



2013 Annual Watershed and Research Conference
May 14-15, 2013 · Fayetteville, Arkansas



104B Research Projects and Impacts
Ecological Design in the Ozarks



Welcome to the 2013 Annual Watershed and Research Conference

Arkansas Water Resources Center
203 Engineering Hall
University of Arkansas
Fayetteville, Arkansas 72703

www.uark.edu/depts/awrc

Dr. Brian Haggard, Professor and Director
Mary Fennel, Conference Coordinator
Leslie Massey, Program Manager

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OMI

The primary role of the technical advisory committee is to provide guidance and technical review of the proposal submitted to the Arkansas Water Resources Center each year – We appreciate your service over the last year, 2012-2013.



8:00 Registration/Coffee, Juice & Pastries

Session 1: 104B Research—Impact Award Winner and Water Supply Projects

Moderator: Brian Haggard, Professor and Director, Arkansas Water Resources Center, UA System Division of Agriculture

9:30 **Welcome and Introduction**

9:40 **National NIWR Impact Award Winner 2011: Balancing Nutrient Storage and Accelerated Eutrophication in Multi-Use and Multi-Sized Water Impoundment Reservoirs**
Thad Scott, UA System Division of Agriculture

10:10 **Regional NIWR Impact Award Winner 2012: Land-Use Effects on Benthic Algae and Metabolism Recovery after Flood Events in Ozark Streams**
Michelle Evans-White, University of Arkansas

10:30 **Assessment of the Microbial Population in Beaver Lake Swim Beach Regions to Determine Origin of Fecal Pollution**
Kristen Gibson, UA System Division of Agriculture

10:50 **Preparing Drinking Water Utilities on Beaver Lake Reservoir to Meet Disinfection Byproduct Regulations: The Impact of Continued Nutrient Enrichments**
Julian Fairey, University of Arkansas

11:10 **The Effect of Global Climate Change on Algal Biomass and Total Organic Carbon Concentrations in Beaver Lake**
Byron Winston, UA System Division of Agriculture

Lunch and Poster Session

11:30 **Lunch Provided in the Foyer**

12:30 **Poster Session.** Presenters should chaperon their posters.

4. Detection of Antibiotic Resistance Genes after Disinfection during Wastewater Treatment

Authors: Ryan MacLeod and Mary Savin

Affiliation: UA System Division of Agriculture

5. The Effects of Low Level Natural Gas Emissions to an Ozark Head Water Stream.

Authors: Bradley Austin, Joe Ponzio, Erik Pollock,
Michelle Evans-White, and Brian Haggard

Affiliations: University of Arkansas
UA System Division of Agriculture

6. A Novel Technique for Isotopic and Quantitative Analysis of Dissolved Methane in Natural Waters

Author: Erik Pollock

Affiliation: University of Arkansas

7. Effects of Oxygenation of Resuspended Sediment from a Eutrophic Lake

Authors: Grace Richardson and Scott Osborn

Affiliation: UA System Division of Agriculture

8. Improving Water Quality with Phosphorus Removal Structures

Authors: Chad Penn, Josh Payne, Jeff Vitale,
Garey Fox, Delia Haak, and Josh McGrath

Affiliations: Oklahoma State University
Illinois River Watershed Partnership
University of Maryland

9. Hydrogeology and Chemical Characterization of Hydrocarbon in Domestic Water Wells in Rogers, Arkansas

Authors: Janelle Sherman, Erik Pollock, and Phillip Hays

Affiliations: U.S. Geological Survey
University of Arkansas

10. Developing Relationships between Stream Water Phosphorus and Ecological Endpoints in Ozark Headwater Streams

Authors: Raymond Brennan, Andrew Sharpley, Thad Scott, Brian Haggard, Mike Bowes, and Helen Jarvie

Affiliations: University of Arkansas
NERC Centre for Ecology and Hydrology

11. Does Sampling Method Influence the Relation between Constituent Concentration and Discharge?

Authors: Morgan Welch and Brian Haggard

Affiliation: University of Arkansas

12. Does Lake Frances Influence Phosphorus Transport in the Illinois River?

Authors: Jason Corral and Brian Haggard

Affiliation: University of Arkansas

13. Relationship Between Land-Use, Water Quality, and Macroinvertebrate Densities in Spring-Fed Streams of the Ozark National Forest

Authors: Ayla Smartt, Shrijeta Ganguly, Michelle Evans-White, and Brian Haggard

Affiliation: University of Arkansas

14. The Effect of Increased Atmospheric CO₂ on Phytoplankton Across an Experimental Phosphorus Gradient

Authors: Aaron Jackson, Byron Winston, and That Scott

Affiliation: University of Arkansas

National Institutes for Water Resources



US Congress passed the Water Resources Research Act in 1964 establishing fifty-four water resources research institutions such as the Arkansas Water Resources Center at land grant universities throughout the United States. The State Water Resources Research Institutes were charged with arranging for competent research that addresses water problems and enhances our understanding, aiding the entry of new research scientists into water resources fields, helping to train future water scientists and engineers, and transferring results of sponsored research to water managers and the public.

Each fall, the AWRC accepts applications for projects funded through the 104b program. This year, the Arkansas Water Resources Center funded three projects including:

- Fecal Source Characterization in Select 303(d) listed Streams in the Illinois River Watershed with Elevated Levels of *Escherichia coli*, Kristen Gibson, UA System Division of Agriculture, \$16,000.
- Economics of On-Farm Reservoirs across the Arkansas Delta Region: A Conjunctive Management Approach to Preserving Groundwater and Water Quality, Kent Kovacs, UA System Division of Agriculture, \$15,500.
- Improving Surface Water Quality by Reducing SOD and Removing Nutrients, Scott Osborn, UA System Division of Agriculture, \$12,000.
- The Effect of Global Climate Change on Algal Biomass and Total Organic Carbon Concentrations in Beaver Lake, Byron Winston, UA System Division of Agriculture, \$15,207
- Assessing Sources of Nitrosamine Precursors in Drinking Water Treatment Plants, Wen Zhang and Julian Fairey, University of Arkansas \$28,975

For more information about the National Institutes for Water Resources visit niwr.net.



Wednesday, May 15, 2013 · Oral Sessions

Coffee, Juice & Pastries 7:30-8:00 AM

Sponsored by Beaver Watershed Alliance



7:30 Registration/Coffee, Juice & Pastries

Session 4: Ecological Design Perspectives and Practices

Moderator: Maia Singer, Senior Aquatic Ecologist and Water Quality Scientist, Stillwater Sciences

8:00 **Welcome and Introduction**

8:15 **Ecological Processes, Patterns, and Priorities**

Steve Patterson, Bio x Design

8:45 **Engineering Design: Process, Predilections & Priorities**

Cully Hession, Virginia Tech University

9:15 **Landscape Architectural Design: Process, Predilections, and Priorities**

Mark Boyer, University of Arkansas

9:45 Panel Discussion

10:00 Break

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