

# Rainwater Catchment and Blue Architecture

As the human population continues to grow along with individual water usage, the natural underground aquifers in the United States are being depleted an average of three to five feet per year. As the aquifers become increasingly shallow, the arsenic underneath the bottom layer of the aquifers becomes slurped up by wells, potentially poisoning wells that are drilled down to reach the aquifers.

The main reasons to harvest water, by catching it off of roofs, storing it in tanks, and collecting additional water that lands on our property, is to recharge the natural underground aquifers and reduce our usage of city water and well water. The urban populations of the world are using far more water than the aquifers can bear and it is becoming absolutely critical to use our water in a more conscious and sustainable manner.

We also have access to cleaner water when we harvest and reuse it ourselves. Nitrates, chemicals, toxins, mercury, and other toxic elements are common in city water, which is generally taken indirectly from reservoirs. Many municipalities have allowable levels of pathogens, chemicals, and bacteria (measured in parts per million). However, if you are harvesting water from your roof, it is simply not exposed to the same level of toxins. Depending on the type of roof and home filtration system, you can safely remove all viruses, particulates, and bacteria from harvested rainwater.

Generally, a four-step filtration system with 20-micron, 5-micron, charcoal, and ultraviolet filters will do the job. The water we use to wash our food and dishes with, along with the water we use to bathe and brush our teeth with needs to be run through an elaborate "domestic potable" filtration system. However, this water only comprises 10% of residential water use. The other 90% of the water in your collection cistern does not need to be run through a filtration system. Even if it contains minute levels of bacteria, you can use it to wash your clothes. The gray water left over from the washing machine, along with your dishwasher, kitchen sink, bathtub, and shower can be collected and used again immediately to nourish your garden or fruit trees, or reused to fill your toilet. You can even make it potable again by running it through a simple waste water bio-cell.

Xeriscape landscaping, which is designed specifically for areas that are susceptible to drought or for properties where water conservation is practiced, is a way to drastically minimize water use on your property. Additionally, if you collect water and detain it as long as possible (along with using your gray water), you can grow your own vegetable garden, a variety of medicinal healing herbs, and even productive fruit trees.

People are also now filtering their toilet water, known as black water. Most people psychologically do not trust black water, but if run through either proprietary black water systems

or elaborate bio-cell filtration systems it is safe to reuse on both ornamental flowers and fruit trees. By the time the water nourishes the trees and the fruit reaches maturity, any pathogenic bacteria will have no effect on the edible fruit.

Part of the reason we want to detain the water on our site, percolate it, and recharge the aquifers is that when the water drains through the dirt and mycological mats below, there is beneficial bacteria that naturally cleanses and filters the water before it returns to the aquifers. This is preferable to watershed systems, which allow water to wash down the driveways, streets, and sidewalks of our neighborhoods, flowing down the storm sewers to a catch basin that deposits the water to a creek, swamp, river, lake, or ocean. Unfortunately, the runoff collects all the motor oil, antifreeze, toxic chemicals, conventional fertilizers, and plastic estrogens from the neighborhood and puts it back into natural waterways, thereby greatly deteriorating the health of the ecosystem and all of the animals who live there.

If we can catch, retain, reuse, and percolate as much water on site as possible, the impact on the environment will be reduced and the depletion of our natural aquifers minimized.