DRAFT ISSUE BRIEF

GROUNDWATER IN THE ASSURED WATER SUPPLY PROGRAM

ISSUE STATEMENT

Large areas of the Active Management Areas (AMAs) remain groundwater-dependent due to a lack of renewable water supplies and infrastructure, which creates uncertainties as groundwater supplies become more limited.

- What are the role and consequences of the use of groundwater to support new growth after 2025?
- What are the risks to homeowners whose physical groundwater supplies may be depleted after the regulatory Assured Water Supply 100-year timeframe?
- What roadblocks prevent access to renewable supplies and infrastructure in these groundwater-dependent areas?

BACKGROUND

The Assured Water Supply (AWS) Program was designed as a consumer protection law and has evolved into a significant tool for sustaining the state's economic health by preserving groundwater resources and promoting long-term water supply planning.[1] The AWS Rules were developed with stakeholder input over many years, ultimately adopted by the Arizona Department of Water Resources (ADWR) in 1995[2], and subsequently modified over time. The AWS Program provides consumer and economic protection by requiring a demonstration of a 100-year water supply to serve a new development before lots can be sold in the State's AMAs.

An AWS can be demonstrated through either a Designation of AWS (Designation) or Certificate of AWS (Certificate). To secure either a Certificate or Designation, a 100-year supply of water must be demonstrated to satisfy the needs of the proposed use, either for one subdivision in the case of a Certificate, or for all of the demands within the service area of a water provider who seeks a Designation. The Director of ADWR must review a Designation at least every 15 years to determine whether the Designation should be modified or revoked.[3] The Director does not typically reevaluate a Certificate.

Both Certificates and Designations can be demonstrated based entirely or partially on groundwater. Two of the requirements for demonstrating an AWS are that the water for the proposed Certificate or Designation is Physically Available for 100 years and that the use of the water is consistent with the management goal of the AMA. Physical Availability of groundwater is the regulatory measure of an applicant's ability to demonstrate sufficient groundwater for 100 years. To satisfy the Physical Availability requirement for groundwater, an applicant must show that its groundwater withdrawals would not cause the depth to groundwater to exceed a regulatory limit (1,000 feet below the land surface in the Phoenix, Tucson, Prescott, and Santa Cruz AMAs; 1,100

[1] https://new.azwater.gov/aaws

[2] The 1995 rules did not include provisions specific to consistency with the management goal of the Santa Cruz Active Management Area (SCAMA), which was created by the Legislature in 1994 (A.R.S. § 45-411.04). AWS rules have not yet been modified to address consistency with the management goal of the SCAMA, and it is not addressed in this Issue Brief.

[3] A.A.C. R12-15-711

feet in the Pinal AMA) and would not negatively affect previously issued AWS Determinations and existing municipal uses.[4]

The requirement that projected groundwater use be consistent with the management goal may be met if withdrawals are made pursuant to the groundwater allowance or through the use of pledged extinguishment credits (which are added to the groundwater allowance balance).[5] More detail on these types of groundwater withdrawals is provided in the *Unreplenished Groundwater Withdrawals Issue Brief*.

In the Phoenix, Pinal and Tucson AMAs, the requirement that projected groundwater use be consistent with the management goal may also be satisfied if the subdivision or water provider becomes a member of the Central Arizona Groundwater Replenishment District (CAGRD). The CAGRD is an entity created within the Central Arizona Water Conservation District (CAWCD), which operates the Central Arizona Project (CAP). Since CAWCD encompasses only Maricopa, Pinal and Pima Counties, the CAGRD does not serve the Prescott or Santa Cruz AMAs. The CAGRD replenishes *excess* groundwater[6] pumped by or delivered to its members, after that volume is annually calculated and reported to the CAGRD. The CAGRD Plan of Operation must conform with the management goals of each AMA in its service area and requires approval at least every ten years from the Director of ADWR.

ISSUE DESCRIPTION

Even with the benefits that followed the 1980 Groundwater Management Act, there are numerous pressures placed on groundwater in the AMAs, many of which have been identified in the *Unreplenished Groundwater Withdrawals, Hydrologic Disconnect,* and *Exempt Wells* Issue Briefs. The AWS Program has been a significant factor in encouraging municipal water providers to reduce groundwater use in the AMAs over the last 25 years. In the context of all the challenges identified by the Post-2025 AMAs Committee, the State should evaluate the AWS Program and consider how it can be improved well beyond 2025. Three main questions related to groundwater use under the AWS Program provide a starting point for evaluating whether the AWS Program could better provide consumer and economic protection and better aid in achieving the AMA management goals.

What are the role and consequences of the use of groundwater to support new growth after 2025?

As described above, under the current regulatory structure, new subdivisions that fall under the jurisdiction of the AWS Program may join the CAGRD for replenishment services and/or utilize groundwater that is consistent with the management goal through the use of Extinguishment Credits and/or the Groundwater Allowance.[7] As groundwater uses expand to serve new development, there is a corresponding draw upon the aquifer that can reduce the volume of groundwater that exists in the aquifer.

While the CAGRD will replenish the portion of these groundwater withdrawals attributed to its member obligation, localized depletion of groundwater may occur in cases where replenishment occurs outside the area

[4] A.A.C. R12-15-716 and ADWR Substantive Policy Statement: *Hydrologic Studies Demonstrating Physical Availability of Groundwater for Assured and Adequate Water Supply Applications* (AWS 7).

[5] A.A.C. R12-15-722. The Groundwater Allowance is a volume of groundwater which may be calculated for each AWS determination according to rules specific to each AMA. *See Unreplenished Groundwater Withdrawals Issue Brief.*

[6] "Excess groundwater" is any amount of pumped groundwater beyond what is permitted by the AWS rules. With a few exceptions, this generally means the volume of groundwater pumped that exceeds the groundwater allowance and/or extinguishment credits of a CAWS or DAWS. More detail on CAGRD operations is provided in the *CAGRD Issue Brief*.

[7] See the *Unreplenished Groundwater Withdrawals Issue Brief* for more detail on groundwater use by AMA.

where groundwater is withdrawn or in cases where there are allowable unreplenished groundwater withdrawals.[8] The CAGRD has the flexibility to replenish in various locations of the three AMAs it serves in order to fulfill for its members consistency with the AMA-wide management goal, which could be at odds with the physical availability criteria for AWS demonstration.

New Certificates and Designations may be approved by ADWR as long as Physically Available groundwater can be sufficiently demonstrated. In the Pinal AMA, ADWR modeling shows insufficient groundwater is Physically Available for AWS determinations already issued by ADWR over the 100-year modeling period (unmet AWS demand) which, if left unresolved, would not allow additional AWS determinations using groundwater or stored water recovered outside the area of impact to be approved.[9] In addition to curtailing the ability to subdivide lands for new development, diminished Physical Availability may lead to other adverse impacts. Assuming ADWR projections are accurate and no other steps are taken to reduce or ameliorate impacts of groundwater drawdown, depths to water in the AMAs would decline, resulting in increased land subsidence, decreased aquifer storage, and the potential deterioration of water quality.[10] The degree to which these adverse impacts may occur when groundwater levels fall to depths of 1,000' below land surface is also unknown.[11] ADWR is in the process of updating its groundwater models for the Phoenix and Tucson AMAs which should provide better projections of the groundwater supplies in these two AMAs.

What are the risks to homeowners whose physical groundwater supplies may be depleted after the regulatory Assured Water Supply 100-year time frame?

As noted above, Certificates are typically not re-evaluated after they are issued by ADWR. This raises a question as to the potential ramifications for owners of land after 100 years. While the water demands of a given Certificate or Designation must be incorporated in future AWS applications, groundwater pumping reduces the amount of groundwater available for all existing municipal water providers serving Certificated lands or with Designations through time. These impacts may be more likely to occur where pumping and replenishment are hydrologically disconnected. Even with an AWS determination, other factors, including new and existing groundwater users not subject to the AWS requirements, may also affect the availability of groundwater supplies during the 100-year regulatory timeframe of an AWS determination.

What roadblocks prevent access to renewable supplies and infrastructure in these groundwater-dependent areas?

Groundwater-dependent municipal water providers face obstacles in their ability to acquire renewable water supplies, to become designated, to extend their existing designations, or to reduce or eliminate their reliance on the CAGRD. These obstacles include the lack of institutional structures to facilitate the acquisition of renewable

[8] See the *Hydrologic Disconnect Issue Brief* for more detail. This phenomenon can also occur in situations where municipal water providers utilize annual storage and recovery of surface water and effluent to serve Certificated lands or lands within Designated service areas.

[9] 2019 Pinal Model and 100-year Assured Water Supply Projection Technical Memorandum, October 11, 2019, http://infoshare.azwater.gov/docushare/dsweb/Get/Document-11793/2019_Pinal_Model_and_100-Year_AWS_Projection-Technical_Memorandum.pdf; Pinal Model 2019 Update Presentation, November 1, 2019, Slide 53, https://new.azwater.gov/sites/default/files/20191101_Pinal_Model_2019_Presentation.pdf.

[10] Lower Hassayampa Sub-Basin Hydrologic Study and Computer Model. Town of Buckeye, Figure 9-16 November 15, 2006; ADWR Modeling Report No. 22, https://new.azwater.gov/sites/default/files/Modeling_Report_22_2.pdf; "Ground-Water Depletion Across the Nation." USGS, 2003. https://pubs.usgs.gov/fs/fs-103-03/JBartolinoFS(2.13.04).pdf.

[11] Phoenix 3MP – Section 8.9; Previous scholarship has demonstrated that the 1,000 foot depth limit was not based upon hydrological or technical considerations (see, Rita Pearson Maguire, *Patching the Holes in the Bucket: Safe Yield and the Future of Water Management in Arizona,* 49 Ariz. L. Rev. 361 (2007)).

supplies, constraints on the marketability of surface water rights, costs of such supplies, certain restrictions imposed on private utilities by the Arizona Corporation Commission, resistance to and/or limitations on water transfers, obstacles to accessing infrastructure to move renewable supplies, and the AWS Rules, which emphasize the acquisition of permanent renewable water supplies well in advance of actual water use. These obstacles point to an overarching financial challenge for water providers, particularly those with smaller customer bases, to be able to finance and absorb the costs for such acquisitions.

Many groundwater-dependent municipal water providers are limited by their financial capabilities and in their access to the infrastructure necessary to deliver renewable supplies to their service areas because of where they are located.

The quantity of renewable supplies realistically available in the future is a concern for both municipal water providers and the CAGRD (*see CAGRD Issue Brief*). With fewer renewable supplies available for acquisition, municipal water providers will compete not only with each other, but also with the CAGRD for the same supplies. Different perspectives exist regarding the role of competition in acquiring supplies, particularly in regard to whether the CAGRD as an entity has reduced competition and may continue to reduce competition in the future. These perspectives need to be considered as the State continues to look at barriers and opportunities to obtain renewable supplies and reduce reliance on groundwater.

There are 242 undesignated municipal water providers in the Phoenix, Pinal and Tucson AMAs. Since 1999, no undesignated municipal water providers have successfully been newly designated in the Phoenix AMA, which illustrates the difficulty of building a renewable water supply portfolio and reducing dependence on groundwater. The recent effort by the Town of Queen Creek to acquire renewable supplies to obtain a Designation and eliminate the replenishment obligation of the CAGRD member lands it serves, demonstrates the difficult financial and logistical hurdles municipal water providers face. Understanding the Town's challenges and motivations, as well as those of the City of Buckeye, which has also pursued for years a Designation, could deepen the understanding of these issues and present opportunities for improvement moving forward.