



## Bill Would Settle Tribal Water Rights

Legislation has been introduced to settle decades of litigation that has left many individuals and interests in the state uncertain about their water rights. Arizona Sens. Jon Kyl and John McCain recently introduced the Arizona Water Settlements Act to ratify state water right settlements.

Embodied within the bill are agreements worked out over five years by 35 parties. These include the state and federal governments, Indian tribes, municipalities, the Salt River Project, the Central Arizona Water Conservation District, farmers, corporate entities and others.

The act is fundamentally concerned with settling Indian water rights, since resolving these priority rights is key to determining other state water claims. Of the 1.5 million acre-feet that flows through the Central Arizona Project canal, 47.2 percent will be allotted to Indian Tribes and 52.8 percent to non-Indian users. Indians would be able to lease water to cities, although they are prohibited from selling or leasing their water out of state. The legislation specifies amounts of CAP water to be allocated to municipalities,

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*Early Phoenix settlers visited Arizona Falls to picnic and be refreshed by the sound, flow and feel of water. In the early twentieth century, the 20-foot water falls, located on the Arizona Canal at 56<sup>th</sup> Street and Indian School Road, became the main attraction of a hotel. Here guests dined and danced to the backdrop of moving water. The Salt River Project and the City of Phoenix are recreating the site as a community gathering spot. A power plant is being constructed to replace the one built in 1902 that ceased operations in 1950. The new facility will include an outdoor room and dance floor, curtained on three sides by waterfalls. Visitors can gaze through grates to experience the rush and mist of the churning water as it flows to the turbine. The project is scheduled for completion in January 2003. (Arizona State Library, Archives and Public Records, Archives Division, Phoenix, #96-1768)*

## Budget Cuts Take Toll on ADWR's Operations

*Agency copes with unfilled positions, personnel layoffs and eliminated or cut backed programs.*

The Arizona Department of Water Resources took a 10 percent hit to its already lean budget during the most recent round of state budget cuts. This recent cut along with other previous budgetary setbacks is eroding the agency's ability to effectively manage the state's water resources.

Due to budget cuts over time, the agency is hurting in various way. Consider staffing: In 1990, ADWR had a staff of 237, and today staffing is down to 166 positions. During this period, as the number of ADWR staff decreased, state population increased by 40 percent.

ADWR Director Joe Smith says, "My target staff number for the agency is around 185 or 190 people. We are at 166.

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"If the Legislature were to fund us fully we would be operating with about \$21 million, and we are currently operating at about \$14 million. We are below what I would call a minimum pool of staff and money to adequately manage."

Years of relatively level funding from the Legislature has taken a toll on the agency, to the point that meeting fixed expenses has been a problem. Smith says, "The Legislature has not funded us at a level to cover our fixed expenses." He says the cost of the private office space that the agency occupies increases with rent and property tax. To pay rent, he shifts money from personnel, at a cost of two FTE per year. "My budget is 90 percent personnel, with very little discretionary funding for anything else."

The financially strapped agency's most recent budgetary challenge was to respond to the governor's directive, issued in August and sent to all state agency directors, to cut FY 2003 budgets by ten percent. This meant that ADWR needed to cut \$1.5 million. This was the second year in a row that state budgets had to be cut by 10 percent. In FY 2002, ADWR was able to make up its ten percent reduction by relinquishing unfilled positions. Other options had to be found for FY 2003 cuts.

One of the options was to cut the Rural Water Initiative Program. It was the one ADWR program targeted for FY 2003 reductions that involved cutting dollars, not staff. Now in its fourth year of operations, the program provides support to the U.S. Geological Survey to conduct hydrologic studies in rural areas of the state. The information is provided to resource managers and planners at the local level. Since the USGS provides matching funds, a cutback of state funds represents a two-for-one loss.

At this point, work on rural studies is essentially in abeyance, with agreements signed on a quarterly basis, at a substantially reduced funding level. Work in the three major project areas — the San Pedro, Verde and Coconino watersheds — will either be down-scaled or funding will need to be obtained from other sources. Fairly recently, before budget cuts did their damage, rural water concerns were receiving increased due attention, with ADWR gearing up to work

with stakeholders in rural, non-Active Management Areas of the state.

Further cuts were made by eliminating the staff processing notices of intent to drill. Staff members had been responsible for processing the seven or eight thousand requests per year to drill wells. With the staff gone and ADWR still with statutory responsibility of responding to requests, the duties have been reassigned to the agency's Hydrology Division. These will be added tasks, to perform in addition to its regular responsibilities, with the result that obtaining approval to drill wells will take longer — and with less regulatory review.

Greg Wallace, chief hydrologist, says "We are considering an on-line automated process that gives just about any driller permission to drill a well. Minimum well construction standards will have to be met, but they will not be reviewed in advance. The

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*The tales of financial woe are likely to continue beyond the current year, with future cuts in store.*

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burden will be on the counties and drillers to make sure they are drilling a proper well. We don't have much choice. We do not have the personnel."

In a further comment on his section's operations Wallace says, "We have basically dispensed with any sort of field investigations and travel outside of metro areas. We are going to concentrate on efforts in metro Phoenix this fall because we do not have travel funds. We turned in some trucks, and we turned in all of our cell phones."

Funding for ADWR's support of the state's Water Quality Assurance Revolving Fund (or State Superfund) also took a hit, its \$800,000 budget cut in half to \$400,000, with six staff members losing their jobs. As a result, ADWR will no longer be providing updates to its WQARF database for the Arizona Department of Environmental Quality. Field inventories will still be done, but not data entry.

Major budget cuts to the general fund appropriations are not the only financial loss to plague the agency. During FY 2002, \$1 million of the Phoenix AMA Conservation and Augmentation Fund was reverted.

Not general expense monies, these funds were earmarked for specific expenditures that now will not be made.

For the last several years, funds from the AMA's Conservation and Augmentation programs have been redirected to pay for monitoring activities. These funds, which must be used within the AMA where they were collected, had previously been used to support recharge and conservation projects through a grants program.

The Arizona's Water Protection Fund also is in trouble. The Legislature has not appropriated any funding for AWPf for several years. ADWR has sufficient monies in reserve to support AWPf staff for about 24 months to manage ongoing projects, some with multiple year commitments. ADWR maintains reserved funds since the agency has the fiduciary responsibility to manage ongoing programs even if AWPf is eliminated. Future legislative action will determine the fate of AWPf. The program's purpose is to fund projects with a local focus that address riparian issues.

The tales of financial woe are likely to continue beyond the current year, with future cuts in store. The recent state deficit is about \$400 million, and the governor anticipates about a billion-dollar deficit next year.

Smith says, "What we are trying to do is sustain programs important to Arizona's development community such as the Assured and Adequate Water Supply program. And we have tried to avoid cuts in the AMAs. But if I have to cut again I am going to have to start looking at consolidating AMA offices."

In the face of hard times, Smith fears losing seasoned and experienced staff. He says, "An organization that appears to be faltering tends to lose its brightest staff. I've got an extremely talented staff, and I am concerned about losing them to other governments or they may take work as private consultants."

With positions left unfilled, personnel laid off and program operations eliminated or greatly cut back, prospects seem grim to many ADWR employees. Wallace says, "Morale is abysmal. I have been here for 17 years, and this is the worst I have ever seen."

*See Guest View, page 6, for a commentary on ADWR budget cutbacks.*



## Water Vapors

### Water Milestones

An event not much noted outside the water world — nor an occasion for much celebration within the water world either — October 1 marked the beginning of a new water year. Why Oct.1 should be the New Water Year Day is somewhat of a puzzle. One theory relates it to the stream flow cycle. After the minimal summer flows, river flow picks up in the fall and winter. Another theory says it has to do with the agricultural cycle, with September the end of the growing season and October the beginning of a new year for the farmer.

Easy to overlook was another water event that might have slipped by unnoticed except for Ken Seasholes' remarkable knowledge of the ins-and-outs of the Groundwater Management Act — and also, as will be seen, its in-between. In a Sept. 23 email, with the subject line "Hurry, only 8,137 days left," Ken, a Water Resources Specialist for the Tucson Active Management Area, noted: "Last night at the stroke of midnight Arizona passed a significant milestone — the halfway point from enactment of the Groundwater Management Act to 2025." (From June 12, 1980 to December 31, 2024 = 16,274 days)

He then went on to place the event in a social and cultural perspective: "2025 has always seemed distant and slightly mysterious, but now it is 1980 that is more distant. Enacted before the dawn of MTV (1981), the IBM personal computer (1981) or Compact Disc (1983), the GMA remains one of the state's most important legislative achievements.

Ken then provided a "then-and-now" scenario of various significant milestones, with *then* indicating 1980 and *now* representing now or 2002.

President: *then* Jimmy Carter, *now* George W. Bush; Governor: *then* Bruce Babbitt, *now* Jane Hull; AZ Population: *then* 2.7 million, *now* 5.5 million; Gallon of Gas: *then* \$1.25, *now* \$1.42; Average Fuel MPG for New Vehicles: *then* 22.5 MPG, *now* 20.4 MPG; Inflation: *then* 12.5%, *now*

1.5%; Headlines: *then* Soviet Union invades Afghanistan; Iraq invades Iran, *now* United States invades Afghanistan; U.S. may invade Iraq; First Class Stamp: *then* \$0.15, *now* \$0.37; Fast Computer: *then* 4.77 MHZ, *now* 2.0 GHZ (2,000 MHZ); Top Grossing Film: *then* The Empire Strikes Back, *now* Spider-man; #1 TV Show: *then* Dallas, *now* Everyone Loves Raymond.

### But it is a dry drought...

The above was a headline on a Sept. 16 drought notice in the Arizona Republic.

### Mark Your Calendars

The University of Arizona's Water Resources Research Center is planning a spring conference, scheduled for **May 1 and 2, 2003**, in Prescott. The conference is tentatively entitled, "Local Approaches to Resolving Water Resource Issues: What's Working, What Hasn't Worked, and Building on Existing Efforts." Conference presentations will include assessments of current state and regional water management strategies and identification of new and emerging management needs and strategies. Speakers and attendees from across the state will participate to foster understanding of the differences as well as the similarities in water resource challenges.

The spring event is the latest in a series of conferences sponsored by the WRRC.

The intent of the conferences is to provide a forum to discuss critical water issues.



The University of Arizona Water Resources Research Center's Project WET (Water Education for Teachers) organized the Arizona Water Festival. The third annual event was held on Sept. 27<sup>th</sup>, with 1,000 fourth grade students and their teacher participating at WestWorld in Scottsdale. A number of fun learning stations were set up to provide students with a variety of hands-on activities. In the above photo, children are involved in a water hauling activity to learn about water supplies and the weight of a gallon of water. Project WET also provides throughout the year water education workshops for teachers. For information about the workshops contact Kerry Schwartz; phone: 520-792-9591, X 22; email: [kschwartz@ag.arizona.edu](mailto:kschwartz@ag.arizona.edu) or check the web site: [www.ag.arizona.edu/azwater/wet](http://www.ag.arizona.edu/azwater/wet)



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## News Briefs

### Court Rejects Suit to Limit Groundwater Pumping

The Arizona Court of Appeals dealt a setback to environmental groups — but did not entirely close the door on them — in their efforts to force the state to reduce groundwater pumping.

The groups claimed the state has violated public trust by not forcing cities, irrigation districts and other groundwater pumpers to reduce their pumping. They said excessive pumping lowered water tables, with the result that rivers and streams have dried up. They contend that the state is required by the public trust doctrine to protect the watercourses.

In its unanimous decision the three-judge panel said the public trust doctrine only applied to those rivers the state owned. It therefore could not rule whether the Arizona Department of Water Resources was avoiding its legal responsibilities in not prohibiting action that threatens surface flows until it was determined what rivers the state in fact owns.

Meanwhile, defining state ownership of riverbeds is an issue in the works. A commission was established with the task of determining which rivers were navigable at the time Arizona achieved statehood in 1912. These rivers or riverbeds are considered state owned. (see following News Brief)

The court said, "Without a determination of navigability at statehood this court is placed in the position of ruling on an abstract legal question." The lawsuit therefore is premature.

Attorney Joy Herr-Cardillo of the Arizona Center for Law in the Public Interest says she intends to file for a review by the Arizona Supreme Court. If upheld, the ruling could be a formidable legal roadblock since the commission examining the riverbed ownership issue has been making uneven progress.

Herr-Cardillo says if claims must await the outcome of the commission's effort "the rivers may all be dried up by then."

### River Navigability Quest Continues

When Arizona achieved statehood in 1912 the federal government gave it title to all navigable streams within its boundaries. Viewed by some as a historical curiosity, the situation took on greater importance in 1985. A lawsuit at that time forced the Legislature to address the issue of public ownership of riverbeds.

There is an estimated 39,039 watercourses in the state, with hundreds of thousands of acres of dry streambeds. Much of that land now is in private hands, including sand and gravel operators and other interests. Identifying which streams were naviga-



*River navigability in 1912 is being studied. (Photo: Mohave County Historical Society)*

ble in 1912 is critical in determining public and private lands.

The Arizona Navigable Streams Commission was established to do the job, and in 1994 legislation was passed setting criteria for the commission to use in deciding navigability. The standards were subsequently challenged in court and determined to be unconstitutional.

The commission at that point had conducted 53 public hearings throughout the state and submitted recommendations finding 14 rivers, two creeks and a number of small watercourses non-navigable. It was, however, back to the drawing board.

Scheduled to sunset in 2002, the commission was rebudgeted and extended until 2004. Budget cuts prevented the commission from beginning its hearings in 2001 as planned. The 2003 budget restored some

funding. The commission's term was extended to 2006, with expectations that its work will conclude in February or March of that year. This, of course, is barring further budget cuts.

### Small Fraction of Released Toxins Enter U.S. Water

Water was less affected by the release of 7.1 billion pounds of toxic chemicals into the U.S. environment than were the country's land and air, according to a recent U.S. Environmental Protection Agency report. Whereas approximately 27 percent of the released toxic chemicals entered the air and 69 percent settled on land on-and off-site, only 4 percent were released to water.

This information was obtained from the agency's annual Toxics Release Inventory which includes data on persistent bioaccumulative toxic chemicals such as dioxins, mercury and polychlorinated biphenyls.

Although the total quantity of 7.1 billion pounds of toxic chemicals released into the environment may seem staggering the figures for the year 2000 actually represent an improvement. The information obtained from approximately 91,500 forms submitted by 23,500 facilities indicate that total chemical releases into the environment decreased nationwide from 7.8 billion pounds in 1999 to 7.1 billion pounds in 2000.

This continues a downward trend evident since the inception of TRIs, with chemical releases having decreased approximately 48 percent since 1988.

Consistent with previous years, metal mining industry releases in 2000 account for a substantial portion of all chemical releases — 47 percent, or approximately 3.4 billion pounds.

The EPA says the report provides communities with a more thorough understanding of the sources of the chemicals in their environment.

The 2000 Toxic Release Inventory data along with background information on the TRI program are available at <http://www.epa.gov/tri/>

## EPA Funds Hopi, Navajo Drinking Water Projects

The U.S. Environmental Protection Agency recently announced grants to the Hopi and Navajo tribes of northern Arizona to help them develop drinking water supplies.

The \$1.9 million grant to the Hopi Tribe will be used for exploration and development of new water sources for the villages of Moenkopi and Shungopavi. The project to locate and develop new wells also will include storage and water mains and distribution to homes or central watering points. Funds also will be used to correct

existing deficiencies in the current drinking water systems.

Residents of the more traditional areas within the villages prefer central watering points rather than in-house plumbing.

EPA also announced a \$1.9 million drinking water grant and a \$278,000 environmental program development grant to the Navajo Tribe

The drinking water projects grant will fund feasibility studies and design and construction of wells for 23 Navajo communities. The wells will provide additional sources of water and help protect water supplies from arsenic and other pollutants.

The \$278,990 grant will help further develop the Navajo Nation's environmental program. A portion of this grant, \$71,000, will help 20 Navajo communities address small pockets of illegal dump sites. Currently, there are over 400 open dumps on the Navajo Nation.

The Navajo Nation estimates that 40 percent of all tribal members lack running water, compared with less than half of one percent of the U.S. population as a whole. Nationwide, EPA estimates seven percent of all tribal families lack running water, and over 1,100 open dumps are found on U.S. reservations.

### *Tribal Water...continued from page 1*

farmers and tribes.

The sale and lease of water promises to be a profitable activity for tribes as Arizona cities approach the limits of their current resources.

A settlement between the Gila River Indian Community and other parties is confirmed for water rights to various sources: SRP storage supplies, CAP, groundwater and reclaimed municipal water. In total, the Gila Tribe will be getting 653,500 acre-feet per year. Also as part of the settlement, the cost of constructing the Gila River Community's water delivery systems and rehabilitating existing systems will be paid. The tribe intends to increase its agricultural output, with plans to raise 146,000 acres of cotton, wheat, alfalfa and vegetables.

The legislation also amends the 1982 Southern Arizona Water Rights Settlement Act to resolve disputes among the Tohono O'Odham Nation, San Xavier allottees, Tucson and private users. Along with ensuring implementation of the basic elements of the 1982 settlement, the bill allows the Tohono O'Odham greater flexibility in putting their water resources to beneficial use. The Tohono O'Odham Nation would receive 28,200 acre-feet a year.

For their part, the tribes involved in the settlement would agree not to pursue legal claims against the state under the 1908 Supreme Court ruling, the "Winter's Decision." In Winters, the court held that when reservations were established sufficient water was implicitly reserved to fulfill the intended purposes for which the reservations were established.

Although non-Indian farmers will be surrendering water rights to CAP water, their use of water from the Salt and Verde rivers will be unaffected. This is to their advantage since, if the Gila River Indian tribal law suit prevailed, its water claims would have come from the Salt and Verde rivers.

And the bill also would allocate about 66,000 acre-feet of unallocated CAP water, to be divided among Phoenix, Tucson, Mesa, Glendale and Scottsdale. These cities would then have backup supplies to dip into before having to lease the more costly tribal water.

The bill also establishes terms for Arizona to repay the federal government for CAP construction costs, with the state paying \$1.65 billion of the total cost of \$4.7 billion. Federal officials were demanding about \$700 million more from the state.

Proponents of the bill say it will help settle much unfinished state water business, ultimately to the advantage of non-Indian interests, even though the tribes seem to have made the greater gains. Arizona urban areas, irrigation districts, farmers, mining companies and other water users would now know with more certainty the amount of water they have available to support their activities and plans, without the threat of future litigation by Indian tribes.

The bill rankles some who believe that tribes will be gaining an undue proportion of the state's water resources to the disadvantage of non-Indian water users. In a Sept. 29 editorial in the Arizona Republic, Earl Zarbin, author and retired reporter, complained, "Added to the almost 28 percent of the state's entitlement of 2.8 million acre-feet already controlled by three Indian Reservations along the Colorado River, it (the bill) will mean that slightly more than 1 percent of the state's population will control more than 51.5 percent of Arizona's entitlement."

Kyle says the complex settlement embodies various compromises among interests, with none achieving everything they wanted. Agreement prevailed, however, to avoid the excessive cost of further litigation and to bring to a close a very contentious and uncertain situation.

The bill will not likely come up for hearing until early next year and will likely be tweaked and fine tuned as it makes the rounds of the various agencies and committees and is submitted for public discussion. Since passage of the bill comes at a cost to the U.S. Treasury, it will likely get careful congressional scrutiny. Some observers expect it could take several years for the measure to make it through Washington.

Sens. Kyle and McCain wrote in an Arizona Republic editorial, "The intensive and protracted negotiation of these agreements has brought us to this final stage in the settlement process. And if Arizonans are unified, we expect success in the legislative process."



## Guest View

### Adequate Funding Needed for ADWR to do its Job

*This guest view was contributed by Mike Pearce, an attorney with Fennemore Craig, P.C. and former Chief Counsel of the Arizona Department of Water Resources.*

In these times of lean state budgets and large predicted state revenue shortfalls, much attention has been focused on reducing the size of state government, eliminating waste and reducing duplicative effort among state agencies. There is no doubt that these are good policies for hard times and most would agree that state government is by its nature an inefficient enterprise always in need of vigilant supervision to prevent waste. Like any good policy, however, there comes a point of diminishing returns in reduction of state government. The Arizona Department of Water Resources (ADWR) is at such a point. Before ADWR meets the big budget axe again, we should stop to question what that agency means to the overall credibility of Arizona.

In the United States, our governments were created to serve the people, to accomplish the social goals that individuals, corporations and municipal entities cannot accomplish alone. As a state agency and member of the executive branch of our state government, ADWR is charged with responsibility of enforcing the water laws of the state. It has investigative power and administrative authority to enforce the groundwater code, the artificial lakes regulations, dam safety standards, export of water from the state and the multi-faceted underground storage and recovery program. These programs represent the will of the people to live by a set of rules designed to enhance the overall health of Arizona's economy and the welfare of its citizens.

Within the groundwater code, for example, the decision to close the Active Management Areas to new irrigated agriculture was the single most important way to reverse the sharply increasing overdraft of these basins. But the program depends on effective administrative enforcement of the irrigation grandfathered right boundaries. Likewise, state-wide regulation of water well drillers and enforcement of minimum well construction standards are designed to protect our aquifers. But paper standards are meaningless if the industry knows that the emperor has no teeth. Still more important is the assured water supply program. This program, recognized around the West as one of the most progressive, has forced a regimen of sound long-term planning on the state, the cities, the utilities, the developers and the homebuilders alike. But maintenance of this program is dependent upon good hydrologic science and sound technical and legal review of professionally prepared applications.

Recharge of groundwater aquifers is undoubtedly the water management trend of the 21<sup>st</sup> century, but it is a program still in its infancy in Arizona. We have not yet begun to truly depend on the water stored under our existing legal and physical infrastructure, nor have we begun to withdraw it in times of real water shortage. While the amassing of "credits" is an admirable expression of our desire to stockpile water for the future, we have yet to make any regulatory

distinction between stored water and ambient groundwater, or to reconcile the rights of the residual groundwater pumper vis-à-vis the recovery well. The value of recharge credits, and accordingly the health of the recharge industry, depends on the state based administration system. Our recharge laws are certainly among the best in the country, but they must be administered by technically proficient permitting processes, accurate accounting and enforcement of property rights.

And what of matters of interstate, national and international importance? Will our director of water resources continue to speak to the Secretary of the Interior on the management of the Colorado River with the same level of authority to which we are accustomed, or will Arizona lapse into the California model of incessant internal discord and painful lack of a state position? Mere words and rhetoric will not suffice here. Intellectual credibility on the Colorado requires precise knowledge of the law of the river, a thorough understanding of the U.S. Bureau of Reclamation's operating regime, and sensitivity to the politics of the seven basin state forum. This is not the director's job alone. Anyone in that position needs seasoned staff to attend the meetings, challenge the science and produce well reasoned alternatives to the constant flux.

Similarly, the implementation of the Endangered Species Act, the Clean Water Act and the Safe Drinking Water Act present increasing evidence of federal "policy creep" on traditional state-based water management. How will the state of Arizona fare in determining its own policy if we have no staff or technical expertise to bring to the bargaining table? Will the issues surrounding Mexico's increasing dependency on Arizona's groundwater near the border, and Arizona's increasing dependency on Mexican effluent discharges, be resolved by the Department of State's International Boundary and Water Commission, or will Arizona step into a role of leadership on these international issues and assert our state's unique interests? It will be difficult to assert leadership without staff to develop sound policies backed by credible scientific and economic study.

Wither the Arizona Department of Water Resources? The old expression "water flows uphill toward money" is as true at the state and national level as it is on the irrigation ditch. If water is important to our future — and there is no one in Arizona who would argue to the contrary — then Arizona must present a credible agency to develop, promote and implement our state's water policy. Can the agency do more with less? Yes it can, by focusing on the important programs, hiring key "exempt" employees at competitive salaries for critical management positions, and continuing to weed out ineffective programs and inefficient staff. This is a tall order and the task is not aided by budget cuts that draw no distinction between short-term and long-term prosperity. Ask of the director to do more with less, but ask of our next governor, and our next Legislature, to support this small state agency as the regional voice of Arizona in the high stakes game of western water politics.



## Legislation and Law

### ADEQ Awaits EPA Approval to Administer NPDES

*Meanwhile NPDES Phase II deadline looms*

The National Pollution Discharge Elimination System is an issue of timely importance in today's state water quality news, with two newsworthy NPDES events getting attention. For one, the Arizona Department of Environmental Quality awaits U.S. Environmental Protection Agency approval for authority to administer the NPDES program. Also, with a March 10, 2003 deadline just around the corner, a number of Arizona entities need to gear up to comply with NPDES Stormwater Phase II regulations.

ADEQ's application for NPDES primacy is in the works. With all requirements duly met, ADEQ expects EPA approval will be forthcoming to enable the agency to administer NPDES. At present, EPA administers the program in Arizona, in cooperation with ADEQ, with permits jointly drafted by EPA and ADEQ.

In 2000, ADEQ began its initiative to replace NPDES with AZPDES (Arizona Pollutant Discharge Elimination System). In June 2002, a final application was submitted to EPA. The following month EPA determined that AZPDES was complete, and according to the Clean Water Act, the agency then had 90 days to make a ruling. Oct. 9 marked the end of the 90-day period.

Chris Varga, manager of the Surface Water Permits Unit at ADEQ, says, "EPA did not rule, nor have they asked for an extension thus far. The current status therefore is that no one in Arizona is authorized to sign permits, neither EPA nor ADEQ, until a decision is made about our program. We have every expectation that EPA will approve our application."

When AZPDES takes charge a few changes will occur. The most obvious will be that instead of EPA, ADEQ will now issue permits and have enforcement authority, with records and monitoring reports submitted to the state agency. Further, Varga says AZPDES applications will be handled more directly. He says, "We are a state agency, subject to permitting time frames by rule. We have to process things quickly, within certain timelines or get penalized."

Also Varga says that ADEQ will be able to keep closer tabs on situations since the agency will be closer to permitted sites or facilities applying for permits. Inspections can more readily take place and meetings arranged with interested parties. He says, "We think we will do a better job by being closer to the regulated parties."

Some controversial issues also arise with Arizona assuming NPDES primacy. For example, the state, in taking on a what was previously a federal responsibility, will not at the same time have responsibility or authority to implement or enforce the federal Endangered Species Act. If the U.S. Fish & Wildlife Service now has objections to an EPA action, the permit might be withheld or mitigating activities required. It will be different with the state.

Varga says, "When we get the program we will send draft permits to USFWS as a matter of public notice as we would to other interested party. If we get comments we may incorporate them or try to resolve them, especially if they deal with water quality."

In issuing stormwater permits the state also will not be bound by restrictions relating to the National Environmental Protection Act nor the National Historical Preservation Act. Regardless of whether the state or the federal government is in charge, however, the same water quality standards are enforced.

In assuming primacy for the NPDES program, ADEQ will not get any additional federal funding. Federal funds already pay about 40 percent of the state's expenses in its role as program partner. No additional federal funding is anticipated when the state becomes the sole NPDES administrator.

When the state Legislature authorized ADEQ during the 2001 regular session to pursue NPDES primacy it established nine new full-time AZPDES positions. The people filling these positions are now gearing up to take on NPDES responsibilities and will perform AZPDES duties when the state has program primacy.

Arizona's NPDES primacy bid is being finalized at about the time that NPDES Stormwater Phase II is scheduled to be implemented. Phase II follows Phase I, which was promulgated in November 1990, and targeted stormwater discharges from communities with a population of at least 100,000. Also subject to Phase I regulations were certain industrial activities and construction sites of five acres or more.

Promulgated in December 1999, the final NPDES stormwater regulations for Phase II focus on small municipalities and construction sites, with the intent of broadening the law's coverage. Municipalities and construction site operators must apply to the permitting authority for authorization to discharge by Mar. 10, 2003.

That Phase II is coming due during a transitional period has raised some logistic concerns. General permits were scheduled to be available by December for Phase II municipalities and construction sites, with a March filing date. With the state primacy issue still not officially resolved, questions arise whether EPA or ADEQ will be the permitting authority. In an attempt to resolve the issue, the two regulatory agencies worked together to develop permits for Phase II municipalities. The documents were co-noticed in both the Federal Register and the Arizona Register. Either EPA or ADEQ can therefore sign off on a permit, depending upon which agency is in charge at the time.

EPA, however, is currently not expected to issue Phase II construction permits until February despite a December deadline. Both agencies are in the process of drafting versions of the permit.

The adjustments taking place as part of the transitional period has added to the confusion of some entities confronting Phase II compliance. They should, however, be seriously preparing to meet the upcoming Phase II compliance requirements. For more information about Phase II compliance contact ADEQ, either Robert Wilson (602-771-4574) or Karyn Moldenhauer (602-771-4449).



## Publications & On-Line Resources

### Free Drinking Water/Public Health Poster

The U.S. Environmental Protection Agency Office of Ground Water and Drinking Water is offering a free poster titled, Safe Drinking Water Act—Protecting America's Public Health. The map provides a pictorial description of how discharges, recreational activities and other everyday events can affect water. To order a copy of the 24-inch by 36-inch poster, call the National Service Center for Environmental Publications at 800-490-9198 and ask for publication number EPA 816-H-020001.

### A Home Buyer's Guide to Geologic Hazards in Arizona (AZGS Down-to-Earth 13)

*Raymond C. Harris and Philip A. Pearthree*

This publication describes geologic conditions most likely to cause property or structural damage. Its intent is to inform prospective buyers and builders about potential hazards so that they can determine how best to deal with them and decide what level of risk is acceptable. Floods, subsidence and fissures are the water-related

hazards discussed in the publication. The publication is available for \$6.95 plus shipping from the Arizona Geological Survey Publications, 416 W. Congress St., Suite 100, Tucson, AZ 85701; phone: 520-770-3500.

### UA College of Ag & Life Sciences' Electronic Newsletter

The University of Arizona's College of Agriculture and Life Science (CALs) has launched an electronic newsletter called CALs News-Line. The intent of the newsletter is to provide information about services CALs offer to the people of Arizona. The services are varied and far-ranging and include water-related events and developments. To sign up for the monthly electronic newsletter visit <http://ag.arizona.edu/pubs/newsline/>

Also CALs will soon begin publishing again "Arizona Land & People." The newsletter, which will be published three times per year, will feature CALs extension and instructional activities. To subscribe to Arizona Land & People check: <http://ag.arizona.edu/pubs/landandpeople/>

### Still the Wild River Runs

*Byron E. Pearson*



In the environmental history of the West, the defeat of the proposal to build two dams in the Grand Canyon during the 1960s is considered a defining moment. According to the standard account of the event, the dam-the-river forces suffered a major setback when the Sierra Club led a national campaign to defeat the plan. Public indignation was roused, and the project went down in defeat. Viewed as the savior of the Grand Canyon,

the Sierra Club became a leader in the U.S. environmental movement.

This book offers a revisionist view of the event. The author questions whether the Sierra Club's call to public arms was in fact the deciding factor that influenced Congress to turn down the dams. He makes the case that political expediency or wheeling and dealing made the difference, with Secretary of Interior Stewart Udall deleting the dams from the Central Arizona Project and espousing a more stripped down version to ensure the project's congressional passage.

In making his case, the author is not out to discredit the Sierra Club's environmental leadership and achievements, which have been considerable, but rather his goal is historical accuracy. He says, "As a person with a legal background who was not involved in the controversy, I have examined the documentary evidence as objectively as possible and have come to the conclusion the evidence supports." 250 pp, \$45.

### Native Waters

*Daniel McCool*

The conflict between Indians and non-Indians over water rights has left a bitter legacy, marked by suspicion and injustice. Initial efforts to settle matters were confined to the courtroom, with parties engaged in costly and drawn-out legal proceedings in efforts to resolve water rights. Progress was slow and laborious, and in the 1980s the federal government shifted strategies from deciding cases in the courtroom to negotiating water right settlements. Negotiated settlements became the strategy of choice for determining water rights.

According to the author, settlements are changing water rights in fundamental ways, both for tribes and non-Indian communities sharing scarce water resource with Indians. He says the shift to settlements was sufficiently significant to consider their adoption and use as a second treaty era. He questions, however, whether settlements will truly guarantee the water future of reservations or like first-era treaties Indians will lose out in the end.

The book is a very readable account, providing discussions of specific water settlements without going into the technical details of water policy. The perspective is on actual people involved in on-going efforts to resolve water disputes that have continued for decades. The strategy that is adopted to resolve Indian water claims is viewed as an indication of who we are as a nation and how we confront difficult issues involving race, culture and the environment. 260 pp, 45.

*The above two books are available from The University of Arizona Press; phone: 520-621-1441; fax: 520-621-8899; web site: [www.uapress.arizona.edu](http://www.uapress.arizona.edu)*





## Special Projects

### NAU Student Takes on Project to Install Campus Reclaimed Water System

As part of her master of engineering project, Northern Arizona University student Abigail Roanhorse acted as a nexus between the City of Flagstaff and the university to study reclaimed water use on campus. The means of fulfilling a degree requirement, the project evolved into much more, with Roanhorse taking the initiative to get support and funding to organize a major NAU reclaimed water feasibility study.



Graduate Student/  
Program Coordinator  
Abigail Roanhorse

Roanhorse got started on the topic when she consulted with Flagstaff officials while attempting to identify a suitable project to undertake. Randy Pellatz, Flagstaff assistant utilities director, told her the city was anxious to switch NAU from potable water to reclaimed water for turf and landscape irrigation. In fact, over ten years ago the city and the university collaborated on a study of NAU and reclaimed water use, but with limited results. The university was only able to hook up a relatively limited area.

NAU is the single greatest user of potable water in Flagstaff and consumes an estimated 154 million gallons per year to irrigate 72 acres.

Roanhorse saw interesting possibilities in a project that could provide the groundwork for installing a reclaimed water system at NAU. She submitted the idea of developing an NAU reclaimed water feasibility study to her advisor who approved it. The scope of the project was sufficiently broad and ambitious to require funding. Roanhorse's entrepreneurial skills were called into play.

She sought and received funding from Arizona Public Service, the City of Flagstaff and the NAU Business College. NAU Capital Assets and Services also contributed funds along with in-kind assistance. Her funding from the City of Flagstaff was in the form of a contract that she produce a report as a deliverable to the city. Her awards totaled \$120,000, and her success at attracting funds enabled her to hire three students to help with the project. Her graduate student status broadened as she took on the role of program coordinator.

The feasibility study required that she conduct an inventory, provide a conceptual design of the proposed system and perform an economic analysis. The inventory phase of the program characterized water demand and pipe sizing. Further, the inventory included evaluating soil types, mapping the existing irrigation system and identifying and mapping trees, shrubs and flowers beds on campus.

The second phase was the conceptual design. Its objective was

*Continued on page 12*

### Grant Supports Study of Ag Chemicals as Source of Nonpoint Pollution

James A. Field of the University of Arizona's Chemical and Environmental Engineering Department was awarded a \$137,448 grant from section 104(g) of the Water Resources Research Act for a two-year study of agricultural chemicals as a major nonpoint source of arsenic. His proposal was one of eight funded out of 75 submitted nationwide. Total federal program allocation for 104(g) was \$1 million.

Scheduled to begin this fall, his study, addresses a timely topic. Lowering arsenic levels in drinking water has emerged as a national priority, with EPA setting the maximum contaminant level of arsenic in drinking water at 10 parts per billion. Arsenic is a naturally occurring element that can be liberated into soil and water. Along with natural sources, agricultural activities also can be the cause of large quantities of arsenic entering the environment as organic arsenicals.

Herbicides used on cotton include monosodium methanearsonic acid (MSMA), disodium methanearsonic acid (DSMA) and cacodylic acid (CA), and roxarsone is utilized as feed additive/antibiotic agent in poultry farming. The national annual discharges of MSMA and roxarsone into the environment are estimated at  $2.6 \times 10^6$  and  $1.2 \times 10^6$  kg, respectively. The discharge of MSMA is of special concern to Arizona, a cotton growing state.

The nonpoint pollution of organic arsenicals from agriculture may have an important impact on arsenic budgets in groundwater and surface water. To monitor and predict the fate of organic arsenical in the environment, the major biotransformation products expected from the microbial conversion of organic arsenicals need to be understood.

The project goal is to identify major metabolites accumulating in the environment from the bioconversion of these organic arsenicals, evaluate their toxicity and establish analytical protocols for their detection. Microbial processes and microorganisms responsible for key conversion will be studied to gain better insight on the mechanisms responsible for the biotransformation of organic arsenicals.

The U.S. Geological Survey funds 104(g) through the National Institutes for Water Resources program. The University of Arizona's Water Resources Research Center, the state's institute program, solicits 104(g) grant applications and submits them to USGS for evaluation. USGS also is the source for the UA WRRC's section 104(b) funding, used by the center to support small water research projects of importance to the state and region.



## Announcements

### Water Quality Conference in Tucson

USDA-CSREES National Water Quality Coordinators Conference will be conducted Jan.12-15, 2003 in Tucson. Titled "Building the Network, Strengthening Partnerships," the conference has two main objectives: encouraging partnerships by presenting new ideas and new opportunities for collaboration and moving forward in the national effort to enhance and bring together work in states and regions across the country by sharing successful program ideas. This conference will highlight and describe successes to date, unique approaches and emerging issues. Participants will have opportunities to begin new work across states, regions and the nation to further the goals of the USDA-CSREES Water Quality Program. Refer to the conference web site for details and registration: <http://www.engr.colostate.edu/ce/csrees/index.shtml>

### Arizona Rural Watershed Conference Set

The Arizona Watershed Alliance will be hosting its Arizona Rural Watershed Conference 2002 on Dec. 3-5 at the Apache Gold Convention Center approximately 5 miles east of Globe. Participants from all across Arizona



*Scene from rural Arizona (Photo: Barbara Tellman)*

are invited to attend. Topics slated for presentation include the Arizona Watershed Alliance, ADWR's statewide planning efforts, Arizona legislative proposals for 2003, rural water supplies - a status report, groundwater and surface water relationships and funding options. Display space will be provided for watershed groups to showcase their local efforts, projects and partnerships. Contact Robert J. Mawson, AWA Coordinator; phone: 928-473-2233; e-mail: [rmawson@cableone.net](mailto:rmawson@cableone.net)

### Call for Papers

A call for papers has been issued for presentations at the First Interagency Conference on Research in the Watersheds to be held in Benson, Arizona Oct. 28-30, 2003. The conference will highlight current research being conducted in instrumented experimental watersheds that is relevant and applicable to the watershed scale. Investigators who have completed research on watershed-scale topics such as hydrology, erosion, economics, instrumentation,

ecology, sociology, water quality, integrated management, remote sensing, climate change, watershed management, data management and fire are invited to submit abstracts for oral and poster presentations. Abstracts must be submitted by Dec.1, 2002. Electronic abstract submission and conference details are available at <http://www.tucson.ars.ag.gov/unit/ICRW.htm> For further information, contact Susan Moran at [smoran@tucson.ars.ag.gov](mailto:smoran@tucson.ars.ag.gov) or 520-670-6380 ext. 171

### RFP for Arsenic Removal Technologies for Small Systems

The U.S. EPA seeks proposals for treatment technologies for cost-effective arsenic removal for small drinking water systems. The objective of the program is to pre-qualify treatment technologies for a subsequent demonstration. The program will evaluate the reliability of technologies for small systems; gauge simplicity of operation, maintenance and required operator skills; determine cost-effectiveness; and characterize treatment residuals. No funds will be directly awarded to the selected proposers under this solicitation. From those proposers pre-qualified, EPA anticipates selecting up to 12 proposals for demonstration. For those demonstrating, EPA will purchase any equipment or engineering services through an independent contractor and will pay for the installation of the equipment at the site. EPA will also purchase and provide supplies such as chemicals or media if needed. Application Proposal Due Date: January 7, 2003. For additional information check: <http://es.epa.gov/ncer/rfa/current/2003arsenic.html>

### Source Water Protection Symposium

American Water Works Association is sponsoring a Source Water Protection Symposium, Jan. 19-22, 2002, in Albuquerque. The symposium will bring together representatives from water utilities, government agencies, researchers, consultants, manufacturers and environmental groups to discuss current issues vital to the protection of source water. The symposium will address early warning and source water monitoring; best management practices for source water protection; and garnering public outreach and participation for source water protection and watershed management. For more information check the web site: <http://www.awwa.org/conferences/SWP>

### Upcoming UA Water Resources Research Center Conference

A WRRC conference titled, "Local Approaches to Resolving Water Resource Issues," is scheduled for May 1 and 2, 2003, in Prescott. See the Vapors section, page 3, for information about the conference.



## Public Policy Review

by Sharon Megdal

### Program Supports UA Water Research, Education and Outreach



A new water-focused grants program is underway at the University of Arizona. This innovative competitive grants program for water resources research, education and outreach is funded through the legislatively authorized Technology and Research Initiative Fund (TRIF). In November 2000, when voters increased funding for education by approving an increase in the state sales tax, the state's university system benefited.

A portion of the tax was dedicated to investment in technology and research-based initiatives. Established by statute (ARS 15-1648), TRIF is administered by the Arizona Board of Regents (Regents), which awards funding in response to university requests.

It was in response to a UA request that the Regents approved funding for a comprehensive water initiative. Known as the Water, Economic Development and Sustainability Program (WEDSP), this innovative project includes research, education and outreach activities and is a collaborative effort among four existing UA water centers. An increase in projected program funding from the fiscal years' 2002 and 2003 level of \$500,000 to \$2,000,000 in fiscal year 2004 is enabling the introduction of the grants program.

Working closely with Dean Eugene Sander of the College of Agriculture and Life Sciences on developing and implementing WEDSP are the directors of the UA water centers: Farhang Shadman of the Engineering Research Center for Environmentally Benign Semiconductor Manufacturing; Soroosh Sorooshian of the Center for Sustainability of Arid and semi-Arid Hydrology and Riparian Areas; Ian Pepper of the Water Quality Center; and Peter Wierenga of the Water Resources Research Center.

The WEDSP mission is to provide science-based technical, economic, legal, and policy expertise necessary for water development, use, and conservation. A business plan was recently requested by the Board of Regents. The business plan, which can be accessed from the Regents' home page ([www.abor.asu.edu](http://www.abor.asu.edu)), is undergoing review by the Regents' Business Advisory Team. It highlights how the UA is leveraging its strengths in academia, research, and local environmental technology industries to further the WEDSP mission.

To date, TRIF funding has enabled each of the funded water centers to expand its work on water resources research. Areas of research interest include but are not limited to evaluating the effects of climate fluctuations on surface water resources, determining how to meet increasing water demands at the same time as groundwater levels are declining, addressing water quality issues associated with high-tech manufacturing as well as water treatment and recycling, and assessing Arizona water resources policies and institutions.

Education and outreach are important components of the WEDSP. In addition to the education and outreach activities of each of the centers, a joint education program has been the recipient of one-fifth of the program's funding in each of the first two

years. Already, TRIF funding has supported the development of high school, interdisciplinary curriculum modules on water resources in a semi-arid environment, a middle-school field trip site at Tohono Chul Park in Pima County, and water resource centers in Cochise and Yavapai Counties. In addition, TRIF has supported the expansion into Maricopa County of Project WET (Water Education for Teachers) and development of a summer teachers institute on water recycling by industry.

An external advisory committee to the WEDSP has been established to provide periodic input on the program's activities, including input on areas of research, possible funding partners, ways of strengthening the program, and mechanisms for information dissemination. Serving on the committee are representatives of private sector companies, including the semiconductor industry, water utilities, and state and federal agencies.

Partnerships are extremely important to the WEDSP. It is expected that TRIF funding will enable faculty and staff to build upon existing partnerships and forge new partnerships. The extent to which resources are leveraged with external funding is a key performance measure for the program. The Regents intend to evaluate the performance of the TRIF-funded programs thoroughly. Less than half-way through its second year of funding, the WEDSP is about to embark on perhaps its most exciting component, one that is unique among the TRIF programs, the competitive grants for UA faculty and staff. The focus will be on Arizona-specific water resources issues. A large proportion of the fiscal year 2004 increase in funding will fund faculty and staff grants, with a smaller portion going to fellowships for undergraduate and graduate students. A request for proposals will be released in early November, with awards announced next spring. The WEDSP grants program is expected to continue for two years beyond fiscal year 2004.

Since joining the Water Resources Research Center in February, I've had the opportunity to participate in the implementation of the WEDSP. It has been exciting to be involved in the enhancement of our ability to understand and address Arizona's water resource challenges. I'll keep you posted!

**Update:** In a recent column, I wrote about the lack of legislative action on the recommendations of the Governor's Water Management Commission. Many are wondering what will happen next session. There will be an effort by the Central Arizona Water Conservation District Board to obtain legislative support for implementing the Commission's recommendations related to the Central Arizona Groundwater Replenishment District, and there is significant interest in addressing rural Arizona water issues. There also continues to be some activity regarding infrastructure finance. Otherwise, there appears to be no organized effort at this time within the water community to generate legislative support for other Commission recommendations. The obvious but not only reason for this — the dire state budget situation.

*NAU Student...continued from page 9*

to minimize the number of connection points required to tie NAU's existing potable water irrigation system into the reclaimed water distribution system. Roanhorse says, "While doing the conceptual design we did the economic analysis because it is hard to do one without the other."

The economic analysis was important because it would provide Flagstaff with the information needed to determine its financial support of the project. Flagstaff will pay an organization to convert to reclaimed water if the city can recover the cost of replacing the system within a 10-year period by selling reclaimed water to the organization.

Phase IV evaluated the existing NAU irrigation system. Roanhorse says, "When I was doing the inventory I noticed how inefficient the irrigation system was. We hadn't considered that in the original proposal." Her evaluation verified the problems with the existing irrigation system.

Roanhorse says, "We determined for the city how much water each connecting point and each section of the university would consume. Also how much money the city could make by selling reclaimed water to the university and how much groundwater they would save." Roanhorse came up with a proposed reclaimed water system design that would convert 66 acres of irrigated area to reclaimed water, with an estimated 141 million gallons of potable water conserved per year. Her report was sufficiently detailed to

convince city officials to spend the approximately \$1 million to construct the system to bring reclaimed water to the NAU campus.

The city still comes out a winner since it is cheaper to pay for a reclaimed water system than to drill a new well at a cost of about \$1.8 million. The city saves in other ways too. Shifting NAU to reclaimed water saves the city about \$28,000 in energy costs since reclaimed water is cheaper to pump than potable water.

Her interest in wise and efficient water use in northern Arizona continued beyond the writing of the feasibility report. With seed money from APS, Roanhorse got involved in fund raising to interest donors to contribute to xeriscaping the NAU campus and improving its irrigation system. Her funding also supports student participation in this ongoing endeavor.

Also Roanhorse received funding from the University of Arizona's Water Resources Research Center through section 104(b) of the Water Resources Research Act to conduct a workshop for water managers in northern Arizona. Held in Flagstaff on July 11, the workshop focused on turf and landscape water savings in northern Arizona, using both potable and reclaimed water. Over 50 professionals from the City of Flagstaff, NAU, the Navajo Nation and Sedona attended the event. Vendors of water and irrigation products also helped sponsor the workshop.

Roanhorse transferred to the UA and is a PhD student in the Department of Agricultural and Biosystems Engineering. She can be reached at [Abigail.Roanhorse@NAU.EDU](mailto:Abigail.Roanhorse@NAU.EDU)



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