

Guide to using RAIN BARRELS

(Information compiled from a variety of resources)



From this...

*Rain Barrels are
one component of
a water-efficient
landscape.*



... to this .

**This information is provided by:
James River Soil & Water Conservation District**

This booklet is designed to educate homeowners and businesses about harvesting rainwater by using a small rain barrel. Harvesting rainwater allows the property owner to supplement watering sources at a minimal cost. Storing rainwater also aids in the reduction of stormwater runoff, which can lead to reduced levels of pesticides and fertilizers in stormwater ponds, streams, lakes, and rivers. When we experience drought conditions, having extra water on hand is a good idea.

This booklet focuses only on storing rainwater for nonpotable outdoor uses as a supplement to natural rainfall and other sources of outdoor water consumption. We will cover only simple collection and distribution methods related to landscape watering.



Benefits of a Rain Barrel

Rain water harvesting is always beneficial, whether the water is used to water one houseplant or an entire garden. Also, the act of collecting rainwater can be an inspiration to find other ways to conserve water around the home.

Many homeowners are making rain barrels out of 50—55 gallon food-grade drums that were used to carry food products, such as juices, olives, pickles, etc.

Although a small rain barrel may not provide all the water needed to sustain your lawn or garden, it can certainly supplement your current watering schedule. Planter beds, vegetable or flower gardens and potted plants can easily be irrigated with the water from a rain barrel. The water savings from using stored rainwater rather than municipal or well water can be substantial over a period of time. A rain barrel can also reduce the amount of water that may settle around the foundation of your home.

How Much Rain Water Can I Collect?

For a general calculation, you can collect about a half gallon of water per square foot of roof area during a 1-inch rainfall. As an example, a house with a 2,000-square-foot roof can collect about 1,000 gallons of water (*the actual amount of rain that falls on your roof is about 20 percent more, but some is lost to evaporation, runoff and splashing*). This is a substantial amount of water, and a large cistern would be needed to collect all of it. To calculate your volume of water, use only that portion of the roof or catchment area that is actually feeding your storage tank. To get a more accurate figure on the gallons collected, you would have to take the slope of the roof into account. A roof with a steep slope would collect less rainwater than a flatter roof, even if they both have the same square foot area.

As you can see, it doesn't take much rain to fill a small rain barrel. A typical ½-inch rainfall event will fill a 50- to 55-gallon barrel. It is a good idea to add an overflow outlet/pipe near the top of the barrel. This will divert any excess water to another part of the yard, which can reduce the amount of water that settles around the foundation of your house.

To store even more rainwater, multiple rain barrels can be linked together with hard PVC or flexible hose. Although you can use small diameter pipe or even a garden hose, large diameter pipe or tubing (1.5"-2") will be able to carry more rainwater during a heavy thunderstorm and will prevent water from possibly backing up the downspout. Steps to connect an overflow outlet and link barrels together are covered later in this booklet.



How Many Gallons of Water Run Off My Roof?

Use the basic calculation below to determine how many gallons of rainwater can be harvested from your roof.

📌 **Estimate the drainage area of your roof: (Length x Width).**

Example: Length of roof = 40' Width of roof = 20'

(Calculate the area of the roof that is draining to one gutter. If there is a ridge or peak in your roof, this separates the roof into drainage areas, calculate the individual drainage areas.)

📌 **Estimate the depth of rain:** (In Coastal Plains VA, use an estimate of 44" of rain per year or 3.7 feet)

Example: annual depth of rain = 3.7' (44" ÷ 12" per foot = 3.7')

(You can also use a depth of rain from a specific rainfall, just be sure to convert it into 'feet' units.)

📌 **Calculate the Volume:** (Length x Width x Depth)

Example: 40'L x 20'W x 3.7'D = 2800 cubic feet

📌 **Convert the Volume into Gallons:** (Multiply Cubic Feet by 7.48 for Gallons)

Example: 2800 cu ft x 7.48 = gallons

(An average of 20,950 gallons of rainwater could be harvested from the 40x20 roof during one year.)

To calculate the number of gallons from a 1 rainfall event:

$40L \times 20W \times .08 D = 66.7 \text{ cu ft volume} \times 7.5 \text{ gal/cf} = 500 \text{ gallons of rain}$

Imagine collecting 1,837,500 gallons of water in one year from the roof of a 70,000 sq. ft. big box retail store!!

Painting Your Rain Barrel

When it comes to being creative, you're only limited by your imagination!

Painting your rain barrel is not only a fun project, but it will help to protect the surface of the barrel from breaking down, due to the harsh effects of the sun.

There are several methods you can use to paint your barrel. There are also several types of paint available -- and endless colors to choose from --in retail stores.

Outdoors acrylics and spray paint work well, but the barrel must first be primed so that these materials adhere properly to the surface. A newer product on the market is a spray paint designed specifically for outdoor plastic furniture, but it will work on almost any plastic surface. The benefit to this product is that the barrel does not have to be primed before application of the spray paint.

Regardless of what type of paint with which you choose to decorate your barrel it is a good idea to apply a couple of coats of polyurethane to protect your work.

To prime your barrel:

1. Thoroughly clean the exterior surface of the barrel by wiping away excess dirt and grime with a clean rag soaked in a 1:1 mixture of vinegar and water
2. Using a fine to medium grade sandpaper, "rough up" the surface of the barrel.
3. With a dry cloth, wipe the barrel again to get ride of any fine plastic shavings.
4. Apply one coat of outdoor primer. Primer is typically white, but it can be mixed with another paint color or tinted to match the final design color of the barrel. Allow the primer to dry, according to the directions on the container.

Now the barrel can be painted any way you like - by stencil, a pattern, freehand, etc. You can even use some leftover exterior paint to make it match the walls of your house! Allow the paint to dry completely before applying 1 to 2 coats of polyurethane. Allow the polyurethane to dry in between coats.



Installing Your Rain Barrel

1. Level the dirt under your down spout. Use sand to make it even.
2. The higher the barrel, the better the water pressure. For higher water pressure, use bricks, cinderblocks or treated wood under the barrel. Remember: water weighs 8 pounds per gallon, so full barrels weigh more than 400 pounds.
3. Remove the curved end of your downspout, and set it aside. Measure and cut off part of your downspout using a hacksaw. Save this part of the downspout for use in the winter when you store your rain barrel.
4. Put your barrel in place, and reattach the curved end of the downspout so water will go into the barrel.
5. ALWAYS keep a screen on the rain barrel to avoid mosquitoes. Mosquito dunks may also be used in the barrel. Dunks slowly release Bt (*Bacillus thuringiensis* subspecies *israelensis*) as they float in the water, killing mosquito larva. A few drops of vegetable or olive oil floating on the water's surface will also prevent mosquito larvae from developing.
6. Attach a length of hose or plastic piping to the overflow hole so mosquitoes can't get in the barrel.
7. You can connect two barrels to each other by connecting a section of hose from one overflow hole to the other.
8. If you are concerned about cats or other animals cutting the screen, secure hardware cloth (metal mesh) on top of the screen



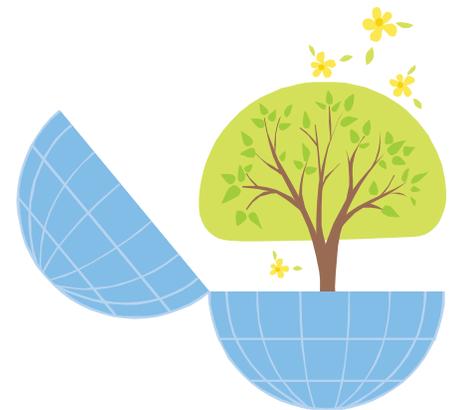
Caring for Your Barrel

1. After two or three years, you will have to replace the screen if it becomes torn. Fiberglass screening can be found in any hardware store. Metal screening can also be used.
2. To make your barrel last longer, empty it in late fall, and store it. Reattach the downspout section that you cut off earlier.
3. If your roof has many leaves, twigs, etc., then empty your barrel once or twice during the summer to remove organic materials.
4. Use the water within a week or two – a rain barrel is not meant to be long-term storage

Other water stewardship tips

Now that you are committed to using rain barrels under your downspouts to conserve water and reduce stormwater runoff, here are other actions you can take to improve water quality:

- ◆ Prevent pollution by using non-hazardous cleansers, paints, solvents, and pesticides.
- ◆ Reduce polluted runoff from your property by picking up pets' waste, fertilizing your lawn sparingly, and controlling any erosion.
- ◆ Become an environmental steward by organizing or participating in a Virginia Waterways Cleanup Event (part of the International Coastal Cleanup). Call CVW to register a cleanup event, or see our web site for information.
- ◆ Start a compost pile.
- ◆ Plant a diverse mix of native plants, and choose plants that attract birds, bees and other pollinators.
- ◆ Fertilize your lawn only in the fall when the grass needs it.
- ◆ Minimize the size of your lawn; maximize your gardens.
- ◆ Mulch around plants to reduce the need for watering.
- ◆ Control pests naturally – hand-pull weeds and use natural predators.
- ◆ Become a water pollution-prevention educator. Teach others about the harm pollution (including litter) causes to our communities, environment, wild animals, & human health.
- ◆ Install rain gardens, porous pavement and use other “Low Impact Development” methods to reduce polluted runoff.
- ◆ Drive fewer miles, reduce the amount of waste your household produces, pick up litter, and recycle materials as much as possible.
- ◆ Learn more about protecting Virginia's water resources:



Clean Virginia Waterways' Web Site: www.longwood.edu/cleanva

Other excellent sources of environmental information:

Alliance for the Chesapeake Bay: www.alliancechesbay.org

Virginia Naturally: www.vanaturally.com/

Frequently Asked Questions

What are the benefits of using a rain barrel? *Rain barrels reduce the volume of runoff, conserve water for reuse, provide irrigation during drought times, save money and energy, protect watersheds, provide fresh & clean water and it is free!*

Is maintenance required with my rain barrel? *If your rain barrel is properly installed, it should require very little maintenance. Periodic inspection of the tank for cracks or buildup of debris on the bottom be needed. Exposure to sunlight may make some of the barrel become brittle over time. Painting the barrels make them last longer. During winter months you should disconnect hoses and open the faucet to prevent damage from freezing.*

What about mosquitoes? *Mosquitoes and other insects are always attracted to standing water. The top of your barrel is covered with a screen that will prevent insects from getting into the barrels. If keeping mosquitoes out of the barrel become a real concern, there are products available at home centers that will prevent mosquitoes from breeding.*

Will my rain barrel tip over? *Water weighs a little over 8 pounds per gallon, so a 50-gallon rain barrel will weigh over 400 pounds when full. If you have small children or pets and are concerned that the barrel might tip over, you may want to strap or attach the barrel to a nearby wall or other stable structure. Any type of frame can be built around the barrel. If the barrel sits on a level and stable platform, tipping over is not a problem.*

How can I increase water pressure? *Set the barrels on block or a platform. The higher the barrels, the greater the pressure. If you are using sprinklers, be sure they are low-pressure sprinklers.*

What about water quality? *The quality of rainwater shedding off a roof or gutter system is more that adequate for plants. The water can contain some levels of algae, roofing chemicals or bird droppings. These are not a concern for nonpotable uses or occasional contact by the homeowner.*



Try to do one thing each day to save water. Every drop counts and every person can make a difference!