The Arkansas Water Resources Center continues to focus on helping local, state and federal agencies manage and protect Arkansas’ water resources. The Center succeeds in this effort through research activities, education and training outreach and disseminating water resources information to stakeholders throughout the State and region.

The AWRC has contributed substantially to the State’s understanding of its water resources by conducting and funding scientific research and monitoring activities. Current projects generally focus on:

- drinking water treatment
- non-point source pollution
- water quality and quantity related to agricultural activities in the delta
- land use and climate change impacts on water quality, water quantity, and the availability of water resources
- volunteer monitoring programs

The training of students is a top priority for the Center. For example, research proposals submitted for funding through the AWRC-USGS 104B grant program must include a section describing how the proposed project will support undergraduate and or graduate student research activities.

Another important component of the AWRC is the transfer of information to water resources stakeholders. Some of the ways the Center disseminates information are through an annual conference, publications available on the AWRC website and the use of other media outlets like Facebook and email newsletters.

The mission of the AWRC is to support and conduct water resources research, train future scientists and engineers and transfer water research results to stakeholders throughout the State. This document serves as a summary of the Center’s projects and activities as related to its mission.
### What Are Our Research Accomplishments?

**319 Non-point Source Pollution** - Completed the first year of a continuation grant to monitor water quality in the Upper Illinois River Watershed and Upper White River Basin in northwest Arkansas. Project will result in over 10 years of water-quality data at many of the study sites! Data will be used to estimate constituent loads and evaluate how water quality is changing over time in these priority watersheds.

**Scenic Rivers Joint Study Committee** - Director, Brian Haggard, served as co-chair overseeing the research by Dr. Ryan King of Baylor University. How do algae respond to increasing phosphorus in the Illinois River Watershed? Over time in these priority watersheds. What Are our research accomplishments? Visit our website at:

For more about our research and publications, visit our website at:arkansas-water-center.uark.edu

**Water Quality Lab** - Analyzed over 21,000 constituents this year in service to researchers, landowners and others across the State.

For more about our research and publications, visit our website at: arkansas-water-center.uark.edu

**Turbidity Impairment** - Completed the third year of sampling for turbidity in the West Fork of the White River in northwest Arkansas. All 28 river miles are listed as impaired, but data suggest that the upstream portion of the river meets the standard.

**Poteau Valley Improvement Authority** - Completed the first year of sampling for water quality in the Poteau River Watershed, a transboundary watershed in Arkansas and Oklahoma. Collecting samples at the sub-watershed level to identify the biggest sources of nutrients and sediments. Ultimate goal is to target BMP implementation to reduce nutrient input into Lake Wister, Oklahoma.

**Technical Publications** - Drafted technical reports on Center-related research and monitoring, which are published on the AWRC website. We also publish technical reports by other scientists to make available important water resources information quickly, in addition to or in lieu of peer-reviewed articles. This year we published 8 new technical reports that are available to researchers, students, and other interested stakeholder.

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### 2016 104B Funded Projects

The Arkansas Water Resources Center funded seven research projects, including three faculty proposals and four projects that supplemented graduate student research, selected through external peer review by the Technical Advisory Committee in 2016. Research projects included:

**Comparative Microbial Community Dynamics in a Karst Aquifer System and Proximal Surface Stream in Northwest Arkansas**, Dr. Matthew Covington, Department of Geosciences, University of Arkansas

**Biological and Ecological Consequences of Sub-Lethal Ion Concentrations on Microbial and Macroinvertebrate Detritivores**, Dr. Sally Entrekin, Department of Biology, University of Central Arkansas

**Investigating Fate of Engineered Nanoparticles in Wastewater Biofilms**, Dr. Wen Zhang and Connie Walden, Department of Civil Engineering, University of Arkansas

**Characterization of Nutrient Sources, Transport Pathways, and Transformation Using Stable Isotope and Geochemical Tools in the Big Creek Watershed of Northwest Arkansas**, Dr. Phillip Hays and Kelly Sokolosky, Department of Biological Sciences and Department of Geosciences, University of Arkansas

**Tracking the Growth of On-Site Irrigation Infrastructure in the Arkansas Delta with Remote Sensing Analysis**, Dr. Kent Kovacs and Grant West, Department of Agricultural Economics and Agribusiness, University of Arkansas

**Does Macrograzer Activity Drive Seasonal Variations in Algal Biomass in Ozark Streams?**, Dr. Michelle Evans-White and Kayla Sayre, Department of Biological Sciences, University of Arkansas

The funded research addresses our congressional authorized mission and promotes the national objectives of the U.S. Geological Survey.

### How do we train future Water Scientists?

**Research Experience for Undergraduates** - Mentored an undergraduate student in water research. The student developed skills related to the scientific method including research design and data analysis. Student presented findings at AWRC annual conference and won 1st place in poster competition.

**Freshman Engineering Research** - Mentored freshman students who developed their research and scientific skills, including project design, data collection, data analysis, and preparing their findings.

**Student Summer Internship** - Worked with high school student to enhance our visibility at the UA campus. Student gained extensive experience with graphic design and using multimedia to communicate to college students, faculty and staff.
How do we communicate with stakeholders?

**Annual Conference**
Over 150 people attended from throughout Arkansas and the region, including researchers, students, consulting firms, utilities, watershed groups, state agencies and the public. “Nutrients, Water Quality, and Harmful Algal Blooms” was the theme, with several invited experts who spoke on the threats of HABs and cyanotoxins.

Coordinated with other organizations to hold a meeting for the newly formed Inter-agency Working Group on HABs.

Other session topics included:
- Nutrient sources and transport
- Watershed-scale influences on water quality
- Biological thresholds and responses to water quality
- REU and graduate student poster competition

**Social Media**
Utilized Facebook and twitter to disseminate information about the activities of the Center as well as sharing news and opportunities from other water organizations.

Facebook followers continue to grow, and “boosting” posts to advertise our monthly electronic newsletters has increased our reach by over 2,600%!

**Informed Campus Community**
Developed posters and videoboard content with targeted water resources information relevant to various departments on campus.

Ultimate goal was to improve student awareness of the AWRC and of water resources issues important to them.

**Website**
Worked with web developers to enhance the usability and search engine optimization of the website to better disseminate water resources information. The website is critical to the information transfer mission of the AWRC as a platform for the following:

- Immediate electronic availability of AWRC publications of technical reports
- A warehouse of raw data provided as data reports in reference to research and monitoring projects
- Information about submitting a water sample to the AWRC Water Quality Laboratory
- Information on upcoming conferences, funding opportunities for researchers and other events
- Information about Center-related research and monitoring activities

**Electronic Newsletters and “Arkansas Water Currents”**
Published monthly email newsletters to the growing AWRC listserv, consisting of several hundred professionals, students and citizens.

Wrote articles about USGS 104B reserach, waterresources topics in Arkansas, upcoming conferences and events and more.

Shared relevant news stories from other sources and organizations.

Developed and launched website called “Arkansas Water Currents” to publish and archive our news articles. This enhanced the Center’s information transfer agenda through improved search engine optimization and ability to more easily share individual articles through various media outlets.

[watercurrents.uark.edu](http://watercurrents.uark.edu)