



Verde Watershed

# Currents

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*“There is a need to know which aquifers should be monitored and protected, and how to effectively mitigate any potential effects of groundwater pumping in the upper Big Chino Valley.”*

— Ed McGavock  
Montgomery and Associates  
Article on Pg 4

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## VWA HOSTS USGS PRESENTATIONS IN PRESCOTT AND CAMP VERDE

The Verde Watershed Association hosted presentations by John Hoffmann, Associate Director of the U.S. Geological Survey Arizona Water Science Center in Tucson, in the evenings of Wednesday, June 20, in Prescott and Thursday, June 21, in Camp Verde. The audience at each was on the order of 100.

The subject was the findings and implications of the recent USGS reports on the upper and middle Verde watersheds. Hoffman spent a good amount of time going over general principles of hydrology. Foremost among the discussion of general hydrologic principles, was Hoffmann's explanation of the role of capture of ground-water by pumpage. In a nutshell, it is that that ground water extracted from the watershed by wells causes an eventual depletion of ground-water discharge to the surface in an amount equivalent to the amount of water removed by pumping. An eventual effect is reduction in the part of the river flow that is supported by discharge of ground water to the river. Another kind of capture germane to the Verde watershed occurs from pumping near the common boundaries of adjacent basins (for example, on the Mogollon Rim or between the Little Chino and Agua Fria watersheds). Pumping in that setting drives the ground-water divide away from the pumping wells and eventually captures ground water from the adjacent basin.

### Next VWA Meeting July 18

#### Guidelines for Sustainable Water Management

**Who:** Andy Laurenzi, Program Director and Senior Policy Analyst, Sonoran Institute

**When:** 10:00 AM Wednesday July 18

**Where:** Mackin Building at 840 Rodeo Dr. Prescott. (behind the County Building on Fair St.)

**What:** For much of 2007, the Sonoran Institute empanelled a blue ribbon group of water policy, legal, hydrology and ecology experts from throughout the universities and agencies of Arizona. They identified challenges and made recommendations on what most people think are the three most threatened rivers in Arizona---the Verde, San Pedro and Santa Cruz. Their focus was sustainable groundwater management. Their conclusions are thought-provoking.

Come hear Andy give the first Yavapai County presentation of their just-released findings. All are welcome to this free program

## State of the Verde River Report

On July 1st, Verde Reservoir storage was 75,106 acre-feet which is 26% of capacity. Verde runoff this winter, January through May, was 62,298 acre-feet which is the 4th lowest in SRP's 104-year record. Winter precipitation totaled 3.58". Year-to-date precipitation for the Verde watershed is 3.59". Precipitation from April through June was 0.62" with 0.50" falling in April, 0.11" in May, and 0.01" in June. Runoff from April through June was approximately 22,000 acre-feet.

For SRP reservoir operation planning purposes, June 1st was the onset of the 13th year of the current drought.

**September 19**  
**U of A Climatologist**  
**Dr. Jonathan Overpeck**

## Forecast for Verde Basin Precipitation this Monsoon Season

Although it occurs every year for most of AZ, the Summer Monsoon is one of the most difficult seasonal forecast problems for the state's meteorologists. As June draws to an end, a shift in the prevailing winds throughout the mid-to-upper levels of the atmosphere from W/NW to S/SE or even easterly is almost certain to occur within the next 3-4 weeks. That said, in most years, forecasting the timing of this shift beyond the immediate future is nearly impossible as is reliably forecasting how persistent the shift in the prevailing winds will be during the following weeks. As tough as it is to anticipate, the change in the prevailing winds over and around AZ is important since it is typically accompanied by "surges" of moisture in the atmosphere's low and mid-levels into the state from the south and southeast that in turn lead to widespread thunderstorms that can affect both the higher and lower elevations.

In most cases, AZ weather forecasters with only a few years of experience with the Summer Monsoon will waffle on a specific Monsoon forecast in favor of historical averages and climatologically based probabilities. Following this lead, in about half of the 100 years or so that records have been kept, the prevailing wind shift and first surge of moisture into AZ, commonly referred to as the Monsoon's Onset, occurred during the 10-day period spanning from July 2nd to July 11th although onset dates range from mid-June until late July. This year will undoubtedly not see an "early" monsoon onset, but it's probable that the monsoon will be underway by the time this is being read since onset occurs two-thirds of the time before July 16th. Once onset occurs, moisture usually continues to ebb and flow into AZ producing "bursts" and "breaks" in thunderstorm activity across the state until late Aug-Sept when the prevailing winds return to west/northwest and the monsoon is said to have ended.

The historical precipitation data for the Verde Basin for the period from July 1st to Sept. 15th, which is the average end date of the monsoon, contains a wide range of average precipitation totals. In "wetter" years such as 1984, average basin precipitation for this time frame has approached 10 inches whereas in too many recent "drier" years to list (e.g., our driest on record 2000), average precipitation failed to exceed 4". Although April-June are typically some of the driest of the year for much of AZ, average precipitation across the Verde Basin during this period for the current year is much less than half normal. Let's hope the onset of this year's monsoon occurs sooner than later and that persistent surges of moisture allow thunderstorms to be at least as productive as last year's "slightly better than average" monsoon that left an average rainfall accumulation of almost 7" on the Verde. - Tim Skarupa, SRP.

## Eco-Flows Workshop Report

On May 23-24, thirty-nine participants attended an Ecological Flows Workshop on the habitat flow needs of the Verde River. They gathered at the Mingus Springs Camp and spent two days describing current conditions and anticipating the downstream ecologic consequences of varied stream flow volumes. The workshop was sponsored by the Verde River Basin Partnership with the Arizona Water Institute as academic lead. TNC facilitated the workshop as they developed the model (Ecologically Sustainable Water Management model) in conjunction with the Army Corps of Engineers.

The Verde is the second river in Arizona to have been examined in this way, the Bill Williams being the first. The preliminary report was spear-headed by Abe Springer (NAU) and workshop was facilitated by Brian Richter (TNC head of Global Freshwater Initiative). Participants came from five universities, four federal agencies, three state agencies and a half dozen private entities. Expertise was shared in geomorphology, hydrology, and many biological disciplines including riparian habitats, birds, fish, mammals, invertebrates, etc. Focus was split between upstream consequences on the Upper Verde River and Verde Valley. The final report is being completed now and will be available for public distribution in early Fall. The project was funded by Arizona Water Institute and TNC. — Dan Campbell - dcampbell@tnc.org

## August VWA Meeting Field Trip to Verde Tributary Bring a Lunch!

The August meeting will be a field trip to one of the Verde's tributaries, so bring a lunch. On Wednesday, August 15, at 10am plan to join us at the historic Beaver Creek Ranger Station (one of the oldest left in the US).

The subject will be a discussion of the archives of 50 years of watershed research performed here by the USFS. The Beaver Creek Watershed Study is of more than just historical interest. This study and conclusions were recently cited by the Verde River Watershed Protection Coalition as a land treatment option for the Juniper Wilderness, one of their six proposed projects. Come meet Heather Provencio, District Ranger, Peter Pilles, Forest Archeologist and other Forest Personnel.

Directions to Beaver Creek Ranger Station:

- proceed on I-17 to exit 289
- instead of proceeding into Sedona, drive south on FS Rd #618
- in about 3 miles follow the sign into the ranger station

## **WELCOME NEW MEMBERS:**

**Ruth Johnson**

**Delbert "Chip" Norton**

## *Activities of Yavapai County Water Advisory Committee*

The WAC is involved with several ongoing projects. These include conservation, water education, groundwater flow modeling, model scenario development, Verde Valley surface water flow modeling, drought planning, and regional water resource management planning.

The conservation effort focuses on working with others such as County Planning and Zoning to develop ways to implement conservation recommendations proposed by the WAC. Efforts will be appropriately coordinated with the programs of the WAC communities and other joint efforts. The WAC has contributed funding to help support Arizona Project WET in Yavapai County. The Project WET staff has been coordinating various educators training workshops and developing curricula for area schools.

The Northern Arizona Regional Groundwater Flow model is continuing to be developed with leadership by the USGS Arizona Science Center. A draft model is expected by the end of 2007. H3J Consulting (Hoyt Johnson) is working with the WAC and their technical committee to develop long-term growth and water-use scenarios for input into the USGS model. The USGS is performing surface water studies on the Verde River in the Verde Valley. Information will be gained on water quality and base flow. The surface water information will provide some basic data and also help constrain the groundwater model.

The WAC is serving as an oversight committee for the Yavapai County Local Drought Impact Group (LDIG). The LDIG is initiated by the state to empower the communities to monitor drought conditions, plan for mitigation and response, and provide

outreach and education. The groups rely on local volunteers and provide data to the State. A kick-off meeting for the LDIG was held in Cottonwood in June. The meeting consisted of a drought status and weather update for Yavapai County by University of Arizona Climatologist, Gregg Garfin (drought is likely to continue); a brief overview of Arizona's drought planning efforts by Arizona Department of Water Resources Community Water Planning Manager, Susan Craig; and an overview of how the LDIG can help Yavapai County plan for drought rather than simply responding to its effects by Yavapai County Emergency Manager, Nick Angiolillo and Jeff Schalaus, University of Arizona Cooperative Extension Agent. Many attendees signed up to participate in the areas of drought preparedness, monitoring, and education. These Participant Groups will be vital to the LDIG's success.

At the June WAC meeting the WAC agreed to formally develop a detailed scope of work for an Appraisal Level Water Resource Demand Study with the US Bureau of Reclamation. The WAC will review this scope of work and make a determination regarding signing-on as a cost share partner with Reclamation. Appraisal Studies are preliminary investigations to determine the desirability of proceeding to a feasibility study. Appraisal reports generally use existing data and information to identify plans for meeting current and projected needs and problems of the planning area. Three questions should be answered by the study: 1. Is there a problem (i.e. unmet water demand); 2. Is there at least one potential solution to the problem; and 3. Is there a Federal interest? Reclamation requires a 50/50 cost share with a local partner to fund the study. Please contact the WAC Coordinator, John Rasmussen, for more details on any of the WAC activities or to be involved with a LDIG Participant Group ([john.rasmussen@co.yavapai.az.us](mailto:john.rasmussen@co.yavapai.az.us)).

## **Future Funding for Fossil Creek/Verde Access at Childs Projects**

Ed Wolfe and Chip Norton recently met with Bill Stafford, the Red Rock Ranger District Recreation Coordinator for the Coconino National Forest, to discuss the possibility of utilizing grant monies and volunteer labor to build restroom facilities on Fossil Creek.

Stafford stated that such an effort would be premature for Fossil Creek; as such action would follow the passage of the bills before Congress to designate Fossil Creek as a Wild and Scenic River, the creation of a new USFS Management Plan and NEPA clearance of the Management Plan, respectively.

Stafford did note, however, that an immediate need exists to implement the USFS Childs Recreation

Site Management Plan for the Childs access to the Wild and Scenic section of the Verde River. This new plan is the result of the APS decommissioning of the Irving and Childs power plants, an action which restored traditional flows to Fossil Creek. The plan has cleared the NEPA process and is awaiting upper management approval and project funding. Stafford welcomed assistance in acquiring funding for the project, with the first order of business being the funding of the engineering and landscape architecture work.

Carol Johnson and Chip Norton are currently reviewing the draft narrative of the new management plan and assessing funding options for the project.

## **Proposed Upper San Pedro Water District**

On June 20th, Governor Napolitano signed into law a measure that establishes an Organizing Board to develop an Upper San Pedro Water Management District. The pilot committee is charged with developing a plan of organization, a financial plan and water management plans and goals. This package must be approved by Cochise County voters before a local political authority charged with managing Upper San Pedro water resources can be established. Creation of the water district could ultimately lead to authorization of taxes, bonds and infrastructure to bring water from afar to satisfy population growth. Arizona Department of Water Resources Director Herb Guenther described the proposed district as a "replenishment district" with a goal of augmenting the existing water supplies.

## MONTGOMERY & ASSOCIATES

### REVIEW USGS REPORTS

Prescott-area municipal officials recently released a review by Erroll L. Montgomery and Associates (a hydrogeology consulting firm) of two recent U. S. Geological Survey reports: Geologic Framework of Aquifer Units and Ground-Water Flow Paths, 2005, by Wirt and others, and Hydrogeology of the Upper and Middle Verde Watersheds, Central Arizona, 2006, by Blasch and others. The review can be obtained at <http://www.pvaz.net/government/boards/Downloads/USGS%20Report%20Review.pdf>. Subsequently, on June 27, Ed McGavock of Montgomery and Associates summarized the review in a presentation at the regular monthly meeting of the Upper Verde River Watershed Protection Coalition held in the City of Prescott Council Chambers.

McGavock reported that errors in the Blasch report were largely clerical and editorial in nature and that a revised version of the report correcting many of these errors had recently been completed while the Montgomery review was being finalized. The Montgomery review disagrees with a major conclusion of the conceptual model in the Blasch report regarding groundwater contributions in the Verde Valley. The Blasch report states that the regional aquifer contributes water to the Verde River. This regional aquifer is also the primary source of municipal water in the Verde Valley. The Montgomery review states that the regional aquifer may not contribute water to the Verde River and Verde Valley communities may not be as vulnerable to downstream water right claims as portrayed in the Blasch report.

The Montgomery review and McGavock were critical of portions in the Wirt report. The review took

issue in particular with the chemical modeling that Wirt undertook to reach her conclusion that ground water from the Big Chino Valley constitutes between 80 and 86 percent of the base flow in the uppermost Verde River. However, the review states that: "...the basic finding that about 80 percent of upper Verde River base flow is derived from the Big Chino sub-basin is hydrologically sound, and has generally been believed by hydrologists since 1976".

Ed McGavock points out that the issue isn't so much whether the flow contributions are from the Big Chino, but from where in the Big Chino. According to the Montgomery review, "the argument in favor of reconstruction is that a properly constructed IGM (chemical model) possibly could provide information needed for monitoring, protection, and mitigation. There is a need to know which aquifers should be monitored and protected, and how to effectively mitigate any potential effects of groundwater pumping in the upper Big Chino Valley."

Montgomery and Associates suggest the possibility that there may be little if any ground-water exchange between the basin-fill deposits and the underlying Martin Formation in the Big Chino Valley and that ground water issuing from the springs may be predominantly water that entered the limestone in the Juniper Mountain region and flowed straight through to the springs. Thus, they suggest that pumping at the Big Chino Water Ranch may have little or no impact on discharge to the Verde River. They are clear, however, that this is an unsubstantiated hypothesis and that further study—in particular deep drilling—is needed to determine whether or not ground water moves between the basin-fill deposits and the underlying Martin Formation.

## Cottonwood Adopts Drought Preparedness Plan

The Cottonwood City Council adopted a Drought and Water Shortage Preparedness Plan in November of 2006. The plan has three demand reduction strategies which are triggered based on the amount of water pumped, with the exception of the months of May, June, July, August and September when demand reduction strategy one is mandatory irregardless of the amount of water pumped.

The three demand reduction stages are:

- Stage one is effective when water demand exceeds safe production level (75% of total capacity) for five consecutive days.
- Stage two is effective when demand exceeds safe production by more than 20%.
- Stage three is effective when demand exceeds

the maximum production capacity.

City staff has been monitoring compliance with the mandatory stage one restrictions beginning in May of 2007 and overall the customer's compliance with the restrictions has been very good.

The City has also recently formed a water conservation program committee comprised of the utilities director and five citizens representing a cross section of their customer base. The committee is tasked with developing a conservation program to enhance the City's current efforts and promote new ideas for both voluntary and incentive based water conservation policy. The committee's goal is to present their program to the City Council in a work session late in 2007 or early 2008.

## TOWN OF CHINO VALLEY PLANS PIPELINE FROM BIG CHINO

Chino Valley signed an agreement on May 10, 2007 to build a pipeline that will deliver groundwater from the lower part of Big Chino Valley to the town itself. The contract calls for Chino Grande LLC, the owner of the CV Ranch in Big Chino Valley, to build the pipeline at a maximum cost of \$15 million. In return, Chino Grande would get the proceeds of the sale of the groundwater to Chino Valley land developers at a cost of \$45,000 per acre-foot. In an innovative approach to water management in the Verde Watershed, Chino Valley proposes to ban all outdoor irrigation including reuse of gray water with the water obtained from the Big Chino Valley and hopes to return as much as 80 percent of the Big Chino water to the aquifer in the form of recycled wastewater. According the **Daily Courier** (June 14, 2007) the Town plans to import at least 4,400 acre-feet per year of Big Chino ground water obtained by buying and retiring historic irrigation rights in the Big Chino Valley.

## GOVERNOR SIGNS RURAL WATER MANAGEMENT BILLS

Governor Napolitano signed into law on June 4, 2007, a Bill (SB 1575) permitting rural counties and municipalities to deny new subdivisions with inadequate water supplies in areas not subject to existing state water-adequacy regulations. The Bill is important because rural developers have in the past sued counties that attempted to use limited water supplies as a basis for rejecting proposed subdivisions. An amendment to the Bill stipulates that a county's rejection of a proposed subdivision on the basis of an inadequate water supply requires a unanimous vote of the County Supervisors. The legislation was proposed in 2006 by the Governor's Statewide Water Advisory Group. An earlier Bill (HB 2962) also stemming from the Statewide Water Advisory Group, signed into law by the Governor on May 24, creates a fund for rural water development loans and grants.

## 19th Annual VERDE RIVER DAYS – September 29, 2007

The Cottonwood Chamber of Commerce is once again taking the lead on the 19th Annual Verde River Days event on September 29, 2007 at Dead Horse State Park in Cottonwood. The goal of VERDE RIVER DAYS is to foster a renewed sense of awareness, interest and concern for the Verde River as a community resource that should be protected and used wisely.

The Verde Watershed Association will have a booth with videos, maps, reports, and a quiz for the kids. Look for our banner and we hope to see you there.

### Membership Form for the Verde Watershed Association

Government units	\$ 100 per year	Make check payable and mail to: <b>Verde Watershed Association</b> <b>P.O. Box 4001</b> <b>Cottonwood, AZ 86326</b>
Business for profit	100 per year	
Civic groups and non-profits	50 per year	
Individuals	25 per year	

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