PLANT A RAIN GARDEN AND JOIN EFFORTS FOR CLEANER RHODE ISLAND WATERS
Rain Gardens Filter Stormwater Runoff

What is Stormwater Runoff?

During a rainstorm, rainwater that falls on roofs, parking lots, streets and sidewalks will collect and run downhill. On the way, rainwater picks up all kinds of debris: automotive fluids on streets, road salts, animal waste, fertilizers and insecticides, leaks from malfunctioning septic systems, etc.

This polluted water eventually enters the nearest body of water: a brook, pond or storm drain dumping into a nearby river.

A significant amount of local water pollution is caused by stormwater runoff.

A Rain Garden is located to catch stormwater runoff from parking lots, driveways and roofs.

This stormwater runoff flows to the lowest part of the garden, in the center, and soaks down into the soil. Soil and plant roots filter out pollutants.

Cleaner water continues down into the groundwater.

Rain Gardens are planted with native plants that don’t need extra insecticides and fertilizers that add to water pollution.

PLANTA RAIN GARDEN AT YOUR HOME OR BUSINESS.

Plant a Rain Garden to intercept:

- Rainwater coming from roof downspouts.
- Basement water discharged from sump pumps.
- Stormwater flowing off of paved driveways.
- Water running downhill off garden or lawns that receive fertilizers and insecticides.

WHAT ARE THE BENEFITS OF RAIN GARDENS?

- Decreases flooding that is caused by overloaded stormdrains.
- Cleaner water will enter nearby brooks, ponds and other bodies of water.
- Water trapped by Rain Garden replaces local groundwater supply.
Rain Garden in a neighborhood setting

**Plant Choices**
Choose native plants based on need for light, moisture, and soil. Vary plant structure, height, and flower color for seasonal appeal and butterfly habitat.

**Depth**
A typical rain garden is between four and eight inches deep. This depth proportionate to surface area helps ensure water will infiltrate quickly and not pond.

**Location**
Rain gardens are often located at the end of a roof gutter or drain spout, as a buffer between the lawn and the street.

**Size**
A rain garden is typically 3 to 10 percent the size of the impervious surface that generates runoff.

**Soil Amendments**
A good soil mix for rain gardens is 65 percent sand, 15 percent topsoil, and 25 percent compost.

Illustration by Doug Adamson
NRCS
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PLANTING YOUR OWN RAIN GARDEN

CHOOSE YOUR RAIN GARDEN SITE
1. First, decide if your Rain Garden will filter stormwater flowing from a roof, parking lot or fertilized lawn.
2. Watch this area during a rainstorm as the water collects and flows downhill. You could place your garden to intercept this flow or you could divert the flow to another area using underground pipes.
   *Plant the garden at least ten feet away from building foundations and septic systems to prevent water from entering these areas.*

HOW LARGE SHOULD THE GARDEN BE?
1. The size of your garden depends on your available space and budget. It also depends on the amount of stormwater that will flow into the garden. The more stormwater flowing into the garden the larger the garden will need to be to catch 100% of the flow.
2. If your goal is to control 100% of the stormwater runoff you can calculate the garden size based on the surface area of the stormwater runoff area. For instructions go to the web site: Rain Gardens: A How-to manual for homeowners. www.clean-water.uwex.edu/pubs/raingarden
3. You can also choose your own size. A Rain Garden that catches some of the stormwater is better than no Rain Garden at all.
4. Ideally, the length of the garden will be twice as long as the width. See the example below of a 200 square foot garden.

Stormwater ran off this parking lot into a nearby storm drain. We were able to divert stormwater into this Rain Garden site by digging a shallow trench to create a grassed swale at the parking lot edge leading into the garden.
SHOULD YOU REPLACE THE SOIL AT YOUR SITE?

1. The soil should allow rainwater to drain down at about 1 inch per hour. Sandy soils are best for drainage. If water pools for more than four hours, the location is not adequate.
2. The soil should also provide adequate nutrients for plants.
3. To learn simple methods to test your soil, go to the web site: Rain Gardens: A How-to manual for homeowners. www.clean-water.uwex.edu/pubs/raingarden
4. If needed, the soil can be replaced with a mixture of 50%-60% sand, 20%-30% compost, 20%-30% topsoil.

DIGGING THE RAIN GARDEN

1. Before you start digging, call Dig Safe (1-888-DIG-SAFE or 344-7233) to check for underground utilities in your chosen garden site.
2. Mark the borders of your garden edge.
3. Loosen all the soil in the garden to a depth of about 2.5 feet. Some people use shovels, some use backhoes.
4. If you hit bedrock, consider changing the garden site because the rainwater will not drain well.
5. Dig an inlet or shallow trench that will carry the flow of rainwater from the paved surface or roof downspout into the Rain Garden.
6. Your Rain Garden will be shaped like a basin with the lowest point in the center. Here the water will collect and drain down through the soil.
7. A Rain Garden is typically 4 - 8 inches deep at the center. You can choose your own depth or you can calculate a depth based on the slope of the garden edges. For instructions, go to the web site: Rain Gardens: a How-to manual for homeowners. www.clean-water.uwex.edu/pubs/raingarden
8. The edges of the garden should be higher so the stormwater will stay in the garden and drain down through the soil.
9. The following method can be used to help you measure garden depth from edge to center.
10. Place a stake on one edge of the garden and another stake in the center. Tie a string to the garden edge stake at the ground level. Tie the other end to the garden center stake. Use a carpenter level to make the string level with the garden edge.
11. Dig the garden so it gradually gets deeper with the center the deepest point. Again, you are making a basin shape.
12. Measure the center stake, from the string to the soil. Keep digging until you reach your chosen depth.

Desired depth for this garden is 5 inches.

The Rain Garden will become gradually deeper with the deepest part at the center.
CHOOSING THE NATIVE PLANTS

Following a rainstorm, a large amount of water will be directed toward the Rain Garden. Plants must be able to tolerate these soaking conditions. On the other hand, these same plants will need to grow well during the dry conditions between rainstorms. There are a variety of native plants that can survive despite these changes. You can find a list of Rhode Island native plants that can be used in Rain Gardens by going to the web site: URI Health Landscapes www.uri.edu/ce/healthylandscapes

You can choose trees, shrubs, vines, grasses and herbaceous plants with a wide variety of flower and berry colors, plant heights and blooming times.

The following plants were used in our demonstration Rain Gardens at Varieur Elementary School in Pawtucket and Woonsocket High School in Woonsocket.

- New York Ironweed (Vernonia noveboracensis)
- Silky Dogwood (Cornus amomum)
- Steeplebush (Spiraea tomentosa)
- Joe-Pye-Weed (Eupatorium maculatum)
- Spicebush (Lindera benzoin)
- New England Aster (Aster novae-angliae)
- Rough Goldenrod (Solidago rugosa)
- Switchgrass (Panicum virgatum)

For detailed information on individual native plant species go to web site: Natural Resource Conservation Service Plant Database at http://plants.usda.gov
MAINTAINING THE RAIN GARDEN

While the plants are young, you may need to water and weed occasionally. Once plants have grown larger and stronger, they will tolerate dry periods better and shade out any weeds. Because native plants have adapted to survive in the local environment, they don’t need the extra attention required by non-native plants: insecticides, fertilizers, frequent watering. Place mulch on top of the garden to prevent weed growth and maintain garden moisture.

LEARN MORE ABOUT RAIN GARDENS

Learn about research that tests the effectiveness of Rain Gardens.
Haddam Research/Demonstration Garden
http://clear.uconn.edu/raingarden/raingarden.htm

Learn more information about planting Rain Gardens.
University of Rhode Island’s Healthy Landscapes Program
www.uri.edu/ce/healthylandscapes

Learn how local high school students planted a demonstration Rain Garden and learned biology and ecology.
Northern Rhode Island Conservation District
http://nricd.org

Learn how city planners are using practical techniques, such as Rain Gardens, to protect local water quality.
Rhode Island Department of Environmental Management
www.dem.ri.gov/index.htm
Go to Publications, go to Watershed, see Urban Environmental Design Manual

Learn which native plants are for sale by two local nurseries.
New England Wetland Plants at 413-548-8000 www.newp.com
New England Wildflower Society at 508-877-7630 www.newfs.org/
Try Out This Idea

Plant a small 5 x 10 foot Rain Garden.

Plant 20 herbaceous plants
OR
12 herbaceous plants and 3 shrubs
OR
7 shrubs.

Allow 2 feet of space between each herbaceous plant.

Allow 9 feet of space between each shrub.

Fill in spaces between plants with mulch.

Choose from this selection

Selection of herbaceous plants:
- Eupatorium purpureum (Joe-Pye-Weed)
- Solidago rugosa (Rough Goldenrod)
- Aster novae-angliae (New England Aster)
- Thelypteris noveboracensis (New York Fern)

Selection of shrubs:
- Lindera benzoin (Northern spicebush)
- Sambucus canadensis (Elderberry)
- Vaccinium corymbosum (Highbush blueberry)