

# READING, WRITING, AND RUNOFF

**ENVIRONMENTAL EDUCATION  
MOVES BEYOND THE GARDEN.**

Schoolyard gardens and woody field trips help kids learn about the environment. Now some educational programs are tackling infrastructure and the water cycle by teaching kids about stormwater management, even in elementary school.

At the Dalton School, a private prep school in New York City, the program for grades K–3 transformed a small (16-foot-square) rooftop space just outside the science classroom into a multifaceted “Green Lab.” There are a few planters, a cold frame, and a compost bin, but the showpiece of the project is



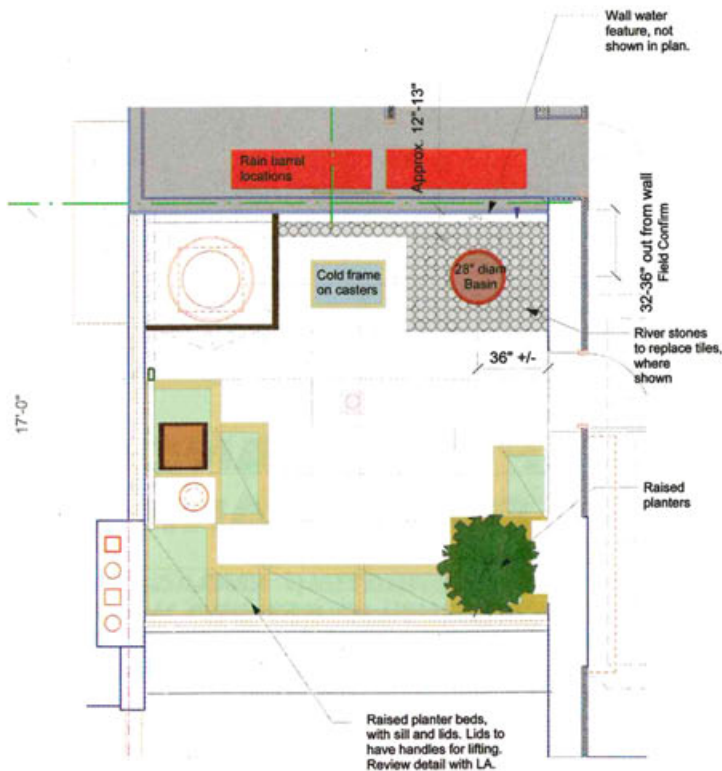
a colorful wall-mounted contraption that moves rainwater from a higher neighboring roof (which had been suffering from drainage problems before the project) through a series of pipes and water-movable features mounted at kid height for close-up viewing.

**TOP**  
Science teachers use the system at Dalton to help kids learn about weather and water.

The landscape architect Liz Pulver, ASLA, of Town and Gardens Limited, who designed the project with the Dalton leadership and faculty, says that with space at a premium, a vertical design was the obvious solution. They originally planned to use a rain barrel to collect water from the upper roof, but the compact rectangular form and stackability of recyclable plastic modular tanks made by Rainwater HOG worked better.

**BOTTOM**  
The design used vertical elements to make the most of a small space.

The bright orange tanks are clearly visible. Laura Haddad, a science teacher, says the interesting color and shapes capture kids’ attention. But they sit overhead on a ledge and out of the way. Water stored in the tanks powers a wall-mounted water wheel and a balance beam that holds removable buckets used to water plants. When it rains, the wheels and the beam move on their own, even when the tank valves are shut off. Will Hopkins, the chairman of the school’s science department, says the stormwater display has been the most popular feature of the new space, even for the littlest students. “For kids this age, it’s all about interactivity and exploration,” he says. “We didn’t want only plants, which require a lot of waiting.”



➔ Farther uptown, Rocking the Boat, a boatbuilding and on-water environmental education program in the South Bronx, has converted the scrubby backyard of a furniture warehouse into a publicly accessible grassland and treatment wetland to manage runoff from the warehouse's 30,000-square-foot parking lot. The 10,000-square-foot site is on the Bronx River, across from Concrete Plant Park (see "The Bronx Is Blooming," *LAM*, November 2010) and near Hunts Point Riverside Park (see "Parks Come to the Point," *LAM*, December 2007). But the parks sit in a network of freeways, warehouses, and scattered trash transfer and scrap-metal recycling facilities that contribute to stormwater runoff and water quality problems.

Before the project was installed, says the hydrologist Eric Rothstein of eDesign Dynamics, runoff from the parking lot collected in an underground catch basin, and when it filled up, a pump would blast it into the river. Now, a pipe connects the basin to the emergent herbaceous wetland. There's a forebay for sediment accumulation, and during storms the water level in the wetland can rise up to nine inches deep, beyond which it goes into the



**LEFT**  
The Rocking the Boat team built a treatment wetland on the Bronx River.

river. The volume captured by the wetland is essentially the "first flush" of a big storm, says Rothstein, and that runoff carries about 90 percent of the contaminants coming off the pavement.

Working off a design developed by the ecological artist Lillian Ball, 20 of Rocking the Boat's teen-aged apprentices and program assistants helped to prepare the site and plant 8,000 plugs of salt-tolerant native grasses and other tough plants. They also helped install a pervious walkway and a seating area for visitors.

Projects like this represent an expansion of the group's original boatcentric mission. "There's a lot

of need in this area for water-based environmental science work," says Adam Green, Rocking the Boat's founder and executive director. Funding is also available for stormwater projects, he says, and this kind of experience is valuable in the job market.

"These projects are part of a larger matrix of education and stewardship here," says Rothstein, a former parks department employee who has been working on restoration projects in the South Bronx for more than a decade. "I hope some of these kids get inspired to study biology or hydrology and come back to this community to continue the work." ●

**HERE**  
This copper beech on Bellevue Avenue, Newport's main street, had to be removed last spring.

## TWILIGHT OF THE BEECHES

**LONGTIME NEWPORT RESIDENTS FEEL THE EFFECTS OF AGE, WELCOME GLAM NEW NEIGHBORS.**

When the barons of Gilded Age Newport on Rhode Island's coast were accessorizing their mansions, the copper beech (*Fagus sylvatica*) was a popular choice: stately in habit, European in origin, and, with its shiny purple foliage, tastefully striking in appearance.

But more than a century later, the resort town's beeches aren't faring so well. As the *New York Times* recently reported, the trees are, as a group, succumbing seemingly all at once to scale, the cankerous pathogen *Phytophthora*, and age. Weakened specimens can't withstand pathogens, ↘