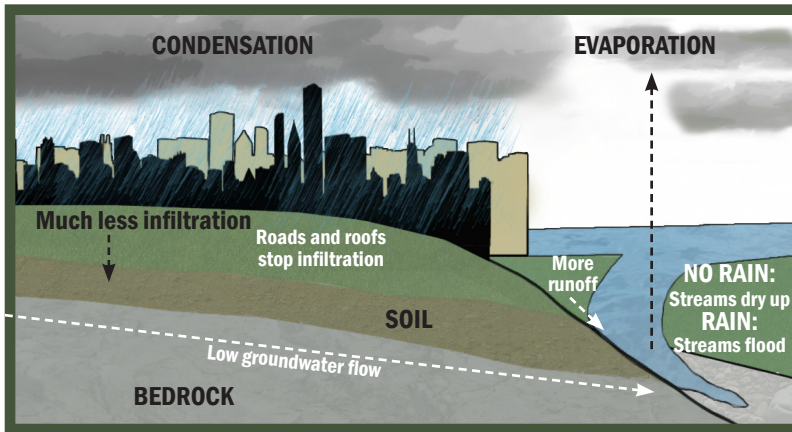
**RUTGERS**  
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## WHAT IS STORMWATER RUNOFF?

Rain and snowmelt that runs off the ground is called stormwater runoff. In urban areas where the ground is hard, water cannot easily soak into the ground to replenish the groundwater supply so it flows from streets, sidewalks, lawns, and building roofs into storm drains. As stormwater runs along the ground towards the storm drains, it picks up pollutants such as sediment, oil, chemicals, and animal waste. Those pollutants then flow directly from the storm drains into local waterways.



The diagram above depicts the stormwater runoff process.

## FLOODING

If a storm drain clogs, stormwater is blocked and backs up into streets and can back up into your home. Sometimes there is just too much stormwater that can fit down the storm drain.

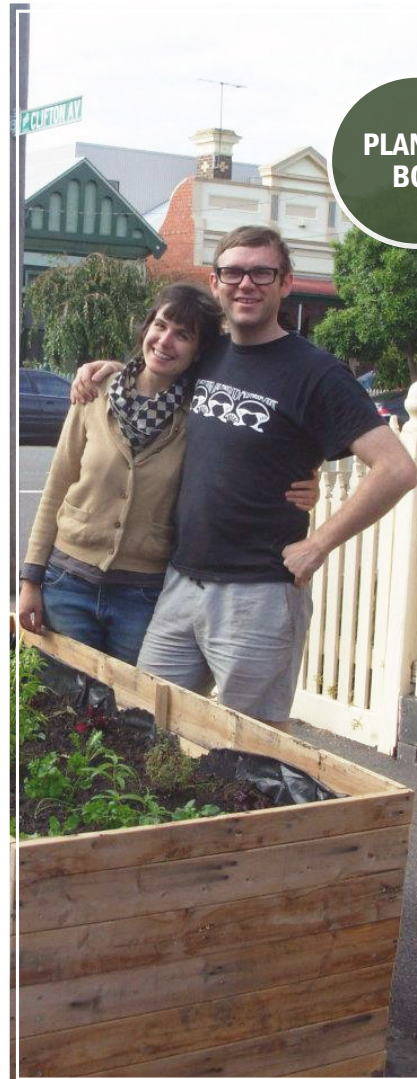
## WHAT IS THE ANSWER?

Stormwater should be managed **before** it reaches the storm drain. Rain gardens, rain barrels, and green roofs (called green infrastructure) capture stormwater so that it can be reused and absorbed into the ground. The best part of green infrastructure is that not only does it help manage stormwater, it makes communities more beautiful!



Above, a student learns about the rain garden installed in his schoolyard.

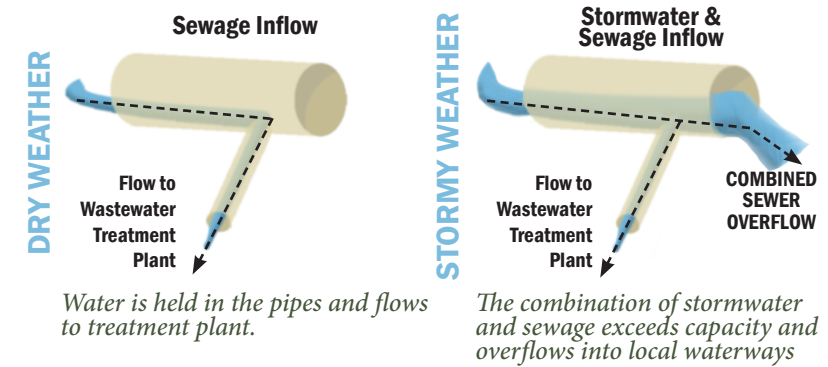
## CALL FOR COMMUNITY ACTION



In several New Jersey cities, groups are beginning to tackle problems from combined sewers using green infrastructure. In Camden, rain gardens are being built and rain barrels are being distributed to residents. In Newark, vacant lots are being converted to gardens, and cisterns are being used to collect rain to water the plants. Others like Jersey City, Hoboken, and Perth Amboy are also looking at green infrastructure solutions to help stop flooding and combined sewer overflows. More work is needed, and every resident can help.

Left, a planter box adds color to a yard with little green space. Photo by Yarra Climate Action Now.

## COMBINED SEWER OVERFLOWS



Water is held in the pipes and flows to treatment plant.

The combination of stormwater and sewage exceeds capacity and overflows into local waterways

In most areas of New Jersey, stormwater is transported in its own stormwater sewer system which is separate from the wastewater sewer system that carries water from your home. In some older urban cities, these systems are combined into one system that carries both wastewater and stormwater to a treatment plant. During heavy rain or snow melt, these combined sewer systems cannot handle the additional stormwater and overflow into local waterways carrying the waste water into rivers, streams and bays.

In New Jersey, 21 municipalities have combined sewer systems. In these cities, there are a total of 217 combined sewer overflows (NJDEP 2013)<sup>1</sup>. When overflows occur, stormwater that has been mixed with untreated wastewater is discharged into local waterways, contaminating them with multiple pollutants such as human waste.

Below, left: combined sewer overflow is released into a local NJ waterway, right: top, stormwater rushes to a stormdrain and bottom, overflows

