



# New Mexico Water Leaders Workshop

December 1–2, 2022  
Socorro, New Mexico

## FINAL REFERENCE BOOK

Open-File Report 621  
Stacy Timmons

Hosted by New Mexico Bureau of Geology and Mineral Resources  
at New Mexico Institute of Mining and Technology  
with support from Thornburg Foundation

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# BACKGROUND

## NEW MEXICO WATER LEADERS WORKSHOP: SOLVING NEW MEXICO'S BIGGEST WATER CHALLENGES

New Mexico is currently facing numerous water-supply, water-quality, and management challenges. With greater funding opportunities in coming years, how can we best address these challenges, and how should we prioritize actions? This workshop provided background for some of New Mexico's current water-resource challenges and looked at ways to proactively address current and future changes.

This workshop was funded by the Thornburg Foundation and the New Mexico Bureau of Geology and Mineral Resources.

Thanks to all of you for attending!

Workshop organizers:

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Doug Bland — douglas.bland@nmt.edu



This word cloud was generated from comments made at the end of the workshop breakout sessions. Participants were asked to provide a few words to describe their feelings about this workshop.

# AGENDA

## DAY 1: 12.01.2022

### BREAKFAST

7:30–8:00: Deju House, New Mexico Institute of Mining and Technology (New Mexico Tech)

### MORNING SESSION

8:00–8:15: Welcoming remarks; agenda and logistics

8:15–9:15: Statewide Perspective: Water in New Mexico

#### 10-minute presentations

- Climate Impacts and Expectations, Impacts to Surface Water (Fred Phillips, New Mexico Tech Emeritus)
- Groundwater Resources, Water Data and Areas of Concern (Stacy Timmons and Rob Pine, New Mexico Bureau of Geology and Mineral Resources)
- Unconventional Sources of Water for New Mexico: Opportunities and Constraints (Bruce Thomson, University of New Mexico [UNM] Emeritus)
- Q&A

9:15–9:30: Break

9:30–10:45: Management Operations, Infrastructure and Regulation in New Mexico

#### 10-minute presentations

- Water Quality Regulation (Rebecca Roose, New Mexico Environment Department [NMED])
- Water Rights Basics, Active Water Resource Management (AWRM) and Interstate Compacts (Mike Hamman, New Mexico Office of the State Engineer [OSE]; Rolf Schmidt-Peterson, New Mexico Interstate Stream Commission [ISC])
- Federal roles: Interagency Cooperation and Infrastructure Management (Carolyn Donnelly, U.S. Bureau of Reclamation [USBOR])
- Alternative Management Options and Shortage Sharing (Adrian Oglesby and Stephanie Russo, Baca, Utton Center)
- Q&A

10:45–11:00: Break

11:00–12:00: Panel on Rural and Small Water and Wastewater System Challenges

#### Focused questions of panelists

- Southwest Environmental Finance Center (SWEFC) - Heather Himmelberger
- Rural Community Assistance Corporation (RCAC) - Ramón Lucero
- New Mexico Rural Water Association (NMRWA) - Bill Conner
- NMED - Rebecca Roose
- Q&A

### LUNCH

12:00–12:45: Greetings from New Mexico Tech President

Review logistics for field trip plans; load onto bus

## AFTERNOON FIELD SESSION

**1:00–5:00** (with travel by bus)

**20-minute drive to San Acacia Dam: Water as a Collaboration** (on site 1.5 hr)

**10-minute presentations**

- Overview: Lay of the Land, Simple Geology and Aquifer Interaction, History and Sediment Input to River (Dan Cadol, New Mexico Tech)
- Overview: Importance of this Reach, the Issues, and How Do We Get Water Here? (Adrian Oglesby, Utton Center)
- Water Management and Infrastructure Challenges (Jason Casuga, Middle Rio Grande Conservancy District [MRGCD])
- Farmers Adapting to Change (Cecilia Rosacker, Rio Grande Agricultural Land Trust)
- Environmental Perspective (Paul Tashjian, National Audubon Society)
- Q&A

**35-minute drive to Bosque Del Apache - Overlook** (on site 1 hr)

**10-minute presentations**

- Rio Grande Compact and River Maintenance Challenges (15 minutes; Page Pegram and Rolf Schmidt-Peterson, ISC)
- River Alignment and Moving Water Through Here (Cameron Herrington, invited, USBOR)
- Downriver Sections, Efficiency and Projects Planned (Jennifer Faler, Kenneth Richard, USBOR)
- Fire and Its Impacts to the Region (5 minutes; Dan Cadol, New Mexico Tech)
- Q&A

**30-minute drive back to Socorro through Bosque Del Apache**

## SOCIAL HOUR AND DINNER

**5:30–8:00:** Deju House, New Mexico Tech

Dinner served at 6:30pm

Keynote presentation at 7pm: Phoebe Suina

## DAY 2: 12.02.2022

### BREAKFAST

**7:30–8:00:** Deju House, New Mexico Tech

### MORNING SESSION

**8:00–9:15:** Presentations

- 50-Year Water Plan: Next Steps/Actions (10 minutes; Andrew Erdmann, ISC)
- Water Policy and Infrastructure Task Force Recommendations (20 minutes; Mike Hamman, OSE; Hannah Riseley-White, ISC; Rebecca Roose, NMED; Marquita Russel, New Mexico Finance Authority)
- A Charge for Adaptation and Resilience/Systems Thinking (10 minutes; Dagmar Llewellyn, USBOR)
- Brief Q&A

**9:15–9:30:** Break and restructure room

**9:30–12:00:** Set up and engage in concurrent breakout sessions

**12:00–1:00:** Lunch

### AFTERNOON SESSION

**1:00–2:30:** Report out, discussions and next steps

Adjourn 2:30 pm

# LOGISTICS AND MAPS

## HOTEL

- Participants who signed up for a hotel during registration will have a room arranged at Socorro Best Western, located at 1100 N. California St., Socorro, NM 87801: [View Map](https://goo.gl/maps/Zr16nizxVrdMk2Ac8) (https://goo.gl/maps/Zr16nizxVrdMk2Ac8)

## ICEBREAKER EVENT

### November 30, 5pm – 7:30pm

- New Mexico Bureau of Geology and Mineral Resources (Headen Building)
- Navigate to 1000 Bullock Blvd., Socorro, NM 87801 (located near the big water feature at corner of New Mexico Tech campus: [View Map](https://goo.gl/maps/RdTCYJPFdSwg8tr4A) (https://goo.gl/maps/RdTCYJPFdSwg8tr4A)

## WORKSHOP EVENTS

### December 1–2, 7:30am start

- Deju House, New Mexico Tech campus: [View Map](https://goo.gl/maps/8heC5J82cpbN9g6H6) (https://goo.gl/maps/8heC5J82cpbN9g6H6)
- Parking is at Macey Center



# REGISTERED ATTENDEES

- Gail Armstrong ..... House Representative, District 49
- Aron Balok ..... Pecos Valley Artesian Conservancy District
- Gilbert Benavides ..... Village of Los Ranchos, Water Authority Board, Trustee and Member
- Linda Benavides ..... House Representative, District 17
- Doug Bland ..... New Mexico Bureau of Geology and Mineral Resources
- Daniel Cadol ..... Professor, Hydrology, Earth & Environmental Sciences, New Mexico Tech
- Greg Carrasco ..... Commissioner, New Mexico Interstate Stream Commission
- Cally Carswell ..... Legislative Finance Committee
- Jason M. Casuga ..... Chief Engineer/CEO, Middle Rio Grande Conservancy District
- Aaron Chavez ..... Commissioner, New Mexico Interstate Stream Commission
- Bill Conner ..... Executive Director, New Mexico Rural Water Association
- Siah Correa Hemphill ..... Senator, District 28
- Crystal Diamond ..... Senator, District 35
- Carolyn Donnelly ..... U.S. Bureau of Reclamation
- Andrew Erdmann ..... New Mexico Interstate Stream Commission
- Alex Eubanks ..... Field Representative, U.S. Senator Martin Heinrich
- Jennifer Faler ..... Area Manager, U.S. Bureau of Reclamation
- Paula Garcia ..... Executive Director, New Mexico Acequia Association
- Robert Goldberg ..... Organization Insight, LLC
- DeChellie Gray ..... Field Representative, U.S. Representative Melanie Stansbury
- Mike A. Hamman ..... New Mexico State Engineer, Office of the State Engineer
- Pamelya P. Herndon ..... House Representative, District 28
- Susan Herrera ..... House Representative, District 41
- Martin Hickey ..... Senator, District 20
- Heather Himmelberger ..... Director, Southwest Environmental Finance Center
- Casey J. Ish ..... Middle Rio Grande Conservancy District
- Dagmar K. Llewellyn ..... U.S. Bureau of Reclamation
- Ramón M. Lucero ..... Regional Field Manager, Rural Community Assistance Corporation
- Tara Lujan ..... House Representative, District 48
- Nicholas A. Maestas ..... Field Representative, U.S. Senator Ben Ray Lujan
- Anne Marken ..... Middle Rio Grande Conservancy District
- Patrick McCarthy ..... Water Policy Officer, Thornburg Foundation
- Greg Nibert ..... House Representative, District 59
- Adrian Oglesby ..... Director, Utton Transboundary Resources Center, University of New Mexico
- Kristina Ortez ..... House Representative, District 42
- Page L. Pegram ..... New Mexico Interstate Stream Commission
- Fred M. Phillips ..... Professor Emeritus of Hydrology, New Mexico Tech
- Rob Pine ..... Hydrologist, New Mexico Bureau of Geology and Mineral Resources
- Kitty Pokorny ..... Aquifer Mapping, New Mexico Bureau of Geology and Mineral Resources

John S. Rhoderick ..... Water Protection Division, New Mexico Environment Department  
Ken Richard..... Program Coordinator/Project Manager, U.S. Bureau of Reclamation  
Hannah Riseley-White ..... Deputy Director, New Mexico Interstate Stream Commission  
Andrea Romero ..... House Representative, District 46  
Rene Romo ..... Field Representative, U.S. Senator Ben Ray Lujan  
Rebecca Roose..... Deputy Cabinet Secretary, New Mexico Environment Department  
Cecilia Rosacker ..... Executive Director, Rio Grande Agricultural Land Trust  
Marquita D. Russel..... CEO, New Mexico Finance Authority  
Peter Russell..... Commissioner, New Mexico Interstate Stream Commission  
Stephanie Russo Baca... Ombudsman Program Director & Staff Attorney, Utton Transboundary Resources Center  
Rolf Schmidt-Petersen..... Director, New Mexico Interstate Stream Commission  
Antoinette Sedillo Lopez..... Senator, District 16  
Nathan Small ..... House Representative, District 36  
Mimi Stewart ..... Senate President Pro Tem, Senator, District 17  
Phoebe K. Suina ..... High Water Mark, LLC  
Bill G. Tallman ..... Senator, District 18  
Paul Tashjian ..... Director of Freshwater Conservation, National Audubon Society  
Bruce Thomson..... Research Professor, University of New Mexico  
J. Michael Timmons..... Acting Director, New Mexico Bureau of Geology and Mineral Resources  
Stacy Timmons ..... New Mexico Bureau of Geology and Mineral Resources, New Mexico Tech  
Ashley Ward ..... Senior Policy Associate, Nicholas Institute, Duke University  
Peter Wirth ..... Senate Majority Leader, Senator, District 25  
Pat Woods ..... Senator, District 7  
Martin Zamora..... House Representative, District 63





# RECOMMENDED READING AND RESOURCES

Prior to and during the workshop, numerous additional reading materials were provided. Those available online are listed here, grouped by providing organization. Presenters' slides from the workshop are also listed online at <https://geoinfo.nmt.edu/wlw/home.cfm> with this open-file report.

## NEW MEXICO BUREAU OF GEOLOGY AND MINERAL RESOURCES

- [Bulletin 164 — Climate Change in New Mexico over the Next 50 Years: Impacts on Water Resources](https://geoinfo.nmt.edu/publications/monographs/bulletins/164/home.cfm) (<https://geoinfo.nmt.edu/publications/monographs/bulletins/164/home.cfm>)  
Nelia W. Dunbar, David S. Gutzler, Kristin S. Pearthree, Fred M. Phillips, Paul W. Bauer, Craig D. Allen, David DuBois, Michael D. Harvey, J. Phillip King, Leslie D. McFadden, Bruce M. Thomson, and Anne C. Tillery, 2022. The bulletin, which is the scientific foundation upon which New Mexico's 50-Year Water Plan is based, represents a compilation, assessment and integration of existing peer-reviewed published research, technical reports and datasets relevant to the broad topic of changes to New Mexico climate over the next 50 years and resultant impacts on water resources. This project, also known as the "Leap Ahead" analysis, identifies significant data and modeling gaps and uncertainties and suggests research directions to strengthen our understanding of climate and water resource changes.
- [Groundwater Story Map](https://nmt.maps.arcgis.com/apps/Cascade/index.html?appid=6be697576378473593115c22795593fo)  
(<https://nmt.maps.arcgis.com/apps/Cascade/index.html?appid=6be697576378473593115c22795593fo>)
- [Climate and Water Report 2022](https://geoinfo.nmt.edu/ClimatePanel/report/home.html)  
(<https://geoinfo.nmt.edu/ClimatePanel/report/home.html>)
- [Earth Matters Publications](https://geoinfo.nmt.edu/publications/periodicals/earthmatters/home.cfm)  
(<https://geoinfo.nmt.edu/publications/periodicals/earthmatters/home.cfm>)
- [Previous Decision Maker's Conference Materials](https://geoinfo.nmt.edu/publications/guides/decisionmakers/home.cfm)  
(<https://geoinfo.nmt.edu/publications/guides/decisionmakers/home.cfm>)
- [Healy Collaborative Groundwater Monitoring Network](https://geoinfo.nmt.edu/resources/water/cgmn/home.cfm)  
(<https://geoinfo.nmt.edu/resources/water/cgmn/home.cfm>)
- [REFERENCE on Groundwater Monitoring Networks from USGS](https://pubs.usgs.gov/circ/circ1217/pdf/circ1217_final.pdf)  
([https://pubs.usgs.gov/circ/circ1217/pdf/circ1217\\_final.pdf](https://pubs.usgs.gov/circ/circ1217/pdf/circ1217_final.pdf))

## NEW MEXICO OFFICE OF THE STATE ENGINEER / INTERSTATE STREAM COMMISSION

- [2018 New Mexico State Water Plan Part III: Legal Landmarks](https://www.ose.state.nm.us/Planning/SWP/2018/4-2018_SWP_Part_III_Legal%20Landmarks.pdf) provides information about historical New Mexico water law decisions, events and circumstances that shaped New Mexico's legal structures for water resource administration.  
([https://www.ose.state.nm.us/Planning/SWP/2018/4-2018\\_SWP\\_Part\\_III\\_Legal%20Landmarks.pdf](https://www.ose.state.nm.us/Planning/SWP/2018/4-2018_SWP_Part_III_Legal%20Landmarks.pdf))

## UTTON CENTER

- [Shortage Sharing Pilot Listening Session](https://uttoncenter.unm.edu/events/shortage-sharing-pilot-listening-session/index.html)  
(<https://uttoncenter.unm.edu/events/shortage-sharing-pilot-listening-session/index.html>)
- [Water Matters! \(2015\)](https://uttoncenter.unm.edu/resources/research-resources/water-matters-.html)  
(<https://uttoncenter.unm.edu/resources/research-resources/water-matters-.html>)

## NEW MEXICO ENVIRONMENT DEPARTMENT

### Water Policy and Infrastructure Task Force: Community Drinking Water, Wastewater and Stormwater Capacity, Infrastructure and Finance Workgroup Related Efforts and Resources

- **Legislative Finance Committee (LFC) Capital Outlay Subcommittee:**  
August: [2023 capital outlay initiatives](https://nmlegis.gov/handouts/ALFC%20081722%20Item%206%20-%202023%20Capital%20Outlay%20Initiatives%20August%202022.pdf) (https://nmlegis.gov/handouts/ALFC%20081722%20Item%206%20-%202023%20Capital%20Outlay%20Initiatives%20August%202022.pdf),  
June: [Policy Options to Improve Project Successes](https://nmlegis.gov/handouts/ALFC%20061522%20Item%2010%20TAB%20-%20D.pdf) (https://nmlegis.gov/handouts/ALFC%20061522%20Item%2010%20TAB%20-%20D.pdf)
- **Rural Economic Opportunities Task Force (REOTF):**  
Interested in proposals to address rural water infrastructure needs; [all 2022 meeting agendas and materials](https://nmlegis.gov/Committee/Interim_Committee?CommitteeCode=REOTF) (https://nmlegis.gov/Committee/Interim\_Committee?CommitteeCode=REOTF);  
[August 2022 Agenda](https://nmlegis.gov/agendas/REOTFpageAug23.22.pdf) (https://nmlegis.gov/agendas/REOTFpageAug23.22.pdf)
- **New Mexico Public Regulation Commission:** Coordinating with NMED on new approaches to address small system issues for systems organized under Public Utility Act
- **Senator Peter Wirth and Representative Susan Herrera:** Regionalization bill (working with RCAC)
- **Water Finance Exchange:** Private non-profit providing financing and technical assistance to water and wastewater systems; interested in partnering with SWEFC to host a workshop in New Mexico focused on water infrastructure funding and capacity needs
- **Department of Finance and Administration (DFA) – Board of Finance:** [Limited funding available for emergencies](https://www.nmdfa.state.nm.us/board-of-finance/emergency-loans/) (https://www.nmdfa.state.nm.us/board-of-finance/emergency-loans/)
- **Legislative Finance Committee Evaluation Staff:**  
[State-Funded Water Projects evaluation \(June 2021\)](https://nmlegis.gov/Entity/LFC/Documents/Program_Evaluation_Reports/State-Funded%20Water%20Projects.pdf) (https://nmlegis.gov/Entity/LFC/Documents/Program\_Evaluation\_Reports/State-Funded%20Water%20Projects.pdf)
- **Economic Development Department Statewide Strategic Plan:** Recommendation to “Establish a competitive fund for regional, local, tribal, and nonprofit organizations to provide the matching funds required by EDA, USDA, and other similar grants.” (https://eddstateplan.com/)
- **Southwest Environmental Finance Center:** [Report: Infrastructure Funding for Community Water Systems in New Mexico, Including Tribal Community Systems](https://swefc.unm.edu/home/wp-content/uploads/2022/04/InfrastructureFundingReport_SWEFC_Final_3-8-2022.pdf) (https://swefc.unm.edu/home/wp-content/uploads/2022/04/InfrastructureFundingReport\_SWEFC\_Final\_3-8-2022.pdf)
- **Rural Communities Assistance Partnership:**  
[Multiple reports, guides and resources on small dw/ww system issues and regionalization](https://www.rcap.org/managerialfinancialhub/regionalization-partnerships/) (https://www.rcap.org/managerialfinancialhub/regionalization-partnerships/)
- **Pivotal New Mexico (for REOTF):** [Rural Infrastructure Needs Study](https://www.nmlegis.gov/Sessions/InterimCommittees/REOTF/2021/Rural%20Infrastructure%20Needs%20Study%202021.pdf) (Dec. 2021) (https://www.nmlegis.gov/Sessions/InterimCommittees/REOTF/2021/Rural%20Infrastructure%20Needs%20Study%202021.pdf)
- **Water Trust Board process and policy revisions:** Recent changes to address increased funding and common barriers include incentivizing consolidation, emphasizing planning and asset management, increasing opportunities for small systems and reducing match requirements in certain circumstances (https://www.nmfinance.com/water-trust-board/)
- [Leap Ahead Report and 50-Year Water Plan](https://engagemwater.org/new-mexico-50-year-water-plan) (https://engagemwater.org/new-mexico-50-year-water-plan)
- **Aspen Institute and Nicholas Institute for Environmental Policy Solutions:**  
[Toward a National Water Affordability Strategy: Report from the Aspen-Nicholas Roundtable Series on Water Affordability](https://www.aspeninstitute.org/publications/toward-a-national-water-affordability-strategy-report-from-the-aspen-nicholas-roundtable-series-on-water-affordability/) (See Action 5: Invest in Managing and reducing Costs of Water Services While Ensuring Quality) (https://www.aspeninstitute.org/publications/toward-a-national-water-affordability-strategy-report-from-the-aspen-nicholas-roundtable-series-on-water-affordability/)
- **FUNDIT** (http://nmfundit.org): [Presentation at 8/23/22 REOTF](https://nmlegis.gov/handouts/REOTF%20082322%20Item%203%20Fund%20IT.pdf) (https://nmlegis.gov/handouts/REOTF%20082322%20Item%203%20Fund%20IT.pdf)

- [EPA and USDA Closing the Wastewater Access Gap Initiative](https://www.epa.gov/water-infrastructure/closing-americas-wastewater-access-gap-community-initiative): Targeted and sustained technical assistance for unsewered or undersewered communities; Chapparal in Dona Ana County and Kewa Pueblo are two of 11 communities in the U.S. in the first phase of the program (<https://www.epa.gov/water-infrastructure/closing-americas-wastewater-access-gap-community-initiative>)
- **EPA Enforcement and Compliance History Online: [Compliance data](https://echo.epa.gov/facilities/facility-search)** on public water systems and wastewater treatment plants in New Mexico (<https://echo.epa.gov/facilities/facility-search>)
- **NMED: [Drinking Water Watch](https://dww.water.net.env.nm.gov/NMDWW/)** for information about public water systems (<https://dww.water.net.env.nm.gov/NMDWW/>)
- [New Mexico Water Data Initiative](https://newmexicowaterdata.org/) (<https://newmexicowaterdata.org/>)
- **[Utility Operator Certification Program, NMED](https://www.env.nm.gov/drinking_water/utility-operator-certification-program/)**: Certification exams and training/support for certified water and wastewater operators in New Mexico ([https://www.env.nm.gov/drinking\\_water/utility-operator-certification-program/](https://www.env.nm.gov/drinking_water/utility-operator-certification-program/))
- [EPA Water Sector Workforce Initiative](https://www.epa.gov/sites/default/files/2020-11/documents/americas_water_sector_workforce_initiative_final.pdf) ([https://www.epa.gov/sites/default/files/2020-11/documents/americas\\_water\\_sector\\_workforce\\_initiative\\_final.pdf](https://www.epa.gov/sites/default/files/2020-11/documents/americas_water_sector_workforce_initiative_final.pdf))
- [EPA Water Infrastructure Workforce Development Program](https://www.epa.gov/sustainable-water-infrastructure/innovative-water-infrastructure-workforce-development-program) (<https://www.epa.gov/sustainable-water-infrastructure/innovative-water-infrastructure-workforce-development-program>)

## NATIONAL CONFERENCE OF STATE LEGISLATURES

- [Policy Report: State Water Governance: Approaches from Six Western States](https://www.ncsl.org/research/environment-and-natural-resources/state-water-governance.aspx) (<https://www.ncsl.org/research/environment-and-natural-resources/state-water-governance.aspx>)
- [Policy Brief: State Policy Options for Green Infrastructure](https://www.ncsl.org/research/environment-and-natural-resources/state-policy-options-for-green-infrastructure.aspx) (<https://www.ncsl.org/research/environment-and-natural-resources/state-policy-options-for-green-infrastructure.aspx>)
- [Policy Brief: State Policy Options for Small and Rural Water Systems](https://www.ncsl.org/research/environment-and-natural-resources/state-policy-options-for-small-and-rural-water-systems.aspx) (<https://www.ncsl.org/research/environment-and-natural-resources/state-policy-options-for-small-and-rural-water-systems.aspx>)

## RIO GRANDE AGRICULTURAL LAND TRUST

- [Rio Grande Agricultural Land Trust](https://rgalt.org/) (<https://rgalt.org/>)
- [Celebrating 25 Years of Conservation](https://rgalt.org/wp-content/uploads/2022/08/RGALT-fall-2022-Newsletter-final.pdf) (<https://rgalt.org/wp-content/uploads/2022/08/RGALT-fall-2022-Newsletter-final.pdf>)

## WORLD WILDLIFE FUND

- [A Report Card for the Upper Rio Grande Basin](https://www.worldwildlife.org/publications/a-report-card-for-the-upper-rio-grande-basin) (<https://www.worldwildlife.org/publications/a-report-card-for-the-upper-rio-grande-basin>)

# PRESENTER BIOS AND CONTACT INFORMATION



## **DOUG BLAND**

**Event lead, New Mexico Bureau of Geology and Mineral Resources**  
[dmbland@comcast.net](mailto:dmbland@comcast.net)

Doug Bland worked for the New Mexico Bureau of Geology and Mineral Resources from 2004 through 2015 and again in 2022 on educational programs and conferences on natural resource topics, including decision-makers field conferences. He served as director of the Mining and Minerals Division of the New Mexico Energy, Minerals and Natural Resources Department from 1998 through 2002, where he was responsible for overseeing environmental protection and permitting of mine sites. He also held various technical and managerial positions in the Mining and Minerals Division between 1989 and 1998. In addition, his experience includes 12 years in the mining and petroleum industries. He holds BS and MS degrees in geology from Virginia Tech and the University of Wyoming.



## **DANIEL CADOL**

**Associate Professor, Earth and Environmental Sciences, New Mexico Tech**  
[daniel.cadol@nmt.edu](mailto:daniel.cadol@nmt.edu) | 575-835-5645

Daniel Cadol is an Associate Professor of Hydrology at New Mexico Tech, having joined the faculty in 2012. His doctoral training was in geomorphology (Colorado State University, 2010). Dan's research in New Mexico has taken three main directions: working to better understand sediment transport and groundwater recharge during flash floods in ephemeral channels (with the U.S. Bureau of Reclamation, New Mexico Bureau of Geology and Mineral Resources, and U.S. Army Corps of Engineers), looking at the hydrologic and geomorphic effects of wildfires (working with the City of Santa Fe, Valles Caldera National Preserve, and New Mexico Established Program to Stimulate Competitive Research), and using remote sensing products and methods to develop a soil moisture balance model covering New Mexico in order to estimate groundwater recharge (with New Mexico Water Resources Research Institute and New Mexico Bureau of Geology and Mineral Resources). He is currently advising three MS and two PhD students.



**JASON CASUGA**

**Chief Engineer/CEO, Middle Rio Grande Conservancy District**

**505-247-0234 ext. 1380**

Jason M. Casuga is the Chief Engineer/CEO for the Middle Rio Grande Conservancy District (MRGCD), located in Albuquerque, New Mexico. As a professional engineer with over 16 years of experience in water resources that spans both the private and public sectors, Jason has spent the last 12 years working within the Middle Rio Grande Valley. Prior to being appointed as the Chief Engineer/CEO in February 2022, Jason was MRGCD’s Chief Operations Officer, responsible for the agency’s technical services and field maintenance divisions.

Before joining MRGCD in June 2016, Jason was a River Maintenance Engineer and Project Manager at the U.S. Bureau of Reclamation. In this role, Jason was responsible for managing river maintenance and habitat restoration projects along the Rio Grande from Velarde, New Mexico, to Elephant Butte Reservoir. Jason was raised in Dexter, New Mexico, and has an undergraduate degree in Civil Engineering from New Mexico State University.



**BILL CONNER**

**Executive Director, New Mexico Rural Water Association**

**bill@nmrwa.org | O: 505-884-1031 | C: 505-553-1548**



**CAROLYN DONNELLY**

**Albuquerque Water Operations Supervisor, U.S. Bureau of Reclamation**

**cdonnelly@usbr.gov | 505-462-3607**

Carolyn Donnelly is a supervisory civil engineer, hydraulic/hydrologic, for the U.S. Bureau of Reclamation in Albuquerque, New Mexico. She is a native New Mexican who holds bachelor’s and master’s degrees in Civil Engineering from the University of New Mexico. She began her engineering career as a consulting engineer, performing a variety of hydrologic and hydraulic studies. In her current position at Reclamation, she is responsible for water operations on numerous Reclamation Projects: San Juan–Chama, Middle Rio Grande, Carlsbad, and Rio Grande Project. She is an expert in the complicated and intricate operations that allow project operations to remain in compliance with legal and environmental constraints. She is a licensed professional engineer in the state of New Mexico.



**ANDREW ERDMANN**

**Water Planning Program Manager, New Mexico Interstate Stream Commission**

[andrew.erdmann@ose.nm.gov](mailto:andrew.erdmann@ose.nm.gov) | 505-231-1910

Andrew Erdmann is the manager of the State Water Planning Program at the New Mexico Interstate Stream Commission. The responsibilities for the State Water Planning Program include the 50-Year Water Plan, the State Water Plan, and Regional Water Plans. Andrew has over 15 years of experience working with water management in New Mexico including work for the U.S. Forest Service, the New Mexico Office of the State Engineer, the City of Santa Fe and now the New Mexico Interstate Stream Commission



**JENNIFER FALER**

**Albuquerque Area Office Manager, U.S. Bureau of Reclamation**

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**MIKE HAMMAN**

**NM State Engineer, New Mexico Office of the State Engineer**

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Mike Hamman served as the governor’s state water advisor prior to becoming appointed as the New Mexico State Engineer. Hamman served as the chief engineer and chief executive officer for the Middle Rio Grande Conservancy District, overseeing river flood control, drainage and irrigation that includes managing 30,000 acres of bosque lands and coordinating with multiple jurisdictions at the local, state and tribal levels to deliver water to 60,000 acres of irrigated farmlands. Prior to that, he worked for 17 years at the U.S. Bureau of Reclamation, ending his tenure there managing multiple federal water projects from the San Luis Valley in Colorado to Fort Quitman in Texas. He also worked for the Interstate Stream Commission, the City of Santa Fe and the Jicarilla Apache Nation, where he was instrumental in the development of the nation’s \$45-million water and wastewater treatment and delivery systems project. Hamman has served on the New Mexico Interstate Stream Commission since 2019. He was raised in Taos, New Mexico and is a registered professional engineer with a civil engineering degree from the University of New Mexico.



**HEATHER HIMMELBERGER**

**Director, Southwest Environmental Finance Center**

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Heather Himmelberger is a registered professional engineer with 28+ years of experience working with water and wastewater utilities and in the environmental arena. She has a BS in Environmental Engineering from Penn State University and an MS in Environmental Engineering from Johns Hopkins University. She is currently working on a PhD in Civil Engineering at the University of New Mexico. She served as the Director of the New Mexico Environmental Finance Center from 1996 to 2012 and became Director of the Southwest Environmental Finance Center in 2013. As Director, she has assisted state, local and tribal governments with the broad financial implications of providing environmental services, such as water and wastewater, and complying with state and federal regulations. Heather has served as an expert witness to EPA's Environmental Financial Advisory Board (EFAB) and was appointed an official board member to EFAB in spring 2014. Heather has conducted numerous studies related to water loss which investigated water loss technologies and their applicability. In addition, she has worked on a Water Research Foundation project that is developing water loss training for small systems.



**DAGMAR LLEWELLYN**

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Dagmar Llewellyn has consulted and managed water-resource projects across the United States and abroad for 37 years. For the past 22 years, her work for Reclamation and as a contractor to the State of New Mexico has focused on water, river and environmental management in the Rio Grande Basin of Colorado, New Mexico and Texas, with emphasis on working with partners to develop adaptations to changing hydroclimate conditions.



**RAMÓN LUCERO**

**Regional Field Manager, Rural Community Assistance Corporation**

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Ramón Lucero is the proud father of two sons and five grandchildren. Ramón's origins are in a small community by the name of San Ysidro Sur along the Pecos River in San Miguel County. Ramón volunteered for the mutual domestic water consumer's association as a certified water operator and board member and later for a regional water utility by the name of El Valle Water Alliance for a total of 25 years. During this same time, Ramón worked as a Project Manager for an engineering firm, where he supported community water systems for 20 years. Currently, Ramón is a Regional Field Manager for the Rural Community Assistance Corporation, where he continues to support community water systems.



**ADRIAN OGELSBY**

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Adrian Oglesby began his tenure as the Director of Utton Center in 2014. He is a graduate of the University of New Mexico School of Law and has practiced water law since 2000, including working with the Utton Center on many projects. Adrian’s legal career has been focused on river and riparian restoration, agricultural preservation, efficient water management, governmental accountability and fish and wildlife conservation. He has advised irrigation districts, acequias, Pueblo and tribal governments, farmers, environmental organizations and local water providers. He established and managed the New Mexico Living Rivers Program for The Nature Conservancy and served as a Special Assistant Attorney General for the New Mexico Interstate Stream Commission. He is currently the Chair of the Bosque Ecosystem Monitoring Program. He is a past Vice Chair of the Middle Rio Grande Conservancy District, past Chair of the Natural Resources, Energy and Environmental Law section of the New Mexico State Bar and past President of the New Mexico Riparian Council.



**PAGE PEGRAM**

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Page Pegram is a hydrogeologist with 25 years experience in groundwater and surface water management in both the private sector and state government. She is currently the Rio Grande Basin Manager for the New Mexico Interstate Stream Commission and coordinates all aspects of Rio Grande Compact and Endangered Species Act compliance in the Rio Grande basin for the state of New Mexico. She is also New Mexico’s Engineer Adviser for the Rio Grande Compact. She has a BS in Geology from Brown University and an MS in Hydrology from New Mexico Tech.



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**ROB PINE**

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Rob Pine earned an MS in Mathematics from the University of Utah and an MS in Hydrology from New Mexico Tech. He then went to work for the State of New Mexico for 28 years in a variety of jobs. He worked for the New Mexico Environment Department for 14 years doing groundwater permitting, investigating groundwater contamination and working with drinking water systems to improve their managerial and operational capacity. Rob worked for the Energy, Minerals and Natural Resources Department for 6 years on mining reclamation and designed the Oil Conservation Division's online permitting system. Then he worked with the Office of the State Engineer (OSE) for 8 years managing their adjudication database and in the Hydrology Bureau doing water right impact analysis and expert testimony. He is currently working on a project for the New Mexico Bureau of Geology and Mineral Resources with Stacy Timmons designing a statewide groundwater monitoring system with funding from the Thornburg Foundation. He is also managing OSE's adjudication database and assisting the Environmental Defense Fund with groundwater management issues in New Mexico.

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## **CECILIA ROSACKER**

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Cecilia Rosacker is the Director of the Rio Grande Agricultural Land Trust (RGALT, [www.rgalt.org](http://www.rgalt.org)) since 2007. RGALT was founded at Cecilia's kitchen table by fellow farmers, ecologists and conservationists all interested in protecting the Rio Grande and its floodplain—the farms and riparian lands.

She has been a leader in the middle Rio Grande landscape conservation initiative to protect agricultural land, wildlife habitat and water. This leadership role requires developing partnerships and implementing collaborative efforts to access federal and state funding for conservation easements and habitat/restoration projects. RGALT serves culturally diverse and primarily historically underserved landowners, where access to funding for land and water conservation is essential.

In addition, Cecilia has been a leader in creating agricultural markets for farmers. She started the Socorro Farmer's Market, and for 10 years she served on New Mexico Farmer's Market board, helping to start markets all over the state. She also served on the New Mexico Food and Agricultural Council for 5 years, working to create agriculture markets and a healthier New Mexico.

Cecilia owns and operates a 30-acre certified organic farm in Polvadera, New Mexico (north of Socorro) established in 1997. Cecilia's Organics provides vegetables, flowers and beef to a number of Albuquerque's fine restaurants, grocery stores in Albuquerque, as well as Grower's Markets in Albuquerque.

As a landowner and a farmer, she is able to bring the landowners' perspective to her work in protecting private lands.



## **REBECCA ROOSE**

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As Deputy Cabinet Secretary of Administration at the New Mexico Environment Department (NMED), Rebecca Roose guides key policy and regulatory priorities, including state and federal public health and environmental initiatives, and coordinates the Department's activities related to infrastructure investments. Previously, Ms. Roose served as the Department's Water Protection Division Director from 2019 through May 2021, where she led surface and groundwater quality, drinking water protection and wastewater infrastructure finance programs for the State. Prior to joining NMED, Ms. Roose worked for the U.S. Environmental Protection Agency for over 13 years. At EPA headquarters, Ms. Roose devoted 11 years to supporting EPA, states and tribes with implementation of the Clean Water Act and other federal programs. During her last 2 years at EPA, she served as Senior Advisor for Tribal Capacity Development in the American Indian Environmental Office. Ms. Roose earned her law degree and natural resources law certificate from the University of New Mexico and her bachelor's degree in Geography from Valparaiso University.

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Stephanie Russo Baca is currently the staff attorney and Ombudsman Program Director at the Utton Transboundary Resources Center located at the University of New Mexico in Albuquerque, New Mexico. In both roles that Russo Baca fulfills, her mission is to support and represent constituents in a fair and unbiased manner. As the Ombudsman Program Director, Stephanie guides the activities of the Joe M. Stell Ombudsman Program, which is a statewide program that provides impartial adjudication information and procedural guidance to unrepresented water right claimants in the state of New Mexico. Stephanie contributes significantly to the Utton Center’s overall mission of providing objective research-based public service to New Mexico’s communities on issues related to energy, climate change, ecological conservation, food systems and international natural resource management. She holds both the Indian Law and Natural Resources and Environmental Law Certificates from the University of New Mexico School of Law.



**ROLF SCHMIDT-PETERSON**

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Rolf Schmidt-Petersen is the Director of the New Mexico Interstate Stream Commission (NMISC)—New Mexico’s interstate water compact, water planning, investigation and development agency. He also serves as New Mexico’s Canadian River Compact Commissioner, an alternate Colorado River Compact Principal, an alternate Upper Colorado Compact Commissioner and on the Colorado River Salinity Control Forum. He has over 30 years of experience working on water resource management, interstate compact, endangered species, environmental and hydrology related issues in New Mexico and the southwestern United States as the NMISC’s Colorado River Basin Bureau Chief, the Rio Grande Basin Bureau Chief and as a hydrologic consultant.



## **PHOEBE SUINA**

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With a background in environmental engineering and management, Ms. Suina has managed multi-million-dollar emergency and disaster assistance projects for the Federal Emergency Management Agency, in addition to her previous career at the U.S. Department of Energy (DOE) and Los Alamos National Laboratory (LANL) for post-Cerro Grande fire erosion, sediment control, debris flow and flood hazard mitigation. She also has led environmental compliance and environmental remediation efforts for over 10 years on DOE and LANL projects. Ms. Suina has also worked for the U.S. Bureau of Reclamation, where she completed water resources engineering project design, operation and maintenance on the nation's rivers and waterways.

Ms. Suina currently manages emergency and disaster assistance projects for High Water Mark's clients. This involves meetings with client and funding agency staff, documentation of all project activities, expenditures and records management and project closeout. She is meticulous in her record keeping and takes pride in her attention to detail.

Ms. Suina earned bachelor degrees in environmental engineering and engineering sciences and a graduate degree in engineering management, all from the Thayer School of Engineering at Dartmouth College. Phoebe is from the Pueblos of San Felipe and Cochiti. She is very active in the traditional culture of her respective Pueblos. She continues to assist and share her knowledge and skills with the Pueblo communities.



## **PAUL TASHJIAN**

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Paul Tashjian joined Audubon Southwest in March of 2018 to establish a comprehensive water and restoration program for the Rio Grande in New Mexico. His expertise includes water management and water protection for wildlife, river restoration, water law and wetland workshop coordination. Paul has expanded Audubon's role in the Rio Grande through building capacity through federal and state grants, representation on federal water teams and coordination with many partners from irrigation districts to other non-profit environmental organizations. His work developing water market strategies for environmental flows in the Rio Grande has expanded New Mexico's ability to protect our rivers and wetlands.

Prior to joining Audubon, Paul spent 26 years working as a regional hydrologist for the U.S. Fish and Wildlife Service in the southwestern United States. He coordinated the quantification and protection of water rights on national wildlife refuges with Department of Interior solicitors and federal and state water management agencies, conducted numerous studies and workshops to improve wetland management on refuges and implemented river restoration projects throughout the southwestern United States.

Paul enjoys fishing, photography and family. He also is quite fond of burritos.



## **BRUCE THOMSON**

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Bruce Thomson, PhD, PE, is Research Professor and Professor Emeritus in the Department of Civil, Construction and Environmental Engineering at the University of New Mexico (UNM). He was Director of UNM's Water Resources Program from 2006 to 2013. He has a BS in Civil Engineering from the University of California at Davis and MS and PhD degrees in Environmental Science and Engineering from Rice University in Houston, Texas.

Dr. Thomson's research has focused on the chemistry and treatment of metals and metalloids in water, water resources of the southwestern U.S., and the relationship between energy development and water. He has published over 70 journal articles, several book chapters and papers in over 150 conference proceedings. Dr. Thomson has served on many federal, state and local committees involved with management and protection of water resources. He is an elected member and current Vice Chair of the Board of Directors of the Albuquerque Metropolitan Arroyo Flood Control Authority. Dr. Thomson is a licensed Professional Engineer in the state of New Mexico and is among the last practicing engineers in the state who know how to use a slide rule.



## **STACY TIMMONS**

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Stacy Timmons is an Associate Director of Hydrogeology programs at the New Mexico state geologic survey—the New Mexico Bureau of Geology and Mineral Resources in Socorro, New Mexico, at New Mexico Tech. Stacy has a passion for developing an understanding of regional-scale hydrogeology, especially supporting important societal issues and decision-making. Helping people understand their own water resources, especially groundwater, has been at the center of her work since she completed her education in geology (MS from Oregon State University in 2002 and BS from University of Cincinnati in 1999).

As a hydrogeologist working with the New Mexico Bureau of Geology and Mineral Resources since 2004, Stacy has worked around the state on hydrologic and geologic research topics, in aquifer regions with a range of complexity. Her work involves collecting and managing data including water quality and quantity data, mapping aquifers and helping to build an understanding of the state's bedrock, alluvial and volcanic aquifers and their relationship with groundwater recharge and surface water. Starting in 2019, Stacy also began leading the implementation of the Water Data Act, a statute that works to improve management, sharing and integration of the state's water data from multiple agencies and organizations. Stacy also serves as the vice-chair for the New Mexico Interstate Stream Commission.



# SUMMARY OF BREAKOUT SESSIONS

## 2022 WATER LEADERS WORKSHOP BREAKOUT SESSION NOTES

On day 2 of the Water Leaders Workshop (December 2, 2022), workshop attendees were provided time and space to self-organize into concurrent breakout sessions. Session topics were designed on the spot as a result of interest, ideas or themes from the workshop presentations and discussions. The following text include raw notes and summary points from each of the breakout session themes. It includes recommendations, ideas that the groups discussed and ideas provided to the larger group during reporting out.

### THEME 1:

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#### How to organize water task force recommendations and how to ensure passage of a legislative agenda

##### ISSUES IDENTIFIED

- Problem: no dedicated leadership (in governor's office and in legislature) for the Water Policy and Infrastructure Task Force. Need to establish a dedicated champion/leader.
- Problem: Governor's position is not clear, particularly for recurring and non-recurring efforts/funding. What are the tasks for next steps, given the governor saying "Think Big" now? How can we support the governor to make things happen? Who is the best person to do this work?
- Need leadership person in governor's office for water issues.
- New House leadership coming
- Venn diagram: 1) Water Task Force, 2) governor's executive priorities and 50-Year Water Plan, 3) legislative priorities. The overlap point is the legislative agenda in 2023. How can we capitalize on this?

##### RECOMMENDATIONS

- Next steps: OSE/ISE/NMED/DFA – advocate at governor's office for **unified package** that can implement recommendations.
- Identify a water "czar" to lead this and other initiatives between agencies and executive/legislature.
- Consider a water caucus of some type (a sustainable model to get the legislature to continually think about water, staffed and thinking about issues on regular basis). Legislators are slammed when in session, but maybe it would be good to invite them to an annual meeting outside of the session to address hot topics and hear from experts.
- Water issues NOT going away. Need multiyear consistency, strategy and tactical action plan.
- Invite Ag and Natural Resources and Conservation committees. Perhaps meet at beginning of interim session and replicate what this Water Leaders Workshop has done. Do this annually.
  - » In such a meeting, more subject matter experts than legislators is better.
  - » Just want to hear from experts, have dialogue, then break out from there.
  - » Continue to convene! Continue to educate.
- Get sponsors or backers on the different issues for the committees and decide what to tackle next.

## THEME 2:

### How to fund our water future

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- To begin with, we need to start thinking like we're rich—New Mexico the RICH state, not the victim mentality. There is currently significant additional funding available to fund new water projects.

#### ISSUES IDENTIFIED

- Current vacancy rates in state agencies can be a misrepresentation of reality. We have problems in how things are portrayed at the legislature, such as thinking that vacancy rates are the main source of our current inability to move projects forward.
- Workforce compensation is not enough. SPO/LFC/DFA pay bands are not working. SPO is a major issue, as they control pay bands. People don't want to come work for low salaries. LFC lowballs everything, which contributes to the current high vacancy rate.
- Many agencies are challenged to maintain flat budgets or zero-sum budgets. For example, at the New Mexico Bureau of Geology and Mineral Resources, which is under HED, there are restrictions prohibiting cutting off funding for other sections of agency/university.
- There are impediments to seeking/using federal funds (i.e., coming up with matching funds makes it harder for some agencies to apply for funding).

#### RECOMMENDATIONS

- Work with SPO and LFC to increase pay bands.
  - » Build more flexibility into SPO and their regulation; work with new person at SPO.
  - » Pay bands need to move up 7%–20%.
  - » This needs to come with a matched agency budget appropriate to support this, especially for agencies who have a mixed funding source (i.e., NMED).
  - » SPO gets renewed every new administration. Build consistency across administrations to endure change.
  - » Improve public image and consider having offices that have been closed since COVID (e.g., MVD, tax offices) reopen.
- Workforce development:
  - » Build an internship program in state agencies to help build workforce and agency capacity.
  - » Build more agency interaction with K–12 to get people into water workforce.
  - » Highlight a water conservation as a message.
  - » Develop a robust fund for water conservation. Consider implementing a fee for water use. Example: Charge \$2 per acre for agriculture, another rate for municipal; build a state fund for matching federal dollars. Similar to what HED has recently established (TEF).



## THEME 3:

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### Building interagency coordination: Water quality and quantity management and accountability

#### ISSUES IDENTIFIED

- Lots of people/agencies are involved with water issues. How can they all work together, and should we have someone in charge?
- Water quality/water quantity agencies siloed (compartmentalized)—NMED/OSE/ISC
- How does anyone keep track of all the efforts, including legislators and the public?
- What can be done to structure interaction better?

#### RECOMMENDATIONS

- Goal is to have data and transparency for the public, so everyone understands who is in charge. Some of this is addressed with water quality and quantity planning.
- TO DO:
  - » Identify what already exists for coordination and use those tools.
  - » Identify what is the current interplay of the administration and legislature. How do we work together and set priorities?
  - » What is a better model for institutionalizing a relationship between OSE/ISC and NMED?
- Keep state agencies as they are because a shakeup would be too disruptive. Assurance that work is being done effectively—mostly.
  - » Need to keep expertise and diversity of scope in each agency (i.e., air, water and land use in NMED, who talks to OSE).
  - » Federal law and state law intersection falls with NMED and OSE at different levels.
- We need to institutionalize cross pollination with collaborating agencies and include accountability.
  - » Have periodic committee/legislative requests to agencies to come present TOGETHER on specific topics.
  - » Institutionalize touch points. Heads of water agencies should be required to be on a council to build interaction consistency. A “natural resources huddle” into law?
  - » Previous model: Bill Hume functioned as water coordinator for the agencies. He worked with agencies and the governor’s office. It was a pathway of communication to the governor’s office.
- Intersections on these agencies and the leadership of the agencies tie into all of these next steps and better water resource management.

## THEME 4:

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### Groundwater management

#### ISSUES IDENTIFIED

- Perspectives are diverse—economically driven, agriculture and domestic needs, public supply.
- Need to define the values or goals of individual regions. These will vary depending on circumstances.
- District concepts work in some areas very well.
  - » Example: PVACD: Establish boundaries of aquifer. Build local governance. Adjudication process (time consuming and costly with current process/staffing). Locally funded (mill levy). Develop meter program and OSE water master to regulate, paid by district through mill levy. People will be locally invested in the outcome.
  - » Future includes ideas of “water banking.” Must have the flexibility to make adjustments as needed in future.
- Big issue: Who will enforce? Important consideration? OSE? Staff? Agencies currently lack the staff and the TOOLS to do this.
- Mining of aquifers is happening in some places; this is a reality, but sustainability can be achieved in some areas.
- Consider that economic drivers can motivate and help make this work.
- Water quality major issues: PFAS, LUSTs, salinity, naturally occurring contaminants.
- Management of deep brackish resources: need to establish guidelines and aquifer boundaries.

#### RECOMMENDATIONS

- We must address tribal water rights so we can get those clarified and accounted for, as they often have priority.
- Add meters, monitoring and identification of local values toward groundwater management.
- Take time now to discuss and learn. Educate and inform everyone on their local groundwater issues.
- We must make decisions about regions and their boundaries, which should be somewhat locally driven, built on education/information process.
- Build ideas at the local level for funding and management ideas.
- Prepare for and proceed with adjudication now. Tidy up and get the ducks in order.

## THEME 5:

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### Federal and state funding for water projects

#### ISSUES IDENTIFIED

- No money should be left on the table unspent.
- Challenge of figuring out how best to access funding needed for water projects; requires some technical capacity and fiscally responsible entity (or staff/resource) to build local projects.
- Already lots of collaboration out there that can be improved.
- Office of DFA: Federal Grants Bureau is a resource to help with writing grants.

#### RECOMMENDATIONS

- Have this section/office moved out from DFA to under the governor's office so it will be more visible/accessible.
- Alternative: There is a section under DFA already working very closely with DFA grants program; build or improve on this.
- Need to bring in resources to communities for grant writing.
- Train local/city/county governments learn how to get this funding and how to write grants.
  - » Consider working with New Mexico Counties (33 Leaders) to be the bridge.
- Fundit Program is under economic development. Make pitch to them and they try to help find funding to get it set up.
- Need additional staff at state agencies to build these funding opportunities and help communities take advantage of them.

## THEME 6:

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### Water supply/demand and water shortage sharing

#### ISSUES IDENTIFIED

- Water is a property right, but we're seeing less water supply.
- We need to come up with a plan for reduced water availability NOW.
- State needs to do some real accounting of the unaccounted for water losses (e.g. evaporation).
- Food security = national security. Need water to grow food.

#### RECOMMENDATIONS

- Currently shortage sharing agreement is through priority administration. Can use AWRM before adjudication happens to be creative in areas where adjudication hasn't happened yet.
- Look at all users collectively: M&I, ag, sovereign, domestic, environment (ESA), etc.
- Meet compact requirements of Rio Grande, including considerations related to climate change.
- Reduce water depletions. Make more efficient use of the water; explore additional rotational fallowing (don't buy and dry so much). Increase compensation for farmers to help them adjust.
- Use federal funding, such as Farm Bill 2023.
- Develop state-specific funding programs for water savings.
- Alternative water sources: let's continue to explore.
- Changing crop patterns: the market should decide. Growers already do this. Endorse voluntary farmer choice on crops.

# THEME 7:

## Resilience thinking and water planning

### ISSUES IDENTIFIED

- We are facing uncertainty in our water future.
- We are dealing with more extremes—i.e., extreme drought and flooding.
- There are no single-issue solutions in an interdependent/interrelated system (i.e., hydrology).
- Very hard for older water systems to innovate and improve while also building capacity.
- Resilience is being practiced all around the world. Book called Resilience Thinking. Community scale, in systems which have a lot of uncertainty.
- We can build resilience thinking, but we must plan and prepare for disturbance now and in the future.
- Need to have diversity in scale and participation.

### RECOMMENDATIONS

- Embrace resilient thinking as the new paradigm for water decision-making. Consider:
  - » Redundancy
  - » Flexibility
  - » Modularity
  - » Diversity
  - » Graceful failure
- First identify the systems and system components that are most valued; think about how they interrelate to each other. Identify the desired values; we have to make choices here that help to guide the framework.
  - » What do we need to keep?
  - » What do we want to keep?
  - » What can we lose?
  - » What we're going to lose? THEN THINK THROUGH: how can we do this gracefully?
  - » What do we need to change?
- Identify too what are things we DON'T want but may be highly resilient? Learn from this.
- Define scale, build redundancy and graceful failure modes.
- Build for modularity: i.e., acequias with groundwater well supplement or building back up supply for each other.
- Engineered systems CAN and will fail. Build it so it's not so catastrophic.
- IN PROGRESS: New Mexico Climate Change Task Force is preparing to release a 5-year plan which will include actions that require champions. Water portion: big emphasis on resiliency. There is more to do on this in 2023.
- Water and wastewater systems: training needed, make opportunities available.

