

# The Arkansas Annual Report

Prepared Pursuant to Section 319 (h) of the Federal Clean Water Act

Arkansas Natural Resources Commission



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# 1 SUMMARIES

## Notes from the Director:

The Arkansas Natural Resources Commission (ANRC) is proud to provide this Annual Report for the Arkansas Nonpoint Source (NPS) Pollution Management Program. 2015 was another productive year for ANRC and the second most substantial year for the NPS Program since its beginning in Arkansas in the 1990s.

After 3 years of intensive work ANRC completed an update of the Arkansas State Water Plan, in which the NPS Program is an integral part. The Arkansas Water Plan update is now complete and includes several recommendations related to NPS management, including:

- Recommending that additional state resources be put into reducing NPS pollution
- Enhanced collaboration between state and federal agencies on the biennial Clean Water Act water quality review processes and water quality criteria review to determine the attainment or nonattainment of water quality standards and to identify the sources and causes of nonattainment
- An emphasis on leveraging a variety of financing sources to protect drinking water sources from NPS pollution

One of the most commented upon recommendations encourages the General Assembly to consider the need for nutrient management plans for the application of poultry litter and animal manure in parts of the state where such application does not require a plan.

Another goal was realized this past year for the NPS Program. Through continued diligent work of the NPS staff, conservation districts, state and federal agencies, and multiple other partners; a stream segment of the Illinois River was “delisted”, or basically removed from the States list of impaired waters. This delisting is the culmination of years of work and implementation by landowners that utilized EPA 319(h), USDA – NRCS programs ,and other various partner resources for technical and financial assistance. This delisting allowed ARNC to submit and have another success story accepted.

Progress continued with the development and acceptance of two 9 element watershed management plans (WMPs). The Lee Creek and Frog Bayou WMPs were developed by the City of Fort Smith and their consulting engineers GBMc. Work also continues on the development of four additional WMPs (Lake Conway – Point Remove, Cache River, Strawberry River ,and Little River). Three of these plans are expected to be complete and submitted to EPA for review in mid-2016.

Lastly, the NPS Management Program had the honor of having Ron Curry, Administrator, EPA Region VI to attend and participate in the Grand Opening of the City of Little Rock Creative Corridor. The Creative Corridor was a Low Impact Development/Green Infrastructure project funded by the NPS Management Program and EPA. Additionally EPA Administrator Gina McCarthy came at a later date to view and discuss the Creative Corridor project. The visits of these two dignitaries were the capstone of a great year for the program.



The NPS Management Program is and continues to be a partnership between federal, state, and local entities. This partnership continues to be the "backbone" and strength of the program. Communication and coordination are paramount to obtaining positive results and enhancing water quality. The dedication of the EPA, Region VI, state and federal agencies, groups, organizations and the citizens of this great state are crucial. Your ongoing participation in the NPS program is valued and deeply appreciated.

Sincerely, J. Randy Young

A handwritten signature in black ink, appearing to read "J. Randy Young". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

## Executive Summary:

The Arkansas Natural Resources Commission (ANRC) is the lead agency responsible for the Arkansas NPS Management Program. ANRC, its state partners and stakeholders, collectively known as the “work group”, collaboratively work together to develop the NPS Pollution Management Plan (Plan). The Plan provides a broad framework and aspirational objectives and milestones for implementation of the NPS Pollution Management program. The Plan also utilizes a risk matrix assessment tool to prioritize watersheds for resource allocation. The Plan is comprehensively updated every five years based upon an adaptive approach. Annual update meetings are held to review and discuss new, additional, or updated information and if appropriate to be included into the Plan.

The Arkansas Department of Environmental Quality (ADEQ) is the primacy agency for overseeing water quality in Arkansas. ADEQ is required to develop and provide an Integrated Water Quality Assessment Report and listing, commonly referred to as the 305(b) report and the 303(d) list, every two years for EPA acceptance and approval. At the writing of this report, the 2010, 2012 and 2014 305(b) reports have not been approved by EPA. The assessment and report defines if waterbodies (streams, lakes, and impoundments) are meeting and supporting their designated uses. The 305(b) report and subsequent 303(d) list provides the initial and foremost basis to direct efforts to restore water quality within the state.

This report focuses on accomplishments made in meeting the milestones of the NPS Program. It reflects projects, efforts, and activities initiated, implemented and completed by various partners and stakeholders within the past year. The Annual Report also contains calculated load reductions of sediment and nutrients and a depiction of federal dollars allocated categorically.

Many federal and state agencies, non-governmental organizations (NGOs), and individuals have invested multiple resources to improve water quality in Arkansas. In some areas and watersheds, water quality data and trends are showing improvement. As in years past and as we continue to move forward water quality will continue to improve as:

- Watershed stakeholders become more actively involved in restoration efforts. State and federal agencies continue to provide technical and financial assistance but it is imperative local stakeholders take ownership and lead water quality restoration or protection efforts.
- Education materials specific to individual watersheds are developed and delivered. Watershed stakeholders must organize and identify common water quality goals. Collective strategies and efforts culminate into 1) watershed plans, 2) schedules of implementation and 3) reassessments.
- Conservation and Comprehensive Nutrient Management Plans (CNMP) are developed, utilized, and implemented and followed by landowners.
- Assessments, tools, evaluation efforts, and milestones are utilized and continue to be evaluated
- New techniques of Low Impact Development and Green Infrastructure are being demonstrated in urban areas but in a manner to insure there is no conflict with MS4 requirements. A primary focus on the demonstration is the educational component for students, developers, municipalities and citizens of the community.

The primary and pinnacle evaluation of the NPS Program and Plan lies within the 303(d) list. As impaired waterbodies are restored, they are removed from the list. The level of effort needed to remove a waterbody is enormous and cannot be accomplished by a single agency, program, project or activity. It is essential that ANRC, its partners and stakeholders work together in a collaborative effort to improve water quality.

## Deputy Director Ryan Benefield

Ryan Benefield was hired as Deputy Director of the Arkansas Natural Resources Commission on August 31, 2015. As Deputy Director he has responsibility for the Water Development, Water Management and the Conservation Divisions. He previously served as the Deputy Director of the Arkansas Department of Environmental Quality (ADEQ) from February 2009 until September 2015, with a stint as interim director from September 2014 to February 2015.

In 2013, he was named President of the Association of State and Territorial Solid Waste Management Officials (ASTSWMO). The Association represents its members on waste management issues in Washington D.C. and provides a platform for the states to learn from each other on such issues. Benefield was elected to the position of Vice President by the group's members in 2012, a precursor to the presidency position. Benefield served on the ASTSWMO Board of Directors as the Region 6 Board Representative from 2008 to 2012.

As ADEQ's Deputy Director, Benefield oversaw the Water Division, Mining Division, Hazardous Waste Division, Technical Services Division, Public Outreach and Assistance Division and the Records Management Section of ADEQ. He previously served as the Chief of the Hazardous Waste Division and as Technical Branch Manager in the Solid Waste Division.

Before coming to ADEQ in 2004, Benefield spent two years as the City Engineer for the City of Cabot and worked six years in environmental consulting primarily focused on the permitting, design and construction oversight of municipal and industrial solid waste management facilities.

Benefield is a Registered Professional Engineer in the State of Arkansas and has a Bachelor of Science in geological engineering from the University of Missouri at Rolla, now the Missouri University of Science and Technology. He is married and they have two children.





## 2 Green Infrastructure and Low Impact Development

### Water Quality Demonstration and Educational Program for Main Street Little Rock (12-600)

As with most metropolitan areas where impervious surfaces dominates the landscape, the potential for significant amount of hydrocarbons, and to a lesser degree metals, pesticides and litter can flow rapidly into storm drain inlets. Within this project area those “pollutants” eventually enter into the Arkansas River. This project was initiated as a demonstration to reduce runoff by utilizing Low Impact Development (LID) and Green Infrastructure (GI) implementations. The use of LID / GI practices lessens the potential for “pollutants” to enter streams and waterbodies while providing a hydrological connection potentially enhancing the micro ecosystem of the project area.

The overall goal of this project was to demonstrate to the citizens of Arkansas the benefits of Low Impact Development facilities (LID) (rain gardens and other water filtrations) through the use of clean water initiatives and to educate the community about how these techniques work. The project retrofitted four blocks of Little Rock’s Main Street, which is located in the downtown area of Little Rock, utilizing LID and other green infrastructure techniques to improve water quality. Program staff then developed and provided a variety of educational programs and involved the community during key aspects of the project.

The vision of this project was to implement green infrastructure and environmentally friendly designs that grew from two federally funded projects in Little Rock, AR. In 2009, the City of Little Rock received a Greening of America’s Capitals technical assistance award from the Environmental Protection Agency Sustainable Communities Initiative that helped develop a vision of a distinctive, environmentally-friendly downtown Main Street that incorporated innovative green building and infrastructure practices as well as sustainable practices. The plan envisioned redeveloping underutilized or vacant buildings and parking lots that would help transform Main Street back into a thriving mixed use neighborhood with sustainable infrastructure. The plan included use of aesthetically appealing and environmentally sound approaches to create a strong sense of place, such as street and public space design that used innovative practices: rain gardens, green roofs, porous parking, and alley treatments.

In 2010, the City of Little Rock received funding from the National Endowment for the Arts *Our Town* grant to build upon concepts set forth in the Greening of America’s Capitals project, adding the idea that art groups and other creative interests could be concentrated along Main Street to provide the strong anchor for development that was once provided by retail trade. Designed by Steve Luoni, the Director of the University of Arkansas Community Design Center (UACDC), and Marlon Blackwell, architect, the award-winning Creative Corridor, the Low Impact Development plan was developed, using green infrastructure as its base.

The City of Little Rock (CLR) partnered with the Arkansas Natural Resources Commission (ANRC) on the project. The UACDC served as a design consultant on the project. Crafton Tull, Inc. provided the designs and engineering and Township Construction Inc. was the general contractor. Best management practices implemented included the use of permeable pavers, permeable curbs and gutters, rain gardens, bioswales, silva cells, and planting of appropriate drought and flood resistant trees and plants.

The educational component of the project was multi-faceted: community educational presentations, LR Cable channel programs, press releases and conferences, You Tube videos, signage which links via QR codes to information on a web site, and utilization of social media including Facebook and Twitter. News media also frequently ran stories about the project. CLR partnered with E-stem Public Charter School, which includes grades K-12 to create a living classroom experience. The educational component was designed to present the key components and principals of environmental science and technology and thereby help students to understand water improvement issue. Information on nonpoint-source pollution and related water quality issue was presented using various formats and educational genres to the students in many grade levels. Emphasis was on the impacts of nonpoint source pollution, importance of water quality protection and what can be done to prevent such.

With the adoption of the Next Generation Science Standards by the Arkansas Department of Education, the Little Rock Creative Corridor was included as an integral part of the E-stem K-12 Science Curriculum as a local resource for monitoring and mitigating the effects of urbanization, starting the 2015-2016 school year.

Tours emphasizing the LID aspects were provided to a variety of groups, such as 40 garden bloggers brought to town by P. Allen Smith, Destination Downtown conference attendees, Cooperative Extension Community Development Professionals conference goers, and the local chapter of the U.S. Green Building Council, among others.

Finally, other cities' LID ordinances were researched and two amendments were made to CLR ordinances which made LID facilities legal within the City without having to obtain a waiver from the Planning Commission and the Board of Directors (City Council). The City of Little Rock adopted two voluntary, permissive ordinances that make it easier to use Low Impact Development techniques in non-residential developments. This required a number of meetings with various stakeholders during the process of drafting and adopting the ordinances, one of which related to the Public Works aspects of development and the other which related to Planning and Zoning aspects.

Funding for the project was provided by a grant from the Arkansas Natural Resources Commission in the form of \$900,000 of Section 319 funding. The City of Little Rock was to provide matching funds in the amount of \$678,950 for the project, for a total project cost of \$1,578,950. In actuality, the City contributed additional funding and increased the scope of work to include additional lighting, for a total cost of approximately \$2.3 million dollars.

This project did not actually monitor water quality. It did include, though, the following LID best management practices that to lead to water quality improvements:

- Rain gardens
- Bioswales
- LID plantings
- Vegetated wall
- Vegetative slope
- Use of silva cells



Awards for Creative Corridor Plan by U of A Community Design Center and Marlon Blackwell Architects

- 2015 AIA Florida/Caribbean Honor Award 2014 ASLA Award 2014 AIA Honor Award
- 2014 Special Mention Architizer A+ Awards for Architecture + Urban Transformation 2013 AR AIA Award
- 2013 American Architecture Award 2013 AR APA Award
- 2013 World Architecture Festival Award Shortlisted 2013 CNU Charter Award
- 2012 World Architecture News Award Finalist

Upon completion of the project, a dedication ceremony was held at the Arkansas Repertory Theatre which is in the project area. In addition to a large crowd, the ceremony was attended by a number of dignitaries and EPA officials, including Executive Director of the Arkansas Natural Resources Commission, and Region 6 EPA Administrator Ron Curry. Attendees were then invited outside to watch these two officials, along with Little Rock Mayor Mark Stodola, plant the drought and flood resistant Henry's Garnet Sweet Spire and Irises.



Many of those who attended the ceremony strolled along the 500 Block of Main Street where they could observe features of the Low Impact Development streetscapes.



An unexpected outlet for public education about the project came from requests from various groups to provide tours of the project. Some recent examples include the following groups:

- Destination Downtown Conference (Three state conference of preservationist)
- P. Allen Smith Annual Garden Blogger tour
- Deputy Directors of EPA/HUD/DOT
- Hillcrest Garden Club
- U.S. Green Building Council, Little Rock Chapter
- National Association of Community Development Extension Professionals

Other opportunities for education arose when Mayor Stodola gave presentations to the Downtown Rotary Club, the Downtown Little Rock Partnership, and several national organizations. Caran Curry, the City's Project Manager, was a speaker for an EPA webinar with over 1,400 participants. She also was a speaker at a national Clinton Foundation Global Health Initiative and a national Main Street America conference. A presentation was also made in Philadelphia at the Urban Land Institute Shaw Forum on Green Infrastructure.

A number of people helped make the project successful, including Mayor Stodola, who took a personal interest in the project at every step. The Grants Department shepherded the project from beginning to end, led by Curry. Curry hired Dr. Marsha Guffey near the end of the project to address the educational components of the project and utilize her knowledge of stormwater management, LID and Green Infrastructure techniques helped gain the passage of the two LID ordinances. The Public Works and Planning Departments also assisted with the passage of the two LID ordinances.



## Water Quality Demonstration and Educational Program for the Illinois River Watershed (13-300)

This project is demonstrating the benefits of rain gardens and other water filtrations techniques by installing green infrastructure demonstration projects and using clean water initiatives such as porous pavers, tree wells, rain gardens, phosphorous removal structures such as vegetated swales, riparian buffers with native grasses and trees to improve water quality. As the infrastructure is installed, the IRWP are educating and involving the community on the key educational water quality improvement and best management practice aspects.

Green infrastructure uses vegetation, soils, and natural processes to manage rain water where it falls and reduce non-point source pollution to improve water quality. By slowing down runoff into a stream not only captures nonpoint source pollution, it prevents excessive rainwater volume and power that blasts out streambanks, damaging streamside vegetation and wiping out aquatic habitat. Green Infrastructure also addresses the negative impacts of higher water temperatures from streets, roof tops and parking lots, which are harmful to the health and reproduction of aquatic life in streams.

During the first phase of implementation, IRWP is concentrated on the Northwest Arkansas Razorback Greenway northernmost trails (Bentonville, Rogers) that follow creeks for approximately 36 miles through the urban corridor. The Greenway is the most visible opportunity to demonstrate BMPs that directly impact streams and provided a convenient opportunity for the public and students to experience and gain understanding. Low Impact Development/Green Infrastructure projects were strategically located to enhance infiltration and filter non-point source pollution from water that enters into streams in priority headwater sub-watersheds. Native plants tolerant of influx of water and periods of dry weather were planted to help trap and filter pollutants. Additional green infrastructure work is also occurred included porous pavers, tree wells, etc. The IRWP worked with city planners and parks and recreation departments on design of all phases.



The second phase is concentrating on the southern-most portion (Fayetteville) of the Razorback Greenway. This phase features rain gardens, parking spot bump-outs with porous pavers. Phase III is connecting the northern and southern portions (Springdale) of the Greenway.

For all three years of the project, the IRWP is partnering with EAST (Environmental and Spatial Technology) programs to create living classroom experiences. The educational component is designed to present the key components and principals of environmental science and technology and thereby help students to understand water improvement BMPs. Information on nonpoint source pollution and related water quality issues will be presented using various formats and educational genres to the students in many grade levels. Emphasis is on the impacts of nonpoint source pollution, importance of water quality protection and what can be done to prevent such. The IRWP's Clean Water Rainger program focuses on rain gardens, riparian tree plantings, "Only Rain Down the Drain", and native plant grow stations for more examples of watershed protection.

Native plants are important to the Illinois River watershed because of their essential role in restoration and conservation work. IRWP is working with local schools to host grow stations specifically to grow Switchgrass and Little Bluestem to include in this project for rain gardens, riparian buffer zone plantings,

and water conservation landscaping. Swithgrass (*Panicum Verbatim*) and Little Bluestem (*Schizachyrium scoparium*) are native adapted to our region, need less water and nutrients to grow and maintain health, provide excellent sources of food and shelter for wildlife and offer an exquisite palette of color, texture and form.

Additionally, an education and outreach program is being conducted during the three stages of the project. The IRWP has design and implementing a NPS pollution prevention outreach campaign that features installation and benefits of green infrastructure projects with a minimum of 6 radio and 6 television PSAs and newspaper ads, and a social media education program to include Facebook, Twitter, IRWP website, a customized i-phone "like" application and QR codes connected to education resources, to reach the more than 400,000 Illinois River Watershed residents. The Outreach Program also includes production of one cable TV show per grant year to feature the ongoing projects on websites and at public presentations. Press releases are being released at each project milestone.

## **Low Impact Development Demonstration and Education Project for the Illinois River Watershed (13-1300)**

This project is focusing on recommendations for urban management due to the land use changes predicted primarily for this management area of the watershed. This project is installing, demonstrating and educating stakeholders about the benefits of low impact development and green infrastructure that can be implemented to improve and protect water quality. As the green infrastructure features are installed, the IRWP is educating and involving the regional community on key educational water quality improvement and best management practices for individuals, businesses and municipalities.



The Low Impact Development Demonstration is being implemented at the newly established Illinois River Watershed Partnership's Watershed Sanctuary at Cave Springs (IRWP WSCS) for the purpose of water quality improvement. The demonstration at this site is also positively impacting school-age children and adults visiting the Watershed Sanctuary, educating them to implement practices learned at the WSCS into the places where they live and work, and inspiring them through an experience with nature and its creative processes (Upper Illinois River Watershed Management Plan section 7.12 and 7.13).

The Low Impact Development Demonstration and Education Project at the IRWP Watershed Sanctuary is providing stakeholders with knowledge and appreciation of clean water within a natural environment and demonstrating the protection of sensitive ecosystems using low impact development. Visitors are viewing the cave created from karst topography, the underground spring, stream channel and adjacent land and learn about the endangered species dependencies upon the protection of sensitive land and water uses. Educational demonstrations featuring how watersheds function with (a) actual ground water recharge zone protection; (b) water entering through the cave and sustaining endangered fish and bat species; (c) water moving through the stream channel and wetlands, lake and stream providing wildlife habitat and

clean water for downstream neighbors; (d) water sustaining plants, wildlife, and people; and (e) the impacts, positive and negative, that people and wildlife can have on the watershed with demonstrations of strategies to enhance and/or mitigate urban and rural impacts (Upper Illinois River Watershed Management Plan Table 7.3 and Table 7.4).

Annual visitation to the Watershed Sanctuary is projected (IRWP, AGFC) to be approximately 60,000 adults and 10,000 elementary, middle and high school students. These visitors will increase awareness and appreciation for the Illinois River Watershed and one of the state's most enduring natural ecosystems at Cave Springs. Adoption by visitors and participants of watershed protective actions at home and work will be assessed through follow-up surveys and visits with school personnel.

Education is being delivered through monthly public workshops conducted by the IRWP but is also being delivered through self-education guides, "i-phone like" application(s) developed through this project, QR codes, and interpretive signage at the site. Visitors to the site are participating in completing "scavenger games" to identify LID projects as well as native plants and trees, and fish and wildlife habitat that are being protected by low impact development features. As an added incentive, the completed "scavenger games" will be uploaded to the IRWP Facebook page where visitors will be entered in weekly give-away contests with prizes from local outfitters.

Interpretive educational signage includes custom "i-phone like" application for identification of karst topography, endangered fish and bats, native plants and trees, and low impact development elements within demonstration project area. A 36-month NPS pollution prevention outreach campaign is currently being conducted for 60 schools (20 per year) in the UIRW and the general public visitors that includes social media communication through Facebook, Twitter, IRWP and local municipal websites, and a customized "i-phone like" application to reach Illinois River Watershed residents. LID workshops are being held for teachers, city and county planners and council members, construction, and conservation organizations. The IRWP is offering teacher education and demonstration workshops approved by Arkansas Department of Education (ADE) for Professional Development credits. Water quality sampling and stream teams are being trained to use water testing kits and how to conduct macro invertebrate collection exercises to determine water quality.

Information on nonpoint-source pollution and related water quality issues are being presented using various public media. Education emphasis will be on the impacts of nonpoint source pollution, the importance of water quality protection and how Low Impact Development and Green Infrastructure can be implemented to preserve and protect the watershed.

### 3 Watershed Management Plans

#### Lee Creek and Frog Bayou Watershed Management Planning

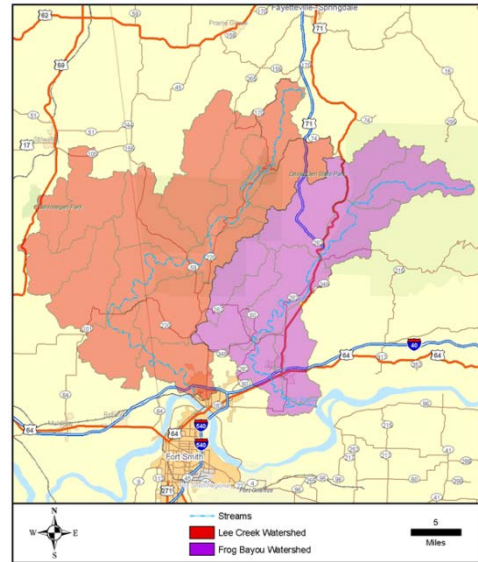
During 2015 EPA accepted two 9 Element Watershed Management Plans from ANRC that were the end result of project 13-200. The first was Lee Creek and the second was Frog Bayou.

The Lee Creek watershed (HUC-11110104 (NRCS WBD)) is approximately 447 mi<sup>2</sup> in size. The watershed is located in the Boston Mountains and Arkansas River Valley Ecoregions (Omernick, 1987), primarily in Crawford and Washington Counties in Arkansas and Adair and Sequoyah counties in Oklahoma. The watershed drains directly into the Arkansas River Basin. Lee Creek has an impoundment (Lee Creek Reservoir) just upstream of its confluence with the Arkansas River. The impoundment serves as a drinking water source for Fort Smith and Van Buren. The area served by the reservoir has a population of approximately 200,000 (US Census, 2000).

Land use in the watershed is mostly forest and pasture. The watershed is dominated by forest land-uses (79%). Agricultural land-uses (mostly pasture) comprise a fairly high percentage (13%) of the watershed. Slopes are moderately steep and typically range from 3% - 45%, with over half the slopes in excess of 16%. The moderately steep slopes in the watershed make it somewhat vulnerable to erosion in un-forested areas.

All waters in the state of Arkansas have Designated Uses applied to them that dictate the level of water quality that must be maintained. Lee Creek is designated for the following uses by the Arkansas Department of Environmental Quality (ADEQ):

- Primary contact recreation
- Secondary contact recreation
- Domestic, industrial and agricultural water supply
- Fisheries (Aquatic life), Perennial Boston Mountains
- Extraordinary Resource Water (ERW), from state line upstream to headwaters



Lee Creek in Arkansas is also designated as a nutrient surplus area according to the Arkansas Code 15-20-1104. This designation places controls on the amount of fertilizer that can be applied to the land in the watershed, further protecting the waters from nutrient pollution.

A unique characteristic of Lee Creek, is that it runs out of Arkansas into Oklahoma and then after approximately 16 miles runs back into Arkansas.

Currently none of the streams in the Lee Creek Watershed in Arkansas are on Arkansas 303(d) list. This Watershed Management Plan is a proactive effort to maintain water quality within the watershed.

The Frog Bayou watershed is a part of the Frog-Mulberry Watershed (HUC- 11110201), and is approximately 271 mi<sup>2</sup> in size. The watershed drains directly into the Arkansas River Basin. The Upper Frog Bayou watershed (HUC-1111020104) has an impoundment (Lake Fort Smith) that serves as a drinking water source for Fort Smith. A portion of the watershed is approximately 84 mi<sup>2</sup> in size and is



located in the Boston Mountains Ecoregion (Omernick, 1987), primarily in Crawford County, Arkansas. The water supply serves a population of approximately 200,000 (US Census, 2000).

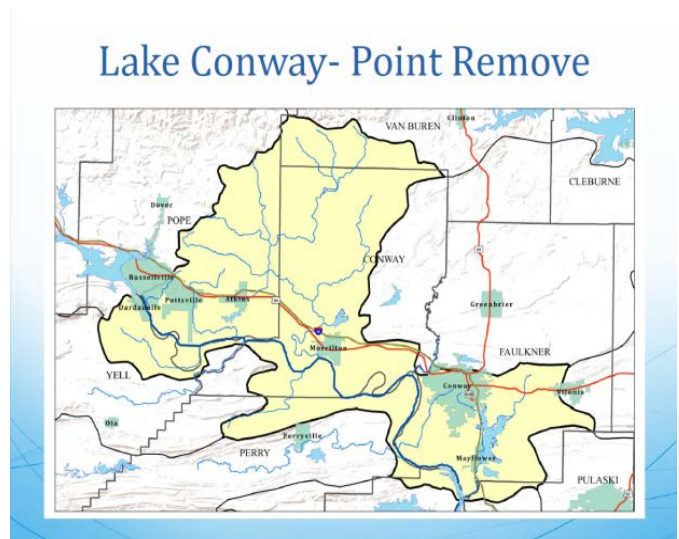
Sediment levels appear to be a principal concern in the watershed at this time and are known to be elevated due to storm water runoff from the numerous unpaved roads, pastures and eroded stream banks in the watershed. A substantial portion of the watershed is agricultural. Some areas, especially adjacent to agricultural land, lack riparian buffers and have ongoing stream bank erosion issues. Nutrient levels are not high but have been identified as elevated during storm flow events. Concerns over increased agricultural activity in the watershed potentially threaten Frog Bayou in the years to come, if not protected. In addition to agricultural concerns, Hwy 71 is a major highway that meanders through the watershed and is a potential source of additional pollutant loading and new contaminants.

Considering the results of the Designated Use Assessment and the similarity of the water quality to least disturbed Boston mountain Streams no load reductions are required to meet Arkansas water quality standards. The Upper Frog Bayou watershed is directly adjacent to watersheds classified by the Arkansas legislature as “nutrient surplus watersheds (i.e. the Illinois River).” It is a concern that nutrients from agricultural animal manure could be transported into the Upper Frog Bayou watershed from adjacent watersheds.

It is the goal of the plan to continually improve upon the drinking water quality in Lake Fort Smith and to protect the watershed from water quality degradation. In order to meet this goal a proactive target for 10% reduction of sediment and phosphorus loading to Lake Fort Smith will be designed to protect and improve water quality. Reduction of sediment loading will be the main focus of the implementation efforts and monitoring, as a proportional reduction in nutrients generally parallels sediment or total suspended solids (TSS) reduction. These reductions will be achieved following the plan outline.

## Development of a draft Watershed Management Plan (WMP) for Lake Conway-Point Remove Watershed

The University of Arkansas Community Design Center (UACDC) and the University of Arkansas Ecological Engineering (UAEEG) are working collaboratively to develop a “draft” (WMP) for the Lake Conway-Point Remove Watershed (HUC # 11110203). The watershed plan is structured around the nine elements as outlined by the EPA guidance. Three areas of focus for the project are: 1) conservation development in the more rural areas and low-density land uses surrounding Lake Conway; 2) urban riparian corridor conservation development that integrates environmental protective practices with urban land uses and recreational assets adjacent to or within corridors; and 3) model urban development and green infrastructure that incorporates BMP technologies to reduce non-point source pollution loading and increase ecosystem services delivery in new and existing development. The plan also provides



sample solutions for a cross-section of typical environmental-development conflicts within the study area, including, for example, the retrofit of large parking lots built within the riparian corridor. In addition to planning recommendations, the plan will include model ordinances for adoption by local governments. UACDC and UAEEG partnered with Metroplan (Central Arkansas' regional planning authority), Faulkner County, and cities of Conway, Mayflower and Vilonia to engage the public in development of the watershed plan's principles and approach. Metroplan convened local stakeholders in the process of conceptualizing the future condition of the Lake Conway Watershed, identifying barriers to achieving that future, and developing strategies for removing those barriers. For the past three years, Metroplan has facilitated the efforts of the Lake Conway Watershed Alliance (LCWA) as the group has worked to resolve water quality and flooding issues associated with Lake Conway. The relationship Metroplan has with the LCWA is used to garner participation in the workshops. The workshops were organized under principles of analysis and deliberation, where stakeholders work with local and regional experts on specific topics to better understand trade-offs, short and long-term impacts, and opportunities for watershed management. Metroplan led this effort assisted by UACDC, UAEEG, the City of Conway, and Faulkner County. Three workshops were convened to address the nine element plan components and the implementation of demonstration projects. The first workshop focused on the nine element process, NPS pollutants of concern, and the range of BMPs possible for implementation. The second workshop summarized the nine element plan and presented preliminary strategies for BMP implementation. A third workshop will be convened to summarize results and evaluate next steps in developing a comprehensive nine element plan for the entire 8 digit HUC.



## 4 Program Success Stories in FY2015

### Watershed Restoration Efforts Reduce Turbidity in the Upper Illinois River


Surface erosion and agricultural activities led to high turbidity levels in the upper Illinois River in Arkansas. As a result, the Arkansas Department of Environmental Quality (ADEQ) added a 2.5-mile segment of the Illinois River to the state's 2006 Clean Water Act (CWA) section 303(d) list of impaired waters for turbidity. The state applied a holistic mitigation strategy to abate sediment runoff in the watershed. Turbidity levels on the listed reach declined, prompting the state to remove it from the 2014 CWA section 303(d) list for turbidity impairment.

The Illinois River watershed is in northwest Arkansas and northeast Oklahoma. It is a perennial river with flow rates varying considerably from year to year, depending on rainfall. The Illinois River begins in the Ozark region of northwest Arkansas, near Fayetteville, Springdale, Rogers and Bentonville. The headwaters of the river meander west through the Ozarks (Benton and Washington counties) and cross into Oklahoma five miles south of Siloam Springs, near the town of Watts, Oklahoma.

ADEQ has listed the Illinois River as an Ecologically Sensitive Waterbody. The Illinois River is in the Arkansas River Basin, which is divided into 10 discrete ADEQ planning segments based on hydrological characteristics, human activities, geographic characteristics, and other factors. The upper Illinois River is in ADEQ planning segment 3J.

Erosion from agricultural areas led to high sediment loading in the upper Illinois River. ADEQ considers a stream reach in ADEQ planning segment 3J to be impaired by turbidity if more than 25 percent of all samples exceed 17 nephelometric turbidity units (NTU), based on 5 years of data before the assessment year. An assessment of data from the 5 years leading up to 2006 (i.e., data from 2001–2005) showed that 28 percent of water samples along a 2.5-mile segment of the Illinois River exceeded 17 NTU. Therefore, ADEQ added this segment (AR-3J-11110103-024) to the state's 2006 CWA section 303(d) list of impaired waters for turbidity.

Beginning in 1998, the Arkansas Natural Resources Commission (ANRC) used U.S. Environmental Protection Agency CWA section 319 funds to provide Illinois River watershed landowners with financial and technical assistance to implement best management practices (BMPs). These BMPs helped reduce turbidity by



**Section 319  
NONPOINT SOURCE PROGRAM SUCCESS STORY**

*Arkansas*

**Watershed Restoration Efforts Reduce Turbidity in the Upper Illinois River**

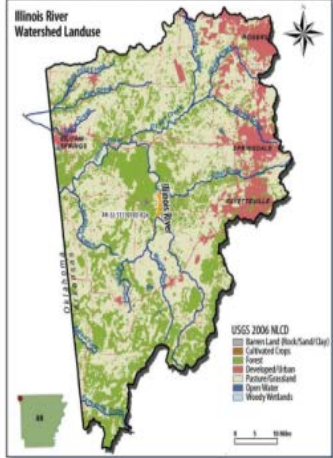
**Waterbody Improved** Surface erosion and agricultural activities led to high turbidity levels in the upper Illinois River in Arkansas. As a result, the Arkansas Department of Environmental Quality (ADEQ) added a 2.5-mile segment of the Illinois River to the state's 2006 Clean Water Act (CWA) section 303(d) list of impaired waters for turbidity. The state applied a holistic mitigation strategy to abate sediment runoff in the watershed. Turbidity levels on the listed reach declined, prompting the state to remove it from the 2014 CWA section 303(d) list for turbidity impairment.

**Problem**

The Illinois River watershed is in northwest Arkansas and northeast Oklahoma. It is a perennial river with flow rates varying considerably from year to year, depending on rainfall. The Illinois River begins in the Ozark region of northwest Arkansas, near Fayetteville, Springdale, Rogers and Bentonville. The headwaters of the river meander west through the Ozarks (Benton and Washington counties) and cross into Oklahoma five miles south of Siloam Springs, near the town of Watts, Oklahoma (Figure 1).

ADEQ has listed the Illinois River as an Ecologically Sensitive Waterbody (Figure 2). The Illinois River is in the Arkansas River Basin, which is divided into 10 discrete ADEQ planning segments based on hydrological characteristics, human activities, geographic characteristics, and other factors. The upper Illinois River is in ADEQ planning segment 3J.

Erosion from agricultural areas led to high sediment loading in the upper Illinois River. ADEQ considers a stream reach in ADEQ planning segment 3J to be impaired by turbidity if more than 25 percent of all samples exceed 17 nephelometric turbidity units (NTU), based on 5 years of data before the assessment year. An assessment of data from the 5 years leading up to 2006 (i.e., data from 2001–2005) showed that 28 percent of water samples along a 2.5-mile segment of the Illinois River exceeded 17 NTU. Therefore, ADEQ added this segment (AR-3J-11110103-024) to the state's 2006 CWA section 303(d) list of impaired waters for turbidity.



**Figure 1.** Land use within the Arkansas portion of the Illinois River watershed. Agricultural areas surround the restored segment, which is noted in orange. Urban areas dominate the watershed's eastern headwaters.

preventing sediment from entering the water.

ANRC's watershed-wide approach included participating in the startup of a watershed group, contributing to development of an EPA-approved nine-element watershed plan, implementing BMP cost-share projects and demonstration projects, conducting special watershed-targeted public education projects (e.g., Urban Hispanic Outreach and E-Education), and implementing low impact development projects in urban areas.

BMPs implemented in the watershed included riparian plantings (Figure 3) and rain gardens. Other partners within the watershed have used private funds and donations to continue some of the projects started by ANRC and develop their own water quality projects to help improve and restore waters in the Illinois River watershed.

ANRC and its partners successfully addressed surface erosion from agricultural activities through cost-effective targeting of CWA section 319 funds. As a result of the implemented practices in the watershed, turbidity levels have been decreasing. The 2014 ADEQ water quality assessment showed that exceedances of the 17 NTU turbidity standard for all flows had declined to 18 percent in the 5-year period leading up to 2014. This level falls below the 25 percent threshold, and meets water quality standards. Therefore, ADEQ removed the turbidity impairment for the 2.5-mile segment of the Illinois River from its 2014 impaired waters list.

The water quality improvement in the Illinois River is the result of partnerships between local landowners in the watershed, the Benton County Conservation District, the Washington County Conservation District, ANRC, ADEQ, Arkansas Game and Fish Commission, University of Arkansas Water Resource Center, University of Arkansas Cooperative Extension Service, Illinois River Watershed Partnership, U.S. Department of Agriculture's Natural Resources Conservation Service and the U.S. Environmental Protection Agency. Funding for BMP coordination, implementation and demonstration was provided by CWA section 319 funds in the amount of \$8,999,142; partners contributed \$7,545,101.

## 5 Other Entities That Augment Section 319(h) Programs and Initiatives

The Arkansas NPS program has various partners and other entities that work to reduce non-point source pollution. Partners consist of the Natural Resources Conservation Service (NRCS), Arkansas Natural Heritage Commission (ANHC), the University of Arkansas Cooperative Extension Service (UACES), The Nature Conservancy, Beaver Watershed Alliance, Illinois River Watershed Partnership and various other entities funding and/or implementing projects augmenting the efforts of The Arkansas 319(h) program. Listed below are several examples of projects from numerous entities that have implemented projects to enhance the mission of the Arkansas NPS program.

### Natural Resources Conservation Service (NRCS)

From the 2014 Arkansas NRCS Annual Report, there were several initiatives that help put conservation on the ground. Through these initiatives Arkansas was the second in the nation in the amount of financial assistance obligated with more than \$137 million and 11<sup>th</sup> in the nation in technical assistance funding with more than \$21.9 million. NRCS was able to utilize over \$7 million in technical assistance directly to landowners in 2014.



### Environmental Quality Incentives Program (EQIP)

The Environmental Quality Incentives Program (EQIP) promotes agricultural production and environmental quality as compatible goals. It provides financial and technical assistance to install or implement structural and management conservation practices on agricultural land. The majority of general EQIP funds provided to Arkansas are used to support priority resource concerns identified by conservation districts through local work groups. Arkansas farmers received more than \$47 million in EQIP financial assistance in 2014, funding 1,476 applications. This financial assistance will help install conservation practices to reduce soil erosion, use water more efficiently and improve grazing land, wildlife habitat and water quality on more than 247,399 acres. Other initiatives under EQIP included Energy (39 contracts for \$1.94 million), Organic (4 contracts for \$28,761) and Seasonal High-Tunnel (40 contracts for \$304,591).

### Regional Conservation Partnership Program

The Regional Conservation Partnership Program (RCPP) promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners. NRCS provides assistance to producers through partnership agreements and through program contracts or easement agreements. RCPP encourages partners to join in efforts with producers to increase the restoration and sustainable use of soil, water, wildlife and related natural resources on regional or watershed scales. Through RCPP, NRCS and its partners help producers install and maintain conservation activities in selected project areas. Partners leverage RCPP funding in project areas and report on the benefits achieved.

Projects in Arkansas will accomplish a wide diversity of agricultural and natural resource goals from addressing water quality degradation, groundwater declines, and inadequate habitat for fish and wildlife on irrigated cropland; reducing nutrient and sediment load entering the Red River; improving water quality in the Illinois River Watershed so that all waters meet their designated uses; and assisting rice



producers address water quantity, water quality, and wildlife habitat across 380,000 acres in Mississippi, Arkansas, California, Louisiana, Missouri, and Texas.

Arkansas conservation partners were approved for four RCPP projects in 2015 (2 State, 1 National, and 1 Critical Conservation Area (CCA))

- State Level – Illinois River Watershed Partnership for \$1.1 million in USDA funding
- State Level – Southwest Arkansas RC&D Council for \$0.7 million in USDA funding
- National – Ducks Unlimited and USA Rice for \$10 million in USDA funding
- Critical Conservation Area – Bayou Meto Water Management District for \$3 million in USDA funding

### **Illinois River Sub-Basin and Eucha-Spavinaw Lake Watershed Initiative (EQIP)**

The Illinois River Sub-Basin and Eucha-Spavinaw Lake Watershed Initiative (IRWI) is an ongoing initiative within Illinois River Sub-Basin (11110103) and Eucha-Spavinaw Lake (1107020903) watersheds to reduce sedimentation and nutrient loads to both of these watersheds. The project is located in portions of Benton and Washington counties in Arkansas. Funding is assisting landowners in the 576,517 acre area over an eight-year period. Through this initiative NRCS and its partners were able to secure 123 contracts over 9,070 acres in the Illinois River Watershed assisting landowners with \$3,328,910 of financial assistance. The function of this project is to implement BMPs to reduce nutrients and sediment within the watersheds. Financial assistance for this project is provided by the Environmental Quality Incentive Program (EQIP).

### **National Water Quality Initiative (NWQI)**

Through the National Water Quality Initiative in 2015, the Natural Resources Conservation Service worked with farmers and ranchers in 174 small watersheds throughout the Nation to improve water quality where it is a critical concern. In 2014, Arkansas NRCS provided \$991,159 dollars in financial assistance to help farmers and ranchers implement conservation systems to reduce nitrogen, phosphorous, sediment and pathogen contributions from agricultural land. This is the fourth year of the initiative, and builds on an over \$85 million NRCS investment since 2012 nationwide.

NWQI is an ongoing, regional initiative in Arkansas that has provided funding for three 12-digit Hydrologic Unit Codes (HUCs) within the Bayou Bartholomew watershed in Arkansas. The purpose of this initiative is to assist producers in addressing high priority water resource concerns in small watersheds with streams or water bodies that are targeted for impairment, threatened with impairment or have established TDMLs. Cousart Bayou-Little Cypress Bayou (080402050302), Upper Deep Bayou (08040205030) and Lower Deep Bayou (080402050304) participants received this funding in FY 2014 for edge of field monitoring projects.

Eligible producers received assistance under the Environmental Quality Incentives Program for installing conservation systems that included practices such as nutrient management, cover crops, conservation cropping systems, filter strips, terraces and in some cases, edge-of-field water quality monitoring. In 2014, a total of 30 contracts were developed, enrolling 4,646 acres.

### **EQIP Water Quality Monitoring**

A new project to monitor edge-of-field water quality on agricultural lands in targeted watersheds throughout the state began in 2013. Producers can use the data from water quality monitoring and evaluation to measure the effectiveness of conservation practices and systems such as nutrient management, cover crop, and irrigation water management. Evaluation of conservation practice



effectiveness through edge-of-field monitoring will lead to a better understanding of nutrient and sediment loading and will assist NRCS and participants in adapting or validating the application of conservation measures. In 2014, Arkansas landowners received \$498,364 through three contracts on 337 acres.

## **EQIP Western Arkansas Woodland Restoration Project**

The NRCS and United States Forest Service (FS) announced a multi-year partnership in 2014 to improve the health and resiliency of forest ecosystems across the nation. In Arkansas, the Western Arkansas Woodland Restoration project aims to double conservation activity on private lands in 29 counties and on the Ozark-St. Francis and Ouachita National Forests over the next three years. NRCS will provide voluntary, incentive-based assistance to private forest landowners, while the Forest Service portion will focus on forest health and water quality issues on Forest Service lands.

In 2014, the project resulted in more than \$2 million in financial assistance being obligated through 107 contracts designed to benefit 13,939 acres. There were more than 219,000 feet of firebreaks, 2,310 feet of diversions, 516 acres of site preparation for tree planting, 175 acres of forest stand improvement, 20 acres of prescribed burning, 8 ponds, and 5 stream crossings installed.

## **The Mississippi River Basin Healthy Watershed Initiative (MRBI)**

Through the Mississippi River Basin Healthy Watersheds Initiative (MRBI), NRCS and partners work with producers and landowners to implement voluntary conservation practices that improve water quality, restore wetlands, enhance wildlife habitat and sustain agricultural profitability in the Mississippi River basin. NRCS has identified the Mississippi River basin as a top priority due to water quality concerns, primarily related to the effects of nutrient loading on the health of local water bodies and, eventually, the Gulf of Mexico.

For 2015, NRCS planned to invest \$10 million in 27 new high-priority watersheds and 13 existing projects that would help improve water quality and strengthen agricultural operations. This investment through the Mississippi River Basin Healthy Watersheds Initiative is part of a commitment of \$100 million over four years to address critical water quality concerns in priority watersheds while boosting rural economies. Arkansas NRCS, through the Cooperative Conservation Partnership Initiative, was able to secure 445 contracts on 98,645 acres for over 23 million in financial assistance during 2014. The Wetlands Reserve Enhancement Program also was under the MRBI initiative and consisted of 18 easements for 3,963 acres and a total of \$7,286,169 in financial assistance.

## **Wetlands Reserve Enhancement Program (WREP) and Agricultural Conservation Easement Program Wetlands Reserve Easements (WRE)**

Arkansas NRCS enrolled 30 easements totaling 6,943 acres of wetlands through the Agricultural Conservation Easement Program Wetlands Reserve Easements (WRE) and Mississippi River Basin Healthy Watersheds Initiative Wetlands Reserve Enhancement Program (WREP). Total easement acquisitions were more than \$13.1 million and restoration was more than \$2.86 million. The voluntary programs offer landowners the opportunity to protect, restore and enhance wetlands on their property. Through WRE, 12 easements totaling 2,980 acres and more than \$5.8 million in acquisitions and \$1.17 million in restoration were implemented. Through WREP, 18 easements totaling 3,963 acres and more than \$7.2 million in acquisitions and \$1.69 million in restoration were implemented. Arkansas ranks third in the nation in the number of acres enrolled with more than 235,000.

## Conservation Stewardship Program (CSP)

The Conservation Stewardship Program (CSP) encourages agricultural and forestry producers to undertake additional conservation activities while improving and maintaining the existing conservation on their land. The program provides financial and technical assistance to conserve and enhance soil, water, air and related natural resources. In FY14, 428 new contracts were developed enrolling 417,293 acres. The contracts will provide more than \$12.4 million in financial assistance to participants over the five year contract agreements. The total CSP payments for existing contracts were more than \$54.3 million.

## USDA Strike Force Initiative

The USDA Strike Force Initiative is helping relieve persistent poverty in high-poverty counties by accelerating USDA assistance while working closely with Community Based Organizations. In 2014, Arkansas's Strike Force counties increased from 25 to 48. More than \$1.9 million in NRCS financial assistance funded 59 contracts on 4,781 acres in Arkansas's Strike Force counties in FY15 through EQIP.

USDA has invested between \$365 million and \$501 million from FY11 to FY13 in the 25 Strike Force counties. This has resulted in a substantial impact on the Arkansas economy. It is estimated these investments have provided between 5,708 and 6,997 additional jobs per year for Arkansas residents, many of these in the original 25 Strike Force counties.

## The Nature Conservancy

During FY 2015 another partner (TNC- Arkansas) completed phase II of a three phase stream restoration project on the Archey Fork (HUC #110100140103) of the Little Red River in March of 2015. This tributary runs through the City of Clinton, AR and feeds Greer's Ferry Lake which is used as a water supply source for several municipalities and water distributors. This stretch of stream was channelized for better flood control during the mid-1980's. While the channelization was useful for flood conveyance, it caused significant erosion of riparian lands over time. In addition, what was once suitable habitat for many aquatic species within the 3 mile stretch of river up and downstream of the confluence of the Archey and South Fork, became a wide, shallow, bedrock dominated, eroding channel that experienced extremely hot temperatures during the summer low-flow months.



A Natural Channel Design was used to return the stream to a more stable dimension and pattern. Project benefits include:

- Improved public access and recreational fishing opportunities within the City of Clinton. Before channelization, this stretch of river harbored a number of trophy-sized game fish, including native largemouth bass, smallmouth bass, and walleye. In fact, the current world-record walleye was caught less than two miles downstream of the proposed project site in 1982, just a few years before the site was altered for flood control. Archey Fork Park, managed by the city, lies at the heart of the project site. The addition of a fishable river walking trail in spring 2015 complements and highlights the project benefits in an easy to access public setting.
- A visible demonstration of successful stream restoration techniques made possible through collaboration between industry and conservation interests. With the majority of the project funding coming from

Southwestern Energy Company, it's an example of how industry can re-invest in the communities where it works.

- Protection and improvement of water quality in Greer's Ferry Lake, which serves as water supply for Clinton, Heber Springs, Lonoke-White Regional Water District, and Community Water System. These water districts currently represent a service area of greater than 5,200 square miles with a population served of approximately 152,000. To date, approximately 8 acres in the project area have been acquired by TNC and donated to the City of Clinton to add to the Archery Fork Park while an estimated 30 acres of riparian lands now have conservation easements in place to permanently protect the river corridor.
- Improved aquatic habitat for the rare and endangered species that inhabit the headwaters of the Little Red River. Improved spawning habitats for game-fish that primarily reside in Greers Ferry Lake.

## Beaver Watershed Alliance

The Beaver Watershed Alliance (BWA) has supported the Arkansas NPS program by completing conservation actions in hopes of watershed protection for the Beaver Watershed in Northwest Arkansas. The BWA's mission is to proactively protect, maintain, and enhance the water quality of Beaver Lake and the integrity of its watershed through outreach and education, voluntary best management practice implementation, and scientific investigation. During FY 2015, BWA (with the help of partners, landowners, and volunteers) implemented a few hundred conservation actions (or BMPs) made possible by the many financial partnerships helping fund this work. They expanded their outreach to 8,800 landowners and reached over 1 million people in 2015 with clean water messaging. The BWA used funds for researching future guidance for conservation/restoration/outreach efforts and took advantage of the Beaver Lake Watershed Protection Strategy (BLWPS) making it more relevant and useful for stakeholders. A study was also conducted to show that retention ponds could slow stormwater runoff on the West Fork of the White River.



## Illinois River Watershed Partnership

The Illinois River Watershed Partnership works to improve the integrity of the Illinois River through public education and community outreach, water quality monitoring, and the implementation of conservation and restoration practices throughout the watershed. During FY 2015, there were many accomplishments made that have helped benefit the Arkansas 319 NPS Program. The IRWP was able to utilize 5 trailheads in the watershed for education and outreach, BMP implementation, and low impact development demonstrations. The Watershed Sanctuary and Watershed Learning Center were two places that were greatly used in the education of the public, legislators, and academia. They also partnered with NRCS this past year using the MRBI and RCPP programs. Volunteer participation was big for the IRWP and it was estimated to be an economic value of time and match, doing green infrastructure and low impact development projects, of \$1,156,911. Overall, the IRWP was very active for FY 2015 and their partnership with ANRC was beneficial to the Arkansas NPS pollution program.



## University of Arkansas Cooperative Extension Service

The University of Arkansas Cooperative Extension Service (UACES) is a valuable partner in the Nonpoint Source (NPS) arena and have partnered



with ANRC to enhance the overall mission of the Arkansas NPS program. Most of the accomplishments over the past year have been in the realm of education and outreach for the UACES and that is one of their primary goals (to provide educational programs and research based information to the people of Arkansas). During FY 2015, the University of Arkansas Cooperative Extension Service has promoted and facilitated several meetings around the state in various watersheds, participated in radio interviews regarding NPS pollution, technically advised programs such as the Drain Smart program, toured the LID project in Little Rock for the National Association of Community Development Extension Professionals, and even partnered with the University of Arkansas Little Rock (UALR) in an annual Coleman Creek cleanup event. UACES's work is helping reduce NPS pollution around the state and the education and outreach work that is accomplished only increased the effectiveness of the Arkansas NPS Program.

## Discovery Farms

The Discovery Farm program strives to achieve environmental and agricultural sustainability for farming in Arkansas through monitoring, demonstration, and research to:



- Assess the need for and the effectiveness for adopting appropriate Best Management Practices (BMPs) to reduce nutrient and sediment loss and conserve water for major agricultural systems.
- Provide on-farm verification of nutrient and sediment loss reductions and water conservation.
- Mitigate nutrient and sediment losses that may prevent State waters from attaining designated uses.
- Deliver outreach programs to producers to aid them achieve production and environmental goals.
- Provide information in support of the Arkansas State Water Plan.
- Bridge a knowledge gap that now keeps farmers, natural resource managers, and decision makers from confidently taking effective actions that ensure both economic and environmental sustainability

The statewide program currently consists of nine farms in Arkansas. The following is a brief description of each Discovery Farm and its current location(s):

- Elkins – Poultry and beef operations (Washington County). This farm is in the Beaver Lake-Upper White River Watershed. There are 10 poultry houses, with 1,200 acres of pasture and approximately 1,000 acres of woodland. On this farm we are looking at nutrient runoff from around the poultry production facilities and use of two conservation practices to mitigate potential nutrient runoff.
- Wedington – Beef operation (Washington County). This farm is a beef rotational grazing operation in the Illinois River Watershed, where we are assessing the benefits of rotational grazing to nutrient runoff reduction and soil health improvements.
- Lincoln – Poultry and row crop operation (Washington County). This is a poultry farm that is increasing the number of poultry houses on the farm located in the Illinois River Watershed and we are working to develop four new houses with a reduced environmental footprint compared with tradition house structure and operation.
- Atkins – Corn-soybean row crop farm (Pope County). This farm is a 940-acre row-crop farm in the MRBI focus watershed of Point Remove-Lake Conway in Pope County. There are approximately 200 acres of wheat, 240 acres of rice, 200 acres of corn, and 400 acres of

soybean. We are assessing the benefits of a winter cover crop to nutrient and sediment runoff reduction

- Cherry Valley – Soybean-rice rotation (Cross County). Two farms were chosen for this site: The Clements farm (approximately 1,600 acres – conventional tillage) east of the L'Anguille River and the Wood Farm (approximately 2,700 acres – conservation tillage) immediately across the river on the west side. This area was recently declared a Critical Groundwater Area by ANRC and the two farms offer a contrast in conservation management.
- Stuttgart – Rice-soybean-corn rotation (Arkansas County). This farm is a row crop operation (approximately 1,500 acres) concentrating on rice, soybean, and corn rotations and is located in the Bayou Meto Watershed in Arkansas County. The farm has been in a Critical Groundwater Area for more than a decade. We are concentrating on various aspects of water conservation, harvesting and crop rotations to assess water use efficiency, while at the same time decreasing nutrient and sediment runoff.
- Dumas – Cotton-soybean-corn row crop farm (Desha County). The Steven's farm is a row crop operation (Approximately 1,500 acres), concentrating on cotton and corn and is located in the Bayou Macon Watershed in Desha County. On this farm we are evaluating the benefits of cover crops with cotton production to minimize nutrient and sediment runoff potential and the effects of irrigation water management on nutrient and sediment losses in irrigation tail water.
- Discovery Satellite Farms for Cover Crops – We are now doing background monitoring on three new farms, two in Jefferson County and one in St. Francis County, where we are splitting a field and half and documenting the benefits of cover crops in reducing nonpoint source pollution. Cover crops will be planted starting in the fall of 2016.

## Arkansas Multi-Agency Wetland Planning Team

### Wetlands Mapping and Characterization in the Gulf Coastal Plain Ecoregion

In 2015, a study to map geomorphic surfaces (terraces) in the Coastal Plain Ecoregion entitled *Geology of the Classic Deweyville Terrace System along the Ouachita and Saline Rivers across the Gulf Coastal Plain of Arkansas as Context for Wetland and Potential Natural Vegetation Mapping. Phase 2, Part 2* by Edwin R. Hajic, William H. Isenberger, W. J. Bennett, Jr. and John Northrip was completed. Mapping results from this study provide crucial insight into understanding geomorphic landscapes in the Coastal Plain Ecoregion. Data from this and previous studies provide the foundation for “potential natural vegetation” (PNV) mapping which show the relationship between geomorphic landscapes and occurrence of specific wetland types. These maps, once completed, will be extremely useful for restoration and conservation efforts in the Coastal Plain Ecoregion. The goal of this study will help ensure the appropriate plant complexes are integrated into these wetlands which will ensure the proper functionality of the wetlands to attenuate the pollution (which includes nonpoint sources) from escaping these wetland areas.



### Arkansas Natural Heritage Commission (ANHC)

The Arkansas Natural Heritage Commission's mission is to preserve natural diversity, to promote choice among beneficial uses of the environment, and to promote a balance between development and environmental protection in the State of Arkansas for this and succeeding generations. The Arkansas Natural Heritage Commission's projects enhance the 319(h) program in different ways. During FY 2015, they have done several creek and lake cleanups (one in Bayou Bartholomew, which is one of the priority watersheds), educated nearly 5,200 people and planted many trees in the process, protected and managed the state's System of Natural Areas (which consists of 71 properties), added 289 acres to the System of Natural Areas, and completed many assessments and collections. The Arkansas Natural Heritage Commission had just under \$2.5 million in expenditures for FY 2015 and around 43% of that total was used for Natural Area Acquisition and Land Management and Research.





**Snapshot Reporting for FY2015 (July 2014 – August 2015)**

Snapshot reporting was introduced September 2014 at the Stakeholder Meeting and was outlined as a way to share Arkansas water quality projects or activities with ANRC. The goal was to capture water project efforts around the state that were contributing to the benefit of the 319 program. A form was developed and partners were solicited to report projects that they could share with ANRC. These snapshot reports have helped ANRC 319 section better understand the work that is being accomplished around the state for nonpoint source pollution. In the future, these reports can help partners understand where to focus funds and make a difference in water quality.

The table below is the projects that were reported to ANRC for the time frame of July 2014 – August 2015. There were 21 projects reported to ANRC from various groups managing them with the assistance of many partners. If you would like more information on any of these projects please contact ANRC or the management of these projects around the state.

<b>Title</b>	<b>Management</b>	<b>Timeframe</b>	<b>Location</b>	<b>Project Type</b>	<b>Partners</b>
Monitoring Water Resources of the Gulf Mountain Wildlife Management Area to Evaluate Possible Effects of Natural Gas Development	Arkansas Water Resources Center	04/2013 – 06/2015	Southfork of the Little Red River (11010014)	Water Quality Monitoring	AG&F, U of A Department of Biological Sciences, UCA Department of Biological Sciences
Lakeside Watershed Opportunity Assessment	Beaver Water Alliance	11/2014 – 11/2015	Beaver Lake Lower White Watershed (1101000107)	BMP Implementation, Outreach/Education, and Watershed Assessment	Walton Family Foundation, Tyson, Carroll Boone Water District, Two-Ton, Beaver Water District, Springdale, Fayetteville, Rogers Water Utility, Watershed Conservation Resource Center, Washington County, Bentonville, Pea Ridge
Watershed Speaker Series	Beaver Water Alliance	01/2015 – 12/2015	11110103	Outreach/ Education	ADH, Mitchell Williams Law Firm, Northwest Arkansas Regional Planning Commission, University of Arkansas
Outdoor Watershed Education Recreation Program	Beaver Water Alliance	01/2015 – 12/2015	11010001	BMP Implementation and Outreach/ Education	Keep Arkansas Beautiful, Arkansas Game and Fish, Washington County Environmental Affairs, Cargill, Arkansas Environmental Educators Association, UA Extension, City of

					Fayetteville, City of Elkins, City of West Fork, Hobbs State Park, Arkansas Master Naturalists, Beaver Water District
West Fork Water Quality Monitoring	Beaver Water Alliance	Ongoing	1101000104	Water Quality Monitoring	Arkansas Water Resources Center
Middle Fork Saline River at Middle Fork Barrens Natural Area	Arkansas Natural Heritage Commission	Ongoing	080402030304	Streambank Stabilization	USFWS, Private Landowners, and Natural State Streams
Big Creek Natural Area Water Quality Monitoring	Arkansas Natural Heritage Commission	Ongoing	110100140703	Water Quality Monitoring	Arkansas Department of Environmental Quality
Cove Creek Water Quality Monitoring	Arkansas Natural Heritage Commission	Ongoing	111102050106	Water Quality Monitoring	Arkansas Department of Environmental Quality
Devil's Eyebrow Erosion Control	Arkansas Natural Heritage Commission	10/2014 – 03/2015	110100010710	BMP Implementation, Monitoring, Outreach and Education	The Nature Conservancy
NWA Regional Urban Stormwater Program	U of A Cooperative Extension Service	Ongoing	11010001, 11110103, 11070208	Outreach and Education	NWA Regional Planning Commission, Bella Vista, Benton Co., Bentonville, Bethel Heights, Cave Springs, Centerton, Elkins, Elm Springs, Farmington, + 10 other cities, Washington Co., U of A – Fayetteville
Fort Douglas Streambank Stabilization Project	US Forestry Service	09/2014 – 10/2014	111102020606	Streambank Stabilization and Mitigation	US Fish and Wildlife Services and Arkansas Game and Fish Commission
The Great Arkansas River Cleanup	Keep NLR Beautiful	09/2015	Pulaski County-North Little Rock	BMP Implementation, Outreach and Education, Monitoring	Keep Arkansas Beautiful
Arkansas Red River RCPP	SW Arkansas Resource Conservation and Development Council	05/2015 – 09/2019	11140160, 11140201, 11140302	BMP Implementation and Outreach & Education	Lafayette County Conservation District, Miller County Conservation District, Little River County Conservation District, USFWS, Red River Valley Association, Silas Hunt, UAPB, Wilson's Farm
Bayou Metro-Lower Arkansas Regional Conservation Partnership Program (RCPP)	Bayou Metro Water Management District	05/2015 – 09/2019	08020402	BMP Implementation	ANRC, White River Irrigation District, Pulaski County Conservation District, UAPB, AGFC, AACD, Diesel Motor, Inc., Lonoke County Farm Bureau, Lonoke

					County Co-op, DU, City of Lonoke, Grand Prairie-Bayou Two Public Water Authority
Caney Creek MRBI	NRCS	06/2015 – 09/2018	080202050402	BMP Implementation, Outreach and Education, Monitoring	Cross County Conservation District, Cross County Farm Bureau, ASU, U of A, AFC, and AG&FC
Growing Conservation in Illinois River Watershed (RCPP)	Illinois River Watershed Partnership	04/2015 – 09/2019	11110103	BMP Implementation and Outreach & Education	Benton County Conservation District, Washington County Conservation District, ANRC, AG&FC, AFC, USFWS, Benton County AR Farm Bureau, Washington County Farm Bureau, Arkansas Nature Conservancy, US Congressman Steve Womack, US Senator John Boozman
Rice Stewardship Partnership Sustaining the Future of Rice RCPP	Ducks Unlimited	06/2015 – 09/2019	30 rice growing counties in Arkansas	BMP Implementation and Outreach & Education	Ar Rice Federation, TNC, Arkansas Rice Research & Promotion Board, Bunge North America, Delta Council, AACD, Louisiana Rice Mill, Lower Mississippi Valley Joint Venture, Rice Tec, USA Rice Producer's Group, Kellogg, Riceland Foods
Strawberry River MRBI	NRCS	06/2015 – 09/2018	110100120203 and 110100120101	BMP Implementation and Outreach & Education	Fulton Co. CD, Izard Co. CD, University of Arkansas Extension Service, AFC, ANRC, and AG&FC
Upper Cache River MRBI	NRCS	06/2015 – 09/2018	080203020206 and 080203020202	BMP Implementation and Outreach & Education	Clay Co. CD, Greene Co. CD, Lawrence Co. CD, TNC, ANRC, AG&F, AFC, U of A, Legacy Ag Enterprise, Local Drainage Districts
Beaver LakeSmart	Ozarks Water Watch	Ongoing	Beaver Lake	-	-
Friends of Fourche Creek	Friends of Fourche Creek	Ongoing	Fourche Creek	-	-

## 6 NPS Pollution Management Program

### Milestones:

In the previous annual report (FY 2014), the Arkansas NPS program staff incorporated a milestone section to outline the specific milestones that the ANRC NPS program staff, cooperating partners, and stakeholders established. The goal also, of last year's report, was to detail the work and specific projects that helped accomplish or partially complete work under each milestone. In the past, the 319(h) program has funded projects that have, in turn, leveraged the success of previous projects. In FY 2015 there were active projects that were continuations of previous projects. There were also numerous projects funded by this program that directly addressed specific milestones.

We continue to conduct baseline monitoring in priority watersheds to help us better assess the status of those watersheds and the impact that BMP implementation is making. Projects such as 11-500 "Water Quality Monitoring in the Upper Illinois River Watershed and Upper White River Basin" and 12-800 "Water Quality Monitoring for the L'Anguille Watershed", just to name a few. These baseline monitoring projects can be considered, for the most part, continuations of previous baseline monitoring projects.

Several BMP implementation projects are vital to meeting Milestone 6 dealing with the reporting of load reductions to the GRTS (Grants Reporting and Tracking System) database. Without these projects, that are accomplishing reductions in Nitrogen, Phosphorus, and Sediment, there would be no loads to insert into the GRTS system.

Many projects that were active for FY 2015 specifically addressed milestones and/or were continuations of previously funded projects seeking to build on the success of those projects.

The following milestones are anticipated to be fully achieved by Sept. 30, 2016. The program management team will continue to use the adaptive management process to adjust objectives and to measure progress toward identified short-term milestones. Project partners, supported by Clean Water Act (CWA) Section 319 grants, will meet in September of each year to review progress toward project objectives and established program milestones. The Nonpoint Source (NPS) Pollution Management Program Stakeholder Group met to approve these measurable milestones that are being reported. The Arkansas Natural Resources Commission (ANRC) will review progress toward program milestones and discuss possible additions, deletions and/or revisions, as appropriate. This process will be repeated annually.

ANRC and the U.S. Environmental Protection Agency (EPA) recognize the achievement of goals and milestones are subject to potential changes in national funding levels, in addition to environmental and weather related factors, the national economic climate, and other variables beyond the control of the state. EPA and the state must also recognize that changes to the goals and milestones can be influenced by revisions to national EPA guidance. Subsequently, Arkansas may choose to re-evaluate and update applicable goals and milestones to adjust for such changing factors. This adaptive management approach will enable the state to make appropriate modifications to the Management Program to continue to attain satisfactory progress.

## Milestones for the NPS Pollution Management Program for FY 2015

**1. Continue the process of identifying 12-digit hydrologic unit areas for priority watersheds for program management purposes. This will occur in concert with a thorough analysis of the modeling assumptions and metrics and be accompanied by significant validation efforts. The qualitative risk assessment matrix will be updated every other year or six months after ADEQ releases the impaired waters list. Priority watersheds will be evaluated and updated every two years after the qualitative risk assessment matrix is updated.**

**13-600-** Continued Development of a Comprehensive Watershed Model for 12-digit HUCs in selected Priority Watersheds in Arkansas- Phase III. This project has served to calibrate and validate the Soil and Water Assessment Tool (SWAT) model at locations with available flow and water quality data so that sub watersheds within the 8-digit HUCs of Cache River, and Lower Ouachita-Smackover watershed are assessed and ranked based on their contribution to nonpoint source (NPS) pollution. Additional water quality (WQ) monitoring was conducted and the required data entered into the WQX or STORET database. Collected WQ data and historical WQ was utilized to calibrate and validate model results. The Cache River watershed model is instrumental in the development of a 9 element watershed plan. This modeling project began in July of 2013 and ended in December of 2015.

**13-700-** StreBanD- This project serves as a continuation to develop a cloud based, interactive and user-friendly web interface for the StreBanD tool. This tool has been developed to assist in delineating streambanks utilizing remote sensing technology and for ease of use and adoption by interested agencies and conservation planners. The tool was completed in August of 2015. Initial discussions were held with Arkansas-NRCS regarding the process and subsequent inclusion of the tool in their planning assistance "toolbox". Arkansas-NRCS interest in the tool was limited. EPA Region VI and Purdue University is showing great interest in the tool. Staff at Purdue University has expressed an interest to further develop and promote the tool.

**2. Continue to conduct strategic baseline monitoring in selected high priority 12-digit hydrologic unit areas within matrix-identified priority watersheds. ANRC anticipates 3-4 priority watersheds will have baseline monitoring over the life of the plan.**

**11-500-** Water Quality Monitoring in the Upper Illinois River Watershed and Upper White River Basin- This project was a continuation to the baseline monitoring of two of the priority watersheds and wrapped up September 30, 2015. The accomplishments that were made for FY 2015 are as follows: Financial review for year four of the project was completed, Over 31 discharge measurements were taken at Sager Creek, and 44-50 samples were collected at each of the 19 sites in the UIRW and UWRB and were also analyzed. The final report for this project was submitted on September 30, 2015 and was officially approved by EPA on November 4, 2015. Overall this project found several exceedances for sediment, nutrients, and bacteria. The sources were identified and suggestions were made about ways to implement future targeted BMPs. There were also locations identified for possible future success stories.

**11-600-** Water Quality Monitoring for the Lake Conway Point Remove Watershed- This project contributed to the baseline monitoring of one of the priority watersheds. It concluded in December 2014 but began in July 2011. The accomplishments that were made for FY 2015 were basically just the final



analysis and report generation. The final report was delivered to ANRC in October 2014 and was later approved by EPA in December 2014. General comments from EPA were how it looked great and Equilibrium did a very thorough job calculating load reductions in the watershed. There were some good improvements over the life of the project and no technical comments at the time of approval.

**12-800-** Water Quality Monitoring for the L'Anguille Watershed- This project also contributed to this milestone and monitored the L'Anguille Watershed thru September 30, 2015. The accomplishments that have been made for FY 2015 are as follows: A fiscal audit of project revenues was completed, monitoring equipment was maintained, 240 grab samples and 98 routine samples were collected, in-situ data was collected at each monitoring station, 373 samples were analyzed, and data was entered and validated into the WOX database. Equilibrium is also in the process of submission and review of the final report.

**13-400-** Water Quality Monitoring for the Bayou Bartholomew Watershed (Deep Bayou) -This project is collecting data for one of ANRC 319's priority watersheds (Bayou Bartholomew) but is also a more focused monitoring project, partnering with the National Water Quality Initiative (NWQI). The accomplishments that have been made for FY 2015 are as follows: There were 485 grab samples and 99 routine samples have been collected from 10 monitoring locations, in-situ data has been recorded at each monitoring station, 590 samples have been analyzed, and stage height data has been surveyed at 5 locations. This project is a little over halfway complete and will conclude in September 2017.

**11-1600-** Cache River Monitoring- This project tried to ascertain the effectiveness of BMPs implemented by MRBI partners in the upper Cache River watershed thru in stream water quality monitoring at the outflow of selected 12 digit HUCs. This monitoring began in the late summer of 2011 and continued through 2014. 1,092 samples were collected and analyzed over the life of the project. A final report was submitted and accepted in February of 2015.

**13-500-** Middle Cache River Monitoring- This project is trying to ascertain the effectiveness of BMPs implemented by MRBI partners in the middle Cache River watershed thru in stream water quality monitoring at the outflow of selected 12 digit HUCs. This monitoring began in the summer of 2013 and is scheduled to continue through June 2016. 544 samples have been collected and analyzed so far with 216 of those being done in FY2015.

### **3. Continue to employ a formal annual review process of select NPS projects funded with CWA 319 grants aimed at improving project effectiveness. The formal review results will be reported annually in the NPS annual report.**

This year the NPS Stakeholder and Project Review took place September 23-24, 2015 at the Cooperative Extension Service facility in Little Rock. Seventy people attended the first day stakeholder meeting. The agenda was robust and focused on several topics. Dr. Dharmendra Saraswat was recognized for all of his hard work and efforts contributed to the Nonpoint Source Management Program during his service with the Cooperative Extension Service. EPA remarks were given by Brian Fontenot and focused on success stories, watershed management plans, and communication. There was a session on successful watershed management plan implementation paneled by Delia Haak (Illinois River Watershed Partnership), John Pennington (Beaver Watershed Alliance), and Katie Teague (University of Arkansas Cooperative Extension Service). Also there were presentations on the endangered species inclusion into the Management Plan, ANRC's year in review, NRCS activity update, and snapshot reporting. This year stakeholders were more thrust into the conversation of how to improve the program and make the

meeting more efficient and beneficial. The Stakeholder meeting concluded the afternoon with a tour of the Low Impact Development work that was completed on Main Street of Downtown Little Rock. It was well attended and definitely a high point of the day.

The NPS Project Review Meeting took place Sept. 24, 2015 with 51 attendees taking part on the second day. There were thirteen presenters this year from watershed groups, non-profits, academia, and conservation districts. The following are the projects that were presented and discussed.

Project Number	Project Name	Project Type
11-1600, 11-1800, 13-500	Cache River and Larkin Creek Monitoring	Monitoring
12-800 & 13-400	L'Anguille River and Deep Bayou Monitoring	Monitoring
13-900	Poplar Creek Watershed Improvement Project	BMP Implementation
12-600	WQ Demonstration and Educational Program for Main Street Little Rock	BMP Implementation and Education
13-1300	LID Demo and Education Project for Illinois River Watershed	Demonstration/Education
13-300	WQ Demonstration and Educational Program for the Illinois River Watershed	Demonstration/Education
11-500	Illinois and Upper White River Monitoring	Monitoring
13-1400	Lake Fayetteville Watershed Outreach and Education	Outreach and Education
13-200	Lee Creek and Frog Bayou Watershed Mgt. Planning	Planning
14-300	War Eagle Creek Riparian Mgt. Education and Demo	Education and Demonstration
14-500	Sediment and Nutrient Mgt. in the L'Anguille River Watershed	BMP Implementation
13-1100	White River Bank Restoration and Monitoring Project	Streambank Restoration
12-200	Bull Shoals Watershed Project	BMP Implementation

**4. As resources allow, continue cooperation with the Arkansas State Plant Board and the Abandoned Pesticide Program in the collection of data associated with the environmental risk reductions related to farmer participation in abandoned pesticide collection. Any developments in this area will be reported annually in the NPS annual report.**

Since 2005, the program has been conducted in all 75 counties in the state, successfully recovering over 2.3 million pounds of unwanted agricultural pesticides. In FY 2015, NPS staff participated in quarterly meetings of the Abandoned Pesticide Collection Advisory Committee, giving input as to where and when collection events should be held. Seven different collection events garnered 377,333 pounds of pesticides in the last year.

**5. Continue to produce and submit the NPS annual report by the end of January each year.**

The 2014 Arkansas Annual Report was submitted January 15, 2015 to EPA Region VI. ANRC received correspondence dated April 2, 2015 from the Region related to receipt, review, acceptance and suggestions to the report. Comments on the report were, overall, very positive and encouraging with the new adapted format of the Annual Report.

**6. Continue to report load reductions (sediment and nutrients) and BMPs in the Grants Reporting and Tracking System (GRTS) database each year. These results will be included in the NPS Annual Report.**

The table below is a reflection of the load reductions that have been accomplished during FY 2015. Every quarter these load reductions and other information such as BMP amounts are entered into the EPA GRTS database. Projects, that have information entered in for load reductions, consist of demonstration, BMP implementation, and streambank restoration projects. Most of these projects submit information quarterly or at the conclusion of the project. There are various models that are used in calculating load reductions and they can vary between projects. So, this table depicts active projects that had a quantifiable load reduction during the period of FY 2015.

**FY 2015 ACTIVE PROJECT LOAD REDUCTIONS**

Project #	Nitrogen Reduced (lbs./year)		Phosphorus Reduced (lbs./year)		Sediment Reduced (tons/year)	
	FY 15	Project Life	FY 15	Project Life	FY 15	Project Life
<b>11-2100</b>	1,199	5,232	599	1,144	487	705
<b>12-200*</b>	290	533	145	266	122	17,500
<b>12-300*</b>	-	-	-	-	-	11,000
<b>12-400</b>	135	255	67	181	58	288
<b>13-900</b>	10	52	5	26	5	25
<b>14-500</b>	3,774	3,774	1,886	1,886	1,556	1,556
<b>Total</b>	<b>5,408</b>	<b>9,846</b>	<b>2,702</b>	<b>3,503</b>	<b>2,228</b>	<b>31,363</b>

\*Load Reductions were calculated using the Region 5 model (for the exception of 12-200 and 12-300 which utilized RUSLE)

**13-1100-** White River Bank Restoration- This project is to reduce erosion along a minimum of 1,250 feet of riverbank including approximately 750 feet of bank reconstruction using toe-wood techniques on the White River near the City of Fayetteville waste water treatment plant. The project will reduce sediment and phosphorus loads from eroding riverbanks, improve water quality, and enhance aquatic and terrestrial habitat. The assessment and design for this project has been completed and is currently in the implementation phase.

**12-200-** Boone County/ Bull Shoals Watershed Project- This project with the Boone County Conservation District addressed water quality concerns in the Bull Shoals watershed. The project offered eligible landowners technical and financial assistance to implement BMPs on their property. This project started in June 2012 and concluded in June 2015. A final report was submitted and accepted in September of 2015. Load reductions for the project have been calculated and entered into the GRTS database.

**13-900-** Poplar Creek Watershed Improvement- This project with the Greene County Conservation District is seeking to address impairment (sedimentation) of a tributary of the Cache River called Poplar Creek. The project offers eligible landowners technical and financial assistance to implement BMPs on their property. This project started in June 2013 and will continue thru June 2016. Load reductions for the project have been calculated and entered into the GRTS database.

**12-400-** Lower L'Anguille River Watershed Cost-Share Project Phase IV- St. Francis County Conservation District has assisted 49 applicants in helping water quality in the Lower L'Anguille River Watershed. BMPs implemented include: Cover Crops, Structure for water control, Irrigation Water Conveyance and Drop Pipes.

**14-500-** Sediment & Nutrient Management in the L'Anguille River Watershed in St. Francis County Cost-Share project has assisted 10 applicants in helping water quality in the L'Anguille River Watershed. Also newsletters, newspaper articles and radio spots were used informing landowners in the watershed about ways to prevent non-point source pollution. BMPs implemented include: Cover Crops, Irrigation Water Conveyance and Nutrient Management.

**7. Continue to partner and assist the Natural Resources Conservation Service (NRCS) in the review, selection or development of National Water Quality Initiative (NWQI), Mississippi River Basin Initiative (MRBI), Regional Conservation Partnership Program (RCPP), Environmental Quality Incentive Program (EQIP) or other programs that will improve or enhance water quality in watersheds on an annual basis. ANRC will also participate in the State Technical Committee annually or as it convenes. A summary of meetings attended, programs reviewed or participation will be reported annually. Additionally ANRC will monitor (in-stream WQ monitoring) a minimum of 2 NWQI 12 digit watersheds and 2 MRBI 12 digit watersheds yearly through the life of this plan. Monitoring results will be assessed and reported in the NPS Annual Report as they become available.**

February 2015 attended and participated in the State Technical Committee (STC) meeting. The focus of the meeting was EQIP funding allocation by County, changes in funding allocations by program/initiative and the possibility of Regional Conservation Partnership Program (RCPP) being initiated.

The RCPP is a national version of the MRBI program and was announced in late February 2015. The announcement for RCPP applications and due dates were determined, applications and a call for proposals was made. Arkansas submitted 26 applications. Four of the 26 applications were selected to be further enhanced.

ANRC has several projects addressing the monitoring aspect of this milestone. There are monitoring projects in the Bayou Bartholomew (NWQI), Lake Conway Point Remove (MRBI), L'Anguille River (MRBI), Cache River (MRBI), and Little River Ditches (MRBI) watersheds. The projects below have made accomplishments for FY 2015:

**13-400-** Water Quality Monitoring for the Bayou Bartholomew Watershed (Deep Bayou) -This project is collecting data for one of ANRC 319's priority watersheds (Bayou Bartholomew) but is also a more focused monitoring project partnering effort under the National Water Quality Initiative (NWQI). The accomplishments that have been made for FY 2015 are as follows: There were 485 grab samples and 99 routine samples have been collected from 10 monitoring locations, in-situ data has been recorded at each monitoring station, 590 samples have been analyzed, and stage height data has been surveyed at 5 locations. This project is a little over halfway complete and will conclude in September 2017.

**12-800-** Water Quality Monitoring for the L'Anguille Watershed- This project also contributed to this milestone and monitored the L'Anguille Watershed thru September 30, 2015. The accomplishments that have been made for FY 2015 are as follows: A fiscal audit of project revenues was completed, monitoring equipment was maintained, 240 grab samples and 98 routine samples were collected, in-situ data was collected at each monitoring station, 373 samples were analyzed, and data was entered and validated into the WQX database. Equilibrium is also in the process of submission and review of the final report.

**11-1600-** Cache River Monitoring- This project tried to ascertain the effectiveness of BMPs implemented by MRBI partners in the upper Cache River watershed thru in stream water quality monitoring at the outflow of selected 12 digit HUCs. This monitoring began in the late summer of 2011 and continued through 2014. 1,092 samples were collected and analyzed over the life of the project. A final report was submitted and accepted in February of 2015.

**13-500-** Middle Cache River Monitoring- This project is trying to ascertain the effectiveness of BMPs implemented by MRBI partners in the middle Cache River watershed thru in stream water quality monitoring at the outflow of selected 12 digit HUCs. This monitoring began in the summer of 2013 and is scheduled to continue through June 2016. 544 samples have been collected and analyzed so far with 216 of those being done in FY2015.

**14-400-** Little River Ditches Monitoring- This project is trying to ascertain the effectiveness of BMPs implemented by MRBI partners in the Little River Ditches watershed. This monitoring began in January of 2015 and is scheduled to continue through September of 2017. 93 samples have been collected and analyzed to date, all in FY2015.

**8. Continue to evaluate and support in-stream water quality monitoring to assess the effectiveness of implemented 319(h) grant-funded projects, and report monitoring data to ADEQ annually or as appropriate.**

ANRC strives to send all baseline monitoring data to ADEQ annually and at the conclusion of projects. The data is sent by October 1 of every year but can be sent at other times of the year. The following projects have had data submitted to ADEQ during FY 2015: 11-500, 11-1600, 12-800, 13-400, 13-500, and 14-400.

**9. Review ADEQ's 305(b) report and subsequent 303(d) list approved by EPA for delisted streams or stream segments and determine area activities implemented during the period prior to delisting as a result of NPS load reductions. Review of the 303(d) list will occur every two years and draft success stories will be developed for delisted segments as appropriate. The goal is to develop two to three success stories within the time frame of this management plan.**

We continue to review the draft 2014 stream segment delistings for potential delistings. In FY 2015 a success story was developed for the Illinois River. To date the 2010, 2012 and 2014 Intergraded Water Quality Assessment Report (305(b)) has not been approved by EPA and the Arkansas Department of Environmental Quality has not published an updated stream segment listing.

**10. Develop and implement the Arkansas Watershed Stewardship training program, which will provide watershed education to help residents participate in programs designed to address water quality issues. Program facilitators will train 300 people each year. The AWS training program will occur 8 times in 2014 in 8 priority watersheds with a total of 300 people each year being educated in water quality restoration practices.**

There have been no additional activities associated with this milestone.



**11. Work with partners or other stakeholders to initiate or to have two to three watershed management plans accepted as meeting EPA's nine key elements within the time frame of this NPS Management Plan. Progress on working with watershed groups and/or submittal or acceptance of watershed plans could also be reported on an annual basis in the NPS annual report.**

ANRC is currently using state funds facilitating contracts with entities, partners and conservation districts in the Strawberry (11010012), Cache (08020302) and Lower Little River (11140109) watersheds to develop acceptable EPA 9-element plans. The Strawberry and Cache WMPs should be completed by March 2016.

**12-900-** ANRC is currently using state funds facilitating contracts with entities, partners and conservation districts in the Cache (08020302) watershed to develop acceptable EPA 9-element plans. The Cache WMP is expected to be completed by March 2016.

**13-200-** Lee Creek and Frog Bayou Watershed Management Planning – Phase II. The goal was to update and revise the draft watershed management plan (WMP) for the Lee Creek and Frog Bayou watersheds. A draft WMP was completed in June 2012 as Phase I of this project. Phase II of the project provided a more accurate assessment of loading and a final WMP that is based on EPA's 9 minimum elements and practical to implement. This project began in July of 2013 and was completed in July 2015. The WMPs were reviewed and accepted by EPA in October 2015.

**12-700-** Initiation of Watershed Management Plan (WMP) for Little Palarm Creek Sub-Watershed and Low Impact Development Plan for Lake Conway Urban Watershed

A draft of the WMP has been initiated for Little Palarm Creek Sub-Watershed. Reports and literature review on the water quality issues of this watershed have been initiated. Mapping data has been collected and assessed for usability from the City of Conway and other sources. The draft WMP was submitted to ANRC for review and comment in April, 2015. Comments were provided by ANRC. The draft WMP was then sent to EPA for a preliminary review and comments made by EPA were addressed and re-submitted to ANRC in August 2015. This draft can be now turned over to the Lake Conway Watershed Alliance for further enhancement and development to ensure that all 9 elements are met. Meetings focused on watershed advocacy group formation, governance and structure has begun.

**14-700-** ANRC is currently using state funds facilitating contracts with entities, partners and conservation districts in the Strawberry (11010012) watersheds to develop acceptable EPA 9-element plans. The Strawberry WMP is expected to be completed by March 2016.

**14-800-** ANRC is currently using state funds facilitating contracts with entities, partners and conservation districts in the Lower Little River (11140109) watersheds to develop acceptable EPA 9-element plans. The Lower Little River WMP is expected to be completed by March 2016.

**12. Work with partners or other stakeholders to initiate Low Impact Development (LID) projects within priority watersheds.**

**13-300-** IRWP Greenway demonstrated the benefits of rain gardens and other LID practices. The IRWP installed Low Impact Development (LID) demonstration projects and used clean water initiatives such as porous pavers, tree wells, rain gardens and phosphorous removal structures such as vegetated swales, riparian buffers with native grasses and trees to improve water quality. As the infrastructure was

installed, the IRWP educated and involved the community on the key educational water quality improvement and best management practice aspects.

As of this report the IRWP has installed 5 Trailheads on Razorback Greenway with Green Infrastructure, 15 Rain Gardens, installed 12 interpretive signage sites, held 7 LID workshops and conducted online media campaigns 3 times.

**13-1300-** This project focused urban management due to the land use changes predicted primarily for this management area of the watershed. This project is installing, demonstrating and educating stakeholders about the benefits of low impact development and green infrastructure that can be implemented to improve and protect water quality. As the green infrastructure features are installed, the IRWP is educating and involving the regional community on key educational water quality improvement and best management practices for individuals, businesses and municipalities.

To date the project has completed a Phosphorus Removal Structure, bioswale, porous pavers, vegetated wall, green roof pavilion, agricultural raised beds, rain garden, floating wetlands, solar-powered sign. Also 3 LID demonstration workshops have been held for school teaches and 3 for students. For farther outreach the IRWP has held 4 media events and conducted 10 social media campaigns.

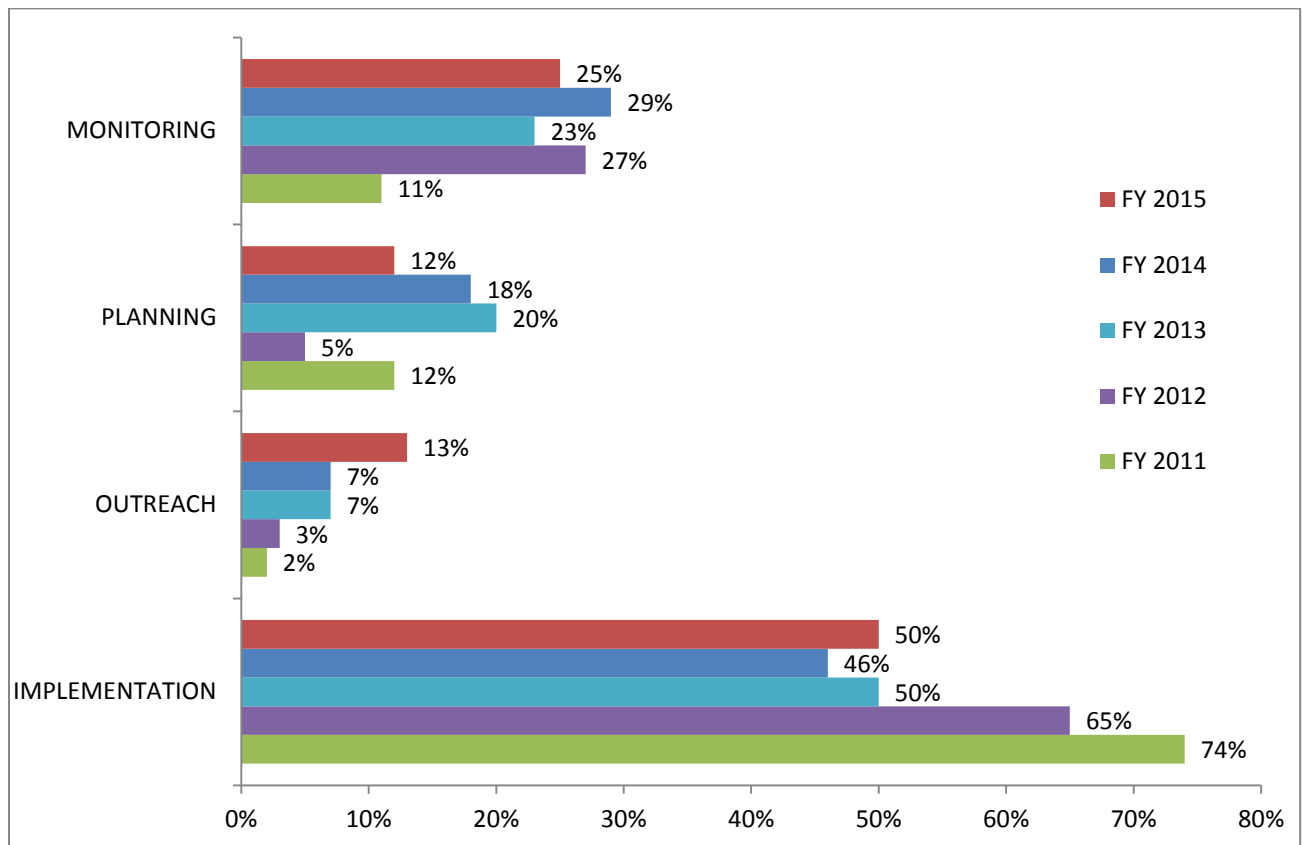
## 7 FEDERAL RESOURCE ALLOCATION:

### Program Expenditures:

The Arkansas Nonpoint Source Program allocates most of its Clean Water Act 319(h) funds to its partners who plan to implement projects in priority watersheds that best meet the goals and milestones of the Program. These partners must be capable of carrying out projects and are typically required to provide a minimum of 43% match in non-federal funds. In FY 2015, ANRC and its project partners spent approximately \$2.8M in federal funds to address water quality resource concerns and to reduce or prevent nonpoint source pollution.

The chart below shows how federal funds disbursed for projects were allocated among monitoring, planning, outreach, and implementation projects. Monitoring expenditures decreased 4% of federal expenditures from FY 2014 to 2015. Planning expenditures decreased considerably to 12% while outreach expenditures increased 6% respectively. Implementation expenditures increased 9% in FY 2015.

### Program Expenditures for FY 2015:



## 8 Best Management Practices

### Best Management Practices Implemented in FY 2015

The below table contains BMPs that have been implemented during FY 2015 and the quantity of each BMP according to active projects during FY 2015.

Best Management Practices	NRCS #	Demonstration Projects					Total
		12-200	12-300	12-400	13-900	14-500	
Brush Mgt. (acres)	314	195					195 acres
Cover Crop (acres)	240			272		670	950 acres
Critical Area Planting (acres)	342				0.5		0.5 acres
Fencing (feet)	382	5,410					5,410 feet
Forage & Biomass Planting (acres)	512	21.1		9	39		60 acres
Grade Stabilization Structure (feet)	410			560			560 feet
Heavy Use Area (each)	561	14					14
Irrigation Pipeline (feet)	430		3,299	5,195	2,636	2,264	13,394 feet
Mulching (acres)	484				0.5		0.5 acres
Nutrient Mgt. (acres)	590					93	93 acres
Pipeline (feet)	516	7,813					7,813 feet
Pond (cubic yards)	378				9,084		9,084 feet
Residue Mgt. (acres)	345					93	93 acres
Structure for Water Control (feet)	587		2,359				2,359 feet
Watering Facility (each)	614	12					12

## 9 FY 2015 Non-point Source Program (Program) Accomplishments

- **Watershed Management Plans**-Two 9 element Watershed Management Plans were initiated in FY 2014 and both of these plans were completed, reviewed, and submitted to EPA in FY 2015. Lee Creek and Frog Bayou Watershed Management Plans were submitted and accepted by EPA this past year. Also, a draft management plan in the Lake Conway Point Remove Watershed was completed but it was not reviewed as a full 9 element WMP. The Arkansas NPS staff will continue to provide assistance to stakeholders for initiation and completion of Watershed Management Plans.
- **Arkansas Water Plan**- After 3 years of intensive work ANRC completed an update of the Arkansas State Water Plan, in which the NPS Program is an integral part. The Arkansas Water Plan update is now complete and includes several recommendations related to NPS management. Specifically, the Arkansas Water Plan section 2402.8 titled “Improving water quality through nonpoint source management” states:
  - Water quality is affected by nonpoint sources of pollutants and nonpoint source management projects need state funding in addition to federal funding.
  - The Commission will propose legislation to designate funding specifically for financing nonpoint source pollution management programs and implementing nonpoint source management practices.
  - The Commission will collaborate with the Arkansas Department of Environmental Quality, the Arkansas Game and Fish Commission, the Arkansas Natural Heritage Commission, the Arkansas Department of Health, the United States Geological Survey, and other state, regional, and local agencies and organizations that engage in or have water quality management interest through:
    1. The biennial Clean Water Act water quality review processes, and
    2. The water quality criteria review to determine the attainment or nonattainment of water quality standards in streams and identify the sources and causes of nonattainment.
  - The Commission may encourage the General Assembly to consider the need for nutrient management plans for the application of poultry litter and animal manure in other regions of the state.
  - The Commission will leverage funding from multiple sources such as Source Water Protection under the Safe Drinking Water Act, administered through the Arkansas Department of Health, to address nonpoint source pollution in watersheds with drinking water sources.

Legislative approval of the water plan was a huge accomplishment in FY 2015 and sets the course for Arkansas’ water resources and management the next several years.



- **Success Stories-** Would not be possible without the dedication and commitment of all staff involved and funding provided by EPA. ANRC had one success story for FY 2015 in the Illinois River Watershed which addressed levels of turbidity in the upper portion of the watershed.
- **Enhancing Partnerships-** ANRC, EPA, NRCS, TNC and ADEQ have further strengthened partnerships with one another through initiatives and programs that share a mutual goal of reducing nonpoint source pollution. In January 2015, ANRC and ADEQ initiated quarterly meetings that included representatives from the Arkansas Department of Health, United States Geological Survey, Arkansas Heritage Commission and Equilibrium (NGO partner) in an effort to better coordinate and communicate program goals and objectives. The continuation of strengthening partnerships with partners and other entities will be a primary goal of the Program in subsequent years
- **State Funds Utilized for 319(h) Activities-** State funds are being utilized to fund the development of 3 Watershed Management Plans (Cache River, Strawberry River and Little River).
- **GRTS Reporting-** There were load reductions directly related to 319(h) funded projects that were accomplished and measured this past fiscal year. Load reductions were exhibited in many of the priority watersheds around the state. Total load reductions in FY 2015 were 2,228 tons for Sediment, 5,408 pounds for Nitrogen and 2,702 pounds for Phosphorous. All of these load reductions have been entered into the GRTS database.

## Program Staff

The Arkansas Natural Resources Commission, Nonpoint Source Management Program staff would like to thank EPA for the financial and technical assistance provided and the diverse partners and stakeholders that assisted in the endeavor to improve water quality in the Arkansas.



**Tony Ramick,**  
Fiscal Manager/Coordinator

- Program Administration
- NPS Management Plan Update
- Project Development and Management
- Partnership Coordination and Development
- LID/GI, BMP Implementation and Education/Outreach



**Kevin McGaughey,**  
Program Coordinator

- Project Development and Management
- BMP Implementation, Monitoring, GRTS, Conservation District Coordination and Technical writing



**Allen Brown,**  
Program Coordinator

- Project Development and Management
- LID/GI, BMP Implementation, Education/Outreach, Streambank Stabilization and WMP Development



**Robbie Alberson,**  
Program Coordinator

- Project Development and Management
- Agricultural Demonstration development, in-field BMP site inspection, BMP implementation, Monitoring, GRTS and Technical writing



**Steve Stake,**  
Program Coordinator

- Project Development and Management
- BMP Implementation, LID/GI, Streambank Stabilization, Conservation District coordination and WMP Development