

Meadows Research Institute for West Texas Water

STRATEGIC PLAN 2026-2030



MEADOWS
RESEARCH INSTITUTE
FOR WEST TEXAS
WATER



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CONSERVING THE LAST FRONTIER



Mission: Advance collaborative water solutions in Far West Texas through applied research, education, and technical expertise to ensure a resilient water future for people, land, and wildlife.

Purpose and Overview

Water in the desert is often hidden, increasingly scarce, but always vital. Where it springs to the surface, it provides respite and beauty. Out of sight, its deep aquifers sustain our ranches, communities, wildlife, and all who live in this desert we call home. As drought deepens, cities spread, and pumping increases, the pressure on this most precious desert resource only grows. Effective management and stewardship of desert water resources depends on knowledge, expertise, awareness, innovation, and a skilled workforce, along with active engagement of landowners, community members, local leaders and officials, policy makers, scientists, and other experts.

*“Far West Texas **encompasses the most arid region of the State of Texas.***

*Residents of this expansive desert environment recognize that **water is a scarce and valuable resource that must be developed and managed with great care** to ensure the area’s long-term viability. The Region’s economic health and quality of life are dependent on a **sustainable water supply that is equitably managed.**”*

[2021 Region E Far West Texas Water Plan](#)



In this context, Sul Ross State University is excited to launch the Meadows Research Institute for West Texas Water (the Water Institute) to provide vital educational, research, and community assistance to support water resource management needs in the Far West Texas Trans-Pecos region and beyond. This document is the inaugural strategic plan for the Water Institute, covering the 5-year period of 2026-2030.

A Brief History of the Water Institute

Sul Ross State University has a long history of excellence in water research and education, dating back more than twenty years. University faculty have engaged in grant funded research, developed and taught numerous water-relevant courses, and participated in research and educational activities under the Rio Grande Research Center, which operated for many years. In January 2024, the Borderlands Research Institute at Sul Ross State University, along with numerous partners, hosted the Water in the Desert conference in Alpine, Texas. The event was an overwhelming success, drawing more than 250 landowners, community members, local leaders and officials, policy makers, scientists, and other experts. Key water issues and potential solutions surfaced and are summarized in Box 1. Conference discussions underscored the need for more focused attention to research, workforce development, and technical assistance to local communities on water issues and stewardship across the Trans Pecos region. The seeds of the Meadows Research Institute for West Texas Water were planted.

Key Water Issues and Potential Solutions in Far West Texas (Box 1)

Groundwater dependence and decline. Desert communities and industries rely on slowly recharging aquifers, with some facing increased pressure from competing uses.

Potential solutions: Improve aquifer mapping, measurement, and data availability, adopt sustainable pumping practices, support groundwater conservation districts, identify and protect recharge zones, focus stormwater capture projects in recharge areas, encourage aquifer storage.

Surface water scarcity. Parts of West Texas and Mexico depend on limited flows from the Rio Grande and stressed watersheds, both vulnerable to drought, groundwater pumping, and upstream diversions.

Potential solutions: Enhance understanding of groundwater-surface water interactions, enhance riparian area management, and expand watershed restoration to stabilize surface water flows.

Drinking water supply challenges. Rural systems and wells often face limited capacity, high costs for treatment, and vulnerability to drought and contaminants. Water supply infrastructure needs often outpace community financing capacity

Potential solutions: Invest in rural water infrastructure drawing on state and federal resources, expand brackish groundwater desalination, develop regional water-sharing agreements, support water quality testing, and provide technical support to small service providers/utilities and operators.

Wastewater and infrastructure limitations. Aging plants, inadequate/failing local systems, and limited resources make it difficult for small towns to reduce waste and provide services.

Potential solutions: Modernize treatment plants, promote water recycling and reuse, and provide funding/technical support for rural systems and operators.

Water quality pressures. Salinity, agricultural runoff, and industrial and oil and gas impacts degrade both groundwater and surface water supplies.

Potential solutions: Expand monitoring, promote precision agriculture and best management practices, develop brackish water treatment, and incentivize reuse of treated, produced water.

Agricultural and industrial demands. Irrigated farming and oil and gas operations place heavy and competing demands on scarce water resources.

Potential solutions: Promote drip irrigation and soil-moisture technologies, incentivize water reuse in oil and gas, strengthen policies for efficient allocation, incentivize forbearance agreements that facilitate water conservation, and transition landscapes to less water intensive beneficial uses.

Ecological and spring systems at risk. Springs and river ecosystems that support wildlife and recreation are declining due to groundwater pumping and invasive species.

Potential solutions: Protect spring recharge zones, restore riparian habitats, manage invasive species, establish ecological flow protections, conduct research to fill critical information gaps.

Climate change adaptation and vulnerability. Hotter, drier conditions and declining precipitation increase stress on already scarce supplies. More severe weather brings higher incidence of flash floods.

Potential solutions: Incorporate climate projections into planning, expand drought contingency strategies, and restore landscapes to enhance natural recharge and resilience.

Governance, management, and workforce challenges. Varying management and financial capacities result in local opportunities for improved and coordinated stewardship. Some water management entities struggle to access technical and financial capacity to meet complex needs. .

Potential solutions: Support groundwater conservation districts, improve coordination across agencies, and use applied research to inform adaptive management. Enhance workforce development.

Strategic Focus of the Water Institute

Geographic Focus and Characteristics

The Water Institute is focused on addressing water issues in and near the Trans-Pecos region of Far West Texas through research, service, and education and workforce development. The institute sees its work as being relevant to water research and solutions across the Chihuahuan Desert region, the largest desert in North America which spans parts of central and northern Mexico and the southwestern United States, covering lands in Arizona, New Mexico, and Texas.

While the institute takes a broad focus on regional water issues, special attention is given to several iconic places that are vital to the identity of the region and its water systems, including the San Solomon springs system, Independence Creek and the Carolina springs system, the Lower Canyons and Rio Grande Wild and Scenic River area, the Pecos River watershed, and major aquifers such as the Edwards–Trinity, among other places.

The Chihuahuan Desert of West Texas



As a desert environment, average annual rainfall ranges from 8 to 14 inches, with high evaporation rates exceeding 70 inches per year. As a result, aquifer recharge is very limited, mostly occurring through ephemeral stream infiltration and mountain-front recharge around the Davis, Chinati, and Guadalupe mountain ranges after intense storms. The region's geology includes widespread igneous and carbonate rocks plus localized sedimentary bolsons, creating highly variable permeability.

Iconic Waters: San Solomon Springs

The San Solomon Springs System is a network of six artesian springs located in West Texas. The largest of these springs, San Solomon Springs, feeds the iconic pool at Balmorhea State Park. The Balmorhea State Park Swimming Pool is the world's largest spring-fed pool and often referred to as the crown jewel of the Texas state parks system. More than 15 million gallons of water flow through the springs each day. The springs are an oasis in the desert that keeps the nearby community of Balmorhea thriving. The springs and desert wetlands—or cienega—are home to many species, including two small, endangered desert fishes: the Pecos gambusia and the Comanche Springs pupfish. Research, monitoring, and conservation efforts are needed to protect the springs and the aquifer systems that support them to ensure generations to come can benefit from the springs in the face of expanding development, energy production, and other stressors.



This region is characterized by large areas of protected public lands such as Big Bend National Park and Big Ranch State Park, as well as some of the largest remaining cattle ranches in the state. These vast intact ranches contribute to the area's scenic vistas, dark skies, clean water, wildlife corridors and other unique traits. Many of the ranches established in the late 1800s and early 1900s still exist today. Keeping these working lands intact is important to the community, because they produce food, provide significant habitat for wildlife, and support ecological processes, including water filtration, carbon sequestration, and dust control.

Topical Focus of the Water Institute

Far West Texas faces a wide range of water issues and challenges, as noted in Box 1 above, and the institute will build the applied research, technical assistance, and educational and workforce development capacity to address many of them. The specific topical focus of the institute will be driven by a combination of regional, community, and partner needs and university expertise and capacity. Sul Ross State University and the Borderlands Research Institute have trusted relationships with landowners and communities throughout the region that the Water Institute can leverage and build upon to ensure responsiveness to regional

needs. *The institute envisions becoming a regional hub for data, information, outreach, education, and collaborative endeavors related to West Texas water issues.*

Iconic Waters: Lower Canyons of the Rio Grande

The “Lower Canyons” is an 83-mile section of the Rio Grande Wild and Scenic River that begins downstream of Big Bend National Park at La Linda and ends at Dryden crossing south of Sanderson, Texas. A system of freshwater springs from the Edwards-Trinity Plateau Aquifer and a Mexican equivalent flow into the river in this area and contribute to what is referred to as a ‘groundwater dependent ecosystem’ that supports the habitat for the endangered freshwater mussel Texas Hornshell (*Popenaias popeii*). The Lower Canyons provide a wilderness river experience for those up for a week-long trip and the springs contribute significantly to the flow in the river which becomes shared water between the U.S. and Mexico. During times of low upstream river flow due to drought and upstream diversions, this spring system provides almost all the water in the river that supports the diverse aquatic habitat and then flows into Amistad reservoir. The staff of the Water Institute are actively engaged in monitoring this remote but important component of the Far West Texas water system.



Given the importance of groundwater and groundwater-surface water interactions in the region, a primary focus of the institute will be to help understand and support the management of aquifers, study groundwater systems, and map groundwater-surface water interactions. The institute intends to do this work through applied research, education and workforce development, and community outreach and technical assistance. The topical focus of the institute may evolve over time as both regional needs and expertise at Sul Ross State University change.

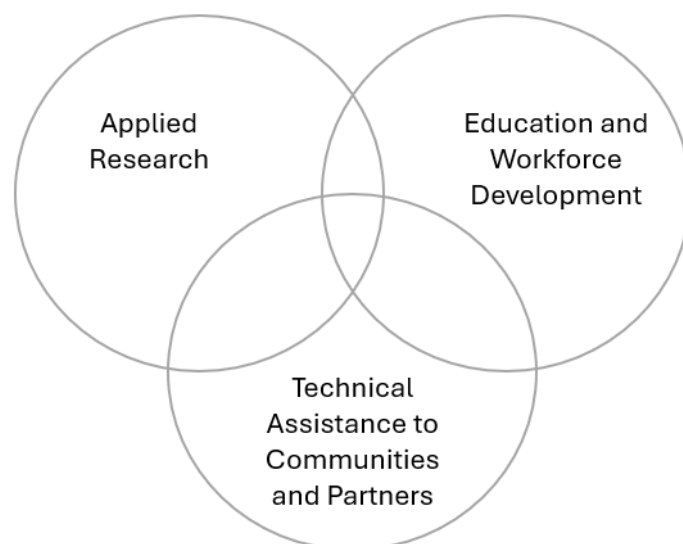
The Meadows Research Institute for West Texas Water will endeavor to complement and leverage the work of other university-based water research centers in Texas focused on specific issues. The Meadows Center for Water and the Environment at Texas State University in San Marcos is a natural partner, as a peer institution in the Texas State University System. The Meadows Center in San Marcos has a broad range of water science and policy expertise that can be drawn upon, with opportunities to complement course offerings and collaborate on research. In addition, Texas Tech University in Lubbock hosts the Texas Produced Water Consortium, providing a hub of expertise and research activities on produced water byproducts from oil and gas production, as well as the Water Center in the Davis College of Agricultural Sciences & Natural Resources and the Center for Water Law & Policy. University of Texas at El Paso's (UTEP) Center for Inland Desalination Systems has expertise in water treatment solutions relevant to the Trans-Pecos region. The institute will explore opportunities to partner with these and other academic water centers across the state.

Core Competencies and Functions of the Institute

The institute will focus on three interrelated functions that are core competencies of Sul Ross State University and are aligned with the university's mission and vision: applied research, education and workforce development, and technical assistance and outreach to communities and partners. Sul Ross State University at Alpine is widely known for its programs in Natural Resource Management & Wildlife, Agriculture & Animal Science (including Sustainable Ranch Management), Biology, Geology, and Industrial Technology & Construction Management. The institute will connect water-relevant academic programs and faculty research and community assistance activities from across the university. More details on these functions and core competencies are explored in the next section on programmatic goals and objectives.

"Sul Ross State University's vision is to provide] ...high quality, innovative, and flexible academic programs..., where students learn to develop creativity, foster critical thinking..., and engage in research to serve our region, state, and nation."

**Sul Ross State University Strategic Plan
2022-2027**



Part of the value of the institute lies in the interactions between these functions. For example, students will gain valuable, relevant workforce skills by participating in faculty research and supporting community assistance services. Applied research will help answer questions that are of vital importance to communities and partners in the region and beyond.

Over the next five years, the Water Institute will focus on achieving important programmatic and institution-building goals, which are summarized in Box 2 and described in the section below.

Water Institute 2026-2030 Goals (Box 2)

Programmatic Goals

Goal 1: APPLIED RESEARCH Build and connect a strong portfolio of water-relevant research initiatives that address important water stewardship needs in the Chihuahuan Desert region.

Goal 2: EDUCATION AND WORKFORCE DEVELOPMENT Develop water-relevant curricula and programs, including degree and certificate offerings, for graduate, undergraduate, and continuing education students.

Goal 3: TECHNICAL ASSISTANCE SERVICES Develop a set of technical assistance and outreach services that address priority needs of communities, landowners, groundwater management district leaders, and municipal service managers in the Trans-Pecos region.

Institution-Building Goals

Goal 4: FACULTY DEVELOPMENT AND SUPPORT Develop and align administrative and operational systems to enable robust faculty participation in institute programs, while growing staff capacity to support institute activities.

Goal 5: COMMUNICATION AND OUTREACH SYSTEMS Develop an outreach and communications system and capacity needed to support institute programs, outreach, and technical assistance services.

Goal 6: GOVERNANCE Develop an efficient governance framework to ensure the institute addresses key regional water management and workforce needs while sustaining internal and external support.

Goal 7: FUNDING AND DEVELOPMENT Cultivate sustainable funding streams to support and grow the institute's capacity, functions, and activities.

Programmatic Goals

This section summarizes three main goals and associated objectives related to the development and evolution of Water Institute programs focused on research, education, and technical assistance to communities and partners.

Goal 1: APPLIED RESEARCH *Build and connect a strong portfolio of water-relevant research initiatives that address important water stewardship needs in the Chihuahuan Desert region.*

Sul Ross State University faculty are conducting world-class research on a range of water science, policy, and practice issues, drawing on diverse and complementary disciplinary backgrounds. Current Water Institute core faculty and affiliates have expertise in fields including structural geology, geomorphology, hydrogeology, fluvial hydrology, aquatic biology, ecology, land stewardship, and wildlife habitat management. Annex 1 profiles current leadership and core and affiliated faculty associated with the Water Institute. A key aim of the institute is to connect faculty, staff, and student researchers from different disciplinary backgrounds and departments to facilitate multi-disciplinary research. While some institute research may contribute to advancing basic science, the institute has a strong intention on applied research that is designed to solve specific, real-world problems and achieve practical outcomes, using knowledge gained from basic research to develop new approaches, practices, and technologies. Key objectives are anticipated to include:

Objectives

1.1 Support and connect faculty in water research: The institute will explore approaches and opportunities to support core and affiliated faculty to continue and expand water science and policy research activities, including through funded research appointments and new federal, state, and private grant initiatives. The institute will also seek to provide space and equipment needed to support faculty research, such as software (e.g., MODFLOW and Groundwater Vistas), pumping test equipment, and water quality testing equipment. The institute will communicate about and elevate attention to its faculty's water-relevant research both within and outside the university, helping to connect diverse research initiatives into a more coherent water research portfolio.

1.2 Engage communities and stakeholders to identify priority research needs: Building on past and current community outreach, the institute will take explicit steps to regularly engage with diverse stakeholders to identify the types of water resource management

questions they have which could be informed by research. Key stakeholders include landowners, municipal officials, groundwater management district leaders, community leaders, and the interested public. Institute faculty and staff will pursue diverse approaches to solicit input from communities and stakeholders, including periodic workshops and conferences, one-on-one consultations, participation in collaborative water initiatives across the region, among other potential outreach activities. Identified research questions and needs will be shared and discussed among Water Institute faculty and staff to identify research opportunities that could be explored and developed.

1.3 Invest in research on groundwater infiltration and subsurface flows: Initial outreach has found that some of the most pressing research questions from communities and partners focus on understanding the relationships between groundwater infiltration, subsurface water flows, and aquifer levels, and how they vary across the region. Key questions include: *Where are aquifer recharge zones across the region? What are the flow paths taken by groundwater? How does precipitation affect groundwater levels in different places? How much are groundwater levels likely to fluctuate in different places and what are the implications for wells? How do different land management practices (e.g., overland flow stormwater capture systems, mesquite clearing) affect groundwater infiltration?* The institute will explore and develop opportunities to advance applied research relevant to these questions and others.

1.4 Groundwater monitoring: The institute will work to expand educational outreach to landowners and others on the value of groundwater monitoring, enabling water stewardship by landowners and supporting beneficial research. Expanding access to well monitoring data on groundwater levels and precipitation—particularly in strategically located areas across the region—is important to enable expanded faculty research on aquifer levels and characteristics, and therefore regional understanding of the present and future availability. This information can be combined with information on stratigraphy, to understand how water flows through rock layers across the region. The institute will work to develop partnerships with well drilling companies and landowners, among other steps that could help secure more monitoring locations on private and public lands in the Trans-Pecos region. The institute will also work with partners to explore and address barriers to groundwater monitoring, including data confidentiality, data reporting, data quality assurance, and other considerations.

1.5 Expand faculty to address priority research needs: Sul Ross State University is committed to growing its faculty with water-relevant expertise to address complementary research and instructional needs in key areas relevant to water science and resource management. Potential priority research areas that could be addressed by new faculty

include karst hydrogeology, groundwater flow modeling, geochemistry, riparian and wetland ecology, and water policy and governance. The university will continue to pursue a range of funding opportunities to grow faculty capacity.

Goal 2: EDUCATION AND WORKFORCE DEVELOPMENT *Develop water-relevant curricula and programs, including degree and certificate offerings, for graduate, undergraduate, and continuing education students.*

A core goal of the institute is to provide strong educational programs for undergraduate, graduate, and continuing education students that foster a multi-disciplinary approach to water resource management and meet key water workforce needs in the Trans-Pecos region, the State of Texas, and beyond. A recent study by the Texas Water Foundation, Texas Rural Funders, and Jobs for the Future estimated that Texas' water sector will lose 30-50 percent of its workforce to retirement over the next decade. Educational programs, certifications, and courses will aim to equip students for workforce needs and job opportunities by integrating science, policy, and management competencies. Key objectives and associated activities are anticipated to include:

Objectives

2.1 Develop a new Master's degree program in Water Science and Resource

Management: The university aspires to develop a new graduate program that will build on courses provided across different units to form a cohesive, multi-disciplinary program designed to train water resource management professionals, engaging both technical and management competencies.

2.2 Expand competency-based learning, certificate, micro-certificate programs

addressing key water skills: As Sul Ross State University expands its competency-based learning and continuing education programs, water-relevant skills, courses, and certification programs can play an important role in addressing regional workforce needs. The Water Institute will identify and develop high priority courses, short-courses, professional workshops, certifications, and micro-certifications, which may address topics and skills including geographic information systems (GIS), water data science and analytics, grant writing for government funding of water infrastructure and water resource management projects, aerial drone mapping/ unmanned aerial vehicle (UAV) operation, water quality testing, and water system operator certification for groundwater, surface water, and distribution (addressing Texas Commission on Environmental Quality Class B and C water

system operator licensing requirements). The institute may also explore innovative dual credit programs with regional school districts and high schools to support water skill and workforce development through secondary education pathways, leveraging initiatives such as the Big Bend River Rangers program. and the Texas Section of the American Water Works Association's (Texas AWWA) SETH program

2.3 Expand undergraduate water-relevant course offerings:

The Water Institute will work to expand course offerings over the next five years in water-relevant areas. Box 3 highlights several courses recently taught or being developed by core faculty at the institute. Future course topics may include limnology, ichthyology, aquatic entomology, community ecology, and field methods in freshwater sciences. The institute will also explore opportunities to develop undergraduate degree and certificate programs relevant to water resource management. Sul Ross State University will also explore partnerships with other institutions in the Texas State University system to enable students to take relevant, complementary classes taught by faculty at partner institutions.

2.4 Expand pathways for students to engage in water research and community-based work experience:

Many of the Water Institute research and technical assistance initiatives addressed under Goals 1 (Research) and 3 (Technical Assistance to Communities and Partners) are ripe with research, internship and work-study job opportunities for graduate and undergraduate students. The Water Institute will actively support efforts to engage students in faculty research by securing resources, funding, and space to support student assistantships and research opportunities. In addition, the institute will explore opportunities to establish student internships and/or work-study positions to support key service areas, such as water quality testing, groundwater monitoring data analysis, website development and curation, data resource development, and institute newsletter and communications support.

Recent Water Courses at Sul Ross State University (Box 3)

Partial list:

Advanced Ecology
Aquatic Ecology and Bioassessment
Aqueous Geochemistry
Environmental Change
Earth's Changing Climate
Geographic Information Systems (GIS) and Advanced GIS
Geology of Trans-Pecos Aquifers
Hydrogeology

Goal 3: TECHNICAL ASSISTANCE SERVICES *Develop a set of technical assistance and outreach services that address priority needs of communities, landowners, groundwater management district leaders, and municipal service managers in the Trans-Pecos region.*

The institute aims to ensure its relevance and value to the region by identifying and delivering key water-relevant technical assistance services to communities and stakeholders in the Trans-Peco region. The Water Institute will prioritize technical assistance services that meet pressing community needs and support the educational and research goals of the institute. Development of high-value community assistance services will undoubtedly require experimentation and on-going consultation with a wide range of community partners and stakeholders. On-going consultation will be conducted through the same means identified under the Goal 1 (Research), involving periodic workshops or conferences, one-on-one consultations, and institute faculty and staff participation in various collaborations and convenings across the region. The objectives below highlight some technical assistance service areas that the Water Institute will likely explore and/or develop over the next five years.

Objectives

3.1 West Texas water science and issues information: The institute will develop educational resources and information, including outreach materials to translate findings from scientific and policy research to decision-makers and lay audiences. Materials will be designed to address important issues concerning water resources in the Trans-Pecos region as well as water conservation and stewardship practices. Educational materials are likely to be in the form of fact sheets, briefing papers, and short videos. The Water Institute will work to make information easily accessible on the institute website.

3.2 Regional groundwater data dashboard: The Water Institute will work to build an interactive, online dashboard and data library of important information related to groundwater monitoring, water levels, water chemistry and quality, and other topics from monitoring locations across the region. The Water Institute will work to connect the dashboard and data sets with the [Texas Water Data Hub](#) to ensure enhanced and coordinated data access and use. The institute will collaborate with groundwater conservation districts, municipal governments, and other actors to ensure the data can be analyzed and used to inform water resource management and planning decisions and voluntary conservation solutions. As discussed under objective 1.4 above on groundwater

monitoring, the institute will work with partners to explore and address issues such as data confidentiality, data quality assurance, and other considerations.

3.3 Water quality analysis for private and municipal wells: The Water Institute will explore development of free (or modest cost for service fee) water quality testing for owners of private and municipal wells. The program will test water for key parameters including fecal coliforms, basic cation/anion, arsenic, and salinity. The service aims to provide valuable water quality and health information to landowners and communities, while also compiling data to support faculty and student research. The service will leverage a shared water quality analysis laboratory at the Sul Ross campus in Alpine.

3.4 Landowner outreach and education services: Landowner engagement is needed both to support science and to diffuse solutions. The institute will explore and develop opportunities to support landowners outreach and education services related to water conservation, land and soil management, riparian restoration, aquifer recharge enhancement, rainwater harvesting, well protection, monitoring data gathering, and other relevant conservation and stewardship topics. The Water Institute will work in close partnership with the Borderlands Research Institute's Center for Land Conservation & Stakeholder Engagement and other partners to provide these services.

3.5 Technical support to municipal and rural water and wastewater service providers: The Water Institute recognizes the important role municipalities and rural utilities play in providing vital water and wastewater services to West Texas residents connected to shared systems. In addition to providing workforce development and training services for water system operators (see Objective 2.2), the Water Institute will work with municipalities and rural utilities in the region to identify common needs and additional technical assistance and support services that the institute could provide. The institute will also explore formal and informal partnership opportunities with technical assistance providers active in the region, such as Communities Unlimited and the Water Finance Exchange, to identify opportunities for the institute to support or amplify their work with municipalities and rural utilities.

3.6 Funding information and grant writing support: Stakeholders have identified an important need to support communities and municipalities to identify and apply for grants and funding to support water-related infrastructure, management, stewardship, and conservation projects, from state and federal funding sources. For example, while the passage of Proposition 4 in November 2025 ensures long-term funding for water infrastructure through the Texas Water Fund, substantial support is needed to ensure that small, rural communities can access funding for cost-effective water, wastewater,

and flood projects. The institute will explore opportunities to support these funding and grant writing needs, including potential development of a grant writing certificate program, curricula and courses, or workshops on effective grant writing, and/or technical assistance to communities developing water-relevant grant applications. The institute may also consider developing a clearinghouse of relevant water project funding opportunities for communities, landowners, groundwater conservation districts, and other stakeholders.

3.7 Participation in water resource stewardship collaboratives and partnerships: The Water Institute will support faculty and students to participate in water conservation and stewardship collaborations and partnerships across the region, such as the San Solomon Springs Collaborative, Pecos River Partners, and the Alamito Creek Conservation Initiative. Support to faculty, staff, and student participation in partnerships and collaboratives may include travel assistance and recognition of the value of these roles in performance reviews.

Over time, the institute may consider opportunities to host or provide organizational and convening support to key research-practice partnerships, such as the San Solomon Springs Collaborative. The institute will also support faculty participation in and support for important regional water planning processes such as the Far West Texas (Region E) State Water Planning Process, Upper Rio Grande Flood Water Planning, and the Texas Water Development Board Groundwater Management Area 4 (GMA4) planning processes that are vital to informing and shaping West Texas' water future. Finally, the institute will continually explore partnerships with organizations which are well-situated to assist with

Prospective Partners for Collaboration (Box 4)

Partial list:

Borderlands Research Institute
Chihuahuan Desert Research Institute
Communities Unlimited
Devils River Conservancy
Environmental Defense Fund (EDF)
Southwest Environmental Finance Center at
University of New Mexico
Friends of the Pecos River
Marfa Public Radio
The Nature Conservancy
Rio Grande Joint Venture
Rio Grande Council of Governments
Southwest Research Institute
Texas Agricultural Land Trust
Texas A&M AgriLife Extension
Texas Master Naturalists
Texas Parks and Wildlife Department
Texas Section of the American Water Works
Association (Texas AWWA)
Texas Water Development Board
Texas Water Foundation
Texas Water Research Network
Texas Water Trade
Texas Well Owner Network
US Water Alliance
Water Finance Exchange

provision of the institute’s technical assistance, outreach, and educational services (see Box 4 for a partial list of organizations that the institute faculty and staff have worked with recently).

Institution-Building Goals

The following goals and objectives focus on efforts needed to develop a strong, high-functioning institute at Sul Ross State University that is responsive to student and faculty needs—and the water stewardship and workforce needs of the Trans-Pecos region and the State of Texas.

Goal 4: FACULTY DEVELOPMENT AND SUPPORT *Develop and align administrative and operational systems to enable robust faculty participation in institute programs, while growing staff capacity to support institute activities.*

The success of the Water Institute will depend on supporting and growing a strong faculty and staff team who have adequate time, resources, and other supports to lead important research, education, and community assistance activities under the auspices of the institute. Key objectives and associated activities are anticipated to include:

Objectives

4.1 Fundraise and recruit for a Water Institute Director: A priority near-term focus for the institute is to fundraise for and recruit a Director for the Water Institute. This hire is envisioned to be for a Ph.D. level faculty position that can complement existing core faculty research, while also leading the institute’s work and development. Sul Ross State University is currently fundraising to support this new position.

4.2 Support for faculty research and technical assistance: Part-time research appointments are a powerful tool for enabling core institute faculty to have adequate time to invest in research projects and technical assistance for communities and partners while also accommodating teaching needs. The institute will work to pursue opportunities to provide core institute faculty with research appointments.

4.3 Staff capacity to support communications, outreach, and stakeholder engagement: Effective delivery of institute services related to research, education, and technical

assistance to communities and partners will rely on staff capacity at the institute that can help coordinate and amplify the impact of faculty and student activities. The Water Institute envisions adding staff capacity to support institute communications activities, outreach, and stakeholder engagement.

Goal 5: COMMUNICATION AND OUTREACH SYSTEMS *Develop an outreach and communications system and capacity needed to support institute programs, outreach, and technical assistance services.*

The success of the Water Institute in providing relevant, valuable services to communities and stakeholder across the Trans-Pecos region and beyond will require explicit attention to developing a communications and outreach system and capacity. As it develops, the institute will leverage systems and capacities in the Borderlands Research Institute, including in the Center for Land Stewardship & Stakeholder Engagement. Key objectives and associated activities are anticipated to include:

Objectives

5.1 Website development, curation, and maintenance: The institute will develop a public-facing website with information on the institute's research, educational activities, and services. The website will also include information on Far West Texas water issues, as well as educational materials, data resources, videos, and information referenced in this plan. The website will include up-to-date information on institute activities and events open to students, targeted audiences, and the public.

5.2 Newsletter: The institute will develop an email newsletter to periodically update stakeholders on institute activities, including research and technical assistance services.

5.3 Water in the Desert Conference and periodic workshops: The institute will host the second Water in the Desert Conference in February 2026, and will conduct other conferences and workshops in collaboration with other partners over the coming years to support institute outreach, education, and engagement needs.

5.4 Partnership with regional media: The institute will explore and develop opportunities to partner with media organizations, such as Marfa Public Radio, to raise awareness about water issues in the region and to support landowner and public outreach.

Goal 6: GOVERNANCE *Develop an efficient governance framework to ensure the institute addresses key regional water management and workforce needs while sustaining internal and external support.*

An effective governance framework will be important to ensure that the Water Institute is responsive to regional water resource management and workforce development needs. Attention to efficient and effective faculty and university administration governance structures, systems, and processes will also be important to sustain attention to institute functions and activities. For its first few years, Sul Ross State University anticipates that the institute will be incubated within the Borderlands Research Institute. Key objectives and associated activities are anticipated to include:

Objectives

6.1 Steering committee: The Water Institute will continue to support use of a steering committee or other group that will advise the institute to ensure that its activities and services—in research, educational and workforce development, and technical assistance to communities and partners—remains relevant to needs and opportunities across the region. The institute will develop and refine the charter for the steering committee and appropriate processes and procedures to support its effective function.

6.2 Other governance considerations: The Water Institute will develop necessary governance systems and processes in accordance with Sul Ross State University guidance and requirements.

Goal 7: FUNDING AND DEVELOPMENT *Cultivate sustainable funding streams to support and grow the institute's capacity, functions, and activities.*

Sul Ross State University is actively working to secure funding for the Water Institute, including faculty appointments, staff capacity, and resources for institute activities and equipment. Key objectives and associated activities are anticipated to include:

Objectives

7.1 Pursue opportunities to secure legislative appropriations for institute support: The institute will work in partnership with legislators across the region and other partners to

secure public funding (through appropriations from the Texas legislature or other means) for the institute. Sustained public funding is vital to ensure adequate faculty positions to support the programs and services outlined in this strategic plan.

7.2 Cultivate philanthropic investment in the institute: The Water Institute will work with philanthropic partners to grow support for the institute and its activities from foundations and donors. Philanthropic support provides vital, flexible resources to support diverse institute activities in areas such as student engagement in research, outreach and technical assistance to communities and partners, and development of innovative pathways for water workforce development.

7.3 Pursue competitive grant funding to advance institute initiatives: The Water Institute will actively seek and secure federal, state, and private grant opportunities to support research, education, and community engagement. Grant funding will provide targeted resources to expand faculty research appointments, develop innovative water programs, and implement pilot projects that advance the institute's mission and strategic priorities.

Annex 1: Water Institute Faculty and Affiliates

This annex provides brief biographies of current institute leadership, faculty with research appointments, and other institute-affiliated faculty and staff.

Interim Director



Billy Tarrant serves as Interim Director of the Meadows Research Institute for West Texas Water and Associate Director of Stewardship Services at the Borderlands Research Institute at Sul Ross State University. He earned bachelor's and master's degrees in wildlife science from New Mexico State University.

Tarrant spent more than two decades with the Texas Parks and Wildlife Department, where he worked as a District Wildlife Biologist and later served as Regional Director overseeing wildlife operations across the Trans-Pecos and Panhandle. He has also played a leadership role in collaborative conservation efforts including the Trans-Pecos Pronghorn Working Group, Texas Playa Conservation Initiative and Respect Big Bend. At Sul Ross, he manages BRI's Center for Land Stewardship and Stakeholder Engagement, working with landowners, communities and other partners on conservation and land stewardship issues. That experience working across interests and building partnerships now helps guide his leadership of the Meadows Research Institute.

Senior Research Scientist



Dr. Kevin Urbanczyk is a Professor of Geology at Sul Ross State University and Senior Research Scientist with the Meadows Research Institute for West Texas Water. He earned bachelor's and master's degrees from Sul Ross and a Ph.D. from Washington State University.

A member of the Sul Ross faculty since 1991, Urbanczyk has spent more than three decades studying the geology and water resources of the Trans-Pecos. Much of his research focuses on groundwater flow and the desert spring systems it supports, including the San Solomon Springs complex and springs in the Lower Canyons of the Rio Grande. He has also studied the region's Igneous Aquifer and monitored groundwater levels and precipitation patterns across the Big Bend region. Urbanczyk has contributed to Groundwater Availability

Models for the Texas Water Development Board and serves as a director of the Brewster County Groundwater Conservation District.

Core Institute Faculty with Research Appointments



Dr. Kelbi Delaune is a Research Scientist at the Meadows Research Institute for West Texas Water and an Assistant Professor of Natural Sciences at Sul Ross State University. She began her academic career in the arts, earning a Bachelor of Fine Arts in Theatre before combining her communication skills with a love of nature and pursuing a career in science. She later earned a Master of Science in Biology from Sam Houston State University and a Ph.D. in Wildlife Science, Aquatic Science, and Wildlands Science and Management from Texas Tech University.

Dr. DeLaune studies aquatic ecosystems in arid landscapes, with a focus on desert springs and rivers. Her research examines how invasive species, habitat loss and other environmental changes affect aquatic communities and the resilience of these water-dependent ecosystems. She also has a strong interest in mentorship and hands-on learning, giving students opportunities to gain practical experience through research.



Dr. Jesse Kelsch is a Research Scientist at the Meadows Research Institute for West Texas Water and an Assistant Professor of Geology at Sul Ross State University. Before joining Sul Ross, she worked as a professional hydrogeologist in New Mexico, overseeing well drilling projects and working closely with water-well drillers, engineers and field crews. Dr. Kelsch earned her Ph.D. from the University of Texas at El Paso in 2023.

Her research combines that background in hydrogeology with expertise in structural geology, looking at how faults, fractures and other geologic structures influence groundwater movement. Dr. Kelsch studies groundwater at both regional and local scales, with a particular interest in aquifer permeability, groundwater storage and flow paths through the fractured rock systems of the Trans-Pecos. She is also an active public educator and frequently gives talks about the geology and landscapes of the region.



Dr. Philamer Carlos Torio is a Research Scientist at the Meadows Research Institute for West Texas Water and an Assistant Professor of Political Science and Public Administration at Sul Ross State University. His interest in water policy grew from his work in the Philippines, where water management is closely tied to agriculture, communities and local government. He later earned a Ph.D. in Public Policy from Oregon State University.

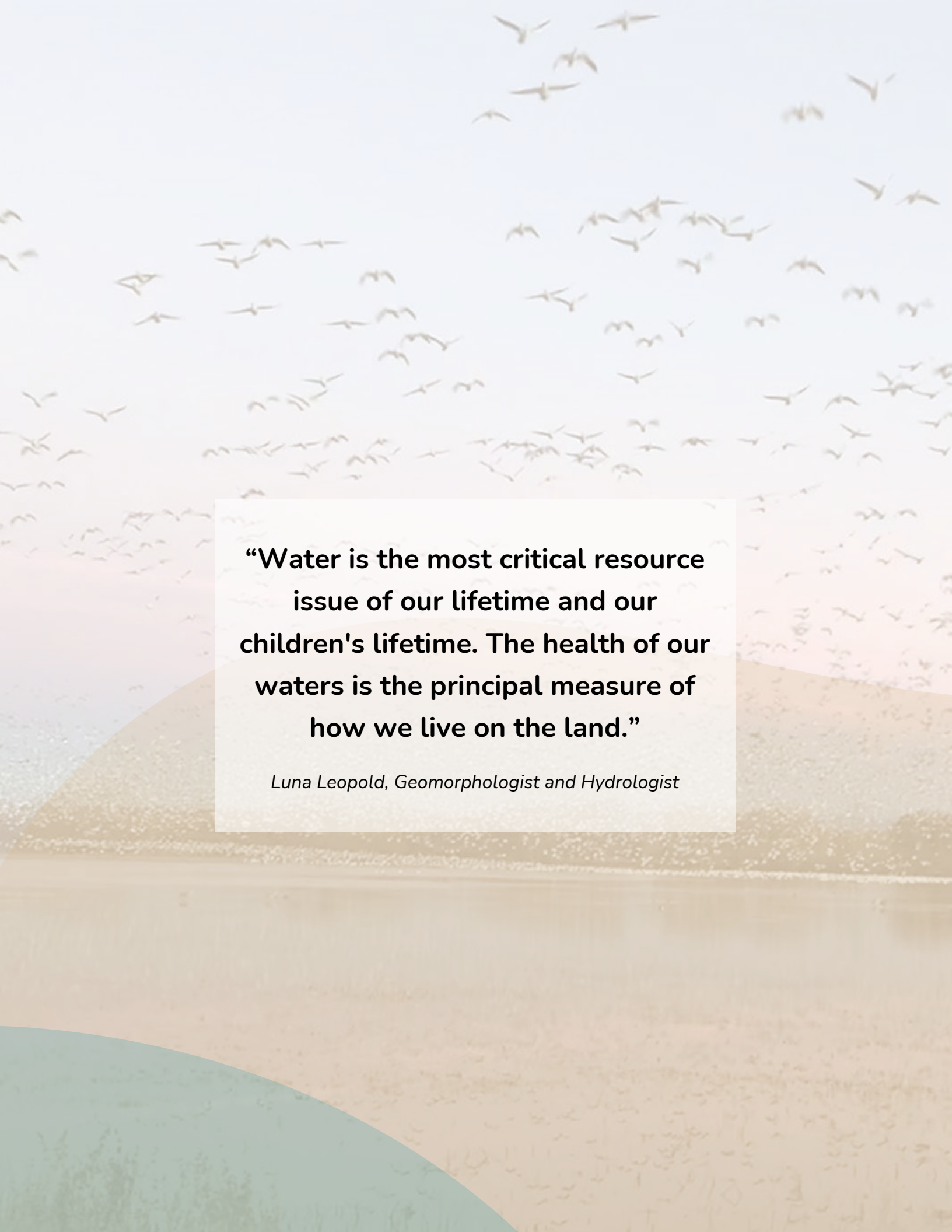
Dr. Torio studies the policies and institutions that govern water and other natural resources. His work looks at how decisions are made, how different groups participate in the process and what happens when competing interests depend on the same resource. In Far West Texas, those questions are especially relevant as communities, landowners and water managers consider how limited groundwater supplies should be managed for the future.

Administrative Staff



Sydney Bauer serves as Administrative Coordinator for the Meadows Research Institute for West Texas Water, supporting the Institute's research, education and outreach initiatives. Before joining the Institute, she was General Manager of the Brewster County Groundwater Conservation District, where she developed a strong interest in groundwater science and management.

A native of Odessa, Bauer earned an Associate of Science in Geology from Odessa College and a Bachelor of Science in Geology from Sul Ross State University. She is an active volunteer with Girl Scouts of the Desert Southwest, helping connect girls with nature at Camp Mitre Peak. Bauer plans to pursue a master's degree in Water Science and Management at Sul Ross.

The background of the image is a photograph of a vast flock of birds, likely terns, flying in a loose formation over a body of water. The sky is a pale, hazy blue, and the water in the foreground is a calm, light blue-grey. The overall mood is serene and natural. A semi-transparent white rectangular box is centered in the middle of the image, containing the quote and the attribution.

**“Water is the most critical resource
issue of our lifetime and our
children's lifetime. The health of our
waters is the principal measure of
how we live on the land.”**

Luna Leopold, Geomorphologist and Hydrologist