

PROCEEDINGS

37TH ANNUAL NEW MEXICO WATER CONFERENCE

Multicultural, Multiuse: Planning New Mexico's Water Resources Future

Taos Civic Plaza
Taos, New Mexico
November 5-6, 1992

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PREFACE

We headed north for the 37th Annual New Mexico Water Conference and were received graciously by our northern New Mexican colleagues and friends. We were honored to have Governor Tony Reyna of the Taos Pueblo welcome us to Taos and wish us well in our meetings. It also was a pleasure to listen to Nelson Cordova's talk on the history of Taos Pueblo during Thursday's luncheon.

Water planning continues to be a hot topic in New Mexico as well as throughout the West. New Mexico's growing population, limited water supply and strong traditional ties to water use combine to make sound water planning vital to New Mexico's future. At this year's conference we learned of other state's planning efforts and western trends in water management. The history of New Mexico's water planning was described along with State Engineer Eluid Martinez' thoughts on current water planning issues in our state. Several speakers who have been active in developing regional water plans in New Mexico offered their insights on the planning process. A panel of water conservation experts from Denver, Tucson, Phoenix and El Paso talked to us about some of their successes and failures in developing effective municipal water conservation programs.

For the first time in many years, we held workshop sessions on three controversial and timely topics: instream flow, agricultural conservation and water banking. Our special thanks to the facilitators for these workshops, Tim DeYoung, S. Chris Nunn, and Howard Hutchinson, respectively. Conference participants attended one of the three concurrent workshops where lively exchanges took place for a couple of hours Friday morning. We then reconvened as a group and listened to reporters from each of the workshops summarize the discussions that took place. Peggy Montano did a superb job informing us of the issues and concerns articulated in the instream flow workshop, as did Wesley Menefee for the agricultural conservation workshop, and Howard Hutchinson for the water banking workshop. Their reports are contained in these proceedings.

The WRRI is grateful for the suggestions and support of the Water Conference Advisory Committee in planning the conference. Each year the committee suggests a conference site, topic and relevant speakers. We look forward to working with them in the spring as we plan our next conference.



Tom Bahr
Director



Taos Pueblo Governor Tony Reyna addresses conference.

37TH ANNUAL NEW MEXICO WATER CONFERENCE

MULTICULTURAL, MULTIUSE: PLANNING NEW MEXICO'S WATER RESOURCES FUTURE

Taos Civic Plaza
Taos, New Mexico

Thursday, November 5, 1992

Session I - Water Resources Planning and Assessment

Moderator:	Tom Bahr, Water Resources Research Institute
8:25 a.m.	Views from the Former Chairman of the U.S. Water Resources Council Leo Eisel, Wright Water Engineers
8:55 a.m.	Trends in Western Water Resources Management and Planning Jo Clark, Western States Governors' Association
9:25 a.m.	History of New Mexico Water Planning Al Utton, University of New Mexico School of Law
9:50 a.m.	Break
10:15 a.m.	Current Ideas for New Mexico Water Planning Eluid Martinez, New Mexico State Engineer
10:40 a.m.	The Regional Water Planning Dialogue: The Pecos Experience Participants from the Pecos Basin Regional Water Planning Project
11:05 a.m.	The Kansas Water Plan Joe Harkins, University of Kansas
11:30 a.m.	Reaching the Joint Settlement Between El Paso and New Mexico Steve Hernandez, Hubert and Hernandez, P.A.
Noon	A Brief History of the Taos Pueblo Nelson Cordova, Taos Pueblo

Session II - Special Issues in Water Planning

- Moderator:** Tom Bahr, New Mexico Water Resources Research Institute
- 1:30 p.m.** The Role of Acequia Organizations in Water Planning
Wilfred Gutierrez, New Mexico Acequia Commission
- 1:55 p.m.** The Many Facets of Instream Flow
Tim DeYoung, Modrall, Sperling, Roehl, Harris and Sisk, P.A.
- 2:20 p.m.** Water Banking
Chuck DuMars, University of New Mexico School of Law
- 2:45 p.m.** Agricultural Conservation
Al Blair, Blair and King Engineering
- 3:10 p.m.** Break
- 3:35 p.m.** Conservation Panel

Moderator: Alice Darilek, State Engineer Office

Panel Members:

Liz Inman, City of Denver
Gary Woodard, University of Arizona
Jane Ploeser, City of Phoenix
John Sutton, City of El Paso

Friday, November 6, 1992

Session III - Workshop Session

- 8:00 a.m.** Workshop Instructions
Tom Bahr, New Mexico Water Resources Research Institute
- 8:15 a.m.** Instream Flow Workshop
Facilitator: Tim DeYoung, Modrall, Sperling, Roehl, Harris and Sisk
- Water Banking Workshop
Facilitators: Pete MacGill and Howard Hutchinson, Catron County
Water Advisory Board
- Agricultural Conservation Workshop
Facilitator: S. Chris Nunn, Regional Water Planning Dialogue
- 10:45 a.m.** Break
- 11:00 a.m.** Plenary Session - Workshop Results and Discussion

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Leo Eisel is vice president of Wright Water Engineers, Inc. based in Denver. He holds a doctorate in Engineering from Harvard, and a master's degree in Hydrology and a B.S. in Forestry from Colorado State University. Leo was director of the Illinois Environmental Protection Agency, director of the Illinois Division of Water Resources and director of the U.S. Water Resources Council. He has served as a consultant to the U.S. State Department on land use and water problems. Leo's interests include the water rights appraisals at the new Denver airport; an investigation of the groundwater in the Lower Colorado River Basin, California, Arizona, and Nevada; developing an operational study of Ruedi Reservoir for Exxon; and groundwater and surface water hydrologic analysis for El Paso v. New Mexico.



AN OVERVIEW OF WATER RESOURCES PLANNING

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A BRIEF HISTORY

The 1960s

The Federal Water Resources Planning Act of 1968 signaled the formal entry of the federal government into water resources planning. This act established the U.S. Water Resources Council along with the Title II River Basin Commission. Responsibilities of the Water Resources Council included developing an assessment of the nation's water resources, and implementing a state grant program for water resources planning. The Water Resources Council also developed *The Principles and Standards for Planning Federal Water Resources Projects*, which for many years provided federal agencies with guidelines for water resources planning purposes.

The U.S. Water Resources Council and the Title II River Basin Commission were probably somewhat outdated even at the time of the 1968 act. In many ways, they were more directed to the water resources problems and the planning goals of the 1940s, as exemplified by the Pick-Sloan Act, than they were to the planning problems of the 1960s and 1970s. The

attempts at river basin planning using large maps filled with triangles indicating proposed reservoir sites were not appropriate for the water resources development and management problems of the 1960s and 1970s.

Another development during the 1960s was the marriage of the computer to water resources planning. Computers enabled planners to develop large simulation models and linear programming models designed to maximize regional economic development. In almost all the modelling work, economics was the objective and driving force.

During the 1960s we saw the first indications of an emergent environmental awareness, which later would significantly impact water resources planning. For example, the Marble and Bridge Canyon Dam proposals for the Grand Canyon were defeated eventually because of environmental concerns.

The 1970s

The 1970s saw declining leadership by federal agencies, especially in the western U.S. where the Bureau of Reclamation was no longer automatically the dominant force in water resources planning and devel-

opment. However, in contrast, the efforts of the Carter administration and their water policy review were to sow the seeds for eventual fundamental changes in cost sharing and other important water policy planning matters.

The 1970s saw increasing environmental concern and the passage of important legislation, such as the National Environmental Policy Act and the Clean Water Act. New agencies were developed such as the U.S. Environmental Protection Agency, which would also come to have important affects on water resources planning.

The 1980s

Much of the Carter water policy with respect to water project planning was implemented by the Reagan administration, especially increased cost sharing by local governments and states for federal water projects. The Endangered Species Act and the Clean Water Act came into prominence in the 1980s as major players in water resources planning.

The 1980s saw the total demise of the Water Resources Council and the River Basin Commissions. *The Principles and Standards* which were published rules by the Carter administration became guidelines under the Reagan administration.

State and local governments were forced into accepting a significantly increased planning role and shouldering more development responsibilities in the 1980s as a result of the declining importance of the federal agencies and declining federal funds for projects.

In some respects, the prior appropriation system became a more important water resources planning tool in the 1980s with the demise of federal projects. Additionally, irrigated agriculture became less of a potent political force in the western United States in promoting water projects and policies.

The 1990s

The focus has changed in the 1990s from project construction to transfers of water from lower value uses to higher value uses. President Bush's signing of the Omnibus Bill in October 1992 paved the way for increased transfers of water from federal projects in California and others in the west. Transfers of water from agriculture to municipal industrial purposes have been occurring for a number of years; however, in the 1990s these transfers are becoming a major potential source of new water supply for municipalities and industries.

The Endangered Species Act is proving to be a major driving force for water resources planning in several western states. No longer is water resources planning devoted primarily to maximizing national or regional economic development; in the 1990s it is often devoted to determining how adequate water supplies can be obtained for restoration of endangered fish species while still preserving sufficient water supply for future development.

For example, a major effort is underway to restore endangered fish species to the Colorado River basin in Colorado including the White, Green, Yampa, main stem Colorado, and Gunnison rivers. Important components of this restoration implementation program include:

- Determine and accept flow needs for habitat essential to recovery for the Yampa, Colorado River main stem, Gunnison, White and Green rivers.
- Provide for 2,000 cfs minimum flow below the confluence of the Colorado and Gunnison rivers.
- Evaluate options for allocating Colorado Compact entitlements among the five sub-basins.
- Provide for 35,000 acre-feet of salvage water from the Grand Valley Irrigation Project.

Needless to say, these efforts constitute serious water resources planning and will affect water resources development in the state of Colorado. EPA's refusal to approve permits under Sections 401 and 404 of this act, thereby canceling construction of a significant water supply source for the Front Range area in Colorado, provides a good example.

Interstate compacts also will provide an important stimulus in western water resources planning in the 1990s and into the next century as evidenced by recent litigation on the Pecos River and current litigation before the U.S. Supreme Court on the Arkansas River in Colorado and the Platte River in Nebraska and Wyoming.

Instream flows for environmental and recreational purposes will be an increasingly important issue facing water planners. The separation of water quality and water quantity planning has long been a problem. Another continuing concern is water quality impairment by users authorized under state law, for example, depletion degradation and physical alteration. Water resources planning in the 1990s will pay attention to reducing the separation of water quality and quantity issues.

THE FUTURE OF WATER RESOURCES PLANNING

Will water resources planners have to sit idly by and accept the dictates of the Endangered Species Act, the Clean Water Act, and diminished funding in the 1990s? Or, can water resources planners be more proactive to insure that everything will not necessarily be litigated? Future water resources planning should focus on the following several issues.

Basin-of-Origin Issues

Basin-of-origin issues will become pivotal in water resources planning. We can either provide leadership in resolving these issues or have solutions forced upon us by state legislatures. Possible actions include developing guidelines and criteria for evaluating water transfer proposals and addressing potential third party effects. The public interest/public welfare language which exists in state statutes, such as in New Mexico, but not in Colorado, can provide a basis for insuring more adequate evaluation and response to all those affected by water transfers. Water planners, engineers, and attorneys should identify possible water transfers that meet water management objectives and do not provide injury to the basin-of-origin.

Instream Flows

Water planners also can be more proactive in areas such as instream flows. States can determine whether water rights acquisition for instream flow purposes should be limited to the state government or whether other governmental entities and/or private interests should be allowed to acquire instream flow water rights on the same basis that water rights are acquired for other purposes.

Water Conservation and Salvage

Water conservation and salvage can be promoted by state water planning interests. Salvage occurs when a new source of water is obtained due to improved water use efficiency. There may not be additional large salvage projects such as the Imperial Valley Project in California, but smaller projects might be developed without injuring users of return flows.

Decision Support Systems

Decision support systems provide water resources planners an opportunity for assuming leadership for future planning. By assembling good quality data bases with verified data, state water resources planners will automatically take a leadership role. If state water

planners can assemble models or calculation procedures for manipulating this data, an even greater leadership role is possible for state water resources planners.

These examples provide only a few areas in which state water planners can be proactive.

CONCLUSIONS

The future of water resources planning in the United States is in facilitating water rights transfers, resolving conflicts between instream flow demands and water development, and solving basin-of-origin conflicts. State water officials and water planners have responsibility to promote these new concepts in water planning.

Jo Clark is director of programs for the Western Governors' Association. She is responsible for general program development and oversight, and manages all programs on land and water resources. Jo has managed WGA's water program since its inception in 1982. Since that time WGA has worked on issues of water efficiency, water governance, drought management, hydroelectricity, Indian water rights, and most recently, responding to changing values for water use. Over the last year, WGA has worked closely with the Western States Water Council, coordinating three workshops in Park City, Utah to assess changes now taking place and changes which should take place which will affect state water management.



TRENDS IN WATER MANAGEMENT

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Thank you, I'm very pleased to be here. When I received the program for this conference, I loved the description of my remarks—"sticky issues in western water management, the role of the governors, and more." Working with water issues, it's hard not to make puns—drowning, flooded, oar in the water, all wet, high and dry—but "sticky" is not a word that comes to mind to describe water. And yet it is, and I'm happy to talk about it.

The Western Governors' Association started its water program ten years ago under the leadership of Bruce Babbitt. The governors' decision to get directly involved was not received with unanimous applause. At the first meeting of the Western States Water Council I attended, one of its members felt it important to draw me aside and say, "You know, you really shouldn't be getting involved in this; water is too important an issue to be left to governors." For those of you who might be wondering, it wasn't Steve Reynolds who told me that, but it could have been.

We've come a long way since then, and partly because the issues have been so sticky. Who would have believed ten years ago that we would see the dramatic shift in public values regarding the way water is used: that a state court would award half the water in eastern

Wyoming to the tribes; that rafters could force a change in releases from Glen Canyon; that salmon would force a reassessment of management on the entire Columbia River; that drought would lead to discussion among upper Colorado River states to market water to California; and that rice growers in California would find it to their advantage to work with Marc Reisner on ways to flood rice fields in winter to provide waterfowl habitat and that the Bureau of Reclamation (Bureau) would give Marc a grant to do that.

It took some years to get there, but now WGA and the Water Council work together very well. The experience, expertise, and on-the-ground management of state water directors complements the political clout and broader perspective and outreach of the governors. But we've learned that those two groups aren't enough on their own. Times have changed fundamentally concerning water-use priorities; the role of federal agencies; and the recognition that all river basins are essentially fully allocated whether for irrigation or for ecosystem protection, meeting tribal water rights, or fostering recreation and tourism.

This means the way we have to do business has changed. No more backroom deals on new projects in Congress; now those deals get challenged by the com-

mittee chairmen themselves or later in court. No more all-powerful state engineers; now state officials have to negotiate with environmentalists, tribes and other ethnic interests, economists challenging calculations, and a raft of others. Individuals can no longer regard the water they use as "their" water; now if that use is abused, the Environmental Protection Agency (EPA) or the Army Corps of Engineers (Corps) or others are likely to slap significant fines on that use. And no more unchangeable fifty-year contracts.

But in response to all the turmoil, we are seeing many positive changes. More and more often, local watershed groups are forming to solve their own problems. New Mexicans have known how to manage water through local groups for a long time, starting with the acequias. Other states are catching on. There are major discussions occurring among basin states in the Colorado, the Missouri, and the Columbia basins. The full Rio Grande, including Mexican states, probably isn't far behind. Montana has developed a state-wide comprehensive planning process, and Washington has developed new decision processes through the Chelan agreement. California is trying to merge the Central Valley Project with the State Water Project. More and more states and tribes are negotiating Indian water rights settlements. Federal agencies, recognizing that they don't have the dollars to provide incentives and that they are seeing more and more resistance to command and control approaches, are rethinking their relations with states.

When I look at the kinds of change taking place, I feel like we started listening to Ross Perot before he began talking—in very real ways, people are taking charge and just doing it. But just as it wouldn't be as easy to find the right course for the nation as Perot made it sound, neither is it easy to figure out how to solve some of the challenges facing us with water management. I'd like to talk about several challenges I think are the most important and may have the most impact on how you do your job.

Holistic Approach

The first I'll call holistic approaches. I thought about calling it comprehensive basin approaches, but that really doesn't get at what I'm talking about. Perhaps Gary Weatherford used better terms when he talked about the "hydrocommons" and "problemsheds." The point is that a watershed is a geographic unit. Upper reaches and lower reaches, water quantity and water quality, surface water and groundwater are inescapably joined. So are economic uses and environmental needs. And so are all the people and species

dependent on that water—rural dwellers and urban, industrial and recreational people in the basins, and people dependent on that water resource but who live outside the basin.

Until fairly recently, we tended to ignore that interconnectedness other than for protecting return flows. The Bureau and the Corps raced each other to build projects. EPA set standards and regulations that addressed just water quality. The Department of Fish and Wildlife identified endangered species. The Federal Energy Regulatory Commission issued hydropower licenses to private applicants. Groundwater pumpers have pumped more or less what they wanted, without accounting for effects on aquifer drawdown or groundwater dependent wetlands. Cities have built long straws to move water away from its basin of origin. Multiple uses along rivers were permitted with little accounting for increased salinity in the river. Wetlands were drained; riparian areas destroyed in the interests of channelization or today's goal, river walks; and development took place in the absence of a secure water supply.

We can't do that anymore. No longer can we afford all the conflicting single purpose development of the resource, and the multi-jurisdictional complications are driving us nuts. Somebody described the country as heading towards a point where anybody can stop anything and nobody has the authority to make a deal stick. Nowhere is that more true than with water.

The only thing that appears to get us past that gridlock is to take a holistic perspective. The transaction costs are large in terms of time, money, and mental energy. Identifying all the major affected interests and bringing them into the decision processes, considering the ecosystem needs of not just the stream but the associated riparian areas, and recognizing that decisions made in New Mexico might affect someone as far away as McAllen or Matamoros, are difficult and a pain. But we can't ignore what we now realize to be the reality. Perot talked about denial, the irresponsibility of running up a \$4 trillion debt and not getting the budget balanced and debt repaid. That also is true for water. We have to deal with the consequences of past actions and figure out how to avoid future ones. At WGA we are involved with federal facility cleanup, and it's clear that it would be a whole lot easier if someone had started worrying about the problems a lot earlier.

Acting holistically, or recognizing that we share a hydrocommons, is not all pain and constraints, however. In those sub-basins or states where various interests have come together to solve their problems, the

experience has generally been very positive. I'm interested to learn more about the Pecos experience. People learn from each other, they learn to pool resources to get the job done, and they feel empowered, in charge of their own destiny. In addition, by providing all interests the chance to make their case, decisions are tested so that once arrived at, most people involved are confident they are doing the right thing, or at least the best thing at that time. One of the best things that state and federal agencies can do is to encourage problem solving at the lowest, most local levels possible.

We're finding that this need to take holistic approaches to problems cuts across the board. I mentioned the waste cleanup. The WGA also houses the Grand Canyon Visibility Transport Commission that is trying to restore visibility to the Grand Canyon and 16 other national parks and monuments. There the common element is the air shed which stretches from Oregon and California to New Mexico and beyond. We also coordinate a project called the Great Plains Initiative which is trying to figure out how to develop a prevention strategy for endangered species. There it is bioregions which must be looked at as a whole. John Wesley Powell was right. Geographic common sense in setting political boundaries would have simplified our job today. But that's no excuse for not stepping up to the challenge facing us.

Governmental Roles

A second area I would like to talk about is related and that is the need to sort out appropriate roles for states, for federal agencies, for tribes, and for local governments. WGA tried hard to get initiatives started to reassess federal and state-federal management. In 1989 North Dakota Governor George Sinner worked with former governor John Sununu and convened a meeting in Washington D.C. of all federal water-related agency leaders to discuss better coordination and to present our ideas for a White House directed council to address national water policy. In the months that followed, it became clear that clean air, wetlands, and other issues took priority with the Domestic Policy Council. Senator Hatfield picked up on the recommendations but instead of advocating a national water policy commission under the President so that all federal water agencies are involved, he has given us yet another western water commission, directed by the Secretary of the Interior.

WGA and the Water Council gave up on trying to solve these problems from the federal level and decided to convene a series of three workshops in Park City that would include representatives from all the

various interests and jurisdictions. The idea was to see whether we could arrive at any consensus on common needs and directions that would let us move forward and not just try to hold each other back. There was an amazing amount of consensus, including on the issue of what our appropriate roles should be.

States were seen as playing the pivotal role, linking national goals, state authority, and local implementation. Local watershed councils and water authorities were seen as having the best track record of bringing the critical mix of interests and authorities together to solve problems on the ground. Tribes were seen as having legitimate rights not just to water but to manage their own resources.

Federal roles are changing too. In many ways federal agencies are managers of last resort. Those issues that have been too expensive, involved interstate concerns, or involved public interest concerns, were assigned to federal agencies. Many of the roles continue to be appropriate at the federal level, like setting national goals, providing assistance to states and local entities, dealing with international issues, and managing federal facilities. But states were encouraged to accept delegation for program management so that programs could be integrated at the state level. And perhaps more importantly, states were encouraged to assume responsibility for protecting the public interest so that the federal government would not be designated as the protector of first resort, something which has increasingly been the case.

The suggestion for states to protect the public interest has led to cooperation that I'm really excited about. Our host Tom Bahr, who attended the Park City workshops, suggested that the Powell Consortium, which is comprised of the water research institutes in the Colorado River basin, catalog the public interest provisions that have been incorporated in federal law. That will be a major contribution, not just to water management, but for public lands management, response to the endangered species listings, and anything else where authority is given to federal agencies because there is a lack of trust in state agencies to be able to provide protection.

WGA and the Western States Water Council are following up the Park City workshops with another in February. The workshop's intent is to assess state capacity to assume the "pivotal role." We have already surveyed states as to what roles they think are important to assume, how they should go about assuming those roles, and what obstacles exist.

Paying for Water Needs

And that brings me to my last sticky trend—financing. About eight years ago, the governors took a serious look at financing in order to be sure they could raise funds for the heresy of the day—cost sharing. After looking at general funds, user fees and other sources, they concluded that raising hydro fees had the most promise and they looked at buying the power marketing administrations (PMAs); the Western Area Power Administration and the Bonneville Power Administration. They quit not because they thought it was infeasible but because David Stockman proposed raising power rates to reduce the federal debt. They didn't want to provide Stockman with the vehicle he needed.

The governors' interest in buying the PMAs came from the fact that the governors wanted to keep revenues generated in western basins in those basins, they wanted to level out the obvious subsidies and special benefits which invite someone else's reforms, and they wanted to introduce more flexibility in how water-generated revenues could be used. Those are still important political goals.

But along with these goals is the reality of the federal deficit. In a time of rapidly emerging new needs, we are seeing not just a slowing of growth in new water appropriations but actual declines. I think that

water, like many other things, will have to figure out how to pay its own way.

In the West, that has historically not been the case. There is no question that many who are dependent on low-cost water will have painful transitions, especially those who may also receive other subsidies which will shrink or disappear. But I don't think we will have a choice. We will benefit ourselves, including those who may be hurt, if we take a comprehensive look at current and potential revenues which we can generate and then control ourselves. Making changes on our own can improve the overall operations of the system, allow us to provide relief for those in need, and provide resources for responding to new needs and changing values.

In the three sticky trends I've covered—the need for holistic approaches, sorting out governmental roles, and paying for water needs, I have dealt with process issues, not substance. That reflects my belief that we are seeing a fundamental shift in how we have to do business in water management. There are many major changes taking place in specific issues as well—the growing interest in conjunctive management forcing inclusion of water quality with water quantity and groundwater with surface water; the interest in species and habitat bringing riparian management and instream flows increasingly to the fore, and others.

THE PARK CITY PRINCIPLES

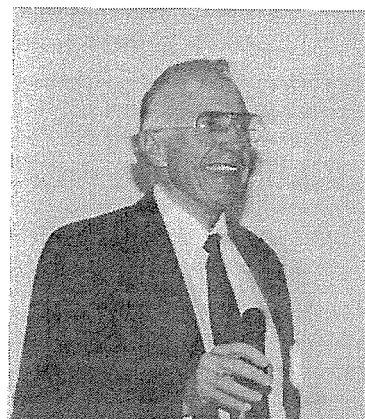
1. **Recognize Diverse Interests** - There should be meaningful legal and administrative recognition of diverse interests in water resources values.
2. **Problemshed Approach** - Problems should be approached in a holistic or systemic way that recognizes cross-cutting issues, cross-border impacts and concerns, and the multiple needs within the broader "problemshed"—the area that encompasses the problem and all the affected interests. The capacity to exercise governmental authority at problemshed, especially basinwide, levels must be provided to enable and facilitate direct interactions and accommodate interests among affected parties.
3. **Flexible, Predictable, Adaptable** - The policy framework should be responsive to economic, social and environmental considerations. Policies must be flexible and yet provide some level of predictability. In addition, they must be able to adapt to changing conditions, needs, and values; accommodate complexity; and allow managers to act in the face of uncertainty.
4. **Decentralize to States** - Authority and accountability should be decentralized within national policy parameters. This includes a general federal policy of recognizing and supporting the key role of states in water management as well as delegation to states and tribes of specific water-related federal programs patterned after the model of water quality enforcement.
5. **Negotiation and Market-Like Approach** - Negotiation and market-like approaches as well as performance standards are preferred over command and control patterns.
6. **Joint Policy Participation** - Broadly based state and basin participation in federal program policy development and administration is encouraged, as is comparable federal participation in state forums and processes.

Trends in Water Management

But it is not the "what" that is likely to cause problems. The West's water system has always been able to adapt to meet new needs. It is the "how" that is changing fundamentally. I would like you to consider the "Park City Principles." These are principles which emerged during the first Park City workshop and are based on what appeared to be the lessons learned from a number of case studies. Although they are unlikely to be used in their entirety, they show clearly the changing values regarding water management.

Indications are that the new administration in Washington will be very sympathetic to the concepts captured by the Principles. But it is up to us, not the federal government, to make these ideas work and work in a way that meshes with the system already in place. That can be the most important trend of all.

Al Utton is chairman of the New Mexico Interstate Stream Commission. He is director of the International Transboundary Resources Center and professor of international law at the University of New Mexico. He teaches international law, natural resources law, and water law. He has written and edited numerous books on the law of natural resources, including Pueblo Indian Water Rights. Al is a graduate of the University of New Mexico and was a Rhodes Scholar at Oxford University.



HISTORY OF NEW MEXICO WATER PLANNING

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All of us here have dealt with regional water planning in one way or another or are at least interested in it. If I were to give you just three or four words to remember from this talk about regional water planning, those words would include: *bottom-up, partnership, homework*, and the phrase *dust on the shelf*. Those are the keywords from my perspective on regional water planning.

A funny thing happened on the way to the El Paso case. We in New Mexico were sitting sort of fat, happy, and complacent when the city of El Paso came in and stood first in "our line." They were the first in the queue to apply for a water permit for a yearly water allocation of about 300,000 acre-feet from southern New Mexico. We looked around and said, "Hey, El Paso is applying for our water under New Mexico law. They are playing by our rules."

Under New Mexico law, cities are able to plan ahead for their future water needs. The law provides for a 40-year planning horizon. In order for the state engineer to grant communities a permit for water, those communities have to show that they have or will have a need for that water. The community must have done its homework. Communities must develop economic and demographic projections that demonstrate

that future growth justifies their request as best they can predict.

El Paso had done its homework. We were given a wake-up call in the state of New Mexico about "our water." It woke us up to the fact that communities around the state had not done their homework. We did not know how much water we were going to need in the future. We did not know from where that water was going to come. As a result, the governor and the legislature appointed a committee headed by Chuck DuMars from the University of New Mexico School of Law to study New Mexico's water laws and needs.

The committee looked at all kinds of things. Early in their work they determined that El Paso was not the only city that might be on the outside looking in for our water. Economists told us that other cities in the surrounding area like Lubbock, Amarillo, Tucson, and Phoenix were economically and physically within reach to come over and stand in our line for "our" water. These cities could build pipelines and export our water out-of-state. El Paso might be only the first among many.

Also giving the committee pause, was the U.S. Supreme Court case, *Sporhase v. Nebraska*, in which the court ruled that states cannot necessarily use the word "our" when referring to water anymore. Under

the commerce clause of the United States Constitution, state lines are erased and a state cannot forbid the export of its water. New Mexico did have an export statute which forbade water exportation to, for example, Lubbock or Amarillo. That statute was trumped by the *Sporhase* decision. The decision, combined with El Paso's move to secure a water permit, forced New Mexico into action. We decided we had to establish some sort of system to make certain that communities around New Mexico would, in fact, do their homework.

The result was legislation establishing the regional planning concept in New Mexico. Unlike most states, the idea was to follow a bottom-up approach rather than a top-down approach. In most states that have water plans, the plan is prepared by state authorities, or from the "top down." New Mexico decided to take a bottom-up approach and have communities, or regions of the state, prepare their own water plans.

The state government is in the position of being a partner in the planning process and that is where the partnership idea comes in—partnership between the state and the communities. With the financial help of the legislature, the state can review regional proposals and if those proposals are acceptable, the state can provide at least part of the money to regions to develop their own water plans. In this partnership then, the state provides most of the money, but the regions themselves do their own water planning. They hire their own engineers, economists, and demographic experts.

The process requires the regions themselves to do their own homework to find out what their population growth is likely to be, what economic development needs are likely to develop, and therefore how much water will be needed and from where the water will come. With that information, regions will then be on at least equal footing with El Paso or Lubbock or any other city wanting New Mexico's water. Regions will be in the position to apply for water rights to meet future needs.

New Mexico is now in the process of developing regional water plans. The state engineer will provide a much fuller report on the status of the various regional water plans later today, but it can be said that we have initiated the process successfully. When I say "we" I am referring to the regions of New Mexico which have initiated successfully regional water plans—and we now have plans either completed or underway for practically all parts of the state. Those plans will contain the information necessary for communities to

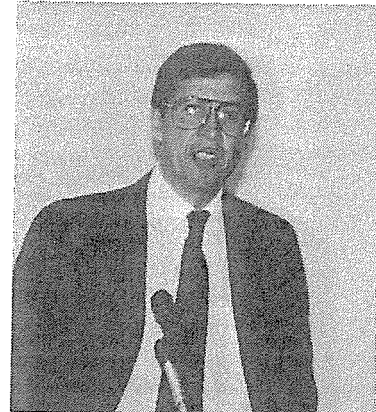
plan for their future, including acquiring the water necessary for that future.

We have been very successful at developing regional water plans up to this point—something for which the state of New Mexico can be very proud. Nonetheless, there is a risk, and I bet it is on the back of everyone's mind here, that we will have all those regional water reports, but they will just sit on a shelf somewhere gathering dust. And that is a risk. But I do not think that will happen because if, for example, any industry wants to come into New Mexico, whether it be in Encino or Shiprock or Lea County, they will surely want to know what the job base is, what the educational system is, and very high on their list is determining what water is available to their company. Communities around the state will be able to answer that question with the help of their water plans.

Although it is not explicitly part of the act, regional water plans must be kept up-to-date. I would suggest also that they be reviewed and revised at least every seven years, probably every five years would be better. It must be an organic, ongoing, dynamic process so that our homework is not allowed to be put on a shelf and gather dust. We have to keep them up-to-date. We must meet the future water needs of the various regions of the state. We must prepare for the future. That preparation requires as its groundwork knowledge and information. Regional water plans are nothing more than that. Knowledge and information allows the communities themselves to acquire water rights for their future.

So to reiterate what I've said: a *partnership* between the state and regions is necessary; the *bottom-up* approach comes about by having regions hire their own people to develop their own plans; the planning process requires that we do our *homework*; and we must be alert and not allow regional water plans to sit and collect *dust on a shelf*.

Eluid Martinez was appointed New Mexico State Engineer in December of 1990. He has worked for the SEO for twenty years. He served on the Santa Fe School Board from 1979-1985 and was board president during the last two years of his tenure. The State Engineer is an accomplished artist and created the official poster commemorating the New Mexico Columbus Quincennial.



CURRENT IDEAS FOR NEW MEXICO WATER PLANNING

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New Mexico is one of only a few states that continues to invest all responsibilities for the state's water rights administration and water rights policy in one individual. As I reach the end of my first two-year term as state engineer, I have begun to reminisce about my work for the State Engineer Office over the past 20 years. For most of those 20 years, I dealt with instate water issues. When I became state engineer, I was forced to deal with regional and national water issues. It is at the regional and national levels that much innovation is occurring and those effects will be felt in New Mexico.

In terms of water planning, as state engineer I have grappled with the term "public welfare" and conservation, and with water statutes detailing my responsibilities in administering the state's water resources. Prior to the 1987 change in the law resulting from the El Paso litigation, when an application was filed for a water appropriation or for a change in place and/or use of water, the state engineer considered only impacts to existing water users and whether those impacts constituted an impairment. The revised statutes required the state engineer to consider the public welfare and conservation of water when allocating surface and groundwater. However, the legislature failed to

define and provide criteria on what those terms really meant.

In the El Paso application, Steve Reynolds did not address the public welfare issue because he was able to deny the application through a provision of law that said if a municipality has a 40-year water supply, it does not need additional water. Attorneys for the City of El Paso filed an appeal, but the judge dismissed El Paso's applications because of El Paso's failure to properly appeal from the state engineer's decision. Thus the courts never really ruled on the public welfare issue nor did the state engineer.

I knew that some of the first applications I would face as state engineer would contain public welfare issues and I began to address seriously those concerns. I talked with Chuck DuMars of UNM's School of Law about my concerns. He suggested that one of the law students compile a report describing what other western states have done with respect to public welfare—the laws, criteria, administrative decisions, and so forth. After reviewing the report, I thought I would be able to adopt a list of criteria for New Mexico. However, what was interesting was that all these lists of various states' criteria had a final provision that required the state engineer to consider all the foremen-

tioned issues plus any other relevant issues. So for all practical purposes, the lists did not provide much guidance.

I next turned to several staff members who had been giving some thought to the issues. One attorney suggested New Mexico emulate California and other states in requiring a state water plan. The plan would give direction to the state engineer and the courts on what was meant by the term public welfare with respect to different regions of the state. Thus, the regional planning process came about due to a need by the state engineer to have a basis on which to make decisions on public welfare and conservation that would not be considered arbitrary. It was hoped the courts would be more willing to uphold state engineer decisions if those decisions were made on the basis of a state water plan. We are now in the process of formulating a state water plan and have brought together representatives of all relevant state and federal agencies. Later we will meet with all water user groups throughout the state.

For the past four or five years the legislature has been funding the Interstate Stream Commission to provide regional water plans and to update New Mexico's water resources assessment. In 1976 the ISC, in conjunction with federal agencies, first published an assessment of the state's water resources and projected future water needs. It's now 1992 and we still have not updated the assessment completely. Along with updating the state assessment, we decided that regional plans could serve as building blocks to a comprehensive state water plan.

One of my concerns when I became state engineer was that the agency needed to make the transition from the "water buffalo era"—the era of building dams, irrigation works and making the water resources available for maximum benefit of New Mexicans—to a period where water transfers are the primary mechanism for making better use of our current water supply. Issues such as instream flow, water quality, and environmental conservation of water will dominate this new era. When I became state engineer I was primarily concerned with taking the State Engineer Office from where it was to where I perceived it should be. Some will differ with me and I accept that, but I knew the transition needed to be made.

The water planning process is helping in that transition. The state water plan will develop from the grassroots level where water users from their communities will determine future water uses in New Mexico and how water concerns will be addressed. We are now at a crossroads—we don't know whether a new

state engineer will continue this approach or whether the Interstate Stream Commission will continue its support.

Today, I would like to talk more specifically about the water transfer process of changing existing uses to new uses. In the West, water transfers will be the mechanism for supplying water for new uses, unless some magical way of creating water is discovered. New Mexico and other western states are focusing not on project development but on the wise use of its existing water resources.

Water use transfers have significant third party effects. Whenever water is transferred from one use to another, you are going to affect existing uses and users. Prior to 1987, the state engineer principally looked at impairment of existing water rights. Since 1987, the state engineer has had to look at third party effects and some of those who are affected are water users with no water rights—fishermen, the duck hunters, those with water quality or riparian concerns, and so on. They may not hold water rights, but because of the change in the law, they have a voice in how New Mexico administers its water resources.

Economics drove water transfers in the past but economics will not be the sole basis for the transfer of water rights in New Mexico in the future. Other considerations must be made such as maintaining the traditional cultures of western communities, protecting water quality, and protecting the fisheries environment. From an economic standpoint, how do you measure the costs and benefits associated with water transfers from agricultural uses in traditional communities to new uses, such as for subdivisions? This is a problem the town of Taos is facing. The state engineer is being asked to consider denying transfers of existing water uses to new uses because it is changing the character of some areas. A decision I made on a water application in Taos was appealed recently. However, the judge dismissed the appeal because of a failure on the part of the applicant to serve proper parties. We won't know whether the decision I made was correct unless that applicant comes back before the state engineer and my decision is appealed again and ruled upon.

Public welfare issues were addressed in some decisions I made on the Pegasus gold mining application in Santa Fe County. An appeal of those decisions might not be carried forward. We may need to wait until the next application dealing with public welfare issues comes before the state engineer to see where we are headed.

Current Ideas for New Mexico Water Planning

Another concern is instream flow. Elsewhere in the west and in New Mexico where water is fully appropriated, it is a fact that water for instream flow can only come from the acquisition of senior rights. Opinions vary, depending on which part of the state one is from, on whether water should be appropriated for certain purposes or not. For example, if a water appropriation for mining purposes in Santa Fe County comes before the state engineer, you can count on packing a large room with people against that use. They consider that use to be against the public welfare. However, in Silver City or areas dependent on mining, you can pack that large room with people supporting the application. Therefore, is it proper for one individual to sit in Santa Fe and decide what is best in terms of public welfare for the entire state? I submit to you as state engineer that it is not in the best interest of the state of New Mexico for the state engineer to make those decisions unilaterally. Those decisions should come through the planning process and hopefully that's what the state water plan will help us do.

What can we look toward in the future? Does New Mexico provide for broad public input in the transfer process? If it does not, how can we reach that goal? In terms of the public welfare issue, the state engineer has taken the position that he will allow just about anybody to participate in the process—participants do not have to own a water right. Should that be changed? Is that going to constrain the transfer process? In other words, are you going to allow 5,000 people to get up and say the same thing and delay the water transfer process? Should New Mexico allow governmental entities or private individuals or private parties to acquire water rights for instream flow purposes? This issue is very important. As state engineer, I do not believe that the issue of instream flow in New Mexico is going to go away. We are either going to deal with it or it will deal with us. I can guarantee you that with the new federal administration, the instream flow issue is going to come to the forefront. Either the state takes the initiative or somebody else will.

With respect to water rights transfers, there are costs involved. When a transfer occurs from an agricultural use to a nonagricultural use, what is affected other than the cultural aspect of the community? The transfer diminishes the base of the resources on which the community acequia depends to maintain the ditch. If you take water out of irrigation, you take land out of irrigation. You have fewer uses for the ditch but you still have to have ditch maintenance expenses. That applies also to irrigation ditches. Should the state

engineer, under the public welfare criteria, require perpetual payments from the new owner of the water right to continue maintaining the ditches? Some states have addressed this concern. Should the state engineer and the courts require a continuing tax base to the counties from which you take irrigated lands when you transfer water rights elsewhere? New Mexico and the state engineer will have to deal with these issues.

Also, should the public welfare language in the law be clarified? Should New Mexicans allow the state engineer, through the water planning process or through his decisions, to define public welfare? Or should the citizens of New Mexico ask the legislature to define the term public welfare? If we consider New Mexico's traditional Indian and Hispanic communities to be unique and that people visit here because of the Indian and Hispanic communities, should we consider state legislation that permits or establishes historical zones around these communities that makes it more difficult to transfer water rights out of those communities? Who would establish historical zones—the courts in decisions similar to Judge Encinia's ruling in the *Sleeper* case, or the legislature? Should New Mexico promote and enact laws dealing with water conservation and the salvage of water?

Water banking is another current topic. From what I have read, water banks have been established in areas with surplus water available to bank. In a state like Idaho that has a water banking statute, farmers are voting surplus water into the bank. New Mexico is not a state with surplus water, so the water banking concept would have to work differently here.

The reuse of sewage effluent is another issue with which I am concerned. Arizona, California, and some other states are really gung ho on the reuse of sewage effluent. I think it is fine as long as you import the water from, for example, the Central Arizona Project, the Colorado River, or the San Juan/Chama River. If you deplete 100 percent of the water you bring in, it makes all the sense in the world to reuse the effluent. But in New Mexico where the reuse of the effluent is going to diminish the flow to an existing prior user, you have a different problem. Where interstate compacts exist, effluent reuse increases the depletion and causes a different kind of problem. What works well in other states may not work in New Mexico.

To what extent should water quality be considered in the water rights administrative process? In the past, water quality was not given much thought except for salt water encroachment. Should the state engineer under the public welfare criteria consider water quality issues? For example, suppose a subdivision is pro-

posed for an area above fractured granite and it is likely that septic tanks will leak and cause groundwater contamination. Should the state engineer take the position that the Environment Department should deal with what is a water quality problem and deny the permit, or should the state engineer deny the water rights application in the first place?

We are entering an interesting era of water rights management. Many of you in this audience are knowledgeable and experienced players in water rights management. I am not going to be state engineer for 35 years like my predecessor. I will probably move on in a year or two. But I have staff members who will probably be here ten or fifteen years down the road providing direction for water resources administration. As long as I am state engineer, I will provide my staff with the opportunity to make changes to the system. I am also open to your input. If you have concerns and suggestions on how to improve water rights administration in New Mexico, I welcome those comments.

In closing, I would like to say that it is different being the water rights administrator for the state and being an individual who has philosophies about how water should be administered. The buck stops with me. I do not have the luxury that others have—my decisions are subject to judicial review. In some areas, the law provides me with no guidance, I glean from what other states have done, from my own personal experiences and perspectives, and from my experience sitting at Steve Reynolds' side for 19 years.

My final thoughts concern whether New Mexico should continue to vest its water responsibilities in one individual in the future. I feel it is just too much responsibility for one individual, and those of you familiar with New Mexico's water law and how water is administered know of what I am talking. The state engineer was the Interstate Stream Compact Commissioner, served on seven of the eight interstate compacts, directed the staff of the ISC, and directed the State Engineer Office. I am not sure whether it is in the best interest of the state in the long run, especially given that the legislature sets the state engineer's appointment for a two-year term. Theoretically, you could have a new state engineer every two years.

Thank you for your attention and I will appreciate your comments.

Chris Nunn is an agricultural economist and associate of the Natural Resources Center of the University of New Mexico. For the past ten years her research and teaching at the University of Arizona and the University of New Mexico have focused on the role of local interest groups and governments in developing regional and state water policy. Chris is currently the project director of the Regional Water Planning Dialogue, a Western Network/Natural Resources Center project aimed at providing a forum for New Mexico regional water planners to explore their common interests and increase their effectiveness in the state water policy arena.



REGIONAL WATER PLANNING DIALOGUE: THE PECOS EXPERIENCE

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In 1983, when Federal District Court Judge Bratton found New Mexico's prohibition on water exports unconstitutional, he taught New Mexicans that we're going to have to do our homework if we want to keep our water. Judge Bratton told us, in effect, that to keep water in New Mexico when water-short neighbors want it, we will have to show that we need the water, that we have plans for the water, and that the water is crucial to the welfare of the people of the state of New Mexico. Judge Bratton will probably go down in history as the man who made the "P word" (which is what they call planning in Colorado) popular in New Mexico.

Suddenly, the way local communities used their water became a state problem. In 1985, the New Mexico Legislature gave the Interstate Stream Commission (ISC) instructions to fund regional water planning efforts in the state. This unique legislation did not explain what a water region was, or what a water plan was. Instead, it appropriated money for regional water planning and left the regions and the ISC to figure out what that was. The ISC and 23 regions of the state figured it out, and the ISC funded those 23 regions, some of which have completed their plans, some of which are nearly finished, while some are still in the early stages.

This regional water planning process has certainly broken new ground in New Mexico, where planning is not a household word. The regional planners decided what a plan was as they went along, doing something that had never been done before. On the local level, we saw a bottom-up process emerge in many regions, with grass-roots people showing great creativity, enthusiasm and concern about local water problems and opportunities. Questions of the deepest significance are being addressed in these local water plans. On the state level, we have a new state engineer with a new approach to state water policy. Eluid Martinez has brought with him a new openness to local/state partnership in making water policy. Again, questions of the deepest significance are being addressed at the state level—public welfare, conservation, instream flows, preservation of agriculture and traditional culture. This is an exciting time of change and evolution with regard to New Mexico water issues.

In spite of all this activity, there is relatively little awareness of water policy issues at the level of the general New Mexican public. While there is rich local activity at the bottom, grass-roots level, and an atmosphere of responsibility and change at the top, the water administration of the state, there isn't much happening in the middle. There is very little state-wide communication among regional planners and the gener-

al public. What we have is a kind of a sandwich with no filling. It's hard to get a sandwich like that to stick together.

That sandwich didn't stick together on Tuesday, November 3, when New Mexico voters failed to approve the sale of bonds for the purchase and retirement of water rights on the Pecos. Most New Mexico voters didn't know that the water obligation to Texas had anything to do with them. In other areas as well, regional water planners are having difficulty seeing how to go about implementing their policy, because the state-wide integration of these regional policies—the filling—is missing. To provide that filling, we need a cross-regional exchange of information and a forum for setting New Mexico priorities that express the regional priorities of the water plans. This part of the process has been missing.

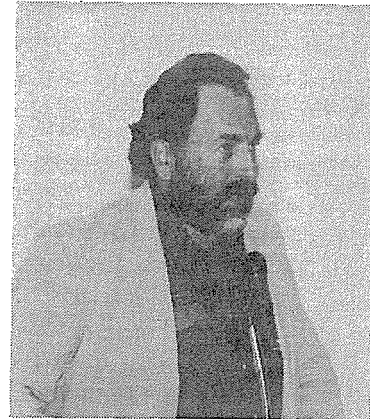
We felt the regional planning process offered an opportunity to bring regional water planners together in a way that would really contribute to the water planning environment of New Mexico, help to provide the missing center, the filling to the sandwich. The Natural Resources Center sponsored the Upper Rio Grande Working Group and the Wilderness Conference to bring New Mexicans together to talk about resource-management priorities. Western Network's mission—to resolve conflict in the public policy arena by helping people arrive at decisions that meet their needs—has resulted in a body of work in alternative dispute resolution, public involvement, and cross-cultural communication, as well as a research program which has produced a valuable series of sourcebooks and guides for water policy decision makers. The Natural Resources Center and Western Network are both organizations with experience in bringing people together to exchange information and set priorities. The regional water planning legislation itself has its origins in a study on state appropriation of unappropriated groundwater carried out by the Water Resources Research Institute and the Natural Resources Center associates.

We began by talking to people involved in regional water planning in the Pecos basin, because some problems on the Pecos are well-defined and acute. Three regional water plans touch the Pecos basin: the Mora/San Miguel plan, the Eastern Plains Council of Governments plan and the Lower Pecos plan. The story of these discussions and the roundtable at Las Vegas that came out of them is told in a handout available from Western Network. A document on the planning experience of these three regions and the proceedings of the roundtable is also available at the cost of reproduction. You're welcome to look at these, and we

invite you to talk to the many people here who were involved in that process. You will probably get quite a different story from each.

I won't tell my version of that story now, because I would like to use the time allotted here to ask two of the people who were at the roundtable to share with you their experience with their region's water plans, and what they see as the challenges faced by regional water planning today, as well as how they would like to see their work implemented. These two men—Antonio Medina, from the Mora Water and Land Protective Association, and Lee Tillman, the Executive Director of the Eastern Plains Council of Governments—demonstrate that expertise and creative energy in water planning and community empowerment in New Mexico is thriving at the grassroots level.

Antonio Medina is the executive director of the Mora Valley Community Health Services, Inc. and President of the Mora Water and Land Protective Association. Mr. Medina is a native of Mora County, a graduate of University of New Mexico, holds a master's degree in Social Work from the University of Illinois/Chicago, and a Master of Divinity from McCormick Theological Seminary in Chicago.



THE DANGERS OF WATER PLANNING IN ISOLATION: A NORTHERN NEW MEXICO PERSPECTIVE

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President*

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I very much appreciate the opportunity to speak to you this morning. The organization I represent is the Mora Water and Land Protective Association. It is a countywide organization concerned with water and land issues. We emphasize water *and* land because, for those of us in Mora County, water does not go without the land.

The water planning process has been instrumental in educating many of us from Mora and San Miguel about water issues, although planning is only one of many important water issues. For many of us, water and land have always been issues of life and death. Our history will substantiate that claim.

To provide you with my background, I am executive director of the Mora Valley Community Health Services, a community owned and operated medical and health services organization. I helped Mora County residents unite to organize our own health and medical services. Currently, we provide six different services: medical, ambulance, dental, home health, home care and community health. Community health is our most recent service initiated primarily because of our cultural and traditional concerns for community health care.

Another active organization in northern New Mexico, and of which I am a part, is the Siete del

Norte Community Development Corporation, a community development corporation begun in the 1970s, which remains alive and well in six counties in northern New Mexico. This organization is 70 percent controlled by elderly, low-income people from those six counties. Hispanic low-income elderly persons in their 70s and 80s are actually taking part in operating community development programs. That speaks to a cultural tradition that our elders are respected and remain active in our communities. Those of us who are middle-aged and younger are aware of the role our elders play and will follow in their footsteps.

Another organization instrumental in providing reflection and analysis is the Regional Planning and Development Group, comprised of seven counties, five in northern New Mexico and two in southern Colorado. The group is not only active in planning but also in addressing development needs. Planning cannot and should not be done in isolation. Much of what we hear in terms of water planning is reflective, in isolation with no context. However we all know that the context of water planning these days is economic need, and in some instances it is economic greed. The Regional Planning and Development Group represents natural, social, historical, traditional, and geographic regions including two southern Colorado counties. For those of

us who are natives of northern New Mexico, the two Colorado counties are culturally part of New Mexico and it is natural for them to be a part of the group.

A fourth organization is the Rio Grande Institute. The institute not only encompasses New Mexico but the southwestern United States. This organization is unique in that it is an effort by Native Americans and Hispanics along the Rio Grande to share with each other sacred memories, memories of ancient ways and truths. The Rio Grande refers not only to a geographic area but to the entire southwestern culture that grew from the river. The Rio Grande Institute deals academically and intellectually with many issues confronting us today, but remains very grounded and rooted in our ancient, sacred past.

Those of us involved in the Mora/San Miguel water plan have two or three specific recommendations from the plan to share with you. These recommendations emphasize the important role the acequia associations played in the planning process. I quote from the plan.

It is recommended that local governments recognize the historical, cultural and economic importance of irrigated agriculture in the community ditch associations to the region and work toward preserving the acequias. It is recommended that local governments consider a policy of restricting the development of irrigated lands to preserve the historical and cultural integrity of the acequias to the region. It is recommended that all irrigators beneficially use their water rights on a yearly basis to insure that their water rights are preserved. It is recommended that the community ditch associations encourage their members to refrain from building on or developing irrigated lands to avoid abandoning productive farmlands. It is recommended that community ditch associations be aware of any proposed transfers of water rights by any of its members and if necessary file protests of the transfer on the grounds that such transfers are inconsistent with the public welfare because it would destroy a traditional agricultural way of life and would be a part of a distinct pattern of destruction of the local culture.

We dared to take water planning and tie it to our history, traditions and culture. At the beginning of our

discussions, we debated about whether it was appropriate to include our history as part of the water planning process. We later discovered that, although not by statute, but by policy and rule, our culture is a very acceptable part of the process. Some of us would not have participated if this were not the case. The process required negotiations making the whole planning process alive and dynamic.

It is recommended that acequia associations consider participating in organizations such as the New Mexico Acequia Association.

The other important issue that I was asked to share concerns the issue of water transfers. The transfers issue is very important to us because it has to do with our whole tradition and history—where we come from, where we are, and where we are going. Although the dominant western society believes that planning and progress are linear, many of us do not agree. We reflect a more eastern way of life that begins at a center, goes out from the center and returns to that center. Water transfers are very threatening to us, to the very fiber of who we are. Transfers mean in a very real sense, the elimination of who we have been, who we are—it robs us of the opportunity of being and continuing to be.

Transfers from agricultural to nonagricultural, commercial and industrial uses are very threatening to us. The transfer of surface water to underground water also is a very important planning issue. A good example of very bad water planning and development is the proposed federal Mora Fish Hatchery and Technology Center. We are totally opposed to this project because of many of the issues I have presented today.

Another issue of concern is bioregionalism. "Bio" means "life," all of life, the totality of life. Bioregionalism means that we plan taking into account all of the natural elements of life in relationship with each other—not only water, but earth, wind, and fire as well. Not to do this is to plan superficially with the intent to isolate one element, such as water in this case, to exploit that element for economic and materialistic purposes. Let's challenge ourselves to plan bioregionally. It is necessary to our survival and our quality of life depends on it. By quality of life, I am not referring to a better standard of living in America. We are part of a global village in which many of the villagers are people of color, traditional people who remain tied to their traditional past largely because of their oppression and exploitation by developed countries. To be participants in a global village, we must plan from a bioregional perspective.

The Dangers of Water Planning in Isolation:
A Northern New Mexico Perspective

Several years ago, through the Regional Planning and Development Group, I coined an expression to describe the planning and development process for our native villages: "*De abajo para arriba, y de adentro para afuera.*" Or, "Development is from the bottom up, and from the inside out." So what you have is not a linear misconception again, from the bottom up. When you plan from the inside out, you establish a center, an intersect. When you begin a process, you first complement what is already there, because it does not belong to you. Respect for the past is required as the basis for tomorrow. Next, you supplement what already is present. Thus, first in the planning process is to respect and complement what is there, in this case, the Native Americans, Hispanics, acequias, cultural beliefs, traditions, and superstitions. Respect for a holy consciousness in the area is necessary. We are not an ignorant people, we are not only bean eaters. For centuries we have been plagued because many of you are ignorant of who we are. Dealing from the inside out is the only way to maintain control. Native Americans and Hispanics in New Mexico need to be in control of their destiny. We must control development and our resources. Otherwise, speculators and developers will obtain our resources. They will buy us out, and once they own the resources, they will be in control.

I am going to conclude and summarize my remarks by sharing a couple of sayings about ancient truths. From the ancient Jewish civilization, Jeremiah exhorts his people,

Stand at the crossroads and ask for the
ancient ways, wherein is the good life,
and walk therein and find rest for your
soul.

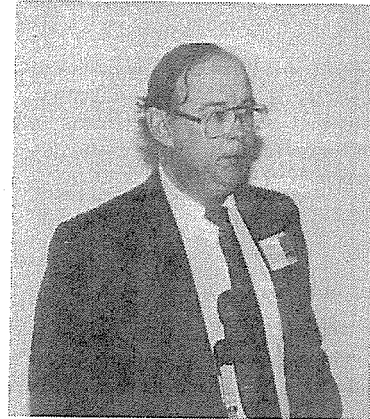
Notice the action verbs—stand, ask, walk and find! This is valuable wisdom and advice for our day. Mr. Martinez, our state engineer, stated earlier in his remarks that we are in transition when it comes to water planning in our state. We are at a crossroads when it comes to management and allocation of water for the future. Let us ask for the ancient ways wherein is the good life and walk in them and find rest for our lives.

The second ancient saying we need to keep foremost in our minds as we plan our water resources is,

*Un pueblo que obvida su pasado, corre
el riesgo de volver a repetir sus errores.*

A people who forget their past run the
risk of repeating its same mistakes.

Lee Tillman has been actively involved in water issues for many years in his capacity as Executive Director for the Eastern Plains Council of Governments from 1975 to present. He has been a strong advocate for cooperative planning to address water issues on a regional basis and assisted local leaders in the development of The Northeastern New Mexico Regional Water Plan, the first plan of its kind in the state. He has been actively involved in promoting the planning, financing and construction of the Ute Water Pipeline project as a solution to long-term groundwater supply problems for municipal and industrial users. Lee, a native of the Eastern Plains area, is a 1971 graduate of Eastern New Mexico University.



REGIONAL WATER PLANNING: THE EASTERN PLAINS APPROACH

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The word "context" has been mentioned a few times today and certainly regional water planning must be done in context. Other keywords used today have been "bottom-up process," "homework," "partnership," and "dust on the shelf." I believe the water planning process in eastern New Mexico was a bottom-up process, we did our homework, and we established some partnerships. Here is a copy of our plan and there is no dust on it—it is not on a shelf somewhere, and in fact, it has many notes in the margins.

It is my observation that 40 years is too short a period to look at New Mexico's water future. If we look at the historical life of communities in eastern New Mexico, 40 years is a blip in time in the life of a pueblo or municipality. We must look 100 years and more into the future to determine if we will have any water with which to work because if we don't have the water, we won't need to plan to deal with it.

Our planning region was established as one of the first in New Mexico after legislation authorizing regional water planning passed. I took the opportunity to testify before the legislature in support of regional water planning because I believed in the need to bring common water interests together.

The "hydrocommons" concept must be adopted in New Mexico. The eastern New Mexico planning region includes 20,000 square miles, 7.5 counties, 22 incorporated municipalities, about 11 acequia jurisdictions, 10 soil and water conservation districts, a conservancy district (Arch Hurley Conservancy District based in Tucumcari), and Ft. Sumner Irrigation District based in DeBaca County. We tried to include the needs of people from all those areas when we embarked on the planning process.

One homework assignment was the study of the very complex hydrogeology of three separate basins. In our area, there is a lack of data for water resources, particularly groundwater resources.

Ultimately, we tried to develop a plan that could be utilized on an ongoing basis by local jurisdictions. We began by indicating that this process would not replace local water planning. We did not want anyone to think that because they had been included in regional water planning in some peripheral way, their local water interests would be addressed adequately. You need to be involved in the regional planning activities where appropriate, but don't be lulled into complacency by thinking someone else is taking care of your

local public interests. Make sure your interests are represented, whether they are agricultural, environmental, or any other interest.

Our plan's goal was to utilize all available surface and groundwater effectively through beneficial use to meet current and future demands. What is at stake is whether our children and our grandchildren will have a water resource and land base in New Mexico on which to build their lives.

Our planning committee wanted to produce an action-oriented document. Fifteen pages of the document describes the plan which outlines these five strategies for local and regional action. Action strategies describe what individuals, private companies, local governments, and interest groups can do to promote common interests. The regional water plan took a stand on some public interest issues. Part of the problem of defining public welfare in our water hydrocommons is that we encompass such a large area of diverse interests. However, northeastern New Mexico is unlike other areas in the state in that our land is 85 percent privately owned. Twelve percent of the land is state owned and only three percent is federally owned. Thus at the very beginning of our plan we indicated that it is the region's policy to protect landowners' rights. When dealing with the regions' county commissioners, ranchers and farmers, you'll find this concept to be very precious and it will be defended and protected. We also assumed the fundamental policy that regional water plans should be considered in the administration of the state's water policy.

For your reference, I will provide you with our water planning strategies. I encourage you to share your individual regional water planning dialogue with others. We must improve communication to make water planning a vibrant and effective process.

Our first strategy dealt with the continuation of a cooperative planning approach. Do not think that the plan is done when it is printed, it is only the beginning, not the end, of the process. It's a snapshot of your starting place, not where you will end up. The planning process must be ongoing if it is to maintain the region's interests effectively. The plan must promote the preparation of local water security plans, a more detailed local water quantity and quality assessment which is particularly important for communities vulnerable to external or internal forces, which could lead to water quality problems or depletion problems.

We also wanted to evaluate special districts. When we started this process in 1987, there was a feeling that we might need groundwater control districts similar to those in west Texas. Because we felt institutions

are already in place, we did not propose any new institutions. Soil and water conservation districts exist and have been dominated by concerns about soil conservation issues. However, these conservation districts have authority for water conservation and water resource management purposes. They do require local financial support to get their job done. Other special districts such as water and sanitation districts could be utilized along with local governments, which have broad authority yet often are under-utilized in many communities.

A long-term water supply strategy is needed in eastern New Mexico. It must involve replacing the finite resources in a groundwater aquifer that will be depleted eventually. We speculate that the Clovis/Portales/Tucumcari area will need to augment their existing groundwater supply sometime around the year 2030, and that projection does not take into account major water quality problems or major raids from across the border. The Ute Water Development Project will address the groundwater depletion issue by providing a long-term water supply for municipal and industrial purposes.

When you start discussing the solutions to water problems, you inevitably end up talking about money. One thing New Mexico has not done is to set aside funds for assisting in instate water transfers and for solving water quality problems. We must be serious about saving money to pay for the expensive work that will have to be done to address our long-term water problems. Our plan proposes a water trust fund. A legislator from our area had proposed the establishment of a water trust fund as a means of funding needed projects.

Our planning group evaluated structural issues also. Everybody has a dam, pipeline, treatment facility or something that needs to be addressed. Engineering aspects were left to the local governments. Our concern was the need to improve and protect each area's water systems.

Our plan has a water conservation strategy. We encourage every community and household to develop its own conservation plan. I am pleased with the leadership the State Engineer Office is providing in trying to bring more focus to water conservation. Our group talked about agricultural conservation and management because of the big dividends possible from conservation. Contrary to what some people might think, from my vantage point in eastern New Mexico, the irrigated agricultural community is doing a good job in using water efficiently. Farmers are investing in improved systems and technologies and we encourage them to

Regional Water Planning: The Eastern Plains Approach

continue. However, we recognize that there is no incentive to conserve water in New Mexico because New Mexico's water statutes do not provide any incentive, for example, to line a ditch. The saying "water saved is water earned," is not reflected in state statutes. We think a serious effort must be made to provide incentives particularly for voluntary conservation. Our water plan addresses recycling and reuse, domestic conservation and management, and rangeland conservation and management.

Water quality was addressed in terms of localized programs like wellhead protection programs and other simple and straightforward programs that are possible but aren't established in New Mexico.

Finally, our group emphasized implementation because you don't have much of a plan if you don't have action behind it. In eastern New Mexico, many of our local communities have taken action to update systems, to prepare water security plans, to buy water rights and to make necessary public investments. We need to make public investments through broadened public participation. Public support is vital—if we don't have public involvement in the process, we can't implement the plan. The media needs to do a better job writing about water issues that affect the future of New Mexico. We must appeal to the media to get the message out to communities on the importance of water issues to every one of us.

I want to thank all of you for being here today. Your participation is an indication of the interest New Mexicans have in preserving their water future. It is through the union of very diverse interests that a dynamic planning process will yield positive results for future generations throughout New Mexico.

Joe Harkins is currently director of the University of Kansas Capitol Center, an off-campus teaching facility located in Topeka, Kansas and teaches management courses in the Departments of Public Administration and Health Administration. Joe served for eight-and-a-half years as director of the Kansas Water Office and four years as secretary of the Kansas Department of Health and Environment. Before entering state government he was an assistant professor of Human Ecology at the University of Kansas School of Medicine. While at the Kansas Water Office, Joe supervised the development of the first water plan in Kansas. Also during his tenure as a state official, he was responsible for the development of the state's first comprehensive health plan.



THE KANSAS WATER PLAN

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When we first started looking at developing a state water plan for Kansas, we thought it would be appropriate to assess past planning efforts so we could avoid repeating mistakes of our predecessors. We found the issue of water planning was nothing new—mankind has been involved in water planning for thousands of years.

One of the interesting water planning projects we discovered was a little known historical fact that may provide a foundation for future planning. It had to do with Moses. When Moses was leading the multitudes out of Egypt, he came to the banks of the Red Sea and, of course, they were blocked. Moses turned and saw a big cloud of dust off in the distance that was being raised by the pharaoh's army in hot pursuit. Moses called his three top advisors together and said, "It looks to me like we have two options here. One is to turn and fight; or, I'll get up on this rock, raise my staff and try to part these waters so we can escape across the floor of the sea." He turned to his first advisor who was his engineer and said, "What do you think?" His chief engineer replied, "Well, Moses, I don't know anything about military tactics. I can't advise you on our chances if we fight. I can tell you

this, from my calculations, if you succeed in parting these waters you'll raise the level of the sea several feet and you'll flood millions of acres." Moses said, "Thank you very much." He looked to his second advisor, his attorney, and he asked, "What do you think?" His attorney responded, "Moses, I'm like the engineer. I don't know anything about military tactics, but I can tell you this—if the engineer is right and we flood all that land, we are going to have lawsuits on our hands for years to come." Moses turned to his third advisor who was his public relations officer and said, "What do you think?" His public relations officer said, "Moses, I'm like the first two. I can't advise you about fighting. I can tell you this, if you succeed in parting those waters and we get out of this alive, I guarantee you three full pages in the Old Testament!"

Some things have not changed much since the time of Moses when it comes to dealing with water. There are still many people involved and major decisions are made for different kinds of reasons. We discovered that in 1917 the Kansas legislature passed a law that mandated the preparation of a state water plan and created the State Water Commission to prepare the plan. We have a very patient group of legislators in

Kansas. They waited ten years for the water plan to be prepared but it never came forward. They then passed a law in 1927 that abolished the State Water Commission and assigned the job to the State Board of Agriculture. Their patience was really tested as they waited from 1927 to 1947 for the water plan. No plan came forward. In 1955 the legislature passed yet another law and created an organization called the State Water Resources Board to prepare a state water plan. They waited from 1955 to 1978 and no water plan came forward. As a consequence, in 1978 the governor convened a group of people and asked them to sit down, talk about water issues and come up with a proposal for Kansas' water needs. These people were from a cross section of Kansas and included people from government and the private sector. The group met for 18 months and wrote a report called the *Governor's Task Force on Water*. Their basic proposal was, astonishingly, that Kansas needed a water plan.

The 1978 effort differed from the 1917, 1927, and 1955 efforts in that this group went the extra step and determined what the state water plan should be. They wanted a plan that dealt with policy issues including sections devoted to water management, water conservation, and water quality. Although fish and wildlife issues were left out initially, they were added subsequently. The group also believed the state water plan should include a section for each major river basin in the state. We still didn't have a water plan but for the first time in 80 years we finally had the framework for one.

It is important to keep in mind that the participants who wrote the report represented the first group to come to a consensus about what was needed. The movers and shakers in Kansas, those who were really interested in this issue and who knew it needed to be addressed, agreed up front on architecture of a plan. This was absolutely essential to Kansas' success in ultimately developing a water plan. Before we started writing, we had agreed on what the plan was going to look like.

In 1981 the legislature and the governor agreed to create yet another organization called the State Water Office and assigned it the responsibility of preparing the state water plan. Before initiating the planning process the Water Office reviewed the water plans of other states. Generally we found that most existing water plans were as big as the Chicago telephone book. They were out-of-date before they were finished and were sitting on a shelf. Those involved with developing the plans complained that nobody had paid any attention to their report and nothing was being done.

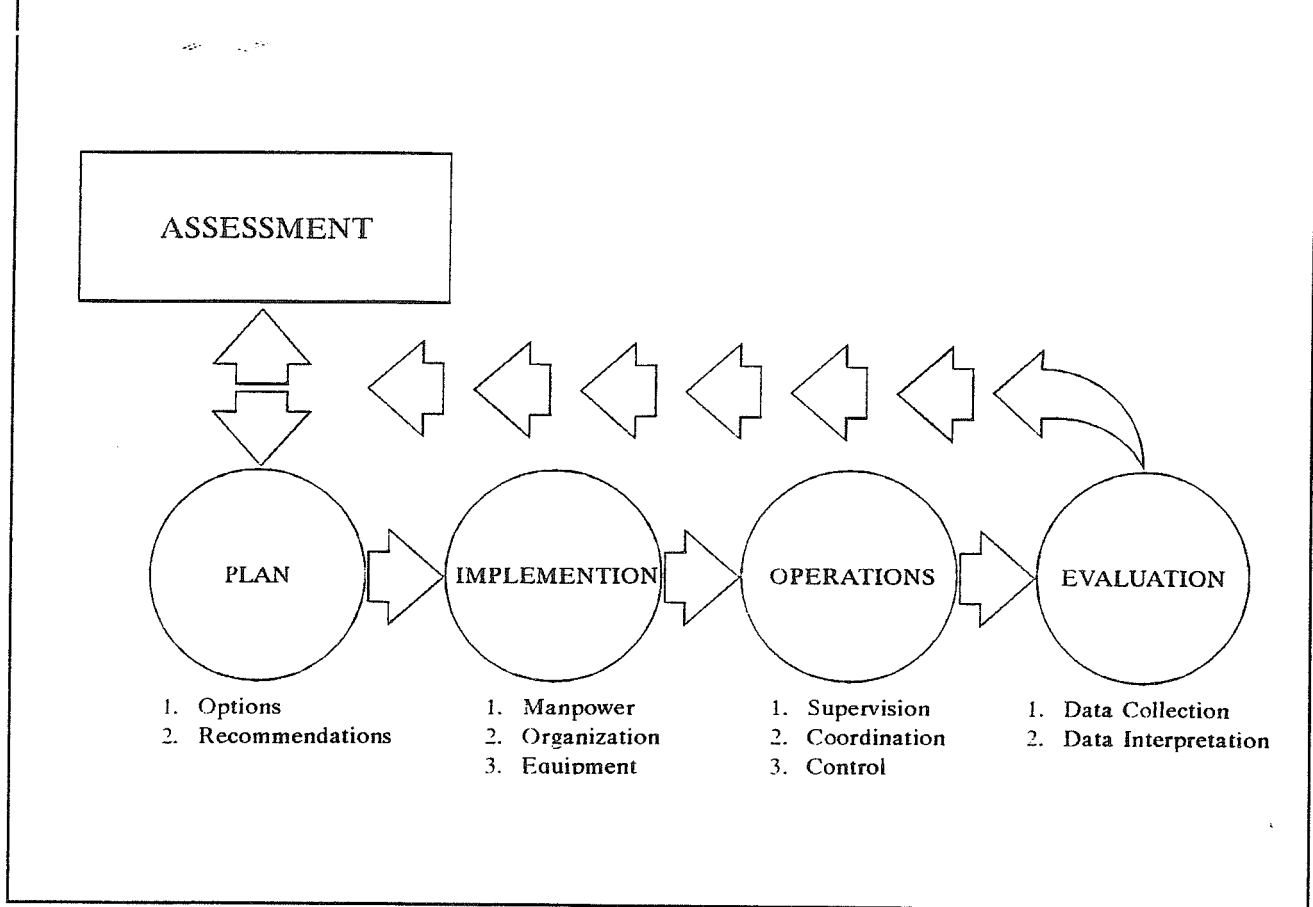
In Kansas, we decided that we wanted nothing to do with an exercise that required enormous energy, time and resources, only to have no one pay attention to it. Our diagnosis of the problems we saw in other states was straightforward and simple. The key weakness in state water planning around the country ten years ago was that water planning was out of context with the states' management processes, the processes through which the states made decisions.

Table 1 depicts a fundamental management principle in which I strongly believe. It is a simple process that everyone of you in this room uses in some way or another if you run an organization, if you manage a ranch, if you operate a business. You develop a plan, the strategy to implement the plan, execute the plan and have a means to evaluate the plan. The plan is revised depending on the evaluation results and the whole process begins again. It is a fundamentally rational process.

If applied to state government, the process cycles on an annual basis, at least it does in Kansas and most other states. The governor usually prepares and proposes a budget yearly. That budget is eventually funded and then implemented. Each year the governor submits a proposal for a new budget, the legislature evaluates it, and the cycle repeats itself. We decided it was crucial for the water planning process to be integrated into the state's management system. We repeat the entire process each year in order to have a document that can be used by the governor in his budget and policy proposals to the legislature. Water issues surface yearly, and if you do not revise your plan to reflect current issues, no one is going to pay any attention to you after a couple of years. They will retreat to the same old ad hoc policy development process and the planners will be off the field and in the cheap seats.

The fundamental concept becomes a little more complicated in Kansas because we have eight water agencies. One state agency deals with water quality, another regulates oil and gas, another deals with watershed development, another regulates pesticide use, another administers water rights and another conducts water planning. In other words, there is not one but a whole set of agency management processes. We had to develop a planning process that integrated the planning of all state water agencies, so that the plan did not become the water plan of a single agency, but a plan representing the joint efforts of eight water agencies all speaking with a common voice. We knew that if the plan represented only one agency, we would go before

TABLE 1. Fundamental Management Principle



the legislature and seven other agencies would be there to shoot us down.

Every policy issue addressed in the planning process is discussed by a technical advisory committee comprised of individuals competent to deal with specific issues. We did not care whether they work for state, federal or local agencies, private organizations, or whether they are private citizens. We find the best eight or nine people and ask them to sit down at a table and noodle the issue. A staff member then prepares a background paper on the issue. Keep in mind that there are many groups meeting simultaneously.

After the background paper is prepared, it is taken to the state water authority which determines if the paper is complete enough for the purposes of drafting a subsection of the state water plan. With water authority approval, staff develops a draft subsection of the state water plan. It is then taken back to the water authority to determine if it is in good enough shape for public review. If so, it is taken to 12 public meetings

held throughout the state for public scrutiny. The results of those meetings are then used to redraft the subsection. The redrafted subsection goes back again to the state water authority. The water authority determines whether it has been sufficiently improved and whether or not it is responsive to the public input. If it is determined that it meets these requirements, two formal hearings are held, one at each end of the state. The results of those hearings are reviewed by the water authority again, and if the subsection is still alive, it is put in final form and adopted as a component of the water plan.

Every new issue in the water plan is subjected to the same process. At the end of a 12-month cycle, the updated plan is sent to the governor and the legislature.

Developing 12 basin plans follows the same process as the policy sections. Instead of ad hoc technical advisory committees, we have a permanent advisory committee comprised of 12 members from each basin.

After a basin plan is drafted it goes through the same laborious process of public meetings and public hearings as do policy issues.

Does it pay off? It has paid off for us because the majority of recommendations in the water plan get done because so many people have reached a consensus up front. The legislature is accustomed to having people come before committees and argue and fuss. The legislators are very happy to have people with divergent points of view come in and say, "We worked this out. We are all in agreement with the subsection of the water plan and we think it ought to be passed." It is a whole different approach to dealing with the legislature.

Now we get to the implementation phase and that means money. Much of what we want to do in the basin plans costs money. We designed a process for allocating funds called the Annual Implementation Plan. Every year in addition to the planning process, there is a separate process which includes developing a detailed budget for each of the state's 12 river basins. The budgets are subjected to the scrutiny of the basin advisory committees, which advise the water authority at two different stages during budget preparation. Ultimately a single budget for water issues in all 12 basins is finalized and submitted to the governor in time for the governor to prepare annual budget recommendations.

Several years ago the legislature created a special fund for implementing the annual state water plan recommendations. Thus, we do not submit a wish list to the legislature. We know exactly how much money we have each year for implementing the water plan, about \$16 million. We recommend to the governor and legislature the priority issues in each of the 12 basins. In the past five years, under two different governors, virtually no changes have been made in the proposed budgets and nearly every recommendation has been funded and is in the process of being implemented. It goes back to the issue of having a consensus up front.

Who are the strongest advocates for those budgets when they go before the legislature and the governor? Obviously, they are the leaders in the basin areas throughout the state because they feel they have been treated fairly and those budget proposals represent their priority needs. The representatives and senators from those parts of the state are told by their constituents that they played a part in the budget development, it represents their priority recommendations, and, yes, they think their representatives should approve it. As a consequence, we have been very successful in obtaining funds for implementation.

When we began our efforts, we had two major obstacles to get the state bureaucracy to switch its behavior and think and act in terms of natural boundaries. Each of the eight state agencies had a different set of administrative boundaries. No two were alike, one agency had four boundaries and another one had two. Thus we were dealing with 14 separate administrative boundaries that did not reflect the state's natural boundaries. In our plan, we had budgeted by basin, but we did not have an administrative mechanism in any one of the eight agencies to implement the budget.

A second problem was that historically, we had set up all our state activities along categorical lines so that one staff member deals with water wells, another with oil wells, another with disposal wells, somebody else in another agency deals with waste dumps, and so forth. Nobody has responsibility for the big picture. Each staff member is doing their own thing in their field. We are making a concerted effort to change that thinking so that a piece of geography is seen as a common responsibility for all agencies that deal with it. Agency staff must work together and start communicating with each other about implementing and managing their programs. To encourage better communication, we created basin coordinating teams for each basin. Teams meet and work regularly on developing basin budgets. We are not yet sure where we want to be in terms of comprehensive and efficient management of water on a geographic basis in Kansas, but we are beginning to break down the obstacles of categorical programs and illogical administrative boundaries.

Evaluation is a term that is used constantly in government. Usually this amounts to bean counting. For example, if you are planning to build four dams by year's end, you simply count the dams you have built, to determine whether you met your goal. That is not the kind of evaluation we are talking about with this process. We are developing data systems that help us evaluate what is happening in the state. We have invested much effort developing an information system that monitors water use in Kansas. Water reports are produced that focus on each county, right down to a township. We can monitor water use by every municipality and every rural water district. Comparisons can be made of one area to another with similar needs to determine whether the area is using its resources efficiently or not. Of course, we make that information public. The information has done a lot to encourage people to make changes in how they use water.

In terms of water quality, Kansas, like most states, has limited water quality information. As a consequence, we have urged and have been successful

in getting the U.S. Geological Survey to designate four-fifths of the land surface in the state of Kansas as part of the Survey's National Water Quality Assessment Program. This designation is going to produce enormously beneficial information on water quality over the long-term. The 20 percent of the land area not in that system will be monitored using the same methodology as the rest of the state, although the state will pay the full cost of that monitoring instead of sharing the cost with the USGS.

In summary, I have talked about having a vision and a consensus on water planning. It was very important to Kansas' success to have a vision and consensus up front. Secondly, when you talk about the planning process, you are not talking about the process of preparing the plan. You are talking about a management system that includes developing the plan, putting budget priorities in place, implementing proposals, and evaluating the long-term success of the program.

In Kansas, we had a commitment by Republicans and Democrats that this was going to be a bipartisan effort and for over 10 years the effort has been above partisan bickering in the legislative process. This project was undertaken under one governor and then was handed to another governor, and subsequently to another. It is now in the hands of a fourth governor and it never missed a beat because of the commitment at the executive and legislative levels. This has happened because the real power for the system comes from private citizens who tell the legislators that they like the process and the product.

Steve Hernandez received a Bachelor of Science in Business and a Juris Doctorate from the University of Arizona in 1977. He worked as assistant city attorney for the City of Tucson where he was involved in drafting new groundwater legislation and represented the city in its negotiations for water from the Central Arizona Project. From 1980-1981 he served in the Solicitor's Office, Department of Interior in Washington, D.C. From 1981 to 1992 he was actively involved in the litigation of the City of El Paso's applications to appropriate water from New Mexico and was successful in having the applications dismissed on behalf of the Elephant Butte Irrigation District. He is post-chair of the State Bar Section of Natural Resources, Energy and Environmental Law Section and is a member of the Model Water Code Task Force, ASCE. He concentrates his practice in the area of natural resources and is a partner in the law firm of Hubert & Hernandez, P.A.



REACHING THE JOINT SETTLEMENT BETWEEN EL PASO AND NEW MEXICO: AN UPDATE ON EL PASO V. REYNOLDS AND THE COOPERATION NOW EMPHASIZED BETWEEN EL PASO AND NEW MEXICO

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INTRODUCTION

The ruling by the United States Supreme Court in *Sporhase v. Nebraska* spurred many states to re-examine their ability to protect their citizens in terms of long-range water planning. *El Paso v. Reynolds* prompted southern New Mexico to be one of the first areas to examine water planning within such a diverse cultural and economic area. This paper attempts to show how the El Paso litigation has spurred this process.

BACKGROUND OF THE EL PASO WATER SUIT

- September 5, 1980 - The City of El Paso through its Public Service Board files suit in New Mexico

District Court against the State of New Mexico, claiming the state's Water Embargo Statute was unconstitutional because it violated the Commerce Clause of the United States Constitution.

- September 11, 1980 - New Mexico State Engineer Reynolds declares the Lower Rio Grande underground water basin which stretches from the New Mexico/Texas state line up the Rio Grande to a place near Radium Springs.
- September 12, 1980 - New Mexico State Engineer Reynolds declares the Hueco underground water basin in the proximity of the Texas/New Mexico state line on the east side of the Franklin Mountains near the New Mexico community of Chaparral.
- September 12, 1980 - El Paso files applications for permits to drill 266 wells asking for 246,000 acre-

feet of water from the Lower Rio Grande Basin for export into Texas.

- September 18, 1980 - El Paso files permits for 60 wells requesting 50,000 acre-feet of water in the Hueco Basin for export into Texas.
- April 21, 1981 - The State Engineer denies all permit applications based on the Embargo Statute.
- May 15, 1981 - Federal District Judge Howard Bratton allows Elephant Butte Irrigation District to intervene in the federal suit. Elephant Butte Irrigation District (EBID) is responsible for the delivery of water from the Rio Grande project to 90,640 acres within the district boundaries, most of which now lie in the Lower Rio Grande Basin. EBID could be the most affected entity because the pumping El Paso proposes could impact its surface water delivery to its constituents.
- July 2, 1982 - The United States Supreme Court rules in *Sporhase v. Nebraska* that water is a good in commerce and, therefore, falls under the Commerce Clause of the United States Constitution. All western states, including New Mexico, must now reanalyze restrictive water transfer statutes.
- January 17, 1983 - Federal District Court Judge Howard Bratton rules that New Mexico's Embargo Statute is unconstitutional and violates the Commerce Clause.
- February 22, 1983 - The New Mexico legislature repeals the embargo statute and passes a new state law establishing the procedure for out-of-state export of New Mexico groundwater. For the first time, the law examines the conditions under which exports would be allowed and also takes into account public welfare and conservation of water within the state as considerations to be reviewed by the State Engineer.
- August 3, 1984 - Federal District Court Judge Howard Bratton rules that most of the provisions in New Mexico's new export law are constitutional and points out that there may be problems with applying the public welfare and conservation of water criteria to out-of-state transfers only.
- April 4, 1985 - Following the guidance of Judge Bratton, the New Mexico legislature adds the conditions of public welfare and conservation of water as criteria to the application and transfer of water rights within the state as well.
- November 18, 1986 - Administrative hearings begin in Las Cruces on El Paso's applications to drill wells in the Hueco Basin under the new export statute.
- December 23, 1987 - The State Engineer rules that El Paso is unable to show that it has an insufficient water supply to meet its needs for the next 40-year period and denies all applications. The decision notes El Paso's ability to obtain water by contract from the Rio Grande Project through the El Paso Irrigation District.
- January 13, 1988 - El Paso appeals the New Mexico State Engineer's decision to the New Mexico District Court before the Honorable Manuel Saucedo.
- March 4, 1989 - Judge Saucedo dismisses El Paso's applications because of their failure to properly appeal from the State Engineer's decision.
- April 6, 1989 - El Paso files an appeal from Judge Saucedo's dismissal to the New Mexico Court of Appeals. The case subsequently is assigned to a facilitator to determine whether the case may be resolved.
- March 6, 1991 - After extensive negotiation sessions with the facilitator, George Perez, the City of El Paso, Elephant Butte Irrigation District and New Mexico State University reach a settlement.

THE EL PASO SETTLEMENT AGREEMENT

Under the Settlement Agreement, the City of El Paso agreed to the following:

- to withdraw its litigation in state and federal courts;
- to withdraw all its pending well applications in New Mexico;
- to withdraw all protests to applications by New Mexicans for appropriation and transfer of water within the Lower Rio Grande basin;
- to withdraw its counterclaims and crossclaims in the stream adjudication proceedings on the Rio Grande south of Elephant Butte Reservoir;
- to meet its water demand, the supply should come from 1) conservation, 2) surface water, and 3) groundwater;
- to study the Canutillo Wellfield in the vicinity of the New Mexico state line to determine whether and to what extent pumpage from that wellfield is affecting Rio Grande Project water supply and to identify appropriate measures to be undertaken; and
- to continue using groundwater, including drilling new wells, but to do so consistent with its new priority goals.

Elephant Butte Irrigation District

EBID had argued throughout the litigation that there was surface-water supply from the Rio Grande Project available to resolve El Paso's water needs. Forty-three percent of the water in the Rio Grande Project belongs to the El Paso Irrigation District. Elephant Butte Irrigation District urged El Paso to resolve its differences with its own irrigation district. To facilitate El Paso's use of surface water, EBID agreed to:

- withdraw its claims against El Paso in the stream adjudication in New Mexico and to withdraw its attack on El Paso's Canutillo Wellfield without prejudice.
- not assess any new fees on additional supplies of surface water for the region from upstream sources being transported through EBID's present system for delivery to Texas. Fees would still be assessed on basis of actual operation and maintenance costs attributable to the use of that water.
- look at releases of Rio Grande Project water on a year-round basis to help facilitate El Paso's use of surface water in its municipal plants year round. EBID has already outlined a route to take El Paso municipal water from the Rio Grande Project which would maintain water quality and facilitate delivery to El Paso's water treatment plants.

Joint Water Settlement Commission

The settlement agreement also stipulated that a joint water commission be established between parties to the agreement to promote coordination and cooperation with respect to common water resources interests. Half of the joint commission members would be appointed by El Paso and half would be appointed by the New Mexico parties.

The parties have consented to work together to study, identify and address common concerns and objectives with respect to water resources in the region including the possibility of securing additional surface-water supplies for the region from upstream sources.

The parties also agreed to study conveyance facilities to carry Rio Grande Project water by pipeline or other means from Caballo Reservoir to downstream points in Texas. They also will work cooperatively to maximize the utilization of waters in the Rio Grande Project to meet current and projected long-term agricultural and municipal needs of the region.

In addition, the parties agreed that, if consistent with applicable law, conserved water should be treated as the property of those responsible for the conservation.

PROGRESS OF THE JOINT WATER COMMISSION

The Joint Water Commission has met regularly since the settlement agreement was signed, and both sides have employed engineering firms to address water supply problems in El Paso and southern New Mexico.

The firm of Engineering-Science completed its report entitled *Surface Water Supply Alternatives for the City of El Paso and Southern New Mexico Users*. The report outlined the rationale for the City of El Paso to use surface water as its number one priority to meet future needs. It also suggested that a municipal surface water alternative could work in southern New Mexico as well.

Boyle Engineering was retained by the El Paso Public Service Board to submit an engineering report entitled *Water Resource Management Plan* on the feasibility of using surface water for El Paso's future growth.

The reports were exchanged between the New Mexico and Texas parties. The commission has decided to reconcile and integrate relevant elements of each report into a joint surface-water program through a three-phase study. It also hopes to have contracts in place by December 1, 1992 with the two engineering firms. The plan of study is outlined below.

Phase I - Determine Quantity of Surface Water Available

- quantify additional surface-water supplies which can be realized from changes in operation of the Rio Grande Project
- examine reduction of seepage and other losses in the system as well as a reduction of evaporation losses by changes in storage patterns in project reservoirs
- using existing data and information, quantify the amount of Rio Grande Project water available for municipal use considering current restraints on the water supply

Phase II - Evaluate and Formulate Conceptual Water Supply Plan(s)

- evaluate proposed construction of a lined canal from Caballo Dam to the American Dam to function as the main transmission facility to serve most project beneficiaries

- evaluate regional and/or individual water treatment plants in New Mexico and Texas
- evaluate the potential for water banking of surface water for the Mesilla Bolson
- evaluate the potential for water banking of surface water in the Hueco Bolson

Phase III - Perform Route and Location Studies of System Facilities

- evaluate use and lining of existing project canals and laterals for a regional conveyance canal
- prepare reconnaissance-level layout of a new conveyance channel from Caballo Dam to the American Dam without using existing project facilities
- evaluate alternative sites for the placement of regional and/or individual water treatment locations
- prepare preliminary assessment of environmental and regulatory constraints
- prepare preliminary layout of project water system
- select optimum project water system plan and prepare summary report

THE FUTURE OF THE JOINT WATER COMMISSION

The City of Las Cruces, Dona Ana County and the State Land Office will be joining the Joint Water Commission in addition to the City of El Paso, New Mexico State University and Elephant Butte Irrigation District.

The New Mexico entities will seek future funding from the legislature to continue to fund the engineering reports which will prove to be a key part of the overall regional water plan now being spearheaded by Elephant Butte Irrigation District.

On October 30, 1992 President Bush signed the Omnibus Water Bill which will transfer the rights-of-way currently held by the United States in the Rio Grande Project to Elephant Butte Irrigation District.

The transfer of the rights-of-way back to Elephant Butte Irrigation District will allow EBID to plan for multiple use of its existing conveyance facilities. In other words, some transmission facilities may now be able to be concrete lined and carry agricultural and municipal water in such a way that the water quality for the municipal supply can be kept higher. Without the involvement of the federal government who used to hold title to these conveyance facilities, the implementation of progressive changes and modernization of the facilities should be much easier to accomplish. Another important part of the District's participation in

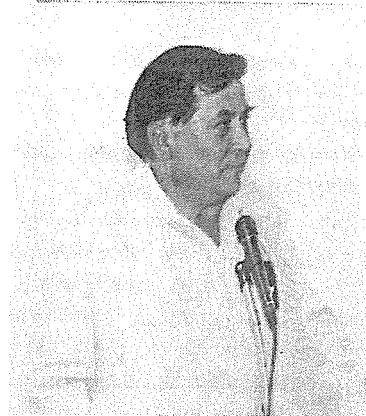
upgrading its facilities will come about as the result of federal litigation against the United States regarding revenues from project lands.

Elephant Butte Irrigation District v. U.S. Department of Interior, CIV 90-0095-HB. On September 3, 1992 Judge Howard Bratton ruled that Elephant Butte Irrigation District is entitled to the benefits of the 1924 Fact Finders Act. The district will now have access to revenues from project lands for work on the irrigation system. It is hoped that these revenues can be used in projects undertaken by the Joint Water Commission.

CONCLUSION

After years of litigation, it is hoped that Texas and New Mexico interests may identify water planning efforts that benefit both regions. As long as each region respects the cultural and community values and makes decisions which benefit both sides of the state line, then individual elements of regional water plans may be integrated. As El Paso learned in the litigation, the people in southern New Mexico value the lifestyle and agricultural nature of the region and it is just as important to preserve that as it is important for El Paso to succeed as a major economic power in its state. Any final agreement on jointly utilizing Rio Grande Project supply to benefit both New Mexico and Texas interests will depend upon the respect of the values that each region holds important to itself.

Wilfred Gutierrez retired from Los Alamos National Laboratory three years ago. He is a full-time farmer in Velarde and has been active in community affairs for over 30 years. Wilfred was instrumental in establishing the Velarde Acequia Project. He has served on the New Mexico Acequia Commission for three years. The Commission was established by Governor Carruthers in 1986 to help acequia users learn about their rights and the laws which affect the acequias. The Commission also advises the Corps of Engineers on rehabilitation programs for the acequias. Wilfred occasionally writes articles for the Water Line, the State Engineer Office newsletter.



THE ROLE OF ACEQUIAS IN WATER PLANNING

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How should the acequia organizations and Acequia Commission fit into New Mexico's water planning process? The answer is quite simple, but we must first discuss the acequias' background.

HISTORY OF ACEQUIAS

The acequias, or community ditches, have existed in their present form for approximately four centuries. The acequias were the main source of water for farming and pueblo (village) use. They provided water for agricultural use, domestic use, and for home building.

Acequias have been recognized by territorial and state statutes and are considered a political subdivision of the state, and the oldest form of democratic government still in practice in this country. New Mexico is the only state to have this unique historical and rich cultural heritage. Because of this, we must work hard to protect and keep acequias for our future generations. Approximately one thousand acequias exist throughout the state with thousands of water users relying on this source. The acequias' impact is, has, and will be a great tribute to New Mexico's economy, and its historical and cultural values.

Problems and Concerns

Many new people are settling in New Mexico, and with a growing population comes new demands for our water. Instream flow, minimum stream flow and riparian issues can adversely affect acequias and community life as it has existed for generations. The bottom line on these issues is that water should be flowing in the streams and rivers at all times. That statement sounds good and well; it is impressive, idealistic, and environmentally sound thinking to want water flowing in the rivers at all times. We would all like that to be the case. But at what cost and at whose expense? Let's look at the ramifications.

At some meetings held in Santa Fe, attended by acequia users and myself, the group interested in sponsoring instream flow, minimum stream flow, and riparian legislation had not done their homework. As I told them, the acequia people cannot support such legislation. Legislation has been introduced during the past two legislative sessions and acequia people have fought against it and had it killed. We will do the same again.

Those interested in such legislation have not addressed the following questions:

- What streams or portion of streams are they interested in?

- How much water is flowing in these streams?
- Who would pay for the exorbitant cost to enforce a new law?
- Have they considered creating a fund in case of violence to help families of the victim(s) and defendants?

New Mexico taxpayers cannot afford such a program, especially when there are other more pressing needs. It's very simple to say "purchase senior water rights and flow them downstream," but in reality, the issue is more complicated.

Because of our growing population and its demand for water, we need to put a moratorium on big housing developments until we can quantify our potable water resources, establish a program to clean water that has been contaminated, and keep our clean water from becoming contaminated. If we continue on our present course, the day will come during the dry-cycle years, when water scarcity will change our way of life forever. The demand for human consumption will outweigh all other needs and all the hard work many of us have done will be in vain. This should be our top priority.

Adjudication is mandated by law. On the positive side, through adjudication our water rights will be identified. However, on the negative side, litigation is expensive, both in time and money. Litigation has been a big burden on the *parciantes* (water users). The Aamodt case has been going on for twenty-eight years, at a tremendous cost to both sides.

Another problem is the pitting of acequia against acequia on the same stream, and *parciantes* against *parciantes* on the same acequia. People have to spend a tremendous amount of money and time to prove ownership of water rights which belong to them. Much taxpayer money has been spent by the state and federal governments on these litigations. This money can better be spent to improve our existing acequias and way of life.

Acequia Users' Involvement in State Water Planning

The acequia people have been some of the oldest users of water in New Mexico. We have a vested interest in how our water is used in the future. Therefore we must be included in water planning for New Mexico. We have very knowledgeable people who can contribute excellent ideas on water use. New Mexico will gain by including us in the planning process, listening to our ideas and suggestions, and implementing our recommendations.

The New Mexico State Acequia Commission can be the vehicle for the acequia people to get their ideas and recommendations to the appropriate agencies. One of the many duties of the commission is to interface with the Governor, the legislature, and state and federal agencies on acequia matters. The commission can be an integral part in water planning by relaying important information both ways.

My heartfelt thanks to Dr. Tom Bahr and the staff at the Water Resources Research Institute for inviting me to speak here today. It is a pleasure for me to be here, especially to discuss these critical water issues. Of the many issues facing us today, this is our most important. Water is one of our natural resources that cannot be taken for granted. Without water, we cannot survive.

Tim DeYoung is a member of Modrall, Sperling, Roehl, Harris and Sisk's Natural Resources section where he practices in areas of water law, natural gas litigation, mining law, environmental contamination, and public land laws and regulations. Tim received a Ph.D. in Government with a specialization in natural resources administration from the Claremont Graduate School in 1977. He was an assistant professor in the Political Science Department at University of New Mexico for three years and an associate professor in UNM's Division of Public Administration for seven years. Tim graduated from UNM Law School in 1990. His UNM awards include the 1990 Honors in Clinical Law Award, the 1990 Natural Resources Thesis Award, and the Bondurant Research Fellowship. He has authored several articles and books, primarily in the area of water resources policy and administration. His recent publications include "Instream Flow Protection in a Water Market State: The Case of New Mexico" and The New Mexico Water Law Manual.



THE MANY FACETS OF INSTREAM FLOW

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I'm very happy to be here in Taos. The last water meeting I attended in Taos was with the Upper Rio Grande Working Group. I remember the late Señor Andres Martinez getting out a great big magnifying glass, everyone looking at him, and someone finally asking, "Mr. Martinez, what's that for?" He responded, "I find that this contraption is very handy for keeping track of what the state engineer might be doing to me in the legal notices in the newspaper." I feel the spirit of Andres Martinez here as well as the spirit of Steve Reynolds.

About ten years ago I was asked to address that year's water conference about water planning. It was held in Albuquerque and I remember Steve Reynolds would always find a prominent place at these meetings, chain smoke cigarettes and keep us honest. He would correct anybody, even during their presentation if they said something he thought was wrong. We have a changed atmosphere here today. No longer is planning a dirty word. I agree with the other speakers

who believe this is an exciting time for New Mexico water policy and planning.

Peter Drucker talks about the end of the commodity view, the commodity age, and the beginning of the informational age. I think his views apply to water. No longer do we think of water as a thing to be bought and sold to the highest bidder. This is the age when we begin to look at connections, interconnections, and interrelationships, rather than looking at water as something to be used, to be developed, and with which to make a profit.

Today I want to talk about a couple of issues. First, I'll talk about the ecology of instream flows and how instream flow water rights, if they are recognized in New Mexico, might impact that ecology. Second, I'll talk about the legal aspects of the problem by looking at some historical attempts by the state legislature to recognize instream flows.

My seven-year-old daughter Alana and I live in the North Valley of Albuquerque, where we can get on

our bikes and ride along the ditches of the Middle Rio Grande Conservancy District. The ditch is a wonderful place for us to go, a place where we don't have to worry about cars, and a place where we can enjoy free-flowing water. Very quickly we get to the fields surrounding the Anderson Vineyards that is one of the last open spaces in Albuquerque's North Valley. It occurs to me that instream flows perhaps is a misnomer. Even though the water doesn't flow all year in the ditch, when that water flows in the summer time, it's a good place to be. It's a quiet place, a riparian habitat, a place to get out of the heat, a place to enjoy free-flowing water. It saddens me to hear talk about how the acequias will fight attempts to implement instream flow protection. It seems to me that we have flows, free-flowing waters in acequias, that create instream values. Instream flow protection, if it is broadly defined to include natural and man-made riparian habitats, should include the acequias, not be a threat to them.

Let's think about ecology. "Eco" means home. Let's think about the home where we find water and the home that water creates. If we think about three types of watersheds in New Mexico, or surface flow regimes if you will, then we can begin thinking about the ecology of instream flows. First of all, we have natural, free-flowing rivers and streams, although we don't have many of them. These are the streams above reservoirs, above the acequias. These rare stretches largely are found on federal reserves including national forests, and federal and private lands. By and large, instream flows already are protected by the land owners, such as the U.S. Forest Service or Bureau of Land Management (BLM), and there does not appear to be an immediate need for further protection.

The second type of watershed is much more prevalent in the state, the artificial free-flowing streams and rivers found between reservoirs. In some cases, these stretches are regulated for the express purpose of protecting and preserving riparian habitats but in other locations, riparian habitat protection is an incidental or unintended benefit. For example, some of our best trout fisheries are tail waters below reservoirs. The instream flows in those stretches generally are managed by the Bureau of Reclamation (Bureau) or the U.S. Army Corps of Engineers. Importantly, these watersheds are being protected throughout the West without the creation of instream flow water rights.

I recently attended an instream flow conference in Jackson Hole, Wyoming. It was tough duty, I had to do some instream flow monitoring with my fly pole and I'm pleased to report that the Snake River still has

some fish in it. Interestingly, I never heard anyone talk about the need for instream flow water rights. Instead, instream flow management below reservoirs was talked about most often. The Bureau of Reclamation is doing some incredible things in terms of managing instream flows. In the Columbia River Basin, for example, regulation of flows to protect endangered salmon species is occurring. And it was encouraging to me to hear some of the Bureau people talking about managing flows, managing timing, not just for irrigators, but for preservation and enhancement of riparian habitats.

In the Colorado River Basin, which of course includes the San Juan River, endangered fish species including the Colorado squawfish, the humpback chub, and the razorback sucker have led the Bureau to enter into a Memorandum of Understanding with the U.S. Fish and Wildlife Service to mimic historic flows. In other words, to imitate the pre-reservoir pattern of high spring flows and lower flows in the winter time. This is a good example of instream flow management, but there have been effects downstream. Tom Bolack's ranch along the San Juan River, for example, suffered the loss of thousands of geese eggs due to rapid increases in releases from Navajo Dam last spring. So, instream flow management is a difficult task. But the point I want to emphasize is that instream flows can be regulated, are being regulated, and riparian habitats protected, all without the creation or use of instream flow water rights.

In New Mexico, I have talked with a number of people. Tom Mottle with BLM tells me that on the Rio Chama, they are reaching the point where they have a final plan almost in place regulating flows for rafters. Rich Barrios of the Bureau also tells me that flows are being managed for recreation and for habitat protection. As a fly fisherman I wonder about that, and I worry about effects downstream to some of the acequias. However, I think those problems are being resolved.

At the same time, I have seen evidence that along the Rio Grande, the Gila, and the Pecos River, there are times when the main channel of those rivers dries up completely. It dries completely and jeopardizes endangered species such as the silvery minnow as well as other flora and fauna. In fact, you can point to endangered species in each of those watersheds. The ironic thing is, in those segments the river may be dried up, but the highline canal is almost full as it takes water down to Elephant Butte, to Safford, or to Texas. So I think there is a crying need in those situations for at least minimum flows for the preservation of the existing fish populations as well as the other

The Many Facets of Instream Flow

wildlife that depend on minimum flows. Instream flow water rights, however, are not going to solve these problems largely because those rivers are controlled either by conservancy districts, the Bureau, or other agencies. This is project water that generally is governed by a whole different set of rules and procedures.

The third type of watershed includes artificial free-flowing ditches and canals. I've already talked about their importance to a certain extent. It would seem to me that we need not define instream flows as only those in natural habitats, but also to look at the homes or ecosystems that the acequias provide. These are the backbone of our farming communities and a source of New Mexico's rich cultural heritage. We need to recognize the role of acequias and agriculture in preserving open space and expanding riparian habitats.

Let me briefly discuss some of the other changes occurring. The Clean Water Act is up for reauthorization. Section 313 allows the regulation of water quality from discharges from federal facilities. Section 303 gives the Environmental Protection Agency (EPA) review authority which it is using, especially in light of the recent Supreme Court case, *Oklahoma v. EPA*, where it is now law that upstream and downstream water quality must be considered. You can't just consider water quality within your particular jurisdiction. Isleta Pueblo, for example, would like to see fishable and swimmable water quality on the main stem of the Rio Grande and it has the authority to implement its own water quality control regulations. Therefore, I think there will be increased use of the Clean Water Act as a tool for instream flow protection.

In New Mexico, attempts to create instream flow water rights have failed. The prior appropriation doctrine was designed specifically to permit diversions of waters from streams and rivers; it is a system set up to take water out of the streams and rivers. It's no surprise that it can't deal very well with demands to leave water in the stream and river. Some people think Steve Reynolds is the reason that instream flow bills have failed. I think it's more complicated than that.

I think if you look at the instream flow bills, they tried to provide that for instream flows, there will be no diversion requirement, or, that leaving the water in the stream will be a beneficial use. Both types of bills have a deceptive appeal because the idea is simply to monkey with the water law system a little bit. I oppose either type of bill because I don't think stretching the definition of a water right is the most effective means to the end of protecting and enhancing riparian habitats. I think to protect instream flows we need to

protect the watershed directly. We need to think about the riparian watershed that we want to create, to protect and to enhance. Then we need to determine how to protect instream flows.

An instream flow water right is different qualitatively than a regular diversionary water right. An instream flow water right, to be any good, has not only to be a certain quantity like a regular water right, but it has to be a certain quality. Fish won't live in dirty or polluted water. The water also has to be a certain depth. It has to be left instream, if it's going to do what we want it to do—keep fish alive for example—then the water right will be fundamentally different. It would be a water right with a quantity and quality dimension.

To recognize instream flow water rights would mean that someone—and who should own such a right is also an important consideration—will be given the right to block transfers of water rights effectively. This could occur because it would be relatively easy to impair an instream flow water right. In turn, this might negatively effect the water rights market system that has been established in New Mexico. And I think that is a fundamental reason why instream flow legislation has been opposed. There have been attempts to create a more comprehensive program for instream flow protection but these efforts also have failed.

In 1985, the Anaya administration explored public ownership of water rights or some other way to provide for minimum flows in selected streams in New Mexico. A team from the Environmental Improvement Division and the state's Game and Fish Department personnel conceived some really good ideas, including the designation of certain stream segments for protection. The main problem with the proposals was that Steve Reynolds responded with some difficult questions: "Who's going to meter this water? Who's going to look at water quality? Who's going to do those things necessary to have an instream flow that does what we want it to do?" Without financial resources it was difficult to answer these questions. Eventually, the attempt was abandoned before any legislation was proposed.

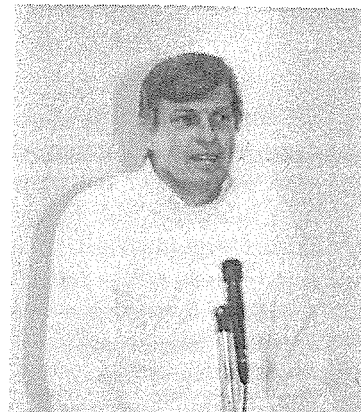
Some of those ideas resurfaced in a second approach tried initially in 1989. The Instream Flow Protection Act was unprecedented in several respects. Rather than modifying the language of state water law, a five-step process for establishing a statewide instream flow protection system was proposed. First, the New Mexico State Game Commission, in consultation with the state engineer, would inventory potential sites for protection. The rationale for this step is to address

the "NIMBY" syndrome, "Not in my backyard." People say, "Well, I like instream flow protection as long as it doesn't affect my water rights or isn't in my stream system." So the idea was to address this problem by talking specifically about locales. In other words, the first step is to determine exactly where instream flows could be protected. The second element of the proposed act would provide that after a public hearing, the Game and Fish Commission would recommend specific stream segments to the legislature for designation as protectable habitat. Third, the legislature would determine which, if any, of the recommended segments to designate. Fourth, the state engineer would maintain sufficient quantities of water, and here I presume that means preservation flows, in designated segments by placing limitations on new diversions at points upstream from the segments. Fifth, designated segments could be extended downstream by the legislature whenever a permanent discontinuation of diversions below existing designated segments occur. This element probably caused the most concern for the acequias who in my view, correctly fear that instream flow advocates would attempt to purchase and transfer acequia water rights downstream in order to allow expansion of the designated segment. Another part of the act looked at studying instream flows in other segments.

I believe this type of approach makes more sense from a holistic or ecological view than does the creation of instream flow water rights. And it corresponds to the Endangered Species Act notion of the designation of critical habitats. In any event, I believe that we should develop comprehensive programs to protect riparian habitats. Such programs can be created within the existing system without creating instream flow water rights. During the regional water planning process, the protection and enhancement of instream flows ought to be a central concern. I hope that those of you who are involved in that process and in the development of a state water plan will try to incorporate instream flow protection.

Thank you.

Chuck DuMars is a professor of law at the University of New Mexico. He is the author of numerous articles on water law and water rights, the co-author of Economic Impact of Alternative Resolutions of New Mexico Pueblo Indian Water Rights, and principal author of Regional Water Plan Legislation in New Mexico. Chuck is a member of the Western States Water Council, the Board of Trustees of the Rocky Mountain Mineral Law Institute, and the American Bar Association in Natural Resources Committee. Chuck received a bachelor's degree from the University of Oregon and a law degree from the University of Arizona.



WATER BANKING: HAS ITS TIME COME IN NEW MEXICO?

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The subject of water banking has always interested me. I became particularly interested this summer when several organizations requested the World Bank to sponsor a conference on water banking in Washington, D.C. I attended the conference with some people from Chile, Mexico and other countries where they are moving in the direction of treating private rights in water as bankable assets. As I flew to Washington I thought about how many of the terms dealing with banking in money have their origins in water allocation. The whole notion of "liquidity," the idea of an "income stream," and idea of "banks" themselves are good examples. Some economists carry this idea too far. They believe water rights are fungible and if we could just get water credit cards and make electronic transfers of water, we would all be in great shape. It isn't that easy. I think the *dicho* that my father used to quote regarding our ranch where we had a little surface water is appropriate. "*Un palo largo rio arriba vale mas que un derecho legal al agua rio abajo.*" In other words, if you have a long-handled shovel upstream you're a lot better off than if you've got a water right downstream.

With these caveats on the limits of water banking, I'd like to talk about the theoretical possibilities of water banking. The question posed to me is, "Has the time come for water banking in New Mexico?" The

answer is, "It came a long time ago in New Mexico and we've been doing it for years."

First I'd like to talk about groundwater in mined aquifers such as the Ogalalla (the upper lip that we have in New Mexico), the Estancia basin, and the Mimbres basin. These are areas with a confined quantity of water, in fact, contained in a deposit. If you think about the aquifer as a bank, it contains deposits, it contains reserves, and it has withdrawals. If the aquifer is a replenishable one, the withdrawals are in the form of loans. If you have groundwater in storage deposited over geologic time, you also have a deposit, and your passbook to that deposit is the beneficial use of that water. When you make a withdrawal from these nonrenewable groundwater stocks, for all practical purposes it is not a loan because you do not have to pay it back. The water is deposited there as it is in a bank. In a well-managed aquifer, the criteria for taking the water out of the ground are similar to the criteria that a bank might have through the Federal Reserve System. This leads me to the questions, "In New Mexico, with respect to all those areas where we currently are mining groundwater and making loans which we can't pay back, how did we arrive at that criteria? Is it the correct criteria? To what degree has the public been involved in the process?" If we look closely we will find that during Steve Reynolds' tenure

as state engineer, there was a position that there should be reserves available at the end of a typical amortization period, but there wasn't much public involvement in the process. Let me end the groundwater analogy by saying that it is now time to begin to look at those water banks/aquifers that are being mined. We should evaluate the criteria, which I think in large part are very good, and see whether the time period is appropriate on those non-refundable loans. How much reserves should we keep in there? To what degree does the non-refundable loan policy reflect the policy interests today and all of the regional water plans that are being developed? I think analyzing the use of these water banks/aquifers was one of the purposes of the regional water planning legislation.

Let's go to the second category of water: surface water. To have an effective water bank (and I will say "water bank;" let's hope it's not "water savings and loan") as with cash you need to have the physical bank. You need to have control of it, that is to say, you must have a place to make deposits and you must have shareholders with rights who will make those deposits. In the case of water banks throughout the West, you often see water banking statutes. Laws authorizing water banking often exist where there is a lot of unappropriated water and a large reservoir system that is deep and does not allow significant evaporative loss. Where you have a water system in place, a reservoir, or infrastructure, water banking can be very effective. Take California, for example.

In 1991 the Metropolitan Water District (MWD) in Los Angeles purchased on a one-time basis 820,805 acre-feet of water, converted it to municipal use, and changed the law temporarily to allow the conversion. It is called the Drought Water Bank. What they really did was take water which was already banked for agriculture.

Farmers know about water banking. They have been banking water and carrying over storage and planning for many years. Therefore, in California, 820,000 acre-feet of water was easily obtained out of the Central Valley. How did they get the farmers to loan them the water? Very simply, the MWD promised to pay the farmers more money for the water than what they would make farming. You might ask, "How much did they have to pay?" Well, the smart people in Los Angeles sat around and figured out the price of water in Los Angeles, increased it, and offered the farmers \$125 per acre-foot. The MWD had almost all its water needs met within two months, so they dropped the price to \$50 per acre-foot and met the rest of their needs. The 1992 price is \$50 per acre-foot

which approximates the productive value of water in agriculture in that part of the valley for those farmers. Basically what happened was an exchange. The farmers agreed to bank their water for Los Angeles if they would be paid not to farm. What was the key element? The key element was that all the infrastructure was in place. The canal systems were in place and the bank already existed.

In New Mexico, where are we in this regard? We have conservancy districts and irrigation districts that currently bank water. The Elephant Butte Irrigation District is an excellent example of that.

There is a regional planning process going on between El Paso, Las Cruces, Dona Ana County, and New Mexico State University. This is really a process of evaluating whether or not there is a way to use water more efficiently in the area by treating the reservoir as the bank and developing criteria for releases that are fair to the people and reflect the best water conservation strategies possible. When there is no more water to be made available through conservation I would presume an exchange of water for money would be appropriate.

Well, if it's that easy and we have reservoirs and irrigation districts and conservancy districts in place, why isn't it happening more often? There are a number of reasons and let me discuss just a few. The first problem concerns return flows. Unless you have a completely new source of imported water, like San Juan/Chama water which originates from another basin, where you divert the water and where the water comes back into the river is important to all who use the river. One person's outflow is another person's inflow. Let me ask you, what do you think is the seventh largest surface water stream in New Mexico? The answer may surprise you—the outflow of the City of Albuquerque's sewage treatment plant. So, where the return flow comes back to a river is important and where you divert it is important. One reason why water banking is not as easy as it may seem is that unless you have all new water to the system, you have an established set of rights to divert at particular locations and people cannot have those rights impaired. There are ways of dealing with this and some legislation could possibly fix some of those concerns.

Another problem we have in the West is that as we talk about moving toward surface water solutions for long-term municipal supplies and water banking and having municipalities use more surface water, we see numerous environmental consequences because there is less water in the river. Ideally we should encourage everyone to conserve water and then bank the

surplus water they save. The second thing we should do is to eliminate carriage loss between the water bank (reservoir) and the user. In order to do these two things however, you sometimes have to affect the environment. Tension is building between those who are pursuing reliable long-term surface sources for domestic use (which I happen to think is a very good wise policy), and those worried about the environmental consequences of that process. For example, concrete lining ditches to eliminate seepage and sand water impact indirectly the seepage and carriage losses that create wetlands. There needs to be a very thorough study of the trade-offs involved in balancing the goals of economic efficiency with the collateral costs on the environment.

A third problem is that if you are going to have a water bank, there must be an economic incentive unless it's purely the government banking. In many Eastern Bloc countries, there was no problem in establishing a bank. The government would set up the bank, put money in it and people would borrow from it. The problem was there was no movement of the money back into the bank and when the bank ran out of money, that was it.

If you are going to have a private water bank, you must have individual shareholders who are willing to bank their water and they ought to get a return which is higher than they could make if they didn't bank it. The prospect of private water banking also has collateral costs on communities. If farmers are banking their water rather than growing things, this can affect acequias and people who live on the ditches. This in turn can affect the economies of some irrigation districts and the remaining irrigators. In this sense water is not like dollars. These are people's lives. Banked water is translated into the crop which is not grown, the chili that is not sold locally. The ristras you see when you travel through Española will no longer be hanging there. The water rights will be in a bank somewhere generating revenue for some corporation that is creating jobs in an urban area. In short, there must be a balance that is reached in the process.

The bottom line is that water banking is taking place throughout the world. But to do it you must have the infrastructure in place. You must be flexible and solve problems of return flows. One must understand that water conservation is a wonderful use of reliable long-time surface water for domestic use. But, there are collateral costs, both cultural and environmental, that everyone should understand.

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AGRICULTURAL WATER CONSERVATION

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INTRODUCTION

This paper looks at conservation from the point of view of production agriculture. Agriculture is the largest manufacturing industry in the world. Worldwide and in the United States it is number one. Agriculture manufactures products used by every person in the world. It produces food, fiber, and renewable energy. Agriculture takes two basic inputs, water and sunlight, and makes something out of it. No other industry can work with that primitive of a raw product and yet produce the high quality and usable products that the agricultural industry does.

What's the outcome of agricultural production? Figure 1 depicts a simplification of production agriculture's inputs and outputs. Society is impacted by production agriculture in three ways:

- Jobs - labor needs are significant especially with vegetable crops such as chile. Much of the money used by agriculture to finance crop production is returned to individuals through wages.
- Energy use - agriculture is a significant user of energy.
- Consumption of durable goods - farmers purchase high-dollar-value equipment like trucks and tractors (and today a reasonably sized tractor costs about \$50,000) thus providing midwesterners with high-

paying jobs. John Deere would go out of business without agriculture.

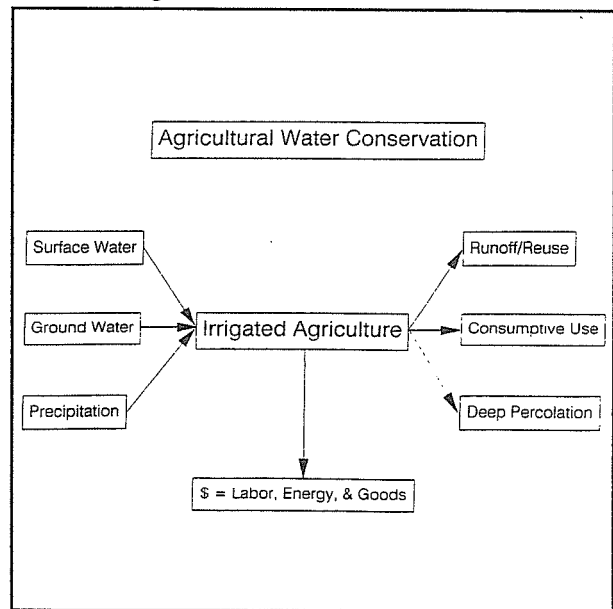


Figure 1. Agricultural water conservation.

Agriculture takes sunlight and water to produce what the nation can run on, ranging from the simplest things such as your cotton shirt to the very sophisticat-

ed tractor that has a tremendous amount of engineering and high quality labor put into it.

Irrigated agriculture in New Mexico uses three sources of water: groundwater, surface water and precipitation. The Deming area receives little precipitation or surface water, so most irrigation water comes from groundwater sources. Agricultural land located in the Elephant Butte Irrigation District and the Middle Rio Grande Conservancy District receives most of its water from the Rio Grande except during times of drought. Finally, agriculture in the High Plains region uses precipitation productively. For the last ten to fourteen years, precipitation in New Mexico has been significantly greater than usual and farmers have taken advantage of the extra rainfall, although at times it can be an irritation. Generally farmers hope for clear skies so they can perform field operations.

Agriculture receives its water from three sources and after using the water productively, it ends up in three places—runoff, consumptive use and deep percolation. Water which runs off the field may be captured and reused for other purposes. Consumptive use produces food and fiber through biological processes, and water is vented back to the atmosphere through evapotranspiration. Water may also percolate past the crop rootzone and recharge the groundwater. This water balance occurs in almost all irrigated agriculture. Neither runoff, consumptive use, nor deep percolation are water losses.

If the agricultural sector is going to conserve water, it must conserve runoff or reduce deep percolation. However, the water used by agriculture is merely transported elsewhere in the hydrologic cycle to be used for other purposes or to be reused by agriculture. Only the consumptive use of water is lost to the atmosphere and in doing so is used productively. Agricultural producers are trying to reduce consumptive use without reducing yield, but genetic engineers and plant breeders have a long way to go in developing more water-efficient plants.

Agricultural water conservation is complicated in that every irrigated field is different and many are considerably different from each other even within the same irrigation district, and definitely between irrigation districts. Having worked with about twenty irrigation districts in my career, I can say that in every single district, although there may be similarities in hydraulic characteristics, crops, and soil types, there are different attitudes or philosophies or mechanizations by which the land is farmed. Sometimes the differences are subtle, othertimes they are not.

Figure 2 shows the three major types of agricultural irrigation systems. Flood or gravity irrigation is the most prevalent type of irrigation in the U.S. and worldwide. It is an economical method and can be a very water-efficient method.

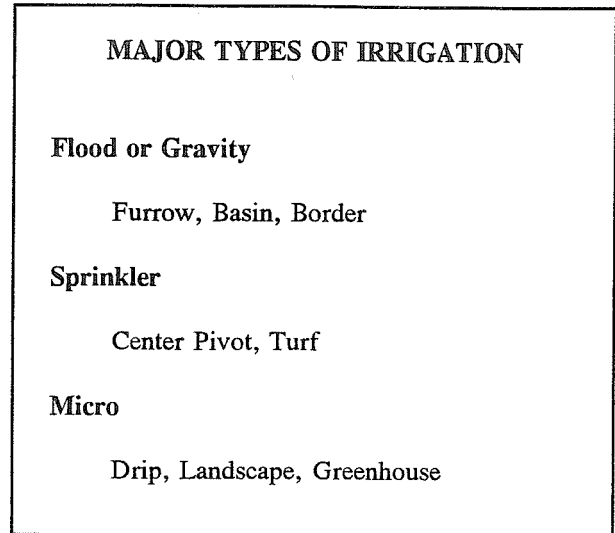


Figure 2. Major types of irrigation.

Sprinkler irrigation is limited in applicability and by cost. Two types of sprinkler irrigation have been adopted on a large scale: center pivot and turf irrigation. Center pivot irrigation is used on the High Plains of Texas, Nebraska and California and a little bit in New Mexico. Nearly all turf irrigation uses sprinkler irrigation. Sprinkler irrigation results in an increase in evaporation by propelling the water droplets through the air. From the time the water leaves the sprinkler until it hits the ground, water is lost to evaporation, and that water is not used productively other than for evaporative cooling in the nearby area. This water is lost to the atmosphere. In flood or gravity irrigation, there is very little evaporation because the water is close to the ground. Typically evaporation water loss through flood irrigation is less than 5 percent, often only 2 percent. Sprinkler evaporative loss can be as high as 20 percent.

Micro-irrigation in agriculture is limited to drip irrigation and is mainly successful on orchard crops such as grapes and to a limited degree on some trees, mainly when the trees are young. Eventually because of the large consumptive rate of mature orchard crops, drip irrigation cannot apply an adequate amount of water in a timely manner. Drip irrigation is very popular for use in greenhouses and for landscape, but accounts for only a fraction of a percent of the production of agricultural land worldwide, and will remain so for a long time. Drip irrigation is expensive to install

and requires a great deal of management. The cost is so great that drip irrigation won't be implemented widely until the cost of water increases sufficiently. If the cost of water reaches that point, there will be a lot of people put out of business in the agricultural industry.

A FARMER'S VIEW OF WATER CONSERVATION

The bottom line for farmers as for most business people is the balance in their checkbook. That's not to say that producers don't think about other things, but their net profit is a critical determinant of whether and how they will farm. In dealing with a metropolitan water district for example, producers will ask themselves, "What will the water district pay me not to farm with this water?" Producers weigh the answer to that question against the value of the crop they could produce. If the crop values increase, farmers can afford to pay more for raw inputs such as water. If prices decrease, farmers must reduce initial outlays for raw input.

Producers also assess the risks involved in farming and risks play an important role in terms of conservation.

For example, if a farmer has a chile crop with \$1000 per acre invested at the end of the year, he may contemplate whether to irrigate one last time. It may cost the farmer \$2 an acre to irrigate once more, but he is concerned about his yield. The farmer may take some soil moisture measurements to help him decide whether to irrigate, but often the farmer decides it isn't worth the risk of a yield reduction to not spend the \$2 per acre to irrigate. He will go ahead and irrigate, many times when it may not be necessary, but there may be some uncertainty in it and they'll minimize the risk by irrigating.

The effort required to implement a conservation practice is critical. Anyone who has tried to farm understands this. I was a bit naive when I first started farming. I had 40-50 acres of chile and thought of hiring two people to hoe weeds. Then I calculated how many linear miles you have to walk to weed that field. It's about 140 miles, the distance from Las Cruces to Socorro. I wanted the field weeded in two weeks. It would take quite a bit of effort for two people to walk that distance, all the while swinging a nine-pound hoe. So you get a little better view of what effort is involved and the benefit of my spending time instead of conserving water instead of not doing that last \$2 irrigation per acre is a lot of other things going on that

I'm going to make a lot more than \$2 per acre, if I'm paying attention to them. You've got fertility management, you've got insect management, and cash flows are low at that time of the year; there are a lot of things going on that I can benefit from much more than maybe putting the time into water conservation.

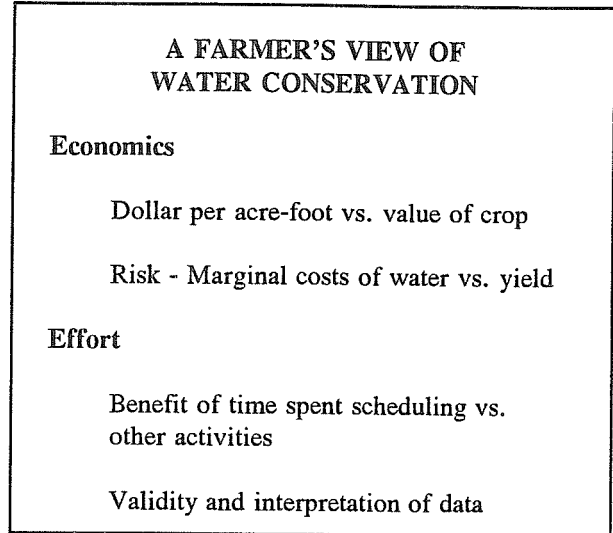


Figure 3. A farmer's view of water conservation.

Another factor in conservation is the validity and interpretation of the data supporting conservation practices. Being an academic turned agriculturalist, I should be touting high-tech methods for agricultural water conservation. As a result of trying to apply my research as well as the research of others to farming practices, I have questions concerning how to interpret the research data and the validity of the research.

A typical farmer is extremely intelligent and has learned a lot through experience. Each day farmers are required to make many decisions requiring intelligence and experience. As an academic, one is tempted to tell farmers, "Hey, I've done this analysis, you've got to adopt these computer programs and these best management practices. I know these data will help you operate more efficiently, I did a research paper on it." Researchers are up against farmers who know quite a bit more than they do about farming, and the reason they know so much is that they live it everyday. And they think about it everyday.

Farmers get most of their information through informal networks. At the field level, it's not an overly competitive industry. Most farmers do not compete to put their neighbors out of business. Farmers cooperate with each other and network. A tremendous amount of information is transferred among farmers.

There's an intuitive optimization process that occurs with farming as in other industries. It is not

understood exactly how farmers leap from an inference to making a decision without having significant or sufficient information to make that decision. This is something that artificial intelligence researchers are trying to get grasp on right now. Farmers often seem to have the right answer, but don't know how they arrived on that answer. Their answers may not be 100 percent correct initially, but the trial-and-error process and hands-on experience helps generate the optimization and intuitive process.

EXPERIENCE VS. ANALYTICS
Day-to-Day Basis
Networking
Extrapolation - Intuitive Optimization
Hands-On/Trial and Error
Natural Selection of Best Farmers via Economics
Life Long Farmer - 40 to 50 experiments
Generational Transfer of Information

Figure 4. Experience vs. analytics.

Also, there is a natural economic selection process which operates in most businesses. We saw it working to a great degree in agriculture during the 1980s. Farmers who couldn't produce at the maximum economic efficiency went bankrupt. To some extent, economics eliminated a lot of farmers who didn't know what they were doing. Those left were often farmers with the best farming and financial instincts.

A farmer only gets to conduct 40 to 50 experiments and then he's dead. He has a limited time to optimize his farming process. Hopefully during the learning process there is ongoing generational transfer of information. Not only from parent to son or daughter, but from one group to another. Even so, things change quickly in farming.

WHAT WORKS IN AGRICULTURAL WATER CONSERVATION

Previous water conservation efforts can be categorized as either efforts that worked well and those that did not. Each technology has restrictions on applicability and drawbacks on use.

Laser-land grading, precision grading of land down to a fraction of an inch so that water can be spread evenly during flood irrigation is an important and very common practice. Laser leveling is done with an instrument that is more of a surveying instrument than anything having to do with land-leveling machines. A laser reference system is used to provide the information necessary to adjust the land-leveling equipment so that farmers get a very precise, graded field. The uniform grade allows uniform application of water.

Surge-flow irrigation has limited applicability for surface irrigation although it has been very successful in specific geographic areas. Surge-flow irrigation uses an automated valve that alternates the flow of water in furrows from one set of furrows to another controlled by computer program. It is very affordable and easy to use. The Soil Conservation Service and others are enthusiastically encouraging its use, and it is an excellent example of technology transfer. Surge-flow is an innovation that made farmers pay attention to things they had not paid attention to before and part of its success is due to farmers networking.

Low pressure precision application is a method whereby agriculture has been able to reduce energy costs and evaporation losses experienced when using center pivots. Low-pressure precision application has been implemented primarily in the High Plains with great success.

Automation and use of remote control are being applied increasingly to improve irrigation efficiency and reduce labor costs. Farmers will buy into electronics as long as they are economically, very reliable, and make the job simpler.

The last point may be the most important. Eighty cents a pound cotton will do the most for agricultural water quality conservation and preservation. You must have money to make system capital improvements. You may think 80 cents a pound doesn't sound like much, but it is a world of difference from where agriculture is now. Eighty cents a pound would provide capital resources to the farmer that no federal agency could match. However, the world market has not supported this price and may not for quite a while.

Figure 5 lists several things which have limited success in conserving irrigation water. Irrigation scheduling is important, but there are problems with the validity and interpretation of data. Drip irrigation is difficult to implement on a large-scale for production crops, such as cotton and chile. It requires intensive management, resources, and capital. There always seems to be someone developing a new application of

a soil additive, plant hormone or different fertilizer. If it costs less than \$20 an acre, or sometimes only a few dollars an acre for aerial applications, farmers might try it. However, often the efficacy of the substance is unproven. Often it's just something to sell the farmer with the promise that it will reduce consumptive use by 10 percent, but in reality, there is no way to evaluate whether it did anything at all.

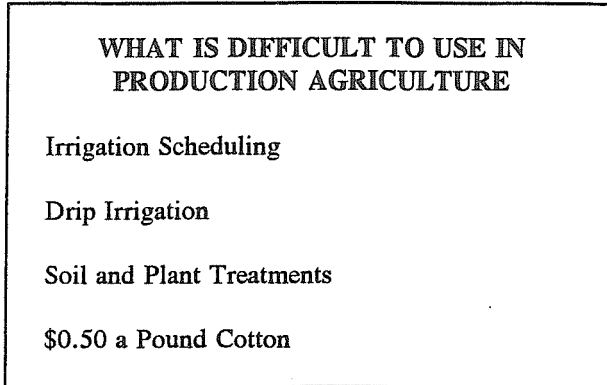


Figure 5. What is difficult to use in production agriculture.

Last and most significant is the price a farmer receives for his product. Using the example of cotton at 50 cents a pound, it will be difficult for a farmer to reinvest next year with this year's cotton money and install an automated irrigation system or surge irrigation system or laser level as conservation efforts. Farmers will not have the capital to make these improvements.

In summary, water is a raw input into the manufacture of food and fiber. No one would think of telling the automotive industry that they must limit the amount of iron they use in manufacturing a car. As long as agriculture uses water productively it benefits everyone. And agricultural conservation is not as easy as it may seem. First, from a hydrologic point of view, agricultural water use efficiency is high. Second, farming is a complex and risk-oriented business with the marginal cost of water being relatively low. And third, many of the water conservation programs and technologies are of limited applicability and benefit.

Alice Darilek is a water resources specialist with the New Mexico State Engineer Office. She holds a B.A. in Communications from American University in Washington D.C. and has held positions with the Dallas Chamber of Commerce, Oregon Water Resources Department, New Mexico Environment Department and the New Mexico Energy, Minerals and Natural Resources Department. Alice is a member of the American Water Works Association's Water Conservation Committee and is vice-chair of the AWWA Rocky Mountain Section Water Conservation Committee. She is also a member of the Conservation Committee for the Santa Fe Metropolitan Water Board.



OPENING COMMENTS FOR THE WATER CONSERVATION PANEL

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I am glad to see that WRRI has placed water conservation on its program agenda this year because I believe it is an important issue in New Mexico, and one that will become increasingly important in the coming years. I am particularly pleased to have such a distinguished panel with us today to talk about municipal water conservation. They are some of the leading experts in the country in this field, and I am sure we will learn a lot from them.

Before I introduce the panelists, I would like to make a couple of comments about the state water conservation program that the New Mexico State Engineer Office and the Interstate Stream Commission have begun to develop. We have decided to put more of an effort in the area of water conservation because we think it is going to provide an important water supply alternative in meeting the state's water supply crunch that is expected to occur in the next few years.

You heard Eluid Martinez talk this morning about some of the issues that could bring about that water crunch. Issues such as groundwater mining, water pollution, and the rising costs of water development and water and wastewater treatment are making water conservation an increasingly attractive alternative water supply option, to meet both current water needs and future water demands.

We began working on developing a state water conservation program early this year and are focusing our current efforts on water conservation research and education. Next year, if we are successful in obtaining funding from the legislature, we will begin actual development of the program through an extensive public participation process. We will use this process to work closely with the regional water planning entities and citizens across the state to help us determine what should be contained in the water conservation program.

I don't want to spend time discussing the details of the program now because I'd like to focus on the subject of this particular panel, municipal water conservation. However, I want to let you know that we have prepared a discussion paper on the program, which outlines why we think a program is needed, how we propose to develop that program, and what we think some of the elements are that might be contained in the program. The paper is being distributed at the conference today. If you obtained a copy, read the paper, and have questions or comments concerning the program, please call me at the State Engineer Office in Santa Fe. I'd be glad to discuss the program further with you. If you didn't get a copy of the paper and

would like one, please give me a call, and I will send it to you.

Now, to the subject at hand — municipal water conservation. In the past, most municipalities have implemented water conservation measures to address droughts or other short-term water shortages, in which a quick and substantial reduction in water use was needed for a limited period of time. Now, communities are looking to water conservation more and more as a long-term water supply alternative in their water supply planning process. By using water more efficiently and reducing water demand, they have been able to stretch their current water supplies, and, in a sense, create a new supply of water to meet present and future demands.

To talk about how they have stretched the water supply in their communities, we have with us today four panelists from our neighboring states of Colorado, Arizona and Texas.

I'd like to add one more comment. As long as we view water conservation as just another government policy, I'm not sure how much we will really accomplish in this area. But, if we look at conservation as a shared responsibility, where each of us does our part (as we all use water every day in a direct and intimate fashion), then I think we can make significant progress in using water more carefully and treating it with the respect it deserves.

Liz Inman is the conservation officer for Denver Water responsible for coordinating efforts for Denver's long-term water conservation plan. Liz has a B.A. in History and Social Studies and is working toward her master's degree in Management at Regis University. Liz is a member of the Conservation/Management Committee of the American Water Works Association, a board member of Metro Water Conservation, Inc., and Xeriscape Colorado, Inc. She was co-chair for the Task Force which helped form the Colorado Alliance for Environmental Education, and is a member of the World Future Society. In her spare time, Liz plays in her organic Xeriscape garden and reads anything she can get her hands on about human potential organizational transformation, sustainability and how quantum physics relates to business.



WATER CONSERVATION IN DENVER

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Denver Water is a leader in the water conservation arena, and yet we certainly have not done everything perfectly. I am here to share with you our successes and offer to you the lessons of our mistakes so you can save yourselves some pain and money.

The purposes of our conservation program are to:

- maintain a reliable, sustainable water system
- meet our conservation goals from the Foothills Agreements
- balance the need for expanding supply and reducing demand, especially peak demand
- maintain a safety margin for drought
- maintain a beautiful community
- keep water costs from escalating
- meet the challenges of the many unknowns of the future

Denver has developed a long-range program to accomplish all this, because "It is not enough to have a vision; without a plausible bridge, a strategy to get there, few people will leave the familiarity of what IS for the possibility of WHAT COULD BE." We are also discovering the truth to Robert Ingersoll's statement, "In nature, there are neither rewards nor punish-

ments, there are consequences!" When we remain silent as a utility or an industry about the pressing needs of the present and the future, our customers cannot support us because they do not know what we expect of them. We also need to consider the consequences of our past actions, whether positive or negative, and think diligently about how those actions and consequences may be different in the future.

Our conservation program is entirely voluntary now. We have initiated many programs to urge our customers to use water wisely and the most important are shown in Figure 1. Our customers use the most water during the summer for landscaping, probably the same as many communities in New Mexico. Figure 2 is an overview of our 1991 water use.

However, we found that focusing on the largest use, single-family residential landscaping, was not helping us substantially to reach our conservation goals. We had reduced water use by 5 percent between 1979 and 1984, and another 3 percent from 1986 to 1991. However, and this is a key lesson to remember, customers told me that they refused to make further efforts in conservation until they saw government

practicing what it preaches. That meant a change in my job from programs dealing with residential customers to programs dealing with fellow "bureaucrats." The most visible water use by government in Denver is on parks, parkways and public open spaces such as golf courses. We decided Denver Water must first practice conservation more thoroughly on our own properties and then work with city, county, state and federal government property managers to do likewise on their properties. Figures 3, 4, and 5 show the areas of water use; Figure 6 shows our projected reductions to meet the goals set in the Foothills Agreements. The goal is to reduce water use in our service area to 744 gallons per account per day by Jan. 1, 1999.

By 2035, Denver Water projects a savings of 36,600 acre-feet per year based on our most recent growth and demand forecasts, using conservative estimates. These savings are projected assuming a voluntary or incentive basis, but not rationing or mandatory measures (see Figure 7).

Costs of this water vary widely. Notice on Figure 8 that our meter installation program was very expensive, but it was a one-time cost. We set in place the last meter on October 29, seven years ahead of schedule and still under budget.

Some things don't work well in Denver in the water conservation field. We haven't and won't reduce overall water pressure in our system because we have too many hills, and the areas of low and high pressure become nightmares. We are phasing out evapotranspiration for residential customers as a way to conserve because almost no one uses it as a tool to measure or reduce water use. Most of the other programs in Figure 1 are very successful, and I recommend them to you in New Mexico.

Another painful lesson we learned could have been avoided if we had heeded the advice of Joel Barker in his book and video, "Discovering the Future: the Business of Paradigms." Barker suggests that the world operates on a set of agreed-upon paradigms or boundaries, and a set of agreements about what to do to be successful within those boundaries. His research has found that all organizations/agencies/ businesses, etc. need to ask themselves frequently "The Paradigm Question" in order to keep on track. That question is, "What one thing that is impossible today, could occur in the future and radically change the nature of my business?" Denver Water did not ask the paradigm question about Two Forks Dam. We never even considered that EPA would deny the permit to build the dam and thus change our direction as a water

agency, and greatly influence the direction of our conservation program.

But, since this was neither a reward nor a punishment, but rather a consequence, we have adjusted and are moving on toward new challenges. It is in our best interest and the interest of the Earth to look toward more sustainable decisions. Wise water use is one of those sustainable decisions.

As Chief Oren Lyons of the Onandaga Iroquois states, "We must make every decision for the well-being of the seventh generation yet unborn." The bottom line is simply, how much do we care about our children and their grandchildren? Do we care enough to overcome our past biases and attitudes in order to leave them a promising future? Water planners, land use planners, agriculturists and customers need to work together to implement solutions for our children and their grandchildren. Water conservation is one of those solutions, and it can be cost-effective if we start now. It's always cheaper to do it right than to do it over.

Thank you.

	Date Initiated
Schools Program	1976
● ◆ ■ (every-third-day irrigation guideline)	1977
Evapotranspiration (ET)	1981
Sonic Leak Detection	1981
Xeriscape	1981
Formation of Metro Water Conservation, Inc. (MWCI)	1985
Formation of the National Xeriscape Council, Inc.	1986
Residential Retrofit	1987
Metering	1987
Alternative Source Irrigation	1990
Ultra Low Volume (ULV) Toilet Rebate Program	1990
RTD Bus Boards	1990
Business and Institutions Audit Program	1990
Conservation Hotline	1991
New Rate Structure	1991
Multifamily Retrofit	1992
City and County of Denver ULV Plumbing Code	1992

Figure 1. Starting dates of major Denver water conservation initiatives (1976 - Present).

Water Conservation in Denver

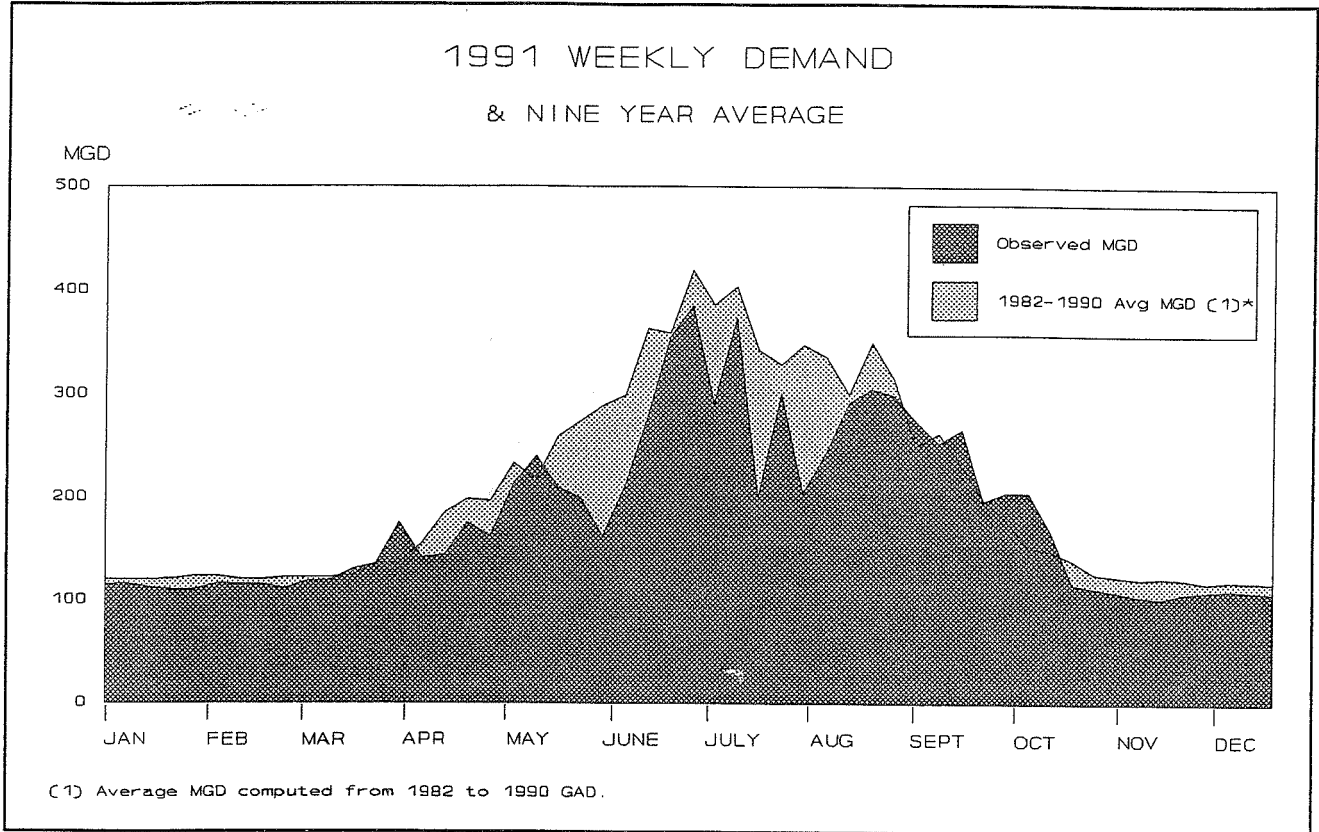


Figure 2. 1991 weekly demand and nine-year average.

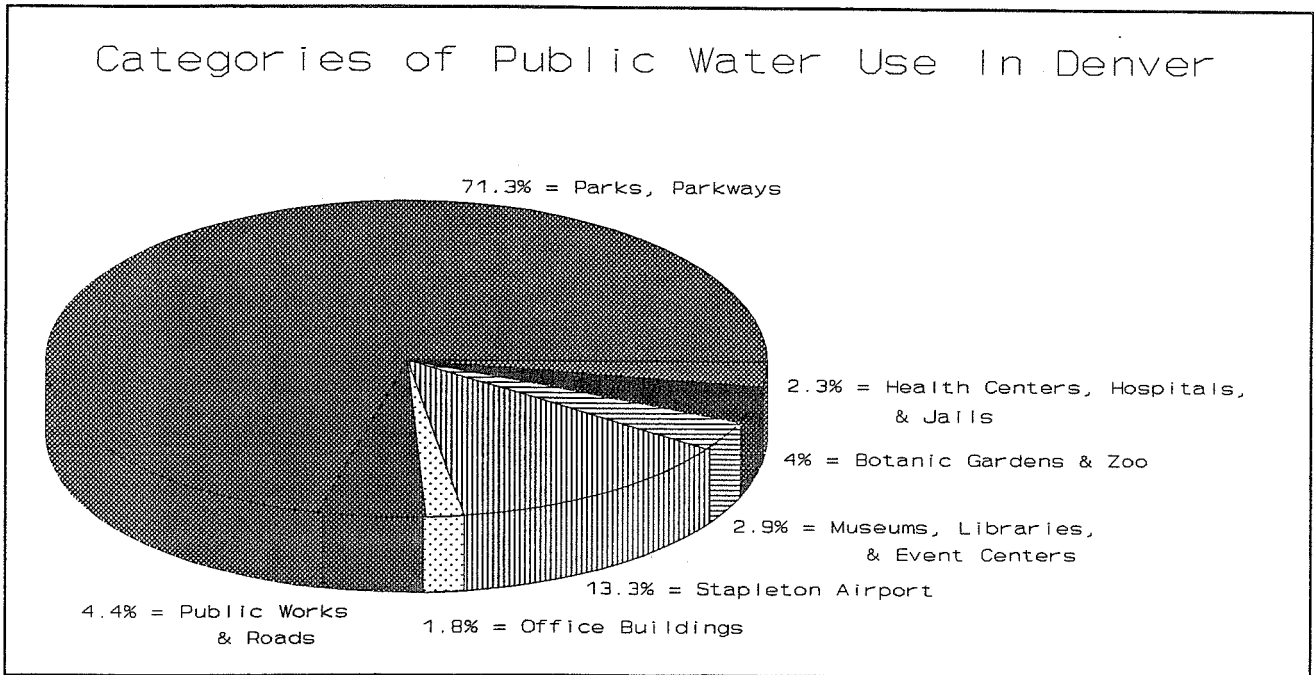


Figure 3. Categories of public water use in Denver.

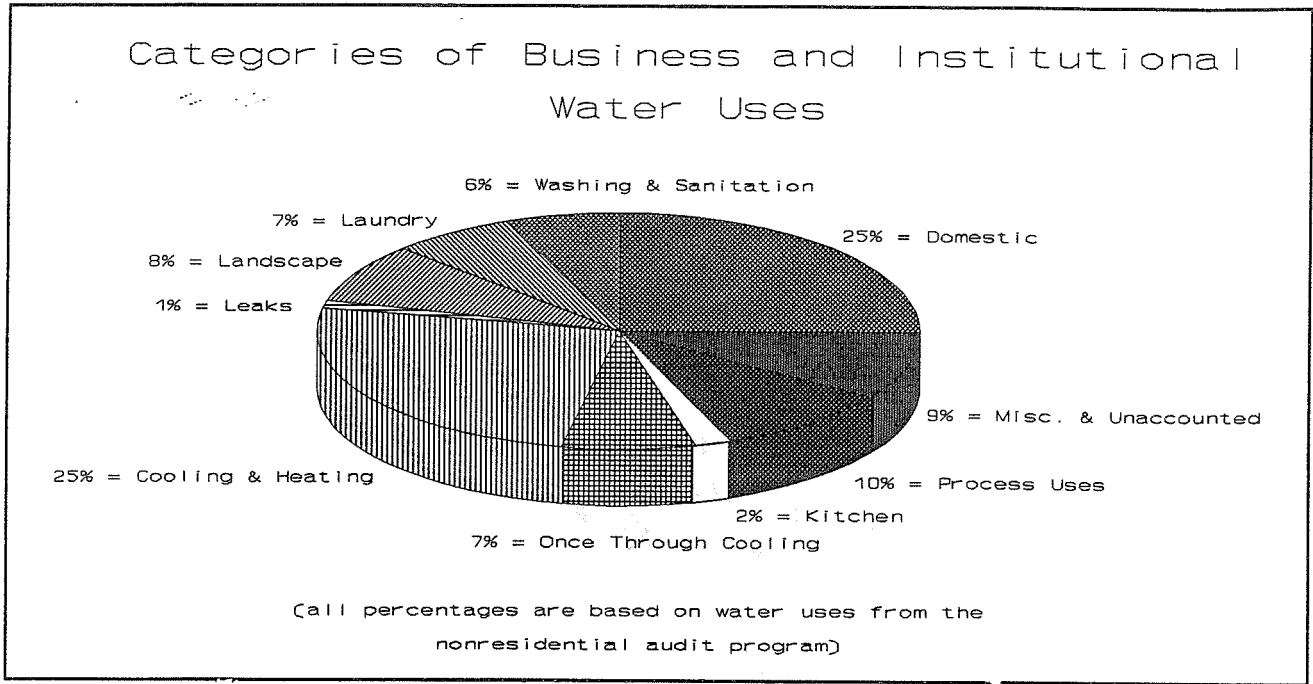


Figure 4. Categories of business and institutional water uses.

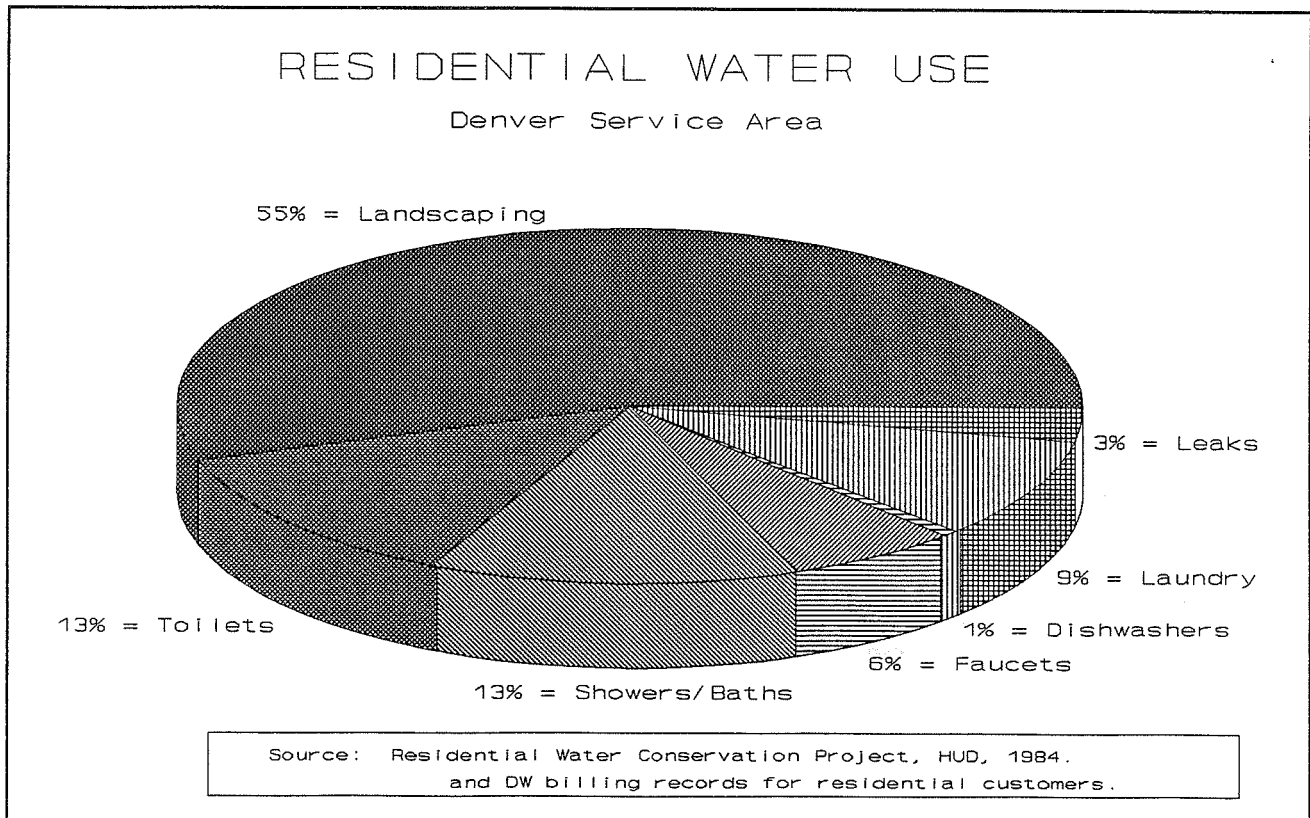


Figure 5. Residential water use - Denver service area.

Water Conservation in Denver

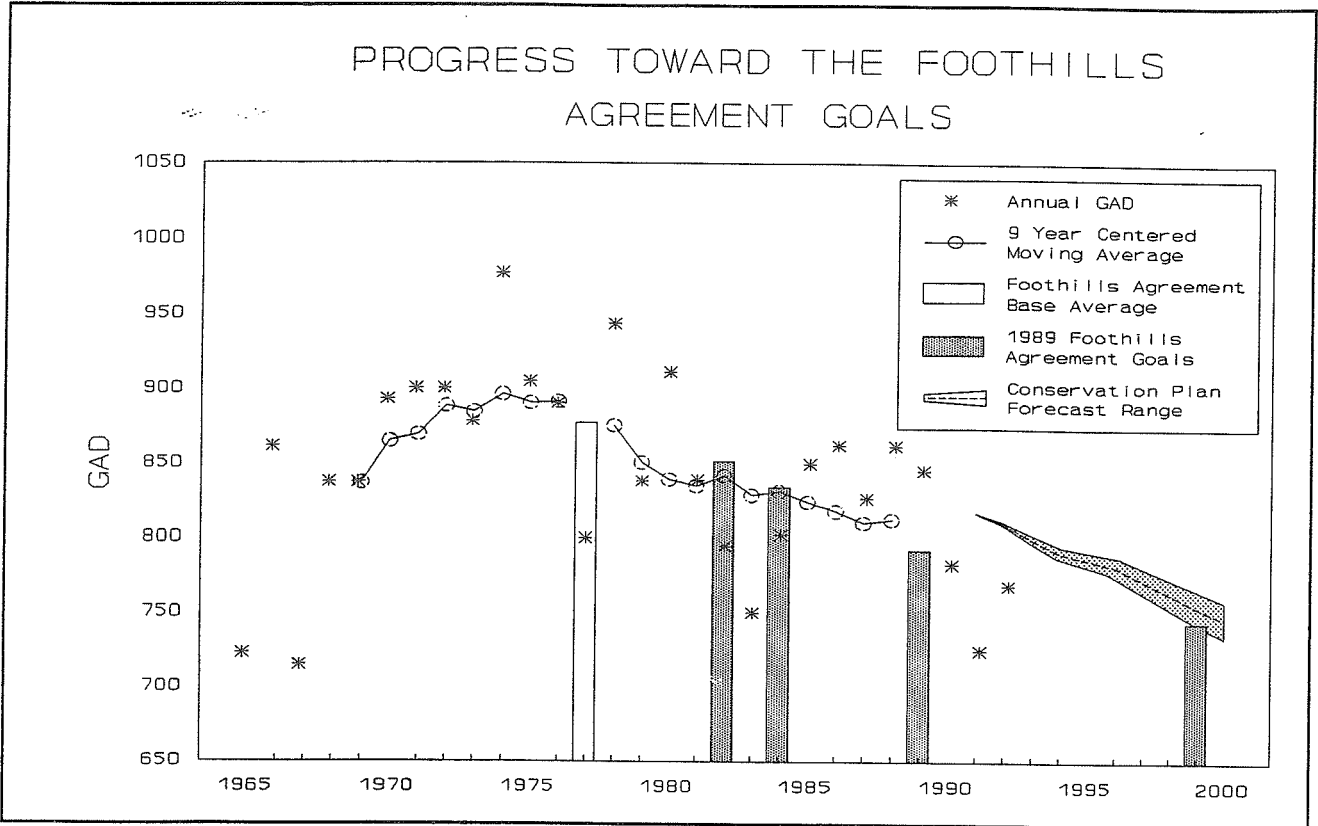


Figure 6. Progress toward the foothills agreement goals.

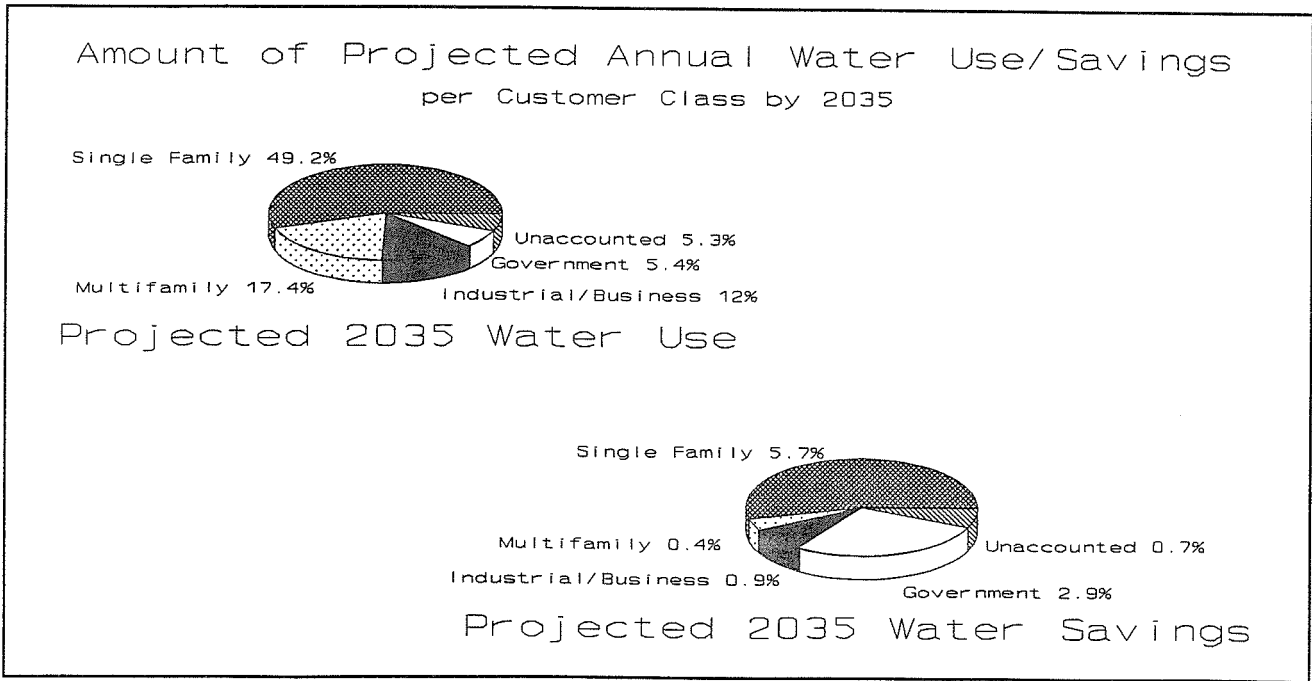


Figure 7. Amount of projected annual water use/savings per customer class by 2035.

Elizabeth Seymore Inman

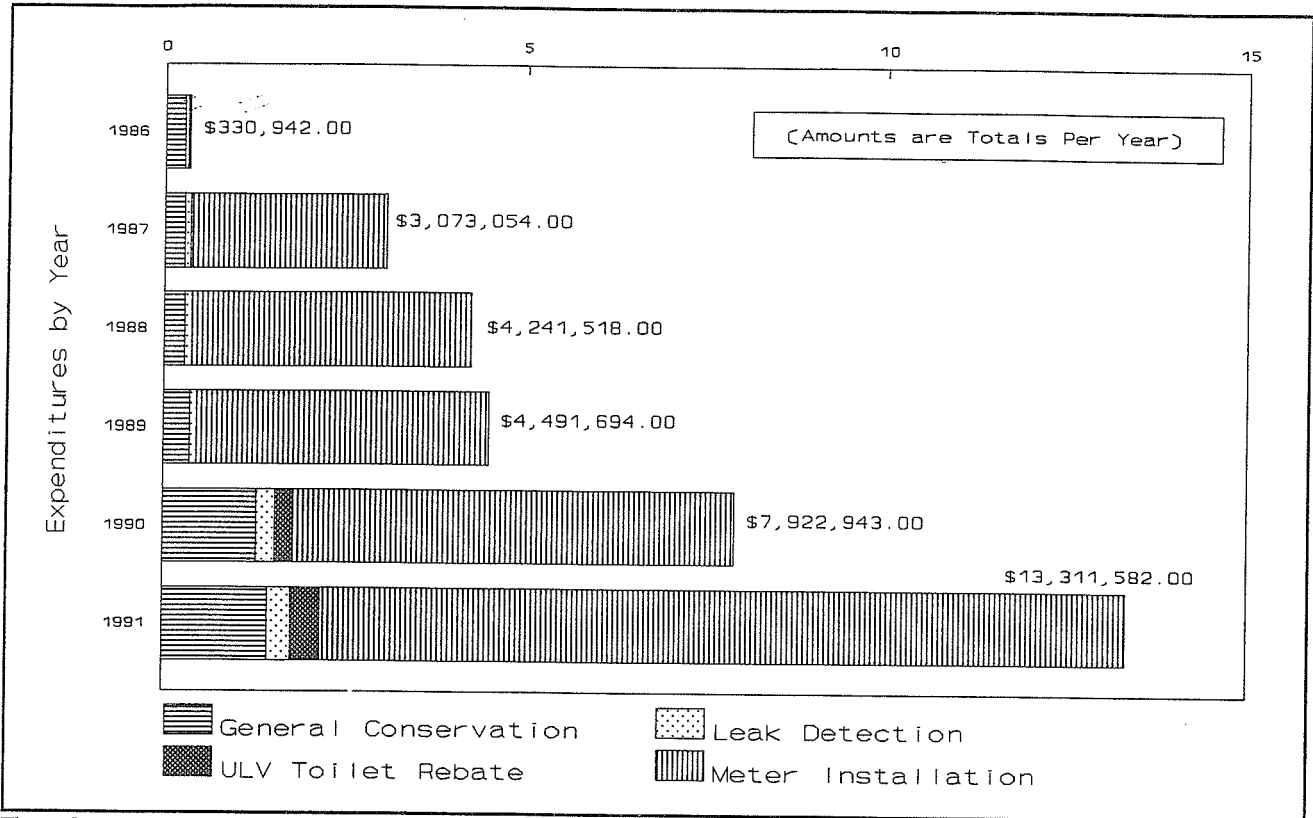
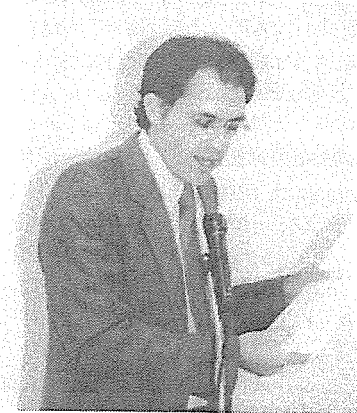


Figure 8. Annual conservation expenditures 1986 - 1991.

Gary Woodard is the associate director for research at the Water Resources Research Center in the College of Agriculture at the University of Arizona. As such he directs and conducts research into a wide array of water policy issues and natural resource management within Arizona. Gary holds a B.S. in Chemistry, a Juris Doctorate in Law and a Master of Public Policy Studies, all from the University of Michigan. He has studied numerous policy issues including forecasting municipal water demand, evaluating water conservation strategies, interbasin transfers in the West and their impacts on rural areas; the cost effectiveness of various regulatory approaches to reducing urban air pollution, and evaluation of approaches for water conservation programs. Gary serves on several state and local advisory boards and panels for Tucson Water, Arizona Department of Water Resources, and Southern Arizona Water Resources Association.



TUCSON'S WATER CONSERVATION PLAN

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Our panel monitor distinguished for us the two kinds of water conservation; the kind that is implemented hastily if there's a drought or the dam breaks or some other temporary supply interruption occurs, and the kind that deals with a long-term shortage, as for example, Tucson Water's conservation program. You here in New Mexico really have to work on programs that make conservation permanent, built-in, automatic and not rely on changing people's behavior permanently. People have to feel there's a crisis in order to change their behavior, and water supply issues should not be continual crises. People are not willing to sacrifice forever by taking a very short shower, but if they can get an ultra low-flow toilet that does the job with less water, their quality of life isn't lowered very much and they will accept the change.

Tucson has been active in water conservation since the mid-1970s. The rest of Arizona got into the act a bit later when the 1980 Groundwater Management Act was passed. A lot of people in Tucson think

that we were first because we're somehow morally superior, but actually we just got ourselves in trouble with our dwindling water supply sooner than others. Tucson likes to refer to itself as the largest municipality that relies solely on groundwater for its water supply. As of 8:00 a.m. yesterday, November 4, 1992, we can no longer say that. Valves were turned and Colorado River water, flowing some 355 miles through the Central Arizona Project (CAP) and purified in a \$60 million treatment plant, actually entered the water mains of Tucson. You might have thought that would be a red letter day in Tucson, with big parades and celebrations. That was not the case. People are actually pretty unhappy because they are concerned about the quality of the water and its reliability. Home improvement stores are running full-page ads on water softeners, reverse osmosis systems and other in-home treatment systems.

The CAP is in trouble on a larger scale. Farmers who had agreed to sign contracts for the water are not

taking it. We have a couple of irrigation districts on the verge of bankruptcy in part because studies that justified the CAP a couple of decades ago projected that cotton would be selling today for about \$2.45 per pound. Today's actual price is less than \$.65 per pound.

Under-utilization of Colorado River water is the major concern in Arizona right now, which makes it awfully hard to push for more conservation. Nevertheless let's discuss what Tucson has done. Basically the city has tried just about everything that they could think of or that other utilities have brought to their attention—everything from a goofy public relations campaign called "Beat the Peak" (featuring a human-size duck called Pete the Beak) to water audits, and even "water cops,"—you name it, they have tried it.

Let me focus very briefly on three areas of activity: pricing; education, prepayments and incentives; and ordinances and codes. The synergies among these categories are very important. Some people respond to carrots, others to sticks, but if you wave both in the air you get just about everyone's attention. If you have both a pricing "stick" and rebate incentives at the same time, you might get results that are more than the sum of the results of individual programs. It is sometimes difficult, however, to justify a major price increase. We just heard about the very low prices for water in Denver. Maybe Denver will get lucky and find they have lead in their water or run afoul of the Safe Drinking Water Act in some other way that causes their water bills to double.

But, if you can get people's attention with pricing you better be ready once you've got their attention to direct their response to those higher water bills in a positive way. When Tucson doubled rates back in 1975, it didn't implement the increase very well. The city didn't warn people that the increase was coming and they started it in the summertime. It turned out to be a record hot, dry summer. People's responses were not directed in a positive way. Instead, they recalled the entire city council. So timing is very important.

Price does work though. There is a real price elasticity. Studies have shown very modest changes in demand with changes in price, but a lot of these studies were done sometime ago when the price variable was misspecified in the econometric model—in other words, the economists botched it! Researchers also sometimes studied areas where rates were so low, or water bills were such a small percentage of incomes or water bills were so small compared to other utility bills, that even though they implemented a large percentage increase, nobody even noticed. However, if

water bills are significant, you can get a response. Some studies done by myself and colleagues show that in Tucson, every one percent increase in price (inflation adjusted or "real price"), results in a six-tenths percent decrease in demand. Work I did in Phoenix shows that a one percent increase results in about a half percent decrease in demand, so pricing really can reduce demand. But, you must be careful how you design your rate structure.

Tucson Water started with a very simple rate structure and then over time really began to tinker with rates to encourage conservation and pursue other utility objectives. Eventually, there were eight customer classes with different types of rate structures.

Today, there are many rate features—one rate structure for winter, another for summer, increasing blocks, fixed charges, remote service area charges, and so on. It's so complicated that no consumer has any idea of how their bill is determined or how much money they might save if they reduce their consumption. In fact it got to the point where apparently some people at Tucson Water didn't quite understand how it worked either.

Figure 1 compares the water bills as a function of how much water is used. Note the rate break between the small commercial and large commercial categories. Some businesses in the large commercial category decided "to do the right thing" and put in drip systems and low-flow plumbing fixtures and were subsequently moved to the small commercial category. Their usage went from about 120 ccf per month to about 90 ccf. They were rewarded for their efforts by having their bill go up. The lesson is: keep rate structures simple.

Not only are there problems among customer classes—you can also have problems with increasing block rate structures. I'm a strong advocate for anything other than increasing block rate structures. These are rates that increase with increasing water use. There are built-in inequities in increasing block rates and they also do not produce as strong a conservation signal as economic theory predicts. For example, a typical Tucson residential customer's water bill will decrease by about 7 percent if they drop their water consumption by 10 percent. That is not a big reward. I prefer rate structures based on a summer surcharge where customers are charged higher prices for water use in summer months that exceeds the customer's winter usage. Tucson Water is about to abandon increasing blocks. They also will reduce the number of customer classes from eight to three.

A few years ago Phoenix copied Tucson and went to increasing block rates. Phoenix caught on to the

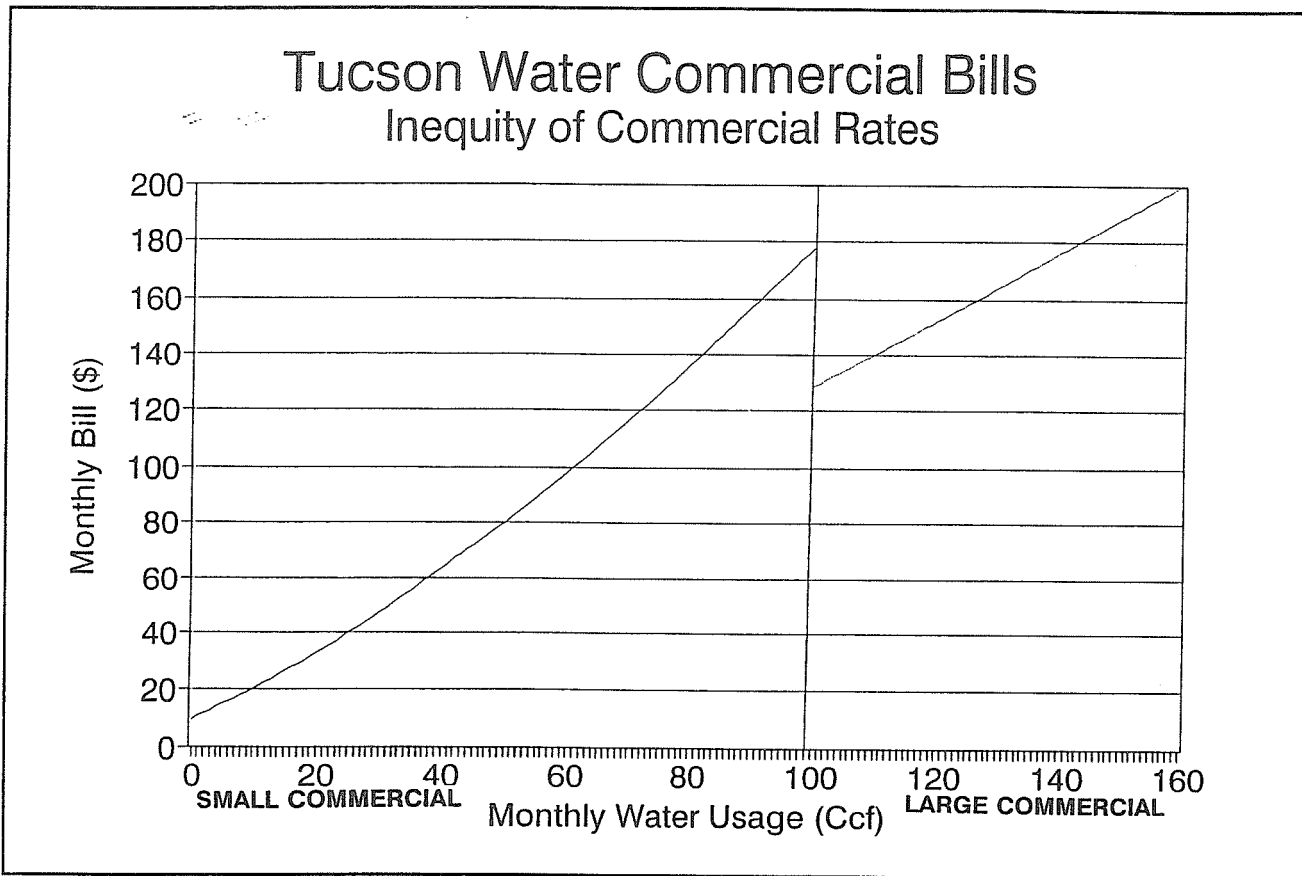


Figure 1. Comparison of water bills as a function of how much water is used.

shortcomings of increasing block rates a little quicker and abandoned that rate form. I particularly like one aspect of what they did with the rate structure—they essentially have one customer class so it's hard for any group to argue that they are being treated unfairly.

Incentives and education also are important. Most economists pooh-poo the public service messages and say that they really don't have an impact on customer behavior. But if you have a consistent message year in and year out, coupled with specific suggestions for people—helping them rip out turf, showing them which plants are water efficient, conducting workshops on how to install a drip system, having contests where best homeowner conservation winners have a photo of their house in the Sunday paper—all of these things can have a positive impact.

Tucson Water started a program in January 1990 to encourage people to get rid of their existing toilets and replace them with ultra low-flow toilets that uses about 1.5 gallons of water per flush. The program works. Figure 2 shows that for the over 2,000 people who replaced their toilets between January 1990 and April 1992, indoor water consumption actually

dropped by 12 to 15 percent. That program was initiated by Tucson's mayor and council against the advice of Tucson Water staff because a similar program in Glendale had not worked at all. Essentially the same program was implemented in Tucson and it took off and did very well. There's a lesson to be learned there too—be very careful about trying to apply blindly programs from one area to another.

You also have to be careful these programs don't work too well. One city in California offered a little bit too much of a rebate and everybody decided to take advantage of it, which cost the city in excess of \$1 million per year for the toilets.

Finally, I believe that plumbing codes and certain legal restrictions on water use have a place in conservation efforts. It's much cheaper to build-in conservation than to retro-fit it. Tucson and Pima County, and just recently the entire state of Arizona, require low-flow fixtures for new construction or renovation projects. In Tucson and Pima County, if you want to build a golf course or other large turf facility, you must use effluent, you have no choice. Developers initially warned of dire consequences. The economy

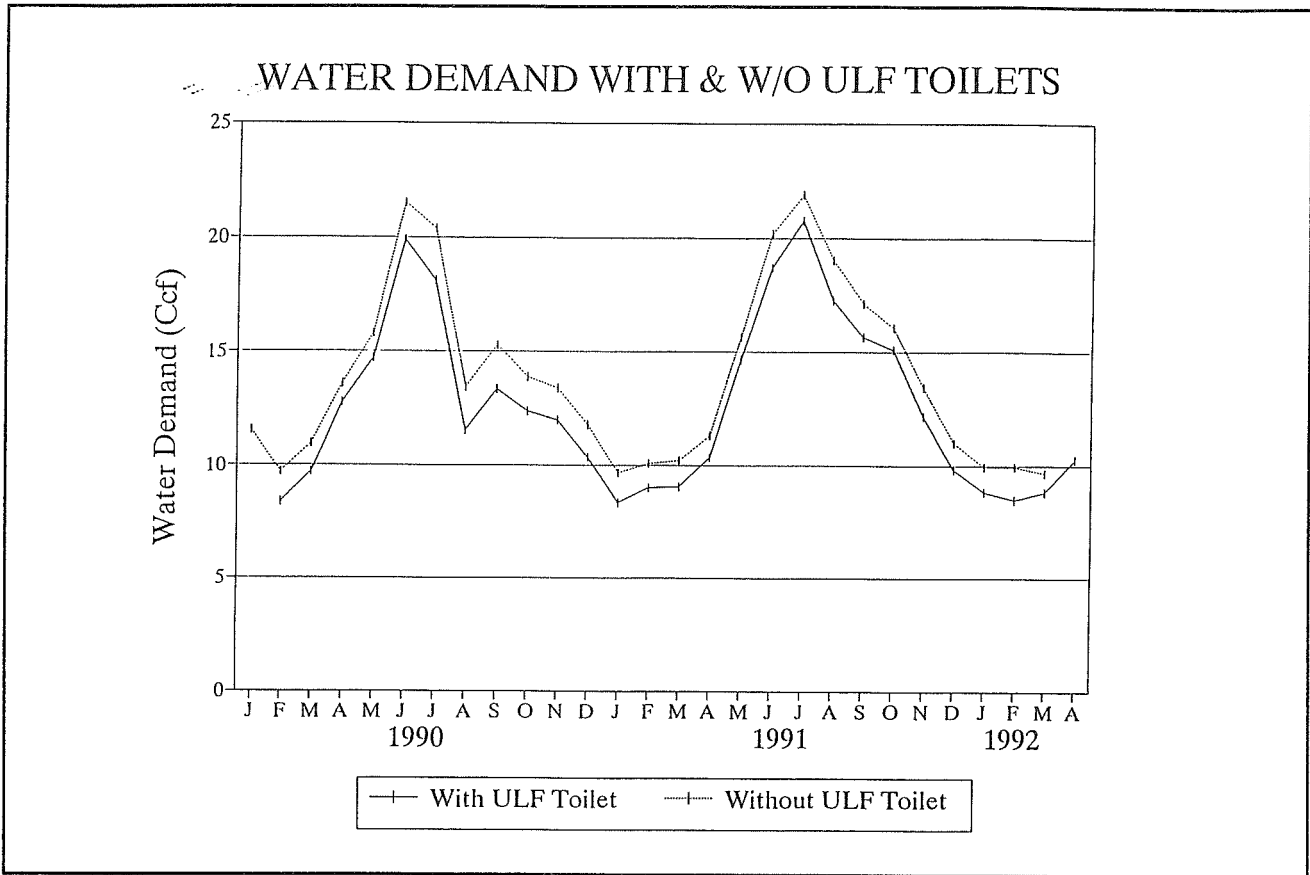


Figure 2. Water demand with and without ULF toilets.

did grind to a halt last year but nobody is blaming it on the effluent reuse provisions. It has turned out to be not that big a deal. Once everyone quits fussing about it, they adapt quite well and it is the most cost effective way to lower your demand permanently.

Thank you.

Jane Ploeser is water conservation coordinator for the City of Phoenix Water Services Department. Her responsibilities include administration of the city's non-residential water conservation program. The program encompasses site visits, workshops, the Mayor's Annual Award for Conservation, and conservation plan development for major customers. She is also involved in the Desert House, a totally water efficient and energy efficient home and information center that is being built on the grounds of the Desert Botanical Garden in Phoenix. Jane is chair of the American Water Works Association's Industrial/Commercial/Institutional Water Conservation Subcommittee and published Incon.Net, an annual directory of nonresidential water conservation professionals and programs throughout the U.S. Jane has published in a number of periodicals. She received a B.A. in Communications from the State University of New York and has been in marketing and program development for 19 years.



PHOENIX WATER CONSERVATION PROGRAM

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Good afternoon. I'd like to review how the Phoenix Water Conservation Program is designed. In square miles, Phoenix is the second largest municipality in the country; Oklahoma City is the largest. We deliver services to about one million customers. In 1980, Governor Bruce Babbitt sponsored the Groundwater Management Code which organizes the state into three active management areas. Within those areas, the major municipalities must meet conservation goals in gallons per capita per day (gpcd). Phoenix's goal for the current 10-year period is 251 gpcd. This year we are at about 245 gpcd; it has been a fairly wet year. This criterion may be revised because it tends to favor larger population areas whereas some smaller population areas cannot possibly meet the goals set by the state. High population concentrations require proportionately less turf/agricultural irrigation.

Phoenix delivers about 245 million gallons of water per day. Our ultimate goal is to have no groundwater discharged by the year 2025; currently, ground-

water provides ten percent of our water needs. The Salt River Project provides 65 percent of our needs through surface water from the Salt and Verde rivers. The Central Arizona Project (CAP) provides 25 percent of our water, but we try to use as little CAP water as possible because of its high treatment costs resulting from a higher concentration of solids. During the summer I get comments from users of cooling towers; they know when CAP water proportions have increased because their chemical treatment costs increase noticeably.

Phoenix's water consumption is divided into three major groups: 51 percent single-family use, 17 percent multi-family use, and 32 percent industrial, commercial and institutional use. Four major programs address these groups: residential, Xeriscape, turf irrigation, and non-residential. The residential program was the first program established because of a 1985 emergency requiring sewer-flow reduction. The program also deals with evaporative coolers, some pool and spa

recommendations, and multi-family considerations. Multi-family issues are becoming more important due to landscaping considerations and the fact that residents often do not feel a need to conserve since they often do not directly pay for water use.

We have several community outreach programs. Field personnel have retrofitted 50,000 homes with showerheads, flush reduction and displacement devices, and faucet aerators. Another 65,000 homes have been retrofitted by customers after having come to our office with their water bill and obtaining a retrofit kit. We have a cooperative program with Southwest Gas called Seniors Helping Seniors, where senior citizens are trained to retrofit seniors' homes for both energy and water efficiency. That program has been a great success and has had some wonderful socialization benefits as well. Large facility training is conducted by field staff who demonstrate how hotel and hospital facilities can retrofit plumbing. In addition, we have an aggressive school education and community affairs program.

Xeriscape is our second major program. A full-time staff botanist works with community organizations and the city to develop lists of plants that can and cannot be used in public right-of-ways. The botanist also works with design, siting, and water features. Water fountains are very popular in Phoenix but can be controversial and are subject to siting restrictions.

Currently, we are discussing energy considerations that landscaping can help allay. Many people want to put in turf because they feel it makes the home cooler. Our research projects demonstrate you can obtain just as much shading with less water by using Xeriscape trees and plant material.

Every October, native wild flowers are promoted through the distribution of about 10,000 wild flower seeds packets. Nearly 3,000 homeowners participate annually in residential Xeriscape workshops. Homeowners are invited to bring their home's site plan and are helped to design a more water efficient landscape.

The third program area is turf irrigation. Any facility with over 10 acres of turf must adhere to a specific water application rate per year set by the state. Each municipality is responsible for making sure that each customer adheres to their quota or the municipality can pay a large fine. We help our customers through the Arizona Meteorological Network (AZMET) that was established by the University of Arizona. Four weather stations are located throughout Phoenix's park system. Any large-turf customer can use the computer to determine what the recommended water application rate should be for that day. The

computer data base also provides weather information. The Parks Department is one of the city's largest customers. Our turf irrigation specialist has done a terrific job in training Parks Department personnel in scheduling, using proper spray heads and equipment, and making changes in cultural practices that have long been tradition. We are now working with other city departments, helping them with conservation plan development and employee education.

Our fourth program deals with non-residential water use. Pepsi Cola Bottling Co. was one of my first site visits. Because 40 to 50 percent of water use in the non-residential sector is cooling use, whether by cooling towers, chillers, fuse scrubbers or machinery coolers, we have targeted cooling for efficient water use.

In 1987, Phoenix started the two-phase Best Available Technology Study. The first phase determined what the major water uses were within Phoenix, and the second phase designed an implementation and outreach program. Last year we formed the Industrial/Business/Government Water Conservation Program. We conduct about 20 site visits yearly for our largest customers. An engineering firm, under contract with us, visits customers, prepares a complete water audit of the facility, and makes conservation recommendations. We then require the customer to develop a conservation plan. We present a Mayor's Award annually to any company that has developed conservation actions or plans. This year we have 13 awardees who conserved 101 million gallons of water. We will also present two media awards for promoting public conservation awareness.

It is very important to recognize water conservation programs developed by people who are willing to jump on the bandwagon, yet have few financial resources. We have one weatherman who joined the AZMET program and publicizes the daily water production figures and what the turf irrigation application rate should be. Recognition will be given to the city's bus system for putting up our conservation posters at bus benches at no charge when space is available.

Before developing codes, ordinances, or new outreach programs, we present our ideas to an advisory committee comprised of representatives from each of the 13 major industries within Phoenix. Their feedback has been extremely helpful in code development. We hold half-day and full-day seminars and workshops on cooling management, general conservation planning, and just this year, workshops for vertical industries. Programs are provided for hospitals, hotels, and other

Phoenix Water Conservation Program

commercial enterprises. A new commercial landscaping and maintenance program also has been developed.

Finally, an exciting new development in water conservation is integrated resources planning. We are working with gas and electric utilities in developing cooperative conservation plans for non-residential customers. You get a lot more "bang for the buck" if a facility manager can see from the outset how much money will be saved over the long-term by developing a conservation plan.

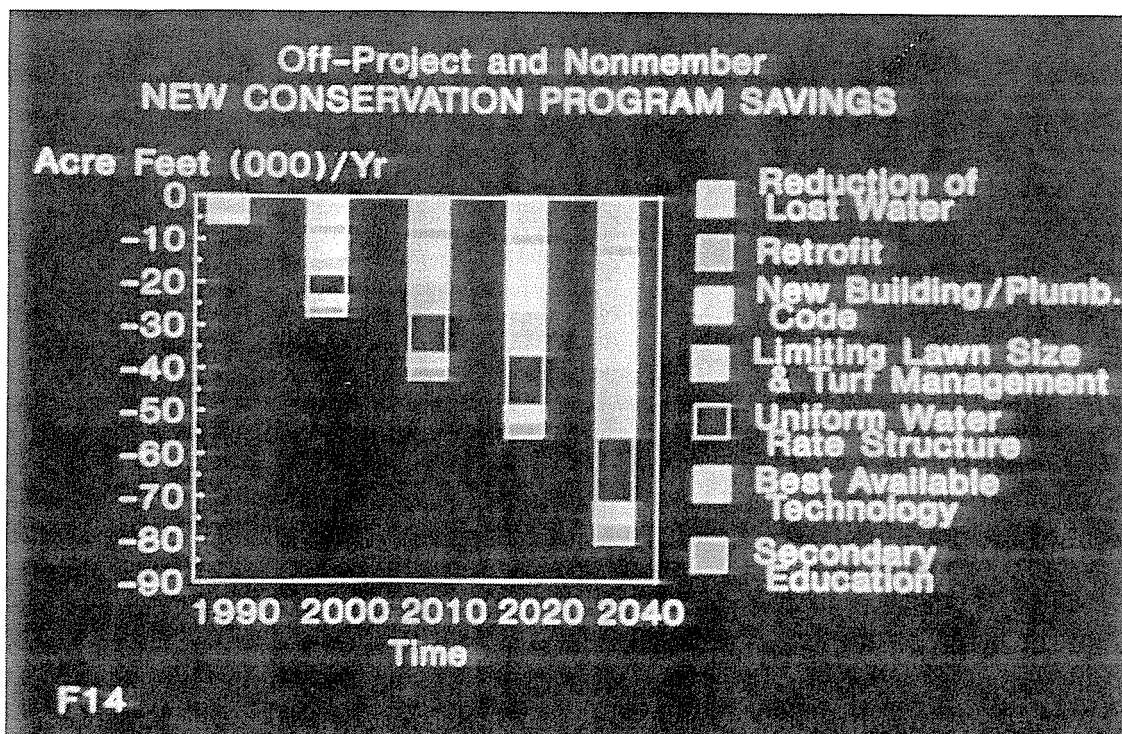
Employee education is very important as the following story will attest. Not long ago we walked into the bakery section of a grocery store and happened upon, not a dripping faucet, but a running faucet. I asked the bakery worker how long the faucet had been running like that and she shrugged her shoulders and said, "Well, as long as I've been here." I asked, "How long is that?" She said, "A year." That one faucet accounted for 20 percent of the grocery store's water bill and proved two things. First, the employees were not taught enough to care, and second, the manager did not do a very good job of walking around his store checking on what was happening.

We also work through trade associations like the Hotel Engineering Association and the Hospital Engineering Association. Members attend seminars free of charge and we've had a very positive response from engineers who wanted to do something but they just didn't know how to go about it.

Table 1 shows projections for the impact of different conservation programs by the year 2040. Note that secondary education is included. We are integrating conservation planning into the high school curriculum. The EPA has cooperated with us in developing conservation education through the Heritage Fund. To meet new EPA restrictions, we must build significant changes into our wastewater treatment system and must pass these environmental charges on to the customer. This will, in some instances, increase a non-residential customer's bill by 43 percent. This can mean a significant increase in water charges, particularly for industrial-class customers. Conservation is also affected because sewer rates are tied to water consumption. We are very proud of what we have been doing with water rate development. We have been working very hard with citizen committees on water rate development. We have learned that consensus on volatile topics such as water rates is impossible but informed consent is something we work toward.

The Desert House, a \$1.8 million project was started in 1985. The project was started by the University of Arizona after they retrofitted a home in Tucson called "Casa del Agua." They wanted to build a home from scratch that would be representative of a medium single-family home in the Phoenix area. The home was built on the premises of the Desert Botanical Garden as part of their Center for Arizona Living, and is a

Table 1.



partnership project of the City of Phoenix, the Arizona Energy Office, Salt River Project, and the Desert Botanical Garden. The project should be completed by February 1993 and will be used for research. Ground-water tanks have been placed under the home and will be used once the county health authority gives their approval. Research data will be collected by computer in a tunnel under the house.

One last suggestion in looking at water conservation: keep in mind the inter-relationship between water, wastewater, and water quality and their impacts on water conservation. *Money* magazine's September 1992 issue provided their annual list of the best U.S. cities in which to live. Amazingly, most important on the selection criteria of the residents, over and above crime and education considerations, was water quality. It has become the priority issue in our water services department.

John Sutton is the Water Conservation Manager for El Paso Water Utilities. The department develops and implements programs and activities to meet the goals of El Paso's Public Service Board to achieve and maintain a 20 percent reduction in per capita water use by the year 2000. Projects initiated include the "Water On Request" program in cooperation with the El Paso Restaurant Association and the "Cash for Your Commode" rebate program. John received a B.S. in Horticulture and Landscape Design from Oklahoma State University in 1976. He has worked as a landscape designer for commercial and residential projects for over a decade and has worked with El Paso's Community Action Program and as Public Service Employment Monitor. John is a member of the Water Conservation and Re-Use Committee of the American Water Works Association, Texas Section and is on the Urban Agriculture Subcommittee, Texas A&M Research Center.



WHY WATER CONSERVATION? WHY IN EL PASO?

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El Paso is a desert city with a limited supply of readily available water. Groundwater supplies provide 75 percent of our water needs with the remaining 25 percent obtained from surface water via the Rio Grande. Our major groundwater source, the Hueco Bolson, is also shared with Juarez and Chihuahua, Mexico and is predicted to meet our needs only for another 25 to 30 years. Alternate sources of water are estimated to be 4 to 6 times as expensive as present costs.

El Paso's recently completed Water Resource Management Plan looks at anticipated demands and supplies for the next 40 years and identifies water conservation as the priority element for a future water supply, followed by the use of reclaimed water, surface water, and finally groundwater. Water conservation is the least expensive method to deal with a limited supply.

A 40-member citizens advisory board was also named in 1990 to look at all areas of water use and

make recommendations for a comprehensive water conservation program. These recommendations were the basis for the Water Conservation Ordinance that was approved by El Paso City Council in the spring of 1991. This mandatory year-round ordinance restricts certain water-use activities and prohibits water waste. There are guidelines for landscape watering, car washing, leaks, and large water users. Changes in the city's Plumbing Code also require ultra-low-flow plumbing fixtures to be used in all new construction and replacements.

The basis of the Conservation Program is an aggressive educational program on wise water use and the changing of old water-use habits. El Paso Water Utilities' goal is to reduce capita consumption by 20 percent, from 200 gallons per capita per day (gpcd) to 160 gpcd by the year 2000. The program is working, in 1991 our total consumption was the lowest since 1986 with a per capita usage of 173 gpcd. Peak day demands have also been reduced.

WORKSHOPS

Friday morning was devoted to three workshops addressing water banking, instream flows and agricultural conservation. These are controversial topics and there is a likelihood that legislation will be introduced on each of these topics in 1993. Conference participants were asked to attend a workshop of their choice. A facilitator was assigned to each workshop to help focus discussion and explore areas of consensus. Each workshop elected a reporter who summarized the workshop discussions and described any consensus reached by the participants when the conference participants reconvened as a group following the workshop sessions. The following papers are these summaries.

Peggy Montañó is an associate with Saunders, Snyder, Ross and Dickson law offices in Denver, Colorado. Peggy has extensive experience in natural resource issues and has published numerous articles on water law. Peggy has represented public and private interests in state and federal courts. She is now representing state interests against U.S. Forest Service claims to huge quantities of instream flow water rights in Colorado's South Platte River Basin.

INSTREAM FLOW WORKSHOP

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INTRODUCTION

Approximately 75 interested citizens participated in a two-and-a-half hour workshop focused on instream flows. The group followed the discussion format outlined below and reached no consensus about whether New Mexico should adopt statutory standards for recognition of minimum streamflows in the waters of the state. The comments made by workshop participants were synthesized so they may be more easily understood. No attempt was made to determine the degree of support for each proposition set forth.

DEFINITIONS OF INSTREAM FLOWS

Suggested definitions included the following: A set amount of a water right; a set amount of water only in a natural stream; a set amount of water in a natural or artificial stream; preservation flows; minimum flows; the minimum amount of water necessary to maintain social values; the maintenance of flows in a predefined reach of a channel necessary to meet a predefined value at a time needed; the amount of water necessary to maintain flora/fauna in a stream segment, i.e., plants and animals survival basis; the amount of water

necessary for a particular activity such as rafting; the amount of water necessary to preserve the natural environment to a reasonable degree.

The group finally ceased the discussion after the following working definition was enunciated: the maintenance of flow in a defined channel at a certain time to satisfy predetermined values.

The following questions were raised in the discussion of a definition of instream flows: From where is the water right to be obtained? Should instream flows be limited only to natural streams or should they also be adopted in artificial streams? Whose values are to be used as the basis for setting minimum streamflows? What timing would be used for instream flows, i.e., would this be a year-round flow? For what purposes is the flow needed? Which section of a stream would be designated as an instream flow segment? How would you account for natural variances in streamflows? During dry years many streams are dry, therefore, an instream flow program may be in opposition to the natural condition. The natural hydrography, whether it is a wet or dry year, should be considered.

**THE FOLLOWING ISSUES AND CONCERNS
WERE ARTICULATED BY PARTICIPANTS ON
A VOLUNTARY BASIS**

1. Riparian Rights v. Prior Appropriation Doctrine
2. Economic impacts of instream flows
3. Recognition of instream flows as beneficial use and a water right pursuant to state law
4. Historic flows must be considered. For example, a dry Pecos River is the norm historically.
5. All New Mexico stream adjudications must be completed in order for instream flows to be considered and be obtained by purchase or otherwise.
6. An instream flow already exists in many streams due to the prior appropriation system in which senior water rights call water downstream and prohibit diversion above the senior right on each stream system.
7. Changing values in society
8. Streams are naturally dry at times
9. Impact on agricultural water use in the state
10. Economic impact of wasted water because it is not diverted
11. Water quality needs if instream flows are adjudicated for certain purposes, those purposes necessarily require a certain quality of water, for example, fisheries
12. Coordination of existing uses could meet some instream flow needs. For example, fish propagation could be encouraged by maintenance or management of existing water rights.
13. Out-of-state interests gaining control of New Mexico's streams
14. Humans should not alter the environment's natural condition.
15. Sustainable development should be considered when adjudicating an instream flow, i.e., balancing agricultural interest with interests such as rafting or fish propagation.
16. Alternate sources of instream flow should be considered, i.e., imported water into certain basins.
17. The priority system should be considered within beneficial use. For example, a hierarchy of uses such as agricultural vs. domestic must be considered.
18. The entire water system should be considered together, rather than in pieces, for example, ditches vs. acequias.
19. The money to administer instream flows is simply not available. Due to the nature of instream flows, administration of these rights would be very personnel intensive.
20. Beneficial non-use of water already accommodates existing statutes without injury to other uses. If a senior water user wants to leave his or her water in a stream, they can now do so.
21. The effect on New Mexico's future should be considered including an analysis of who will be benefitted and who will be hurt by recognition of instream flows.
22. Who owns the water rights that currently exist? Cities and private entities now do. Would the state pay and condemn existing water rights in order to attain instream flows?
23. If instream flows are necessary in certain parts of the state, they should be done pursuant to augmentation plans.
24. Desired future conditions should be considered, i.e., cultural and biological diversity concerns.
25. The state engineer will not support instream flows until regional and state water plans are completed. Therefore, consideration of instream flows is premature. Technical questions such as those concerning quantification of instream flows should be addressed. That is, the hydrology of some streams in New Mexico is such that the streams disappear only to reappear in other segments.
26. Financially, who truly benefits from instream flows?
27. Long-term issues and impacts should be considered. Is this a "today" issue that will fade in years to come?
28. Who will police or regulate and own instream flows?
29. Current law does not now protect acequias and until that has been done, no new beneficial uses should be added.
30. Currently, there are thirteen adjudications going on within the state. Therefore, ownership of the existing water has not been established. This uncertainty means that the consideration of instream flows should be done at a later time.
31. Threatened and endangered species issues
32. Sedimentation problems
33. Natural hydrology and changes between policy and the groundwater system integration with surface instream flows. For example, would wells be curtailed if an instream flow was not met by surface water rights?
34. A concern was raised about the process and timing of this conference because of the divisiveness of the issue.

35. The legislature should not use this conference as a basis for legislation on instream flows in this session.
36. The cultural and social values of acequias and pueblos would be harmed or may be harmed if instream flows are required.
37. Is evaluation of the biological community and riparian areas necessary prior to implementation of instream flows?
38. The racist aspects of environmental issues against Hispanic and Native Americans were raised.
39. Is it unconstitutional to take water as property from private citizens by the state if instream flows are required?
40. Federal law and reserved water rights issues were raised. Some participants were opposed to federal requirements of instream flows and suggested state law be strengthened to provide protection from federal agencies.

DOES THE EXISTING SYSTEM ALLOW FOR PROTECTION OF INSTREAM FLOW VALUES?

Acequias now protect areas above the diversions by maintaining water in the stream and delivering water pursuant to senior rights. We do not need instream flows mandated by statute because in the high mountain streams such as wilderness areas, waters must now flow down to senior rights below. If instream flows are mandated, they must be junior water rights because that would be the only way within the existing system to protect existing water rights and the area's culture.

A discussion continued concerning whether the present system sufficiently protects instream flows. It was suggested that specific areas needing protection be identified and focused on. If threatened species exist, the Endangered Species Act could also be used as a method for protecting particular segments of stream systems. The role of interstate compacts in protecting instream flows was also raised. To the extent the compacts require New Mexico to deliver certain amounts of water to the state line, instream flows are guaranteed up to that amount. In addition, concerning endangered species, if New Mexico maintains sufficient waters to protect a species, this state law would prevent the federal government from imposing and enforcing the Endangered Species Act within the state. This was viewed as a positive aspect. The recognition of federal agencies, such as the U.S. Forest Service, impacting greatly on water use in the state was discussed. The U.S. Forest Service was described as an

agency which affects water by clear cutting trees which destroys stream systems within the state. A discussion followed concerning the interplay of the Endangered Species Act, the National Environmental Protection Act (NEPA), and the Federal Land Management Policy Act (FLMPA) and the interplay between agencies which pick and choose the law which most benefits its position at the moment. It was recognized that a need to coordinate federal agencies and federal laws within the state to assess their impact and control their impact on water resources is needed. International impacts were also recognized in the discussion. The impact of Asian countries purchasing U.S. timber at prices much cheaper than they can purchase timber within their own boundaries was seen as an impact on the forest of the West. The dollar amount for which such timber is sold is not recognized as sufficient compensation to the people of New Mexico for cutting down the forests.

Concern was voiced about hidden agendas and instream flows.

Acequias were recognized as enhancing and increasing riparian areas within the state and within the current water system. Because of the rights-of-ways in the northern part of the state, this was seen as positive. Elephant Butte Irrigation District was also recognized as having some acequias.

Participants discussed the effect of forfeiture of water rights. The example was given that if the Nature Conservancy purchased land and an accompanying water right for the purpose of leaving water in the stream to protect a desirable habitat, could the forfeiture law be used to deprive or abandon that senior water right? If so, the discussion focused on changing the law so that a senior water user could choose to leave his or her water right in the stream to protect instream flow habitat.

WATER RIGHTS ABANDONMENT AND THE DIFFERENCE BETWEEN FORFEITURE AND ABANDONMENT

The statement was made that no one is now precluded from applying for a water right in order to protect instream flows. Who would hold this water right in the future if such a right were created by state law? Should the Interstate Stream Commission (ISC) apply for a water right and create an instream flow on, for example, the Pecos River by drying up lands that are now irrigated? Could the ISC, if it held such a water right, be exempted from the forfeiture program

if the water right was held for statutorily recognized beneficial purposes?

Some concern was voiced that recognizing a water right for instream flow purposes regardless of who the owner would be would set a dangerous precedent that could not be stopped. The question was raised, could a person or entity with an instream flow right argue that a new well could not be drilled because it would hurt the instream flow water right due to depletive effects?

It was clear that many people believed that the existing system of laws now provides means to protect instream flows and some slight modifications could be made to further protect instream flows if that is the intended result.

Discussion was raised concerning the use of the words "public welfare" in existing law. Could such recognition of water rights for the public welfare be used to have an instream flow water right curtail a well? That was recognized as possible by the participants. The discussion ensued concerning the state engineer and the legislature's need to codify "public welfare" and ensure that it does not conflict with cultural and social values and consider only economic values.

PROPOSALS FOR CONSENSUS

No consensus could be reached other than the recognition that instream flow legislation was a highly contentious topic. A proposal was made to resolve that no instream flow legislation be considered by the state legislature either this session or ever because it is a threat to many of the state's cultures and economies. Instream flow legislation, if adopted at all, should await planning on a local level which is currently under way.

There was also a proposal that a resolution be adopted that this conference would not be used at the legislature by lobbyists or special interest groups as support for a statute this session.

In the end, the participants agreed to disagree on the issue with the facilitator making the statement that the existing system can be used for protection of instream flows. However, it is unclear what water laws, compacts, private lands and/or reservations protect instream flows, including acequias.

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WATER BANKING WORKSHOP

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The expressed objective of the water bank workshop was to leave the meeting with a consensus on the need and form of legislation to allow water banking in New Mexico. Discussions focused on: 1) protection of private water rights and private property from acts of forfeiture or condemnation; 2) possible benefits water banking could accrue for the local, regional and state economies and ecosystems; 3) whether or not water banking can contribute to resolving instream flow, riparian management, federal reserved water right and conservation issues; and 4) exploration of legislative language amendments, or creation of new language in New Mexico Water Law that will create a "win-win" solution in the battle over water uses.

The workshop was divided into two parts. Part I was identification and open discussion of issues and concerns. Part II was devoted to establishing consensus on the need for water banking or other mechanisms in New Mexico.

ISSUES AND CONCERNS

1. Are meeting aquatic and riparian water demands compatible with the protection of private property and privately held water rights?
2. Are there existing mechanisms and entities under current New Mexico water law that allow for water banking, instream flow and water conservation?
3. Does government acquisition of private property and water rights adversely affect local planning and flexibility to address changing local needs?
4. Are there existing laws to protect forfeiture of water rights devoted to conservation purposes?
5. Can unappropriated water be reserved and marketed?
6. What is the difference between reserving and marketing?
7. What reasons exist for not using appropriated water?
8. Should there be more local autonomy over decisions on water use vs. sole direction from the state engineer? Does this usurp the power of the state engineer or reduce administrative burden? Are there constitutional or legal problems in increasing local control?
9. What is the difference between a right to water and water right?

10. Would water banking cause water speculation?
11. How can New Mexico contract for Central Arizona Project (CAP) or other new unappropriated water for which we have no current use?
12. For what purposes can unappropriated CAP or other new unappropriated water be used?
13. What are the differences in banking, conserving or reserving water in fully appropriated and established systems vs. unappropriated waters?
14. What are the mechanics of securing reserved water rights?
15. Does local control of water promote planning flexibility on an annual basis?
16. Do mechanisms exist that allow water to be used for instream flow from individuals, conservancy, acequia, or irrigation districts or other political subdivisions?
17. Pre-1939 water districts were established for agricultural purposes, not for municipal/industrial or conservation purposes.
18. Are permits required to realize instream flows or other riparian management plans?
19. Will water banking or other mechanisms prevent private property and water right condemnation?
20. Can joint powers agreements be used for acquisition of CAP or other new unappropriated water?
21. Would establishing a local or regional water-holding entity preempt condemnation by a federal or state authority?

CONSENSUS ON SOLUTIONS FOR ISSUES AND CONCERNS

This section's objective was to focus on arriving at a consensus to satisfy specific water demands and purposes. The question was asked: Is there a need for water banking in the state of New Mexico? Part I revealed that there are several mechanisms to reserve and assign uses of unappropriated water. We also discussed the different definitions of water banking and other methods of water conservation and allocation.

The issues and concerns listed previously were extracted from the discussions in Part I along with others raised in Part II. The list does not necessarily reflect the sequence in which they occurred. To provide reference in the following text, the numbered focus questions and issues and concerns addressed appear at the beginning of each paragraph.

Often consensus can be reached by agreement on definitions. It appears, in retrospect, that this is what occurred in the workshop. Instream flow, water banking, conservation and reserved water, as they relate to

New Mexico water law, have triggered debate and argument for some time. Those familiar with New Mexico water law and the prior appropriation doctrine can be left with the impression that the above water concepts are not compatible with existing New Mexico water law.

Focus question 3, Issues and Concerns 2,4,16, 18 — The term instream flow has caused many hours of legislative debate without resolution. As Tim DeYoung stated in the previous day's presentation, instream flow could be called free-flowing water. This free-flowing water may be found in acequias and irrigation ditches.

Focus questions 2,3,4, Issues and Concerns 2,4, 15,19,21 — Consensus was reached that any attempt, at this time, to legislate a new water banking entity is unnecessary. Water banking is alive and well in New Mexico. NMSA 72-12-8(d) established the Pecos Valley Artesian Conservancy District Water Bank. It was suggested that an amendment to this legislation could establish the same type of mechanism for other specific areas of the state. It also was pointed out that NMSA 72-1-9 allows several types of political subdivisions of the state to reserve water for up to 40 years. This provision includes counties.

Issues and Concerns 1,2,3,4,7,8,10,15,19,21 — The above discussion revealed two distinct definitions of the term "water banking." From the standpoint of conservation, water banking means the voluntary suspension of use by a water right holder, in order to recharge an underground aquifer (Pecos Water Bank Model), and by inference could be used to stabilize or augment surface water flows (mechanical water banking). From the standpoint of water marketing, unused or unappropriated water could be reserved and marketed (Albuquerque's San Juan/Chama Water Marketing Model) or deposited by a private or public water right owner into a brokering entity (California Water Bank Model) which would in turn market that water for other uses (marketing water banking). Both of these concepts of water banking rely on a special exemption to the forfeiture clause such as contained in NMSA 73 and 72-1-9. To avoid water speculation, an established water right, deposited in a water bank by individuals or other entity, would have to be appropriated under the beneficial use doctrine and remain appurtenant to land within the basin-of-origin.

Issues and Concerns 2,4,5,6,7,11,12,13,14,16 — The terms "conservation" and "reserved water" proved to

be stumbling blocks in the discussions. We arrived at consensus on the following definitions: "Conservation" means preserving something currently in use for a future use. "Reserve" means preserving something not currently in use for some future use. Under current New Mexico water law, reserved can mean both "conserved" and "reserved" water.

Both of these terms, as they relate to New Mexico waters and as used in the context of water banking, also can have different methods of employment. There can be mechanical and marketed conserved or reserved water. An example of mechanical conserved or reserved water is when authorized political subdivisions, under NMSA 72-1-9, and local and regional planning, secure future water needs from acquired existing sources (conserved) or unappropriated sources (reserved).

Examples of marketed conserved water are the Albuquerque Model described above, return flow credits (a closed administrative marketing transaction) and conservation and irrigation districts who sell surplus water to users within their jurisdictions.

The issue was raised as to whether or not a political subdivision has to actually secure a permit for conserved or reserved water. It was suggested that such an entity make application for such a permit.

Focus questions 1,2,3,4, Issues and Concerns 1,2, 3,4,7,15,16,18,19 — Consensus was reached that, when there are demonstrated needs for protecting aquatic and riparian systems or underground or surface water sources, there are existing mechanisms to do so in New Mexico water law. During drought conditions, the simple act of discontinuing use or conserving water can augment natural stream flows. Forfeiture of a water right requires a minimum 5 years. Therefore, individuals or local water authorities have flexibility in regulating flows without resorting to temporary transfers or other mechanisms. This method insures the greatest degree of local control over the designation of water use.

This discussion raised the question: If the local water users do not participate voluntarily with expressed policies of the local or regional plan or federal or state agency wishes, should they be forced to bear the economic losses for the desires of the general public? Recent Supreme Court decisions have reinforced the Fifth Amendment's taking clause, holding that individuals who are compelled to surrender private property to accommodate the desires of the general public, through regulatory actions, must be compensated. Adequate funding sources exist to compensate for temporary or permanent acquisition of water. Just

compensation paid in the form of leases could work much better than prolonged court or legislative battles for condemnation. The concern was expressed that, once privately held water rights or property are transferred to state or federal ownership, it is nearly impossible to get them returned to private, locally controlled uses. This can have devastating effects on the local cultures and economies. Local and regional plans should be relied upon to address water allocation problems.

Issues and Concerns 8,11,14,20 — In New Mexico, the vast majority of surface water and underground water are subject to interstate compacts and court decrees. There is very little, if any, unappropriated water left in the state. Therefore, any new uses of water must come from existing water rights. Satisfying the required water deliveries on these interstate streams adds several complications to local water management. There is available water from the Colorado basin through the CAP and the Animas/La Plata projects. The Interstate Stream Commission (ISC) has the authority to purchase such water for uses in the state. The ISC can purchase this water for immediate use or reserved uses. Joint powers agreements also can be formed to accomplish the same ends or local authorities could contract for these additional water rights. The major problem facing local authorities or joint powers groups is financing these rather large expenditures.

The seriousness of the situation was punctuated by the statement made by one workshop participant, "Unless you shoot people at the border, they will come in and get our water." Contracts for CAP water must be made immediately. If not, California will apply for CAP water not being used in Arizona and New Mexico. Another complication of local control of interstate streams is the state's obligation, as a whole, to satisfy the water deliveries. Local authorities would have little to lose by telling an adjacent state to sue over any disputed water.

Focus questions 3,4 Issues and Concerns 3,17,18, 19,21 — Instream flow rights and federally reserved water rights were not discussed on their own merits. However, one of the objectives of examining water banking was to search out "win-win" proactive solutions for these water use conflicts. It was mentioned that pre-1939 water projects were devoted exclusively to providing water for agriculture. After 1939, provisions were made for municipal and industrial (M&I) water and conservation. Pre-1939 irrigation districts

such as Elephant Butte are under no obligation to provide water for instream flows, M&I or recreation. Attempts at condemnation would have to overcome the difficulty of one branch of the state suing a political subdivision.

Several federal agencies have intimated that there are circumstances under which the federal government could assume supremacy over certain waters. However, at this time, federal laws recognize state jurisdiction over water resources decisions. Most federal reserved water rights are located high in the watersheds and do not affect New Mexico waters. Recent wilderness and wild and scenic river legislation on lower elevation lands contain water language which, if passed, could impact water rights held upstream. Minimum natural water course flows have also been prescribed for some recovery plans under the Endangered Species Act. No attempt has been made to claim or condemn water rights for threatened or endangered species. Several events have taken place, such as high volume releases from some reservoirs and opposition to certain new water projects, which may indicate some federal agencies are testing this area of the law.

The prior appropriation doctrine produces de facto instream flow in that certain amounts of water are required to be released to flow to the next user or supply water deliveries on interstate streams. Prior to the construction of storage dams on New Mexico streams, even the largest rivers went dry during some years. Minimum stream flow is not a natural element of riparian ecosystems in the Southwest.

Issues and Concerns 2,4,7 — There were several reasons discussed as to why available water would not be in use that could be applied to other uses. After floods, many fields are left unusable for a long time. Owners of water rights take extended vacations or are unable to work their farms for health reasons. Some villages, municipalities, associations, schools or counties may purchase water rights for future use. All these situations and others provide an opportunity for those water rights to be used for other purposes. If a brokering entity existed, it could market water to other uses. Also, under current law, temporary transfers of water use and points of diversion may be approved by the state engineer.

CONCLUSION

Consensus was reached that there is a need to consider water banking as a means to conserve water. Consensus was also reached that there is no need at

this time to create special legislation for water banking. There are several existing, defined-by-statute entities capable of performing the holding and marketing of water and water rights. In some cases, existing legislation would have to be amended to provide for site-specific applications. The consensus was that it is much easier to work within the boundaries of the current law than to create new law.

ACKNOWLEDGMENTS

The water bank workshop was, for this writer, very educational and productive. This is owed in great part to several individuals who contributed to the preparation and participation in the discussions. We would like to acknowledge the contributions to the discussion by Charles T. DuMars, Steve Hernandez, Dr. Bobby Creel, New Mexico Water Resources Research Institute staff, New Mexico State Engineer Office staff, New Mexico Acequia Commission and Association, Pecos Valley Artesian Conservancy District and the U.S. Fish and Wildlife Service. Our appreciation also goes to Keith Melton from the Interstate Stream Commission who originally proposed the workshop, David Lujan from the Tonantzin Land Institute for contributing concepts on water trusts, and to all of the many participants in the workshop discussion.

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AGRICULTURAL CONSERVATION WORKSHOP

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During the agricultural conservation workshop we addressed many of the same issues the other two workshop groups did because instream flow, water banking, and ag conservation issues are interrelated and all very important. I have compiled a list of questions discussed and not many answers. We did arrive at a consensus that there is no way agricultural conservation legislation should be introduced now because there's no background for developing legislation, and no data showing that legislation needs to be introduced.

First, the big question: Are we talking about conservation of water statewide, or are we talking about conservation within a region or an aquifer, or are we talking about conserving water on the farm? Each of these aspects has a different application and a different consequence. We never resolved that question. We discussed the three types of irrigators in New Mexico, however, and how conservation impacts each group. One group is composed of irrigators who receive the majority of their water from irrigation or conservancy districts, like Elephant Butte Irrigation District or the Middle Rio Grande Conservancy District. Another group of irrigators are the acequia users, mainly in northern New Mexico. The third group is made up of irrigators who pump groundwater, such as the produc-

ers in the High Plains or in Luna and Hidalgo counties.

These three groups irrigate in very different ways, so conservation methods should be implemented accordingly and technical assistance encouraging conservation should fit the irrigator's situation. Each group deals with different quantity and quality issues also, and these impact conservation differently.

Another major question concerned the economic impact or cost of conservation. Are producers going to pay for conservation measures themselves? Or will irrigation districts or acequia organizations help pay the costs? We agreed that conservation measures should stand on their own with regard to costs. There is no need to burden the taxpayer further. Additionally, the cost/benefit ratio can be an incentive to conserve water.

Other questions our group voiced were: For what uses are we conserving this water? For reuse or lease to our neighbor who doesn't have much water? To an industry? Or can we sell this conserved water? How do we induce change? Through rule-making or through incentives? One comment was made that we might induce change through conservation credits. Some participants interpreted this to mean that an individual would receive monetary payment for conserving water, but that was not the intent at all. By conservation

credits, we are referring to water credits possibly being awarded for conservation. Although we weren't sure of how such a system might work, we thought it might have merit.

Currently, there are funds available through low-interest loans and possibly grants to encourage water conservation on farms and in districts through ditch-lining, sealing the reservoirs, laser-leveling, and underground pipelines. Some of these conservation measures aren't necessarily appropriate for each group of irrigators. The acequia users observed that in some cases a return to more traditional, historical practices might actually be beneficial to conserve water. Many of these practices have been lost through the years and there should be a conscientious effort to re-employ them. Also, many of the acequia farms are smaller than those elsewhere in the state, and conservation practices such as laser-leveling aren't economically feasible. We talked about conservation measures being rooted in the community, another reason why any conservation plan perhaps should be implemented on a regional or local basis.

We discussed the impact of federal laws on conservation. How do the Endangered Species Act or wetland issues impact the conservation of water? Are we conserving water for these other uses? As with the other two workshop groups, we needed a definition of public welfare. The main reason we need a definition of public welfare is because of a fear on the part of the water rights owners that the definition may somehow determine that their water rights may be taken because it could be construed that the public welfare is a higher and better use of your water right than what you are currently using it for.

The suggestion was made that we get legislation passed now before the agricultural industry loses more influence legislatively. Well, we don't have any legislation to present. That point has merit but we are not ready at the present time.

We went on to try to define who should oversee conservation practices. The community, the districts, the regions or the state? Who takes this initiative? We identified several groups already in place to help foster conservation.

- There are regional water planning groups now conducting water planning, helping to identify resources, and planning for those uses, which interact with conservation. Maybe conservation should fall under the regional water planning.
- Soil and water conservation districts exist in communities all across the state. In fact, there are 47 water conservation districts in the state. They now

provide technical assistance to farmers and ranchers or water rights owners for conserving water on the land or on-farm. Our group decided they were the best organization already in place to help influence the conservation of water.

- Federal and state programs are in place now that provide low-interest loans and assistance to encourage conservation.
- Statutes are already in place concerning the waste of water. The suggestion was made that perhaps the State Engineer Office had not been as effective as it could have been in enforcing these statutes.

In conclusion, we feel there is no legislation now ready to be presented, and leadership should come from the top, and as the gentleman said yesterday, with input from the bottom up and the inside out.

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