ARIZONA WATER CONSERVATION FACTSHEET

Domestic Well User Water Conservation

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THE UNIVERSITY OF ARIZONA COOPERATIVE EXTENSION
WATER RESOURCES RESEARCH CENTER
wrrc.arizona.edu/conserve

Background

This factsheet provides information on water conservation strategies for domestic well users. In 2020, Arizonans supplied their own domestic water from almost 85,000 groundwater wells.[1] Today, analysis of the ADWR Wells55 registry demonstrates that the number in 2026 is 99,000.[2] Domestic well owners are responsible for maintaining wells and ensuring that water meets safe drinking water quality standards. More than half (56%) of domestic wells are located in **groundwater basins*** experiencing groundwater decline, and almost half of these are located in areas where groundwater decline is more than 1 foot per year.[3]

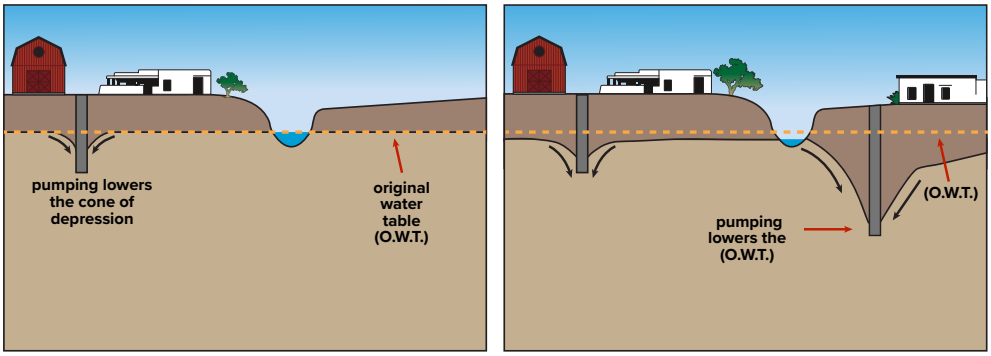

Figure 1. The graphic shows the impact of a new well on the water table, a nearby stream, and the existing well. As a new water user starts pumping a large volume of water from their well, the water table falls. Eventually, the stream and initial well may run dry.

Wells pump groundwater from aquifers, underground layers of rock and sediments saturated with water. Cracks and pores in the aquifer allow water to move, usually by gravity, but also by other forces. When a pump begins pulling water out of the ground, groundwater flows through the aquifer towards the pump, much like a liquid in an ice filled glass can be sucked toward a straw. A pumping well creates a **cone of depression**; the shape and extent of this cone depend on the rate of pumping and aquifer characteristics. Closely spaced wells can have overlapping cones of depression (see Figure 1). In this way, pumping impacts the groundwater level near the well, and multiple wells can impact groundwater levels over a broad area.

If the groundwater levels are near the bottom of the well, the pump may suck up air and grit, which may damage the pump and associated plumbing. Water conservation by pumpers in the same area can preserve water levels for everyone and mitigate changes to water quality.[4] Deepening a well, replacing well-related equipment, or installing a water treatment system is much more expensive than employing conservation strategies.

Where are Arizona Domestic Wells?

Domestic groundwater wells are located throughout Arizona. The Arizona Department of Water Resources (ADWR) regulates groundwater use within **Active Management Areas (AMAs)** (Figure 2). In AMAs, most domestic wells—those pumping less than or equal to 35 gallons per minute—are classified as **exempt wells**, with no reporting requirements and their water use is minimally regulated by ADWR; however, these wells may not be used to irrigate gardens larger than two acres. Outside of AMAs,

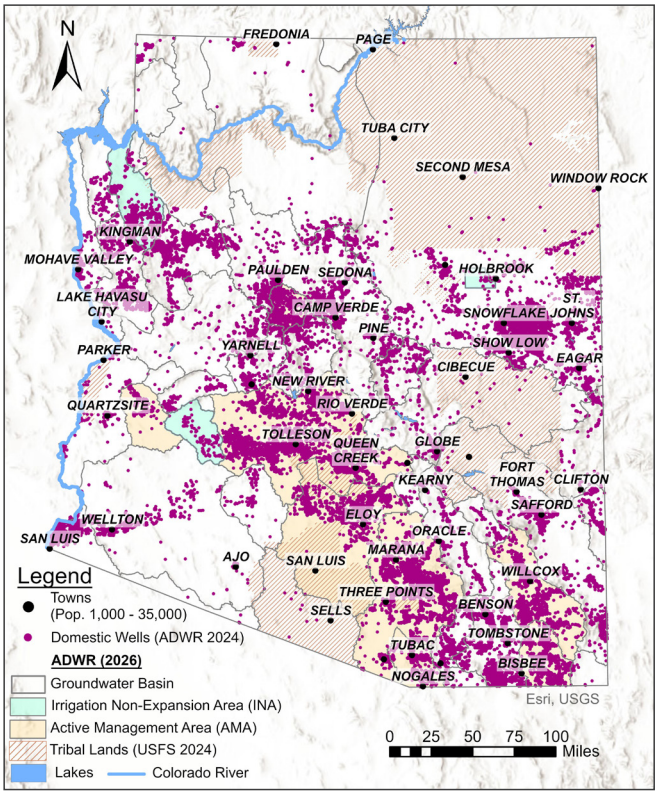

Figure 2. Map of domestic wells in Arizona as recorded by ADWR Wells 55 Registry[2] and AMAs and INAs.[5] Note that the ADWR database does not include many wells located on Tribal land due to the sovereign status of those lands.

Highlighted words are defined in the online resources section for this factsheet.

ADWR has limited authority over groundwater. In designated **Irrigation Non-Expansion Areas (INAs)**, the footprint of irrigated agriculture cannot increase over historical levels. Outside of AMAs and INAs, landowners may withdraw water from beneath their property for any "reasonable and beneficial use." As of 2026, 59% of domestic groundwater wells were located outside of regulated areas.

Where to Look for Water Savings

A 2025 study found that the average annual daily water consumption by residential users in Arizona was 139 gallons per capita per day (GPCD),[6] which is equivalent to 50,735 gallons per capita per year (GPCY). Previous studies estimated a slightly lower 110 GPCD for **self-supplied** water;[7] however, because exempt well owners do not report their use, data on self-supplied water use is limited.

Understanding how domestic well water is used can point to strategies for water conservation.

Domestic water is used for outdoor and indoor purposes. Outdoor water use may include landscape irrigation, filling a pool, or cleaning patios and other paved areas. Indoor uses may include drinking, cooking, cleaning, personal hygiene, and toilet flushing. A recent water use study in Arizona found that approximately 64% of water was used outdoors.[8] The remainder of water is used indoors, where toilets, showers and faucets are typically the biggest water users indoors (Figure 3).

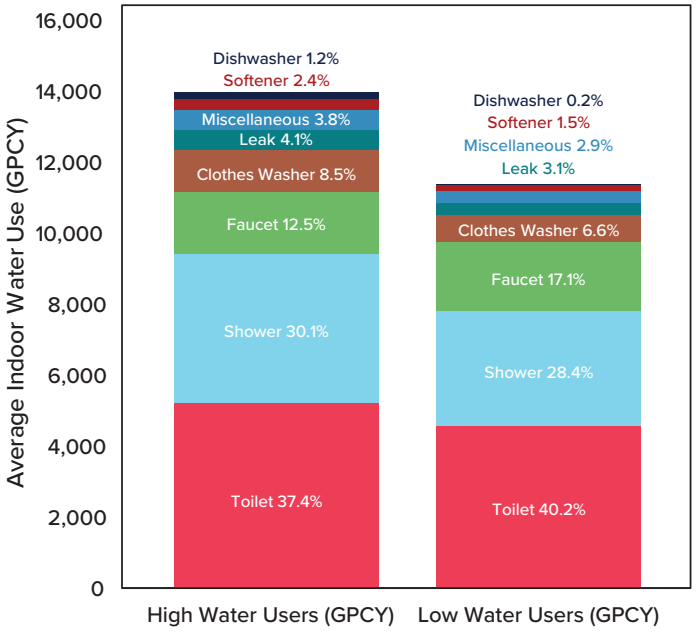

Figure 3. Comparison of the average daily indoor water use in gallons per capita per year (GPCY) for high and low water users across the nation. High water users typically did not practice water saving strategies (behavioral or technological), while low water users did.[8]

Conservation Strategies

Domestic well users can conserve groundwater and augment their water with alternative supplies by adopting technologies and behavioral changes. Below are some strategies for water conservation and augmentation.

Outdoor Water Conservation Strategies

Most outdoor water use is from irrigating landscapes or gardens. Smart watering practices and the use of native, arid-adapted plants are among the best water conservation strategies for outdoor use.

Behaviors	Technologies
• Plant native arid-adapted plants rather than turf. Turf removal can reduce a home's water consumption by 20%.[9] Astro Turf or a similar PFAS-free option can provide an alternative if turf is needed. • Water plants during the coolest part of the day and add two to three inches of mulch to reduce evaporation. • Sweep driveways, sidewalks, and steps rather than hosing them off. • Wash vehicles with a bucket and sponge rather than a hose.	• Replace standard clock-based irrigation controllers with EPA WaterSense labeled smart irrigation controllers. This can save up to 15,000 gallons of water annually. **Annual Water Savings: 15,000 GPCY** **Estimated Cost: $450** **Investing in a smart irrigation controller is one of the most cost-efficient water saving strategies!**

Indoor Water Conservation Strategies

Find other water saving strategies at https://wateruseitwisely.com/

Conserving water indoors can also be achieved by installing WaterSense technologies and modifying behaviors. Compared to traditional appliances and faucets, WaterSense labeled appliances and faucets can reduce water use by 50%. A recent study found that households with high-efficiency appliances used about 18.5% less water than older appliances households.[6] **The most cost-efficient water savings can come from replacing toilets and shower heads!**

Behaviors	Technologies
• Turn off the faucet when brushing your teeth. • Take shorter showers. Aim for 5 minutes or less. • Check for leaks. Leaks are common in toilet flappers, showers, hose bibs, and faucets. • Wash dishes in stoppered sink or bowl. Washing the dishes with the tap running can use up to 20 gallons of water, while filling the sink or a bowl and turning the tap off saves 10 of those gallons. • Skip rinsing dishes before loading the dishwasher and save up to 10 gallons per load. • Thaw food in the refrigerator overnight rather than running under tap water. • Add food wastes to your compost pile instead of using the garbage disposal.	• If your toilet was purchased before 1992, replace it with a WaterSense model **Annual Water Savings: 5,750 GPCY** **Estimated Cost: $110** • Replace old clothes washer with an ENERGY STAR® certified model **Annual Water Savings: 3,950 GPCY** **Estimated Cost: $520** • Replace dish washer with an ENERGY STAR® certified model **Annual Water Savings: 350 GPCY** **Estimated Cost: $500** • Replace old showerhead with a WaterSense **Annual Water Savings: 2,450 GPCY** **Estimated Cost: $40** • Divert a point-of-use RO system concentrate stream to a cistern rather than sewer. (See next section.) **Annual Water Savings: 4,400 GPCY** **Estimated Cost: $1,000**

Water Conservation Associated With At-Home Water Treatment

Domestic well users are responsible for ensuring that their water meets safe drinking water quality. An Arizona Department of Environmental Quality groundwater sampling campaign of 1,766 sites throughout the state found that 35% of the sites exceeded at least one primary maximum concentration level for drinking water.[10] At-home water treatment systems can treat water to meet safe drinking water standards. However, it is important to note that some technologies, such as water softeners and reverse osmosis (RO), produce a brine stream that is typically diverted to a waste line or septic system.

- **Water Softeners:** Water softening units typically treat all of the water entering a home. They use water during their regeneration cycles, typically 15-120 gallons of highly salty brine are produced per 1,000 gallons of treated water.
- **Reverse Osmosis:** RO units are typically installed beneath the kitchen sink to treat water used for drinking and cooking. Older models can produce 4 -10 gallons of wastewater for every gallon that is treated. If you use 1.5 gallons of treated water per day for cooking and drinking, then roughly 3,800-5,500 gallons of brine are produced per year. Notably, the brine stream produced by residential RO units is not very concentrated and could be used for other uses, such as flushing toilets or irrigation.

Water should be treated to meet safe drinking water standards. However, there are alternative water treatment technologies that use less water and are similarly priced. For example, adsorptive media and anion exchange are two effective water treatment technologies that recover nearly 100% of the water used and can be used to treat common groundwater contaminants, including fluoride, arsenic, and nitrates.

Leak Prevention Strategies

According to the U.S. EPA, the average household loses more than 10,000 gallons of water each year through leaks, which is the same amount of water needed to wash 280 loads of laundry, take 600 showers, or meet the average family's water needs for a month. Water leaks commonly occur in toilet flappers or outdoor spigots, but can occur in other parts of the plumbing system. Using water monitoring technologies or being diligent about checking for leaks can save water.

Behaviors	Technologies
• Be alert for persistent pump cycling, which may indicate a leak in the system. • Check the wellhead for vegetation or pooling water. These may be signs of underground leaks or a compromised seal. • Check plumbing (from wellhead to tap) for unexplained wet spots in the yard along the route from the well to the home. • Check landscaping along potable water line, septic, or sewer line for additional plant growth that can indicate a leak.	• Install a smart water meter to track water use and provide leak detection. **Annual Water Savings: 3,300 GPCY** **Estimated Cost: $270** **Many insurance companies offer incentives for installing smart water leak detectors such as a discount on your policy and/or free or discounted detectors.** *NOTE: Any damage to well components should be addressed by a qualified well professional. Leak detection may be difficult depending on the geologic zone and soil profiles.*

Alternative Water Supply Augmentation Strategies

In addition to reducing water consumption, it is also possible to capture rainwater or reuse gray water on your property. Captured rainwater or gray water can easily be used to meet outdoor water use. With proper treatment, harvested rainwater can also be used to meet indoor water use. Check for any local plumbing code and permitting requirements.

Rainwater Harvesting	Gray Water
Annual precipitation throughout Arizona ranges from 3 inches in southwest Yuma to 40 inches in the White Mountains. Rainwater harvesting captures runoff from roofs. Rainwater can be stored in storage tanks (active) to be put to beneficial use throughout the year, or it can be directed to basins (passive) to infiltrate into the landscape. Depending on the size of the roof and annual rainfall, the amount of rainwater that can be harvested ranges from a few thousand to tens of thousands of gallons per year. Harvested rainwater can easily be used for irrigation to offset the freshwater demand. **Annual Water Savings: 3,700-21,200 GPCY** **Estimated Cost: $2,000-$4,500**	Gray water, the wastewater generated from domestic processes such as laundry and bathing **(not from kitchen sinks or toilets)**, comprises 50-80% of residential wastewater. With minor plumbing adjustments, this water can be used around the property, including for flushing toilets and irrigating landscape. **Annual Water Savings: 3,300-5,750 GPCY** **Estimated Cost: $600-$1,000** *Note: The cost and capacity of rainwater and gray water harvesting varies greatly depending on the size of the system. There are many health and water quality concerns to address before using gray water. Gray water can harm plants due to soil salinity build up; use low sodium soaps and consult on how to mitigate with soil amendment when irrigating with gray water.*

Getting Started

Adopting water conservation strategies can be financially and personally rewarding. Many resources are available; you do not have to figure this out alone. **Please use the QR code below or visit wrrc.arizona.edu/conserve to find additional resources and references (linked by numbers in the text) used for the creation of this factsheet.**

Additional Definitions, Resources, and References
wrrc.arizona.edu/conserve

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