

The Arizona Water Banking Authority

Preparing for Shortages on the Colorado River

Rebecca Bernat, Ph.D.

Water Resources Specialist Associate & Technical Administrator
Arizona Water Banking Authority



Water Resources Research Center
Seminar Series
May 2, 2023

Outline

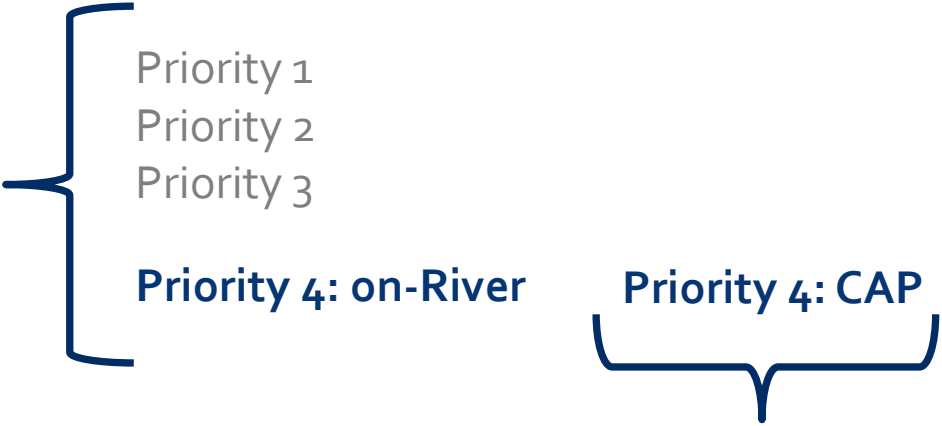
- Introduction
 - The Colorado River
 - Terminology
 - Commission and inter-agency support
- Water storage and long-term storage credit location
- Long-term storage credit purchase
- Water by recipient and fund
 - Central Arizona Project municipal and industrial subcontractors
 - Fourth priority on-River users
 - Tribal
 - Nevada
- Conclusion
- ADWR career opportunities

Introduction

THE COLORADO RIVER



Photo 1. Lake Mead | 2023



Indian priority **M&I subcontractors**
 NIA water
 Ag pool
Excess water



Photo 2. Central Arizona Project Canal | Somewhere in Arizona 2022 | Credits: Brian F. O’Neill

managed aquifer recharge
replenishment
artificial aquifer recharge **mar**
anthropogenic aquifer recharge
asr
recharge
aquifer recharge
aquifer storage and recovery
recharge and recovery
aquifer storage
water banking

Introduction



Thomas Buschatzke – Chair
Director of the Arizona Department of Water Resources



Mark Clark – Vice Chair
Representing mainstem Colorado River contractors



Joseph Olsen, P.E.
Knowledgeable in water resource management



Eric Braun – Secretary
Representing CAP M&I subcontractors



Mark Taylor
Representing CAWCD, designated by
CAWCD Board President Terry Goddard



Senator Sine Kerr
Ex officio member, designated by
Senate President Warren Petersen



Representative Austin Smith
Ex officio member, designated by
Speaker of the House Ben Toma

- Established in 1996 to store unused portion of Arizona's Colorado River entitlement
- Provides backup supplies (firming) in times of shortage for certain Fourth Priority Colorado River users and Nevada
- Inter-agency support
 - Arizona Department of Water Resources
 - Central Arizona Water Conservation District (CAWCD/CAP)

Introduction

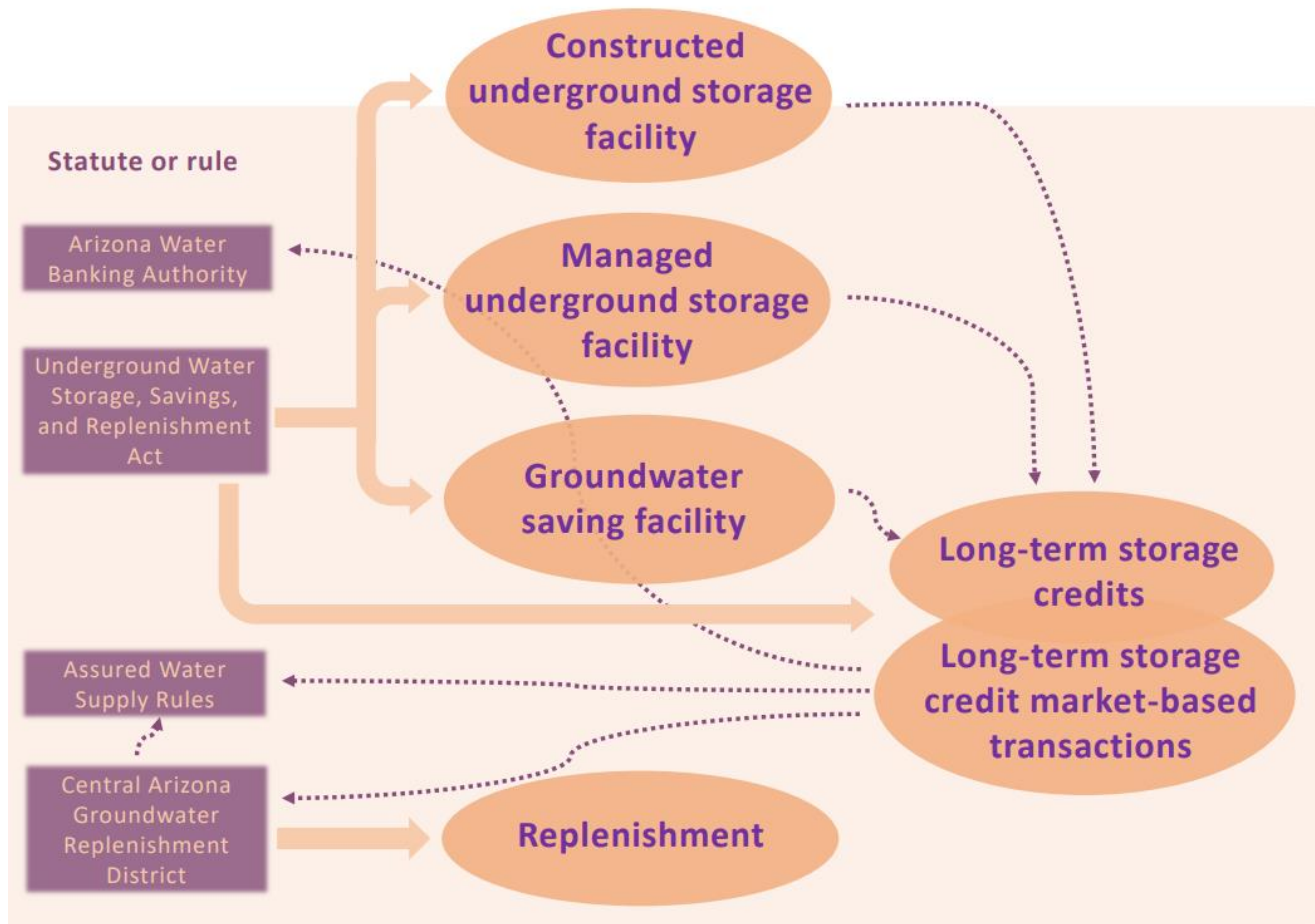


Figure 1. Managed Aquifer Recharge in Arizona (Bernat, 2020)

Bernat, 2020 | Global Change in the Sun Corridor Megaregion: Managed Aquifer Recharge Planning Tools in the Central Arizona Desert, USA | 2021 UNESCO Conference

Storage & Credit Location

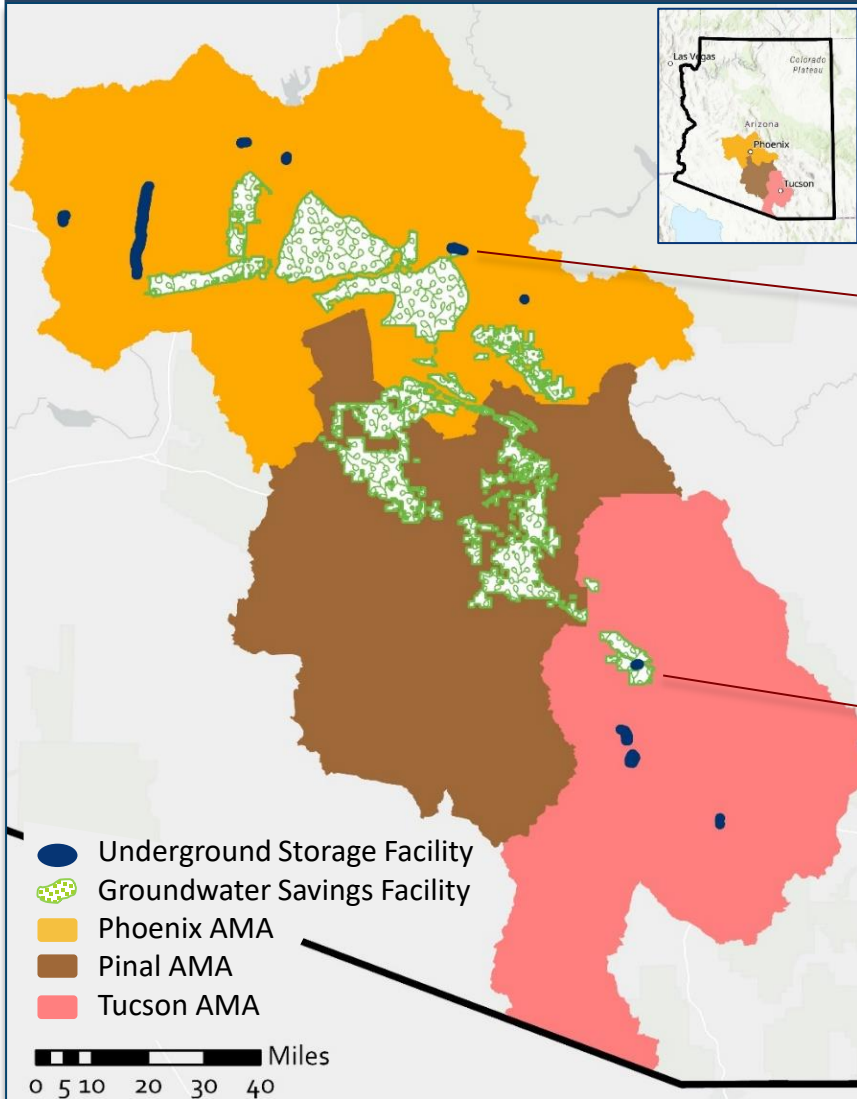


Photo Credits: ADWR

Figure 2. Locations of facilities with AWBA long-term storage credits

AWBA Long-Term Storage Credits

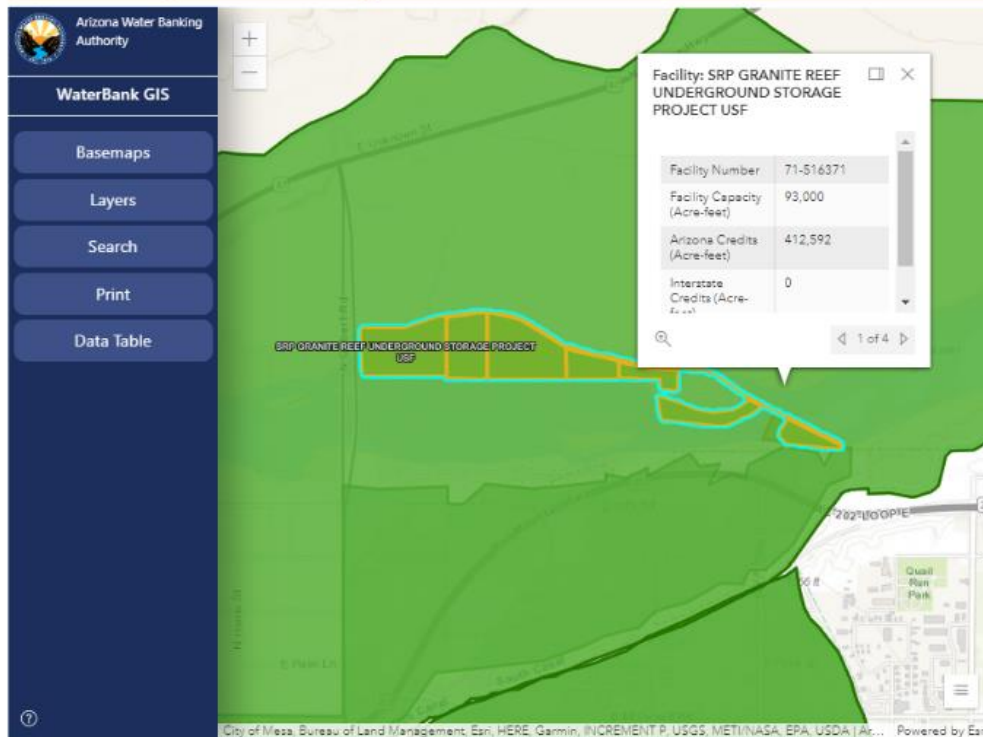


Figure 3. [AWBA LTSC Interactive Map](#)

Long-Term Storage Credit Purchase

Long-Term Storage Credits Purchases by the Arizona Water Banking Authority

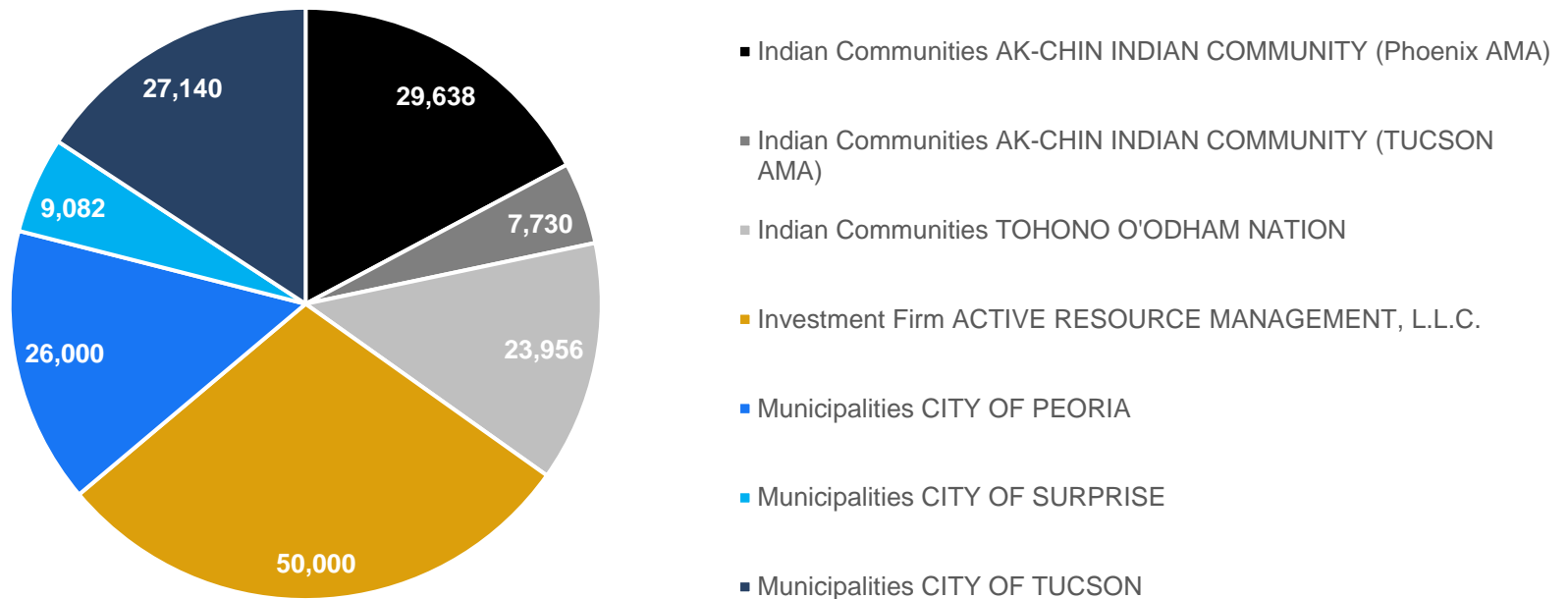


Figure 4. Volume of long-term storage credits purchased by the AWBA from 2014 to 2023 in acre-feet (AF)

Long-Term Storage Credit Purchase

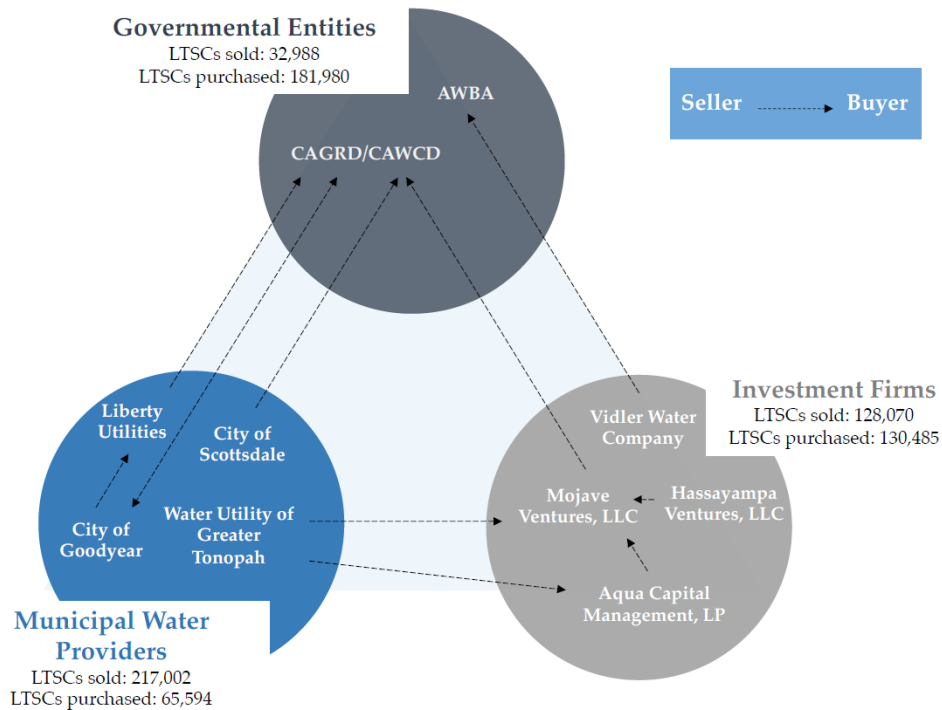
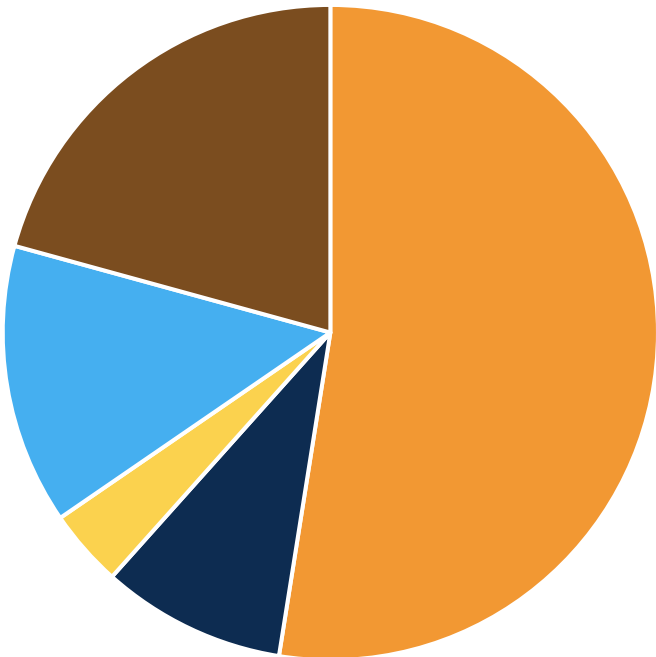


Figure 5. Direction of sales and purchases, and amount of long-term storage credits traded between governmental entities, municipal water providers, and investment firms, from 1994 to 2016 in the Phoenix AMA (Bernat et al. 2020)

Bernat, R.F.A.; Megdal, S.B.; Eden, S. Long-Term Storage Credits: Analyzing Market-Based Transactions to Achieve Arizona Water Policy Objectives. *Water* **2020**, *12*, 568.

Bernat, R.F.A.; Megdal, S.B.; Eden, S.; Bakkensen, L.A. Stakeholder Opinions on the Issues of the Central Arizona Groundwater Replenishment District and Policy Alternatives. *Water* **2023**, *15*, 1166.

Water by Recipient and Fund



Central Arizona Project Municipal & Industrial Subcontractors	2,329,457 AF	<i>Ad Valorem Taxes</i>
Priority 4 Municipal & Industrial Mainstem Contractors	403,830 AF	General Fund Appropriations
Tribal	169,281 AF	Groundwater Withdrawal Fees
Nevada	613,846 AF	Southern Nevada Water Authority
Others	919,856 AF	Various funding sources including Withdrawal Fees

Figure 6. Water credits by recipient and fund in acre-feet (AF)

Water by Recipient and Fund

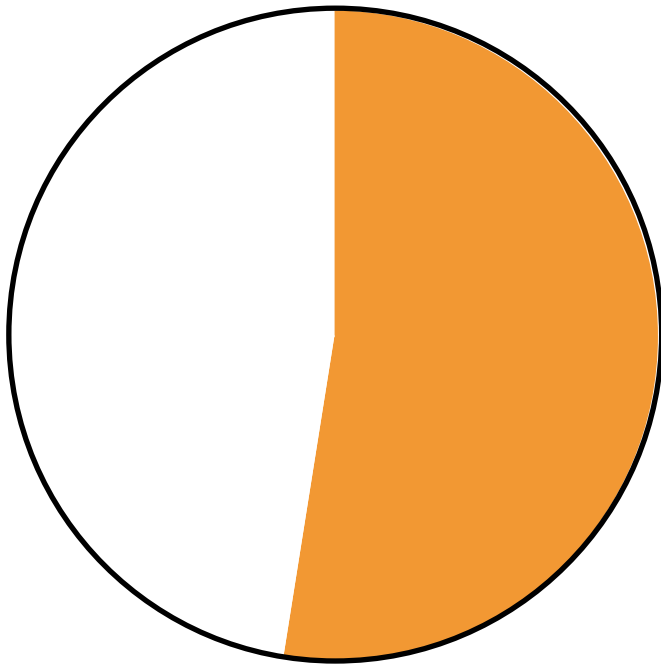


Figure 7. Long-term storage credits for CAP M&I subcontractors

**Central Arizona Project
Municipal & Industrial
Subcontractors**

2,329,457 acre-feet *Ad Valorem Taxes*

- 52 subcontractors in the Phoenix, Pinal and Tucson active management areas
- Two recovery methods
 - Independent recovery (77%)
 - CAWCD recovery (23%)
- Stakeholder process to discuss the distribution of long-term storage credits

See April 11 and May 2, 2023 meeting recordings:
<https://waterbank.az.gov/meetings>

Water by Recipient and Fund

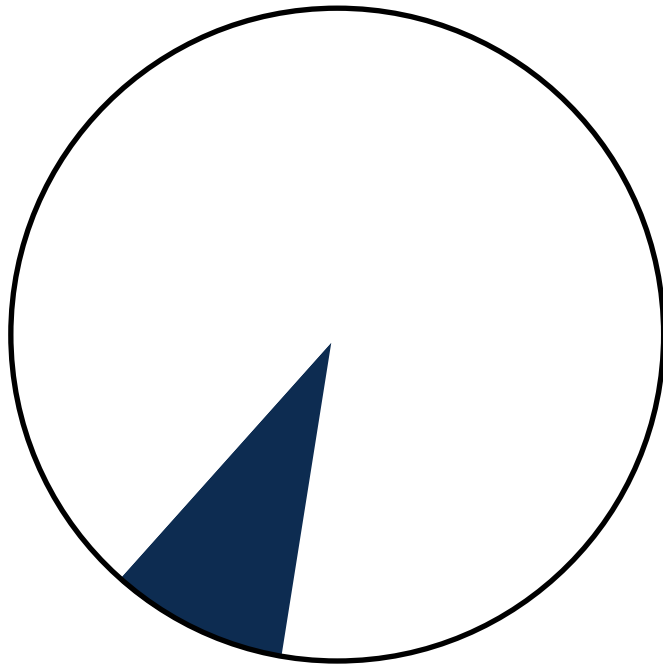
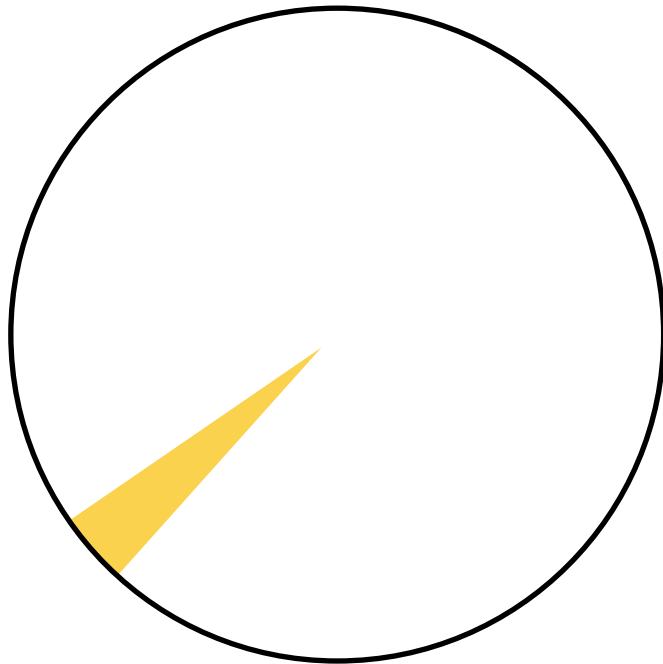


Figure 8. Long-term storage credits for fourth priority M&I mainstem contractors

Priority 4 Municipal & Industrial Mainstem Contractors	403,830 acre-feet	General Fund Appropriations
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- AWBA/Mohave County Water Authority
[2010 Amended Agreement to Firm Future Supplies](#)
- Exchange and Recovery: CAWCD/ Mohave County Water Authority
2005 Amended Exchange Agreement
- Enter into agreements with other fourth priority M&I mainstem contractors
[2010 Resolution](#)

Water by Recipient and Fund

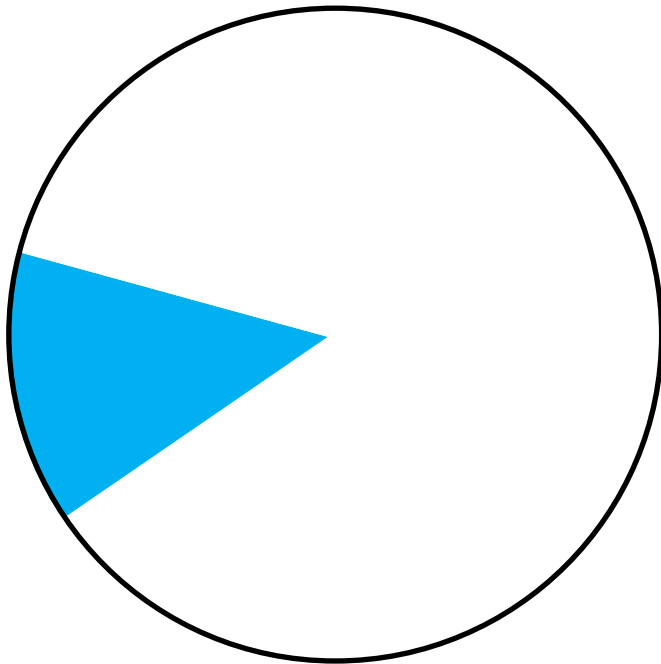


Tribal	169,281 acre-feet	Groundwater Withdrawal Fees
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- Many [Tribal Firming Agreements](#)
- Credits for the Gila River Indian Community:
 - Long-term storage credits
 - Firming credits
 - Intentionally Created Surplus firming credits
- AWBA obligation to the Gila River Indian Community during shortages:
 - 2022: AWBA extinguished 6,680 AF of firming credits
 - 2023: AWBA will extinguish 14,575 AF of firming credits

Figure 9. Water credits for the Gila River Indian Community

Water by Recipient and Fund



Nevada

613,846 acre-feet

Southern Nevada
Water Authority

- AWBA stored CAP water on behalf of Nevada
*2013 Third Amended Water Banking Agreement
Storage & Interstate Release Agreement*
- Exchange, and recovery by CAWCD:
*2010 Recovery Agreement Among AWBA, CAWCD, Southern Nevada Water
Authority and Colorado River Commission of Nevada*
*Agreement for the Development of Intentionally Created Unused
Apportionment*

Figure 10. Long-term storage credits for Nevada

Conclusion

- The AWBA has accrued over 3.7 million AF of water credits to help safeguard Arizona against shortages



Photo 5: Colorado River | Mohave County | 2022

Credits: Brian F. O'Neill

- With shortages on the Colorado River, the AWBA has been preparing to distribute water credits
 - Began providing water credits to the Gila River Indian Community (2022, 2023)
 - Started a stakeholder process to discuss water credit distribution for Central Arizona Project municipal and industrial users
- Learn more:
 - Read the [AWBA 2023 Plan of Operation](#)
 - Go to the AWBA website and sign up to receive updates from the AWBA

ADWR Career Opportunities

- **Master's degree:**

- **Hydrogeologist 2**

Hydrology Division/Groundwater Modeling Section

- **Hydrogeologist 2**

Hydrology Division/Field Services Section

- **Water Resources Specialist 2**

Compliance Enforcement

- **Water Resources Specialist 2**

Groundwater Users Advisory Group Coordinator

- **Water Resources Specialist 2**

Water Planning Division/Surface Water Section

- **Bachelor's degree:**

- **Hydrogeologist 1**

Field Services

- **Application Developer**

[Apply here](#)

Questions?

Rebecca Bernat, Ph.D.

Water Resources Specialist Associate

Technical Administrator

Arizona Water Banking Authority

rbernat@azwater.gov

602.771.8670

waterbank.az.gov

