



COLLEGE OF AGRICULTURE & LIFE SCIENCES  
COOPERATIVE EXTENSION

# **WATER RESOURCES RESEARCH CENTER**

## **Pima County Water Factsheet**

Tailoring Meaningful Water Information at the County  
Scale with and for Local Stakeholders

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**[wrrc.arizona.edu](http://wrrc.arizona.edu)**

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# Introduction and Background



# Laying the Groundwork for the Arizona Water Factsheets



Old Main, University of Arizona, 1902  
Courtesy of UArizona Special Collections.

The WRRC is a unit of the  
University of Arizona  
Cooperative Extension System



Bridging the research and  
educational outreach of the  
university with the needs of  
our communities.



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# Maricopa County Water 101

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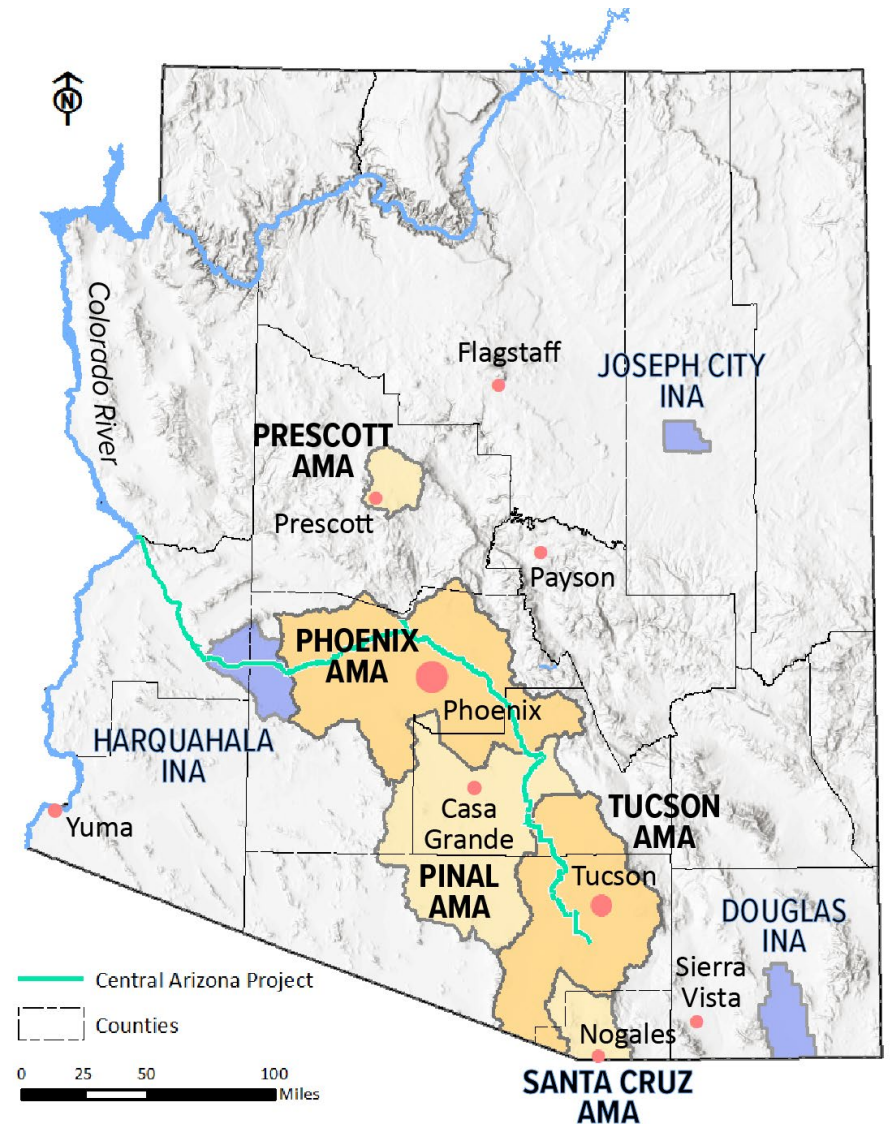
THE UNIVERSITY OF ARIZONA  
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# Untangling Water Information, County by County

Packaging water information at a county scale is not as simple as it may sound...

The question of scale and units

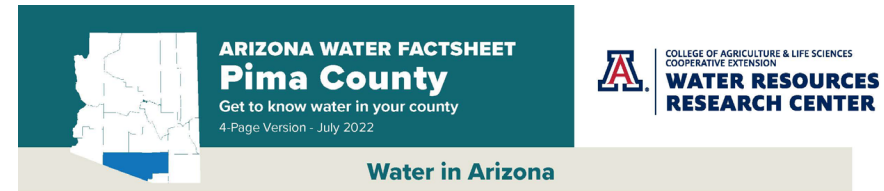
- Management boundaries
- USGS vs ADWR
- Acre-feet or gallons?
- **Information must be accessible\*!**



# Covering Water Topics from A to Z

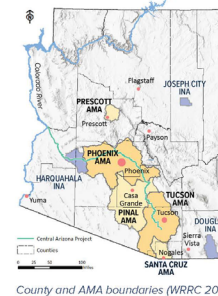
Not only do the factsheets reconcile different sources of information, they organize and make sense of relevant topics and resources for a general reader.

The factsheet template provides flexibility to incorporate the unique water characteristics of each county, such as Pima County's emphasis on the value of flowing rivers and healthy riparian habitats.

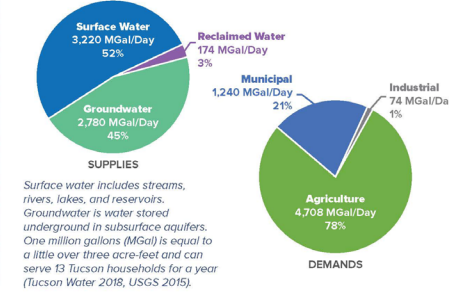


Arizona's future depends on sustainable water supplies, which in turn depend on vigilant and innovative management of those supplies. From low deserts to high mountains, counties and communities face different water challenges and take different approaches to addressing those challenges, while conforming with regional, state, and federal requirements. The Arizona Department of Environmental Quality (ADEQ) is responsible for water quality and tasked with enforcing federal environmental standards. The Arizona Department of Water Resources (ADWR) oversees the use of surface water and groundwater, which are legally distinct though physically interconnected. In general, ADWR regulates groundwater more strictly in Active Management Areas (AMAs) than in the rest of the state.

## Statewide Context



## Arizona Water Supply and Demand

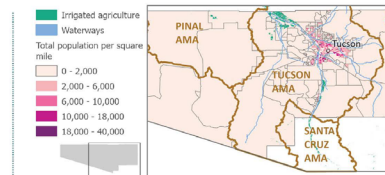


## Water in Pima County

Pima County lies at an ecological crossroad where the neo-tropics meet the Sonoran Desert and Rocky Mountains. Covering much of the county, the Sonoran Desert is the wettest, hottest, and most biodiverse desert in North America. On average, Arizona receives 3-40 inches of precipitation per year, with Pima County averaging 13 inches. The summer and winter rainy seasons are vital to this region and to many naturally flowing streams and springs. While most watercourses only flow when it rains, segments of the Santa Cruz and San Pedro Rivers flow year-round. As Federal and Tribal lands span most of central and western Pima County (Tribal 42%, Federal 19%, State Trust 15%, private 14%), water use and management are concentrated on the more populous eastern side of the county.



Land ownership in Pima County (Arizona State Land Department 2020).



Population density and agricultural lands in Pima County and Tucson AMA (US Census Bureau 2020, USDA 2011).

# Office of Sustainability and Conservation



*Working to promote a sustainable and livable community and to conserve Pima County's natural and cultural resources through the implementation of Board adopted policies that promote the environmental, social, and economic well-being of our region*





# Why a Water Factsheet?

Pima County's Involvement

Unique Characteristics of Pima County

Climate Crisis: Need to Have Common Framework

Value of the Water Factsheet for the County

- Reliability Important for All County Residents
- Resilient Sound Water Management Important for Economic Development and Protection of Our Environmental Resources
- Water Conservation is a Component of County's Commitment to Sustainability
- All County Residents are Stakeholders

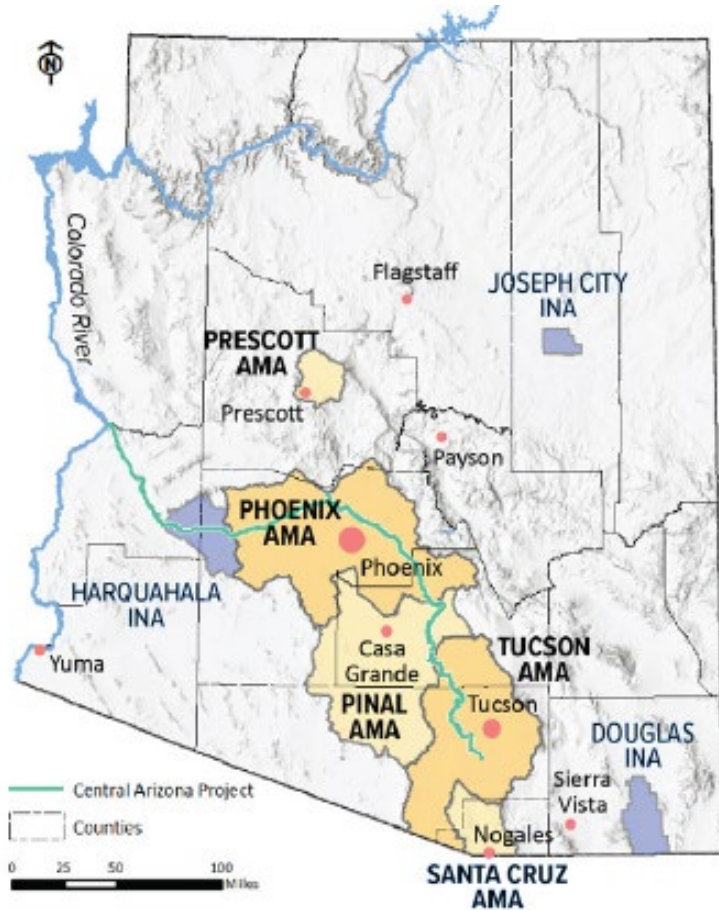
# Technical Advisory Committee



Cooperative Extension

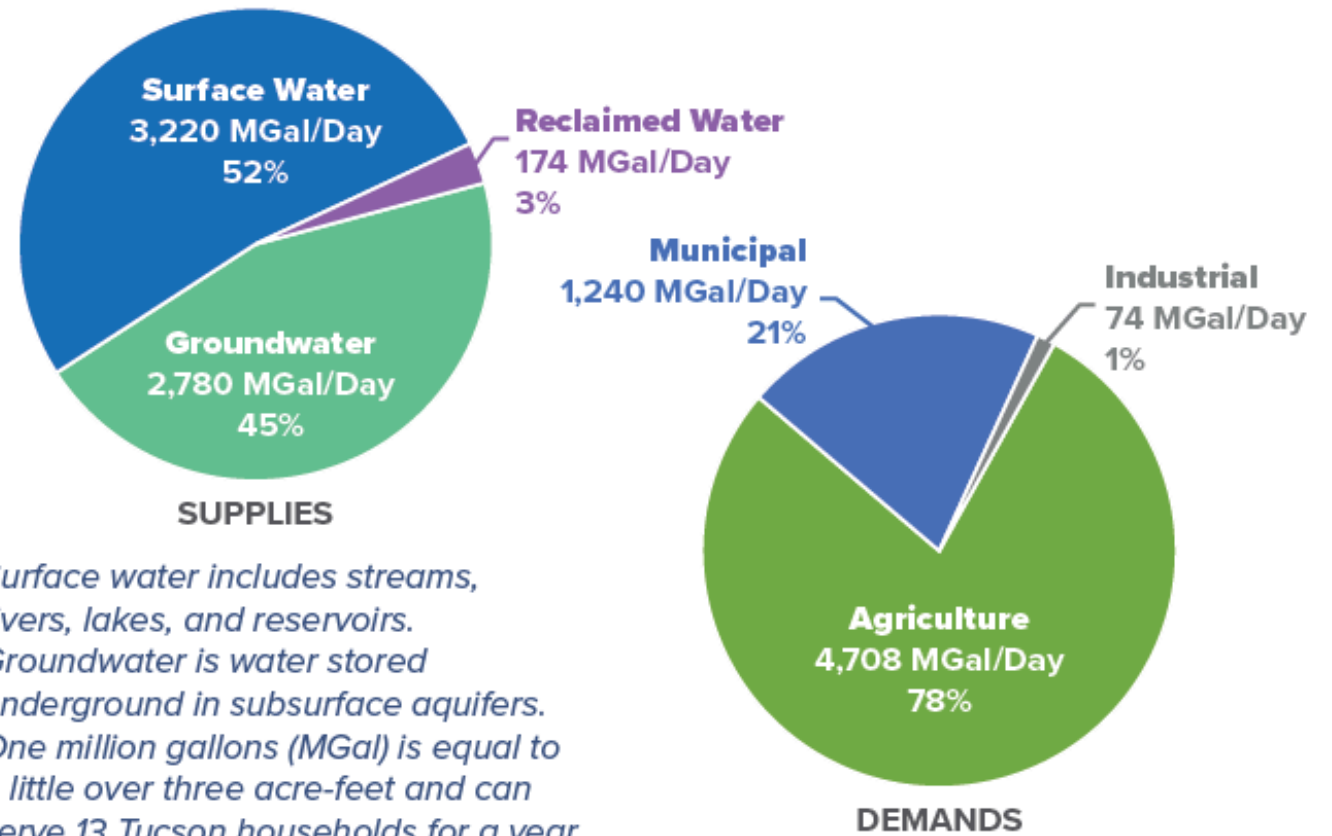


# The Statewide Context



County and AMA boundaries (WRRC 2021).

## Arizona Water Supply and Demand



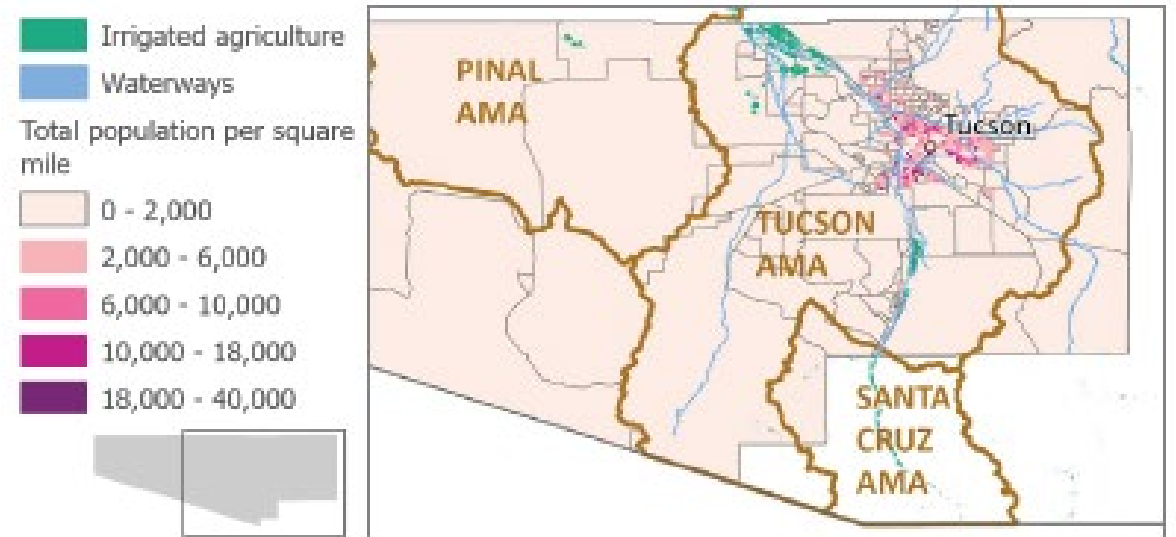
Surface water includes streams, rivers, lakes, and reservoirs. Groundwater is water stored underground in subsurface aquifers. One million gallons (MGal) is equal to a little over three acre-feet and can serve 13 Tucson households for a year (Tucson Water 2018, USGS 2015).

# Water in Pima County

## Water within the context of land ownership and management



*Land ownership in Pima County  
(Arizona State Land Department 2020).*



*Population density and agricultural lands in Pima County and  
Tucson AMA (US Census Bureau 2020, USDA 2011).*

# Frequently Asked Questions

## Where Does Pima County's Water Come From?

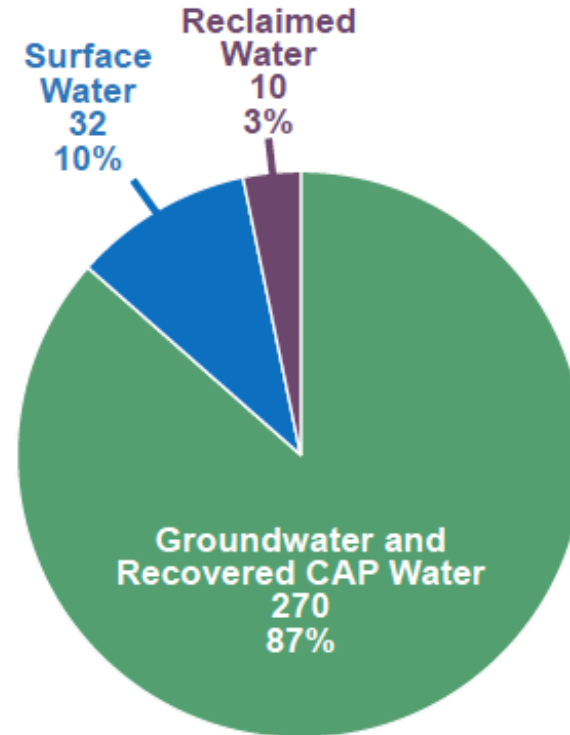
Groundwater

Colorado River

Surface Water

Reclaimed Water

Incidental Recharge



Sources (Million Gallons/Day) for Pima County's water (USGS 2015).

Note: USGS categorizes stored CAP water as groundwater, because it is withdrawn for use from the aquifers after storage.

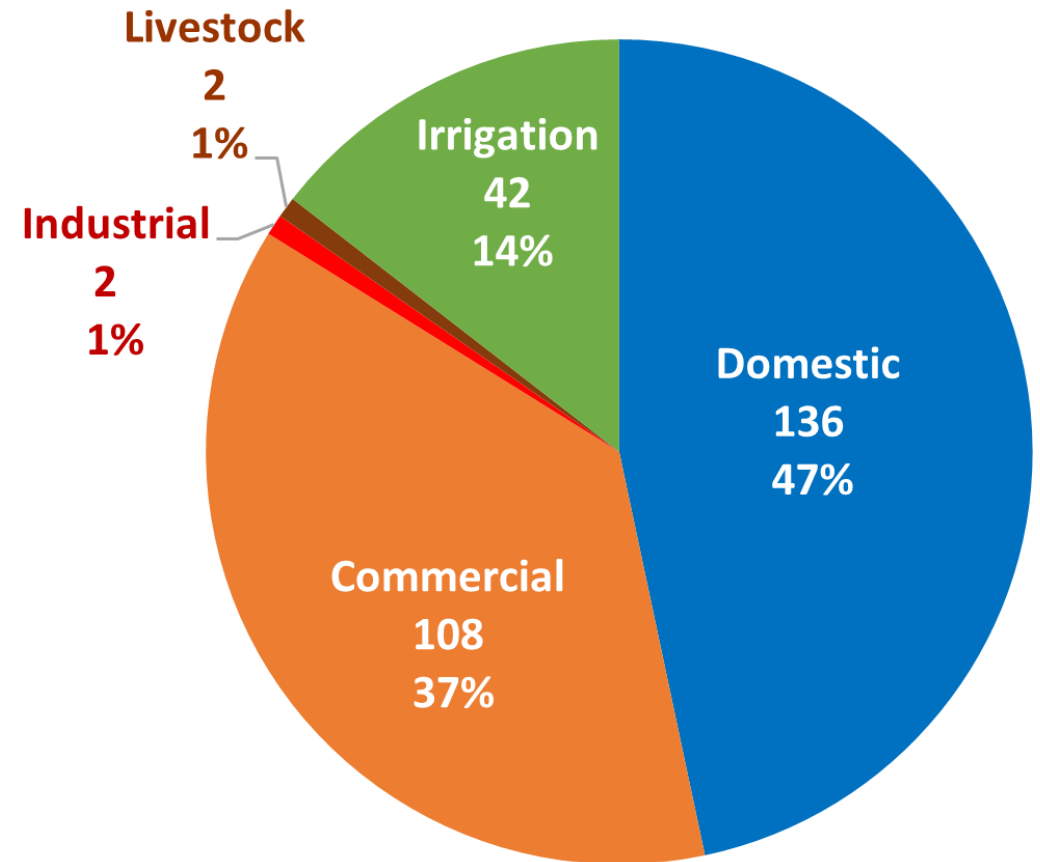
## How Is Water Used in Pima County?

### Trends

- Since the 1990, population has doubled, but water use stayed the same
- Shift from agricultural to municipal

### Artificial Groundwater Recharge

- In natural streams and constructed basins
- In-stream recharge benefits plants, wildlife, and people



*Water use (Million Gallons/Day) in Pima County (USGS 2015).*

# What Water Challenges Does Pima County Face?

## Quantity Challenges

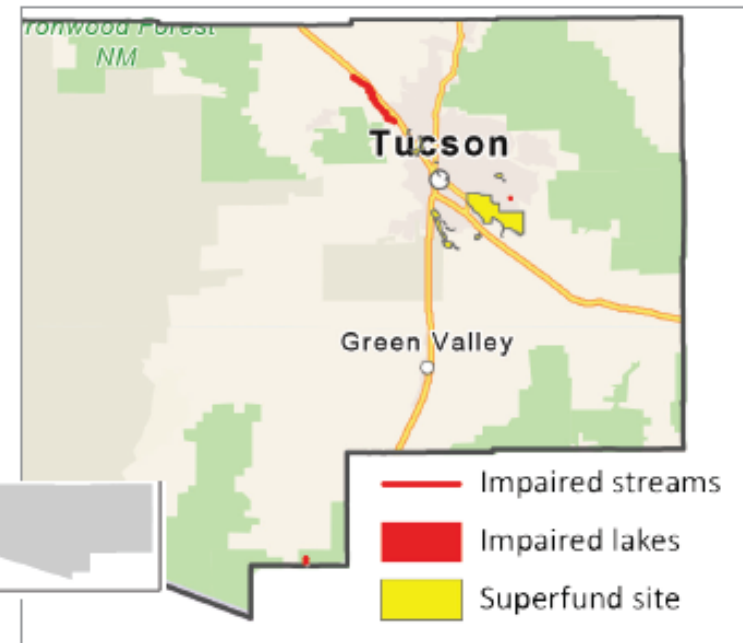
- Hydrologic disconnect
- Overdraft/Land Subsidence
- Riparian habitat – affected by shallow wells
- **Colorado River Shortage**

## Quality Challenges

- Superfund sites
- Groundwater contamination
- Surface water pollution

### *Opportunities!*

Up to 31% of water used in Tucson homes can be reused as graywater to irrigate plants and trees. Washing machines are usually the easiest source of gray water. The City of Tucson offers rebates for gray water systems.



*Impaired streams, lakes, and Superfund sites (ADEQ 2020).*

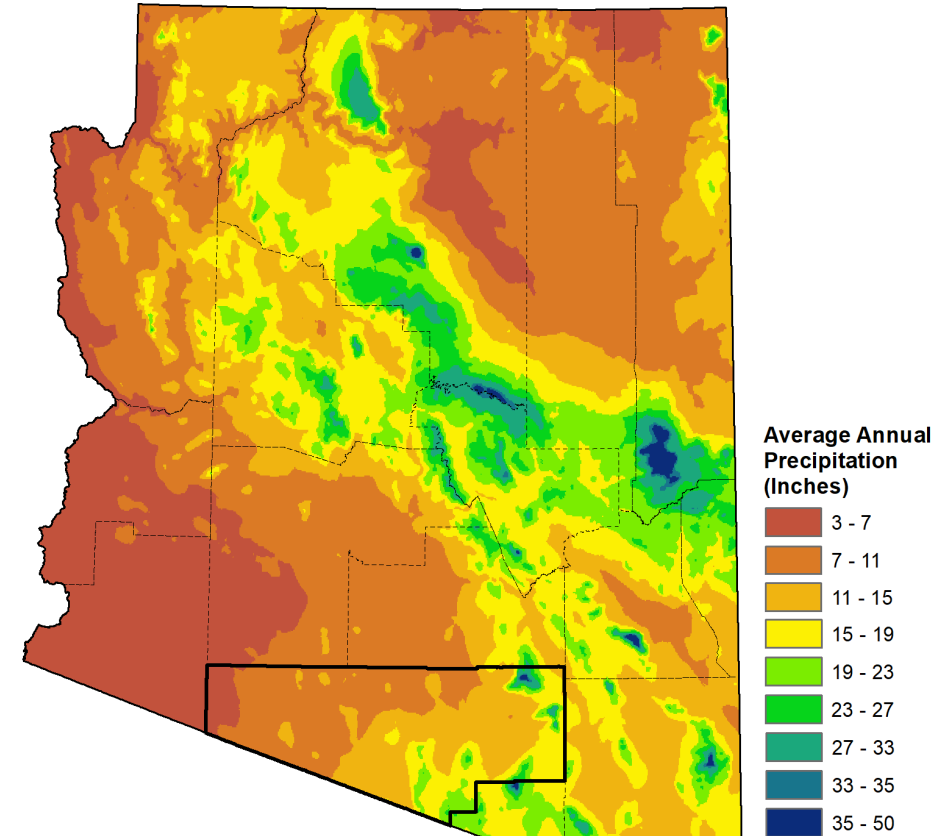
## What Does Pima County's Future Water Situation Look Like?

Because the region expected to be disproportionately impacted by climate change, Pima County's water supplies, communities, and ecosystems are likely to be hit harder and faster than elsewhere around the country.

Some impacts:

- Extreme heat
- Intensifying drought
- Increased groundwater pumping
  - Impacts to natural environments
- Wildfire
- Colorado River Uncertainty

**There are also opportunities!**



Mean Precipitation 1981-2010 (PRISM Climate Group 2016).



# How Is Pima County Moving Toward Sustainable Water Management?

## Conservation and Innovation

CAP Recharge

Water Reuse

Rainwater Harvesting

Regional Coordination

Efficiency

Integrated Land and Water Planning

Community Health and Environmental Values

By the early 1900s, the Santa Cruz River had lost all native fish species. Due to efforts to improve water quality and increase streamflow, two native fish species have been reintroduced!

## Additional Resources

The WRRC has compiled and periodically updates a list of additional resources related to water in Arizona. These resources range from statewide information from ADWR to information available from local watershed groups and non-profits. Visit the [WRRC website](#) to see the complete list. The resources used for this factsheet are provided below.

### WRRC Water Map

A reliable and concise visual representation of Arizona's water resources. This map includes information on land ownership, water use by groundwater basin, annual precipitation by planning area, subsidence and groundwater storage, annual water use by region, supply and demand, Colorado River apportionment, and more. [Map Info](#)

### Statewide Water Resources

- **ADEQ Emerging Contaminants Report:** An assessment of the emerging contaminants in Arizona's water supplies.
- **ADEQ Impaired Water Information:** Maps and information about the impaired surface waters in the state.
- **ADEQ WQARF Registry:** A list of WQARF sites across the state with descriptions of the individual sites.
- **ADEQ Superfund Sites:** An overview of Superfund sites and descriptions of the sites located in Arizona.
- **ADWR Community Water System Map:** A map of water providers and their service areas.
- **AZ State Maps:** A state population density map with county boundaries, used for the population density map of Maricopa County.
- **Cooperative Extension Save Water:** Information on water saving techniques for Arizona relating to irrigation, gray water, and rainwater harvesting.
- **Desert Water Harvesting Initiative:** A website with resources for local water harvesting and Green Infrastructure
- **PRISM database:** Data on historic and current climate patterns, used for the precipitation map of Arizona.
- **USGS Ground Water Atlas of the United States:** Groundwater and aquifer basics and in-depth publications about aquifers throughout the US.
- **Tribal Water Rights:** Information Tribal water usage in the Colorado River basin and the barriers to that usage.

### Regional Management and Planning

- **Active Management Areas:** Information about groundwater regulation in Arizona and the management of AMAs.
- **CAP:** Background information on the Central Arizona Project.
- **Drought Contingency Plan (DCP):** An overview of the Drought Contingency Plan and its implications for Arizona water users.
- **Altar Valley Conservation Alliance:** A non-profit working to conserve, promote, and sustain healthy working landscapes through water conservation efforts among other initiatives.

### County Specific Water Resources

- **Nonpoint Education for Municipal Officials:** Watershed based plan for water quality improvement.
- **PAG Resources:** Various data resources and interactive maps from Pima Association of Governments.
- **PAG Areawide Water Quality Management Plan:** Water quality inventories and wastewater facility interactive map.
- **Pima County Comprehensive Plan:** Pima Prospers is the update to the long-range county plan.
- **Pima County Drought Response Plan:** Information about Pima County's drought response planning.
- **Pima County Living River Report:** The 2020 report on Santa Cruz River conditions.
- **Sonoran Desert Conservation Plan:** Pima County's plan to conserve natural resources.
- **Santa Cruz Watershed Collaborative:** Watershed stakeholders partnering on collective goals and priorities for healthy waterways and people in Tucson.
- **SAWUA:** Legislative briefings, water priorities, and bulletins from the Southern Arizona Water Users Association.

# Additional Resources

Sources for the factsheet and much much more...

[wrrc.arizona.edu/state-and-local-water-resources-information](http://wrrc.arizona.edu/state-and-local-water-resources-information)

<https://wrrc.arizona.edu/resources>:

Valuable Resources at your Fingertips

BROWSE ALL RESOURCES



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# Looking to the Future

The WRRC is in the final stages of producing the Cochise County factsheet and work is well underway for Graham and Greenlee counties. While the ultimate goal is to produce a factsheet for each of Arizona's 15 counties, the development process is dependent on collaborative input from local stakeholders and Cooperative Extension.

All Arizona Water Factsheets are hosted on the WRRC's dedicated factsheet webpage:

[wrrc.arizona.edu/arizona-water-factsheets](http://wrrc.arizona.edu/arizona-water-factsheets)

# Thank you!



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