

TUCSON WATER CONSERVATION AND RECHARGE STRATEGIES

Tucson Water is a city utility, with a strong commitment to water quality, security, and sustainability. Listed below are the department's many initiatives to conserve and preserve this most precious natural resource.



Rainwater harvesting: home. Our rebate program supports both passive and tank systems, with up to \$2000 rebate per property for installation. Participants must attend a two-hour workshop to qualify for rebate, and meet other program requirements. Next year we will conduct an economic analysis to determine cost-effectiveness of this pilot program.

<http://cms3.tucsonaz.gov/water/rwh-rebate>

Rainwater harvesting: commercial. City ordinance mandates the use of rainwater harvesting on new commercial developments. The ordinance, which has been in place for 3-4 years, stipulates that 50% of the landscape water requirements are met through rainwater captured on-site. We have not yet evaluated the effectiveness of this requirement.



Rainwater harvesting: streets. The City Transportation Department has worked with neighborhoods to install rainwater harvesting systems along rights of way to enhance landscaping. Design guidelines and standards have been developed to ensure that installations meet City requirements.



Chicanes or pull-outs with flush curbs, Midtown neighborhood, Tucson. Used where road is crowned or raised in the center, with runoff to street-side curb. Flush curb allows runoff to infiltrate soil of planting area, while surplus runoff can continue down the street. These pull-outs calm traffic by forcing it to meander. Speed humps in the area constricted by pull-outs could calm traffic even more if needed.

Image & caption: HarvestingRainwater.com

Gray-water. Since 2009, all new homes must have gray-water attachments built in. Accordingly, Tucson Water offers a rebate program for the installation of permanent, in-ground gray-water systems. Attendance at a 2-hour workshop is required to qualify; homeowners must meet other program requirements as well. Workshop participation has been extremely high, but actual rebate applications have been very low, even after raising rebate amount to \$2000 max. We are not aware of any rebate applications submitted for new housing built under the gray-water Installation requirement. We suspect that full-blown gray-water systems are too complicated for the average homeowner to install, operate, and maintain. Photos: www.besthomewatersavers.com



Conservation. Tucson has reduced its per capita usage about 30% recently. These reductions are likely attributable primarily to economic conditions and changes in homebuilding practices (plumbing code standards, smaller yards resulting in less outdoor water requirement, etc.).

The Conserve to Enhance (C2E) program was initiated through the Water Resource Research Center at the University of Arizona. The intent is to have customers donate their savings on reduced water bills towards projects that enhance the environment. The City of Tucson provides a checkbox on its Utility Services Statement for donations to be made; donations can also be made directly to C2E. <http://cms3.tucsonaz.gov/water/checkbox>



Water reclamation. The Sweetwater Facility is a constructed wetland designed to take filter backwash water from our reclaimed water filtration plant and provide natural treatment before it is stored underground in the aquifer. Underground storage of treated effluent provides recycled water to our reclaimed water facility. Reclaimed water goes to irrigate parks, schools, golf courses, medians, and a few neighborhoods where home owners and larger landscape-owners can use non-potable water for their non-edible greens. The site is enjoyed by birds and bird-watchers. Another facility is in the design phase. <http://cms3.tucsonaz.gov/water/reclaimed>

Groundwater recharging. Before urbanization of the Tucson basin, groundwater was on average about 12 feet below the land surface. Groundwater levels have sunk to about 200 feet, largely due to urban and agricultural draws of both surface waters and underground sources. Replenishing the aquifer is a major goal, for both environmental integrity and long-term water security.

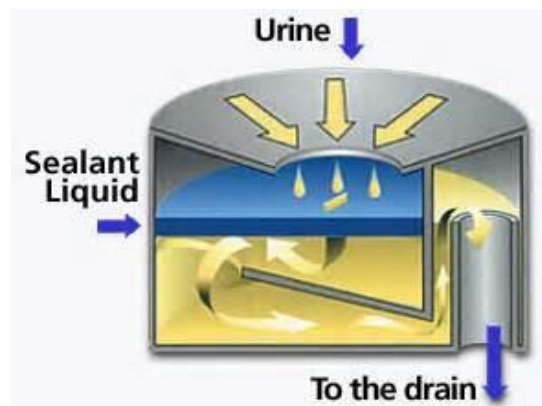
Currently, renewable CAP water supplies account for 90% of potable water deliveries for the Tucson Water service area. In addition to the Sweetwater Facility, Tucson Water uses the Clearwater facilities to recharge, store, and recover Colorado River water which is imported into the basin via the Central Arizona Project (CAP).

<http://cms3.tucsonaz.gov/water/sweetwater>



In 2010, Tucson and Santa Cruz County water management areas achieved "safe yield," balancing groundwater pumping with recharge of the aquifer. The state-mandated deadline was 2025. We currently recharge approximately 140,000 acre-feet of CAP water per year, yet only withdraw approximately 100,000 AF per year to meet potable water demands, thus banking about 40,000 AF per year in the aquifer.

http://cms3.tucsonaz.gov/water/water_resources



www.energymizers.biz

Waterless urinals. This is a highly potent low technology, saving up to 40,000 gallons of water per fixture in public locations. These appear abundantly at the University of Arizona, as at St. Mary's College in Moraga. Outside the University, interest in waterless models remains low. Tucson Water has expanded its Urinal rebate program to include water-using urinals (usually 1 pint or 1 quart models). Many water-using urinals get taken out of service, though, after installation, due to complaints about odor and performance. (Maintenance practices are often the problem.)

<http://cms3.tucsonaz.gov/water/heu>

Irrigation Upgrade Rebate. Field data on performance of irrigation systems on commercial properties, including multi-family residences, indicate that this is an area with a lot of conservation potential. The program provides a financial incentive for property owners to upgrade irrigation technologies, including sprinkler heads, timers, and soil moisture sensors.

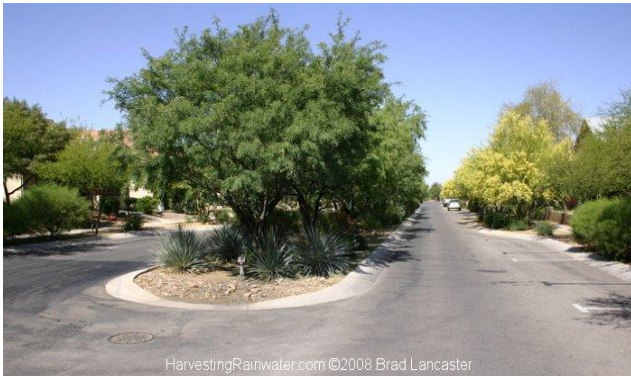
Irrigation Management program.

Tucson Water has sponsored SmartScape Landscaper Training since about 1997: nine classes taught by University of Arizona faculty and local business professionals, providing research-based instruction to promote best landscape management practices for the urban Sonoran Desert.



End-note: visualizing our sustainable future

More designs like this:



. . . and more time for places like this:



Credits

Information collected by Stuart Moody, MA, intern to the City’s Office of Conservation and Sustainable Development, Leslie Ethen, Sustainability Director (www.tucsonaz.gov/ocsd). For more information, here is a portal to all of the utility’s conservation strategies: <http://cms3.tucsonaz.gov/water/conservation>. With special thanks to Fernando B. Molina, Public Information Officer, Tucson Water: 520.837.2185; fax: 520.791.5041