

Arizona Department of Water Resources  
**GROUNDWATER USERS ADVISORY COUNCIL**  
Tucson Active Management Area  
Kenneth Seasholes, Area Director



DEE T. O'NEILL  
Chair

JOHN MAWHINNEY  
Vice-Chair

DAN OFFRET

JON POST

CHUCK SWEET

**Minutes**  
**August 24, 2007**

**Members Present:**

Dee O'Neill, Chair  
John Mawhinney, Vice-Chair  
Dan Offret  
Jon Post

**Tucson Staff Present:**

Kenneth Seasholes  
Mary Bauer  
Christina Bickelmann  
Laura Grignano  
Jeff Tannler  
Dawne Wilson

**Others:**

Beryl Baker, Concerned Citizen  
Mike Caporaso, Westland Resources  
Janet Lea Carr, SAWUA  
Rob Carruth, USGS  
Julia Fonseca, Pima Co. Flood Control  
John Hoffman, USGS  
Tina Lee, Ward 2 - City of Tucson  
Dorothy Niemi, Precinct Committee Woman  
Mikki Niemi, Republican Precinct, Elvira Neighborhood  
Don Pool, USGS  
Philip Saletta, Oro Valley Water Utility  
Pete Schlegel, PMA Group  
Mark Seamans, Rancho Sahuarita Water Co.  
Linda Smith, Tucson Water  
Warren Tenney, Metro Water District  
Audrey Tinkham, Lewis and Roca  
Deborah Tosline, Bureau of Reclamation  
Arnold Velasco, Phelps Dodge Sierrita Corp.  
Norris West, Community Water Co. of G.V.

**1. Call to Order**

Chair Dee O'Neill called the meeting to order at 10:30 a. m. Introductions were made, with the welcoming of Dan Offret as the new GUAC member replacing David Modeer; whose term has expired.

## **2. Approval of Minutes**

Jon Post made a motion to approve the minutes of June 19, 2007. John Mawhinney seconded the motion. The minutes were unanimously approved.

## **3. Election of GUAC Vice-Chair**

David Modeer's position as Vice-Chair has expired. Jon Post nominated John Mawhinney to the position. Dan Offret seconded the nomination. The nomination was unanimously approved.

## **4. 2008 Groundwater Withdrawal Fee**

Kenneth Seasholes reported that one of the GUAC's statutory roles is to make a recommendation for the annual groundwater withdrawal fee. The statute sets a maximum of \$3.00/AF and a minimum of \$2.50/AF. The \$2.50 is dedicated to the Arizona Water Banking Authority (AWBA) to store CAP water for use in the Tucson AMA. The amount collected from withdrawals fees last year was approximately \$610,000.

The GUAC makes the recommendation on \$.50 portion of the fee. The Tucson AMA has been using this money (roughly \$100,000) in past years to fund one full-time employee, Christina Bickelmann, to carry out non-regulatory conservation work. This fund has slowly been diminishing due to increasing use of renewable supplies. Another activity the fund has contributed to is the United States Geological Survey (USGS) aquifer subsidence and monitoring program.

Mr. Mawhinney made a motion to adopt the \$3.00 annual withdrawal fee with \$.50 continuing to fund ongoing activities. Jon Post seconded the motion and the recommendation was unanimously approved.

## **5. Review of 2006 Water Use Data**

Total water use for all sectors in 2006 totaled 350,800 AF. Of this amount, actual municipal use was about the same as 2005 in spite of a growing population. Some of the contributing factors were more rain, and drought conservation messaging. Agricultural use has gone down somewhat. Of the industrial use (users with their own water rights), metal mines had the biggest consumption, followed by the turf industry.

Groundwater use for golf courses has dropped with approximately 50% effluent use and 50% groundwater use. One facility is using surface water diversion and another is using recovery of CAP credits. Total golf course water use is approximately 6% within the Tucson AMA. There is ongoing work to have more golf courses move to the use of reclaimed water.

CAP water use has reached a short-term plateau in the Tucson AMA. There was a slight reduction in total CAP use between 2006 and 2005, principally because the Lower Santa Cruz Replenishment Project, one of the largest CAP recharge facilities, had flood damage to one of the recharge basins, which took months to get back on-line. All direct recharge facilities are currently at their maximum storage capacity.

The Central Arizona Groundwater Replenishment District (CAGRDR) is the operating arm of the CAP that recharges water on behalf of members. Its current activity is not as large in the Tucson AMA as it is in Phoenix area, but activity has been increasing. In particular there was a large increase in activity in 2006 due to Oro Valley's transfer of earned credits.

Currently there is a total of 640,098 AF of long-term storage credits in the Tucson AMA. Of this amount 351,002 AF was stored by the AWBA for local purposes. This is done primarily to assist in firming Tucson's Municipal and Industrial CAP subcontracts. In addition, 78,376 AF has been stored on behalf of the Southern Nevada Water Authority. This source of water and funding has been used to assist in filling Tucson's existing facilities. Tucson Water has stored 78,070 AF. Others having long-term storage credits are Fidelity Trust (26,838 AF), Bureau of Reclamation (18,898 AF), Oro Valley (15,810 AF), Metro Water District (14,965 AF), Marana (10,224 AF), and the CAGRDR replenishment reserve (13,855 AF). The CAGRDR replenishment reserve is a block of water being stored in each of the central AMAs to be used in times when the CAGRDR's supplies are disrupted or costs increase. The remaining amount (32,060 AF) is being stored by various other entities.

Next, Mr. Seasholes reported that in terms of AWBA storage activity, Tucson is one-third of the way toward its firming goal of 864 KAF. This firming water will be used in times of shortages on the Colorado River.

The AWBA's long-term storage credits have been earned from several sources of funds: the 4-cent ad valorem tax (51%), the state's general fund (13%), the groundwater withdrawal fee (18%), and interstate storage (18%).

Finally, Mr. Seasholes reviewed the Tucson AMA draft 2006 water budget. The Tucson AMA has made some headway on overdraft in 2006 compared to 2005, but overall the budget has changed very little. Mr. Seasholes noted that the total use of CAP is largely constrained by the capacity of current recharge facilities, but there will be a noticeable difference when the City of Tucson's SAVSARP facility comes on line. This facility will create a new ability to take CAP water and will have a substantial impact on the overall budget.

## **6. United States Geological Survey (USGS) Aquifer Storage Change and Subsidence Monitoring**

Rob Carruth, along with John Hoffmann and Don Pool, from the USGS Tucson office were invited to give an update on the Aquifer-Storage Change and Land-Subsidence Monitoring project in the Tucson AMA. Cooperating agencies on this project include: ADWR, City of Tucson Water Dept., Town of Oro Valley, Metro Water District, and Town of Marana.

This project is conducted using a method known as microgravity. The study represents an independent data set to the various ways of monitoring aquifer storage change and land subsidence. The method is being refined and its use is being expanded around the state and other parts of the country, as well as over seas.

Land subsidence is monitored at a network of benchmarks throughout the Tucson AMA by measuring changes in land surface elevation over time with GPS. Aquifer storage change is monitored by measuring changes in gravity over time at the same network of benchmarks.

Gravity is affected by mass and distance; a change in mass or a change in elevation will cause a change in gravity. Groundwater depletion is a mass change and land subsidence is a distance change. By removing the affect of change in distance, changes in gravity are used to determine changes in aquifer storage. There is a combination of instruments used in this approach and the data sets obtained are compared on an annual basis.

In the Tucson AMA there are a series of network stations dating back to the late 1970s. The intent is to increase the density of the stations in the areas where most pumping scenarios are changing.

According to data from Winter/Spring 2002 to Summer 2004 there was approximately 160,000 AF of aquifer storage change in a portion of the Tucson basin, roughly one-half foot per year. Another data set, Spring 2005 – Summer 2006, showed approximately 60,000 AF of change, roughly 0.4 foot per year. This latter data set was conducted on a smaller portion of the Tucson AMA.

Subsidence in the Tucson basin is affected by areas with higher silt and clay content, in addition to areas of higher water withdrawal. Monitoring subsidence is an important compliment to the project both on its own and its affect on aquifer storage and structures.

Data from 1998-2002 show a maximum subsidence of around 3.5 inches in the Tucson basin and around 1.1 inches in Avra Valley. The 2002-2004 data show roughly 3.2 inches in the Tucson basin and approximately 4 inches in Avra Valley. In central Tucson, where subsidence was a big concern, signs of improvement are showing. This is due to the cessation of the central wellfield pumping.

Satellite-based Interferometric Synthetic Aperture Radar (InSAR) images, made possible through a NASA grant, have also been taken of the Tucson AMA. InSAR data compiled from February 2003 to October 2006 show a maximum subsidence of approximately 1.5 inches. This approach adds much value to the other methods of monitoring land surface change.

## **7. Area Director's Report**

Mr. Seasholes reported that there are several conversations taking place within the region regarding growth and water supplies. The WRRC, PAG, ADWR, SAWUA, CAP and SALC will be sponsoring a community forum on water. The date is October 26, 2007 from 7:30 a.m. – 3:00 p.m. at the Doubletree Hotel; 445 S. Alvernon Way in Tucson.

## **8. Date and Agenda for Next Meeting**

The GUAC members will polled to determine the date of the next meeting. The AWBA's Plan of Operation and proposed modifications to ADWR's municipal conservation GPCD program are potential agenda items.

## **9. Adjournment**

The meeting was adjourned at 12 noon.