

WINTER 2003

**THINK NEW MEXICO**

*A Results-Oriented Think Tank Serving New Mexicans*



# ¡Rio Vivo!

The Need for a Strategic River Reserve in New Mexico

Jim Vogel was born and raised in Roswell, New Mexico, and currently lives and works in Dixon, NM. His paintings tell stories about New Mexico's land, water, and the people who still work with them. Often his art serves as social commentary on the importance of sustainable agriculture, conservation and respect of the land. More of his work can be viewed at Blue Rain Gallery in Taos, New Mexico ([www.blueraingallery.com](http://www.blueraingallery.com)). Vogel is currently seeking a public venue for an eight-foot-wide painting and also for a mural based on the "Seasons of the Acequia" study, in hopes that these pieces can help teach people from across the state and country about the way acequias weave themselves through the lives of New Mexicans.

**Photographs Courtesy of:** Doug Brown, Kathleen Dudley,  
 & Museum of New Mexico Photo Archives

**Researched and Written by:** Kristina Fisher and Fred Nathan



Copyright © 2003 by Think New Mexico

## **About Think New Mexico**

Think New Mexico is a results-oriented think tank serving the citizens of New Mexico. We fulfill this mission by educating the public, the media and policy makers about some of the most serious problems facing New Mexico and by developing effective, comprehensive, sustainable solutions to those problems.

Our approach is to perform and publish sound, non-partisan, independent research. Unlike many think tanks, Think New Mexico does not subscribe to any particular ideology. Our focus is instead on promoting workable solutions, which is especially important because New Mexico is at or near the bottom of so many national rankings. We use advocacy and, as a last resort, legal action but only within the constraints of Federal tax law.

Consistent with our non-partisan approach, Think New Mexico's board is composed of Democrats, Independents and Republicans. They are statesmen and stateswomen, who have no agenda other than to see New Mexico succeed. They are also the brain trust of this think tank.

As a results-oriented think tank, Think New Mexico measures its success based on changes in law or policy that it is able to help achieve and which improve New Mexico's quality of life. We are best known for our successful campaign to make full-day kindergarten accessible to every child in New Mexico.

Think New Mexico began its operations on January 1, 1999. It is a tax-exempt organization under section 501 (c) 3 of the Internal Revenue Code. In order to maintain its independence, Think New Mexico does not accept any government money. However, contributions from individuals, businesses and foundations are welcomed, encouraged and tax-deductible.

## Think New Mexico's Board of Directors



**Edward Archuleta**, a 13th generation New Mexican, is the Director of the Santa Fe office of 1000 Friends of NM, a nonprofit organization that advocates responsible land-use planning, growth management and sustainable development. Edward previously served as the top assistant to former NM Secretary of State Stephanie Gonzales.



**Paul Bardacke** served as Attorney General of NM from 1983–1986. Paul was Chairman of Bill Richardson's successful 2002 gubernatorial campaign. He is a member of the American College of Trial Lawyers. Paul currently handles complex commercial litigation and mediation with the firm of Eaves, Bardacke, Baugh, Kierst & Larson.



**David Buchholtz** has served on a long list of NM boards and commissions and has advised several New Mexico governors on fiscal matters. David recently served as Chairman of the Association of Commerce and Industry. He is Senior Counsel at Brownstein, Hyatt, and Farber.



**Garrey Carruthers** served as Governor of NM from 1987–1990. Garrey is Dean of New Mexico State University's College of Business, and was formerly President and CEO of Cimarron Health Plan. He is a member of the Board of Directors of the U.S. Chamber of Commerce and the NM Business Roundtable for Educational Excellence.



**Elizabeth Gutierrez** is an education consultant with a PhD in educational leadership and public policy. Liz is a member of the Board of the Santa Fe Community College. She has served as Director of Administrative Services Department for the City of Santa Fe and was a marketing executive with IBM for nearly two decades.



**LaDonna Harris** is an enrolled member of the Comanche Nation. LaDonna is Chairman of the Board and Founder of Americans for Indian Opportunity. She is also a founder of the National Women's Political Caucus. LaDonna was a leader in the effort to return the Taos Blue Lake to Taos Pueblo.

**Rebecca Koch** is the owner of Rebecca Koch & Associates which provides management consulting services in the areas of development and strategic planning to local and national nonprofits. Rebecca was the organizational development consultant for the Santa Fe Business Incubator, Inc. She is a former President of the Board of NM Literary Arts.



**Fred Nathan** founded Think New Mexico and is its Executive Director. Fred served as Special Counsel to NM Attorney General Tom Udall from 1991–1998. In that capacity, he was the architect of several successful legislative initiatives and was in charge of NM's 1.25 billion dollar lawsuit against the tobacco industry.



**Frank Ortiz**, a career Foreign Service Officer of the United States, has served as United States Ambassador to several countries, including Argentina, Guatemala and Peru. Frank serves on many boards throughout NM.



**Roberta Cooper Ramo** is the first woman elected President of the American Bar Association. Roberta is a former President of the Board of Regents of the University of NM. She is a shareholder with the Modrall law firm and serves on many national boards.



**Stewart Udall** served as Secretary of the Interior under Presidents Kennedy and Johnson. Prior to that, Stewart served three terms in Congress. He is the author of *The Quiet Crisis* (1963) that tells the story of humankind's stewardship over the planet's resources, and *To the Inland Empire: Coronado and Our Spanish Legacy* (1987) which celebrates Hispanic contributions to our history.



*Photo Credit for Mr. Archuleta and Ms. Koch: Kathleen Dudley*



## Letter From the Executive Director



*Fred Nathan*



*Kristina Fisher*



*Lynne Buchen*

When Think New Mexico's board and staff meet to select a policy topic to tackle each year, we search for topics with workable solutions that are large enough to make a difference, yet small enough to be achievable.

For example, rather than attempt to reform the entire public education system, Think New Mexico successfully focused on one solution, making full-day kindergarten accessible to every child in New Mexico. In the same way, our ongoing campaign to repeal New Mexico's food tax concentrates on one sound approach to make New Mexico's regressive tax system fairer for working families, instead of trying to rewrite New Mexico's entire tax code.

In this policy report, rather than attempting to solve all of New Mexico's many water problems, Think New Mexico chose to focus on New Mexico's rivers, which have often been described as our state's lifeblood. We believe that if the modest solution we propose here were implemented, it would go a long way toward helping New Mexico's rivers survive and protecting the people, communities, and traditions those rivers sustain.

We believe the time is ripe for this solution, given the serious drought that New Mexico is entering and the useful steps that the Legislature and the Richardson-Denish Administration are beginning to take toward creating a balanced, sustainable water policy for New Mexico.

To help us better understand water policy and New Mexico's rivers, we read dozens of books, government reports, outside studies, periodicals, and newspaper and journal articles. We studied New Mexico's water laws and the relevant state constitutional provisions. We researched the historical origins and evolution of New Mexico's current water policies. You can find the resources that formed the foundation for this report in the Bibliography.

Next, we carefully listened to the ideas, concerns, and experiences of a diverse array of stakeholders in the water arena, ranging from acequia members to environmentalists to farmers to city officials. We also interviewed water managers from the Office of the State Engineer and the Interstate Stream Commission, including State Engineer John D'Antonio and Interstate Stream Engineer Estevan Lopez, who were particularly generous with their time and knowledge. In the Acknowledgments on page 36 of this report, you can find the names and affiliations of everyone with whom we conferred.

In addition, we attended meetings of the House Agricultural & Water Resources Committee and the Senate Conservation Committee during the 2003 session, the interim Water & Natural Resources Committee and the Water Trust Board to gain a sense of where water policy is progressing – and where work is still needed.

Three statesmen who are universally recognized for their expertise in water issues worked closely with us to refine our proposed solutions in this report. Eluid Martinez and Tom Turney collectively served for more than a dozen years as State Engineer under Democratic and Republican administrations. Norm Gaume served as Interstate Stream Engineer and, among other things, brought the negotiations on the Pecos River to a successful conclusion.

I also want to especially thank my talented colleagues at Think New Mexico, who worked very hard on this report. Kristina Fisher, Think New Mexico's Research Director and a Harry S. Truman Scholar in Leadership and Public Service, co-researched and co-wrote the report with me. Lynne Buchen, Think New Mexico's Office/Finance Manager, served as our production coordinator, pulling together the artwork for the report and organizing the logistics of printing and distribution.

Finally, several wonderful volunteers assisted us with our research. They include Phil Smith, former Associate Director of the White House Science and Technology Office under Presidents Ford and Carter; Jon Schneider, a former partner at Goldman Sachs; and Alice Loy, a PhD student in communications at the University of New Mexico. Once again, my wife, Arlyn Nathan, has done an outstanding job as our unpaid and severely overworked graphic designer.

Think New Mexico has never had a development director or even held a fund-raising event. We are entirely dependent on the quality of reports like this, and people like you who find our work worthwhile, to generate our operating support. If you like what you read here, I want to encourage you to make a tax-deductible contribution to Think New Mexico in the attached envelope. By doing so, you will be joining a growing list of individual social investors, businesses, and foundations who make our work possible.

*Fred Nathan*

Founder and Executive Director

November 10, 2003



*Tom Turney*



*Eluid Martinez*



*Norm Gaume*

# INTRODUCTION

## A PARABLE ABOUT WATER CHOICES IN NEW MEXICO

*Water is the true wealth in a dry land.*

– Wallace Stegner

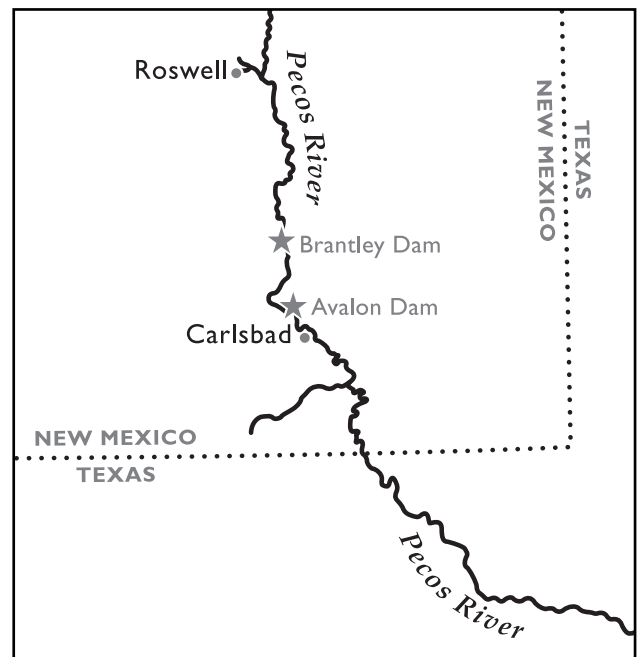
After 14 years of legal combat, three special masters and millions of dollars in legal fees, the United States Supreme Court in *Texas v. New Mexico*, decreed in late 1988 that New Mexico was obligated to pay \$14 million to Texas. Texas had brought the lawsuit, charging that its upstream neighbor, New Mexico, had benefited by more than a billion dollars from the Pecos River water that New Mexico had allegedly stolen from Texas over four decades in violation of the terms of the 1948 Pecos River Compact.

As New Mexicans have been saying since well before statehood, "Pity New Mexico: so far from heaven, so close to Texas."

Even worse than the \$14 million debt to Texas was that the U.S. Supreme Court also adopted a Texas-authored formula for calculating New Mexico's annual Pecos River water obligation to Texas that would force New Mexico to provide on average an additional 10,000 acre-feet of water every year to Texas, beginning in 1990. In drought years, it might be as much as 35,000 acre-feet. (An acre-foot is 325,851 gallons of water or almost enough water to cover a football field, goal line to goal line, one foot deep.)

Obtaining 10,000–35,000 acre-feet of water annually to turn over to Texas would be extremely difficult. The New Mexico portion of the Pecos River was already fully appropriated, meaning that New Mexicans had rights to all the available water and there was no water left in the river to spare.

It appeared that for the first time in New Mexico history, a "priority call" on a New Mexico river would have to be enforced by the state engineer. Doing so would involve forcibly cutting off all those New Mexicans with junior water rights, until there was enough flow in the river to meet the demands of senior New Mexico users and Texas, since the court had ruled that New Mexico could not fall short on its delivery obligations to Texas.



Map by Deborah Reade for *Think New Mexico*.

Many of the junior New Mexico users on the Lower Pecos River reside in Roswell in southeastern New Mexico. At one time Roswell had "more than 60,000 acres of land occupied by lush farms, orchards and ranches," according to the 1971 autobiography by Cecil Bonney, a Roswell native and newspaperman.

Now, however, the residents of Roswell were worried about the loss of not only their irrigation water, but their drinking water as well. Some estimates of the economic damage caused by enforcing a priority call on the Pecos River run as high as \$240 million,



with many municipal and industrial water users, who hold junior water rights, losing their water. Tension in the community mounted with the arrival of top officials from the State Engineer's Office and the New Mexico Interstate Stream Commission (ISC) on Tuesday, September 18, 1990 for a town hall meeting in Roswell concerning the Pecos River and the *New Mexico v. Texas* decree.

The State wanted to receive feedback from the citizens of Roswell about a series of options to comply with the decree from the U.S. Supreme Court. About 200 farmers, ranchers and other residents of Roswell packed the meeting, according to an article in the *Roswell Daily News*. John Wipple, an engineer with the ISC, warned the assembly: "It's not a matter of if shortfalls [to Texas] are going to occur, it's just a matter of how big they are going to be."

The audience was not shy, according to an account of the meeting by University of New Mexico law professor Em Hall in *High and Dry: the Texas-New Mexico Struggle for the Pecos River*:

Instead of weighing the state engineer's options, the audience complained about the compact, the Supreme Court, even complained bitterly that the state had lost *Texas v. New Mexico* through incompetence. Why should local interests have to pay for legal obligations they had not created, courts of law to which they had not submitted, lawsuits in which they had not participated?...All the possibilities were bad, but the least bad of a poor bunch, from Roswell's point of view, was the one involving state purchase or lease of water rights. The state would peremptorily curtail no water rights by priority enforcement; it would force no sale of Roswell water rights by condemnation.

Since that meeting, the State has, in effect, adopted the consensus that was reached that night in Roswell by purchasing and retiring water rights on the Pecos River to avert the need for a priority call. However, without changes to New Mexico's current river management policies, the divisive fight over the Pecos River could be repeatedly played out on all of New Mexico's major rivers.

That is why we call in this report for the establishment of a Strategic River Reserve in New Mexico as a buffer against both conflict and drought. It would protect New Mexico's rivers and the communities they serve from the demands of the Federal Courts and bordering states, like Texas.

It is also a proactive solution to avert future crises like that on the Pecos River. As former State Engineer Eluid Martinez wryly notes, "If you don't resolve the issues yourselves, you might find a judge will make those decisions for you."

A Strategic River Reserve will not solve all of our water problems in New Mexico. Rather, it is one of many key steps that New Mexico needs to take to create a balanced, sustainable water policy.



*An irrigation canal off the Pecos River, prior to the signing of the Pecos River Compact with Texas. Courtesy of the Museum of New Mexico.*

# BACKGROUND

## A VERY BRIEF HISTORY OF WATER USE IN NM

*So far as I can find out, water is what these Indians worship, because they say it makes the corn grow and sustains their life.*

– Francisco Vasquez de Coronado, 1540

From time immemorial, all water use has been centered on New Mexico's rivers. The Anasazi and later the Pueblo, Navajo, and Apache Indians understood water as a sacred blessing, and they shared the common resource among the members of their communities. They diverted water from the rivers by hand-hewn earthen and rock ditches, irrigating small fields of corn, beans, and squash.

When Spanish settlers entered the territory, beginning at the end of the 16th century, they brought their own water use customs with them. The fundamental principle of Spain's water law declared that water was reserved for common use. The Crown retained possession of all rivers and gave first priority to public uses. Individuals were allocated water only after the needs of the community as a whole had been met.

In New Mexico, the Spanish organized their communities around irrigation ditches called acequias. The acequias, which diverted water directly from rivers, were hand-dug and communally maintained. Water was apportioned to the members, or *parciantes*, of acequia communities as a variable share of what was available: in wet years, there was plenty of water for everyone, and in dry years, the shortage was shared equally among all.



*Water use at San Juan Pueblo, circa 1883. Courtesy of the Museum of New Mexico.*

In 1848, the territory of New Mexico became part of the United States, and as a new culture of Anglo settlers arrived, a novel structure of water administration was superimposed upon the earlier forms. This new water law was based on the foundation of private property rights.

Rather than establishing community-based water management structures, water was allocated on a "first come, first served" basis known as prior appropriation. The first person to divert water from a river had a right to as much water as he could beneficially use. Beneficial use initially referred to agricultural, municipal, and industrial purposes, and was expanded by a 1940 New Mexico Supreme Court case to include fishing and recreational uses as well. Those who came later could claim rights only to what was left – even if they were upstream of earlier diverters – and in dry years these junior water rights holders were not permitted to divert any water until the senior holders had received their full share.

All of these water use practices eventually became the basis for New Mexico's current system of water law. However, because some of the customs conflicted, there were frequent disputes over who owned the water, the public or individuals, and which customs should prevail. In order to resolve these conflicts, the territory of New Mexico needed a single comprehensive water code. In response, New Mexico's Territorial Legislature adopted the Water Code of 1907.

The new statute bridged the differences by recognizing that water belongs to the public, while simultaneously recognizing that water is administered through prior appropriation and must be used beneficially. As New Mexico State University Professor Ira Clark observed in his definitive book, *Water in New Mexico: A History of its Management and Use*, the Water Code of 1907 changed the underlying philosophy of water law in New Mexico so that priority of appropriation and beneficial use had to be considered within a larger framework of public interest. In essence, water belongs to the public in New Mexico, but rights to use water are private property rights.

This system that balanced the public interest with private property rights was incorporated into New Mexico's Constitution, which was overwhelmingly approved by the voters in 1911 in advance of statehood in 1912.

The water rights system laid out in 1907 exists today alongside approximately 1,000 acequias, which continue to maintain their original system of water allocation, in which *parciantes* share the available water among themselves in both wet and drought years.

New Mexico Water Use Timeline	
PRE-1598	Tribes and pueblos use water for agricultural and domestic purposes
1598	Oñate establishes first permanent Spanish irrigation ditch
1600-1700	Several hundred acequias established across New Mexico
1848	Treaty of Guadalupe Hildago and introduction of prior appropriation doctrine
1907	NM Territorial Legislature adopts Water Code balancing public interest with private property rights
1911	Public overwhelmingly approves NM Constitution, which contains water use principles from the 1907 Water Code.
1940	NM Supreme Court recognizes that "beneficial use" includes fishing and recreation along with agriculture, municipal and industrial uses
1970-2000	NM looks increasingly to water transfers to supply new uses

Source: Ira G. Clark, *Water in New Mexico: A History of its Management and Use*. Compiled by Think New Mexico.

## **AN OVERVIEW OF NEW MEXICO'S MAJOR RIVERS**

The rivers of New Mexico, forged by volcanoes, glaciers, and rain against rock, have fed many waves of human settlement. Today, however, drought, increasing population, and conflict over water ownership imperil the rivers. Last year, stream flows across the state set many record daily lows. Despite this threat, New Mexico's rivers endure, their personalities as distinctive as the communities they sustain.

### **SAN JUAN**

The San Juan is the state's most bountiful river, carrying more than twice the water of the Rio Grande in its 100-mile run through northwestern New Mexico. Tumbling in from high within Colorado's San Juan Mountains, the river lures fishermen from around the world to some of the state's richest stretches of trout waters. Irrigators tap the San Juan as it drops down onto a desert plateau. Entering Farmington, the San Juan is joined by the Animas and La Plata rivers before pressing on into the Navajo Nation, irrigating more farmland on its way to Utah and the Colorado River.

### **RIO GRANDE**

Running north to south down the length of the state, the Rio Grande nurtures every culture and way of life in New Mexico. High in the mountains, the river's water is first transformed into alfalfa and vegetables along miles of acequias. As it spreads out into its lower valley, the river feeds larger farms, pecan orchards, and thriving fields of onions, lettuce, cotton, and chile, as well as the homes and industries of the state's three largest cities. The Rio Grande has always drawn many people to its fertile, bosque-lined valley, from the Anasazi to the Pueblos to the waves of Spanish explorers who followed the river north.

### **CANADIAN**

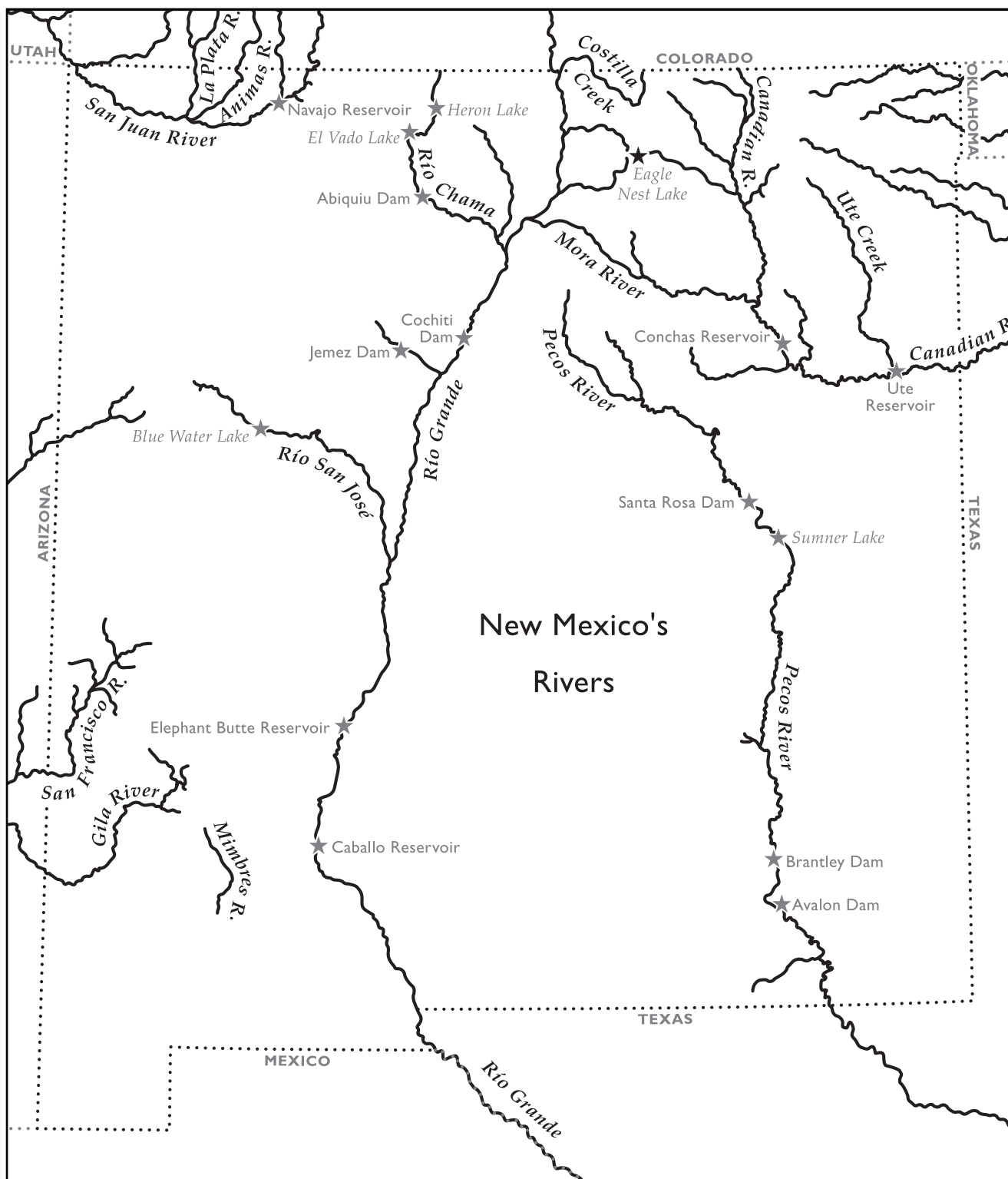
Named by early American explorers who followed the mysterious river until they became convinced that it must extend all the way to Canada, the Canadian emerges quietly from the earth high in northeastern New Mexico. From its source, the river traverses a series of canyons alternating with wide, meadowed valleys where ranchers tend herds of sheep and cattle. The Canadian gives rise to more ranches and some irrigated and dryland farms before slipping across the Texas border, on its way to join the Arkansas River in Oklahoma.

### **PECOS**

Running parallel to the Rio Grande, the Pecos River heads in the eastern Sangre de Cristo Mountains, where it cuts a steep route through mountain valleys dotted with acequias. Passing through a twisting canyon, the Pecos surges into the arid grasslands of cattle country, and then pulls downward into the Roswell basin. Clusters of towns and irrigated farms are gathered along the Pecos as it snakes south to Carlsbad and drops into Texas, heading to the Gulf of Mexico.

### **GILA**

The wild and sinuous Gila, along with its tributary, the San Francisco River, arises from springs and caves in the mountain heights just west of the Continental Divide. Along its darting path through New Mexico, the Gila's flow is heavily dependent on violent localized rainstorms, which send erratic pulses of water down the river. Rising to the challenge of the Gila's wildness, the Hohokam Indians built an intricate irrigation culture along the river's banks from 200-1400 AD. Today the Gila twists through ranchland, farms, and the mining towns that first discovered the mineral riches of this river basin in the 1850s.



Map by Deborah Reade for Think New Mexico, based on information from the NM Water Resources Research Institute.



# PROBLEM

## THE CRISIS FACING NEW MEXICO'S RIVERS AND COMMUNITIES

*Whiskey's for drinking, but water's for fighting over.* – Mark Twain

All across the state, New Mexico's rivers are in trouble. Late this past spring, the Pecos River ran more than a foot lower than the level water officials had expected, raising fears about under-deliveries to southern New Mexico farmers and to Texas. South of Socorro, the Rio Grande had faded away into a dry arroyo by the beginning of July, killing thousands of carp, catfish, and other aquatic species; below Elephant Butte, the river is dry much of the year on a regular basis. Diminished flows on the San Juan this year threatened to devastate a \$25 million fly-fishing industry. The U.S. Bureau of Reclamation, which is involved with vicious water wars all across the West, has labeled New Mexico a "poster child" for water crisis, due to the state's perfect storm of drought, increasing population, and mounting demands for water both within and outside of the state.

## NEW MEXICO'S SHRINKING WATER SUPPLY

Drought is an ever-present threat to New Mexico's rivers. Data collected by the National Weather Service for more than a century demonstrates that at least a portion of the state is in severe or extreme drought 55% of the time.

Until recently, there was no way of predicting the

coming of wet or dry years in the region. As the saying goes: "If you don't like the weather in New Mexico, wait five minutes." However, the late 1970s through the late 1990s saw a stretch of extremely wet weather across the state that coincided with warm temperatures in the coastal Pacific Ocean.

Recent research has confirmed that the mood of the Pacific Ocean plays a major role in New Mexico's weather (along with much of the Southwestern U.S.). The storms that develop there are the source of most of the state's precipitation. When the coastal Pacific's waters are warmer, New Mexico is wetter; when the waters cool down, the state dries out.

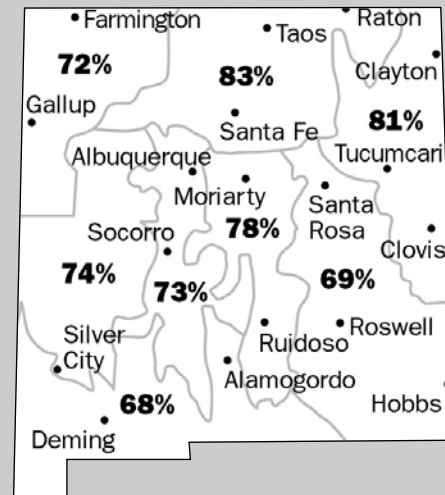
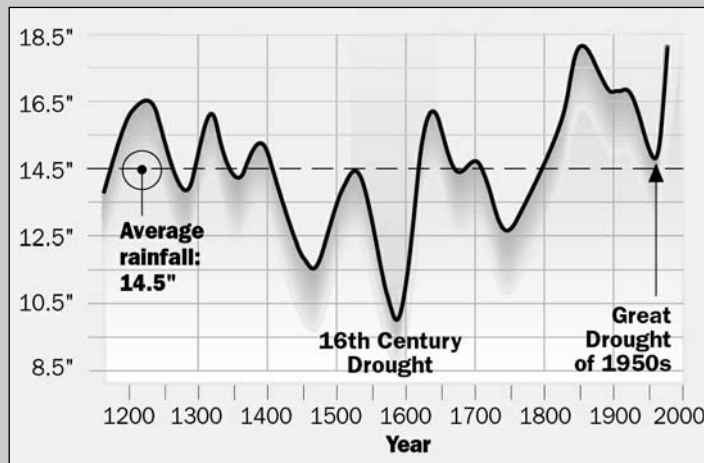
The temperature of these ocean waters seems to shift about every twenty years. From the late 1970s through the late 1990s, the ocean was in its warm phase. Evidence suggests that the Pacific shifted into a cool phase around 1998.

The last time the coastal Pacific Ocean cooled down, New Mexico experienced the "Great Drought" of the 1950s, which devastated agriculture and reduced river levels to unprecedented lows. If the weather continues to follow these trends, the state can expect, on average, only 75% as much precipitation during the next twenty years as it received during the last twenty – and some regions, like southern New Mexico, will be even harder hit.

From a longer-term perspective of rainfall in the region, the Great Drought of the 1950s turns out to be only about as dry as the historical average for the state. Data from studies of tree rings near Grants, NM, provide evidence that New Mexico is prone to droughts more massive than any that have occurred since Anglo settlement in the mid-1800s. It is likely that the drying of New Mexico's rivers caused by

## Historical and Current Droughts in New Mexico

Studies of tree-ring records show that New Mexico has a long history of severe droughts, and the state is currently coming out of one of the wettest periods in the last millennium. In the near future, regions across the state can expect to see only 68–83% of the precipitation they received during the last twenty years, as shown in the map below.



Source: © Carol Cooperrider, *Albuquerque Journal*. Data from tree-ring study by Henri Grissino-Mayer of the University of Tennessee, the U.S. Geological Survey, and Charlie Liles of the National Weather Service.

these past massive droughts contributed to the disruption and disappearance of Southwestern civilizations like the Anasazi and Hohokam in the 1400s.

### NEW MEXICO'S EXPANDING DEMAND FOR WATER

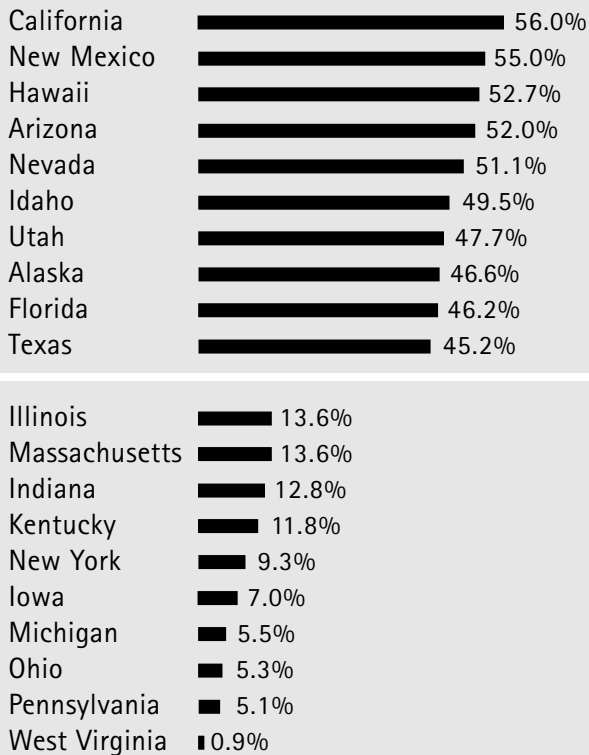
During those unusually wet decades from the 1970s–1990s, New Mexico's population nearly doubled, growing from just over 1 million people to 1.8 million. This increase shows no sign of tapering off. In fact, the U.S. Census Bureau predicts that New

Mexico will be the second-fastest growing state in the nation between now and 2025. Based on current state rates of birth, death, and immigration, the Census Bureau projects the state will gain more than 900,000 people over the next two decades.

The increasing demand for water that accompanies this population growth makes the impacts of drought much more severe. Charlie Liles, Chief Meteorologist of the National Weather Service in Albuquerque, has pointed out that with today's larger population, even a mild drought now causes serious problems for New Mexico's rivers.

## Fastest and Slowest - Growing States by Population

States ranked by projected percent change in population 1995-2025.



Source: U.S. Census Bureau.

## COMPETING DEMANDS ON NEW MEXICO'S RIVERS

Meanwhile, New Mexicans are battling the federal government, bordering states, and each other over how to allocate the scarce water of our rivers.

### Federal Courts

Federal environmental laws dictate that enough water must remain in the rivers to meet certain

objectives, including preserving endangered species and limiting water pollution. These laws open up opportunities for federal courts to mandate how New Mexico uses its water.

One threat to New Mexico's water stems from the federal courts' ability to limit how individuals, and entities like cities, may use their property if it contains a listed endangered species. For example, the federal courts have prevented people from building on land they have purchased, in order to preserve the habitat of endangered species. Even though rights to use water are private property rights, the federal government can restrict people and other rights holders like cities from diverting the water if doing so will destroy the habitat (e.g. a river) needed by the endangered species.

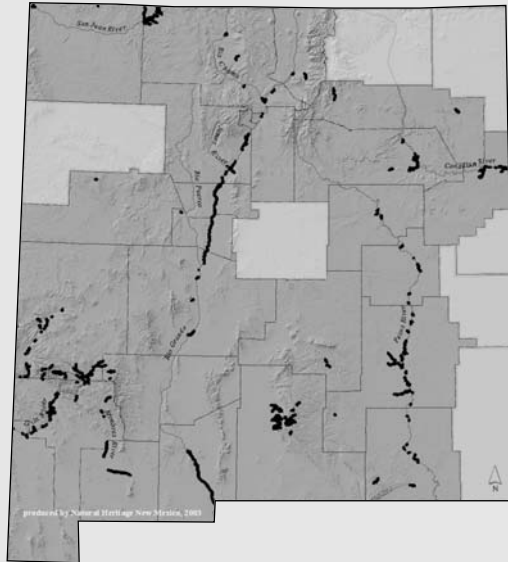
The Endangered Species Act is particularly potent in New Mexico because the federal government helped fund the construction of most of our dams and irrigation projects, and it still controls many of them. When the federal government is directly involved in a water infrastructure project, it is required to manage that project in a way that does not jeopardize the survival of a species—even if this means reallocating water that belongs to farmers and cities.

The Endangered Species Act has recently received a lot of media attention due to the Rio Grande Silvery Minnow lawsuit. A federal judge ruled earlier this year that water would have to be released from storage along the Rio Grande to preserve the fish, even though rights to use that water were held by cities and farmers along the river.

However, the Silvery Minnow is only one of 22 river-dependent federally listed endangered and threatened species in New Mexico. Each of them is a lawsuit waiting to happen. Essentially, the potential for

## New Mexico's River-Dependent Endangered Species

### River Stretches and Counties Containing Endangered and Threatened Species



- Surface Waters with Federally Listed Species
- Counties with Federally Listed Species

### Federally Listed Endangered Species

Southwestern Willow Flycatcher  
 Interior Least Tern  
 Brown Pelican  
 Rio Grande Silvery Minnow  
 Gila Trout  
 Apache Trout  
 Bonytail  
 Colorado Pikeminnow  
 Razorback Sucker  
 Pecos Gambusia  
 Gila Topminnow  
 Socorro Isopod  
 Sacramento Prickly-Poppy

### Federally Listed Threatened Species

Bald Eagle  
 Arkansas River Shiner  
 Beautiful Shiner  
 Pecos Bluntnose Shiner  
 Spikedace  
 Chihuahua Chub  
 Loach Minnow  
 Sacramento Mountains Thistle  
 Puzzle Sunflower

Source: Natural Heritage New Mexico Research Center, University of New Mexico.

a case like the Silvery Minnow exists on every one of New Mexico's river systems, and in 26 of the state's 33 counties, according to the Natural Heritage New Mexico research center at UNM.

The Clean Water Act is another federal law that impacts New Mexico's water management. This law sets minimum standards for pollutants in the nation's waters, regulating such contaminants as arsenic, mercury, and fecal coliform bacteria.

As a river level drops, there is less water available to dilute pollutants, and so the concentration of pollutants in the river rises. With New Mexico's rivers drying up, the state is increasingly at risk of lawsuits over violations of the Clean Water Act. Recently, the City of Albuquerque lost a lawsuit over the Clean Water Act and was forced to upgrade its waste treatment system in order to meet Isleta Pueblo's stricter arsenic standards. A majority of New Mexico's river reaches are already designated by the

New Mexico Environment Department as at least partially "impaired," meaning that they are violating their pollution standards.

## **Mexico**

New Mexico must also be wary of the United States' obligations to Mexico. According to the treaty signed in 1906, the U.S. is required to deliver 60,000 acre-feet of Rio Grande water to Mexico each year. While the state itself is not a party to this international treaty, if the required water deliveries are not made, the federal government will step in and take whatever actions it deems necessary to meet the treaty's obligations.

## **New Mexico's Bordering States**

Interstate river compacts are agreements signed between states over how to share rivers that cross state borders. Without the Rio Grande Compact, for example, nothing would stop Colorado from using up the entire flow of that river before it crossed the state line, leaving northern New Mexico high and dry. Our state is a party to eight interstate river compacts, including the Canadian, the Pecos, the Rio Grande, and the Colorado River Compact, which limits our withdrawals from all rivers west of the Rio Grande basin.

Since the signing of the interstate compacts, New Mexico has walked a tightrope, perpetually at risk of falling short on its deliveries. After the Rio Grande Compact was signed, New Mexico over-delivered water to Texas for the first three years, but then failed to meet its delivery obligations every single year for the next three decades. The state narrowly escaped owing damages to Texas on a legal technicality.

A new lawsuit over the Rio Grande looms on the horizon, as the Texas Legislature has set aside \$6.2 million dollars since 2001 to prepare for litigation against New Mexico over water disputes, particularly those related to water releases from Elephant Butte reservoir. Each year also brings the fear of again violating the Pecos Compact, which would immediately trigger a devastating priority call on the river. Any failure by New Mexico to deliver water as the compacts require will place us at the mercy of our bordering states.

## **Indian Water Rights**

The complexity of Indian water rights in New Mexico results from our state's unique combination of tribal and pueblo claims. In most cases, Indian water rights are defined by the *Winters* doctrine, a 1908 U.S. Supreme Court decision stating that whenever land was set aside for an Indian reservation, enough water to meet the needs of the population was also implicitly reserved. These "federally reserved" Indian water rights generally date to the time the reservation was established. Because the pueblos were not created by the federal government, most pueblo water rights lack specific priority dates (with the exception of water rights more recently acquired by the pueblos). While it is understood that pueblo rights are ultimately the most senior on New Mexico's rivers, their full extent is still being negotiated.

Pueblo and tribal water rights create uncertainty because no one knows exactly how much water they represent. The *Winters* decision called for enough water to meet the "present and future needs" of tribes. Does this mean enough water to meet the original purpose for which it was reserved – usually irrigated agriculture – or does it mean enough water



## New Mexico's Most Contentious Interstate River Compacts

COMPACT	STATES	NM'S DELIVERY OBLIGATIONS	CONFLICTS
Canadian River Compact	New Mexico Oklahoma Texas	NM may store a maximum of 200,000 acre-feet of water originating below Conchas Dam	1987: TX & OK successfully sued NM; NM required to repay water (completed in 2002) and monetary damages to each state
Pecos River Compact	New Mexico Texas	NM must deliver to TX 50% of releases from Sumner Dam and 50% of river inflows below the dam	1974–1988: TX successfully sued NM; NM paid \$14 million in damages, and since then has spent an additional \$70+ million to acquire water to send to TX
Rio Grande Compact	New Mexico Colorado Texas	NM must deliver to Elephant Butte at least 57% of flow past Otowi gauge near Los Alamos	1935, 1951: TX sued NM Today: TX investigating NM deliveries from Elephant Butte and making plans to initiate another lawsuit against NM

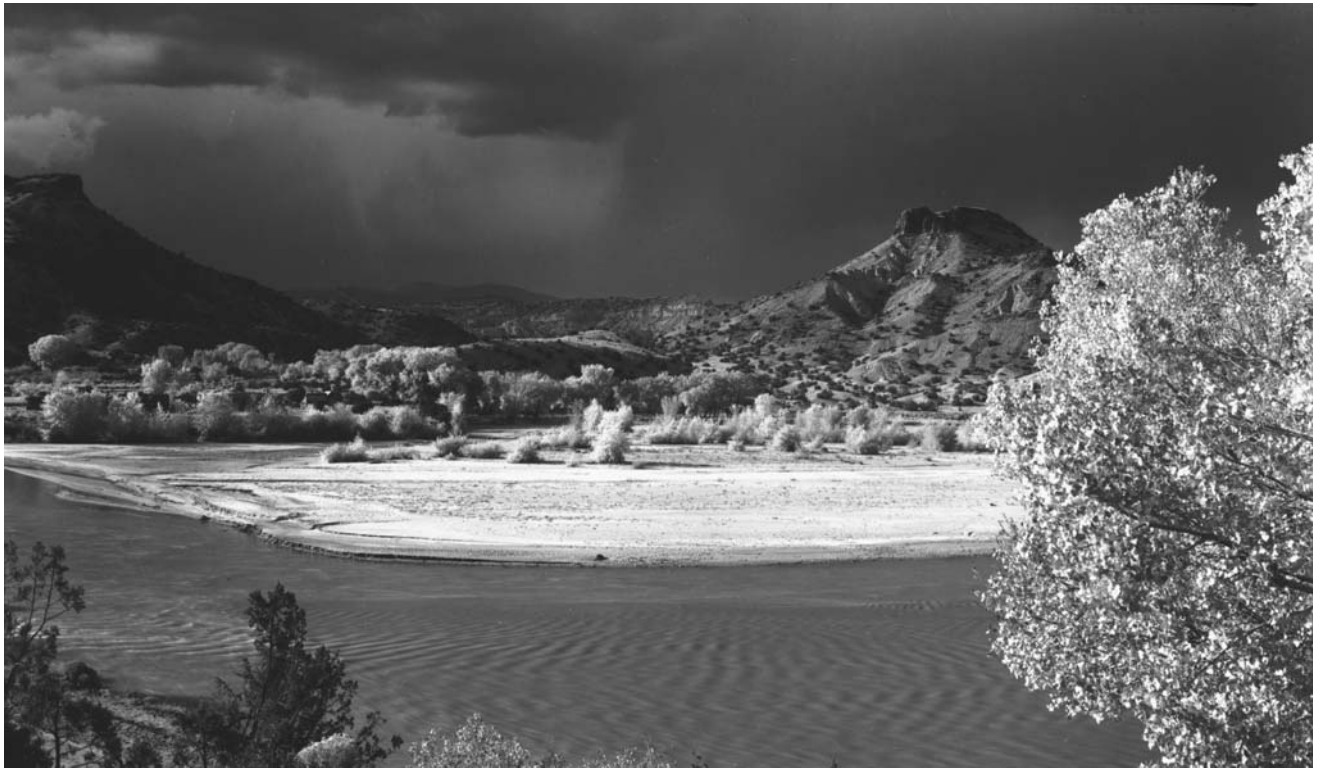
*Source: New Mexico State Engineer's Office, Ira G. Clark, Water in New Mexico: A History of Its Management and Use. Compiled by Think New Mexico.*

for any economic development projects a tribe chooses to undertake, including hotels, resorts, and golf courses? The way in which Indian water rights claims are decided will greatly impact the water available to other users.

### New Mexicans Fighting Each Other

Water management in New Mexico is further hindered by the lack of adjudication and metering throughout the state. Adjudication is the legal process in which the state of New Mexico takes all water rights holders on a stream system to court to

determine exactly how much water each individual owns and the priority date of their rights. Due to the difficulties and expense of the process, only 15% of the state's water rights have been adjudicated, according to former State Engineer Tom Turney. The other 85% have not been finalized, which means that their amount and priority date are not completely certain. Moreover, because the majority of the state's water users are not metered, the state lacks important and necessary information about how much water is actually being diverted from rivers.



*A storm over the Rio Grande, circa 1935. Photo by T. Harmon Parkhurst. Courtesy of the Museum of New Mexico.*

## **SUMMARY: A PERFECT STORM**

By 2020, the demand for water in New Mexico is projected to outstrip the available supply. At that time, it will be too late to stop the cascade of crises from overwhelming the state. Now, however, there still remains just enough time and water for us to make the choice to protect the public uses of New Mexico's rivers and our quality of life.

If we fail to act now to preserve New Mexico's rivers, it will become impossible for the state to make its deliveries to all of the downstream water users. As an old saying goes, "It takes water to move water." No matter how legitimate a downstream senior right is, if the river runs dry before it gets to that diversion, no water will be available. This situ-

ation will lead inevitably to a priority call on the river, turning New Mexicans against New Mexicans in a civil war over water.

Moreover, not only will we fail to provide water to all New Mexico water rights holders, but the state will be vulnerable to lawsuits from Texas, Colorado, Oklahoma, and the federal government. It will be a lawyer's holiday. Millions of dollars that could have been spent on education and other public services will be sapped by the endless litigation, and taxes will have to be raised. Control of our state's water resources will be relegated to federal judges.

Perhaps the most serious consequence if we fail to preserve New Mexico's rivers will be the degradation of our state's drinking water. While the majority of New Mexico communities still rely on groundwater

## New Mexico Public Opinion on Water Use

Average value of various water uses ranked on a zero-to-ten scale

[0= "You do not care whether water is available"  
10= "You want water to be available"]

Statewide	
<b>8.26</b>	Indoor use in existing homes
<b>7.85</b>	Irrigation of farms
<b>7.58</b>	Preserving the native cottonwood forest and vegetation along river banks known as the bosque, that creates habitat for a variety of different animal species
<b>6.87</b>	Indoor use in new housing developments
<b>6.30</b>	Recreation, such as fishing and rafting
<b>5.58</b>	Community parks and sports fields
<b>5.36</b>	New industrial uses, such as manufacturing processes
<b>4.51</b>	Watering existing yards and landscaping
<b>4.02</b>	Use for yards and landscaping in new developments
<b>3.02</b>	Watering golf courses

Source: UNM Institute for Public Policy 2000.

for household use, the state is increasingly shifting to surface water drawn from the rivers. Unfortunately, this water is prone to both natural (e.g. naturally occurring arsenic) and manmade (e.g. septic tank seepage, farm runoff) water contamination. As long as the rivers maintain a strong flow, these contaminants are diluted to the point where they pose little or no risk to human health.

As river flows diminish, however, cities will be burdened with massive investments to purify the water to meet drinking quality standards. When the state began looking into the expense of complying with the Environmental Protection Agency's stricter arsenic standard two years ago, statewide start-up costs of improving water treatment technology to meet the new standards were projected to reach as high as \$400 million. New Mexico's poorest communities have no way of affording the complex treatment facilities that would be needed to purify their water if the rivers run dry. Safe drinking water could then become a luxury, unattainable by poor residents and rural communities.

New Mexicans will also suffer from a decline in jobs and economic development as tourism dries up along with the rivers. NMSU researcher Frank Ward has determined that every acre-foot of water used for recreation in New Mexico rivers generates \$900-1,100 in benefits to our communities. In addition, the New Mexico Department of Tourism reports that fishing, rafting, and boating generate tens of millions of dollars each year in spending on equipment, supplies, travel, lodging, food, and so on. Beyond river-related tourism, what new businesses will want to locate in the state if it is impossible for them to acquire the water they need to operate?

The value New Mexicans place on our rivers can be seen in the results of a poll taken during the summer of 2000 by UNM's Institute for Public Policy. When asked to rate the importance of various water uses, New Mexicans expressed a nearly equal preference for household use, irrigation, and preserving the rivers. Clearly, New Mexicans desire a solution that will balance the state's water among domestic use, agriculture, and our rivers.

# SOLUTION

## THE NEED FOR A STRATEGIC RIVER RESERVE

*When the well is dry, we learn the worth of water.* – Ben Franklin, 1746

In 1975, Congress created the Strategic Petroleum Reserve ("SPR") in the aftermath of the 1973-1974 oil embargo that caused enormous damage to the U.S. economy. After the embargo ended, Congress recognized that the economy was still vulnerable to a future crippling oil supply disruption and acted to establish the SPR, which remains in effect today as an emergency oil stockpile. The SPR currently stores about 570 million barrels of crude oil in four underground sites along the Gulf of Mexico.

The SPR has been effective in accomplishing its intended goals of keeping prices stable and oil plentiful. It was used in 1991 during the Persian Gulf War and again in 2000 when severe winter weather, coupled with low supply, caused sharp spikes in home heating oil prices in the Northeast.

In many ways, the SPR is a good model for what we need in New Mexico to protect our rivers, which are the lifeblood of New Mexico's economy in the same way oil is the lifeblood of the national economy. Both water and oil are valuable, finite natural resources.

Just as the SPR creates a buffer against the volatile politics of the Middle East and unstable oil supplies, a Strategic River Reserve for New Mexico would create a buffer to protect New Mexicans against legal attacks from neighboring states, the federal courts, and violent fluctuations in water availability.

How would a Strategic River Reserve work? In brief, we envision that a New Mexico Strategic River Reserve would consist of a pool of publicly held water rights on every river system. These water rights would be selected by the Water Trust Board, according to a schedule that prioritizes the state's most pressing needs, like compact compliance and drinking water protection. The Water Trust Board would pay for the public water rights with the proceeds of a designated fund, generated by a 10% share of the state's annual severance tax bonding capacity or by a fee on water transfers. Finally, the Interstate Stream Commission would be responsible for monitoring those public water rights, installing and checking meters wherever public water is acquired to ensure that it remains in the rivers to meet the public uses for which it was acquired.

## MANAGING THE STRATEGIC RIVER RESERVE: THE WATER TRUST BOARD

Who would be best qualified to select the water rights for purchase on behalf of the Strategic River Reserve? It should be a public agency with representation for all of the major stakeholders, from acequias and farmers to cities and environmentalists to state government and the state engineer.

Thanks to the foresight of the Legislature and, in particular, Representative Joe Stell (Chairman of the House Agriculture and Water Resources Committee), Senate Majority Leader Manny Aragon, Senator Phil Griego and then-Senator Pat Lyons, who is now Land Commissioner, such a public body already exists. It is called the Water Trust Board.

## **Membership of the New Mexico Water Trust Board**

- New Mexico State Engineer
- Director of New Mexico Finance Authority
- Representative, Acequia Water Users
- Representative, Irrigation or Conservancy District Surface Water Users
- Representative, Irrigation or Conservancy District Ground Water Users
- Representative, Soil & Water Conservation Districts
- Representative, Environmental Community
- Director, New Mexico Association of Counties
- Director, New Mexico Municipal League
- New Mexico Commission on Indian Affairs Appointee
- Vice President, Navajo Nation
- Director of New Mexico Department of Agriculture
- Director of New Mexico Department of Game and Fish
- Secretary of New Mexico Energy, Minerals, and Natural Resources Department
- Secretary of New Mexico Department of Environment

*Source: Section 72-4A-4 NM Statutes Annotated 1978*

In 2001, responding to the need for a comprehensive strategy to pay for urgently needed water infrastructure projects across New Mexico, the Legislature unanimously enacted the Water Project Finance Act. It created a Water Trust Board to prioritize and authorize funding for water infrastructure projects for, among other things, "the storage, conveyance or delivery of water to end users...restoration and management of watersheds" and efforts to find collaborative solutions to issues arising from the Endangered Species Act.

The Water Trust Board is composed of 15 members, who, as the chart demonstrates, are a broad cross-section of stakeholders in the water arena.

We propose extending the jurisdiction of the Water Trust Board to provide it with the additional authority and responsibility of selecting water rights, with the advice of the State Engineer and the Interstate Stream Engineer, on behalf of the state of New Mexico for the Strategic River Reserve. The Water Trust Board might conduct the purchasing itself or contract out the negotiating and purchasing of the rights to a specialist experienced in real estate transactions. The Water Trust Board is the ideal group to select public water rights not only because of its representative, statewide perspective, but also because there is a natural synergy between water infrastructure projects and public water rights.

## **SUPPLYING THE STRATEGIC RIVER RESERVE**

How would public water rights be acquired? Because New Mexico's water supply is fully allocated, the Water Trust Board will not be able to appropri-



## THE VALUE OF ACEQUIAS

Nestled into river valleys across the state, primarily in the north, are about 1,000 acequias. These communal ditches irrigate 160,000 acres on 12,000 farms, more than two-thirds of which are 20 acres or smaller. The term acequia has come to mean both the irrigation ditch and the community centered around it. Formed well before the New England town meeting, New Mexico's acequias are some of the world's oldest functioning democracies.

The acequias preserve a unique cultural identity, the physical embodiment of which can be seen in the adobe villages and fields dotting northern New Mexico. It is a cultural heritage whose benefits ripple out across the state, as tourism brings in an infusion of dollars from visitors who come in part to see the beautiful landscape the acequias have created.

Ecologically, acequias enrich the land in much the same way as rivers. Acequias gently draw water outward from the river, extending the riverbank bosques into wider bands of cottonwoods, willows, plums, and other vegetation, and expanding the available habitat for birds and wildlife. As water travels through the earthen ditches, some of it also seeps out into the ground and recharges the local aquifer, cleansing the groundwater in the process.

As resilient as they have been for so many generations, acequias now face threats from several directions. Acequias are vulnerable to the drying up of the rivers because they divert water with simple dams, relying on gravity to draw water into the ditches from the river. This gravity flow technique is dependent on sufficient flow from the river. When the river drops below a certain level, acequias cannot function.

Acequias are also menaced by transfers of water to distant cities and larger-scale agriculture. These transfers threaten to pull the thread of water away until the fabric of acequia communities unravels. As former Dixon *mayordomo* Stanley Crawford has eloquently expressed, when a *parciante* sells his water rights off the ditch, the acequia loses a worker to help with the annual labor and loses the right to carry and distribute that share of the communal water. Because of the way acequias operate, what is sold is not simply a property right, but also a piece of the community's commons, like selling off books from a public library.

ate any new water rights for the Strategic River Reserve. Rights to all of the water flowing through the state are already owned. These water rights are private property rights, and it is the duty of the state to respect them.

In order to supply the Strategic River Reserve, the Water Trust Board will need to rely on water transfers, purchasing water rights from willing sellers. This is the same approach the Interstate Stream Commission has taken to meet our compact obligations on the Pecos River. Just as the ISC has purchased both surface water and groundwater rights in order to supplement that river's flow, the Water Trust Board would have broad authority to buy either surface or groundwater rights for the Strategic River Reserve, based on current needs and availability.

New Mexico has an active water market. The State Engineer has recorded an average of more than 100 applications for water transfers filed each year. The Water Trust Board could tap into this existing market.

We would, however, restrict the Water Trust Board from acquiring water rights from acequias for the Strategic River Reserve. Because of the unique social, cultural, and ecological benefits of acequias, described in the accompanying sidebar, no purpose is served by transferring water away from them and to the rivers.

Public water rights for the Strategic River Reserve would be acquired according to a schedule designed to ensure that the state's most urgent needs are prioritized. For example, the Legislature might designate three categories of water rights for acquisition, with the first being water rights that help New Mexico meet its interstate compact obligations. A second category might be water rights that shield New Mexico and its cities from federal lawsuits such

as those made possible by the Endangered Species Act and Clean Water Act. Finally, a third category of water rights might be those that enhance economic development interests like fisheries and river tourism.

The Water Trust Board's selection of water rights for public purposes would first consider these priorities, and then take into account other characteristics of the rights available for purchase. For example, whenever possible, more senior water rights should be chosen over junior ones. It is also important that there be a wide geographic distribution of water rights across the state, so that the Reserve is distributed across all of New Mexico's rivers. Another key consideration should be to purchase water where a crisis—such as a water quality lawsuit or compact under-delivery—seems most imminent, and where setting aside some water today can stave off an emergency tomorrow.

## **FUNDING THE STRATEGIC RIVER RESERVE**

### **The Christmas Tree Bill**

How should we pay for the public water rights of the Strategic River Reserve? One way to do so would be to use a percentage of New Mexico's annual severance tax bonding capacity. This approach would annually produce a reliable source of millions of dollars for the Strategic River Reserve without the need to raise taxes. It is also the same approach that the Legislature and Governor Richardson took in the 2003 legislative session to fund the water infrastructure projects selected by the Water Trust Board.

In 2001, when the Water Trust Board was created, the prior governor vetoed the appropriation to pay



*Children learn how to irrigate crops on a small New Mexico farm, circa 1940. Courtesy of the Museum of New Mexico.*

for a Water Trust Fund. This made the Water Trust Board a paper tiger in that it could identify water infrastructure projects for funding, yet it had no revenue source to supply that funding. In the 2003 session, Speaker Ben Lujan, in partnership with Governor Richardson, remedied this problem by sponsoring and winning enactment of House Bill 882.

Specifically, Speaker Lujan's law mandates the New Mexico Department of Finance and Administration to estimate the amount of bonding capacity available each year for severance tax bonds to be authorized by the Legislature. Of this amount, ten percent of the estimated severance tax bonding capacity for the upcoming fiscal year is allocated to fund water infrastructure projects across New Mexico selected by the Water Trust Board.

Historically, much of the severance tax bonding capacity has been used for what some members of the Legislature jokingly refer to as the "Christmas Tree Bill." The bill is passed annually to pay for a variety of capital outlay or "pork" projects, depend-

ing on your perspective. By political tradition, the available revenue is divided into thirds with the Governor, the Senate, and the House each choosing one third of the uses of the bond proceeds. Typically, Legislators allocate their individual share for local projects in their districts. In the 2003 session, the Legislature appropriated about \$150 million for approximately 2,100 projects.

This old-fashioned political system of capital outlay has come under increasingly intense criticism. For example, a recent study by the Government Performance Project of the Maxwell School of Public Affairs at Syracuse University ranked New Mexico second least effective of the 50 states for its system of prioritizing capital spending, based on the Christmas Tree Bill, which it labeled "unique." An *Albuquerque Journal* editorial observed that the Christmas Tree Bill "...diverts scarce capital resources from needed infrastructure to pork projects." Governor Richardson, after reviewing the Legislature's process for developing the Christmas Tree Bill during his first legislative session, called it "unplanned and mysterious," and stated that he wants to work with the Legislature to find a better way to meet the needs of the state.

Speaker Lujan's law, which goes into effect in 2004, is a significant step in the direction of moving resources away from hundreds of individual pork projects and toward creating a system that prioritizes New Mexico's critical statewide infrastructure needs, like those pertaining to water.

All of which brings us back to how best to fund a Strategic River Reserve, which would benefit every region of the state rather than single legislative districts. Speaker Lujan's law provides a model for how it could be funded because of the obvious synergy between a Strategic River Reserve and water infrastructure projects.

The vitality of New Mexico's rivers is essential to the success of those infrastructure projects. If the rivers die, then the communities they serve will die too, and many of the water infrastructure projects that we are investing in now will be rendered irrelevant. Additionally, purchasing water rights for a Strategic River Reserve complements spending on water infrastructure. For example, flowing rivers dilute contaminants, which keeps drinking water cleaner and eliminates the need for some water infrastructure projects.

Therefore, we propose that the Governor and the Legislature set aside a 10% share of New Mexico's annual severance tax bonding capacity toward the issuance of bonds whose proceeds would be used to fund the Strategic River Reserve beginning in 2004. We believe the amount should match the 10% already set aside for water infrastructure projects.

### **A Water Transfer Fee <sup>1</sup>**

Another way to fund the Strategic River Reserve would be to impose a fee on water transfers, similar to a real estate transfer fee. Thirty-four states and the District of Columbia currently impose small fees (generally 1% or less) on the sale of real estate, according to the 2003 State Tax Handbook.

Since water in New Mexico is generally fully allocated, the only way to provide water for new uses,

---

<sup>1</sup> A water transfer fee differs from a water user fee in much the same way that a real estate transfer tax differs from a property tax. The major drawback of a water user fee is that it would affect practically every water consumer, from agricultural irrigators to city water users. A transfer fee, on the other hand, affects only those who are benefiting from the sale of their water right. It serves to compensate the public for any negative impacts caused by the water transfer, without impacting everyone who currently uses water.



*Fly-fishing on the Pecos River, 2003. Courtesy of Doug Brown, fisherman / photographer.*

such as growing cities and industries, is through water transfers. To transfer a water right in New Mexico, the holder of the right must first file an application with the State Engineer's Office. (As we noted earlier in this report, the public owns the water in New Mexico, and individuals or entities merely hold the right to withdraw a specified quantity, at a specific location, for a specific use.) Any changes in place or use must be approved by the state engineer.

Once an application has been filed, the state engineer then publicizes the request and allows time for protests to be heard and resolved. Next, the state engineer evaluates the proposed transfer to make sure that it will not harm any existing water rights, and that it is not "contrary to the conservation of water...or detrimental to the public welfare of the state." If it meets these criteria, then the transfer is approved.

These transfers, however, also impact people who are not parties to the transaction—a phenomenon known as "third party effects." For example, water

transfers often reduce stream flows because the water is diverted further upstream, leaving less lower down in the river. This disrupts economic activities that require higher flows, such as fishing and rafting, as well as the industries they support (e.g. tourism, equipment sales).

Human communities and ecosystems alike suffer from the degradation in water quality caused by transfers that reduce flows. Riparian ecosystems are also impacted when transfers alter the amount and timing of river flows, which can kill off certain plants, trees, and wildlife. The primary social consequences of water transfers occur in the communities from which water is transferred. Long-term security and productivity of rural communities are harmed when water rights are transferred out of agriculture, as described in the sidebar on page 26.

A transfer fee would alleviate some of the negative third party effects caused by transfers by having those who benefit from the sale—the buyer and the seller—absorb the costs of the public water rights needed to solve problems created by the transfer.

It would not be difficult to implement a transfer fee. Water rights sellers are already required to file a transfer application with the State Engineer's Office, disclosing certain information about the transaction. The sales price could simply be added to the application, and the fee, based on the sales price, could be collected by the state at closing. This change would make water rights transfers more closely parallel transfers of land.

The transfer fee should be set at a level that raises enough money to make up for the negative effects caused by the transfer. Considering that the price of an acre-foot of water varies from \$1,500 in parts of

## PROTECTING NEW MEXICO'S RURAL COMMUNITIES

Historically, irrigated agriculture has been the primary water user in New Mexico. During the settlement of the state, irrigators appropriated the vast majority of the available water. Currently, agriculture has rights to approximately 75% of the surface water, according to the State Engineer's Office, and is the largest user of water in the state, as agriculture is in every Western state. However, demand for water is changing in New Mexico, and the percentage used by agriculture is beginning to drop.

This decline will continue and probably accelerate in the future because water from agriculture is the most likely source to meet new demands for other uses of water in New Mexico. According to a 1990 U.S. Geological Survey study, 30-40% of New Mexico's water transfers move water away from irrigation and toward municipal, recreational and industrial uses.

Unfortunately, the effects of these transfers extend far beyond the buyer and rural sellers, whose communities can wither economically as a result.

Consider, for example, the effect of a large-scale transfer of water from a small, rural New Mexico community to another part of the state: demand for farming-related goods and services shrinks in that community, the local tax base declines and with it the level of support for essential services like police and fire protection. You do not need to be a farmer, rancher, or resident of one of the many small, rural communities in New Mexico to find this scenario extremely troubling.

Fortunately, since 1985, New Mexico water law has given the State Engineer the authority to veto or modify transfers of water rights that are "detrimental to the public welfare." This language is open to interpretation. We would encourage the State Engineer to interpret it broadly to protect rural communities by strictly regulating those water transfers which have long-term, negative third party effects on those communities.

southern New Mexico to over \$30,000 near Tesuque in northern New Mexico, the fee should be set as a small percentage of the sale price (e.g. 1%), rather than as a fixed fee per acre-foot.

It would also make sense for the fee to be progressive, increasing as the size of the water transfer increases, because larger transfers have more profound effects than smaller ones. Perhaps the fee should also be higher for inter-basin or inter-water-planning-region transfers, as these transfers tend to impose higher third-party costs than more local transfers.

One concern that some have expressed about the idea of a water transfer fee is that it adds an additional expense (or "transaction cost") to an already expensive procedure, which might discourage necessary transfers. However, New Mexico's water transfer transaction costs are well below those of our neighboring states. According to a 10-year study completed for the U.S. Geological Survey in 1990, New Mexico's transaction costs (not including the cost of the water right itself) average \$54 per acre-foot, compared with \$187 in Colorado. New Mexico transfer applications are also much less likely to be protested than those of surrounding states, with 95% eventually approved. And although the "slow" application process has been much criticized, New Mexico has an average approval time of 5.8 months, versus well over a year in Colorado and Utah.

Another concern is whether a water transfer fee would raise enough money to adequately fund the Strategic River Reserve. Because the state's water supply is fully allocated, the coming years should see increasing numbers of transfers as water is shifted around the state to meet new and changing demands. The price of water rights is also expected





*Family at irrigation canal in Grant County, circa 1910. Courtesy Museum of New Mexico.*

to rise over time, due to the laws of supply and demand. Thus, a water transfer fee promises to generate increasing revenue over the coming years as New Mexico's water is redistributed to new uses.

The reallocation of water that is beginning to take place in the state makes this the perfect time to institute a water transfer fee. The increasing water transfers generated by changing demands, like growing cities, provide us with an ideal opportunity to make up for our oversights in the initial allocation of New Mexico's water, before the benefits of recreation and non-consumptive water use were understood, and put some water back in the public realm to serve those vital needs.

## **SUPPLEMENTING THE STRATEGIC RIVER RESERVE**

Water rights could also be acquired by other means than direct purchases.

### **Leased Water**

By acquiring water through leases, the Strategic River Reserve could help people retain their full water rights while allowing the public to use some of their water. For example, some individuals and entities like universities hold rights to more water than they currently need, yet they would like to retain their full right for future uses. Because water rights are based on beneficial use—a "use it or lose it" system—the water has to be put to some use each year in order to maintain the water right. This rule has led to the creation of a number of unnecessary golf courses and resorts, built primarily to prevent the loss of a water right. Instead, these water rights could be leased to the Strategic Water Reserve, where they will benefit the public, until their owners need them.

Water could also be leased to the Strategic River Reserve through forbearance and dry-year lease programs. In these programs, agricultural water users would be paid to make their water available to the Strategic River Reserve in years when dry weather greatly reduces stream flow. Whenever this happens, the farmers would be paid an additional amount to compensate them for the revenue lost by not irrigating that year. The benefits of this option are its flexibility and the infusion of monetary resources into rural communities in a way that does not permanently dry up New Mexico's farmland.

## Donated Water

Water rights could also be donated to the Strategic River Reserve. Several Western states have active water trusts that seek donations of water rights. Although New Mexico has multiple land trusts, it has no water trusts.

Water donations might be prompted by changes in land use. For example, if farmland is converted into municipal housing, which is occurring right now on the outskirts of Las Cruces, the full water right used for irrigation may not be required for the homes. In this case, the unneeded water could be donated to the Strategic River Reserve in return for a tax benefit.

The Legislature and Governor Richardson enacted a law during the 2003 session, sponsored by Senate President Pro-tem Richard Romero, which allows taxpayers a credit on their state income taxes of half the appraised value of land donated to land trusts. A similar incentive could be established for water rights donated to the Strategic River Reserve.

## Conserved Water

New Mexico might also consider instituting a salvage law to encourage agricultural water conservation and provide a few additional water rights to the Strategic River Reserve. Salvage laws are in place in several Western states. For example, Oregon's salvage law allows 75% of water saved through efficiency improvements (e.g. by installing drip irrigation) to be kept by the water right holder and used or sold, while 25% is dedicated to public purposes such as improving fisheries. Naturally, if a salvage law were enacted in New Mexico, it would need to include a requirement that any conservation measure implemented must not increase overall depletions on the river.

Cities might also contribute to the Strategic River Reserve by allowing their residents to dedicate conserved water. Under a plan like the one recently proposed by the Santa Fe City Council, each household would have the option of checking off a box on their water bill stating that they would like some or all of the water they conserve (compared to the same month of the previous year) to be used to keep the rivers flowing. The city would then provide the conserved water to the Strategic River Reserve on a monthly or yearly basis.

## **MAINTAINING THE STRATEGIC RIVER RESERVE: THE INTERSTATE STREAM COMMISSION**

Who will monitor the Strategic River Reserve and ensure that the public water remains in the state's rivers? While the Water Trust Board is the ideal group to select the water rights, the Interstate Stream Commission (ISC) is best suited to hold and guard them. Established in 1935 to watch over New Mexico's water supply, particularly the interstate compacts, the ISC was granted broad authority in 1955 to acquire land and water rights.

In fact, the ISC already holds water rights along the Pecos River, in a manner very similar to that we have proposed for the Strategic River Reserve. These Pecos water rights have been acquired since the *Texas v. New Mexico* decision, in order to prevent an under-delivery of water to Texas. Using money appropriated by the Legislature, the ISC has permanently purchased more than 27,000 acre-feet of water, and leased thousands more, increasing the river's flow at the state line by about 8,600 acre-feet each year, according to the state engineer's last annual report.



*Man watches over the Gallinas River near Las Vegas, New Mexico, circa 1881. Photo by George C. Bennett. Courtesy of the Museum of New Mexico.*

The primary role of the Interstate Stream Commission with regard to the Strategic River Reserve would be to hold and monitor the public water rights. The monitoring could be done by installing gauges along the river stretches where Strategic River Reserve water rights are purchased. The ISC may be able to maintain the Strategic River Reserve water rights in conjunction with local entities, such as irrigation districts, that have already begun implementing regional water banks. Once the ISC installs and monitors meters, the state engineer will be responsible for administering and enforcing the public water right. This management will need to take place within a comprehensive system of administration, which the Office of the State Engineer is currently striving to develop and implement.

## **THE STRATEGIC RIVER RESERVE WILL HELP SOLVE NEW MEXICO'S RIVER CRISES**

Had a Strategic River Reserve been enacted several decades ago, it likely would have averted lawsuits, protected communities, and saved taxpayers millions of dollars.

### **Pecos River**

In the aftermath of *Texas v. New Mexico*, those New Mexicans living in communities along the Pecos River are probably the most likely to recognize the need for a Strategic River Reserve. After all, they were the ones who called for the purchase of public water rights to avert the disastrous effects of a priority call on the Pecos.

Speaking in support of this solution, Tom Davis, Manager of the Carlsbad Irrigation District and Water Trust Board member, said in a recent newspaper article, "Somehow, there is going to have to be some base flow re-established in the river...I look at this as an opportunity to solve an age-old problem without anyone getting extremely injured."

The purchase of public water rights is a strategy that holds immense promise for resolving crises on other rivers across the state. If it were implemented proactively, rather than after-the-fact, it could be even more effective.

### **Elephant Butte**

As early as the 1970s, the late Steve Reynolds, the longest serving state engineer in New Mexico's history, recognized the need for something like a

## LITIGATION AND LEGISLATION

Over the years in New Mexico, the legal system and water management have mixed about as well as oil and water. Perhaps the best example of this is New Mexico's notorious *Aamodt* case, which began to attempt to adjudicate water rights along the Pojoaque-Nambe stream system in 1966, and remains in court today as the nation's longest running federal lawsuit.

The story of the *Texas v. New Mexico* lawsuit also provides testimony to the flaws inherent in the legal system's ability to resolve major water disputes. Law Professor Em Hall, himself a lawyer for the state of New Mexico in that case, reflected on the case in his book, *High and Dry*: "The lawsuit was a bottom feeder, sucking up an entire river basin, the institutions built for it, the communities dependent on it and the human lives devoted to it."

Indeed, many aspects of the legal system in general make it a poor forum for resolving the water issues now facing New Mexico. The most obvious is the fact that lawsuits tend to be time-consuming, where urgent action is needed to restore and protect the benefits provided by New Mexico's rivers. Moreover, lawsuits are extremely expensive, particularly in a state that already lacks basic water infrastructure, like in the North and South Valley of Albuquerque.

Lawsuits are also inherently divisive. The parties involved lose the opportunity to reach a consensus solution. They also lose control over the ultimate end result of the process. What New Mexico water policy needs now is more collaboration and consensus. Unlike the judicial branch of government, the legislative and executive branches are designed to foster productive compromise among all stakeholders. In fact, the Legislature and Governor Richardson have made impressive progress in resolving some of the state's water problems by enacting several unheralded but significant new laws during the 2003 session.

These include Speaker Lujan's funding bill, discussed earlier, Rep. Mimi Stewart's legislation establishing a process to develop a state water plan, and a law that strengthens legal protections for acequias, which was sponsored by Senator Carlos Cisneros, Chairman of the Senate Conservation Committee, and Speaker Lujan.

Strategic River Reserve with regard to keeping the water levels of the Elephant Butte Lake high enough to support the boating on which the surrounding communities' economies depend.

Conflict between irrigators and recreationists over the reservoir's water had simmered since the Great Drought of the 1950s, and it came to a head in 1977 when the lake hit a record low. In order to maintain enough water in the reservoir to sustain the recreation and economic development it provides, Reynolds recommended that the state purchase water rights and dedicate them to the lake. Instead of following that advice, as the urgency of the crisis passed, the state decided to instead pursue short-term water augmentation strategies.

The consequences of this missed opportunity were driven home last spring, when the lake again fell to levels as low as those in the late 1970s. Due to the stringent requirements of the Rio Grande Compact, the state was forced to patch together a deal with Texas in order to secure some water for northern New Mexico users. As part of the agreement, however, Elephant Butte Lake will lose 217,000 acre-feet between 2003-2004, which will cause it to drop by more than 30 feet. This loss is a great blow to the Sierra County residents whose livelihoods rise or fall with the level of the lake.

Setting aside water for public purposes in a Strategic River Reserve would allow us to meet the needs of all New Mexicans rather than sacrificing some for the sake of others. As Bill DeBuys, New Mexico author and water expert, observes about New Mexico's water situation: "Clearly, we must contend with limits, yet we are not poor in alternatives. We face a range of choices, not just among uses, but among strategies for stretching supplies."



*New Mexicans looking out over the valley of the San Francisco River, near Glenwood, circa 1923. Courtesy of the Museum of New Mexico.*

## CONCLUSION

*Cooperation, vision and new thinking – not fighting – are the key to protecting our water. And protecting our water is the key to protecting our economic security and our quality of life.*

– Joe Stell,  
Carlsbad rancher and state legislator

New Mexicans should never again be forced to make painful water policy decisions with our backs against the wall, as the citizens of Roswell were forced to do in the 1990 scene with which we began this report. The time has come to break away from the anarchic, *ad hoc* way we have been managing our rivers. A good place to start would be to create a Strategic River Reserve.

The problem is that the longer we wait, the more costly this solution will be, since purchasing water



rights becomes more expensive with each passing year. Also, the longer we wait, the more lawsuits, conflict, and fighting over our rivers we will have to endure. As Representative Stell, a long-time and greatly respected voice of reason on water issues, warns, our economic security and quality of life depend on what we decide.

Here, the public may be a little ahead of the political process. A 1995-1996 poll by the University of New Mexico Institute for Public Policy found that 84% of New Mexicans support allowing New Mexico state agencies to buy or lease water for public purposes like those we have described for a Strategic River Reserve.

The breadth of this support is not all that surprising when you consider that the philosophy behind a Strategic River Reserve has been ingrained in New Mexico's culture since the time of the Anasazi, the Pueblos, and the early Spanish settlers, all of whom emphasized in their irrigation customs and laws that water is a sacred public resource that should be shared. Indeed, this philosophy is embodied in the old Spanish *dicho*: "*Agua que no has de beber, dejale correr.*" That is, "Water not needed should be allowed to run downstream to benefit the next person."

A Strategic River Reserve will not solve every aspect of New Mexico's water crises, but it would represent important and timely progress toward a balanced and sustainable water policy for New Mexico. Moreover, by establishing a Strategic River Reserve, we would not only be protecting the rivers, but all of us who depend on them.

Indeed, a Strategic River Reserve would balance a variety of human needs: clean water for drinking, a healthy agricultural industry, and new river-dependent economic development. It would respect the ancient traditions of acequias by shielding their water from purchase for the Strategic River Reserve, while also recognizing the private property rights of water holders that are the foundation of the state's water laws. Most importantly, it would serve as a buffer against both drought and conflict, preserving New Mexico's heritage and quality of life.





*Fly-fishing on the San Juan River, 2003. Photo by Doug Brown.*

## SELECTED BIBLIOGRAPHY

### Books

- Baxter, John O. Dividing New Mexico's Waters, 1700-1912. UNM Press: Albuquerque, 1997.
- Bonney, Cecil. Looking Over My Shoulder: Seventy-Five Years in the Pecos Valley. Hall-Poorbaugh Press: Roswell, 1971.
- Brown, F. Lee and Helen Ingram. Water and Poverty in the Southwest. University of Arizona Press: Tucson, 1987.
- Clark, Ira G. Water in New Mexico: A History of Its Management and Use. UNM Press: Albuquerque, 1987.
- Committee on Western Water Management, National Research Council. Water Transfers in the West: Efficiency, Equity, and the Environment. National Academy Press: Washington DC, 1992.
- Crawford, Stanley. Mayordomo. Doubleday: New York, 1988.
- Crawford, Stanley. The River in Winter: New and Selected Essays. UNM Press: Albuquerque, 2003.
- Gibbons, Diana C. The Economic Value of Water. Johns Hopkins University Press: Baltimore, 1987.
- Hall, G. Emlen. High and Dry: The Texas-New Mexico Struggle for the Pecos River. UNM Press: Albuquerque, 2002.
- Horgan, Paul. Great River: The Rio Grande in North American History. Wesleyan University Press: Hanover, NH, 1984.
- McNamee, Gregory. Gila: The Life and Death of an American River. UNM Press: Albuquerque, 1994.
- Meyer, Michael C. Water in the Hispanic Southwest: A Social and Legal History, 1550-1850. University of Arizona Press: Tucson, 1996.
- Rivera, José A. Acequia Culture: Water, Land, & Community in the Southwest. UNM Press: Albuquerque, 1998.
- Saliba, Bonnie Colby and David B. Bush. Water Markets in Theory and Practice: Market Transfers, Water Values, and Public Policy. Westview Press: Boulder, 1987.

### Studies and Reports

- Bamberger, Robert. *Strategic Petroleum Reserve*. CRS Issue Brief for Congress, IB87050, August 2, 2001.
- Belin, Alletta, Consuelo Bokum & Frank Titus. *Taking Charge of Our Water Destiny: A Water Management Policy Guide for New Mexico in the 21st Century*. 1000 Friends of New Mexico, 2002.
- Brown, F. Lee, Charles DuMars, et.al. *Transfers of Water Use in New Mexico*. NM Water Resources Research Institute (WRRRI), Report No. 267, August 1992.
- Brown, F. Lee, S. Christopher Nunn, John W. Shomaker, & Gary Woodard. *The Value of Water: A Report to the City of Albuquerque*. January 1996.
- Campbell, Paul. *Population Projections: States, 1995-2025*. U.S. Census Bureau, Current Population Reports, #P25-1131, May 1997.
- Colby, Bonnie G., et. al. *Transferring Water Rights in the Western States - A Comparison of Policies and Procedures*. Natural Resources Law Center, U. of Colorado School of Law, Boulder, February 1989.

Coyne, William & Jeanne Bassett. *Water Fuels Sprawl: An Analysis of Water Transfers and Inefficient Growth in New Mexico*. NMPIRG, July 2002.

Cummings, Ronald G., Nancy A. Norton & Virgil J. Norton. *Water Rights Transfers: Options for Institutional Reform*. Water Policy Working Paper #2001-001, Georgia State University, September 2001.

Harris, Linda G., Updated by Leslie Blair and Catherine T. Ortega Klett. *New Mexico Water Rights*. NM WRRRI, Misc. Report No. 15, 2002.

Landry, Clay J. *Saving Our Streams Through Water Markets*. Political Economy Research Center, 1998.

Lansford, Robert R., Bobby J. Creel, et. al. *Water Supply and Demand for New Mexico: 1985-2030 Resource Data Base*. NM WRRRI, Report No. M18, May 1988.

MacDonnell, Lawrence J. *The Water Transfer Process as a Management Option for Meeting Changing Water Demands*. Report Prepared for the U.S. Geological Survey. 1990.

New Mexico Environment Department. *2002-2004 State of New Mexico §303(d) List for Assessed River/Stream Reaches Requiring Total Maximum Daily Loads*. June 2003.

New Mexico First. *New Mexico's Water: Perceptions, Reality and Imperatives*. Report of the 28th New Mexico First Town Hall, May 16-18, 2002.

New Mexico First. *Managing New Mexico's Land and Water Resources for the Best Use: Now and Through 2020*. Report of the 19th New Mexico First Town Hall, June 26-29, 1997.

Office of the State Engineer. *2001-2002 Annual Report*. April 1, 2003.

Rivera, José A. *The Acequias of New Mexico and the Public Welfare*. Southwest Hispanic Research Institute, UNM, Spring 1996.

Stone, William J. *Our Water Resources: An Overview for New Mexicans*. NM Bureau of Mines and Mineral Resources: Socorro, March 2001.

Thaw Charitable Trust. *Water and Growth in the Santa Fe Area*. June 1995.

UNM Institute for Public Policy. "Water Issues in New Mexico and the Middle Rio Grande." Public Opinion Profile 12.2, Summer 2000.

## Journal Articles

Berrens, Robert P. et. al. "A Joint Investigation of Public Support and Public Values," *Ecological Economics* 27 (1998): 198-203.

Colby, Bonnie G. "Transactions Costs and Efficiency in Western Water Allocation," *American Journal of Agricultural Economics* 72 (1990): 1184-1192.

DeBuys, William. "Navigating the River of Our Future: The Rio POCO-Grande," *Natural Resources Journal* 41 (2001): 265-281.

Harbison, John S. "Waist Deep in the Big Muddy," *Land and Water Law Review* 26.2 (1991): 535-570.

Johnson, Norman K., & Charles T. DuMars. "A Survey of the Evolution of Western Water Law in Response to Changing Economic and Public Interest Demands," *Natural Resources Journal* 29 (1989): 347-387.

Leones, Julie, Bonnie Colby, Dennis Cory, & Liz Ryan. "Measuring Regional Impacts of Streamflow Depletions," *Water Resources Research* 33.4 (1997): 831-838.

Ward, Frank. "Economics of Water Allocation to Instream Flow Uses in a Fully Appropriated River Basin: Evidence from a New Mexico Wild River," *Water Resources Research* 23.3 (1987): 381-392.

## Newspapers and Periodicals

Associated Press. "N.M. A 'Poster Child' For Water Crisis." *Santa Fe New Mexican* 13 August 2003: B1, B4.

Associated Press. "Pecos River Is Off By 13 Inches." *Albuquerque Journal* 3 May 2003.

Associated Press. "Richardson Signs Capital-Outlay Bills into Law." *Santa Fe New Mexican* 11 April 2003: A1, A6.

Associated Press. "Rio Grande Again Listed as Endangered River." *Santa Fe New Mexican* 10 April 2003: B4.

Barrett, Katherine & Richard Greene. "Grading the States." *Governing* Vol. 12.5, February 1999: p. 65.

Clubbe, John. "No River is Running in the City." *Santa Fe New Mexican* 28 October 2001: F9.

Constable, Anne. "New Law Provides Tax Credits for Land Conservation." *Santa Fe New Mexican* 11 April 2003: A6.

DeBuys, William. "Rio Grande's Liquid Ropes Bind Us All Together." *Albuquerque Journal* 6 August 2000: B3.

Dunbar, Nelia W., Charles E. Chapin, and Lynn A. Brandvold. "Arsenic in New Mexico's Water." *New Mexico Earth Matters: Newsletter of the NM Bureau of Geology and Mineral Resources*. Vol. 2.2, Summer 2002: p. 1-4.

Fleck, John. "Drought Inevitable in NM, Scientists Say." *Albuquerque Journal* 31 January 2000: A1, A7.

Fleck, John. "State Could Be in for Decades-Long Dry Spell." *Albuquerque Journal* 5 November 2000: B1, B5.

Fleck, John. "Due for a 'Megadrought.'" Albuquerque Journal 3 March 2003: A1, A3.

Goldsmith, Rob. "New Mexico Could Fall Short on Pecos Water Owing Texas." Roswell Daily Record 19 September 1990: 1, 5.

Hoffman, Ian. "NM State Officials say Leaving Water in Rivers is a Valid Use." Albuquerque Journal 28 March 1998.

Hummels, Mark. "Politics Dominate Capital-Outlay 'Pork' Process." Santa Fe New Mexican 9 January 2000: A5.

Jones, Jeff. "Lake Keeps Area Afloat, 400 Argue." Albuquerque Journal 18 April 2003: A1, A3.

Linthicum, Leslie. "From Fields to Homes." Albuquerque Journal 8 June 2003: B1, B4.

Maxwell, Timothy D and Eric Blinman. "2,000 Years of Water Woes." *El Palacio: The Magazine of the Museum of New Mexico* May 2003: 14-19.

Miller, Patrick. "New Mexico Rivers are Hidden Gems for Fly-Fishing." Albuquerque Journal North 5 May 2003: 1-2.

Navarro, Bruno J. "Negotiate Water Disputes, Official Says." Santa Fe New Mexican 8 February 1997: B1.

Neary, Ben. "Boaters Protest Lake Deal." Santa Fe New Mexican 29 April 2003: A1, A5.

Neary, Ben. "Drought Might Diminish Reservoir Releases." Santa Fe New Mexican 16 March 2003: B1, B4.

Neary, Ben. "Drying Up." Santa Fe New Mexican 19 May 2002: A1, A6.

Neary, Ben. "River Dries Up South of Socorro." Santa Fe New Mexican 4 July 2003: A1, A6.

Neary, Ben. "State Behind in its Efforts to Buy Pecos River Water Rights." Santa Fe New Mexican 18 June 2003: A1, A8.

Neary, Ben. "State Must Deliver Water to Texas or Face Consequences, Officials Say." Santa Fe New Mexican 8 February 2002: B1, B3.

Neary, Ben. "Use It or Lose It." Santa Fe New Mexican 9 June 2002: A1, A6.

"Public Works Funds Need Better System." Albuquerque Journal 18 February 1999: A10.

Romero, Orlando. "Water is Life, Not Just a Commodity, In Our Arid Land." Santa Fe New Mexican 3 March 2002: F1, F5.

Selcraig, Bruce. "Digging Ditches." *Smithsonian* February 2002: 55-62.

Shogren, Elizabeth. "New Mexico Towns Battle U.S. Over Arsenic." Los Angeles Times 7 April 2002.

Simmons, Marc. "Water Has Always Been as Precious as Gold in Land of Enchantment." Santa Fe New Mexican 2 March 2002: B1, B5.

Smolka, Larry. "Our State, Its Water: Quantity and Quality." Santa Fe New Mexican 30 March 2003: F7.

Soussan, Tania. "Change is Coming: New Mexico and Neighboring States Face a Looming Water Crisis." Albuquerque Journal 1 June 2003: A1, A8.

Soussan, Tania. "How Do You Stretch A River?" Albuquerque Journal 20 July 2000: A1, A10.

Soussan, Tania. "Rio Grande Plan Backed." Albuquerque Journal 6 September 2003: E1.

Stell, Joe M. "Water Fight Looms on State's Horizon." Albuquerque Journal 8 February 2002: A13.

Udall, Stewart L. "Water: Santa Fe Should Learn Its Lessons." Santa Fe New Mexican 4 March 2001: F7.

## State Constitution, Federal & State Statutes

Article XVI, New Mexico State Constitution

Sections 72-1-1 to 72-19-103 N.M. Statutes Annotated (1997 Repl.)

## Conference Proceedings and Multimedia

Day, Joe. "Rio Grande: Live River or Dead Ditch?" Video produced by McCune Charitable Foundation and Daylight Productions, 2003.

DeYoung, Tim, and Maria O'Brien, eds. *Water Rights Transfers: Current Policies, Procedures and Perspectives in New Mexico*. Proceedings of Lorman Legal Educational Services Conference: Albuquerque, March 28, 2003.

MacDonnell, Lawrence, ed. *Moving the West's Waters to New Uses: Winners and Losers*. Natural Resources Law Center, University of Colorado School of Law, Eleventh Annual Summer Program: Boulder, June 6-8, 1990.

NM WRRI. *There's No Doubt, We're In a Drought!* Proceedings of the 47th Annual NM Water Conference: Socorro, October 10-11, 2002.

Turney, Tom. "Cracking the Adjudication Nut." from NM Water Law Continuing Legal Education Seminar: Santa Fe, August 9, 2001.



*Acequia Madre in Santa Fe, circa 1915. Courtesy of the Museum of New Mexico.*

## ACKNOWLEDGEMENTS

We would like to acknowledge the contributions of several dozen New Mexicans who assisted us in the research we conducted in putting this report together. **They should not be held responsible for our conclusions with which they may or may not agree.** They include our consultants: Norm Gaume, former Interstate Stream Engineer; Eluid Martinez, former State Engineer; and Tom Turney, former State Engineer; as well as current State Engineer John D'Antonio and current Interstate Stream Engineer, Estevan Lopez. We are also grateful to the diverse array of water experts and stakeholders who allowed us to consult with them during the development of this report: Francisco Apodaca and Brian Shields, Amigos Bravos; Conci Bokum, Director of Water Project, 1000 Friends of New Mexico; Letty Belin, Attorney, Belin & Sugarman and lawyer for the plaintiffs in the Silvery Minnow lawsuit; Bobby Creel, Director, NM Water Resources Research Institute at NMSU; Tom Davis, Manager, Carlsbad Irrigation District and Water Trust Board member; Joe Day, Documentary filmmaker; Bill DeBuys, Author; Gary Esslinger, Manager, Elephant Butte Irrigation District; Denise Fort, Law Professor at UNM and Water Trust Board member; Bill Fulginiti, Executive Director, NM Municipal League and Water Trust Board member; Paula Garcia, Executive Director, NM Acequia Association and Water Trust Board member; Steve Harris, Executive Director, Rio Grande Restoration; Steve Malloch, Executive Director, Western Water Alliance; Gordon Meeks, Legislative Council Service; Tom Morrison, Chief Hydrologist, Office of the State Engineer; Maria O'Brien, Attorney, Modrall law firm and lawyer for the City of Albuquerque in the Silvery Minnow lawsuit; D.L. Sanders, General Counsel, Office of the State Engineer; Phil Smith, Associate Director of White House Science and Technology Office under Presidents Ford & Carter and former Director of the National Research Council of the National Academies of Sciences and Engineering; State Representative Joe Stell (Carlsbad), Chairman of the House Agriculture & Water Resources Committee; John Stomp, Water Resources Manager, City of Albuquerque Public Works Department; and Bob Sulnick, Director of the Alliance for the Rio Grande Heritage.





*Agua que no has de beber, dejale correr.*  
Water not needed should be allowed to  
run downstream to benefit the next person.  
—New Mexican *dicho*