Supporting Acequia Resiliency in the Time of Megadrought

Presentation to the Water and Natural Resources Legislative Interim Committee
July 13, 2021, Gallup, NM

NMAA Presentation Roadmap

- **Part I:** Overview of NMAA
- **Part II:** Impacts of Drought and Climate Change on Acequias
- **Part III:** Supporting Acequia Resiliency in the Time of Megadrought:
  A. Repartimiento - Water Sharing
  B. Infrastructure and Conservation Practices
  C. Disaster Response & Assistance
  D. Other measures: Conflict management, etc.

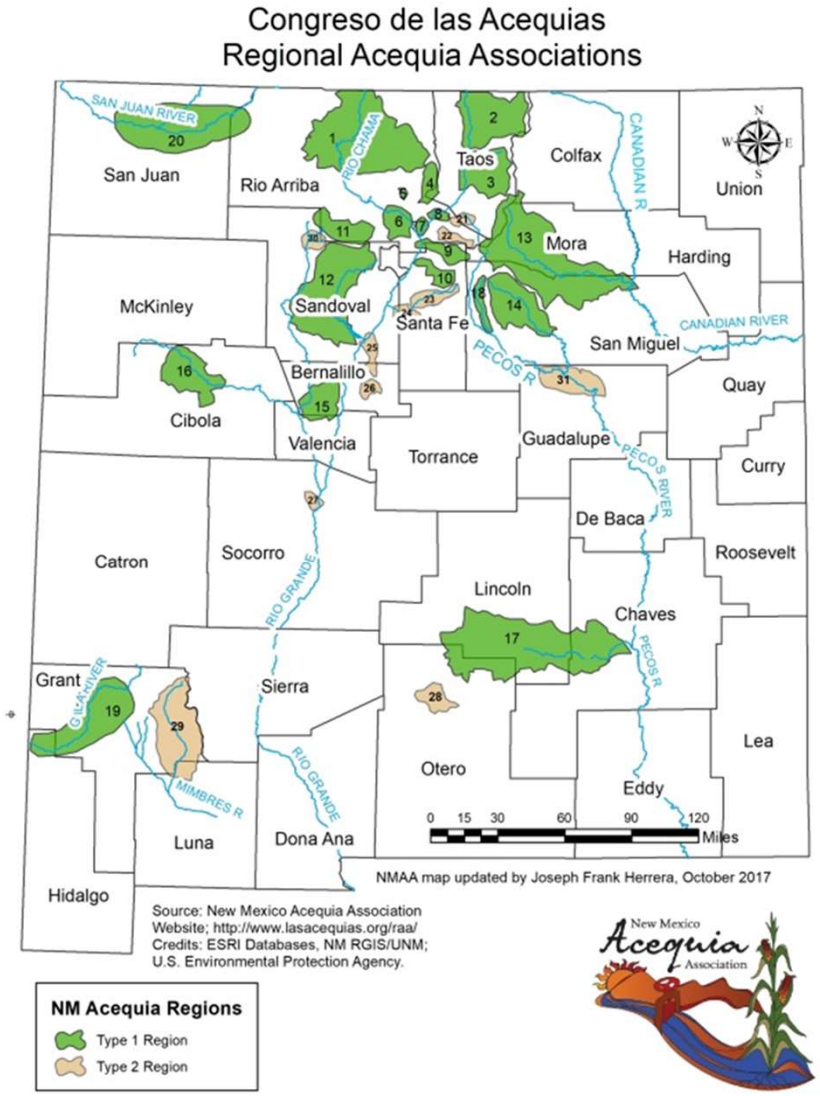
Part I: Overview of NMAA

The New Mexico Acequia Association is a grassroots, membership based organization of acequias and community ditches in New Mexico. Since 1989, we have been working to protect acequias and agricultural water rights through community education, organizing, and advocacy.

Our vision is for acequias to flow with clean water, to work together to grow food, and to celebrate our cultural heritage.

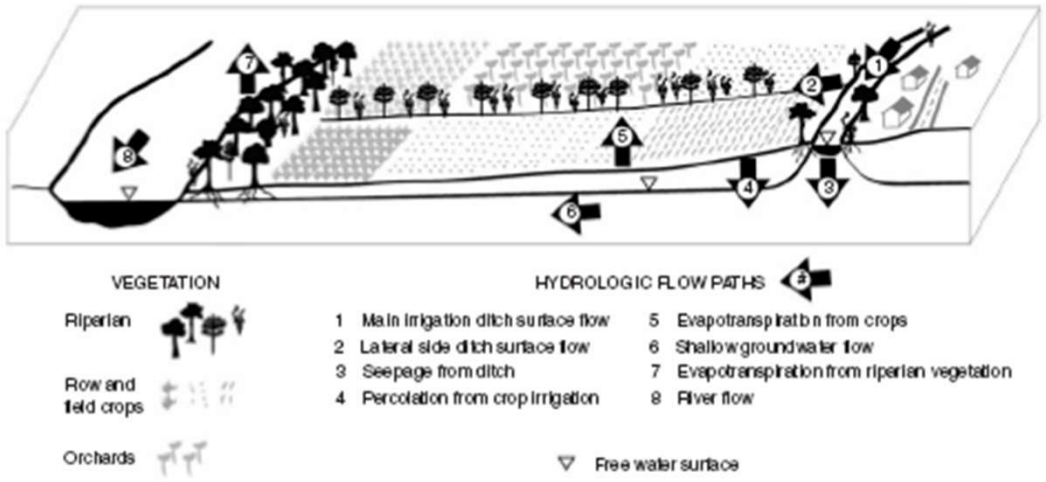
~640 Acequias in New Mexico

Rio Grande and Tributaries
San Juan River
Rio Chama
Nambe/Pojoaque/Tesuque
Pecos River (Gallinas)
Canadian (Mora)
Rio Pueblo/Rio Embudo
Jemez River
Rio San Jose
Hondo River
Gila River
Mimbres River



Acequias Contribute to Aquifer Recharge

FIGURE 5. Hydrologic flow paths in an acequia-irrigated alluvial floodplain.



Source: NMSU Water Resource Research Institute.

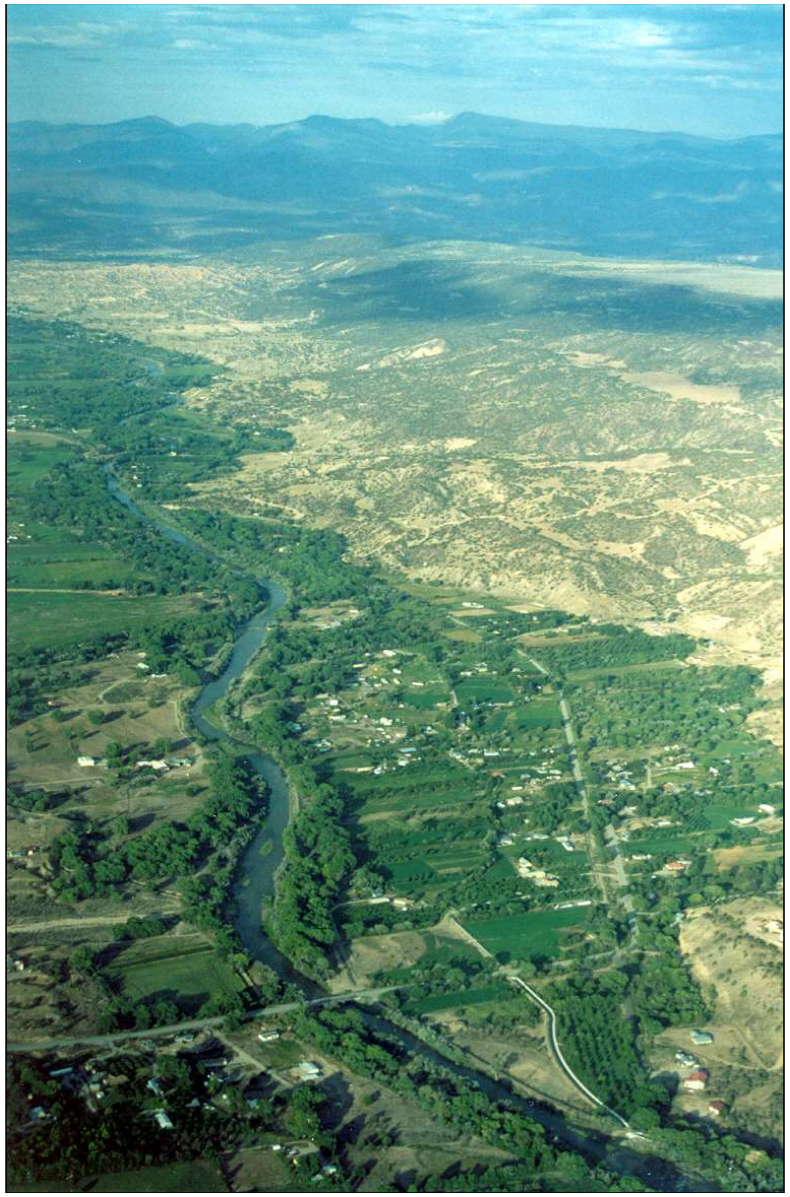
Acequias Contribute to the Agricultural Economy

Acequia agriculture makes a significant contribution New Mexico's economy. Counties with highest number of acequias make up about 40% of the total farms in the state.

	New Mexico	Acequia Counties	
Number of Farms	11,430	4,856	**42%**
Irrigated Acres	680,318	185,985	**27%**

* Source: USDA 2012 Census of Agriculture. Counties are Rio Arriba, Taos, Mora, Lincoln, San Miguel, San Juan, Cibola, Grant, Sandoval. Note that county-level data also includes other agriculture.

Photo: Velarde, Rio Arriba County. Home of numerous orchards and Las Nueve Acequias del Rio Grande. Credit. NMSU Water Resource Research Institute



Acequia Governance Project

- Infrastructure Planning
- Water rights and water management
- Acequia Bylaws
- Financial Compliance
- Easements
- And other governance matters

USDA Farmer-Rancher Outreach Project

- Outreach on USDA programs
- Assistance with USDA applications
- Guidance on participation in USDA programs:
  - FSA Disaster Programs
  - NRCS Conservation Programs

Los Sembradores Farmer Training Project

- Apprenticeships on Family Farms
- Full Growing Season of Training
- Community Building
- Farm Planning

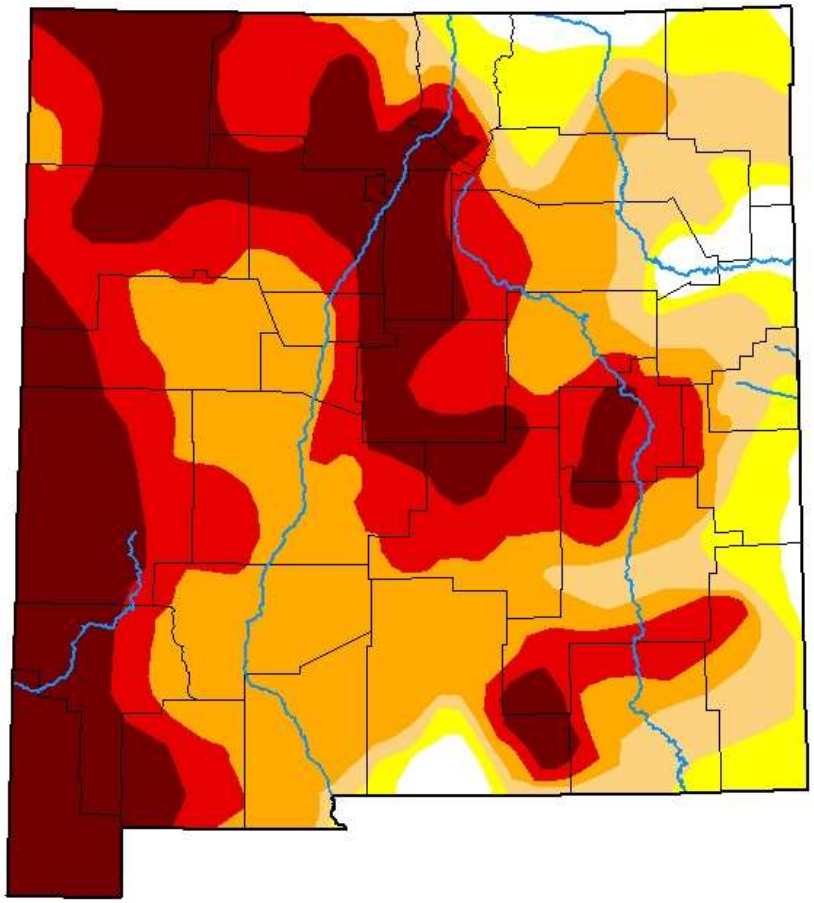
Acequia Youth Education

- Classroom presentations (elementary, middle, high school)
- Educational materials
- Organizational presentations (4-H, County Fairs, Boys and Girls Clubs, etc.)

Part II: Impacts of Drought and Climate Change on Acequias

U.S. Drought Monitor

New Mexico



July 6, 2021

(Released Thursday, Jul. 8, 2021)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	3.62	96.38	88.20	77.12	49.34	25.67
Last Week *06-29-2021*	1.04	98.96	92.88	84.87	58.80	30.47
3 Months Ago *04-06-2021*	0.00	100.00	100.00	99.35	79.88	53.50
Start of Calendar Year *12-29-2020*	0.00	100.00	99.97	99.59	82.26	53.20
Start of Water Year *09-29-2020*	0.00	100.00	99.92	73.65	39.88	2.90
One Year Ago *07-07-2020*	17.61	82.39	58.16	40.83	11.17	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

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National Drought Mitigation Center

droughtmonitor.unl.edu

Acequia Testimonials: 2020-2021

Snowpack evaporated. "... the spring weather was extremely hot and the snow melted quickly or evaporated."-- Taos Valley

Rivers dried. "The rivers dried in early summer. ..the pasture did not grow." – Acequia de la Isla, Ledoux

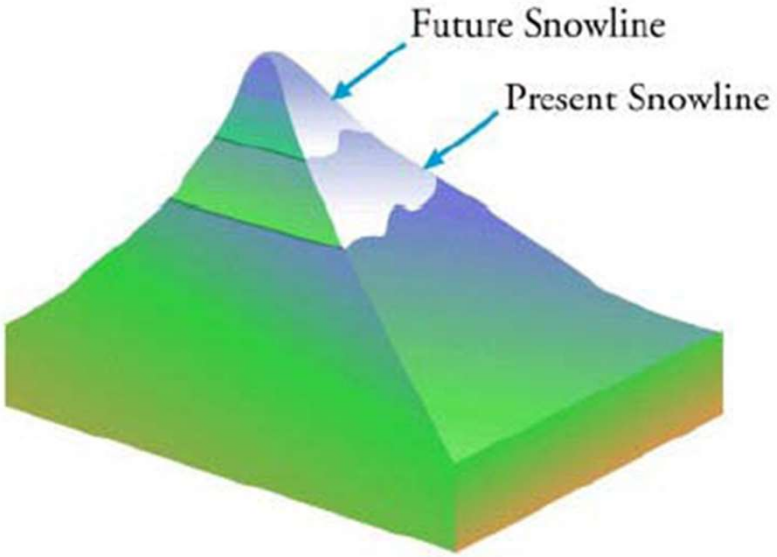
Runoff did not last long. "... snowpack was minimal and runoff peaked early ..." – Rio Chama

As dry as the 1950s. "It was similar to 1950s according to old-timers since the 1950s... river was dry for most of the summer..." -- Embudo Valley

... and then there was flooding in 2021.

Heavy rains and dry soils. "The rains just rushed down the valley...soils were hard as concrete." – Hondo Valley, Lincoln County

Acequia testimonials align with climate change predictions



- Snowpack is decreasing and melting earlier
- Precipitation is less certain and more variable
- Precipitation events are more extreme
- Temperature is increasing
- Droughts are intensified by warmer climate

Drought Impacts on Agriculture

- Less runoff, shorter growing season.
- Higher temperatures, higher evapotransporation, stressed plants that need more water.
- Lower yields of forage, grains, produce.
- Higher costs of hauling water and supplemental feed.
- Herd reduction, fallowing of more land.
- Economic losses, reduced viability of agriculture.

Part III: Supporting Acequia Resiliency in the Time of Megadrought

- Water Sharing Practices
- Infrastructure
- Disaster Response
- Other: Conflict Management, Conservation Practices, etc.

Suport and Affirm Acequia Water Sharing Practices

Repartimiento: Water sharing practices

- Centuries-old customs and traditions of sharing scarce water endure in the acequias.
- Acequia-based allocation on a shared stream is recognized in acequia statutes.
- Water sharing is affirmed in Active Water Resource Management (AWRM) as a type of Alternative Administration

Water Sharing as an Adaptation to Climate Change

- Regional Acequia Associations play a vital role in water sharing agreements.
  - Water sharing agreements via OSE Alternative Administration (Rio Chama, Rio Jemez, etc.)
  - Autonomous or court ordered water sharing agreements (Anton Chico, Santa Barbara, Embudo, etc.)
- Local agreements complement administration by OSE
- Need for technical & legal support at local level

Policy Recommendations:

- Capacity building for acequias, regional associations
- Leadership development
- Resources for OSE staffing
- Resources for technical & legal assistance

Strengthen Acequia Infrastructure

Importance of Acequia Infrastructure

Infrastructure is necessary for efficient delivery of water:

- Vital for water right administration
- Enables and facilitates water sharing

More resilient infrastructure needed:

- To operate in times of low and high flow
- To withstand extreme climatic events such as flooding

Policy Recommendations:

- Develop the Acequia and Community Ditch Infrastructure Fund (ACDIF) into a robust program with staff and reliable funding.
- Protect ACDIF funding and the Irrigation Works Construction Fund.
- Institutional support for climate-smart designs that are more resilient to flooding.


New Acequia infrastructure:
• Variability of low/high flow
• More resilient to flooding

Acequia and Community Ditch Infrastructure Fund (ACDIF)

- Created in statute with SB 428 (2019)
- Administered by the Interstate Stream Commission (ISC)
- Receives $2.5 million annually from the Irrigation Works Construction Fund (IWCF)

Planning:

- Site visit, preliminary assessment. Initial estimate of scope of work for planning purposes.
- Planning facilitates agreement within the acequia on the proposed improvements.
- All funding applications require a “readiness to proceed” resolution from the acequia.
- Identify opportunities to leverage federal, state, or local funds.

Engineering design:

- ACDIF funds 100% of the design of a project up to $50,000.

Construction:

- Requests for funding only considered with an engineering design.
- ACDIF will fund up to $250,000 per project.
- Requires oversight and inspection in the construction contract.

Interstate Stream Commission

Acequia and Community Ditch Infrastructure Fund $2.5 million annually

90-10 Program: state/local cost share

Acequia Loan Program: 2% Loans

- Contact: Jonathan Martinez
- 505-827-6160, JonathanC.Martinez@state.nm.us

NM State Legislature

Capital Outlay: Amount available varies.

- Contact: Your State Legislator, List is at www.nmlegis.gov

Water Trust Board

- Contact: NM Finance Authority 505-984-1454, www.nmfa.net

NRCS Regional Conservation Partnership Program (RCPP)

NM Association of Soil and Water Conservation Districts

- Contact: Your NRCS District Conservationist
- Contact: Norman Vigil 575-684-0042, norman.vigilsr@outlook.com
- NMAA can provide a list of names and phone numbers

USACE Acequia Program

- Funding for larger projects greater than $500k
- Contact: Jonathan Martinez from ISC

Regional Planning for Infrastructure Funding:

Association of the Community Ditches of the Rio San Jose

Acequia Name	Engineering Surveys & Designs	Construction Dollars needed	Total Dollars Requested	Description of Projects	Capital Outlay 2021
San Mateo Acequia Association	$60,000	$619,005	679,005	4 miles Plastic Irrigation Pipeline, with 74 irrigation valves	$200,000
Cebolletita Acequia Association	$45,000	$218,056	$363,056	Reservoir maintenance; 16,800 feet Plastic Irrigation Pipeline with 70 outlet valves	$250,500
Cubero Acequia Assocation	$50,000	$27,615	$77,615	Diversion Dam maintenance and upgrade, Reservoir upgrade	$80,000
The Moquino Water Users Association II	$50,000	$72,258	$122,258	Diversion Dam, New; 2500 feet Concrete Ditch Lining.	Request made - no funding
San Jose de la Cienega Acequia Association	$30,000	$39,009	$69,009	300 feet of half-cut CMP; Reservoir upgrade.	$69,000
	$235,000		1,310,943		$599,500

Strengthen Disaster Response and Assistance

Impacts of flooding on acequias

- Threats to human life, livestock, and wildlife
- Damage to stream beds, acequia infrastructure, roads/bridges, farmland, fencing
- Challenge facing acequias is to ensure that they are included in damage assessments – local knowledge is critical in locating areas damaged by floods

Policy Solutions:

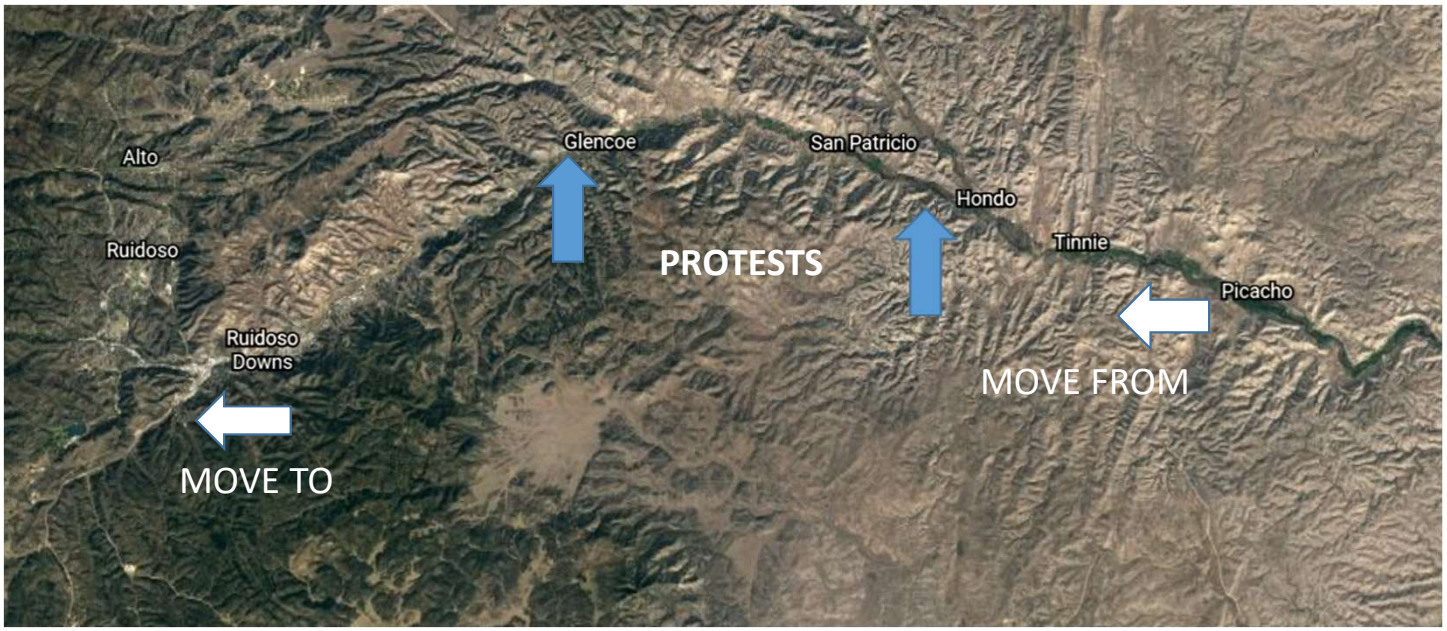
- Conduct/complete acequia infrastructure inventory & mapping for DHSEM-FEMA Hazard Mitigation Plan
- Train/Prepare local acequia leaders to serve as liaisons with state and federal disaster agencies
- Provide more resources for DHSEM response to disasters that do not receive a federal emergency declaration: wide gap between funding for disasters with and without federal emergency declaration

Drought, Water Scarcity, and Conflicts

- Drought exacerbates other conflicts and tensions over water.
- Drought intensifies conflicts over water transfers adding to concerns about impairment of existing water rights.
- Need for conflict management and mediation services for water conflicts

Strickling: Protestants mostly from Anton Chico area

Upper Hondo: Protests from acequias between move-from and move-to point. Ruidoso is upstream. This is a leapfrog transfer presumed to cause impairment.



Conservation Practices for Climate Change Resiliency

- Connect landowners to USDA Farm Bill programs for soil and water conservation practices
- Leverage federal dollars with state funding, i.e. Agriculture and Natural Resources Trust Fund
- Build upon recent work with NM Healthy Soils Program to support drought resiliency through soil health practices.

Que Vivan las Acequias!