



DIVINING ROD

NEW MEXICO WATER RESOURCES RESEARCH INSTITUTE

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WRRRI Director Bahr receives NMSU Award of Excellence

"In recognition of leadership in the protection and development of water resources for New Mexico in the spirit of NMSU's founding leader," New Mexico State University's executive vice president, John Owens, presented the Hiram Hadley Founders' Award of Excellence to Thomas G. Bahr.

Only the second person to receive this prestigious award—former NMSU president Gerald Thomas was presented with the award recently—Bahr announced at this year's WRRRI Annual New Mexico Water Conference that he will retire as director of the institute next summer.

Tom has led the New Mexico WRRRI since March 1978. Among other duties, he is responsible for coordinating and administering water resources research at all institutions of higher education in New Mexico.

Over the past twenty years, Tom has played a pivotal role in overseeing the evolution of water resources research and administration in our state.

As WRRRI director, Tom has expedited many notable research projects funded through the institute. These include topics on irrigation efficiency, recharge in the Roswell Artesian Basin and other basins, salinity and temperature effects on plants, water treatment for public supply, economic studies on water-use efficiency, a major Ogallala Aquifer study, toxicity of volatile organic compounds, management and policy research on unappropriated groundwater, removal of contaminants from drinking water, runoff and erosion processes, fishery management in New Mexico reservoirs,

water-use transfers, groundwater flow and recharge modeling, transport of organics in groundwater, rainfall effects, improved plant water-use efficiency, optimizing river management, Pueblo Indian water rights, ephemeral stream infiltration and recharge, flow between streams and aquifers, toxic pollutants in surface and groundwater, removal of heavy metal ions from wastewater, and many others.

Involved from the beginning of what became known as the El Paso Water Suit, Tom, in 1982, only two years

into the legal process, was quoted in the institute's newsletter as saying, "When you look at all the resources—brilliant minds and money—tied up in this two-year legal battle, you can't help but wonder if we all would be better off if both sides had used this talent and money to find more efficient ways to use the existing water resources of both sides." His pre-scient comment continues to hold relevance today.

Tom was appointed as the Assistant to the University Attorney to assist in preparation for legal hear-

ings to be held on the University's protest of groundwater applications by the City of El Paso in 1985. Currently, he is co-chairman of the New Mexico/Texas Water Commission, a group representing nearly every entity with policy or management authority over water resources in the Lower Rio Grande, and charged with maximizing the utilization of Rio Grande Project waters to meet everyone's long-term water needs.



Tom Bahr (left) receives NMSU Hiram Hadley Founder's Award of Excellence from NMSU executive vice president, John Owens.

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In addition to his work at the WRRI, Tom has also accepted related appointments during the past two decades. In 1982, he accepted a one-year appointment by the Secretary of the Interior as Director of the Office of Water Policy in Washington, D.C. There he served as the lead departmental official for analysis and coordination of the nation's water policy.

In 1986, Tom took another leave to accept a cabinet post in the Carruthers administration as Secretary of the New Mexico Energy, Minerals and Natural Resources Department. There he was responsible for the state Park and Recreation Division, Game and Fish Department, Oil Conservation Division, Mining and Minerals Division, and Energy Conservation Division. He also served as water policy advisor to the Governor on issues of wilderness water rights, instream flow legislation, wild and scenic rivers and public lands issues.

In 1989, he was appointed by the U.S. Secretary of Energy to a five-member Blue Ribbon Panel to advise the U.S. Department of Energy on its Defense Nuclear Weapons Waste Management Program. An important aspect of this project was policy development related to potential groundwater contamination.

Other state assignments include membership on the New Mexico Water Quality Control Commission and chair

of the Governor's Technical Excellence Committee on Water Resources Task Force.

On the broader level, Tom is a member of several national and international water associations and committees, and has published extensively in the area of water quality management. He is past president of the National Institutes for Water Resources, a network of 54 Water Resources Research Institutes representing each of the 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam.

Tom came to New Mexico from the Michigan Institute of Water Research, which he directed. Tom earned a B.S. in forestry from the University of Idaho, and then an M.S. and Ph.D. from Michigan State University, specializing in water chemistry and biological/physiological aspects of water quality management.

Promising to remain at the helm of the WRRI until a new director is appointed next summer, Tom plans to stay active in the water business through consulting and tending to his vineyard.

As the NMSU Founders' Award of Excellence attested, Tom Bahr has distinguished himself with his outstanding service to the state of New Mexico through his dedication to preserving our precious water resources.



NMTech hydrology students garner national fellowships

A trio of doctoral candidates in New Mexico Tech's nationally renowned graduate program in hydrology recently was awarded prestigious research grants and fellowships, further adding to the program's esteemed repute among the nation's top research universities.

Roseanna Marie Neupauer was awarded one of the U.S. Environmental Protection Agency's 1998 Science to Achieve Results (STAR) Fellowships for Graduate Environmental Study. The fellowship will provide Neupauer with up to \$34,000 per year of support.

The NASA Graduate Student Fellowship in Earth System Science was presented to Mitchell Plummer. Plummer will receive \$22,000 per year of support.

The Horton Research Grant, named in honor of Robert Elmer Horton, considered by many to be the father of modern hydrology, was established to provide financial support to Ph.D. candidates involved with hydrology or water resources research projects. John Michael Sigda received this prestigious award from a field of several top science and engineering doctoral candidates from around the world.

Earlier this year, NMTech's graduate program in hydrology was again rated among the best in the nation in *U.S. News & World Report's* annual issue of graduate school rankings. The recent ranking

marks the third year in a row that NMTech's graduate program in hydrology was ranked as the fourth-best in the United States.



John Sigda, hydrology Ph.D. student at NMTech, was this year's recipient of the Horton Research Grant.



Water resources research grants announced

In October, Congress passed and the President signed the State Water Resources Research Institutes Fiscal Year 1999 budget. The total appropriation was \$5,055,000, a \$502,000 increase over last year. Of the total, \$1 million is to be used to support 1:1 matching grants to be awarded competitively for research addressing regional problems and for which research priorities are to be developed by the institutes and the U.S. Geological Survey. Funds for administering the program, in the amount of \$237,000, have been allocated.

The remaining \$3,818,000 is to be divided equally among the states and territories participating in the Institute program "to support a State-wide competitive program of research education, and information and technology transfer developed in close collaboration with the Institute's advisory panel." These funds reinstate the state water resources grant competition as WRII knew it for many years but which was discontinued three years ago. The competition allows states to set research priorities and the state alone ranks the proposals.

The request for preproposals for the Seed Money Research Program was released in mid-November. The New Mexico WRII sent RFP notices to researchers on its mailing list along with departments and institutes at the state's universities. Information regarding preproposal submission is posted on the WRII Home Page (<http://wrii.nmsu.edu>). The deadline for electronically submitted preproposals was November 30, 1998. This short time frame was needed to comply with a new USGS deadline and to accommodate review by WRII staff and its Review Board. If chosen for further consideration, investigators will be invited to submit a full proposal (also in electronic format) by January 31, 1999. Funding for proposals could begin as early as April 1, 1999 but in no case later than July 1, 1999.

The New Mexico WRII anticipates funding 4-6 new projects, contingent upon the amount of available federal and state appropriations.

The emphasis of the Program is on new information or technology. The following areas will be given highest priority in the selection process:

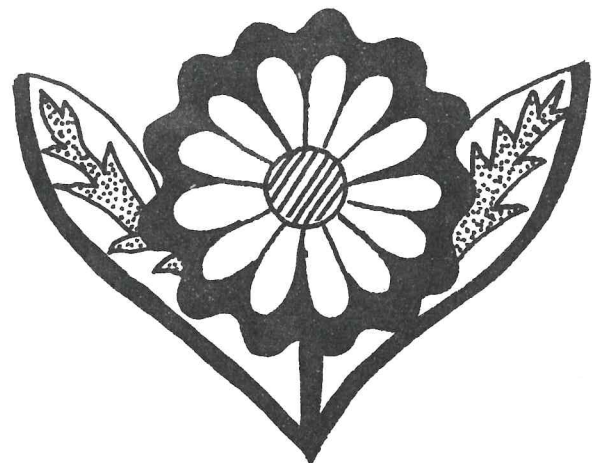
- Research on water conservation, planning and management

- atmospheric-surface-groundwater relationships
- water quality research
- utilization of saline and other impaired waters

The institute will occasionally support studies of a very preliminary nature that deal with innovative concepts that would generally be considered as high risk but of great payoff if successful. Investigators are strongly encouraged to include student participation in their research proposal. The cost-sharing match for this program requires a 1:2 match (federal:state).

Questions concerning the 1999 WRII Seed Money Research Program can be addressed to Darlene Reeves via email at: dreeves@wrii.nmsu.edu.

The Senate confirmed **Charles Groat** as the new U.S. Geological Survey Director on October 21. Interior Secretary Bruce Babbitt notes, "The U.S. Geological Survey plays a critical role in science in this country...We welcome Dr. Groat's considerable talent to lead our premiere science agency in the many important natural resource challenges that lie ahead...[He] has the right mix of academic background, skills and experience..." He has over 25 years experience in earth sciences, and was Associate Vice President for Research at the University of Texas at El Paso, overseeing environmental science and engineering programs.





In fond memory of Albert E. Utton 1931-1998

To longtime participants of the WRRI Annual New Mexico Water Conference, Professor Al Utton's presence at this year's conference was sorely missed. Having attended nearly every annual water conference since the early 1970s, Al will be remembered for his thoughtful comments and questions following many conference presentations, his vast institutional memory of water resources in New Mexico as well as regionally and internationally, and his congeniality to everyone who had the pleasure of knowing him.

After a hard-fought battle against prostate cancer, Al died on September 29 in Albuquerque. He is survived by Mary, his wife of 40 years, their son, John, an attorney specializing in water law who has distinguished himself in the New Mexico water community, and daughter, Jennifer Fergusson. During the many years he lived and worked in New Mexico, he was a well-known teacher, scholar and public citizen. His humor, kindness and vitality endeared him to many. He was 67.

A native of Aztec, New Mexico, Al graduated in 1953 with Phi Beta Kappa honors in geology from the University of New Mexico. While at UNM he was elected and served as student body president his senior year. He then attended Oxford University as a Rhodes Scholar, receiving his law degree from that institution in 1956.

While in England, Al also served as assistant staff judge advocate in the U.S. Air Force Judge Advocate General's Office. He then undertook further law studies at the University of London. He was admitted in 1959 to the Inner Temple of the English Bar as a Barrister, and later that year was admitted to practice law in New Mexico.

He later was to say that even though he cherished his law degree, his most beloved gift from England was his wife, Mary.

After a brief stint in private practice in Albuquerque, in 1962, Al was awarded a fellowship in International and Administrative Law at the Yale Law School and that same year returned to New Mexico to join the UNM Faculty of Law. He remained a valued, distinguished, and beloved member of the Law School faculty until his death.

Al taught in the areas of administrative law, water law, environmental law, and international law, and was admired by a host of New Mexico lawyers who began their studies under his tutelage. During his long teaching

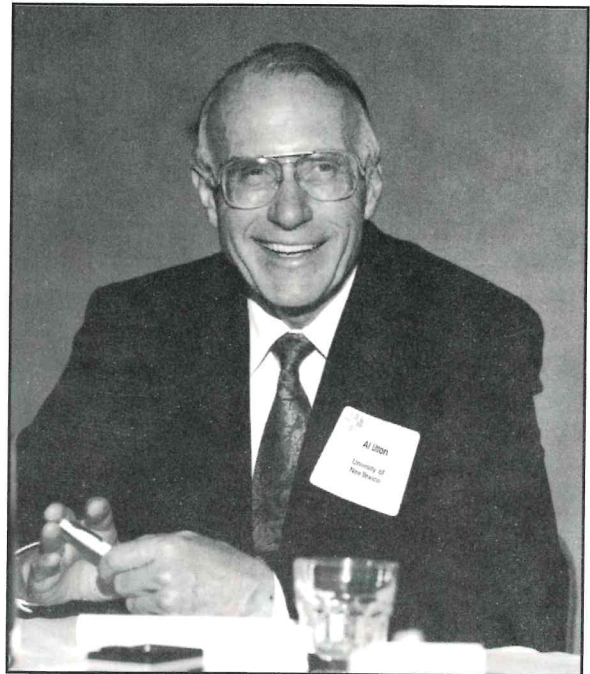


Photo of Al Utton taken at the 1994 Annual New Mexico Water Conference in Albuquerque.

career, he served on every important committee with the Law School as well as serving as Interim Dean.

In addition, Al was often called upon to chair other important committees within the University. On several occasions he represented the Law School by serving as chairperson of the State Judicial Selection Commission. Because of his strong interest and expertise in interdisciplinary study, he was well-known throughout the University community, and frequently worked with colleagues in economics, Latin American studies, political science, business, and public administration.

Early in his career at the Law School, he became Editor-in-Chief of the internationally renowned *Natural Resources Journal*. He created and directed the special certificate program in Natural Resources Studies, and also directed the Natural Resources Center at the Law School. Al wrote and published over twenty books and monographs in various areas of natural resources law and international law. He authored numerous articles which have been published in law reviews and journals around the world. He established a faculty exchange program between the Law School and the University of Granada, in Spain. He also created a certificate program in U.S. Law for foreign service officers of the Mexican Diplomatic Service.



Over the last twenty years, Al focused his considerable talents and energy on international transboundary resources issues. In the late 1980s, Al founded and then served as Director of the International Transboundary Resources Committee of the International Law Association, co-authored a draft U.S.-Mexican Transboundary Water Resources Treaty, and served as a consultant and conference participant on transboundary resources questions in North and South America, Europe, Asia, the Middle East and Africa. Al also served as the Organizing Chairperson of numerous international conferences dealing with international groundwater questions, U.S.-Mexico transboundary issues as well as Canadian/U.S./Mexico relations. In the process, he developed many professional relationships and close friendships.

Closer to home, Professor Utton served for nearly 20 years as chairperson of the New Mexico Interstate Stream Commission, which oversees all the state's major rivers, and he represented the state in negotiating a water rights settlement with the Jicarilla Apache Tribe. He chaired and participated in numerous Bar Association panels dealing with environmental law, water rights, and transboundary resources questions.

In addition, he was active in many community groups and organizations. He served as chairperson of the state Rhodes Scholar selection committee and of the Albuquerque Labor Relations Board. For over 30 years he was secretary and director of the Albuquerque Committee on Foreign Relations, bringing to the city many national and international scholars and diplomats for informal discussion of the international issues of the day.

Active in Democratic politics, he served as state manager of Robert Kennedy's 1968 presidential campaign.

Al was the recipient of local, national and international awards too numerous to list, but three stand out: in 1994 he was given one of the highest honors that UNM bestows upon its faculty when he was selected by the University to deliver the annual Research Lecture. In 1996 he was the recipient of the Distinguished Service Achievement Award from the UNM Law School Alumni/ae Association, and last year, the Mexican Government bestowed upon Al the Aztec Eagle Award—the highest honor given by Mexico to a non-citizen “for service to Mexico and to Humanity.”

In his spare time, Al was devoted to a number of interests and passions. He was an avid Lobo fan, never missing either a football or basketball game when he was in town, and straining mightily to find the Lobos on the radio when he was out of town. He was also an animal

lover and particularly looked forward to the enthusiastic greeting of his pet dogs upon his return.

Al was an aficionado of adobe brick laying, design and construction, having built with his own hands the family's first house in Corrales, more recently a house in Santa Fe and a longtime family residence, fondly referred to as “Casa Utton” on the West Mesa overlooking the bosque and his beloved Rio Grande.

His son, John, said, “My dad once told me that he had laid more than 100,000 adobes in his life. Not only did he love adobe architecture as an art, but also because it represented the natural New Mexico landscape. To him, adobes represented the perfect balance between earth and water, and two of the most natural resources we have.”

Finally, he enjoyed travel and with it the opportunity to meet and learn about peoples and customs of different cultures and countries. Wherever he went, Al enjoyed meeting people and making friends.

“Al Utton was the heart and soul of this institution,” said Dean Robert Desidereo of the UNM Law School. “The institution will go on, but it will take a long time for us to recover from the loss of Al's special gifts and his special presence among us.” Jose L. Martinez, a long-time colleague, observed: “Al was a person who loved life, loved his work, and in turn was loved by everyone he taught or came into contact with. He was truly ‘un Hombre Bueno’ in the finest New Mexico tradition.”

Al Utton's association with the New Mexico WRII spanned nearly thirty years. A member of the institute's Program Development and Review Board from 1969 to 1987, his advice was always well received. Al had served on the Water Conference Advisory Committee since 1983. Just last year, Al took a bus from Albuquerque to the conference site in Tucumcari. He arrived his usual buoyant self and regaled some friends with how much he enjoyed the trip and the interesting people he met.

Even after being replaced on the Interstate Stream Commission, John Utton recalls that his father rarely, if ever, missed an ISC meeting. Al would participate in any water meeting he could attend, John indicated at this year's Annual New Mexico Water Conference.

Whereas memorable adages like “Whiskey is for drinking but water is for fighting” abound, the quote that could best characterize Al Utton's sentiments toward our precious water resource is “Water is for Sharing.”

Our water community will profoundly miss Al Utton.

Contributors include Michael Browde and Robert J. Desidereo of the UNM Law School and John Utton



WRRRI publishes journal on water resources issues

The New Mexico WRRRI in conjunction with the New Mexico Academy of Science has produced the *1998 New Mexico Journal of Science*. This year's journal focused on water resources issues in New Mexico.

The 19 papers contained in the *Journal* provide readers with a broad spectrum of current water issues facing our state. The first paper, written by WRRRI director Tom Bahr, condenses a vast amount of information on New Mexico's water supply, water use, water law and water administration. It provides a backdrop for the other papers, all written for a general audience by experts in their field.

The *Journal* contains the following articles:

- ❖ An Overview of New Mexico's Water Resources - *T. Bahr*
- ❖ Groundwater Recharge: The Legal Realities of Keeping the Hydrologic System Whole - *T. Davidson*
- ❖ Water Rights Transfers in New Mexico: Themes and Current Issues - *C.T. DuMars*
- ❖ How the Colorado Squawfish Reeled in the Animas-La Plata Project: A Legal and Institutional Look at the Endangered Species Act - *E. Newlin Taylor*
- ❖ Water Politics in Southern New Mexico - *G.L. Esslinger*
- ❖ Effectiveness of Conservation Policies on New Mexico Residential Water Demand - *D. Gegax, T. McGuckin, and A. Michelsen*
- ❖ Economics of Water Conservation - *F.A. Ward*
- ❖ Water, Planning, and Administration in the Middle Rio Grande Basin - *W.P. Balleau*

- ❖ Water Conservation in New Mexico Agriculture - *C. Barnes and R. Flynn*
- ❖ The High Plains (Ogallala) Aquifer: Management and Development of the Water Resources in the Southern High Plains, New Mexico - *D.G. Woodward*
- ❖ An Historical Overview of Playas and Other Wetland/Riparian Areas of "Nuevo México" - *M. Greer Deason*
- ❖ Riparian Management on the Bosque Del Apache National Wildlife Refuge - *J.P. Taylor and K.C. McDaniel*
- ❖ Observations on Southwestern Riparian Ecosystems - *J.C. Whitney*
- ❖ Water Conservation through an Anasazi Gardening Technique - *C.S. White, D.R. Dreesen, and S.R. Loftin*
- ❖ Wastewater Treatment in New Mexico - *A. Russell and R.B. Jacques*
- ❖ Potential for Greywater Recycle and Reuse in New Mexico - *S. Trujillo, A. Hanson, W. Zachritz II, and R. Chacey*
- ❖ Enhancing Nitrogen Removal in Submerged Surface Flow Constructed Wetland Systems - *W. Zachritz II, A. Hanson, and B. Thomson*
- ❖ Technologies for the Removal of Arsenic from Drinking Water in New Mexico - *J. Bates, A. Hanson, F. Cadena, B. Thomson, M. Johnson, D. Heil, and A. Bristol*
- ❖ Groundwater Treatment by Cascade Air-Stripping Process - *N. Nirmalakhandan, R. Brennan, and C. Trevizo*

For information about the New Mexico Academy of Science, check out their web site at <http://www.nmas.org>.

To order copies of the *New Mexico Journal of Science* (Vol. 38, November 1998), please complete the order form and mail with a check or money order payable to NMWRRRI to:

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Attn: New Mexico Journal of Science
MSC 3167, Box 30001
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Las Cruces, NM 88003



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USGS reports

The U.S. Geological Survey has published the following New Mexico related publications since the last issue of the *Divining Rod*. The Water Resources Research Institute library has the reports on file. They also may be ordered from the USGS, Federal Center, Box 25286, MS 517, Denver, CO 80225. You may call (303) 202-4700 for price information.

- ❖ **Quantification of deep percolation from two flood-irrigated alfalfa fields, Roswell Basin, New Mexico** by D. Michael Roark and Denis F. Healy (WRIR 98-4096)
- ❖ **Surface-water and suspended-sediment inflow and outflow for Nutria Reservoir No. 3, Zuni Indian Reservation, New Mexico, March 1994 to September 1995** by Allen C. Gellis (WRIR 98-4083)
- ❖ **Description of piezometers installed in the Duranes well field area, Albuquerque, New Mexico** by Condé R. Thorn (OFR 98-415)
- ❖ **Application of nonlinear-regression methods to a ground-water flow model of the Albuquerque Basin, New Mexico** by Claire R. Tiedeman, John Michael Kernodle, and Douglas P. McAda (WRIR 98-4172)
- ❖ **Estimated Use of Water in the United States in 1995** by Wayne B. Solley, Robert R. Pierce, and Howard A. Perlman (USGS Circular 1200)

Newly released statistics on water use from the USGS show that the nation is using less water—402 billion gallons per day (bgd) for all uses, which is 2 percent less than in 1990 and nearly 10 percent less than in 1980, despite a continuous increase in population over that same time period. California accounts for 134 bgd, the largest state total water use in the nation. New Mexico accounts for 0.06 bgd. This report provides water-use comparisons by water-resources region and by state.

Miscellaneous reports

Watershed Stewardship: A Learning Guide is a valuable resource for watershed group members, land-owners, land managers, workers, and volunteers. This 22-chapter guide is an easy-to-use resource that will help readers learn how to:

- form effective partnerships
- know the parts of their watersheds and how they fit together
- understand assessments of watershed conditions
- develop strategies for enhancing watershed resources
- implement effective enhancement projects

The guide was written by a team of Oregon State University Extension Service educators with input from watershed councils, federal and state agencies, industry, private groups, and academia. To order, request publication EM 8714 and send a check (\$32 per copy) payable to Oregon State University to:

Publication Orders-WS1
 Extension & Station Communications
 Oregon State University
 422 Kerr Administration
 Corvallis, OR 97331-2119
 FAX: 541-737-0817
 email: puborders@orst.edu

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The Complete How To Guide to Xeriscaping contains photos of dozens of beautiful and water-thrifty plants that will thrive in New Mexico. This 46-page guide was produced for the City of Albuquerque. Although the guide is particularly useful to central New Mexico, the techniques described and many of the plants can be used throughout the state.

Free copies of the guide can be requested from:

Water Use and Conservation Bureau
 Office of the State Engineer
 PO Box 25102
 Santa Fe, NM 87504
 1-800-WATERNM



Water conference underscores water challenges

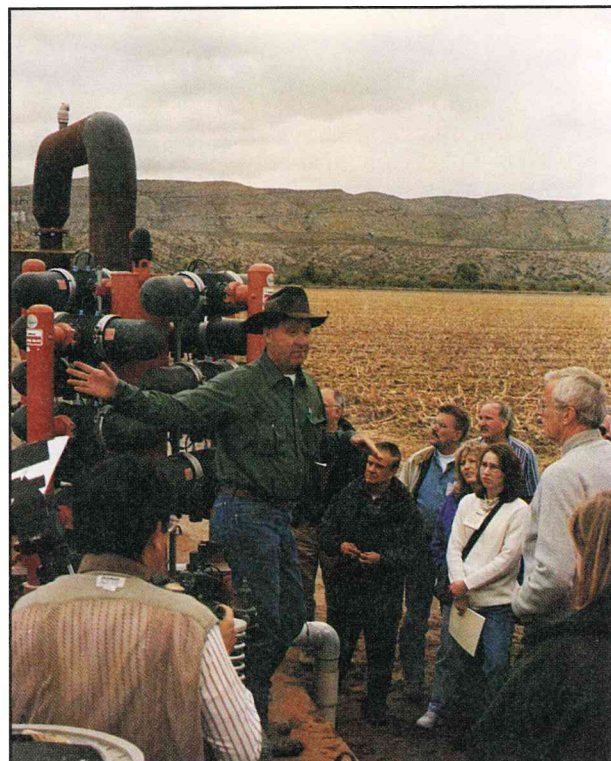
Those attending the 43rd Annual New Mexico Water Conference in Las Cruces in October likely came away with a better understanding of a host of problems facing the Lower Rio Grande, a sense of the magnitude of the issues, and an awareness of the dissension surrounding these problems.

For example, conference speakers described how the Rio Grande Compact is being attacked from various sides including environmentalists who served notice earlier this year that they intended to sue to reopen the Compact so that it will provide a specific water allocation to ensure compliance with the Clean Water Act and the Endangered Species Act. Meanwhile, one Pueblo has informally approached the subject of reopening the Compact to provide additional water use for the Indians—the Rio Grande Compact specifically exempts Indian tribes

from its provisions. Most would agree that reopening the 1938 Compact would be akin to opening Pandora's box.

Other water controversies facing the Lower Rio Grande include the state's right to manage its water without federal intervention, how to best deliver water to Texas as required by the Rio Grande Compact, and how to transfer water from agricultural to municipal use.

A complete text of all conference speakers' comments is being prepared for the conference proceedings, which should be available in the spring. Check WRRRI's Home Page (<http://wrrri.nmsu.edu>) for a notice of the proceedings publication.



Robert Faubion described to water conference tour participants how his subsurface drip irrigation system works. Tour participants also viewed Leasburg and Mesilla diversion dams and canal systems, and toured the new Cervantes chile processing plant in Vado.



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