The Arizona Riparian Council Newsletter

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The Riparian Task Force

Riparian Areas Executive Order and Legislation

On February 14, 1991, Governor Rose Mofford issued Executive Order 91-6, *Protection Of Riparian Areas* and that same month, House Bill 2485 (Arizona Riparian Areas) was introduced and passed out of Rep. Bill Mundell's House Environment Committee. Both of these actions were the direct result of recommendations from the Governor's Riparian Habitat Task Force at the end of a year's study and deliberations.

The Executive Order spells out a strong State policy for protection and management of riparian areas in Arizona and directs various State agencies to take specified actions to achieve the policy's objectives.

HB 2485, if passed, would establish a Riparian Area and Watershed Enhancement program. This would be conducted through a non-regulatory Board whose main function would be to coordinate demonstration projects, drawing on funding from various cooperating entities to achieve optimum results. All projects would have to demonstrate riparian enhancement. The program also would be involved in education, research identification, and information collection. We are optimistic about passage of this bill since there appears to be little opposition.

To may obtain a copy of the Final Report and Recommendations of the Governor's Riparian Habitat Task Force from the Commission on the Arizona Environment, 1645 W. Jefferson St., Suite 416, Phoenix, AZ 85007.

Sue Lofgren
Governor's Riparian Habitat Task Force

Heritage Update

The Arizona Heritage Fund Alliance lives on! There has been a good response to a recent survey of Alliance members. Most of the major organizational members including the Arizona Riparian Council have said that they would like to continue their affiliation. It has become clear that passing the initiative was only the first step.

Many of you have undoubtedly read about Legislative efforts to delay full funding for the Heritage progams. At press time all is o.k. with the Heritage Fund itself, but both the Arizona Game and Fish Department and State Parks Department are facing problems on other aspects of their programs and funding that are Heritage related. Needless to say, there is a continuing need for oversight.

The Alliance can be a lot more than a watchdog. It can spread the word about Heritage Fund projects and opportunities. It can have a proactive role with the Legislature and the public in promoting the benefits of the Fund to Arizona. It also can interact with the agencies and serve as a public input conduit.

There will be more information on the Alliance as plans develop. To stay in touch, call Eva Patten, Arizona Heritage Fund Alliance (602) 220-0490.

Eva Patten

In This Issue

President's Column

Interlocutory appeal may not be familiar words, yet one would be hard pressed to find two words that have such substantive implications for the long-term protection of riparian systems in Arizona. On December 11, 1990, the Arizona Supreme Court decided to grant review on six issues raised in the context of the interlocutory appeals process in the general adjudication of all rights to use water in the Gila River system and source. The adjudication is a judicial process to determine the extent and priority of water rights in the Gila River system, and is intended to finalize the "appropriable" water rights, of cities, farmers, ranchers, state and federal agencies, conservation organizations, including instream water rights. The adjudication is being conducted in State Superior Court, with the administrative and technical assistance of the Arizona Department of Water Resources (DWR). Upon completion, adjudicated water rights become the basis for establishing the extent, priority, and legitimacy of water uses in the Gila River Basin backed up by Court decree.

Early in the proceedings, a legitimate question arose as to whether underground water is "appropriable" and, therefore, subject to the State laws and regulations affecting surface water in the Basin. Water flowing on the surface is easily recognized as surface water from both common sense and legal standpoints, however, it is not altogether clear how to handle sub-flow. While any riparian professional will tell you that surface and sub-flow are the same, the law is less than clear on this point.

In an attempt to resolve this issue, the presiding judge, (Judge Goldfarb), formulated a rule which provides a test (i.e. the 50-90 rule or Bright Red Line) as to whether a pumper of subsurface water is in fact using "appropriable" water and hence subject to the adjudication proceedings. The test is whether the total stream depletion from a pumper would reach 50% of the volume pumped over a period of 90 days. Those pumpers that meet the test are within the Bright Red Line, those that do not are outside. More to the point, pumping outside the line is not subject to adjudication and hence unrestricted, (provided you are not within a GroundwaterActive Management Area).

This ruling has led to an interpretation by the DWR that the Bright Red Line should only be drawn around perennial and intermittent stream segments that have continuous flow for 90 days. A review of the information presented to date by DWR for the San Pedro River basin reveals that most of the regional aquifers associated with perennial stream segments fall outside the Bright Red Line. In a nutshell, continued application of this rule throughout the adjudication process exposes every perennial stream segment in the state to gradual depletion by unrestricted groundwater pumping. In one fell swoop, the adjudication could render instream flow water rights in the Gila River system moot.

But take heart, remember the interlocutory appeal and the six issues? One of the six issues is "Did the trial court err in adopting its 50%-90 day test for determining whether underground water is "appropriable" under A.R.S. §45-151 (i.e. the surface water code)? Within the next several months, the Court will establish a "pre-submittal conference" date on this issue to allow any party affected by the issue to file a notice of appearance. At the pre-submittal conference, the Court will designate which parties will participate on this issue, align the parties on the issue, and set a schedule for oral argument and briefing.

Andy Laurenzi

Cienega Creek Natural Preserve Threatened by Mining

There is a proposal before the Arizona State Land Department to reopen and expand an open pit clay mine on State land within a quarter mile of Cienega Creek Natural Preserve, southeast of Tucson, owned and managed by Pima County. Cienega Creek is the only natural perennially flowing stream in the Tucson Basin other than Sabino Creek.

The surface disturbance and potential for run-off from this mine pose a serious threat to the ecological integrity of the nearby creek. Cienega Creek supports a population of native fish, the longfin dace, and an extensive stand of cottonwood, willow, and mesquite trees.

Unfortunately, the State Land Department is limited as to how it can deal with this application due to a ruling by the Arizona Courts which determined that the clays extracted in this area are not common clays. Had they been, any extraction activity would then have been subject to the State's discretionary mineral material sale procedures. Instead the Court determined these clays have special qualities which makes them subject to the State's mining claim and mineral leasing laws.

Because the applicant has filed a mining claim on the basis of this special status, the company has a preferred right to a mineral lease unless the proposed use would adversely affect the value of the Trust lands or would create a liability to the State.

The State Land Department is working with the applicant and asking them to reduce their 80 acre application to only the area around the previously mined pits and to put together a land restora-

– See **CIENEGA**, *page 3*

Interim Flows for the Grand Canyon

The controversy over the effects of operating Glen Canyon Dam on the downstream resources of the Grand Canyon continues. One side sees a need to totally protect the resources through releasing water at a steady flow, high enough to prevent desiccation of aquatic plants and invertebrates and trout spawning beds, but not so high as to erode sediment from the system. The other side sees a need to fluctuate releases to satisfy power needs for the Southwest. This controversy has led to a lengthy study of the effects of the dam and ultimately the call for an Environmental Impact Assessment. The EIS will not be completed for at least another two years; meanwhile, there is enough evidence to demonstrate that the present operation of the dam has been degrading the downstream resource.

Congress appears ready to get into the act. One House and two Senate bills have been presented to protect the natural resources of the Grand Canyon. Each of these has the requirement that until the EIS process is complete, the interim operating procedures of the dam should be such as to create downstream flows that minimize continued deterioration of resources such as beaches and native fish habitat. The Department of the Interior has taken the position that Congress need not act since the Secretary can impose interim flow procedures at any time. Regardless of how the debate between Congress and Interior ends up, it appears as though there will be interim flow regulations. This will probably occur some time after the planned flow releases needed to accommodate objectives of the Glen Canyon Environmental Studies' end in late July 1991.

Groups representing the scientific research community and the power/water community are meeting to draft their conceptions of interim flow requirements. This input will be reviewed by various groups, including ecological resource managers, the Glen Canyon Studies cooperating agencies, and the public. Hopefully, by the time the research flows are completed, interim flows can be initiated to minimize downstream losses in Grand Canyon, either by an act of Congress or separately by the Secretary of Interior.

Duncan T. Patten
Center for Environmental Studies
Arizona State University

Wetlands Protection Bill Introduced in Congress

Senator Charles Bennett (D-Fla.) has recently introduced into Congress a bill that would establish a $300 million per year program for the acquisition and protection of the nation's wetlands. The monies would come from the Land and Water Conservation Fund (LWCF).

This bill takes on added importance since the President's task force to establish a wetlands policy is nowhere near completing its task. In the Bennett bill, 60 percent of this $300 million would be allocated to the States. The balance would be used for a variety of wetland programs administered by the Department of Interior. These programs would include land acquisition under the Emergency Wetlands Resources Act of 1986.

Under the plan, the States would be required to prepare conservation plans for wetlands, including plans to learn the causes of degradation, means for the preservation of existing wetlands, and ways to restore degraded wetlands.

Watson Lake Revisited

In the last issue of this newsletter, we carried a story on the demise of Watson Lake near Prescott and a discussion of some of the factors contributing to loss of this once popular recreation lake. Well, nature in its marvelous ability to recover has again given us a second chance. A 3-day deluge that began on February 27, dumped from 6 to 9 inches of rainfall on Prescott and the surrounding watersheds. Watson Lake is now full again. With heavy runoff into the lake continuing, it is not inconceiveable that the lake will spill and provide in-stream benefits to the marvelous riparian areas below the dam.

We can only hope that this rebirth will provide some incentive to the Chino Valley Irrigation District that controls the use of the water in Watson Lake to give more recognition to the aesthetic, economic, and environmental benefits that can accrue from an aquatic resource such as Watson Lake when managed cooperatively to maximize those benefits.

Ed.

—**CIENEGA**, *from page 2*

tion plan that would help to clean up some of the land disturbance and drainage problems left by earlier operations.

Assuming that drainage and erosion impacts from future activities can be adequately addressed, this may be a beneficial resolution to the issue. Any questions should be directed to Glen Collins, Deputy Commissioner, State Land Department, 1616 W. Adams, Phoenix, AZ 85007 (542-4621).

Doug Koppinger

Management of the Upper Verde on the Prescott National Forest

The upper Verde River begins at Sullivan Lake near Paulden. Many threatened, endangered and forest dwelling species are dependent on this river. The Verde has long been an area of human activity as is evident from the various prehistoric dwellings along its course. It is now used for fishing, hiking, swimming, and horse-back riding recreation. The river is also used by ranchers as a water source for their cattle and as a travel corridor to the tributary canyons en route to upland grazing areas. There are many demands for Verde River water, irrigation and urban use being foremost among those.

Within the area administered by the Chino Valley Ranger District, Prescott National Forest, the Regional Forester is concerned about the present condition of our riparian areas and their instream flows. The Verde River was historically a gallery forest of ash, Fremont cottonwood, willow, cherry, and walnut with a boggy bottom too deep to even ride a horse through. There are now only remnants of that forest. The upper watershed has increased its sediment yield and the river bottom is scoured and unstable. The flooding of the river is, of course, a natural process important for the ecology of the system. Nevertheless, how the river floods and deposits its sediment, how much sediment it carries, and how well the riparian zone endures these floods can be controlled through good management. This is the job of the Chino Valley Ranger District.

In order to address some of these concerns the Chino District is planning several projects this year. Several roads have been developed on the District that are not part of the Forest Service transportation system. Some are in the riparian zone of the Verde River and cross the river, thus adversely impacting threatened and endangered species in the river. We plan to convert some of these roads to trails open only to hikers and horse-back riders. The trails will continue to provide access to the river for recreational use and ranching operations. Volunteers will be involved in creating the trails, in educational field trips and in conducting an inventory of the resources along the river.

The District is also working with Alemida Cattle Company in their management of the Del Rio allotment and the seven miles of river that their operation affects. The livestock operators are attempting to minimize impact to the riparian area and to decrease sedimentation and increase plant cover on the uplands. Their cows use the river as a corridor but for 10 days only during early spring when livestock are more likely to use grasses and forbs rather than woody material. The Alemida Cattle Company has also offered to develop a Holistic Resource Management system on the ranch with a goal to increase wildlife populations, increase diversity, and bring the Verde River riparian area back to a gallery forest with openings created by natural events that disturb the climax forest.

The Horseshoe allotment is also up for review, a process that will provide an opportunity to improve the Verde River riparian management on that allotment.

To become more involved in the upper Verde River system, contact Gary L. Fullmer, or Gretchen Fitzgerald, Chino Valley Ranger District at (602) 636-2302.

Gretchen Fitzgerald

Public Lands Grazing

Greater awareness of the value of our desert riparian areas is influencing the management plans for grazing on allotments on public lands.

For example, according to Patricia Fenner, of the Tonto National Forest's Cave Creek Ranger Districts's Range Staff, a new management plan for the districts's Cartwright Allotment will remove cattle from a desert riparian area that has been grazed without interruption for about 100 years.

The desert riparian area she is referring to is Cave Creek Canyon, beginning at Seven Springs and continuing toward the southwest for several miles. Usually, this segment of Cave Creek has a significant flow of water and even in drought periods it maintains intermittent pools. It is easily accessible to hikers from trailheads above it at Seven Springs or below it near the town of Cave Creek.

Today, a visit to this beautiful desert canyon would probably make a person wonder why cattle have been allowed to overrun such a place.

Fenner says that, starting in 1991, new fencing will prevent cattle from entering the riparian area during the summer. She anticipates that the annual summer rest will allow it to flourish again. There are many large old trees in the canyon, mainly sycamores, but little new undergrowth.

Fenner adds that the total number of cattle on the allotment has been reduced, which should also help the riparian area by reducing erosion on the creek's watershed.

Rancher Eddie Johnson, the allotment's permittee, deserves credit, Fenner said, for cooperating with the new grazing plan.

Jeff Burgess

Thesis abstract

Heavy Metal Content Of Riparian Vegetationexposed To Wastewater Effluent

Municipal and industrial dis charges consisting of secondarily-treated wastewater effluent dominates instream flows in significant desert rivers across the Southwest. The potential adverse effects of heavy metals (Cd, Cr, Cu, Fe, Ni and Zn) in wastewater effluent upon a desert riparian community were assessed by examining the metal content of the leaves and roots of salt cedar (*Tamarix chinensis*), Gooding willow (*Salix goodingii*) and cattail (*Typha domingensis*) from the Salt River riparian community near Phoenix, Arizona. Physical and chemical soil characteristics were measured to determine the potential influence of these factors on the metal content in vegetation. These plant species and the riparian soil were also evaluated as indicators of the performance of desert riparian communities for filtering waterborne heavy metal contaminants. Study sites were located downstream of a large point source municipal and industrial wastewater discharge. Data was collected in the fall, winter and spring.

The metal content in roots was higher than in leaves for all three species. Leaf metal concentrations were generally highest in the spring. Seasonal metal concentrations in roots were variable and differed among plant species and study sites. Higher metal concentrations in plant roots, relative to study site soils, show that these plant species provide effective filtration of waterborne contaminants in effluent, thereby reducing the potential toxic effects of heavy metals on desert aquatic communities. Factors influencing the potential for a riparian community to function as a filter for heavy metals in effluent are discussed.

Marie Sullivan

Artificial Wetlands Used to Treat Mine Waste

Editor's Note: The following news item was reprinted from the Land Letter, January 20, 1991.

Forest Service biologists on Kentucky's Daniel Boone National Forest think artificial wetlands may be able to neutralize acid mine drainage. To test their hypothesis, researchers constructed a series of small ponds and wetlands and fed them with mine drainage. The idea was that heavy metals and other pollutants in the drainage would be gradually filtered out by plants and microbes in the wetland. Eighteen months later, the project removed 90 percent of the heavy metals in the water and 98 percent of the sulfates. Researchers now are looking into the costs of creating and maintaining the artificial wetlands. "In the long run, it will be less expensive than through the traditional methods of cleanup, " said Howard Halverson, one of the project's directors.

Mesquite Bosques – A Riparian Controversy

Are they riparian ecosystems, or aren't they? Opinions differ, but it is hard to argue against the facts. If we accept that riparian ecosystems depend on supplemental surface or subsurface water, we must accept mesquite (*Prosopis spp.*) bosques as riparian ecosystems. Even jurisdictional wetlands, which have an obvious link to surface water, are also legally tied to subsurface water[1]. A recent study of velvet mesquite (*P. velutina*) bosques along Tanque Verde Creek in Tucson has helped to document their dependency on subsurface water[2]. Pumping of groundwater from the Tanque Verde aquifer by the city of Tucson, although tragic in its effects on the riparian community, had one silver lining. By creating a gradient of groundwater depths, it gave scientists an opportunity to quantify the relationships between groundwater depth and bosque characteristics.

Tanque Verde Creek is an ephemeral riparian system, characterized by late summer and winter surface flows and perennial subsurface flows. As groundwater declines in the Tanque Verde system, the vegetation volume, tree height, leaf size, and internal water stress of the bosque trees all decline. Only in areas where subsurface water is quite shallow (<5 meters) do trees have very tall stature (12 meters) and high vegetation volume (> 2 meters^3/meters^2). These traits decline somewhat at groundwater depths of up to 15 meters. At groundwater depths of 15-30 meters, trees become increasingly stressed, as evidenced by low stem water potentials, reduced leaf size, and high levels (>45%) of canopy mortality. As of the end of 1990, many mesquite trees (as well as other plant species) in areas of deepest groundwater decline were in a state of sublethal stress. These deepest groundwater levels (ca. 30 meters) are in the same range as those that were lethal to mesquite along the Gila River near Casa Grande[3].

Some of the mesquite trees in deep groundwater sites at Tanque Verde Creek showed evidence of late summer use of surface water. Subsurface flow, however, is the primary, season-long water source of the trees. This groundwater, in turn, is hydraulically *connected* to surface flow in that it is recharged annually by surface flow that drains from the Rincon Mountains. Even though we cannot see the subsurface water, that is no excuse for ignoring its role as a *lifeline* for riparian mesquite bosques.

We do not known whether velvet mesquite differs genetically among its myriad habitats, which are as varied as riverine riparian bosques, lakeside (or playa-side) riparian bosques, sand dunes, and savanna grasslands. The species may indeed exist as morphologically or physiologically distinct ecotypes adapted to different habitats, a question which should be pursued. It is clear, however, that the stature, biomass, tree density, productivity, and habitat quality of riparian mesquite stands are many-fold higher than upland mesquite associations, and that riparian and upland mesquite associations each harbor different plant and animal species. Clearly, too, mesquite trees in riparian settings perform distinctly different functions, including bank stabilization and flood attenuation to name but a few. Thus, it is imperative that we eliminate threats to our endangered riparian mesquite bosques, of which groundwater pumping is but one of many.

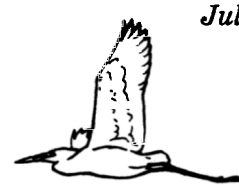
1 Federal Interagency Committee for Wetland Delineation. 1989. Federal manual for identifying and delineating jurisdictional wetlands. US ACE, US EPA, US FWS, USDA SCS, Wash. DC., Cooperative Technical Publication. 76pp.

2 Stromberg, J. C., J. A. Tress, and S. D. Wilkins. Response of velvet mesquite to groundwater decline. Journal of Arid Environments (in press).

3 Laurenzi, A. 1990. Groundwater overdraft in the Tanque Verde Sub-basin. Arizona Riparian Council Newsletter 3(2):6-7.

4 Judd, J. B., J. M. Laughlin, H. R. Guenther, and R. Handergrade. 1971. The lethal decline of mesquite on the Casa Grande National Monument. Great Basin Naturalist 31:153-159.

Julie Stromberg



Criteria For Delineating Riparian Areas

The *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* is currently being revised. The manual is used to determine what areas can be classified as wetlands under the Clean Water Act (CWA) Section 404 Permit program.Wetlands are protected under this program.

In Arizona, state and federal agencies submitted written comments to the team that is revising the interagency manual. They criticized the lack of protection for riparian areas in the Southwest. As a result of these comments, the wetlands manual revision team met with an interagency group on January 10, 1991 at Dead Horse Ranch State Park in Cottonwood. The group discussed the function and values of riparian habitat in the Southwest and related CWA, Section 404, permitting concerns.

The team revising the wetlands manual is comprised of eight representatives from four federal agencies: the Environmental Protection Agency (EPA), Soil Conservation Service (SCS), U.S. Fish and Wildlife Service (USFWS) and U.S. Army Corps of Engineers (COE). Representatives from three western states (Arizona, California and Washington) were present to express their concerns regarding wetland delineation to the Team. Agencies and organizations in attendance included Arizona State Parks, Arizona Game and Fish Department, Arizona Department of Environmental Quality, Center for Environmental Studies and western representatives from the U.S. Forest Service, USFWS, EPA and COE.

Several resource agencies involved in Section 404 permitting believe jurisdictional delineations do not protect Southwestern riparian areas. They demonstrated to the Team that in the Southwest, riparian areas have the function and values of eastern wetlands, including the protection of biological, physical and chemical integrity of waters of the U.S. But, as presently written, the jurisdictional definition of wetlands provides little protection for riparian areas in the Southwest.

It was suggested to the Team that a nationwide wetlands definition be developed based upon the functions and values of the wetlands ecosystem, thus allowing the inclusion of southwestern riparian areas in the jurisdicational manual. It was also suggested that the wetland definition be regionalized. The Team did not agree to change the Manual at this time.

An EPA Team member did suggest that an approach for identifying riparian areas be developed based on three field criteria which parallel the criteria for identifying wetlands (i.e., vegetation, soil and hydrology). He thought that identifying three criteria for riparian delineation may be helpful in getting riparian protection included in the forthcoming revisions of the Clean Water Act.

Sam Spiller and Don Metz, USFWS, requested that these criteria be developed through the Riparian Council. Julie Stromberg and Duncan Patten of the Center for Environmental Studies developed the preliminary criteria. The ARC Classification and Inventory and Protection and Enhancement Committees have agreed to continue this effort.

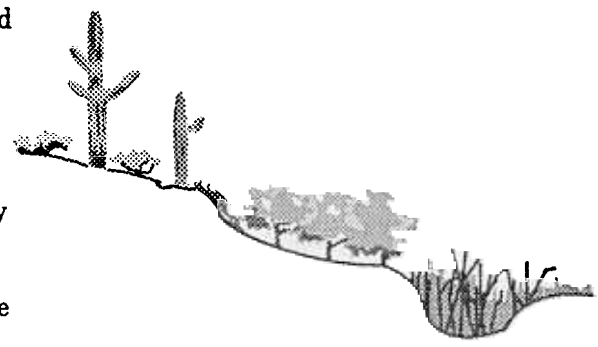
Development of the three criteria is timely. Two pieces of legislation, which pertain to riparian protection, are currently being considered in the Arizona Legislature. In addition, on February 14, 1991 Governor Rose Mofford signed Executive Order No.91-6, entitled Protection of Riparian Areas. It requires that all applicable state agencies protect, maintain and restore riparian areas. It also directs specific state agencies to initiate certain activities to accomplish that goal. In the executive order, a riparian area is defined as *"an aquatic or terrestrial ecosystem that is associated with bodies of water, such as streams, lakes, or wetlands, or is dependent upon the existence of perennial, intermittent, or ephemeral surface or subsurface water drainage."* The objective of developing the three criteria for riparian delineation is to provide field indicators. This will assist agencies in carrying out the mandates of the Executive Order. The criteria may also be valuable if riparian protection is incorporated into the forthcoming revisions of the Clean Water Act.

The adequacy of these preliminary riparian delineation criteria were recently discussed during a March field trip to the Verde Valley. Additional comments on the criterial will be solicitated at a later date.

Copies of the draft criteria may be requested from:

Carol Russell, Chair
Classification and Inventory Committee
Arizona Department of Environmental Quality
2655 E. Magnolia, Suite 2
Phoenix, AZ 85034

Marie Sullivan



(WATAG) - its goal and objectives

Formation of the Watercourse Alteration Technical Advisory Group

The Point Source Unit of the Water Assessment Section of the Arizona Department of Environmental Quality (ADEQ) formed the WATAG in September 1990. Title 49 of the Arizona Environmental Quality Act (49-246.2) requires the group to establish Best Management Practices (BMPs) that protect and enhance environmental quality due to watercourse alterations. The objectives are in one year to 1) provide recommendations on BMPs to the Director of ADEQ, in the form of a BMP handbook, and 2) provide clear guidance to implement regulation of watercourses. The group will be concerned with the active channel including the 100 year flood plain. The membership consists of a diverse background of expertise including state, county, cities, industry, university, and concerned citizens.

In January, subcommittees were formed to begin development of the BMPs. The three subcommittees are Wetland and Riparian Management (WARM), Construction and Other Land Alterations (COLA), and Hydraulic Modification and Sediment Transport (HMAST).

The WARM subcommittee is currently developing evaluation criteria for potential project sites. They are revamping an EPA document developed for use in Region IV called MIST, Mitigation Site Type Classification. MiST is a methodology used to classify pre-project mitigation sites and to develop performance standards for construction and restoration of wetlands. The COLA subcommittee is currently focusing on sand and gravel operations with many members of this subcommittee directly involved with the industry. They are assessing a breakdown of the activities of a sand and gravel operation, the impacts, and the opportunities they present.

The HMAST subcommittee is identifying activities that relate to hydraulic and sediment transport and are researching various state and federal agencies guidance and standards practices already in place that pertain to the identified activities. These activities include stable channel designs, detention and retention areas, reservoir management, stockpiling/excavations, and temporary and long-term flood plain stabilization (use of revetments).

Although the subcommittees have already begun work, there is plenty to do and Riparian Council members with interest and/or expertise in any of these areas are encouraged to participate. The next WATAG meeting is tentatively scheduled for April 17, 1991. Call Don Shroyer (392-4067) or Kris Randall (392-4072) to receive more information and meeting times.

Kris Randall

Verde Recreation Guide

by Jim Slingluff

This new book appears unique among guidebooks in Arizona. It is illustrated with line drawings, maps, and photographs from the files of the Arizona Game and Fish Department, Arizona State Parks Department, the University of Arizona Press, and Sonoran Arthropod Studies, Inc. as well as the author's personal files. The book provides an excellent introduction to the streams of the Verde River watershed. Written with the water as its focus, the book has sections on birds, arthropods, amphibians, reptiles, plants, mammals, and fish in addition to low impact camping hints, boating advice, and a listing of conservation issues, conservation organizations, and outfitters that touch the Verde. The writing is informal, informative, and environmentally conscious without being pompous.

The book is available for $5.95 at bookstores and outdoor outfitters or for $7.00 postpaid by writing direct to Golden West Publishers, 4113 N. Longview, Phoenix, AZ 85014.

Water information without the runaround

A Water Sourcebook

The Water Resources Research Center of the University of Arizona has just issued a new publication for those with questions about water but do not know where to go for answers.

Where to Get Free (Or Almost Free) Information About Water in Arizona is a guide to answers to water questions. Sections of this guide list: topics with sources of information, teaching materials, free and low cost publication from government agencies and non-profit groups, where to get speakers, videos, etc., and addresses of government agencies, non-profit groups, professional organizations dealing with water issues. A full index makes it easy to locate your information. The booklet is free, though quantities are limited. Write to:

Water Resources Research Center
University of Arizona
350 N. Campbell
Tucson, AZ 85721

Water Resources Research Center to Host Groundwater Recharge Symposium

The Artificial Groundwater Recharge Symposium is a biennial event sponsored by the University of Arizona Water Resources Research Center, The USDA-ARS Water Conservation Laboratory, and the Salt Water Project. This year, the two and one-half day program will be filled with presentations by regulators, water utilities professionals, engineers, researchers, and consultants, and a field trip to demonstration and operational recharge sites in the Tucson area. The Symposium will be held May 29-31, 1991 at the Westward Look Resort, Tucson.

The theme of the 1991 Symposium is "Challenges of the 1990s." The decade of the '90s will see many of the problems of previous years associated with groundwater recharge resolved, only to bring forth new challenges for researchers, managers, planners, and policy makers. One significant change brought about in the years since the first symposium in this series has been the nearly universal acceptance of artificial groundwater recharge as a valid water management tool. This symposium will try to place artificial groundwater recharge into the greater context of water management in the 1990s and highlight technical and institutional challenges the decade is likely to hold.

Check the calendar on page 12 for registration information.

Barbara Tellman
Water Resources Research Center

Formation of a Western Riparian Association

On December 4th & 5th I represented the ARC at the Western Riparian Workshop held in Phoenix. The focus of the meeting was to identify steps needed to bring about the sound management and restoration of riparian areas in the West. The meeting was sponsored by the Bureau of Land Management (BLM) and the Grand Canyon Trust. The workshop brought together "key players" involved with riparian management to identify and rank actions which are needed to improve riparian areas.

The participants represented the full spectrum of riparian interests including ranchers, conservation groups, and federal and state agency representatives. Also, representatives from western riparian associations attended from Arizona, Colorado, Montana, New Mexico, Wyoming, Utah, and Oregon. The workshop was just that—work. The 60 participants broke into four groups and, by discussing problem areas which had been identified earlier by the entire group, tried to agree on methods to improve riparian areas.

The group agreed that the biggest step that was needed toward better riparian management was getting disparate interests, i.e., ranchers, environmentalists, agency personnel, concerned citizens, and others to sit down and talk with each other. To this end, the group recommended publishing a riparian cooperators' handbook which would describe successful conflict resolution methods and identify sources which are available for assistance and funding to carry out projects.

Another recommendation was to publish a guide to classify riparian areas in clear, layman's terms. This publication would standardize terms used to describe riparian areas so that all those involved, especially state and federal agencies, would speak the same language. To date, this has been a pretty elusive goal.

The last major recommendation was to establish a western riparian association. A meeting has been tentatively scheduled for May 1991 in Utah for this purpose. The ARC intends to participate by sending a member to this meeting. A larger, western riparian association, will be a good conduit for sharing information and perhaps a louder voice in riparian management issues.

I left this meeting with the impression that there is role for the ARC to play in grazing and other land use issues affecting riparian area management. The ARC Land Use Committee which handles these issues, has been dormant at times. However, Mark Heitlinger of the Nature Conservancy has volunteered to take over as chair. In the future, this may become one of our busier committees because the time is ripe for the ARC to have its views on riparian management considered as we get about the business of "closing the gap." Mark is going to need some help, so if you can help out in this area let him know.

Because the ARC intends to become more involved with land use issues, the Executive Board has decided to formulate and adopt a land use policy. A formal policy is needed so that the ARC can be consistent regardless who is speaking on behalf of the organization. The membership will soon be receiving a draft policy statement for comment.

Marty Jakle

Water Resources Committee Report

The Instream Flow Task Force has found new life and there has been a bill introduced in the State Senate to enact instream flow legislation.

The long idle task force which had not met in the past four years met in February and again in March and are doing a final review of both the biology and hydrology subcommittee reports. These reports outline the technical steps for securing an instream flow right. Also, rules are being drafted to start the final step in the rules making process. This is good news. These are actions which the ARC and others interested in seeing instream flows become a reality, have been urging.

On another front, Dr. John Leshy, ASU law professor, drafted a bill designed to protect instream flows. This bill, SB 1109—the Riparian Protection Act, is a strong one.

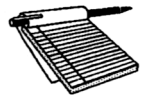
The bill was heard by the Senate Environmental Committee on February 27. I testified on behalf of this bill along with representatives of the Audubon Society, Sierra Club, Tucson Rod and Gun Club, Arizona Flycasters, Pima County Board of Supervisors, and others. This bill has a broad base of support.

It was referred to subcommittee where a few changes were made. It was passed by the Environmental Subcommittee and is scheduled to go to the Senate floor during the first week of April. Unfortunately, in the struggle through the system, all of the wording pertaining to groundwater depletion and its effects on riaprian habitat has been stripped. What is left is a plain instream flow bill.

The prognosis of even this stripped down version passing is not good—maybe 20 percent. The excised riparian and groundwater depletion parts of this bill are headed to a study committee which will take up these issues in October.

Marty Jakle, Chair
Water Resources Committee

Secretary's Report



Our 1990 meeting in Tucson was a success with 117 people attending. We currently have approximately 550 members though only 49% of these have paid their 1991 dues. Unfortunately, time has not allowed me to send out a new 1991 statement, but please be reminded that 1991 dues are needed now. The label on this newsletter indicates the expiration date of your dues.

Cindy Zisner
Secretary

Treasurer's Report

Balance, January 1990 . .	$5,146.75
Deposits (incl. registrations, dues, donations	6,604.76
Total deposits	6,604.76
Expenses	
Donations (Heritage, Urban Wash Forum) . . .	. . 148.87
Newsletter ($778.51/issue)	2,365.53
T-shirts, 1990 meeting . . .	. 560.00
Bibliography	. . 61.73
Annual meeting	3,341.90
Reimbursements to officers	. 150.39
Display, Downing Displays	. 729.14
Total expenses	7357.56
Balance, March 31, 1991 .	$4,393.95

Cindy Zisner
Treasurer

The ARC Traveling Exhibit

One of the Council's primary functions is education — letting people know what riparian areas are and why the general public should care what happens to these valuable areas. We have ordered a fabric-covered tabletop display unit that can be set up with photographs, text, posters, and other materials to provide an audience with whatever message one wishes to impart.

The exhibit will be available for display by May with a collection of mounted photos and general riparian text blocks that adhere to the fabric with velcro. The display can be changed at will to accommodate the audience.

If a Council member would like to use this display for a conference, fair, school, or other event, please contact:

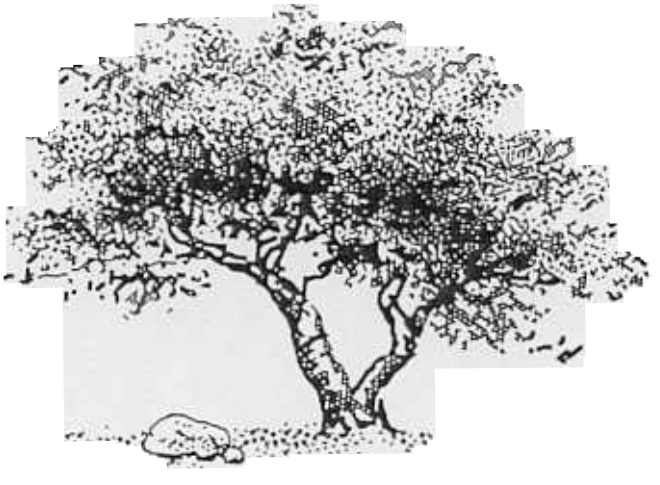
Tana Thornburg, ARC Education Chair
Arizona State Parks Department
800 W. Washington, Suite 415
Phoenix, AZ 85007
542-1996

We're Movin' On

Now to add to this column by telling everyone that it has been wonderful to know all of you over the years that the Council has been in existence. I would like to thank everyone who has helped make the Council become a reality and a recognized voice in our state. In the very near future I will be resigning from the position of Secretary/Treasurer because I will be moving out of state. My husband has taken a position in Atlanta, Georgia, and we will be moving there as soon as we are able to sell our home (if not sooner). I will really miss Arizona and hope that some of you will keep in touch and let me know how the Council is doing. Diane Laush has consented to take over my position and the Center for Environmental Studies will remain as the mailing address.

Thank you all,

Cindy D. Zisner
Secretary/Treasurer



ARIZONA RIPARIAN COUNCIL

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Marty Jakle, Vice President ..... (602) 870-6764
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Marty Jakle, Water Resources ..... (602) 870-6764

Newsletter

Ron Smith, Editor ..... (602) 445-6678

Statement of Purpose

The Arizona Riparian Council (ARC) was formed in 1986 as a result of increasing concern over the alarming rate of loss of the State's riparian ecosystems. It is estimated that less than 10% of the State's original riparian acreage remains in a natural form. These habitats are considered Arizona's most rare natural communities.

The purpose of ARC is to provide for the exchange of information on the status, protection, and management of riparian systems in Arizona. The term "riparian" is intended to include vegetation, habitats, or ecosystems that are associated with bodies of water or are dependent on the existence of perennial, intermittent, or ephemeral surface or subsurface water drainage.

This newsletter is published quarterly to communicate current events, issues, problems, and progress that involves Arizona's riparian systems. It also serves to inform you the members of ARC about important items of Council business, and as a forum for you to express your views or news about riparian topics. To contribute articles or information for future issues, please send all materials to:

Ron Smith, ARC Editor
1712 Pine Woods Rd.
Prescott, AZ 86301

Any person or organization interested in the management, protection, or scientific study of riparian systems, or some related phase of riparian conservation is eligible for membership. Dues are $5.00 annual; additional contributions are gratefully accepted. For more information about ARC or to join, write to:

Arizona Riparian Council
Center for Environmental Studies
Arizona State University
Tempe, AZ 85287-1201

Calendar

- April 23-25
  International Canada Goose Symposium
  Marc Plaza Hotel, Milwaukee, Wisconsin
  For information call Donald H. Rusch (608) 263-6882
- April 27-28
  Silvicultural Workshop
  8:00-5:00, Rm. 103, School of Forestry
  Northern Arizona University
  Sponsored by the Plateau Group of the Sierra Club and Northern Arizona Audubon Society.
- May 3-5
  Riparian Natural History Weekend
  Dead Horse Ranch State Park
  A weekend seminar open to teachers
  Sponsored by A.A.L.E. and the Az. Game & Fish Dept.
  Call Randy Babb at 942-3000 or 1-800-824-2456 for details.
- May 29-31
  5th Symposium on Artificial Recharge of Groundwater
  Westward Look Resort, Tucson
  Sponsored by U. of A. Water Resources Research Center
  Registration is $75.00, incl. lunch, coffee, proceedings
  For more information call Susanna Eden
  (602) 621-7607
- June 8-9
  Rivers Fair
  Valley West Mall, Phoenix
  Exhibits, displays, demonstrations
  Call Mark Wisehart for information at 262-7797.
- June 20-23
  Policy conference on water resource conservation and river protection
  Denver
  Sponsored by the Wilderness Society and American Rivers
  Call (202) 547-6900 for more information.
- June 23-26
  Thorne Ecological Institute
  Explores the management of water, wetlands, and riparian corridors. $325.00 fee includes food, lodging, instruction, and transportation.
  Bailey, Colorado
  Call Susan Q. Foster at (303) 499-3647 for information.
- September 28
  Verde River Days
  Dead Horse Ranch State Park
- September 27-29
  A.A.L.E. Environmental Education Conference
  Prescott Pines Baptist Camp
  Open to anyone interested in environmental education
  Call John Stair at 621-7269 for details.

BT5 1005
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Arizona Riparian Council
Tempe, Arizona *85287-3211*

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