

APPENDIX D

Guidance on Creating Rain Barrels and Rain Gardens

This handout can be expanded to 11x17, tailored to a local watershed and laminated for use by homeowners in a public outreach program.

How to Build and Install a Rain Barrel



What Is a Rain Barrel?

A rain barrel collects and stores rainwater from your rooftop to use later for things like lawn and garden watering. Water collected in a rain barrel would normally flow through your downspout, onto a paved surface, and eventually into a storm drain.

Why Use Rain Barrels?

◆ Rain barrels help **lower water costs** (a rain barrel can save approximately 1,300 gallons of water during peak summer months).

- ◆ Storing rainwater for garden and lawn use helps **recharge groundwater** naturally.
- ◆ Rain barrels **reduce water pollution** by reducing stormwater runoff, which can contain pollutants like sediment, oil, grease, bacteria, and nutrients.
- ◆ Rain barrels are **inexpensive and easy** to build and install.

Instructions

Steps 1-3 below explain how to build and install your rain barrel. The supplies listed above can all be found at most home improvement and hardware stores. The 55-gallon drums are available for \$5 from the Pepsi Bottling Company in Baltimore, or you can purchase a ready-to-install barrel from the South River Federation. For more information contact the Rain Barrel Community Action Team at #410-721-0661 or actionteams@southriverfederation.org.

STEP 1. Cut Holes in Barrel

◆ Cut lower drain hole

Measure about 1 inch above the bottom of the barrel where the barrel side begins to rise toward the top. Using a 3/4" bit (or hole saw), drill a hole through the barrel.

◆ Cut upper drain hole

Mark the upper drain hole according to where you want the overflow to be located in relationship to the lower drain. Use a 1-5/8" hole saw to cut out the overflow hole.

◆ Cut top hole for atrium grate (filter)

Using the atrium grate as a template for size, mark a circle at the center of the top of the drum (locating the rainwater inlet in the center of the barrel lets you pivot the barrel without moving the downspout). Drill a 1/2" hole inside of the marked circle. Use a router, jigsaw or coping saw to cut until the hole is large enough to accommodate the atrium grate, which filters out large debris. Don't make the hole too big – you want the flange of the atrium grate to fit securely on the top of the barrel without falling in.

◆ Cut notch to hold hose

Using a 1/2" bit or hole saw, cut out a notch at the top of the barrel rim (aligned so that it is above the lower drain hole). The notch should be large enough so that the end of the hose with the adapter will firmly snap into place.

STEP 2. Set Up Barrel and Modify Downspout

◆ Set up barrel

Since water will only flow from the garden hose when the hose is below the barrel, place the barrel on high ground or up on cinder blocks or a sturdy wooden crate underneath your downspout.

◆ Modify your downspout

Cut your existing downspout using a saw so that the end can be placed over the top of your rain barrel. Use a 3" vinyl downspout elbow to connect the two downspout pieces (or use a downspout adapter and a piece of corrugated plastic pipe). Trim the end of the downspout if necessary.

STEP 3. Assemble Parts

◆ Attach garden hose to lower drain hole

Screw in the 1/2" PVC male adapter to the lower drain hole. The hard PVC threads cut matching grooves into the soft plastic of the barrel. Unscrew the 1/2" PVC male adapter from the hole. Wrap threads tightly with teflon tape (optional). Coat the threads of the coupler with waterproof sealant (optional). Screw the coated adapter back into the hole and let it sit and dry for 24 hours (optional). Attach 5' foot garden hose to the PVC male adapter. Attach the 3/4" x 1/2" PVC male adapter to the other end of the hose (this can be readily adapted to fit a standard garden hose).

◆ Attach drain hose to upper drain hole

Put the 1 1/4" male threaded coupling inside the barrel with the threads through the hole. From the outside, screw the 1 1/4" female barbed fitting onto the threaded coupling. Use silicone on the threads (optional). Attach 5' section of drain hose to upper fitting.

◆ Place atrium grate and screen in top hole

Using PVC glue, secure a piece of fine mesh window screen inside or outside of the atrium grate to filter out debris and control mosquitoes (optional). Place the atrium grate into the hole (basket down).

◆ Position the downspout

Position the end of your downspout so it drains onto the atrium grate on the rain barrel.

SUPPLIES

- ✓ One 55-gallon drum
- ✓ One 5' section vinyl garden hose (3/4" OD x 5/8" ID)
- ✓ One 4" diameter atrium grate (basket used in garden ponds and pool skimmers)
- ✓ One 1/2" PVC male adapter
- ✓ One 3/4" x 1/2" PVC male adapter
- ✓ One 5' section of drain hose, drain line, or sump pump line (1-1/4")
- ✓ One 1-1/4" female barbed fitting and one 1-1/4" male threaded coupling
- ✓ One vinyl gutter elbow
- ✓ Drill (or a hole saw)
- ✓ Router, jig saw or coping saw
- ✓ Measuring tape

Optional

- ✓ Waterproof sealant (silicone caulk, PVC glue)
- ✓ Teflon tape
- ✓ Fiberglass window screen material or mosquito netting
- ✓ Cinder blocks or wooden crate

Sources

Pepsi Bottling Company

Charlie Dickerson #410-366-3500

South River Federation

Rain Barrel Community Action Team
#410-721-0661
actionteams@southriverfederation.org

Arlington Echo Outdoor Education Center

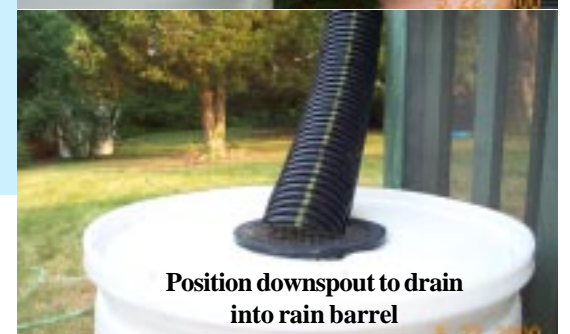
www.arlingtonecho.org

Maryland Green Building Program

www.dnr.state.md.us/smartgrowth/greenbuilding/rainbarrel.html

Weems Creek Conservancy

www.weemscreek.org



This instructional flyer was created by the South River Federation and the Center for Watershed Protection August, 2002



This project was funded through a grant from the Chesapeake Bay Trust



How to Install a Rain Garden

What Is the South River Federation?

The South River Federation (SRF) is a non-profit organization dedicated to restoring, protecting and preserving the South River watershed. For more information on how you can help protect the South River or for information about membership, rain barrels or rain gardens, visit SRF's website at www.southernriverfederation.net or, call Drew Koslow SRF president, at #410-990-9173 or send email to membership@southernriverfederation.org

What Is a Rain Garden?

A rain garden uses native landscaping to soak up rain water from your downspout. The middle part of the garden holds several inches of water, allowing it to slowly infiltrate into the ground instead of being delivered to the stormdrain all at once.

Why Install a Rain Garden?

A rain garden allows 30% more water to infiltrate into the ground than a conventional lawn. This helps replenish the groundwater supply (important during a drought!), and reduces the amount of pollution that reaches our streams through stormwater runoff. Since studies show that the first inch of rainfall is responsible for the bulk of the pollutants in stormwater, a rain garden is designed to temporarily hold water from a one-inch rainstorm, and slowly filter out many common pollutants like sediment, oil, grease and nutrients. Rain gardens require less watering and fertilizer than conventional lawns, and provide habitat for birds and butterflies.



Source: Roger Bannerman



Source: Corinne Reed-Miller

15 feet 15 feet 1/4 of the roof drains to one downspout = 15' x 15'



lay out the site

Source: Roger Bannerman



dig down 3-4 inches

Source: Corinne Reed-Miller



add plants

Source: Corinne Reed-Miller



a beautiful two-year old rain garden!

Source: Roger Bannerman

Sources

Weems Creek Conservancy www.weemscreek.org

Rain Gardens: A household way to improve water quality in your community University of Wisconsin -Extension and Wisconsin Department of Natural Resources <http://clean-water.uwex.edu/pubs/raingarden/gardens.pdf>

Instructions

Follow the three steps below to install a rain garden in your yard. Materials you'll need include plants for the garden (see plant list below); a hose, rope or string; a level; a shovel or spade; humus or other soil amendments (optional); a measuring tape; and a downspout extension (also optional).

Step 1: Size and Locate your Rain Garden

First, measure the footprint of your house and determine how much of your rooftop area drains to the downspout you're using for your garden (for gutters with a downspout at each end, assume that half the water goes to each downspout). Be sure you measure the house footprint only; do not take the roof slope into account. The surface area of your rain garden should be between 20% and 30% of the roof area that will drain into the rain garden. Locate the garden at least 10 feet away from the house (to prevent soggy basements), and maintain a minimum 1% slope from the lawn down to the rain garden (you can also create a shallow ditch to ensure the water flows from roof to the garden, or use a downspout extension to direct the flow into the garden). Lay out the boundary of the garden with a rope.

Rain garden sizing example:

30' x 30' house area

1/4 of this area drains to one downspout

15' x 15' = 225 ft²

20% of 225ft² = 45ft²

30% of 225ft² = 67.5ft²

The rain garden area should be between 45 and 67.5 square feet, depending on soil type (use 20% for sandier soils).

Step 2: Dig the Rain Garden

To enable the rain garden to hold several inches of water during a storm, you'll have to dig a hole 3-4 inches deep across the entire surface of the garden. If the soil lacks organic material, you can improve it by digging the hole 5-6 inches deep, and adding 2-3 inches of humus or other organic material. Make sure the bottom is level. Next, test how the garden will hold water during a storm by letting water flow into the rain garden from a hose placed at the downspout. Based on this test, make any necessary adjustments (e.g., create a berm on the lower side of the garden using the diggings, or use a downspout extension or shallow ditch to direct the water into the garden).

Step 3: Add Plants to the Rain Garden

Choose drought-tolerant plants that won't require much watering, but make sure they can withstand wet soils for up to 24 hours. A list of native plants that meet these criteria is provided below. Also take into account how much sun your garden receives. It's often helpful to draw out a planting plan before you start, and mark planting areas within the garden with string. After planting, weeding may be required until the plants become more established. You may also need to periodically prune some of the plants to let others grow. In the winter, leave dead or dormant plants standing and cut back in the spring. Your garden may need a bit more maintenance than a lawn in the beginning, but in the long run it will be easier to care for and provide many added benefits!

Native Plants for Rain Gardens

☀ = sun or part sun ☀☁ = part sun/part shade ☁ = shade

Ferns

- ☀ rattlesnake fern
- ☀ hay-scented fern
- ☀ Grasses
- ☀ blue wood sedge
- ☀ Canada wild rye
- ☀ bottle brush grass
- ☀ Virginia wild rye

Perennials

- ☀ butterflyweed
- ☀ New England aster
- ☀ joe-pye weed
- ☀ wild snakeroot
- ☀ cardinal flower
- ☀ wild bergamot
- ☀ blue-eyed grass

- ☀ Solomon's seal
- ☀ black-eyed Susan
- ☀ wild pink
- ☀ purple coneflower
- ☀ yellowflag iris
- ☀ St. John's wort
- ☀ early goldenrod
- ☀ daylily

- ☀ hosta
- ☀ grass-leaf blazingstar
- ☀ Shrubs
- ☀ mountain laurel
- ☀ highbush blueberry
- ☀ spicebush
- ☀ inkberry
- ☀ sweet pepperbush

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