

Master Watershed Steward Program



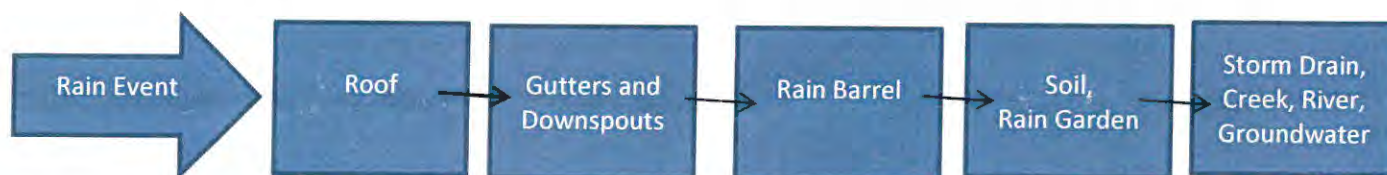
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What is a Rain Barrel?

A rain barrel is a container that captures rain water from rooftops (that water is called stormwater runoff). Rain barrels come in several different shapes and sizes, but they all do the same thing: they save water and decrease stormwater runoff into creeks. Rain barrels sit underneath a building's downspout to collect water from the roof during each rain event; the water from the rain barrel can then be used to water plants in your yard.

Residential Stormwater Management System

- The rain barrel is one piece of the system used to handle the stormwater from your residence.
- The system starts with the rain shower (event) that supplies the water.
- The house roof stops the water and flows it down to the gutters and downspouts.
- The rain barrel takes the water from the downspout and accumulates the stormwater from the rain event until the barrel is full.
- If the amount of water from the rain event is greater than the available space inside the rain barrel, the surplus water flows out an overflow fitting and onto the soil and potentially into a raingarden.
- If the amount of water from the rain event is greater than the ability for the soil and rain garden to absorb, the surplus water then overflows your property into the storm drain and then eventually into a creek and river.



Rain Barrel Benefits

Save drinking water resources. On average, nearly 30% of our daily water use is attributed to lawn and garden care. Collecting water from rain events decreases the amount of drinking water used to water plants and after all, clean, fresh water is a limited, precious resource!

Decrease water and sewer bills. Capturing rain water also keeps money in your pocket by reducing the amount of water needed from municipal sources.

Utilize higher quality water for plants. Water collected from rain events is better for plants than treated water (which often contains chlorine).

Rain Barrel Siting

The rain barrel accepts water from that portion of your roof that is served by the downspout to which the barrel is connected. Ideally the rain barrel should be located so that the water coming off the roof from the average rain event approximately equals the capacity of the barrel. In York, PA the average rain fall during a rain event in May 2018 was 0.36 inches. The following equation is used to do the siting calculation.



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$$(Inches\ of\ rain\ per\ rain\ event) \times (Sqft\ of\ Roof) \times (0.6\ conversion\ factor) \\ = Gallons\ to\ rain\ barrel\ per\ rain\ event$$

Therefore for a 65 gallon barrel and a 0.36 inch rain event, we would like to drain approximately 300 square feet of roof. If we drain less roof area, there may sometimes be unused space in the barrel (not necessarily a bad thing). If we drain more roof area, we will need to use the barrel overflows more often.

Rain Barrel Components



The rain barrel supplied by the Master Watershed Stewards is made up of plumbing fittings and other components that allow water to flow into the barrel, keep the water inside the barrel clean and flow the water out of the barrel so that it can be used for watering plants (spigot, hose bib), or to direct excess stormwater overflow (fitting and hose) to prepared areas of your yard (swale, rain garden, etc.). The MWS Rain Barrel User's Manual which is a companion to this document deals with the fitting dimensions and method of rain barrel assembly.

When a 65 gallon rain barrel is full of water, it will weigh approximately 520 pounds. For safety and sustainability reasons the homeowner should plan to build a platform to hold the rain barrel. The platform should be approximately 8 inches high and approximately 24 inches in depth and 30 inches in width.

As described in detail in the MWS User's Manual there are 3 options for platform construction:

1. 4X4 treated wood posts.
2. Concrete blocks (shown here).
3. Combination of concrete blocks and treated wood boards.

Rain Barrel Maintenance & Contamination

- Remember to keep your rain barrel drained in the winter months. Freezing and thawing of water can crack the rain barrel components.
- Clean out the screen and tank periodically to remove any debris that has settled.
- Lead the overflow hose into an existing garden or plant a rain garden to receive the excess water.
- Note that the water is not drinkable. The water collected from the roof can be laden with leaf litter, bird droppings (potential for bacteria), dust, other airborne materials, and chemicals from roof material. It is best to use the water on inedible plants such as the lawn or flowers. The water can be used on vegetable plants, but to ensure safety, make sure to water near the base of the plant and avoid the fruit and foliage, especially in leafy greens.
- Specifically avoid watering edible plants if you have an old tar and gravel, old asbestos shingle roofs, treated wood shingles or shakes, copper roofs and if you have a zinc anti-moss strip. Also, pay attention to the type of gutter you have, since some may be coated with lead-based paints.

How to build an MWS rain barrel -1

Start Building Your Barrel

York County Master Watershed Stewards provide this user's guide to assist in rain barrel assembly during our workshop. The user is responsible for the proper installation and maintenance of their rain barrel at their desired location.



Step 1 of 6

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How to build a rain barrel -4

STEP 1a: Bung-port adaptor installation

- o Place debris screen over top of the adaptor and secure with rubber band.
- o Slide 3" hose clamp over the 2" bung-port adaptor, do not tighten the hose clamp.



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Parts and Tools-2

Parts	Tools
<ul style="list-style-type: none"> o HDPE Barrel o 2" Adaptor (2nd as overflow fitting is optional) o Debris Screen o 3 1/2 X 1/4 inch Rubber Band o 3" Pipe Clamp o Flexible Elbow o 1/2 inch Spigot o 1/4 inch Male Hose Adaptor (standard overflow fitting) 	<ul style="list-style-type: none"> o Tape Measure o Magic Marker o 3 inch scraper o Flat head screw driver or 5/16 inch nut driver o Bung Wrench (or equivalent) o Power Drill o 1/4 inch spade bit o 1/2 inch thread cutter (optional) o 2 1/2 inch hole saw (for optional 2 inch overflow) o 2 inch thread cutter (for optional 2 inch overflow) o 15/16 inch spade bit o 1/4 inch thread cutter o Deburring tool (or equivalent) o Plumber's Teflon Tape


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How to build a rain barrel-5

Step 2: Install Flexible Elbow

(At the workshop)

- o Find narrower end of the flexible elbow.
- o Force the narrow end of the flexible elbow over the 2" bung port adaptor so that the adapter is inside the elbow and the hose clamp is outside the elbow.





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How to build a rain barrel-3

STEP 1: Bung-port adaptor installation

- o On barrel top locate fine (NPS) & coarse (Buttress) threaded bung port openings
- o Screw 2" bung-port adaptor into the NPS opening

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How to build a rain barrel -6

Step 2a: Install Flexible Elbow

(At the workshop)

- o Using a flat head screw driver, tighten the hose clamp to fasten the flexible elbow to the 2" adaptor.



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Spigot Details-13



- Spigot hole drilled prior to workshop.
 - Lay barrel on it's side with bung-port adaptor on the bottom (closest to ground)
 - On the top-side of barrel measure approx. 5" (V2 design) up from bottom and mark
 - Drill 3/4" hole in the barrel for the 1/2" spigot.




Painting Option -16

Painting HDPE material requires special procedures.



- Abrade surface with scotch bright.
- Wash off dust, and dry.
- Use (spray) primer for plastic material.
- Use (spray) paint for plastic material (2 coats).
- Pay attention to edges. Paint will start to peel from edges first if surface prep is inadequate.

Rain Barrel Platform Details -14

Platform provides stability and elevation.

- Standard Dimensions:
 - Height=8 inches
 - Width=32 inches
 - Depth=24 inches.
- May use:
 - Concrete foundation blocks (8 inch X 8 inch X 16 inch) (shown).
 - (Or) Treated Stacked 4X4 posts (alternative).

Overflow Details -15

Overflow plan absolutely necessary.

- Decide which side of barrel for overflow.
- Use hose to direct overflow stream to swale, or raingarden.
- Std Dimension:
 - 3/4 inch garden hose adapter, 4 inches from top of barrel (use 15/16 inch drill).

