Rainwater gardens are attractive, environmentally friendly

Lynn Underwood, Star Tribune
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Phil Friedlund's front garden, featured in neighborhood garden tours, is lush with tall prairie grasses and wildflowers sashaying in the breeze. The garden's natural look complements the facade of the 1883 Eastlake-style home off St. Paul's Summit Avenue.

But there's more to this landscape than meets the eye. When it rains, the water nourishes Friedlund's plants instead of flowing into storm drains.

This simple concept is behind the showy rainwater gardens in his yard. The front, back and side gardens were designed to capture and filter rainwater, making the gardens environmentally friendly as well as an attractive habitat for birds and butterflies.

Rainwater drains off the roof into depressions in the yard that trap and absorb it, keeping it from the street and ultimately local streams, lakes and wetlands. Other benefits: The gardens improve water quality by filtering out pollutants as it feeds the vegetation and require little mowing or chemical applications.

"Rain gardens protect downstream natural water bodies such as lakes, wetlands and the Mississippi River from the incredible volume of water that washes off hard surfaces like roofs and streets," said Fred Rozumalski of Barr Engineering in Minneapolis. The landscape architect and ecologist designs rainwater gardens for commercial and public park sites. He worked with Friedlund to create his sustainable dream garden 10 years ago, when he was a landscape architect graduate student at the University of Minnesota.

Rain gardens work by modeling a natural process as old as the hills - except that many of the hills and native plants are gone. A typical city block generates nine times more runoff than a woodland area the same size, according to the U.S. Environmental Protection Agency.

Rain gardens across the Twin Cities are doing what natural plants and prairies did a hundred years ago - they prevent water runoff and allow the water to naturally seep into the ground.

"The plants act as a sponge, drawing water deep into the soil," said Lorrie Stromme, a master gardener for the University of Minnesota Hennepin County Extension Service and author of a rainwater garden article on the extension Web site. "A rain garden beautifies a low spot while also slowing and filtering storm water," Stromme said.

Rain gardens can be as small and simple as a natural dip or low spot in the yard or as complex as a large storm water management system that uses piping, grading and infrastructures to channel water runoff to plants.

In Friedlund's gardens, soil has been graded to create swales and depressions and gravel paths direct water flow while plants hold water runoff on the site.

Different kinds of rainwater gardens are springing up throughout the metro area. Examples are the Como Water Quality Garden near Lake Como and city-planned rain gardens in Maplewood neighborhoods.

"It's new, but slowly catching on with storm water management professionals and landscape architects and engineers," said Rozumalski. The Metropolitan Council Environmental Services will be offering grants to Twin Cities communities to develop alternative storm water management strategies, which includes rain gardens.

"It doesn't seem like much when one homeowner does it," Rozumalski said. "But when you think about a whole block doing it, you're storing a lot of water."

Birmingham project

In Maplewood, two blocks of homes successfully overcame the nasty storm water runoff problem. The city planted small boulevard rain gardens for residents living on Birmingham Street. The 1996 experimental

project was an innovative way of managing storm water runoff, said Chris Cavett, assistant city engineer for Maplewood.

"It is becoming a big issue," said Cavett. "Conventional storm management systems speeded the rate of runoff and we're dealing with water quality issues, too." Maplewood and other cities have storm water management projects in the works that include rain gardens.

Moisture-loving plants

Homeowners like Freidlund are more aware that plants, trees and ground cover absorb a lot more rainwater runoff than a vast green lawn.

Native prairie plants work well in the rain garden landscape because they are deep-rooted and will survive extreme wet and dry conditions, said Rozumalski. Once they are established, they seldom need watering or fertilizing. When designing a rain garden, it's important to match the plants to the moisture conditions because some plants can tolerate standing water while others can't, he said.

The Friedlund gardens are a mix of flowering plants, shrubs and vertical grasses that provide color throughout the growing season. Tall culver's root bordering the driveway, alumroot and prairie smoke are natural barriers for runoff. Other native and non-native prairie plants and wildlflowers in the Friedlund landscape include majestic Joe Pye weed, big bluestem, tall meadow rue, blazing star, monarda, butterfly weed, oxeye daisies, wild geraniums, ferns and hostas.

"This kind of natural garden can be wild looking so you have to contain it with edging and create clean lines," Rozumalski said. "I wasn't really sure how it would turn out," said Friedlund. "But the prairie garden has really been rewarding."

Cafe garden

If you'd like to see a neighborhood rain garden in action, visit the demonstration site next to the Swede Hollow Cafe at 725 E. 7th St. in St. Paul.

The Maria Bates Rain Garden was the result of a street improvement project on the block about three years ago. The Upper Swede Hollow Neighborhoods Association worked with the city of St. Paul as part of the Lower Phalen Creek Project to put in the two swales that capture and filter rainstorm water and snow melt from the street before it gets to the storm sewer system. Rozumalski also had his hand in the garden design and installation.

"We were trying to raise awareness about watershed issues and improving water quality in a dense urban environment," said Carol Carey, then executive director of the neighborhood association.

Along the two gardens are stone walking paths, stone benches, quaint streetlights and a public art installation.

On a smaller scale, Carey has applied some of the rain garden techniques she learned to her own back yard. To solve drainage problems, she had her side yard graded to create a swale with a gentle slope to draw rainwater away from the house.

Carey plans to plant nannyberry viburnum, black chokeberry and other bushes to create a wild and natural rain garden.

"People can make a simple rain garden like this just by paying attention to the areas in their yard where water collects," she said.

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Native plants for rain gardens

Hardy native wildflowers, grasses and shrubs that thrive without fertilizers and pesticides work best in rain gardens. Here are some examples:

Sunny sites
- Butterfly weed (Asclepias tuberosa).

- Black-eyed Susan (Rudbeckia hirta).
- Prairie smoke (Geum triflorum).
- Turtlehead (Chelone lyonii)
- Joe Pye weed (Eurpatorium maculatum).
- Tall meadow rue (Thalictrum dasycarpum).
- Culver's root (Veronicastrum virginicum).
- Oxeye (Heliopsis helianthoides).
- Yellow flag iris (Iris pseudacorus).
- Big bluestem (Andropogon gerardii).
- Switch grass (Panicum virgatum).
- Prairie dropseed (Sporobolus heterolepis).

Shady sites
- Alumroot (Heuchera richardsonii).
- Wild columbine (Aquilegia canadensis).
- Wild geranium (Geranium maculatum).

Some non-native perennials such as goatsbeard (Aruncus dioicus); bleeding heart (Dicentra spectabilis), and bigroot cranesbill (Geranium macrorrhizum), also do well in rain gardens.

Resources
- University of Minnesota Extension Service. (http://www.extension.umn.edu.)
Click on Yard and Garden Line.
Click on Yard & Garden News Archive.
Click on the May 1, 2001 article "Plotting to Infiltrate? Try Rain Gardens."

- Upper Swede Hollow Neighborhoods Association, 651-771-2659.

- Friends of Bassett Creek, 612-374-4849. (http://www.mninter.net/~stack/bassett/.
Click on Rain Gardens - Gardening with Water Quality in Mind.

- Metropolitan Council Environmental Services

An online manual on storm water management is at (http://www.metrocouncil.org/environment/watershed/bmp/manual.htm. Go to chapter 3, click on Infiltration Systems. Click on On-Lot Infiltration.

What makes a rain garden

A rain garden is a natural or graded low area planted with native vegetation that intercepts runoff. (They also are called storm water gardens, water quality gardens, mini-wetlands and infiltration basins.) The design depends on the soil, existing drainage patterns, the kind of garden you want and purpose.

Most rain gardens are:

- Located near flat surfaces, such as alleys, sidewalks, driveways and under downspouts and gutters so water will drain into the dip or depression.

- Include a shallow water ponding area (dip or swale) about 6 inches deep for water-loving plants.

- Have a strip of a grass buffer or ground cover on the top edge of the depression that slows down the water.

- Make sure to have a mix of appropriate plants that match the moisture conditions.

- Depending on your soil type or design, you may need an under-drain system or an overflow outlet. But a thick layer of mulch or grassy strip may do the trick.

- Need good soil to succeed. A blend of 20 percent organic matter, 50 percent sandy soil and 30 percent topsoil is recommended. For good drainage, soil should have no more than 10 percent clay.

- Water should soak into the soil within four days to prevent mosquito breeding.

- Rain gardens require routine weeding, pruning, some watering and mulching.