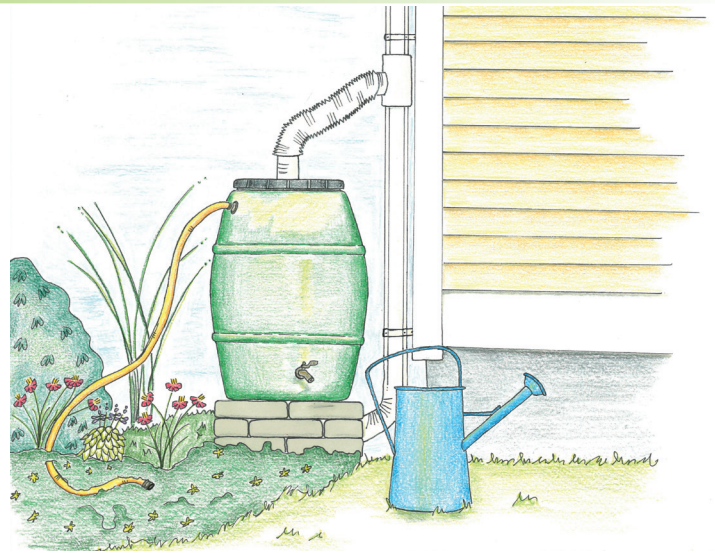


RAIN BARREL

A rain barrel captures rainwater from your roof to reduce runoff from your property and provide you with water for lawns, gardens, and indoor plants to use in dry weather.



SIZING AND DESIGN

STEP 1. Observe your roof runoff. Note where you have existing roof gutter downspouts, roof valleys or edges that drain large amounts of water.

STEP 2. Calculate the runoff volume. To determine how many rain barrels you need and whether you should designate an area to direct the rain barrel overflow, you need to know the volume of water the barrels will receive during a typical rain storm. Most storms in New Hampshire produce one inch or less of rain so designing for a 1-inch storm will capture most of the runoff volume as long as the barrels are emptied between storms.

Complete steps a. through d. to calculate runoff volume.

a. Calculate the square footage of the drainage area:

$$\text{DRAINAGE AREA LENGTH (ft)} \times \text{DRAINAGE AREA WIDTH (ft)} = \text{DRAINAGE AREA (ft}^2\text{)}$$

b. If multiple areas will be directed to the rain barrel, calculate the square footage of each and add them together .

c. Find the volume of stormwater from the total drainage area for a 1-inch storm by dividing the drainage area by 12 to convert the inch to feet:

$$\text{TOTAL DRAINAGE AREA (ft}^2\text{)} \div 12 \text{ INCHES} = \text{STORMWATER VOLUME (ft}^3\text{)}$$

d. Most rain barrels give the holding capacity in gallons. Convert the cubic feet to gallons by multiplying by 7.48.

$$\text{STORMWATER VOLUME (ft}^3\text{)} \times 7.48 \text{ GALLONS} = \text{STORMWATER VOLUME (gallons)}$$

EQUIPMENT & MATERIALS

- ↳ Purchased or home-made rain barrel (food grade)
- ↳ Downspout diverter (purchased or made)
- ↳ Shovel
- ↳ Cinder block or other elevated base
- ↳ Level

OPTIONAL

- ↳ Soaker hose
- ↳ Crushed stone
- ↳ Mulch
- ↳ Splash guard

STEP 3. Determine how many rain barrels are needed. Attempt to capture the volume from a one-inch storm.

STORMWATER VOLUME (gallons) ÷ RAIN BARREL STORAGE CAPACITY (gallons) = NUMBER OF RAIN BARRELS NEEDED

STEP 4. Address the overflow. Be sure to note where the overflow will go during large storms. Avoid directing the overflow next to building foundations. Plan to use a splash guard, install a soaker hose, or build a slight swale to direct overflow away from your home and into an area where it can be absorbed, such as a naturally vegetated area, a rain garden, or dry well.

TIP: If more than one rain barrel will be needed to capture a one-inch storm:

- Rain barrels can be linked together so that the overflow from one goes into the next.
- You can plan to capture smaller storms and designate an area to receive overflow.

INSTALLATION

STEP 1. Level the area. Once you have determined where you want your rain barrels to go, level the ground surface. You can use crushed stone or mulch to stabilize the ground.

STEP 2. Install blocks or stand. Elevating the rain barrel is necessary to allow room for a watering can, bucket, or hose attachment under the spigot. Elevating the barrels will also create stronger water pressure. Place the blocks or other materials to create a stand on the leveled ground and recheck for level. Adjust as needed to achieve level.

TIP: Your rain barrel must be secured on a firm, level surface. A full, 55-gallon rain barrel weighs over 400 pounds.

STEP 3. Connect the downspout to the rain barrel. Flow diverters allow you to easily direct flow from your gutter downspout into your rain barrel during warm seasons. They can be closed during winter month, which allows your gutter to operate normally. To install the diverter, temporarily place the rain barrel on the blocks to mark where the diverter needs to be installed. Cut the gutter with a hand saw and install the diverter per the instructions, at a height that allows the water to flow from the diverter into the barrel. If not using a flow diverter, the gutter downspout can be directed or connected directly to the barrel.

STEP 4. Install the rain barrel.

- Place the rain barrel on the blocks or stand.
- Direct flow from gutter downspout or diverter into the barrel.
- Cover the open top of the rain barrel with screen to prevent mosquitoes from breeding in the standing water and to reduce the amount of debris entering the barrel. Most rain barrels that you purchase pre-made will come with a screened cover.
- Direct the overflow hose from the rain barrel to a vegetated area or another stormwater practice, where it can soak into the ground.

MAINTENANCE

INSPECT: Check after storms to determine how soon you need to empty the barrel. Remember that a rain barrel only works if it has space to contain more water.

EMPTY: Empty the rain barrel between storms or, at a minimum, when full. The water can be used on perennial gardens, house plants, and other non-potable or non-drinking water needs. Carefully consider what you water with your rain barrel. This water has the potential to contain pollutants from your roof that you may not want to come in contact with vegetables or other edible crops.

CLEAN: Keep the screen clear of debris and clean with a soft brush as needed. Periodically clean out the inside of the barrel if debris has collected. Keep gutters and downspouts clean and clear to prevent debris, such as leaves and pine needles from entering the rain barrel.

WINTER STORAGE: It is recommended in New Hampshire that you completely empty your rain barrel and store it indoors through freezing winter months. When the rain barrel is removed for the season, the gutters and downspouts should be returned to their normal function to drain the roof during winter storms. This can be done by closing or removing the diverter and extending the downspout back to the ground.

BUILD YOUR OWN RAIN BARREL

Pre-made rain barrels are available in many sizes and styles. They range in price from \$50 to over \$200. To save money, you can make your own rain barrel out of a food grade drum and plumbing parts that you can find at most hardware stores. An internet search of "How do I make a rain barrel" will result in a long list of how-to sites and videos like this one <http://www.instructables.com/id/Rainwater-harvesting-Rain-Barrel-DIY/?ALLSTEPS#step1>. Whatever instructions you follow, we recommend using a food grade drum and avoiding trash barrels, which may not be sturdy enough to stand up to the pressure of being full of water.

DESIGN REFERENCES

Vermont Department of Environmental Conservation. *[Low Impact Development Guide for Residential and Small Sites](#)*. December 2010.