

# Construct Your Own Multi Barrel Rain Barrel System

By Pete Holman

Last fall, in the issue of *Community Seeds Eco Magazine*, we talked about the advantages of being able to harvest the water from the roof of a building in order to use it in place of the domestic water supply for some specific uses. We can often use this water for irrigation, animals, or cleanup. In some cases, I have known people who treasure the rainwater from their barrel to wash their hair or clothes. Because it usually does not pass through the soil and pick up the minerals, it is very soft water and allows the soap to work very efficiently. Be very cautious about using rainwater from a barrel on your hair or clothes until you know if it is collecting anything from the roofing material that could be toxic!

We also talked about the fact that, in many communities, officials are trying to reduce the amount of rain water that has to be processed in the waste treatment plants and is allowed to drain into city sewer systems. In Portland, Oregon, they have been connecting downspouts to the sewer system for years; however, they are now requiring homeowners to disconnect the downspouts from the systems.

We talked about several ways to hook up a barrel to your downspouts and how much water you might expect to get. With the system on the one building we built at Evergreen 6 School in Paradise, California, we calculated that in an average year one might expect as much as 9000 gallons of water from the roof of a building that is about 48' X 12'. Let's review the calculations: Let's start with the calculations to estimate the amount of water. At Evergreen 6, the building that they are collecting from is about 48' by 12' with one down spout at each end. It has a nearly flat roof that slopes



slightly to the backside. If we multiply the 48 X 12 we get 576 feet squared. We then divide that by the 2 down spouts to get 288 square feet for each downspout.

The amount of rain is usually measured in inches, but we want to know the amount of water in gallons. If we take a rainfall of one inch over the 288 square foot roof the calculations to gallons would go something like this: In order to get volume we must take the square footage (length times width) and multiply it by the height; in this case, 1 inch. Since we want our answer to be in cubic feet, all of the measurements must be in feet. One inch can be stated as the fraction: 1/12 of a foot. Since a fraction is an indication of a division, our problem becomes 288 feet squared divided by 12. This gives us 24 cubic feet for every inch of rain.

In order to get the number of gallons, we need to multiply the number of cubic feet by 7.48 as that is approximately how many gallons there are in each cubic foot.

In this case:  $24 \times 7.48 = 179.52$  or about 180 gallons.

This means that if we had a rainstorm that rained 1 inch, we should collect about 180 gallons at each rain barrel. Likewise, if it were  $\frac{1}{2}$  inch, we would

get about 90 gallons etc. You might note that the average annual rainfall in Paradise is about 52 inches. This would translate to over 9000 gallons per year that could be harvested from each downspout on that building.

Since we started with one 30 gallon barrel at each downspout, it becomes obvious that it would be filled to overflowing with a storm of less than  $\frac{1}{4}$ ". Since our goal was more along the lines of harvesting water to use in the worm bins and garden and not so much to control out-flow, we decided to connect a few additional barrels to increase our storage capacity. Using 30 gallon barrels you can see very quickly that you would need 300 barrels to "control" the water in an average year.

We were able to obtain additional barrels, and in spring at "Solar Day" with the help of several students, we installed several additional barrels to the system.

The first problem we ran into was that all of the new barrels had tops that couldn't be removed. We solved this dilemma by cutting a square hole in the top of each barrel (Figures A & B). We will later cover these holes with some window screen held in place with epoxy cement. This should keep out any debris that will clog the system.

We used pipe to poly tank adapters like we did when we did the first tanks. This time,  $\frac{3}{4}$ " for the hose bibs at the bottom of each tank and 1-1/4" for the tube to connect tank to tank. We chose to make our tank-to-tank connections near the top of the tanks so that each tank could be drained independently and the whole system wouldn't be drained if one valve failed.

The holes were drilled for the adapters (Figures C & D) and the adapters were installed (Figures E, F, G, & H). Next, the 1-1/4" Pipe to tubing adapters were installed at the top and the hose bibs were installed at the bottom of each barrel (Figures I, J, K, L, M, N, & O). You can see from Figures P & Q (on the next page) that these barrels were set up with 1-1/4" inlets and outlets near the top of the barrel and on opposite sides of the barrel. The end barrels have only one. The hose bib was near the bottom and at right angles to the line between the inlet and

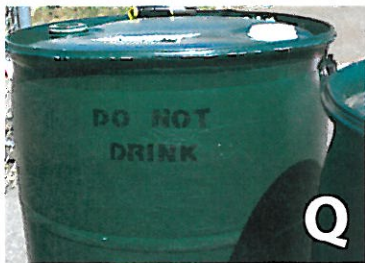


## Rain Barrels, Continued



outlet. The last step was to place each barrel on a stand (bricks) and to connect them with 1 1/4" reinforced poly hose and stainless screw clamps (Figures R, S, & T).

Using this system, one can now connect as many barrels as practical and enjoy using the harvested water for almost anything you want.



Other solutions to using the water from a collection system include the development of a "Rain Garden" which often includes a pond-like structure with rocks and gravel that will allow the infiltration of the water and the use of special plants that will tolerate the wet and dry conditions. You can also consider the use of larger and/or buried containers with solar powered pumps to move the water to where you want to use it.



There is a lot of information out there to help you and give you some great ideas. Two great places to start are the "DIY Network" site at: <http://www.diynetwork.com> and the "Ask This Old House" site at <http://www.thisoldhouse.com/toh/tv/ask-toh>. Just go to the sites and search for "rain barrel". Good luck and have fun!



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