

## Harvesting the Rain

by Sam Williams

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In 2002, when a severe decline in winter snow and spring rainfall forced the city to declare a drought emergency, gardeners throughout New York City faced a new twist on an age-old dilemma.

Unable to tap city fire hydrants -- the traditional irrigation source for community gardens -- garden managers looked to the skies for respite. Taking a cue from early farmers, they gathered as many jars, barrels and cisterns as they could find and set them out to capture and store a portion of every summer downpour that passed over the city. By the end of the year, at least seven gardens had created elaborate rainwater harvesting systems channeling water from neighboring rooftops and downspouts to 55-gallon drums and underground cisterns.

Four years later, the pressure to capture each precious drop of water may not be as high, but the rainwater harvesting continues. A loose-knit coalition of environmental groups calling itself [Water Resources Group](#) has helped community gardeners install water retention systems in 25 local gardens. The group has even secured a \$45,000 grant from the Environmental Protection Agency to finance systems in at least four community gardens, starting with the Bedford Avenue Block Association Garden in Brooklyn near the corner of Bedford and De Kalb avenues.

Some of the larger sites use [1,000 gallon tanks](#), says project coordinator Lenny Librizzi of the Council on the Environment of New York City, a group member. But others use 55-gallon olive barrels donated by a Queens olive distributor.

As assistant director of the Council on the Environment's open space greening project, Librizzi sees rainwater collection as an easy way to fulfill that project's agenda to expand and enhance community gardens. For now, most community gardens rely on free city water from fire hydrants. This makes the gardens beholden to the whims of a city government that, for at least the last 10 years, has taken note of the value of the land underlying most community gardens and considered putting the acreage to more financially profitable use. For security's sake, many of the green spaces would prefer to have their own back-up water supply, free of city control.

But there are additional environmental benefits. Last year's grant from the Environmental Protection Agency, for example, came about because the group was able to show that recycling rainwater reduces demand on the city's storm sewers and so can help cut water pollution.

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Although the city is [overhauling its aging](#) combined [sewer overflow system](#), many neighborhoods still send storm water runoff and household waste into the same sewers. Catching rainwater reduces the demand on the sewers, giving city pumps in these neighborhoods more time to work before the sewers reach the overflow stage and send untreated sewage into local waterways.

“It’s a win-win for the environment and for gardeners,” says Robin Simmen, manager of the Brooklyn Botanic Garden’s [GreenBridge horticulture program](#). “First of all, rainwater is better for plants than chlorinated tap water so you’ll get bigger, healthier plants. Also, by harvesting rainwater, we reduce the amount of storm water that we are currently flooding into our sewer system.”

Or as Librizzi puts it, “In collecting rainwater, we’re not only making the city greener, we’re making it bluer.”

Granted, it takes more than a few dozen community gardens to put a dent in the city’s storm water runoff problem. The Water Resources Group estimates that its 25-garden network currently captures a little more than 250,000 gallons of rainwater annually. Compare that to the average family’s use of an estimated 100,000 gallons a year and it’s hard to resist the punning drop-in-a-bucket metaphor.

But rainwater harvesting can also produce a change in the way New Yorkers think about water. Once New Yorkers stop seeing water as something they can take for granted, they start appreciating what it truly is: a fickle resource that takes time to capture.

“We happen to be kind of lucky in that we just turn on the tap and have all the fresh water we want, but that may not always be the case,” Librizzi says. “The educational aspect is a big part of this.”

Just as community gardens have taken the lead in bringing nationwide issues such as open space preservation and solid waste composting into the five boroughs, so too has the movement played a leadership role in a city where many residents already grasp the common-sense value of rainwater recycling but don’t see how to make it work in a heavily urbanized environment.

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“In a way we’re reinventing the wheel,” Simmen says. “Many of the immigrant cultures in our city come from places where rainwater harvesting is a way of life. People who come from the Caribbean -- there’s no groundwater supply there, every drop of water you use for irrigation comes from the sky, and people know to catch and store the water when it rains.”

To further that education, numerous websites offer set up and safe storage tips to the aspiring rainfall harvester. For example, the site for [Tree People](#), a Los Angeles tree-planting group, offers [an interactive application](#) to help calculate proper cistern size depending on the size of the collecting rooftop and the expected rate of rainfall. A [University of Florida Extension site](#), meanwhile, provides a how-to guide for anyone looking to hook up a simple, self-containing 55-gallon rain barrel system to an existing gutter or downspout.

Designing a self-contained system is important. Not only does rainwater evaporate when left uncovered, it also can be a magnet for mosquitoes, rodents and other disease-bearing pests. Finally, there are the issues of drowning risk and potability. Like a backyard pool, a good rainwater collection source should be well marked and well-guarded, and it should be abundantly clear to passersby that the water that just flowed in off somebody’s rooftop is for plant use only.

“Rainwater is generally free of harmful materials and in most cases chemicals, but can be adversely affected by air pollutants and/or contaminated by animals in the catchment area,” warns the [rainwater harvesting website](#) Harvest H2O.

There are various methods to prevent contamination. Jonah Braverman, an urban agricultural coordinator with East New York Farms, says his group uses a “first flush” system. This involves a plugged, 10-gallon PVC downspout directly adjacent to the collection source - the gutters of a nearby house. Once the downspout fills completely, remaining water is automatically diverted to the main downspout, which flows directly to a 500-gallon tank. After the rainstorm, garden volunteers, remove the plug and dispose of the first few gallons of water, and with it, whatever early sediment came washing in off the rooftop. Most research has found that filtering the first 10 gallons “as the first flush system does” is enough “to protect yourself from bird excrement and other pollutants,” Braverman says.

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The collection system also includes a direct line to the city sewer, so that volunteers can shut off and drain the system during the winter when freezing might shatter the permanently filled water lines. So far, the only lingering concern with the three year-old irrigation system is water pressure. To address that, the group is planning to purchase a solar-powered pump. "We will also be hooking the system up to a second roof," he says.

Looking down the road, rainwater collection enthusiasts sees opportunities to expand the Water Resources Group's efforts to private lots and facilities other than community gardens. In early June members of the Water Resources Group along with members of the City Council's Committee on Environmental Protection will visit Philadelphia where Philadelphia Green, a project funded by the Philadelphia Horticultural Society, has been working on pilot projects involving [permeable paving materials](#), including asphalt. Such projects, if successful, could dramatically increase the percentage of rainwater captured and minimize storm runoff from parking lots and streets. The newly permeable surfaces can then be planted with trees and other plants, making them cooler and more attractive "without consuming additional drinking water.

In a sense such projects hark back to an earlier era. Simmen notes that that the lots of many Brooklyn brownstones still contain the buried backyard cisterns local residents once used to store rainwater during the dry months. "Since the early 20th century, New York has one of the few cities that doesn't exist next to or on top of its water supply," Simmen says. As a result, many of us haven't learned the importance of protecting the local waterways from pollution, something we might have learned growing up in another city. It's something that we had here and it's something that we've lost."

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