

Tucson Citizen

Going green with gray water

Recycling a legal way to cut addiction to the garden hose

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A blistering, long-term drought.

Water rates going up in August.

A lazy summer monsoon.

Sounds dismal for thirsty plants in southern Arizona, but there is a "brand-new" source of irrigation water and it's already in your home.

It's called gray water, which is water used in a shower, washer or lavatory, says Val L. Little, director of the University of Arizona's Water Conservation Alliance of Southern Arizona, better known as the Water CASA.

Few people seem to realize that since January 2001, using gray water is legal for most irrigation, Little said. With a few alterations to a plumbing system, many homeowners can virtually get off the hose.

There are huge benefits to using gray water, even beyond the potential water savings.

Water dumped down the drain often requires electricity to pump it to a sewage treatment plant. Then a lot of energy is used to process it there.

Then more energy is required to pump the byproducts into the Santa Cruz River.

The average person creates an estimated 20 to 35 gallons of gray water per day, Little said. With about a million people living in Pima County, that means a potential 20 million to 35 million gallons of gray water is wasted every day.

An estimated 16 million gallons of gray water is produced by customers of Tucson Water, said the utility's spokesman, Mitch Basefsky.

The gray water starts out in our homes as clean, potable water. So far this year Tucson Water customers used an average of 124 million gallons of potable water every day.

The record high consumption by Tucson Water customers this year was 49 million gallons on June 19. The all-time record for Tucson Water was 165 million gallons on

July 14, 2005.

The average consumption for a winter day, when irrigation is at a minimum, is 75 million gallons.

"That leaves a lot of potential of gray water that could be used for most irrigation," he said. "That's why we are looking at incentives for new construction, such as discounts on building permits, to have plumbing installed to make it easier to use gray water."

And the sooner the better, added Brad Lancaster, a gray-water use advocate and author of a book on ways to cut down on using potable water for irrigation.

To save energy, the UA graduate recommends that gravity be the only source of power, and he advises against storage tanks and pumps.

Contour your yard with depressions and berms so that water pools, and when a pool is full, the water overflows to the next depression, he said.

From a financial perspective, using gray water instead of potable water could save a family about \$1.60 per month for each family member.

While saving money is not the main reason for conserving natural resources, it is an issue, Basefsky said. Tucson Water will raise rates Aug. 7 by an average of 4.6 percent, or about \$1.06 per customer per month.

"But it's one thing to say, 'Let's use gray water instead of pure water,' but you'd have to replumb all those houses," he noted. That can be easy in some homes, but virtually impossible in others.

Water CASA estimates the cost of retrofitting a home at \$135 to \$1,250 plus installation.

The best time to plumb a home for harvesting gray water is during its construction, said Brad DeSpain, utilities director for Marana. That's why Marana plans in its building code to require gray water systems be mandatory in new construction.

"We are working very hard to get that accomplished, possibly to go into effect next July 1," DeSpain said. "I don't see any big resistance, and the town management favors it."

He said such a change would slightly increase the cost of the home, varying according to its size and design.

DeSpain said he did not wait for the town to require using gray water. He has retrofitted his home with a system that routes gray water for irrigation.

Lancaster said he combines his gray water with water harvesting - collecting rainwater from his roof. Using both allows him to wean his trees off potable water in all but the driest of seasons.

"I advocate the creation of an oasis zone around the house, up to about 30 feet from the outside walls," he said.

It's especially important to provide shade on the east and west sides of the home, he said. That can reduce the ambient air temperature near the home in the summer by as much as 20 degrees.

"This becomes a dynamic passive cooling strategy so they can greatly reduce or even eliminate mechanical cooling which otherwise consumes a great deal of energy at the power station and with the air conditioners."

Some of those trees should be fruit or nut trees that provide fresh food, he said.

"On-site food production is another way to reduce energy consumption."

Most food is trucked into Tucson and that requires energy through the consumption of fossil fuels.

"So here you are, not pumping that water, and you are not transporting that food," Lancaster said. "You are getting healthier food because it's fresher and you can produce it organically onsite with rainwater and gray water."

And by using the passive basins and berms, people are not given another chore to add to their already busy schedule, Lancaster said. When the rain comes or the gray water flows, there is no other action required by homeowners.

Actually, saving water is a lot of fun, said Lancaster who installed a shower that uses solar-heated water in his side yard. "I'm jazzed about it. I know the gray water is going to irrigate my trees which cools my house and provides me with food."

ADDITIONAL INFORMATION

BY THE NUMBERS

20-35: Gallons of gray water the average person produces a day

\$135-\$1,250: Cost of retrofitting and installing a gray water system

124 million: Gallons of Tucson Water customers use on an average day

WHAT IS GRAY WATER?

- Gray water is wastewater from the laundry, baths, showers and lavatories
- Water from kitchen sinks and toilets is considered "black water," which is not suitable for home irrigation.
- Laundry water from washing diapers is considered black water.
- Water from kitchen sinks and dishwashers contains food debris and grease. It is considered black water.

WHERE WATER GOES

- Homes with in-ground sprinkler systems use 35 percent more water than other homes.
- Homes with automatic timers to control their irrigation systems use 47 percent more water than other homes.
- Homes with drip irrigation use 16 percent more water than those without drip irrigation.
- Homes with gardens use 30 percent more water than those without gardens.
- Homes with access to another nonutility-water source have 25 percent lower outdoor use than those using only utility-supplied water.

Source: The Water Conservation Alliance of Southern Arizona

CHECK LIST FOR RETROFITTING A HOME

- Direct gray water at least 4 feet away from a building foundation
- Consult a plumber if you are unsure of your own expertise.

- Get a free plumbing permit and inspection for gray water.
- If you use chlorine bleach or high-sodium detergents, plumb your system so you can dump those products into the sewer line.
- Clearly identify gray water plumbing from potable water lines.
- Make sure that tapping into your plumbing system does not damage or create problems with black water disposal.

ON THE WEB

For more information about using gray water, go to:

- www.harvestingrainwater.com
- www.watercasa.org
- www.tucsonaz.gov/water/docs/adeqtwq.pdf. Click on "Using gray water at home."

For information on free permits and inspections for your gray-water system, consult your local building officials.

- Tucson: 791-5550 or www.ci.tucson.az.us
- Pima County: 740-6520 or www.dsd.pima.gov
- Marana: 382-2600 or www.marana.com
- Oro Valley: 229-4800 or www.ci.oro-valley.az.us
- Sahuarita: 648-1972 or www.ci.sahuarita.az.us