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By Dee Goerge, Contributing Editor

Rainwater Storage Tanks Eliminated Need For Well

Mike Minga's system to collect rainwater for drinking and regular household use is a big step up from other systems we've seen for watering gardens and yards. When he built his home, he included a 24 by 25-ft. room to hold four 1,100-gal. tanks and the necessary pumps and filters to provide water to the home. Another 1,100-gal. tank outside collects water from rain gutters fitted with microscreen filters and a first-flush diverter to take out debris before going into the tank.

Minga created the system for about half the cost of drilling a new well. He explains that there was a well when he purchased the property, but the water was brown, creamy and smelled because it had so much iron. Well drillers around White Oak, N.C., said they could drill another well for about $8,000, but they couldn't guarantee the water would be any better.

"At our previous home I had experimented with collecting water off our roof in an 1,100-gal. tank to use for the toilet and washing machine, and it cut our water bill in half," Minga says.

He had also seen rain water systems while traveling in the Caribbean and Bermuda, and he found plans on a Bermuda website. He obtained information and equipment such as a UV sterilizer and micron filters at www.rainharvest.com. Searching for "cistern design for water harvesting" brings up many good websites, he says.

Minga painted the outside tank black to keep out sunlight, which grows algae, then painted it white again so it wouldn't heat up with the sun. Water is pumped from that settling tank into one of three tanks inside. The utility room with the tanks is completely finished off and has a garage door and painted windows to prevent sunlight from entering and growing algae in those tanks.

"The tanks came from a farm supply store," Minga says. "They are often used by winemakers."

The fourth tank holds the "treated" water. The treatment includes pumping the water from one of the other tanks through three .5-micron filters, then two .2-micron filters and finally a UV sterilizer at the rate of 7 to 8 gal./minute. From there it's hooked up to a pump and pressure tank delivering water to the home's plumbing.

One tank holds enough water for 2 1/2 to 3 weeks for the two-person household. Once a week, Minga checks the water level. When it's low he turns on the UV sterilizer, which needs a few minutes to start up, then turns on the pump. It takes an hour or two to fill the tank, and he adds a little chlorine. Minga could add floats and timers to automate the system, but says he doesn't mind the weekly chore.

Treatment includes pumping water through three .5-micron filters, then two .2-micron filters and finally a UV sterilizer.

Minga notes that at first they were frugal with water usage and only drank water after it went through the refrigerator filter. But after testing the water and finding out hard metals were negligible even though the roof is asphalt, he realized the water was pure enough to drink from the tap. There is also plenty of water for normal usage – even washing the car.

Once a year, he cleans the tanks by removing water with a wet-vac, then scrubbing them with bleach water.

North Carolina gets plenty of rain, and water is usually available year round. As a backup plan if there is a drought, Minga says he would pay the fire department to haul water that he would run through his treatment system.

"The real key to make this work is to be sure to calculate the water you use and the amount of water you get on your roof," Minga says, noting there are calculators on various websites.

Besides saving money drilling the well, the only additional electricity used is to pump water into the treated tank. Plus, Minga says, he doesn't need a water softener.

"The water is very soft. And when we wash a car, we don't have to dry it off," he says.

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"Hose-O-Matic" Moves Water Fast

Larry Black's mobile pumping tank moves water fast. Dubbed the Hose-O-Matic by Black, it fills itself up fast from a pond or stream and empties out just as fast.

"I can fill the 500-gal. tanks in less than 5 min.," says Black. "Reversing the process gives me high pressure to clear off parking areas or clean out cattle guards and culverts."

Black put his system together after attending a surplus equipment auction of county highway equipment. He picked up a 500-gal. tank on a skid with a 7-ft. watering bar for holding down road dust. He also picked up a surplus gas-powered, self-priming pump. It had a 3-in. intake valve and output valves. Both were originally U.S. Army surplus.

"The county had the tank on a skid to slip on a truck bed," says Black. "When the local fire department discarded some fire hose, I decided to mount the tank and the pump on a trailer with the hose."

He built a frame out of channel iron and angle iron and mounted it on 2 trailer axles discarded after hauling mobile homes into place. Knowing the full tank would total more than 4,000 lbs., Black built the trailer to heavy-duty specs. He mounted the axles far enough apart that they will support the tank and keep it level. He left room at the front of the trailer for the pump and fire hose.

"It's about 11 ft. long and about 3 1/2 ft. wide," says Black.

He used 3-in. pvc pipe from the output valve through a T-connection with a reducer to the 1 1/2-in. fire hose. At the T, pvc pipe equipped with a ball valve also connected the output valve to the top of the tank. A 24-ft., 3-in. black hose was attached to the pump's intake valve.

"When I am filling the tank, the ball valve is wide open, and the spray nozzle on the fire hose is closed," explains Black. "If I want to spray out of the tank, I drop the end of the black hose into the tank and adjust the ball valve to give me the pressure needed for the fire hose and recirculate the rest of the water back into the tank."

Black mounted a hose bib on the back of the tank. If he simply wants gravity flow, he can use the tank with the hose bib.

"It has lots of applications," says Black. "I can clean off a dozer that's been in muddy ground faster than I could with a power washer or blast leaves and mud out of a 20-ft. culvert."

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