

Arizona's Environmental Quality Act A Legislative Milestone

ONE OF the most significant environmental events to occur in Arizona over the last several years is the enactment of the new state Environmental Quality Act. The law, which became effective on August 13, 1986, emerged after several years of vigorous debate and conflict among the state's myriad interests, and represents a consensus achieved at the urging of then-Governor Bruce Babbitt.

The EQA abolishes the former Water Quality Control Council and creates a new Department of Environmental Quality, which will be headed by a single director to be appointed by the Governor. The DEQ, which comes into existence on July 1, 1987, will possess broad regulatory authority over water and air quality, as well as over solid and hazardous waste.

In addition, the EQA abolishes the Board of Pesticide Control, and transfers responsibilities for pesticide use to three existing agencies: the Commission of Agriculture and Horticulture (which will adopt rules for pesticide application and for pesticide management areas and buffer zones); the Industrial Commission (which will have responsibility for farmworker safety); and the DEQ (which is to develop



rules creating a non-degradation program for pesticides with the potential for contaminating groundwater).

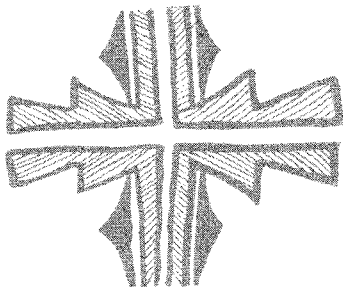
The most profound changes addressed by the new law are in the area of groundwater protection. The EQA establishes a comprehensive permit program to regulate virtually all activities with the potential to degrade groundwater quality. Applicants who wish to obtain a discharge permit must show that they will be utilizing the Best Available Demonstrated Control Technology to reduce harmful discharges to the greatest degree

possible. In some circumstances, cost concerns and site-specific characteristics can be taken into account when determining control requirements. However, new facilities will have to limit discharges of certain chemicals (carcinogens and acute toxics) without regard to cost considerations.

Initially, the EQA classifies all aquifers in the state as drinking water aquifers. As such, these aquifers must meet federal primary drinking water standards, and their water must be potable without treatment. The EQA does specify restricted conditions under which aquifers can be reclassified to a lower quality use. The procedures for accomplishing this require a petitioner to demonstrate that the aquifer or portion to be reclassified is hydrologically isolated from other aquifers and is not being used for drinking water purposes. Also the petitioner must demonstrate that the prospective benefits of the reclassification exceed the prospective costs. The regulations to implement this part of the law are currently being prepared by the Arizona Department of Health Services. The EQA also requires the DEQ to adopt numeric standards by January 1, 1990, for toxic pollutants

(as defined by the federal Clean Water Act) for surface water.

In addition, the EQA also establishes a state "Superfund" program to clean up hazardous waste sites. The law provides \$5 million in the first year, and \$6 million per year thereafter to implement this program, which will allow the new DEQ to clean up hazardous sites promptly, and recover costs at a later date. The funding mechanism for these appropriations is yet to be established and is a matter of some current controversy in the Legislature.



"Cloud Struggling," design on Zuni Water jar.

Another major provision of the new law enables private citizens to file suit against polluters in Superior Court for violations of the EQA. This provision which, in effect, gives individuals "private attorney general" capabilities, also allows citizens to sue the state for failing to comply with the provisions of the EQA. This is modelled on a similar provision defined in the federal Clean Water Act, and the EQA specifically provides for court-awarded attorney fees to citizens bringing such suits.

The new requirements set out by the EQA will come into effect as the ADHS (and subsequently the new DEQ) promulgates the necessary sets of rules. Until that time, the Attorney General's Office has determined that the groundwater protection regulations developed by ADHS in 1984 will remain in effect. As the accompanying article on page 3 indicates, ADHS is now in the process of developing the new sets of rules. ~~~~

Invited Comment

The Arizona Water Information Center sponsored a conference titled *Getting Acquainted: Arizona Water Researchers and Research Users*. The October 11 conference at Arizona State University was an opportunity for research users to tell of their concerns, needs and priorities, and for researchers from Arizona public universities to present the results of their work.

The one-day session included a morning panel discussion of *Water Problems and Research Needs* with Bob McCain (Arizona Municipal Water Users Association), Wilford Gardner (UA Department of Soil and Water Sciences), Errol Montgomery (Montgomery and Associates), and Arizona State Senator Greg Lunn offering their perceptions of pressing water-related issues, and suggesting potentially useful research.

The afternoon program included a poster session highlighting the results of 22 recently completed, or in-process water research projects and a second panel discussion. The topic confronting the afternoon panel was *Communicating Research Needs and Research Findings* and it drew on a variety of research-user perspectives: Peter Deswood (Navajo Nation), Lester Snow (Tucson Active Management Area), Bill Warskow (Salt River Project), and Marybeth Carlile (Southern Arizona Water Resources Association).

Marybeth Carlile, executive director of SAWARA, discussed the art of communicating research results. Following is her presentation:

Communicating Research Needs and Findings to the Wider Public Audience or Communicating on the Same Wavelength

The problem is most aptly presented by a Charles Shultz

Peanuts cartoon. Here are two constant companions, Linus and Sally, having a chat. Linus says, "Did you know I have an uncle who's in a stage play? He says an actor's biggest fear is being in a turkey that folds." Pause—for a thoughtful moment between Linus and Sally, then Sally questions, "How do you fold a turkey?"

This cartoon says a lot about taking your audience for granted, your approach and your lost opportunity.

There are a limited number of opportunities to make your statement and be heard in the "Communication Era" when we are assaulted daily through all of our sense organs with more information than we can possibly assimilate or use. So communicating research needs and research findings must have new thoughts and new packaging if the research is to be used by the wider public audience.

The first questions to ask yourselves as researchers are: 1) What do you want to communicate? 2) Do you really want to communicate with others outside the research world and why? and 3) Whom do you want to communicate with?

In this discussion, my main themes will center on audiences, verbal communication and reaching your publics and addressing their needs.

There is so much material to choose from, especially in the water world, and so many symposiums offered that audiences tend to become very selective and often cynical about what they can gain from the offerings. With so much information available, I believe the public is looking for an easily digestible capsule of a potentially more complicated problem or lengthy treatise. If the public appetite is whetted, further investigation may result. If not succinctly phrased, neatly packaged or clearly stated, the report may not get a second glance.

Verbal communication of research results gives a rare opportunity for

personal interaction, but requires careful preparation and attention to details. Verbal communication, well done, can be strategic in influencing the listener—and provides an opportunity for clarification and feedback no other medium allows.

As for other modes of communication, the general public seems to go for the easy way to gain information. Turning on the radio, watching television, scanning the newspaper and reading thoroughly only those articles or books appropriate to one's professional needs seems to be typical unless you are teased, conscience struck or dedicated to a cause! Or if it affects your financial future or personal security. With that specter, how do you fit in?

You must understand where your audience is coming from... what questions does it want answered and what are its needs and wants. Your audience is trying to determine what your agenda is and what you are trying to say, then it will decide if what you are offering is needed.

The Arizona public, particularly in the urban areas, is probably the most sophisticated anywhere on water matters. For the most part, it cares and that is half the battle.

The other half is persistence and using to their best effect all of the communication channels available to serve the public's needs. What are those needs? First, there is the need for the right information and enough of it to act wisely; second, it must be easily accessible in a familiar medium; third, the public needs to be treated as equals and pulled into the information system and guided through the maze of scientific and technical terminology to useable information; and, fourth, the public needs to be convinced that the information is needed at all. The researcher generally does not have the time to devote to simplifying and integrating his or her results to match a public need or wider picture, but this process is a necessary link. Who else is to be that interpreter or

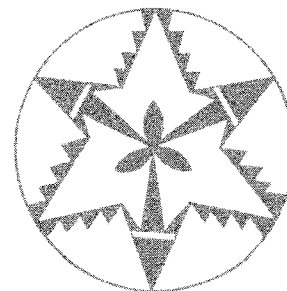
integrator to continue the flow of information from sources to user?

Getting on the same wavelength seems to be a good deal of the answer. ~~~~

Legislative News

Two important pieces of federal legislation affecting water were passed by the 99th Congress:

Safe Drinking Water Act The act includes two provisions to develop state programs for water resources protection. The two provisions are: 1) Each state is to develop a program to



"Star with Clouds," design on plate from San Ildefonso Pueblo.

protect from contamination areas around wells that supply public drinking water systems. EPA could provide grants to a state for 50 to 90 percent of program development costs. The bill authorizes \$20 million annually in fiscal 1987-88 and \$35 million annually during 1989-91. →

Environmental Quality Act Regulations Being Developed

Under the new Environmental Quality Act, the Arizona Department of Health Services (and later the Arizona Department of Environmental Quality) is charged with developing rules to make the new law operational. ADHS has made progress in the development of EQA regulations in four important areas.

First, emergency regulations were adopted on December 5 for the Water Quality Assurance Revolving Fund. A public participation process (which included public meetings in Tucson and Phoenix in early January) has been instituted. Thus far four sites needing immediate action have been identified for funding under the WQARF. Eventually the regulations will be applicable to all remedial actions as authorized by the EQA.

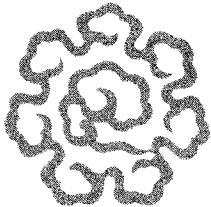
A second set of preliminary regulations is being developed to implement the Aquifer Boundary and Protected Use Classification provisions of the EQA. ADHS and the Arizona Department of Water Resources developed a concept paper to identify the salient issues. Public workshops were held on

December 17 to facilitate further input as the rules were being developed. Preliminary draft regulations were written and distributed for public comment at the end of December, and public meetings were held in Tucson and Phoenix in mid-January.

Preliminary draft regulations have also been prepared for the Aquifer Protection Permit Program. These draft rules were disseminated statewide in December and public meetings were held in Tucson and Phoenix in mid-January for additional input. Several issues requiring further clarification were raised at these meetings, and ADHS anticipates the need for a subsequent public meeting before final regulations are submitted to the Attorney General's Office.

Also ADHS has developed a preliminary draft of a concept paper to lay the groundwork for the development of the Agricultural Pesticide Groundwater regulations. Public workshops or meetings on this issue are tentatively scheduled for March. ~~~~

2) The Environmental Protection Agency is authorized to award grants of up to 50 percent of costs for demonstration programs to protect aquifers that are a community's "sole source" of drinking water. For those grants, the bill authorizes \$10 million in fiscal 1987; \$15 million in 1988; and \$175 million annually during 1989-91. The act requires EPA to issue permanent standards for 83 drinking-water contaminants. These new standards will also have to be adopted by Arizona as part of its new Environmental Quality Act. Finally, the act allows Indian tribes to operate their own public water systems supervision programs.



*Japanese textile design
depicting clouds.*

Water Resources Development Act Authorizing \$16.3 billion in grants for a variety of water projects, this omnibus bill is the largest public works measure approved by Congress since 1970. Under the act, the decision making and the funding for projects will be shared by users through many different non-federal institutions—state and local governments, flood control districts, irrigation districts, electric utilities and other mechanisms.

Included are several projects for Arizona. The federal government will pay \$19.55 million of the total cost of \$26 million for the first phase of a bank erosion project on the Rillito River. A groundwater recharge study in the Tucson and Scottsdale areas is funded for \$250,000. An \$11.9 million flood control project on the Little Colorado River in Holbrook will receive \$8.9 million from the federal government, and an \$8 million flood control project on the San Francisco River near Clifton will receive \$4.5 million. ~~~~~

Research News

Each issue of the newsletter will present brief descriptions of water research projects that are relevant to Arizona. The research described in this issue was presented as part of a poster session at the fall Arizona Water Information Center conference at Arizona State University.

Watson Lake - Arizona's Most Eutrophic Reservoir: Causes and Consequences

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Selected aspects of the water quality of Watson Lake, a small reservoir located just north of Prescott, Arizona and its two primary water sources, Granite Creek and the Sundog Wastewater Reclamation Facility, were investigated.

During the study period, seventy times more nitrogen and sixty times more phosphorus were contributed to the watershed above Watson Lake by the wastewater facility than by Granite Creek.

From analysis of Watson Lake, it would appear that the applicable state standards for surface waters (R9-21-204) have been compromised. Specifically, blue-green algae blooms were visually evident in the lake and putrescent and odorous bottom sediment deposits were encountered. The combination of high pH and ammonia-nitrogen concentrations resulted in several calculated unionized ammonia concentrations that exceeded recommended standards. Instantaneous measurements of dissolved oxygen also revealed concentrations below recommended standards.

Water Rights — How Much Are They Worth? Western Water Markets and Valuation of Water Rights

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University of Arizona
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Valuation of water rights is an important issue in Arizona and the West as agriculture, industry and growing cities all desire reliable water supplies but face limited water resources. Political and economic pressures for water transfers emerge as the following occurs: water becomes fully appropriated; new water supply development becomes expensive; and new users can only be accommodated through transfers from established water rights holders. Those conditions are prevalent throughout the West.

Voluntary water sales at prices negotiated between buyer and seller (market transfers) are one means of transferring water from current rights holders to new users. The research investigates advantages and disadvantages of water markets which need to be considered by policymakers as they decide whether to encourage market transactions and what restrictions (if any) to place on market activities. Prices generated in market transactions can provide useful information on the value of water rights. The project also examines water markets and prices in six western states, including Arizona. Non-market valuation techniques are a helpful supplement to market price information in valuing water rights and several non-market valuation approaches are described.

Microbial Assessment of Water Quality at Lake Powell

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Kristine Brenneman
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Lake Powell is a 170-mile long basin formed by the damming of the Colorado River by the Glen Canyon Dam at Page, Arizona. The Glen Canyon National Park is a boating and camping recreational facility attracting thousands of visitors each summer. A survey of the bacterial indicators of fecal pollution was undertaken by the National Park Service to assess the impact on the lake. High-density use areas (primarily beaches) were designated by park rangers in the field, and five three-day sampling trips were scheduled throughout the summer to include these sites. Water temperature, pH, and Secchi depth were taken in the field. Water samples collected in the field were returned to the laboratory and filtered to assay for both fecal coliforms and fecal streptococci. Several popular beaches had consistently high bacterial counts. High counts were not confined to any one part of Lake Powell, correlating more with density of use. In general, the marinas did not exhibit high bacterial counts. At most sites, bacterial counts went down over the season. Beaches with high bacterial counts should be more intensively studied over several seasons to determine long-range effects of recreational use.

Potential Costs and Benefits to Arizona Agriculture of the Central Arizona Project

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Station

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The overall objectives of this study are to examine the economic benefits and costs to farmers in Central Arizona irrigation districts of water to be delivered via the Central Arizona Project. The focus is on agricultural benefits and costs.

The study measures the potential impact of substituting CAP water for overdrawn groundwater supplies on projected rates of increase in groundwater pumping costs. New project benefits are calculated as the difference between average total water costs per acre-foot with and without the project. A present worth analysis of the CAP is conducted by discounting the stream of annual net benefits from positive to negative, or from negative to positive.

The conclusion of the long-run cost model and of the sensitivity analysis is the following: Farmers in most irrigation districts would find themselves worse off with the CAP than they would without it for many years to come.

Resources and Information

More resources and information are available to people interested in water issues than many realize. This is certainly true for the general public, but also true for professionals involved with water affairs, whether as researchers, managers or administrators.

To acquaint readers with various sources of water-related information, the *Water Resources News Bulletin* will feature each issue a resource of interest to people concerned with water affairs. The featured resource may be a database, a government agency, an academic program or other useful source of information.

This issue features Arizona newsletters that provide coverage of water affairs.

Arizona Water-Related Newsletters

All of the following newsletters are available free of charge:

Access. Bimonthly newsletter offers brief summaries of publications, information sources, and regulatory actions on water and air resources, hazardous wastes, land use, risk assessment, toxic substances and other environmentally related topics. For additional information contact: Council for Environmental Studies, College of Agriculture, University of Arizona, 1109 E. Helen St., Tucson, AZ 85719. (602) 621-2753.

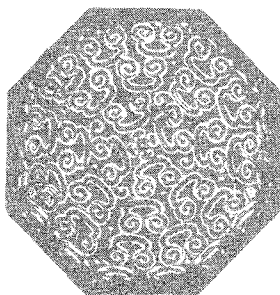
Agri-Business Reporter. Bimonthly newsletter provides coverage of water issues affecting irrigation districts and ranchers and legislative matters as they affect agricultural interests. For additional information contact: Agri-Business Council of Arizona, Inc., 333 W. Indian School Rd., Suite 209, Phoenix, AZ 85013. (602) 274-3422.

Arizona Waterline. Published quarterly by the Salt River Project, this newsletter addresses the basics of Arizona water law and the issues involved in the state's future water picture. For additional information contact: Athia L. Hardt, Editor, 641 W. Linger Lane, Phoenix, AZ 85021. (602) 870-1189.

Groundwater Quality Update. Quarterly newsletter presents statewide groundwater quality news and issues with an emphasis on Superfund sites. For additional information contact: Editor, Environmental Health Services, Arizona Department of Health Services, 2005 N. Central Ave., Room 400. Phoenix, AZ 85004. (602) 257-2330.

Insight. Quarterly newsletter informs civic leaders of significant matters relating to water, energy and the Salt River Project. For additional information contact: Salt River Project, Communications & Public Affairs Department, P. O. Box 52025, Phoenix, AZ 85072-2025 (602) 236-8254.

Water Planning News. Quarterly newsletter reports on the Department of Water Resources' planning efforts, focusing on research findings related to the development of the state's second groundwater management plans. For additional information contact: Arizona Department of Water Resources, 99 E. Virginia, Phoenix, AZ 85004. (602) 255-1546.



Cloud design on 13th century Chinese box.

Water Words. Bimonthly newsletter features current issues affecting the Tucson water basin with special emphasis on CAP, Casa del Agua and developments in Washington D.C. Occasional special editions are published on current topics of interest. For additional information contact: Southern Arizona Water Resources Association, 48 N. Tucson Blvd., Suite 106, Tucson, AZ 85716. (602) 881-3939.

Watergram. Bimonthly newsletter discusses water issues as they relate to the construction of CAP. For additional information contact: Central Arizona Project Association, 3030 N. Central Ave., Suite 812, Phoenix, AZ 85012. (602) 248-0226.

Recent Publications

Publications of the Natural Resources Law Center

Western Water: Expanding Uses/Finite Supplies, 406-page notebook of outlines and materials from a three-day, June 1986 conference. \$60.

Getting a Handle on Hazardous Waste Control, 361-page notebook of outlines and materials from a two-day, June 1986 conference. \$50.

Western Water Law in Transition, 415-page notebook of outlines and materials from a three-day, June 1985 conference. \$40.

The above publications are available from the Natural Resources Law Center, University of Colorado, School of Law, Boulder, CO 80309-0401.

Hydrology and Water Resources in Arizona and the Southwest, Volume 16

This volume contains papers presented at the meeting of the Arizona Section—American Water Resources Association, Hydrology Section—Arizona-Nevada Academy of Science and the Arizona Hydrological Society, April 1986. Copies are available from Arizona Section, American Water Resources Association, 845 North Park Avenue, Tucson, AZ 85719, c/o Dale Wright. \$14.

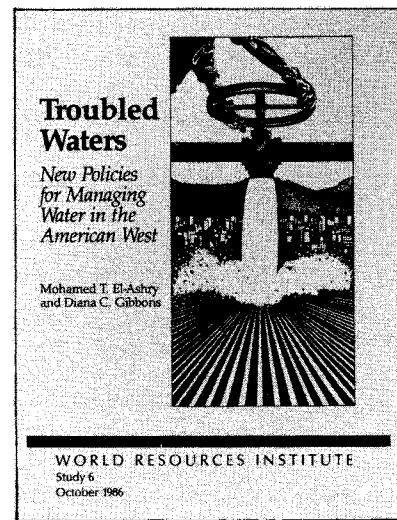
Troubled Waters:

New Policies for Managing Water in the American West

by Mohamed T. El-Ashry and Diana C. Gibbons

The authors discuss present western water laws and institutions describing them as being designed for an earlier era and not in general adapting to the new demands on

water resources. Further, they explore the nature of water demand in the agricultural and municipal sectors and outline policies for maximizing the efficiency of water use and minimizing the conflicts inherent in policy change. Published by: World Resources Institute, 1735 New York Avenue, NW, Washington, DC 20006. \$750.

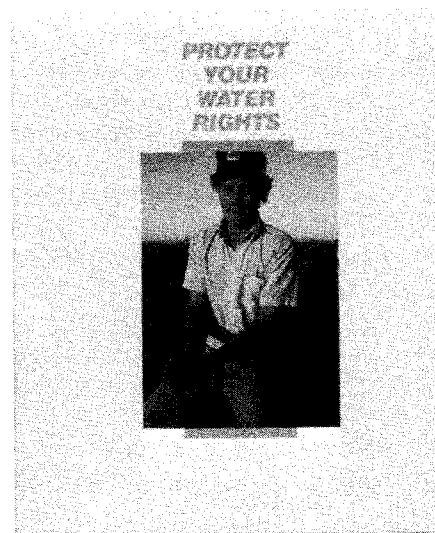


Arizona Water Information Center Publications

AWIC has recently issued two publications:

Protect Your Water Rights

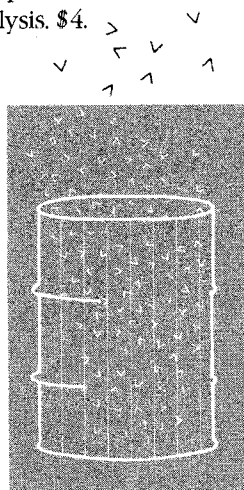
This publication provides Arizona water users with information about the general stream adjudication



process to help them better understand and participate in the Gila River, Little Colorado River and any future adjudications. Title is out of stock, but a new printing is in process. Free.

Issues with Risk

This issue paper provides a general, but practically-oriented examination of the complicated issues which underlie decision-making in risky situations. The booklet is the first of a series with other papers to follow addressing more specific water-related risk situations. The series is designed for professionals whose work requires an understanding of risk analysis. \$4.



The above AWIC publications are available by writing to: Librarian, Arizona Water Information Center, Geology 318, University of Arizona, Tucson, AZ 85721. (602) 621-1648.

New Serial Publications Announced

Two new journals and a newsletter that address water issues have recently been announced:

Journal of the Southwest

This quarterly journal, published in association with UA's Southwest Center, prints materials from across disciplines, including studies of arid lands, water policy, ecology, and

ethnobotany and other multidisciplinary issues that address history, culture, and development in the Southwest. For additional information contact: Editor, *Journal of the Southwest*, Library C327, University of Arizona, Tucson, AZ 85721. (602) 621-2484.

Water Resources Management

This quarterly journal was established to provide an international, multidisciplinary forum for the exchange of knowledge and experiences on the advancement of research, planning, management and development of water resources. For additional information contact: Kluwer Academic Publishers, Order Department - P.O. Box 358, Accord Station, Hingham, MA 02018-9990. (617) 871-6600.

Water Market Update

This monthly newsletter focuses on the promise and problems of emerging water markets in the western United States offering timely and practical information on the forces and events shaping this rapidly changing field. For additional information contact: *Water Market Update*, Western Network, 1215 Paseo de Peralta, Santa Fe, NM 87501. (505) 982-9805.

Conferences

Water Resources Planning and Management Division of the American Society of Civil Engineers

March 16-18, Kansas City, Missouri

For information about this 14th annual conference contact: Robert L. Smith, Chairman, Local Arrangement Committee (913) 864-3807.

Fifth National Symposium on Ground Water Pollution Control

March 26-27, Kansas City, Missouri

Titled *Agricultural Chemicals and Groundwater Pollution Control*, this symposium is intended primarily for state and local policymakers who are concerned with groundwater quality protection. Also, representatives of agriculture, industry, interest groups, academic researchers, and others who are interested in policy issues related to agricultural chemicals and groundwater pollution control are invited to attend.

For additional information contact: Dr. Tom James (405) 325-2554 or Mittie Durham (405) 325-5202.

Association for Arid Lands Studies

April 22-25, El Paso, Texas

AALS, an interdisciplinary organization of arid lands scholars, and the Western Social Science Association sponsor this annual meeting. The meeting involves people interested in a broad range of arid lands topics including water issues.

For additional information contact: William W. Ray, Executive Director, Western Social Science Association, Box 32890, Texas Christian University, Fort Worth, TX 76129.

Society of Wetland Scientists

May 26-29, Seattle, Washington

The Society of Wetland Scientists will hold its eighth annual meeting in conjunction with the meetings of Coastal Zone '87 and the North American Riparian Council. The focus of this year's SWS program will be "Wetland and Riparian Ecosystems of the American West."

For additional information contact:
Dr. Lyndon C. Lee, SWS Program
Chairman, Office of Wetlands
Protection, U.S. Environmental
Protection Agency, 401 M Street S.W.,
Washington, DC (202) 382-5299, (FTS)
382-5299.

Floodplains '87: Realistic Approaches to Better Management

June 9-12, Seattle, Washington

Sponsored by the Association of
State Floodplain Managers, this
conference will focus on realistic
approaches to solving problems
associated with managing
floodplains. The conference will
feature one full track of concurrent
sessions dealing specifically with the
western states' flood damage
reduction problems.

For additional information contact:
Mary Fran Myers, 1987 ASFPM
Conference Chair, IDOT-Division of
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