AGENDA ITEM #6

arizona municipal water users association

MANAGEMENT BOARD

Information Summary

July 30, 2008

Subject

Sustainability Policies Stakeholders Group Progress Report

Summary

The AMWUA Sustainability Policies Stakeholders Group is in the process of finalizing recommendations related to enrollment in the Central Arizona Groundwater Replenishment District (CAGRD) and the location of replenishment and recharge, and the hydrologic impact of pumping that may help to improve water management efforts in the Central Arizona Water Conservation District (CAWCD) service area.

The attached memorandum provides an overview of the white papers developed during the process. It also summarizes the proposed administrative and statutory changes that, if pursued, would help to address some of the concerns raised during the course of the stakeholders' process.

Also attached are the final draft of the "CAGRD Enrollment White Paper" and the final draft of the "Location of Replenishment/Recharge and Hydrologic Impact of Pumping – Groundwater Modeling for Assured Water Supply Purposes and Well Impact Analyses." The latest draft of the "Location of Replenishment/Recharge and Hydrologic Impact of Pumping - Summary and Recommendations" is also included.

Prior Committee Action

The AMWUA Management Board has received regular updates on the status of the Sustainability Stakeholders Group since January 2008.

Recommendations

AMWUA staff recommends that the AMWUA Management Board recommend that the AMWUA Board of Directors direct the Stakeholders Group to complete its deliberations on the substance of the administrative and legislative recommendations, to provide input on a strategy to best accomplish the implementation of the recommendations and, if it is determined to be appropriate, draft legislation for possible introduction in the 2009 legislative session.

Attachments

ATTACHMENT A: Executive Director Memorandum dated July 24, 2008 regarding "AMWUA Sustainability Policies Stakeholders Group Update"

ATTACHMENT B: "SUSTAINABILITY POLICIES STAKEHOLDERS PROCESS White Paper on CAGRD Enrollment 'Final' Draft June 30, 2008"

ATTACHMENT C: "SUSTAINABILITY POLICIES STAKEHOLDERS PROCESS Location of Replenishment/Recharge and Hydrologic Impact of Pumping, Groundwater Modeling for Assured Water Supply Purposes and Well Impact Analyses, 'Final' Draft July 12, 2008"

ATTACHMENT D: "SUSTAINABILITY POLICIES STAKEHOLDERS PROCESS Location of Replenishment/Recharge and Hydrologic Impact of Pumping, Summary and Recommendations, 'Final' Draft July 12, 2008"

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AGENDA ITEM #6 – ATTACHMENT A

July 24, 2008

TO: Members of the AMWUA Management Board

FROM: Steve Olson, Executive Director

SUBJECT: AMWUA SUSTAINABILITY POLICIES STAKEHOLDERS GROUP UPDATE

In December 2007, the Arizona Municipal Water Users Association (AMWUA) initiated a Sustainability Stakeholders Process to address concerns regarding the long-term sustainability of water supplies. The Sustainability Policies developed and adopted by the AMWUA Board of Directors provided guidance for the discussion.

Early in the process, Stakeholders were asked to identify concerns related to the sustainability of future water supplies by responding to a survey. These results were compiled and organized by topic. Stakeholders reviewed the survey results and determined which issues should be addressed within the scope of the Sustainability Stakeholders Process and which issues should be addressed in other forums, such as the Central Arizona Water Conservation District (CAWCD) ADD (Acquisition, Development and Distribution) Water Process.

The issues of greatest concern raised by the stakeholders related to CAGRD enrollment, and replenishment in the area of impact and the hydrologic impacts of pumping. These concerns are consistent with the AMWUA Board of Directors sustainability policies that specifically relate to these issues.

After much discussion, the Sustainability Stakeholders Group developed White Papers related to the CAGRD Enrollment and Replenishment in Area of Impact/Hydrologic Impact and a series of statutory and administrative changes that will help to ensure that our future water supplies are sustainable.

CAGRD Enrollment

The AMWUA Sustainability Policies Stakeholders Process has reached closure on a number of key issues. The Stakeholders Process has resulted in a number of tangible and intangible benefits to water management in the CAWCD service area.

One of the most valuable outcomes of the process was the development of the "White Paper on CAGRD Enrollment." The development of this document stimulated an in-depth discussion of how the Central Arizona Groundwater Replenishment District was intended to operate and how it actually operates. The resulting "White Paper" describes CAGRD's enrollment process, CAGRD's Plan of Operation and the oversight of the Arizona Department of Water Resources (ADWR) over the Plan as it relates to enrollment.

The discussions that led to the development of this document also identified a series of recommendations that could help to strengthen and clarify existing law and practice. These recommendations include both statutory and administrative changes.

"White Paper on CAGRD Enrollment"

The "White Paper" provides a concise overview of the purpose of the CAGRD. The "White Paper" explains the specific role of the CAGRD in the demonstration of a 100-year Assured Water Supply for a new subdivision. Membership in the CAGRD satisfies one of the five criteria for demonstrating an Assured Water Supply – consistency with the Management Goal. In the case of a safe-yield Active Management Area, membership in the CAGRD allows groundwater to be pumped and later replenished so that the AMA will, by 2025, achieve "Safe Yield" which means that the amount of groundwater that is pumped will be offset by an equal amount of natural or artificial recharge.

The "White Paper" also explains the distinction between a Member Land and a Member Service Area. This distinction is of interest to AMWUA because five of the ten AMWUA members are member service areas. Understanding the long- and short- term ramifications of CAGRD membership and those ramifications relative to the Member Lands is critical to the development of effective water management policies.

The Stakeholder discussion during the development of the "General Overview of the CAGRD's Plan of Operation section of the "White Paper" was particularly beneficial. It raised a number of issues and generated discussion on those issues that had previously not occurred. Discussion regarding "current and projected" membership and the related replenishment obligations for that membership was particularly insightful. In some instances, the discussion provided increased confidence in the existing structure. For example, discussion on the replenishment reserve of long-term storage credits that was established to insure that CAGRD could meet its replenishment obligation in the event of a water supply shortage or infrastructure failure, helped Stakeholders better understand some of the safeguards within the Plan of Operation. In other instances, Stakeholders found that a lack of statutory clarity could lead to inaccurate enrollment figures. Recommendations for statutory amendments to address such issues were developed and will be discussed later.

The section in the "White Paper" on ADWR's Oversight of the Plan of Operation also generated much discussion. This section helped Stakeholders to better understand the role of CAGRD and the role of ADWR. Enhanced understanding of the expectations and practices of the respective organizations helped to identify a process that would help to better insure that the CAGRD Plan of Operation would not be found out of compliance.

This White Paper has established a common understanding of CAGRD enrollment and ADWR's oversight of CAGRD's Plan of Operation in relationship to enrollment. In the process of developing the White Paper, and the corresponding clarification of the mechanisms that are in place to monitor enrollment and CAGRD's compliance with the Plan, the Stakeholders' concerns about the potential for unsustainable growth of CAGRD have been somewhat ameliorated. However, statutory and administrative changes could further clarify and strengthen current law.

Recommendations for Statutory Changes Related to CAGRD Enrollment

- CAGRD Enrollment Process

  CAGRD has implemented a process for enrollment of member lands, which requires, among other things, an application to CAGRD and the payment of a per-housing-unit enrollment fee. The statutes do not specify that a landowner must follow this application process. Arguably, a landowner could execute and record a member land declaration and a member land agreement and the land would qualify as a member land without action by CAGRD.

  Amending the statutes that specify the qualifications for member lands to require that the Member Land Declaration be approved by CAWCD prior to recordation and that CAWCD be a party to the Member Land Agreement would help to ensure that prospective Member Lands comply with CAGRD's enrollment process and pay an enrollment fee. These amendments would help to ensure that CAGRD will be able to enforce its application process and monitor enrollment in CAGRD.

- ADWR Oversight of the Plan of Operation

  One goal of the Sustainability Stakeholders was to clarify and document ADWR's oversight of the Plan to ensure that CAGRD remains in compliance with the Plan and that, as long as new members may qualify to enroll in CAGRD, the Plan demonstrates consistency with the management goals of the Phoenix, Pinal and Tucson AMAs. Current law allows the Director of ADWR to determine if the Plan continues to demonstrate consistency with the management goals of the AMAs between the second and sixth anniversary of the Director's original determination. If the Director determines that the Plan no longer demonstrates consistency with the management goal of an AMA during this period, CAGRD must submit a revised Plan to ADWR within two years. The length of time between the sixth anniversary and the earliest date at which CAGRD is able to submit its subsequent ten-year Plan led to concerns that there was insufficient time to revise the Plan if there was an unexpected increase in enrollment or if sufficient water supplies were unavailable. If the Plan no longer provides a means by which to demonstrate that CAGRD members meet the consistency with goal requirement for the AMA during that period, current statutes not only do not require that the Plan be revised, but they prohibit the submission of a revised Plan. The following statutory amendments would help to address this issue:

- Authorize the Director of ADWR to determine that the Plan is no longer consistent with the management goal for one or more AMAs any time between the second anniversary and the eighth anniversary of the Plan of Operation.

- Require CAGRD to submit any revised plan within one calendar year of the Director's notification to submit a revised plan, unless the Director extends this time for good cause. The statute currently gives CAGRD two years to submit a revised Plan.

- Expiration of the Plan

  CAGRD must submit a new Plan to ADWR every ten years. ADWR must determine whether the Plan for each AMA "shall be designated as being consistent with the management goal of that" AMA. The "designation expires on January 1 of the year following the year" the CAGRD is required to submit its next ten year Plan. Additionally, if ADWR requires CAGRD to submit a revised Plan for an AMA and later determines that that revised Plan is not consistent with achieving the management goal of that AMA, "the district's plan shall expire."

  The statutes as currently written could result in the entire Plan expiring if the Director determines that the revised Plan is not consistent with achieving the management goal for an AMA. A statutory amendment would ensure that the portions of the ten-year Plan that are not affected by the Director's determination on the revised Plan remain in effect.

  Statutory amendments would also ensure that the planning dates clearly provide that the current ten-year Plan remains effective until at least one year after the last date that the next ten-year Plan must be submitted to ADWR.

Recommendations for Administrative Changes

- ADWR Oversight of the Plan of Operation

  ADWR's oversight of the Plan is critical to ensuring that the Plan is implemented and that enrollment does not continue if the Plan is not consistent with the management goals of the AMAs. ADWR must review the Plan annually (between the second and sixth anniversaries) to determine whether there has been an unexpected increase in projected groundwater replenishment obligations or an unexpected reduction in water supplies available to meet the current replenishment obligations. These critical standards, which determine whether a Plan continues to be consistent with the management goals, are not well defined in the statutes. The White Paper sets forth how ADWR intends to interpret these standards. ADWR plans to adopt a substantive policy statement to formally establish how it will annually monitor the Plan and determine whether there has been an unexpected increase in projected groundwater replenishment obligations or an unexpected reduction in water supplies available to meet current replenishment obligations.

- Loss of Designation of Assured Water Supply

  If ADWR determines that the Plan is not consistent with achieving the management goal of an AMA or CAGRD is not in compliance with its replenishment obligations for an AMA, a municipal provider that received a Designation of Assured Water Supply on the basis that its service area was a Member Service Area, that provider will lose its Designation. The loss of a Designation has serious economic and political ramifications and municipal providers need certainty regarding ADWR's interpretation of this provision. A substantive policy statement that specifies how ADWR will determine whether a municipal provider will lose its Designation and how ADWR will review an application to modify a Designation will help to alleviate these concerns.

- Increasing Cap on Member Service Area Replenishment Obligation

  When CAGRD enrolls a service area, it includes in the Member Service Area Agreement a maximum volume of excess groundwater deliveries that may be reported to CAGRD. In essence, the Member Service Area Agreement caps CAGRD's replenishment obligations for the Member Service Area. However, if the Member Service Area later begins to serve water to a Member Land, CAGRD cannot levy a replenishment assessment against the Member Land. This poses a problem for the Member Service Area that must assume the responsibility for meeting the consistency with the management goal requirement for the Member Land within the cap imposed by the Member Service Area Agreement.

  A CAWCD policy that states that if a Member Service Area begins serving a Member Land and such service was not contemplated when the Member Service Area Agreement was signed, CAWCD will agree to increase the cap on its replenishment obligation under the Member Service Area Agreement in an amount sufficient to cover the replenishment obligation associated with the Member Land to remedy this situation.

<u>Location of Replenishment/Recharge and Hydrologic Impact of Pumping</u>

Concerns arose regarding whether current laws, rules and practices of the ADWR adequately protect water that has been stored underground from the impacts of proposed groundwater pumping by applicants for designations, certificates and analyses of assured water supply and by those seeking permits for new wells. The Stakeholders invited ADWR to explain and clarify current law and practices. As a result of these discussions, a brief summary document was developed.

"Location of Replenishment/Recharge and Hydrologic Impact of Pumping" Summary

This document explains the differences between the types of groundwater models and how they are used, and summarizes ADWR practices regarding groundwater modeling for assured water supply purposes and the impact analysis required by ADWR's well-spacing rules. The summary focuses on the following issues.

- Types of Groundwater Models

  ADWR uses two types of models to assess how proposed pumping will affect groundwater levels. The Analytical Model is a simplistic and conservative model that assumes the aquifer is a bathtub with the same hydrologic characteristics from top to bottom. Recharge is not considered in the analytical model. The Numerical Model is a computer program that uses mathematical equations to simulate flow in an aquifer. Using the model to conduct a simple analysis can be set up in a week; more complex analyses, such as the re-designation process, can take months.

- Assured Water Supply Groundwater Modeling

  ADWR requires AWS applicants to use a groundwater model to demonstrate that 100 years of groundwater is physically available for the proposed use. The modeling must demonstrate that the applicant's proposed groundwater pumping will not draw the aquifer below certain set limits (1,000 feet below land surface for the Phoenix, Tucson and Prescott AMAs). The type of model required depends on the complexity of the area and the relative volume of nearby pumping. For example, does the area have faults or hard rock, is the aquifer similar from top to bottom, how many additional pumpers are in the area, etc. The type of analysis required also depends upon ADWR's assessment of potential depth to water issues within the area.

- "Protection" in Groundwater Modeling of Certain Water Supplies

  Groundwater that has previously been demonstrated to be physically available for a Designation of Assured Water Supply, a Certificate of Assured Water Supply or an Analysis of Assured Water Supply may not be relied upon by subsequent Assured Water Supply applicants to demonstrate an Assured Water Supply. ADWR protects this groundwater by assuming that the groundwater has been "pumped out." By modeling this groundwater as being pumped out, this groundwater cannot be used by subsequent Assured Water Supply applicants to demonstrate physical availability of groundwater.

  Water replenished by CAGRD becomes groundwater. Thus, such water is available to any Assured Water Supply applicant and is considered to be groundwater in all Assured Water Supply models.

  Water stored underground may be relied upon to demonstrate an AWS only by the person who stored the water. In an Assured Water Supply model, ADWR "models" the water stored by someone other than the applicant as being "pumped out" during the model time period. By modeling stored water as being pumped out, this stored water cannot be used by the Assured Water Supply applicant to demonstrate physical availability. While the model "protects" stored water from being relied upon by an applicant who is not the person who stored the water, it does not protect the water level of that stored water. The person who stored the water may have to pump that water from greater depths.

Groundwater Allowances

To the extent that a municipal provider has not relied on its groundwater allowance to demonstrate an Assured Water Supply under its current Designation of Assured Water Supply, the physical availability of the provider's groundwater allowance is not "protected" from other Assured Water Supply applicants. In other words, while the municipal provider may have the legal ability to include its groundwater allowance in a future application to modify its designation of Assured Water Supply, the groundwater may not be physically available because it has been relied upon by other applicants.

- Impacts of New Wells

ADWR has adopted well-spacing rules "to prevent unreasonably increasing damage to surrounding land or other water users from the concentration of wells. The well-spacing rules apply to new wells in AMAs, replacement wells in a new location in AMAs, and recovery wells. The rules prohibit the Director of ADWR from approving an application for a new well or a replacement well in a new location if the probable impact of the withdrawals from the proposed well on any well of record with ADWR will exceed ten feet of additional drawdown after the first five years of operation (unless the owner of any well of record consents to the withdrawals).

Except for recovery wells, the standard in the well-spacing rules does not consider the existing regional drawdown. For example, if an existing well is in an area with groundwater levels declining 27 feet every five years, a new well would be allowed to increase the existing well's decline to 37 feet every five years. The well impact analysis required by the rules does not take stored water into account because ADWR examines only the proposed well's impact on other wells. This provision also does not apply to recovery wells.

A person seeking to recover (pump) stored water from a new or existing well must apply for a recovery well permit from ADWR. If the proposed recovery well is located outside of the area of impact of the stored water, the recovery well permit may not be issued unless the Director of ADWR determines that recovery at the proposed location is consistent with the management plan and the achievement of the management goal for the AMA. The "area of impact" means "as projected on the land surface, the area where the stored water has migrated or is located." ADWR assumes that the area of impact is a one-mile radius from where the water is stored unless the applicant can demonstrate a larger area.

Administrative Changes

In the Third Management Plan, ADWR has determined that recovery outside the area of impact is consistent with the management plan and the achievement of the management goal if the well is located in an area experiencing an average annual rate of decline that is less than four feet per year. This determination is made at the time of the application for the permit and can be modified

by ADWR based on periodic reviews of well data. ADWR will review its interpretation of this limitation on recovery wells in the Fourth Management Plan.

ADWR is considering extending the time for which a Designation of Assured Water Supply may be granted, which could increase the volume of a groundwater allowance that could be included in a Designation of Assured Water Supply and, therefore, would not be available to other Assured Water Supply applicants to demonstrate an Assured Water Supply.

Other Issues

The issue of recharge in the area of impact generated much discussion. It ultimately morphed into a discussion of regional water management. One of the possible tools to help to address regional water declines was to authorize the CAGRD to deliver water directly, rather than to replenish groundwater that has already been pumped. There is no agreement at this time to move forward in the 2009 Legislative Session. It has been suggested that this issue be addressed in the ADD Water Process.

Summary

When the AMWUA Sustainability Stakeholders Process began, the Sustainability Policies adopted by the AMWUA Board of Directors helped to provide guidance and to frame the issues addressed by the group. The CAGRD Enrollment Sustainability Policy and the Replenishment in the Area of Impact/Hydrologic Impact Sustainability Policy are included so that the relation between the policies and the work of the Sustainability Stakeholders can be more easily assessed.

The work products and recommendations of the Stakeholders have helped to address many of the issues embodied in the Sustainability Policies and have helped to move toward the long-term sustainability of our water supplies.

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AGENDA ITEM #6 – ATTACHMENT B

SUSTAINABILITY POLICIES STAKEHOLDERS PROCESS

White Paper on CAGRD Enrollment
"Final" Draft
June 30, 2008

Introduction

On May 9, 2007, the Board of Directors of the Arizona Municipal Water Users Association (AMWUA)[1] adopted Policies Concerning Sustainable Water Supplies[2] addressing, among other things, enrollment in the Central Arizona Groundwater Replenishment District (CAGRD). The Board directed its staff to convene a Sustainability Policies Stakeholders Process to discuss these policies and related issues. This White Paper was drafted by representatives of CAGRD, the Arizona Department of Water Resources (ADWR), AMWUA, the City of Tucson, and the development community, and has been reviewed and confirmed by the Stakeholder Group. It describes CAGRD's enrollment process, CAGRD's Plan of Operation, and ADWR's oversight of the Plan in relationship to enrollment. It also includes the Stakeholders' recommendations for statutory and administrative changes.

Background

Since passage of the Groundwater Management Act of 1980 (Act), Arizona has been committed to reducing reliance on groundwater and transitioning to renewable water supplies to meet the needs of water users in the state's Active Management Areas (AMAs). The Act prescribes the goal of safe-yield by 2025 for the Phoenix, Tucson, and Prescott AMAs. "Safe-yield" is "a groundwater management goal which attempts to achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an AMA and the annual amount of natural and artificial recharge in the AMA."[3] The management goal for the Pinal AMA is to allow development of non-irrigation (non-agricultural) uses and preserve agricultural economies for as long as feasible, consistent with the necessity to preserve future water supplies for non-irrigation uses.[4]

Although groundwater pumping has decreased in the AMAs since 1980, withdrawals still exceed recharge.[5] Despite the use of renewable water supplies, such as Central Arizona Project (CAP) water and effluent, groundwater overdrafts could continue past 2025.[6] Additionally, safe-yield is

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[1] AMWUA is a voluntary, non-profit corporation established by municipalities in the urban area of Maricopa County, Arizona for the development of an urban water policy. The members of AMWUA are the cities of Avondale, Chandler, Glendale, Goodyear, Mesa, Peoria, Phoenix, Scottsdale, and Tempe and the Town of Gilbert. The mayors of these municipalities serve as the Board of Directors of AMWUA.
[2] See Appendix A.
[3] A.R.S. § 45-561.
[4] Ibid.
[5] Final Report & Recommendations, Governor's Water Management Commission, December 2001, p. 14.
[6] Ibid.

an AMA-wide goal, which means that groundwater mining may still be occurring in some parts of the AMA even if safe-yield is achieved.

One of the Act's most important tools for reducing municipal reliance on mined groundwater is the requirement that an assured water supply must be demonstrated before subdivided lots may be sold in an AMA. An assured water supply means that sufficient water of adequate quality will be physically, legally, and continuously available to satisfy the needs of the proposed use for at least 100 years.[7] In 1995, ADWR adopted rules to implement the assured water supply requirement. These rules mandate that an assured water supply must be demonstrated primarily with renewable water supplies.[8]

Many municipal water providers in the AMAs, including all of the AMWUA members, are designated as having an assured water supply. Each of the AMWUA members has an allocation of CAP Municipal and Industrial (M&I) water. The total volume of CAP M&I allocations held by AMWUA members is 297,267 acre-feet or 47 percent of the CAP supplies available to all M&I water users in the CAP's three-county service area (which includes most of the Phoenix, Tucson, and Pinal AMAs). Since 1980, AMWUA members and other designated providers have invested substantially in projects and programs to make use of CAP water and other renewable water supplies.

Not all landowners and water providers currently have access to CAP water or other renewable water supplies. In response to the pending adoption of the assured water supply rules, in 1993 the legislature established CAGRD to assist developers and certain water providers to demonstrate an assured water supply.[9] Membership in CAGRD allows more groundwater to be pumped to serve new subdivided lots than would otherwise be allowed under the assured water supply rules (excess groundwater[10]), as long as ADWR determines that, the excess groundwater is physically available. CAGRD must replace the excess groundwater that is pumped to serve CAGRD members by replenishing (recharging) an equal amount of water. While replenishment must occur in the same AMA, CAGRD is not required to replenish in the area from which the excess groundwater is withdrawn.

AMWUA and other water users have worried that rapid enrollment in CAGRD, and the fact that CAGRD is not required to replenish where its members pump groundwater, may pose risks to the sustainability of the water supplies of the AMAs. They have expressed concern about the physical consequences associated with localized groundwater mining, including land subsidence, diminished water quality, and, ultimately, the lack of a viable water supply for the future. They also recognize that, as growth continues, there may be intense competition for imported water supplies to meet future needs.

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[7] A.R.S. § 45-576.
[8] Final Report & Recommendations, p. 14.
[9] Ibid.
[10] A.R.S. § 48-3701.

The Stakeholders held a series of meetings to discuss these issues and concluded that a common understanding of CAGRD enrollment and ADWR oversight of CAGRD's Plan of Operation was necessary to determine whether changes to the current laws are warranted.[11]

I. CAGRD Enrollment

A. General Overview of the Purpose of CAGRD

In 1993, the Arizona legislature passed the Groundwater Replenishment District Act. This Act created a groundwater replenishment authority to be undertaken by the Central Arizona Water Conservation District (CAWCD) throughout its three-county service area: Maricopa, Pinal, and Pima. This replenishment authority is commonly referred to as CAGRD.

CAGRD's role in water resource management cannot be fully understood without a basic understanding of the state's Assured Water Supply (AWS) Rules, which became effective in February 1995. The AWS Rules are designed to protect groundwater supplies within each AMA and to ensure that people purchasing subdivided land within an AMA 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 assured water supply is available to serve the subdivision before sales can begin. An AWS can be demonstrated in two ways. First, a municipal water provider may apply for and obtain a Designation of Assured Water Supply (DAWS) for its service area. In this case, new subdivisions that will be served by the designated provider need not independently demonstrate an AWS. Alternatively, if the municipal water provider that will serve a new subdivision has not received a DAWS, the developer of the subdivision must apply for a Certificate of Assured Water Supply (CAWS) and prove an AWS for the individual subdivision.

There are five basic criteria for proving an AWS. An applicant for an AWS must demonstrate all of the following:

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 water quality standards.

3. The proposed use of water is consistent with the management Plan adopted by ADWR for the AMA. Among other things, the management Plan prescribes conservation requirements for water users in the AMA.

4. The proposed use is consistent with the management goal of the AMA.

5. The applicant is financially capable of installing the necessary water distribution and treatment facilities.

[11] The Stakeholders Process may address other issues in addition to CAGRD enrollment and ADWR's oversight of the Plan of Operation.

ADWR's AWS Rules explain how an applicant for a DAWS or CAWS may satisfy these five basic criteria. 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.[12] The effect of this groundwater pumping limitation is to prevent new subdivided lots, particularly in the safe-yield AMAs, from relying primarily on mined groundwater to meet water demands.[13]

Development, however, is not necessarily stymied for those landowners and water providers who lack direct access to CAP water or other renewable supplies. Membership in CAGRD provides a means by which an AWS applicant can satisfy criterion number 4 above, which requires that the proposed water use be consistent with the management goal of the particular AMA. By joining CAGRD, a water provider or a landowner can meet the consistency with the management goal requirement of the AWS Rules based on the proposed use of excess groundwater if it can demonstrate that the excess groundwater is physically available. As a member of CAGRD, the landowner or provider must pay CAGRD to replenish excess groundwater pumped by the member in the same AMA in which it is pumped. CAGRD must replenish this excess groundwater within three calendar years of the time it is pumped.

B. CAGRD Membership Enrollment

Membership in CAGRD is voluntary and is limited to a city, town, district, water company, subdivision, or homeowner's association located in the Phoenix, Tucson or Pinal AMA. CAGRD is comprised of two types of members: Member Lands and Member Service Areas. Each of these types is further described below.

1. Member Lands

A parcel of land qualifies as a Member Land (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 the land to the replenishment assessment, and (2) the owner and the municipal provider that will supply water to the land execute and record an agreement (ML Agreement) under which the water provider agrees to submit the water delivery information necessary to calculate the replenishment assessment for each tax parcel annually to CAGRD.

Currently, CAGRD's ML enrollment process calls for submitting an enrollment application to CAGRD along with a per-housing-unit enrollment fee. CAGRD staff reviews the application to ensure that (1) the provided legal description is complete and accurate, (2) the title report is up-to-date and matches information provided in the application, (3) the vested landowner is accurately identified and a representative authorized to execute the enrollment documents has been identified, and (4) a CAWS application for the land has been submitted to ADWR. After the review is completed and all deficiencies are corrected, CAGRD prepares originals of the ML Declaration and ML Agreement and sends them to the applicant for execution by the

[12] A.A.C. R12-15-724.A.

[13] Effective October 1, 2007, ADWR modified the AWS Rules to further limit the amount of mined groundwater that may be used to demonstrate an AWS is the Pinal AMA.

landowner's and the municipal water provider's authorized representatives. Once executed, the documents are returned to CAGRD, the ML Agreement is executed by CAWCD and the documents are recorded in the County Recorder's Office, thus completing the enrollment process. It should be noted that current statutes do not specify that a landowner must submit an application to CAGRD in order for its land to qualify as an ML. Arguably, a landowner could execute and record an ML Declaration and an ML Agreement and the land would qualify as an ML under the statutes with no action by CAGRD. However, to the best of CAGRD's and ADWR's knowledge, all land that has qualified as an ML to date has complied with CAGRD's enrollment process.

The commitment made by CAGRD upon enrollment of an ML is quite clear. This is because the boundaries of the real property are clearly identified and, once the real property is enrolled, the boundaries may not be modified without approval by CAGRD and ADWR. In addition, the applicant must establish the number of individual units (homes, businesses, etc.) that are to be built on the land before it can receive a CAWS from ADWR. Upon issuance of a CAWS, ADWR notifies CAGRD that the CAWS has been issued and identifies the projected groundwater use on the land at build-out. This provides CAGRD with a projection of its ultimate replenishment obligation for the land.

After land has qualified as an ML, the municipal water provider serving that land must annually report to CAGRD and ADWR the volume of groundwater and excess groundwater delivered to each parcel. The volume of excess groundwater delivered to the parcel becomes CAGRD's replenishment obligation for that parcel. CAGRD establishes the replenishment assessment for each parcel based on the volume of excess groundwater delivered to that parcel. The replenishment assessments for all CAGRD parcels in a county are reported by CAGRD to the County Assessor and are collected by the Assessor along with that parcel's annual property tax. CAGRD's replenishment assessment shows up as a line item on the parcel owner's property tax statement. Once collected, the County Treasurer transmits all CAGRD replenishment assessments to the bank account maintained by the State Treasurer for CAGRD. CAGRD uses the replenishment assessments and other revenue to acquire and replenish renewable water supplies in order to meet the statutory requirement to satisfy its replenishment obligation within three years of incurring the obligation.[14] CAGRD's revenue sources are explained in more detail in Section I. C of this White Paper.

There is currently no statutory provision to "de-enroll" an ML from CAGRD.[15] However, if the water provider that serves the ML is subsequently issued a DAWS by ADWR, or the ML is later served by a water provider that has been issued a DAWS, the parcel-by-parcel annual reporting requirement for the ML is relieved and CAGRD cannot levy a replenishment assessment against the parcels as long as the DAWS is in place.[16] The municipal provider then assumes the responsibility for meeting the consistency with the management goal requirement for such ML

[14] This three-year window for replenishing was established in part because revenue collection lags behind the actual use of excess groundwater.
[15] However, CAWCD can handle de-enrollment administratively to take care of the situation in which member land is denied a CAWS.
[16] A.R.S. § 45-3771.D & E.

either through direct delivery of supplies that are consistent with the management goal or, if the water provider is a member service area of CAGRD, as part of CAGRD's commitment to replenish on behalf of the water provider.

2. Member Service Areas

A city, town, water district or water company enrolls in CAGRD when it adopts a resolution and executes an agreement that declares its service area to be a Member Service Area (MSA) of CAGRD (MSA Agreement). Under an MSA Agreement, the municipal provider is required to submit annual reports to CAGRD identifying the volume of excess groundwater[17] delivered within the service area. The MSA Agreement also includes a covenant by the municipal provider that it will pay CAGRD replenishment taxes based on the amount of excess groundwater delivered within its service area each year.

Currently, CAGRD's MSA enrollment process calls for submitting an enrollment application to CAGRD along with an enrollment fee to cover the administrative costs of processing the application. CAGRD staff reviews the application to insure that (1) the legal status of the water provider is clearly defined (i.e., whether it is a private water company, municipality, domestic water improvement district, etc.), (2) a representative authorized to execute the MSA Agreement on behalf of the water provider has been identified, and (3) the water provider has submitted a DAWS application to ADWR. Once the review is completed and all deficiencies are corrected, CAGRD prepares an MSA Agreement and an appropriate resolution (corporate, municipal, district, etc.) and sends them to the applicant. The resolution must be published for two consecutive weeks, and the municipal provider's governing body must adopt the resolution and execute the MSA Agreement. In addition, the CAWCD Board of Directors approves the execution of each MSA Agreement individually, thus completing the enrollment process.

The ultimate commitment made by CAGRD upon enrollment of an MSA is not always well defined. This is because, by statute, a water provider's service area is not static, but may be extended to serve new customers. CAGRD's ultimate replenishment obligation for each MSA enrolled from 1995 to 2000[18] was not defined in the corresponding MSA Agreements. However, beginning in May 2000, in order to facilitate better planning, MSA Agreements included a maximum volume of excess groundwater deliveries that may be reported to CAGRD. Upon issuance of a DAWS, ADWR identifies the projected volume of groundwater deliveries that may be made by the water provider under that DAWS. This provides CAGRD with a projection of its maximum replenishment obligation for the service area under the DAWS.

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[17] It should be noted that the MSA Agreements between CAGRD and its members generally identify a minimum volume that must be reported as excess groundwater in each calendar year. This minimum volume is calculated based on the total volume of groundwater used by a member in that year. If a member uses no groundwater in a given calendar year, then its excess groundwater use is also zero for that year.

[18] Fourteen MSAs were enrolled in CAGRD between 1995 and March 2000. Those MSAs are: Vail Water Company, Marana, Metropolitan Domestic Water Improvement District, Apache Junction, Tucson, Oro Valley, Peoria, Spanish Trail Water Company, Avondale, Surprise, Florence, Rancho Sahuarita Water Company, El Mirage, and Eloy. Only Tucson's MSA included an upper limit in that, for any reported volume of excess groundwater exceeding 12,500 acre-feet, Tucson must provide the water supply necessary for replenishment.

Once a service area has qualified as an MSA, the water provider must annually report to CAGRD and ADWR the volume of groundwater and excess groundwater delivered within the provider's service area. CAGRD's replenishment obligation is equal to the volume of excess groundwater delivered. The replenishment tax is based on this replenishment obligation and must be paid by the water provider directly to CAGRD. Once collected, CAGRD deposits the taxes into the bank account maintained by the State Treasurer for CAGRD. CAGRD uses the taxes to acquire and replenish renewable water supplies in order to satisfy its replenishment obligations within three years of incurring the obligation.

An MSA may be "de-enrolled" from CAGRD if a substitute renewable water supply has been obtained to serve the service area, thereby eliminating the municipal water provider's reliance on MSA status to maintain a DAWS. The municipal provider must apply to ADWR to modify its DAWS to eliminate reliance on CAGRD, it must submit an application to CAGRD requesting termination of its membership status, and it must adopt a resolution declaring that CAGRD is no longer obligated to perform groundwater replenishment on behalf of the service area.

C. General Overview of CAGRD's Plan of Operation

In order for any parcel or service area to qualify for membership in CAGRD, CAGRD (1) must have a Plan of Operation ("Plan") in place, that has not expired, and that has been determined by the Director of ADWR to be consistent with the management goals of the Phoenix, Pinal, and Tucson AMAs; and (2) must be in compliance with its groundwater replenishment obligations.[19] The Director of ADWR determined that CAGRD's current Plan[20] was consistent with the management goals on October 31, 2005. The Plan will expire no later than January 1, 2016. CAGRD is required by law to submit a new Plan to the Director of ADWR every ten years[21], with the next Plan due at any time during calendar year 2014. As explained in more detail in Section II. C of this White Paper, ADWR may require CAGRD to submit a revised Plan before the current Plan expires.

Purpose and Components of the Plan

The purpose of the Plan, as defined by statute, is to describe the activities that CAGRD proposes to undertake during the 100 calendar years following submission of the Plan. The Plan must include the following information for the Phoenix, Pinal, and Tucson AMAs[22]:

1. CAGRD's groundwater replenishment obligations and the extent to which those obligations have been met in the ten years preceding plan submittal *(see Section 2 of the current Plan)*.

2. An estimate of CAGRD's current and projected groundwater replenishment obligations for current members for the twenty calendar years following the submission of the Plan

[19] A.R.S. § 45-576.06.
[20] CAGRD Plan of Operation, Submitted Draft, November 8, 2004.
[21] A.R.S.§ 45-567.02.C.
[22] A.R.S. § 45-576.02.C.2.

(see Section 3.3 of the current Plan) and an estimate of CAGRD's projected groundwater replenishment obligations for the one hundred calendar years following the 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 the submission of the Plan *(see Section 3.4 of the current Plan)*.

3. A description of the water resources that CAGRD 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 *(see Section 4 of the current Plan)*.[23]

4. A description of CAGRD's current replenishment reserve activities in each active management area for the ten years preceding the current Plan and planned replenishment reserve activities for the ensuing ten years *(see Section 5 of the current Plan)*.

5. A description of any facilities and projects to be used for replenishment and the replenishment capacity available to CAGRD during the twenty calendar years following submission of the Plan *(see Section 6 of the current Plan)*.

6. An analysis of potential storage facilities that may be used by CAGRD for replenishment purposes *(see Section 6 of the current Plan)*.

7. A description of CAGRD's capability to meet the current and projected groundwater replenishment obligations for the twenty calendar years following the calendar year in which the Plan is submitted to ADWR *(see Section 7 of the current Plan)*.

8. Any other information that the Director may require.

Some of these requirements are critical to an examination of the adequacy of the current enrollment and planning process. Paragraph 2 has two important components. First, CAGRD must include in the Plan an estimate of its current and projected replenishment obligations for current members for the next 20 years. The statutes do not define what members qualify as "current members." The current Plan defines this term as those members enrolled through December 31, 2003. CAGRD estimated in the Plan that the current and projected replenishment obligations for these members in 2025 (the 20th year following submission of the Plan) would be 90,500 acre-feet annually.[24] CAGRD estimated that when the Plan expires on January 1, 2016, the actual replenishment obligation at that time for members enrolled through 2003 would be 43,100 acre-feet annually or approximately half of the 20-year obligation.

The second important component of paragraph 2 is that the Plan must include an estimate of CAGRD's projected groundwater replenishment obligations for current members and potential members for the 100 calendar years following submission of the Plan. In the current Plan,

[23] See Appendix B, which is Table 4.2 from the Plan.
[24] See Appendix C, which is Table 3.5 of the Plan.

CAGRD estimated that the replenishment obligation at build-out for current members and potential members expected to enroll through 2015 would be 226,800 acre-feet annually.[25] CAGRD estimated that when the Plan expires on January 1, 2016, the actual replenishment obligation at that time for members enrolled through 2015 would be 95,800 acre-feet annually.

Paragraph 3 similarly has two components. The Plan must include a description of the water resources CAGRD *plans to use* to meet its 20-year replenishment obligations and a description of the water resources *potentially available* for groundwater replenishment for the subsequent 80 years.[26] Thus, the water resources that CAGRD plans to use to meet its 20-year replenishment obligations must be defined with more certainty than those sources of water that might be available to meet the longer-term replenishment obligations.[27]

Paragraph 4 refers to an important concept that was added to the statutes in 2003 requiring CAGRD to establish a replenishment reserve of long-term storage credits.[28] The purpose of the replenishment reserve is to insure that CAGRD will always be able to meet its replenishment obligations while enhancing rate stability for its members. During future times of water supply shortage or infrastructure failure, CAGRD will be able to use credits from the replenishment reserve to meet its obligations, rather than purchase water that is temporarily high-priced (or unavailable) due to extreme conditions. CAGRD may use credits from the replenishment reserve beginning in 2030, or earlier if approved by ADWR for good cause and if CAGRD has an adequate plan for replacing the credits.[29]

The volume of credits to be stored in the replenishment reserve is known as the "reserve target." Conceptually, the purpose of the reserve target is to create a 20-year reserve to back up the portion of CAGRD's replenishment water supplies that are short-term. The reserve target must be identified in the Plan specifically for each AMA and is calculated based on the projected obligations and water supply acquisitions described in the Plan. The reserve targets identified in the current Plan are as follows:

AMA	Reserve Target (AF)
Phoenix	1,279,400
Pinal	93,000
Tucson	179,700
Total	1,552,100

[25] See Appendix D, which is Table 3.6 of the Plan.
[26] See Appendix E, which is Figure 4.3 of the Plan.
[27] It should also be noted that CAGRD is not required to submit the information required by item 3 and 7 to the extent that it has obtained a CAP allocation or other water supplies determined by the Director to be consistent with the AWS requirements in an amount that equals or exceeds the 100-year projected replenishment obligations.
[28] A.R.S. § 48-3772.E. The establishment of a CAGRD replenishment reserve was recommended by the Governor's Water Management Commission in its Final Report & Recommendations dated December 2001.
[29] A.R.S. § 45-859.01.K.

By the end of 2008, CAGRD will have about 70,000 acre-feet of credits in its replenishment reserve account. In addition, through Board policy, CAWCD has dedicated about 660,000 acre-feet of its existing long-term storage credits for use in establishing the replenishment reserve.[30] In the event that CAGRD ever has to use credits from the replenishment reserve to meet its replenishment obligations, CAGRD is required to replace the credits as soon as possible so that the reserve remains whole.

Finally, paragraph 7 requires CAGRD to describe its capability to meet its current and projected replenishment obligations for the 20 years following submission of the Plan. CAGRD and ADWR have interpreted "capability" to mean financial capability. The current Plan estimates that CAGRD will have to spend more than $260 million through 2027 to fund the water supply acquisition plan.[31] This figure, however, does not include the cost of taking delivery of and replenishing the water supplies.

The law requires that all operations of CAGRD be funded completely by its members. The statutes authorize CAWCD to advance funds to the CAGRD to help cover necessary expenses, provided that all advances from CAWCD are fully repaid with interest at a rate determined by CAWCD's Board of Directors.[32] CAWCD advanced funds for start-up operations of CAGRD and those advances have been fully repaid (with interest). CAGRD has the authority and responsibility to establish and collect all fees, assessments and taxes necessary to meet its replenishment obligations. CAGRD's Board of Directors has adopted policies for establishing its fees and rates on a biennial basis, thus providing CAGRD with flexibility as economic and operational conditions change.

CAGRD's sources of revenue are enrollment fees, activation fees, replenishment reserve fees, replenishment assessments, and replenishment taxes and interest derived from these funds. CAGRD collects three different fees from its members: an enrollment fee, an activation fee and a replenishment reserve fee. The enrollment fee is required by Board policy and must be paid with an application to enroll land or a service area. The enrollment fee for MLs is based on the number of housing units in a subdivision and revenues generated from the ML enrollment fee are to be used to purchase water rights and develop infrastructure necessary to meet replenishment obligations. The MSA enrollment fee is to be used to cover the administrative costs of processing the specific enrollment application.

The activation fee is required by statute and must be paid to CAGRD on behalf of the owner of a subdivision within an ML or MSA before the Arizona Department of Real Estate will issue a public report allowing the sale of parcels of land in the subdivision.[33] The activation fee is based on the number of housing units in a subdivision. Revenues generated by the activation fee are to be used to purchase water rights and develop infrastructure necessary to meet replenishment obligations.

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[30] The Board policy, dated October 6, 2005, requires that CAGRD pay CAWCD for the credits in the year in which they are transferred from CAWCD's long-term storage account into CAGRD's replenishment reserve subaccount.
[31] CAGRD Plan of Operation, p. 50.
[32] A.R.S. § 48-3713.B.9&10.
[33] A.R.S. § 48-3772.A.7.

The replenishment reserve fee is required by statute and is levied against MLs and MSAs.[34] Revenues generated from the replenishment reserve fee are to be used to accrue long-term storage credits for use in establishing and maintaining the replenishment reserve in the AMA where the fee was levied. For an ML subdivision, the fee is based on the estimated excess groundwater demand at build-out for the subdivision and must be paid to CAGRD on behalf of the owner before the Arizona Department of Real Estate will issue a public report for the subdivision. For an MSA, the fee is paid annually by the water provider to CAGRD based on the incremental increase in the use of excess groundwater in the water provider's service area in the prior year.

After excess groundwater is actually being used within an ML or an MSA, CAGRD must also establish and levy an annual replenishment assessment against the ML and an annual replenishment tax against the MSA, which, when combined with revenues from the fees described above, must cover all of CAGRD's costs of performing its replenishment obligations.[35] CAGRD accomplishes this by establishing per-acre-foot assessment rates on a biennial basis for each AMA that are levied against the actual volume of excess groundwater used by the members in that AMA. In accordance with current Board policy, CAGRD assessment rates consist of four rate components that are designed to cover different costs incurred by CAGRD. These four components are:

- Water & Replenishment: based on the given year's estimated cost of acquiring, transporting and replenishing adequate water supplies to meet replenishment obligations for the reporting year. The up-front cost, if any, to acquire the rights to renewable water supplies is not included in this component.

- Administrative: based on the costs of administering CAGRD, including salaries, benefits, training, overhead, special studies, etc.

- Replenishment Reserve: based on the costs of acquiring, transporting and replenishing water to establish and maintain a replenishment reserve of long-term storage credits.

- Infrastructure & Water Rights: based on the anticipated up-front costs of acquiring rights to renewable water supplies and developing necessary infrastructure to perform required replenishment activities.

The cost that is most difficult for CAGRD to project is the cost to acquire and develop the rights to renewable water supplies and development of infrastructure necessary to meet replenishment obligations over the long-term. The water supply acquisition plan outlined in the current Plan was projected to cost more than $260 million through 2027. As indicated above, revenues to fund this acquisition plan will come from a combination of enrollment fees, activation fees, the infrastructure & water rights component of annual assessments and taxes, and interest derived from these funds. Consistent with the Plan, as of 2007, CAGRD had collected approximately

[34] A.R.S. § 48-3772.E.
[35] A.R.S. § 48-3772.A.3.

$17 million for water supply acquisition and had spent about $2 million to acquire an entitlement to 7,746 acre-feet of CAP M&I priority water.

As indicated in the Conclusion section of the current Plan, CAGRD is continuously monitoring its projected groundwater replenishment obligations and the availability of water supplies to meet CAGRD replenishment obligations and will continue to provide reports to the CAWCD Board of Directors at least once per year. In addition, the Board adopted a new Strategic Plan in November 2006 that confirmed its desire to continue to review the status of CAGRD's Plan and update it as necessary.

II. ADWR OVERSIGHT OF PLAN IN RELATIONSHIP TO ENROLLMENT

A. Plan Submittal and Approval

Within 60 days of receiving the proposed Plan from CAGRD, ADWR must determine whether CAGRD has submitted sufficient information for the Director to make a determination that the Plan is consistent with the management goals of the Phoenix, Pinal, and Tucson AMAs.[36] If the Director determines that the information submitted in the Plan is insufficient for making such a determination, ADWR must notify CAGRD of the deficiencies in writing and must specify what additional information is required. CAGRD must provide the additional information to ADWR within a reasonable time, as specified by the Director, after receiving the notice of deficiencies.

Once ADWR determines that the Plan is complete, it must publish a public notice requesting comments on the Plan and setting a date for a hearing on the Plan. ADWR must hold a hearing within 60 days after the last public notice. Any person may comment or present evidence on the Plan and CAGRD must respond in writing to ADWR to every comment received. After the public hearing, ADWR has 120 days to issue a decision for each AMA. ADWR must determine that the Plan is consistent with the management goal of each AMA if all of the following have been demonstrated:

1. The Plan identifies sufficient water supplies to meet the replenishment obligations for current members during the 20 years following submission of the Plan;

2. The Plan identifies additional water supplies potentially available for the projected groundwater replenishment obligations for 100 years following submission of the Plan for current and potential members (based on reasonable projections of real property and service areas that could qualify as members in the ten years following submittal of the Plan);

3. The replenishment reserve for each AMA has been calculated and CAGRD is developing the required replenishment reserve for each AMA;

[36] A.R.S. § 45-576.03.

4. The Plan identifies sufficient capacity at storage facilities and projects to be used for replenishment purposes for the 20 years following submission of the Plan; and

5. CAGRD has made a reasonable estimate of the projected replenishment obligations for the 100 years following submittal of the Plan.

If the Director determines that the Plan is consistent with the management goal for each AMA, the Plan remains effective for that AMA until January 1 of the year following the year in which CAGRD is required to submit the next Plan unless the Plan expires sooner as explained in Section II.C.[37]

B. Annual Plan Review

Each year, ADWR reviews the Plan to determine that: 1) on an annual basis, CAGRD has met its replenishment obligation within three years after the obligation is incurred; 2) there has not been an unexpected increase in the projected groundwater replenishment obligation; 3) credits are being transferred to the replenishment reserve account; and 4) the water supplies identified to meet the current member's obligations for the 20 years after the submittal of the Plan are being acquired as presented in the Plan. ADWR performs this review using a combination of continuous monitoring of CAGRD enrollment activities and annual reports submitted by CAGRD.

1. Monitoring of Membership Enrollment

Each time a new ML or MSA completes the enrollment process, CAGRD provides ADWR with a copy of the enrollment documents that define the member's physical boundaries and the enrollment date. Without this "proof of enrollment," ADWR will not issue a corresponding CAWS or DAWS. As part of the process of issuing a CAWS or DAWS, ADWR projects the corresponding groundwater demand for the subdivision or service area (and, thus, a projection of CAGRD's long-term replenishment obligation) and is required by statute to transmit that information to CAGRD. ADWR places this data in a database as a mechanism to monitor actual CAGRD enrollment and ultimate groundwater demands of all CAGRD members. CAGRD also maintains its own membership database. In an effort to insure that both agencies agree on the status of CAGRD membership, beginning in 2008, ADWR will require that CAGRD include a summary of annual enrollment as part of the annual report submitted to ADWR.

2. Annual Reporting

By August 31st of each year, CAGRD is required to submit to ADWR an annual report for the prior calendar year (reporting year) that includes the following information[38]:

[37] CAGRD must submit its new Plan in the year before the 10th calendar year. A.R.S. § 45-576.02.C.2.
[38] A.R.S. §§ 45-877.01 and 48-3775.E.

a. The total amount of water that was stored during the reporting year for each water storage permit held by CAGRD;

b. The amount of water stored during the reporting year to be credited to CAGRD's conservation district account, which is the master account that is used to determine whether CAGRD is in compliance with its annual replenishment obligations;[39]

c. The amount of water stored during the reporting year to be credited to CAGRD's long-term storage account;

d. The amount of water stored during the reporting year to be credited to CAGRD's replenishment reserve sub-account;

e. The amount of long-term storage credits CAGRD has transferred and credited to its conservation district account during the reporting year;

f. The groundwater replenishment obligation for the reporting year and for the two calendar years preceding the reporting year, and the extent to which the district has completed the groundwater replenishment obligations applicable to each of those years;

g. The amount of water replenished during the reporting year pursuant to any "contract replenishment obligation" on behalf of a municipal water provider; and

h. Any other information ADWR may require.

C. Maintaining Consistency with the Management Goal

At any time between the second anniversary and the sixth anniversary of the Director's determination that the Plan is consistent with the management goal of each AMA, the Director may determine that there has been "an unexpected increase in the projected groundwater replenishment obligations" or an "unexpected reduction in water supplies available to meet the current obligations" such that the Plan no longer demonstrates consistency with the management goal for one or more AMAs.[40] Upon making such a determination, the Director must require CAGRD to submit a revised Plan to ADWR that addresses those Plan elements that no longer demonstrate consistency with the management goals. The revised Plan must be submitted within two calendar years of the date that ADWR notifies CAGRD of such a determination.[41] The revised Plan does not extend the original termination date of the current Plan. Rather, it addresses deficiencies identified by ADWR in the current Plan. ADWR plans to adopt a

[39] A.R.S. § 45-859.01.
[40] A.R.S. § 45-576.03.R.
[41] This timeframe was established by the legislature upon the recommendation of the Governor's Water Management Commission as a result of deliberations that occurred during 2000 and 2001. It reflects the facts that (1) development of a revised Plan could take up to two years to complete, and (2) CAGRD must, by law, submit a new ten-year plan at approximately the ninth anniversary of the current Plan, preparation of which is expected to begin at approximately the seventh anniversary.

substantive policy statement to formally establish how it will annually monitor the Plan and how it will determine, as described below, whether there has been an unexpected increase in projected groundwater replenishment obligations or an unexpected reduction in water supplies available to meet current replenishment obligations.

1. Determining an Unexpected Increase in Projected Groundwater Replenishment Obligations

ADWR will use the current Plan, the annual reports and its database to determine whether there has been an "unexpected increase in the projected groundwater replenishment obligations." Beginning in 2008[42], ADWR will require that CAGRD provide, along with its annual report for each AMA, the results of an analysis showing the total 100-year projected replenishment obligations for all members enrolled in that AMA through the end of the reporting year (existing members). Each year, ADWR will verify the validity of the analyses and will compare this total 100-year projected replenishment obligation for existing members in each AMA to the total 100-year projected groundwater replenishment obligation for current and potential members in the corresponding AMA, as identified in the Plan.[43] If ADWR determines that, for any AMA, the total 100-year projected replenishment obligation for existing members in the AMA exceeds 90 percent of the total 100-year projected replenishment obligation for current and potential members for that AMA, as identified in the Plan, ADWR would immediately notify CAGRD in writing of its finding that there has been an unexpected increase in the projected groundwater replenishment obligation and that a revised Plan must be submitted to address this condition. Comparing the total projected replenishment obligation for existing members against a 90 percent portion of the total projected replenishment obligation for current and potential members in the Plan provides an opportunity to address potential over-enrollment problems before they actually occur. As time goes on and more is learned about CAGRD enrollment and corresponding replenishment obligations, ADWR may modify its substantive policy statement to refine the methodologies it uses to determine whether there has been an unexpected increase in the projected groundwater replenishment obligations.

2. Determining an Unexpected Reduction in Water Supplies Available to Meet Current Obligations

ADWR will rely on the current Plan, annual reports, its database and other available information to determine whether there has been an "unexpected reduction in water supplies available to meet CAGRD's current obligations." In making this determination, ADWR will take into account all existing CAGRD members enrolled through the most recent reporting year. Beginning in 2008, ADWR will require that CAGRD provide, as part of its annual report:

[42] Because the Plan was determined by the Director to be consistent with management goals on October 31, 2005, the 2008 annual review will be the first full-year review completed since the second anniversary of the Director's determination. Reviews during the first two years after the determination were less rigorous.
[43] See Appendix D of this White Paper.

- A summary showing the projected groundwater replenishment obligation for all existing members for each year through 2025 (i.e., the 20 calendar years following submission of the Plan); and
- A summary documenting CAGRD's progress in implementing the water supply acquisition plan outlined in the current Plan of Operation.[44]

With this information, ADWR will reconfirm, on an annual basis, whether there are sufficient water supplies available to meet all of CAGRD's projected replenishment obligations through 2025. If ADWR cannot make such a confirmation in its annual review, it will immediately notify CAGRD in writing of its finding that there has been an unexpected reduction in water supplies available to meet the current obligations and that a revised Plan must be submitted to address this condition. Confirming available water supplies through 2025 (ten years beyond the date that the current Plan expires) provides an opportunity to address potential water supply problems before they actually occur. As time goes on and more experience is gained regarding CAGRD replenishment obligation trends, funding programs and new technologies for developing water supplies, ADWR may modify its substantive policy statement to refine the methodologies it uses to determine whether there has been an unexpected reduction in available water supplies.

3. Revised Plan

If ADWR determines that the Plan no longer demonstrates consistency with the management goal for one or more of the AMAs, CAGRD must submit a revised Plan to ADWR within two calendar years of the date that ADWR notifies CAGRD of such a determination. The revised Plan must address those Plan elements that no longer demonstrate consistency with the management goal. Once the revised Plan is submitted, ADWR has 60 days to determine if CAGRD has submitted sufficient information to determine whether the Plan is consistent with the management goal of each AMA. If the Director determines that the information submitted in the Plan is insufficient for making such a determination, ADWR must notify CAGRD of the deficiencies in writing and must specify what additional information is required. CAGRD must provide the required additional information to ADWR within a reasonable time, as specified by the Director. If ADWR determines that the information necessary to make a determination has been submitted and is complete, a two-week public notice period must be provided for comments, as was the case for the original Plan submittal. ADWR must hold a public hearing within 60 days of the last public notice on the conditions that have changed in the revised Plan and any person may comment or present evidence at the public hearing. CAGRD must respond in writing to ADWR to every comment received. After the public hearing, ADWR has 120 days to make a determination whether the Plan is consistent with the management goal of each AMA. If the Director of ADWR makes a determination for one or more AMA that the revised Plan is consistent with the management goal, the current Plan, as modified by the revised Plan, will

[44] In its current Plan, CAGRD states that excess CAP water will not be sufficient to meet all of its obligations for the next 20 years and outlines a plan to develop a portfolio of water supplies necessary to cover any deficiencies. The Plan provides a general planning schedule for acquiring water rights necessary to meet CAGRD's projected replenishment obligations.

remain in effect until one year following the end of the original 10-year period. If the Director makes a determination for one or more AMA that the revised Plan is not consistent with the AMA management goal and CAGRD is unable to satisfy the Director's concerns within 60 days of notice of such a determination, the current Plan for the AMA will expire. The Director's determination is subject to rehearing or review and to judicial review, but the Court may not issue a temporary restraining order or preliminary injunction to prevent the Director's decision from taking effect while judicial review is pending.[45]

D. Impacts of Expired Plan

If a Plan has expired for an AMA,[46] or if the Director of ADWR determines that CAGRD is not currently in compliance with its groundwater replenishment obligations for an AMA, no additional real property in that AMA may become member land and no additional service areas may become member service areas in that AMA.[47] Additionally, a municipal provider that received a DAWS "on the basis" that its service area was an MSA will lose its DAWS and, therefore, may not serve additional subdivisions. ADWR interprets this provision to mean that a municipal provider in the applicable AMA will lose its DAWS if, in the decision and order granting the DAWS, the Director of ADWR determined that the municipal provider's use of excess groundwater was consistent with the management goal based on replenishment by CAGRD. The loss of a DAWS remains in effect until CAGRD submits a revised Plan that meets the criteria for demonstrating consistency with the management plan for that AMA, CAGRD successfully appeals ADWR's determination, or the municipal provider can otherwise demonstrate to ADWR that the municipal provider's projected use is consistent with the management goal of that AMA. In the latter case, the municipal provider would need to apply for a modification of its DAWS and demonstrate it can meet the consistency with the management goal requirement without reliance on CAGRD.

As discussed above, ADWR will notify CAGRD in writing of any finding that there has been an unexpected increase in projected groundwater replenishment obligations or an unexpected reduction in water supplies available to meet current replenishment obligations. CAGRD then has time to submit a revised Plan to correct these deficiencies. The Plan would not expire until the Director makes a final decision after the administrative process described on page 16 of this White Paper. During the time in which a revised Plan is being prepared, a municipal provider that received a DAWS on the basis that its service area was an MSA would have the opportunity to apply to modify its DAWS before the DAWS might expire to demonstrate that it can meet the consistency with the management goal requirement without reliance on CAGRD. ADWR would limit its review to the component the modification would address resulting in an expedited review.

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[45] A.R.S. § 45-576.03.Q.
[46] A Plan may expire because ADWR does not approve a revised Plan (A.R.S. § 45-576.04.S) or because the original expiration date of a Plan passes without ADWR having approved a new Plan.
[47] A.R.S. § 45-576.06.

Conclusion

This White Paper has established a common understanding of CAGRD enrollment and ADWR's oversight of CAGRD's Plan of Operation in relationship to enrollment. In the process of developing the White Paper, and the corresponding clarification of the mechanisms that are in place to monitor enrollment and CAGRD's compliance with the Plan, the Stakeholders' concerns about the potential for unsustainable growth of CAGRD have been somewhat ameliorated. However, many Stakeholders agree that statutory and administrative changes could further clarify and strengthen current law. Accordingly, the Stakeholders make the following recommendations for statutory and administrative changes.

A. Statutory Changes

1. CAGRD Enrollment Process

As discussed on pages 4 and 5 of this White Paper, CAGRD has implemented a process for enrollment of member lands, which requires, among other things, an application to CAGRD and the payment of a per-housing-unit enrollment fee. The statutes do not specify that a landowner must follow this application process. Arguably, a landowner could execute and record an ML Declaration and an ML Agreement and the land would qualify as an ML without action by CAGRD. Consequently, in order to ensure that prospective MLs comply with CAGRD's enrollment process and pay an enrollment fee, the Stakeholders recommend that A.R.S. § 48-3774, which sets forth the qualifications for MLs, be amended to require that the ML Declaration be approved by CAWCD prior to recordation and that CAWCD be a party to the ML Agreement. This will ensure that CAGRD will be able to enforce its application process and monitor enrollment in CAGRD. The proposed amendment would read as follows:

> "A.5 The owner of the real property, or other person or entity, such as a property owners' or homeowners' association, if the person or entity has proper authority, records a declaration, WHICH HAS BEEN APPROVED BY THE DISTRICT, against the real property in the official records of the county where the real property is located that: . . .
>
> C. Notwithstanding subsection A of this section, no real property qualifies as member land unless the municipal provider that is subject to the declaration records in the official records of the county where the real property is located an ~~instrument~~ AGREEMENT BETWEEN THE DISTRICT AND THE MUNICIPAL PROVIDER that contains both of the following PROVISIONS: . .."

2. ADWR Oversight of the Plan of Operation

One goal of the Stakeholders has been to clarify and document ADWR's oversight of the Plan to ensure that CAGRD remains in compliance with the Plan and that, as long as new members may

qualify to enroll in CAGRD, the Plan demonstrates consistency with the management goals of the Phoenix, Pinal, and Tucson AMAs. As discussed on page 14 of this White Paper, current law allows the Director of ADWR to determine if the Plan continues to demonstrate consistency with the management goals of the AMAs only between the second and sixth anniversary of the Director's original determination. If the Director determines that the Plan no longer demonstrates consistency with the management goal of an AMA during this period, CAGRD must submit a revised Plan to ADWR within two years pursuant to the statutory process. Many Stakeholders are concerned that the length of time between the sixth anniversary and the earliest date at which CAGRD is able to submit its subsequent ten-year Plan is too long. If the Plan becomes inconsistent with meeting the management goal of an AMA during that period, current statutes not only do not require that the Plan be revised, but they actually prohibit the submission of a revised Plan. Accordingly, the Stakeholders recommend that A.R.S. § 45-576.03.R be amended to:

a. Give the Director of ADWR the authority to determine any time between the second anniversary and the eighth anniversary of the Plan of Operation that the Plan is no longer consistent with the management goal for one or more AMA.

b. Require CAGRD to submit any revised plan within one calendar year of the Director's notification to submit a revised plan, unless the Director extends this time for good cause. The statute currently gives CAGRD two years to submit a revised Plan.

3. Expiration of the Plan

As discussed on page 7 of this White Paper, CAGRD is required to submit a new Plan to ADWR every ten years. ADWR must determine whether the Plan for each AMA "shall be designated as being consistent with the management goal of that"[48] AMA. The "designation expires on January 1 of the year following the year"[49] the CAGRD is required to submit its next ten year Plan. Additionally, if ADWR requires CAGRD to submit a revised Plan for an AMA and later determines that that revised Plan is not consistent with achieving the management goal of that AMA, "the district's plan shall expire."[50]

The Stakeholders are concerned that the statutes as now written would result in the entire Plan expiring if the Director determines that the revised Plan is not consistent with achieving the management goal for an AMA. The Stakeholders would like to ensure that the portions of the ten-year Plan that are not affected by the Director's determination on the revised Plan continue to be effective and recommend that A.R.S. § 45-576.03.S be amended to read:

"Unless the conservation district successfully appeals the director's determination pursuant to subsection Q of this section, if the director has made a determination for one

[48] A.R.S. § 45-576.03.M.
[49] Ibid.
[50] A.R.S. § 45-576.03.S.

or more active management areas that the conservation district's revised plan for operation is not consistent with achieving the management goal of that active management area pursuant to this section and the conservation district is unable to satisfy the director's concerns within sixty days after the director has notified the conservation district of the determination, the DESIGNATION PURSUANT TO SUBSECTION M OF THIS SECTION THAT THE district's plan IS CONSISTENT WITH THE MANAGEMENT GOAL OF THE ACTIVE MANAGEMENT AREA shall expire."

The Stakeholders also recommend that A.R.S. §§ 45-576.02.C.2 and 45-576.03.M be amended to ensure that the planning dates clearly provide that the current ten-year Plan remains effective until at least one year after the last date that the next ten-year Plan must be submitted to ADWR.

B. Administrative Changes

1. ADWR Oversight of the Plan of Operation

ADWR's oversight of the Plan is critical to ensuring that the Plan is implemented and that enrollment does not continue if the Plan is not consistent with the management goals of the AMAs. As explained in detail on pages 14 through 16 of this White Paper, ADWR must review the Plan annually (between the second and sixth anniversaries) to determine whether there has been an unexpected increase in projected groundwater replenishment obligations or an unexpected reduction in water supplies available to meet the current replenishment obligations. The Stakeholders expressed concern that these critical standards, which determine whether a Plan continues to be consistent with the management goals, are not well defined in the statutes. Accordingly, the White Paper sets forth how ADWR intends to interpret these standards. ADWR plans to adopt a substantive policy statement to formally establish, as described in this White Paper, how it will annually monitor the Plan and determine whether there has been an unexpected increase in projected groundwater replenishment obligations or an unexpected reduction in water supplies available to meet current replenishment obligations.

The Stakeholders recommend that ADWR adopt a substantive policy statement that is consistent with the principles and practices contained in this White Paper.

2. Loss of DAWS

As discussed on page 17 of this White Paper, if ADWR determines that the Plan is not consistent with achieving the management goal of an AMA or CAGRD is not in compliance with its replenishment obligations for an AMA, a municipal provider that received a DAWS on the basis that its service area was an MSA will lose its DAWS. The loss of a DAWS has serious economic and political ramifications and municipal providers need certainty about how ADWR will interpret this provision.

The Stakeholders recommend that ADWR include in the substantive policy statement discussed under B.1 above how it will determine whether a municipal provider will lose its DAWS under A.R.S. § 45-576.06.A and how ADWR will review an application to modify a DAWS consistent with the principles and practices contained on page 17 of this White Paper.

3. Increasing Cap on MSA Replenishment Obligation

When CAGRD enrolls a service area, it includes in the MSA Agreement a maximum volume of excess groundwater deliveries that may be reported to CAGRD. In essence, the MSA Agreement caps CAGRD's replenishment obligations for the MSA. However, as explained on page 5 of this White Paper, if the MSA later begins to serve water to an ML, CAGRD cannot levy a replenishment assessment against the ML. This poses a problem for the MSA that must assume the responsibility for meeting the consistency with the management goal requirement for the ML within the cap imposed by the MSA Agreement.

The Stakeholders recommend that CAWCD adopt a policy that if an MSA begins serving an ML and such service was not contemplated when the MSA Agreement was signed, CAWCD will agree to increase the cap on its replenishment obligation under the MSA Agreement in an amount sufficient to cover the replenishment obligation associated with the ML.

AGENDA ITEM #6 – ATTACHMENT C

SUSTAINABILITY POLICIES STAKEHOLDERS PROCESS

Location of Replenishment/Recharge and Hydrologic Impact of Pumping

Groundwater Modeling for Assured Water Supply Purposes And Well Impact Analyses "Final" Draft July 12, 2008

Stakeholders have expressed concern about whether current laws, rules, and practices of the Arizona Department of Water Resources (ADWR) adequately protect water that has been stored underground from the impacts of proposed groundwater pumping by applicants for designations, certificates, and analyses of assured water supply (AWS applicants), and by those seeking permits for new wells. The Stakeholders invited ADWR to explain current law and practices at two Stakeholders' meetings. ADWR has also elaborated on this discussion at a recent workshop on future applications for re-designation of assured water supply. This document explains the differences between the types of groundwater models and how they are used and summarizes ADWR practices regarding groundwater modeling for assured water supply (AWS) purposes and the impact analysis required by ADWR's well-spacing rules.

Groundwater Models

Numerical and analytical are the two types of groundwater modeling used to assess how proposed pumping will affect groundwater levels.

1. Analytical Model (TH Wells)

    a. A simplistic and conservative model that assumes the aquifer is a bathtub with the same hydrologic characteristics from top to bottom.

    b. Recharge is not considered in the analytical model.

    c. A spreadsheet can be used for TH Wells analysis.

2. Numerical Model

    a. A computer program that uses complex mathematical equations to simulate flow in an aquifer.

    b. Groundwater levels are computed in "grids" or cells. Each cell represents a 3-dimension block of aquifer.

c. Model inputs include the geologic structure (depth to bedrock, the size of each cell, etc.), hydrologic parameters that define how much and how fast the water moves through the aquifer and the amount of water that flows into and out of the model, such as pumping and recharge. Each parameter must be defined for each cell.

d. The USGS developed the industry standard computer model called Modflow. ADWR has developed a Modflow data set that simulates the Salt River Valley (SRV). The ADWR data set has been referred to as the SRV Model.

e. It can take months or years to develop a numerical model depending on the complexity of the area being modeled. Using the model to conduct a simple analysis can be set up in a week; more complex analyses, such as the re-designation process, can take months.

Groundwater Modeling for AWS Purposes

1. Purpose

ADWR requires AWS applicants to use a groundwater model to demonstrate that 100 years of groundwater is physically available for the proposed use. The modeling must demonstrate that the applicant's proposed groundwater pumping will not draw the aquifer below certain set limits (1,000 feet below land surface for the Phoenix, Tucson, and Prescott AMAs).

2. Groundwater Models Acceptable to ADWR

a. The groundwater model acceptable to ADWR for each AWS application is determined either at a pre-application meeting with ADWR or pursuant to the hydrological guidelines on ADWR's website.

b. The type of model required depends on the complexity of the area and the relative volume of nearby pumping. For example, does the area have faults or hard rock, is the aquifer similar from top to bottom, how many additional pumpers are in the area, etc. The type of analysis required also depends upon ADWR's assessment of whether there are potential depth-to-water issues within the area.

c. In general, ADWR accepts the use of an analytical model (TH Wells) for only the most simple groundwater analyses.

d. ADWR is requiring more and more AWS applicants to use a Modflow model to demonstrate physical availability of groundwater for an AWS. Most applicants for a designation of assured water supply (DAWS) must use a Modflow model.

Most master planned communities seeking an analysis of assured water supply[1] (Analysis) or a certificate of assured water supply (CAWS) must also use a Modflow model.

e. Not every applicant that is required to use a numerical model must use an ADWR model.

3. Expiring DAWS

a. In the Phoenix AMA, many water providers' DAWS expire in the year 2010. ADWR expects a heavy workload to process the applications to renew these DAWS.

b. To more efficiently process the numerous applications for DAWS renewal, ADWR will use a regional groundwater model to account for all future pumping and recharge. In the Phoenix AMA, ADWR has updated the existing SRV Model to carry out this regional groundwater analysis.

(1) ADWR will consider incorporating new hydrologic information from DAWS applicants into the SRV model if it has been demonstrated to be better data.

(2) ADWR will update the pumping and recharge values using the multiple applicants' information.

(3) ADWR will update pumping and recharge for those areas with existing CAWS and Analyses.

(4) ADWR measures water levels in index wells located throughout the AMAs every year. There are 300 index wells in the Phoenix AMA alone. This data is used in reviewing AWS applications and to calibrate ADWR's SRV numerical model.

[1] An Analysis of Assured Water Supply is a determination issued by the Director of ADWR stating that one or more of the criteria for obtaining a certificate of assured water supply have been demonstrated for a development. A.C.C. R12-15-701. A person proposing to develop land that will not be served by a municipal provider that has not been designated as having an assured water supply may apply for an Analysis. A.C.C. R12-15-703. The most common reason a developer seeks an Analysis is to demonstrate that sufficient groundwater supplies are physically available to meet the estimated demand of the proposed development. For ten years after the Director issues an Analysis, the Director must consider the groundwater reserved for the use of the proposed development in subsequent determinations of physical availability of groundwater. This ten-year period may be extended by the Director upon approval of an application filed by the Analysis holder.

"Protection" in Groundwater Modeling of Certain Water Supplies[2]

1. Groundwater Relied Upon to Demonstrate an AWS

   Groundwater that has previously been demonstrated to be physically available for a DAWS, a CAWS or an Analysis may not be relied upon by subsequent AWS applicants to demonstrate an AWS. ADWR protects this groundwater in an AWS model by assuming that the groundwater has been "pumped out." By modeling this groundwater as being pumped out, this groundwater cannot be used by subsequent AWS applicants to demonstrate physical availability of groundwater.

2. Water Replenished by CAGRD

   Water replenished by CAGRD becomes groundwater. Thus, such water is available to any AWS applicant and is considered to be groundwater in all AWS models.

3. Water Stored Underground ("stored water")

   a. Water stored underground may be relied upon to demonstrate an AWS only by the person who stored the water.[3]

   b. In an AWS model, ADWR "models" the water stored by someone other than the applicant as being "pumped out" during the model time period. By modeling stored water as being pumped out, this stored water cannot be used by the AWS applicant to demonstrate physical availability.

   c. While the model "protects" stored water from being relied upon by an AWS applicant who is not the person who stored the water, it does not protect the water level of that stored water. In other words, the person who stored the water may have to pump that water from greater depths.

4. Groundwater Allowances

   a. To the extent that a municipal provider has not relied on its groundwater allowance to demonstrate an AWS under its current DAWS, the physical availability of the provider's groundwater allowance is not "protected" from other

[2] "Protection" refers to ADWR insuring that certain water supplies may not be relied upon by AWS applicants to demonstrate an AWS. However, municipal pumping that does not require an AWS, industrial pumping, agricultural pumping, and exempt well pumping, may still impact the physical availability of these water supplies.

[3] The exception to this principal is the 5 percent "cut to the aquifer." Generally, only 95 percent of water stored underground may be recovered. A.R.S. § 45-851.01. The remaining 5 percent of the stored water is considered to be groundwater and may be relied upon to demonstrate an AWS by persons other than the storer of the water. This limitation on recovery of stored water does not apply to certain sources of stored water, such as effluent.

AWS applicants. In other words, while the municipal provider may have the legal ability to include its groundwater allowance in a future application to modify its DAWS, the groundwater may not be physically available because it has been relied upon by other AWS applicants.

b. ADWR is considering extending the time for which a DAWS may be granted, which could increase the volume of a groundwater allowance that could be included in a DAWS and, therefore, would not be available to other AWS applicants to demonstrate an AWS.

Impacts of New Wells

1. Well-Spacing Rules

a. ADWR has adopted well-spacing rules[4] "to prevent unreasonably increasing damage to surrounding land or other water users from the concentration of wells" as required by A.R.S. § 45-598. The well-spacing rules apply to:

(1) The drilling of new wells in AMAs.

(2) The drilling of replacement wells in a new location in AMAs.

(3) The proposed use of a new well or an existing well as a recovery well (to withdraw water stored underground), unless the applicant for the recovery well is (a) a city, town, private water company or irrigation district in an AMA and the application is for an existing well within the applicant's service area; or (b) a conservation district and the application is for an existing well within the groundwater basin or sub-basin in which the district has stored water.[5]

b. The rules prohibit the Director of ADWR from approving an application for a new well or a replacement well in a new location if the probable impact of the withdrawals from the proposed well on any well of record with ADWR will exceed ten feet of additional drawdown after the first five years of operation (unless the owner of any well of record consents to the withdrawals).

c. Except for recovery wells, the standard in the well-spacing rules does not consider the existing regional drawdown. For example, if an existing well is in an area with groundwater levels declining 27 feet every five years, a new well would be allowed to increase the existing well's decline to 37 feet every five years.

[4] A.A.C. R12-15-1301, et seq
[5] A.R.S. § 45-834.01.B. 2 and 3

d. Except for recovery wells, the well impact analysis required by the rules does not take stored water into account because ADWR examines only the proposed well's impact on other wells.[6]

2. Additional Requirement for Recovery Wells

a. A person seeking to recover (pump) stored water from a new or existing well must apply for a recovery well permit from ADWR.[7] If the proposed recovery well is located outside of the area of impact of the stored water, the recovery well permit may not be issued unless the Director of ADWR determines that recovery at the proposed location is consistent with the management plan and the achievement of the management goal for the AMA.

b. The "area of impact" means "as projected on the land surface, the area where the stored water has migrated or is located."[8] ADWR assumes that the area of impact is a one-mile radius from where the water is stored unless the applicant can demonstrate a larger area.

c. In the Third Management Plan, ADWR has determined that recovery outside the area of impact is consistent with the management plan and the achievement of the management goal if the well is located in an area experiencing an average annual rate of decline that is less than four feet per year.[9] This determination is made at the time of the application for the permit and can be modified by ADWR based on periodic reviews of well data.

d. ADWR will review its interpretation of this limitation on recovery wells in the development of the Fourth Management Plan.

[6] Note that A.R.S. § 45-856.01.A.4 appears to require ADWR to take stored water into account in issuing a permit for a new well within the area of impact of the stored water.
[7] A.R.S. § 45-834.01
[8] A.R.S. § 45-802.01
[9] See, for example, *Phoenix AMA Third Management Plan*, p. 8-36

AGENDA ITEM #6 – ATTACHMENT D

SUSTAINABILITY POLICIES STAKEHOLDERS PROCESS

Location of Replenishment/Recharge and Hydrologic Impact of Pumping

Summary and Recommendations
"Final" Draft
July 12, 2008

Introduction

On May 9, 2007, the Board of Directors of the Arizona Municipal Water Users Association (AMWUA)[1] adopted Policies Concerning Sustainable Water Supplies[2] addressing, among other things, the relationship between the location of replenishment by the Central Arizona Groundwater Replenishment District (CAGRD) and groundwater pumping by members of CAGRD; and the impacts of groundwater pumping by or for delivery to CAGRD members on the water supplies available to other water users. The AMWUA Board directed its staff to convene a Sustainability Policies Stakeholders Process to discuss these policies and related issues. This document summarizes the discussions of the Stakeholders related to replenishment and impact of pumping and includes the Stakeholders' recommendations for statutory and administrative changes related to these issues. It has been reviewed and confirmed by the Stakeholders.

Background

As part of the Stakeholders Process, representatives of CAGRD, the Arizona Department of Water Resources (ADWR), AMWUA, the City of Tucson, and the development community drafted a White Paper on CAGRD Enrollment[3] that describes CAGRD's enrollment process, CAGRD's Plan of Operation, and ADWR's oversight of the Plan in relationship to enrollment. The White Paper discusses in detail the origin and purpose of CAGRD and how CAGRD operates.

In summary, the owner of real property or a municipal water provider may enroll in CAGRD to meet the consistency with the management goal requirement of ADWR's assured water supply rules (AWS Rules). Membership in CAGRD allows the landowner or water provider to use more groundwater than would otherwise be allowed under the AWS Rules (excess groundwater), and pay CAGRD to replenish the excess groundwater. CAGRD must replenish the excess groundwater in the same Active Management Area (AMA) in which it is pumped.

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[1] AMWUA is a voluntary, non-profit corporation established by municipalities in the urban area of Maricopa County, Arizona for the development of an urban water policy. The members of AMWUA are the cities of Avondale, Chandler, Glendale, Goodyear, Mesa, Peoria, Phoenix, Scottsdale, and Tempe and the Town of Gilbert. The mayors of these municipalities serve as the Board of Directors of AMWUA.

[2] See Appendix A.

[3] The Stakeholders have also reviewed and confirmed the White Paper on CAGRD Enrollment, June 30, 2008.

Many Stakeholders have concerns regarding pumping of excess groundwater by CAGRD members and the subsequent replenishment of water by CAGRD. These concerns fall into the following three major categories:

1. Whether existing laws and ADWR rules and practices adequately protect water that has been stored underground by others for future use.

2. Whether there should be a hydrologic connection between the location of withdrawals of excess groundwater and replenishment by CAGRD.

3. Whether pumping of excess groundwater to serve CAGRD members should be subject to the same restrictions that govern wells used to recover stored water.

Protection of Stored Water

Many municipal water providers have expended significant resources to store water underground to be used in the future when shortages of surface water occur and they worry that pumping of excess groundwater by CAGRD members will impact the physical availability of this stored water for future uses. They have also questioned whether current laws and ADWR rules and practices adequately protect stored water from the impacts of proposed groundwater pumping for applications for designations, certificates and analyses[4] of assured water supply (AWS applications), and by those seeking permits to drill new wells.

The Stakeholders invited ADWR to discuss current laws and ADWR rules and practices. AMWUA and ADWR then prepared an outline[5] (Groundwater Modeling Outline) that details how ADWR uses groundwater modeling to:

- Determine whether to approve new assured water supply applications;
- Protect stored water and groundwater relied upon for existing designations of assured water supply (DAWS), certificates of assured water supply (CAWS) and analyses of assured water supply (Analyses) from being impacted by new assured water supply determinations;
- Determine whether a proposed new well will impact surrounding land and other water users.

[4] An analysis of assured water supply is a determination issued by the Director of ADWR stating that one or more of the criteria for obtaining a certificate of assured water supply have been demonstrated for a development. A.A.C. R12-15-701. A person proposing to develop land that will not be served by a municipal provider that has been designated as having an assured water supply may apply for an analysis. A.C.C. R12-15-703. The most common reason a developer seeks an analysis is to demonstrate that sufficient groundwater supplies are physically available to meet the estimated demand of the proposed development. For ten years after the Director issues an analysis, the Director must consider the groundwater reserved for the use of the proposed development in subsequent determinations of physical availability of groundwater. This ten-year period may be extended by the Director upon approval of an application filed by the analysis holder. Under certain circumstances as described in ADWR's rules, the Director is required to extend the 10-year period.

[5] See Appendix B.

The practices detailed in the Groundwater Modeling Outline have assuaged concerns about potential threats caused by new AWS applications to stored water and to groundwater relied upon by existing DAWS, CAWS, and Analyses. However, the Stakeholders also recognized that current laws do not protect stored water or existing DAWS, CAWS and Analyses from the impacts of groundwater withdrawals that are not regulated by the AWS Rules. These withdrawals include agricultural pumping; municipal pumping that does not require an AWS, industrial pumping and exempt well pumping. While the Stakeholders are concerned about the large-scale impacts of these withdrawals, they concluded that these issues would need to be addressed in another, more expansive forum.

Location of Withdrawals of Excess Groundwater and Replenishment

As noted above, CAGRD is required by law to replenish the excess groundwater used by its members in the same AMA in which it is pumped. However, CAGRD is not required to replenish water in the area that is hydrologically impacted by the withdrawals of excess groundwater. Many Stakeholders are concerned that this lack of a hydrologic connection between the location of withdrawals and the location of replenishment may exacerbate land-subsidence, water quality issues, and growth on non-sustainable water supplies. The Stakeholders recognize, however, that requiring CAGRD to replenish in the area that is hydrologically impacted by the withdrawal of excess groundwater is problematic. Many CAGRD member lands are located a great distance from the Central Arizona Project (CAP) facilities that CAGRD relies upon to deliver water to replenishment locations. Thus, requiring replenishment to occur in an area that is hydrologically connected to the location of the withdrawals of excess groundwater would be extremely costly in some cases. Moreover, because CAGRD is required by law to establish uniform replenishment assessment rates on an AMA-wide basis, all CAGRD members in the AMA would have to pay for the development and operation of the more costly facilities. Additionally, replenishment in many of the locations where excess groundwater is withdrawn may not be hydrologically feasible or desirable. For example, some excess groundwater is pumped in areas with high or rising groundwater tables and requiring replenishment in such areas may actually cause, rather than solve problems. Some Stakeholders have also noted that those who have stored water underground are allowed to recover (pump) this water from outside the area of impact of the stored water, which may cause or exacerbate the same problems described above.

Finally, ADWR is currently conducting an assessment of the AMAs to determine the areas where groundwater withdrawals are creating long-term problems and plans to propose changes to address these issues in the future. ADWR believes it is premature to address the location of replenishment until this assessment is completed. In 2006, CAWCD's Board of Directors adopted a strategic plan that calls for working with ADWR to identify problem areas and how it can help address the problems.

Recovery Well Limitations

A person seeking to recover stored water from a new or existing well must apply for a recovery well permit from ADWR.[6] If the proposed recovery well is within the area of impact of the stored water[7], the Director of ADWR must issue the permit, as long as the well complies with well-spacing requirements. If the proposed recovery well is located outside of the area of impact of the stored water, the recovery well permit may not be issued unless the Director of ADWR determines that recovery at the proposed location is consistent with the management plan and the achievement of the management goal for the AMA. In the Third Management Plan, ADWR has determined that recovery outside the area of impact is consistent with the management plan and achievement of the management goal if the proposed recovery well is located in an area experiencing an average annual rate of decline that is less than four feet per year.[8] The determination whether an area is experiencing an average annual rate of decline that is less than four feet per year is made at the time of the application for the recovery well permit. However, this determination may be modified by ADWR based on periodic reviews of well data.

Many municipal water providers have service area wells that are also permitted as recovery wells. A municipal provider has the right to withdraw as much groundwater as necessary from a service area well for the benefit of landowners and residents within its service area, subject to conservation requirements and transportation limitations.[9] The municipal provider's service area is the area of land actually being served water by the provider for a non-irrigation use plus additions to that area that contain an operating distribution system owned by the municipal provider.[10] When a municipal provider is designated as having an assured water supply or is serving water to member lands of the CAGRD, it may also use its service area wells to pump excess groundwater. Thus, the regulation of the water withdrawn from the same well will differ depending on the classification of the water as groundwater, stored water or excess groundwater. Excess groundwater must be replenished. A municipal provider may withdraw from the well as much groundwater or excess groundwater as needed to serve its customers, but will not be able to recover stored water from the same well if it is within an area experiencing a four-foot decline. Thus, a municipal provider may have sufficient stored water to avoid pumping excess groundwater, but will be unable to recover the stored water if recovery is in an area of four-foot decline and will thus be forced to incur the cost of replenishment. Because the four-foot decline determination may change periodically, a municipal provider may be able to use a service area well to recover stored water in one year, but not in another. This can create significant financial and operational uncertainty for the municipal provider.

Many Stakeholders believe current laws are inequitable as they relate to recovery of water stored outside the area of impact of the stored water. They question why recovery outside the area of

[6] A.R.S. § 45-834.01.

[7] ADWR assumes that the area of impact is a one-mile radius from where the water is stored unless the applicant demonstrates a larger area of impact.

[8] See, for example, Phoenix AMA Third Management Plan, p. 8-36.

[9] A.R.S. § 45-492.

[10] A.R.S. § 45-402.

impact must be consistent with the management plan and achievement of the management goal when there is no similar requirement for pumping excess groundwater that is not replenished where it is withdrawn. More importantly, they do not see the water management benefits of subjecting some municipal service area withdrawals to a four-foot decline limitation. There are no similar limitations on withdrawals by agricultural and industrial users.

ADWR has stated that it will review the four-foot decline limitation on recovery wells in the development of the Fourth Management Plan and may propose to eliminate or expand this requirement.

Recommendations

Location of Replenishment

Many Stakeholders are concerned about the fact that CAGRD is not required to replenish in an area that is hydrologically impacted by the withdrawals of excess groundwater, but recognize there are many obstacles, as discussed in the Background section above, to requiring a hydrological connection between withdrawals and replenishment. Consequently, the Stakeholders have discussed other potential solutions to the problems that may arise when withdrawals and replenishment are not hydrologically related.

Direct Delivery by CAGRD

One possible solution is to allow CAGRD to deliver water directly to the municipal provider that would otherwise pump excess groundwater rather than replenishing the excess groundwater after it is pumped. In these situations, the municipal provider would use the water delivered directly instead of pumping excess groundwater, thereby mitigating concerns about land subsidence, water quality deterioration, and growth on non-renewable groundwater water supplies. While the Stakeholders agree that there are situations in which direct delivery by CAGRD may serve valuable water management objectives, they recognize that the criteria for any such delivery must be carefully evaluated. Accordingly, the Stakeholders recommend that they continue to work to determine if agreement can be reached on criteria under which CAGRD could be authorized to deliver water directly to a municipal provider in lieu of replenishing that water.[11] Criteria for direct delivery could include the following:

a. No direct delivery could occur without the approval of the Central Arizona Water Conservation District (CAWCD). Among other things, CAWCD would be required to:

   (1) Review its requirements for transportation of CAP water, its contracts, subcontracts, letter agreements, excess water contracts, and other contractual obligations, and its member service area and member land requirements and determine that it can meet those obligations and that capacity remains in the CAP project to make such direct delivery.

[11] Allowing CAGRD to deliver water directly would require a change in state law.

(2) Determine that such direct delivery will not increase annual replenishment assessment rates or costs to CAP contract and subcontract holders, or its member service areas and member lands, except as provided under sub-paragraph b below.

b. Such direct delivery would be at the expense of the municipal provider.

c. The municipal provider would still need to demonstrate that sufficient groundwater of adequate quality is physically available for the use for which direct delivery is sought because direct delivery of specific amounts of water for long-term uses could not be guaranteed.

ADWR Assessment

The Stakeholders recommend that ADWR should complete its groundwater assessment as soon as possible. The Stakeholders further recommend that ADWR, CAWCD and the Stakeholders should work together to determine how to address the problems identified in the assessment.

Four-Foot Decline Limitation on Recovery Wells

For the reasons discussed in the Background section above, the Stakeholders recommend that ADWR eliminate the four-foot decline limitation on recovery wells.