

Arizona Interstate Water Transfers Issue Again on Table

Owners of water rights to Cibola Valley Irrigation and Drainage District (CVIDD) in southwestern Arizona seek approval to sell or lease about 24,000 acre-feet of federal contract Colorado River water to out-of-state buyers. This proposed transaction represents a challenge to the state of Arizona and its efforts to control interstate water transfers. The Arizona Department of Water Resources (ADWR) thus far has blocked any proposed interstate sales or leases.

Officials of Consolidated-Geare, the district's major land owner, therefore are unable to negotiate water contracts. Consolidated-Geare's minority partner Larry Geare says, "We have generally received strong, very strong blessing from the BuRec to reallocate the water for a higher and better use; in this case either a long term lease to Nevada or California. ADWR can't seem to allow it and has opposed us all the way."

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Repair of the Salt River siphon. (Photo: Jack Adams, Bureau of Reclamation.)

Siphon Repairs On-time, Under Budget

Replacement of two Central Arizona Project (CAP) siphons, the Salt River and New River siphons, went according to schedule (see Aug.-Sept. 1994 *AWR*, p. 5). Replacement of the Agua Fria siphon, however, is on hold indefinitely due to unresolved disputes between the CAP and the Bureau of Reclamation (BuRec) over repayment of CAP capital debt (see Nov.-Dec. 1994 *AWR*, p. 5).

Six siphons carry CAP water under major river beds. Originally constructed of huge, U-shaped, wire-wrapped prestressed concrete pipes (PCPs), the PCPs were discovered in 1990 to be corroding, necessitating replacement or repairs.

Repairs began in April 1993 with the construction of new pipes paralleling the existing siphons. Steel pipe was used to replace the Salt River siphon, and a cast-in-place concrete pipe constructed to replace the New River siphon. The process of disconnecting the damaged siphons and connecting the new siphons began in October 1994 and was completed by mid-December. Water deliveries, which were suspended while the replacements took place, resumed on December 17th. According to Chuck Morfoot of the BuRec, final costs for the two siphon repairs are expected to be lower than the projected \$35.2 million.

Deterioration of the four remaining CAP siphons still needs to be addressed. Replacement of the Aqua Fria River siphon was scheduled to begin in early 1995, but construction cannot begin until the disputes between CAP and the BuRec are resolved. According to the BuRec, the siphons at Centennial Wash, Jackrabbit Wash and the Hassayampa River currently are being monitored using hydrophone technology developed by the U.S. Navy and will be repaired or replaced as necessary. All siphon work was scheduled to be completed by November 1996 but it is not clear to what extent the conflicts between CAP and the BuRec will prevent adherence to this schedule.



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water transfers, continued from page 1

Larry Linser, deputy director of ADWR, explains the department's position, "Cibola's proposal basically involves the sale, on a party-to-party basis, of a portion of Arizona's 2.8 million acre-feet entitlement of Colorado River water for use in Nevada. Our position has been if there is to be any marketing of any water across state lines it has to be through a state-to-state process."

Given the economics of interstate water marketing, many observers view the proposed sale or lease as an event that was waiting to happen. Arizona has more water than it presently can use or pay for. Meanwhile, there are willing out-of-state buyers, specifically in Nevada and California, who need water and are willing to pay. It is not unexpected therefore that someone in Arizona with wet water to sell would want to work out a deal with an out-of-state buyer.

"ADWR wants to control all of the water in Arizona."

Consolidated-Geare is anxious to take advantage of the current economic situation and views ADWR as unduly interfering with its right to sell water and make a profit. Geare sees the situation as a free market issue. "It is basically a question of whether you are going to let a free market function or not," he said. "The free market — willing buyer and willing seller — will determine the market price and the highest and best use. If you put in a lot of government regulations, then that is going to ruin the free market effect."

Although economics may favor the deal, political issues have complicated the affair. The interstate sale or lease of water has been a thorny issue to Arizona water officials. Arizona is not using its full Colorado River allotment. Officials fear, however, if they allow any of the state's allotment of Colorado River to be used out of state, Arizona may not be able to reclaim it for in-state use when needed.

The issue is further complicated because Arizona, by insisting on its authority to regulate interstate water transfers, is standing up to what it perceives to be interference from the federal government. The U.S. Bureau of Reclamation (BuRec) has proposed regulations that would allow the Secretary of the Interior to authorize the interstate leasing of unused water allotments.

Arizona, and other lower Colorado River Basin states, objected to the proposed plan mainly because the federal government would gain control of how states manage and eventually sell or lease their allotments of Colorado River water. The Colorado River Compact States organized a technical committee, the 7-10 Committee, to examine options to the federal plan. Arizona has proposed a water banking concept.

Although progress is being made in negotiations with lower basin states, much more work is needed before any plan is adopted and put into place, Linser says. "If some type of marketing concept is approved among the three

states and authorized by our Legislature, there may be an opportunity for Cibola to participate; for example, through an Arizona state water bank."

Arizona, therefore, looks with disfavor at requests to transfer water out-of-state, until it has in place a plan to regulate such transactions. It is presently unclear what types of regulations Arizona might impose. Some observers believe the state might adopt fairly restrictive regulations, possibly requiring that water first be offered for sale in-state, with prices and profits controlled.

There is an ironic twist to the situation. The popular scenario has the federal government in the role of the overly restrictive and intrusive guardian, with state government advocating less government control. In this situation, however, the economic interest of CVIDD's water rights owners is better served by the proposed federal regulations than state actions thus far.

"ADWR wants to control all of the water in Arizona," Geare says. "They basically have said there can be no movement of water without their approval. That is a jurisdictional question that I think invites a lot of debate."

Such a debate would involve discussion of the direct diversionary contract CVIDD water rights holders have with BuRec. The extent to which and, indeed, whether, this contract allows them to transfer, exchange and lease water across state lines would be examined.

Linser says that CVIDD obviously is seeking a leasing scheme similar to what was proposed earlier by the Secretary of Interior — and objected to by the states. "We oppose that," he said. "That arrangement is not legal under the Law of the River."

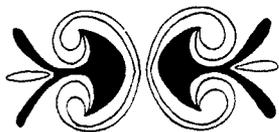
Geare questions whether the 7-10 Committee will come up with a suitable plan to resolve the situation. "It is pretty much a bureaucratic solution. The committee excludes the people who eventually will have to pay for the water — the users, consumers, the developers, manufacturers. They are not allowed to participate in the decision making."

Consolidated-Geare's proposed transaction has implications beyond the interstate transfer of water. Various land swaps hinge upon the successful negotiation of CVIDD water contracts and involve land in Utah, Nevada as well as Arizona.

In Arizona this interstate water transfer is key to a proposed land exchange to turn over the agricultural land in CVIDD to U.S. Fish and Wildlife, thereby increasing its Cibola National Wildlife Refuge. The refuge was established in 1962 to mitigate the impacts of dam and dike construction along the Colorado River. At that time, CVIDD land was acquired for the refuge, and U.S. Fish and Wildlife now is interested in acquiring additional district lands. In return, Consolidated-Geare would get BLM land in La Paz or Mohave County for commercial or industrial development.

Consolidated-Geare and ADWR officials continue to meet in efforts to resolve difficulties.





Water Vapors

We received email this month from Paul Marsh of the Center for Environmental Studies at ASU. "AZ Wat. Resour 3(6): 9 says American Rivers has closed its Phoenix Office. Not according to Conservation Associate Pamela W. Hyde, who continues to work at that location. True, Gail Peters is no longer with American Rivers, at least that's what we've been told."

There is some confusion about who is doing what for American Rivers these days. What we have learned is that the Phoenix office remains open, with Conservation Associate Pamela Hyde there part-time. She can be reached at 602-264-1823 or 602-265-9173. Dale Pontius, who has run the Tucson office since last summer, will be returning to the private sector as of April 1. The Tucson office will be closed at that time. For now, Dale can be reached at 602-318-1087. It isn't clear who will replace Dale, or from what office he will operate.

Don't Drink the Water?

In an effort to counter perceived national and state-level legislative campaigns to weaken drinking water standards, a coalition of environmental and public interest groups released reports and studies containing a blizzard of alarming statistics. Among the claims: one in five Americans drank tap water contaminated with bacteria or that was too cloudy last year; bad drinking water causes a million illnesses and 900 deaths per year; 494,000 Arizonans were exposed to contaminated drinking water last year; and most of Arizona's regulated water systems are out of compliance with federal standards.

Don't Drink the Beer?

Miller Brewing is suing the San Gabriel Water District over plans to recharge treated effluent into the aquifer that serves as the water supply for

Miller's Irwindale brewery. Miller claims the recharge may contaminate the San Gabriel aquifer; water district officials note the aquifer is an original Superfund site. Currently, the effluent is dumped into the ocean.

Seems to us Miller should chill. Recharging aquifers with treated effluent is mature technology. Besides, Anheuser-Busch uses the Mississippi as source water for its St. Louis brewery, and last time we looked at a map, St. Louis is downstream from half the wastewater plants in the country.

Foreign Correspondent

Nothing puts domestic water problems in perspective like a quick glance around the globe. Most of Europe has been hit by floods, except the Iberian Peninsula, where drought persists. Drought also persists in Bulgaria, where water has been rationed in the capital, Sofia, for three months. The government now is considering declaring a state of emergency and evacuating some residents.

Droughts and floods come and go, but the water quality problems being revealed in Russia will haunt that country for decades. A recently-released report from the Russian Academy of Sciences estimates that three-fourths of the nation's water is undrinkable. Sources of contamination include surging bacteria levels in rivers and lakes from poorly maintained wastewater plants, a cold war legacy of radioactive waste, and oil leaking from deteriorating pipelines.

Every Mushroom Cloud has a Silver Lining

Great news from the Nevada Test Site — surface-disruption features resulting from underground nuclear testing (aka "craters") may increase the potential for groundwater recharge in areas that normally would produce little, if any, recharge. The potential practical applications of this discovery boggle the mind! And now we can put to good use all the aging nukes the U.S. is buying from Kazakhstan.

In a similar vein, researchers from the University of Nebraska-Lincoln have come up with a low-cost alternative to air strippers for removing volatile organics from groundwater. They have announced that small-nozzle, fine-spray irrigation sprinklers can remove over 98 percent of the TCE from contaminated water. Now if they can figure out how to set up center-pivot irrigation systems in the middle of industrialized urban centers... It seems to us a better solution is outdoor misting systems around every patio.

Factoid of the Month

From the January issue of *American Forests* — "It has been estimated that all the saltcedar in the Southwest annually uses twice as much water as all the cities of southern California."

But not for long. The Los Angeles City Council is considering new water rates that would give breaks to households in hot areas, on large lots, or with large families — in other words, households that use lots of water.



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News Briefs

WMIDD Seeks Levee Repair, Faces New Flood

The Wellton-Mohawk Irrigation and Drainage District is locked in a fight with the U.S. Environmental Protection Agency (EPA) over plans to repair levees destroyed or damaged during state-wide flooding in early 1993. Of 105 miles of levees protecting 62 miles of Gila River frontage, 65 percent was destroyed, with most of the rest damaged.

The District, which delivers Colorado River water to farmland in eastern Yuma County, wants the levees rebuilt and has drafted an Environmental Assessment (EA); the EPA is calling for a more comprehensive Environmental Impact Statement that would consider other options.

District administrative assistant Herb Guenther contends that reconstruction of levees under the federal disaster recovery act requires only an EA, and describes EPA's demands for an EIS as "bizarre, beyond description." The EPA position is that new levees along the altered watercourse constitute a new project, and therefore an EIS is required. Guenther claims such a position is unprecedented, stating that "in all my years associated with the federal regulatory arena, I've never seen anything like this."

The District argues that, without flood protection, there would be no farming in the area, and without irrigation tailwater, there would be no riparian habitat along that stretch of the Gila. The District's levee reconstruction plans include enhanced protection of oxbows in the channel to extend wet periods along the Gila and improve riparian habitat.

The current EPA position is supported by the Yuma Audobon Society, and by the Phoenix-based Southwest Center for Biological Diversity, which has threatened to sue the EPA if an

EIS is not conducted.

Meanwhile, the District is bracing for more flooding. The current channel can carry Gila River flows of 2,000 cubic feet per second; releases of 5,000 cfs are anticipated from Painted Rock Reservoir.

Landowners Sue for Gila Flood Damage

Land owners along the Gila River in Yuma County have sued Maricopa County and the Maricopa County Flood Control District over flood damage to their land that occurred when the Gillespie Dam broke two years ago. The lawsuit alleges negligence in design, construction and operation of the concrete diversion dam located 10 miles southwest of Palo Verde. A 60-foot section of the dam gave way January 9, 1993.

PVs Power Pump

Arizona Electric Power Cooperative and Sulphur Springs Valley Electric Cooperative have installed Arizona's first AC-powered photovoltaic (PV) water pump. The system's 30 PV panels generate up to 800 watts of electricity to power a 1/3 horsepower pump that provides domestic and livestock water in Cochise County.

Environmental Impacts of Mill Questioned

It sounds like the ultimate in environmentally-sensitive industry — a mill that uses effluent and recycles old newspapers and magazines into newsprint. But the Fletcher Challenge mill, to be built in Red Rock 30 miles northwest of Tucson, is raising concerns among some Pinal County residents. The Canadian-based firm claims its refusal to agree to use mostly Arizona workers to build the mill, and not genuine environmental issues, are at the heart of the dispute.

The \$400 million mill, which will employ 180 workers, will emit 100 million pounds of sludge and 100

million gallons of wastewater containing 200,000 pounds of pollutants annually. Some of the wastewater will be piped to the Central Arizona Irrigation and Drainage District to irrigate crops; the rest would be discharged to the Santa Cruz River. Pinal County has offered to build a landfill for sludge disposal.

A study commissioned by the Southern Arizona Work Preservation Fund, a Tucson labor-union group, concluded that emissions over the mill's expected 20-year life would put millions of pounds of pollutants into water, soil, and the air. The group wants the U.S. Environmental Protection Agency (EPA) to require a full Environmental Impact Statement.

So far, the EPA has required only a draft Environmental Assessment (EA), which concluded that the mill would not pose a significant threat to the environment. EPA staff admit, however, that the EA did not adequately address issues of sludge disposal. Meanwhile, nearly all participants at an EPA-sponsored public hearing in Red Rock on February 13 called for more study.

Santa Cruz County Well Owners Warned

Well owners in the Santa Cruz communities of Tubac and Rio Rico have been advised to have their water tested for nitrate and bacteria contamination. The warning was issued jointly by the Santa Cruz County Health Department, the Arizona Department of Environmental Quality, and the Arizona Department of Health Services.

Elevated nitrate levels were found in private wells in the two areas to exceed drinking water levels, apparently due to discharges from septic tanks. Water high in nitrates can interfere with the functioning of hemoglobin in the blood, causing Blue Baby Syndrome, a health risk to pregnant women and their unborn babies, and infants under six months of age.

Testing of public water system wells in the same areas revealed no nitrate violations.

Ombudsman to Assist Riverbed Owners

An ombudsman is the latest player to join the ongoing effort — albeit an interrupted effort — to determine which Arizona rivers were navigable at statehood in 1912. The search to identify such navigable rivers is being done in response to a court decision. Once identified, the beds of such rivers are to be declared state property.

The hitch is that much of this property is in private hands. Enter the ombudsman.

Legislation created the ombudsman position last year to assist property owners affected by state activities to determine ownership of riverbeds.

The private property ombudsman originally was to be hired early summer, but the Legislative Council did not fill the position until mid-January when Phoenix attorney Mike Foster was hired. The ombudsman position includes an annual budget of \$250,000.

Foster's duties as ombudsman include representing private property owners in proceedings arising from government actions. Such actions could include proposed state agency rules, licensing, permitting conditions or dedications limiting private property use. His first priority is to represent owners of residential, non-commercial and agricultural properties.

Riparian Advisory Committee Reports

After more than two years of deliberation, the Riparian Area Advisory Committee (RAAC) submitted its recommendations to the Arizona Legislature. The RAAC was created by the Legislature to develop recommendations for riparian protection measures.

The RAAC early on agreed upon basic concepts and goals for riparian protection. When it came to the specifics of implementing those goals there was much less agreement. Some members felt strongly that riparian protection could be achieved through providing local entities with powerful

tools for managing water supplies and land use; others were suspicious of this type of authority and felt that such decisions by local entities should be subject to legislative approval.

The final report recommended that the Legislature develop a mechanism for local interests to plan for riparian protection (e.g., the Upper San Pedro or Verde rivers). It also recommended that a Council be established composed of representatives from Arizona Department of Environmental Quality (ADEQ), Arizona Game and Fish, and Arizona Department of Water Resources (ADWR) to facilitate this planning and provide technical assistance.

Linked to this planning process, the RAAC requested the Legislature provide funds for an economic analysis of several additional proposals (called for in the original legislation, but never funded) and reconstitute the committee to present a final proposal to the Legislature with the completed analysis.

Additional recommendations to be brought back in 1996 include a set of management tools which local planning groups could use at their discretion to protect riparian areas, along with various non-regulatory tools, including: a lower property tax for

land maintained for environmental preservation; recommendations for grazing management on state land; restoration with native plants; and establishment of a technical assistance office.

For the full RAAC recommendations, contact Kris Randall, ADEQ, 602-207-4510.

Kachina Water, Sewer Rates Hiked

Water and sewer rate increases approved by Coconino County Supervisors for Kachina Village will result in drastic increases in some customers' bills. Hardest hit will be mobile home parks, with increases in combined water/sewer bills of as much as 243 percent, to \$21 per 1,000 gallons.

Apartment units will see increases of 125 percent, while commercial users will see modest increases of about six percent; both will pay nearly \$16 per 1,000 gallons under the new rates. Single-family residences will see increases of over 25 percent, to \$12 per 1,000 gallons. Water and sewer hook-up costs were increased from \$1,000 to \$1,850. The new rates are expected to increase annual revenues by \$200,000.



Denizens of the Water Resources Research Center. From left to right: Sol Resnick, Director Emeritus; Gary Woodard, Associate Director; Jen Murchison, Secretary; Jen TeBockhorst, Student Assistant; Sabrina Burke, Graduate Research Assistant (GRA); Hanna Cortner, Director; Rick Yarde, GRA; Mary Wallace, Research Specialist; Barbara Tellman, Research Specialist; Joe Gelt, Editor; Brian Keating, GRA; Lin Stevens-Moore, Project WET; Susan Cordell, Project WET assistant; Ana Rodriguez, Administrative Assistant; Patsy Waterfall, Low4 Program; Connie McCotter, Student Assistant; Jim Henderson, GRA; and Ken Seasholes, GRA.



Legislation & Law

New Congress Tackles Water Bills

A raft of key water-related bills and reauthorizations await the new Republican-controlled Congress. Some of these were addressed but not resolved by the last Congress. (See Transitions, p. 9, for a run-down of key leadership appointments.)

Among the GOP's top-10 list of laws it views as burdensome to business or imposing mandates on states are seven environmental laws, including the Endangered Species Act, wetlands laws affecting agriculture, Section 404 of the Clean Water Act, and the Safe Drinking Water Act's inadequate use of risk assessment.

A House Task Force will be traveling around the country holding public hearings this spring to solicit input on reauthorization of the Endangered Species Act. None of the hearings are scheduled for Arizona or the Southwest.

Potential changes to the Act include: peer review of U.S. Fish and Wildlife studies; requiring that species recovery plans be developed before a species is listed as threatened or endangered; and a private property rights provision that would provide compensation for property owners whose land values are substantially reduced by its being declared critical habitat. Bills have been introduced in both houses of Congress to freeze Endangered Species Act activities pending reauthorization.

The House is expected to take the lead in reauthorizing the Clean Water Act. The Senate, meanwhile, is moving ahead with overhauling the 1872 mining law. Senator Dale Bumpers (D-AR) reportedly will introduce a bill calling for a moratorium on mining patents and to block any bill that does not adequately protect water quality

from mining activities.

The Senate also is moving on a bill to reauthorize the Safe Drinking Water Act. The bill is expected to closely resemble the measure that the Senate passed a year ago. That bill would have established a fund from which revolving loans could be made to finance water treatment system improvements. It also would have required the Environmental Protection Agency to use risk assessments in regulating contaminants.

Funding for USGS, Water Institutes Program Uncertain

It has been widely reported that the Republican Party's "Contract with America" calls for elimination of the U.S. Geological Survey. Some Congressmen dispute this, pointing out that elimination of the USGS is not on Speaker of the House Gingrich's check list; it also is not clear whether the entire USGS is targeted, or only certain programs that might be privatized.

The Administration's budget proposal includes a 2.6 percent increase in the USGS's \$586 million budget. Increased funding would be provided for the National Water Quality Assessment, expanded production of digital map data, seafloor mapping, and earthquake preparedness in urban areas.

The only decrease in the budget is a proposed elimination of the \$4.6 million Water Resources Research Institutes (WRRI) program, of which the Arizona Water Resources Research Center is a member. The current WRRI program funds information transfer activities in all states and supports some 200 104b research projects (see Special Projects, p. 7).

Last year's administration budget also proposed eliminating the WRRI program. Ultimately, it was cut 25 percent.

Arizona Legislative Update

No water-related bills have yet passed the legislature, but some are moving through the system. Others appear to be gone, at least for this session.

House Bill 2312 appears to be dead. This bill, supported by the Water Utilities Association of Arizona, would have changed the definition of "small water providers," over which the Arizona Department of Water Resources has limited regulatory authority, from those providers delivering less than 250 acre-feet of water per year to those delivering less than 2,500 acre-feet (see Nov.-Dec. *AWR*, p. 6).

A bill introduced by Senator Overton apparently has died in committee. This bill would have greatly reduced restrictions on use of CAP water, effluent, and other non-groundwater sources, for both municipal and agricultural uses.

HB 2425 requires heritage funds land to be sold if species for which the habitat were purchased are "delisted," or removed from the list of endangered species. This bill passed out of the House Environment Committee, chaired by Rusty Bower, on a 7-2 vote.

A bill to make all state boards and committees serve at the pleasure of the governor appears to have died after failing in the Senate Government Committee on a 4-4 vote. Currently, members of boards and committees can be removed only for cause.

One widely-rumored bill for which a file was opened apparently has not been introduced. This bill would have combined three existing state agencies, Land, Game and Fish, and Parks, into one single agency. Such a consolidation was part of the governor's proposal to transfer control of public lands from the federal government to the state.





Special Projects

Individuals and organizations involved in water-related studies, pilot projects and applied research are invited to submit information for this section.

Federal 104b Research Projects Funded

The University of Arizona Water Resources Research Center (WRRC) announces recipients of grants supporting water-related research projects during FY 1995-96. WRRC receives approximately \$77,000 annually under the Water Resources Research Act, Section 104, a program administered nationally by the U.S. Geological Survey. Following are brief descriptions of the funded projects.

Upgrading Septic Tank Effluent with Planted Soil Filters (PSFs)

Septic tank failure is a major contributor to groundwater pollution in Arizona, particularly in rural Arizona. A combination of factors, including improper design and poor maintenance practices, have impacted groundwater quality in places such as Apache Junction, Oak Creek, and Rio Rico. Yet, the cost of conventional treatment and the pace of rural development suggest that septic tanks will continue to be determinants of groundwater quality. Arizonans will benefit from an investigation of planted soil filters (PSFs), an alternative to current septic tank design. PSFs may be more effective and economical than traditional designs. This pilot project, undertaken by a study team of hydrology faculty members and students, will assess the consequences of PSF implementation in Santa Cruz County. A chief objective of the research is to discover if PSF technology is transferable to Arizona and its potential as an alternative to traditional septic system design. Additionally, the proximity of the study area to Mexico assures that the implementation strategies developed in Santa Cruz County will be easily exported to Mexico. Principal Investigators: Martin Karpiscak, Office of Arid Land Studies; Charles Gerba, Department of Soil and Water Science; and Simon Ince and Eric Ellman, Department of Hydrology, UA.

Functional Assessment of Effluent Dominated Riparian Ecosystems

Stream diversion and groundwater pumping in Arizona has resulted in the loss of a great many riparian ecosystems. In many of these dewatered rivers, however, effluent discharge from waste water treatment facilities have allowed for riparian regrowth and vegetation. Such riparian stream ecosystems offer many benefits, including improved water quality, groundwater recharge, and recreation and wildlife habitat. This project will assess the role of effluent-depen-

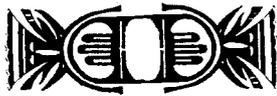
dent riparian vegetation in providing habitat, and effluent-dependent streams in providing food for terrestrial animal species. The objectives of this study are to compare several measures of ecosystem functions, and the physical factors that regulate these rivers. Six low-elevation river reaches will be selected; three reaches will be effluent-dominated (Salt River downstream from the Phoenix 91st Avenues waste water treatment facility, the Agua Fria River below the effluent discharge point from Luke Air Force Base, and lower Santa Cruz River downstream from the Tucson Ina Road treatment facility), and three will serve as naturally perennial control reaches (Salt River above Granite Reef Dam, Agua Fria River above Lake Pleasant, and Santa Cruz River above the Nogales International Waste Water Treatment Plant). Laboratories at both Arizona State University and UA will fulfill the sampling and data analytical requirements of this project. Principal Investigators: Duncan T. Patten, Juliet C. Stromberg, Robert D. Ohmart, Nancy Grimm, ASU; and Thomas Maddock III, UA.

Dam Management and Riparian Ecosystems

Across Arizona, the operations of a number of reservoirs are being revised to include downstream values beyond the traditional irrigation and municipal water delivery. As a result of the widespread degradation of riparian ecosystems downstream of dams, and the recognition of federally and state listed endangered species, the restoration of these highly productive systems has become a major component of many multi-purpose dam management plans. Ultimately, the success of any flow release schedule formulated to restore riparian vegetation will depend on the creation of an ecological database. The objective of this study is to determine the physical conditions and processes necessary to restore riparian habitats downstream from dams in the Sonoran Desert region of Arizona. Information will include quantification of tree establishment frequency, historical establishment and present day conditions, and survivorship of riparian vegetation in above- and below-dam reaches of the Agua Fria and Bill Williams Rivers. Principal Investigators: Juliet C. Stromberg and Duncan T. Patten, ASU; and Patrick B. Shaforth and Lee S. Ischinger, National Biological Survey.



Waterfowl swim in Jacques Marsh, a constructed wetlands near Pinetop, Arizona. (Photo: Barbara Tellman, WRRC)



Publications

United States Geological Survey: Programs in Arizona

This four-page fact sheet contains quick summaries of USGS projects occurring within the state. Projects discussed in the fact sheet include: the collection of streamflow, water quality and mineral data throughout the state; studying the geology and hydrology of the upper San Pedro River basin; and assessing the mineral resources of the Prescott National Forest and environmental hazards of mining. For copies of the fact sheet call USGS, 602-670-6201 or 1-800-USA-MAPS.

Managing the Interconnected Waters: The Groundwater-Surface Water Dilemma

Joe Gelt. Vol. 8, No. 1 of *Arroyo*, a quarterly publication of the Water Resources Research Center. This edition discusses Arizona's separate management of surface and groundwater. Historical and geological background is provided. Recent issues — adjudication and riparian protection — demonstrate the inadequacy of this type of water management. Developments that show Arizona tentatively moving toward conjunctive management are described. Options are presented.

Individual copies — also subscriptions of *Arroyo* — are available without charge from the Water Resources Research Center, University of Arizona, 350 N. Campbell Avenue, Tucson, AZ 85721; phone: 602-792-9591; fax: 602-792-8518.

Water Sense

A new quarterly newsletter begun by the National Drinking Water Clearinghouse (NDWC) to address financial issues associated with drinking water systems in small communities. Topics covered by the newsletter will include information on funding sources, updates on legislation affecting funding for drinking water, cost-saving strategies, innovative financing mechanisms, and listings of resources that provide assistance with drinking water financing.

For a free subscription contact NDWC, 1-800-624-8301.

Water Markets: Increasing Federal Revenues Through Water Transfers

In this report, the Resources, Community, and Economic Development Division of the General Accounting Office (GAO) examines how market transfers of water, specifically, transfers from irrigation to municipal and industrial uses, could increase federal revenues. Issues to be considered in determining the charges for transferred water are discussed. The report includes a case study of two transfers that took place in the Bureau of Reclamation's Emery County Project in Utah. The first copy of the GAO report is free. Additional copies are \$2 each. To order write: U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20884-6015 or call 202-512-6000.

Water Quality: State of the Region Report, December 1994

This report by the Pima Association of Governments (PAG) contains status reports and issue summaries regarding surface water, groundwater, and drinking water in Pima County. Information contained was provided by all PAG member jurisdictions and other agencies. Copies are available for \$20. Contact Gail Kushner at PAG, 177 N. Church Ave., Suite 405, Tucson, Arizona 85701; 602-792-1093.

Research Program of the Water Resources Research Institutes

Accomplishments of the National Institutes for Water Research during 1993 and 1994 are published in this report prepared by Paul Godfrey, Director of the Massachusetts Water Resources Research Center (MWRRC). The report summarizes current research and lists projects by state and by research categories. For copies of the report or additional information contact: MWRRC, University of Massachusetts, Blaisdell House, Amherst, MA 01003; 413-545-2842.

Graduate Studies in Water Resources: Ninth Edition

This brochure describes educational opportunities in the United States for graduate studies in water resources. The information provided includes a listing of degree programs, course offerings, and contact names and phone numbers for member universities of the Universities Council on Water Resources. Copies of the brochure may be obtained by writing: Executive Director, Universities Council on Water Resources, 4543 Faner Hall, Southern Illinois University at Carbondale, Carbondale, Illinois 62901; 618-536-7571.

Stormwater Pollution Abatement Technologies: Project Summary

A summary of key findings of a research project that is fully documented in a separate report of the same title. The report presents information on best management practices and pollution abatement technologies for urban stormwater runoff. The general approach and strategy of the project are summarized along with watershed area technologies and practices. Also covered are source treatments of pollutants, control practices for existing drainage systems, end-of-pipe treatments, and reuse of stormwater. Free copies of the project summary (EPA/600/SR-94/129) or full report can be obtained (while supplies last) from: ORD Publications, U.S. EPA-CERI, G-72, Cincinnati, OH 45268; 513-569-7562.

Promotion of Women's Participation in Water and Resources Development.

A global review of new approaches developed over the course of the decade, including technologies and non-technological measures, and the participation of women and the community in the operation and maintenance of water supply and sanitation facilities. Natural Resources/Water Series No. 25; \$12.00. For copies contact: United Nations Publications, 2 United Nations Plaza, Room DC2-853, Dept. 009C, NY, NY 10017; 800-253-9646; fax: 212-963-3489.



Transitions

Republican capture of Congress means new leadership on committees with responsibility for water. The House abolished committees and enacted a rule that limits committee chairmen to six-year terms. Key House leaders on water are:

AGRICULTURE

Chairman Pat Roberts (R-KS)
 Ranking minority Kika de la Garza (D-TX)

APPROPRIATIONS

Chairman Bob Livingston (R-LA)
 Ranking minority David Obey (D-WI)

Energy & Water Development Subcommittee

Chairman John Myers (R-IN)
 Ranking minority Tom Bevell (D-AL)

Agriculture Subcommittee

Chairman Joe Skeen (R-NM)

Interior Subcommittee

Chairman Ralph Regula (R-OH)

COMMERCE

Chairman Thomas Bliley, Jr. (R-VA)
 Ranking minority John Dingell (D-MI)

Health & Environment Subcommittee

Chairman Michael Bilirakis (R-FL)
 Ranking minority Henry Waxman (D-CA)

PUBLIC LANDS & RESOURCES

Chairman Don Young (R-AK)
 Ranking minority George Miller (D-CA)

Water & Power Resources Subcommittee

Chairman John Doolittle (R-CA)
 Ranking minority Peter DeFazio (D-OR)

TRANSPORTATION & INFRASTRUCTURE

Chairman Bud Schuster (R-PA)
 Ranking minority Norman Mineta (D-CA)

Water Resources & Environment Subcommittee

Chairman Sherwood Boehlert (R-NY)

Key Senate leaders on water legislation are:

ENVIRONMENT & PUBLIC WORKS

Chairman John Chafee (R-RI)
 Ranking minority Max Baucus (D-)

Drinking Water, Fisheries & Wildlife Subcommittee

Chairman Dick Kempthorne (R-ID)

Transportation & Infrastructure Subcommittee

Chairman John Warner (R-VA)

ENERGY & NATURAL RESOURCES

Chairman Frank Murkowski (R-AK)
 Ranking Minority Bennett Johnston (D-LA)

Forest & Public Lands Management Subcommittee

Chair Larry Craig (R-ID)

APPROPRIATIONS

Chairman Mark Hatfield (R-OR)
 Ranking minority Robert Byrd (D-WV)

Agricultural & Rural Development Subcommittee

Chairman Thad Cochran (R-MS)

Energy & Water Development Subcommittee

Chairman Pete Domenici (R-NM)

Interior Subcommittee

Chairman Slade Gorton (R-WA)

Three senior people recently have departed the Arizona Department of Environmental Quality. William Wiley has left his position as Deputy Director of the Department, a position he held for three years, to go to Arizona Public Service. He is being replaced by Karen Heidel. Ms. Heidel served as Director of the Environmental Division of Maricopa County for two years; prior to that, she was with the City of Tucson.

Brian Munson has left his position as Director of the Water Quality Division, a position he assumed in 1992. He will be joining Dames and Moore's Phoenix office. Munson will be replaced by Karen Maceachern, who will be coming to ADEQ from a four-year stint with the Attorney General's Environmental Enforcement Section.

John Godec has left his position as Public Information Officer at ADEQ to join Dames and Moore's Phoenix office as Senior Project Manager for the Public Involvement Group. Pam Stutts has temporarily assumed Godec's responsibilities and will remain with ADEQ after a permanent replacement has been named. Stutts comes to ADEQ from the Governor's Office, where she managed the Constituent Services Office.

Tom Jensen has quit the directorship of the Grand Canyon Trust. Jensen reportedly has been offered a position with the administration in D.C.

Santa Cruz County Supervisor Ron Morriss has been elected chairman of the newly-formed Groundwater Users Advisory Committee for the Santa Cruz Active Management Area. Vice-chairman of the five-member committee is Nogales Alderman Duke Petty.

Arizona Water Resource is financed in part by sponsoring agencies, including:

Arizona Department of Environmental Quality

Arizona Department of Water Resources

Arizona Hydrological Society

Arizona Municipal Water Users Association

Central Arizona Water Conservation District

Geraghty & Miller

Salt River Project

Tucson Water

USGS Water Resources Division

Water Utilities Association of Arizona

Their contributions help make continued publication of this newsletter possible.



Announcements

UA Hosts "El Dia Del Agua" and Kisiel Lecture

The University of Arizona's Department of Hydrology and its student association are sponsoring two events on March 22, 1995. The first program is "El Dia Del Agua," the fifth Annual Hydrology Student Research Exposition, to be held from 7:45 to 1:30 p.m. in the Arizona Ballroom of the Student Union. The luncheon speaker is David "Fitz" Fitzsimmons, editorial cartoonist, The Arizona Daily Star, who will address "The Politics of Water." Registration forms and a \$20 fee must be submitted to the Department of Hydrology by March 10, 1995.

The second event, the 14th Annual Kisiel Memorial Lecture will be held at The Schaefer Center for Creative Photography at 3:15 p.m. Dr. David R. Dawdy is the distinguished speaker. His presentation is titled "Hurst, Scaling and the Meaning of Hydrology." For additional information on the student seminar contact Dr. Marek Zreda (621-4072) or Dr. Gray Wilson 602-621-9108. Information on the Kisiel Lecture is available from Dr. Nathan Buras (621-9132). Contact Fran Janssen, 602-621-7120, or email fran@hwr.arizona.edu, for registration forms.

Arizona Natural Resources Data Collection Seminar Scheduled

The Bureau of Reclamation is sponsoring a free one-day seminar on natural resource data within Arizona. The seminar will focus on what data are being collected, who is collecting them, what are their formats, and how can the data be accessed. March 16, 1995 at the Grace Inn, 10831 S. 51st Street, Phoenix. Registration begins at 8:00 a.m. and the seminar runs from 9:00 a.m. to 4:30 p.m. Speakers from various agencies will discuss data collecting activities and data availability. The intended audience is computer modelers, resource planners and data collectors. Please call 602-870-2322 if you plan to attend.

Check E₂B₂ for Nonpoint Source Info

The Electronic Environmental Bulletin Board (E₂B₂), sponsored by the National Nonpoint Source Federation in Kansas City, Missouri, connects callers with watershed management and nonpoint source information. To dial in via modem call: 913-897-1040. There is a \$10 charge for each hour of E₂B₂ use. Reduced rates are available by subscription. Call 800-795-3634 for more information.

ADWR Seeks Water Resource Planner, Interns

The Arizona Department of Water Resources, Phoenix Active Management Area office, is seeking to hire a water resources planner for their planning and special studies section. Major activities of the section include developing regulatory programs for water conservation, implementing Arizona's Groundwater Management Act, and providing conservation assistance.

The Water Resources Specialist II or III position has a salary range of \$26,456-\$45,723. Applicants must have one year experience as a WRS I or two to four years of professional water resources management experience. Graduate course work can be substituted for up to two years of experience. The ideal candidate will have work experience and undergraduate and/or graduate course work in planning, natural resources and public policy. Computer experience is desired, and background in GIS would be an asset. Contact Jim Holway, Phoenix AMA, 602-417-2465.

Student intern positions also are available. Contact Monica Goy, 602-417-2465.

EPA Announces Grants, Fellowships

The U.S. EPA has announced a \$22 million program of grants and fellowships for environmental research at U.S. universities. EPA's Office of Research and Development (ORD), in cooperation with the National Science Foundation, is seeking grant proposals for research on ecosystems, environmental technologies, global change and socio-economic issues. ORD also is seeking fellowship applications from graduate students in environmentally-related studies. The fellowships will provide two-year support for students in a doctoral program. Contact EPA's ORD, 202-260-7473.

Environmental Justice Funding

The Environmental Protection Agency (EPA) is soliciting proposals for projects addressing environmental justice through pollution prevention. Projects may involve public education, training, demonstrations, research, investigations, experiments, surveys, studies, public-private partnerships, or approaches to develop, evaluate, and demonstrate nonregulatory strategies and technologies. Grant applicants may request up to \$100,000; for grants above \$50,000, 10 percent of the total project costs must be matched. State agencies must provide 50 percent matching funds regardless of the amount requested.

Proposals must be submitted no later than March 31, 1995. For application packages contact: Regional Coordinator, Bill Wilson, EPA Region 9, 75 Hawthorne St., San Francisco, CA 94105; phone 415-744-2192. For information contact: Lena Ferris, EPA Headquarters, 401 M St. SW, Washington, DC 20460; phone 202-260-2237.



Calendar of Events



RECURRING



Arizona Hydrological Society (Phoenix). Mar. 14, 7:00 p.m. Spaghetti Company, 1418 N. Central Ave, Phoenix. Reservations required, RSVP Sandy Kuchan 602-966-2337.

Arizona Hydrological Society (Tucson). 2nd Tuesday of the month. Mar. 14, 7:00 p.m. Thomas Maddock, Hydrology and Water Resources Dept., UA, will give presentation on groundwater modeling. WRRRC, 350 N. Campbell Ave., Tucson. Contact: Laurie Wirt 602-670-6231.

Arizona Water & Pollution Control Association. Monthly luncheon series. Topic: Surfing the Internet — An Online Experience. Mar. 21, 11:45 a.m. Reservation deadline: Mar. 17. Ramada Downtown, 475 N. Granada, Tucson. Contact: Brad Jurkovic 602-791-2544.

Arizona Water Protection Fund Commission. Contact: Trish McCraw 602-417-2400.

Arizona Water Resources Advisory Board. To be scheduled. Contact: Beverly Beddow 602-417-2440.

Central Arizona Project. 1st Thursday of the month, 12:30 p.m. CAP Board Room, 23636 N. 7th St., Phoenix. Contact: Donna Micetic 602-870-2333.

City of Tucson Citizens Advisory Committee. 1st Tuesday of the month, 7:00 a.m. 310 W. Alameda, Tucson. Contact: Karen Alff 602-791-2666.

Maricopa Association of Governments / Water Quality Advisory Committee. Next meeting to be announced. Contact: Eileen Miller 602-254-6308.

Maricopa County Flood Control Advisory Board. 4th Wednesday of the month, 2:00 p.m. 2801 W. Durango. Phoenix. Contact: 602-506-1601.

Phoenix AMA, GUAC. Mar. 1, 9:30 a.m. 500 N. 3rd St., 3rd floor, ADWR, Phoenix. Contact: Mark Frank 602-417-2465.

Pima Association of Governments / Water Quality Subcommittee. 3rd Thursday of the month, 9:30 a.m. 177 N. Church St., Suite 405, Tucson. Contact: Gail Kushner 602-792-1093.

Pima County Flood Control District Advisory Committee. 3rd Wed. of the month. Contact: Carla Danforth 602-740-6350.

Pinal AMA, GUAC. To be announced. Contact: Dennis Kimberlin 602-836-4857.

Prescott AMA, GUAC. To be announced. Contact: Phil Foster 602-778-7202.

Santa Cruz AMA, GUAC. Feb. 22, 9:00 a.m. 857 W. Bell Rd., Suite 3, Nogales. Contact: Placido Dos Santos 602-761-1814.

Tucson AMA, GUAC. Feb. 17, 9:00 a.m. 400 W. Congress, Suite 518, Tucson. Contact: Kathy Jacobs 602-628-6758.

Verde Watershed Association. Mar. 6, 7:00 p.m., Sedona City Council Chamber. Contact: Tom Bonomo, VWA Newsletter Editor, c/o Verde R.D., P.O. Box 670, Camp Verde, 602-567-4121.

Yavapai County Flood Control District Board of Directors 2nd Monday of the month in Prescott, 255 E. Gurley St.; 4th Monday in Cottonwood, 575 E. Mingus. Contact: YCFCD, 255 East Gurley, Prescott, 602-771-3196.

UPCOMING



March 2, **Public Meetings on Draft Programmatic Environmental Impact Statement (DPEIS).** Bureau of Reclamation plans to prepare a DPEIS for construction of an irrigation system on the Gila River Indian Community that would serve 146,330 acres in Maricopa and Pinal counties. Meetings will be held 1:00-3:00 p.m. at the Quality Inn-South Mountain, 5121 E. La Puente St., Phoenix and 7:00-9:00 p.m. at Coolidge High auditorium, 800 West Northern Ave., Coolidge. For more information contact Sandra Eto 602-870-6771 or Chuck Morfoot 602-870-2104.

March 9, **Safe Drinking Water: Critical Choices for Utilities and Public Officials.** National satellite teleconference hosted by the Arizona Water and Pollution Control Association: Phoenix, Tucson, Prescott, and Yuma. \$25 fee includes refreshments and manual. Contact Heide Burbach, AWWA Training Program Coordinator, 800-559-2885.

April 23-26, **Water in the 21st Century: Conservation, Demand, and Supply.** The Annual Spring Symposium of the American Water Resources Association (AWRA). Red Lion Salt Lake, Salt Lake City, Utah. Early-bird registration must be received by March 17. For more information contact: AWRA, 950 Herdon Parkway, Suite 300, Herdon, VA 22070; phone 703-904-1225; fax 703-904-1228.

Announcements, continued from page 10

Call for Papers

The Universities Council on Water Resources is calling for papers for its annual meeting in Portland, Maine, August 1-4, 1995. Paper and presentation proposals should relate to the following topics: integrated watershed management, ecological integrity, economic and social integrity, urban storm-water management vs. urban riparian ecosystems, ecosystem restoration, integrated education for watershed management, and coastal zone management.

Proposals must be received by March 1, 1995. For more information contact: Robert C. Ward, Technical Program Chair, Colorado Water Resources Research Institute, Colorado State University, Fort Collins, Colorado 80593; phone 303-491-6308; fax 303-491-2293.

Desert Cultures Conference Scheduled

The International Sonoran Desert Alliance will host the 3rd Annual Celebration of Desert Cultures March 2-5, 1995, in Caborca, Sonora. Conference goals include pursuing cultural preservation, sustainable development, and conservation along the U.S.-Mexico border. For more information contact either the Arizona Historical Society 602-628-5695 or Wendy Laird, Sonoran Institute 602-290-0828.

Call for Abstracts

The Association of State Dam Safety Officials (ASDSO) is calling for abstracts of papers for presentation at its 1995 annual conference. Papers may address various topics including: hydrology and hydraulics, computer applications, geotechnical issues, dam safety and environmental issues, state dam safety programs and issues, and technical research. The conference is scheduled for September 17-20, 1995 at the Omni Hotel at CNN center in Atlanta, Georgia. Abstracts must be postmarked by March 1, 1995. For more information contact: ASDSO, 450 Old East Vine St., 2nd Floor, Lexington, KY 40507; phone 606-247-5140; fax 606-323-1958.

Environmental Inspector Seminar

The Environmental Assessment Association (EAA) is holding a one-day seminar on "Performing Phase I Environmental Inspections" on February 21, 1995 at the Hilton Tucson East, Tucson, Arizona. The seminar is designed to provide appraisers, lenders and environmental professionals and those with an interest in becoming a Certified Environmental Inspector with the tools and real-world training needed to perform basic environmental inspections. Cost is \$195 for members and \$225 for non-members. For more information, contact the EAA at 8383 E. Evans Rd., Scottsdale, AZ 85260, 602-483-8100; fax 602-998-8022.

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