



# DIVINING ROD

NEW MEXICO WATER RESOURCES RESEARCH INSTITUTE

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Winter 2001

## Watershed Management Focus of 46th Annual Water Conference

Over 225 water resources professionals gathered in Santa Fe in early November to share their experiences and learn more about managing New Mexico's watersheds. This year's conference was co-sponsored by the New Mexico Riparian Council and the New Mexico Watershed Coalition.

On the afternoon before the plenary sessions began, a bus loaded with warmly dressed, umbrella toting participants traveled north to Los Alamos. Greg Kuyumijan, U.S. Forest Service hydrologist, hosted the tour of

the Cerro Grande fire site and shared his expertise on the erosion control efforts underway throughout the burn area. Karl Wood, WRI director and tour participant said, "Results of this very expensive, multi-cooperator initiative were evident—in some areas the efforts are working well and not so well in other areas."

Meanwhile, another group of conference participants headed south to Bernalillo to tour a study site of the area's watershed. UNM Professor and project leader Carl White was joined

by Rosemary and Burt Pendleton from the Rocky Mountain Research Station, graduate assistant Luis Guzman, and George Duda of State Forestry. The tour group was shown the intensive contour plowing that was done in the mid 1950s to create terraces along with other features to retain water. Recent effort evaluates the use of prescribed fire to promote grass establishment and growth, reduce shrub invasion, and to further reduce erosion within the watershed.

The following day, keynote speaker Sid Goodloe kicked off the conference. Sid is owner and operator of the Carrizo Valley Ranch, northwest of Capitan, New Mexico. Since he purchased the ranch in 1956, Sid has worked diligently to rehabilitate the watersheds on his ranch. "It now has improved livestock grazing, wildlife habitat, and spring and surface-water flow as well as enhanced aesthetics along with a dramatic decrease in wildfire danger," according to Sid.

All conference papers will be included in the proceedings. Full text papers will be available via WRI's homepage (<http://wri.nmsu.edu>). A hard copy of the proceedings will be available in a few months.

*Carl White kneels next to an instrument he designed to measure the soil surface profile. Carl described the results of the Bernalillo Watershed Study to conference tour participants.*



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# Water Essays Read at Water Conference

In conjunction with WRRRI's 45<sup>th</sup> Annual Water Conference, we initiated a water essay contest for high school students. The winning essays were read by the student authors during a luncheon at the conference. The response to the contest was very positive so we sponsored the contest again this past year.

Students were invited to submit an essay of no more than 1,500 words on the following scenario:

*The year is 1905 and you live in the New Mexico territory, which has been experiencing drought conditions for the past decade. Describe your life, telling us where you live, how you make a living, your daily experiences with obtaining water for your needs, how you are preparing for continued dry conditions, and what your concerns are for your children and grandchildren regarding their future water needs.*

Essays were judged in two categories: Juniors (9<sup>th</sup> and 10<sup>th</sup> grades), and Seniors (11<sup>th</sup> and 12<sup>th</sup> grades). First place in each category received \$300 and second place received \$200. Several students were awarded Honorable Mention certificates.

The WRRRI received 55 essays in the Junior Division and 41 in the Senior Division. Entries were received from schools throughout New Mexico and included several students who are home schooled. High schools represented included Cimarron, Tatum, Ruidoso, Oñate, Hot Springs, Mesa Vista, Del Norte, Las Cruces, La Cueva, Lovington, Mayfield, Rio Rancho, Animas, Capitan, Rio Grande, Questa, Valley, Los Alamos, and Carrizozo.

Students read their award-winning essays at the 46th Annual New Mexico Water Conference in Santa Fe, where they also received their prizes. Former WRRRI Director Tom Bahr hosted the luncheon.

In this issue of the *Divining Rod*, we are publishing the Junior Division essays that won awards. This year, there was a tie between two essays for second place, and each of these students received \$200. The next issue of WRRRI's newsletter will include the senior essays.

## 2001 Water Essay Contest Winners

### Junior Division

1st: Steven Ramirez, Carrizozo High  
2nd (tie): Ryon Groesbeck, Tatum High  
Anthony Castillo, Valley High

### Honorable Mention:

Jason Gentry, Capitan High  
Katherine Buchanan, Questa High  
C.J. Kinsolving, Tatum High  
Sabrina McNew, Valley High

### Senior Division

1st: Kurt Sanders, Cimarron High  
2nd: Jennifer Stone, La Cueva High

### Honorable Mention:

Tomas Romero, Cimarron High  
Elizabeth Rivers, Sandia High  
Jenelle Manzanares, Mesa Vista High  
Michelle Catalanotto, Rio Rancho High  
Laura Lovato, Rio Rancho High

*High school student essay winners read their essays at the 46th Annual Water Conference. From left, Ryon Groesbeck, Steven Ramirez, Kurt Sanders, and Jennifer Stone. At the far right is Michelle Cattaneo, WRRRI's student assistant. Michelle, an NMSU sophomore, coordinated this year's water essay contest.*





## First Place - Junior Division

Steven Ramirez

9<sup>th</sup> grade, Carrizozo High School

### Capitan Gap, New Mexico Territory, 1905

#### September 3

Today makes one year that we have been here from Texas. It is hard to believe that just over a year ago we were still traveling in the wagons towards these mountains in New Mexico. We are so lucky to have a Dad that was able to find one hundred and sixty acres to homestead. We were even more fortunate to find a place with a spring that still runs. We came here in hopes of finding more water than we had at home but soon found out that there has been an almost ten year drought in this country too. Still, the drought has worked in our favor in a way because Dad knows how to witch wells. Uncle Cliff and Dad found a good place up in the Gap and hand dug a good well. Since then they have had plenty of work because everyone is desperate for water.

#### September 5

Talking about being desperate, just last week some people over the mountain got shot. Our neighbor Pat had found a little seep where he watered his goats and he got in an argument with a fella who claimed that he had a right to the water too. Pat got shot in the back and died. This sure is some rough country.

#### September 9

Dad and Uncle Bill had a real close call today while they were digging a well for some people down in Lincoln. We were real happy about the job because they are trading a real pretty horse for digging the well. Uncle Bill was down in the hole since he is the smallest and they were getting pretty far down. The side of the well started caving in and Dad heard Little Bill yell. He ran over there and pulled Bill

up with a whole ten-gallon bucket full of rocks and dirt. We were so glad to still have Bill with us since there has been more than one person killed doing the same thing that he was.

#### September 16

Today we were so glad to have the well finished and to be able to go home. I got to ride the new horse back and we were all happy until we got home and saw Mom sitting on the ground crying. As it turned out she had been to the garden picking beans and when she went to shelling them there were so many shriveled up that she got to worrying that we might not have enough to get us through the winter. This life has been hard on us but it has been even tougher on Mom than for any of us. Dad didn't dare tell her about what had almost happened to little Bill until after supper or she might not of even ate.

#### September 25

We have sure been busy. When we aren't hauling water from the well or the spring we have been working on the cabin trying to finish it for the winter. We have been living in a cave on the mountain since we got here. It hasn't been so bad this summer because we can camp out and not worry about freezing, or getting wet since it never seems to rain. Still, we don't want to grow up in a cave and we are working really hard on the cabin so Mom can be more comfortable. Dad says that it is really important since it looks like we might have another brother or sister by spring.



*Steven Ramirez reads his essay during lunch at La Fonda in Santa Fe at the 46th Annual Water Conference.*

#### September 30

This afternoon we quit working on the cabin and went up the road to the spring for water since we were starting to run low. We switch off where we get water from to let the pool fill up by the spring. When we got there there was no water in the pool and all the troughs were tore up and some

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were broken where they had hit the rocks. We had laid the troughs from the spring to the road and dug a hole at the end that fills up so that we can dip water out to fill our barrels. We did this so we would not have to carry the water so far. We spent days carving the troughs from juniper wood so now it looks like we will have to set aside all our other wood to rebuild them. It took about one hundred feet of troughs to get to the road and about half of them are broken. It sure is a lot of work with that old awl to carve them out, I sure wish I knew who tore them up, I think I'd shoot them.

Dad just came down from the spring and he thinks that the tracks are from a bear; maybe I'll get to shoot him after all, if Dad will let me!

### **October 7**

We sure had another big scare last night. Dad walked out of the cave and saw what looked to be a big fire coming up from the bottom of the ranch. We all rushed over to the cabin and hooked the horses up to the wagon as we were trying to load all that we could so that it wouldn't all burn up. Just as we were getting ready to make a run for it old man Shoemaker galloped up on his horse and told us to calm down. He told us that it wasn't a fire but the Northern Lights. He told us that in Montana they see them all the time but that they are not so common here which is why he had rode down here because he figured that we'd get scared and run. He left pretty quick so he could tell our other neighbors, he sure is a good guy.

### **October 14**

We have been working on making more water barrels so we can store more water if it ever rains. That way we wouldn't have to spend so much time going up the mountain to get it. Uncle Cliff had a team of oxen that we got for digging a well so he took them to Roswell to trade. He bought some metal bands while he was there to bind the barrels together and some other supplies to get us through the winter. He even got some coffee and tobacco, which sure made Dad happy and bought some fabric for Mom to make stuff from.

On the way back through Hondo he took the money that he had left and bought some walnut wood to build the barrels with. It is sure hard wood to work with but it doesn't rot so it lasts a long time. The horses were sure beat after hauling all that up the mountain.

### **October 20**

While Dad and them have been building barrels and such me and my little brother Robert have been gathering rocks to line the cistern with. They dug a twenty-foot hole

behind the house and since the mortar is so expensive we use the rocks to cover the walls and just use it to hold them together. We are putting gutters off of the roof of the cabin to catch the rain if it ever comes. At least we will have a lot of water storage if we ever can use it.

### **October 28**

We haven't quite finished the cabin but we put hides and blankets to cover the windows. It seems like we moved in just in time because it started snowing today. We hope that it snows enough so that we can catch some water since we won't be able to get to the spring or the well when it's muddy. If we have to we can haul water from the Salado Creek but it would be hard on the horses. We would hope that it didn't snow as much down there as it does here but it is still a five mile trip and it is all uphill coming back.

### **November 5**

We all got baths today. Mom was baking bread so Dad, Uncle Cliff, my brothers and I hooked up the horses and went to the spring since the ground was finally solid enough to travel on. Since we don't have to water the garden much since there is only the root crops left in the ground Mom thought we could spare enough to get proper baths. Usually we just take sponge baths but Mom surprised us all by heating a bunch of water on the wood stove and pulling the washtub out. It sure felt good to be really clean and to watch our little brother splash around in the tub. It made me realize how frugal we have had to be with the water and I started to think about when I will have my own family someday. I wonder how we will have to live if this drought continues on.

Maybe when my brothers and I get older and stronger we could dig a deeper well close to the cabin and build a windmill that could pump water. That way Mom and Dad wouldn't have to go so far for water, especially if me and my brothers were off to school or working away from the ranch. Besides, if we all stay up here or get married someday there will be more people here and we will need more water. Maybe in the springtime we can dig the spring out more too and get more water from there.

### **November 29**

Ever since the other day I have been thinking a lot about the future. I remember back in Texas when Grandpa used to have a whisky still. I have overheard Dad and Uncle Cliff talking about making and selling whisky to make more money here. It seems that every time they start talking about it Mom gets mad and we don't hear anymore about it for a while. Still, if we had some liquor to trade and sell we could

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get some windmill parts and maybe even some folks could come help us dig another well, and maybe we could even buy some pipe to case it with. If we had the windmill we could have a bigger garden and plenty of food for all of us. We might even have enough money to get a big roll of that calico fabric for Mom and she might smile again.

### December 13

Gosh, it is almost Christmas. Even though we don't have a lot this year Mom and Dad say that we have a lot more than most folks and even more to be grateful for. We have enough food and the deer are fat so we haven't had to

kill any of our animals. I have been thinking that if I can I would like to go to college and study more on water so that maybe I can get a good job or just help my family and the people in town. I have heard stories about how people get sick from the water sometimes and maybe I am wrong but I think that in town the houses, wells and outhouses are all too close together. I think that the filth in the outhouses might soak into the ground and maybe it gets into the wells and contaminates them to where those people get sick from it. Maybe if I can learn more about this I can make life better for all of us and we won't have to make whisky to get ahead.

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## Second Place - Junior Division

Ryon Groesbeck

10<sup>th</sup> grade, Tatum High School

### My New Mexico Homestead

It is 1905 and my family and I are homesteaders in the New Mexico territory. My family originally lived in Alabama, but my grandparents were forced to move west by the effects of the Civil War. My mother was born in Selma, Alabama, and until the day she died she insisted that Selma was the greenest most beautiful place in the world. Perhaps as the years passed in the harsh dry world that is Texas and New Mexico, her memories of Alabama became even more beautiful. Our family eventually settled near Brownfield, Texas. The family struggled to survive on a small farm until my father was elected as the first sheriff of Terry County.

Eventually as a young man with a wife and small son, I was lured to the New Mexico territory by the free land available for homesteaders. Carrying everything we owned in a wagon pulled by two mules, we crossed into what is now North Lea County, and filed on a 160-acre homestead. We were required to farm 80 acres of our land for five years and make other improvements to obtain legal possession of the land. After "proving up" on the first 160 acres, I filed on an additional half section. These years have been tough and filled with exhausting backbreaking work. There has never been enough rain and we have almost no money, but we have land of our own and a chance to make a better life.

Water is the key to success in this flat sun-baked wind-whipped country. Except for a small alkali spring at Ranger Lake, there is no natural surface water in this area. The spring is little more than a mud hole, but Indians and

travelers have used it for years. We hand dug a well to supply water for our homestead. The ground was as hard as cement. We used shovels, picks, and crowbars to dig, and hauled the dirt up in buckets. About twenty feet down we hit wet dirt, and in a few days the bottom of the well was filled with water.

At first we hand pumped water for the cows, the horses, the garden, and ourselves but I soon realized that to survive we must have a windmill. This was a major expense, which I financed by day working as a cowboy on a larger ranch nearby. It was difficult doing my morning chores in the dark, riding north five miles to work all day, and then returning to do the evening chores after dark. But I wasn't doing anything unusual. Most homesteaders needed outside work to keep their places going and some were even forced to leave for months at a time to work in other places. I was lucky to find work near home.

When the windmill was in place, I built a rock trough to store water. There was no shortage of caliche rock for building. The rainfall was so unpredictable that it was necessary to store as much water from the windmill as possible. I spent three months digging a large dirt tank using a wooden slide and my two mules. I spent all day walking the mules back and forth scraping the hard dry dirt into a circular mound to hold water. It was a hard summer's work, but we now had a steady supply of water even if the wind didn't blow for days. The water from the windmill ran into the trough and the overflow then ran into the dirt tank. This windmill and tank made life much easier.

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I built a shed over the rock trough and we stored our milk, eggs, and butter in the cool water. As long as the windmill kept pumping the running water kept the food cool. We also dug a trench to the garden and watered it from the tank. We were then able to grow more vegetables for food, when we could fight off the grasshoppers and rabbits. We didn't have to live on beans and salty bacon all the time. My wife even had a very small flower garden beside the house. It may seem like a waste of energy to grow flowers, but it was important to her to have something pretty around the house. Looking at that patch of red carnations after a hard day even cheered me up.

With a steady water supply assured, we built a one-room house and abandoned our tent. The walls were a single layer of two by fours with the joints covered with another board. You could see light through the cracks in the walls and floor, but my wife stuffed cotton into the cracks to help keep out the dirt, wind, and bugs. Every spring she put up new wallpaper to cover last year's stains. We were extremely proud of our new home. We had glass windows, a cook stove, and a pipe to drain wash water. Carrying water from the windmill for cooking and washing is grueling back-breaking work especially in the winter. I plan to install a hand pump next summer so that we don't have to carry water from the windmill. My wife strongly supports this idea.

We also plowed and planted a small dry land farm. I would have skipped the farming except that it was required by the homestead agreement. Our crops include corn, milo,

and wheat. However, we have not been very successful as farmers. There has been little rain for the past three years, and even dry land farming requires some water. The weather continues to be dry and the wind withers our sprouting plants mercilessly. Every day we watch the sky for clouds and hope for rain. However, even if the rain does not come, we have water for the animals and they are able to survive on the sparse grass and the little feed that I can afford.

Our life in New Mexico may be demanding and exhausting with few luxuries, but I am able to support my family. I have built up a small herd of cattle on my homestead and adjoining public land. To sell the calves each fall it is necessary to drive the cattle to the railroad in Bledsoe. We drive the cows and calves to Bledsoe, cut off the calves, and then drive the cows back home. This trip takes several days of riding from dawn to dark and sleeping on the ground. The money from selling the calves along with my extra day work money allows us to get by. Last year I was able to purchase an abandoned homestead next to mine. Using poles and the mules we skidded their one room house the half-mile to our homestead. Now we have a two-room house. I plan to continue building and expanding my holdings to establish a family ranch for future generations. My success and the future of my dream depend on the continued availability of water.

Although I know that in the future there will be many changes and improvements in the ranching industry that I cannot foresee or even imagine, water will still be the most important issue. Our continued survival and the survival of our way of life depends upon water. We cannot change the temperature, eliminate the sandstorms, or increase the rainfall. New Mexico will remain a dry land. However, the ranching industry has survived many droughts and it will survive many more. The one thing that ranching cannot survive is the loss or pollution of our ground water. It must be protected from waste and pollution by a growing population and from exploitation for political purposes. My family and I have been able to survive and prosper despite the persistent drought only because the ground water has remained abundant and available.

I hope that my descendants will have the foresight and intelligence to realize that as the country grows and the population increases it will be necessary to conserve and protect the existing ground water supply. The ground water sustains our way of life. When it is gone, so are we.



*Ryon Groesbeck receives a check and certificate for second place in the Junior Division of the 2001 Water Essay Contest from former WRRD Director Tom Bahr.*



## Second Place - Junior Division

Anthony Castillo

9<sup>th</sup> grade, Valley High School, Albuquerque

Note: Anthony was unable to attend the Water Conference so his essay was read by WRI student assistant Michelle Cattaneo.

The life of a rancher and farmer is not always easy. I Alfonso Cortes was raised on this land. It is nestled in the valley outside of Albuquerque. Long ago my Great Great Grandfather, Pablo Cortes, built his hacienda close to the bank of the Rio Grande. He and his sons spent months, digging irrigation channels, planting crops, and building livestock pens. For sixty years the land endeavored and produced. The cattle were healthy and the family worked and lived well in their home. Sadly, that time would soon draw to a close.

Before the drought descended upon the territory, the ground and surface waters in the area held strong. The water flowed freely throughout the Rio Grande Valley. The acequias moved the water to the farms and haciendas in the surrounding areas. The crops were plentiful and the cattle were well fed. The relation between water, land, and people was harmonious. In all essence our lives were secure, or so it seemed. After all families and friends had water for cattle, drinking, cooking, and irrigating. It all fit together. Without the ample water supply life in the Valley, as well as the rest of the territory, would be at a standstill. One fall nearly ten years ago, the farmers and hacendados of New Mexico began to notice poorer harvests. The crops had begun the planting season strong. But, as time crept by much of the crops began to dwindle and "die on the vine," as a friend put it. The Rio Grande Valley's water supply began to dry up. Rains were becoming sparse. This year's harvest was going to be okay but we worried for next year's. All my people could do was hope and pray, no one imagined though, the amount of time the drought would last. Worst of all, the toll it took was fatal to the lives of the farmers and the land.

For ten years now, my people have struggled daily for the gift that was once used at whim. Even the mighty Rio Grande has begun receding. Trips have grown longer as families and workers trudge to the river to acquire the precious elixir of our life. The once plenteous crops now come in as a drizzle instead of the usual "flood". With crops failing and grazing fields dying off, the cattle have been affected as well. Not only are the animals suffering and

dying from dehydration it is becoming apparent that they will soon be malnourished as well. As is all the food of the Valley, the grasses along the riverbank have begun to dry up in the hot and waterless climate. The people are in more and more of a frenzy as the time passes and some are taking ill in the shadow of this disaster. The land and water that once sustained many other families and mine for decades is now fighting against us. Many, dig up their own property in hopes of finding ground water, in the end it all does is further our losses. They dig in areas where crops seemed to fare the best, sadly, this just leaves them with holes in the ground and less of a harvest than they began with. What were we to do? Worse, many of us wondered if this was how life is now to be.

At one time the Valley's people had walked out their doors to the well on their property and drew out a bucket of water. The journey then was no more than a few yards. Now, wells had dried and to get water for bathing, cooking, cleaning, or any other household use, meant making a quarter day's walk to the Rio Grande. Life had surely changed drastically in only a short passage of time. Also, all the acequias of the land were now almost entirely barren. The little water left in them was used for the cattle and various livestock and the rest was dispersed to the withering plants. Life in the Valley would never be the same for us. The experience of the drought was taking its toll on us, mentally, physically, and even spiritually to a point. We did our best in our community to keep spirits high and pray for the rainfall that was so desperately needed. Some even told themselves that one "good" rain was all we needed. Others, who were more realistic, knew that it would take time to replenish the land and its crops. The small rain showers that came few and far between only helped to raise our hopes and then let them fall again. When the rain did come however, buckets and barrels were set out and we would try to preserve and make use of it. If lucky, the water might last a day, never longer. For the most part conditions remained the same. Every once in a while you would hear of a nearby tribe performing religious dances and ceremonies to the gods of the rains and harvests. This was considered by many our last chance. When it failed all hope began to slowly drift away.

Since this ordeal began we have tried to help our children understand what a precious resource the land and water is to us. Even now, when we need it most, we have learned to try and spare it whenever possible. We are blessed with the gift of rain and harvests and they can be taken away just as quickly as they were given. If we appreciate and work with the means we are given, we can make the

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most of it. There is no guarantee that we will always be provided for but by learning how to cope with the problem and striving to make it better, we show things can only get better.

Life in our quiet valley may never be the same. Neither you nor I know that. If and when, our gifts are returned we

*will* know how to use them wisely. The smallest asset may be the greatest treasure. Before the drought, I do not believe many believed this could happen; now it has. We must take the knowledge we've gained from it and move forward. We must also, never take it for granted again.

## Reports Available

### USGS reports

The following reports were recently published by the U.S. Geological Survey. Copies are available for inspection at the USGS District Office in Albuquerque (5338 Montgomery Blvd NE, Suite 400). The Water Resources Research Institute library also has the reports on file. They may be ordered from the USGS Federal Center, Box 25286, MS 517, Denver, CO 80225. You may call 1-888-ASK-USGS for price information.

**Relations for Estimating Unit-Hydrograph Parameters in New Mexico** - by Scott D. Waltemeyer. Prepared in cooperation with the New Mexico State Highway and Transportation Department (Water-Resources Investigations Report 01-4154).

**Simulation of a Long-Term Aquifer Test Conducted near the Rio Grande, Albuquerque, New Mexico** - by Douglas P. McAda. Prepared in cooperation with the City of Albuquerque Public Works Department (Water-Resources Investigations Report 99-4260).

**Analytical Results of a Long-Term Aquifer Test Conducted near the Rio Grande, Albuquerque, New Mexico** - by Condé R. Thorn (with a Section on "Piezometric-Extensometric Test Results" by Charles E. Heywood). Prepared in cooperation with the City of Albuquerque Public Works Department, Water Resources Management (Water-Resources Investigation Report 00-4291).

**The National Water-Quality Assessment Program—Entering a new decade of investigations.** Fact sheet that summarizes Program goals and geographic scope as it begins its second decade of investigations. A map and listing of assessment areas also are included.

### Santa Fe Land Use Resource Center report

Water Supply Options has been published by the Santa Fe Land Use Resource Center, a nonprofit organization focusing on land use and water issues in the Santa Fe region. The workbook contains an explanation of water policy basics and descriptions of water supply options, focusing on the City of Santa Fe and Santa Fe County. Contact the Resource Center at [sflurc@inetmail.att.net](mailto:sflurc@inetmail.att.net) or 505/982-4732 or view their web page at [www.sflurc.com](http://www.sflurc.com).

### Upcoming Deadlines

**Law of the Rio Grande - Legal, Environmental and Practical Considerations**, CLE International, January 17-18, 2002, Hyatt Regency Hotel, Albuquerque, NM ([www.cle.com](http://www.cle.com))

**Environmental Law on the US-Mexico Border**, CLE International, February 7-8, 2002, Marriott Camelback Inn Resort, Scottsdale, AZ ([www.cle.com](http://www.cle.com))

**New Mexico-Arizona Joint History Convention**, April 11-13, 2002, Las Cruces, NM (B. Dinges, 520-628-5774)

**Allocating and Managing Water for a Sustainable Future: Lessons from Around the World**, Colorado Natural Resources Law Center, June 11-14, 2002, Boulder, CO ([www.colorado.edu/law](http://www.colorado.edu/law))

**Ground Water/Surface Water Interactions**, American Water Resources Association's Annual Summer Conference: July 1-4, 2002, Keystone, CO (Abstracts due January 31, 2002) ([mike@awra.org](mailto:mike@awra.org))



## Meet the Researcher

### Dr. Seth E. Snell

Assistant Professor of Geography, University of New Mexico since August 1999; currently on leave of absence and residing in New Haven, CT

#### Research Focus

Impacts and Adaptation to Climate Change  
Artificial Neural Networks  
Quantitative Modeling of Biophysical Systems  
Geographic Information Technologies  
Econometric Techniques  
Human Dimensions of Global Change  
Dynamic Models of Environmental Systems  
Ecological Economics

#### Education

Ph.D., geography, Boston Univ. 2000  
Dissertation entitled *Toward an Integrated Assessment of the Impact of Climate Change on U.S. Corn Production*  
M.A., energy and environmental studies, Boston Univ. 1994  
B.S., physics, Guilford College, Greensboro, NC 1992

#### Teaching

Physical Geography  
Introduction to Geographic Information Technologies  
Climate Change Impacts and Adaptations  
Introduction to Geographic Information Systems  
Applied Geography Seminar

#### Advising

Presently, 5 undergraduate students, and to date, direction of 16 undergraduate senior projects  
Presently, 4 graduate students, and to date, 3 M.A. thesis committees

#### Currently Funded Research

WRRI: Co-principal investigator, *A Flash Flood Prediction Model for Rural and Urban Basins in New Mexico*. Period: 2000-2001, \$24,760. Final report currently under review and should be published in early 2002.

National Science Foundation: Co-principal investigator, *A Quantitative Assessment of the Economic and Institutional Impacts of Climate Change on the Upper Rio Grande Valley Using an Integrated GIS Framework*. Period: 2000-2003, \$674,400.

Environmental Protection Agency: Co-investigator, *An Integrated GIS Framework for Water Reallocation and Decision Making in the Upper Rio Grande*. Period: 2000-2003, \$409,977.

#### Publications

Snell, S.E., R. Kaufmann, and L. Scuderi. "A Process Model for Soil Moisture: Evaluating its Effectiveness in Corn Yield Modeling." Planned submission to: *Agricultural and Forest Meteorology*.

Kaufmann, R., S.E. Snell, and S. Gopal. "Spatial Prediction of Daily Precipitation Totals: A Comparison of Methods." Planned submission to: *Weather and Forecasting*.

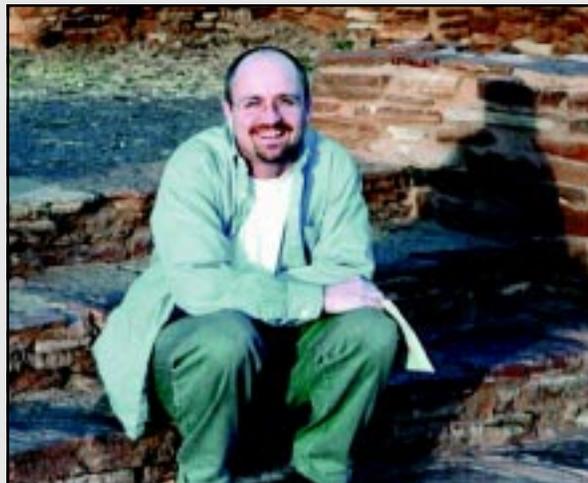
Snell, S.E., R. Kaufmann, and S. Gopal. "A Biophysical Model for Wheat Yield." Planned submission to: *Agricultural and Forest Meteorology*.

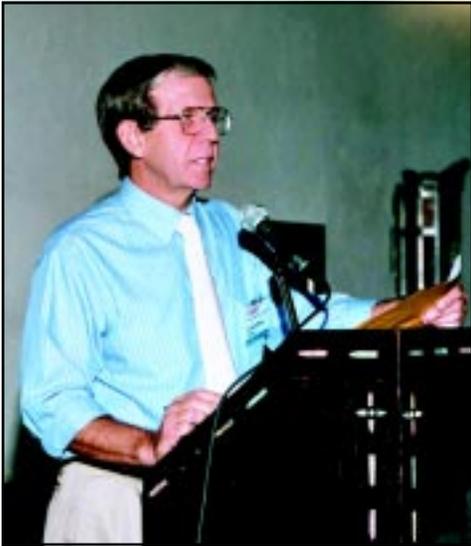
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*WRI Director Karl Wood presented a talk on grazing management practices.*



*WRI staff smile at the conclusion of the conference. From left, John Kennedy, Michelle Cattaneo, Cathy Ortega Klett, and Darlene Reeves.*

*Co-sponsors of this year's conference, the New Mexico Riparian Council presented their annual awards at the reception. From left, Melanie Greer Deason (recipient of Public Awareness/Education award), Dick Kreiner (president, Middle Rio Grande Chapter of the National Wild Turkey Federation, recipient of the Habitat Improvement award), Cliff Dahm (Research award), Council Past-president Richard Becker, Dale Jones (Lifetime Achievement award), Beverly deGruyter (Council President), and Francis Martinez (accepting the Partnership award on behalf of the Tierra y Montes Soil and Water Conservation District).*



*U.S. Geological Survey Associate Director, Bob Hirsch, addressed conference participants.*

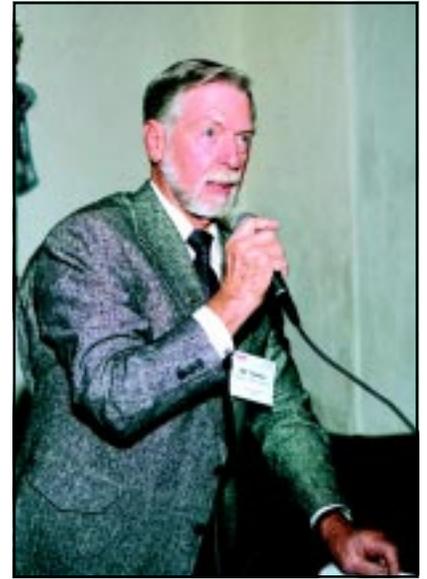


*The Albert E. Utton Memorial Lecture was given by Professor Dan Tarlock who spoke on the future of the prior appropriation system.*



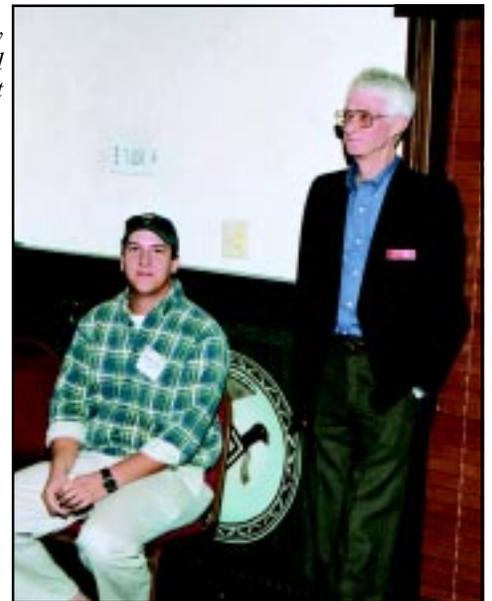
Senators Sue Wilson Beffort and Carlos Cisneros conferred before participating on the legislative issues panel.

Sid Goodloe, owner and operator of the Carrizo Valley Ranch, presented the keynote address at this year's conference.



# 46th Annual Water Conference New Mexico Watershed Management: Restoration, Utilization and Protection

WRRRI staff Mike Cleary and Bobby Creel stood by ready to assist where needed.



Eileen Grevey Hilson moderated the first session of the Annual Water Conference.

Cerro Grande fire tour participants were shown examples where new growth has become well established as shown on the left of this photo.



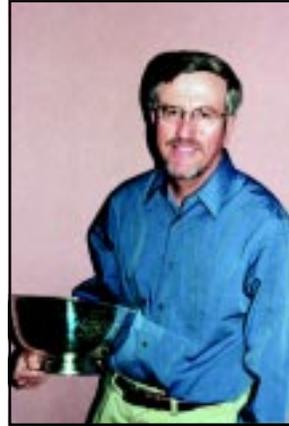


# NMTech Hydrology Professor Receives Prestigious Award

Fred M. Phillips, professor of hydrology at New Mexico Tech, was named this year's recipient of the O.E. Meinzer Award at the recently held Geological Society of America (GSA) annual convention in Boston, marking the fourth time a New Mexico Tech hydrology professor has received the prestigious prize.

The Meinzer Award is the highest honor in the field of hydrogeology in the nation. It is given annually by the GSA's Hydrogeology Division to an author of published research of distinction, which has advanced the science of hydrogeology or closely related fields, such as groundwater hydraulics.

In particular, Phillips was recognized for five pioneering papers that focused on the use of isotopic tracers in hydrology, especially the development and application of chlorine-36 isotopic techniques to arid region hydrology and to determining the flow rates of groundwater in aquifers. Techniques he developed have proved important in the evaluation of both high-level and low-level proposed nuclear waste disposal sites.



Phillips has been with the New Mexico Tech hydrology program since 1981. With over 80 publications to his credit, he is an active member of a variety of professional organizations, committees, and panels. Dr. Phillips was supported by the New Mexico WRRRI for a number of projects during the 1980s and early 1990s.

The O.E. Meinzer Award, which was established by the GSA in 1963, is named for Oscar Edward Meinzer (1876-1948), whom hydrologists consider "the father of modern groundwater hydrology" in North America. The Meinzer Award includes a "traveling trophy," which consists of a year-long possession of a large silver Revere bowl, engraved with the names of former award winners, along with a small, "keeper" version of the bowl inscribed solely with Phillips's name.

Other NMTech faculty honored with the Meinzer Award include John Wilson (1996), Lynn Gelhar (1987), and Mahdi Hantush (1968).

*Story and photo by George Zamora, NMTech Public Information Office*

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**Staff:**

M. Karl Wood, Director  
Bobby J. Creel, Associate Director  
Darlene Reeves, Coordinator  
Catherine T. Ortega Klett, Editor  
John F. Kennedy, GIS Coordinator  
Peggy S. Risner, Administrative Secretary  
Michelle Ford-Del Rio, Records Specialist

New Mexico WRRRI  
New Mexico State University  
MSC 3167  
P.O. Box 30001  
Las Cruces, NM 88003-8001

Phone: 505-646-4337  
FAX 505-646-6418  
Email: [nmwrri@wrri.nmsu.edu](mailto:nmwrri@wrri.nmsu.edu)  
Web page: <http://wrri.nmsu.edu>

