CAGRD
CENTRAL ARIZONA GROUNDWATER REPLENISHMENT DISTRICT
A Division of Central Arizona Project

cagrd.com

2025
CAGRD Plan of Operation

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Central Arizona Groundwater Replenishment District (CAGRD) is a special function of the Central Arizona Water Conservation District (CAWCD)

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Executive Summary

The Central Arizona Groundwater Replenishment District (CAGRD), a special function of the Central Arizona Water Conservation District (CAWCD), was created in 1993 by the Arizona Legislature. CAGRD members are landowners, cities, towns and private water companies in Maricopa, Pinal and Pima counties. CAGRD serves its members by replenishing the groundwater they pump in excess of the limits established by the Assured Water Supply Rules.

In accordance with Arizona statute, the CAGRD 2025 Plan of Operation (2025 Plan) describes the activities that CAGRD proposes to undertake in the Phoenix, Pinal and Tucson Active Management Areas (AMAs) over the next 100 years based on continued enrollment through 2034. The 2025 Plan must be submitted to the Arizona Department of Water Resources (ADWR) prior to Jan. 1, 2025.

Currently, CAGRD has 23 water providers as Member Service Areas (MSAs). In addition, 1,264 subdivisions, representing approximately 311,480 lots, are enrolled as Member Lands (MLs) of the CAGRD. From 2014 through 2023, CAGRD's 10-year replenishment obligation has totaled 321,614 acre-feet (an average of 32,161 acre-feet/yr.). CAGRD's 10-year replenishment satisfaction has totaled 287,721 acre-feet. CAGRD has met and continues to meet its replenishment obligation within the statutorily prescribed three-year window.

Perhaps more than any previous Plan of Operation, the planning environment under which the 2025 Plan was developed has been especially challenging given the changing landscape of the Assured Water Supply program rules and regulations within CAGRD's service area and questions regarding the future availability of Colorado River supplies post-2026. Much of this uncertainty will remain long after this Plan is submitted to the ADWR. Because of this, CAGRD staff have done their best to incorporate this uncertainty into their analysis but acknowledge revisions to the Plan may need to be incorporated at the request of the ADWR Director after its submittal.

Long-term projections for replenishment obligation were first developed in August of 2023 and showed an estimated annual replenishment obligation in 2044 and 2124 of 83,000 acre-feet and 91,000 acre-feet, respectively; however, new estimates were developed in January and then again in May of 2024 to better align with the proposed Alternative Path to Designation of Assured Water Supply (ADAWS) Rule changes which, if adopted, will substantially alter the way development occurs within the Phoenix AMA and impact future replenishment obligations for CAGRD.

The May 2024 obligation projection was chosen as the official projection for the 2025 Plan and assumes that four ADAWS candidates (Queen Creek, Buckeye, EPCOR, and Arizona Water Company-Apache Junction) become designated and acquire alternative supplies at a rate necessary to ensure the designation volume is large enough to accommodate their service area's growth. The May 2024 estimates show that the 2044 annual replenishment obligation is 64,100 acre-feet and 77,200 acre-feet in 2124. In September of 2024, an update was made to the Pinal AMA estimate which increased these totals to 68,100 acre-feet and 80,500 acre-feet, respectively.

At the time the 2015 Plan of Operation was being developed, CAGRD was still meeting some of its obligations with Excess Central Arizona Project (CAP) water, and the goal of its water supply acquisition program was to acquire supplies to meet the remaining obligations when Excess CAP water was no longer available, which eventually occurred in 2020. To date, CAGRD has secured rights to 77,141 acre-feet of annual water supplies. This portfolio includes permanent CAP Municipal & Industrial (M&I) and Non-Indian Agricultural (NIA) entitlements, mid-and long-term leases and exchanges of Indian NIA and Indian Priority CAP supplies, a 100-year effluent lease and more than a million acre-feet of long-term storage credits (LTSCs).

CAGRD acknowledges the hydrologic and regulatory uncertainty of future Colorado River supplies post-2026, so it will continue to pursue additional water supply acquisitions to mitigate shortage impacts to its existing CAP supplies and to build its Replenishment Reserve accounts. CAGRD, in consultation with WestWater Research, has developed an inventory of water supplies that are potentially available for acquisition during the next 20 years and the subsequent 80 years, as required by statute. Since the 2015 Plan was approved, CAWCD has approved mechanisms to move water other than CAP water through the CAP canal.

CAGRD is required to establish and maintain a Replenishment Reserve of LTSCs in the Phoenix, Pinal, and Tucson AMAs to help ensure fulfillment of replenishment obligations during shortages

and enhance rate stability. The 2025 Plan Reserve target is 850,036 acre-feet, the majority of which is for the Phoenix AMA. CAGRD has already accrued 335,500 acre-feet of LTSCs in the Replenishment Reserve account and holds an additional 488,755 acre-feet of dedicated credits in the Phoenix and Pinal AMAs.

In its 2025 Plan, CAGRD demonstrates that sufficient replenishment capacity is available at storage facilities to meet CAGRD's projected replenishment obligation into the future. The analysis for the 2025 Plan identifies significant capacity in underground storage facilities (USF) and groundwater savings facilities (GSF) in the Phoenix, Pinal and Tucson AMAs. Since the 2015 Plan, CAGRD has entered into agreements that provide a water supply and include storage capacity arrangements at two additional USFs. The 2014 agreement with Liberty Utilities provided CAGRD with 2,400 acre-feet of annual storage capacity in the west Phoenix AMA at the Sustainable Effluent to Aquifer Project, and a 2019 agreement with the Gila River Indian Community provides for up to 18,185 acre-feet of annual storage at the MAR-5 Olberg Dam USF.

Statutes require that all of CAGRD's costs be paid by its members and provide CAGRD with the authority and responsibility to establish and collect fees, assessments, and taxes necessary to meet its statutory obligations. In 2019, CAGRD exercised its bonding authority for the first time to pay a portion ($20 million) of the $95 million water supply acquisition cost associated with LTSCs purchased from Gila River Water Storage LLC. The CAWCD Board has adopted policies for establishing its fees, rates, and dues no less frequently than every two years, providing CAGRD with flexibility as economic and operational conditions change. These financial mechanisms have ensured CAGRD's ability to meet its statutory obligations using funds collected exclusively from its members and will continue to do so in the future.

In conclusion, this 2025 Plan demonstrates that CAGRD has the capability and the authority to meet all of its statutory obligations over the next 100 years for current members and new members that will enroll through 2034.

HIEROGLYPHIC MOUNTAIN RECHARGE

CAGRD Plan of Operation Requirements

Arizona Revised Statutes (A.R.S.) § 45-576.02.C mandates that the Central Arizona Water Conservation District (CAWCD), acting in its capacity as the Central Arizona Groundwater Replenishment District (CAGRD), submit a Plan of Operation (Plan) to the Director of the Arizona Department of Water Resources (ADWR) every 10 years.

This 2025 CAGRD Plan of Operation must be submitted by Dec. 31, 2024.

The purpose of the Plan, as defined by statute, is to describe the activities CAGRD proposes to undertake during the 100 calendar years following the Plan submittal. The Plan must include the following information for the Phoenix, Pinal and Tucson Active Management Areas (AMAs):

a. CAGRD's groundwater replenishment obligation and the extent to which that obligation has been met in the 10 years preceding the submittal of the Plan

b. An estimate of CAGRD's current and projected groundwater replenishment obligation, as that term is defined and used in Title 48, Chapter 22 of the A.R.S., for current members for the 20 calendar years following the submission of the Plan; and an estimate of CAGRD's projected groundwater replenishment obligation for current members and potential members for the 100 calendar years following the submission of the Plan based on reasonable projections of real property and service areas that could qualify for membership in the 10 years following the Plan submittal

c. A description of the water resources CAGRD plans to use for replenishment purposes during the 20 calendar years following Plan submittal and water resources potentially available to CAGRD for groundwater replenishment purposes during the subsequent 80 calendar years

d. A description of CAGRD's current replenishment reserve activities in each AMA for the 10 years preceding the current Plan and planned replenishment reserve activities for the ensuing 10 years to be undertaken pursuant to A.R.S. § 48-3772.E

e. A description of any facilities and projects to be used for replenishment and the replenishment capacity available to CAGRD during the 20 calendar years following Plan submittal

f. An analysis of potential storage facilities that may be used by CAGRD for replenishment purposes

g. A description of CAGRD's capability to meet the current and projected groundwater replenishment obligation for the 20 calendar years following the calendar year in which the conservation district submits the Plan

h. Any other information the ADWR Director (Director) may require

ADWR Review and Approval Process

Within 60 days of Plan submittal, the Director must determine whether CAGRD has submitted sufficient information to determine whether the Plan is consistent with the management goals of the Phoenix, Pinal and Tucson AMAs. If the Director determines the information is insufficient for such a determination, the Director shall notify CAGRD of the insufficiency in writing and shall specify what additional information is required. CAGRD must provide the additional information within a reasonable time as specified by the Director.

On determining that the Plan is complete, the Director must publish a notice in a newspaper of general statewide circulation once each week for two consecutive weeks. The public notice shall request public comment concerning the information supplied by CAGRD in its Plan and shall set a date and location of a public hearing to be held to provide any person, including ADWR, an opportunity to comment on or to present evidence concerning the submitted Plan. CAGRD must respond in writing to all public comments whether received at the hearing or otherwise received by a date announced by the Director.

Within 120 days after the public hearing, the Director must issue a decision for each AMA (Phoenix, Pinal and Tucson) determining whether or not the Plan submitted with respect to the AMA shall be designated as being consistent with achieving the management goal of the AMA. If the Director determines that the Plan is consistent with achieving the management goal of the particular AMA, the designation for that AMA remains effective until it expires. The Director's determination expires on Dec. 31 of the year following the year in which CAGRD is required to submit its next plan, or the date the Director issues a decision determining that the next Plan is consistent with achieving the management goal of the AMA, whichever occurs first.

The Director shall make a determination that the Plan is consistent with achieving the management goal for each AMA if all of the following have been demonstrated:

- CAGRD has identified sufficient water supplies to meet its replenishment obligation for current members during the 20 calendar years following submission of the Plan and has identified water supplies potentially available for CAGRD's projected groundwater replenishment obligation for 100 calendar years following Plan submittal for current members and potential members based on reasonable projections of real property and service areas that could qualify for membership in the 10 years following the submission of the Plan.
- The replenishment reserve target for each AMA was calculated as prescribed in A.R.S. § 48-3772.E and CAGRD is developing a replenishment reserve in each AMA pursuant to that statute.
- CAGRD has identified sufficient capacity at storage facilities and projects to be used for replenishment purposes during the 20 calendar years following Plan submittal.
- CAGRD has made a reasonable estimate of its projected replenishment obligation for the 100 calendar years following Plan submittal.

If at any time between the second anniversary and the eighth anniversary of the Director's determination of consistency with the management goal, the Director finds there has been either an unexpected increase in CAGRD's projected groundwater replenishment obligation or an unexpected reduction in water supplies available to meet CAGRD's current obligation such that the Plan no longer demonstrates consistency with the management goal for one or more AMAs, the Director shall require CAGRD to submit a revised Plan. The revised Plan must be submitted within one calendar year of the date that the Director notifies CAGRD of such a determination, unless the Director extends this time for good cause. The Director shall review, hold a hearing on and make a determination on the revised Plan just as described above, except that the Director shall only hold a public hearing regarding those conditions that have changed. If CAGRD is unable to submit a revised Plan that satisfies the Director's concerns for one or more AMAs, then the Plan shall expire for the respective AMA(s).

SUPERSTITION RECHARGE

1.0 Background

1.1 HISTORICAL BACKGROUND AND CREATION OF CAGRD

In 1993, the Arizona Legislature (Legislature) passed the Groundwater Replenishment District Act. This added groundwater replenishment authorities to the statutory authorities already assigned to the Central Arizona Water Conservation District (CAWCD). CAWCD's unique duties and operations under these authorities are commonly referred to as the Central Arizona Groundwater Replenishment District (CAGRD).

This section provides a short chronology of significant water management events that led to the creation of CAGRD. It begins with a brief history of the 1980 Groundwater Management Act and the state's first attempt to adopt Assured and Adequate Water Supply Rules some 10 years later. Also provided is a description of how CAGRD continues to evolve to meet new challenges associated with rapid changes in the water resource and political landscape to best serve its current and future members.

1.1.1 Early Groundwater Management Efforts

Groundwater development in Arizona began around the turn of the century, increasing gradually through the 1930s, 1940s and 1950s. Over time, however, increasing mining and agricultural activities, and the associated groundwater demand resulted in several areas of the state reaching a condition of ongoing groundwater overdraft and severely declining water levels.

The Legislature has engaged in several attempts to address groundwater overdraft within the state. Arizona's first Groundwater Code was enacted in 1948 and attempted, mostly unsuccessfully, to curb overdraft in "critical groundwater areas." In 1973, the Legislature charged the Arizona Water Commission (predecessor of the Arizona Department of Water Resources, ADWR) with administering a new Adequate Water Supply Program. That program was created to address mounting concerns over land fraud in the state, where tracts of desert land with little or no available water supply were sold to uninformed buyers. The program required that initial buyers of subdivided land be notified of the adequacy or inadequacy of the water supply. However, the lack of an adequate water supply for the subdivision did not prevent the sale of land.

1.1.2 1980 Groundwater Management Act

In 1977, the Legislature created the Groundwater Management Study Commission (Study Commission) to investigate alternatives to improve Arizona's groundwater law. It was expected that the Study Commission's recommendations would generate changes that would ultimately bring groundwater pumping and natural recharge more closely into balance.

The work of the Study Commission, coupled with continuing declines in groundwater levels due to overdraft, and a decision by Secretary of the Interior Cecil Andrus to condition continued funding for the Central Arizona Project (CAP) on the state's enactment of stricter groundwater regulations, led to the adoption in 1980 of a comprehensive Groundwater Code. This was known as the Groundwater Management Act (GMA) and exists as Title 45, Chapter 2 of the Arizona Revised Statutes (A.R.S.).

Among other provisions, the GMA created ADWR and charged it with administering the Groundwater Code's provisions. The GMA also established Active Management Areas (AMAs), which are geographic areas in the state where groundwater overdraft was most critical. The Groundwater Code imposed new regulations on groundwater use within the AMAs, including limits on new groundwater users and the drilling of new wells. The GMA also mandated water conservation measures and required all new developments within an AMA to prove access to a reliable water supply for a 100-year period.

1.1.3 Post-Groundwater Code Assured and Adequate Water Supply Program

With the passage of the Groundwater Code in 1980, the 1973 Adequate Water Supply Program was replaced with the Assured and Adequate Water Supply (AAWS) Program. The AAWS Program required developers to prove to ADWR that the development had an adequate water supply if the development is located outside an AMA, or that the development has a 100-year assured water supply (AWS) if the development is located inside an AMA.

For new residential development within the AMAs, the AAWS Program significantly shifted the approach from a consumer information program to a consumer protection program. If the findings of the water supply evaluation for a development concluded that an AWS could not be demonstrated, the plat would not be approved, and lots could not be offered for sale. Section 1.2 describes the criteria that must be met to prove an AWS.

In the first few years following the passage of the GMA, ADWR continued to operate the AAWS Program under guidelines similar to the criteria developed for the Adequate Water Supply Program in the 1970s. It was recognized, however, that the allowable overdraft, or acceptable decline in groundwater level as outlined in the guidelines could not continue and still be considered consistent with the management goal within those AMAs where the management goal was safe-yield (a long-term balance between the annual amount of groundwater withdrawn and the annual amount of water recharged to the aquifer).

1.1.4 Initial Draft Rules of the AAWS Program – 1988

In 1988, the first draft rules of the AAWS Program were released to the public. The draft rules for AWS designations described management criteria to transition from overdraft to safe-yield with proposed reductions in the allowable rate of water-level decline. Very low rates of water-level decline were proposed for undeveloped areas. New developments, which were typically in more rural areas of the AMAs, would be required to find alternative sources of water supply. This requirement would have limited new growth in these undeveloped areas unless a conveyance system could be constructed to the nearest supply; if the proposed area could be included in the service area of a designated water provider; or if there was access to CAP water supplies. The draft rules also effectively restricted the density of new development and, in the view of the state's agricultural interests, severely limited the value of agricultural land sold for new residential development.

Many cities and towns without access to CAP water, agricultural interests and the real estate and development community strongly opposed the draft rule package, each for their own reasons. In response to this opposition, ADWR withdrew the draft rule package and continued to operate under the existing guidelines for the next several years.

Given the lack of alternative sources of supply in many areas of the AMAs, concern remained over the potential impacts of any proposed AWS rules on growth. In the early 1990s, ADWR spent more than three years developing a series of draft rules, including an extensive public participation process. ADWR also commissioned an economic impact study to evaluate the impact of projected scenarios on employment, income, housing, retail sales and population. The study concluded that impacts were small throughout the three-county service area, assuming that a replenishment district was available to provide the new water supplies. Without the replenishment district, impacts were greater, as water providers may have been required to buy and store a 100-year water supply at prohibitive expense.

1.1.5 Formal AWS Rules Adopted – 1995

The inevitability that ADWR would promulgate rules to significantly reduce reliance on mined groundwater supplies by new development led to concurrent legislative activity to create groundwater replenishment districts within both the Phoenix and Tucson AMAs. In 1990, the Legislature enacted a bill creating a provisional Tucson AMA Water Augmentation Authority, which was later modified to become the Santa Cruz Valley Water District (SCVWD). In 1991, the Legislature also enacted legislation to allow for the creation of a replenishment district in the Phoenix AMA.

In 1992, ADWR developed a concept paper for the AWS program that evaluated three possible approaches to addressing the consistency with management goal criteria. Comparison of the approaches resulted in an ADWR-preferred alternative of a replenishment model that allowed for orderly transition to renewable supplies and was most consistent with existing augmentation authority and replenishment district legislation.

In 1993, the Legislature created an additional replenishment district through the Groundwater Replenishment District Act, which allowed for voluntary membership throughout the Phoenix, Pinal and Tucson AMAs. At the same time, the SCVWD was authorized to perform similar replenishment functions as an alternative to the three-AMA district. The SCVWD ultimately did not become permanent, and the Phoenix AMA replenishment district was never formed. However, both statutes remain in the Groundwater Code.

The Groundwater Replenishment District Act authorized CAWCD to perform replenishment for groundwater use that exceeded the amount of pumping allowed, as proposed in the draft AWS Rules. The replenishment authority is referred to as CAGRD; it operates throughout that portion of CAWCD's three-county service area that is within an AMA. CAGRD recharges Central Arizona Project (CAP) water or other alternative water supplies to replenish excess groundwater withdrawals (see section 1.2) by municipal water users who have become CAGRD members. Membership is voluntary and members can meet AAWS program requirements without directly utilizing renewable resources.

The 1993 legislation provided a workable mechanism that satisfied both the needs of developers and the requirements of ADWR in achieving compliance with the AAWS program. This mechanism allowed those parties without CAP subcontracts or without direct access to CAP water or other renewable water supplies to demonstrate consistency with the management plan and management goal for the AMA (i.e., achieving safe-yield). Once this consensus was reached in the water community, a draft rule package was developed, with formal AWS Rules adopted by ADWR in February 1995.

1 *Macro and Microeconomic Impacts of the Arizona Department of Water Resources Proposed Assured Water Supply Rules Within Arizona Active Management Areas, June 28, 1993. Prepared by L. William Seidman Research Institute, Economic Outlook Center of ASU in cooperation with Elliott D. Pollack and Company.*

1.2 CAGRD'S WATER RESOURCE MANAGEMENT ROLE

Excess groundwater is defined in A.R.S. §48-3701.7 as an amount of groundwater delivered in a calendar year beyond what is "consistent with the applicable assured water supply rules adopted by the department of water resources for the active management area where the member land or member service area is located." CAGRD's overall responsibilities are to operate in partnership with the AWS Program and replace excess groundwater pumped by or on behalf of its members so that its members demonstrate consistency with the management goal for their AMA.

Within the AMAs, the AWS Rules are designed to protect groundwater supplies and to ensure that people purchasing subdivided land have a water supply of adequate quality and quantity. Thus, in each AMA the developer of a new subdivision must demonstrate to ADWR that a 100-year AWS is available to serve the subdivision before sales can begin. An AWS can be demonstrated in one of two ways. First, a municipal water provider may apply for and obtain a Designation of Assured Water Supply (DAWS) for its entire service area. In this case, new subdivisions that will be served by the designated provider are automatically deemed to have proven an AWS so long as the designated volume of assured supply is not exceeded. Alternatively, if the municipal water provider that will serve a new subdivision has not received a DAWS for its service area, the developer of the subdivision must apply for a Certificate of Assured Water Supply (CAWS) and prove an AWS for the individual subdivision.

Subdivisions, in the context of AWS Rules, refer to how the term is defined in A.R.S. §32-2101.58. Many developments such as industrial complexes and apartment buildings can be constructed without being deemed a subdivision. These developments are currently outside the scope of the AWS Rules and would not require a CAWS or enrollment in the CAGRD to demonstrate consistency with the management goal.

There are five basic criteria of an AWS:

1. A sufficient quantity of water is physically, legally and continuously available to satisfy the water demands of the subdivision or service area for 100 years;
2. The water source meets applicable water quality standards;
3. The proposed use of water is consistent with the AMA management plan;
4. The proposed use is consistent with the AMA water management goal; and,
5. The applicant is financially capable of installing the necessary water distribution and treatment facilities.

The consistency with the management goal section of the AWS Rules limits the quantity of mined groundwater that an applicant may use to demonstrate an AWS. The effect of this groundwater pumping limitation is to prevent new development from relying solely on mined groundwater to serve its water demands. Development, however, is not necessarily stymied for those landowners and water providers who have no direct access to CAP water or other renewable supplies. If a water provider or a landowner has access to groundwater and desires to rely exclusively on the availability of groundwater to demonstrate a 100-year water supply, it may do so provided it joins CAGRD. Membership in CAGRD provides a means by which an AWS applicant can show that the proposed water use is consistent with the water management goal of the AMA (criterion #4 above). As a member of CAGRD, the landowner or municipal water provider must pay CAGRD to replenish any groundwater pumped by the member that exceeds the pumping limitations imposed by the AWS Rules, thereby making the member's groundwater use consistent with the AMA management goal.

In 1999, the Legislature expanded CAWCD's replenishment authorities by passing the Water Sufficiency and Availability Act. This authorized CAGRD to play a limited role in helping a municipal water provider prove to the ADWR Director (Director) that the provider has a continuously available supply of water for 100 years (criterion #1 above). Under the Water Sufficiency and Availability

Act, the CAWCD Board of Directors (CAWCD Board) may grant Water Availability Status (WAS) to a municipal provider by adopting a resolution that commits CAGRD to replenish a specified average annual volume of water in a location where the municipal provider may physically access it for service to its customers. On June 15, 2000, the Director issued a determination that CAGRD has the capability to grant water availability status to Member Service Areas in the three AMAs. By law, WAS membership was limited to a maximum total of 20,000 acre-feet per year, and CAWCD could not grant water availability status to members after Dec. 31, 2010. The City of Scottsdale is the only WAS Member of the CAGRD.

Recommendations from the December 2001 Final Report of the Governor's Water Management Commission resulted in additional CAGRD authorities and responsibilities. Legislation adopted in 2003 requires CAGRD to establish and maintain a Replenishment Reserve of long-term storage credits (LTSCs) to ensure it can meet its replenishment obligation while also enhancing rate stability for its members. In addition, CAGRD's planning requirements were made more stringent, and the criteria under which ADWR is to review and approve CAGRD Plans of Operation was more clearly defined. More recent modifications to A.R.S. have allowed for de-enrollment from the CAGRD in certain circumstances and the collection fees and dues to provide consistent means of funding.

1.3 MEMBERSHIP TYPES

Membership in CAGRD is voluntary. Any city, town, private water company, subdivision or homeowner's association located in the Phoenix, Pinal or Tucson AMA may join CAGRD. CAGRD is comprised of two types of members: Member Service Areas and Member Lands.

1.3.1 Member Service Areas (MSAs)

A city, town, district or water company enrolls in CAGRD when it adopts a resolution and executes an agreement that declares its service area and all extensions to be an MSA of CAGRD. These agreements are referred to as MSA Agreements. Under an MSA Agreement, the municipal provider must submit reports to CAGRD annually identifying the volume of excess groundwater delivered within the service area. The MSA Agreement also requires the municipal provider to pay CAGRD replenishment taxes based on the amount of excess groundwater delivered within the service area each year. When applying to enroll a service area in CAGRD, the applicant provides a projection of future population and water use. This projection serves as a basis for estimating CAGRD's long-term replenishment obligation for the service area. However, changing political and economic conditions could impact population growth and/or the service area boundaries and, consequently, CAGRD's long-term obligation. Therefore, the commitment made by CAGRD through enrollment of an MSA will not be fully known until many years into the future. To help safeguard against sudden shifts in replenishment obligation, the MSA Agreement may specify requirements on the excess groundwater reported to CAGRD. A municipal provider's enrollment in CAGRD as an MSA allows the provider to obtain a DAWS for its service area by fulfilling the consistency with the AMA management goal in the Rule requirements for an AWS designation.

1.3.2 Member Lands (MLs)

An individual subdivision enrolls as an ML of CAGRD when: 1) its owner executes and records an irrevocable declaration of covenants, conditions and restrictions (ML Declaration) running with the land that includes the land in CAGRD and subjects it to the replenishment assessment – the collection of the funds that allow CAGRD to replenish the excess groundwater delivered to the ML; and, 2) the owner and the municipal provider that will supply water to the subdivision execute and record an agreement (ML Agreement) under which the water provider agrees to submit the water delivery information necessary to calculate the excess groundwater and resulting replenishment assessment for each parcel of land annually to CAGRD. Individual parcels within a CAGRD ML are categorized as Category 1 MLs or Category 2 MLs. Category 2 MLs are those parcels that are part

of a golf course and that choose not to participate in CAGRD's replenishment reserve program (as described in Chapter 5 of this Plan). Category 1 MLs are all ML parcels that do not qualify as Category 2 MLs.

The commitment made by CAGRD upon enrollment of MLs is well-defined. The boundaries of the subdivision define the ML and, once enrolled, may only be modified, amended, or revoked by written consent of CAWCD, ADWR, and the owner(s). In addition, the applicant must establish the number of individual units (homes, businesses, etc.) that are to be built within the subdivision before it can receive a CAWS from ADWR. This is the best available information for projecting the ML's long-term water use. Enrollment of a proposed subdivision as an ML allows the developer/landowner to obtain a CAWS for the new development by fulfilling the consistency with the AMA management goal Rule requirement for an AWS certificate.

1.3.3 Water Availability Status Members

As discussed in Section 1.2, WAS members are CAGRD MSAs that have been granted water availability status in accordance with the 1999 Water Sufficiency and Availability Act. CAGRD may directly deliver to customers that would otherwise use groundwater pumped from within the replenishment area under A.R.S. § 48-3772.B.11 on the condition that CAWCD determines that direct deliveries will not harm other CAP customers or increase the replenishment taxes and rates for other CAGRD members.

WAS members are not levied annual membership dues, replenishment reserve fees and charges or a replenishment replacement component of rates associated with replenishment activities.

1.4 CHRONOLOGY OF PLANS OF OPERATION AND MID-PLAN REVIEWS

Each Plan of Operation is developed in its own context, with a unique set of challenges and political realities surrounding the calculation of projected membership, the resulting replenishment obligation, and the availability of potential water supplies.

1.4.1 Initial Plan of Operation

The initial CAGRD Plan of Operation was submitted on June 1, 1994 and adopted by ADWR on Feb. 24, 1995. The Decision and Order for the Phoenix, Pinal and Tucson AMAs designated that the initial Plan of Operation was consistent with the goals of the AMAs. With these designations of consistency, CAGRD began the process of enrolling MLs and MSAs. The initial Plan was effective through Oct. 31, 2005, when the Director approved the second Plan of Operation.

1.4.2 Second Plan of Operation

CAGRD's second Plan of Operation (2005 Plan) was submitted on Nov. 8, 2004. The Director issued the Decision and Order on Oct. 31, 2005 determining that the 2005 Plan was consistent with achieving the management goals of the Phoenix, Pinal and Tucson AMAs. The 2005 Plan expired on Aug. 5, 2015, the date the Director issued a decision determining that the 2015 Plan was consistent with achieving the management goals of the AMAs. Developed during the housing boom in the early 2000s, it reflects potential growth that has not yet been realized.

1.4.3 2011 Mid-Plan Review

In 2011, seven years following the adoption of the 2005 Plan, a Mid-Plan Review was completed by CAGRD. Following the widespread crisis in the financial sector and the associated depressed housing economy, particularly affecting growth states like Arizona, the Mid-Plan Review was prepared to provide an update on the status of CAGRD's projected enrollment and replenishment obligation.

1.4.4 Third Plan of Operation

The 2015 Plan of Operation (2015 Plan) was submitted to the Director on Dec. 29, 2014 with the resulting decisions and order on Aug. 5, 2015. Reflecting a period of economic recovery and anticipation of Colorado River shortage, development of the 2015 Plan included explorations of water acquisition strategy and alternatives to existing CAGRD operations. The plan successfully governed CAGRD activities through an improving Arizona economy, COVID-19 and the first declared Colorado River shortage. Its framework and approach have largely been retained in the development of this 2025 Plan of Operation (2025 Plan).

1.4.5 2019 Mid-Plan Review

Continuing its commitment to increased transparency and accountability, CAGRD released a report halfway through the 2015 Plan period. This update covered recent trends related to enrollment, obligation, water supplies and storage, replenishment reserve and financial capability. The report concluded the 2015 Plan remained in good standing and complied with Arizona's water management goals.

1.4.6 Fourth Plan of Operation

This fourth 2025 Plan will be submitted to the Director prior to the conclusion of 2024 and will cover the 10-year period from 2025 through 2034.

1.5 PLAN DEVELOPMENT AND RELATED STAKEHOLDER PROCESSES

While development of the 2025 Plan began in 2022, its development was preceded by national and interstate discussions on Colorado River operations and state and local discussions on groundwater water policy and management. 2019 saw the signing of the Upper and Lower Basin Drought Contingency Plans (DCPs) to address the historic drought in the Colorado River Basin -- the result of years of discussions and meetings with interested parties throughout western United States. Concurrent to the signing of the DCP, then Governor Doug Ducey's Water Augmentation, Innovation and Conservation Council (GWAICC) was launched with committees addressing long-term water augmentation, desalination, post-2025 AMA groundwater policy and non-AMA groundwater management. CAP and CAGRD were not only active participants in the discussions regarding DCP and GWAICC, but through the CAWCD Board's CAGRD and Underground Storage Committee, hosted its own series of presentations and stakeholder sessions throughout 2021. These discussions led to updated guiding principles on CAGRD water supply acquisition and new guiding principles for CAGRD operations.

Development of this 2025 Plan began in earnest in 2022 with the establishment of a project plan, decisions on preliminary approaches to addressing required topics in the 2025 Plan and convening panels of experts to inform and refine the approaches CAP staff took related to growth projections and forecasting future replenishment obligations. The CAWCD Board and the public were informed of progress on the plan development starting in August 2022 with frequent agenda items at least once a quarter in the CAWCD Board's CAGRD and Underground Storage Committee meetings.

Staff efforts on the 2025 Plan continued through 2023 as Arizona water policy began to change. Governor Katie Hobb's Water Policy Council replaced the GWAICC, leading to new rounds of discussion on groundwater topics in Arizona. Releases of updated ADWR AWS groundwater models in early and mid-2023 triggered a moratorium on issuances of groundwater-based CAWS in the Phoenix AMA. The development of an "Alternative Path to Designation of Assured Water Supply" concept in late 2023 also gained momentum. In response, CAP updated models and approaches to the 2025 Plan and provided updates to the CAWCD Board's CAGRD and Underground Storage Committee, keeping up with potential impacts to proposed policy changes and ensuring the 2025 Plan was robust enough to accommodate anticipated changes. 2024 brought potential legislation on water issues, which again necessitated adjustments to 2025 Plan development.

Finally, like many others, CAGRD continues to closely follow the ongoing interstate negotiations for post-2026 operations of Lake Powell and Lake Mead and the several proposals submitted to the U.S. Bureau of Reclamation through the National Environmental Protection Act process. The outcome of this process will not be completed before this 2025 Plan is due to ADWR; however, it is expected that the new guidelines will acknowledge the changing realities of a river system with less water.

From the beginning of the 2025 Plan development, CAGRD solicited input from the CAWCD Board and interested stakeholders. In addition to regular updates to its CAGRD and Underground Storage Committee, the CAWCD Board approved the use of the replenishment obligation projections on Aug. 3, 2023 and the Planned and Potentially Available Water Supplies on March 7, 2024. Each of the Board approvals was preceded by stakeholder roundtables where the public was given presentations on each topic and given the opportunity to comment. A stakeholder briefing on the draft of the 2025 Plan will be held on Aug. 26, 2024, prior to the anticipated CAWCD Board approval of the draft in the fall of 2024.

PIMA MINE ROAD RECHARGE

2.0 Historic Operations

The statutory requirements relating to past obligation and replenishment for the Central Arizona Groundwater Replenishment District (CAGRD) Plan of Operation are identified below:

A.R.S. § 45-576.02.C.2…

the plan shall include the following information for each active management area in which a member land or member service area is located:

A.R.S. § 45-576.02.C.2(a)

The conservation district's groundwater replenishment obligations and the extent to which those obligations have been met in the ten years preceding submittal of the plan.

This chapter addresses these elements with a summary of current enrollment, the replenishment obligation of the past 10 years, and the extent to which that obligation has been fulfilled or completed. A compilation of tables is provided in section 2.4, which compares excess groundwater deliveries and completion of the groundwater replenishment obligation associated with those deliveries for each Active Management Area (AMA) for the period 2014 through 2023. Information in this chapter is based on enrollment and membership through the end of 2023, and obligation and replenishment through the 2023 reporting period.

Appendix B presents a collection of relevant Conservation District Annual Reports documenting replenishment obligation and fulfillment in each AMA year by year. This report is submitted to the Arizona Department of Water Resources (ADWR) annually with full details of CAGRD replenishment activities.

2.1 ENROLLMENT HISTORY

As each AMA receives its own decision and order, CAGRD activity is categorized by AMA and, for the Phoenix AMA, by its eastern and western portions. Section 1.3 provides full discussions of membership types.

2.1.1 Membership in the Phoenix AMA

A.R.S. §48-3772.I requires CAGRD, to the extent reasonably feasible, to replenish groundwater in the east and west portions of the Phoenix AMA in proportion to the obligation incurred in any given year. Reporting for the Phoenix AMA includes the portion of the AMA where enrollment and replenishment occur. The 2023 Governor's moratorium on issuance of Certificates of Assured Water Supply (CAWS) impacted enrollment in 2023 and 2024 for Member Lands (MLs).

Figures 2.1, 2.2, and **2.3** illustrate the locations of MLs and Member Service Areas (MSAs) in their respective AMAs and which MLs have incurred replenishment obligations.

2.1.1.1 Member Lands

A total of 996 subdivisions have completed enrollment as MLs in the Phoenix AMA, representing 221,003 lots at full build-out. The east portion of the Phoenix AMA contains 377 MLs and 65,438 lots; the west portion contains 619 MLs and 155,565 lots.

2.1.1.2 Member Service Areas

Nine municipal water providers have enrolled as MSAs in the Phoenix AMA – four in the west portion and five in the east portion of the Phoenix AMA.

West Phoenix MSA: City of Avondale, City of El Mirage, City of Goodyear, City of Surprise

East Phoenix MSAs: Apache Junction Water Utilities Community Facilities District, Chaparral City Water Company, City of Scottsdale, EPCOR San Tan, Town of Gilbert

2.1.1.3 Water Availability Status Member

The City of Scottsdale (Scottsdale) is CAGRD's only Water Availability Status (WAS) Member. On Oct. 4, 2001, the Central Arizona Water Conservation District (CAWCD) Board adopted a WAS Resolution, which granted water availability status to Scottsdale and approved both the WAS contract and the MSA Agreement between CAWCD and Scottsdale. Pursuant to these agreements, CAWCD committed to deliver up to 3,460 acre-feet of replenishment water per year to Scottsdale's turnout. Scottsdale committed to either store this water at replenishment facilities where Scottsdale may physically access the stored water for service to its customers or to deliver this water to its customers directly. The location where this replenishment must occur is shown on **Figure B-1** in Appendix B.

On March 7, 2013, the CAWCD Board approved Amendment No. 1 to the WAS contract and Amendment No. 1 to Scottsdale's MSA Agreement. The amendment reduced CAWCD's obligation to deliver replenishment water to Scottsdale's turnout from 3,460 acre-feet per year to 2,910 acre-feet per year. The amendment also required Scottsdale to acquire a permanent legal right to a Long-Term Water Supply to satisfy certain conditions of the agreement as well as provided that in any year that CAWCD determines that sufficient Excess CAP Water is not available to satisfy all or a portion of the annual schedule, CAWCD would have the right to use the Long-Term Water Supply. In 2014, CAWCD notified Scottsdale that as early as 2017, Excess CAP Water may not be available to deliver to their turnout.

In 2019, CAWCD informed Scottsdale that based on the U.S. Bureau of Reclamation's (Reclamation's) August 24-Month Study determining a Tier Zero status for 2020, no Excess CAP water would be available to CAGRD in 2020. In June 2020, Excess CAP Water unexpectedly became available to CAGRD, and 850 acre-feet were directly delivered pursuant to the WAS contract. This was the last year Excess CAP Water was available to CAGRD. Since 2020, in the continued absence of Excess CAP Water, Scottsdale has chosen not to exercise options under its WAS contract and instead has used its CAP entitlement to meet the demands of the WAS beneficiaries as it awaits the ability to use its Long-Term Water Supply, which requires a CAWCD wheeling agreement.

2.1.2 Membership in the Pinal AMA

Revisions to ADWR AWS groundwater models effectively stopped enrollment in the CAGRD by 2018 in the Pinal AMA.

2.1.2.1 Member Lands

A total of 138 subdivisions have completed enrollment as MLs in the Pinal AMA, representing 62,842 lots at build-out.

2.1.2.2 Member Service Areas

Four municipal water providers have enrolled as MSAs in the Pinal AMA: City of Casa Grande, City of Eloy, EPCOR San Tan – Anthem, and Town of Florence.

2.1.3 Membership in the Tucson AMA

As of the drafting of this Plan, the Tucson AMA is the only AMA without unmet groundwater demand in its most recent ADWR AWS model.

2.1.3.1 Member Lands

A total of 131 subdivisions have completed enrollment as MLs in the Tucson AMA, representing 27,164 lots at build-out.

2.1.3.2 Member Service Areas

Ten municipal water providers have enrolled as MSAs in the Tucson AMA: City of Tucson, Flowing Wells Irrigation District, Metropolitan District Water Improvement District's Diablo and West divisions, Town of Marana, Town of Oro Valley, Sahuarita Water Company, Spanish Trail Water Company, Vail Water Company, Willow Springs Utilities, LLC.

Figures 2.1, 2.2 and **2.3** illustrate the location of CAGRD MLs and MSAs in the Phoenix, Pinal and Tucson AMAs, respectively. These figures also identify those MLs with reported obligation vs. MLs without reported obligation.

TONOPAH RECHARGE

Figure 2.1
CAGRD Members in Phoenix AMA

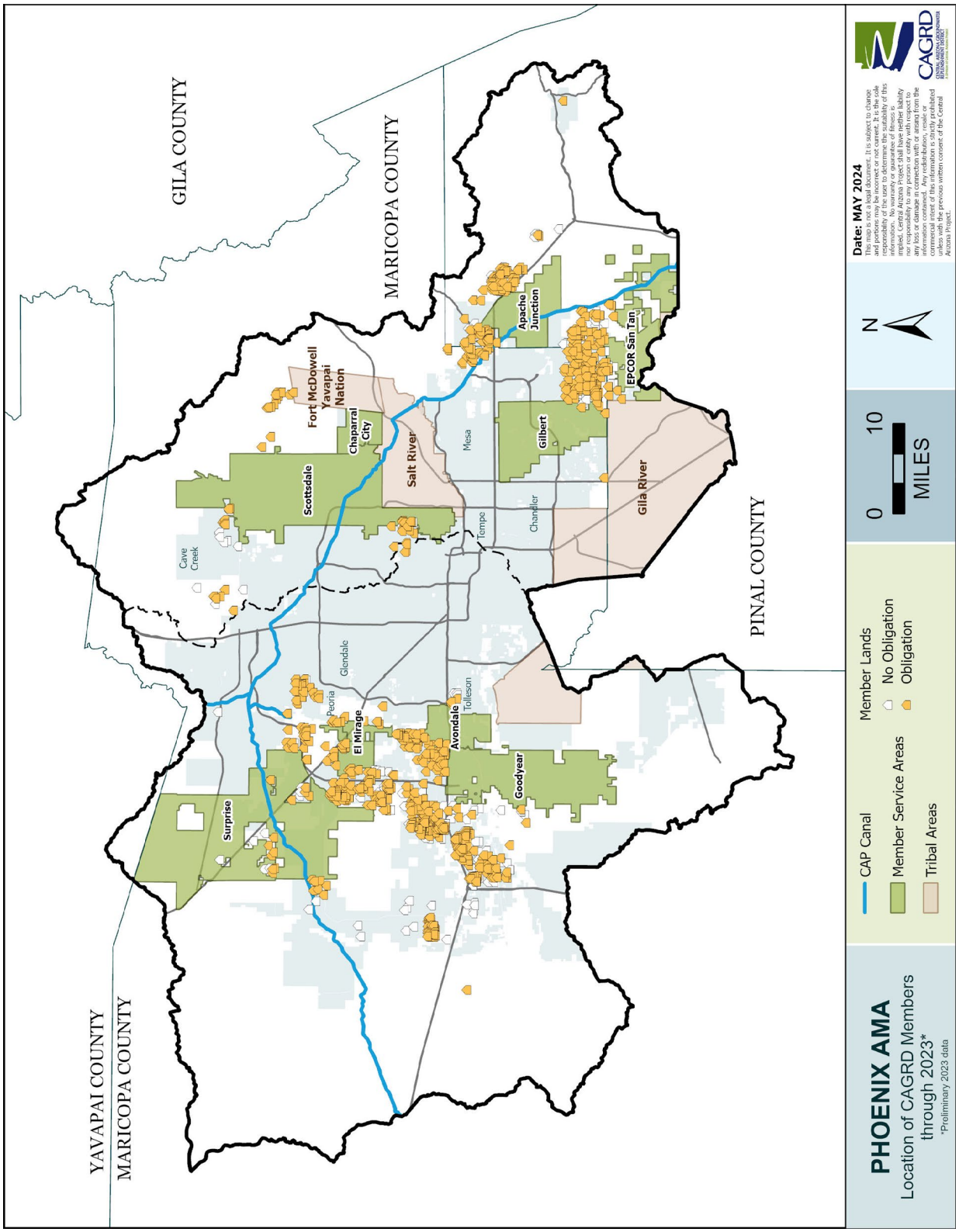


Figure 2.2
CAGRD Members in Pinal AMA

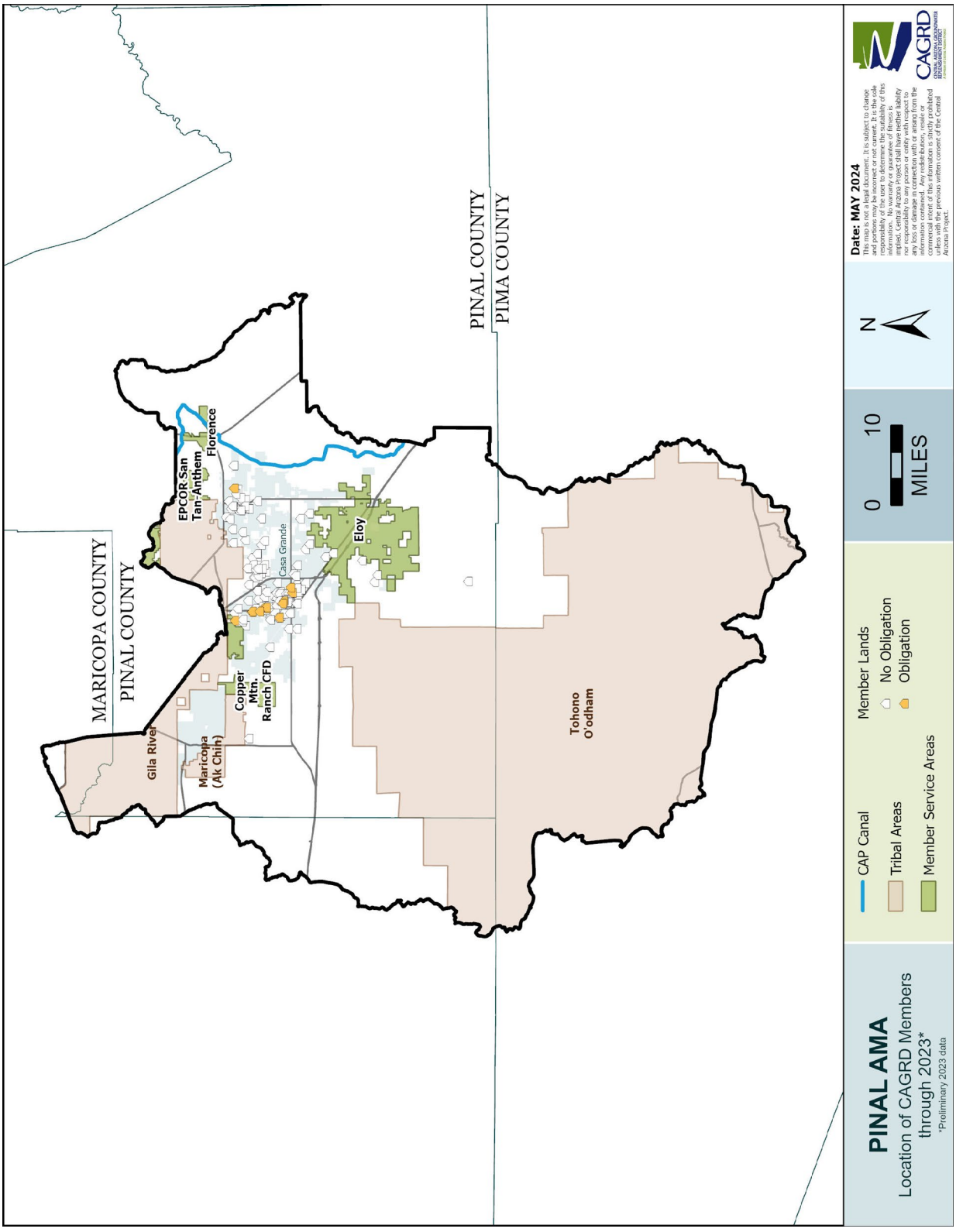
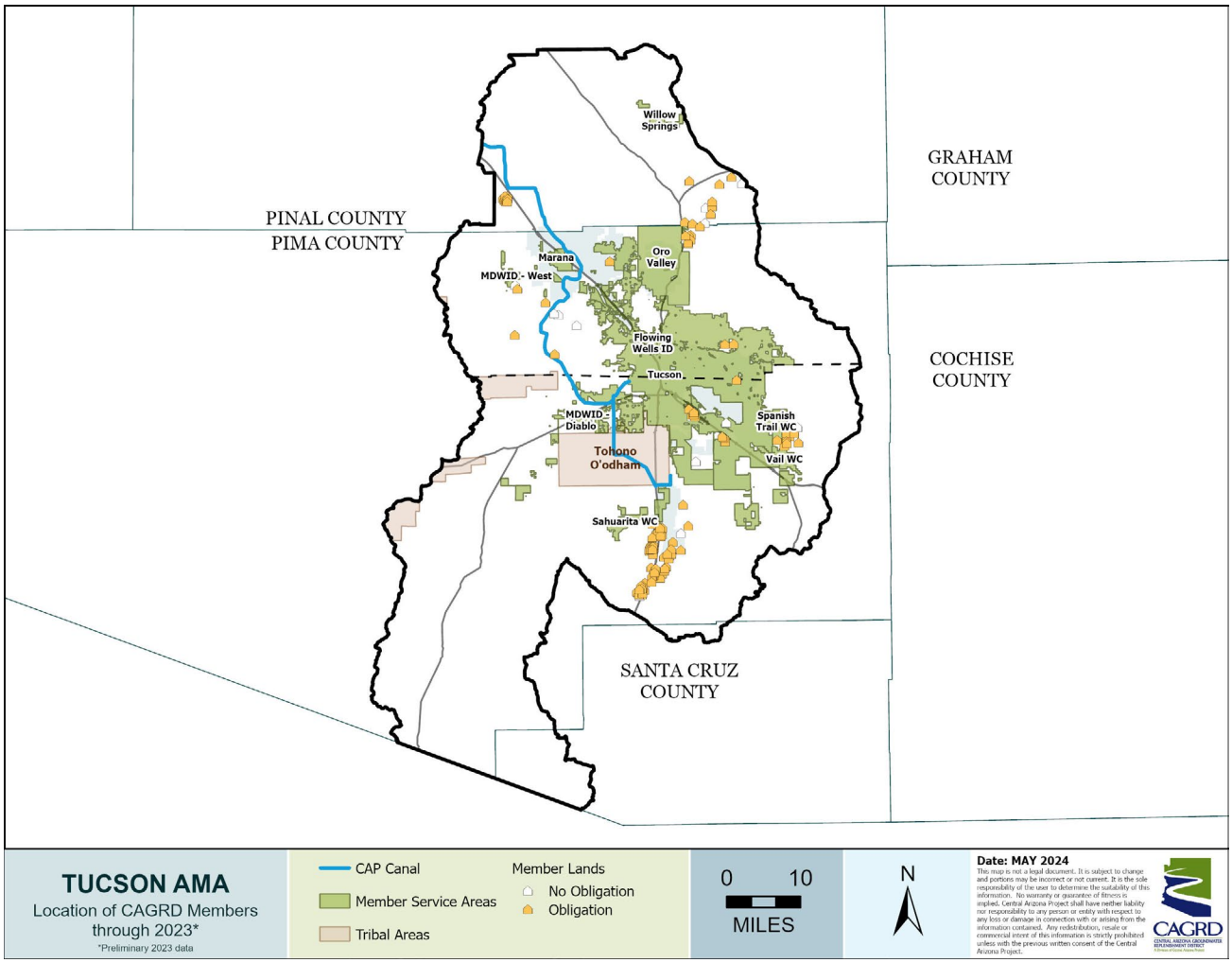


Figure 2.3
CAGRD Members in Tucson AMA



2.1.4 Historic Enrollment

Table 2.1 summarizes ML enrollment for each AMA from the inception of the CAGRD through Dec. 21, 2023. **Figure 2.4** shows the number of residential units in each AMA by year.

Table 2.1
CAGRD Member Land Enrollment through April, 2024

	Phoenix AMA				Pinal AMA		Tucson AMA		Total	
	West Phx		East Phx							
Year	MLs	Lots	MLs	Lots	MLs	Lots	MLs	Lots	MLs	Lots
1995	1	132	1	16	0	0	2	35	4	183
1996	9	3,019	18	1,830	1	11	7	522	35	5,382
1997	17	2,528	25	2,657	5	394	16	1,275	63	6,854
1998	10	1,784	36	2,630	5	359	2	354	53	5,127
1999	19	4,565	35	3,830	10	780	5	664	69	9,839
2000	22	5,803	31	3,935	17	12,989	6	6,435	76	29,162
2001	29	13,340	11	2,041	13	5,098	8	3,358	61	23,837
2002	29	6,363	10	4,378	5	490	6	2,259	50	13,490
2003	75	17,006	18	2,882	6	1,333	14	1,720	113	22,941
2004	91	12,740	8	1,785	9	2,609	11	1,809	119	18,943
2005	98	13,886	25	5,363	14	3,502	11	1,731	148	24,482
2006	47	26,895	34	6,892	25	23,833	10	2,178	116	59,798
2007	25	9,500	12	3,929	13	8,029	10	1,382	60	22,840
2008	11	5,766	19	1,579	10	3,085	4	602	44	11,032
2009	3	1,121	2	85	1	56	2	34	8	1,296
2010	2	149	2	524	2	116	3	70	9	859
2011	1	852	0	0	1	7	0	0	2	859
2012	3	1,266	0	0	0	0	2	126	5	1,392
2013	3	1,105	6	1,078	0	0	0	0	9	2,183
2014	8	986	7	3,153	0	0	0	0	15	4,139
2015	9	2,191	6	528	0	0	1	55	16	2,774
2016	9	1,343	5	233	0	0	1	10	15	1,586
2017	9	886	9	3,083	0	0	0	0	18	3,969
2018	21	6,375	10	1,870	1	151	1	37	33	8,433
2019	17	3,337	14	3,081	0	0	1	81	32	6,499
2020	20	4,494	1	63	0	0	1	114	22	4,671
2021	11	3,487	16	4,042	0	0	3	294	30	7,823
2022	17	3,622	12	3,385	0	0	1	91	30	7,098
2023	3	1,024	4	566	0	0	3	1,928	10	3,518
2024	0	0	0	0	0	0	1	480	1	480
Totals	**619**	**155.565**	**377**	**65,438**	**138**	**62,842**	**132**	**27,644**	**1,266**	**311,489**

Table Notes: *MLs refers to subdivisions enrolled in CAGRD; enrollment numbers for previous years may vary slightly from other reports due to ongoing reconciliation and modifications to MLs.*

Figure 2.4
CAGRD Member Land Enrollment through 2023

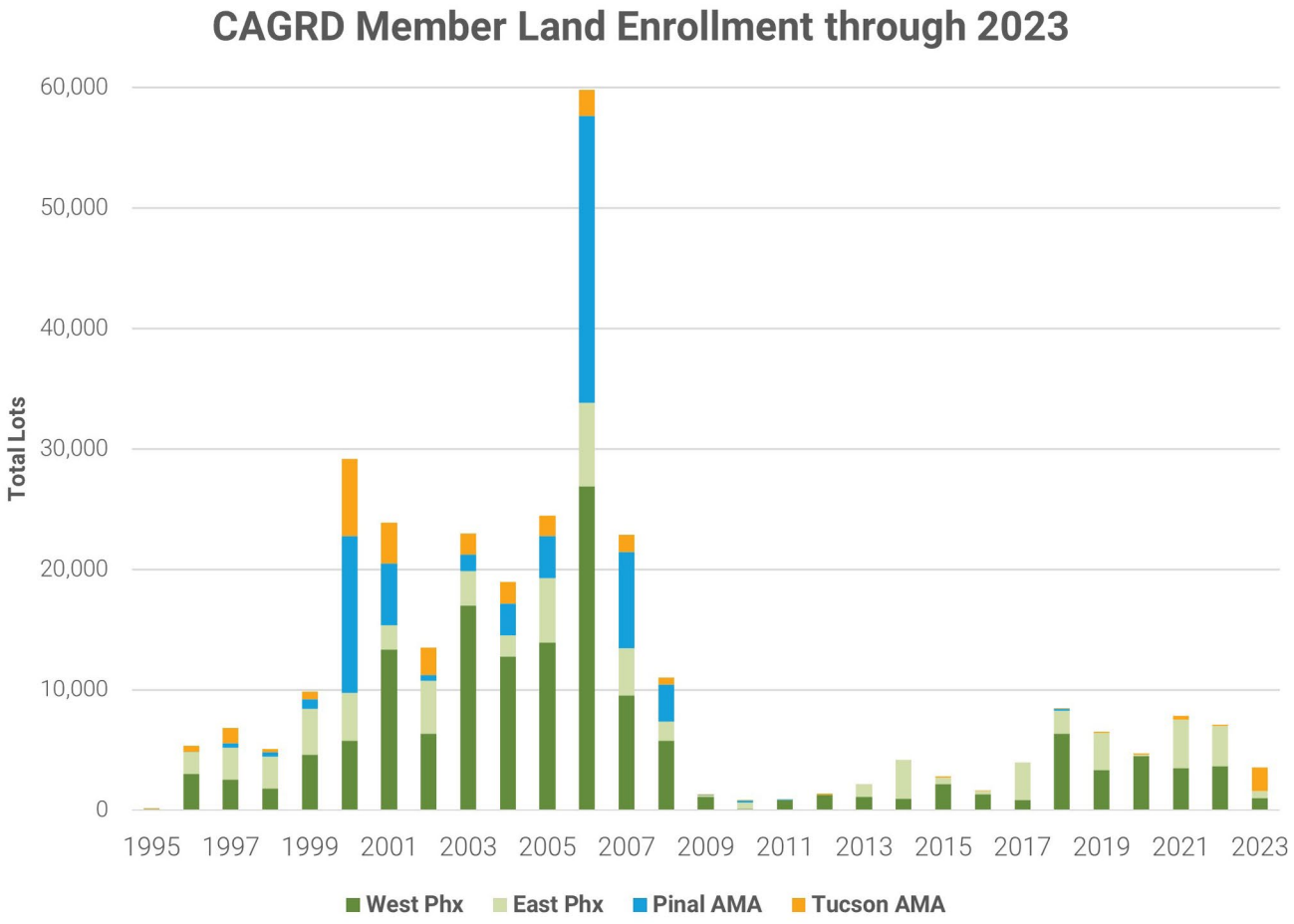


Figure 2.4 illustrates the trends in CAGRD enrollment activity from inception through 2024. Prior to 1995, in anticipation of the impending Assured Water Supply (AWS) Rules, many developers obtained plat approvals for new subdivisions years before construction was scheduled to begin. In 2000 and 2001, increased enrollment likely was a result of developers anticipating stricter regulations associated with the state's Growing Smarter legislation and proposed growth initiatives. In the years following, residential construction was increasing rapidly, consistent with the state's population growth. Home prices continued to escalate together with this high pace of home construction, resulting in a real estate bubble that peaked in 2006. At the same time, another policy-driven spike in enrollment occurred in the Pinal AMA in anticipation of a pending change in the AWS Rules that would increase restrictions on groundwater in 2007. Importantly, although enrollment was on the rise, the number of unconstructed subdivisions also continued to grow. Following the burst of the Arizona real estate bubble in late 2006 and the widespread financial crisis of 2007-08, housing prices plummeted, resulting in unprecedented numbers of evictions and foreclosures, and high rates of unemployment, all of which contributed to several years of limited new home construction in the state. Enrollment in the CAGRD during the period of the third Plan of Operation was relatively modest compared to the boom years of 2000 through 2008 but was a noticeable increase from 2009 through 2014. Even at this scale, the impacts from COVID-19 in 2020 and the moratorium on Certificates of Assured Water Supply in 2023 are apparent.

Table 2.2
CAGRD Member Service Areas as of Dec. 31, 2023

Member Service Area	AMA	Membership Date	Amended Agreement Date
Vail Water Company	Tucson	11/20/1995	
Town of Marana	Tucson	12/12/1995	
Apache Junction WUCFD	E Phx	2/15/1996	
City of Tucson	Tucson	12/19/1996	
Town of Oro Valley	Tucson	3/18/1997	
Spanish Trail Water Company	Tucson	12/14/1997	
City of Avondale	W Phx	1/16/1998	
City of Surprise	W Phx	7/21/1998	
Town of Florence	Pinal	1/11/1999	
Sahuarita Water Company	Tucson	7/26/1999	
City of El Mirage	W Phx	8/23/1999	
City of Eloy	Pinal	2/3/2000	
EPCOR San Tan	E Phx	5/18/2000	8/27/2007
EPCOR San Tan - Anthem	Pinal	5/18/2000	8/27/2007
City of Goodyear	W Phx	10/4/2001	10/21/2010
City of Scottsdale	E Phx	11/21/2001	
City of Casa Grande	Pinal	6/20/2002	
Chaparral City Water Company	E Phx	4/7/2004	
Metropolitan DWID-West	Tucson	12/19/2005	
Willow Springs Utilities, LLC	Tucson	10/22/2006	
Town of Gilbert	E Phx	4/17/2007	
Flowing Wells Irrigation District	Tucson	5/27/2008	2/12/2009
Metropolitan DWID-Diablo	Tucson	2/20/2014	

During the period governed by the 2015 Plan of Operation, Metro Domestic Water Improvement District – Main de-enrolled as a MSA in 2021 after obtaining an updated AWS designation.

2.2 HISTORIC REPLENISHMENT OBLIGATION

2.2.1 Groundwater Replenishment Obligation

CAGRD's annual groundwater replenishment obligation for each AMA is defined in statute as the cumulative ML parcel replenishment obligation plus the cumulative MSA replenishment obligation in that AMA for the calendar year (A.R.S. § 48-3701.9). A.R.S. § 48-3771.A requires CAGRD to complete replenishment within the three calendar years after it is incurred. Replenishment obligation is fulfilled or complete when CAGRD's conservation district account has been credited to reflect either the storage of replenishment water or the transfer of Long-Term Storage Credits (LTSCs) in sufficient volume to meet the parcel replenishment obligation.

2.2.1.1 Member Land Parcel Replenishment Obligation

ML parcel replenishment obligation reflects the volume of excess groundwater delivered by municipal water providers serving CAGRD ML subdivisions. For each ML subdivision that it serves, the municipal water provider is required by statute to file an annual report with CAGRD indicating the volume of groundwater and the volume of excess groundwater delivered to each parcel in the subdivision (A.R.S. § 48-3775.A). These reports must be submitted to CAGRD by March 31 of each year and the volumes reported represent deliveries from the previous year. Thus, CAGRD incurs parcel replenishment obligation in the calendar year after the excess groundwater is delivered to ML subdivision parcels.

2.2.1.2 Member Service Area Replenishment Obligation

This obligation reflects the volume of excess groundwater deliveries that MSA providers make within their service areas. MSAs are required by statute to file an annual report with both CAGRD and ADWR indicating the volume of groundwater and the volume of excess groundwater delivered within their service area (A.R.S. § 48-3775.B). These reports must be submitted to CAGRD by March 31 of each year and the volumes reported represent deliveries from the previous year. Thus, CAGRD incurs MSA replenishment obligation in the calendar year after the excess groundwater is delivered.

2.2.1.3 Contract Replenishment Obligation

This obligation represents the amount of groundwater CAGRD replenishes in a year on behalf of an MSA in advance of that member's use of excess groundwater. This advance replenishment is made pursuant to a specific contract with the municipal provider. CAGRD may perform contract replenishment on behalf of any MSA. No contract replenishment was conducted during the 10 years preceding this Plan of Operation, although a previous LTSC balance resulting from previous contract replenishment was settled upon the de-enrollment of Metro DWID – Main in 2021.

2.2.1.4 Water Availability Status Contract Replenishment

Scottsdale remains the only WAS member, the details of which are described in section 2.1.1.3.

2.3 SATISFACTION OF HISTORIC OBLIGATION

2.3.1 Methods of Satisfying Obligation

CAGRD fulfills its replenishment obligation through underground storage (constructed underground storage facilities and groundwater savings facilities), purchase and extinguishment of LTSCs, direct deliveries and LTSC credit transfers. A combination of statute and policy drive CAGRD to replenish as close to member pumping as feasible, which can be influenced by infrastructure, financial and environmental factors.

2.3.1.1 Constructed Underground Storage Facilities

CAGRD has satisfied a portion of its replenishment obligation using constructed Underground Storage Facilities (USFs). Recharge was accomplished using spreading basin recharge facilities constructed and operated by CAWCD. The locations of these facilities are shown on **Figure D-1** in **Appendix D**.

2.3.1.2 Groundwater Savings Facilities

CAGRD has satisfied a portion of its replenishment obligation using Groundwater Savings Facilities (GSFs). The groundwater savings program is authorized by state law and allows an entity to deliver renewable water supplies to an irrigation district rather than to a USF. The irrigation district uses the renewable water supplies in lieu of groundwater the district otherwise would pump and the entity that delivered the renewable water supply receives LTSCs for the amount of groundwater saved. The locations of these facilities are shown on **Figure D-1** in **Appendix D**.

2.3.1.3 Purchase and Extinguishment of Long-Term Storage Credits

CAGRD has satisfied a portion of its replenishment obligation through the purchase of LTSCs. A.R.S. §48-3713.B.11 allows CAWCD to assign LTSCs to CAGRD, provided that CAGRD pays fair value for the LTSCs. CAGRD MSAs may transfer LTSCs to CAGRD in lieu of paying the replenishment tax or its replenishment reserve component. This process is detailed in the CAGRD Assessment Rate Setting Policy included in **Appendix E**.

2.4 EXCESS GROUNDWATER DELIVERIES AND COMPLETION OF REPLENISHMENT OBLIGATION

Tables 2.3, 2.4 and **2.5** (Phoenix, Pinal and Tucson AMAs, respectively) list the volumes of replenishment obligation incurred and its subsequent fulfillment -- for each table, the top row the replenishment obligation incurred for each listed year and the year or years the obligation was fulfilled. Current operational practice is to fulfill replenishment obligation the year following it is incurred, so the replenishment obligation from 2023 will be fulfilled in 2024. This will leave approximately one year's replenishment obligation as unmet, which will be fulfilled in the following year.

Table 2.3
Phoenix AMA Completion of Replenishment Obligation

Phoenix AMA		Replenishment Obligation Incurred each Year (AF)									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
		30,357	27,436	27,895	26,642	25,798	26,379	31,098	32,094	31,334	30,664
Year Fulfilled	2015	23,911									
	2016	6,446	27,436	4,884							
	2017			23,011	9,008						
	2018				17,634	21,591					
	2019					4,207	17,029				
	2020						9,185				
	2021						165	31,098	52		
	2022								30,673		
	2023								1,369	31,334	
	2024										30,664*
Amount Satisfied		30,357	27,436	27,895	26,642	25,798	26,379	31,098	32,094	31,334	30,664*
Remaining Obligation		0	0	0	0	0	0	0	0	0	0

**Obligation volume expected to be satisfied by the end of 2024.*

Table 2.4
Pinal AMA Completion of Replenishment Obligation

Pinal AMA		Replenishment Obligation Incurred each Year (AF)									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
		551	397	488	674	552	899	331	593	208	24
Year Fulfilled	2015										
	2016	3									
	2017	548	397	488	2						
	2018				0	0					
	2019				672	552					
	2020						899				
	2021							331			
	2022								593		
	2023									208	24
	2024										
Amount Satisfied		551	397	488	674	552	899	331	593	208	24
Remaining Obligation		0	0	0	0	0	0	0	0	0	0

Table 2.5
Tucson AMA Completion of Replenishment Obligation

Tucson AMA		Replenishment Obligation Incurred each Year (AF)									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
		2,957	2,469	2,540	2,852	2,571	2,476	2,913	2,746	2,749	3,205
Year Fulfilled	2015	902									
	2016	2,055	1,154								
	2017		1,316	2,065							
	2018			475	2,083						
	2019				498						
	2020				270	2,571	2,471				
	2021						6	2,913	540		
	2022								2,189		
	2023								18	2,730	
	2024									19*	3,205*
Amount Satisfied		2,957	2,469	2,540	2,852	2,571	2,476	2,913	2,746	2,749*	3,205*
Remaining Obligation		0	0	0	0	0	0	0	0	0	0

**Obligation volume expected to be satisfied by the end of 2024.*

A.R.S. §48-3772.I compels CAGRD to:

> "In the Phoenix active management area, the district [CAGRD], to the extent reasonably feasible, shall replenish groundwater in the east portion of the active management area and in the west portion of the active management area in the approximate proportion that the groundwater replenishment obligation attributable in a particular year to member lands and member service areas located in the east portion of the active management area bears to the groundwater replenishment obligation attributable in that year to member lands and member service areas located in the west portion of the active management area."

Year-to-year operational decisions, contractual requirements and availability of recharge locations dictate the amount of replenishment occurring in each portion of the Phoenix AMA. **Table 2.6** shows the obligation and replenishment for the period of 2014 – 2022.

Table 2.6
Obligation and Replenishment Within the Phoenix AMA (AF)

	West Phoenix		East Phoenix	
Year	Obligation	Replenishment	Obligation	Replenishment
2014	13,958	22,998	16,398	15,633
2015	13,001	22,922	14,435	16,441
2016	11,904	21,233	15,990	17,532
2017	11,951	20,018	14,691	12,000
2018	14,200	22,337	11,598	16,888
2019	13,457	11,236	12,922	10,000
2020	15,378	6,119	15,720	3,066
2021	15,961	9,437	16,133	21,877
2022	19,074	11,681	12,260	18,992
2023	16,237	16,237*	14,427	14,427*
Totals	**145,121**	**164,218**	**144,574**	**146,845**

**Obligation volume expected to be fulfilled by the end of 2024.*

Figures 2.5, 2.6 and **2.7** reflect obligation and replenishment activity in CAGRD's service area between 2014 and 2022.

Figure 2.5
Phoenix AMA Obligation and Replenishment Activity 2014-2022

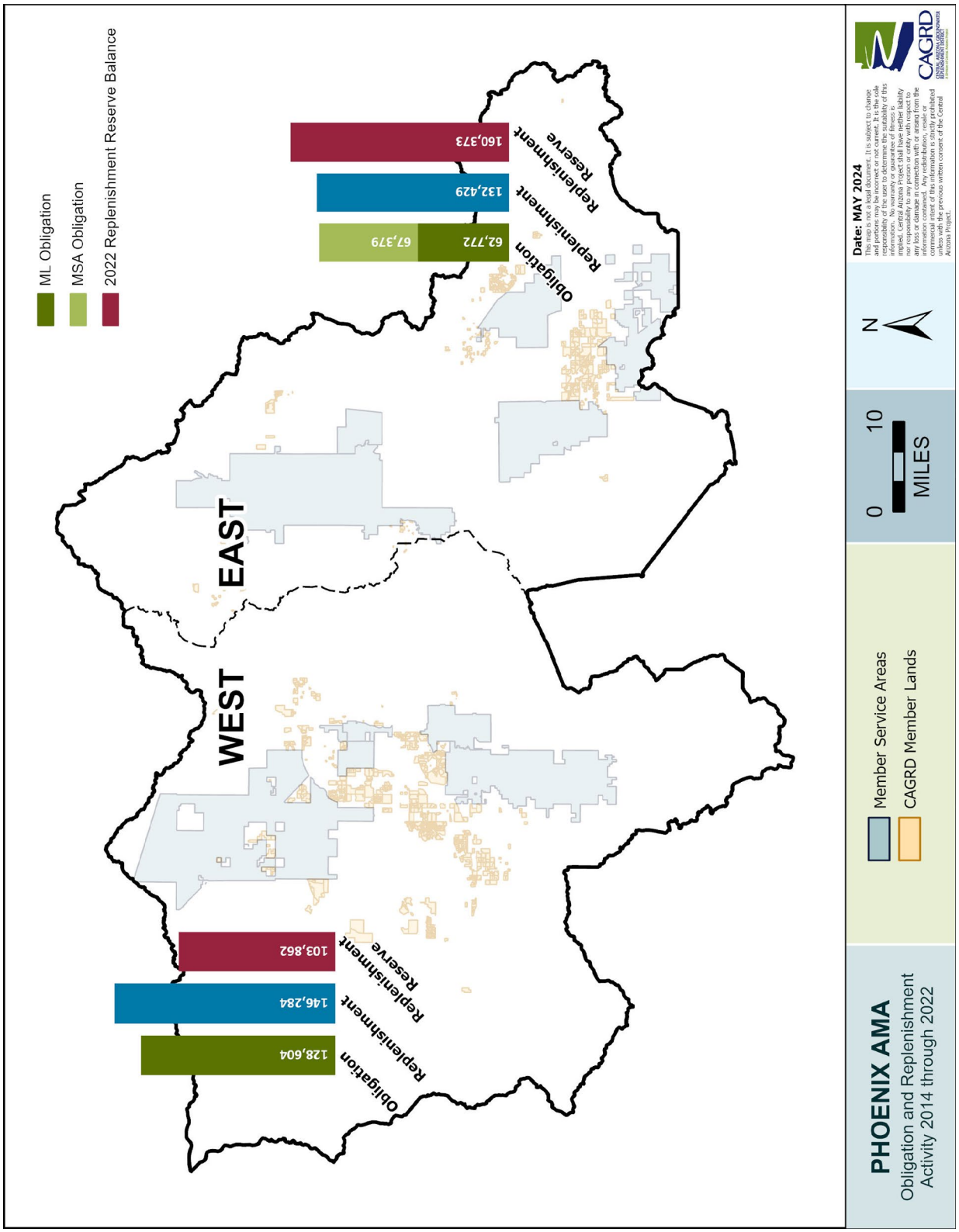


Figure 2.6
Pinal AMA Obligation and Replenishment Activity 2014-2022

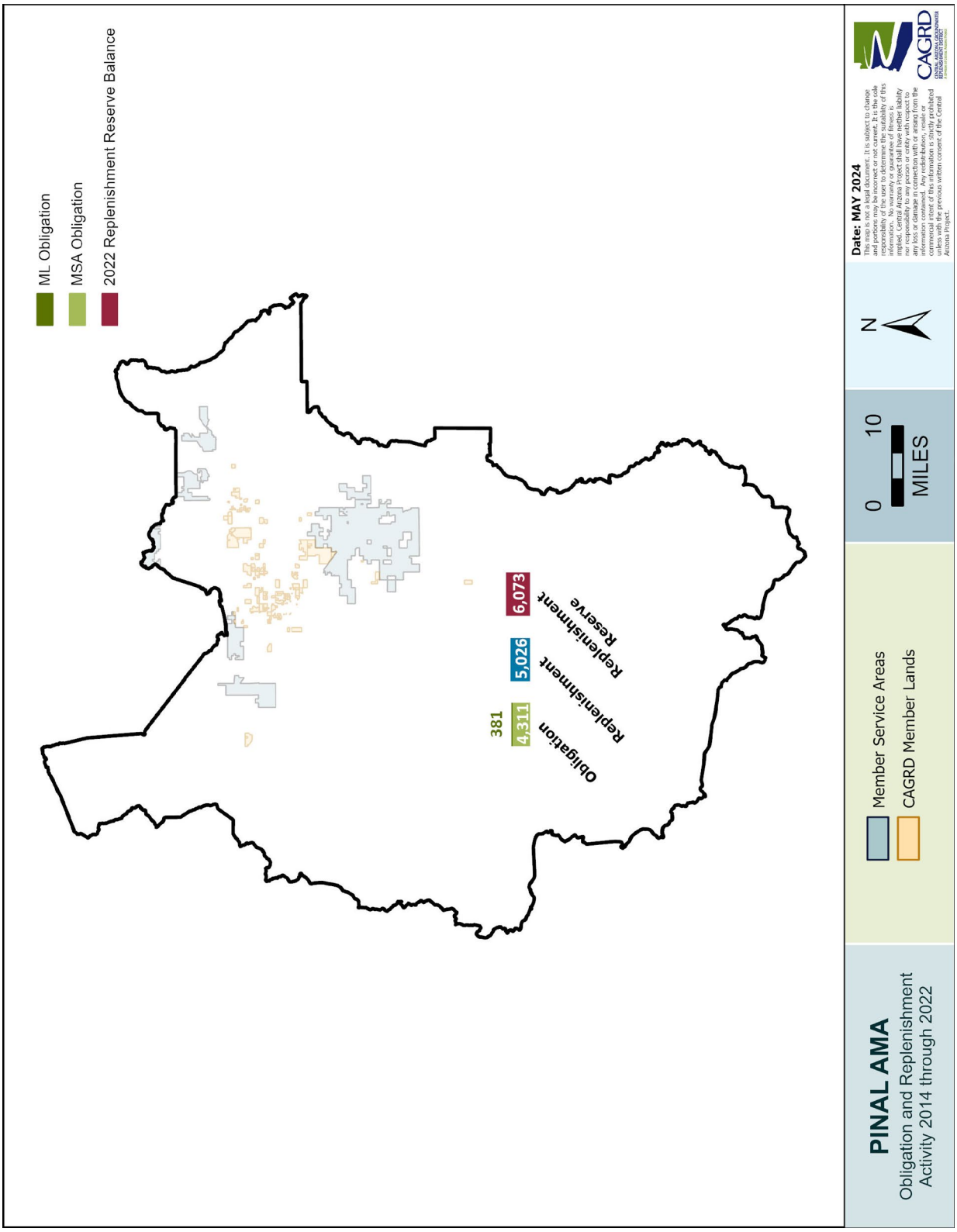
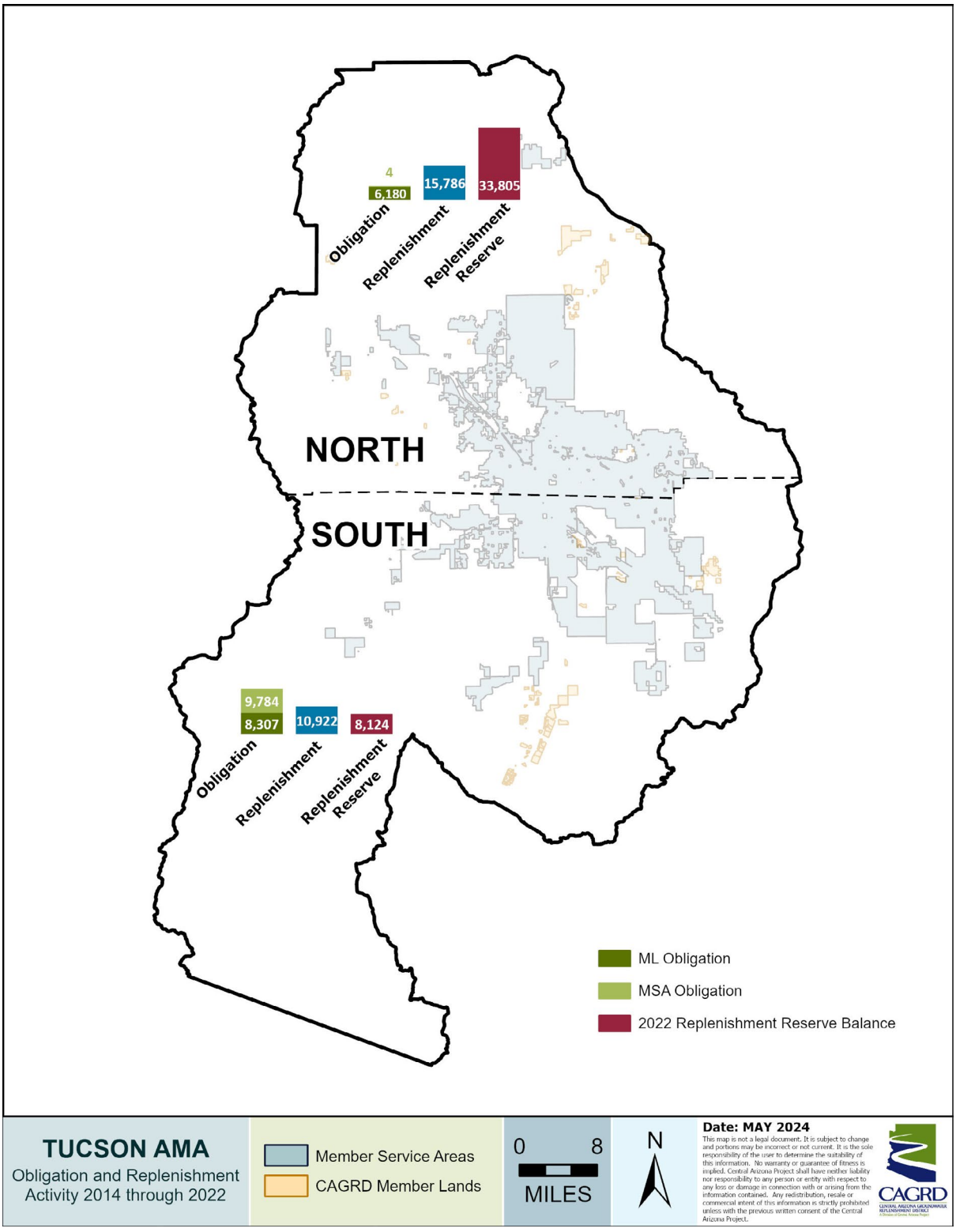


Figure 2.7

Tucson AMA Obligation and Replenishment Activity 2014-2022



3.0 Obligation and Enrollment

The statutory requirements related to the projected groundwater replenishment obligation for the Central Arizona Groundwater Replenishment District (CAGRD) Plan of Operation are identified below.

A.R.S. § 45-576.02.C.2

…the plan shall include the following information for each active management area in which a member land or member service area is located:

A.R.S. § 45-576.02.C.2(b)

An estimate of the conservation district's current and projected groundwater replenishment obligations… for current members for the twenty calendar years following submission of the plan and an estimate of the district's projected groundwater replenishment obligations for the one hundred calendar years following submission of the plan for current members and potential members based on reasonable projections of real property and service areas that could qualify for membership in the ten years following submission of the plan.

The projections of CAGRD obligation and enrollment are a foundational element of the 2025 Plan of Operation (2025 Plan) and they directly inform several other 2025 Plan elements. These projections require consideration of multiple factors, including the rate and location of growth, how that growth translates into water demand, and how water providers comply with Arizona's Assured Water Supply (AWS) Program based on their relationship with CAGRD. Each of these elements has its own uncertainties, and like previous Plans of Operation, efforts have been made to use methods and assumptions that result in a single reasonable projection for submission to the Arizona Department of Water Resources (ADWR). However, as the 2025 Plan was under development, the regulatory environment of the AWS Program was also undergoing fundamental changes, notably in groundwater physical availability in the Phoenix Active Management Area (AMA), proposed AWS Rule changes and several substantive statutory changes. That has added a new set of uncertainties and also some methodological changes from previous Plans of Operation. In particular, unlike past Plans of Operation, the analysis performed for the 2025 Plan included constraints on the physical availability of groundwater in both the Phoenix and Pinal AMAs as a limiting factor of future projections of enrollment and obligation.

3.1
GROWTH & DEMAND

3.1.1
Growth Rate

The growth rate in the Central Arizona Project (CAP) service area is a key part of projecting CAGRD obligation. As shown in **Figure 3.1**, housing unit construction (colored bars) and permits (black line) have been recovering from recession in the past dozen years, though at a more gradual rate than most official forecasts. There has been year-to-year variability in overall permit and housing growth, but generally, half of all new construction has been in the CAGRD Member (MLs) Lands (blue bars) and Member Service Areas (MSAs) (green bars).

Housing unit projections remain highly uncertain, but the 10-year forecast of permits developed by the University of Arizona's Economic and Business Research Center (EBRC) indicates a return to steady growth following the last few years of volatility (**Figure 3.2**). This forecast balances factors that inform the total amount of new housing unit growth, including pent-up housing demand, housing affordability, population growth and migration, and interest rates.

The EBRC estimate has been used to develop housing construction activity during the 10-year 2025 Plan period and has been extended for an additional decade as part of the 20-year obligation forecast.

Figure 3.1
Housing Unit Construction and Permit Activity

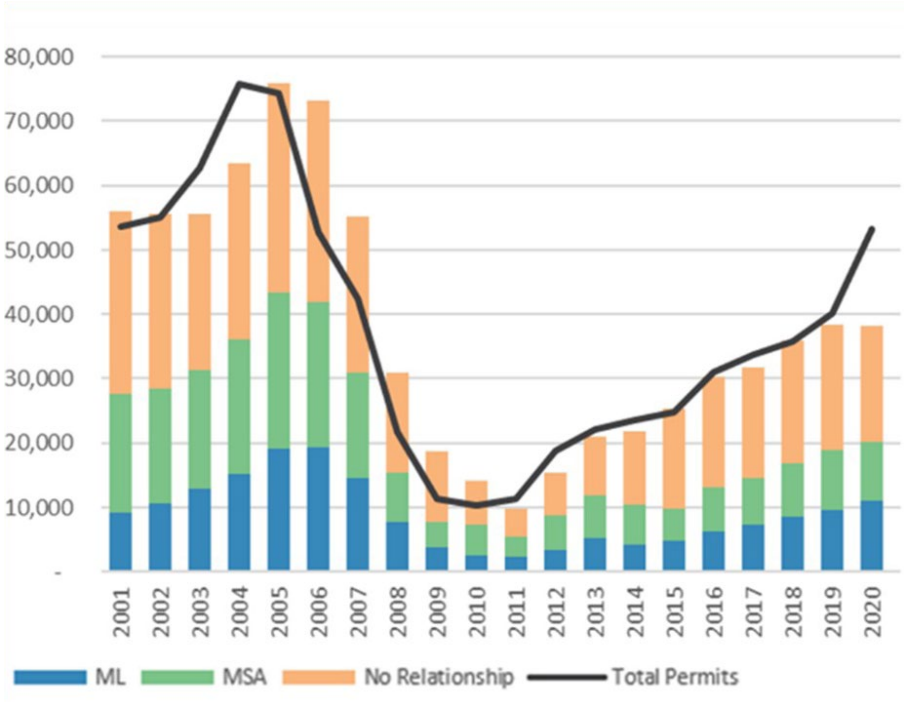
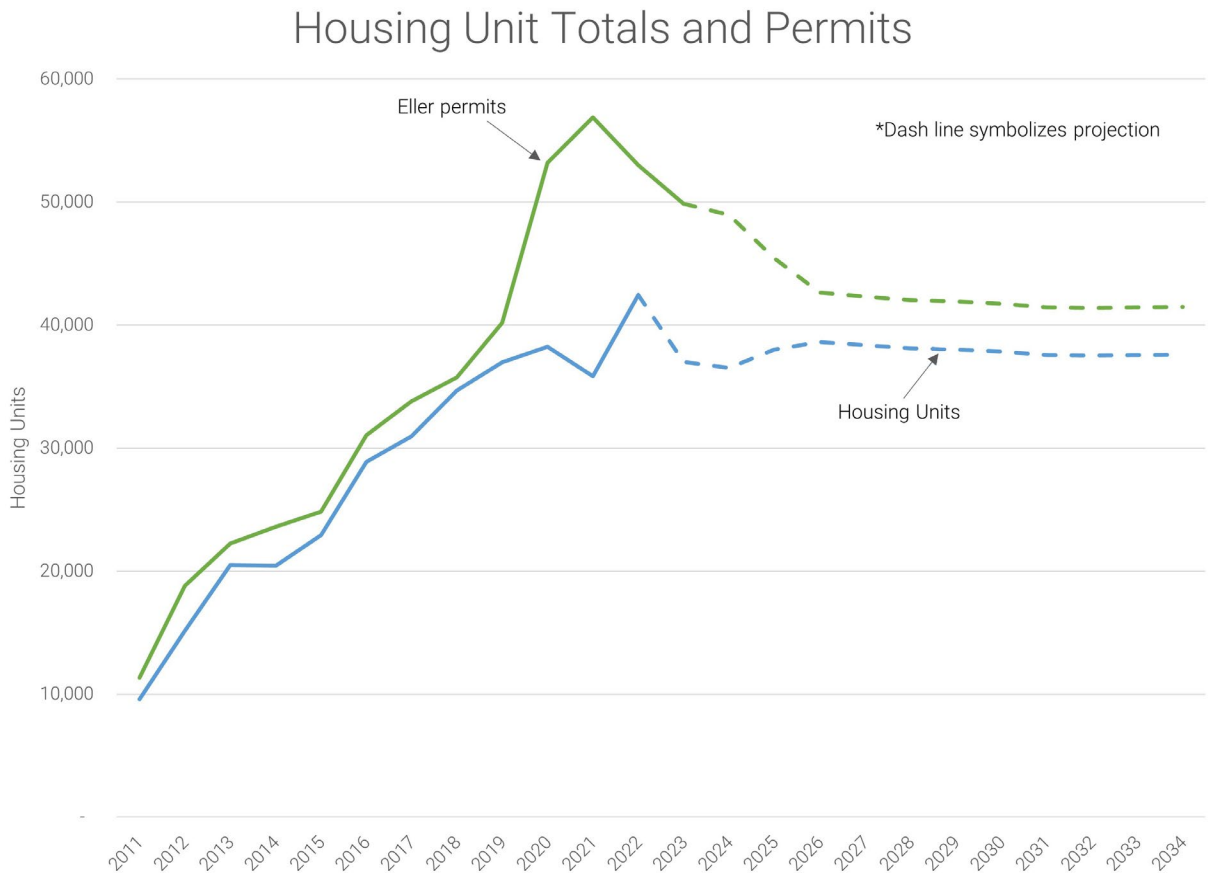


Figure 3.2
Projected Housing Unit Construction & Permits



3.1.2 Growth Location

Closely related to the growth rate is the location of growth, which strongly influences the physical and legal supplies available to meet demands, including excess groundwater reported to CAGRD. Official projections from the Pima, Pinal and Maricopa Associations of Governments are a primary source. The approaches to growth modeling used by these Councils of Governments (COGs) rely heavily on factors such as proximity to existing development and transportation corridors, zoning and other site-specific characteristics. In aggregate, most new housing units are projected within the existing urban areas, but there is a substantial amount of new subdivision growth expected in urban expansion areas, particularly in the West Valley and southeastern portions of the Phoenix Metro area (**Figure 3.3**). This is consistent with observed trends over the past two decades (**Figure 3.4**). The COG projections were then combined in a Geographic Information System with a custom spatial layer representing the current and anticipated service areas of water providers. The water provider layer combines data from several sources, including ADWR, the Arizona Corporation Commission and the COGs. The result is an official forecast of housing unit construction by water provider. However, one limitation of these projections is that they do not explicitly consider water availability, including groundwater, that has supported much of the existing growth in urban areas.

Figure 3.3
Area of Projected Growth by Transportation Analysis Zone

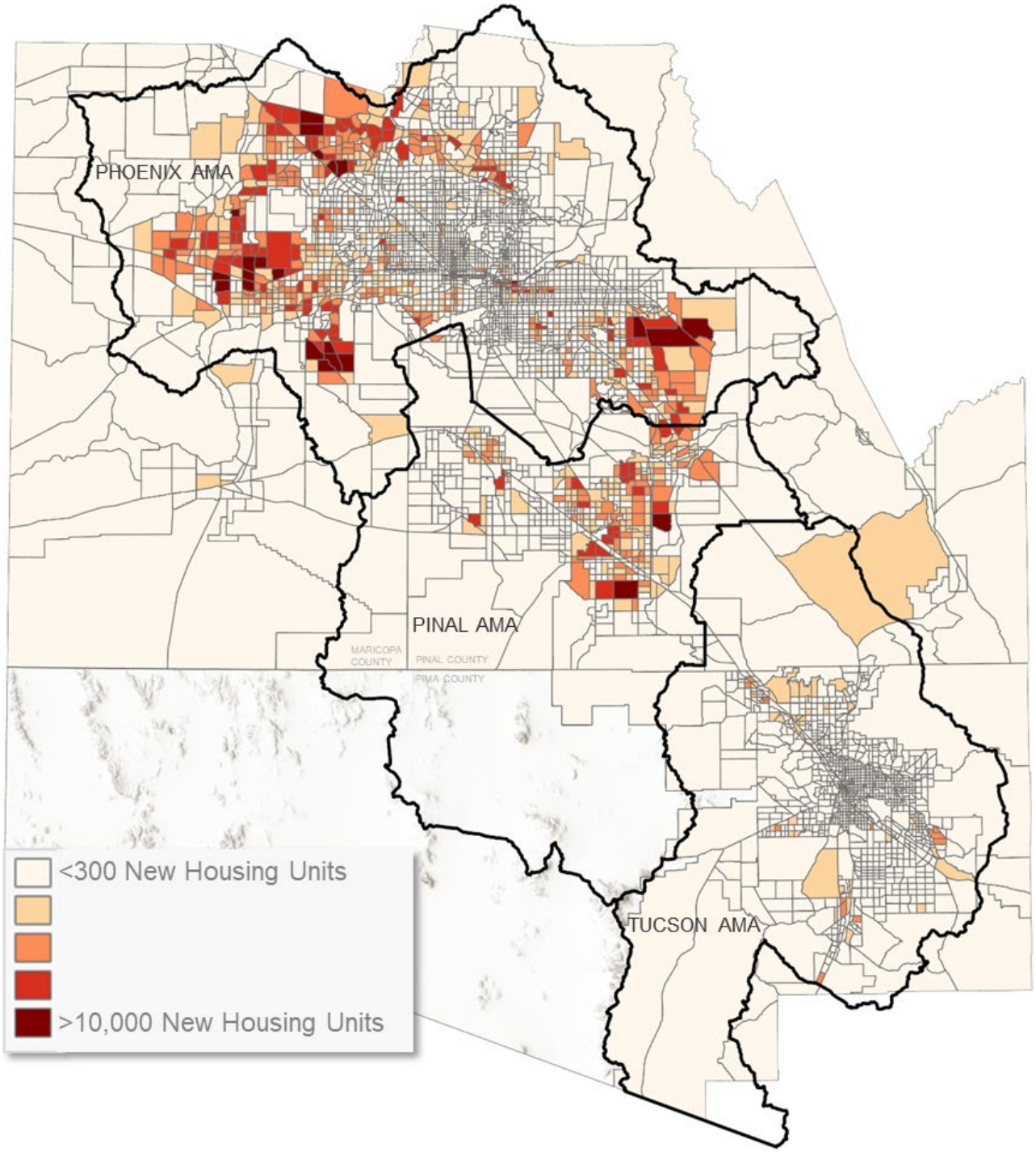
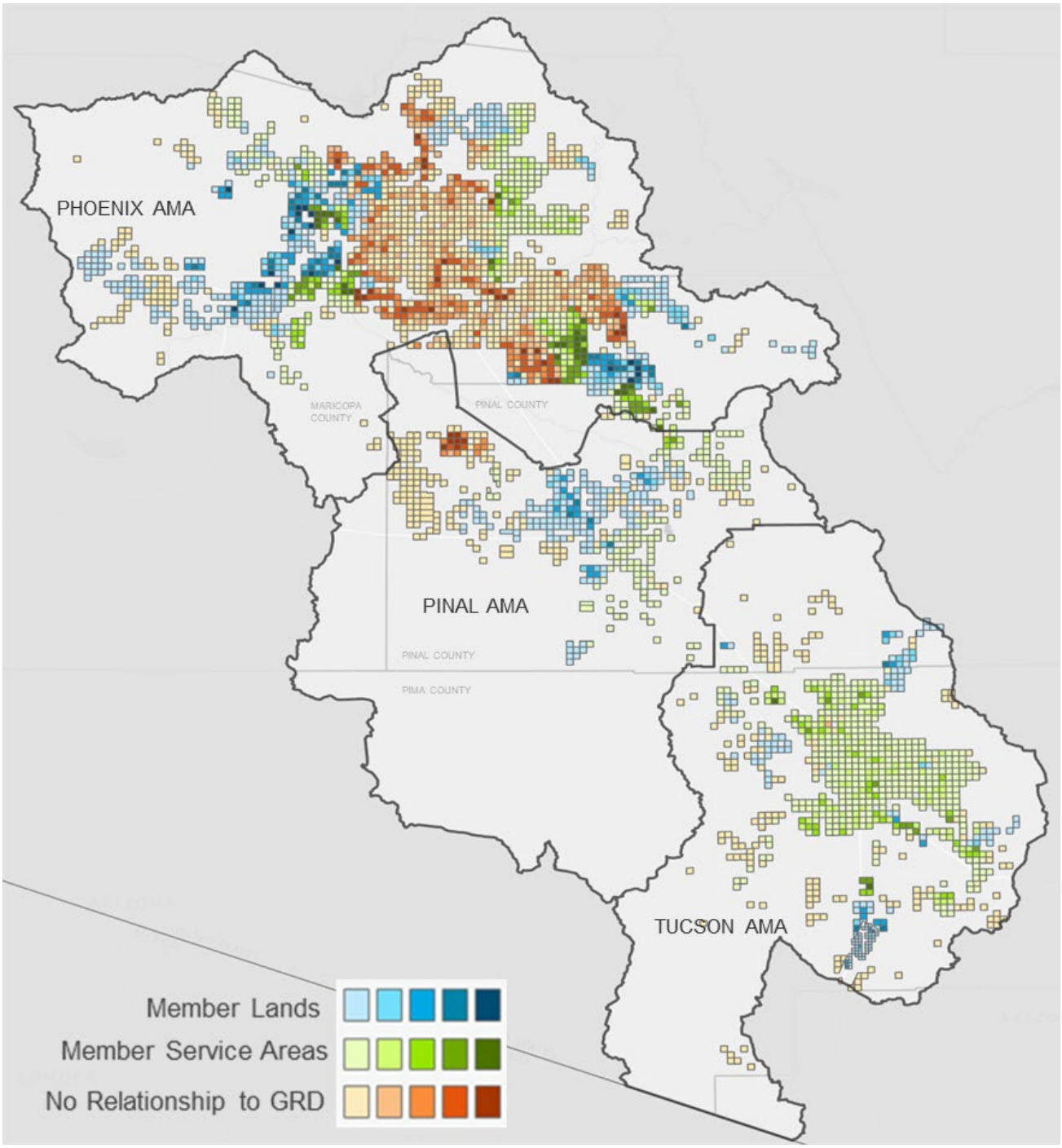


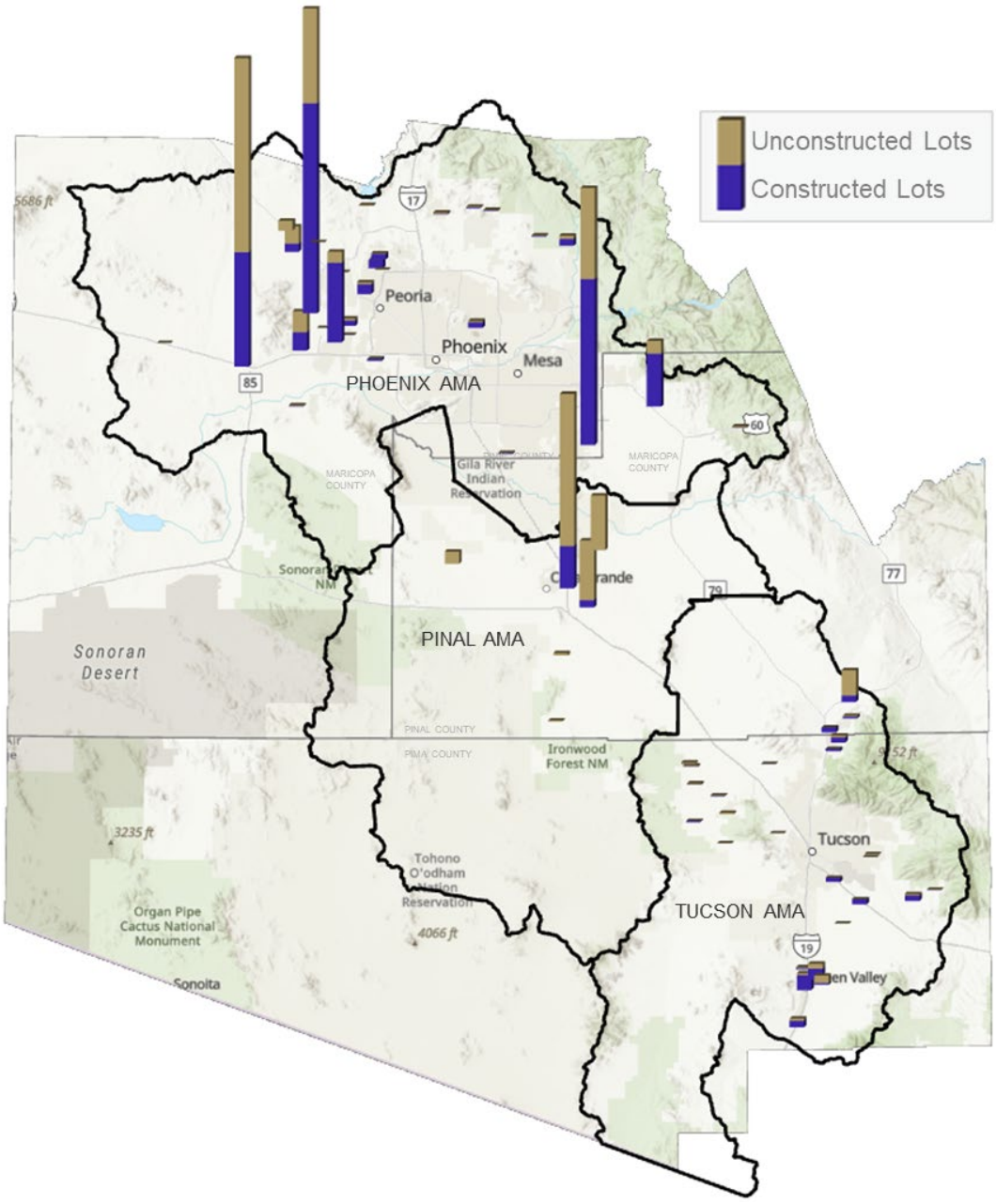
Figure 3.4
Change in Housing Unit Density, 2001-2020, and CAGRD Relationship



Until recently, it was reasonable to assume that large numbers of new subdivisions would be able to proceed in areas served by groundwater-dependent undesignated providers. However, new and emerging constraints on AWS physical availability of groundwater challenge those assumptions (see below). To account for that, there will likely be concentrated development within lands that have already obtained a Certificate of Assured Water Supply (CAWS) but have unconstructed lots (**Figure 3.5**), since these areas have already proven a 100-year supply for the development. Within the Phoenix AMA there are approximately 80,000 lots that have been approved as part of issued CAWS that have not yet been constructed, though many of those may end up being served by new MSAs. This latter scenario is discussed more in section 3.1.5 and includes the concept of current undesignated providers becoming designated under newly proposed AWS rule changes.

Figure 3.5

Location of enrolled Member Land lots by Construction Status



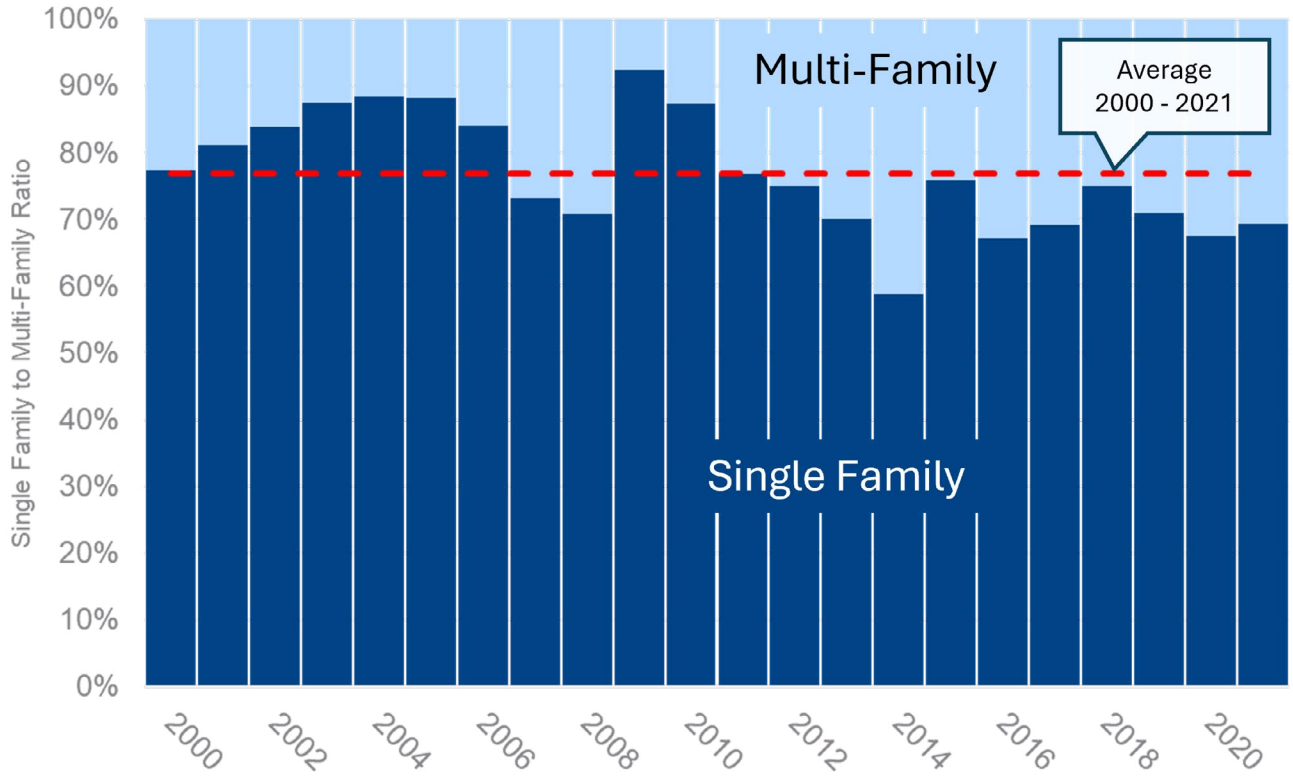
3.1.3 Demand Factors

Several approaches are used to convert housing unit projections to water demand, depending on the characteristics of the water provider and the type of housing.

For unconstructed lots in MLs, statistical relationships have been developed between the water-use estimate included in the CAWS, and nearly three decades of parcel-level water-use records collected by CAGRD. A similar approach was used in the 2015 Plan of Operation, but the analysis has been updated and supplemented with analyses using high-resolution multispectral imagery that can differentiate outdoor water-use types at the parcel and neighborhood scale.

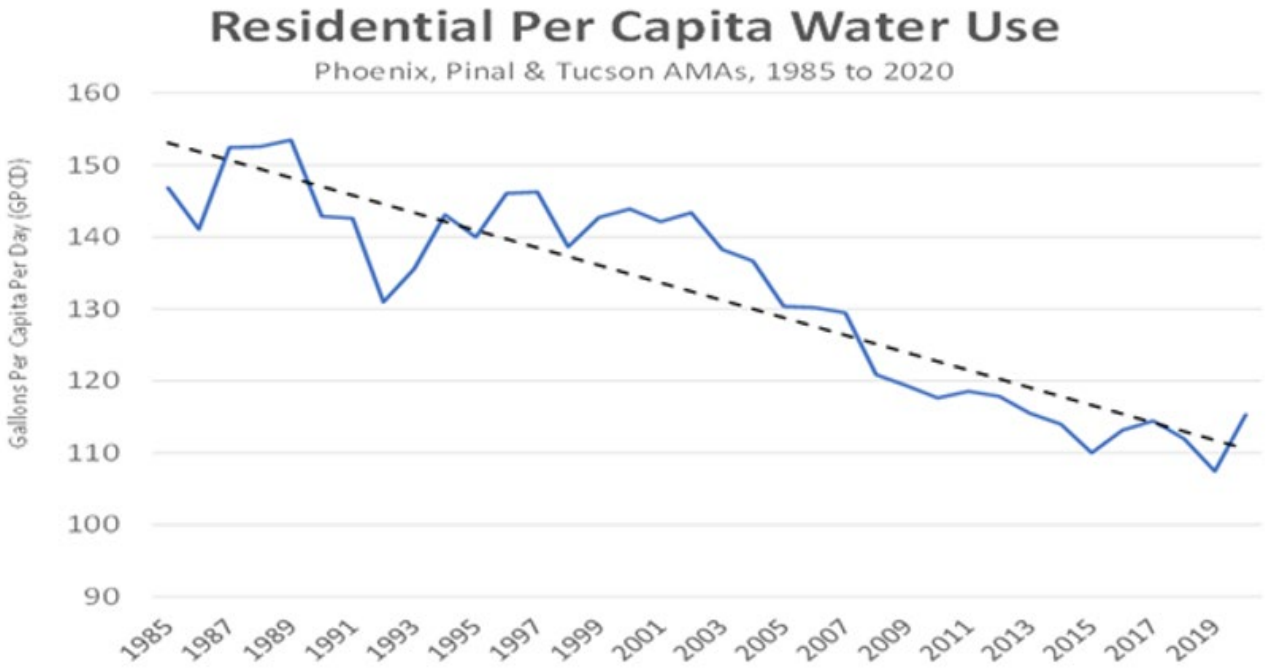
CAGRD MLs are primarily comprised of single-family detached homes, but regional-scale trends in single versus multi-family housing units have also been evaluated in the development of the obligation forecast for this 2025 Plan. In recent years, there has been a shift to a higher proportion of multi-family and greater densification in all housing types. This phenomenon is expected to persist over the 2025 Plan period. (**Figure 3.6**)

Figure 3.6
Historic Single Family to Multi Family Ratio



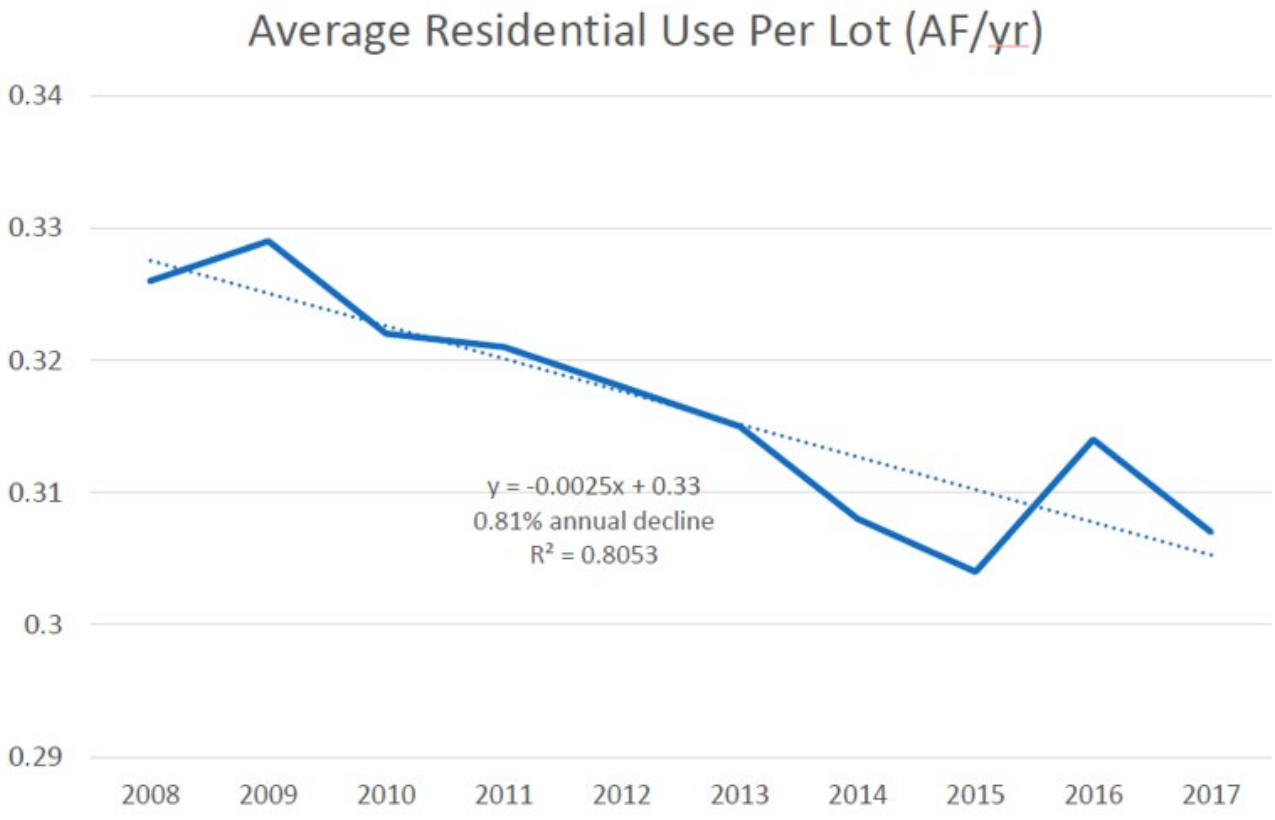
Gradual densification, along with landscaping changes, more efficient indoor fixtures and behavioral changes have contributed to reduced overall per capita rate in the municipal sector (**Figure 3.7**).

Figure 3.7
Residential GPCD



A similar trend is observed in water use per lot in CAGRD MLs (**Figure 3.8**). The water demand estimates developed for this 2025 Plan include an assumption of additional reductions in per lot, but at a more gradual rate than have been observed in the past two decades.

Figure 3.8
Average Residential Use Per Lot in CAGRD Member Lands



3.1.4 External Engagement

To broaden and deepen understanding of the factors that could influence CAGRD obligation, CAP and CAGRD staff members have actively engaged stakeholders and other outside experts. In fall 2022, a stakeholder briefing on the methodology, tools, and technologies used to develop the projections was held, and a stakeholder roundtable was held in May 2023 to review draft projection numbers. Numerous follow-up discussions were held in 2023 and 2024 at various CAGRD and Underground Storage Committee meetings regarding revised replenishment obligation projections and assumptions.

Specific groups were also involved along the way to inform the projections and get feedback on the results. Housing market experts, including developers, homebuilders, and academic analysts, were recruited for four focus group sessions on long-term trends in the central and southern Arizona housing markets to understand what kind of growth could occur and where. Staff also met with ML and MSA water providers representing 85% of CAGRD's annual obligation in groups and one-on-one sessions to understand their operations and how CAGRD fits into their planning. Topics included expected growth within their service areas, the role of groundwater allowance and excess groundwater reporting strategies and plans to acquire new renewable supplies. Staff again reached out to ML water providers after the Alternative Pathway to Designation (ADAWS) proposal was developed to determine who might be interested in pursuing it to get designated. Their perspectives helped develop a different scenario of replenishment obligation for the 2025 Plan that incorporates components of the proposal that ML providers are interested in pursuing. Further information can be found at https://cagrd.com/operations/plan-of-operation-and-mid-plan-reviews/.

3.1.5 Groundwater Physical Availability

All groundwater use that is subject to CAGRD replenishment must have separately demonstrated to ADWR that it is physically available for 100 years, while considering all other pumping and subject to groundwater depth limitations. This physical availability demonstration is performed using groundwater flow models maintained by ADWR. Updated 100-year runs of the Phoenix AMA and Pinal AMA models have shown areas where groundwater levels fall below the allowable thresholds. In response to this unmet demand, ADWR has paused the issuance of AWS determinations based on groundwater in those AMAs. In 2023, Governor Katie Hobbs also established the Governor's Water Policy Council (Council) and associated AWS Committee to "review and make recommendations for updates to AWS policies... to address the challenges revealed by the AWS modeling projections." That process led to the ADAWS proposal, which was further refined in a stakeholder process led by ADWR, and initiation of informal Rulemaking in April 2024. ADAWS is intended to assist cities, towns and private water companies in becoming designated and to address unmet demand in the Phoenix AMA groundwater flow model. The calculations for an ADAWS differ from a traditional Designation of Assured Water Supply (DAWS) with respect to physical availability, groundwater allowance and new alternative supplies. The pause on AWS determinations in the Phoenix and Pinal AMAs and the ADAWS rules have substantially altered the way subdivision development may occur, which in turn has changed assumptions regarding future CAGRD obligation.

3.2 MEMBERSHIP CATEGORIES

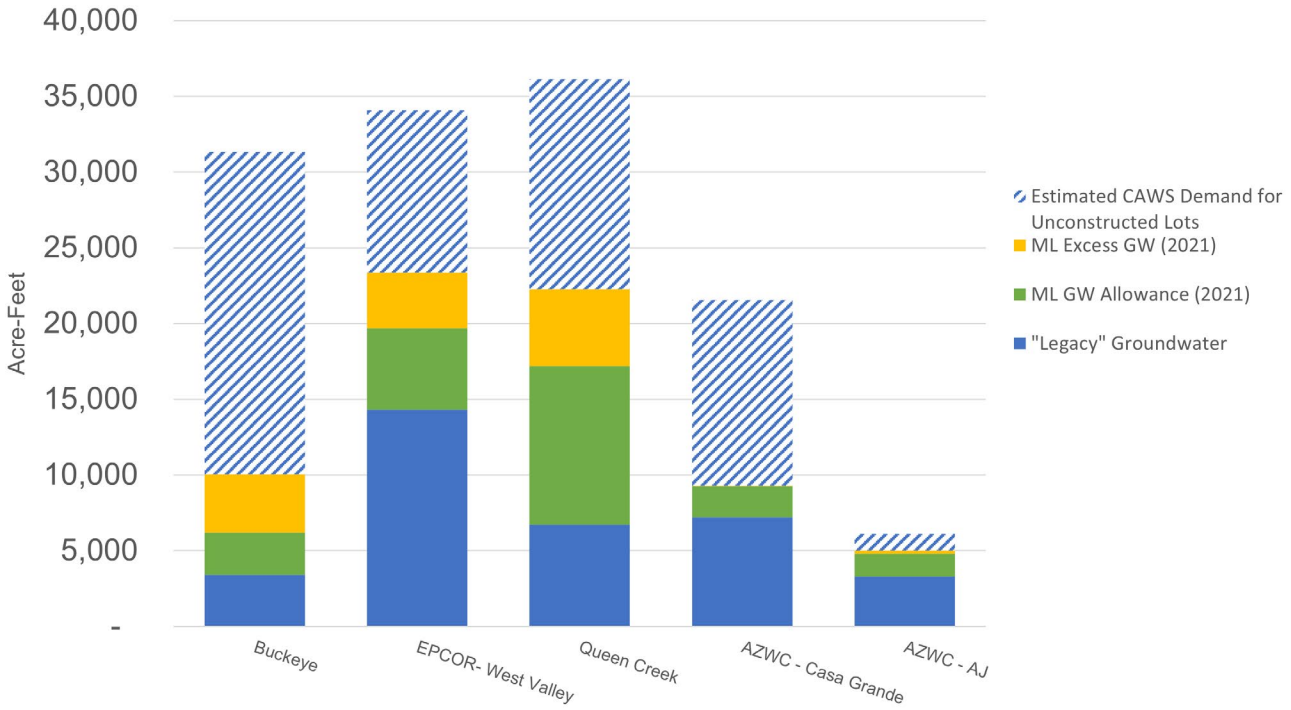
For purposes of developing obligation projections for this 2025 Plan, water providers have been grouped in three categories: ML water providers that are likely to pursue ADWR's proposed ADAWS; providers that will remain undesignated and serve MLs; and existing MSAs.

3.2.1 Likely ADAWS Providers

For Phoenix and Pinal AMA water providers that expect to see significant residential growth, an ADAWS provides an option to grow and serve new subdivisions. In ADWR's informal stakeholder process, three providers were frequently cited as likely candidates: Buckeye, Queen Creek and EPCOR—Agua Fria. Discussions with those providers have confirmed that likelihood, although EPCOR has indicated a desire to merge their Agua Fria, Sun City and Sun City West systems under a single ADAWS. In addition, for this 2025 Plan Arizona Water Company's Apache Junction and Pinal Valley systems have been included as likely ADAWS candidates. Together, these four providers serve a majority of CAGRD's existing ML homes, so the change in relationship with the CAGRD is quite significant.

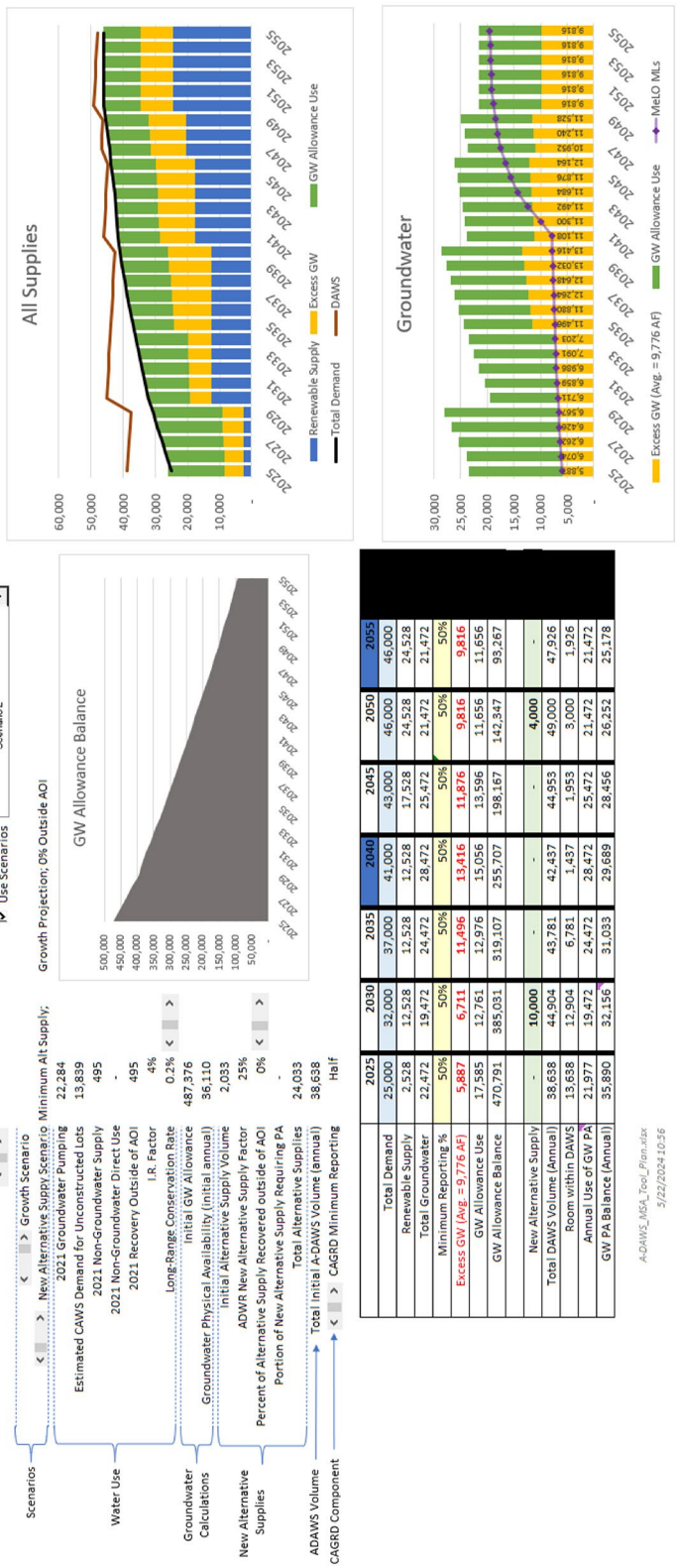
To analyze the impact of the ADAWS rules, a custom interactive model was developed. The initial modeling parameters are set by the draft Rules themselves and are shown by water provider in **Figure 3.9**. These parameters and their volumes were input into the model along with customizable model parameters such as rate of growth, timing and magnitude of alternative supply acquisition, proportion of recovery outside the area of impact and CAGRD excess groundwater reporting requirements (**Figure 3.10**) to project future CAGRD replenishment obligations.

Figure 3.9
Initial ADAWS Modeling Factors, by Water Provider



For each provider, multiple scenarios were developed and evaluated based on differing rates of growth, supply acquisition, reporting requirements, conservation rate and percent recovery outside of the area of impact. The scenarios chosen for this 2025 Plan rely on growth rates that align with the official projections developed by the COGs, but also consider projections from the providers themselves, which are generally higher. The acquisition of alternative supplies is modeled to ensure that increments of new supply keep the total DAWS volume above the provider's overall demand. The ADAWS model provides important insights into the potential behavior of providers faced with growing demands and unique initial conditions. However, for the 2025 Plan the analytical task is more narrowly focused on the obligation the providers are anticipated to incur during the 10-year 2025 Plan period.

Figure 3.10
Example ADAWS Modeling Dashboard



By securing a designation, the provider's entire demand is subject to the AWS Rules, and all groundwater that is pumped must be consistent with the management goal of the AMA (e.g., safe- yield). If an ADAWS provider did not grow past the 10-year 2025 Plan period, and did not acquire any additional alternative supplies, the CAGRD obligation would increase over time and would ultimately be larger than would have occurred as an undesignated provider, particularly as the groundwater allowance was exhausted. However, if the provider continued to grow in the subsequent decades, the provider would need to acquire additional alternative supplies to increase the overall volume of the designation and would have to dedicate a portion of the alternative supply to reducing reliance on groundwater (25% under the proposed Rule). That additional alternative supply diminishes the potential reliance on CAGRD replenishment, including the portion of groundwater demand incurred during the 10-year 2025 Plan period. Although somewhat counter-intuitive, the faster an ADAWS provider grows, the quicker the CAGRD obligation diminishes as that provider acquires alternative supplies.

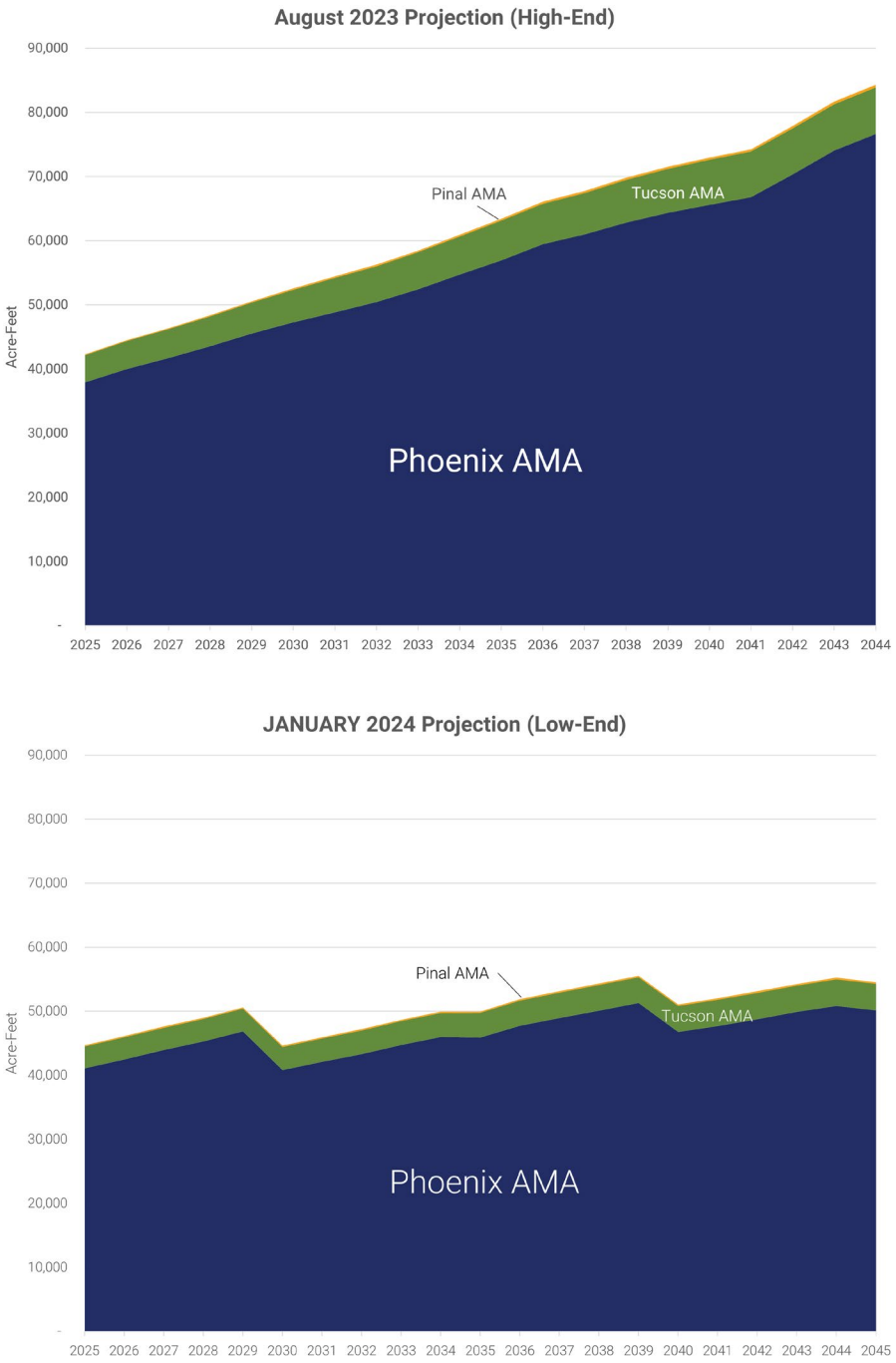
Furthermore, in the designation, any portion of the alternative supply that is stored and recovered outside the area of impact must be backed by groundwater physical availability, which has been capped. Consequently, that portion of the alternative supply does not increase the overall DAWS volume. This is consistent with the existing AWS Rules and consumer protection but is another factor that could reduce a provider's long-term reliance on CAGRD.

Taken as a whole, ADAWS assumptions have a large effect on projected CAGRD obligation. This is amply demonstrated by the estimates publicly shared in August 2023 compared to January 2024 (**Figure 3.11**). In the first set, developed prior to the ADAWS proposal, the majority of the CAGRD obligation was assumed to remain in the ML category, with the bulk of the CAGRD development taking place on issued, but unbuilt certificates. The second set of projections assumed that the largest ML water providers would obtain an ADAWS, and as they grew through time, they would have to incrementally acquire alternative supplies to meet their increased demands and to reduce groundwater reliance.

LOWER SANTA CRUZ RIVER RECHARGE

Figure 3.11

Bookend Projections: August 2023 and January 2024 Annual Obligation Projections by AMA



Staff evaluated many other variations, some of which fell even further outside that already wide range. That uncertainty remains challenging, but to meet the standard of reasonableness required for 2025 Plan submission, a projection was developed that falls between extremes (referred to here as the updated May 2024 Projection).

The updated May 2024 projection assumes that the five ADAWS candidates do become designated, and they grow and acquire alternative supplies at a rate necessary to ensure the designation volume is large enough to accommodate that growth (plus the 25% groundwater offset). That growth is projected through 2055, which is the furthest that official population and housing unit growth projections are available from the Arizona Office of Economic Opportunity and the Maricopa Association of Governments. For the remainder of the 100-year projection, 2055 groundwater utilization is held constant and two-thirds of that is assumed to be excess groundwater reported to CAGRD in the Phoenix AMA and one-third in the Pinal AMA. All ADAWS alternative supplies are assumed to be used by the water provider directly or stored and recovered within the area of impact. The full 20-year projection and 100-year implication is discussed later in this chapter.

3.2.2 Remaining Member Land Water Providers

While the five ADAWS candidates serve the majority of the current ML demand, approximately 60 additional water providers serve over 360 enrolled subdivisions. For this 2025 Plan, those providers are assumed to remain undesignated, and the associated projections were developed using a custom model that accounts for the unique characteristics of each subdivision and the water provider's reporting options and preferences.

Excess groundwater reported to CAGRD can vary significantly by water provider and ML, particularly during the 20-year projection period. The difference is primarily related to the one-time groundwater allowance that is issued by ADWR to each CAWS and any extinguishment credits the water provider has acquired and applied to the ML. The amount of groundwater allowance and the CAGRD minimum reporting requirements varies by AMA and when the subdivision was enrolled. The use of groundwater allowance can reduce, or in some cases fully avoid, reporting excess groundwater to CAGRD, at least on a short- to medium-term basis. Utilization of non-groundwater supplies, notably effluent and recovered LTSCs, also affects ML obligation.

The Member Land Obligation model (MeLO) was developed to consider all of these factors and estimate the associated replenishment obligation. The MeLO model contains detailed data for each ML subdivision, including initial groundwater allowances, the number of constructed and unconstructed lots, specific housing unit demand estimates and minimum excess groundwater reporting percentages, if applicable. The reporting preferences of the ML water provider, any non-groundwater sources used by the provider and the effects of ongoing conservation, can also be simulated in MeLO. During a model simulation, the individual ML groundwater allowance balances are tracked year-by-year, and as they are exhausted, all groundwater delivered becomes excess groundwater reported to CAGRD. Note that in the Pinal AMA, groundwater allowances issued to CAWS prior to 2007 are recurring rather than a one-time volume and are generally sufficient to cover all groundwater demand, and thus little to no excess groundwater is reported.

For this 2025 Plan, the housing unit projections developed for each water provider result in the bulk of the unconstructed lots being constructed by 2055 and individual ML groundwater allowances exhausting at a point during that same period. The result of those assumptions, along with a modest number of new ML enrollments in the Tucson AMA is a ML obligation forecast that begins at 11,700 acre-feet and through the 100-year projection grows to 22,700 acre-feet before gradually declining as conservation effects continue. The 20-year projected member land annual replenishment obligation is presented in **Table 3.1**

Table 3.1

CAGRD 20-Year Projected Member Land Annual Replenishment Obligation (Af)

Active Management Area	2025	2030	2035	2040	2044
Phoenix AMA	9,900	11,400	12,800	14,300	14,900
Pinal AMA	0	0	0	0	0
Tucson AMA	1,800	2,600	3,600	4,400	4,700
Total	**11,700**	**14,000**	**16,400**	**18,700**	**19,600**

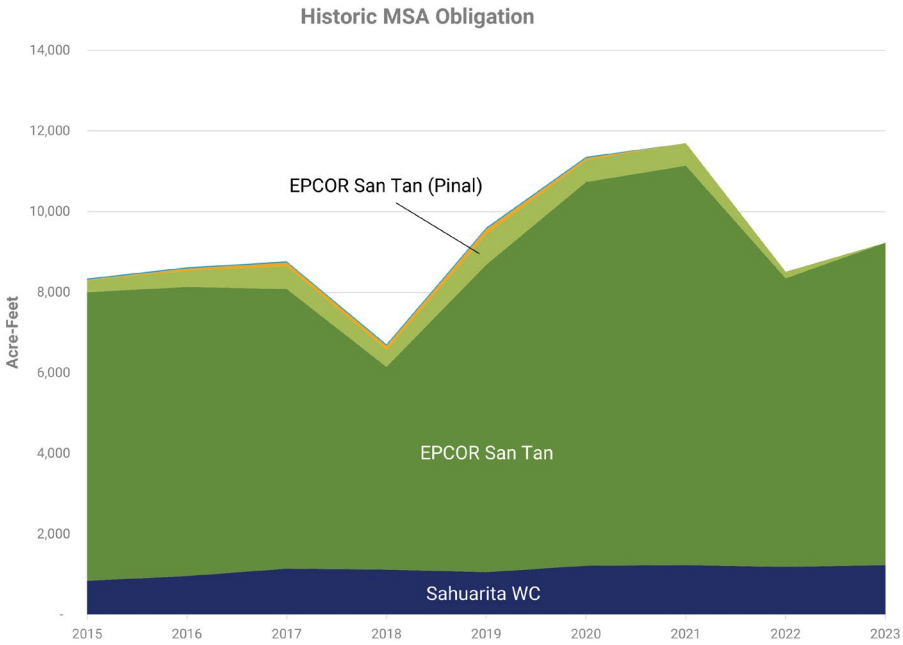
Volumes have been rounded to whole numbers for this Plan, resulting in minor discrepancies in some cumulative totals.

3.2.3 Existing Member Service Areas

There are currently 23 MSAs, which are responsible for 30% of the excess groundwater reported to CAGRD in the past decade, but that has come almost entirely from just three of those water providers

Figure 3.12

Historic MSA Annual Obligation



There are several underlying reasons why the remaining MSAs do not rely on CAGRD on an annual basis. While obtaining a designation of AWS is voluntary and subjects all of the providers' demands to the AWS Rules, it also grants the provider greater control over the management of their water resources and how they satisfy the AWS requirements. Most MSAs have renewable supply portfolios that are large enough to satisfy their annual demands without reliance on CAGRD replenishment, which has generally been more expensive than acquiring supplies independently. Because MSAs pay the replenishment costs directly to CAGRD, as opposed to the ML replenishment that is collected through a property tax assessment, MSAs are more directly impacted by CAGRD rates. As a consequence, this 2025 Plan projects that most MSAs will continue to report zero excess groundwater. However, some MSA reliance has been included to reflect a combination of ongoing reliance by those currently reporting excess groundwater, the potential for shorter-term reliance due to shortages of CAP supplies held by the other MSAs, and a modest increase in growth including the recent enrollment of Global Water's Farmer's Investment Company system, which is groundwater-dependent and has projected near-term growth. The 20-year projected MSA annual replenishment obligation is presented in **Table 3.2**.

Table 3.2
CAGRD 20-Year Projected Member Service Area Annual Replenishment Obligation (AF)

Active Management Area	2025	2030	2035	2040	2044
Phoenix AMA	25,500	33,400	36,300	39,200	38,900
Pinal AMA	500	1,800	4,100	3,600	4,400
Tucson AMA	1,700	4,100	5,200	5,200	5,200
Total	**27,700**	**39,300**	**45,600**	**48,000**	**48,500**

Volumes have been rounded to whole numbers for this Plan, resulting in minor discrepancies in some cumulative totals.

All told, the projected replenishment obligation for the 2025 Plan is 68,100 acre-feet per year by 2044 (**Figure 3.13**) and 80,500 acre-feet per year in 2124 (**Table 3.3**)

Figure 3.13
Projected 20-Year Annual Replenishment, MSA and ML

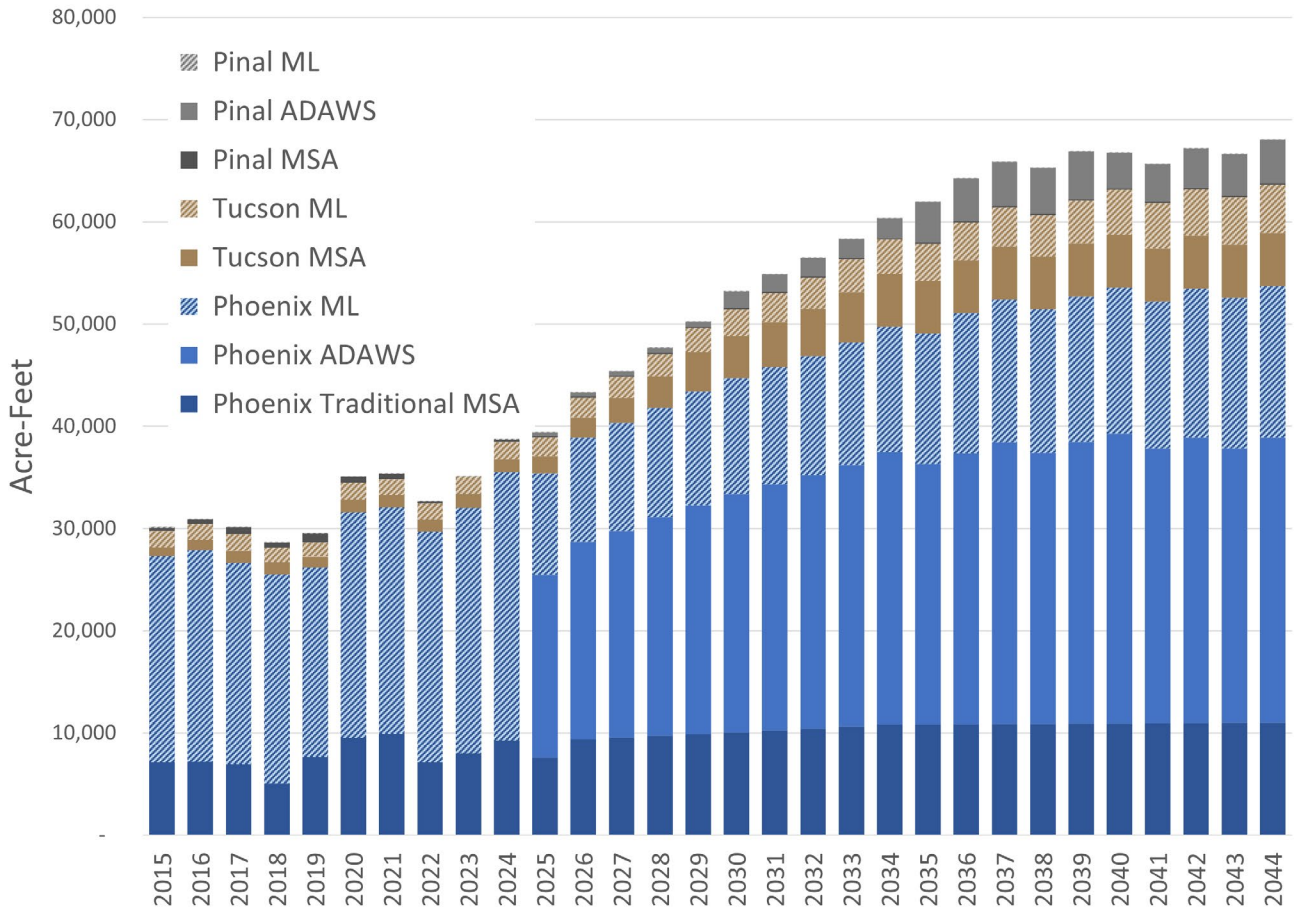


Table 3.3

Estimated 100-Year CAGRD Annual Replenishment Obligation (AF)

	Active Management Area	2025	2030	2035	2040	2044	2124
Current Members	Phoenix AMA	35,400	44,700	49,100	53,600	53,700	64,800
	Pinal AMA	500	1,800	4,200	3,700	4,400	3,800
	Tucson AMA	3,500	6,500	8,200	8,700	8,900	10,600
New Members	Tucson AMA	-	200	500	800	1,000	1,400
	Total	**39,400**	**53,200**	**62,000**	**66,800**	**68,100**	**80,500**

Volumes have been rounded to whole numbers for this Plan, resulting in minor discrepancies in some cumulative totals.

3.3 PROJECTED ENROLLMENT

Projected enrollment in CAGRD has been profoundly affected by the constraints on physical groundwater availability in the Phoenix and Pinal AMAs. There could be a small number of new enrollments outside of ADWR's groundwater flow model boundaries, most notably in the Rainbow Valley of the Phoenix AMA. However, these areas have limited access to groundwater and are constrained further by MSA service area boundaries. Other than the anticipated enrollment of four likely ADAWS providers as new MSAs at the beginning of the 2025 Plan period, no new ML enrollments are included in the projections for the Pinal or Phoenix AMAs. Groundwater-based CAWS are still being issued in the Tucson AMA, though most of the region is served by designated providers. For this 2025 Plan, 7,041 ML lots are projected to be enrolled in the Tucson AMA, primarily in the south and far eastern portion of the AMA.

In 2024, legislation to incentivize agricultural to urban development through the creation of physical availability credits passed, but was ultimately vetoed. This bill would have led to some new ML enrollments in the Phoenix and Pinal AMAs. It is reasonable to assume many of these new CAWS if located in the Phoenix AMA would be located in service areas of the water providers that would likely apply for an ADAWS in future years. It is harder to predict the impact in the Pinal AMA. CAGRD may need to update its 2025 Plan projections and Replenishment Reserve Targets for the Pinal AMA, at the request of the ADWR Director, if future changes to statutes are made in this regard.

This draft does not fully incorporate ADWR's proposed AWS Rules related to the issuance of a CAWS served by a commingled distribution system, which could lead to some new ML enrollments in the Phoenix and Pinal AMAs. To the extent necessary, CAGRD will update relevant sections of the Plan, if requested by the ADWR Director, during the Plan review process.

4.0 Water Supplies

The statutory requirements related to describing available water supplies for the Central Arizona Groundwater Replenishment District (CAGRD) Plan of Operation are identified below.

A.R.S. § 45-576.02.C.2

…the plan shall include the following information for each active management area in which a member land or member service area is located:

A.R.S. § 45-576.02.C.2(c)

A description of the water resources that the conservation district plans to use for replenishment purposes during the twenty calendar years following submission of the plan and water resources potentially available to the conservation district for groundwater replenishment purposes during the subsequent eighty calendar years.

This chapter describes CAGRD's current water supply portfolio and the progress of the CAGRD Water Supply Acquisition Program since the 2015 Plan of Operation. Water supplies that CAGRD plans to use to meet its replenishment obligations during the next 20 years and supplies that are potentially available to meet replenishment obligations during the subsequent 80-year period are described in Sections 4.6 and 4.7 and identified in Tables 4.1 and 4.3. For purposes of this 2025 Plan of Operation (2025 Plan), the 20-year period following its submittal is 2025 through 2044, and the subsequent 80-year period is 2045 through 2124.

The volumes of these water supplies defined herein are larger than CAGRD's projected replenishment obligation during the next 20 years and the subsequent 80 years. The following sections outline the future projected replenishment obligation, as presented in Chapter 3, and detail how CAGRD intends to meet that obligation using its current water supply portfolio and through the continued implementation of the Water Supply Acquisition Program. New for this 2025 Plan is Section 4.4, which describes the potential impacts of shortage on the CAGRD water supply portfolio.

4.1 REPLENISHMENT OBLIGATION

To fully address the requirements set forth in A.R.S. § 45-576.02(c), CAGRD must first identify the projected annual replenishment obligation for three distinct time periods: 1) the present, 2) the 20-year period following submission of this 2025 Plan, and 3) the subsequent 80-year period.

Current Replenishment Obligation (as of 2023): CAGRD's replenishment obligation for the year 2023 was approximately 34,762 acre-feet across the three AMAs.

The 20-year Period Following Submission of the Plan: As set forth in Chapter 3, based on the updated May 2024 projection, the estimated annual replenishment obligation associated with the **current members** and **projected members** in the 20th year following submission of this 2025 Plan, which is 2044, is 68,100 acre-feet. For purposes of this chapter, the term "**current members**" means Member Lands (MLs) and Member Service Areas (MSAs) enrolled through 2024. The term "**projected members**" means new MLs and MSAs projected to enroll in the 10-year period following submission of this 2025 Plan, or 2025 through 2034.

The Subsequent 80-year Period: As further set forth in Chapter 3, based on the updated May 2024 projection, the estimated annual replenishment obligation associated with current members and projected members in 2124 is 80,500 acre-feet.

4.2 CURRENT CAGRD WATER SUPPLY PORTFOLIO

Summary of Current Entitlements: To date, CAGRD has secured rights to 77,141 acre-feet of water supplies. This portfolio includes a Central Arizona Project (CAP) Municipal & Industrial (M&I) entitlement, leases of Indian priority and Indian Non-Indian Agricultural (NIA) water, an effluent lease and long-term storage credits (LTSCs), as shown in **Figure 4.1**. Each of these supplies is described in more detail below and shown in **Table 4.1**.

Table 4.1
Current CAGRD Annual Water Supply Portfolio

Water Supply	Annual Volume (AF/YR)	First Year Available	Term of Acquisition	Notes
CAP NIA (White Mtn. Apache)	2,500	2028	Annual Lease Volume	Lease awaiting final authorization; estimated availability; subject to reduction under any shortage condition
CAP NIA (Reallocation)	18,185	2022	Permanent contract	Subject to reduction under any shortage condition
CAP NIA (GRIC Lease)	18,185	2020	Leased through 2044	Subject to reduction under any shortage condition
Long-Term Storage Credits	14,445	2022	100-year	Total volume annualized over 100 years
Effluent	2,400	2017	100-year lease	
CAP Tribal (GRIC Exchange)	15,000	2020	Leased through 2044	Subject to reduction under deep shortage
CAP M&I	6,426	2006	Permanent contract	Subject to reduction under deep shortage
TOTAL	**77,141**			

4.2.1 CAGRD CAP Entitlements

CAP M&I Entitlement: CAGRD holds an annual entitlement to 6,426 acre-feet of CAP M&I Priority water pursuant to the "Supplemental Contract between the United States and the Central Arizona Water Conservation District for Delivery of Central Arizona Project Water, Contract No. 14-06W-245, Amendment No. 1, Supplement No. 1, as amended," (Supplemental Contract). The Supplemental Contract is for permanent water service.

This volume is less than CAGRD's CAP M&I entitlement at the time of the 2015 Plan, owing to the addition of 315 acre-feet from Chandler Heights Citrus Irrigation District in 2016 and the transfer of 1,885 acre-feet of the entitlement to the City of Peoria in 2022. New River Utility Co. (New River) was a small private utility located within Peoria that had initially transferred its CAP entitlement to CAGRD in 2007. The entitlement was subsequently transferred to the City of Peoria after it acquired New River.

Reallocation of CAP NIA Priority Water: On Jan. 16, 2014, the State of Arizona, through the Arizona Department of Water Resources (ADWR), issued its "Recommendation for Reallocation of Non-Indian Agricultural Priority Central Arizona Project Water" pursuant to Section 104(a)(2)(C)(i)(III) of the Arizona Water Settlements Act of 2004. The recommendation included a recommended volume for CAGRD of 18,185 acre-feet per year of CAP NIA Priority water. The Central Arizona Water Conservation District (CAWCD) signed a contract (on behalf of CAGRD) for this water allocation in September 2021 and CAGRD took initial delivery of this water in 2022. Because NIA supplies are the lowest priority subcontract for CAP water these supplies have been and will continue to be impacted by Colorado River shortage conditions. A more detailed description of the impacts of Colorado River shortage on CAGRD's current water supplies and potential future water supplies can be found in Section 4.4.

Exchange Agreement with Gila River Indian Community: In 2019, CAGRD entered into an agreement with the Gila River Indian Community (GRIC) involving an exchange of 15,000 acre-feet of GRIC Indian Priority CAP water for a similar quantity of Pinal AMA Long-Term Storage Credits (LTSCs) recovered from GRIC wells for on-reservation farming activities. The first deliveries under the agreement occurred in 2020 and the agreement is for 25 years (until 2044). Under this exchange, CAGRD may deliver the CAP water anywhere in the three-county CAP service area to offset replenishment obligations or to earn LTSCs.

Lease of NIA Priority CAP Water from GRIC: In 2019, CAGRD also entered into a 25-year lease agreement with GRIC for 18,185 acre-feet of GRIC NIA Priority CAP water. Initial deliveries of this water occurred in 2020. The lease agreement requires that CAGRD deliver this water to the MAR-5 managed recharge project located on the GRIC reservation in the Phoenix AMA. However, if there is insufficient capacity at MAR-5 in any given year, the water can be delivered anywhere in the three-county CAP service area to either offset replenishment obligations or earn LTSCs. The leased NIA water is subject to shortage reductions similar to the CAGRD NIA entitlement.

Lease of White Mountain Apache Tribe CAP NIA Priority Water: Pursuant to the White Mountain Apache Tribe Water Rights Quantification Agreement and the White Mountain Apache Tribe Water Rights Quantification Act of 2009 (the Act), the White Mountain Apache Tribe has leased 2,500 acre-feet per year of its NIA Priority CAP water to CAWCD for CAGRD purposes. The lease term will begin 30 days after the enforceability date, as defined in Section 12(c) of the Act, and end 100 years thereafter. It is anticipated that the enforceability date will occur in 2027 and the water supply will be available beginning in 2028, contingent on Colorado River operating conditions.

4.2.2 Effluent Lease

An agreement between CAWCD and Liberty Utilities (Liberty) in 2014 resulted in the construction of a recharge facility, the Sustainable Effluent to Aquifer Project (SEAP), that began receiving effluent in 2017. The agreement also included a 100-year lease of 2,400 acre-feet of effluent for CAGRD, which commenced in 2017. The leased effluent includes treated wastewater produced from Liberty's Palm Valley Wastewater Reclamation Facility and effluent produced at any other wastewater treatment plant that may be owned or controlled by Liberty. The agreement also grants CAGRD a 100-year right to purchase LTSCs generated by Liberty by storing additional effluent at SEAP.

As a result of this agreement, CAGRD can offset pumping by CAGRD members in the west Phoenix AMA through replenishment in the area of hydrologic impact. This innovative partnership provides significant benefits to Liberty, CAGRD and its members — providing a mechanism to offset CAGRD member pumping by providing a source of both water and LTSCs for replenishment, granting CAGRD and its members access to infrastructure that may not have been constructed without the financial contribution of CAGRD, and offering hydrologic benefits of groundwater recharge to Liberty and CAGRD members located near the effluent recharge project.

4.2.3 Long-term Storage Credits

CAGRD has acquired 621,500 LTSCs as of the most recent accounting report from ADWR (2022). **Table 4.2** shows all of the credit acquisitions CAGRD has made since 2009. The total volume in the table includes credits acquired in 2023 and credits that will be acquired in the future under long-term agreements that are not included in the ADWR credit accounting report. In addition to acquired credits, CAGRD has earned credits by recharging water supplies that have been available in recent years above its replenishment obligations. CAGRD also has available for use more than 500,000 LTSCs held by CAWCD that were developed by recharging Excess CAP water in the past and 312,000 LTSCs[2] that are held in a replenishment reserve account. In total CAGRD currently has access to 1,444,500 LTSCs that may be used to meet its obligations.

LTSCs are well-suited to meeting CAGRD replenishment obligations. The LTSCs currently in the CAGRD accounts for the Tucson and Phoenix AMAs comprise a significant component of CAGRD's water supply portfolio. When coupled with other supplies in CAGRD's portfolio, these credits would be sufficient to fulfill CAGRD's replenishment obligation for the next 20 years. Although using LTSCs is not its only mitigation strategy, CAGRD plans to use LTSCs to cover shortfalls in its replenishment activities resulting from shortage impacts on its CAP supplies. The CAWCD credits are currently used to meet replenishment obligations in the Pinal AMA and to provide credits for CAGRD's replenishment reserve, discussed in Chapter 5.

4.2.3.1 Description of Long-Term Storage Credit Purchase Agreements

CAGRD began acquiring LTSCs in 2009. LTSCs are a highly fungible water asset with a straightforward transaction process, which is why large volumes are transacted yearly in the AMAs. Because they represent renewable water that has already been recharged, they are a suitable resource for CAGRD to use to meet its replenishment obligations. A small quantity of CAGRD LTSCs have been used to meet obligations to date, while the majority are held in CAGRD's long-term storage account as an available resource to meet obligations under severe shortage conditions impacting other water supplies.

2 *There are restrictions on CAGRD's use of replenishment reserve credits until 2030, as defined in ARS 48-3772 E.6*

Table 4.2
Complete List of CAGRD LTSC Acquisitions

Seller	AMA	Year	Term	Credit Quantity (AF)
Fidelity National Title Trust	Tucson	2009	2 year	5,900
Rocking K Acquisitions	Tucson	2010	1 year	4,000
Metro Water	Tucson	2010	1 year	12,815
City of Goodyear	Phoenix	2010	1 year	34,000
City of Glendale	Phoenix	2010	1 year	9,950
Gold Canyon Sewer Co.	Phoenix	2011	2 year	920
Litchfield Park Service Co.	Phoenix	2011	6 year	14,177
Mojave Ventures	Phoenix	2014	7 year	100,178
Mojave Ventures	Tucson	2014	7 year	28,306
City of Tucson	Tucson	2014	20 year	100,000
U.S. Bureau of Reclamation	Tucson	2015	1 year	60,000
Del Webb	Phoenix	2015	2 year	12,172
Superstition Mountains CFD	Phoenix	2015	6 years	3,099
Active Resource Management	Phoenix	2017	1 year	50,000
Liberty Utilities	Phoenix	2017	100 year	300,000[3]
Metro Water	Tucson	2017	25 years	6,250
City of Surprise	Phoenix	2017	1 year	9,082
Town of Florence	Phoenix	2018	5 year	9,666
Gila River Water Storage	Phoenix	2019	1 year	70,375
Gila River Water Storage	Pinal	2019	1 year	375,000[4]
Tohono O'odham Nation	Phoenix	2020	2 year	40,000
Tohono O'odham Nation	Tucson	2020	2 year	10,000
City of Peoria	Phoenix	2022	5 year	34,397
Tohono O'odham Nation	Phoenix	2022	1 year	16,000
Tohono O'odham Nation	Tucson	2022	1 year	4,000
Stone Applications, LLC	Phoenix	2023	1 year	2,500
Tohono O'odham Nation	Phoenix	2023	1 year	10,000
Liberty Utilities	Phoenix	2023	1 year	10,000
TOTAL				**957,787**

3 *CAGRD has a right of first refusal to acquire LTSCs earned by Liberty for effluent not owned by CAGRD that is recharged to earn credits. This amount is an estimate of the quantity of credits that may be acquired over the term of the 100 year agreement.*

4 *These credits are used as part of the CAGRD-Gila River Indian Community exchange agreement. Each year of the agreement 15,000 Pinal LTSCs are recovered from on-Reservation wells to provide irrigation water in exchange for an equal amount of GRIC CAP water that is delivered for CAGRD uses. They are not included in the total at the bottom of the table.*

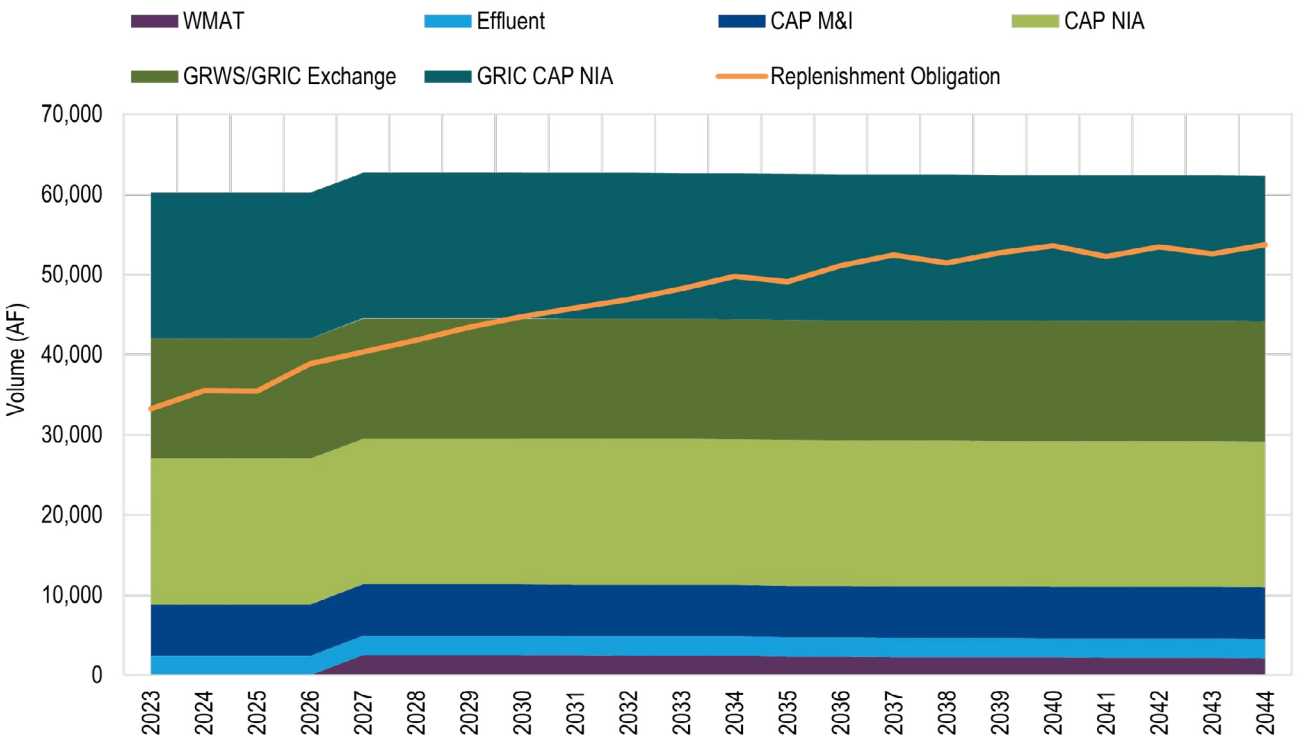
4.3 CURRENT CAGRD WATER SUPPLY AND PROJECTED OBLIGATION

As identified in Section 4.1, using the updated May 2024 projections, the estimated annual replenishment obligation associated with current and projected members in the year 2044 is 68,100 acre-feet; the annual replenishment obligation associated with current members and projected members in the year 2124 is approximately 80,500 acre-feet. Further, as outlined in Section 4.2 and illustrated in **Table 4.1**, CAGRD currently holds rights to 77,141 acre-feet of annual long-term water supplies, of which 62,696 acre-feet are wet water supplies. If all CAGRD wet water supplies were fully available for the next 20 years, they would be adequate to meet projected replenishment obligations through 2044. **Figure 4.1** illustrates how these supplies would be utilized to meet the Phoenix AMA replenishment obligation. However, due to the likely impacts of shortage on CAP supplies, CAGRD plans to mitigate those impacts by relying on its LTSCs and pursuing additional water supplies that can be relied on during shortage years.

CAGRD will acquire these new water supplies through the CAGRD Water Supply Acquisition Program described in Section 4.5.

Figure 4.1

CAGRD Water Supply Utilization (Phoenix AMA) to Meet Replenishment Obligation Without Shortage



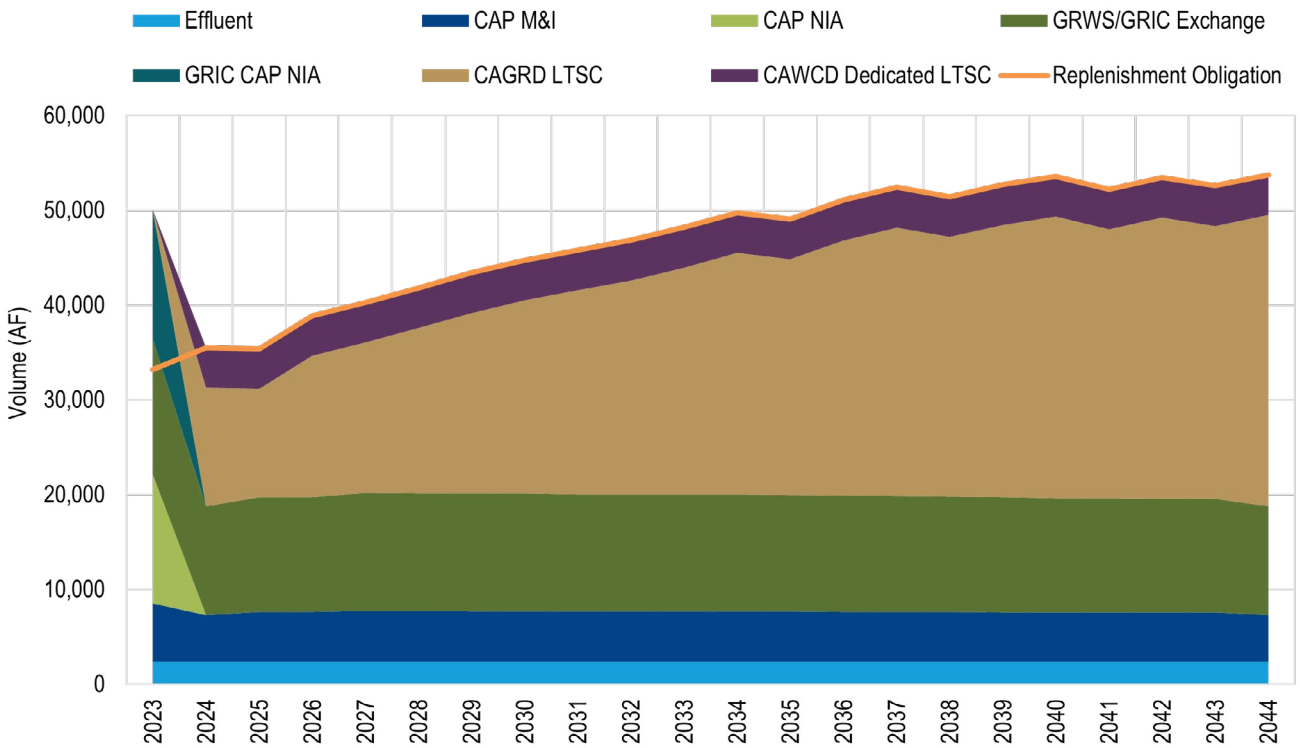
4.4
COLORADO RIVER SHORTAGE IMPACT ANALYSIS

Current shortage guidelines for Colorado River operations are based on the Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead (2007 Interim Guidelines) and the 2019 Lower Basin Drought Contingency Plan (DCP). Shortage reductions under these agreements are triggered by the elevation of Lake Mead reaching specified levels, resulting in greater reductions as the Lake level falls through defined tiers. These agreements are effective through the end of 2026, after which a new set of operating guidelines must be implemented. Those new guidelines are currently undefined.

Future impacts to the CAGRD water supply portfolio cannot be predicted until the new guidelines are developed, but CAGRD staff have analyzed the potential impacts of deep, sustained shortage conditions using an approximation of the current operating guidelines and modeling how CAGRD's ability to meet projected obligations with its current water supply portfolio is affected.

The staff analysis assumes that CAP deliveries are broadly consistent with a Tier 3 shortage under the DCP, which causes the CAP delivery volume to be reduced by 720,000 acre-feet annually for the duration of the period. Without mitigation, these reductions would eliminate all of CAGRD's NIA water as well as result in small reductions to M&I and Indian supplies. Because NIA water makes up more than half of current CAGRD supplies, replenishment obligations would need to be met with an alternative supply. The loss of NIA water could be met with significant numbers of LTSCs from CAGRD's LTSC accounts, as shown in **Figure 4.2**. However, if additional supplies can be acquired to firm the CAP NIA supplies in the portfolio, those LTSCs can be preserved and used to meet short-term needs under extraordinary shortages. As described below in Section 4.5, that is the current objective of the CAGRD water supply program.

Figure 4.2
CAGRD Water Supply Utilization (Phoenix AMA) to Meet Replenishment Obligation Under Sustained Shortage Equivalent to Tier 3



Figures 4.1 and **4.2** only show obligations and supplies for the Phoenix AMA because that is where most of CAGRD's obligation has been and is projected to occur and therefore where most of its wet water supplies are used. CAGRD has sufficient LTSCs to meet obligations past 2044 in the Tucson and Pinal AMAs.

4.5 CAGRD WATER SUPPLY ACQUISITION PROGRAM

A water supply acquisition program was implemented under the direction of the CAWCD Board in 2012 to address the need identified in the 2005 Plan of Operation for CAGRD to begin acquiring water supplies that could be used to fulfill replenishment obligations when Excess CAP water was no longer available. The primary program goal is to acquire a diverse portfolio of water supplies through voluntary, market-based transactions with willing entities. Since the program's implementation, nearly all of the water supplies described in **Table 4.1** were acquired by CAGRD.

At the time of the 2015 Plan of Operation, CAGRD was still meeting some of its obligations with Excess CAP water, and the goal was to find supplies to meet the remaining obligations once Excess CAP water was no longer available, which occurred in 2020. Since 2015, CAGRD has developed a water supply portfolio that exceeds its current obligations. Because of the risks from Colorado River shortage to that portfolio, the new goal is to acquire supplies that will mitigate the impact of shortage on the CAGRD portfolio during the next 20 years and continue to meet its obligations over the subsequent 80 years.

4.5.1 Water Supply Acquisition Program Principles

The CAWCD Board has delineated several key principles to guide program implementation. Those principles are as follows:

- The CAGRD does not have condemnation authority and will not partner with other entities to use their condemnation authority to acquire water supplies through condemnation.
- When considering agreements involving Colorado River entitlements held by irrigation districts, the CAGRD acknowledges that the districts are the local governmental body best situated to assess any impacts to landowners and farmers within the districts and, therefore, will negotiate directly with the districts.
- The CAGRD will assert its fiduciary responsibility to its members by negotiating a fair and reasonable price for the acquisition of water supplies based on the best available information regarding the fair market value of said supplies.
- The CAGRD will consider potential third-party impacts to the local community associated with any proposed water acquisition/transfer.
- The CAGRD will seek to align long-term storage credit acquisitions with the locations of projected future replenishment obligations.
- The CAGRD will endeavor, when possible, to partner with member municipalities and water providers on mutually beneficial infrastructure projects to develop or further the use of renewable water supplies.
- The CAGRD will acquire new water supplies in a manner that generally coincides with increases in the CAGRD replenishment obligation water demand as they occur over time.
- The CAGRD will seek to acquire a diversified, well-balanced portfolio of short and long-term water assets, including permanent wet water resources (or rights), that will ensure water supply availability under a range of hydrological and operational conditions.

4.6 DESCRIPTION OF WATER SUPPLIES AVAILABLE 2025–2124

CAGRD staff members, with consultant WestWater Research, have developed an inventory of water supplies that are potentially available for acquisition during the next 20 years and the subsequent 80 years, as required by statute. These water supplies are identified to firm the lower priority CAP supplies in CAGRD's portfolio; backfill or succeed the current 25-year agreements with GRIC; or meet future increases in replenishment obligation.

The supplies and volumes shown in **Table 4.3** are similar to those in the 2015 Plan of Operation. The volumes listed for each supply category have varied since 2015, with some volumes increasing and some decreasing. For instance, the potentially available volumes of CAP water and effluent declined due to increased utilization and updated assumptions about future uses. The volume of LTSCs increased following 10 additional years of LTSC accumulation by water users in the three AMAs. One major development since 2015 is the System Use Agreement that was implemented in 2017, which will permit the use of the CAP canal to move supplies such as imported groundwater and potential supplies from future desalination projects into the AMAs. A new potential supply was added because of the recently initiated Bartlett Dam Modification Feasibility Study that would develop a new in-state surface water supply if approved for construction.

These water supplies are listed by supply category and volume in **Table 4.3**. This section discusses each of the supply classes listed in **Table 4.3**, including the assumptions used in developing each category's estimated potentially available volume. As shown in **Table 4.3**, CAGRD identified an inventory of between 466,600 to 1,046,450 acre-feet per year of potentially available water supplies that, in conjunction with its current water supply portfolio of 77,141 acre-feet per year, may be pursued to meet CAGRD's replenishment obligations for 20 years after adoption of the 2025 Plan.

CAGRD has also identified 405,900 to 925,050 acre-feet per year of water potentially available over the subsequent 80 years (2045 – 2124), a volume that far exceeds CAGRD's projected additional demands after 2045, even assuming limited to no access to NIA supplies and the termination of the GRIC lease and exchange in 2044.

The volume ranges listed in **Table 4.3** for each supply assume a "high" estimate and a "low" estimate of available supply. The assumptions incorporated into the estimates for individual supply categories are described in the discussion of individual supply types below.

CAGRD anticipates acquiring a mix of supplies from this inventory over the course of this 2025 Plan that are primarily suitable for firming CAGRD's existing supply portfolio. If/when acquisition opportunities are available, CAGRD will also acquire additional supplies beyond its firming needs to meet future replenishment obligations.

4.6.1 Long-term Storage Credits

CAGRD will continue to pursue the acquisition of LTSCs, which are a shortage-proof water supply. There is currently a large volume of LTSCs available in the three AMAs and the market for purchasing them is well-established, with predictable prices and administrative simplicity. Acquiring LTSCs in locations near reported excess groundwater pumping by CAGRD members makes LTSCs an excellent fit for meeting CAGRD's replenishment obligations.

As **Table 4.3** shows, CAGRD identified potentially available LTSCs representing an annualized, 100-year supply of 14,200 to 49,700 acre-feet per year. This represents 1.4 million to almost 5 million acre-feet of uncommitted credits that currently exist within the Phoenix, Pinal and Tucson AMAs. CAGRD anticipates acquiring some of these available credits to meet replenishment obligations when purchase opportunities arise during the 2025 Plan period. The following criteria were applied to the total current supply of LTSCs to estimate the high volume potentially available:

1. LTSCs pledged to a Designation of Assured Water Supply (DAWS) were considered unavailable for acquisition.
2. LTSCs under contract to be sold were considered unavailable for acquisition.
3. LTSCs owned by CAWCD, CAGRD, or the Arizona Water Banking Authority were considered unavailable for acquisition.

While total LTSC supplies have increased across the AMAs in recent years, a portion of the observed growth may be attributed to municipalities adding to their long-term storage accounts to have credits available during potential future shortages on the Colorado River and CAP system. The high volume was therefore reduced by 50% and supplies owned by municipalities were subtracted to develop the low volume estimate.

It was also assumed that some entities currently using a portion of their CAP supply to generate marketable LTSCs will continue to do so in the future as supply availability permits, thus creating additional credits that may be available to CAGRD beyond 2044. Some CAP supplies currently used to generate LTSCs are included in the estimate of potentially available CAP water (Section 4.6.3); therefore, the LTSC estimates do not incorporate any assumptions of future credit generation to avoid double-counting of supplies.

4.6.2 Effluent

CAGRD will also pursue additional effluent supplies where such acquisitions can be accomplished in ways that further the goals of developing long-term renewable supplies or directly fulfilling replenishment obligations at reasonable prices. As **Table 4.3** shows, CAGRD has identified between 38,800 and 116,400 acre-feet per year of effluent that is currently discharged from water reclamation facilities and not reused or recharged to earn LTSCs. This amount is assumed to be available during the 20-year period following the adoption of this 2025 Plan. The amount of unused effluent projected to be available in the subsequent 80 years was not increased to account for future population growth, recognizing that future effluent supplies are much more likely to be used by the generating entity to increase available potable water supplies.

In many cases, the municipalities or water providers that own these effluent supplies intend to fully utilize these resources at some point in the future to assist in meeting potable or non-potable demands. However, these effluent supplies may be available for use by CAGRD through short-term or intermediate leases. Where those supplies would eventually be used to generate LTSCs, CAGRD could partner with the effluent owner to construct infrastructure that might accelerate resource utilization in exchange for LTSCs or a share of the effluent. This model was implemented in the Liberty agreement discussed in Section 4.2.2.

4.6.3 CAP Water

CAGRD will pursue available CAP entitlements to increase the permanent water supplies in its portfolio. These include M&I entitlements not currently committed to long-term uses and future allocations of NIA priority water.[5] In addition, several existing Tribal water rights settlements that include CAP entitlements have provisions to allow, at the discretion of the Tribe, the leasing of settlement water to other water users within Arizona. Some of this water is currently under lease and, therefore, unavailable and some is considered potentially available under the water supply acquisition program's planning assumptions. CAGRD also recognizes that CAP supplies will be impacted by future shortages on the Colorado River, which will have impacts on the potentially available supplies in this category. The low available estimates shown in **Table 4.3** acknowledge that future CAP supplies may be less than current supplies.

As identified in **Table 4.3**, CAGRD estimates the total volume of CAP water that may be available for acquisition over the next 20 years is between 205,400 and 410,900 acre-feet per year. To arrive at this estimate, CAGRD started by assuming that any CAP water not currently utilized as part of a long-term commitment may be currently available. This includes supplies not ordered from

5 *CAGRD recognizes that the future availability of CAP NIA water is highly uncertain. Development of future Colorado River operating guidelines may effectively eliminate this water post-2026. However, when available, CAP NIA water is well suited for CAGRD use because of its ability to be utilized intermittently.*

2018-2022; supplies currently being used to develop LTSCs; and supplies currently being used in short-term lease agreements or short-term Colorado River system conservation programs. Other minor adjustments were made to remove 1,200 acre-feet allocated to the Yavapai Apache Nation and 8,000 acre-feet allocated to the Sif Oidak District of the Tohono O'odham Nation (both are Tribal Homeland allocations). The low estimate is 50% of the high estimate.

The CAP water volume estimated to be available from 2045 to 2124 ranges from 144,700 to 289,500 acre-feet per year. The high potentially available volume assumes a 50% increase in utilization of Indian CAP supplies, increased utilization of municipal CAP supplies and includes NIA priority CAP water that has not been reallocated. The high volume was reduced by 50% to establish a low estimate that effectively assumes higher utilization rates of the Indian and Municipal CAP supplies and no availability of the unallocated NIA priority CAP water.

CAGRD recognizes the unique nature of Tribal water rights, whether decreed rights, rights pursuant to an approved settlement or contractual rights. CAGRD also recognizes the sovereignty of the Tribes holding those water rights. CAGRD fully acknowledges that any lease or other agreement related to Tribal water supplies must be approved by the respective Tribal government. Simply put, CAGRD cannot use Tribal water supplies without the express consent of the Tribe holding the rights to those supplies.

Wherever a transfer of CAP entitlements is not possible, but a subcontractor has an under- or unutilized CAP entitlement, CAGRD may pursue agreements to purchase LTSCs developed by recharge of those entitlements. Indian Tribes and the Arizona State Land Department are examples of entitlement holders with whom this might be a mutually beneficial opportunity.

4.6.4 Colorado River Supplies

CAGRD will pursue the acquisition or lease of Colorado River entitlements in the future. As illustrated in **Table 4.3**, CAGRD has identified between 99,700 and 199,500 acre-feet per year of Colorado River water (Priority 4 or higher) that could be available for use by CAGRD by means of transfer, lease or fallowing agreement in the next 100 years. These volumes assume that it may be possible to acquire the consumptive use portion of some individual contract holder entitlements in addition to fallowing/lease agreements with other entitlement holders. A consumptive use volume estimate was derived from Colorado River accounting reports from 2018-2022.

CAGRD assumed a maximum of 20% of the consumptive use[6] associated with all irrigated acreage could be potentially available. The low estimate is 50% of the high estimate. The CAWCD Board has established as one of the guiding principles of the water supply acquisition program that CAGRD will consider third-party impacts associated with any transfer, lease, or following agreement. This estimate includes a 20% maximum of consumptive use, which is intended to minimize the potential for third-party impacts. This estimate is limited to water currently used for irrigation. No on-river Priority 4 M&I entitlement water is included in the potentially available Colorado River supply estimate.

These planning-level numbers do not presume that water supplies associated with decreed Tribal rights included in the irrigated acreage will be available to CAGRD to meet future obligation. Instead, as is the case with Tribal CAP water supplies, the volumes included in **Table 4.3** reflect CAGRD's intention to engage Colorado River entitlement holders, both Tribal and non-Tribal, to reach mutually acceptable agreements regarding the future use of these supplies by CAGRD.

6 *The assumed limit on fallowing is consistent with technical guidance developed and utilized by the U.S. Bureau of Reclamation for approving water transfers in California: If the amount of water made available by fallowing exceeds 20% of the water that would have been applied absent the proposed water transfer, a public hearing by the water supply agency is required to limit potential negative third-party impacts.*

4.6.5 Imported Groundwater

Arizona law permits groundwater importation from three groundwater basins in the western portion of the state into the three counties that make up the CAP service area. These are the Harquahala, Butler Valley and McMullen Valley basins. Contracts for the importation of groundwater from the Harquahala basin have already been initiated. There are currently no plans for groundwater importation from the Butler Valley and McMullen Valley basins, but preliminary estimates of available groundwater have been published and are relied on for the volumes shown below and in **Table 4.3**.

CAGRD estimates that approximately 78,500 to 157,100 acre-feet per year (over 100 years) could be pumped from the three importation basins. These estimates do not include Harquahala groundwater that is already contracted for delivery to Queen Creek and Buckeye. The final volumes of groundwater approved for importation from all three basins is subject to the issuance of a final decision and order by ADWR.

4.6.6 New Verde River Supply

CAGRD is participating as a local cost-share partner on a feasibility study to assess the viability of raising Bartlett Dam on the Verde River. If constructed, the new dam would likely be in place by the mid-2030s. 21 local non-federal partners participating in the study have expressed an interest in acquiring an allocation of water from an expanded reservoir that could be created on the Verde River. The conservation space within Bartlett Lake would be increased by approximately 328,000 acre-feet. Because this new capacity is likely to fill with runoff only in wet years, modeling of the operation of the reservoir suggests an annual yield from the added capacity of approximately 94,000 acre-feet per year. The current recommended maximum yield allocation determined by the local cost-share partners is approximately 12,850 acre-feet, which is shown as the high estimate of potentially available supply from this source. The low estimate is zero because the project is not guaranteed to be constructed.

4.6.7 Future Desalination Projects

Another potential supply that will be considered by the CAGRD in the future is desalinated water. The cost of removing salts, disposing of waste products from desalination and transporting this water results in a potentially high-cost water supply. Therefore, it is a potential supply to be considered only after lower-cost opportunities are exhausted. Supplies could be sourced from a desalination project outside of Arizona and/or the Yuma area, where saline groundwater is currently pumped from shallow aquifers to prevent crop damage. CAGRD estimates that up to 100,000 acre-feet could be developed from these potential supply sources, based on a 2020 Black & Veach study[7] that found 100,000 to 200,000 acre-feet of potential plant capacity size for binational desalination opportunities.

The low volume of potentially available desalinated water is estimated to be 30% of the high estimate or 30,000 acre-feet. This volume is used as a reasonable planning estimate of a volume that might be pursued by CAGRD in the future, pending the development of desalination projects.

In 2022, the Arizona Legislature gave the Water Infrastructure Finance Authority (WIFA) additional authority and responsibilities. One of these is administering the Long-term Water Augmentation Fund, which is designed in part, to invest in projects to import new water supplies into Arizona. One potential large-scale infrastructure project that may be considered by WIFA is an investment in a seawater desalination plant that could provide additional water supplies to Arizona either via pipeline or exchange.

7 *Binational Study of Water Opportunities in the Sea of Cortez – Minute 323 Executive Summary. April 2020.*

Table 4.3
Potentially Available Water Supplies (2025-2124)

			20 Years		80 Years	
Supply Category	Supply Location	Total Current Volume (AF)	Potentially Available High (AF/yr)	Potentially Available Low (AF/yr)	Potentially Available High (AF/yr)	Potentially Available Low (AF/yr)
Long-Term Storage Credits	Phoenix AMA, Pinal AMA, Tucson AMA	140,000	49,700	14,200	49,700	14,200
Effluent	Phoenix AMA, Pinal AMA, Tucson AMA	407,700	116,400	38,800	116,400	38,800
Central Arizona Project	Phoenix AMA, Pinal AMA, Tucson AMA	1,275,000	410,900	205,400	289,500	144,700
Colorado River	Arizona Entitlements Excluding CAP Supplies	997,400	199,500	99,700	199,500	99,700
Imported Groundwater	Harquahala, Butler, McMullen Valleys	168,000	157,100	78,500	157,100	78,500
Desalinated Water	In-State, Binational Study	100,000	100,000	30,000	100,000	30,000
New Verde River Supply	Phoenix AMA	94,000	12,850	0	12,850	0
Total	**All**	**3,182,100**	**1,046,450**	**466,600**	**925,050**	**405,900**

4.7
SUPPLIES CAGRD PLANS TO USE TO MEET REPLENISHMENT OBLIGATION 2025–2044

Consistent with previous Plans of Operation, CAGRD interprets the term "plans to use" as including water resources that are currently available and likely to be used to meet CAGRD's replenishment obligation during the 20 years following the submittal of the 2025 Plan to ADWR. This includes those water supplies that are already within CAGRD's current water supply portfolio and water supplies that CAGRD could acquire. CAGRD intends to pursue the development of additional water supplies and, to the extent that willing-seller/willing-buyer agreements are negotiated with the holders of such water supplies, CAGRD plans to use these newly acquired supplies to assist in meeting its replenishment obligation over the next 20 years.

The water resources CAGRD plans to use during the period from 2025 through 2044 include: 1) CAGRD's existing entitlements to 77,141 acre-feet of annual, long-term water supplies (to the extent they are available in any given year), and 2) a mix of supplies from the inventory of available water supplies identified in **Table 4.3** as being available during the next 20 years. These supply acquisitions will occur according to need (firming existing supplies or meeting new obligations) and the principles identified for the water supply acquisition program in Section 4.5.1. Firming supplies could include LTSCs, CAP supplies less impacted by shortage, effluent, Colorado River supplies, imported groundwater, Verde River water, or water from future desalination projects.

Table 4.3 identifies ample long-term water supplies projected to be available over the next 20 years to meet CAGRD's likely needs for firming or new obligations.

5.0 Replenishment Reserve

The statutory provisions relating to the Replenishment Reserve are identified below.

A.R.S. § 45-576.02.C.2

…the plan shall include the following information for each active management area in which a member land or member service area is located:

A.R.S. § 45-576.02.C.2(e)

A description of the district's current replenishment reserve activities in each active management area for the ten years preceding the current plan and the planned replenishment reserve activities for the ensuing ten years to be undertaken pursuant to section 48-3772, subsection E.

Additional statutory language related to establishing and funding the Replenishment Reserve is included in Appendix C.

The Replenishment Reserve consists of Long-Term Storage Credits (LTSCs) that Central Arizona Groundwater Replenishment District (CAGRD) accrues in a Replenishment Reserve subaccount established for each Active Management Area (AMA) within which CAGRD operates. The purpose of the Replenishment Reserve is to help ensure CAGRD can meet its replenishment obligations and enhance rate stability, even during periods of water supply shortage or potential infrastructure failure. CAGRD will use LTSCs from the Replenishment Reserve to offset its replenishment obligations rather than seek to purchase spot-market water that may be more costly due to shortage or outage conditions.

5.1 REPLENISHMENT RESERVE TARGET

The volume of LTSCs to be accrued in the Replenishment Reserve is known as the "Reserve Target." A Reserve Target must be identified for each AMA based on that AMA's projected obligation and the water supplies planned to be used to meet that obligation as described in the Plan of Operation. The Reserve Target is re-calculated for each new Plan of Operation based upon the specifics of each Plan. The Reserve Target volume also must be maintained over time. If Replenishment Reserve credits are used to offset obligation, CAGRD must accrue replacement credits in order to maintain the full Reserve Target volume.

The Reserve Target for each AMA is equivalent to 20% of the difference between the total 100-year replenishment obligation for that AMA and the total volume of long- and intermediate-term water supplies planned to meet the obligation. The projected obligation for Category 2 Member Land (ML) golf courses and the obligation associated with Water Availability Status (WAS) membership

(i.e., the City of Scottsdale) are excluded from the total 100-year replenishment obligation. Water supplies with less than 20 years of availability are also excluded from the total volume of water supplies when determining the Reserve Target volume.

Expressed as a formula, the Reserve Target calculation can be summarized as follows:

Reserve Target = (Obligations – Supplies) * 20%

Where:

Obligations = CAGRD's total projected groundwater replenishment obligation over the next 100 years

Supplies = The sum of those water supplies identified in the Plan of Operation as water CAGRD plans to use to meet its replenishment obligations in the AMA (adjusted for availability)

CAGRD's projected 100-year groundwater replenishment obligations for each AMA are detailed in Chapter 3. The updated May 2024 replenishment obligation estimates are used in this chapter to calculate the Reserve Targets. Of the supplies identified in Chapter 4, some supplies can be attributed to a specific AMA while others are available to meet obligations in any AMA. One AMA-specific supply is the Central Arizona Project (CAP) Municipal & Industrial (M&I) subcontract water that CAGRD has acquired from certain water providers in the Phoenix AMA. As a condition of that acquisition, those supplies are to be used, to the extent needed, to offset obligation within the Phoenix AMA and are to be replenished as close as feasible to the service areas associated with the original allocations. In addition, effluent purchases and storage, as well as LTSC accruals and purchases, are specific to the AMA within which they occur, unless these credits are later recovered and moved to another AMA. Currently, due to the higher cost of recovering and moving the credits to another location, it is assumed that these credits remain within the AMA within which they are accrued. The remaining sources are assumed to be distributed among all three AMAs, as needed by CAGRD, to fulfill replenishment obligations.

Table 5.1 shows the projected 100-year replenishment obligation volume by AMA.

Table 5.1
Projected 100-Year Replenishment Obligation by AMA

	Phoenix AMA (AF)	Pinal AMA (AF)	Tucson AMA (AF)	Total (AF)
Projected 100-Year Replenishment Obligation Volume	5,978,198	358,682	1,112,172	7,449,052
Category 2 ML Obligation Volume[8]	22,865	0	2,692	25,557
Final Projected 100-Year Replenishment Obligation	5,955,333	358,682	1,109,480	7,423,495

8 *Excludes projected replenishment obligation for Category 2 MLs (golf courses).*

Table 5.2 shows the Reserve Target per AMA based upon the updated May 2024 projected 100-year replenishment obligation and water supplies planned to meet this obligation. Existing supplies that are AMA-specific are listed as such. Additional existing supplies that are available for use throughout the CAGRD service area will be used over time to meet replenishment obligations in the most cost-effective and efficient manner possible. In addition, future acquisitions of long-term water supplies (consistent with CAGRD's goal of obtaining 50% of its replenishment obligation with long-term water supplies) will be distributed throughout the CAGRD service area in a similar manner.

Table 5.2
Replenishment Reserve Target by AMA

Planned Water Supplies	Phoenix AMA (AF)	Pinal AMA (AF)	Tucson AMA (AF)	Total (AF)
CAP M&I Subcontract	642,600	0	0	642,600[9]
WMAT Lease	72,750	0	0	72,750[10]
CAP NIA Subcontract	545,500	0	0	545,500[11]
GRIC NIA Lease	109,110	0	0	109,110[12]
GRIC Recovery & Exchange (Indian Priority)	334,103	0	0	334,103[13]
Liberty Utilities (Effluent Lease)	276,000	0	0	276,000[14]
CAGRD LTSA Balances	464,303	0	157,197	621,500[15]
CAGRD LTSC (Under Contract)	22,500[16]	0	49,250[17]	71,750
CAGRD LTSC (Future Purchases)	375,000	0	125,000	500,000[18]
Totel 100-Year Water Supplies	2,841,866	0	331,447	3,173,313
Totel 100-Year Obligation	5,955,333	358,682	1,109,480	7,423,495
CAGRD Obligations Minus Supplies	3,113,467	358,682	778,033	4,250,182
Target (20%)	622,693	71,736	155,607	850,036

9 6,426 AF/yr available through 2124; assumes 100% reliability over 100 years.

10 2,500 AF/yr available in 2028; assumes 30% reliability over 97 years.

11 18,185 AF/yr available through 2124; assumes 30% reliability over 100 years.

12 18,185 AF/yr available through 2044; assumes 30% reliability over 20 years.

13 334,103 LTSCs available via GRIC Recovery (Pinal AMA) & Exchange (Phoenix AMA) through 2044; assumes 100% reliability over 20 years.

14 3,000 AF/yr available through 2116; assumes 100% reliability over 92 years.

15 CAGRD AMA Long-Term Storage Account (LTSA) balances certified by ADWR on 7/25/2023.

16 22,500 Phoenix AMA LTSCs purchased in 2023 and not included in 'CAGRD LTSA Balances.'

17 49,250 Tucson AMA LTSCs under contract with Metro Water (4,250 LTSCs through 2041) and City of Tucson (45,000 LTSCs through 2033) and not included in 'CAGRD LTSA Balances.'

18 5,000 LTSCs/yr in future transactions not under contract through 2124; assumes 100% reliability over 100 years.

The Reserve Targets identified in **Table 5.2** above shall remain in effect until CAGRD prepares its next Plan of Operation in 2035, unless a significant change occurs in either: 1) the projected replenishment obligations identified in Chapter 3 or, 2) the Water Supply Acquisition Plan identified in Chapter 4. Per A.R.S. § 48-3772 E.2, if CAGRD experiences or anticipates significant change in either or both conditions prior to preparation of the next Plan of Operation, the Reserve Targets may be adjusted upon approval from the Arizona Department of Water Resources (ADWR) Director.

5.2 10-YEAR REPLENISHMENT RESERVE ACTIVITIES

CAGRD has accrued a significant number of LTSCs in its Replenishment Reserve subaccounts. **Table 5.3** shows the number of credits accrued in each AMA over the past 10 years. These LTSCs were accrued through a combination of direct recharge, groundwater savings facilities and the purchase of pre-existing CAWCD credits.

Table 5.3
Replenishment Reserve Activity by AMA (Af)

AMA	2013 Year-End Balance	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Phoenix	130,914	11,659	12,684	12,073	12,408	0	34,666	14,970	21,012	13,849	10,245	11,061	285,541
Pinal	3,243	304	276	198	268	0	644	450	400	290	69	85	6,227
Tucson	29,489	1,784	1,271	1,290	783	19	3,092	1,880	1,276	1,046	916	970	43,816
Total	163,646	13,747	14,231	13,561	13,459	19	38,402	17,300	22,688	15,185	11,230	12,116	335,584

***Table 5.3** Note: Estimate based on 2024 CAGRD water order and projected purchase of CAWCD-dedicated credits in December 2024.*

5.3 PLANNED REPLENISHMENT RESERVE ACTIVITIES

The following sections describe water supplies CAGRD plans to use to meet the Reserve Targets for each AMA. In addition to the LTSCs CAGRD already has accrued in its Replenishment Reserve accounts, as summarized above in **Table 5.3**, a significant number of existing LTSCs held by the Central Arizona Water Conservation District (CAWCD) have been dedicated to the Replenishment Reserve. These existing credits and additional water supplies will be used as necessary to facilitate the most cost-effective establishment and maintenance of individual AMA-specific Reserve Targets.

5.3.1 Existing CAWCD Credits

On Jan. 5, 2023, the CAWCD Board reviewed a policy (See Appendix C-2) approved on Nov. 3, 2016, dedicating all unencumbered credits currently held by CAWCD for the exclusive use by CAGRD to meet its legal requirement to meet its replenishment obligation and/or establish and/or maintain the Replenishment Reserve. Additionally, the CAWCD Board policy is intended to avoid rate shock and reduce competition for water supplies between CAGRD and other water users within CAWCD's service area. These dedicated credits are located in the Phoenix and Pinal AMAs. The credits include those accrued by CAWCD in the early to mid-1990s using its own reserve funds, as well as those accrued by CAWCD in the mid-1990s using money from the State Water Storage Fund (commonly known as State Demonstration funds). **Table 5.4** summarizes the dedicated CAWCD credits available to CAGRD through calendar year 2024.

Table 5.4
Existing CAWCD Credits (AF) 2024 Year-End Estimate

Description	Phoenix AMA	Pinal AMA	Tucson AMA	Total
CAWCD LTSCs Dedicated to CAGRD Replenishment Reserve	177,523	311,232	0	488,755

The CAWCD Board policy requires CAGRD to pay CAWCD for credits in the calendar year in which the credits are transferred at the then-current Excess CAP water rate. Since Excess CAP water is not projected to be available during the duration of the 2025 Plan, CAGRD will pay CAWCD the same annual rate paid by CAP M&I subcontractors for water delivered, plus the current M&I capital charge.

Table 5.5 summarizes the total LTSCs available for the CAGRD Replenishment Reserve in each AMA, including existing CAGRD Replenishment Reserve credits and dedicated CAWCD credits.

Table 5.5

Summary of Available Replenishment Reserve Credits

2024 Year-End Estimate

AMA	Accrued Credits (AF)	Dedicated Credits (AF)	Total Available Credits (AF)
Phoenix AMA	285,541	177,523	463,064
Pinal AMA	6,227	311,232	317,459
Tucson AMA	43,816	0	43,816
Total	**335,584**	**488,755**	**824,339**

Table 5.6 presents a summary of the AMA Reserve Targets, dedicated CAWCD credits and existing CAGRD Replenishment Reserve credits and the balance of available credits by AMA.

Table 5.6

AMA Replenishment Reserve Targets and Available Credits Summary

AMA	Target (AF)	Available Credits (AF)	Balance (AF)
Phoenix AMA	622,693	463,064	(159,629)
Pinal AMA	71,736	317,459	245,723
Tucson AMA	155,607	43,816	(111,791)
Total	**850,036**	**824,339**	**(25,697)**

Sufficient water supplies are already available to CAGRD to meet most of the total Reserve Target through a combination of CAGRD's existing Replenishment Reserve subaccount balance(s) and dedicated CAWCD LTSCs. A significant volume of dedicated CAWCD credits in the Pinal AMA remain available and might be repositioned if needed and appropriate to help meet the Phoenix and Tucson AMAs Replenishment Reserve Targets. While the volume of potentially available credits is just shy of the total Reserve Target, it is important to remember that CAGRD must achieve the Reserve Target and maintain the Target amount within each AMA.

If CAGRD deems it appropriate to move some of the Pinal credits in the future, repositioning may be accomplished either by recovering these credits from the Pinal AMA and replenishing them in the other AMAs or by implementing one or more exchange agreements.

The CAWCD-dedicated credits effectively provide an "insurance policy" that will ensure CAGRD is in a position to satisfactorily meet each AMAs Reserve Target regardless of future water supply conditions within the three-county service area.

6.0 Storage Facilities Planned for Use

The statutory obligations relating to storage facilities and projects for the CAGRD Plan of Operation are identified below.

A.R.S. § 45-576.02.C.2

…the plan shall include the following information for each active management area in which a member land or member service area is located:

A.R.S. § 45-576.02.C.2(e)

A description of any facilities and projects to be used for replenishment and the replenishment capacity available to the conservation district during the twenty calendar years following submission of the plan.

A.R.S. § 45-576.02.C.2(f)

An analysis of potential storage facilities that may be used by the conservation district for replenishment purposes.

A.R.S. § 45-576.03.N.3

The Director shall make a determination that the conservation district's plan is consistent with achieving the management goal for each active management area if all of the following have been demonstrated …The conservation district has identified sufficient capacity at storage facilities and projects to be used for replenishment purposes during the twenty calendar years following the submission of the plan.

This chapter addresses these required elements by describing existing storage facilities and comparing the operational capacity of storage facilities to the replenishment capacity available to Central Arizona Groundwater Replenishment District (CAGRD). Tables are provided summarizing available Active Management Area (AMA) storage capacity (**Table 6.1**) and identifying details of the storage facility inventory (Appendix D; **Table D-1**). While this section identifies current storage locations CAGRD has access to and applicable permits for, nothing precludes CAGRD and the Central Arizona Water Conservation District (CAWCD) from developing additional storage if circumstances warrant.

6.1 DESCRIPTION OF STORAGE FACILITIES AVAILABLE TO CAGRD

CAGRD is required to demonstrate in its Plan of Operation that sufficient capacity is available at storage facilities to meet CAGRD's projected replenishment obligation. Existing statutes require CAGRD to replenish within the AMA in which obligations are incurred. As described above, CAGRD replenishes as close to member pumping as feasible through statute and policy. CAGRD has access to significant underground storage capacity at Underground Storage Facilities (USFs) constructed by CAWCD and several Groundwater Storage Facilities (GSFs).

6.1.1 Underground Storage Facilities Constructed by CAWCD

Per CAWCD Board Policy (see **Appendix D**), CAGRD has priority access to facilities owned and operated by CAWCD, second only to entities with contractual rights to storage facilities. The CAWCD USF facilities in the Phoenix AMA include Agua Fria Managed and Constructed Projects, Hieroglyphic Mountains Recharge Project, Superstition Mountains Recharge Project and Tonopah Desert Recharge Project. This represents 258,000 acre-feet of storage space per year according to CAWCD's permitted allotment. In the Tucson AMA, 73,500 acre-feet are allotted between the Pima Mine Road and Lower Santa Cruz Replenishment Projects. More than half of the Pima Mine Road storage is for use by the City of Tucson and a small portion of storage at Lower Santa Cruz is reserved for system reliability.

6.1.2 Groundwater Savings Facilities

In addition to the USFs directly owned and operated by CAWCD, CAGRD has existing agreements with numerous GSF operators in each of the AMAs. CAGRD's access to capacity within these GSFs is subject to greater uncertainty and variability than for USFs owned by CAWCD. However, CAGRD's GSF partners have provided significant replenishment capacity in the past. GSF operators are likely to have a strong interest in continued partnership with CAGRD. The GSFs available to CAGRD are detailed in **Table D-1** and illustrated in **Figure D-1** (**Appendix D**).

In the Phoenix AMA, there are four GSFs listed in **Table D-1**: Tonopah Irrigation District, Queen Creek Irrigation District, New Magma Irrigation and Drainage District and Maricopa County Municipal Water Conservation District No. 1. These Districts have a total of approximately 70,800 acre-feet of annual storage capacity potentially available to CAGRD.

In the Pinal AMA, two GSFs are identified: Maricopa Stanfield Irrigation and Drainage District and the Central Arizona Irrigation and Drainage District. These Districts have a total of approximately 221,200 acre-feet of annual storage capacity potentially available to CAGRD.

Finally, in the Tucson AMA, the Kai Farms (Red Rock) GSF has slightly more than 11,000 acre-feet of annual storage capacity, with only a small portion of that capacity available to CAGRD.

The volume of GSF capacity identified in **Table D-1** as potentially available to CAGRD was determined by subtracting the average storage over the last six years by non-CAGRD GSF partners from the permitted capacity of the GSF. The analysis of available capacity is limited to the facilities that have a current CAGRD storage permit.

6.1.3 Project Specific Storage Capacity

Since the 2015 Plan of Operation, CAGRD has entered into two agreements that provide a water supply and include arrangements for storage space at a USF.

The 2014 agreement with Liberty Utilities provided CAGRD with an annual entitlement of 2,400 acre-feet, a right of first refusal on additional excess effluent, and 2,400 acre-feet of annual storage capacity.

A 2019 series of agreements with the Gila River Indian Community (GRIC) provides for up to 18,185 acre-feet of storage at the MAR-5 USF and/or potential future tribal storage locations along with the lease of Non-Indian Agricultural (NIA) water from the Tribe.

6.2 SUMMARY OF AVAILABLE CAPACITY RELATIVE TO PROJECTED OBLIGATION

Table D-1 provides specific information on individual storage permits and facilities. A summary of the information is provided below. As indicated, CAGRD has more than sufficient capacity to replenish obligations over the next 20 years in each AMA.

Table 6.1
Available AMA Storage Capacity

		2025	2030	2035	2040	2044
Phoenix AMA	Capacity Available	336,901	336,901	336,901	336,901	336,901
	CAGRD Obligation	35,400	44,700	49,100	53,600	53,700
	Excess Capacity	301,501	292,201	287,801	283,301	283,201
Pinal AMA	Capacity Available	221,214	221,214	221,214	221,214	221,214
	CAGRD Obligation	500	1,800	4,200	3,700	4,400
	Excess Capacity	220,714	219,414	217,014	217,514	216,814
Tucson AMA	Capacity Available	55,138	55,138	55,138	55,138	55,138
	CAGRD Obligation	3,500	6,700	8,700	9,500	9,900
	Excess Capacity	51,638	48,438	46,438	45,638	45,238

6.3 POTENTIAL STORAGE FACILITIES

The above analysis of storage capacity available to CAGRD identifies more than sufficient USF and GSF storage to fully meet CAGRD's replenishment obligations. However, there may be circumstances where facilities not identified above may be used to meet CAGRD replenishment objectives. These circumstances would include facilities or partnerships that reduce the cost of replenishment to CAGRD. In addition, CAGRD may construct facilities or pursue partnerships that facilitate replenishment nearer the area of hydrologic impact of groundwater withdrawals. CAGRD will continuously evaluate additional facilities that may reduce costs to its members and meet broader water resource goals.

7.0 Financial Capability

The statutory requirements for Central Arizona Groundwater Replenishment District's (CAGRD's) capability to meet current and projected replenishment obligation are identified below.

A.R.S. § 45-576.02.C.2

…the plan shall include the following information for each active management area in which a member land or member service area is located:

A.R.S. § 45-576.02.C.2(g)

A description of the conservation district's capability to meet the current and projected groundwater replenishment obligations for the twenty years following the calendar year in which the conservation district submits the plan.

Statutes require that all CAGRD operations be funded completely by its members. CAGRD has several revenue sources available to fulfill its obligations, including fees, rates and dues. Each revenue source contributes to one or more of the four reserve funds detailed below.

Reserve Funds

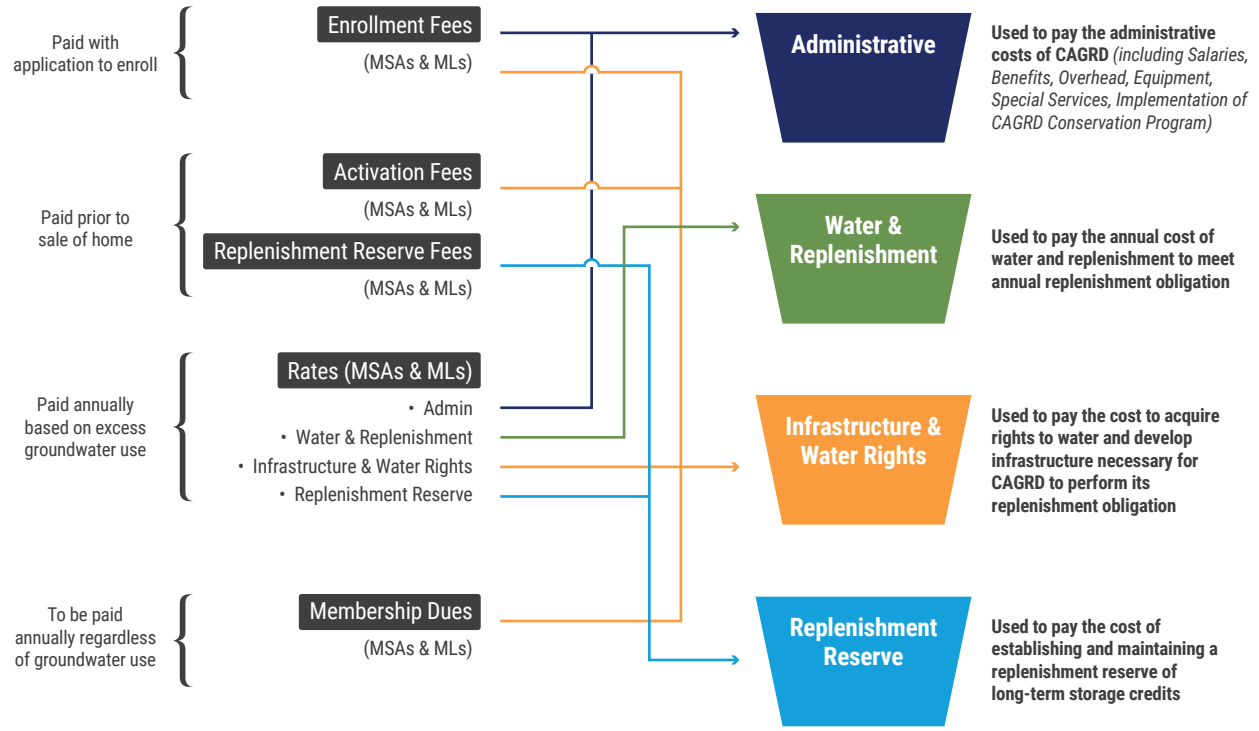
- **Administrative funds** are used to pay CAGRD's administrative costs (including salaries, benefits, overhead, equipment, special services, and conservation program implementation).
- **Water and replenishment (W&R) funds** are used to pay the annual cost of delivering and replenishing water to meet annual replenishment obligations.
- **Infrastructure & Water Rights (I&WR) funds** are used to pay the cost of acquiring rights to water and develop the infrastructure necessary for CAGRD to perform its replenishment obligations.
- **Replenishment Reserve funds** are used to pay the cost of establishing and maintaining a reserve of Long-Term Storage Credits (LTSCs).

The Central Arizona Water Conservation District (CAWCD) Board has adopted policies for establishing its fees, rates and dues no less frequently than every two years, providing CAGRD with flexibility as economic and operational conditions change. These financial mechanisms have ensured CAGRD's ability to meet its statutory obligations using funds collected exclusively from its members and will continue to do so in the future.

7.1 SOURCES & USES OF REVENUE

CAGRD collects various fees, rates, and dues from its membership. Each revenue source, and the fund it contributes to, is presented in **Figure 7.1** and described further below.

Figure 7.1
CAGRD Revenue Streams



7.1.1 Fees

CAGRD collects three different fees from its members: Enrollment, Activation and Replenishment Reserve.

The **Enrollment Fee** is a one-time fee based on the number of housing units in each Member Land (ML) and is paid when an applicant, usually the developer, applies for enrollment. Member Service Areas (MSAs) pay a flat enrollment fee for their entire service area upon enrollment. In 2004, the CAWCD Board adopted the "CAGRD Enrollment Fee and Activation Fee Policy," describing how the Enrollment Fee is established (**Appendix E**). Initially, Enrollment Fees were dedicated solely to the Infrastructure & Water Rights (I&WR) fund. In response to a CAGRD cost-of-service study recommendation, the policy was amended in November 2015 to use a portion of Enrollment Fees to cover the administrative costs of enrollment-related activities and I&WR uses. A special Enrollment Fee for commercial subdivisions was also established in the policy update, creating payment equity between residential and non-residential properties.

The **Activation Fee** is a one-time fee and must be paid for all subdivisions within CAGRD MLs and MSAs before the Arizona Department of Real Estate will issue a public report allowing the sale of parcels within the subdivision. The CAGRD Enrollment Fee and Activation Fee Policy (**Appendix E**) describes how the Activation Fee is established. Revenues generated by the Activation Fee are to be used for purchasing water rights and developing infrastructure necessary for CAGRD to meet its replenishment obligation.

The **Replenishment Reserve Fee** is a one-time fee that CAGRD levies against Category 1 (non-golf course) MLs and against MSAs. It is paid at the same time as the Activation Fee. Revenues generated from the Replenishment Reserve Fee are used to purchase LTSCs to establish and maintain the Replenishment Reserve in the Active Management Area where the fee was levied. The Replenishment Reserve Fee is based on the cost of water or the LTSCs that are anticipated to be used for the reserve.

7.1.2 Rates

The CAWCD Board is required by law to establish and levy an annual replenishment assessment against MLs and an annual replenishment tax against MSAs. This replenishment assessment/tax must be levied on or before the third Monday in August of each year and must be levied separately for each AMA in an amount sufficient to cover the costs and expenses of replenishing groundwater for CAGRD members. The assessment must be levied at a per-acre-foot rate. On March 7, 2024, the CAWCD Board adopted the current "CAGRD Assessment Rate Setting Policy," which describes the methods and schedule for establishing annual rates. A copy of this policy is included in **Appendix E**.

Under the CAGRD Assessment Rate Setting Policy, CAGRD establishes four separate rate components, briefly described below. The policy more fully describes each component.

The **Water and Replenishment Rate Component** is established at the rate anticipated to fulfill the obligation for each AMA.

The **Administrative Rate Component** is established based on annual CAGRD administrative costs (excluding any administrative costs specific to infrastructure and water rights). The rate is calculated based on estimated costs -- net of the amount expected to be collected through enrollment fees -- and is spread over the projected obligation.

The **Infrastructure and Water Rights Rate Component** is based on the costs to develop infrastructure and secure water supply rights needed to meet each AMA's replenishment obligation, including applicable administrative costs. In practice, certain costs, such as most water supply costs, are pooled, and the rate components for the AMAs may be similar or even identical unless there are separate costs associated with specific AMAs (e.g., infrastructure).

The **Replenishment Reserve Rate Component** is calculated separately for each AMA based on CAGRD's statutory requirement to establish and maintain a Replenishment Reserve of LTSCs for each AMA. By law, this component cannot be levied against Category 2 MLs (golf courses) or Water Availability Status (WAS) Members. In addition, statutes limit the length of time that this component may be collected from each member based on that member's enrollment date, (A.R.S. §§ 48-3774.01 and 48-3780.01). For members who enrolled in CAGRD on or after Jan. 1, 2004, CAGRD may only levy this charge for 23 years. For members that enrolled prior to Jan. 1, 2004, and did not pay a Replenishment Reserve Fee as described in Section 7.1.1, this charge may be assessed for 25 years. If LTSCs in the Replenishment Reserve are used to satisfy replenishment obligations for any AMA, CAGRD is required to collect a Replenishment Reserve Replacement rate component from the members of the AMA for which the credits were used. (A.R.S. § 48-3772.E.7).

7.1.3 Dues

In 2010, legislation allowing CAGRD to collect Annual Membership Dues (AMDs) was passed. The dues are collected annually from all enrolled members, regardless of a replenishment obligation, and can be used to pledge toward bonding as they are a dependable revenue stream regardless of obligation levels. The use of AMDs is dedicated exclusively to the I&WR fund. Statute details a specific relationship between the amounts collected as Membership Dues and the other amounts (Enrollment Fees, Activation Fees and I&WR rate component) that are dedicated to the I&WR fund and how the total amount collected in each year is to be split between MLs and MSAs. Recently, AMDs have been collected at the maximum allowable rate.

7.2 COLLECTION OF REPLENISHMENT ASSESSMENTS AND TAXES

The collection of CAGRD's annual assessments and taxes is a year-long process. Municipal water providers that serve MLs and MSAs must submit annual reports to CAGRD By March 31 each year. The reports indicate the volume of excess groundwater delivered to each ML parcel and each MSA during the previous calendar year. Once all municipal provider reports for an entire AMA have been received, CAGRD determines its total replenishment obligation for that AMA and calculates the total projected replenishment obligation cost. The total cost is prorated among all CAGRD members in the AMA based on the volume of excess groundwater used by each member and is the basis for establishing the Water and Replenishment Rate Component described in Section 7.1.2.

Once the Central Arizona Water Conservation District (CAWCD) Board establishes rates each year, as described above, reports are prepared and sent to the counties in which MLs are located (Maricopa, Pinal and Pima). The reports identify the amount levied against each ML parcel in the respective county. The counties add the assessments to each parcel's property tax bill and collect them along with the property taxes. Counties transfer collected assessments to CAGRD for use in meeting its replenishment obligation.

Collection of replenishment taxes from MSAs occurs through direct invoicing. Once CAGRD rates are established, an invoice is sent to each municipal provider that serves a CAGRD MSA. The municipal provider is legally required to pay the replenishment tax directly to CAGRD by Oct. 15 of each year.

7.2.1 Contract Replenishment Taxes

The process for assessing and collecting Contract Replenishment Taxes differs from other CAGRD taxes. Contract replenishment is performed for a specific MSA under a special contract. The contract terms can provide for the use of specific water supplies and/or replenishment facilities to satisfy contract replenishment obligations. Therefore, all costs associated with contract replenishment are borne by the MSA water provider that executes the contract. Collection of contract replenishment taxes occurs through direct invoicing by CAGRD.

7.3 CAGRD REVENUE BONDING

In 2010, legislation was passed that granted CAGRD authority to issue revenue bonds to develop infrastructure and acquire water rights necessary to perform its replenishment obligation (A.R.S. §48-3772.B.13). Only AMDs may be pledged to repay such bonds.

CAGRD issued $20 million of revenue bonds on July 24, 2019, to fund the final portion of a $95 million purchase of LTSCs. The final payment to satisfy these bonds is due Jan. 1, 2025.

7.4 CAGRD'S FINANCIAL CAPABILITY

As described above, CAGRD has several revenue sources to fulfill its obligations. CAWCD's Board has adopted policies for establishing its fees, rates and dues no less frequently than every two years. CAGRD maintains reserve funds for each revenue source. Various revenue sources may be used for "pay as you go" purposes, reserved for periodic expenditures or, in the case of Infrastructure and Water Rights revenues, pledged toward revenue bonding. Accordingly, CAGRD has great financial flexibility as economic and operational conditions change. The variety of mechanisms in place will ensure that CAGRD will always be able to meet its statutory obligations using funds collected exclusively from its members.

Appendix A
List of Abbreviations

ABBREVIATION	DESCRIPTION
AAWS	Assured and Adequate Water Supply
ADAWS	Alternative Pathway to Designation of Assured Water Supply
ADWR	Arizona Department of Water Resources
AMA	Active Management Area
AMD	Annual Membership Dues
A.R.S.	Arizona Revised Statutes
AWBA	Arizona Water Banking Authority
CAP	Central Arizona Project
CAGRD	Central Arizona Groundwater Replenishment District
CAWCD	Central Arizona Water Conservation District
CAWS	Certificate of Assured Water Supply
DAWS	Designation of Assured Water Supply
GMA	Groundwater Management Act
GRIC	Gila River Indian Community
GSF	Groundwater Savings Facility
GWAICC	Governor's Water Augmentation Innovation & Conservation Council
LTSCs	Long-term Storage Credits
MeLO	Member Land Obligation Model
M&I	Municipal and Industrial
ML	Member Land
MSA	Member Service Area
NIA	Non-Indian Agricultural CAP priority water
Reclamation	U.S. Bureau of Reclamation
SEAP	Sustainable Effluent Aquifer Project
USF	Underground Storage Facility
WAS	Water Availability Status
WIFA	Water Infrastructure Financing Authority

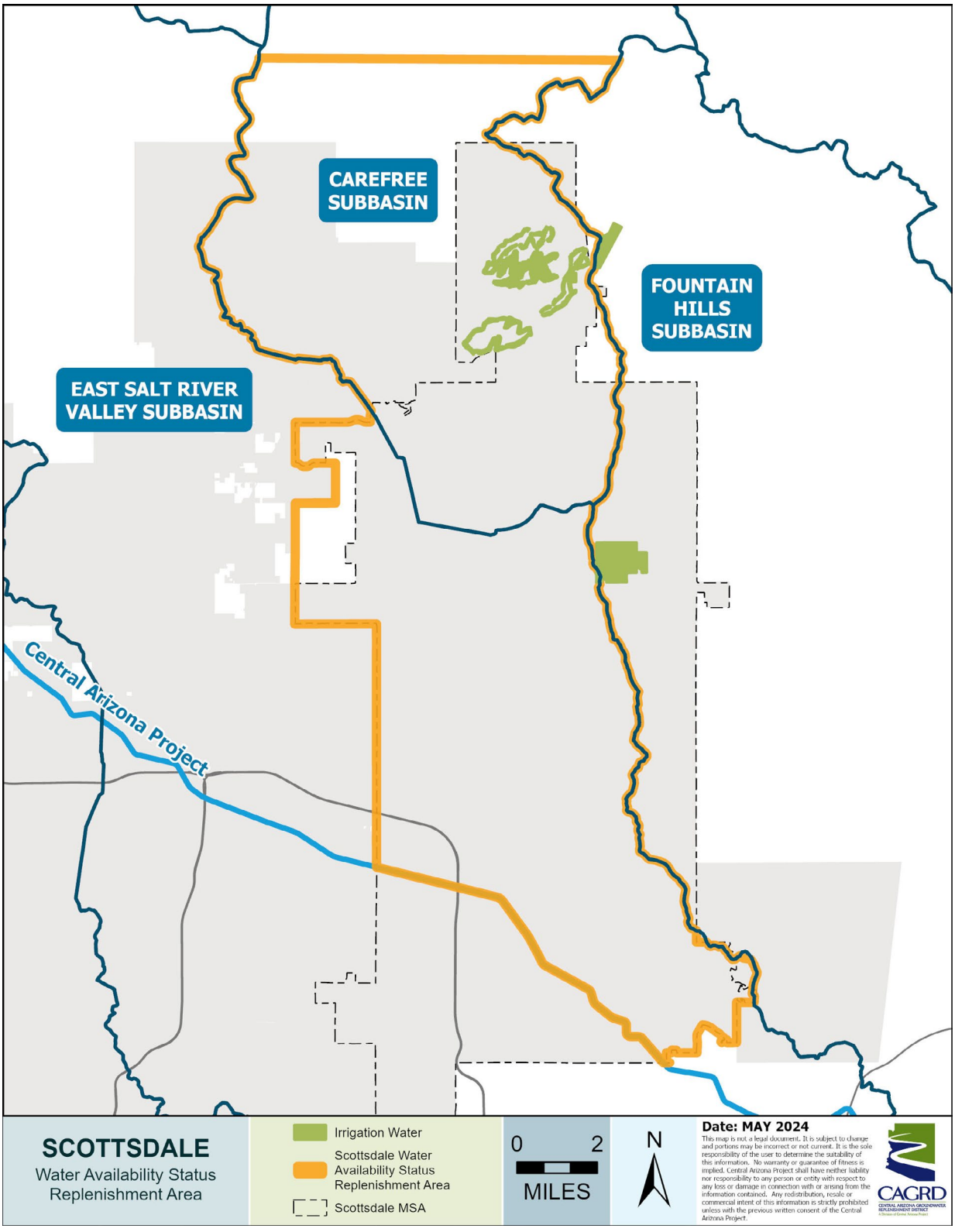
Appendix B – Chapter 2 Historic Operations

Table B-1

Water Delivered to Scottsdale by CAWCD under WAS Contract

Report Year	Annual Volume
2014	509
2015	457
2016	1,281
2017	1,100
2018	1,066
2019	1,001
2020	850
2021	0
2022	0
2023	0

Figure B-1
Scottsdale WAS Replenishment Area



Conservation District Annual Reports 2014 through 2023

Can be found at:

https://cagrd.com/operations/cagrd-reports-and-information/

Appendix C – Chapter 5 Replenishment Reserve

C-1

The district shall establish and maintain a replenishment reserve as follows:

1. The district shall calculate a reserve target for each of the three active management areas within the district and shall identify the reserve target in the plan of operation prepared pursuant to section 45-576.02. The reserve target for each active management area shall be calculated as follows:

    a. For each active management area, add together the projected replenishment obligation for each of the one hundred years following submission of the plan of operation. For the purposes of this subdivision, each active management area's projected replenishment obligation does not include replenishment obligations under resolutions adopted pursuant to subsection B, paragraph 10 of this section or replenishment obligations for category 2 member lands.

    b. Subtract from the sum of the active management area's projected replenishment obligation over the one hundred-year period the sum of the following volumes of water derived from sources identified in the plan as water that the district plans to use to meet its replenishment obligations for that active management area:

        i. The annual volume of each nondeclining, long-term municipal and industrial subcontract for central Arizona project water multiplied by one hundred.

        ii. The annual volume of water under leases or contracts that can be made physically and legally available to the district consistent with the rules adopted pursuant to section 45-576, subsection H, multiplied by the number of years, not to exceed one hundred, in which the water is to be made available to the district. The water need not be continuously available to be included in this item. A lease or contract shall not be considered under this item if the water to be made available under the lease or contract is for a term of less than twenty years.

        iii. The total volume of groundwater that the district plans to transport to the active management area during the next one hundred years as allowed by title 45, chapter 2, article 8.1.

        iv. The total volume of all sources of water not identified in items (i), (ii) or (iii) of this subdivision that will not be held by the district under a lease or contract. Volumes to be included under this item must be consistent with the rules adopted by the director pursuant to section 45-576, subsection H.

    c. Multiply the result from subdivision (b) of this paragraph by twenty percent. The result is the reserve target for the active management area.

2. The reserve target for an active management area may be adjusted by the district, subject to the approval of the director of water resources, based on changes in either of the following:
    a. The active management area's projected replenishment obligation.
    b. The volumes of water identified in the plan of operation prepared pursuant to section 45-576.02 as water that the district plans to use to meet its replenishment obligations for that active management area.
3. The district shall include a replenishment reserve charge in the annual replenishment assessment levied against all parcels of category 1 member land as provided in section 48-3774.01 and in the annual replenishment tax levied against all municipal providers that have member service areas as provided in section 48-3780.01. The replenishment reserve charge for each active management area is established annually by the district based on the reserve target for that active management area.
4. The district shall levy a replenishment reserve fee against category 1 member lands pursuant to section 48-3774.01 and against member service areas pursuant to section 48-3780.01. For category 1 member lands the fee is equal to twice the applicable replenishment reserve charge multiplied by the total projected average annual replenishment obligation for the member lands as reported by the director of water resources pursuant to section 45-578, subsection F. For member service areas the fee is equal to twice the applicable replenishment reserve charge multiplied by the excess groundwater increment. With the approval of the district and the director of water resources, long-term storage credits as defined in section 45-802.01 may be assigned to the district's replenishment reserve subaccount in lieu of paying the replenishment reserve fee.
5. The district shall use replenishment reserve charges and replenishment reserve fees collected within each active management area together with all interest earned on the charges and fees to store water in that active management area in advance of groundwater replenishment obligations for the purpose of developing long-term storage credits as defined in section 45-802.01 that shall be credited to the replenishment reserve subaccount for that active management area as provided in section 45-859.01.
6. Beginning on Jan. 1, 2030 or earlier, on approval of the director of water resources pursuant to section 45-859.01, subsection K, the district may transfer credits from a replenishment reserve subaccount to a conservation district account as provided in section 45-859.01 to satisfy its groundwater replenishment obligations.
7. If the district transfers credits from the replenishment reserve subaccount for an active management area pursuant to section 45-859.01, subsection E, the district shall include in the annual replenishment assessment levied against all parcels of category 1 member land in that active management area and, except as provided in section 48-3780.01, subsection B, in the annual replenishment tax levied against all municipal providers that have member service areas in that active management area a reserve replacement component to fund the replacement of the transferred credits. The district shall use all monies from the reserve replacement component collected within an active management area together with all interest earned on the monies to develop long-term storage credits as defined in section 45-802.01 within that active management area to be credited to the replenishment reserve subaccount for that active management area as provided in section 45-859.01.
8. For the purposes of establishing and maintaining the replenishment reserve, the district shall have access to excess central Arizona project water equivalent to but not more than the access the Arizona water banking authority has for the purposes specified in section 45-2401, subsection H, paragraph 2.

C-2 Board Policy

Approved by the CAWCD Board – Oct. 6, 2005

Reviewed by the CAWCD Board – Nov. 3, 2016

Reviewed by the CAWCD Board – Jan. 5, 2023

POLICY REGARDING THE DEDICATION OF CAWCD'S EXISTING UNDERGROUND STORAGE CREDITS TO CAGRD FOR USE IN ESTABLISHING THE REPLENISHMENT RESERVE

BACKGROUND

Between 1992 and 1996, CAWCD accrued approximately 600,000 AF of long-term storage credits (LTSCs or credits) in the Phoenix, Pinal and Tucson Active Management Areas (AMAs). The majority of these credits were accrued using CAWCD reserve funds, while other credits were accrued using State Water Storage (or State Demonstration) funds. Legislation adopted in 2005 requires that the credits accrued through use of the State Demonstration funds be used for the benefit of CAGRD members in the AMA in which they were accrued.

The CAWCD Board of Directors recognizes that use of these existing LTSCs for CAGRD purposes may reduce the potential for competition over future water supplies between CAGRD and other water users within the CAWCD service area. Therefore, this policy dedicates all unencumbered LTSCs currently held by CAWCD to CAGRD for purposes of meeting replenishment obligation and/or accruing the CAGRD Replenishment Reserve. The credits dedicated under this policy include those accrued by CAWCD using its own reserve funds, as well as those credits accrued using State Demonstration funds.

POLICY

1. All unencumbered long-term storage credits currently held by CAWCD in the Phoenix, Pinal and Tucson Active Management Areas (AMAs) are dedicated for exclusive use by the CAGRD to meet its legal requirement to meet replenishment obligation and/or to establish and/or maintain a Replenishment Reserve of long-term storage credits in the Phoenix, Pinal and Tucson AMAs. The credits dedicated under this policy consist of:
    a. The long-term storage credits accrued through storage at groundwater savings facilities (or indirect recharge projects) by CAWCD using its own funds, and
    b. The long-term storage credits accrued by CAWCD from 1994 through 1996 using State Water Storage funds collected in Maricopa County. These credits will be used to meet replenishment obligation and/or to help establish and/or maintain the replenishment reserve in the Phoenix AMA only.
2. CAGRD will pay CAWCD for credits dedicated under this policy in the year in which the credits are requested by CAGRD and transferred to the CAGRD long-term storage account administered by the Arizona Department of Water Resources. The rate shall be the same as the rate for Excess CAP water that CAGRD could otherwise purchase to accrue long-term storage credits in the year of the transfer. If the transfer takes place in a year in which no Excess CAP water is available for accrual of long-term storage credits, then the rate shall be the same as the rate paid by CAP M&I subcontractors for water deliveries plus the M&I capital charge.
3. This policy supersedes and replaces the credit dedication policy adopted by the Board of Directors on Oct. 6, 2005.

Appendix D – Chapter 6 Storage Facilities Planned for Use

Figure D-1
Storage Facilities Available for Use by CAGRD

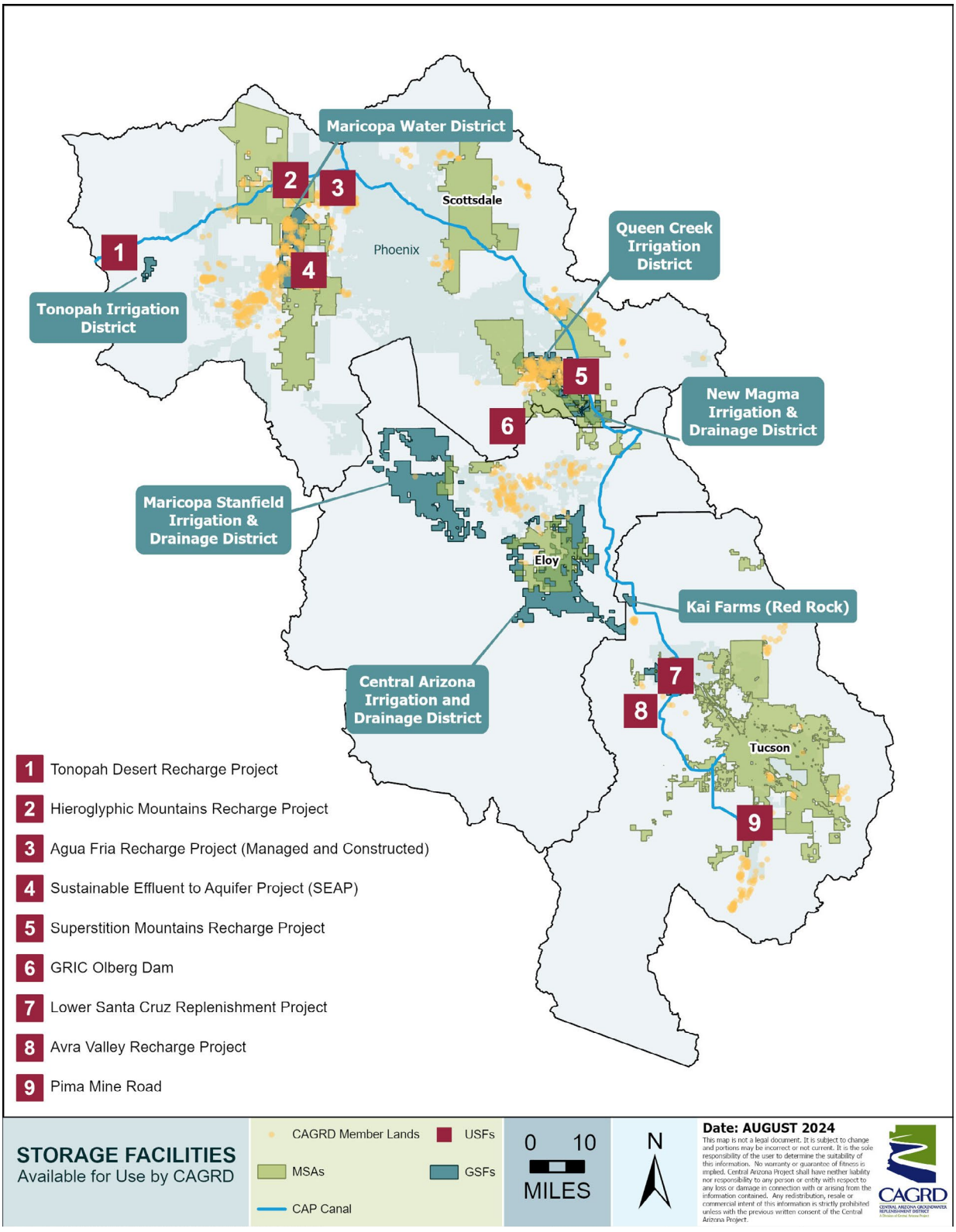


Table D-1

Inventory of Storage Capacity Available for Use by CAGRD at Selected Recharge Facilities

			Capacity (AF/YR)	Potential Capacity[2]				
	CAWCD Storage Permit	Recharge Facility	Permitted[1]	2025	2030	2035	2040	2045
	Phoenix AMA							
USF	73-207702.0002	CAWCD Superstition Mountains Recharge Project	25,000	25,000	25,000	25,000	25,000	25,000
USF	73-224000.0201	Sustainable Effluent to Aquifer Project (SEAP)	4,000	2,400	2,400	2,400	2,400	2,400
USF	73-227650.0500	GRIC Olberg Dam Full scale	20,000	18,185	18,185	18,185	18,185	18,185
USF	73-569775.0102	CAWCD Agua Fria Managed[3]	24,000	20,400	20,400	20,400	20,400	20,400
USF	73-569776.0102	CAWCD Agua Fria Constructed USF[3]	24,000	20,400	20,400	20,400	20,400	20,400
USF	73-584466.0101	CAWCD Hieroglyphics Mountains Recharge Project[3]	35,000	29,750	29,750	29,750	29,750	29,750
USF	73-593305.0001	CAWCD Tonopah Desert Recharge Project[4]	150,000	150,000	150,000	150,000	150,000	150,000
GSF	73-534439.0001	Tonopah Irrigation District	17,059	13,116	13,116	13,116	13,116	13,116
GSF	73-534550.0400	Queen Creek Irrigation District	N/A	16,789	16,789	16,789	16,789	16,789
GSF	73-534888.0101	New Magma Irrigation and Drainage District	68,900	17,895	17,895	17,895	17,895	17,895
GSF	73-558246.0800	Maricopa Water District	40,000	22,966	22,966	22,966	22,966	22,966
	Phoenix AMA Subtotal		**407,959**	**336,901**	**336,901**	**336,901**	**336,901**	**336,901**
	Pinal AMA							
GSF	73-531381.0300	Maricopa-Stanfield Irrigation & Drainage District	168,114	140,338	140,338	140,338	140,338	140,338
GSF	73-531382.0001	Central Arizona Irrigation and Drainage District	110,000	80,876	80,876	80,876	80,876	80,876
	Pinal AMA Subtotal		**278,114**	**221,214**	**221,214**	**221,214**	**221,214**	**221,214**
	Tucson AMA							
USF	73-561366.0001	Lower Santa Cruz Replenishment Project[5]	50,000	39,700	39,700	39,700	39,700	39,700
USF	73-564896.0001	Avra Valley Recharge Project (Full Scale)[6]	11,000	5,474	5,474	5,474	5,474	5,474
USF	73-577501.0101	Pima Mine Road Full Scale USF[7]	23,500	5,750	5,750	5,750	5,750	5,750
GSF	73-558092.0201	Kai Farms Red Rock	11,401	4,214	4,214	4,214	4,214	4,214
	Tucson AMA Subtotal		**95,901**	**55,138**	**55,138**	**55,138**	**55,138**	**55,138**

1 *Permitted capacity represents the maximum annual volume allowable by ADWR.*

2 *Storage capacity for CAWCD USF facilities determined to be all available storage after contractual obligations were met; Storage capacity for GSFs was determined by subtracting the average storage over the last six years by non-CAGRD GSF partners from the operational capacity and coordination with the GSF operators.*

3 *City of Peoria owns 15% of storage capacity.*

4 *While CAGRD is not actively storing at this facility due to recovery challenges, it could still potentially store here.*

5 *Approximately 2,300 AF/yr of operational storage capacity (42,000 AF) reserved as system reliability for Northwest Providers.*

6 *Owned by Metropolitan Domestic Water Improvement District (MDWID); Available storage capacity for CAGRD provided per MDWID staff.*

7 *City of Tucson owns 50% of annual storage capacity; 6,000 AF/yr of remaining storage capacity reserved for Tucson's system reliability.*

Board Policy

Approved by the CAWCD Board – May 2, 2013

Reviewed by the CAWCD Board – Jan. 5, 2023

CAWCD UNDERGROUND STORAGE FACILITY CAPACITY PRIORITY POLICY

CAWCD currently owns and operates six underground storage facilities (USFs) with a total annual operational capacity of approximately 300,000 acre-feet. Requests by various entities for approval of water storage agreements at CAWCD underground storage facilities continue to accumulate. Entities currently ordering CAP water for delivery and recharge at CAWCD USFs include the CAGRD, AWBA, municipal and private water providers, industrial users, water investment firms and Indian tribes. Water storage agreements do not guarantee water delivery or storage capacity. Although CAWCD has historically met nearly all customer requests for underground storage, the lack of a formal policy for prioritization of storage capacity has led to concerns about competing demands and the potential for insufficient storage at one or more of the USF sites.

CAWCD has statutory obligations to support the efforts of the Central Arizona Groundwater Replenishment District (CAGRD) and the Arizona Water Banking Authority (AWBA) to store and replenish water for the public benefit. CAWCD also has entered into contractual agreements with specific partners at different recharge locations and has made commitments to store water for system reliability purposes. CAWCD also desires to support the water management objectives of its CAP subcontractors. This policy provides priorities and guidelines to support these objectives. This policy does not prioritize access to CAP water, it relates only to prioritization of capacity in CAWCD USFs.

POLICY OBJECTIVE

The objective of this policy is to convey a clear method for scheduling recharge capacity at CAWCD USFs. This policy describes scheduling practices already in place and communicates priorities that will be used to resolve conflicts for available capacity that may arise in the scheduling process. This policy is applicable to all entities who desire to store water at CAWCD USF's.

POLICY GUIDELINES

The following guidelines describe a methodology for scheduling storage capacity at CAWCD USFs.

STEP 1: By Oct. 1, contractors submit requests to CAP for storage capacity in a CAP USF, along with their request for CAP water deliveries.

STEP 2: Before considering capacity in CAP USFs, CAWCD compiles all requests for water deliveries to determine if the projected available CAP water supplies will be sufficient to satisfy all requests.

STEP 3: If requests for water deliveries exceed the projected available CAP water supplies, CAWCD makes adjustments to requested water delivery schedules in compliance with existing water scheduling guidelines and policies (e.g., Access to Excess Policy).

STEP 4: CAWCD makes adjustments to CAP USF storage capacity requests based on the adjustments to water delivery schedules from Step 3.

STEP 5: CAWCD compiles all requests for CAP USF storage capacity (with any adjustments as provided in Step 4) to determine if there will be sufficient storage capacity available to satisfy all requests.

STEP 6: If there is not sufficient storage capacity at one or more CAP USFs to satisfy all requests from Step 5, CAWCD contacts requesters individually to determine their willingness to reduce their request or "relocate" some or all of their requested capacity to a different facility.

STEP 7: If voluntary relocations/reductions from Step 6 are not sufficient, CAWCD convenes a meeting of all affected requesters to provide a forum for the requesters to come to agreement on the best way to share the storage capacity.

STEP 8: If an agreement on sharing the storage capacity cannot be reached in Step 7, CAWCD uses the following priorities to establish the final storage schedules for CAP USFs:

1. Water storage requests for entities with contractual rights to CAP storage facilities (up to the volume limit of the contractual right). This includes ownership partners and any reliability agreements that CAP has entered into for specific facilities.
2. Water storage requests for CAGRD replenishment obligations.
3. Water storage requests for entities with statutory firming obligations (with co-equal priority) including:
    a. AWBA
    b. CAGRD Replenishment Reserve
    c. United States (Indian Firming)
4. Individual CAP long-term contract entitlements – priority will be given to entities storing within the AMA where their service area is located.
5. Individuals storing water under a CAP excess contract.

STEP 9: CAWCD notifies all contractors of the final CAP USF storage schedules.

Appendix E – Chapter 7 Financial Capability

Board Policy

Approved by the CAGRD Board – May 6, 2004

Revised by the CAWCD Board – May 1, 2008

Revised – Nov. 5, 2015

Revised – March 3, 2022

Revised – Nov. 3, 2022

CAGRD Enrollment Fee and Activation Fee Policy (Adopted May 1, 2008)

ENROLLMENT FEE FOR MEMBER LANDS

CAWCD hereby establishes an Enrollment Fee for Member Lands to be set and assessed as set forth below.

1. Applicants seeking to enroll land as Member Lands of the CAGRD shall pay an Enrollment Fee at the time of application for membership.
2. The Enrollment Fee shall be assessed per unit, either on the total number of housing units in the subdivision seeking enrollment in the CAGRD or on the total number of parcels in the commercial subdivision seeking enrollment in the CAGRD, subject to a minimum Enrollment Fee and a maximum number of housing units or parcels as established by the Board of Directors. If ownership of the subdivision changes during the enrollment process, an additional administrative fee will be charged to the applicant as identified on the Enrollment application.
3. The Enrollment Fee shall become effective upon adoption of this Policy.
4. The Board shall set the Enrollment Fee after providing advance notice of the fee and providing adequate time for public comment. It is contemplated that the Board will adopt the Enrollment Fee schedule at the same time it adopts the final CAGRD assessment rate schedule.
5. The amount of the Enrollment Fee shall be the same for all Active Management Areas.
6. Revenues from the Enrollment Fee will be used by CAWCD to cover the costs of enrollment-related administrative activities and, among other revenues, to acquire water rights and develop infrastructure necessary for the CAGRD and in support of the CAGRD conservation program.
7. In the event that the Arizona Department of Water Resources (ADWR) denies a Certificate of Assured Water Supply (CAWS) for a particular Member Land subdivision, or the applicant withdraws their CAWS application from ADWR, the previously paid Enrollment Fees will be eligible for reimbursement to the applicant with the exception of a non-refundable administrative charge as identified on the Member Land De-enrollment application. This administrative charge covers the administrative processing costs of the enrollment application. Any De-enrollment fee, as identified on the Member Land De-Enrollment application, will also be subtracted from the refunded amount.
8. A Member Land that has obtained a Certificate of Assured Water Supply from ADWR is ineligible for reimbursement of Enrollment Fees.

ACTIVATION FEE

CAWCD hereby establishes an Activation Fee to be set and assessed as set forth below.

1. All subdivisions within existing[1] Member Lands and Member Service Areas that have not yet received an approved public report from the Arizona Department of Real Estate shall pay an Activation Fee. Further, all subdivisions within future[2] Member Lands and Member Service Areas shall pay an Activation Fee. The Activation Fee shall be paid to CAGRD on behalf of such subdivisions in accordance with A.R.S. §48-3772.
2. The Activation Fee shall be a one-time, per-unit fee assessed on the total number of housing units in each affected subdivision.
3. The Board shall set the Activation Fee after providing advance notice of the fee and providing adequate time for public comment. It is contemplated that the Board will adopt the Activation Fee schedule at the same time it adopts the final CAGRD assessment rate schedule.
4. The amount of the Activation Fee shall be determined by a base rate common to all Active Management Areas then modified by water use factors specific to each AMA.
5. Revenues from the Activation Fee will be used by CAWCD, among other revenues, to acquire water rights and develop infrastructure necessary for the CAGRD.

1 For purposes of this Policy, the term "existing Member Lands and Member Service Areas" means those CAGRD Member Lands and/or Member Service Areas that qualified for membership in the CAGRD before May 6, 2004.

2 The term "future Member Lands and Member Service Areas" means those CAGRD Member Lands and/or Member Service Areas that qualify for membership in the CAGRD on or after May 6, 2004.

Approved by the CAWCD Board – April 5, 2001

Revised and Approved by the CAGRD Board – June 17, 2004

Revised – Oct. 6, 2005

Revised – May 6, 2010

Revised – March 3, 2022

Revised – March 7, 2024

CAGRD ASSESSMENT RATE SETTING POLICY

GOALS OF RATE SETTING

1. Cost Recovery – "To pay the district's costs and expenses to replenish groundwater" as required by statute.
2. Financial Stability – To reliably perform its services, the CAGRD must maintain a strong financial position and long-term balanced cash flows.
3. Price Stability and Predictability – CAGRD should make every effort to maintain relatively stable and predictable rates. If unforeseen changes are required, the changes should be announced well in advance and, if possible, phased in over a period of time.
4. Operational Efficiency – CAGRD commits to a goal of operating consistently with sound water resource management strategies at the lowest possible cost.
5. Accountability – Replenishment policies and assessment rates shall be established in a highly public process only after due consideration and analysis of economic and financial impacts and inviting comment from all affected parties.
6. Legal Compliance – Any rate making processes and policies must be accomplished in accordance with statutory and contractual requirements.
7. Equity - To the extent feasible and consistent with legal and contractual requirements, establish and apply rates in a reasonable relationship to the cost of providing replenishment services for particular members.

ESTABLISHING ANNUAL ASSESSMENT RATES

1. Purpose – To allow for the District to levy an annual replenishment assessment against each parcel of member land and an annual replenishment tax against each municipal provider having a qualified member service area.
2. Deadline – Annual replenishment assessments and replenishment taxes must be levied on or before the third Monday in August of each year. CAGRD rates go into effect the first Monday after the Board approves Final rates.
3. Process – The rate-setting process will be biennial, with the primary rate-setting activity taking place in even years and an update, if required, in odd years. Rates will be set only after being publicly announced and providing adequate time for public comment. The suggested calendar for the rate setting process is shown below, and is applicable to both the primary rate-setting process in even years and any rate updates that may occur in odd years:
    a. January-March – Municipal providers report excess groundwater delivered to member lands and member service areas during the previous calendar year.
    b. May 1 – Staff develops Proposed Assessment Rate Schedule (using reported and projected excess groundwater deliveries and CAP Proposed Rate Schedule) and delivers it to the Board for study.
    c. May – Staff holds a rate briefing to solicit public comments.
    d. May – Public comments are analyzed and reviewed by staff and the Proposed Assessment Rate Schedule is disseminated to the CAGRD and Underground Storage Committee for a Recommended Assessment Rate Schedule to the Board.
    e. June – Board adopts the Final Assessment Rate Schedule.

4. Methodology – CAGRD assessment rates shall consist of the following four components: a water & replenishment component, an administrative component, an infrastructure & water rights component and a replenishment reserve charge.

    a. Water and Replenishment Component – Staff will compute this component separately for each active management area (AMA) based on the cost to purchase and replenish adequate water supplies. The following considerations will be made in computing this component:

        i. All costs of purchasing and transporting water supplies will be included in this component. If excess CAP water is used, the rate as determined by the CAWCD Board in its biennial CAP Water Rate Schedule, but not less than the full cost M&I Excess Water rate, will be charged to the CAGRD and included in this component.

        ii. To the extent allowed by state law, a member with a CAP subcontract entitlement may schedule all or a portion of its entitlement for delivery to a recharge/replenishment facility acceptable to CAGRD and transfer the resulting storage credits to the CAGRD for use in meeting the groundwater replenishment obligation incurred as a result of that member's excess groundwater pumping. The corresponding cost savings realized by CAGRD will be reflected in that member's replenishment assessment/tax.

        iii. Replenishment will be accomplished at reasonably priced facilities in consideration of water resource management goals, with preference for use of state demonstration projects when appropriate.

        iv. The cost of all losses and statutorily required "cuts to the aquifer" will be included.

        v. In the event that CAGRD decides to transfer credits from its replenishment reserve subaccount to its conservation district subaccount to satisfy all or a portion of its replenishment obligations, this component shall include a reserve replacement component computed in accordance with existing statutes.

    b. Administrative Component – Staff will compute one administrative component for each year of the schedule that will be in effect for all three AMAs. The following considerations will be made in computing this component:

        i. All costs of administering the CAGRD shall be included in this component.

        ii. Revenues derived from statutorily authorized fines and penalties shall be used to offset administrative costs.

        iii. Revenues from Enrollment Fees to cover administrative costs.

        iv. The cost to establish and maintain appropriate administrative reserve funds shall be included in this component.

    c. Infrastructure and Water Rights Component - The following considerations will be made in computing this component:

        i. The costs of securing rights to long-term water supplies.

        ii. The costs of replenishment facilities developed by the CAGRD to meet its replenishment obligations.

iii. The cost to establish and maintain appropriate capital reserve funds shall be included in this component.

iv. Differential costs between AMAs shall be considered.

d. Replenishment Reserve Charge - Staff will compute this component separately for each AMA. The following considerations will be made in computing this component:

i. The statutes that require CAGRD to establish and maintain a replenishment reserve of long-term storage credits for each AMA will be the basis for computing this component.

ii. This component will include all costs of purchasing and replenishing water, including losses and required "cuts to the aquifer."

iii. Replenishment reserve storage will be accomplished using the least expensive facilities possible, provided that the facilities are appropriate for long-term storage of water for CAGRD purposes.

5. Forward Announcement of Rates – CAGRD Assessment rates will be announced during each primary or update rate-setting process. Primary rate schedules will be for the following six years, and updated rate schedules, if required, will be for the following five years. The first year of the primary rate schedule will be considered "firm" pricing, subject to change only in emergency circumstances and if a change would be permitted under applicable contracts. The second year of the primary rate schedule will be considered "provisional," and will become firm unless updated by the Board prior to the commencement of the second year during the rate update process. The remaining years in the rate schedule are "advisory" for customer planning purposes, but subject to change in subsequent primary rate-setting or rate update processes. Rate updates affecting provisional or advisory rates may be made if there are material changes in assumptions made when these rates were originally published.

6. Carryover Adjustment – Adjustment for any shortfall or surplus in revenues resulting from differences between projected costs and actual costs will be made in the next rate setting process.

7. Alternative Methods of Paying Replenishment Assessments/Taxes that Could Affect Assessment Rates – Members wishing to offset a portion of their replenishment assessment or tax through the direct transfer of long-term storage credits to the CAGRD may do so under the following conditions.

a. All or any portion of the Water & Replenishment Component of the assessment rate may be offset by transferring a corresponding volume of appropriate long-term storage credits to the CAGRD. Appropriate credits are defined as follows:

i. Credits accrued from storage of CAP water purchased from CAWCD at the full CAP M&I price, including the CAP capital component; and

ii. Credits accrued at underground storage facilities that are located in close proximity to the members' groundwater pumping, or facilities that are otherwise acceptable to CAGRD; and

iii. Credits that can be legally transferred in accordance with state law to the CAGRD for use in offsetting CAGRD's existing groundwater replenishment obligation.

b. All or any portion of the Replenishment Reserve Charge may be offset by transferring a corresponding volume of appropriate long-term storage credits to the CAGRD. Appropriate credits are defined as follows:

i. Credits accrued at underground storage facilities that are acceptable to CAGRD; and

ii. Credits that can be legally transferred in accordance with state law to the CAGRD for use in establishing and/or maintaining CAGRD's replenishment reserve.

c. The member submits a written request along with its CAGRD Annual Report. The request must include the proposed volume of credits to be transferred, the source and price of water used to accrue the credits, and the facility at which the credits were accrued.

d. Members may transfer long-term storage credits to the CAGRD in advance of the need to pay assessments/taxes provided that such transfer and ultimate use of the credits complies with all of the conditions above.

ESTABLISHING CONTRACT REPLENISHMENT ASSESSMENT RATES

1. Purpose – To allow for the District to levy an annual contract replenishment tax against each qualified member service area that has entered into a contract to replenish groundwater.
2. Deadline – Annual contract replenishment taxes must be levied on or before the third Monday in August of each year.
3. Process – The method of calculating the contract replenishment assessment rate shall be provided in each contract to replenish groundwater.

Approved by the CAWCD Board – April 7, 2011
Revised – Nov. 3, 2016
Revised – March 3, 2022
Revised – March 7, 2024

POLICY ON COLLECTION OF CAGRD ANNUAL MEMBERSHIP DUES

BACKGROUND

Arizona Revised Statutes (ARS) provides CAWCD with the authority to charge Annual Membership Dues (AMDs) on all parcels of Central Arizona Groundwater Replenishment District (CAGRD) member lands and on all municipal providers having a CAGRD member service area, even if they are not yet reporting excess groundwater use (ARS §48-3779). Revenues generated by the collection of AMDs must be used to pay costs associated with the acquisition, lease or exchange of water or water rights and development of infrastructure necessary for CAGRD to perform its replenishment obligations, including the payment of debt service expenses, and necessary reserves and coverage requirements, on bonds issued for replenishment purposes (ARS §48-3779.B). Revenues generated by the collection of AMDs will not be used to pay the annual costs associated with delivery of water for replenishment purposes. The objective of this policy is to describe the general methodology that will be used in establishing AMDs. The policy will be applied in any year in which the CAWCD Board proposes to collect AMDs.

METHODOLOGY

Each year, the CAWCD Board of Directors shall decide if AMDs should be collected from CAGRD member lands and member service areas. In determining the total amount of revenues to be generated through the collection of AMDs in a year, CAWCD shall comply with ARS §48-3772.A.8. In determining the AMDs to be charged against each parcel of member land and against each member service area, CAWCD shall comply with the provisions in ARS §48-3779. While most aspects of the methodology that staff will use to implement collection of AMDs are specified in statute, the following describes the supporting data that must be generated to carry out the implementation.

MEMBER LANDS

CAGRD Staff will maintain and publish a count of AMD-eligible lots (as defined in ARS §48-3779.E), based on data from plats and county parcel records, summed by Active Management Area.

MEMBER SERVICE AREAS

CAGRD Staff will estimate the long-term replenishment obligation for each Member Service Area "associated with the current and committed demands projected within the member service area as of Dec. 31 of the year following the year in which the district is required to submit its next plan under ARS §45-576.02, subsection C" (ARS §48-3779.D.2(a)). That "total planned annual service area replenishment obligation" will be determined based on the water provider's projected demand as indicated in the "Schedule AWS" data submitted to the Arizona Department of Water Resources (ADWR), less supplies available to the Member that are consistent with the management goal of the AMA in which the Member is located. The specific volumes of those supplies will be based upon information contained in each Member's current Designation Order, long-term storage account summary, ADWR Annual Reports and contracts for any additional permanent or long-term (100-year) renewable water supplies. CAGRD staff may request additional information regarding the basis of demand projections and will consider renewable supplies not otherwise included in the Member's Designation of Assured Water Supply.

Staff will also calculate the reliance on CAGRD in the Member's current Designation Order. Unless specifically identified, the volume shall be calculated based on the total groundwater, less the portion that is not subject to a replenishment requirement. That exempted portion shall include the calculated incidental recharge, groundwater allowance (divided by 100, [except Pinal AMA, as applicable]) and extinguishment credits (divided by 100, [except Pinal AMA, as applicable]). The Assured Water Supply exemption granted to groundwater remediation projects expires in 2050, and is therefore ineligible.

PROCESS:

The process of establishing AMDs will generally coincide with the CAGRD rate-setting process, on a biennial schedule, with the primary rate-setting activity taking place in even years and an update, if required, in odd years. AMDs will be established only after being publicly announced and providing adequate time for public comment. The suggested calendar for establishing AMDs is shown below, and is applicable to both the primary AMD-setting process in even years and any updates that may occur in odd years:

1. January-March – Staff request updated water supply information from Member Service Areas to best calculate the anticipated dues volume.
2. May 1 – Staff includes proposed AMDs in the Proposed CAGRD Rate Schedule that is delivered to the Board for study.
3. May – Staff holds a rate briefing to solicit public comments;
4. May – Public comments are analyzed and reviewed by staff and the Proposed CAGRD Rate Schedule, including proposed AMDs, is disseminated to the CAGRD and Underground Storage Committee for a Recommended Rate Schedule to the Board.
5. June – Board adopts the Final CAGRD Rate Schedule, including AMDs.

CAGRD AMDs will be announced during each primary or update rate-setting process. The first year of the primary rate schedule will be considered "firm" pricing, subject to change only in emergency circumstances and if a change would be permitted under applicable contracts. The second year of the primary rate schedule will be considered "provisional," and will become firm unless updated by the Board prior to the commencement of the second year during the rate update process. Additional years in the rate schedule are "advisory" for customer planning purposes, but subject to change in subsequent primary rate-setting or rate update processes. Rate updates affecting provisional or advisory rates may be made if there are material changes in assumptions made when these rates were originally published.

Appendix F – Transmittal Letter

(TRANSMITTAL LETTER TO BE DEVELOPED ONCE THE 2025 PLAN IS APPROVED BY THE CAWCD BOARD AND READY FOR SUBMITTAL TO ADWR)

Appendix G – Decision and Order for Phoenix, Pinal, & Tucson AMAs

1. Decision and Order Determining that the Plan of Operation is Consistent with Achieving the Management Goal of the Phoenix AMA
2. Decision and Order Determining that the Plan of Operation is Consistent with Achieving the Management Goal of the Pinal AMA
3. Decision and Order Determining that the Plan of Operation is Consistent with Achieving the Management Goal of the Tucson AMA

(DECISION AND ORDER FOR EACH AMA TO BE ADDED ONCE ISSUED BY THE DIRECTOR OF ADWR)