

Arizona Water 101

The Basics of Arizona Water Law

Where do we need to go from here?

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MILESTONES IN ARIZONA WATER MANAGEMENT

1963 - Supreme Court Decree ends twelve years of litigation between California and Arizona over Colorado River. Arizona's 2.8 million acre foot allocation is confirmed, clearing the way for construction of the Central Arizona Project (**CAP**).

1971 - Central Arizona Water Conservation District (**CAWCD**) formed to construct and operate the physical distribution system, contract to deliver water to water users and providers, and repay the federal government for the costs of construction. It is run by a 15 member board elected from the three counties served by the project. It has authority to levy a property tax from the three counties served: Pima, Pinal and Maricopa.

1973 - Central Arizona Project (**CAP**) construction begins. Project completed and water delivered to Tucson in 1992.

1980 - Groundwater Management Act (**GMA**) passed. The overall purpose of the law is to preserve and extend the life of aquifers in the regions expected to receive CAP. Five Active Management Areas (**AMA**) were created. The GMA set up rules to regulate all groundwater pumping within AMA's.

GMA establishes Arizona Department of Water Resources (**ADWR**) to enforce the regulations and to carry out planning and research mandates. In addition, ADWR enforces surface water rights and regulates dams (except mining impoundments) throughout the state, and represents the state in discussions with the federal government over the Colorado River allotments. The Governor appoints its Director.

1988 - Assured Water Supply (**AWS**) rules require all new developments in AMA's to demonstrate a 100 year supply. Rules are administered by ADWR.

1993 - Central Arizona Groundwater Replenishment District (**CAGRD**) created. It provides a mechanism for landowners and water providers to demonstrate an Assured Water Supply under the AWS rules. CAGRD was created as a division of CAWCD even though the AWS rules are enforced by ADWR because CAWCD can acquire and store water and operate the water projects that enable the GAGRD members to comply.

1996 - Arizona Water Banking Authority (**AWBA**) was created to increase utilization of the state's Colorado River allocation and develop long term credits for the state. The AWBA stores, or banks, unused Colorado River water to be used in times of shortage, to firm water supplies for Arizona, and to fulfill the water management objectives of the state. Although a division of ADWR, the AWBA works closely with the CAWCD in developing projects.

1999 – New authorities provided to the CAGRD in 1999 modify the AWS requirement for Member Service Areas to some extent.

Arizona's Groundwater Management Code

Historically, Arizonans have pumped groundwater faster than it was replaced naturally—a condition known as "overdraft". Groundwater overdraft creates significant problems, including increased costs for drilling and pumping and the eventual loss of supply. Water quality also suffers because groundwater pumped from greater depths typically contains more salts and minerals. In areas of severe groundwater depletion, the earth's surface may sink, or "subside", causing cracks or fissures that can damage roads, building foundations, and other underground structures.

Recognizing continued depletion of finite groundwater supplies as a threat to prosperity and quality of life, in 1980 the Arizona legislature created a framework to manage the state's water supply for the future.

The 1980 Groundwater Management Act, or Code, has three primary goals:

1. Control severe overdraft occurring in many parts of the state.
2. Provide a means to allocate the state's limited groundwater resources to most effectively meet the changing needs of the state;
3. Augment Arizona's groundwater through water supply development.

To accomplish these goals, the Code set up a comprehensive management framework and established the Arizona Department of Water Resources (ADWR) to administer the Code's provisions.

The Code established three levels of water management to respond to different groundwater conditions:

1. The lowest level of management includes general provisions that apply statewide.
2. The mid level of management applies to Irrigation Non-Expansion Areas (INAs).
3. The highest level of management with the most extensive provisions is applied to Active Management Areas (AMAs) where groundwater overdraft is most severe.

The boundaries of AMAs and INAs are defined by groundwater basins and sub-basins rather than by the political lines of cities, towns, or counties. The Code created four AMAs— Phoenix, Pinal, Prescott, and Tucson. A fifth AMA in Santa Cruz County was formed in 1994, as it has a distinct sub-basin system. Provisions for the state's five AMAs are the most comprehensive because of the magnitude of overdraft in these areas. The five AMAs include 80% of Arizona's population and 70% of the state's groundwater overdraft.

The Code contains six key provisions:

1. Establishment of a program of groundwater rights and permits.
2. Rules to prohibit irrigation of new agricultural lands within AMAs.
3. Preparation of a series of five water management plans for each AMA designed to create a comprehensive system of conservation targets and other water management criteria.
4. Development of a program requiring developers to demonstrate a 100-year assured water supply for new growth.

5. A requirement to meter/measure water pumped from all large wells.
6. A program for annual water withdrawal and use reporting. These reports may be audited to ensure water-user compliance with the provisions of the Groundwater Code and management plans. Penalties may be assessed for non-compliance.

Website: www.AzWater.gov/AzDWR/WaterManagement

Department of Water Resources

In 1980, the Arizona Department of Water Resources (ADWR) was created to implement the Groundwater Management Code. ADWR is a regulatory agency that administers state water laws and compiles reports on status of water supplies. Groundwater pumping in the regulated AMAs requires a permit from ADWR. It collects state mandated withdrawal fees and oversees groundwater withdrawal and use reports. Groundwater use outside AMAs is not regulated and does not require any permit. However, drilling a well anywhere in the state requires that a Notice of Intent to Drill be filed with ADWR and is included on their well inventory.

The Department responsibilities include

- 1) Administers and enforces Arizona's groundwater code, and surface water rights laws (except those related to water quality);
- 2) Oversees the use of surface and groundwater resources under state jurisdiction;
- 3) Negotiates with external political entities to protect Arizona's Colorado River water supply;
- 4) Represents Arizona in discussions of water rights with the federal government;
- 5) Develops policies that promote conservation and equitable distribution of water;
- 6) Determines the status of all rights to surface water based upon state law and all claims to surface water based upon federal law within the river systems.
- 7) Conducts statewide water resource planning. These efforts include technical studies of local areas and assistance in projecting future water demands. ADWR produces the Arizona Water Resources Assessment, detailing the state's water status, for long-term planning.
- 8) ADWR provides staff support for the Arizona Water Protection Fund Commission, which was created to preserve and enhance flows in rivers and streams and their associated riparian habitats.
- 9) Other responsibilities include management of floodplains and non-federal dams to reduce loss of life and damage to property.

ADWR hydrologists serve as the technical arm of the department, collecting and analyzing statewide water resource data and maintaining the state's Groundwater Site Inventory (GWSI) database. Hydrologic conditions are calculated and analyzed in preparing reports in response to legislative and judicial request, public inquiries and water management planning efforts. ADWR hydrologists are often recruited to work on the scientific components of specific research projects.

Authority: ADWR is a division of the State Government, administered by a Director who is appointed by the Governor.

Website: www.AzWater.gov

ASSURED WATER SUPPLY RULES

The **Assured Water Supply** program was created as part of the historic 1980 Groundwater Management Act, and operates within Arizona's five Active Management Areas. The AWS Rules are designed to protect groundwater supplies within each Active Management Area (AMA) and to ensure that people purchasing or leasing subdivided land within an AMA have a water supply of adequate quality and quantity. Thus, in each AMA, new subdivisions must demonstrate to the Arizona Department of Water Resources (ADWR) that a 100-year assured water supply is available to serve the subdivision before sales can begin.

There are seven basic criteria for proving an AWS. An applicant for an AWS must prove

1. The water supply must be physically available for 100 years.
2. The water supply must be legally available for 100 years
3. The proposed supply must be continuously available for 100 years.
4. The water must be of sufficient quality for the proposed use.
5. The proposed water use must be consistent with the management goal of the AMA.
6. The proposed water use must be consistent with the current management plan of the AMA.
7. The applicant must demonstrate the financial capability to construct any necessary water storage, treatment, and delivery systems.

An assured water supply ("AWS") can be demonstrated in two ways.

1) *Certificate of Assured Water Supply* is a document issued to a developer for its project and represents both a determination of hydrologic water availability *and* proof of the financial capability required under the code.

2) Designated provider: The owner of a subdivision can receive service from a city, town or private water company which has been "designated" by ADWR as having an AWS. The development can gain a Certificate of Assured Water Supply by showing ADWR the project is within a designated area, and that there is an agreement whereby the water facilities will be paid for and constructed to meet the financial capability requirement.

The Santa Cruz and Prescott AMA's have unique goals as they do not have CAP renewable supply available. Special rules are necessary to meet their special needs to maintain groundwater levels

Authority: Administered by Arizona Department of Water Resources

Website: www.AzWater.gov/AzDWR/WaterManagement

Central Arizona Project: History and Completion

Central Arizona Project (CAP) is designed to bring about 1.5 million acre-feet of Colorado River water per year to Pima, Pinal and Maricopa counties. CAP carries water from Lake Havasu near Parker to the southern boundary of the San Xavier Indian Reservation southwest of Tucson. It is a 336-mile long system of aqueducts, tunnels, pumping plants and pipelines and is the largest single resource of renewable water supplies in the state of Arizona.

During the early 1900's, the seven states of the Colorado River Basin: Arizona, California, Nevada, New Mexico, Wyoming, Colorado, and Utah negotiated for shares of Colorado River water. In 1922, representatives from the seven states and the United States government created the Colorado River Compact, which divided the states into lower and upper basins and gave each basin 7.5 million acre-feet of water to apportion. Arizona, California, and Nevada were sectioned into the lower basin, and were instructed to divide their 7.5 million acre-foot allotment among themselves.

Arizona was in dispute over its share of the river, however, and was the last state to approve the Compact in 1944. Today in the Lower Basin, Arizona has rights to 2.8 million acre feet of Colorado River water per year, California is entitled to 4.4 million acre feet per year and Nevada has annual allocation of 300,000 acre feet. (One acre foot of water equals 325,851 gallons, the amount used by a family of four in one year.)

In 1946, the Central Arizona Project Association was formed to educate Arizonans about the need for CAP and to lobby Congress to authorize its construction. It took the next 22 years to do so, and in 1968, President Lyndon B. Johnson signed a bill approving construction of CAP. The bill provided for the Bureau of Reclamation of the Department of the Interior to fund and construct CAP and for another entity to repay the federal government for certain costs of construction when the system was complete.

In 1971, the Central Arizona Water Conservation District (CAWCD) was created to provide a means for Arizona to repay the federal government for the reimbursable costs of construction and to manage and operate CAP water. Construction began at Lake Havasu in 1973 and was completed twenty years later south of Tucson. The entire project cost around \$4 billion to construct. It is to be repaid by property taxes in the three counties where CAP is delivered, even though the property owner has no access to CAP water delivery.

Authority: CAWCD is run by a Board of Directors elected from the three counties that pay taxes to the CAP project and receive CAP water.

Website: www.CAP-Az.com

CENTRAL ARIZONA GROUNDWATER REPLENISHMENT DISTRICT

In 1993, the legislature created a groundwater replenishment authority, Central Arizona Groundwater Replenishment District (CAGR), to be operated by the Central Arizona Water Conservation District (CAWCD) throughout its three county service area. The purpose of the CAGR is to provide a mechanism to assist landowners and water providers in demonstrating an assured water supply under the new Assured Water Supply Rules that became effective in 1995.

In 1993, the Arizona Legislature passed a law that provides an alternative method for subdivisions and water providers to meet the rules requiring a demonstrated 100-year supply of water. Entities that couldn't otherwise demonstrate an adequate physical supply of renewable water supplies can pay the CAGR a fee for the groundwater that the subdivision or water provider is "mining." CAGR takes responsibility for acquiring and replenishing water to offset the mined groundwater. Since "replacement" water does not have to be recharged in the same location as the withdrawal, localized groundwater declines are not prevented. However, the renewable water supply must be replenished in the same AMA where the members pumped, so it does meet the requirements of the goal of safe yield.

Under CAGR within an AMA, the replenishment assessments paid are the same (per unit volume) for each of the contributing "members." Members that are water providers pay the assessment directly to CAGR. In the case of subdivisions enrolled as Member lands, each lot owner is a member and the individual pays in the form of an assessment on the property tax bill. To date, approximately 1100 subdivisions [127 in Tucson AMA] and 24 water providers [10 in Tucson AMA,] have applied for, or obtained, membership in the CAGR.

Water used for replenishment may be CAP water or water from any other lawfully available source, except groundwater withdrawn from within an AMA. For the foreseeable future, the water that the CAGR D will use for replenishment will be excess CAP water. The excess CAP water supply was fully contracted in 2009, however, the CAWCD Board also adopted a policy that provided CAGR D with a priority to the use of up to 35,000 AF of excess CAP to meet replenishment obligations over the next 5 years as well as an additional priority to share up to 175,000 AF of excess CAP with the Arizona Water Bank for future replenishment.

In 1999, the legislature expanded CAWCD's replenishment authorities and responsibilities by passing the Water Sufficiency and Availability Act. This Act authorized the CAGR D to enter into agreements with member service areas seeking designations of assured water supply when sufficient groundwater is not physically available by requiring the replenishment of groundwater to be in the location where it is pumped.

Authority: CAGR D is a division of CAWCD, and is managed by the CAWCD Board. It is funded entirely by member fees.

Website: www.CAGR D.com



Attorneys tell a developer how to can get an AWS certificate:

"The Development of Black Acre" prepared by **Michael J. Brophy, Esq., Sheryl A. Sweeney, Esq., Mark S. Boswell, Esq., Ryley Carlock & Applewhite, P.A., Phoenix**

(Page 1) Blade 'N Build Development Company is proposing a master-planned community for its 720-acre parcel known as Black Acre.... Black Acre is in an unincorporated area of Maricopa County and is within the Phoenix Active Management Area (AMA). Nearby are both an incorporated city and a private water company. The depth to groundwater is 800 feet. Three hundred twenty acres are farmed and have irrigation grandfathered groundwater rights. The only readily available water supplies for Black Acre are groundwater and, eventually, effluent produced by the development.

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(page 14) **a. Physical Availability**

(1) Groundwater

With respect to the determination of whether a certificate of assured water supply applicant will have a sufficient supply of water which will be physically available to satisfy its 100-year projected water demand, if the proposed source of water is groundwater, ADWR must determine the volume of groundwater which will be available for the proposed use. A.A.C. R12-15-703.B.1.a. Groundwater is considered physically available in the Phoenix AMA only if the groundwater is to be withdrawn from depths not to exceed 1,000 feet below the land surface over the period of 100 years. A.A.C. R12-15-703.B.1.c.

In determining the volume of groundwater available to the applicant, a hydrologic study must be submitted which accurately describes the hydrology of the affected area using a methodology approved by ADWR. A.A.C. R12-15-703.B.1.b. The 100-year depth-to-static water level is determined by adding [A.A.C. ' R12-15-703.B.1.d.]:

1. The depth-to-static water level as on the application date;
2. The projected declines caused by existing demand;

3. The projected decline from committed demand and other lots for which an analysis of assured water supply has been issued, less projected demand for subdivisions whose plats have been abandoned; and
4. The projected decline that will result from the proposed use in the certificate of assured water supply application

At Black Acre, you will recall that the depth to groundwater is already at 800 feet below ground surface (bgs)... That means that the supporting hydrology study must show that, after taking into account the existing and committed demand in the area, the projected demand will not cause the water table to drop below 1,000 feet bgs after 100 years of pumping. Because the water table is already 800 feet bgs, this is likely to be a significant issue for Black Acre.

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(page 4) **C. Water Sources for Golf Course**

1. Groundwater

In Black Acre's case, no effluent is available, other than the effluent that eventually will be produced by the development. Therefore, it will be necessary to use groundwater on the Black Acre golf course, at least in the early years.

There are two potential sources of groundwater to serve the golf course. Groundwater may either be provided by the water provider serving the development or by a well owned and operated by the golf course. Each source presents a separate set of issues.

.....

(page 19) Assuming the project is fully built out in the fifteenth year, the annual demand will be 1,525.9 a.f. [Note 3] Multiplied by an allocation factor of 4.0, the development's groundwater allotment is 6,103.6 a.f. Adding the extinguishment credits (8,625 a.f.), the total groundwater allotment is 14,728 a.f. Since Black Acre's 100-year projected demand is 152,590 a.f., and Black Acre's only readily available supply is groundwater, you may ask yourself, how does Black Acre show compliance with the management goal?

The answer is easy. Enroll Black Acre (less the golf course) in the Central Arizona Groundwater Replenishment District (CAGRDR).

[Note 3: We have included the golf course demand, although it is not clear that ADWR will allow this, since the golf course is not part of the subdivision.]

The applicant may demonstrate consistency with the management goal, for assured water supply purposes, if all of the following apply:

1. The land for which a certificate is sought is a member land in the CAGRDR.
2. ADWR has made a determination that has not expired that the most recent plan for operation submitted by CAGRDR, who is obligated to replenish groundwater on behalf of the land for which a certificate is sought, is consistent with achieving the management goal for the AMA.
3. CAGRDR is currently in compliance with its groundwater replenishment obligation for the active management area in which the use is located. A.R.S. 45-576.01.

CAGR D is part of the Central Arizona Water Conservation District. It is obligated to replenish groundwater pumped by its members in excess of their respective groundwater allotments. See, A.R.S. 45-3771, *et seq.* Membership in CAGR D means that the owner of member land may use an amount of groundwater in excess of their annual groundwater allotment. If that the member lands use groundwater in excess of the annual groundwater allotment, CAGR D assesses a replenishment tax on the member land at a rate per-acre foot of groundwater sufficient to cover the costs and expenses of associate with such replenishment. A.R.S. 45-3778. The current rate for CAGR D's replenishment tax is \$180.00 per acre-foot of water. CAGR D is responsible for acquiring the water that it will use to replenish.

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(page 25) **V. CONCLUSION**

There are obviously a number of water issues that will be significant in the development of Black Acre. In our opinion, biased though it may be, the most effective option that Blade 'N Build could choose for addressing these myriad issues would be to retain a highly qualified and experienced water lawyer.

Entire Report can be seen at www.ryleycarlock.com/news/docs/feature37.pdf

Arizona Water Banking Authority

The Arizona Water Banking Authority (AWBA) was established in 1996 to increase utilization of the state's Colorado River entitlement and develop long-term storage credits for the state. Arizona was not using its full 2.8 million acre feet (maf) share of Colorado River water and would not be using its full allocation until the year 2030. The accumulated amount of water left in the Colorado River would have amounted to approximately 14 million acre feet. The AWBA ensured Arizona's capability to secure the dependable water supplies necessary for the state's long-term prosperity by banking this excess water, as long as it is available.

Each year, the AWBA pays the delivery and storage costs to bring Colorado River water into central and southern Arizona through the Central Arizona Project canal. The water is stored underground in existing aquifers (direct recharge) or is used by irrigation districts in lieu of pumping groundwater (indirect or in-lieu recharge). For each acre-foot stored, the AWBA accrues credit that can be redeemed in the future when Arizona's communities or neighboring states need backup water supplies.

The Water Banking Authority's responsibilities include

1. Assuring adequate supply to municipal and industrial users in times of shortages or disruptions of the CAP system;
2. Meeting the management plan objectives of the Arizona Groundwater Act;
3. Exchanging water to assist Colorado River communities;
4. Assisting in the settlement of Indian water rights claims.

In 2005, the Arizona Legislature created the Indian Firming Study Commission to develop recommendations for meeting the State's obligation under the Arizona Water Settlements Act. In 2006, the AWBA was given the authority to fulfill the State's firming obligation and subsequently entered into an agreement with the Secretary of the Interior that defines that obligation and also allows the AWBA to enter into separate agreements with Indian communities to develop firming plans.

The AWBA is also authorized to act on Arizona's behalf to enter into interstate banking agreements. In 2005, the AWBA began storing water for Nevada pursuant to the Amended Agreement for Interstate Water Banking.

Authority: A division of ADWR, the AWBA is managed by an appointed board, with the Director of ADWR acting as Chair. Its projects are developed in partnership with the CAWCD.

Website: www.AzWaterBank.gov

ADD: Acquisition, Development & Delivery of New Water Supplies

In response to its 2006 Strategic Plan, CAP created Project Acquisition, Development and Delivery (ADD) Water in 2007 in an effort to establish a collaborative process to

- 1) determine when new supplies need to be acquired;
- 2) determine what entities would get those supplies;
- 3) encourage fair competition;
- 4) eliminate any unfair advantage.

In January of 2008, CAP created the ADD Water Project Team that included three CAP Board members, representatives from a variety of external stakeholder perspectives and CAP staff to refine, finalize, adopt and implement the Stakeholder Participation Plan. The Project Team will accurately report the results and recommendations from stakeholder meetings to constituents, stakeholders and the CAP Board. The Stakeholder Process began on May 21, 2008 and is expected to conclude in 2010.

How much will the water cost? At the present time, excess CAP water is priced at \$133 per acre foot. Estimates of ADD water cost are \$2,000 per acre foot. Who will pay for the water? If a designated Service Provider, all customers will have to pay. If a property owner in a member land, the individual will pay.

Report from *U. S. Water News*, July 1, 2008

TUCSON, Ariz. — The combined population of three of Arizona's most populous counties could double in 40 years and that has water experts dreaming up plans for the future.

One scenario could have three desalination plants on line by 2048 to increase the supply of Central Arizona Project water flowing to Phoenix and Tucson.

One plant could be removing salt from seawater along the Gulf of California in the Mexican state of Sonora—and its booty is shared by Arizona, California, Nevada and Mexico—and two other plants may be treating salt-laden groundwater in the areas of Buckeye and Gila Bend.

Experts also hope a huge nuclear power plant may be in operation along the Gulf of California in Sonora, producing 600 megawatts of power to provide the juice for the adjoining seawater desalination plant.

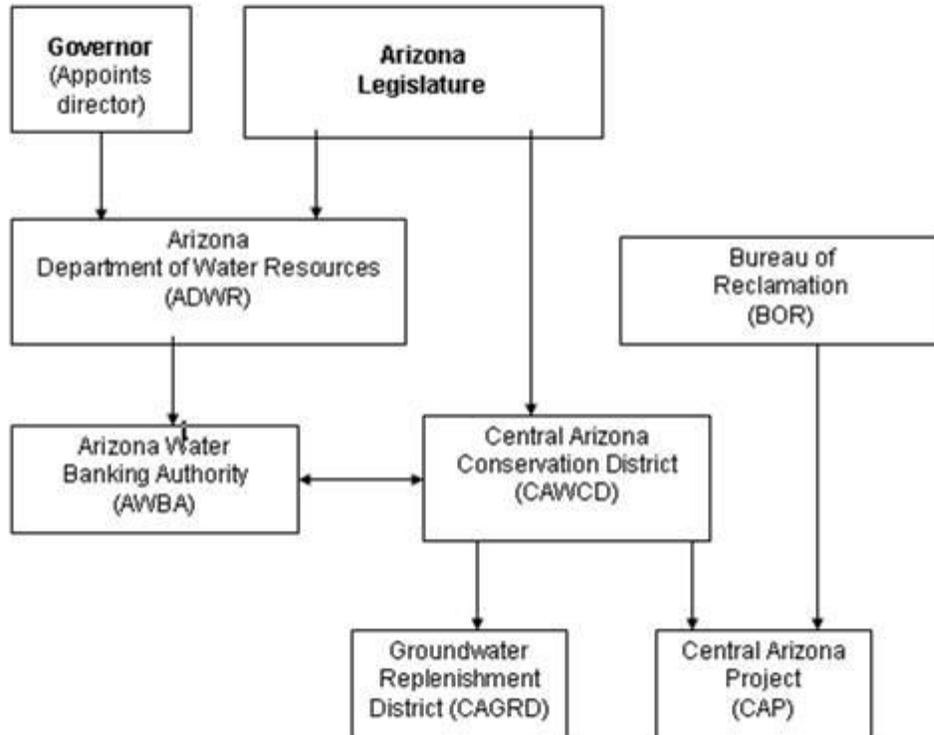
And by 2048, construction could be underway to expand the size of the concrete CAP canal running from the Colorado River to Tucson to deliver up to 2.2 million acre-feet of water a year. Currently, the aqueduct can deliver 1.8 million-acre feet.

The three-county Central Arizona Water Conservation District, which oversees the CAP, is looking at how the state could furnish water to support a 2048 population of 11.5 million in Pima, Pinal and Maricopa counties compared with less than six million today.....

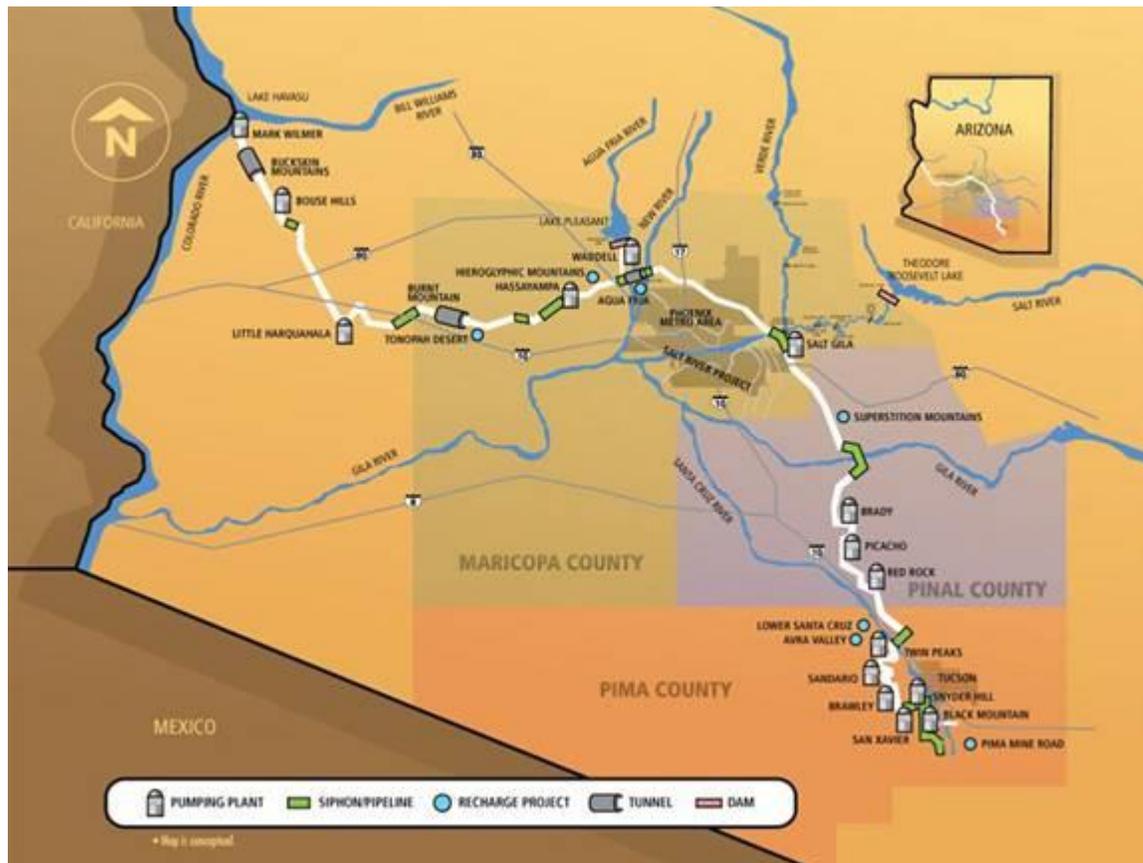
Authority: CAWCD, Central Arizona Water Conservation District

Website: www.ProjectAddWater.com

Flow Chart of AZ Water Agencies



Central Arizona Project System Map



APPENDIX

SUMMARY OF ARIZONA WATER LAW

I. SURFACE WATER LAW

A surface water right [A.R.S. 45-141 through 167] is connected to a specific parcel of land, although the point of diversion and use can be changed through administrative proceedings before ADWR. The doctrine of "prior appropriation" applies to surface water, which means "first in time is first in right."

The right to the use of surface water must be maintained at a minimum of every 5 years, with few exceptions. If the use is not made over a 5 year period the right reverts back to the state. All surface water right holders in the Gila River Basin are subject to a pending adjudication before the Superior Court of the State of Arizona.

II. GROUNDWATER

Under Arizona law the state is divided between areas called Active Management Areas (AMA) and all others. The populated areas in Pima County, Pinal County, Maricopa County, Santa Cruz County and the region around Prescott are the five Active Management Areas. [ARS 45-411 to 421] Groundwater rights are quantified and regulated only in these AMAs, due to a long history of groundwater overdrafts (2.5 million acre feet annually in 1980). There are several types of groundwater rights.

(A) IRRIGATION GRANDFATHERED GROUNDWATER RIGHTS

There are two types of groundwater rights associated with irrigation: Irrigation Grandfathered Groundwater Rights and Type 1 Non-irrigation Grandfathered Groundwater Rights.

(1) Irrigation Grandfathered Groundwater Rights (IGRs) are connected to irrigated lands. The amount of IGR water is a formula based on the acres of the land times an assigned irrigation water duty. The amount of an IGR water decreases over time as the ADWR revises the irrigation water duty with each Management Plan. An IGR can only be used for irrigation purposes on the original irrigated acres.

(2) The owner of an IGR may convert its IGR irrigation rights to a Type 1 Non-irrigation Grandfathered Groundwater Right (called a Type 1 Right). The Type 1 Right is either 3 of acre feet per acre or the standard the "water duty," whichever is less. [A.R.S. 45-469] A Type 1 Right can be used on the connected land or used off of it, *as long as it is withdrawn from the land with the water right.*

(B) SERVICE AREA GROUNDWATER RIGHTS

Service Area groundwater withdrawal rights are created and relate to groundwater rights and uses within "service areas" of cities and towns as defined in A.R.S. 45-402 (26) and for "private water companies" as defined in A.R.S. 45-402 (25).

A Service Area Right includes the right for the removal of any absolute volumetric limitation upon the amount of groundwater, withdrawn from wells for the benefit of landowners and residents with the Service Area, subject to whatever conservation requirements may be imposed under the Management Plan(s) prescribed by A.R.S. 45-561 through 576. A "Service Area" is where a utility has an operating distribution system.

New Service Area Right wells can be drilled within the "Service Area" as defined by ADWR. This is a very unique groundwater right in that it is the only *increasing* right to withdraw groundwater permitted in an Active Management Area. Typically cities and private water companies have Service Area rights.

(C) TYPE 2 RIGHTS

There are two kinds of Type 2 Non-irrigation Grandfathered Groundwater Rights, both of which are associated with groundwater uses that existed *prior* to 1980 for non-irrigation purposes. These are:

(1) Type 2 Unrestricted: This Type 2 Right is typically associated with wells serving dairies, trailer parks, industries, guest ranches, and other commercial uses. This right *may be transferred* anywhere in the same AMA.

(2) Type 2 Mining, Sand and Gravel: This Type 2 Right is associated with mining and sand and gravel operations, and *may be transferred and used* anywhere in the same AMA *only for mining and/or sand and gravel uses.*

A Type 2 Right is a personal property right in that it can float, and is not necessarily connected to a parcel of land at the point of sale.

(D) GROUNDWATER WITHDRAWAL PERMIT RIGHTS

There are a number of Groundwater Withdrawal Permit options available [A.R.S. 45-511] for dewatering, mineral extraction, industrial uses, poor quality groundwater removal, hydrologic testing, etc. ADWR grants Industrial Use permits for specific uses where alternative sources of water are not available.

(E) MANAGEMENT PLAN REQUIREMENTS

Municipalities and private water companies who pump groundwater for municipal use are subject to increasingly stringent water conservation requirements imposed through a succession of Management Plans adopted every 10 years. Arizona is into its Third Management Plan phase (2000 through 2010), and GPCD [Gallons Per Capita Per

Day] requirements for municipal water use have been set for all municipal utilities and private water companies in the state's AMAs. [ARS 45-561 to 578]

A more detailed summary can be found at www.g-a-l.info/Water-Law.htm

Good Intentions, Unintended Consequences:

The Central Arizona Groundwater Replenishment District

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The University of Arizona, February 2007

Arizona Law Review, 2007
Arizona Legal Studies Discussion Paper No. 07-08

Excerpt pages 350-351, 359 of journal

Unchecked member land enrollment poses a threat to the Groundwater Management Act's [GMA] sound water management principles. Under the GMA, the management goal for the Tucson and Phoenix AMAs is "safe yield" by 2025. In contrast, the Pinal AMA, where Cotton was King in 1980, is managed under the goal of what has been termed "planned depletion." Unchecked enrollment of member lands could result in the *de facto* transformation of "safe yield" water management into discrete areas of the "planned depletion" AMAs. To prove that water is "physically, legally, and continuously available" for the next 100 years under the AWS rules, an applicant for an AWS designation or certificate need only show that groundwater pumping in the local area will not cause water level declines of 1,000 feet below land surface or the depth of the bottom of the aquifer within the next 100 years, which is virtually the same standard for meeting the "planned depletion" management goal of the Pinal AMA.

Depending on the depth to groundwater in the local area and the location of replenishment relative to pumping, significant water level declines may result. Declines in excess of even five feet per year are cause for concern about the long-term health of the regional aquifer, as reflected in DWR's temporary well spacing rules, which apply even to the drilling of wells to recover recharge credits from within the area of hydrologic impact of a recharge project. DWR has already adopted rules for "dry lot" subdivisions that preclude drawdowns of 400 feet below land surface.

After a decade of CAGRDR's operation, it has become apparent that there will be "wet" members and "dry" members of the District. "Wet" members are located in close proximity to CAGRDR's recharge and delivery infrastructure, so that the member service area or the water provider serving a member land is pumping groundwater in reasonable proximity to the site of replenishment. In such areas, groundwater levels are likely to remain stable. In other instances, the site of pumping is located far from the CAP delivery system and storage sites that CAGRDR has used, thus far, to meet its replenishment obligations. In these "dry" areas, the hydrologic effects of pumping are not mitigated by replenishment. The ability to pump is constrained only by DWR's review and approval of a hydrologist's finding that groundwater pumping for the water demands of CAGRDR members will not draw down the aquifer more than 1,000 feet below the surface. Even if the hydrologist has correctly

predicted the drawdown levels of this pumping, the allowable long-term effects could be severe, and these severe effects would be worse if the hydrologist's predictions turned out to be optimistic. In the worst case scenario, when effects of local pumping in "dry" MLs are modeled incorrectly, CAGRDR membership offers no real assurance there will be water physically available to serve the particular subdivision in the future.

CAGRDR obliges members to replenish within the AMA where groundwater withdrawals occur, but CAGRDR does not, and cannot, guarantee that this replenished water will be actually hydrologically connected to the water originally withdrawn by the CAGRDR member. For example, if an ML were to draw down the local groundwater supplies in its immediate area to such an extent that it were forced to either curtail deliveries or seek emergency sources of supply, the replenishment obligation would simply diminish to the amount of groundwater pumping. By contrast, the "traditional" or "pay now" AWS designation requires that (1) access to the renewable resource be demonstrated up-front and (2) storage and recovery as a mechanism for indirect utilization of renewable water comply with Management Plan provisions. In particular, wells cannot be permitted as recovery wells in the safe-yield AMAs if the drawdown is more than four feet per year. These provisions essentially slow down any long-term declines in the local aquifer in the safe yield AMAs.

Arizona has a history of urban developments that have existed for over 100 years in core areas of Phoenix, Mesa, Tempe, Tucson, Bisbee, and Prescott, but little experience with pumping the local aquifers in CAGRDR's service area from depths close to 1,000 feet. As a matter of sound long-term water management, then, it would be prudent to ensure that there will be stable water supplies for Arizona's urban developments even past the 100-year window that the AWS program contemplates. It may be optimistic at best and foolhardy at worst to expect that the water needs of urban developments can be met by pumping water from depths approximating 1,000 feet below the surface.....

CONCLUSION

CAGRDR has become a significant factor in Arizona's water management picture. It has the potential to become the most influential player in providing water for growth in the Phoenix-Casa Grande-Tucson megalopolis in the years to come. As enrollment increases and readily-available water to meet replenishment obligations diminishes, it will become increasingly more difficult to correct for CAGRDR's unintended flaws and to preserve its beneficial consequences. CAGRDR's initial (1995) replenishment obligation was 0.1 acre-foot, but before long CAGRDR's replenishment obligation will exceed the delivery obligations of the City of Tucson. In 2035, CAGRDR's replenishment obligation for its three county service area is projected to exceed the amount of non-Indian CAP water available to the entire Tucson AMA.

The GMA promise was to secure the long-term availability of groundwater for the AMAs, but unless we fix CAGRDR, and fix it soon, this promise is empty....

This paper can be downloaded: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=965047

Assured Water Supply Rules seek to avoid—

Economic Costs of Over Pumping of Groundwater

Over pumping of groundwater leads to significant declines in groundwater levels, resulting in the desiccation of formerly perennial streams, impairment of perfected surface water rights, a reduction in riparian habitat, subsidence, differential cracking, localized watershed reversals, diminished water quality, and reduced well productivity.

Land subsidence causes many economic infrastructure problems including: (1) changes in elevation and slope of streams, canals, and drains; (2) damage to bridges, roads, railroads, storm drains, sanitary sewers, canals, and

levees; (3) damage to private and public buildings; and (4) failure of well casings from forces generated by compaction of fine-grained materials in aquifer system.

Information from U.S.G.S. www.usgs.gov

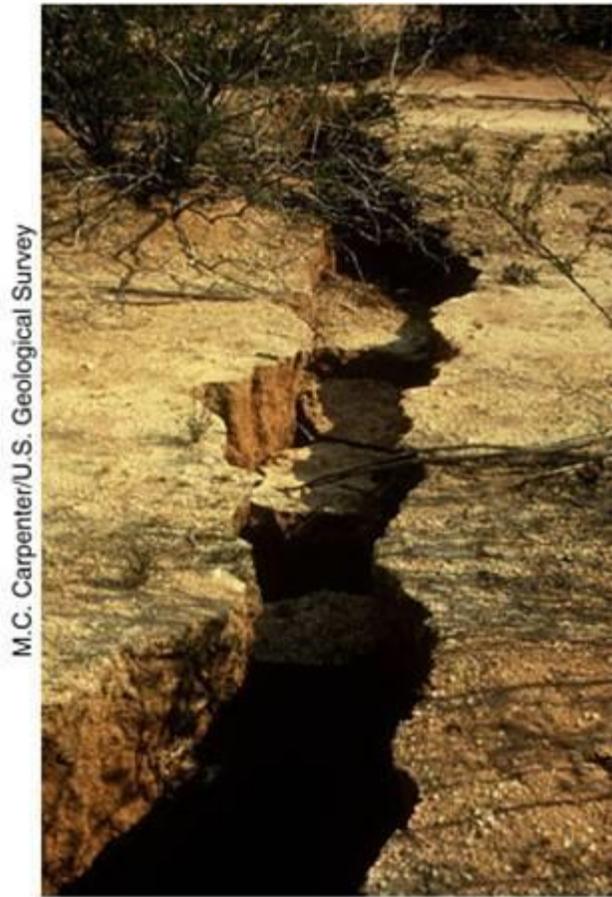


Figure 4. Earth fissure near Picacho, Arizona.

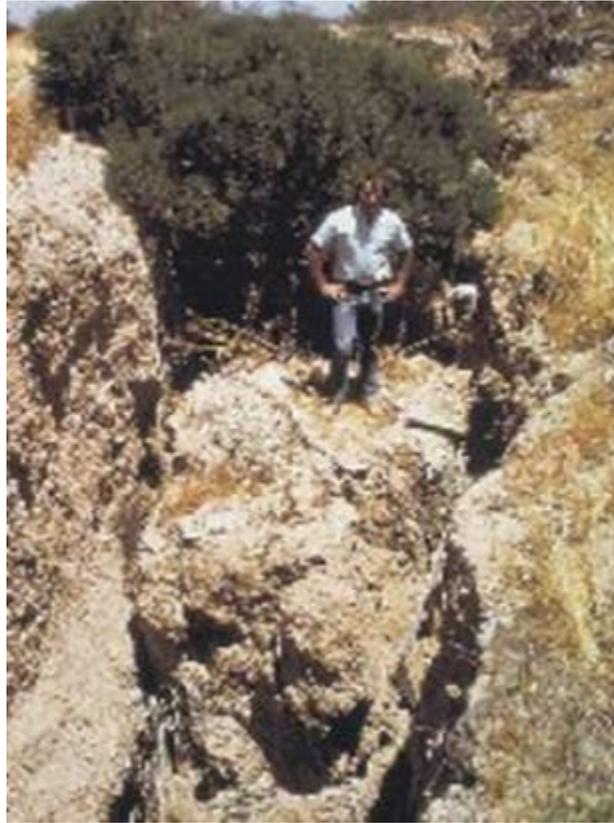


Figure 5. Some of the most spectacular examples of subsidence-related earth fissures occur in south-central Arizona

Cost of “renewable supplies” water in Tucson AMA:

**CENTRAL ARIZONA PROJECT
FINAL 2009/2010 RATE SCHEDULE**
<http://www.cap-az.com/static/index.cfm?contentID=30>

CENTRAL ARIZONA GROUNDWATER REPLENISHMENT DISTRICT ASSESSMENT RATES
Units = \$/acre-foot

Cost of GRD water to Tucson Active Management Area:

	2007/	2008/	2009/	2010/2011/2012/2013/			
	2008	2009	2010	2011	2012	2013	2014-
Water & Replenishment Component	\$133	\$143	\$153	\$164	\$161	\$168	\$177
Administrative Component	28	33	33	31	29	27	25
Infrastructure & Water Rights Component	79	90	101	112	115	118	122
Replenishment Reserve Charge	25	39	46	54	61	65	67
Total Assessment Rate (\$/AF)	\$265	\$305	\$333	\$361	\$366	\$378	\$391

Note: There is no cap on the amount that can be charged by the Replenishment District to new and existing customers.

Cost of Yuma desalinization plant: \$250 million for construction

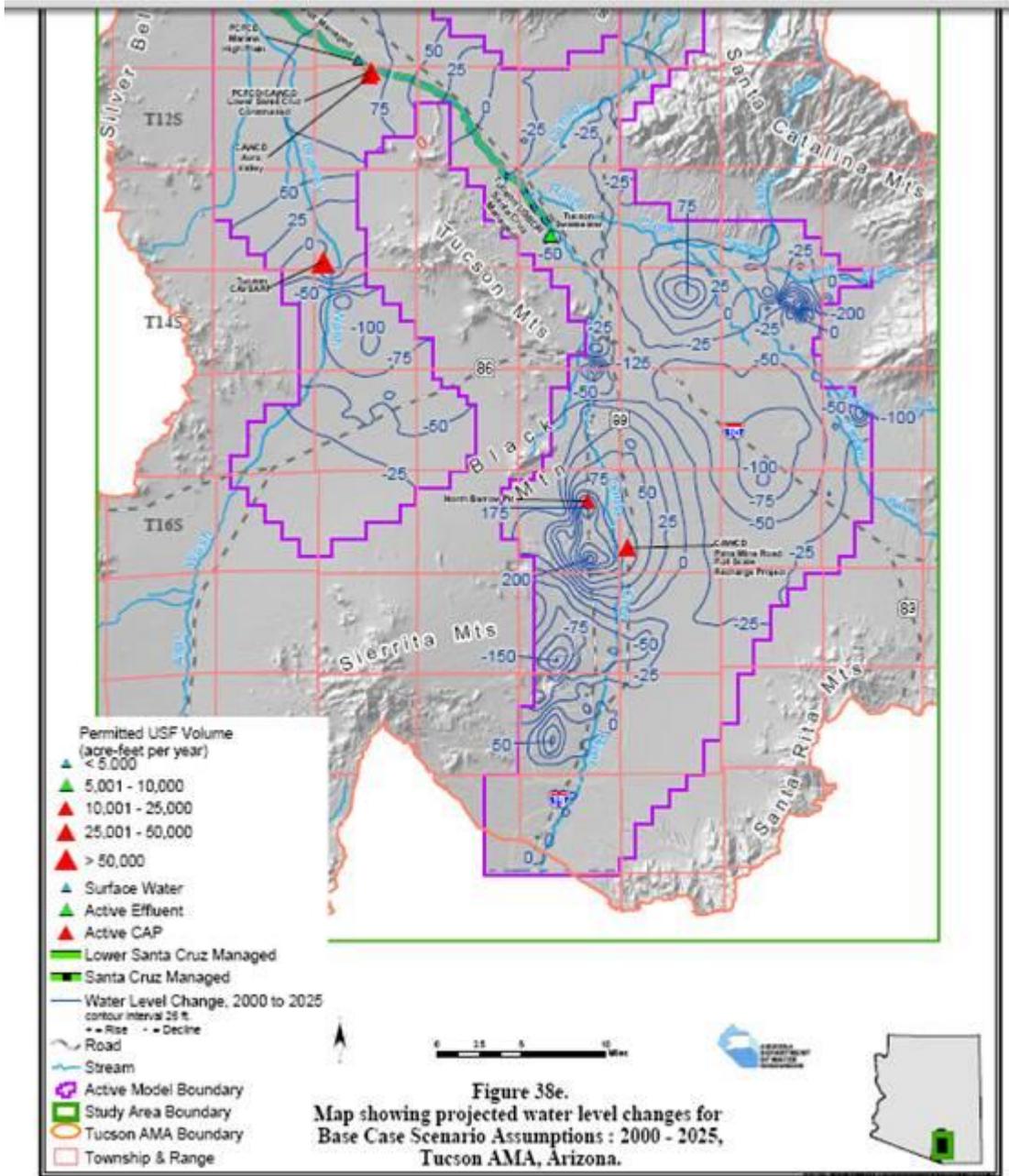
Current contract (subsidized by Feds) with Arizona:

1.4 million dollars for 1 billion gallons = \$457 acre foot (without any delivery)

—————

V. Map showing projected water level changes in Tucson Region until 2005

As you can see by the map below from the 2006 ADWR Report Regional Groundwater Flow Model of the Tucson Active Management Area, groundwater levels are predicted to decline considerably in the “southlands” and surrounding areas. [Entire report can be viewed on the ADWR website.](#)

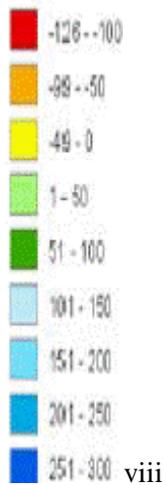
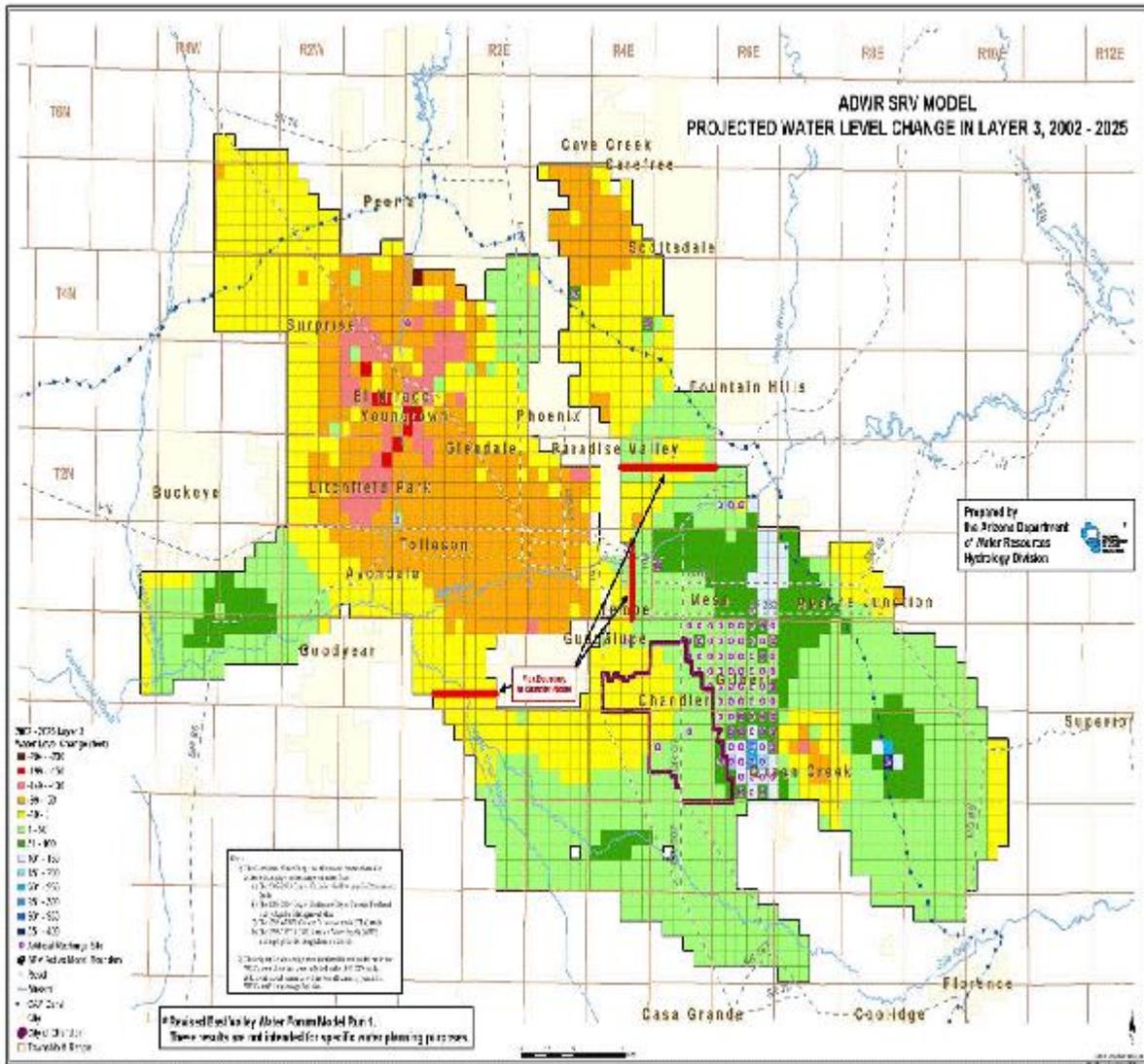


Regional Groundwater Flow Model of the Tucson AMA, Simulation and Application.
101

VI. Map showing water level changes in Phoenix AMA until 2025

See the entire report on ADWR website:

www.adwr.state.az.us/AzDWR/Hydrology/Modeling/documents/East_Valley_Water_Forum_Study.pdf



Title: A bill to provide for adjustments to the Central Arizona Project in Arizona, to authorize the Gila River Indian Community water rights settlement, to reauthorize and amend the Southern Arizona Water Rights Settlement Act of 1982, and for other purposes.

Sponsor: [Sen. Kyl, Jon](#) [AZ] (introduced 2/25/2003) [Cosponsors](#) (2)

Related Bills: [H.R.885](#)

Latest Major Action: Became Public Law No: 108-451

Title I: Central Arizona Project Settlement - Central Arizona Project Settlement Act of 2004 - (Sec. 103) Sets forth general permissible uses of the Central Arizona Project (CAP), including for domestic, municipal, fish and wildlife, and industrial purposes.

(Sec. 104) Directs the Secretary of the Interior (Secretary) to reallocate 197,500 acre-feet of agricultural priority water made available pursuant to the Arizona Water Settlement Agreement (among the Director of the Arizona Department of Water Resources (ADWR), the Central Arizona Water Conservation District (CAWCD), and the Secretary, dated August 16, 2004) (master agreement) for use by Arizona Indian tribes, of which: (1) 102,000 acre-feet shall be reallocated to the Gila River Indian Community (the Community); (2) 28,200 acre-feet shall be reallocated to the Tohono O'odham Nation (formerly the Papago Tribe); and (3) 67,300 acre-feet shall be reallocated to Arizona Indian tribes, subject to specified conditions.

Requires the Secretary to: (1) prepare a report for Congress by December 31, 2016, that assesses whether the potential benefits are being conveyed to Arizona Indian tribes pursuant to water rights settlements enacted subsequent to this Act; and (2) reallocate (subject to specified requirements) up to 96,295 acre-feet of agricultural priority water made available pursuant to the master agreement to ADWR, to be held under contract in trust for further allocation as specified.

Directs the Secretary, on the Director's recommendation, to reallocate 65,647 acre-feet of uncontracted municipal and industrial water as specified. Limits the total amount of entitlements under long-term contracts for the delivery of CAP water in the State of Arizona (the State) to 1,415,000 acre-feet, with a specified allocation formula. Makes this limitation inapplicable to CAP water delivered to water users in the State in exchange for Gila River water used in New Mexico as provided in the Colorado River Basin Project Act....

Title II: Gila River Indian Community Water Rights Settlement - Gila River Indian Community Water Rights Settlement Act of 2004 - (Sec. 203) Ratifies the Gila River agreement....

Title III: Southern Arizona Water Rights Settlement - (Sec. 301) Rewrites the Southern Arizona Water Rights Settlement Act of 1982 as the Southern Arizona Water Rights Settlement Amendments Act of 2004. Directs the Secretary to deliver annually from the main project works of CAP 37,800 acre-feet of water suitable for agricultural use, of which 27,000 acre-feet shall be deliverable to the San Xavier Reservation and 10,800 acre-feet shall be deliverable to the eastern Schuk Toak District. Requires the Secretary to complete the design and construction of improvements to the irrigation system that serves the cooperative farm within the San Xavier Reservation.

Directs the Secretary to deliver water from the main project works of CAP in accordance with such terms and conditions as are contained in specified agreements, including the Tohono O'odham settlement agreement, to one or more of: (1) the cooperative farm; (2) the eastern Schuk Toak District; (3) turnouts existing on the enforceability date; and (4) any other point of delivery on the CAP main aqueduct that is agreed to by the Secretary and specified parties.

Requires the Secretary to deliver annually from the main project works of CAP a total of 28,200 acre-feet of priority water suitable for agricultural use. Sets forth conditions of construction, water delivery, and revenue sharing. Requires the Secretary to establish, for the San Xavier Reservation and the eastern Schuk Toak District,

water management plans that meet specified requirements, including provision for the measurement of all groundwater withdrawals.

Allows 10,000 acre-feet of groundwater to be pumped annually within the San Xavier Reservation. Sets forth permissible uses of water.

Ratifies specified agreements, including the Tohono O'odham settlement agreement to the extent consistent with this title. Reauthorizes the cooperative fund established in the Treasury.

Directs the Secretary to develop and initiate a comprehensive groundwater monitoring program to test, assess, and provide for the long-term monitoring of the quality of groundwater withdrawn from exempt wells and other wells within the San Xavier Reservation and within the eastern Schuk Toak District. Provides for a water resources study by the Secretary and for a waiver and release of claims by the Tohono O'odham Nation.

Reauthorizes the trust fund under the 1982 Act, with an initial deposit of \$15 million for use in carrying out this title.

Provides that this title shall not take effect if the Secretary does not publish the statement of findings described in Title I by December 31, 2007.

For full text of Arizona Water Settlements Act: www.govtrack.us/congress/billtext.xpd?bill=s108-437

HOME