Divining Rod
Vol. XXXV, No. 3 • October 2012

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Making Hard Choices

Conflict or Cooperation? Water stakeholders examine problems, solutions at conference

by Will Keener

Senator Tom Udall (D-New Mexico) co-hosted the 2012 conference. A white paper, recommending legislative remedies to state water problems, is one expected outcome from the meeting. Photos by Will Keener

Question: If U.S. Sen. Tom Udall (D-New Mexico) and New Mexico State University President Barbara Couture held a symposium on water problems in the state, would anybody come?

Answer: Yes. More than 500 participants with various stakes in the state's water problems, including some attendees from outside of the state, crowded into the ballroom at NMSU's Corbett Center to spend Aug. 28 discussing, listening, and trying to better understand sometimes complex water-related issues.

The meeting, the 57th Annual New Mexico Water Conference, was sponsored by Couture, on behalf of the university and Udall, who plans to use the meeting input to compile new water policy options to take to Congress. The symposium was organized and carried out by the New Mexico Water Resources Research Institute and Senator Udall staff.

University President Couture opened the session by reminding participants of the perspective brought to bear by land-grant colleges like NMSU. "Research is not an end in itself, but instead is a basis for dialog," she told the audience. Water scarcity issues have worldwide repercussions, she said, and NMSU is "becoming a leader in arid region issues." She cited watershed management, desalination, and arid lands hydrology as key areas of the university's leadership.

Divining Rod

Published by
The New Mexico Water
Resources Research Institute

Alexander G. "Sam" Fernald
Director

Catherine T. Ortega Klett
Editor/Coordinator

Will Keener
Writer

Deborah Allen
Project Coordinator

Susanna Heather Glaze
GIS Analyst

Annette McConnell
Admin Assistant Associate

WRRI

New Mexico Water
Resources Research Institute
MSC 3167
PO Box 30001
Las Cruces, NM 88003-8001

575-646-4337
575-646-6418 (fax)
nmwrri@wrri.nmsu.edu
http://wrri.nmsu.edu

Attendees quickly came to agreement on the current state of water conditions:

1. New Mexico, with every drop of water allocated and over-allocated to various users, is in serious trouble.

2. New Mexico is not alone in this trouble, with a multi-year drought impacting much of the West and Midwest. At the same time, the state faces some unique difficulties and some unique opportunities.

3. The name of the conference, "Hard Choices," more than adequately summed up what must be done to address these problems.

NMSU President Barbara Couture: "Water scarcity issues have worldwide repercussions."

At a crossroads

Consensus broke down, however, when it came to what actions need to be taken and when. Some experts advocated for small but sure steps into the future. Others argued that major changes must be made quickly. It was no surprise that there were disagreements. "There are entities in this room that are suing one another over water," said Sen. Udall in his opening remarks. "I believe we are at a crossroads where we have to make some hard choices. We have a choice between conflict and cooperation."

Switching to an archeological perspective, Udall flashed a graph of rainfall data from the past 2,100 years on three large screens in the room. Derived from tree ring studies and historical data, the graph illustrated that there have been far more dry times in New Mexico than wet times. "We are in the worst stretch since the 1950s," Udall said, "and we are not out of it yet." The drought has led to a season of "short tempers and litigation," Udall said. "Determining who has the rights to what water is a story of the West."

Reciting a litany of evidence, including historically high corn prices, low levels in the Mississippi River resulting in stranded barges, lost jobs, and failed crops, Udall called for federal agricultural policy to adapt to this new reality by offering fewer subsidies and providing more emergency aid, when required. He praised a "new federal role of technology leadership, assistance, and facilitation in addressing water issues. However, he emphasized that his role at the conference was to be "in listening mode" to hear all sides of the issues before formulating a plan.

Udall told the audience that a recent peer-reviewed study from Sandia National Laboratories in Albuquerque suggests that the state is particularly at risk for drought impacts, facing losses of $25 billion in income and 200,000 jobs, primarily in agriculture, during the next 40 years. Climate change studies forecast a hotter and drier New Mexico with more forest fires and attendant flooding and erosion. "Climate change loads the dice in favor of drought," Udall said.

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John Wesley Powell, regional and state cooperation, and the value of western water

by Will Keener

The value of water was a key concern in the West long before the first European settlers moved into the area in the 16th Century. This continues to be true today.

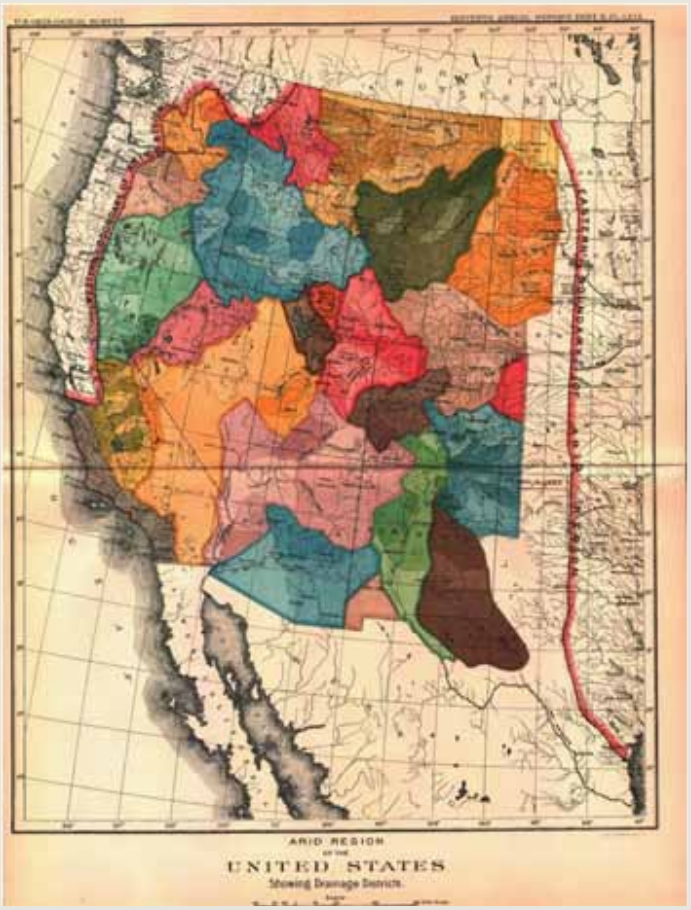
Price is different than value, explained Sen. Tom Udall in his remarks at the conference, harking to the writings of economist Adam Smith. A diamond, for instance is expensive and beautiful, but has little relative usefulness, he said. Water in New Mexico—at roughly $3,000 for 1.5 million gallons of tap water—is cheap, beautiful, and is extraordinarily useful by comparison. The real value of water has created a situation where ". . .the agricultural impact of the present drought is stunning," Udall said.

While the pueblo dwellers and nomadic tribes of the West adapted to the situation with their patterns of settlement and gathering and hunting, the Spanish brought a new idea to the region. The acequias brought water to community farmers in what many view as the first successful establishment of the principles of democracy in North America.

After his post-Civil War exploration of the Grand Canyon, John Wesley Powell and the newly formed U.S. Geological Survey began the difficult task of surveying the Southwest. Powell quickly came to realize the value of water. His suggestion that every settler have access to water, which would have severely limited population of western states, was greeted with skepticism, and opposed vehemently by developers. Bankers, railroad barons, real estate interests, and others put forward the concept of "Manifest Destiny" for the West and fought Powell's efforts in Washington. "Rain will follow the plow" into the West as it did in the Midwest, they suggested.

Funding for the watershed survey was cut off in Congress, Powell fell out of favor, and his work went uncompleted for years. In the meantime, Congress drew different boundaries for the western states. As a result, straight lines and right angles cross watersheds today in an indiscriminant fashion. "This leads to a situation where conflict is more likely than cooperation," Udall noted.

Instead of more rain, the cycle of multi-decadal droughts in the West has persisted, belatedly deflating the theory of



John Wesley Powell's proposal that states be created in the West based on watershed geography would have yielded a map something like this one. A far cry from the actual state boundaries enacted by Congress, these watershed boundaries are again coming into play as regions cooperate to face modern water problems.

Manifest Destiny. Powell did not live to see his realistic views return to favor. Later in his life, Powell was shouted down at a conference in California by water developers who believed they could turn the West into a blooming desert, making use of irrigation projects and dams.

A return to Powell's vision, is one of the reasons for optimism in these difficult times, Udall said at the conference. Regional cooperation, sustainable agriculture, and other modern efforts all point to the same value concept that Powell put forward at the turn of the 20th Century. "We are building on past successes of regional watershed planning both locally and among western states," Udall said.

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New Mexico's "paper water" far exceeds its "wet water," Udall continued. In drought years, the state has failed to meet its downstream obligations to Texas and Mexico 50 percent of the time, he said. Groundwater pumping to alleviate surface water shortages has created other stresses along the U.S. Mexican border from Texas to Arizona.

Improving process/building consensus

Sen. Udall was personally involved in designing the Hard Choices conference, Sam Fernald, director of New Mexico WRRI, said. When he met with Udall to formulate the conference program, the senator suggested a panel of past New Mexico state engineers provide

Morning session at the 57th WRRI Annual New Mexico Water Conference at NMSU's Corbett Center.

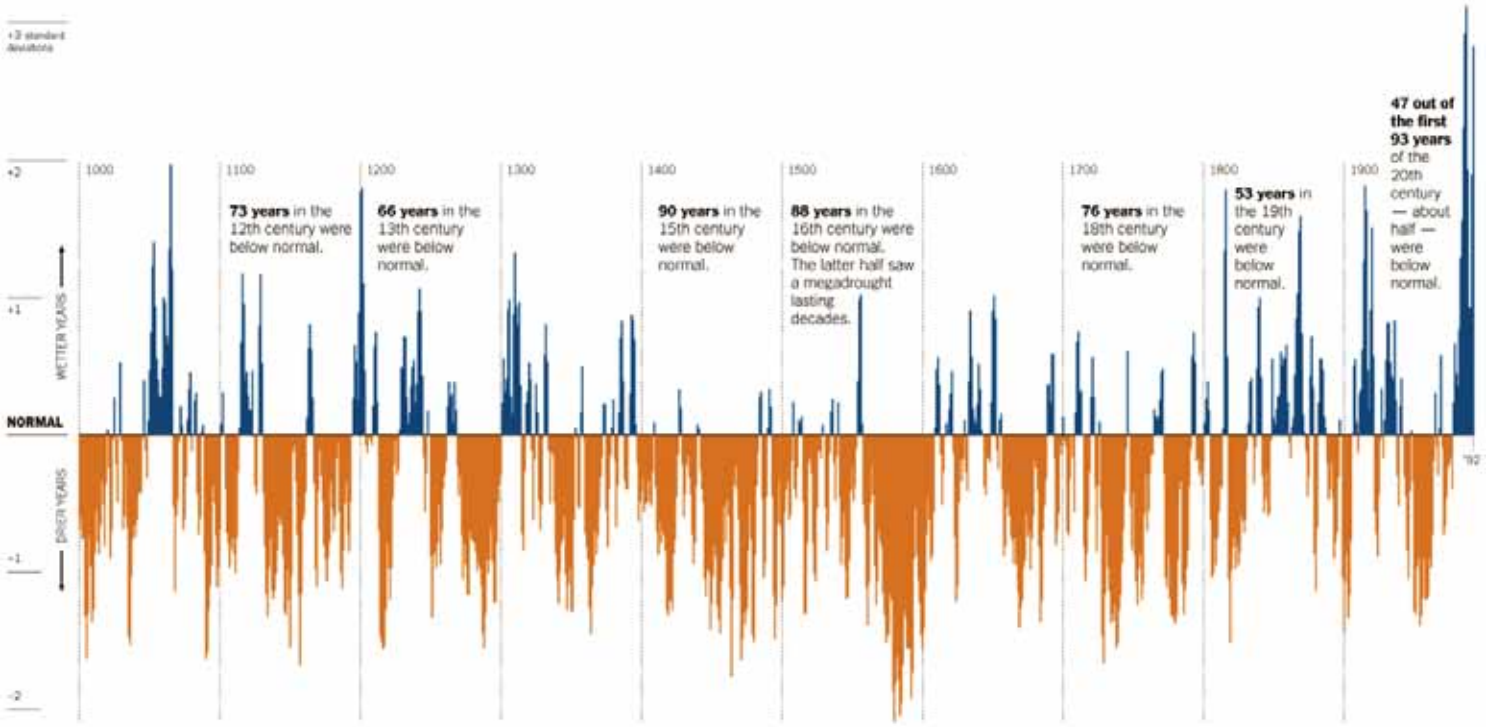
U.S. Senator Tom Udall talked with many conference participants during the daylong conference including pecan farmer, Sammie Singh, Jr. (left) and Blane Sanchez, NM Interstate Stream Commissioner and member of Acoma and Isleta Pueblos. Photo by Jay Rodman

their perspectives on current events. "He brought a perspective that bringing together people from multiple points of view is a way to head off conflict," Fernald said.

"My agenda at this meeting is to improve our process and try to build some consensus. New Mexico State and the WRRI have brought together some of the best and brightest in a collaborative environment," Udall said in his remarks. He said staff members will create a compilation of the options, to be posted on the senator's website. The information will be available for comment and for others to use as a resource, he said.

While drought is not an uplifting topic for any meeting, Udall concluded, there are some reasons for optimism. "We are seeing slow progress in the accommodation between agricultural and urban water users, between acequia and city use," he said. There has also been "a combining of interests between agriculture and environment" to encourage greater instream flows, and progress in recycling water in both municipal settings and in the oil and gas industry, Udall said. He cited work in desalination of brackish groundwater with the use of solar power, the development of algal biofuels (see *Divining Rod*, Issue XXXV, No. 2, April 2012), and "smart water technology," which can reduce the massive amount of leakage in our aging infrastructure, as other optimistic developments.

Measure of Drought: 11 Centuries of Rainfall in New Mexico



The orange color in this graph (modified from the original, which showed annual rainfall levels beginning in 137 B.C.) shows that dry years over the past 11 centuries dominate the wet ones (blue color.) (Sources: Henri D. Grissino-Mayer, University of Tennessee, 1996; David M. Anderson, National Oceanic and Atmospheric Administration National Climatic Data Center; Graph, Bill Marsh/NYTimes; August 12, 2012.)

Conference keynote addresses:

Disarm the lawyers, seek sustainable solutions

by Will Keener

Speaking in a room where conferees found themselves on opposing sides in ongoing lawsuits, the two conference keynote speakers tread carefully, while still addressing the situations. Both Michael Connor, commissioner for the U.S. Bureau of Reclamation, and Scott Verhines, state engineer for New Mexico, had something to say about the court actions. Face-to-face talk, in a time when extreme drought has intensified water problems, is the way to find the best path, both speakers agreed, not legal proceedings.

"Low water levels and increased groundwater pumping are causing conflict within the state," said Connor in his remarks. An August ruling that the federal government does not have groundwater rights in the Elephant Butte Irrigation District (EBID), which covers the lower Rio Grande in New Mexico and El Paso County, Texas, had the effect of "kicking the can down the road," Connor said. The suit failed to resolve the issues, while recognizing some federal rights in the case. The federal position was "mischaracterized," according to Connor. The U.S. is not trying to stake out ownership of New Mexico groundwater, he said. "We're trying to protect the project's (EBID) interests."

"I'm not sure who is right and who is wrong, if anyone is wrong, but litigation won't resolve the issues in useful ways," Connor said.

In another case, New Mexico's challenge to a 2008 EBID operating agreement with Texas will not be resolved in a useful way by the present lawsuit, Connor predicted. "You

Scott Verhines, New Mexico's state engineer emphasized the need for cross-boundary planning to find sustainable solutions.

will trade the agreement for a lawsuit with Texas and that won't address the long-term issues," he said. "We need to look across different interests and be willing to listen. It's time to disarm the lawyers until we better understand surface-groundwater interactions and then bring the entities together. That will result in a faster and more sustainable solution."

If the Colorado River Compact members from seven states can sit down and develop a new paradigm, it is certainly possible in New Mexico, Connor said. "We have lost our way . . . but I am confident we can develop a better way to move forward."

Verhines described a number of challenges for New Mexico water, echoing earlier conference speakers, including a shift of the monsoon patter of rainfall to the west this year, low reservoir levels, and continuing drought. "The Lower Rio Grande collective has farmers pitted against farmers, farmers versus municipalities, state versus the Bureau of Reclamation," Verhines said, calling the situation "disturbing."

One way of improving the situation is with a revamping of the state's regional planning effort, Verhines suggested. "The state planning regions are unique in many ways," he said, since they address problems from a perspective of water, not artificial boundary lines. "The plans have taken a negative connotation and that's unfortunate," Verhines said. "There is a lot of support for improving this activity," he said, offering "great opportunities" for New Mexicans.

Michael Connor, commissioner for the Bureau of Reclamation prefers face-to-face conversations to legal proceedings.

HARD CHOICES:
Adapting Policy and Management to Water Scarcity

A record crowd of over 470 people registered for the conference and another 50 students attended sessions as their class schedule allowed. The conference was available via a live webcast and is now archived for viewing at http://2012.wrri.nmsu.edu/webcast. The webcast is divided into sections for convenient viewing. To date, nearly 900 have watched the webcast. The next issue of the *Divining Rod* will include summaries of the panel discussions. Photos by Will Keener unless otherwise noted.

USDA Rural Development State Director Terry Brunner and Deputy Undersecretary for Rural Development Judy Canales presented plaques at the luncheon funding award ceremony to Brazito, La Union, and Lake Roberts projects.

Thirty posters were presented on a wide variety of water related research, many by students.

Current New Mexico State Engineer Scott Verhines confers with his predecessor, John D'Antonio.

The first panel focused on where and how much water we have in New Mexico. Panelists included (from left) Sam Fernald, Dagmar Llewellyn, Del Archuleta, Mike Darr, and Steve Vandiver.

Co-Hosted by Senator Tom Udall and NMSU President Barbara Couture

57th Annual New Mexico Water Conference

August 28, 2012, Corbett Center, New Mexico State University

Different perspectives on the state's water issues were voiced by panelists (from left), Paula Garcia, Richard Sayre, Denise Fort, and Larry Webb.

Conference participants networked throughout the day.

NMSU professor and conference moderator Phil King took this photo of (from left) Herman Settemeyer (Texas Commission on Environmental Quality), Estevan Lopez (NM Interstate Stream Commission), Gary Esslinger (Elephant Butte Irrigation District), and Mike Gabaldon (Bureau of Reclamation). "It illustrates the power of the annual water conference. These gentlemen have been among the players in many past, current, and pending litigation actions, each against the others. The WRRI meeting brings us all together and reminds us (fleetingly, perhaps) that we have commonality and community, even in the depths of drought," said Dr. King.

A highlight of the conference was the "Straight Talk" panel of experienced officials from the New Mexico Office of the State Engineer, moderated by Senator Udall. Seated next to Sen. Udall are John Hernandez, Eluid Martinez, Tom Turney, and John D'Antonio.

Co-sponsors: **Los Alamos National Laboratory • Hazel & Ulysses McElyea Endowment Elephant Butte Irrigation District • Sandia National Laboratories • Rio Grande Basin Initiative**

In Memoriam

Nathaniel Wollman
May 15, 1915 - June 10, 2012

We were saddened to hear of the recent passing of economist Nathaniel Wollman, longtime faculty member of the University of New Mexico's Department of Economics. Dr. Wollman joined the department in 1948, served as department chair from 1961 to 1969, and was a major force in developing their graduate program's environmental and natural resources focus. He was appointed Dean of the College of Arts and Sciences in 1969, a position he held until his retirement from UNM in 1980. He held a B.A. in economics from Pennsylvania State University and a Ph.D. in economics from Princeton University. His treatise on the value of water, focusing on New Mexico's water resources, is a pioneering discourse that inspired hundreds of water economists, including NMSU Professor Frank A. Ward who reviewed Dr. Wollman's 1962 book for the *Divining Rod*.

The Value of Water in Alternative Uses with Special Application to Water Use in the San Juan and Rio Grande Basins of New Mexico

Dr. Nathaniel Wollman
University of New Mexico Press, 1962

Reviewed by Frank A. Ward, New Mexico State University, September 2012

Soon after arriving on the New Mexico State University campus in the late 1970s, I made my way to the university library and tracked down a copy of the iconic book by the University of New Mexico's Dr. Nathaniel Wollman, *The Value of Water in Alternative Uses*. I was almost afraid to open it because it had such a grand scale. As a graduate student at Colorado State, my professors had spoken in hushed tones about New Mexico's Dr. Wollman and the book he had written where he demonstrated how to measure the value of water in alternative uses for the Rio Grande. I was impressed that anyone would undertake such a bold and ambitious task. I had a vague idea of the vision, backed by hard work that it would take to assemble information on a river's hydrology, agronomy, economics, and institutions. Later, after arriving at NMSU, I heard that Dr. Wollman was still active at our sister institution in Albuquerque. More recently, I was saddened to learn of the passing of Dr. Wollman in June of this year.

Dr. Wollman's book *The Value of Water in Alternative Uses* has been a classic since it was published in 1962. Despite the ambitious title, exhaustive work, and epic scale, it was motivated by a practical problem: a growing awareness of water as a limiting factor for economic growth in the western United States. At the time, the western U.S. was absorbing huge amounts of money to bring farms, industry, and people to very dry lands.

Wollman's study problem was compelling. It lay in the growing disparity between the supply and demand for water

Photo by Phil King

everywhere west of the 100th meridian, but especially in the desert southwest. People were aware that water use was outpacing population growth. Per capita water use was expanding in the face of natural supplies that were constant and possibly shrinking. As far back as the early 1920s, water supply in the Rio Grande Basin was severely stressed by growing demands. Later studies were carried out to look at the feasibility of finding more water from tributaries of the San Juan River. Shortages became an especially big problem in the southwest generally where population grew tremendously after World War II from the region's attraction for returning veterans. Dr. Wollman believed that if ways could be found to deal with water shortages in the Rio Grande Basin, lessons learned could be applied to other parts of the country and the world.

Dr. Wollman's work was motivated by a then-proposed transfer of water from tributaries in the Colorado Basin to the Rio Grande Basin. This was the famous San Juan-Chama interbasin transfer project. Later, it was approved by Congress, financed and built to import 110,000 acre-feet of water per year to support growing demands in the Rio Grande Basin. Most of the demands were to support hoped-for growth in water-using industry in and around Albuquerque. Nobody wanted lack of water to hamstring growth in a dry and poor part of the nation.

As an academic economist, Dr. Wollman had a scholar's interest in developing tools of economic analysis that could identify the economic value of water. He wished to apply those measured values to learn about the economic viability of the San Juan-Chama water transfer. Would the transfer pay for itself in the sense that the economic benefits would exceed the cost of the federally financed infrastructure and economic losses from reduced water use in the Colorado Basin? He examined four ways to allocate the transferred water among the sectors of agriculture, recreation, and industry and applied two possible quantities, 110,000 versus 235,000 acre-feet per year for a total of eight scenarios examined. He believed that a lack of information on the economic value of water would lead to development plans with inadequate guidance for making the right choices. Even today, a lack of this information hamstrings the power of economics to resolve long standing water disputes over climate variability, transboundary waters, and growing water poverty.

His book contains 426 pages of exhaustive analysis that compares the additional value of water in agriculture, recreation, and industry with the cost of bringing the water under the Continental Divide. His work shows the economic value per acre-foot (1962 dollars) in each of the three sectors: agriculture at $40 - $50, recreation at $200 - $300, and industry at $3,000 - $4,000. Not only did his book present mountains of detailed calculations, but he was able to present four major findings with recommendations for action:

1. Irrigation in New Mexico's Rio Grande Basin could not economically use the additional water imported from the Colorado Basin without continued heavy subsidy.

2. Recreational uses of water in the Basin might have a higher value than irrigation, but those uses could not be profitable in recreational business unless subsidized, despite the state's location advantage for recreation.

3. Subsidies to industry and recreation that were equivalent to existing subsidies to irrigation were needed and desired to raise living standards. It would also promote full use of the new imported water, which could otherwise be claimed if not used by New Mexico.

4. He called for institutions that smoothed the transfer of water from agriculture to other sectors. Locking water into agriculture put heavy constraints on the state's economic development possibilities. Unlocking those institutional constraints to water transfers was needed to avoid having scarce water hamstring future growth.

I can only imagine that finishing this book must have taxed Wollman's patience and discipline. It was written before the days of easy access to data and companion publications posted on the Web. It was written before the modern policy debates over climate change, climate adaptation methods, benefit sharing for transboundary conflict resolution, and before growing sentiments for sustainable water resources programs. His calculations may have been the first example of what's now called integrated water resources management, today's recognized "gold standard" for basin analysis. Assembling the huge tracts of data on recreational, industrial, and agricultural water uses along with the hydrology and agricultural data, must have been especially daunting.

Thinking back to the day I discovered Dr. Wollman's book at NMSU's library, I recall being inspired by its epic title. In opening the book, I was met with water politics, interbasin hydrology, economic theory, and most of all, volumes of painstakingly assembled tables. Moreover, the numbers added to evidence that told one unified story. After completing the book, I reconfirmed my suspicions that New Mexico was then and remains today a magnificent place to investigate the economics of water resources.

Dr. Frank A. Ward is Distinguished Professor in the Department of Agricultural Economics and Agricultural Business at New Mexico State University. He has been associated with the NM WRRI for many years, having been a principal investigator on several projects including "Institutional Adjustments for Coping with Prolonged and Severe Drought in the Rio Grande Basin," which culminated in a 2001 NM WRRI technical report, and TR 356, "Analysis of Water Rights Prices in New Mexico's Lower Rio Grande Basin" published in 2009. Currently he receives funding through NM WRRI on two international water and land-use projects in Afghanistan and Iraq.

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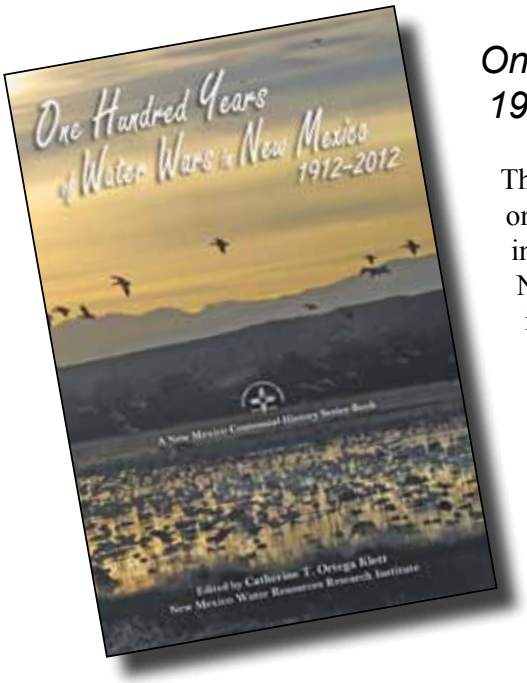

One Hundred Years of Water Wars in New Mexico 1912-2012

The book, part of the New Mexico Centennial History Series, contains 16 chapters on the many complex and messy fights, legal and otherwise, over precious water in a semiarid western state. Focusing on the past one hundred years constituting New Mexico's statehood, contributors describe the often convoluted and always intriguing stories that have shaped New Mexico's water past and that will, without doubt, influence its future history.

Contributions were made by many of New Mexico's most illustrious writers and experts on water including: John Hernandez, Jerald Valentine, Richard Simms, Em Hall, Jay Stein, James Brockmann, Eluid Martinez, Charles DuMars, John Utton, John Nichols, Sylvia Rodríguez, Calvin Chavez, Linda Harris, Kay Matthews, Karl Wood, and Michael Connor.

Order books by emailing NM WRRI at nmwrri@nmsu.edu and in the subject line enter: Water Wars book. Make checks payable to NM WRRI, and mail to NM WRRI, MSC 3167, New Mexico State University, PO Box 30001, Las Cruces, NM 88003-8001. Or call 575-646-4337 with your credit card number. Books ordered through NM WRRI are $30, which includes tax and postage. The book will be available in bookstores and online by the end of October.