

# **TONTO HILLS DOMESTIC WATER IMPROVEMENT DISTRICT**

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## **WATER EMERGENCIES**

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## **THDWID New Build/Remodel Water Considerations**

Tonto Hills Utility Company (THUC) acquired a water allocation of 71 acre-feet per year (AF/yr) from the Central Arizona Water Conservation District (CAWCD) via the Central Arizona Project (CAP) canal and brought it online in March 2004. This allocation was one of the assets purchased by the Tonto Hills Domestic Water Improvement District (THDWID) in December 2010. Currently, the CAP supply is the only feasible long-term source of water for Tonto Hills.

In accordance with our state-required Conservation Plan, the THDWID Board is preparing for unforeseen interruptions in CAP water supply by banking our unused CAP allocation at a Groundwater Savings Facility and obtaining long-term storage credits against which Scottsdale can pump groundwater in lieu of CAP water to temporarily continue meeting our needs, if necessary.

It must be strongly emphasized that our water supply is secure and the likelihood of a shortage is low. We estimate our current supplies could support an average monthly use of about 8,000 gallons per parcel at full build out. The fact remains that our supply is based on an allocation system that does not provide unlimited water to our community. Therefore, it is important to recognize this limitation and that excessive water use by THDWID members can impact the sustainability of our water supply.

To lessen the likelihood of a shortage, the THDWID Board of Directors has adopted the following recommendations and requirements for new build and applicable remodel applicants. Please note that for **all parcels zoned commercial**, THDWID has adopted a policy of ***mandatory Reduced Pressure Principle (RP) Backflow Prevention Assemblies*** to be installed and tested prior to occupancy (see Policies and Procedures).

### **Following are recommendations:**

- **TOILETS:** Toilets should be the high efficiency type that uses 1.6 gallons or less per flush. A family of four can save 14,000 to 25,000 gallons of water per year using these as opposed to the older type of toilets.
- **SHOWERHEADS:** Showerheads should be of the high efficiency type with a flow rate of 2.5 gallons per minute or less. Showering typically accounts for approximately 17% of indoor water use. The high efficiency showerheads can achieve water savings of 25% to 60% over older models.
- **FAUCETS:** Consider using faucets with the “WaterSense” label. Faucets typically account for about 15% of indoor water use. “WaterSense” bathroom sink faucets can reduce water flow by

30% without sacrificing performance. “WaterSense” is an EPA program having partnership agreements with many manufacturers.

- **DISHWASHERS:** Consider installing an “EnergyStar” qualified model. An old style dishwasher can waste about 10 gallons of water per cycle.
- **CLOTHES WASHERS:** Consider installing an “EnergyStar” qualified model. High efficiency washers use 35% to 50% less water and 50% less energy per load. The model should also have a low water factor. A water factor is the number of gallons per cycle per cubic foot that a clothes washer uses. If a washer uses 18 gallons per cycle and has a tub volume of 3.0 cubic feet, the water factor is 6.0. The lower the water factor, the more efficient the washer. Some models have load sensing capability and adjust the amount of water used based on the size of the load.
- **OUTDOOR PIPES:** Tonto Hills experiences freezing weather a few times per year. This can result in burst pipes and many gallons of wasted water. Consider insulating pipes. Use heat tape or thermostatically controlled heat cables to wrap pipes. (Use products approved by Underwriters Laboratories and follow instructions carefully.) Also, seal leaks that allow cold air to enter where pipes are located. Look for air leaks around electrical wiring, dryer vents, and pipes.
- **LANDSCAPING:** Consider landscaping with low-water requirement desert plants. Go to [http://www.amwua.org/advanced\\_search.html](http://www.amwua.org/advanced_search.html) for an appropriate desert plant search engine. Turf or grass planting should not exceed 25 square feet. Consider equipping drip systems with rain shut-off devices or soil moisture sensors. Consider decorative rain barrels to catch rain for landscape watering. These barrels are available for around \$100.
- **ON-DEMAND HOT WATER:** A family of four wastes 10,000 to 15,000 gallons of water annually running faucets while waiting for hot water. There are several types of on-demand hot water systems including: recirculating pumps, demand type pump systems, thermo-siphon systems, and point-of-use water heaters. The downsides of these systems are initial costs and on-going energy costs. To minimize ongoing energy costs, insulate all pipes and install a timer to turn the systems on/off tied to showering hours. Another consideration is a tank-less water heater running on propane located near the primary shower or a small capacity 110-volt electric under sink water heater.
- **HUMIDIFIERS:** Many new homes are built with humidifier systems as part the HVAC system. The two types of humidifiers available are evaporative and steam. The model of evaporative humidifier varies depending on the size of the house. (Consider cubic feet measurements if ceilings are high.) These humidifiers can use from 3 gallons per hour (gph) to 6 gph. If a 6-gph humidifier ran constantly, it could use 4,320 gallons in a month. Many factors impact actual usage, but assuming it ran about 6 hours per day; the monthly total would be 1,080 gallons. For each gallon used in humidifying, 5 gallons go down the drain. To ensure the unit runs only when needed, install a digital humidistat. Steam humidifiers use only 0.6 to 1.8 gph with very little

going down the drain. The downside is that they use 11.5 amps vs. less than 1 amp for a large evaporative humidifier.

### Following are requirements:

- **SHUT-OFF VALVES:** All THDWID Members who have or request connection to the THDWID's system shall install and maintain a private shut-off valve. The THDWID shall provide a like valve on the THDWID's side of such meter. The THDWID also recommends the installation of one or more pressure reducing valves (PRVs) on the Customer's side of the meter at the Customer's expense to regulate water pressure and prevent over-pressure damage to appliances and other equipment. The THDWID shall not be responsible for the effects of high water pressure on the Customer's side of the meter. The THDWID requires backflow prevention devices.
- **POOL COVERS:** A 600-square-foot pool has approximately 34,000 gallons of water evaporation each year. This figure can vary depending on humidity (low humidity means higher evaporation), air temperature vs. pool temperature (the cooler the air in relation to the pool, the more evaporation), solar exposure, and wind. A pool cover can prevent most of this evaporative water loss. A low-cost pool cover is a solar cover. They look similar to packing material, but have UV inhibitors and a thicker grade of plastic. There is also a variety of vinyl covers. Pool covers come with manual, semi-automatic, or automatic pool cover retraction. As of 2014, a basic cover for a 450-square-foot pool costs about \$80; a storage reel costs about \$160. A high quality insulating pool blanket costs about \$700. A pool cover in Phoenix can reduce energy costs by \$2,000 annually and reduce chemical costs.
- **NEGATIVE EDGE POOLS:** Negative edge pools have higher rates of evaporation than regular pools and standard pool covers are less effective. Negative edge pools are not permitted unless an automatic pool cover designed specifically for this type of pool is built-in as part of the construction.
- **BACKFLOW:** The complete backflow prevention requirements for all members are available in the THDWID Policies and Procedures. The following is a brief summary:

*A.A.C. R18-4-215 E1, which states, "A public water system may make installation of a required backflow prevention assembly a condition of service. A user's failure to comply with this requirement shall be sufficient cause for the public water system to terminate water service." The THDWID has adopted a policy requiring installation of backflow prevention assemblies as a condition of initial and continued water service where cross-connections pose a potential threat to the THDWID water system.*

As mentioned earlier, the THDWID has adopted a policy of *mandatory Reduced Pressure Principle (RP) Backflow Prevention Assemblies for all parcels in the District zoned commercial* to be installed and tested prior to occupancy (see Policies and Procedures).

The THDWID requires that residences and commercial properties be in compliance with Section P2902.1 of the International Residential Code for One- and Two-Family Dwellings. Section P2902.1 states, “A potable water supply system shall be designed and installed as to prevent contamination from non-potable liquids, solids, or gases being introduced into the potable water supply. Connections shall not be made to a potable water supply in a manner that could contaminate the water supply or provide a cross-connection between the supply and a source of contamination unless an approved backflow prevention device is provided. Cross-connections between an individual water supply and a potable water supply shall be prohibited.”

THDWID also requires pressure vacuum breakers on all hose bibs used to fill water reservoirs, such as horse troughs, etc., to prevent backflow. Backflow prevention devices should be inspected annually.

The following are the recognized types of backflow prevention assemblies that the THDWID requires (see Policies and Procedures for details):

- 1) *Air gap*: The unobstructed vertical distance through free atmosphere between the lowest point of a water supply outlet, pipe, or faucet supplying potable water to a tank, plumbing fixture, or other device and the flood level rim of the tank, plumbing fixture, or other device. An approved air gap shall be at least twice the diameter of the supply pipe or faucet and in no case less than one (1) inch.
- 2) *Reduced pressure principle assembly (“RP”)*: A backflow prevention assembly containing two independently-acting approved check valves together with a hydraulically-operating, mechanically-independent pressure differential relief valve located between the check valves, and at the same time below the first check valve. The assembly shall include properly located test cocks and tightly closing shutoff valves at each end of the assembly.
- 3) *Double check valve assembly (“DC”)*: A backflow prevention assembly composed of two independently-acting, approved check valves, including tightly-closing shutoff valves located at each end of the assembly and fitted with properly located test cocks.
- 4) *Pressure vacuum breaker assembly (“PVB”)*: A backflow prevention assembly containing an independently-operating, loaded check valve and an independently-operating, loaded air inlet valve located on the discharge side of the check valve. The assembly shall be equipped with properly located test cocks and tightly-closing shutoff valves located at each end of the assembly.