

ARIZONA WATER BANKING AUTHORITY

ANNUAL REPORT 2018

Submitted
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Arizona Water Banking Authority

Annual Report 2018

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Governor of Arizona**

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Acronyms and Abbreviations

ADWR	Arizona Department of Water Resources
Agreement to Firm	Agreement to Firm Future Supplies executed February 4, 2005 between the Arizona Water Banking Authority and the Mohave County Water Authority
Ag	Agriculture
Amended Agreement to Firm	Amended Agreement to Firm Future Supplies executed March 17, 2010.
AMA	Active Management Area
APO	Annual Plan of Operation
AWBA	Arizona Water Banking Authority
AWB Fund	Arizona Water Banking Fund
AWSA	Arizona Water Settlements Act of 2004
CAGRD	Central Arizona Groundwater Replenishment District
CAP	Central Arizona Project
CAWCD	Central Arizona Water Conservation District
Credits	Long-term storage credits
CRSS	Colorado River Simulation System Model
Decree	Consolidated Decree of the U.S. Supreme Court in <i>Arizona v. California</i>
GRIC	Gila River Indian Community
GRIIDD	Gila River Indian Irrigation and Drainage District
GSF	Groundwater Savings Facility
ICS	Intentionally Created Surplus
ICUA	Intentionally Created Unused Apportionment
IRPG	Interagency Recovery Planning Group
IGA	Intergovernmental Agreement
LTS Credits	Long-term storage credits
LBDCP	Lower Basin Drought Contingency Plan
M&I	Municipal and Industrial
MAF	Million Acre-feet
MCWA	Mohave County Water Authority
NIA	Non-Indian Agricultural
PSCP	Pilot System Conservation Program
Quantification Agreement	White Mountain Apache Tribe Water Rights Quantification Agreement
Reclamation	U.S. Bureau of Reclamation
RPAG	Recovery Planning Advisory Group
SNWA	Southern Nevada Water Authority
USF	Underground Storage Facility

Summary

The operation of the Arizona Water Banking Authority (AWBA) continues to change. In its initial phase, the AWBA primarily stored excess Central Arizona Project (CAP) water to create long-term storage (LTS) credits to mitigate the effects of future Colorado River shortages on municipal and industrial (M&I) water users, provide groundwater management benefits, assist the State in the settlement of Indian water rights claims, and assist both California and Nevada through interstate banking arrangements. In time, what began as opportunities to beneficially utilize the State's full entitlement of Colorado River water grew in certain cases into obligations the AWBA must fulfill. With reductions in excess CAP water supplies and increased probability of Colorado River shortages, the AWBA is transitioning to its next phase, focusing on making its LTS credits available to mitigate potential shortages.

Since inception, the AWBA has accrued 4.26 million acre-feet (MAF) of long-term storage (LTS) credits. Of this amount, 3.65 MAF are for Arizona uses, which includes 104,746 acre-feet of LTS credits purchased from others. The remaining 0.61 MAF are interstate credits stored on behalf of the State of Nevada. While this has been a major accomplishment, the AWBA has not yet met all its goals and will be challenged to do so in the years ahead, since projections indicate that beginning in 2019, there will be no excess CAP water supplies available for AWBA storage.

In 2018, the AWBA stored 38,000 acre-feet of excess CAP water within the Phoenix, Pinal, and Tucson Active Management Areas (AMAs). Additionally, the AWBA stored 13,500 acre-feet of Nevada's unused Colorado River allocation, the first time since 2010. The AWBA also purchased 13,100 acre-feet of LTS credits and accrued 9,000 acre-feet of firming credits with the Gila River Indian Community (GRIC) pursuant to its 2016 intergovernmental agreement (IGA) with the Community. To date, the AWBA has accrued a total of 44,000 acre-feet of firming credits on Community lands.

The AWBA also participated in the planning efforts for implementing the Lower Basin Drought Contingency Plan (LBDPC) in Arizona. Through new statutes, policy, and agreements among Arizona water users, the AWBA will play a key role in supporting the implementation of the LBDPC. Actions taken by the AWBA will not only provide certainty to CAP water users but will give the AWBA additional means for firming shortages to CAP Non-Indian Agricultural (NIA) Priority water supplies used by the GRIC.

Throughout 2018, AWBA staff continued to work cooperatively with the Arizona Department of Water Resources (ADWR) and Central Arizona Water Conservation District (CAWCD) on the next steps necessary for implementing the 2014 Joint Recovery Plan. A fourteen-member recovery planning advisory group was convened in January 2018 to assist in these efforts. CAWCD also entered into new recovery partnerships in the Phoenix and Tucson AMAs and continues to evaluate potential future recovery locations. While significant progress has been made, additional work is needed. Although this winter's heavy snowpack has provided a reprieve from anticipated shortages in 2020 and possibly 2021, the potential for shortages in the near-term still persists.

AWBA Commission Members – Calendar Year 2018

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



Ray L. Jones – Vice-Chair
Representing a person knowledgeable
in water resource management

Kathryn Sorensen – Secretary
Representing CAP M&I subcontracts



Mark Clark
Representing mainstream Colorado
River contractors

Pamela Pickard
Representing CAWCD, designated by
CAWCD Board President Lisa Atkins



Ex-officio Members



Speaker J.D. Mesnard



Senator Gail Griffin

2018 Activities

The AWBA continued its quarterly meeting schedule in 2018 with meetings held on March 21, June 20, September 19, and December 5. There were no special meetings held.

Lower Basin Drought Contingency Plan

New to the AWBA in 2018 was its participation in planning efforts for implementing the proposed Lower Basin Drought Contingency Plan (LBDCP) in Arizona. In June of 2018 ADWR and CAWCD, joined by Reclamation Commissioner Brenda Burman, hosted a public briefing to describe the LBDCP developed among the Lower Basin States and Reclamation to address the risk of Lake Mead falling below critically low elevations. That risk has increased significantly since the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (Interim Guidelines) were established in 2007. The LBDCP is intended to be operated through December 31, 2026, the Interim Period, concurrent with the Interim Guidelines. It has several key elements including:

1. Additional contributions to Lake Mead from Arizona and Nevada, along with new contributions from California and the United States.
2. Incentives for additional storage in Lake Mead by creating flexibility for water users to store water and take delivery of storage even during lower reservoir conditions.
3. A commitment by parties in the Lower Basin to protect elevation 1,020 feet in Lake Mead, implemented through consultation to determine what additional measures would be necessary to protect that elevation.

Implementation of the LBDCP will also trigger additional contributions from Mexico through the Binational Water Scarcity Contingency Plan as detailed in the Minute 323 agreement, adopted in 2017.

Because the LBDCP operates by requiring additional incremental water delivery reductions to those already imposed under the Interim Guidelines (**Table 1**), it would largely impact Arizona's junior priority water users, most significantly CAP Agriculture and CAP NIA priority water users. To address this issue, an Arizona Steering Committee was formed to discuss and recommend how to adopt and implement the LBDCP in a way that is acceptable to water users within Arizona. The Steering Committee was headed jointly by ADWR and CAWCD and was comprised of a wide array of representatives including the AWBA. There were a series of nine meetings in 2018, including numerous subcommittee meetings. The Steering Committee consequently developed a collaborative plan for implementing the LBDCP in Arizona.

Table 1. Arizona Shortage Reductions under '07 Guidelines and Additional LBDCP Contributions

Lake Mead Elevation (ft.)	Tier	'07 Guidelines (AF)	Tier	DCP Contribution (AF)	Total (AF)
$\leq 1090 > 1075$		0	TØ	192,000	192,000
$\leq 1075 > 1050$	T1	320,000	T1	192,000	512,000
$\leq 1050 > 1045$	T2	400,000	T2a	192,000	592,000
$\leq 1045 > 1025$	T2	400,000	T2b	240,000	640,000
≤ 1025	T3	480,000	T3	240,000	720,000

The Arizona DCP Implementation Plan incorporates two components that operate in tandem. The first is a mitigation component that is structured to provide both fixed and variable quantities of mitigation water to the CAP agricultural (Ag) pool and CAP NIA priority pool, respectively.¹ It does not fully mitigate all anticipated reductions because sufficient resources are not available and because mitigation is intended to provide a temporary bridge for addressing a drier future. The mitigation component includes wet water supplies, monetary compensation for when supplies are insufficient, and funding for new groundwater infrastructure for CAP Ag Pool users. Wet water supplies are made available as in lieu storage by CAP M&I subcontractors at groundwater savings facilities (GSFs), CAP operational water, water exchanges, and the delivery of limited quantities of existing intentionally created surplus (ICS) created by CAWCD. The second component is an offset component that leaves water in Lake Mead through system conservation and the creation of new ICS that replaces CAP ICS used for mitigation purposes.

Although simply stated, in effect, the Arizona DCP Implementation Plan (Implementation Plan) relies on a multitude of complex inter-related agreements between and among all parties involved, some of which required statutory changes as well as the adoption of new policies. On Jan. 31, 2019, Governor Ducey signed legislation authorizing Arizona's participation in the LBDCP², as well as legislation necessary for implementing the LBDCP.³ In doing so, Arizona met the federal deadline for approving the LBDCP. On March 19, 2019, Drought Contingency Plans for the seven Colorado River Basin States were formally submitted to Congress for immediate implementation. Legislation authorizing the DCPs was signed by President Donald Trump on April 16, 2019. Arizona parties continue to work to execute and implement all elements of the Implementation Plan.

The AWBA plays an important role in support of both the mitigation and offset components of the Implementation Plan. The efforts of the AWBA in 2018 resulted in the development of the following policy and agreements:

[Policy Regarding the Distribution of Long-Term Storage Credits for firming CAP Municipal and Industrial Subcontractors \[adopted March 4, 2019\]](#)

Under this policy, during the Interim Period, the AWBA will distribute long-term storage (LTS) credits pursuant to A.R.S. 45-2457(B)(7) to meet all reductions to scheduled CAP M&I Priority water due to a shortage condition or required LBDCP contributions, regardless of use. Consequently, this policy provides the certainty desired by CAP M&I subcontractors that there will be water supplies available to meet demand and to ensure sufficient resources for mitigating water reductions resulting from the LBDCP. The operating experience gained during this time will inform future AWBA policies on LTS credit distribution.

¹ Ag mitigation provides 105 KAF under Tier 1 shortages and 70 KAF under Tier 2a. shortages (2020 – 2022). CAP NIA mitigation provides 100% (2020 – 2022), 75% under Tier1 & Tier 2a shortages and 50% under Tier 2b shortages (2023 - 2025) until no supplies are remaining under each. There is no mitigation in 2026 or under Tier 3 shortages.

² Senate Joint Resolution 1001- A Joint Resolution Authorizing Drought Contingency Plan Agreements for the Colorado River

³ Senate Bill 1227 - Colorado River Drought Contingency Amendments

Agreement to Exchange LTS Credits⁴

The LTS credit exchange agreement assists in facilitating water storage by Phoenix and Tucson Active Management Area CAP M&I Priority subcontractors at GSFs located in the Pinal AMA to provide partial wet water mitigation during Tier 1 and Tier 2a shortages that might occur between 2020 and 2022. By agreeing to exchange existing AWBA LTS credits accrued in the Phoenix and Tucson AMAs for an equal volume of LTS credits accrued by the storing entities in the Pinal AMA, storing entities are given the ability to recover and use the water in the AMA where they are located. The AWBA has agreed to exchange up to 42,750 acre-feet of LTS credits per year (from 45,500 acre-feet of storage less 5 percent cut to the aquifer) for the three-year period. Legislation authorizing the AWBA to exchange its water management LTS credits for this purpose expires Dec. 31, 2026. Therefore, all exchanges must be completed by this date. The agreement also allows for other unplanned mitigation water supplies, if available, to be used to substitute storage deliveries in order to reduce the amount of LTS credits exchanged by the AWBA. Administration fees for these LTS credit exchanges have also been waived. [Approved by AWBA March 20, 2019; awaiting approval by the parties.]

Agreement to Exchange LTS Credits with the City of Tucson

This agreement will be similar to the agreement described above with the exception that the exchange would only be with the City of Tucson and only under Tier 2a and Tier 2b shortage conditions occurring from 2020 through 2022. The City of Tucson has indicated it would store 35,000 acre-feet at GSFs in the Pinal AMA to provide the difference in supply when Ag mitigation water decreases from 105,000 acre-feet under Tier 1 shortages to 70,000 acre-feet under Tier 2a and Tier 2b shortages. The AWBA will agree to exchange an equal volume of LTS credits it has accrued in the Tucson AMA for LTS credits that are subsequently accrued by the City of Tucson in the Pinal AMA for a maximum of 33,250 acre-feet per year for the three-year period.

Intergovernmental Agreement (IGA) between the AWBA and the Gila River Indian Community for the Development of ICS Firming Credits [Fully Executed May 20, 2019]

To facilitate the offset component of the Implementation Plan, the Gila River Indian Community (Community) proposes to create at least 200,000 acre-feet of ICS that will be left in Lake Mead for the duration of the Interim Period. This IGA, allows the AWBA to pay for the creation of 50,000 acre-feet of that ICS in order to satisfy a future firming obligation to the Community. Due to a one-time 10 percent reduction for system and evaporation losses, the 50,000 acre-feet of ICS will result in 45,000 acre-feet of ICS credits. Payments for the creation of “Firming ICS” will be at a rate of \$240 per acre-foot in 2019 with a minimum payment of \$2.5 million. Payment for the remaining Firming ICS may be made in installments in accordance with the rate schedule identified in the IGA, which has an annual escalator of three %. The total cost could range from approximately \$12 million to \$13.5 million. The AWBA proposes to use primarily withdrawal fees collected in the Phoenix AMA for this purpose.

⁴ Lower Basin Drought Contingency Plan (“LBCDP”) Implementation Plan: Agreement to Exchange Long-Term Storage Credits between AWBA and the City of Avondale; City of Chandler; City of Goodyear; City of Peoria; City of Phoenix; City of Scottsdale; City of Tucson; Freeport Minerals Corporation; and EPCOR Water Arizona Inc.

CAP NIA Mitigation Agreement⁵

This agreement describes the mitigation supplies for the CAP NIA priority pool, including the reduction in mitigation percentages in subsequent years. It also captures the mitigation commitments applicable to the CAP Agricultural pool. As a key provision, it clarifies that the AWBA will calculate its statutory firming obligations and commitments prior to the inclusion of mitigation resources, thereby ensuring that mitigation resources are not used for firming purposes. [Executed by AWBA May 20, 2019.]

Arizona LBDCP Framework Agreement

This agreement captures the components of the Implementation Plan. It describes the mitigation component as well as the offset component and references numerous agreements as exhibits. The AWBA is included as a party due to the vital role it plays in the implementation framework as indicated by the policy and agreements described above. [Executed by AWBA May 20, 2019.]

AWBA 2018 Water Deliveries

The AWBA Plan of Operation (Plan) for 2018 identified 38,000 acre-feet of water available for delivery under CAWCD's Access to Excess policy adopted in 2014. No additional excess CAP water was made available to the AWBA during the year. The Plan also included an interstate water banking component for storing 13,500 acre-feet of Nevada's unused apportionment. The volume of water delivered to each storage facility, include interstate water, is described in **Appendix A**.

Based on the Decree accounting data, total consumptive use of Colorado River water by Arizona in 2018 was 2.63 MAF and accounted for approximately 1.11 MAF of direct uses along the Colorado River and 1.52 MAF in CAP diversions, including 13,500 acre-feet of Nevada's unused apportionment (Calendar Year 2018 U.S. Bureau of Reclamation, Lower Colorado River Operations, Colorado River Accounting and Water Use Report Arizona, California, Nevada, dated May 2018). Efforts to mitigate declining water elevations in Lake Mead continued in 2018 with Arizona conserving an estimated 181,240 acre-feet of water in Lake Mead. This amount includes 25,493 acre-feet conserved under the Pilot System Conservation Program (PSCP), 47,013 acre-feet of Extraordinary Conservation ICS created by CAWCD, and 108,734 acre-feet of unused apportionment. California also contributed by conserving 2,099 acre-feet under the PSCP and by creating 132,525 acre-feet of ICS.

Long-term Storage Credit Purchases

Purchases Pursuant to A.R.S. § 45-841.01

Before a final volume of LTS credits can be issued to the Tohono O'odham Nation (Nation) by ADWR, the Nation must offer the AWBA 10 percent of any LTS credits deemed accruable from water stored at the

⁵ *Agreement Among the United States of America Represented by the Secretary of the Interior Acting through the Regional Director of the Lower Colorado Region of the Bureau of Reclamation, the Arizona Department of Water Resources, the Arizona Water Banking Authority, the Central Arizona Water Conservation District, the Gila River Indian Community, City of Chandler, Town of Gilbert, City of Glendale, City of Mesa, City of Phoenix, City of Scottsdale and City of Tempe for the Mitigation of Reductions to CAP NIA Priority Water Under the Drought Contingency Plan*

Mission Mine Complex. The price for each credit is equal to the AWBA's per acre-foot cost to deliver and store water at a state demonstration project located within 10 miles of the Nation's storage (i.e. Pima Mine Road Recharge Project) at the time of sale. These LTS credits may be used by the AWBA for M&I firming or for water management purposes, however, there is a restriction that they cannot be recovered within five miles of the exterior boundary of the reservation. The Nation did not offer the AWBA credits for purchase in 2018.

Other Credit Purchases

The AWBA's governing statutes were amended in 2014 to allow the AWBA to purchase LTS credits in addition to credit purchases already allowed under A.R.S. § 45-841.01. LTS credits may be purchased after all available excess CAP water supplies have been scheduled for storage for the year. In 2018, the AWBA purchased 13,100 acre-feet of LTS credits in the Phoenix AMA: 9,500 acre-feet for CAP M&I firming and 3,600 acre-feet for water-management purposes. Expenditures totaled approximately \$3.04 million and included just over \$2.2 million in Maricopa County water storage tax funds and just under \$835,000 in Phoenix AMA withdrawal fees. Cumulative credit purchases and expenditures are identified in **Appendix B**. The AWBA 2018 Plan did not include credit purchases in the Pinal or Tucson AMAs since all available funds were used to purchase and store excess CAP water.

Indian Firming Program

Colorado River modeling projections have shown that NIA Priority CAP water would be the first supplies the AWBA will need to firm. To prepare, the AWBA has focused on accomplishing the steps necessary to ensure the state's Indian firming obligations will be met when the need arises. Staff also kept apprised of the status of other ongoing settlement discussions, particularly the need to firm water supplies that may result from those settlements.

Gila River Indian Community (GRIC)

Under the Arizona Water Settlements Act of 2004 (AWSA), the AWBA, as agent for the State, has a 100-year requirement (until 2108) to firm up to 15,000 acre-feet per year of NIA Priority CAP water for the GRIC when supplies are insufficient to meet demand. The *Agreement between the Secretary and the State of Arizona for the Firming of CAP Indian Water*, executed on November 15, 2007, defines the AWBA's firming responsibilities, but also includes a provision that allows the AWBA to enter into a separate agreement with the Community to carry out its firming obligation. An IGA for firming was subsequently executed on June 16, 2015. The 2015 IGA uses the AWBA Ten-Year Plan as the basis for evaluating potential future shortages and outlines the steps that must be taken by each party as the potential for shortage approaches. By offering alternative firming options, the IGA provides flexibility in how a firming obligation can be satisfied during a shortage year.

Concurrent with the execution of the 2015 IGA, the AWBA and the GRIC executed a separate letter agreement to implement one of the firming options identified under the IGA. The firming option allows for the reimbursement of CAP water delivered to the Community for which the Community paid full cost. In turn, the AWBA receives "firming credits" for each acre-foot of water delivered. The process for using

this firming method was consequently formalized in a three-year agreement (2016 IGA).⁶ In 2018, the AWBA accrued 9,000 acre-feet of firming credits at a cost of \$1.44 million. Cumulative firming credits and expenditures accrued under these agreements are identified in **Appendix B**. These firming credits have been registered to a firming account held by the AWBA and may be debited in the future to reduce the state's firming obligation on an acre-foot per acre-foot basis. The 2016 IGA expired December 31, 2018.

Southside Replenishment Bank

In addition to firming requirements, the AWSA required that the AWBA deliver 15,000 acre-feet of water to the GRIC to establish the Southside Replenishment Bank. The Replenishment Bank can be used to satisfy a replenishment obligation that may be incurred from excess groundwater pumping in the Southside Protection Zones, an area adjacent to the southern portion of the GRIC reservation. This obligation was fully satisfied in 2015. Cumulative expenditures for meeting this obligation totaled \$2,339,000.

Southside Replenishment Obligations

By memorandum dated Sept. 20, 2018, the AWBA was informed by ADWR that there were no replenishment obligations for the 2017 reporting year. A replenishment obligation for the 2018 reporting year is likewise not anticipated, but that information will not be available until October of 2019 and will be reported in the 2019 Annual Report.

White Mountain Apache Tribe (WMAT)

The Claims Resolution Act of 2010, which includes the White Mountain Apache Tribe Water Rights Quantification Agreement (Quantification Agreement), was signed by President Barack Obama on Dec. 8, 2010. The Quantification Agreement requires that the AWBA firm up to 3,750 acre-feet per year of NIA Priority CAP water until 2108. This obligation is part of the 8,724 acre-feet per year firming requirement identified for future settlements under the AWSA. The WMAT intends to lease the water made available under the agreement, thus the AWBA's firming responsibilities will be to the lessees.⁷ In 2017, AWBA staff initiated individual meetings with the lessees to discuss potential firming opportunities relative to their operational needs. Based on these discussions, flexibility will be a key consideration in developing firming agreements. The enforceability date of the Quantification Agreement is currently April 30, 2021, but could be extended. An Environmental Impact Statement on the construction and operation of the WMAT Rural Water System (RWS Project) must be completed before enforceability can be met. In January 2018, the WMAT was given the authority under federal legislation (S.140) to utilize funds from the Quantification Act for the planning, design, and construction of the RWS Project.

⁶ *Agreement between the Arizona Water Banking Authority and the Gila River Indian Community for the Development of Firming Credits* executed June 30, 2016.

⁷ Lessees receiving firmed NIA Priority CAP water under the Quantification Agreement include the cities of Avondale, Chandler, Gilbert, Glendale, Mesa, Peoria, Phoenix and Tempe.

Hualapai Tribe

Legislation re-introduced to Congress in 2017 to approve and authorize the settlement of the Hualapai Indian Tribe's claims to the Colorado River did not advance. If pursued further, the AWBA would have an obligation to firm 557.5 acre-feet per year through 2107. The federal government would have an equivalent firming obligation. [New bills to ratify the settlement were introduced to the Senate (S.1277) and House (H.R.2459) on May 1, 2019.]

Recovery Planning

AWBA, CAWCD and ADWR staff referred to as the Interagency Recovery Planning Group (IRPG), in cooperation with stakeholders, released a joint recovery plan in 2014 that provides a framework for the recovery of AWBA credits and the delivery of that water during future shortages or for interstate purposes. The IRPG continues to work cooperatively on the next steps of the plan to ensure recovery implementation is achievable when needed. In January 2018, ADWR, in coordination with the AWBA and CAWCD, convened a Recovery Planning Advisory Group (RPAG) to assist with these efforts. The RPAG consists of 14 members that represent various interests in the water community. The RPAG held seven meetings in 2018. Discussions included a review of updated Colorado River hydrologic modeling projections, the timing and magnitude of future recovery, an examination of alternative recovery and firming methods, an analysis of credit sustainability, and the potential need for policies and agreements. Meetings remain ongoing.

As the AWBA's primary recovery agent, CAWCD has also been moving forward on developing recovery partnerships. In 2018, CAWCD entered into an agreement with the City of Tucson for recovering AWBA interstate LTS credits in order to develop intentionally created unused apportionment (ICUA) for SNWA. This agreement is similar to CAWCD's 2017 recovery agreement with the Arizona Water Company (AWC) in the Pinal AMA. This second agreement is for the recovery of up to 10,000 acre-feet per year of SNWA LTS credits, not to exceed 65,000 acre-feet during the term of the agreement: Jan. 1, 2020 through December 31, 2050. Under CAWCD's 2017 agreement with the AWC, AWC will provide 2,500 acre-feet of annual recovery capacity for a 26-year period beginning Jan. 1, 2025. Recovery capacity not utilized to develop ICUA for SNWA could be made available for other in-state firming needs. SNWA is responsible for paying the recovery costs associated with developing ICUA and has therefore, under separate agreements, provided CAWCD \$1 million for advancement to both AWC and the City of Tucson for this purpose. The AWBA also has agreed to prioritize use of AWC and City of Tucson recovery capacity when ICUA is requested by SNWA⁸.

Commensurate with the execution of the CAP system use agreement between CAWCD and the Bureau of Reclamation (Reclamation) in 2017 that describes how the system can be used to meet AWBA firming requirements, CAWCD Board President Lisa Atkins established a Water Quality Standards Task Force comprised of CAWCD Board members to review the legal, operational and policy matters associated with the introduction of non-project water into the CAP system. The water quality standards developed by

⁸ Letter agreement letter agreement dated March 15, 2017 among the AWBA, CAWCD, SNWA and the Colorado River Commission of Nevada (CRCN).

the task force, though stakeholder involvement, were approved by the full Board and submitted as recommendation to Reclamation in 2018.

CAWCD has also been evaluating the potential for developing a recovery well field within Tonopah Desert Recharge Project (TDRP), as well as locations outside the TDRP, to address issues associated with higher than anticipated arsenic and fluoride concentrations previously identified.

Adoption of 2019 Plan of Operation

The AWBA 2019 Annual Plan of Operation (APO) was adopted on Dec. 5, 2018. For 2019, there will be no excess CAP water available to the AWBA for storage: a first since the AWBA was established in 1996. As a result, the AWBA will concentrate on using alternative methods including purchases of LTS or firming credits to continue to make progress on its Indian and M&I firming goals. The APO provides for the development of an estimated 49,300 acre-feet of credits for a total estimated cost of \$10.96 million.

Credit acquisitions are anticipated to occur in all three AMAs within CAWCD's service area subject to the availability of funding. Potential LTS credit purchases for firming CAP M&I subcontract supplies total approximately 32,600 acre-feet and are estimated to cost \$7.33 million. Additionally, the AWBA anticipates acquiring up to 20,700 acre-feet of credits for water-management purposes at an estimated cost of \$3.63 million. These credits can also be used to meet the AWBA's Indian settlement obligations or for firming CAP M&I subcontract supplies.

As 2019 is a normal year for Colorado River operations, the 2019 APO does not include the distribution of AWBA credits for firming purposes. Additionally, the Southern Nevada Water Authority did not request the development of intentionally created unused apportionment. Therefore, there will be no credits recovered for interstate purposes.

Revenues and Expenditures

A.R.S § 45-2425 mandates the various sources of monies for the Arizona Water Banking (AWB) Fund. The AWB Fund is administered by the AWBA. In 2018, the AWBA obtained its funding from the following sources:

1. Fees for groundwater pumping are collected within the Phoenix, Pinal and Tucson AMAs. Fees for water banking purposes are charged at \$2.50 per acre-foot. However, fees will not be levied during calendar years 2020 through 2026 in the Pinal AMA for this purpose.⁹ These fees will be levied and collected instead for groundwater and irrigation efficiency projects in the Pinal AMA. Credits accrued with these monies must be used to benefit the AMA in which the monies were collected. Withdrawal fees can be used for water-management purposes, including firming for CAP NIA Indian Priority and CAP M&I Priority supplies.
2. The CAWCD Board resolved to retain the water storage taxes levied and collected for the 2017-2018 tax year and to use the funds for meeting operating, maintenance (O&M) and replacement and/or repayment costs of the Central Arizona Project. The CAWCD Board agreed to reserve \$3.62 million in Maricopa County tax revenues to support the purchase of LTS credits by the AWBA for CAP M&I firming. Of this amount, just over \$2.2 million was deposited to the AWB Fund for this purpose. LTS credits accrued using water storage tax funds must be used to benefit the county in which the funds were collected.

In 2018, the CAWCD Board rescinded all past water storage tax resolutions that identified O&M specifically as water storage by the AWBA and adopted a new resolution that includes use of the funds for all allowable CAWCD uses. Accordingly, Tables 2 and 3 have been updated to show only monies that have been made available for AWBA activities.

3. The AWBA did not receive a general fund appropriation in 2018.

Table 2 shows the monies the AWBA collected, monies made available by CAWCD and the monies expended in 2018 by source of funds. **Table 3** shows the total monies received, expended and remaining through December 2018 by source of funds. Remaining funds are committed to activities identified in the Plan of Operation adopted for the current year.

⁹ Senate Bill 1227 signed and made effective January 31, 2019

Table 2. Monies Collected, Made Available, and Expended in 2018 by Source of Funds

Source of Funds	Carryover	Collected/Made Available	Expended
General Funds	\$0	\$0	\$0
State Indian Firming	\$0	\$0	\$0
Interstate Water Banking¹	\$2,145	\$3,075,669	\$3,056,890
Water Storage Tax²			
Maricopa County		\$6,278,617	\$6,278,617
Pinal County		\$478,800	\$478,800
Pima County		\$1,639,916	\$1,639,916
Subtotal		\$8,397,333	\$8,397,333
Groundwater Withdrawal Fees³			
Phoenix AMA	\$1,159,910	\$1,647,975	\$2,309,859
Pinal AMA	\$664,008	\$1,179,553	\$1,419,300
Tucson AMA	\$114,548	\$337,450	\$41,829
Subtotal	\$1,938,466	\$3,164,977	\$3,770,988
TOTAL⁴	\$1,938,466	\$14,637,979	\$15,225,211

¹ Includes \$17,449 in interest and Lehman Brothers bankruptcy distribution of \$1,329. Expenditures reflect reconciled costs.

² Monies made available by CAWCD as part of O&M of the project or deposit to the AWB Fund for LTS credit purchases.

³ Money collected includes \$1,211,100 in legislative allocations unused by ADWR for FY 2017.

⁴ Totals may not sum due to rounding.

Table 3. Cumulative Monies Collected, Made Available, Expended and Remaining Available through 2018

Source of Funds	Collected/Made Available	Expended	Remaining ¹
General Funds	\$11,100,865	\$11,100,865	\$0
In-Lieu Fund - MCWA Pre-payments	\$5,123,480	\$5,123,480	\$0
State Indian Firming	\$2,578,389	\$2,578,389	\$0
Interstate Water Banking-NV²	\$112,405,853	\$112,384,930	\$20,923
Shortage Reparations – NV	\$8,001,948	\$8,001,948	\$0
Water Storage Tax³			
Maricopa County	\$128,500,673	\$128,500,673	
Pinal County	\$14,461,741	\$14,461,741	
Pima County	\$58,193,655	\$58,193,655	
Subtotal	\$201,156,068	\$201,156,068	
Groundwater Withdrawal Fees			
Phoenix AMA	\$31,466,060	\$30,968,034	\$498,026
Pinal AMA	\$24,259,558	\$23,835,297	\$424,261
Tucson AMA	\$10,272,135	\$9,861,966	\$410,169
Subtotal	\$65,997,752	\$64,665,297	\$1,332,456
TOTAL⁴	\$406,364,356	\$405,010,977	\$1,353,379

¹ Funds remaining includes monies committed for the 2019 AOP and FY 18 legislative allocation of funds unspent by ADWR.

² Pursuant to the Third Amended and Restated Interstate Banking Agreement, monies remaining available are non-reconcilable for interstate purposes and subject to legislative authorization prior to use by the AWBA. Remaining funds include accrued interest and recovered Lehman Brothers bankruptcy monies.

³ Monies collected by CAWCD made available to AWBA through direct deposit into the AWB Fund or as an expenditure by CAWCD to offset AWBA delivery and storage costs as part of CAP O&M costs.

⁴ Totals may not sum due to rounding.

Long-term Storage Credits

The AWBA has established LTS credit accounts with ADWR for each AMA. The AWBA receives credit for 95 percent of the stored water after losses are taken into account. After LTS credits are issued to the account, AWBA staff allocates the credits to the appropriate sub-accounts based on source of funding used to accrue the LTS credit. The number and distribution of LTS credits for 2018 are listed in **Table 4**. Cumulative LTS credits accrued or acquired by the AWBA through December 2018 are listed in **Table 5**.

Table 4. Number and Location of LTS Credits Accrued in 2018 (AF)¹

Funding Source	Phoenix AMA	Pinal AMA ²	Tucson AMA	Total
Water Storage Tax	27,406	2,549	7,199	37,154
Withdrawal Fees	3,752	7,533	188	11,473
General Fund	-	-	-	-
Intrastate TOTAL	31,158	10,082	7,387	48,627
Interstate - Nevada	8,698	-	3,793	12,491
TOTAL	39,856	10,082	11,180	61,118

¹ Includes purchased LTS credits.

² Additional LTS credits may be issued upon resolution of annual reporting issues associated with GSF participants in the Pinal AMA.

Table 5. Cumulative LTS Credits Accrued through December 2018 (AF)¹

Funding Source	Phoenix AMA	Pinal AMA	Tucson AMA	Total
Water Storage Tax	1,506,047	223,571	480,213	2,209,830
Withdrawal Fees	339,724	434,530	108,840	883,094
General Fund	42,316	306,968 ²	54,546	403,830
Other Intrastate:				
Indian Firming Appropriation	-	-	28,481	28,481
Shortage Reparation	20,642	60,507	28,340	109,489
GSF Operator Full Cost Share	-	14,125	-	14,125
Intrastate TOTAL	1,908,728	1,039,701	700,420	3,648,849
Interstate - Nevada	59,707	440,241 ³	113,584	613,532
TOTAL⁴	1,968,435	1,479,942	814,004	4,262,381

¹ Includes purchased LTS credits.

² Pursuant to the AWBA Agreement to Firm with Mohave County Water Authority (MCWA) dated February 4, 2005, 230,280 acre-feet of LTS credits were transferred to the AWBA long-term storage subaccount for the MCWA in 2005. An additional 25,894 acre-feet of LTS credits were reserved under Exhibit C the Amended Agreement to Firm, dated December 8, 2010, for a total of 256,174 acre-feet.

³ Includes 50,000 acre-feet of LTS credits transferred from CAWCD pursuant to Amended Agreement for Interstate Water Banking.

⁴ Totals may not sum due to rounding.

Since inception, the AWBA has focused its efforts on developing LTS credits for firming purposes. The AWBA identified 2.7 MAF of LTS credits as a reasonable amount of credits to firm the CAP M&I subcontracts for 100 years. This volume is divided based on a pro-rata distribution of CAP M&I subcontracts by county as follows: 58 percent Maricopa County, 32 percent Pima County, and nine percent Pinal County.

The AWBA also identified 420,000 acre-feet of LTS credits as a reasonable amount to firm the on-River communities for 100 years. In 2002, the AWBA adopted a resolution that identified on-River firming as the highest priority for use of the general fund LTS credits. Consequently, all or part of the general fund LTS credits could be utilized to firm on-River M&I users. When used for this purpose, the AWBA will collect reimbursement for the replacement cost of the LTS credits used. In 2008, the AWBA executed Resolution 2008-1 that established a long-term storage credit replacement account for fourth priority Colorado River M&I users. Under the Resolution, as LTS credits are used and replaced, the replacement LTS credits will be placed in a separate subaccount and earmarked for the entity that reimburses the AWBA for the replacement of those LTS credits.

When the AWSA became enforceable in December 2007, the AWBA, as agent for the State, assumed the obligation to firm up to 23,724 acre-feet per year of CAP NIA Priority water supplies. Of this amount, up to 15,000 acre-feet will be made available to the Gila River Indian Community and 8,724 acre-feet is allocated for future settlements. The AWBA must firm these supplies for a 100-year period and ensure that the water is delivered to the same priority as CAP M&I priority supplies. In 2005, the Arizona State Legislature created an Indian Firming Study Commission (Study Commission) to develop a Firming Program for Arizona. The analysis performed by the Study Commission estimated a firming target of approximately 550,000 acre-feet: 350,000 acre-feet for the GRIC and 200,000 acre-feet for future settlements. The AWBA periodically re-evaluates these targets to ensure they are still applicable. While the AWBA has focused its future firming efforts on the accrual of LTS credits, the AWBA may also use other methods to meet this obligation including contracting for delivery of water supplies other than excess CAP water, engaging in water exchanges, and/or entering into lease agreements with Indian communities and others.

In addition to firming, the AWSA also required that the state contribute \$3 million in cash or in-kind services to assist the Secretary in meeting the Federal obligation to the Tohono O'odham Nation. Pursuant to the AWBA's firming agreement with the Secretary, the parties agreed to accomplish this requirement through the accrual of an equivalent amount of LTS credits that would be distributed to the Secretary during shortages. Lastly, as discussed earlier, the AWBA is required to directly deliver 15,000 acre-feet of water to the GRIC to establish the Southside Replenishment Bank. This obligation was fully satisfied in 2015.

Table 6 illustrates the progress made by the AWBA towards meeting its established goals and obligations. Progress on individual goals varies due to the availability of funds, limitations of how each funding source may be used, and storage capacity that has been available in each AMA historically. The AWBA has nearly achieved its M&I firming goal in the Phoenix and Pinal AMAs at 96 percent and 92 percent, respectively. The AWBA has met just over half its firming goal in the Tucson AMA at 56 percent. Groundwater management LTS credits could also be used for this purpose and if applied, would increase the percent goal achieved to 68 percent. This level of progress has been historically anticipated and is

attributed to the volume of entitlements relative to the amount of revenues collected in the AMA. Water management credits can also be used to satisfy the AWBA's Indian settlement obligations.

Table 6. Uses of Credits Accrued through December 2018 and Percentage of Goal Achieved

Location and Objective	Funding Source	Estimated Goal	Non-Credit Goal Achieved	Credits ¹ Accrued (AF)	Goal Achieved
CAP M&I Firming Phoenix AMA Pinal AMA Tucson AMA	Water Storage Tax collected by County	1,566,000 AF 243,000 AF 864,000 AF		1,506,047 223,571 480,213	96% 92% 56%
On-River M&I Firming²	General Fund	420,000 AF		403,830	96%
Indian Settlement Obligations: GRIC Firming - <i>up to 15 KAF/year</i>	General Fund Withdrawal Fees	350,000 AF ³		149,390 ⁴ 0 149,390	43%
Future Settlements - <i>up to 8.7 KAF/year</i>	General Fund Withdrawal Fees	200,000 AF ³		0 0 0	N/A
Federal Assistance (SAWRSA) - <i>\$3 million</i>	General Fund Tucson W/Fees	\$3,000,000 \$2,338,171 \$630,490		34,102 28,481 5,621	100%
	Cost of Services ⁵	\$31,339		n/a	
Southside Replenishment Bank <i>15 KAF direct delivery</i>	General Fund Pinal W/Fees			15,000 1,342 13,658	100%
Groundwater Management⁶ Phoenix AMA Pinal AMA Tucson AMA	Withdrawal Fees collected by AMA			251,411 417,453 103,219	
Other: Shortage Reparations	Agreement with Nevada	\$8,000,000	\$8,001,948	109,489	100%
Pinal Redirect Credits ⁷	N/A			14,125	N/A

¹ Includes purchased LTS credits and firming credits developed pursuant to 2016 IGA between the AWBA and the Gila River Indian Community

² A total of 256,174 acre-feet of LTS credits reserved for MCWA.

³ Based on estimates from the Indian Firming Study Commission Report dated January 6, 2006.

⁴ LTS Credits accrued from storage at the Gila River Indian Irrigation and Drainage District GSF: Phoenix AMA 88,313 AF, Pinal AMA 17,077. Also includes 44,000 AF of firming credits developed on Community lands.

⁵ Expenditures include \$14,883 and \$16,456 deducted for payment of cost of services for FY 08 and FY 09, respectively.

⁶ Withdrawal fees could be utilized in addition to water storage tax revenues for M&I firming if needed to reach firming goals and for Indian settlement obligations in the absence of general fund appropriations.

⁷ LTS credits accrued from AWBA water provided to Pinal AMA GSFs at full cost to the GSF operators. These credits are currently identified for use in the Tucson AMA.

The average annual cost for the AWBA to obtain one acre-foot of credit for intrastate storage is presented in **Figure 1** and illustrates that the unit cost per credit is influenced by the type of storage facility used as well as the increase in water delivery costs over time. The significant increase beginning in 2010 reflects CAWCD's elimination of the incentive recharge rate. Due to the low volume of excess CAP water supplies available to the AWBA, storage in 2017 was predominantly at GSFs, which have reduced storage rates. Indirect storage at these facilities provides water management benefits through the continued use of renewal supplies in lieu of groundwater for agricultural irrigation.

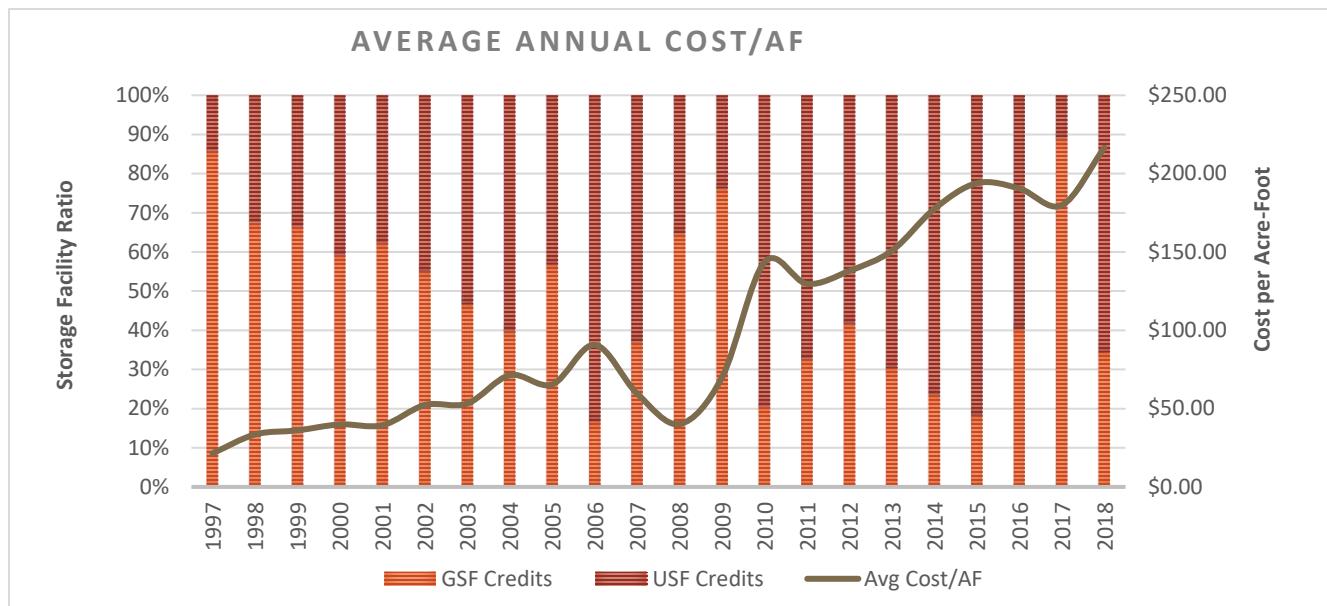


Figure 1. AWBA average cost per acre-foot to accrue one LTS Credit

Total annual storage costs since inception are identified in **Figure 2**.

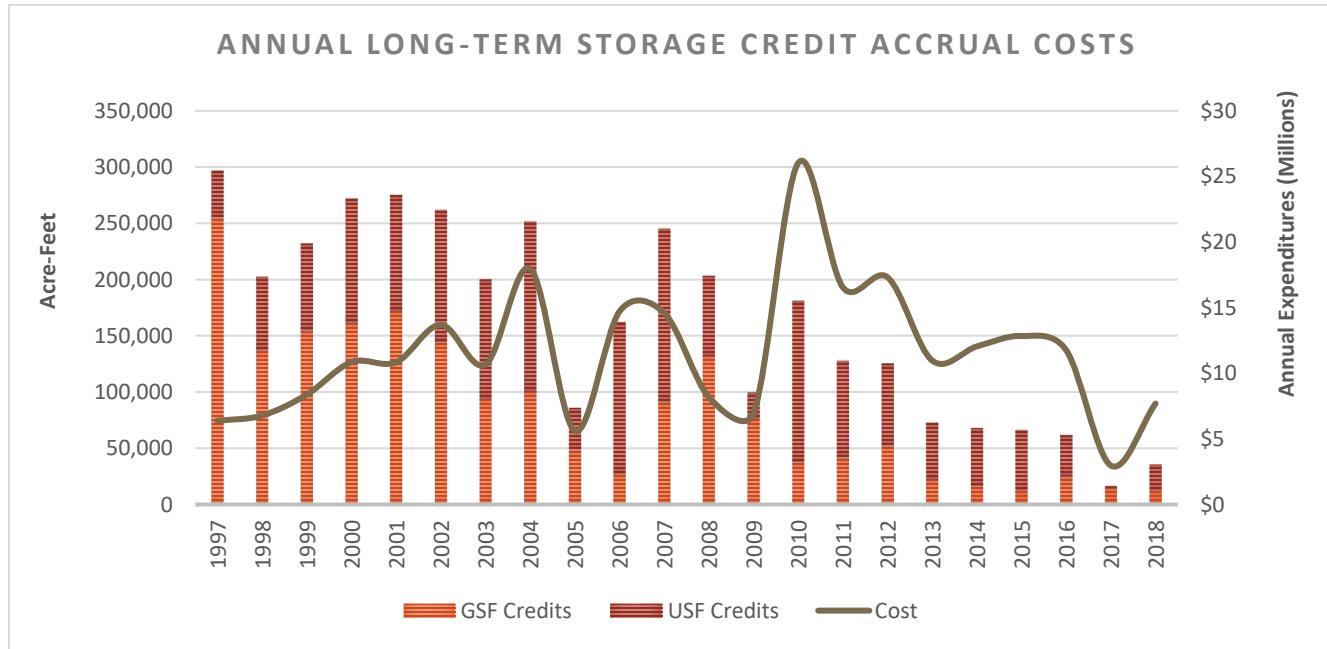


Figure 2. AWBA annual LTS credit accrual costs.

Long-term Storage Credits Distributed or Extinguished

The LTS credits developed by the AWBA to date have been identified for five purposes:

- Firming CAP M&I priority subcontracts;
- Firming post-1968 Colorado River domestic use contracts;
- Firming the State's obligation under the AWSA, including LTS credits accrued specifically for the State's obligation to the United States;
- Assisting in fulfilling the water-management objectives set forth in Chapter 2 of Title 45 (Arizona Revised Statutes); and
- Interstate water banking purposes pursuant to agreements with Nevada.

LTS credits accrued by the AWBA for firming purposes may be distributed or extinguished when the Colorado River system is declared to be in a shortage and demand exceeds supply, if there is a water shortage as defined under the AWSA, or if there is an operational disruption of the CAP. As there were no shortages or unplanned CAP outages in 2018, no LTS credits were distributed or extinguished for these purposes. Additionally, no LTS credits were distributed or extinguished in 2018 for water-management purposes or for interstate purposes.

Under the 1999 amendments to the AWBA legislation, the AWBA is authorized to develop LTS credits with monies collected pursuant to water banking services agreements. In 2018, no LTS credits were developed or distributed under such agreements.

Ten-Year Plan

Pursuant to A.R.S. §45-2426, the AWBA is required to prepare a ten-year plan (Ten-Year Plan) that describes any water banking services and interstate water banking it intends to undertake during the ten-year period in addition to storing Colorado River water for its three main purposes: (1) protecting Arizona's M&I water users against future water shortages on the Colorado River and disruptions of operation of the CAP, (2) fulfilling Arizona's water-management objectives as set forth in the Groundwater Code and (3) making water available to implement the settlement of water rights claims by Indian communities within the state. The Ten-Year Plan must also provide an analysis of the AWBA's ability to complete those activities. The Ten-Year Plan is updated annually based on current information.

Due to forecasted hydrologic conditions and continued implementation of drought conservation measures, the AWBA is not expected to have excess CAP water available during the next 10 years. Consequently, this Ten-Year Plan does not include water storage estimates for meeting its existing objectives or for additional water banking purposes. While the AWBA could store water on behalf of others using supplies made available by those entities, such as Nevada's unused Colorado River entitlement, that storage would not impact the use of excess CAP supplies, and is therefore not a consideration in this Ten-Year Plan.

In the absence of future excess CAP water supplies, the AWBA will need to rely on alternative resources to continue to make progress on its firming goals. The AWBA has purchased LTS credits in previous years and could continue to purchase LTS credits under current or future agreements. However, the decision to purchase/sell LTS credits between the buyer and seller is determined annually through mutual agreement. The AWBA can purchase LTS credits using funds in the AWB Fund or water storage tax funds held by CAWCD. For 2020, the AWBA plans to request that CAWCD provide \$3 million in Maricopa County tax funds for the purchase of roughly 12,100 acre-feet of LTS credits and \$3 million in Pima County tax funds for the purchase of approximately 11,700 acre-feet of LTS credits. Any purchase of LTS credits by the AWBA will ultimately be governed by the Annual Plan of Operation.

As the AWBA transitions to its next phase of operation, distributing LTS credits for firming, the Ten-Year Plan becomes an important tool for providing advance notice on potential near-term firming obligations or commitments, and in developing future policies to guide AWBA activities. However, due to the recent changes in the requirements for the conservation of water for Lake Mead, the data that is necessary to conduct this analysis is not yet available. Therefore, these projections cannot be completed at this time. The ten-year planning projections will be made available once that data has been published by the Reclamation. It should be noted that Reclamation's 24-Month Study for April 2019 suggests there will be no shortage in 2020.¹⁰

¹⁰ Probable Minimum, Probable Maximum and Most Probable Inflow Scenarios all project Lake Mead elevations above 1,080 feet on Dec. 31, 2019.

APPENDICES

APPENDIX A

Excess CAP Water Deliveries for Water Banking Purposes for CY 2018			
Storage Partner Facilities		Deliveries (AF)	
		Arizona	Interstate
PHOENIX AMA	Agua Fria Recharge Project	2,267	2,370
	Hieroglyphics Mountain Recharge Project	7,011	0
	Superstition Mountains Recharge Project	8,687	0
	New Magma Irrigation District	0	3,000
	Queen Creek Irrigation District	0	3,630
	Tonopah Irrigation District	1,135	500
	<i>Phoenix AMA Subtotal</i>	<i>19,100</i>	<i>9,500</i>
PINAL AMA	Central Arizona Irrigation & Drainage District	0	0
	Hohokam Irrigation & Drainage District	2,700	0
	Maricopa-Stanfield Irrigation & Drainage District	8,400	0
	<i>Pinal AMA Subtotal</i>	<i>11,100</i>	<i>0</i>
	Lower Santa Cruz Recharge Project	6,666	0
	Pima Mine Road Recharge Project	29	1,271
	Cortaro-Marana Irrigation District	1,000	1,500
	Kai-Red Rock Farms	105	1,229
<i>Tucson AMA Subtotal</i>		<i>7,800</i>	<i>4,000</i>
TOTAL DELIVERIES		38,000	13,500

APPENDIX B**Table 1A. AWBA Long-Term Storage Credits Purchased in 2018**

	Annual		Cumulative	
	Funds Expended	Credits Accrued (AF)	Funds Expended	Credits Accrued (AF) ¹
Water Storage Tax				
Phoenix AMA	\$2,203,145.00	9,500	\$16,703,145	68,582
Pinal AMA	-	-	-	-
Tucson AMA	-	-	\$5,893,754	27,140
Withdrawal Fees				
Phoenix AMA	\$834,876.00	3,600	\$834,876	3,600
Pinal AMA	-	-	\$0	-
Tucson AMA	-	-	\$326,133	1,759
Shortage Reparations				
Phoenix AMA	-	-	\$0	-
Pinal AMA	-	-	-	-
Tucson AMA	-	-	\$579,842	3,665
Total	\$3,038,021.00	13,100	\$24,337,750	104,746

¹ Information on AWBA annual and cumulative LTS credits accrued from water storage at individual facilities can be found on the AWBA's website, www.azwater.gov

Table 1B. AWBA Firming Credits Developed with the Gila River Indian Community in 2018¹

Firming Credits Developed	Annual	Cumulative
Delivery Reimbursement (AF)	9,000	44,000
Cost of Reimbursement	\$1,440,000	\$7,032,000

¹ Firming credits developed pursuant to Exhibit B of IGA between AWBA and GRIC