Rain Barrel Installation: Step-by-Step Instructions *(Detailed Information for Website)*

1. **Site Observation and Assessment**

   To determine if a rain barrel is right for your site, first walk around the property to evaluate site conditions and identify the drainage area. Observe the path of runoff as it travels from your rooftop and other hard surfaces to its drainage area. Look closely to see if the building's downspouts attach to standpipes that carry runoff to the underground piping system or if stormwater drains into a vegetated area above ground. These observations will help to determine the current drainage area for your site.

   A. Mapping and Calculation

   Draw a map of your property with onsite structures. Be sure to add locations of all downspouts and your roofline. Estimate the square footage of both roof and paved areas (or impervious surfaces), and map the current path of runoff. In addition, map out any vegetation or other permeable surfaces that allow water to infiltrate the ground.

   B. Site Considerations

   Homeowners need to ensure any work complies with municipal regulations and safety guidelines regarding construction and stormwater management. Refer to your municipal ordinances regarding these issues.

   Consider the following before rain barrel installation:

   - **Overflow:** Barrels require an overflow component to divert excess water to a safe discharge point. A rain barrel is not a stormwater disposal method; it is a way to capture a small portion of the rainwater flowing off your rooftop. The rest of the runoff will still need to be discharged to an approved location. In areas with soils that drain well, overflow can be directed from the barrel directly into your yard or landscaped area.
   - **Level Surface:** Rain barrel must be installed on a firm, flat surface near chosen downspout and secured in place. A full 55-gallon barrel weighs over 400 lbs., and tipping is a risk if set on uneven ground or unsecured.
   - **Structurally-sound:** Choose the proper container. Food-grade barrels are designed to hold liquid, while trash cans are **not** designed to withstand the pressure of the water being contained.
   - **Inlet/Outlet Protection:** Barrel should have a sturdy lid and fine mesh screen covering all openings to prevent debris from entering the container, thereby controlling insects such as mosquitoes.
   - **Water Collection:** Only collect roof water for reuse. Do not use water from parking or pedestrian areas, surface water runoff, or bodies of standing water. If you apply any products to your roof (such as those used for moss control), be sure the solution is garden-safe when using the stored rainwater for crop irrigation. Water from a rain barrel should **never** be used for drinking, cooking or other potable uses.
   - **Additional Criteria:** Take note of the stormwater discharge point for the downspout you are planning to connect to your rain barrel. Find out where the rainwater currently drains. (It most likely either flows into a standpipe or a vegetated area in your yard.) If your rain barrel will overflow into a standpipe, it must be attached and sealed to the standpipe opening. If the downspout presently drains to a surface infiltration area, the overflow from your barrel should also drain to that location. If you wish to change your discharge point from a standpipe to surface

infiltration area in your yard, this may be an option as well. Regardless, all safety standards and legal guidelines must be met for project.

2. Installation Plan

After site assessment is complete, devise a plan for placement, assembly, connection and overflow of your rain barrel. Consider where you will be using the water that collects in your barrel and choose a level ground surface for placement. It may be possible to re-hang the gutter and move downspout to a more desirable location; however, keep in mind that the barrel should be located at the base of one of the downspouts draining your roof gutter.

3. Obtain Materials

Gather/purchase necessary materials for installation. Many nurseries and yard supply stores sell fully assembled rain barrels, but unmodified barrels can also be converted into rain barrels. To create one of your own, gather the supplies listed below and then follow the construction steps.

Tools

A. *To build your own barrel:*
- Drill
- Inch hole saw – for overflow pipe
- 1” spade bit – for spigot
- Tin snips or heavy-duty scissors – for cutting screen
- Adjustable wrench
- Utility knife
- Safety glasses

B. *To connect your downspout to your rain barrel:*
- Hacksaw
- Drill
- Tape measure
- Screwdriver or nut driver
- Pliers or crimpers

Additional Supplies

A. *Purchase online or at local restaurant suppliers, nurseries or garden centers:*
- 55 to 90-gallon **food grade** plastic barrel

B. *Find the following items at most plumbing or hardware stores:*
- Hose spigot with ¾” threaded inlet and ¾” male hose end
- Two ¾” galvanized locknuts – to secure spigot from inside of barrel
- Four 1” (size of opening) washers – to provide rigid surface to fasten hose bib
- Teflon tape
- Silicon adhesive or outdoor caulking
- Two 8” x 8” x 12” concrete or wooden blocks
- Window screen mesh – enough to cover barrel opening

- Downspout elbow – to route downspout to barrel
- Clincher strap – to attach downspout and barrel to house
- Small pieces of wood blocking – for use behind clincher strap, if necessary
- ¼" #6 sheet metal screws – for downspout
- ¾" screws – for clincher strap
- 2" overflow pipe fittings

4. Construction/Installation

Follow these steps to build and connect your barrel:

A. Inlet: Create opening with fine screening through which the barrel will collect water from the downspout elbow; this can be a single opening, large enough to accommodate the elbow (as shown in the photo), or a series of smaller openings directly in the top of the barrel.
B. Overflow: Drill hole (minimum of 2" diameter) near top of barrel to accommodate overflow pipe. If overflow pipe elbow seals and seats securely, thread it directly into barrel opening; if not, secure with washers on both sides of barrel and nut on the inside. Use Teflon tape around threads and silicon caulking around opening to ensure a tight seal.
C. Foundation: Create a raised, level base (such as concrete blocks) for barrel. A full rain barrel is very heavy and at risk of tipping if unsecured or on an uneven surface. Test stability by filling barrel with water before attaching to structure of choice.
D. Downspout: Cut downspout with a hacksaw so elbow sits just above barrel inlet. Attach elbow over downspout with a screw and secure downspout to structure with strap.
E. Attach Barrel: Set rain barrel beneath the elbow and secure to structure with strap. Cut and attach overflow elbow to pipe and direct to existing discharge location.
F. Outlet: Drill hole near bottom of empty barrel to attach drain spigot. If spigot seals and seats securely, thread it directly into barrel opening; if not, secure with washers on both sides of barrel and nut on the inside. Use Teflon tape around threads and silicon caulking around opening to ensure a tight seal.
G. Use: After a rainfall, fill watering can from bottom spigot or attach hose to use the collected water where/when it is needed.

5. Follow-up Care/Maintenance

Simple maintenance of your residential stormwater system can prevent problems down the road. If maintained properly, a rain barrel and its system components can have a lifespan of about 20 years. Follow these simple procedures to keep your system working and in good shape:

- Check to see that all parts of the stormwater management system are securely fastened together and the rain barrel is securely attached to the building or a secure footed foundation block.
- Make sure roof flashing directs water into gutters, which must be tilted to guide water toward downspouts. Repair low spots or sagging areas along the gutter line with spikes or place new hangers as needed.
- Inspect system for leaks, cracks and holes at least once a year, especially around spigots and other connection points. Caulk those found in gutter, downspout, barrel and overflow outlets.
- Make sure the rain barrel remains securely screened to prevent debris and mosquito entry.

- Clean gutters at least twice a year, and even more frequently if you have trees with overhanging branches are present on your property. Clear downspout elbows, rain barrel screening, and overflow pipe periodically to prevent clogging. Clean barrel interior annually by brushing or disinfecting with a non-toxic cleaner (such as vinegar).
- For maximum stormwater benefits, empty barrel between rain events during the wet season.
- If overflow is directed to a surface infiltration area, monitor the drainage area and regrade soil if need be to make sure water drains away from structures and does not flow onto pavement, sidewalks or neighboring properties.

** In addition to the information provided here, rain barrel installation will require a review of the legal/safety concerns, s*ite plan, materials and basic instructions for downspout disconnection as well. *Reference or create link to* ***Downspout Disconnection*** *page on PAW Website.*