ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

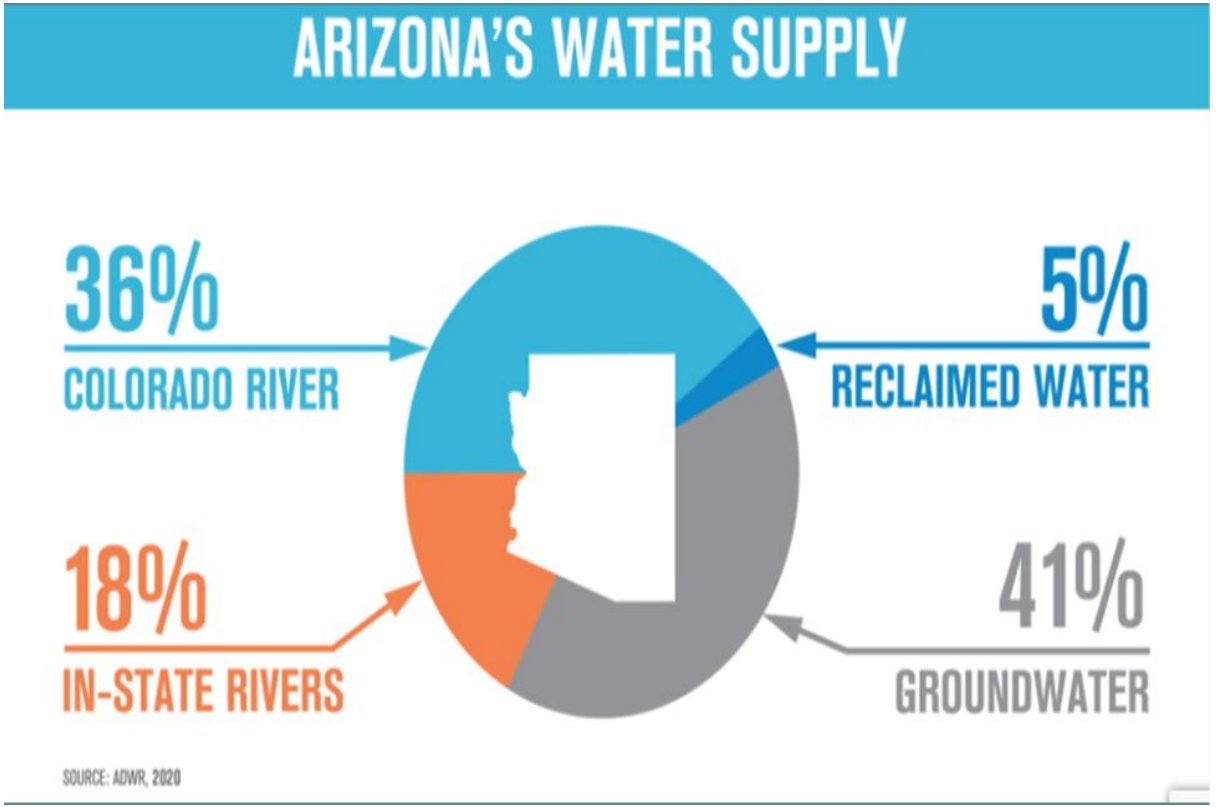
# Reuse in Arizona

Trevor Baggiore, Water Quality Division

# Arizona Reuse History

- Arizona was one of the first states to reuse treated wastewater
  - 1926 – Reuse of reclaimed water began at South Rim, Grand Canyon
  - 1972 – First Reclaimed Water Rules by ADHS
  - 2001 – Updated comprehensive reclaimed water rules
  - 2018 – Rule revision to allow direct potable reuse of purified water for human consumption
  - 2025 - ADEQ approves rules and implements program for Advanced Water Purification

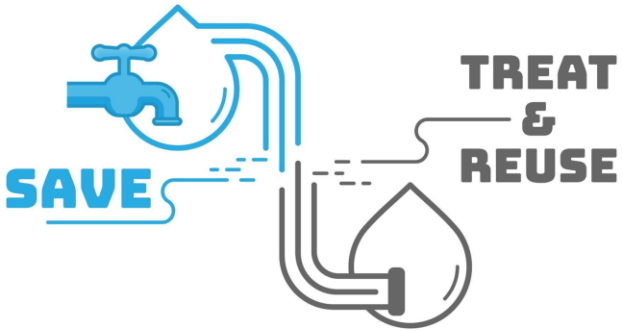
# Water Supply Portfolio



# Program Structure

Three Separate Programs

- Gray Water
- Industrial Reuse
- Wastewater Reuse



# Gray Water Use in Arizona

- Gray water is widely used throughout AZ
- Estimated 100,000+ homeowner gray water users
- Simple best management practices (BMPs) to use gra
  water

Home gray water irrigation

ADEQ Arizona Department of Environmental Quality

Water Quality Division

Using Gray Water at Home

Publication Number: FS-22-03

Every drop of water counts. Conserve the fresh water supply and save money on your water bill by using gray water for landscape irrigation at your home and following some basic requirements.

azdeq.gov/graywater

What is gray water?

Gray water is wastewater collected separately from sewage flow. Gray water includes water from washing machines (clothes only), bathtubs, showers or sinks.

Gray water may contain fats, oils, grease, hair, lint, soaps, cleansers, fabric softeners and other chemicals. It's important to understand which chemicals go down household drains as you don't want to use gray water with elevated levels of chlorides, sodium, borax or sulfate that has a high pH, which could be harmful to your plants.

Gray water does not include water from a kitchen sink, dishwasher or toilet. These sources produce "black water," which should not be reused at home because of the high risk of contamination by bacteria, viruses and other pathogens.

Do I need a permit to use gray water at home?

No. As long as you are only using gray water at your private residence, you only need to follow some required best management practices, which were developed to protect public health and the environment.

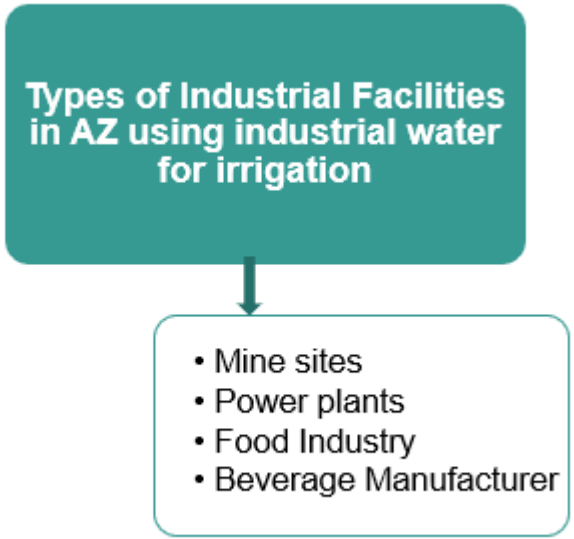
Best Management Practices

- Your gray water must only be used for household gardening, composting or landscape watering at your home where it cannot be accessible by the public or run off your property.
- Gray water flow must be less than 400 gallons per day.
- Gray water may only be used in locations where groundwater is at least 5 feet below the surface throughout the year and cannot be in a floodway (e.g., wash or drainage way).
- Do not use gray water on any plants that produce food, except trees and shrubs with edible portions that the gray water does not touch.
- Avoid overwatering and incorporate practices to increase filtration and minimize standing water, such as using mulch cover.
- Use only flood or drip watering methods. Spraying gray water is prohibited due to the potential for inhalation or drifting off-site.
- Avoid contact with gray water or soil irrigated with gray water as much as possible.
- Gray water cannot contain hazardous chemicals such as antifreeze, mothballs or solvents. Do not include wash water from greasy or oily rags in your gray water.
- Gray water must not contain water used to wash diapers or other infectious garments. This water must be discharged to a residential sewer line.
- Label pipes carrying gray water under pressure to eliminate confusion between gray water and drinking water pipes.
- Cover, seal and secure any surge tanks to restrict access by small rodents and to control disease-carrying insects, such as mosquitoes. Also, minimize the time water is held in surge tanks to avoid any unpleasant odors.
- Should a blockage, backup or overload occur, gray water use must cease until the problem is corrected. The gray water system may include a means of filtration to reduce plugging and extend system lifetime.
- If you have septic or other onsite wastewater treatment and disposal system for black water, your gray water use must not change the system's design requirements for capacity and reserve areas. Contact your County for more information about system requirements.

March 2022

# Industrial Water Reuse

- Industrial Water Reuse Rules
  - to reuse industrial wastewater containing sewage and
  - to reuse of industrial wastewater for productio or processing of any crop
- Industrial reclaimed water quality requirements are base on type of the industry and type of reuse.



# WWTP Program Structure

Five classes of reclaimed water


| Type of Direct Reuse | Minimum Class of Reclaimed Water Required |
|---|---|
| Irrigation of food crops | A |
| Recreational impoundments | A |
| Residential landscape irrigation | A |
| Schoolground landscape irrigation | A |
| Open access landscape irrigation | A |
| Toilet and urinal flushing | A |
| Fire protection systems | A |
| Spray irrigation of an orchard or vineyard | A |
| Commercial closed loop air conditioning systems | A |
| Vehicle and equipment washing (does not include self-service vehicle washes) | A |
| Snowmaking | A |

| Type of Direct Reuse | Minimum Class of Reclaimed Water Required |
|---|---|
| Surface irrigation of an orchard or vineyard | B |
| Golf course irrigation | B |
| Restricted access landscape irrigation | B |
| Landscape impoundment | B |
| Dust control | B |
| Soil compaction and similar construction activities | B |
| Pasture for milking animals | B |
| Livestock watering (dairy animals) | B |
| Concrete and cement mixing | B |
| Materials washing and sieving | B |
| Street cleaning | B |

| Type of Direct Reuse | Minimum Class of Reclaimed Water Required |
|---|---|
| Pasture for non-dairy animals | C |
| Livestock watering (non-dairy animals) | C |
| Irrigation of sod farms | C |
| Irrigation of fiber, seed, forage, and similar crops | C |
| Silviculture | C |

# Reuse in Arizona

***Of Arizona's 84 largest WWTPs (i.e. design flow ≥ 1 million of gallons per day (mgd))…***

***92% distribute at least some reclaimed water for reuse***


**Irrigating athletic field with reclaimed water, U of A**

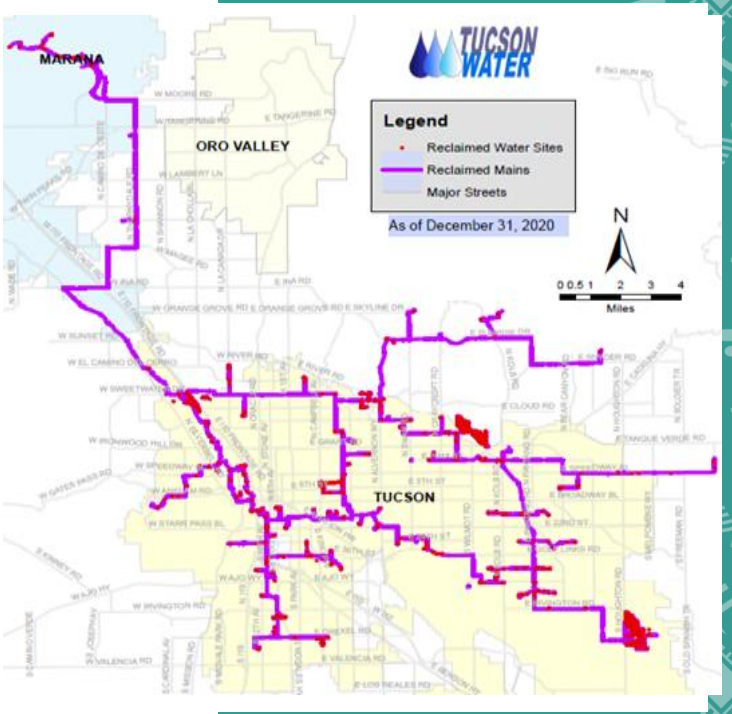
***68% distribute Class A+ water***

**Reclaimed water amenity, Sun Lakes, Maricopa County**

# Reuse in Arizona

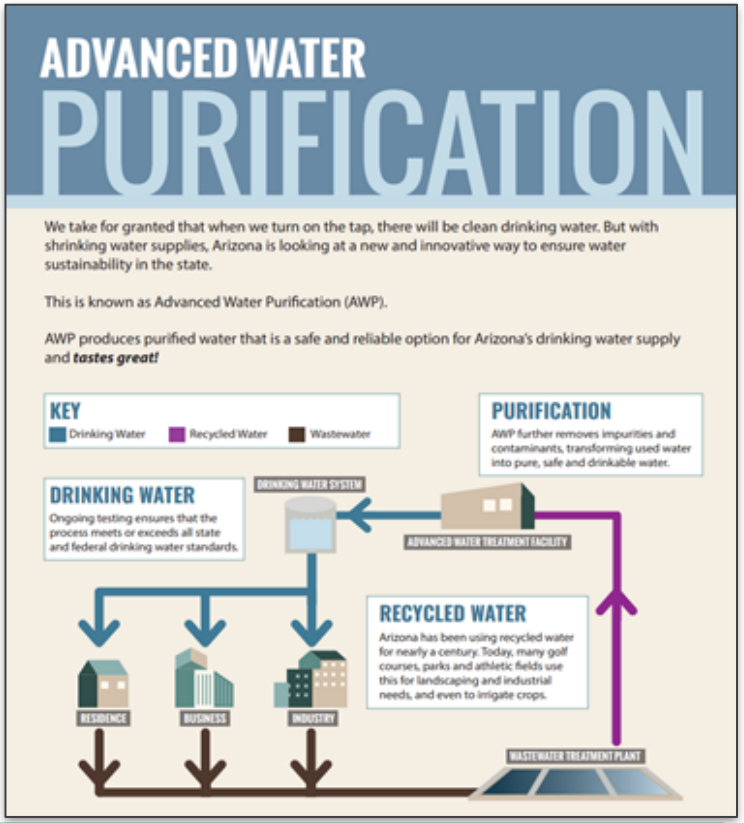
City of Tucson

- >173 miles of purple pipes
- Serves >1000 customers including schools, parks, golf courses, and single family homes
- >30 mgd of reclaimed water is delivered during summer



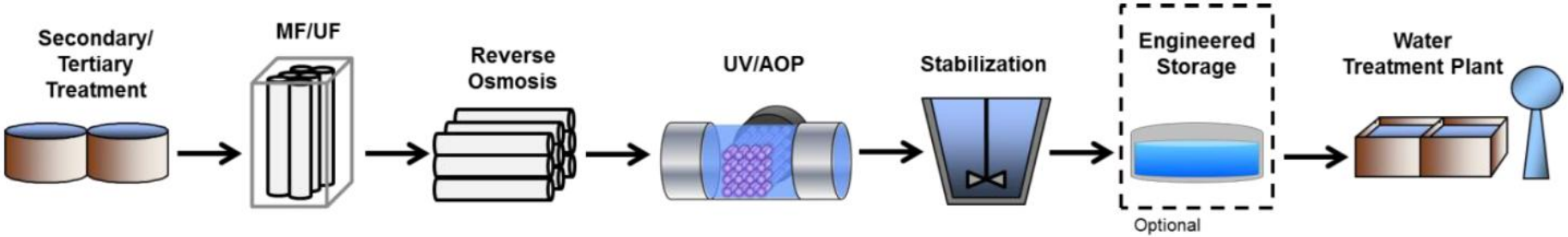
# Advanced Water Purification (AWP)

- What is AWP?
  - Simply put, AWP takes used water that has left your home and turns it into a valuable resource — purified water.
  - Cutting-edge methods to remove impurities, harmful chemical contaminants and pathogens, producing high-quality drinking water.
  - This purified drinking water meets or exceeds state and federal regulatory and health-based standards.



# AWP Rulemaking


- Rulemaking timeline: July, 2022 - March, 2025
- March 4, 2025 - AWP rules approved and went into effect the same day



# AWP Program Implementation

Biggest Challenges to AWP Adoption *(based on ADEQ statewide quantitative surveys 2023 & 2024)*

- **Safety skepticism remains high** — 57% cite safety concerns as a top barrier.
- **"Yuck factor" is persistent** — 48% say it makes them hesitant to drink purified water.
- **Cost concerns** — 46% worry about both personal and municipal costs.
- **Lack of understanding** — 45% are unfamiliar with AWP's process.
- **Declining urgency about water crisis** — Fewer residents see a crisis as imminent, reducing perceived need for AWP.




# AWP Program Implementation

Key Takeaways for Public Outreach *(based on ADEQ statewide quantitative surveys 2023 & 2024)*

- **Education is critical**
- **Reinforce safety**
- **Tailor communication**
- **Highlight urgency/importance**

CITY OF SCOTTSDALE ARIZONA

City of Phoenix

PIMA COUNTY

CITY OF TUCSON

# Thank You!

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