

2025



ENVIRONMENTAL FLOW WORKSHOP

PREPARED BY: ADRIAN OGLESBY, ANJALI BEAN, MARTHA COOPER
DAVÍD PILZ, AND SAIRIS PEREZ-GOMEZ



UTTON TRANSBOUNDARY
RESOURCES CENTER



Attendees of the 2025 Environmental Flows Workshop met in breakout groups to discuss while enjoying the grounds of Albuquerque's Rio Grande Nature Center.

SECTION 1: INTRODUCTION

The term environmental flows means different things to different people. For example, environmental flows might refer to the science underpinning instream flow recommendations; or environmental flows might refer to the tools used to legally allocate water to rivers; or it might most broadly refer to the question, “how much water does a river need to stay alive?” Workshop presentations and discussions covered all these topics and others.

On May 1st, 2025, the Utton Transboundary Center, in partnership with The Nature Conservancy and Western Resources Advocates, hosted a one-day workshop on environmental flows in New Mexico. The workshop was held at Albuquerque’s Rio Grande Nature Center in the floodplain of the Rio Grande. Over the course of a full day, individuals representing non-governmental organizations (NGOs), state and federal agencies, universities and others reviewed the status of environmental flows in the state, shared experiences working with tools to promote flows for the environment in New Mexico and discussed future opportunities to expand the scope and scale of the practice.

In 2010, the Utton Center and many other partners hosted a similar workshop and produced a [report](#), looking at opportunities to expand environmental flows in New Mexico. The sponsors believed it was time to revisit this topic, consider what accomplishments had been achieved in the intervening decade, and consider the challenges and opportunities that lie ahead. Participants in the 2025 workshop came largely from state agencies and nonprofits working on water in the state, but also included representatives from irrigation districts, the media, private sector, and academia. Participants shared an interest in supporting rivers and the many benefits they provide, as well as the need to broaden the interests and perspectives working on environmental flows.



Entrance to Albuquerque's Rio Grande Nature Center

1.1 PURPOSE AND STRUCTURE OF THIS REPORT

This report describes key insights and outcomes from the workshop. Rather than a detailed report-out on all that participants discussed, the purpose of this report is to capture themes and concepts that the environmental flow community and others can build upon in the future.

Referencing notes and recollections from the day, this brief report summarizes where workshop participants think environmental flow work in New Mexico can go and thoughts on some initial steps to get there. **The organization of this report reflects the flow of the workshop, moving from science to practice to the future.** The first section focuses on the science of environmental flows, briefly summarizing the state of knowledge and ongoing work before presenting key insights and suggestions that surfaced during the workshop about how science can best support environmental flow policy and implementation. The second section covers the practice of environmental flows in the state with a high-level description of the diverse ways of promoting and preserving water for environmental needs.

This discussion highlights both the number and diversity of tools available and in use (in New Mexico but also other states), as well as gaps and limitations that hinder success. The next section focuses on the future, addressing how workshop participants framed and discussed hopes and plans for environmental flows in New Mexico moving forward. A final section contains links to resources and information about many of the specific programs and topics that were discussed at the workshop, including links to the presentations.



Attendees of the 2025 Environmental Flows Workshop

1.2 SUMMARY OF INSIGHTS FROM THE WORKSHOP

Environmental flow information and tools exist across the state and people have a shared understanding of climate impacts on rivers. But we still have a long way to go to improve our work to enhance and protect environmental flows and build upon a patchwork of different projects and diverse approaches. Coordinating efforts and learning from one another will increase the scale and impact of projects. *Everyone who gathered shared the desire to continue conversations and work together.*

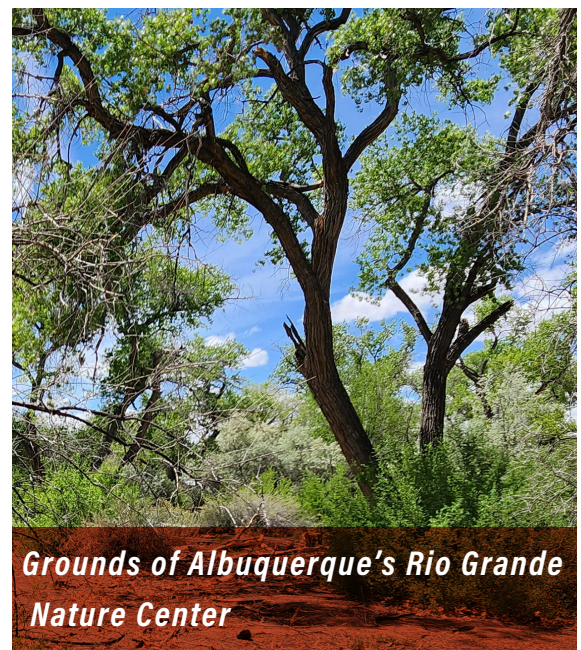
The tools and opportunities that have had the most success are those that provide multiple benefits and have diverse support. Focusing on opportunities that meet this multiple-benefit goal may help bring partners to the table who may not have been supportive of purely environmental water programs. The Rio Chama Flow Project and Jicarilla Apache Nation Water Sharing Agreement are two efforts that provide benefits to people, the river, and inform policy.

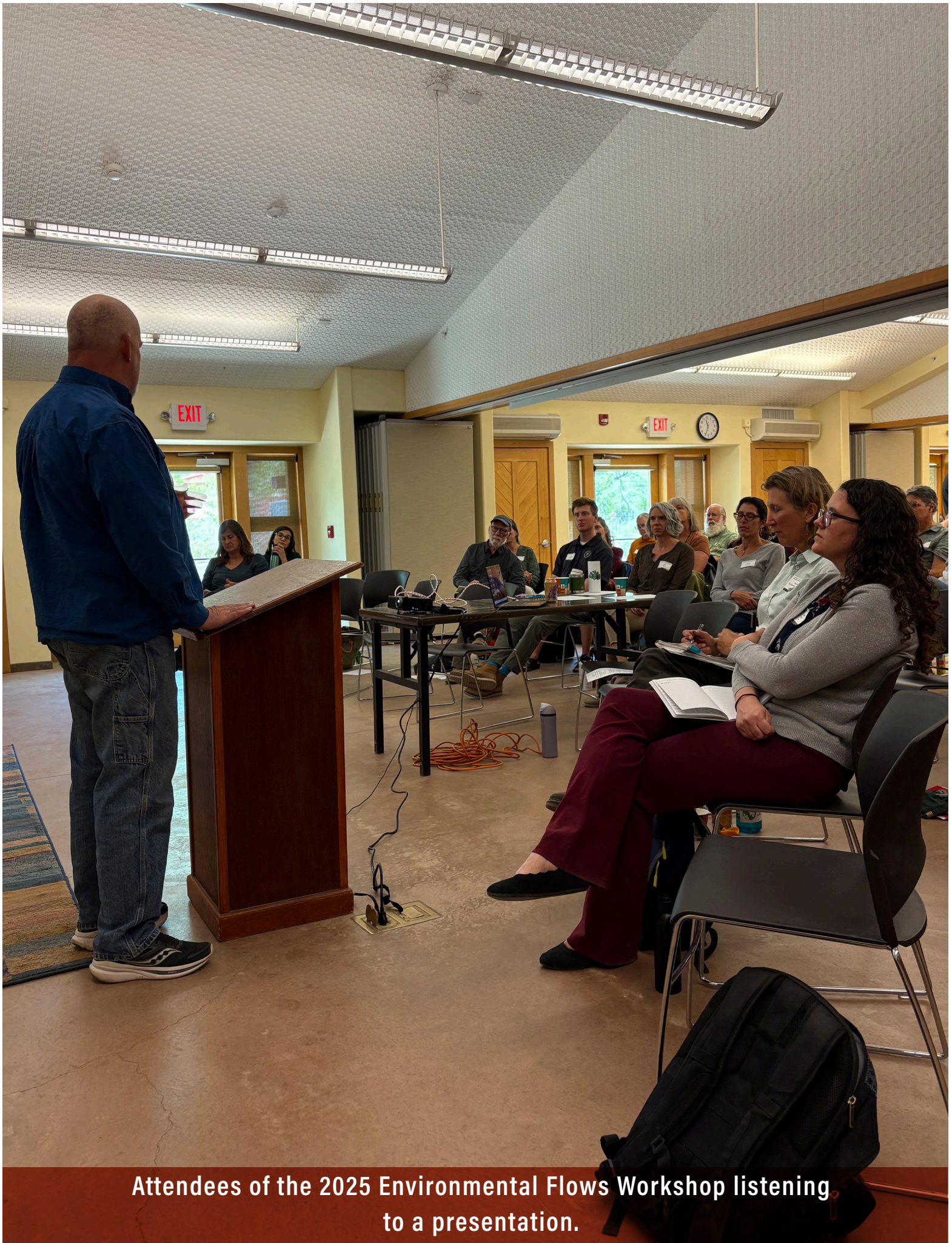
Water administration can enable or hamper environmental flows. Water management districts (PVACD & MRGCD) or groups of water users (like on the Rio Chama) offer an effective level of local water administration that can increase river flows through the use of flexible tools (like water leasing or shortage sharing programs) and effective enforcement. State agency administration does not yet adequately support environmental flows, due in part to capacity challenges for programs like Active Water Resources Management and the Strategic Water Reserve. Siloing of authorities among multiple agencies also hampers cross-team collaboration.

More engagement with other water stakeholders – including agricultural producers, acequias, and Tribes, Nations and Pueblos – is needed to understand perspectives and seek opportunities for meaningful work together. These communities and sovereign nations have managed water in New Mexico for centuries. Despite these challenges, participants agreed that opportunities exist today to expand and protect flows in New Mexico's rivers, taking advantage of new capacity and interest in the government, private and non-profit sectors.

Special thanks to all those who attended our Environmental Flows Workshop

Adrian Oglesby	Karen Menetrey
Aiden Manning	Katherine Walton
Amelia Barrow	Kelli Goodpasture
Andrew Hautzinger	Kristina Fisher
Anjali Bean	Laura Paskus
Aron Balok	Martha Cooper
Barney Austin	Pam Horner
Bob McCrea	Patrick McCarthy
Brian Richter	Paul Tashjian
Casey Ish	Peter Russell
Claire Conrad	Quinn Martine
Colleen	Rex Meyers
Cunningham	Rin Tara
Dagmar Llewellyn	Sairis Perez-Gomez
David Pilz	Steve Harris
Eliza Gilbert	Toner Mitchell
Elle Benson	Tricia Snyder
Emily Wolf	Tucker Davidson
Grace Haggerty	Tyler Lytash
Jack Marchetti	Vannesa Springer
Jill Wick	





Attendees of the 2025 Environmental Flows Workshop listening to a presentation.

SECTION 2: ENVIRONMENTAL FLOW SCIENCE IN NEW MEXICO

Panelists highlighted science developed to understand the environmental flow needs of New Mexico's major river basins.

2.1 KEY INSIGHTS

Several themes and observations emerged in the panelists presentations:

- Each basin has unique challenges and opportunities. The hydrology of each region, and the physical, social and political infrastructure available in the area impact the vision and capacity for environmental flow work on each river.
- Many different tools exist to help understand and prioritize flow in rivers, but success is often dependent on the legal and policy framework that is available in each area. Regions with less operational flexibility and fewer policy levers to pull have struggled to meet the ecosystem needs of rivers.
- Information around environmental flows is often dependent on individual programs and regional champions. In some cases, information is developed in response to external circumstances and associated funding (endangered species/compact delivery requirements).
- Science has been a key component in promoting and facilitating environmental flows in New Mexico. Where strong environmental flow recommendations exist and are paired with implementation of environmental flows, monitoring and adaptive management can enable us to learn from and improve our water management decisions.
- While the information may vary across the basins, we know enough to implement environmental flows, and can continue to learn along the way. But this restoration will take time: **it took 150 years to break our rivers, and it will take a long time to fix them.**

Workshop participants agreed that we have adequate science to act; we can continue to learn as we manage rivers for ecosystem benefits, collect data, and practice adaptive management, but **we need not wait for more science and studies.**

2.2 BASINS AND ACTIVITIES DISCUSSED

Statewide Summary of Environmental Flows Information: Barney Austin (Hazen)

In 2025 a team funded by The Nature Conservancy, Western Resource Advocates and NM Wild, compiled information for NGO's and the New Mexico Interstate Stream Commission in support of the Strategic Water Reserve. The project involves an annotated bibliography and spreadsheet detailing focal species and their habitats by river basin. A data viewer/web map has been developed with multiple layers which include water allocations, HUC designations or watershed delineations, impaired streams, and climate change data to help prioritize management areas and identify data gaps. The report was prepared for the New Mexico Interstate Stream Commission.

Rio Grande Basin Study NGO Sectoral Committee — Paul Tashjian (Audubon Southwest)

The Rio Grande Basin Study Program is a collaborative, cost-shared study led by Bureau of Reclamation evaluating future water supply and demand imbalances and ensuring sustainable water supplies by modeling potential future scenarios. The NGO Sectoral Committee focuses on defining environmental flow needs for six reaches of the Rio Grande in New Mexico. The Rio Chama Environmental Flow Hypothesis, which recognizes the importance of spring pulse events (10-year, 5-year, and 2-year) and low flow requirements, using indicator species provided a framework for this network. The process utilized geomorphic and ecological data, expert opinions, and observations. A peer-review workshop was held in August 2024, and the environmental flow report was finalized in April 2025. Modeling of selected strategies with BOR's Basin Study team is now underway.

Chama Flow Project — Dagmar Llewellyn (Bureau of Reclamation) & Steve Harris (Rio Grande Restoration)

The Chama Flow Project uses collaborative science as a basis for collaborative decision-making. This ecosystem has been altered by dams (Heron, El Vado, Abiquiu). An unintended 9,000 cubic feet per second (cfs) release in 2009 demonstrated positive ecological response—sediment moved, and willows were recruited. A 2012 study explored the baseline conditions for the river and laid the foundation for future studies. The project's goal is to use science, often collected within the community, to improve ecology without affecting downstream water users, and to provide multiple benefits to people and river function.

[Rio Chama Reservoir Operations Pilot Overview and Transmittal Report](#)

[The Law of the Rio Chama San Juan Chama Project, New Mexico Lower Colorado Basin Region](#)

[An Economic Evaluation of Peak Flow Management on the Rio Chama](#)

[Rio Chama Reservoir Operations Pilot Overview and Transmittal Report San Juan-Chama Project, New Mexico Upper Colorado Basin Region](#)

2.2 BASINS AND ACTIVITIES DISCUSSED

Identifying Flow Requirements for the Pecos River — Martha Cooper (The Nature Conservancy)

The Pecos Environmental Flow Study, funded and coordinated by the Army Corps of Engineers and the Sustainable Rivers Program sought to identify environmental flow needs for native species along the riverine corridor, and to identify potential opportunities in the dam-influenced reaches below the Santa Rosa and Fort Sumner Dams. The process began with a literature review and workshops with water operators, irrigators and stakeholders to identify water management needs and ecological flow benefits. The Pecos bluntnose shiner, a focal species, is especially stressed during dry years, and a key goal is to keep water flowing in the river as much as possible. Most of the water stored in the system is destined for use in Carlsbad Irrigation District, a significant challenge to implementing environmental flows.

[Identifying Environmental Flow Requirements for the Pecos River: Background Literature Review and Summary](#)

San Juan River Recovery Implementation Program — Dr. Eliza Gilbert (U.S. Fish and Wildlife Service)

The San Juan River Recovery Implementation Program is a collaboration among four Tribes, three states, and federal agencies stemming from a Biological Opinion in 1991 regarding the federal listing of the Colorado pikeminnow and razorback sucker as endangered. Flow recommendations focus on Navajo Dam and Reservoir operations and rely on 64 years of hydrologic data (1929–1993). A central flow target objective is to increase the size of backwater habitat and increase secondary channel connectivity to support recruitment of fish from larval to adult states. Recruitment of Colorado Pikeminnow occurred in 2023, but challenges abound. Releases are made only when sufficient storage is available; Navajo Reservoir inflows have averaged 89% of expected over the last 25 years. The program has gone 14 years without meeting the 8,000 cfs peak flow target, which is supposed to occur at least once every six years. The dam's structural release capacity is 5,000 cfs, but practical limits reduce this to 4,600 cfs due to floodplain encroachment. In 2023, water from The Jicarilla Apache Nation water sharing agreement added 20,000 acre-feet of water to the spring pulse release coordinated by BOR ([A Win-Win-Win Solution for the Colorado River](#)). This agreement enables water to be released to benefit endangered species or to support compact compliance.

Gila River Flow needs Assessment — Dr. Cliff Dahm (University of New Mexico)

Functional flows is an emerging area of study within environmental flows, with the earliest literature dating to the 1990s. The Gila, a "gem" of a free-flowing river, of which there are few left in the world, experiences significant "boom and bust" swings in flow, with recorded extremes ranging from very low flows (~10 cfs) to peaks around 30,000 cfs. For the analysis, the Gila hydrograph was blocked seasonally into fall/winter baseflow, snowmelt runoff, summer low flow, and monsoon flow ([Gila River Flow Needs Assessment — New Mexico Conservation Science](#)). Flows are declining; the river may become intermittent. Stressors include water extraction and climate change, shifting from a snowpack-fed river to rainfall.

Canadian River — Jack Marchetti (New Mexico Department of Game and Fish)

The New Mexico Department of Game and Fish is working with Texas A&M to determine the environmental flow requirements of the peppered chub downstream of Ute Reservoir. The peppered chub was listed as in 2023. The New Mexico Department of Game and Fish is in conversation with the Bureau of Reclamation about how the Eastern New Mexico water pipeline affects the chub.



The Peppered Chub (Macrhybopsis tetranema) is native to the Arkansas and Canadian rivers that both run through New Mexico. Source: <https://www.fws.gov/media/peppered-chub>



Left/Right: Grounds of Albuquerque's
Rio Grande Nature Center

SECTION 3: ENVIRONMENTAL FLOW PRACTICE IN NEW MEXICO

During the second workshop session, participants discussed how water can be dedicated to rivers, specifically the environmental flow tools that exist and/or are currently being used in New Mexico as well as barriers to implementing and expanding the toolset. In addition to environmental flows tools available in New Mexico, participants noted that there are significant learning opportunities from other western states.

3.1 KEY INSIGHTS

- There are a diverse set of tools for environmental flows in practice in New Mexico.
- Projects and tools where benefits are shared with communities and water users seem to be most successful. For example, many of the tools or programs described include benefits that weren't only environmental: sediment management on the Chama, financial support to irrigators on the Middle Rio Grande, protections from forfeiture on the Gila and the Gallina.
- Capacity remains a major challenge. Each tool requires capacity to implement, and when capacity grows (such as Interstate Stream Commission's new hire to manage the Strategic Water Reserve) so does the ability to implement.
- In addition to capacity, the right enabling conditions must be in place. Leadership, community networks, trust, finances, and river conditions impact the implementation and adoption of place-specific tools and actions.
- Due to the diversity of approaches, coordinating efforts and shared learning could lead to broader implementation and increased scale of impact.



3.2 TOOLS DISCUSSED AT THE WORKSHOP

The Strategic Water Reserve has existed since 2005 and enables the State of New Mexico to purchase, lease, or accept donated water rights for two purposes 1) compact compliance and 2) threatened and endangered species. A third purpose, aquifer recharge, was added by recent legislation in 2025. The list of priority rivers has grown over time; prioritization is done through consultation with governing bodies like Tribes, water authorities, and municipalities.

Pam Homer, the first New Mexico Interstate Stream Commission staff person hired to work in a dedicated capacity on the Strategic Water Reserve has recently completed a retrospective look at the accomplishments of the program (Strategic Water Reserve Reports - New Mexico Office of the State Engineer) and the diverse ways that Strategic Water Reserve leased or purchased water is used to add water to rivers.

Examples:

- **Pecos River:** The Vaughan Conservation Pipeline augments flows by pumping up to 4,000 acre-feet of groundwater from a wellfield south of Fort Sumner, aiming to meet flow targets of 35 cfs at the Taiban gage and 5 cfs at the Acme gage for the Pecos bluntnose shiner.
- **Middle Rio Grande:** The Strategic Water Reserve supports the Middle Rio Grande Endangered Species Collaborative Program (Rio Grande silvery minnow, Southwest willow flycatcher, yellow-billed cuckoo, New Mexico jumping mouse) through leases totaling 1,085 acre-feet to offset depletions from modified reservoir operations and groundwater pumping, as well as offsetting habitat restoration depletions.
- **Canadian River:** Maintains a minimum flow below Ute Dam for the Arkansas River shiner; Interstate Stream Commission has a permit to appropriate up to 5 cfs at the Logan gage for non-consumptive purposes.
- **San Juan River:** The Jicarilla Apache Nation Water Lease provides 20,000 acre-feet for release from Navajo Reservoir for compact compliance and the benefit of Colorado pikeminnow and razorback sucker.

Challenges include the high costs of water and unreliable or inadequate funding. Legislation passed in 2025 created a non-reverting fund of up to \$15 million to support the Strategic Water Reserve. Now money must be appropriated by the legislature. Additionally, the New Mexico Interstate Stream Commission is working on ways to manage, protect and measure Strategic Water Reserve funded flows.

The group noted a strong need for environmental flow shepherding (not just limited to Strategic Water Reserve supported flows) to prevent consumptive use by downstream users. In addition, the Strategic Water Reserve could be used to offset depletions for moving compact compliance flows down the river during an environmentally advantageous time.

Middle Rio Grande Conservancy District /National Fish and Wildlife Foundation Fallowing Program — Amelia Barrow (Middle Rio Grande Conservancy District)

The Middle Rio Grande Conservancy District (MRGCD) operates irrigation, drainage, and river flood control along 150 river miles in the Middle Rio Grande Valley. The MRGCD's mission requires it to consider flood control, drainage, groundwater management, irrigation, and recreation. It must manage compact obligations, irrigation demands, and endangered species requirements. Through a 2019 Cooperative Agreement with the National Fish and Wildlife Foundation and the Bureau of Reclamation, MRGCD pays irrigators to fallow fields seasonally and delivers water back to the river via strategic outfalls (a "String of Pearls"). Since 2020, the program has conserved 22,696 acre-feet. Benefits include increased habitat support for silvery minnow, beavers, and listed bird species, as well as bosque management and infrastructure improvements. This program is unique: one key enabling condition relates to how MRGCD administers water rights. MRGCD created a program that could work for farmers. Significant resources went into collecting pricing information and learning about farmers' values. One component of this program's success is its support of improvements to on-farm irrigation infrastructure.

Instream Flow Permits

Trout Unlimited and Audubon have obtained instream flow permits explicitly recognizing in-stream flow use as a beneficial use. Though these two permits provided proof of concept – that water could be administratively transferred to an in-stream flow purpose of use, the leases were disproportionately expensive and New Mexico Office of the State Engineer's monitoring requirements are burdensome. However, instream flow permits remain one possible tool for private landowners who would like to dedicate their water to a stream or river.



Grounds of Albuquerque's Rio Grande Nature Center

Tools and Organizations of Environmental Flows

Conservation Plans

The Office of the State Engineer's water conservation plans are in place on the Mimbres and Gila Rivers. On the Mimbres, the Gila National Forest and The Nature Conservancy enrolled their water rights to protect riparian health and provide water for Chiricahua leopard frog and Chihuahu chub. On the Gila, The Nature Conservancy enrolled a portion of their water rights to favor native grasses over non-natives. Water conservation plans can help landowners retain water rights without irrigating but do not protect water from diversion by other water right holders.

Active Water Resource Management

Shortage-sharing on the Rio Chama has been facilitated using Active Water Resources Management, a statutory authority of the State Engineer to administer water rights outside of strict priority administration. An active shortage sharing agreement exists on the Rio Chama, where senior users voluntarily reduce diversions in time of shortage. Senior sharing allows junior farmers to receive a minimum hay cutting, allows for livestock watering all season, and exempts domestic uses from shortages. In exchange junior water users promise to adhere to strict schedules and conservation measures. These guaranteed junior reductions have increased baseflows in the basin and kept tributary streams connected to the Rio Chama. It also allows for other priorities to be met. For example, Ohkay Owingeh uses the same senior water for environmental flows and bosque restoration. Furthermore, through Active Water Resources Management - implemented shortage sharing agreements, the Pueblo and acequias have eliminated strict priority calls for those willing to participate in shortage sharing. This model, which incentivizes voluntary conservation contributions, could be implemented across the state with further investments.



Grounds of Albuquerque's Rio Grande Nature Center



Breakout groups focused on three questions: What other tools have we not discussed? What Laws, Policies, and Program do we need to focus on? What perspectives need to be included?





Grounds of Albuquerque's
Rio Grande Nature Center

SECTION 4: FUTURE DIRECTION FOR ENVIRONMENTAL FLOWS IN NEW MEXICO

Discussions in the afternoon turned to creative opportunities for the future and discussion of how the state might best take care of watersheds and rivers going forward. The starting place for this discussion was a deep shared appreciation for rivers in New Mexico, for the ecosystem services and economic value they provide, but also for spiritual, aesthetic and other non-use values. This session included brief presentations and a breakout session.

4.1 KEY INSIGHTS AND NEXT STEPS

- We need to utilize what authorities we have more effectively: from New Mexico Game and Fish authority to work on non-game species, to staffing up the Strategic Water Reserve, to making use of Active Water Resource Management, we have tools and authorities at the state level that could be used more.
- Increased engagement of water users in environmental flows is imperative. Invest in these relationships and explore opportunities to work together and amplify the voices of river and water manager champions. Regional water planning processes in New Mexico can support this.
- Existing tools and resources can help communities make decisions for themselves, but they need support to use them – Active Water Resources Management, regional water planning, water rights transfers, agricultural efficiency funding and more.

THE GROUP IDENTIFIED SEVERAL NEXT STEPS FOR CONTINUING MOMENTUM:

- Make New Mexico environmental flow information available through the University of New Mexico's Digital Repository.
- Engage in the Regional Water Planning process. Trained facilitators are necessary. Include climate change projections; New Mexico is projected to have 25% less water in the next fifty years.
- Collect individual river stories throughout the state; develop a Story Map to share these stories.
- **Convene again.** Expand the diversity of voices participating. Focus on collective action.

4.2 PRESENTATION HIGHLIGHTS AND OBSERVATIONS FROM BREAKOUT GROUPS

- Invest in environmental flow pilot projects that **prioritize multiple benefits** or concentrate work on specific regions that could demonstrate the benefits of fully investing in this work.
- **Increase State Engineer capacity** to work directly with irrigators and provide more enforcement (more gages, more water masters). In the absence of this, local water management districts (e.g. MRGCD, PVACD) can provide water management oversight. You can't manage what's not measured.
- **Greater inclusion of a variety of voices** in environmental flow conversations, including folks from Tribes and Pueblos, acequias, farms, education sector, communication sector, federal partners, and water masters, is necessary.
- **Meaningful interagency collaboration:** Workshop participants talked about potential state water management re-organization to provide water users with more nimbleness. Assigning responsibility for the maintenance and protection of environmental flows to a variety of agencies working at the state level could lead to much greater coordination and impact. A team of collaborators with diverse backgrounds could share agency priorities and work beyond the bounds of a single program or basin. The dance between federal and state authorities to manage our rivers can be challenging.
- Recognize the interdependence of water quality and environmental flows, including with funding sources.



4.2 PRESENTATION HIGHLIGHTS AND OBSERVATIONS FROM BREAKOUT GROUPS



- The NGO community has a role in moving environmental flow work forward, whether that is assisting in creating shortage sharing agreements that include in-stream benefits, or developing organizational infrastructure like a New Mexico water trust (modeled on similar organizations/efforts in other western states) that engages in voluntary, market-based transactions.
- Increased **investment in data** and scientific understanding of river and species needs would benefit all. Related topics included using Traditional Ecological Knowledge; building trust within water systems; improving data through metering, increased use of satellites and OpenET.
- **Improve infrastructure.** Infrastructure in this case refers to effluent treatment, beaver dam analogs and other upstream storage improvements, flexible storage operations at dams and reservoirs, and increased agriculture efficiency. In some cases, infrastructure (homes, barns, roads, bridges) in floodplains need to be removed.
- **Education** is critical – for water users, rural communities, and the legislature. Finding ways to communicate with broad audiences. A focus on multiple benefits and creating (or recreating) our connections to water may be a way forward. Highlight the value of natural systems and what they provide to people.
- Shift away from **thinking of rivers as water delivery systems and instead think of them as living entities**, which requires planning for a significantly drier future.

What is the ...

THE UTTON TRANSBOUNDARY RESOURCES CENTER

The Utton Transboundary Resources Center is a publically funded research project that provides impartial multidisciplinary expertise and academic research to help New Mexicans and all people of the American Southwest find equitable and sustainable solutions for transboundary water, environmental, and natural resources issues. It supports collaborative natural resource management using multidisciplinary expertise and inclusive, diverse stakeholder involvement.

Housed at the University of New Mexico's School of Law, the Utton Center carries on the work of internationally recognized transboundary water expert Professor Albert E. Utton. Professor Utton devoted his 40-year career to peaceful and equitable dialogue across borders. **Today, the Utton Center focuses on innovative resolutions that bridge political and cultural boundaries through research, preventative diplomacy, and public service for all New Mexican communities.**

The Utton Center helped to create this resource and others to further our mission of creating resources and tools for our community members and beyond to learn about water, natural resources management, and the power communities have to help create the water future they want to see.

To learn about our other resources, visit our website at <https://uttoncenter.unm.edu/>

PROFESSOR AL UTTON

