Report for 2002AZ7B: Information Transfer

- Other Publications:
  - Little, Val, 2002, Graywater Guidelines, The Water Conservation Alliance of Southern Arizona, Tucson, Arizona, 24 pgs.
- unclassified:
  - Water Resources Research Center, 2002, Arizona Water Map, Water Resources Research Center, University of Arizona, Tucson, Arizona.

Report Follows:

WATER RESOURCES RESEARCH CENTER

Public Outreach and Education

New WRRC Associate Director

In mid-February 2002, Sharon B. Megdal joined the WRRC as Associate Director. She also serves as Professor and Specialist, Department of Agricultural and Resource Economics. Dr. Megdal holds a Ph.D. in Economics from Princeton University. Dr. Megdal has years of experience working in water resources policy and management, including working on project development and implementation as a consultant, and has extensive experience working with water professionals and public sector, private sector and tribal officials. She served as a member of the Governor's Water Management Commission. At the WRRC, Dr. Megdal focuses on state and regional water policy and management matters. She writes a public policy column for the WRRC bi-monthly newsletter on Arizona water issues and is involved in several research projects, including a study of private versus public ownership of water systems in Arizona. Dr. Megdal regularly makes presentations on water issues. In January 2003, she was invited to provide a background briefing on Arizona water issues at the first regular session meeting of the Arizona State Senate Natural Resources and Transportation Committee. She has served on the Arizona Water Quality Appeals Board since March 2002. The Board is statutorily responsible for ruling on appeals of water quality permit decisions of the Director of the Department of Environmental Quality.

TRIF Water Program

An important development for the water community at the University of Arizona and for the WRRC in particular was new funding for water programs through the state-funded Technology & Research Initiative Fund (TRIF). The program began in the summer of 2001, with funds becoming available to the WRRC starting in December 2001. For the first two years of the program, approximately $500,000 in annual funding was distributed equally among the WRRC, three National Science Foundation-funded centers at the University of Arizona, and a joint water education and outreach program. During the reporting period, a business plan for the TRIF water program, known as the Water, Economic Development, and Sustainability Program, was developed and approved by the Arizona Board of Regents. Anticipating an increase in program funding to $2,000,000 for the fiscal year beginning July 1, 2003, a competitive grants program for water research, education and outreach was developed and implemented during the reporting period. In addition, a competitive student fellowship program was developed. Following a November 2002 request for proposals, a total of 66 proposals were received in the areas of water quality, water supply and economics, and water outreach and education. Three peer review panels ranked the proposals. Twenty-one proposals were recommended for funding. A competitive process was also used to award 5 undergraduate fellowships and 4 graduate assistantships in the water area. Going forward, a small portion of the TRIF

funding was used to hire a TRIF program and fellowship coordinator (0.5 FTE), who will be housed at the WRRC, to assist with management of the grants program. An external advisory committee to the TRIF water program, consisting of representatives of water providers, industry and government, met for the first time in October 2002. WRRC Director, Peter Wierenga, has taken the leadership in coordinating the activities of TRIF in the water area at the University of Arizona.

WRRC Researcher Receives Fulbright Grant and is Appointed to IBWC Outreach Board

During the reporting period, WRRC senior research specialist Terry Sprouse successfully applied for a Fulbright Grant to study bi-national effluent management in Nogales, Sonora and Nogales, Arizona. Sprouse's study, to begin August 2003, is entitled "Developing options for equitable management of Mexican effluent in Ambos Nogales." Sprouse will work in collaboration with researchers at the University of Sonora. In addition, Dr. Sprouse was appointed to serve on the International Boundary and Water Commission (IBWC) Board of the Citizens' Forum for Southeast Arizona. Sprouse also serves as a representative center on the Pima Association of Governments, Environmental Planning Advisory Committee (EPAC) and Water Quality Subcommittee and participated in the development of the EPAC strategic plan. The plan provides guideline for protection of the environment and water resources in Pima County.

WRRC Future Work on U.S.-Mexico Border with USGS and other Centers

The Arizona WRRC will continue to work with the New Mexico and Texas Water Centers, the USGS and our respective Congressional delegations to obtain a special appropriation for Hydrology and Environmental investigations of trans-boundary rivers and aquifers along the U.S.-Mexico border.

USGS District Chief on WRRC Advisory Board

Nick Melcher, USGS District Chief, Tucson, Arizona serves as a member of the WRRC External Advisory Board. The Board, which meets at least once a year, is responsible for providing guidance to the WRRC for future projects and activities. The Board also evaluates grant proposals for the 104B grant program.

WRRC Web Site Upgraded

Notable improvements were made to the WRRC web site. They include the installation of a site search engine to search the entire web sits; improved printer friendly pages; a new navigation system to work with all browsers; and consistent text and page layouts throughout the site. Also, persons can now subscribe to the newsletter on-line. A total of 97 persons took advantage of this subscription feature in 2002. Also a low-band width version on the web site has been added for handicap access.

Community and Conference Speaking

WRRC faculty and staff continue to provide presentations on state, regional and local water issues to various organizations around the state. Faculty and staff also provide information to various media outlets around the state on water-related issues.

Brown Bag Seminars

The WRRC provides a forum for university and non-university personnel to share their water resources work through our Brown Bag Luncheon Seminar Series. Presentations include:

- Tom Carr of the Arizona Department of Water Resources, "History and Future Utilization of the Yuma Desalinization Plant";
- Dr. Katie Hirschboeck of the Laboratory of Tree-Ring Research, "Hydrologic History from Tree Rings: Droughts, Floods & Climatic Variability in the Southwest";
- Bruce Johnson and Mark Stratton of Metro Water Company, "Evaluation of Water Resources in Almaty, Kazakhstan";
- Kathy Jacobs of the Arizona Department of Water Resources, "Rural Water Issues"
- Dr. Ayman Mohammed Jarrar, Director of the Regulatory Directorate Palestine Water Authority, "Water Resources in Palestine";
- Professor Gao Chaoqun, Institute of Economics, Chinese Academy of Social Science, Beijing, "Water Management Issues in China"

Briefings for International Visitors

The WRRC has provided briefings for interdisciplinary groups of international visitors interested in natural resources and water. These visitors are sponsored by the United States Department of State. Presentations have been made to the group about Arizona water issues. These presentations, which are followed by questions and discussion, have been well received.

Meeting with Governor's Staff

During the reporting period, the WRRC worked on organizing an informational briefing, which was hosted at the WRRC in March 2003, on University of Arizona water resources research, education and outreach for Governor Napolitano's Chief Assistant for Policy, Noah Kroloff. Faculty and staff from many university departments and centers provided information on their water research, education and public information programs so that the Governor's Office would be aware of the resources available through the University of Arizona.

Water Map

The WRRC completed revisions of the state water map poster. The map revision was produced in collaboration with the U.S. Bureau of Reclamation, whose capabilities in GIS and graphics contributed substantially to the success of this project. A total of $20,000 was raised to revise the map. Additional agencies that contributed either monetary and/or technical support included the Arizona Department of Environmental Quality, the Arizona Department of Water Resources, the Central Arizona Project, the Salt River Project, and the University of Arizona Cooperative Extension. Since publication over 3,000 maps have been distributed.

Water Conference

Preparations were made during the reporting period for the 2003 annual water conference, entitled "Local Approaches to Resolving Water Resource Issues: What's Working, What Hasn't Worked and Building on Existing Efforts." The conference was held on May 1 and 2, 2003 in Prescott, Arizona and focused on local and regional approaches to water management, particularly for rural Arizona communities. Conference attendance included about 200 persons from more than 40 Arizona communities. Associate Director Sharon Megdal was largely responsible for developing the program for this very successful conference.

Revision of the WRRC's Desert Landscaping Compact Disk.

Work continued on the *Desert Landscaping: Plants for a Water-Scarce Environment* CD, which allows one to search for plants through a plant selector covering over 600 low water-use plants. Users can search by plant name, browse award-winning landscapes, compare groups of similar plants, or use the plant selector to precisely describe the plants one seeks. The rich multimedia database includes plant size and growth rate, soil and sun requirements, irrigation needs, place of origin, allergens, wildlife interactions, and dozens of other useful factors. Additional information is provided through links to landscaping tips and a bibliography. The original CD-ROM was produced in 1996 and was very popular throughout Arizona. The revised version will operate more quickly and efficiently, have more and newer photos, and provide vastly more information on desert landscaping plants.

The Arizona Water Resource Newsletter

The WRRC publishes the Arizona Water Resource Newsletter six times a year. The newsletter is 12-pages and presents general news, events and issues analysis for the Arizona water community. The newsletter is distributed by mail free of charge to over 2,200 individuals and is available on-line. Sections include: Water Vapors, News Briefs. AZ Water Community News, Guest View, Legislation and Law, Publications, Special Projects, Announcements, Outside Readings and Public Policy Review by Sharon Megdal. Goals of the newsletter include: 1) to be a reliable source of varied water-related news and information; 2) to provide water related news and information not usually

covered by the news media; 3) to broaden readers' awareness of critical water issues of importance to the state; and 4) to serve as an Arizona water "bulletin board", enabling water-related organizations and agencies to publicize news and information.

In 2002, the newsletter attracted over $6,000 from outside agencies and organizations, to help cover publication costs.

Articles and features from the newsletter have been reprinted in Capitol Times, U.S. Water News, local newspapers throughout the state and various state water newsletters throughout the county.

Arizona Water Resource Newsletter articles for this year included: *"Dry* Power Plants Produce Energy Using Less Water;" "Rural Northern AZ Plans Its Water Future;" "First Arizona Water Treatment Plant Using Ozone Now On-Line;" "System Provides Real Time Water Quality Information;" "Budget Cuts Take Toll on ADWR's Operations;" "Bill Would Settle Tribal Water Rights; "2002 Farm Bill Has Options for Arizona; and, Q & A With Herb Guenther, New ADWR Director."

The Arroyo Newsletter

The Arroyo newsletter is published less frequently and focuses the entire publication on one topic. Topics for Arroyo are usually issues that are presently being discussed by citizens and decision makers. The additional newsletter space allows for an in-depth analysis of the issues and perspectives surrounding the topic. The featured topic for this year's issue of the Arroyo Newsletter was "Arizona Rural Water Issues Attracting Attention."

K-12 Water Education Programs

The WRRC WET (Water Education for Teachers) Program Coordinator is the state representative for the National Project WET program. As such, the WET Program Coordinator is responsible for promoting an understanding of water and water-related issues statewide. Project WET activities provide an opportunity for people of all ages in all places to better understand the water resource issues facing their community and the world. The position of WET coordinator is funded by the state, through WRRC, but this year the coordinator received additional grants totaling around $319,000 from the Bureau of Reclamation, the Arizona Department of Water Resources (ADWR), the Central Arizona Project (CAP) , the City of Phoenix and National Project WET. Project WET also receives $15,000 annually and from the state-funded Technology & Research Initiative Fund (TRIF).

WRRC has an ambitious and productive water education program for classroom teachers and educators. WRRC coordinates a network of 60 trained facilitators statewide that lead teacher training workshops for over 450 teachers per year and reach thousands of K – 12 students. This program reaches classroom teachers in public and private schools, youth

groups leaders, tribal governments, environmental education centers (including gardens), community colleges and state universities.

Considerable effort, this reporting period, has gone into creating a network of Phoenix metropolitan area facilitators trained in Phoenix-specific water resources and equipped with nationally recognized teaching activities and pedagogy. Funding was provided by TRIF. Through additional Arizona Department of Water Resources grant funding, a 6-day intensive Arizona water resources training was held in July 2002 and a two-day facilitator training was held February 21-22 bringing the Phoenix facilitator network up to forty facilitators. These facilitators are offered ongoing training opportunities and small stipends for 8-hour workshops delivered through the grant. During the next reporting period, the Bureau of Reclamation has committed to funding the development of additional facilitator networks in northern and southern Arizona.

Grant funding discussions continue with the ADWR Tucson Active Management Area (AMA) and the City of Tucson. In addition, workshops are conducted with cooperation from Cooperative Extension specialists, the Science Coordinators and/or the Staff Development Coordinators for school districts in Arizona, Arizona State Parks, and the Natural Resource Conservation District Education Centers.

National Water Education Day – Water Festival

The Project WET Coordinator, is responsible for planning, organizing and implementing an annual Water Festival for National Water Education Day. The Arizona water festival is one of the simultaneous water festivals being held in all 50 states. In this and other efforts, the coordinator has a responsibility to stay connected to the education community as well as the water community.

The Water Festival celebrating National Water Education Day, held in September 2002, benefited from the sponsorship of the U.S. Bureau of Reclamation, Arizona Department of Water Resources, Salt River Project, Central Arizona Project, Arizona Department of Environmental Quality and Scottsdale School District Elementary Schools. An extraordinary, interactive educational opportunity was offered to 1000 4th grade students and their teachers in Arizona. Planning for 2003 water festivals has begun in Safford and Surprise, Arizona.

Tucson Interactive Water Education Exhibit

The Tucson Interactive Water Education Exhibit was created to offer schools state of the art information on water in the Tucson AMA. The exhibit was set up at elementary schools so that librarians and teachers could lead students through the exhibit over the course of a week or two. The color-coded sections of the Tucson Interactive Water Education Exhibit included:

I. Water in the Desert
II. Water Cycle

III. Sources of Water
IV. Water Uses
V. Water for the Future
VI. Water History

In 2002, the Tucson Interactive Water Education Exhibit was hosted in four different school districts and been toured by more than 5,000 students. The response from teachers and librarians was so overwhelmingly positive that the Tucson AMA funded a new grant cycle for the 2002-03 school year. During the summer months, the Interactive Water Education Exhibit was set up at the Arizona Sonora Desert Museum.

Groundwater Flow Model Demonstrations

As a resource for teachers seeking water resources education information, the Project WET coordinators train teachers to use water oriented teaching tools. The groundwater flow models are an incredibly good tool for teaching about groundwater and aquifers. Groundwater flow model demonstrations are conducted with visiting scientists, government employees, and at all educator workshops. Groundwater presentations conducted with WRRC flow models reached over 2,000 students and 500 adults this year. Groundwater flow models are maintained by WRRC staff for use by teachers and for use at training workshops.

WATER CASA

Formed in 1997, the Water Conservation Alliance of Southern Arizona (Water CASA) provides a means for member water providers to augment their individual conservation programs and to improve the region's overall water conservation efforts. Water CASA's membership includes Avra Water Co-op, Community Water Company of Green Valley, Flowing Wells Irrigation District, Town of Marana Water Department, Metro Water District, Oro Valley Water Utility, Pima County Wastewater Management, and the U.S. Bureau of Reclamation. The annual budget for WATER CASA is approximately $235,000. This year it received grants totaling around $110,000 from the Bureau of Reclamation, Tucson Water Company, the Arizona Department of Water Resources and from the Technology & Research Initiative Fund.

This alliance has rapidly become an organization effectively using economies of scale and providing a strong, unified voice on water conservation issues regionally. Summaries of Water CASA:s services, activities, and accomplishments follow. More detailed information is available on the Water CASA website: www.watercasa.org .

In October of 2002, Water CASA celebrated its five-year anniversary with a conference attended by over 75 members of the Arizona water conservation community. Keynote speaker Amy Vickers, author of the “Handbook of Water Conservation,” addressed the audience with her talk “Water Conservation: a New Era and New Dimensions.”

Graywater Guidelines

In July of 2002, Water CASA published the booklet "Graywater Guidelines." This convenient reference publication clarifies graywater issues in a simple and straightforward manner. The text is targeted to the interested public enabling the reader to decide if graywater is appropriated for them, and provides guidelines on a variety of appropriate materials and methods of system installation. Copies of the booklet can be downloaded from www.watercasa.org.

Dual Metering Project

With support of the US Bureau of Reclamation, Water CASA has launched the first of three phases of a dual metering project to measure indoor and outdoor water use separately in single family residences. The project will provide, over the next 20 years, information about actual water use by season and through time as landscapes and families mature. The first year's water use records have been generated. These data show generally less out-door water use in this new development during the first year than was anticipated.

Water on the Web

Last year Water CASA successfully completed the Water on the Web pilot program, which enables members' customers to access individual water consumption and conservation information via the web. The goal of Water on the Web is to provide water customers a convenient way to review their monthly water consumption in a format that most importantly enables them to compare their usage with that of their neighbors and the community. Water CASA believes that this pilot program creatively and effectively promotes water conservation by allowing customers to easily compare their water usage through seasons, from year to year, and to similar households.

This analytical consumption comparison promotes customer water awareness resulting in additional, voluntary conservation. Customers also receive either water saving tips or a pat on the back, depending on their water usage. Water on the Web is a valuable service to Water CASA members that lack the ability to provide this information as part of their water bills. The pilot program, was funded by the U.S. Bureau of Reclamation.

Welcome Packets

Water CASA provides its members with a variety of brochures and information pieces that are distributed with a Welcome Packet for new water customers. Water CASA developed and continues to update the literature in the packets. Members distribute more than 300 packets a month to their new customers and also to customers who request conservation information. Water CASA is tracking the water use patterns related to the packets and analyzes the effectiveness of the Welcome Packet program.

Conservation Devices

Bulk orders of conservation devices are made for, and divided among, the members of Water CASA. This is a good example of Water CASA's effectiveness in the use of economy of scale. Water CASA is able to purchase conservation devices at the lowest possible price by bulk ordering. In addition, the US Bureau of Reclamation supports this program with $10,000 toward the purchase of these devices such as showerheads and faucet aerators. Conservation devices are included in Welcome Packets for new customers moving into older homes and are also available to water customers on request. Field staff who respond to customer questions or complaints also hand out devices, which has proved to be effective as a customer service.

Slow the Flow

This year Water CASA and Pima County Wastewater began collaborating on a pilot program to reduce sewer flows through intensive indoor water conservation efforts. In an effort to mitigate sewer flow in targeted neighborhoods which are at capacity, the County will be investing in cost-effective water conservation strategies which will help eliminate the need to replace and expand the capacity of existing sewer infrastructure, a costly and inconvenient strategy. Using a multi-prong approach to reduce sewer flow, save water, and save money, Water CASA has begun developing a pilot program to test the interest, cost-effectiveness, and water savings of various conservation measures.

Collaboration With Jordan

In May 2001 and again in January of 2002, the Center for the Study of the Built Environment (CSBE), in Amman, Jordan invited Water CASA to travel there to head a team of water conservation experts. The team provided water conservation and appropriate plant material information to their counterparts in Jordan. The Association for Educational Development, the U.S. Embassy, and the CSBE sponsored the trip. Water CASA shared the results of its Residential Graywater Reuse Study. A portion of the trip included an extensive tour of Jordan’s centuries old water harvesting structures and techniques.

The establishment of a collaborative relationship with CSBE has resulted in an exchange of ideas and information beneficial to both groups. The exchange of ideas and information continued this year with a visit in June 2002, of a delegation from Jordan representing the Ministry of Water and Education, the Ministry of Public Works, and WEPIA. Water CASA organized a study tour where the 9 delegates enjoyed discussions with area experts on local water issues, tours of Pima County Waste Water Treatment Plant, Sweetwater water reclamation site, Metro Water facilities, residential water-harvesting sites, and the Arizona-Sonora Desert Museum’s wetlands project.