COLLEGE OF AGRICULTURE & LIFE SCIENCES
COOPERATIVE EXTENSION

WATER RESOURCES RESEARCH CENTER

ANNUAL REPORT 2022

GREATER DEPTH, BROADER PERSPECTIVE FOR A CLEAR WATER FUTURE

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GREATER DEPTH, BROADER PERSPECTIVE FOR A CLEAR WATER FUTURE

We tackle key water policy and management issues, empower informed decision-making, and enrich understanding through engagement, education, and applied research.

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Cover Photo: Robert Baker - Monsoon Relief in Greasewood Park; Tucson, AZ.

MESSAGE FROM THE DIRECTOR

Sharon B. Megdal - Dubai, March 2022

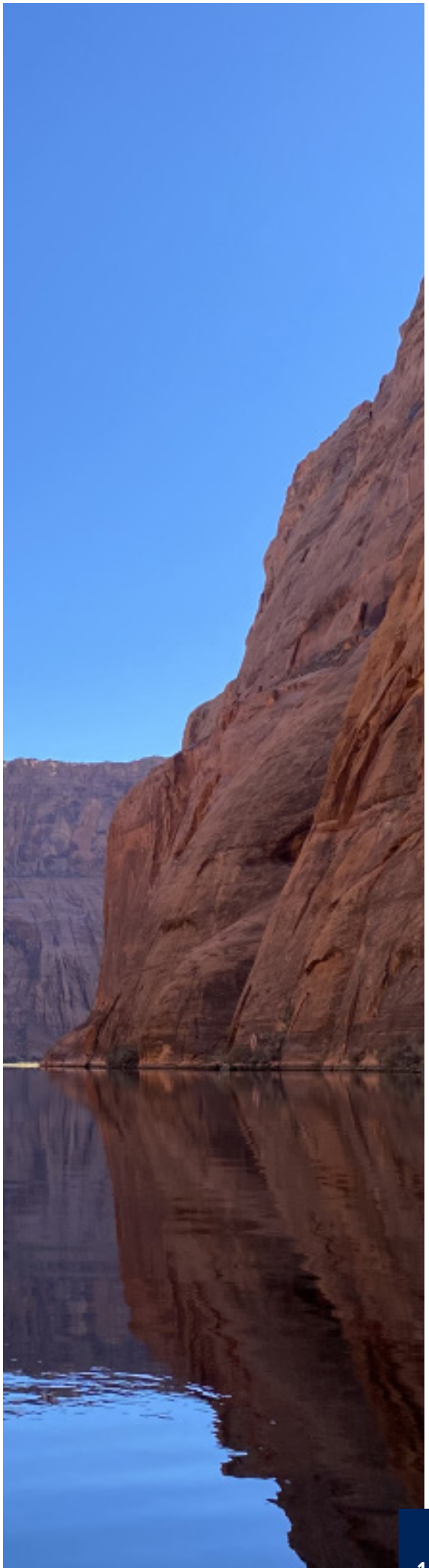
Throughout 2022, the Water Resources Research Center carried out programs to increase understanding of water challenges and solutions. Through our Weekly/Summer Wave, webinars, Annual Conference, and programs described in this Annual Report, we connected with individuals and organizations throughout Arizona and beyond. In addition to ongoing Water RAPIDS, Transboundary Aquifer Assessment, and other efforts, preparing additional county-level factsheets provided us with new opportunities to engage with Arizona communities in 2022. As always, the WRRC continues to be unwavering in its efforts to be a trusted source for reliable information. After perusing this Annual Report for calendar year 2022, I hope you will agree that, as Arizona and the region face unprecedented water challenges, the WRRC continues to fulfill its mission. Engagement and partnerships are key to our efforts. We welcome your continued engagement through participation in and support of our programs, subscription to our Weekly/Summer Wave, and ongoing suggestions and communications.

Sharon B Megdal

About the Director

WRRC Director Sharon B. Megdal oversees programs and operations of the WRRC and engages with multiple partners on projects that investigate water resource policy issues and inform a range of audiences. Publications, conference and workshop participation, and lectures focused on approaches to water management in a drying climate. Strong demand for learning about managed aquifer recharge and potential opportunities to close the gap between water demand and supply in the Colorado River Basin kept Dr. Megdal busy with invited presentations, article writing, and interviews involving local and global media outlets. She returned to teaching her graduate course Water Policy in Arizona and Semi-arid Regions in person, though presentations and lectures remained a mix of virtual and in-person engagements. Service activities included serving on professional boards and organizing several conference programs. A detailed listing of her professional activities can be found **here**.

A member of the faculty in the Department of Environmental Science, Dr. Megdal is the C.W. & Modene Neely Endowed Professor for Excellence in Agriculture and Life Sciences and University Distinguished Outreach Professor. She also holds numerous courtesy appointments in departments and colleges across campus.



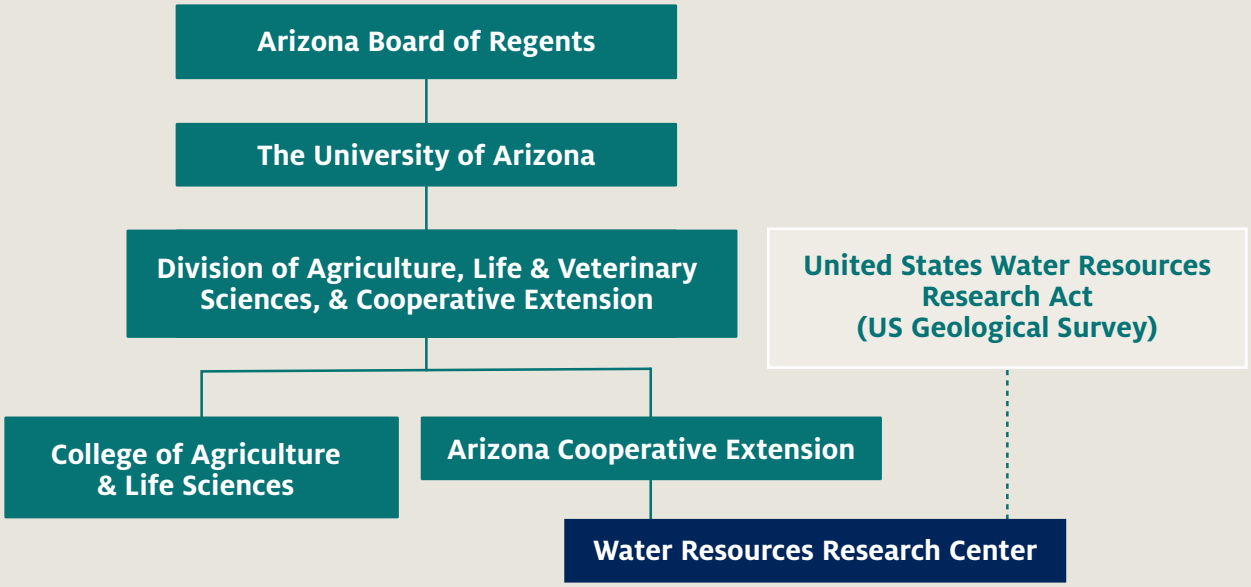
EXTERNAL ADVISORY COMMITTEE

The WRRC's External Advisory Committee met on December 20, 2022. The members of the committee and their affiliations as of December 2022 are listed below.

- Brenda Burman, *Central Arizona Project*
- Tom Buschatzke, *Arizona Department of Water Resources*
- Cynthia S. Campbell, *City of Phoenix*
- Guy Carpenter, *Stanley Consultants*
- William (Bill) Collings, *D.N.A. Inc.*
- Ted Cooke, *Central Arizona Project*
- Maria Dadgar, *Inter Tribal Council of Arizona*
- Tom Davis, *Yuma County Water Users' Association*
- Michael Denby, *Arizona Public Service*
- Alan Forrest, *AF Engineering Inc.*
- Andy Groseta, *Groseta Ranches*
- Joe Gysel, *EPCOR, Water USA, Inc.*
- Jason Hauter, *Akin Gump Strauss Hauter & Feld LLP* and *Attorney for the Gila River Indian Community*
- John Kmiec, *Tucson Water*
- Michael Lacey, *Freeport-McMoRan Copper and Gold*
- James (Jim) Leenhouts, *U.S. Geological Survey, Arizona Water Science Center*
- Melodee Loyer, *Farmers Water Co.*
- Randy Matas, *Arizona Department of Environmental Quality*
- Juliet McKenna, *Montgomery & Associates*
- Leslie Meyers, *Salt River Project*
- Joe Olsen, *Metropolitan Water District*
- Sarah Porter, *Morrison Institute for Public Policy, Arizona State University*
- Fred Schneider, *Arizona Water Company*
- Kimberly Schonek, *The Nature Conservancy*
- Alexander Smith, *US Bureau of Reclamation*
- Warren Tenney, *Arizona Municipal Water Users Association*
- Chris Udall, *Agribusiness & Water Council of Arizona*
- Christopher (Kip) Volpe, *The Estes Company*
- Dave Wegner, *Woolpert Engineering Inc., National Academy of Sciences, Water Science Technology Board*
- Sid Wilson, *Retired (Central Arizona Project)*
- Brian Wong, *BKW Farms*
- Francisco Zamora, *Sonoran Institute*

ORGANIZATION

The University of Arizona Water Resources Research Center is Arizona's federally authorized water institute pursuant to the Water Resources Research Act (WRRA), as administered by the US Geological Survey (USGS).



Water Resource Planning and Stakeholder Engagement

Water Research and Planning Innovations for Dryland Systems (Water RAPIDS)

The Water RAPIDS program works at regional, state, watershed, and local scales to build capacity within communities for water resources and watershed planning. Water RAPIDS fosters holistic approaches that integrate water planning with land use planning.

Supporting Rural Communities through Drought Preparedness and Response Planning: In 2022, the Water RAPIDS team continued efforts with the CLIMAS program at UArizona to apply current and emerging data to build more robust community drought preparedness and response plans that consider local watershed conditions and natural resources. This project will develop and demonstrate replicable methods for co-producing community-based climate adaptation and mitigation strategies. Working directly with community partners, these replicable data and collaborative processes can assist similarly situated communities in creating drought response plans that consider costs/benefits and policy trade-offs. The project team is a collaboration with UArizona College of Agriculture and Life Sciences (CALS) faculty and graduate students.

Assisting the Town of Superior in Understanding Environmental Flows for Queen Creek: Water RAPIDS coordinates and facilitates various efforts with the Queen Creek Working Group, led by the town of Superior. In 2022, the working group received $2.25 million to install a reclaimed water pipeline and rehabilitate an existing infiltration gallery as part of the Queen Creek Restoration Project in Superior. This funding is conveyed through an environmental infrastructure authority to help small rural and tribal communities in Arizona meet their water and wastewater infrastructure needs. Additionally, at the request of Superior's Mayor Mila Besich, the WRRC (on behalf of the working group) and Arizona Water Company applied for and received technical, financial, capacity building, and leadership development support through the Trust Building Support Initiative offered by River Network and the WaterNow Alliance.

Pilot Project with Arizona Water Company: Water RAPIDS has been partnering with the Babbitt Center for Land and Water Policy and Arizona Water Company (AWC) since 2021 to develop the prototype for an Esri-supported data platform to help exurban communities access and use data to achieve their sustainability and resilience goals. The project team collaborates with the Center for Geospatial Solutions, AWC, Casa Grande, and Pinal County. This work is driven by a shared commitment to improving data quality and access for more informed decision-making, especially in small to medium-sized communities with limited resources and capacity.


Water RAPIDS team field trip in Patagonia, AZ

Launching New Application with ADEQ and CALS CCT: In 2021, the Arizona Department of Environmental Quality (ADEQ) Water Quality Division collaborated with the WRRC and CALS Cyber Communications and Technologies (CCT) to develop the Surface Water Quality Standards (SWQS) Historic Document Catalog application. The online catalog launched in June 2022

for internal ADEQ use, giving staff access to historic water quality standards records and the ability to perform advanced queries of these records in a central repository. The novel approach to the catalog design allows queries to return data and information at the page level, saving a tremendous amount of time for ADEQ staff researching specific topics.

Working Across Borders

Transboundary Aquifer Assessment Program (TAAP)

The TAAP team, led by project Principal Investigator Sharon Megdal, included WRRC postdoctoral researcher Dr. Mary-Belle Cruz Ayala, University of Sonora research professor Dr. Elia M. Tapia, and hydrologist Dr. Eylon Shamir of the Hydrologic Research Center, and graduate student David Morales. Team members worked on several activities, including:

1. Collaborating with the USGS, the International Boundary and Water Commission (IBWC), Universidad de Sonora, and other TAAP partners with the overall implementation of TAAP.
2. Developing a water balance uncertainty assessment in the Santa Cruz River Basin focusing on irrigation areas.
3. Developing a hydrologic uncertainty assessment in the Santa Cruz River Basin focusing on evapotranspiration.
4. Examining the socioeconomic dimensions of transboundary aquifers in the US and Mexico and the impact of contrasting modes of governance in shared groundwater resources.

The TAAP team published "**Assessing Groundwater Withdrawal Sustainability in the Mexican Portion of the Transboundary Santa Cruz River Aquifer**," an article for the special issue, "Advances in Transboundary Aquifer Assessment," of the journal Water. Director Megdal serves as lead guest editor for the special issue.

Quitobaquito Springs, Arizona.

On May 16, 2022, the TAAP team organized a binational meeting in Nogales, Arizona, to discuss current and future opportunities for collaboration on the federally funded TAAP. This meeting included representatives from the WRRC, University of Sonora, and USGS. Team members gave presentations at regional, national, and international conferences, including the AGU Frontiers in Hydrology Conference. Director Megdal delivered an invited lecture, "Transboundary Water Cooperation in the Colorado River Basin," to the Porter School of Environment and Earth Sciences Seminar, Faculty of Exact Sciences, at Tel Aviv University.

The TAAP team also participated in developing the TAAP Five-Year Strategic Plan. This plan includes the participation of researchers from the USGS and the New Mexico and Texas Water Resources Research Act water institutes. The five-year cooperative agreement between USGS and the University of Arizona was issued by USGS in early December, through which funding through September 2023 was awarded.

Middle East Water

Director Megdal's Middle East water activities centered on serving as one of two UArizona board members for the Kasser Joint Institute for Food, Water, and Energy Security, a unique partnership of the University of Arizona, Jewish National Fund (JNF)-USA, and the Arava Valley in the South of Israel. The board hosted a multi-day meeting in Israel in late October, Director Megdal's first visit to Israel since March 2020. She stayed a few days longer for additional meetings. Some thoughts about the visit can be found in her November 18 ***Reflections*** essay, "Partnering to Address Food, Water, and Energy Security." Additionally, she connected Israeli water policy and management to our region through other lectures and meetings, including a virtual talk on "Agriculture, food, and water policy: The case of the Colorado River Basin" for the Tel Aviv University Food Security Summer Course.

Groundwater Governance and Management

In 2022, the WRRC's work in Managed Aquifer Recharge (MAR) reached new heights as Director Megdal and others engaged in many presentations, panels, and workshops, and published several articles on the topic. Notably, Director Megdal delivered an invited keynote on MAR at the United Arab Emirates University's International Conference on Water Resources Management and Sustainability: Solutions for Arid Regions and organized and led a MAR workshop as part of the International Symposium on Managed Aquifer

Recharge (ISMAR11). The workshop, titled "Meeting Water Management Objectives with Managed Aquifer Recharge: The Role of MAR Governance and Policy," focused on what successful regulatory frameworks look like and how they can help meet jurisdictional water management goals. In addition to ISMAR11 activities, which also included a plenary panel and keynote presentation, Dr. Megdal was recognized for her contributions to MAR policy and governance research with a Certificate of Appreciation from the International Association of Hydrologists Commission on Managing Aquifer Recharge. The WRRC's **Groundwater Governance and Management Website** features several of the articles published in 2022. A complete list can be found on **Director Megdal's CV**.

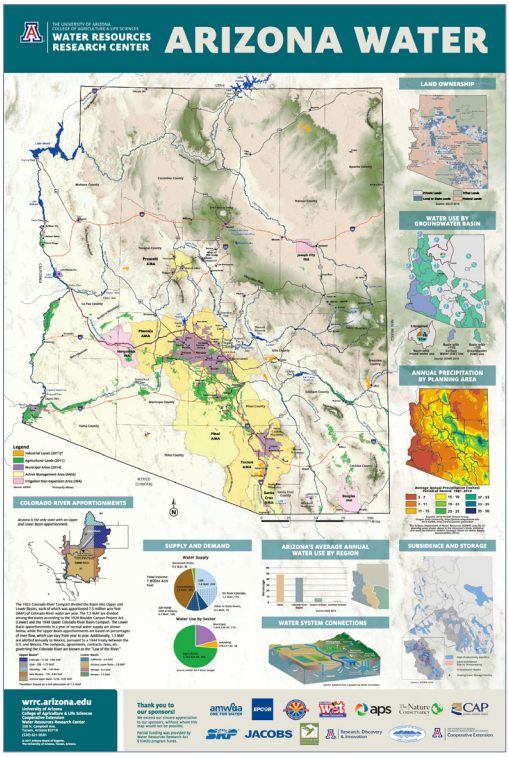
Water Resources Research Act Programs

As mentioned earlier in this report, the WRRC is the water resources research institute for Arizona, federally authorized under the Water Resources Research Act. The WRRA base (104b) funding supports a portion of our information transfer activities and a small competitive research grants program, which is open to students and their faculty advisors at all three state universities (UArizona, Arizona State University, and Northern Arizona University, or NAU). For the 2022-2023 project year, researchers Joseph Blankenship, Kevin Lansey, and Keri Hickenbotton (UArizona) and Temuulen Sankey (NAU) each submitted a proposal.

WRRA responsibilities include the highly competitive Section 104(g) National Competitive Grant Program. The WRRC solicits and submits proposals to USGS from researchers at any of Arizona's three state universities. In 2022, no proposals were submitted to the WRRC for this program.

Multi-University Collaboration on Groundwater-Dependent Agriculture

Director Megdal continues work with co-investigators from the University of California-Davis, California State University-Fresno, and New Mexico State University in an interdisciplinary project aimed at alleviating groundwater overdraft and sustaining irrigated agriculture in the Southwest. The project was awarded a $10 million grant from the US Department of Agriculture's, Agriculture and Food Research Initiative. The Arizona component focuses on agriculture in Pinal County. The Arizona team involves graduate research associate Simone Williams and soil health Extension specialist Debankur Sanyal. Arizona farmers Ron Rayner and Bryan Hartman serve on the project's advisory board. The project's first annual meeting was held in Davis, California, in November 2022. The team hosted an Arizona update meeting in January 2023 and will host the second project-wide symposium in January 2024.



Arizona Water Map Poster

The Arizona Water Map Poster is available exclusively from the WRRC for $12 (plus tax and shipping).

Order:
https://wrrc.arizona.edu/map

CONNECTING WITH A DIVERSE PUBLIC

The WRRC engages with partners, stakeholders, and the public throughout Arizona and beyond through multiple media platforms. A committee of WRRC personnel meets weekly to coordinate work on outreach activities and products and routinely responds to requests for information and media interviews.

Arizona Water Factsheets

In 2022, the WRRC expanded its engagement efforts with county Cooperative Extension offices and communities throughout Arizona with the **Arizona Water Factsheets** project. In 2022 the WRRC published water factsheets for Pima and Cochise counties. These factsheets offer accessible and relevant water information at the county scale, covering topics such as land management, water sources, water uses, water challenges, sustainable water management, and the future of county water. For each county, the information is condensed into a four-page (or expanded six to eight-page) resource that includes text, maps, and figures. A Technical Advisory Committee and municipal, nonprofit, extension, county, state, and federal external reviewers produce the factsheets collaboratively. All factsheets are posted to our dedicated website once published.

Diversifying Voices in Water Resources (DViWR)

As a trusted information and engagement resource for Arizona, the WRRC has undertaken a **multi-phase initiative** to broaden the range of participation in water resource dialogues. The first phase was uncovering diversity, equity, and inclusion (DEI) trends and patterns in water resources through a literature review by graduate student Simone Williams. She submitted an article based on this review that was published by the ***Journal of Contemporary Water Research and Education***, in April, 2023. The second phase is focused on developing a DEI outreach survey of National Institutes of Water Resources (NIWR) directors or designated staff. The survey was developed by Drs. Valerisa Gaddy, Susanna Eden, and Sharon B. Megdal, in collaboration with the NIWR DEI subcommittee, which includes representatives from water institutes nationwide. The survey will be the first known to address DEI in water resource dialogues and outreach and is expected to be released in mid-2023.

Signature Outreach and Engagement Efforts

***Annual Conference*:** The WRRC's annual conference, *Arizona's Agricultural Outlook: Water, Climate, and Sustainability*, was held July 12–14, 2022. This conference marked the 20th anniversary of the center's signature event, which is designed to share up-to-date information and insights on a water topic of importance to Arizona and the region. Since 2020, the WRRC, like most other organizations, has taken advantage of virtual programming to keep our tradition going, and each of the past three years has been something of an adventure. Though COVID-related uncertainty abounded as we began planning the 2022 conference, we followed the advice of an engaged group of expert conference advisors and tried a hybrid format. A full day of in-person programming, with non-interactive live-streaming, was followed by two days of shorter, fully virtual, and interactive programming. The conference attracted over 600 registrants for each day, including nearly 200 who registered to join us at the UArizona Student Union Memorial Center for the first day. The agenda, along with session recordings and materials, speaker and moderator bios, and sponsor information, can be found on the **conference website**.

WRRC Seminar Series: In 2022, the WRRC Seminar Series (formerly known as Brown Bag Seminars) continued as webinars, attracting diverse audiences to presentations on a range of water topics. Throughout the year, the center held 13 seminars featuring state, national, and international experts. On average, 141 people attended our seminars through the end of 2022,

up from 132 in 2021. Subject to speaker permission, the WRRC website posts recordings and copies of slide presentations for each seminar.

Other Public Events, Presentations, and Posters: In addition the Seminar Series, the WRRC hosted or co-hosted five special events in 2022: a special Tohono O'odham storytelling event with Jesse Navarro; "Counter Mapping Articulates What Is Between," presented by Jim Enote; "INHABITANTS: Indigenous Perspectives On Restoring Our World," featuring Dr. Michael Kotutwa Johnson and filmmakers Costa Boutsikaris and Anna Palmer; an *Imagine a Day Without Water* discussion panel about the documentary *Thirst for Justice*; and "Water and Agriculture: Chile-Arizona Experience," co-hosted with the Office of Agriculture at the Chilean Embassy in Washington DC. More information on these and other WRRC events can be found on our website.

WRRC staff and students make many oral and poster presentations to academic, professional, civic, and community groups locally, nationally, and internationally throughout the year. In 2022 these included a Teach-In event in celebration of World Water Day on March 22. In 2022, Director Megdal and other WRRC staff were interviewed by over 34 news organizations to comment on the rapidly developing situation in the Colorado River basin and other water management issues. The WRRC also co-sponsored the **Native Voices in STEM** seminar series, a collaboration with the UArizona **Indigenous Resilience Center**. These seminars feature Native scientists, engineers, activists, community members, and leaders who share their personal and professional journeys.

Arroyo: In 2022, the *Arroyo*, WRRC's annual publication on a single topic of timely interest to Arizona, was created to capture the perspectives and wisdom of the predominantly Native American participants in the WRRC's 2021 annual conference: *Tribal Water Resilience in a Changing Environment*. Recent UArizona graduate and former WRRC summer intern Brian McGreal used conference recordings, presentations, and supplemental materials for the first draft. He sent a draft for external review by conference advisors and speakers and revised it in accordance with their comments.

Acknowledgements include all the external reviewers. The finalized 2022 *Arroyo* was sent in early July to both email and print subscribers, including libraries, schools, firms, and nonprofits, and additional copies have been distributed through multiple organizations and conferences. A unique reference, copies can be obtained from the WRRC upon request. Support for the 2022 *Arroyo* was provided by the Southern Arizona Water Users Association and the University of Arizona Agnese Nelms Haury Program in Environment and Social Justice through their conference sponsorships.

Work on the 2023 *Arroyo* is ongoing with the vital assistance of graduate student Luke Presson, who began as a summer intern and is continuing through the fall semester. Again linked with the annual conference, this *Arroyo* focuses on agricultural water use. Its new format will feature a brief synopsis of the 2022 conference, *Arizona's Agricultural Outlook: Water, Climate, and Sustainability*, and will include a series of factsheets in an appendix. The factsheets are designed to supplement the *Arroyo*, and can be distributed separately. Conference sponsorships at the *Arroyo* level, by Southern Arizona Water Users Association and Bridgestone, support the 2023 issue.

Using Electronic Media

Weekly Wave e-news digest: In 2022, the WRRC published 34 editions of the *Weekly Wave* and six editions of the bimonthly *Summer Wave*. Each edition included WRRC and water community news, events, publications, and announcements. We also featured guest articles from collaborators around the state and region. In addition, the *Weekly Wave* publishes Director Megdal's commentary series, *Reflection*s. In 2022, Megdal authored nine ***Reflections***, which are also posted on the WRRC website. As of the end of the year, the *Weekly Wave* distribution list included over 3,300 subscribers and has a greater reach through views on the WRRC website and further distribution by recipients.

WRRC Website and Communications: The WRRC maintains two websites. The main site continues to feature news, events, and programs, as well as publications and other resources, such as Seminar Series recordings. The second site features the **Conserve2Enhance** program. In 2022, the WRRC continued to employ social media, specifically **Facebook**, Twitter (**@AZWRRC**), and Instagram (**@uazwrrc**), to share program updates and events and highlight publications. Twitter has become the WRRC's primary social media platform.

Annual WRRC Photo Contest: The WRRC sponsors a contest for the best photographs of Arizona water in four categories (Best in Show, Water is Life, Water in the Built Environment, and Water in Nature) on the year's specific theme. Photographs are used in multiples ways, including on Instagram. For the 2022 Photo Contest, WRRC established the contest theme, "Water Now! Living with Less." Winning photos for each category can be **viewed on the website**.

AFFILIATED PROGRAMS

APW - Developing water stewards through student-centered instruction and Arizona-specific content.

Arizona Project WET Water Education Program: As an extension program physically housed in the WRRC, Arizona Project WET (APW) aims to bring the water knowledge of experts from industry and academia into the K-12 education system by using the best education techniques and inspiring students and teachers to explore the state's water resources. In 2022, APW continued its mission of building water-literate leaders, educators, professionals, and community stewards by:

- deepening water-related content knowledge for 159 teachers through **professional development workshops**.
- bringing **real-life water content** to more than 5,800 students **in classroom and field programs** and to over 11,500 students at Arizona Water Festivals in 28 communities around the state.
- **facilitating K-12 classroom engagement** with over 30 cities, water companies, and partners who supported our programs through sponsorships and by volunteering at events, and sharing their content expertise in support of curriculum development.

Water, Environment, and Energy Solutions Initiative (WEES): Since July 1, 2021, control over TRIF funding is now with the Arizona Legislature, which initiated a new approach to distributing TRIF monies. The WRRC is grateful for continued TRIF funding through the University of Arizona Senior Vice President for Research, Innovation and Impact.

PERSONNEL AND FACILITIES

STAFF (2022)

Sharon B. Megdal
Director

Leslie Bonilla
Accountant

Mary-Belle Cruz Ayala
Postdoctoral Researcher

Susanna Eden
Research Program Officer

Jessie Hampton*
Communications Coordinator

Ashley Hullinger
Program Director

Valerisa Joe-Gaddy*
Postdoctoral Researcher

Becky Murguia*
Accountant I

Martin Picazzo
Systems Administrator

John Polle
Media Specialist

Michael Seronde
Program Manager

Amanda Trakas*
Statewide Water
Information Manager

Rose Veneklasen
Administrative Associate

*See personnel changes section on page 10.

Who We Are

Staff and Students

As WRRC director, Dr. Megdal supervised support and programmatic staff. As a faculty member in the Department of Environmental Science (ENVS), she is also responsible for her individual research, Extension work, and teaching. Programmatic staff—Susanna Eden, Ashley Hullinger, Michael Seronde, and Mary-Belle Cruz Ayala — carried out research, Extension, and education projects that focus on enhancing the capacity of stakeholders and communities to tackle water resource issues. John Polle continued to maintain, and update the center's two websites and provided graphic design expertise.

In 2022, Rose Veneklasen and Leslie Bonilla assisted in administrative and financial matters. Bonilla's administrative home is ENVS, which has shared a business center with the WRRC since January 2018. A team responsible for the implementation of core outreach and engagement programs met weekly to coordinate communications and related activities.

In 2022, 2 undergraduate and 6 graduate students supported the WRRC's work in important ways. A list of WRRC students can be found in **Appendix B**: Supplemental Information. To learn about our staff and graduate students, please visit the WRRC Personnel Directory.

The WRRC facility shut down in March 2020 amid the COVID-19 pandemic and remains closed to the public except by appointment.

Changes in 2022

The WRRC welcomed new staff members Dr. Valerisa Gaddy and Jessie Hampton in March 2022. Dr. Gaddy joined as a postdoctoral researcher. She is originally from Gallup, New Mexico, and is of the Diné (Navajo) people. She received both her master's degree and PhD in environmental science, with an emphasis in microbiology, from the University of Arizona. Hampton is our communications coordinator and primarily assists with preparing the *Weekly Wave* and coordinating seminars and events. She has an academic background in biology, writing, and environmental studies, as well as professional experience in graphic design and copywriting.

In August, we also welcomed Becky Murguia and Amanda Trakas to the team. Murguia is a new accountant for the WRRC and ENVS Shared Business Center. She received her MBA in 2020 from the University of Phoenix. Trakas serves as our statewide water information manager and is based in the Phoenix area. She recently earned her Master's in Landscape Architecture from Arizona State University.

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GREATER DEPTH, BROADER PERSPECTIVE FOR A CLEAR WATER FUTURE

We tackle key water policy and management issues, empower informed decision-making, and enrich understanding through engagement, education, and applied research.

2022 HIGHLIGHTS

Photo: James Robert Baker – Greasewood Park; Tucson, AZ; 2019 (cropped) **WRRC Photo Contest**

505 PARTNERS/COLLABORATORS engaged on diverse projects and programs

8,793 RECIPIENTS of the annual *Arroyo* publication

3385 SUBSCRIBERS to the Weekly Wave e-News Digest

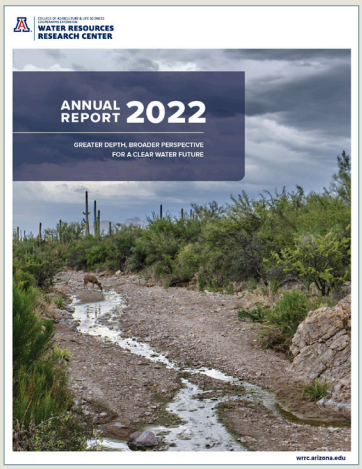
779 ATTENDEES at the 2022 Annual Conference

62 PRESENTATIONS by WRRC personnel to diverse audiences

28 PUBLICATIONS by WRRC personnel

160 SUBMISSIONS to the annual WRRC photo contest

93 PUBLIC INQUIRIES submitted and answered via WRRC-Extension's online information request form



ANNUAL REPORT

More information and metrics can be found **here**.

CONNECTING TO THE PUBLIC

As Arizona and the region face unprecedented water challenges, the WRRC continued to serve as a trusted source for reliable information. The WRRC received many requests for comments from both national and international media outlets covering a range of water management issues including the developing water crisis in the Colorado River basin. Through research, outreach, and engagement, the WRRC has continued to contribute to water resource planning, assessment, and capacity building, as well as to expand water awareness and understanding of water resource issues.

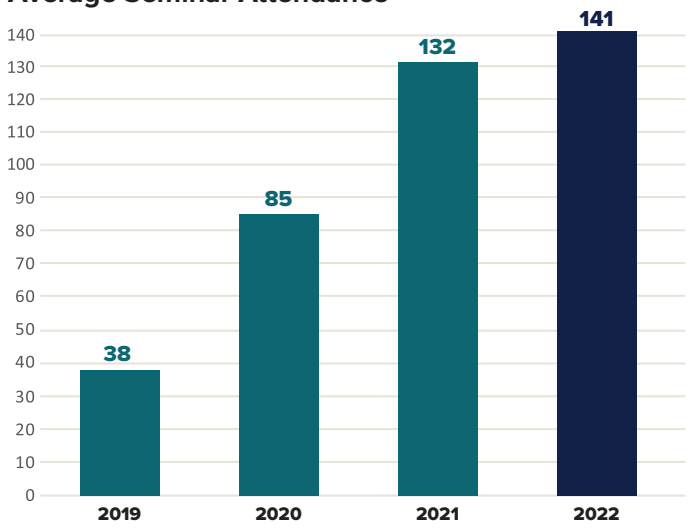
Annual Conference

The 2022 Annual Conference, *Arizona's Agricultural Outlook: Water, Climate, and Sustainability*, brought together more than 40 speakers over a span of three days. Held in person for the first time since February 2019, Day 1 of the conference attracted nearly 200 attendees. Days 2 and 3 were held virtually with close to 600 attending. The full recorded program is available online.

WRRC Seminar Series

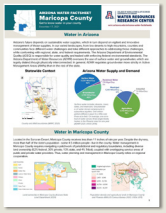
The WRRC's Seminar Series continues to attract diverse audiences in growing numbers for presentations and dialogues on a wide range of water topics.

Average Seminar Attendance



RESOURCES

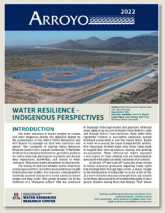
Online and Print



Arizona Water Factsheets

These county-level factsheets are designed to answer common questions about water resources, tailored to every county in Arizona so as to foster understanding of the local nature of Arizona water resource challenges and solutions.

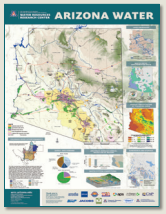
Factsheets



Arroyo

The *2022 Arroyo — Water Resilience - Indigenous Perspectives* — covers the history of the 1980 Groundwater Management Act, as well as subsequent legislation that created today's regulatory and management structure for addressing groundwater management issues and crafting solutions.

Arroyo



Arizona Water Map Poster

Order your water map using this **Order Form**.

Water Research and Planning Innovations for Dryland Systems

Through a flexible approach to water resources planning, the Water RAPIDS program seeks to strengthen local and regional economies while supporting the natural resources that contribute to quality of life.

Water RAPIDS

Transboundary Aquifer Assessment Program (TAAP)

TAAP is a federally funded program co-hosted by the USGS Arizona Water Science Center in Tucson, Arizona, and the Water Resources Research Center (WRRC) at the University of Arizona.

TAAP
TAAP Spanish

WRRC Website

The WRRC website highlights programs, activities, news, and events. Seminars and annual conference presentations are posted for easy access, along with publications and online resources.
wrrc.arizona.edu

- **WRRC Conference**
- **Groundwater Governance**
- **Middle East Water**
- **Publications**

REFLECTIONS

WRRC Director Sharon B. Megdal published nine *Reflections* essays via the Weekly/Summer Wave.

wrrc.arizona.edu/reflections

NIWR
THE NATIONAL INSTITUTES FOR WATER RESOURCES

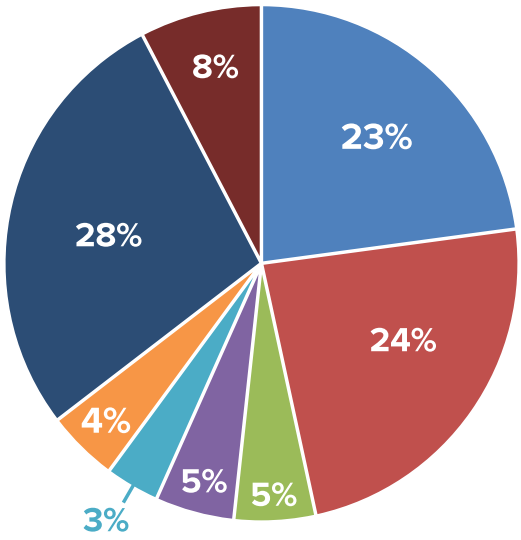
Member of the National Institutes for Water Resources

The WRRC is Arizona's federally authorized Water Resources Research Institute (WRRI), and as such, is one of 54 members of the National Institutes for Water Resources.

FINANCIAL SUMMARY CY 2022

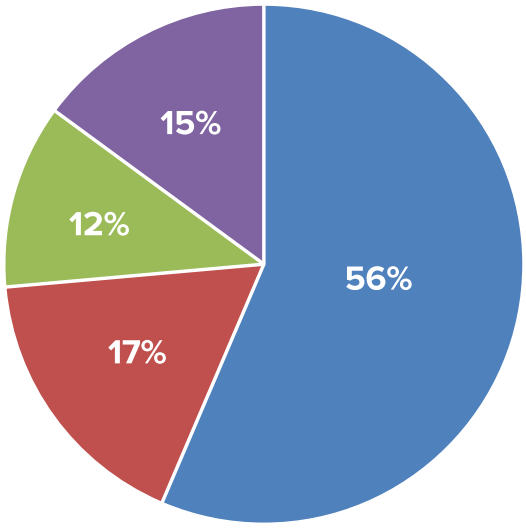
In addition to state funding, financial support continues to come from grants, sales, service activities, and gifts. Of the WRRC's total 2022 revenue, 57 percent came from government awards and 8 percent came from private gifts. Support for staff and appointed personnel accounted for 73 percent of total expenses, while the remainder of expenses were for WRRC operations and programs. The overall WRRC budget remained stable despite shifts in funding, programs, and expenses. The voter-approved Technology and Research Initiative Fund, now under control of the Arizona Legislature, continues to support the WRRC. While some travel expenses increased in 2022 as COVID-19 restrictions continued to lift, other expenses decreased as a result staffing changes.

Operating Support & Revenue



State Appropriations	$324,855
Federal Grants	$275,891
WRRA/NIWR Funds	$72,787
State Grants	$70,691
Private or Other Grants	$48,465
Sales and Service Activities	$63,829
Technology Research Initiative Fund	$393,642
Gifted Funding	$109,055
Total	$1,420,198

Operating & Program Expense



Salaries and Wages	$691,885
Fringe Benefits	$203,236
Operating Expense	$128,413
Program Expense	$139,801
Total	$1,163,336

NOTES

Operating Support & Revenue

- **State Appropriations:** State General Fund and tuition collections appropriated to CALS by the State of Arizona.
- **Federal Grants:** Monies received for awarded competitive national federal grants and federally funded cooperative agreements awarded to the WRRC.
- **WRRA / NIWR Funds:** U.S. Geological Survey 104(b) five-year Cooperative Agreement funded annually in March. The WRRC receives this federal funding as Arizona's State Water Resources Research Institute.
- **State Grants:** Revenue provided by the State of Arizona through competitive grants awarded to the WRRC by departments of the State of Arizona.
- **Private or Other Grants:** Revenues received by the WRRC through the University and the University of Arizona Foundation from local governmental agencies and non-governmental organizations.
- **Sales and Service Activities:** Revenue from one-time transactions accrued over time by the WRRC from publication sales, annual conferences, and miscellaneous services.
- **Technology and Research Initiative Fund (TRIF):** Revenue from TRIF, a state sales tax-derived fund supporting a range of educational programs. TRIF funding is distributed by the Arizona Legislature.
- **Gifted Funding:** One-time gifts from individuals and companies and revenue generated by endowment interest-bearing accounts.

Operating and Program Expense

- **Salaries and Wages:** Includes salaries, wages and supplemental compensation paid to WRRC faculty, appointed personnel, classified staff, graduate assistants, and student hourly employees.
- **Fringe Benefits:** Includes costs of employee fringe benefits (ERE) for insurance, medical, and retirement benefits.
- **Operating Expense:** Includes UArizona revenue and expense service fees; facilities and administration (indirect costs); UITS network funding fees (access to University communication systems for staff); background checks; membership dues; subscriptions; building and equipment maintenance and upgrades; employee training; WRRC Seminar Series; Arroyo Annual publication; and WRRC Annual Conference.
- **Program Expense:** Includes University and lecturer's fees, participant support and temporary labor; subcontractual research agreements for 104(b) grants at Northern Arizona University; printing and publications; communications; office, research, educational, and general supplies; employee travel; conference registration fees; facility and vehicle rental; and meetings and workshops.

Photos

Table of contents: Brian Anderson - Bring It On; Tucson, AZ; 2007
1. Camilo Salcedo; Reflections Inside the canyon; Marble Canyon, AZ; 2022
3. Ted Wuollet; Horseshoe Dam Reservoir; Horseshoe Lake, AZ; 2021
4. Doug Parsons; Post-monsoon; Bear Canyon; Tucson, AZ; 2022
8. Dave Wilson; Havasu Creek; Grand Canyon, AZ; 2014
9. Chris Connor; Mirrored Water; Dead Horse Ranch State Park, AZ; 2022
10. Holly Winters; Last Light; St. Johns, AZ; 2022

Back Cover: Dave Wilson; Autumn at West Clear Creek; West Clear Creek, AZ; 2016

Photos on pages 1-9 were submissions to the **2022 WRRC Photo Contest.**

KEEP UP WITH WRRC NEWS AND EVENTS

WEEKLY WAVE

The *Weekly Wave* e-news digest is distributed on Fridays and contains WRRC news, events, and much more.

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