

ARKANSAS WATER RESOURCES CENTER

Protecting Water Supplies for People and the Environment



*Pinnacle Mountain overlooking
Lake Maumelle, Arkansas
Courtesy of Paul Martin*

JULY 25 & 26, 2017
AWRC Annual Conference
Fayetteville Town Center

WELCOME TO THE 2017 ANNUAL WATERSHEDS & RESEARCH CONFERENCE

Dr. Brian E. Haggard, Professor & Director
Erin E. Scott, Program Manager

2017 TECHNICAL ADVISORY COMMITTEE

Nathan Wentz - *ADEQ*

Randy Easley - *Central Arkansas Water*

Robert Morgan - *Arkansas Forests and Drinking Water*

Michelle Evans-White - *University of Arkansas*

Jerry Farris - *Arkansas State University*

Reed Green - *US Geological Survey*

Hal Liechty - *University of Arkansas Monticello*

James McCarty - *Beaver Water District*

Tony Ramick - *ANRC*

Michele Reba - *USDA-ARS*

Tim Snell - *The Nature Conservancy*

Darcia Routh - *ADH*

John Pennington - *Beaver Watershed Alliance*

David Johnston - *Arkansas Geological Survey*

We appreciate your service!

Need to test a water sample?

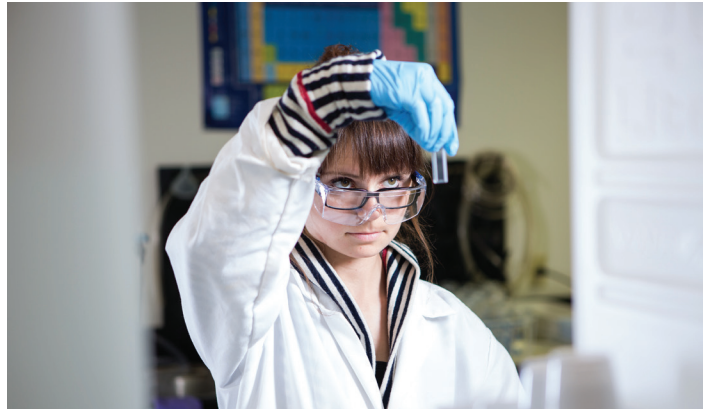
The AWRC Water Quality Lab can test anyone's water!

The Lab is certified by the Arkansas Department of Environmental Quality.

The lab measures...

- ✓ Nutrients
- ✓ Sediments
- ✓ Metals
- ✓ Chlorophyll a
- ✓ Chloride
- ✓ Fluoride
- ✓ Sulfate
- ✓ Bacteria
- ✓ Carbon
- ✓ Alkalinity
- ✓ Hardness
- ✓ Turbidity
- ✓ pH
- ✓ Conductivity

<http://arkansas-water-center.uark.edu/water-quality-lab.php>



Tuesday July 25

Networking Break
sponsored by

7:00 am

Check-in, Coffee, Juice, Pastries

Session 1: Protecting Water Supplies

Moderated by **Raven Lawson**, Central Arkansas Water

8:30 am

Conference Welcome & Introduction

Brian E. Haggard, *AWRC Director, UA Department of Biological and Agricultural Engineering*

8:40 am

The State of Water: Attitudes, Perceptions, and Policy Preferences in Arkansas

Rachael Moyer, *University of Arkansas Public Policy Program*

8:55 am

Source Water Protection: Beaver Water District's Watershed Investment Program

James McCarty, *Beaver Water District*

9:10 am

Why We Burn: Prescribed Fire as a Water Quality Management Tool

Randy Easley, *Central Arkansas Water*

9:25 am

Intensive Community Engagement to Achieve Sustainable Sourcewater Protection and Watershed Restoration

John Pennington, *Beaver Watershed Alliance*

9:40 am Networking Break





Tuesday July 25

Session 2: Science and Policy in the Illinois River Watershed

Moderated by **Brian E. Haggard**, AWRC

10:10 am

The Oklahoma-Arkansas Joint Phosphorus Study

Ryan King, *Baylor University Biology Department*

10:30 am

Bioavailability of Dissolved Organic Carbon in Ozark Highlands Streams Varies Across Gradients of Anthropogenic Sources

Caleb Robbins, *Baylor University Biology Department*

10:45 am

Productivity Drives Sharp Reductions in Diversity of Macroinvertebrate Assemblages in Rivers of the Ozark Highlands

Stephen Cook, *Baylor University Biology Department*

11:00 am

Innovative Approaches to Watershed Management

Nicole Hardiman, *Illinois River Watershed Partnership*

11:15 am

The Criteria is Recommended, So Where is the Illinois River Now?

Brian E. Haggard, *AWRC Director, UA Department of Biological and Agricultural Engineering*

Lunch & Poster Session

11:30 am Lunch Provided

12:30 pm Poster Session

Presenters should chaperone their posters.

OTT Hydromet Water Quality Solutions

DATA COLLECTION



Hydrolab HL4
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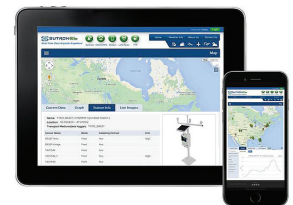


Sea-Bird Coastal
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DATA TRANSMISSION



For a full list of available devices and measured parameters, please visit sutron.com or ott.com.



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POSTER SESSION

UNDERGRADUATE STUDENT POSTERS

Sorption of Benzobicyclon in Soils of Rice Growing Regions of Arkansas

Student Jessica Clarke, Fort Valley State University
Advisor Dr. Cammy D. Willett, University of Arkansas
Mentor Erin Grantz, University of Arkansas

Electrodeionization for the Production of Bicarbonate Enhanced Algae Growth

Student Catherine E. Atchley, University of Arkansas
Advisor Dr. Jamie Hestekin, University of Arkansas
Mentor Dr. Christa Hestekin and Humeyra B. Ulusoy-Erol, University of Arkansas

Factors Controlling CO₂ Evasion at Forested Streams

Student Stephanie Batog, Villanova University
Advisor Dr. Michelle Evans-White, University of Arkansas
Mentor Allyn Dodd, University of Arkansas

The Effects of Low-Level Salinization on Bacterial Communities in Aquatic Environments

Student Thomas Williams, University of Arkansas
Advisor Dr. Michelle Evans-White, University of Arkansas
Mentor Brooke Howard-Parker, University of Arkansas

The Effect of Non-Native Fescue Grass (*Festuca arundinacea*) on the Hatching Success of Leopard Frog (*Lithobates sphenoccephalus*) Eggs

Student Philip Mariage, University of Arkansas
Advisor Dr. John D. Wilson, University of Arkansas
Mentor Chelsea S. Kross, University of Arkansas

A Viable Food Hub for Northwest Arkansas

Student Theresa Hinkle, Cameron University
Advisor Dr. Marty D. Matlock

Limiting Nutrients at Cave Springs Lake

Student Violet Eagle, Metropolitan State University of Denver
Advisor Dr. Brian E. Haggard, University of Arkansas
Mentor Dr. Bradley J. Austin and Brina A. Smith, University of Arkansas

Modeling the Effects of Crayfish Invasion and Drought on Hypothetical Crayfish Population Dynamics

Student Leah Bayer, Youngstown State University
Advisor Dr. Dan D. Magoulick, University of Arkansas
Mentors Robert Fournier, University of Arkansas

Water Quality Impacts of Wild Hogs

Student Brent Chaney, Mississippi State University
Advisor Dr. Beth Baker, Mississippi State University

Poster session continues on next page



RESEARCH EXPERIENCES FOR UNDERGRADUATES





POSTER SESSION

GRADUATE STUDENT POSTERS

Concentration of Herbicides in Tail-water Recovery Systems and Impact on Sensitive Crops

Student Matthew N. Thompson, University of Arkansas
Advisor Dr. Cammy D. Willett, University of Arkansas

Accumulation and Release of Lead by Biofilms in Drinking Water Distribution Systems

Student Kaleb Belcher, University of Arkansas
Advisor Dr. Wen Zhang, University of Arkansas

Efficiency of Liquid Water Treatment Residuals in Reducing Soil Phosphorus Release

Student Megan Reavis, University of Arkansas
Advisor Dr. Brian E. Haggard, University of Arkansas

Evaluation of Irrigation Sensors for Lawn Turf and Potential Water Savings

Student Daniel Sandor, University of Arkansas
Advisor Dr. Doug Karcher, University of Arkansas

*Poster Session
sponsored by*

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Comparative Microbial Community Dynamics in a Karst Aquifer System and Proximal Surface Stream in Northwest Arkansas

Student Josue Rodriguez, University of Arkansas
Advisor Dr. Matthew Covington, University of Arkansas

The Effects of Phosphorus and Light on Recalcitrant Organic Matter Degradation in Lotic Systems

Student Brooke Howard-Parker, University of Arkansas
Advisor Dr. Michelle Evans-White, University of Arkansas

Evaluating Furrow Irrigation Efficiencies for Surge Irrigation and Tail Water Recovery in Rice


Student Vaishali Kandpal, University of Arkansas
Advisor Dr. Chris Henry, University of Arkansas

Assessing Methods Used to Analyze Sediment Agricultural Runoff in the Arkansas Delta Ecoregion

Student Marla Moland, Arkansas State University
Advisor Dr. Jennifer Bouldin, Arkansas State University

Characterization of Nutrient Sources, Transport Pathways, and Transformations using Stable Isotopes and Geochemical Tools in the Big Creek Watershed of Northwest Arkansas

Student Kelly Sokolosky, University of Arkansas
Advisor Dr. Phillip D. Hays, University of Arkansas



Tuesday July 25

Session 3: Current Research from the US Geological Survey

Moderated by **Kathy Knierim**, US Geological Survey

1:30 pm

An Evaluation of Continuous Monitoring Data for Assessing Dissolved Oxygen in the Boston Mountains, Arkansas

Billy Justus, US Geological Survey Lower Mississippi-Gulf Water Science Center

1:45 pm

The Intermediate Disturbance Hypothesis in Algal Ecology at Play

Reed Green, US Geological Survey Lower Mississippi-Gulf Water Science Center

2:00 pm

Mississippi Delta Groundwater Modeling, Monitoring, and Optimization

Jeannie Barlow, US Geological Survey Lower Mississippi-Gulf Water Science Center

2:15 pm

USGS Groundwater Availability Initiatives in the Ozarks and Mississippi Alluvial Plain

Brian Clark, US Geological Survey Lower Mississippi-Gulf Water Science Center

2:30 pm Networking Break

sponsored by



StreamSmart Volunteer Program



Looking to put some of your spare time to good use? Join the Stream Smart volunteer team to help monitor water quality in NW Arkansas!

As a Stream Smart volunteer, you will:

- collect a water sample at your site every three months,
- collect and identify macroinvertebrates (aka “aquatic bugs”),
- gain an appreciation for the natural beauty and services that our area streams provide,
- enjoy the comradery with fellow volunteers.

Contact Angela Danovi for more information, adanovi@ozarkswaterwatch.org or (479)-295-7717



Tuesday July 25

Session 4: Water Management for Agricultural Irrigation

3:00 pm

Moderated by **Walter Delp**, USDA Natural Resources Conservation Service

3:05 pm

The Use of Irrigation Practices by Arkansas Producers, the Impacts and Influencing Factors

Yefan Nian, University of Arkansas Department of Agricultural Economics and Agribusiness

3:20 pm

Influence of Irrigation Water Sources on Reservoir and Tailwater Recovery Adoption

Kent Kovacs, University of Arkansas Department of Agricultural Economics and Agribusiness

3:35 pm

Evaluation of Agricultural Tailwater Quality for Irrigation in Red Bayou Watershed in Northwest Louisiana

Changyoon Jeong, Louisiana State University Ag Center

3:50 pm

On-farm Scale Strategies for the Reuse of Agricultural Runoff as Irrigation Water in Rice-Soybean Fields in Louisiana

Ernest Girouard, Louisiana State University Ag Center

4:05 pm

Performance of Tailwater Recovery Systems in Mississippi's Delta Region

Austin Omer, Mississippi State University Department of Wildlife, Fisheries, and Aquaculture

4:20 pm

Research and Extension Innovations to Improve Agriculture and Natural Resources

Beth Baker, Mississippi State University Department of Wildlife, Fisheries, and Aquaculture

7:00 pm Social at Marley's Pizzeria

Located at 609 W. Dickson St.

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Wednesday July 26

7:45 am

Check-in, Coffee, Juice, Pastries

Session 5: Water Quality in Agriculture

Moderated by **Michele Reba**, USDA Agricultural Research Service

8:30 am

Effect of Environmentally Smart Nitrogen (ESN) on Forage Production and Nitrate Runoff in Ryegrass Pastures

Donna Morgan, *Louisiana State University Ag Center*

8:45 am

Land Application Effects of a High-Calcium Dry Flue Gas Desulfurization By-Product on Plant Uptake of Trace Elements and Runoff Quality

Jason Burgess-Conforti, *University of Arkansas Environmental Dynamics Program*

9:00 am

Lake St. Joseph-Improvements in Water Quality and Best Management Practices

Lisa Fultz, *Louisiana State University Ag Center*

9:15 am

Edge of Field Monitoring for Discovery Farms

Mike Daniels, *University of Arkansas Department of Crop, Soil, and Environmental Sciences*

9:30 am

Discovery Farms Shed Light on Conservation Effectiveness and Agriculture's Role in Nutrient Trading Programs for Arkansas

Andrew Sharpley, *University of Arkansas Department of Crop, Soil, and Environmental Sciences*

9:45 am

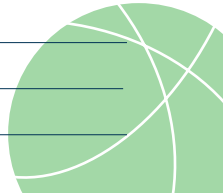
Social Indicators: an Innovative Metric to Monitor Nutrient Reduction Strategies

Sandra Guzmán, *Mississippi State University Social Science Research Center*

10:00 am Networking Break

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Wednesday July 26

Special Sessions Presented by the
Arkansas Chapter of the American
Water Resources Association

Session 7: Dam Safety and Water Supply Issues in Arkansas

Moderated by **Daniel A. Marion**, US Forest Service,
and **Reed Green**, US Geological Survey

1:00 pm

Special Section Introduction

Daniel A. Marion, *US Forest Service*

1:05 pm

USACE SWL Dam Safety and Reservoir
Control Programs

Bradley Clark and Nathaniel Keen, *US
Army Corps of Engineers*

1:25 pm

Dam Safety in Arkansas

Trevor Timberlake, *Arkansas Natural
Resources Commission*

1:45 pm

The Village vs the Baron: How a Small
Town Responded to a Major Watershed
Threat

John Lester, *Clarksville Light and Water*

2:05 pm

Using the AWWA G300 Standard for
Source Water Protection

Randy Easley, *Central Arkansas Water*

2:25 pm Networking Break



Meet James McCarty Manager of Environmental Quality



Beaver Water District is proud to partner with the AWRC to enable this event to occur.

Beaver Water District supplies drinking water, sourced from Beaver Lake, to 1 in 7 Arkansans!

Source water protection is critical to this process. The cleaner Beaver Lake is, the less it costs to clean the water for drinking.

website: bwdh2o.org



CUAHSI

universities allied for water research

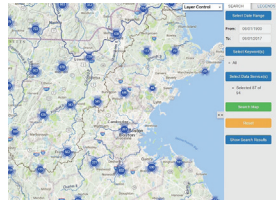
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Thank You Moderators!

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*If you have any questions regarding the
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Thank You Speakers!

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If you have any questions regarding the conference presentations, please feel free to contact the speakers at the email provided.

Thank You Sponsors!



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Funding Opportunity

AWRC-USGS 104B Grant Program

The AWRC is soliciting pre-proposals for water research in Arkansas through the US Geological Survey 104B Grant Program.



Faculty researchers at institutions of higher education in Arkansas, and students with a faculty advisor are eligible to apply.

The deadline to submit a pre-proposal is **August 11, 2017**.

For details, visit arkansas-water-center.uark.edu/funding.php

Current 104B Awards

Research projects include:

Combined Application of Nutrient Manipulation and Hydrogen peroxide Exposure to Selectively Control Cyanobacteria Growth and Promote Eukaryote Phytoplankton Production in Aquaculture Ponds

Amit Kumar Sinha, University of Arkansas at Pine Bluff

Herbicide Mitigation Potential of Tailwater Recovery Systems in the Cache River Critical Groundwater Area

Cammy D. Willett, University of Arkansas

Regionalizing Agricultural Field Evapotranspiration Observations

Benjamin R.K. Runkle, University of Arkansas

Assessment of Strategies to Address Future Irrigation Water Shortage in the Arkansas Delta

Qiuqiong Huang and Tyler Knapp, University of Arkansas

Investigating Impact of Lead Service Lines in Drinking Water Distribution Systems at the City of Tulsa

Wen Zhang and Kaleb Belcher, University of Arkansas



Where to Go

Fayetteville Town Center

15 W Mountain St.
Fayetteville, AR 72701

The Chancellor Hotel

70 N East Ave.
Fayetteville, AR 72701

Marley's Pizzeria

609 W. Dickson St. #103
Fayetteville, AR 72701



Arkansas Water Resources Center

203 Engineering Hall

University of Arkansas

Fayetteville, Ark. 72703

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