

# WEEKLY WAVE



THE UNIVERSITY OF ARIZONA  
COOPERATIVE EXTENSION

## WATER RESOURCES RESEARCH CENTER



December 8, 2023 / Volume 11, Issue 35

The Water Resources Research Center - a research unit of the [College of Agriculture, Life and Environmental Sciences](#) and an Extension unit in [UA Cooperative Extension](#) within the Division of Agriculture, Life & Veterinary Sciences & Cooperative Extension.  
[Land Acknowledgement.](#)

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**IN THIS ISSUE:** Photo Contest, ADWR, Seminar Recap, APW, COP28, NVIS Recap

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**ENDS DEC. 15!**  
**WRRRC 2023 Photo Contest**  
**WATER SCARCITY & EXTREME WEATHER**

**Submit Your Photos by December 15!**

The deadline to submit photos for the annual WRRRC Photo Contest is rapidly approaching! Send us your photos by **December 15**. This year, the theme is Water Scarcity & Extreme Weather in Arizona. We invite you to showcase your talent by capturing the essence of Arizona's climate challenges — from floods to droughts and microbursts to wildfires — in compelling images. Focus your unique vision on illuminating Arizona's paradoxical water landscape and its astonishing weather extremes. The categories will focus on the Water Scarcity & Extreme Weather theme, featuring people,

the built environment, nature, or arid/semi-arid lands outside of Arizona. There is also a category for general photos of Arizona water, which are not necessarily required to fit into the Water Scarcity & Extreme Weather theme. One winner, one runner-up, and one honorable mention will be chosen from each category. Each entrant may submit up to three photos. Winners will be announced during the 2024 Chocolate Fest in February (date TBD), and winning photographs will be featured on the WRRC website. Photo Contest images will be used in WRRC publications and other outreach materials. We look forward to seeing your submissions!

[More Info](#)

[Last Year's Winners](#)

## EVENTS



WRRC 2024  
ANNUAL  
CONFERENCE

**IMPLEMENTING  
WATER  
SOLUTIONS  
THROUGH  
PARTNERSHIPS**

**MARCH 12-13**  
University of Arizona  
Student Union Grand Ballroom

### CALL FOR STUDENT POSTER ABSTRACTS

**Deadline - December 15!**

All students in Arizona participating in water research, management, or community engagement projects in the Southwest region are encouraged to apply!

[More info ▶](#)

### Upcoming WRRC Co-Sponsored Events

**Jan 30, 2024:** Arizona Association of Women in Water & Agriculture (Wine, Women & Water Reception) – Co-sponsored by the WRRC – Save the Date!

**Jan 31, 2024:** Arizona Association of Women in Water & Agriculture Annual Meeting – Co-sponsored by the WRRC – Save the Date!

**Feb 6:** [NVIS Spring 2024 Seminar: Indigenous Ingenuity: A Path Forward – Co-sponsored by the WRRC](#)

**Mar 12:** [NVIS Spring 2024 Seminar: Place Based Learning and Cultural Fire Practice in California – Co-sponsored by the WRRC](#)

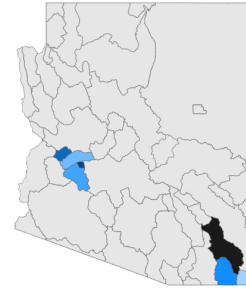
**Apr 2:** [NVIS Spring 2024 Seminar: \[Presentation title TBD\] – Co-sponsored by the WRRC](#)

**May 7:** [NVIS Spring 2024 Seminar: Eleltek Waali \(I'm Reading Country\) – Co-sponsored by the WRRC](#)

## NEWS

**ADWR Releases First Seven Groundwater Basin Assessments**

The Arizona Department of Water Resources recently released the first seven supply and demand assessments for the state's groundwater basins. The department is required by a state law signed in 2022 to complete a supply and demand assessment of each of Arizona's 51 basins every five years. At least six assessments are due annually on December 1. This year, seven basins were assessed: Butler Valley, Douglas Active Management Area (AMA), Harquahala Irrigation Non-Expansion Area (INA), McMullen Valley, San Bernardino Valley, Tiger Wash, and the Willcox basin. The assessments are not groundwater flow models, but rather structured as water budgets detailing total inflows and outflows of each basin. Demand across various sectors, such as agriculture, industrial, municipal, and others, was estimated and compared with the volume of water supplies available to meet those demands. The assessments project supply and demand out to 2075 under various scenarios.



[Read More](#)

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## WRRC Features More Student Research

November 30 brought part two of the WRRC 104(b) Grant Program Student Research Webinars, with presentations on "Low-Energy Brackish Water Desalination" and "Increasing Water Storage in Arid Soils with Biological Applications." Arianna Tariqi, a UArizona Environmental Engineering PhD student, aims to increase Arizona's water supplies by improving desalination technology. Her research looked at different compositions of salt-removing technologies to improve performance and lower energy input of desalination. The result of the experiment showed that a post-treatment with a nanofiltration 270 membrane (NF270) after reverse osmosis (RO), a widely used desal technology, performed best. This configuration showed comparable water quality to RO and lower energy inputs at a significantly lower cost. Next up, Dustin Fancher, a master's student in the Environmental Science department at UArizona, discussed his research into reducing drought impacts in Arizona by improving soil health. The project sought to increase soil carbon, which increases the ability of soil to hold water by implementing rotational grazing in place of or in addition to other soil treatments. The results of the experiments show that rotational grazing, over the other methods tested, can increase soil's water-holding capacity. Under the Water Resources Research Act, Section 104(b) Grant Program, the WRRC provided grants to support these projects. Refer to the link below to learn how you can submit your proposal for a water research project.



[View the Recording  
104\(b\) Research](#)

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**Conservation Education Partnerships**

Today's youth are tomorrow's leaders, and none today can question the importance and benefits of environmental stewardship. The Arizona Envirothon helps students to develop the critical thinking skills necessary to manage and conserve natural resources sustainably, always mindful of economic, social, and environmental concerns. Arizona Envirothon is modeled after the National Conservation Foundation (NCF) Envirothon, North America's largest natural resource competition for high school students. Arizona's competition is open to all high schools within the state. Interested students form a 5-member team, study and learn about our natural resources, and then compete for the opportunity to win significant prizes and represent Arizona at the annual NCF Envirothon, being held in upstate New York this year. Both the Arizona Envirothon and NCF Envirothon programs encourage working in partnership with natural resource management professionals, the education community (such as Arizona Project WET), and the public. These programs strive to create an effective multidisciplinary educational tool that will help our state's schools to nurture environmentally aware students, meet an immediate need to teach more environmental education, and recognize students in grades 9–12 who achieve excellence in natural resource management, knowledge, and skills. There will be over 100 high school students competing for prizes at the R-C Scout Camp in Payson on April 5-6, 2024. Please help APW get the word out to high schools across the state.



*Image: Jeff Humphrey, AZ Envirothon Public Relations Chair*

### [More Info](#) [Registration Packet](#)

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## **WRRC Graduate Student Presents at COP28 Side Event**

*This essay was written by WRRC Graduate Outreach Assistant Taylor Simmons.*

The 28<sup>th</sup> meeting of the Conference of Parties (COP28) is an international conference hosted by the United Nations Framework Convention on Climate Change (UNFCCC) from November 30 – December 12, 2023. The COP comprises 198 parties (197 countries and the European Union), representing the largest annual United Nations conference with an average of 25,000 attendees, though over 70,000 registered this year. Established in 1995 and hosted in different countries annually (aside from 2020), the conference is dedicated to developing global approaches to mitigate climate change and assessing resilience along with reviewing the efficacy of current climate change strategies. Strategies reviewed at this year's COP in Dubai included the 1997 Kyoto Protocol, dedicated to stabilizing greenhouse gasses, and the 2015 Paris Agreement, a plan to maintain global temperature increase lower than 1.5 degrees Celsius, a tipping point in the Earth's climate equilibrium. I attended and gave a research presentation on sanitation and safe drinking water as part of a UArizona-organized delegation. Read on for more information about the proceedings.



### [Read More](#)

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## **Culture and Water History in Southern California Tribal Communities**

On December 5, the NVIS Fall 2023 Seminar Series featured Vincent Whipple, a Postdoctoral Research Associate at the AZ Institute for Resilience and American Indian Educator from the Lakota/Sioux and Diné/Navajo Tribes. The seminar highlighted Whipple's dissertation that investigated Indigenous students' perception of their identity and their involvement in Tribal events and cultural resources on university campuses. This study improved the understanding of which university Indigenous programs work and also where they can fall short.



The presentation also highlighted Southern California's Indigenous water history, supplemented with a brief viewing of a documentary entitled "Once We Had Water." The film tells the story of the San Luis Rey Water Settlement Act of 1988 and the history of how a vital resource, the San Luis River, was stripped from the Tribes in the region. Whipple explained how not only colonialism harmed these Tribes, but how removing water from this Indigenous community forcibly changed the culture. The documentary relates to the current work that Whipple is a part of in Southern California Tribal communities. This presentation closed out the Fall 2023 seminar series; however, the Indigenous Resilience Center will continue the NVIS seminars – cosponsored by the WRRRC – in the spring.

- [Whipple's Dissertation](#)
- [Link to Documentary](#)
- [NVIS Seminar Series](#)

## WATER JOBS

ADWR [GIS Intern](#)

Please visit [WRRC's website](#) for a complete listing of water jobs & opportunities.

## NOTICES, PUBLICATIONS, and MEDIA

### **Call for Abstracts: 3rd International Groundwater-Agriculture Conference**

This international conference will highlight the science and challenges of groundwater resources management and water quality protection related to agricultural landscapes and will identify promising technical and policy solutions for a sustainable future. The deadline to submit an abstract is January 31, 2024. [More Info](#)

### **Waterloop Podcast: A Look Inside Navajo Nation**

In this episode, Crystal Tulley-Cordova, Principal Hydrologist for the Navajo Nation Department of Water Resources, shares her experiences and observations, including how climate change is impacting the landscape. [Listen Here](#)

## CALENDAR ANNOUNCEMENTS

- **Dec 8:** [Environmental Professionals of Arizona \(EPAZ\) Conference – Student Poster Submission Deadline](#)
- **Dec 11–15:** [AGU23: Wide. Open. Science](#)

- **Dec 12–13:** [Western SARE: Building Partnerships for Agricultural Sustainability Summit](#)
- **Dec 13:** [ADEQ Arizona Aquifer Water Quality Standards Rulemaking Virtual Meeting](#)
- **Dec 13–15:** [2023 Colorado River Water Users Association \(CRWUA\) Annual Conference](#)
- **Dec 15:** [2024 Arizona Water Reuse Symposium – Abstract Deadline](#)
- **Dec 15:** [WRRRC 2023 Photo Contest: Water Scarcity & Extreme Weather – Submission Deadline](#)
- **Dec 15:** [WRRRC 2023 Annual Conference – Student Poster Abstract Deadline](#)
- **Dec 18:** [Environmental Professionals of Arizona \(EPAZ\) Conference – Abstract Submission Deadline](#)
- **Dec 19:** [AHS Tucson Holiday Party](#)
- **Dec 22:** [A Meeting of Sacred Waters: A Global Gathering of Indigenous Voices – Abstract Deadline](#)
- **Dec 30:** [Water Quality Research Foundation – Poster Submission Deadline](#)
- **Jan 1, 2024:** [RiversEdge West 2024 Conference – Poster Presentation Abstract Deadline](#)
- **Jan 8, 2024:** [NGWA Conference: Groundwater in the PFAS Era: Stressors, Protection, & Compliance – Abstract Submission Deadline](#)
- **Jan 12:** [2024 Bouwer Intern Scholarship – Application Deadline](#)
- **Jan 22–24, 2024:** [Growing Water Smart: Integrated Water and Land Use Planning Workshop](#)
- **Jan 30, 2024:** [Arizona Association of Women in Water & Agriculture \(Wine, Women & Water Reception\) – Co-sponsored by the WRRRC – Save the Date!](#)
- **Jan 31, 2024:** [Arizona Association of Women in Water & Agriculture Annual Meeting – Co-sponsored by the WRRRC – Save the Date!](#)
- **Jan 31, 2024:** [3<sup>rd</sup> International Groundwater-Agriculture Conference: Toward Sustainable Groundwater in Agriculture - Linking Science and Policy – Abstract Deadline](#)
- **Jan 31, 2024:** [Pete McBride: Into the Grand Canyon, Between River and Rim](#)
- **Feb 4–7, 2024:** [NIWR 2024 Annual Meeting](#)
- **Feb 6:** [NVIS Spring 2024 Seminar: Indigenous Ingenuity: A Path Forward – Co-sponsored by the WRRRC](#)
- **Feb 11–13, 2024:** [AWWA/WEF Young Professionals Summit](#)
- **Feb 22–23, 2024:** [2024 Family Farm Alliance Annual Conference – Resilience in Every Drop: Safeguarding America’s Food Security](#)
- **Feb 26–27, 2024:** [Environmental Professionals of Arizona \(EPAZ\) Conference](#)
- **Feb 26–28, 2024:** [Water Resources Management & Sustainability: Solutions for Arid Regions 2nd International Conference](#)
- **Feb 27–29, 2024:** [2024 Southwest Adaptation Forum – Save the Date](#)
- **Feb 28–Mar 1, 2024:** [MSSC 2024 Annual Salinity Summit](#)
- **Mar 5–7, 2024:** [RiversEdge West 2024 Conference – Restoration for the Future: Promoting Resilience in Our Rivers and Communities](#)
- **Mar 10–16, 2024:** [National Groundwater Awareness Week](#)
- **Mar 11–14, 2024:** [AWWA WaterReuse 2024 Symposium](#)
- **Mar 12:** [NVIS Spring 2024 Seminar: Place Based Learning and Cultural Fire Practice in California – Co-sponsored by the WRRRC](#)
- **March 12–13, 2024:** [WRRRC 2024 Annual Conference: Implementing Water Solutions Through Partnerships](#)
- **March 12–13, 2024:** [A Meeting of Sacred Waters: A Global Gathering of Indigenous Voices](#)
- **Mar 25–27, 2024:** [AWRA 2024 Geospatial Water Technology Conference: Data to Decisions: Managing & Modeling Water Challenges](#)
- **Apr 2:** [NVIS Spring 2024 Seminar: \[Presentation title TBD\] – Co-sponsored by the WRRRC](#)
- **Apr 3–6, 2024:** [BSMAR18](#)

- **Apr 8–10, 2024:** [AWRA 2024 Spring Conference: Water Risk & Resilience: Research and Sustainable Solutions](#)
- **Apr 16–17, 2024:** [NGWA Conference: Groundwater in the PFAS Era: Stressors, Protection, & Compliance](#)
- **Apr 23–25, 2024:** [97<sup>th</sup> Annual AZ Water Conference & Exhibition Annual AZ Water Conference & Exhibition](#)
- **May 7:** [NVIS Spring 2024 Seminar: Eleltek Waali \(I'm Reading Country\) – Co-sponsored by the WRRC](#)
- **Jun 10–13, 2024:** [AWWA 2024 Annual Conference & Expo \(ACE24\): Transforming Our Water Future](#)
- **Jun 17–20, 2024:** [3<sup>rd</sup> International Groundwater-Agriculture Conference: Toward Sustainable Groundwater in Agriculture - Linking Science and Policy](#)
- **Jul 28–30, 2024:** [2024 Arizona Water Reuse Symposium](#)
- **Sep 30–Oct 2, 2024:** [AWRA/UCOWR/NIWR 60th Anniversary Joint Water Resources Conference](#)

Do you have a story idea, water job announcement, or event to share?

[Contact us here](#)