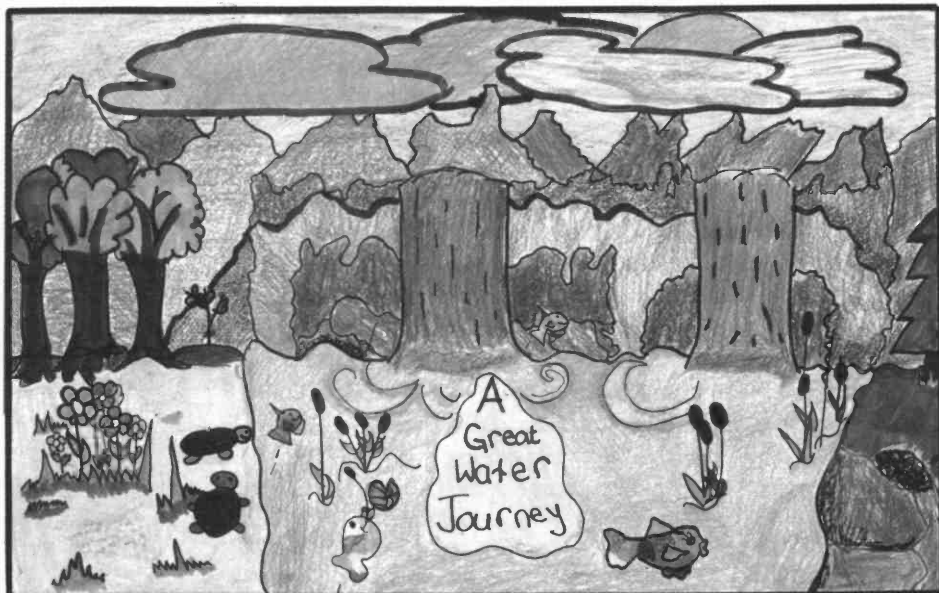


Excessive diversions, overpumping and dropping water tables were not on the mind of Jocelyn H. McCullough, age 10, when she drew the picture at right of a riparian area for the 2001 Water Education Poster Contest. Hers is a different kind of vision, described by the title of her work, "Watering a Perfect Dreamland." Dreamlands are usually not imperiled by hydrologic realities.

Jocelyn's art work won first prize in the state of Arizona in a contest open to elementary school children from western states: Alaska, Arizona, Colorado, Hawaii, California, Idaho, Montana, New Mexico, Oregon, Washington and Wyoming. Each state selects a set of winners, and first place art work will be featured in a 2001-2002 calendar.

The Water Education Poster Contest is an annual event sponsored by the International Office of Water Education in Logan, Utah. The theme of this year's contest was, "A Great Water Journey." Project WET (Water Education for Teachers) of the University of Arizona's Water Resources Research Center coordinates the contest in Arizona. Project WET Director Kerry Schwartz says, "The contest is an opportunity for students to learn about water resources and allows them to be recognized for their ideas and artwork."

Jocelyn is in the fourth grade at the Richard E. Miller Elementary School in Phoenix. Karen Miller is her art teacher.



Settling Water Rights is Peer Review Process in Santa Cruz AMA

How water rights are to be managed elicits controversy

They call themselves the Settlement Group, an organization made up of water users along the Upper Santa Cruz River in search of solutions to local water concerns. Its goals are ambitious and far-reaching, to settle the water rights of its members and to identify the best management plan for managing those rights.

Step one is determining who owns what water rights. Settling water rights in the Santa Cruz Active Management Area (SCAMA) is a complex and challenging task. Some water users claim surface water rights and others groundwater rights, while many water users claim both surface water and groundwater rights to the same water. A great discrepancy exists between the amount of water claimed and the actual supplies. In its favor, however, the Settlement Group does not have to address the complex issue of Indians water rights. No such claims are made in the SCAMA.

Despite the complex situation, the Settlement Group took the task of settling water rights upon itself, contrary to conventional wisdom. Settling water rights is generally viewed as a high-stakes legal proceeding best left to the professionals; i.e. lawyers and bureaucrats. However as a rancher in the area explains, "We want to sort this out among ourselves or at least make the attempt. The feeling is if we do it ourselves it's our creature, and there's not going to be the bitterness that could result if it were imposed on us."

Also, Settlement Group members realize they would likely wait a very long time if they counted on the ongoing, long-running Gila River adjudication to resolve their claims. (The Santa Cruz River is a tributary of the Gila River, although its flow

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reaches the main river only about once every 300 years.) Santa Cruz AMA Director Alejandro Barcenas explains, "The upper Santa Cruz would likely be one of the last ones the court is going to deal with because it is so small and not really high-priority. It may not occur for another ten to 20 years." Others argue that 20 to 30 years is more likely.

Attorney Hugh Holub, who represents the City of Nogales, says, "There is a unifying sense in this valley that if we leave our future to the adjudication our grandchildren will go to law school and get paid to fight this battle."

As a result the Settlement Group is taking the initiative to adjudicate by establishing a peer review process to consider water supplies and related claims, then stipulating the water rights through negotiations among the participants. Plans call for the water rights to be quantified by the end of the year. The court later will be asked to validate the negotiated rights.

Settlement Group success depends upon the good will of its members, to commit to a common cause and be willing to participate in give-and-take negotiations, while dealing with the highly charged issue of water rights. Can this be done? A local rancher reports, "It has gone well, with a real positive direction. We are fairly open with each other about what it is we want."

It did not begin this way. The Settlement Group got started about 1996 when some large water right holders in the area began meeting to discuss settling water rights. Involved in these initial meetings were the City of Nogales, Rio Rico, development and utility interests. Their activities raised the suspicion of area ranchers and irrigators who were not included in the initial meetings.

"Frankly what we feared was that they were trying to engineer a water grab," says a rancher about the early days of the movement. "So we thought it would be better to keep an eye on them."

Despite early suspicions the ranchers and irrigators found they had common cause with the other large water users in the SCAMA. "We discovered that many of our suspicions were not really well founded," said the rancher. "Since then the process has been very open."

In interpreting their chances of success a Settlement Group participant remarked, "At first I did not give it an even chance. After working with the group and making real but slow progress I now give it more than an even chance." Clearly no remnants of an "us-vs.-them" mentality is evident in the first issue of the "Santa Cruz River Watershed Update" newsletter when it referred to the organization as "a group of your neighbors."

The present membership came together at the end of 1998. Of the 90 water users with rights to 10 acre-feet or more per year, 80 are involved in the Settlement Group. A newsletter along with public forums keep the community informed about activities and developments. The intent is to involve all water right holders in the area, even those with minimal claims.

The Arizona Department of Water Resources' (DWR) role in adjudication proceedings is limited by law, to serve as technical advisor, both to water right holders and the adjudication court. DWR attorney Jan Ronald, who acts as a liaison between the agency and the Settlement Group, says, "It is an interesting set of hats we are

The Santa Cruz Water Culture

People in the Santa Cruz Active Management Area often speak of their distinct water heritage, noting that Arizona's Groundwater Management Act is only the latest effort in a long tradition of legal strategies to manage water in the area. They say understanding water in the AMA requires a historical and cultural perspective. European water law was first applied in Arizona in Tubac when the Spanish established a ditch system, with community management and sharing of shortages. Many view this as the beginnings of the irrigation district. People of the area boast of a community of cooperation saying that the prior appropriations doctrine of "first in time, first in right," is alien to their sense of community. When speaking of the kind of water management suitable for the area a rancher said, "What we will end up with will be more than just an engineering system or a tabular hierarchy. We are going to come up with a Santa Cruz Basin culture of how you look at water. We have to consider cultural and historical aspects of water use here. We have water rights going back to the 1690s. We have legal systems overlaying one another. We have had the Spanish-Mexican system. Before that the Pimas diverted water in the area. We have had the territorial system, with the prior use system on top of that. We now have the Groundwater Code. All of this has been addressed to work out some kind of hybrid system without doing violence to anyone's vested interest."

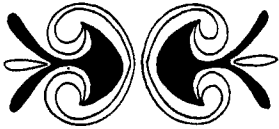
wearing." DWR contributed to the Settlement Group's efforts by preparing a draft inventory of water claims in the area.

DWR also figures in the picture as the Settlement Group takes on step two of its task, determining a suitable water management strategy for the area, to ensure that once water rights are settled they will be managed to best advantage of local water right holders as well as accommodate regional goals. This quest is premised on the belief that the area's designation as an AMA does not cover all of the area's water management contingencies. DWR's primary focus on groundwater is viewed as limiting its usefulness to an area with both groundwater and surface water supplies.

Various management options have been raised. Lee Storey, attorney for Rio Rico, says "Some parties want a very large, all inclusive, can-do-everything management authority. This would mean DWR would not function in the same role and capacity it does now. Others are more realistic and want an entity with the authority to make the settlement work; for example, to facilitate water storage and transfers during drought times."

Attorney Holub has something new in mind, "We are going to have to create a completely new kind of critter to operate in the valley." He envisions a water authority overlaying DWR and initiating the kinds of activities now undertaken by irrigation districts.

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Water Vapors

CAP Water – A Cultural Perspective

Spring, a time when the earth warms, wild flowers bloom and birds migrate north, also was the season when CAP water was delivered to two categories of Tucson area water users, the Tohono O'odham Tribe and Tucson Water customers. This might seem fitting, not that CAP canal flow, like earth, flowers and birds, is responsive to the quick and quiver of the spring season – it is not – but because the delivery of the water to Tucson citizens and the Tohono O'odham represents a new beginning, and spring is a season for new beginnings.

Tucson Water's dedication ceremony at the Clearwater Renewable Resources Facility was actually a rededication of CAP water to the community. The ceremony heralded a new beginning, the previous 1992-94 effort at CAP introduction having gone seriously awry. Various problems arose, with customers complaining of water discoloration, smell and taste and elevated hardness. Some customers suffered a final indignity, in damage to their pipes and home appliances. Resentment and distrust of the water utility lingered among some customers long after the CAP supply was turned off.

The May 3 dedication ceremony was partly to relieve Tucsonans of whatever doubts may still linger about CAP water use. The highlight came when Tucson Mayor Bob Walkup ordered, "Start your pumps," once again causing CAP water to flow to the city.

(See the Special Projects section of this newsletter for a description Tucson Water's EMPACT program designed to encourage water users to understand and accept this new water supply.)

This spring CAP water also arrived at the San Xavier District or Wa:k of the Tohono O'odham Nation, located just outside Tucson. The March 24 dedication ceremony marking its arrival differed greatly from Tucson's later event. No lingering resentments to overcome, no need to preach CAP usefulness, the ceremony welcomed

CAP water in a way desert dwellers might be expected to greet water, with anticipation and joy.

The arrival of CAP water was a vindication of Tohono O'odham's water right claims, as determined by the Southern Arizona Water Rights Settlement Act. SAWRA was passed after the tribe sued the City of Tucson and other major groundwater pumpers for the loss of groundwater under tribal lands.

A blessing ceremony was conducted for the arrival of CAP water, with the water celebrated both for its use in future tribal endeavors but also as a means to revive traditional practices. The tribe will use the water to develop cash crop farming, recharge the aquifer and restore riparian areas.

But the CAP water also will serve to revive some traditional tribal ways. Once again traditional crops will be farmed including tepary beans, squash and 60-day corn. A traditional pursuit of the Tohono O'odham, farming again will be practiced, reaffirming the people's close association with the land.

It may be CAP water, pumped from the Colorado River and through 335 miles of concrete canals before flowing to tribal lands, but the water maintains its special importance to the tribe. The blessing ceremony acknowledged water or "sudagi" as a sacred element, to be respected, honored, and prayed for, the source of all living things.

Julie Ramon-Pearson, a community leader, stated at the blessing ceremony, "The

elders who have already passed on told us that they may not live to see the CAP water come to Wa:k, but that you and the future generations will see it."

In the Tohono O'odham language, the theme of the blessing ceremony was: Ep I me:g Su:dagi - ab Wa:k Tab. (Once Again the Water Runs at Wa:k).

GREETINGS

From PRESCOTT

It has come to our attention that rumors are being circulated that the CITY OF PRESCOTT is faced with a serious water shortage.

We take this opportunity to assure those who contemplate coming North for the summer months that we have an overabundance of pure spring water pumped into our City from the Del Rio Springs, twenty-one miles from Prescott.

You are invited to come up and enjoy a cool summer and excellent water!

CHAS. F. ROBB
Mayor of Prescott

At first glance the above notice might appear to be in response to Prescott's current water supply difficulties. In truth, however, the notice appeared in the Arizona Daily Star on April 4, 1934.



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News Briefs

Flagstaff Fluoridation Feud on Ballot

Battles may be won but the war is never over, with always a skirmish underway as citizens take sides over fluoride in drinking water. Flagstaff again entered the fluoride fray when the City Council recently voted 4-3 to add fluoride to the city's drinking water. Opposed to the Council's decision, a Citizens for Safe Drinking Water was formed that successfully gathered enough valid signatures to place a referendum on the fluoridation issue on a city ballot. The vote will likely be on Nov. 6.

Flagstaff has had a varied and spotted history with the issue. Voters first turned fluoridation down in 1954. The City Council likewise rejected it in 1967. In 1974 the Council turned around and approved fluoridation. A petition resulted that delayed implementation of the decision. With the overturning of the petition on a technicality, fluoridation began, only to be halted in 1976 by a voter referendum. A big issue in 1974 was an alleged claim that fluoridation and cancer were linked. In 1997 the water commission endorsed fluoridation and a series of public hearing were held. The proposal was withdrawn before City Council could act upon it.

The central argument in support of fluoride is that it will improve dental hygiene and combat tooth decay. Opposing positions have varied, from allegations in the 1950s that fluoride in drinking water was a Communist plot to present doubts about the heralded benefits of fluoride use. In the current debate, Dentist Paul Gosar is a strong advocate for its use. Chiropractor Robert E. Dahl vigorously opposes fluoridation of Flagstaff water.

Cost of fluoridation in Flagstaff is estimated to be between \$200,000 to \$500,000. New facilities would have to be built, with at least five sites needed for adding fluoride. The cost would be distributed among the approximately 60,000 city water users.

An estimated 62 percent of Americans drink fluoridated water. In Arizona, the cities of Mesa, Phoenix, Tempe and Chandler all

have fluoridated water systems. Gilbert is the most recent Arizona community to adopt fluoridation. The action was challenged by a referendum petition on the ballot in November, but it failed.

New Phase Begins for NAWQA Study

The National Water-Quality Assessment Program's study unit focusing on Central Arizona Basins completed its intensive data gathering stage and is beginning a new program phase.

Gail Cordy of U.S. Geological Survey's Tucson office says, "We are in the low-intensity phase. In the 10 year recurring cycle, each study unit has a couple of years to gear up and plan, followed by three years of intensive data collecting and another five or six years to write reports and do some long-term planning."

Since 1991, the USGS' NAWQA Program has begun interdisciplinary assessments in more than 50 of the nation's most important river basins and aquifers, referred to as study units. The purpose of the program is to assess the quality of streams, groundwater, and aquatic ecosystems in targeted areas, examining how and why water quality varies across the United States.

Cordy says a program's goal is to establish compatibility of data collections. She explains that much water quality data has been collected nationwide, but lacks compatibility with other data because of different scales, with some site-specific and others regional. Also different protocols may have been used during collection, and different lab methods utilized for testing.

The proposed federal budget calls for a 30 percent cut in NAWQA operations which would likely reduce the number of study units. Meanwhile USGS is planning a second cycle of the Central Arizona Basins unit, to include consideration of a regional approach, examining water quality in a Southwest basin. This would involve coordinating efforts among Arizona, Utah, Nevada and Southern California.

A series of reports have been published as part of the Central Arizona Basins project. "Water Quality in the Central Arizona Basins" summarizes major finding about water quality in the Central Arizona Basins unit. A copy of this report, along with summary reports of other units, is available on the national NAWQA website; <http://water.usgs.gov/nawqa/> For the titles of other NAWQA reports on the Central Arizona Basins contact Gail Cordy of the USGS Tucson office. (520-670-6671, X 223; email:gcordy@usgs.gov)



Shown above are Leslie Myers, U.S. Bureau of Reclamation, and Val Little, Water CASA director. BuRec recently recognized Water CASA's water conservation efforts. (Photo: Lynne Fisher)

Water CASA Earns Conservation Award

The U.S. Bureau of Reclamation recently awarded the 2000 Commissioner's Water Conservation Award to the Water Conservation Alliance of Southern Arizona (Water CASA). Each year, the commissioner of BuRec acknowledges exceptional efforts in the field of water conservation with the presentations of five awards throughout BuRec's 17 western states. This year Water CASA was recognized as "both a leader and an innovator in the conservation field (and) a proactive force that shows what can be accomplished when partnering takes place." Water CASA, a Water Resources Research Center program at the University of Arizona, is a cooperative of six Southern Arizona water providers.



Arizona Game and Fish video shows spoonful of Arizona Lobster ladled out for serving.

Help Save Arizona's Lakes & Streams: Eat Crayfish

In its ongoing effort to combat the ecological damage caused by crayfish the Arizona Game and Fish Department has been touting the culinary delights of eating the critters. Arizona, the only state of the lower 48 without native crayfish, has an imported species that has wrought havoc in high country lakes and streams by devouring stream vegetation and tiny aquatic animals. Applying the advice that if you can't beat them eat them, the agency has produced a video with information about catching crayfish and the best way to prepare them for eating. The video is titled, "Arizona Lobster: Tips on Catching and Cooking Crayfish." The videos are free at the seven Arizona Game and Fish Offices throughout the state. If ordered by mail a \$3 check must be included to cover postage. A brochure is included with the video describing the problems caused by crayfish.

Black Mesa Spill Nets \$128,000 Fine

Black Mesa Pipeline Inc. agreed to pay penalties of \$128,000 for discharging almost 485,000 gallons of coal slurry in northern Arizona. The violation occurred over a two and a half year period. The Arizona Department of Environmental Quality discovered the violations during a series of inspections of Black Mesa's facilities.

"Had the pipeline been properly maintained, these spills would not have occurred," said Alexis Strauss, the water division director for the U.S. Environmental Protection Agency's Pacific Southwest Office. "Desert ecosystems are quite fragile and

filling arroyos with crushed coal is unnecessary and unacceptable."

ADEQ believes the settlement bodes well for future Black Mesa *compliance operations* in the area. "Black Mesa has accepted its responsibility to maintain its pipeline to prevent violations of state and federal law and to protect Arizona's environment," said ADEQ water quality division director Karen Smith. "The preventative maintenance program to be conducted by Black Mesa is a major commitment on the part of the company and should work well to prevent future spills."

Black Mesa has agreed to pay \$49,000 to the state of Arizona and \$79,000 to the U.S. Treasury to settle charges that it violated state law and the federal Clean Water Act. The company also has agreed to increased pipeline maintenance over the next three years, and to pay penalties in increasing amounts for any future spills.

Coal is pulverized at the mine and mixed with water before flowing to the generating station. Corrosion of the pipeline can result in ruptures, with coal slurry released into the environment. The coal then can be transported to waterways harming the local wildlife.

The 273-mile pipeline runs from the Peabody's Western Coal Company's Black Mesa Mine near Kayenta, Arizona on the Navajo Reservation, to the Southern California Edison Company's Mohave Generating Station in Laughlin, Nevada.

Yuma Plans River Restoration Parklands

Although the Colorado River is much depleted by the time it reaches Yuma sufficient flow remains that the city is planning to restore some of the river's natural features. The Yuma East Wetlands project would cover 1,400 acres, extending east for five miles from the Ocean to Ocean Bridge near downtown Yuma to the confluence of the Gila and Colorado rivers.

Ownership of the area is mixed. The Quenchan Tribe is the principal property owner, with 40 percent of the land. The rest is owned by Yuma County and private landowners.

Park plans call for boardwalk trails, bird observation platforms and an interpre-

tive center to serve as the main staging area for the entire project. A considered location is on Quenchan land near the Colorado River bank, next to the Ocean to Ocean Bridge.

The center might feature a cultural and children's center, traditional gardens and ceremonial grounds. Recreational amenities could include a swimming beach, fishing area, picnic grounds and ramadas and a trail system leading to nearby sites such as the Yuma Territorial Prison.

Some concern is expressed that the current annual Colorado River flow of between 300 to 500 cubic feet per second in the area will not be sufficient to flush salts from the land. Additional flow may be needed to support native trees and plants such as cottonwoods and willows, to attract bird and wildlife.

Meanwhile work continues on Yuma West Wetlands, a planned 110-acre park and recreation area along the Colorado River. The park is scheduled to be completed in four years.

In its plans to restore river areas as parklands, Yuma joins other Arizona cities, including Tucson, Phoenix and Tempe, in recognizing the value of rivers as urban environmental amenities.

New El Niño May Be Emerging

Developments in the western Pacific are attracting the attention of NASA, NOAA and other meteorological and oceanographic agencies that see evidence that an El Niño may be building up. Satellite photos and sea-surface readings show a pulse of warm water, called a Kelvin wave, on the move eastward toward South America.

Kelvin waves often appear prior to an El Niño. They are the result of westerly wind bursts and are essentially a reversal of the normal trade winds in the Western Pacific. The Kelvin wave is expected to reach the west coast of South America late July, resulting in a modest warming of the Eastern Pacific, according to NASA.

El Niños generally occur every two to seven years. The occurrence of an El Niño at this time would fit this schedule. The 1997 El Niño was the worst on record, attracting much study and media coverage.



Guest View

Arizona Water Protection Fund: Another Endangered Species

Jim Walsh contributed this Guest View. Jim is a Phoenix lawyer who has been a lobbyist for The Nature Conservancy since 1993 and helped draft the Water Protection Fund legislation in 1994. He continues to work for TNC and also the Grand Canyon Trust.

During the recently concluded Arizona legislative session, two actions threatened to strongly limit the future of the Arizona Water Protection Fund (AWPF). First, Governor Hull vetoed the \$2.5 million appropriation for fiscal year 2001-2002 which begins on July 1, 2001. Second, the legislature diverted the AWPF's exclusive, statutory revenue source to the General Fund. In combination, these actions have already caused the AWPF to postpone the next grant cycle, and probably will result in only one grant cycle during the next two years. The Governor did not interfere with the \$2.5 million appropriated by the legislature for fiscal year 2002-2003. These events raise questions about AWPF and whether it should continue as Arizona's primary resource for riparian restoration.

AWPF was created by the legislature in 1994 to avoid the loss of Arizona dollars from the sale of Central Arizona Project water. Then U.S. Secretary of the Interior Bruce Babbitt proposed taking ten per cent of the proceeds of such a sale of CAP water by Payson to Scottsdale. The Legislature was in the process of revising the laws for repayment of Arizona's obligation to repay the costs of CAP. Speaker of the House Mark Killian supported by a broad array of business, municipal, agricultural, ranching and environmental interests lead the fight to pass AWPF and provide for annual statutory appropriations of \$5 million. In addition, the law provided that should Arizona ever "lease" any CAP water to another state, then a payment in lieu of taxes would be collected for the exclusive use of the AWPF.

AWPF's priority is "to fund on-the-ground projects that provide comprehensive solutions to riparian issues." (from the ADWR official information brochure on AWPF) The program emphasizes grass roots approaches with broadly supported local solutions. Any person or agency can apply for a grant to conduct a project that must be in Arizona and comply with Arizona water law and the purpose of the AWPF legislation. Since its inception AWPF has awarded over \$22 million in grants to over 100 projects located around the state. The diversity of these projects can be seen in the

annual report of the AWPF which can be obtained from the Arizona Department of Water Resources.

In the EC Bar Ranch Water Well Project, rancher Jim Crosswhite developed two wells on either side of Nutrioso Creek on his ranch in Apache County. This allowed him to fence off the riparian area and restore grasses. Crosswhite says, "On a scale of one to 10 with 10 being the tops, the Arizona Water Protection Fund people are tops in professionalism."

The Pueblo Colorado Wash Demonstration Project at Hubbell Trading Post was a low-cost, low-tech approach to stream enhancement which removed livestock and exotic plant species from a 1.5 mile section of the wash near the historic Hubbell Trading Post on the Navajo Nation. A fence was built to control livestock trespass and the wash was revegetated with native plant materials. Subsequently, this simple volunteer driven project expanded into a multijurisdictional, multi-interest conservation partnership. The cultural resources of the historic trading post are now reconnected with their natural setting. EPA awarded an additional "Five Star Restoration Partnership" grant and declared it the first "Five Star Restoration" site.

These are only two examples of the interesting, effective and necessary work that AWPF has supported. Unfortunately, the future of this support is in doubt. As many as 30 grant applications will be delayed at least. The amount of dollars available (\$2.5 million) is only 25 per cent of what the Legislature originally intended over a two year period. The diverted revenues from the in lieu payment on the leased CAP water could amount to almost \$5 million over the next two years.

The small trickle of hope in the ordinarily dry political stream is that key Arizona legislators — who were shocked at the gubernatorial veto — have pledged to restore the AWPF's revenue source next session. In particular, Speaker of the House Carolyn Allen (R-Scottsdale) and Representative Jake Flake (R-Snowflake) have committed to correct the funding situation. In the Senate, AWPF has strong bipartisan support from Democratic leader Senator Jack Brown (D-St. Johns), Senators John Verkamp (R-Flagstaff), Herb Guenther (D-Yuma), and Marcia Arzberger (D-Sierra Vista).

Those who wish to have more information on AWPF or to apply for an AWPF grant should contact ADWR at 602-417-2400 ext 7016 or check the AWPF web site: www.awpf.state.az.us



The Nature Conservancy used Arizona Water Protection Funds for planting of native grasses and forbs on the San Pedro River Preserve. (Photo: Jason Ekstein)



Legislation and Law

Funds Approved for AZ Archives Building But Governor Vetoes First-Year Funding

Recent efforts seeking legislative approval for the construction of a state archives building scored a qualified success this year. The Legislature passed the measure, and on April 24 Governor Jane Hull signed HB2632 into law, authorizing the state to spend \$20 million to construct a dedicated state archives building, to be named for long-time legislator Polly Rosenbaum. The Governor, however, also line-item vetoed the first fiscal year of funding.

Despite the vetoing of first year funding, building planning proceeds. The Friends of Arizona Archives (FAZA) will be sponsoring a series of "Archives Forums," to seek public input about the archives building. Forums will be conducted in various areas of the state, with the first scheduled for Prescott in August.

FAZA seeks representatives from various user groups, including the water community, to serve on a steering committee to plan the forums. Interested persons should contact FAZA Treasurer Doug Kupel. (602-495-5853; email dkupel@ci.phoenix.az.us)

People interested in Arizona's water affairs have long supported the construction of a state archives building. The current, woefully inadequate facilities store about 500 to 600 cubic feet of water records. Materials include many unpublished, one-of-a-kind documents, the sole source of some state water records. Archival collections concerning water span many years, from early territorial times to statehood, with historical records from both organizations and individuals. (See *AWR*, May-June, 2000, for Arizona Archive feature.)

USFS "Bypass Flows" Policy Reversed

The Bush administration recently reversed the U.S. Forest Service's "bypass flows" policy. The action came after a number of western Senators wrote a letter to the Administration urging that the United States reverse its position on the controversial issue. They claim the USFS does not have the authority to impose bypass flows on existing water users.

The bypass flow issue emerged in the early 1990s when the Arapaho/Roosevelt National Forest asserted that renewal of land use authorizations for a number of existing water supply reservoirs located in the Poudre River drainage in Colorado would include a bypass requirement. Water historically stored in these facilities must be "bypassed" to achieve Forest Plan goals for the protection of aquatic habitat.

The previous Bush Administration decided that the USFS did not have the authority to impose bypass flows on existing water users but the Clinton Administration adopted an opposing view.

Charles Gauvin, president of Trout Unlimited says, "The controversy over bypass flows really is not about water law or water rights...it is about the Forest Service's ability to be a good steward of the public lands and the fish and wildlife resources within them."

The bypass flows issue is scheduled to be litigated in *Trout Unlimited v. USDA*, in the federal district court for Colorado. The states of Alaska, Arizona, Colorado, Idaho, Nevada, New Mexico and Wyoming have filed briefs in federal court to reinstate the position that the USFS has no authority to impose bypass flows on existing water users.

Supreme Court Wetlands Decision Raises Many Questions

Regulators, conservationists and developers agree about the importance of the recent U.S. Supreme Court decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*. Yet many questions remain about how the decision will affect the nation's wetlands. An Environmental Law Institute publication, the "National Wetlands Newsletter," analyzes the decision in detail, examining the case from a number of perspectives in an attempt to reach consensus on the issue.

The law suite was initiated following a Corps denial of an Illinois local government's request to construct a landfill. The Corps denied the permit request because the project would have destroyed 31 acres of ponds that provided habitat to migratory birds. The Corps asserted jurisdiction over these ponds under the federal Clean Water Act, which was based upon the Interstate Commerce Clause of the U.S. Constitution. In its 5-4 decision, the U.S. Supreme Court held that the Corps could not use its so-called "Migratory Bird Rule" as the basis for regulating the ponds.

The Court spoke, but questions remain. Perhaps the most energetically debated issue is just how far this ruling reaches into federal regulation. Some experts interpret the decision narrowly, maintaining that it only applies to non-navigable, isolated, intrastate waters where the only interstate commerce connection is use or potential use by migratory birds. Others take a more expansive view, saying the decision applies to all traditionally non-navigable waters and waters not physically connected to navigable waters.

The newsletter features experts in the fields of wetlands and law, with authors representing state wetland managers, private law firms and environmental conservation organizations. They discuss their perspectives on the ruling and its potential repercussions for the nation's waters, the regulated community and the public.

For subscriptions to the newsletter or copies of the focus issue discussing the SWANCC decision call 1-800-433-5120.



Publications

Now Available! — Arizona Water Information Directory

Barbara Tellman

This publication is an aid to those who know the information is out there but are unsure where to find it. Combining two publications previously published separately, "Where to Get Free (Or Almost Free) Information About Water in Arizona" and "Where to Find Water Expertise at State Universities in Arizona," this volume is a "one-stop" reference work. Published by the Water Resources Center at the University of Arizona, the publication is offered free as a public service, to acquaint people with the varied sources of water information available in the state. For copies contact WRRC, University of Arizona, 350 N. Campbell, Tucson, AZ 85721; Phone: 520-792-9502; email: wrrc@ag.arizona.edu A searchable version of the directory is available on the WRRC web page (<http://ag.arizona.edu/AZWATER/>)

What Do Water Utilities Do in the Event of Blackout? Web site Tells All

With debate underway whether or not blackouts will occur in Arizona this summer, prudence suggests that state water officials at least consider the possibility it might happen here. And what better source of such information than the neighboring state of California which isn't whistling in the dark when it comes to blackout experience and information. (Or is it?) The Association of California Water Agencies web site (www.acwanet.com) offers a comprehensive guide for water suppliers and wastewater utilities to minimize the problems when rotating outages occur. Water and wastewater utilities require large amounts of power to pump, treat and

convey water through their systems. Blackouts can trigger various operational problems. The section, "Facing California's Energy Challenge: A Guide to Water and Wastewater Utilities," includes the subsections: Checklist — Steps to Take; Public Outreach; Water Efficiency; Agency Examples; Grants & Incentives; Working With Regulators; Workshops & Events; and Helpful Links.

Water Resources Data, Arizona, Water Year 2000

Water-Data Report AZ-00-1

The U.S. Geological Survey gathers hydrologic data for a series of reports covering each state, Puerto Rico and the Trust Territories. This is the Arizona volume, with records of streamflow, groundwater levels and quality of water and is provided to state, local and federal agencies and the private sector for developing and managing land and water resources. The report was prepared in cooperation with the State of Arizona and other agencies. Copies of the report can be purchased from the National Technical Information Service, U.S. Dept. Of Commerce, Springfield, VA 22161.

USGS also recently published two other volume of possible interest to Arizonans:

Potential Errors Associated with Stage-Discharge Relations for Selected Streamflow-Gaging Stations, Maricopa County, Arizona (Water-Resources Investigations Report 00-4224) by A.C. Tillery, J.V. Phillips and J.P. Capesus.

Hydrogeology of Picacho Basin, South-Central Arizona (Water-Resources Investigations Report 00-4277) by D.R. Pool, R.L.

Carruth and W.D. Meehan

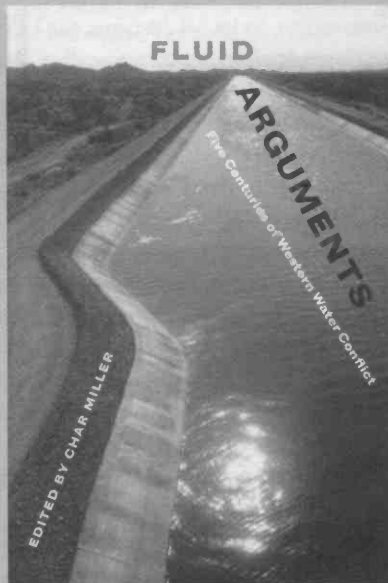
For information about the above two reports contact the USGS Water Resources Division, 520 N. Park, Suite 221, Tucson, AZ 85719-6644; phone, 520-670-6671.

Fluid Arguments: Five Centuries of Western Water Conflict

Char Miller, ed

This volume consists of a collection of essays covering a wide range of topics over a long period of time, from the arrival of the Spanish to the present. In examining different subjects the authors focus on a consistent theme running through western water affairs — conflict. Since the conflicts of the past five centuries often are the roots of today's conflicts the historical perspective of many of the essays helps us to more fully understand contemporary water problems. The 17 authors have varied backgrounds, with the result that the volume provides an interdisciplinary perspective. References to history, geography, ethnography, political science, law and urban studies contribute to the analysis of water issues. The essays address four major water areas: Spanish colonial water law, Native American water rights, agricultural concerns and dam building. A final section, "The Coming Fight," consists of an essay discussing the impact of cities on water and of water marketing on the western economy. In sum, this book is another reminder that the water history of the West, although a troubled and troubling affair, is at the same time a richly complex and fascinating tapestry interweaving elements of history, culture and economics. 380 pp. The University of Arizona Press, \$45 web site:

www.uapress.arizona.edu





Special Projects

Tucsonans Get Facts, Figures and Information With Their CAP Water

Special Projects features research and other projects devoted to increased understanding of water issues.

A new City of Tucson Water Department project is designed both for community input and to provide varied outreach information, with the goal of encouraging more knowledgeable water consumers. A basic premise of the EPA-funded Environmental Monitoring for Public Access and Community Tracking (EMPACT) program is that a water informed citizenry is likely to understand and support good community water policy.

The EMPACT program follows two other Tucson Water special projects, "At the Tap" and the "Ambassador Neighborhoods Program," each aimed at promoting a productive relationship between the water utility and its 675,000 customers.

In implementing such programs, Tucson Water is reaching out to a water sophisticated community, its water attitudes and values seasoned by the arid environment, rapid population growth, groundwater contamination issues and, most importantly, a prolonged controversy over the use of Colorado River water. With water issues the stuff of public discourse, the Tucson community offers fertile and challenging grounds for the services of Tucson Water's outreach programs.

EMPACT along with the other Tucson Water special projects is part of a strategy developed in the aftermath of an aborted effort to introduce CAP water to a segment of Tucson water users during 1992-94. Water delivery was halted after the water reacted with existing corrosion in the distribution system and private plumbing, resulting in impaired water quality and damage to customers' pipes and home appliances. Resentment and distrust of the water utility lingered among some customers after the occurrence of these unfortunate events.

EMPACT activities will be taking place as Tucson Water gradually reintroduces CAP water into the system, through its Clearwater Renewable Resources Facility. The facility will blend recharged Colorado River water and groundwater for delivery to Tucson area water users. EMPACT activities will ensure that information along with water will flow to water users.

The EMPACT project will track water supply through various uses and treatments. The public will be kept abreast of water quality and quantity information as the Clearwater facility operations expand into full-scale. On-line monitoring of various water quality parameters will occur at the source and at selected sites in the distribution system, to reassure consumers that health and aesthetics standards are being met. Further, water users will be provided with information about water withdrawals from local well fields and recharge well fields. This will enable them to better understand how they are helping meet sustainability goals and manage subsidence.

Less water use from these source indicate more consumer use of the alternate water source.

Information also will be provided to promote consumer awareness of conservation efforts and the nature of the water-use cycle in water-short regions. For example, water users will be informed about the amount of treated wastewater released into the Santa Cruz River for riparian habitat enhancement and for longer-term recharge and recovery. Information about the quality of the water recycled for irrigation also will be available.

Water quality parameters to be monitored include pH, temperature, hardness, and TDS (conductivity). Also to be monitored are specific parameters important for public health including disinfectant residuals, total trihalomethanes, fluoride, nitrate and sodium.

In conducting its outreach mission, EMPACT will identify targeted audiences, survey them to determine the water quality/quantity information they want and work out the best means of providing the information to them. EMPACT's constituencies and target audiences include physicians, environmental groups, Hispanics and Native Americans, including the Pascua Yaqui Tribe and the Tohono O'odham Nation. The program will rely on new and developing technologies for reaching the community.

State-of-the-art methods for communicating information will be utilized. For example, residents will be able to identify their street addresses on a web site map and then obtain easily understandable results of nearby water monitoring stations and real-time, water quality reports on their drinking water.

The interface also will allow customers to view recently collected data through the use of maps, tables and graphs. The web-enabled program will include explanations tailored for the non-specialist, describing parameters, sampling methodologies and interpretation of data.

EMPACT involves wide community participation, with the University of Arizona, county and state agencies, water quality and conservation organizations, local schools and stakeholder groups and private industry collaborating in the project with Tucson Water.

The program's effect is expected to extend beyond the Tucson Water community to also involve other local, municipal and private water companies, with the goal of sharing methods and information on a regional level. Within an even broader context, the project is expected to serve as a national model for water utilities committed to working with their communities to develop good water attitudes and values, in anticipation of future changes in water supply and quality.

For more information about Tucson Water's EMPACT program contact Daniel Quintanar, phone: 520-791-5080, X1345; email: dquinta1@ci.tucson.az.us



Announcements

Groundwater Protection Forum

The Ground Water Protection Council and the U.S. Environmental Protection Agency, in association with state and federal agencies, tribal and local governments, citizen groups, and industry will co-sponsor a forum on topics related to the integration of the Safe Drinking Water Act and the Clean Water Act programs. The event will take place September 22 - 26 in Reno, Nevada. The conference will include presentations, panel discussions, posters and exhibits related to technical advancements and practical approaches to underground injection practices, groundwater-source water protection, as well as groundwater monitoring and remediation. For more information contact the Ground Water Protection Council, 13208 N. MacArthur, Oklahoma City, OK 73116; fax: 405-516-4973

Urban Watershed Conference

The National Water Research Institute is sponsoring the National Urban Watershed Conference to be held in Costa Mesa, California, October 17-19. The conference will address strategies to deal with emerging problems associated with population growth, aging infrastructures, diminishing financial resources, public health and safety and economic development. This conference will examine the current and future effects on America's watersheds. For more information contact the National Water Research Institute, P.O. Box 20865, Fountain Valley, CA 92728-0865; phone: 714-378-3278; fax: 714-378-3375

Dam Safety Topic of Conference

The Association of State Dam Safety Officials will conduct its 18th annual conference Sept. 9-12 in Snowbird Utah. Engineers, geologists, hydrologists, dam owners, state, local and federal officials, industry representatives and others working in the field of dam safety are invited to share their experiences in all aspects of dam safety. Topics will include hydrology and hydraulics, geotechnical issues, emergency preparedness, design and rehabilitation, dam inspections, removal of dams, dam safety, regulatory programs, dam owner issues, and dam construction. For more information contact ASDSO, 450 Old Vine St., 2nd Floor, Lexington, KY, 40507; fax: 859-323-1958; email: info@damsafety.org.

Tri-State Seminar on the River

The 17th annual Tri-State Seminar on the River will take place Sept. 27-29 in Laughlin, Nevada. The three-day program encompasses water, wastewater, laboratory and management topics running in concurrent sessions. The seminar is sponsored by the Arizona Water & Pollution Control Association, California Water Environment Association, California-Nevada AWWA and the Nevada Water Environment Association. Also featured will be EPA courses on "POTW Control of Oil and Grease" and "Clean Water Act

Compliance Guide for Municipal Managers." Seminar details, including daily schedules and registration information can be found at <http://www.tristateseminar.com>

Replenishing America: Reuse for Tomorrow's Youth Symposium

The Watereuse Association will hold its symposium September 8-11 in San Diego, addressing such topics as legislative/regulatory issues, filtration/disinfection applications, distribution/storage operations, economics of water reuse, reuse beyond wastewater reclamation, emerging technologies/challenges and public education. For more information, contact Loretta Wire 915 L St., Suite 1000, Sacramento, CA 95814-3701; phone: 916-442-2746; fax: 916-442-0382; email: law@ngke.com

Natural Resource Conference Call for Abstract

A call for abstracts is announced for the Natural Resource Extension Professionals Conference, "Revolutionizing or Evolutionizing Extension," to be held June 2-5, 2002, in Naples, FL. Its purpose is to facilitate communication, cooperation and networking among natural resource educators. The deadline for submitting abstracts is Sept 21 of this year. Natural resource educators (broadly defined) are invited and encouraged to submit an abstract for consideration as an oral or poster presentation. Authors will be eligible for an award based on the quality of the abstract and presentation of materials. Abstracts MUST be submitted electronically via the conference web site at <http://conference.ifas.ufl.edu/nrep/> Check the web site for more detailed information on the preliminary program. Questions can be addressed to Dr. Joe Schaefer, Conference Organizer, at jms@mail.ifas.ufl.edu

Conference on Pharmaceuticals in Water Supplies

The effects of pharmaceuticals and endocrine disrupting chemicals in water supplies is the timely topic to be addressed at the National Ground Water Association's Oct. 9-11 conference in Minneapolis. Scientists from Australia, Denmark, Germany, India and the United States will address the emergence of pharmaceuticals and EDCs as new environmental contaminants in rivers and municipal water systems. The extent of the contamination and its impact on animals, and new ways to test for and successfully treat these compounds in water will be key issues at the conference. The conference is co-sponsored by the Minnesota Department of Health, the Pan American Health Organization, the Technical University of Berlin, the U.S. EPA National Risk Management Research Lab and the U.S. Geological Survey. For additional information contact NGWA customer service center at 800-551-7379 or visit the NGWA web site at www.ngwa.org



Outside Readings

Desert Thirst as Disease

This section, "Outside Readings," includes reprints or abstract of editorials, features, articles or other published materials that appeared in various publications and would likely interest readers of the "Arizona Water Resource" newsletter.

Although written in 1906 the article, "Desert Thirst as Disease" by W.J. McGee, is still considered one of the most detailed and graphic descriptions of extreme dehydration ever recorded. The article continues to be referenced in contemporary works, recently in a book published last year, "In the Heart of the Sea," by Nathaniel Philbrick. In the following excerpt the McGee describes what he calls the "cotton-mouth" stage of thirst.

The Stage of Functional Derangement. In the incipient phase of pathologic dryness a general febrile condition becomes marked and is accompanied by special local symptoms; saliva and mucus in mouth, throat, and nostrils become scant and sticky, and there is a feeling of dry deadness of membranes extending to the epiglottis and even into the lungs — the sensation of inbreathed air changing from one of refreshing coolness (the chief physical pleasure of life in the desert) to one of oven-like heat; the tongue may cling irritatingly to the teeth, or stick to the roof of the mouth; a lump seems to rise in the throat and starts endless swallowing motions to dislodge it; discomfort and pain run from throat to ears along the eustachian tubes and through the tissues; the tympana may snap and drum annoyingly, while the ear-openings itch and the eyes smart. There is a feeling of fullness in face and head (doubtless due to shrinking of the skin), usually accompanied by headache and throbbing pains in the nape and down the upper spine; the hearing is disturbed and seeing capricious, so that illusions and hallucinations — especially the delectable pictures engendered by the desert mirage — spring constantly unless checked by connected effort; irascibility arises, and companions quarrel and separate, perhaps to reunite for the very satisfaction of further dispute; the solitary sufferer may soliloquize, largely in impassioned invective — though the voice becomes cracked, husky or hoarse, and given to unexpected breaking into high tenor or dropping into an absurd whisper. The intellections are insensibly distorted more and more as the phase advances; prejudices are intensified, unreasoned revulsions arise against persons and things, while water and wetness are subconsciously exalted as the end of all excellence; the victim may gravely, after deliberate discussion in his quavering and ill-controlled voice, discard hat or shoes, — for it is in this stage that

Mexicans generally and Americans frequently begin to strip them-

selves of clothing — or spurn the gold which he has been seeking or the tobacco which has been his solace, or perhaps burden himself with a heavy cask or fragile demijohn. The face grows pinched and care-marked, the eyes bloodshot and perhaps tearful, the movements ill-aimed, the utterances capricious, while the temperature rises and the pulse quickens: the sufferer is a walking fever patient, passing or passed into a delirium usually wild and paralyzing in the tenderfoot, but concentrated on a central instinct in the desert habitue — the instinct of the trail, or the way to water. The disordered state of body and brain is often revealed by ceaseless talk: the sufferer strains tongue and throat to "talk and talk and talk, without prevision of the next sentence or memory of the last — and all the talk is of water in some of its inexpressibly captivating aspects.

A group of ranchmen, tricked by an earthquake-dried spring, craked and croaked of rivers they had forded in '49, of the verdure of the bluegrass region in which one of them was born, of a great freshet in the Hassayamp' which drowned the family of a friend and irrigated the valley from mountain to mesa, of the acre-inches of water required to irrigate a field seeded to alfalfa, of the lay of the land with respect to flowing wells, of the coyote's cunning in 'sensing' water five feet down in the sand, of the fine watermelons grown on Hank Wilson's ranch in

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Salado valley; now and then articulation ceased and lips and tongue moved on in silent mockery of speech for a sentence or two before the sound was missed, when with painful effort the organs were whipped and spurred into action and the talk rambled on and on — all talking slowly, seriously, with appropriate look and gesture, not one consciously hearing a word. When, I was deceived into dependence on the brine of a barranca, in Encinas Desert, thirst came, ... and some of the party babbled continuously of portable apparatus for well-boring, of keeping kine by means of the bisnaga — a savagely spined cactus yielding poisonless water — and reveling in milk, of the memory of certain mint juleps in famous metropolitan hostelrys on the farther border of the continent, of the best form of canteen (which should hold at least two gallons — three would be better); they were bright men, clear and straight and forceful thinkers when fully sane: yet they knew not that their brilliant ideas and grandiloquent phrases were but the ebullition of incipient delirium, and seriously contracted for five gallons of ice-cream to be consumed by three persons on arriving at Hermosillo, and this merely as dessert!" This phase is well known on the range, where many survive it and some delude themselves with the notion that it marks all there is of thirst; and scores of survivors have hit on the same expression to denote it: it is the *cotton-mouth* phase.

Santa Cruz AMA...continued from page 2

Storey says, "Lots of proposals are on the table. But the truth is we are not even close to being able to define this management entity and its functions. We have not yet finished going through the inventory and quantifying all the claims, to know what we are dealing with. Only then can we ask how, or even if we need to manage these water rights differently than we already are."

Meanwhile according to Ronald DWR is following a wait-and-see attitude. She says, "We are waiting for the group to decide what it wants to do and are not guiding the group in terms of what we would like to see in the authority."

What appears evident is that at some point in the procedure collaboration between DWR and the Settlement Group could help lay the groundwork for whatever management plan is finally adopted for the area. In its cataloging of water rights in the area DWR made a major contribution to the community project. Yet an ongoing controversy between the agency and water right holders in the area does not bode well for productive collaboration.

Central to the controversy is a debate about the intent of the statute establishing the SCAMA. DWR believes the statute allows the agency some regulatory authority over surface water. The Settlement Group disagrees, believing its intent to develop a management plan could be compromised by DWR claims to regulatory power over surface water.

The controversy was further fueled recently by a document submitted to the Technical Advisory Committee for submission to the Governor's Water Management Commission. Settlement Group

participants claim the Management Framework Issues document relating to the SCAMA does not reflect community views. They interpret the document as part of a DWR strategy to seek legislation to enable the agency to manage surface water within the SCAMA, in a manner they believe is contrary to the basic tenants of state surface water laws.

Jim Holway, DWR assistant director, however, stated, "The charge of the commission is to review the statutes and recommend changes where necessary, so the Commission's recommendations cannot be bound by current statutory limitations." Further, Holway questions whether the Settlement Group is the appropriate entity to develop the overall management program for the region because he says the Settlement Group represents only certain interests in the AMA.

Meanwhile some local interests have submitted a revised document to the Governor's Commission representing "the collective work product of SCAMA's Groundwater Users Advisory Committee, numerous water users and other SCAMA interests and DWR's SCAMA staff." They have requested that the revised document replace the previously forwarded statement.

Some local water users believe DWR should delay seeking legislative changes while the Settlement Group is still at work. Or as a rancher says, "They ought to wait until the process matures a bit more, and we have a better idea amongst ourselves about our priorities. We believe we have a process here and, we want time to work it out."



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