The Arkansas Annual Report

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

FY 2017

Arkansas Natural Resources Commission

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1 SUMMARIES

Notes from the Director:

Since being named the Executive Director of the Arkansas Natural Resources Commission (ANRC) in July 2016, the staff and I have worked diligently to improve and maximize the efficiency and productivity of the agency.

In keeping with Governor Hutchinson's campaign promise and his directive, the various programs that ANRC oversees have been assessed with a few subtle changes being made. The total staffing of ANRC has reduced slightly as some staff have retired and others secured positions outside the agency. ANRC continues to develop, build and enhance partnerships and is committed to effectively managing water resources and water quality through our Nonpoint Source Management Program (Program).

The state Nonpoint Source Management Plan has been updated for the period of 2017-2022 thus guiding the Program for the next five years. The updated plan is more concise and focused on nonregulated nonpoint sources and their management. Most aspects of NPS activities that require permitting or are regulated are administered by the Arkansas Department of Environmental Quality or the Arkansas Department of Health.

The Program continues to focus on the development of nine-element watershed plans and their implementation. A small but ever growing component of watershed management plans is the aspect of green infrastructure (GI) and Low Impact Development (LID). Additionally, the nexus between rural agricultural lands and municipalities are areas where benefits from GI or LID could provide a great benefit to water quality.

This past year was not without its challenges. The ultimate challenge and goal is the improvement of water quality and the restoration of the designated uses of water bodies. We could not directly attribute the functions of the NPS Management Program to a restored waterbody; however, conditions in several stream segments could not be unequivocally determined without further data. Initial indications of the data that did exist substantiated water quality improvement.

Nationwide, there are concerns about Nonpoint Source Program. The question of funding levels makes planning (more than 2 years) difficult. ANRC has taken the approach of "business as usual, full steam ahead". Water quality issues will always be on-going and will continue to be addressed locally, by the state, and we are confident nationally also.

We (ANRC) continue to enhance our partnerships, cooperation and commitment of government agencies, Conservation Districts, organizations, and groups to promote conservation and water quality, as demonstrated by this report. The Arkansas Natural Resources Commission is proud to provide this 2017 Annual Report for the Arkansas Nonpoint Source (NPS) Pollution Management Program.

Executive Summary:

The Arkansas Natural Resources Commission (ANRC) is the lead agency responsible for the Arkansas NPS Management Program. ANRC and its many partners and stakeholders collaboratively work together to develop the NPS Pollution Management Plan. The Plan provides a broad framework and aspirational objectives and milestones for implementation of the NPS Pollution Management program. Watersheds are prioritized for resource allocation using a risk matrix assessment tool that is contained within the Plan. The Plan is updated every five years based upon an adaptive approach. Annual update meetings are held to review and discuss new, additional, or updated information 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. 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.

The NPS Program's primary evaluation is based on 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. Throughout this report you will see the many partners that make the NPS Program impactful.

This Annual Report focuses on the accomplishments that were made in meeting the milestones of the NPS Program for FY 2017. It reflects projects, efforts, and activities initiated, implemented, or completed by partners and stakeholders over the past year. This report also contains Snapshot Reports from many partners; calculated load reductions of sediment, nitrogen, and phosphorus; Best Management Practices (BMPs) that were installed; and how federal dollars were allocated categorically within the NPS Program.

There have been improvements in water quality in select areas and watersheds and for this progress to continue, efforts will have to be made such as:

- State and Federal agencies continue to provide technical and financial assistance.
- Stakeholders "buy in" and become more actively involved in restoring waterbodies.
- Low Impact Development (LID) and Green Infrastructure (GI) techniques are demonstrated in urban areas and demonstrations are implemented for educational purposes for students, developers, municipalities, and citizens of the community.
- Educational materials are developed and utilized effectively in watersheds around the state.
- Watershed stakeholders and groups organize and identify common water quality goals.
- Watershed plans, conservation plans, and comprehensive nutrient plans are developed, utilized, and implemented.
- Continuation of water quality monitoring in priority watersheds to evaluate the status of those watersheds.

2 Green Infrastructure (GI) and Low Impact Development (LID)

Green Infrastructure and Low Impact Development continue to be popular methods for reducing nonpoint source pollution in the State of Arkansas. Low Impact Development Practices are becoming more and more accepted and used. Through the Arkansas 319 Program, projects are being implemented and having an effect on their watersheds. There have been several projects completed in FY 2017 and also one project initiated. Here are a few of the GI and LID projects that will be highlighted in this report:

15-800 Implementing Green Infrastructure Elements for Enhanced Water Quality In the Illinois River Watershed

Through this project, the Illinois River Watershed Partnership focused on meeting the goals of the 2012 Watershed-Based Management Plan for the Illinois River watershed. The main goal was to achieve water quality improvements through institutionalizing green infrastructure as a water quality BMPs for voluntary implementation by individuals and organizations within the project area. Green infrastructure elements that were implemented in this project included:

1. **Rain gardens**: Also known as bioretention or bioinfiltration cells which are shallow, vegetated basins that collect and absorb runoff from rooftops, sidewalks, and streets. Rain gardens mimic natural hydrology by infiltrating and evapotranspiring runoff. Rain gardens are versatile features that can be installed in almost any unpaved space.

2. **Bioswales:** Vegetated, mulched, or xeriscaped channels that provide treatment and retention as they move rain water from one place to another. Vegetated swales slow, infiltrate, and filter rain water flows. As linear features, vegetated swales are particularly suitable along streets and parking lots.

3. **Permeable pavement:** Paved surfaces that infiltrate, treat, and/or store rainwater where it falls. Permeable pavements may be constructed from pervious concrete, porous asphalt, permeable interlocking pavers, and several other materials. These pavements are particularly cost effective where land values are high and where flooding or icing is a problem.

4. **Planter boxes:** Urban rain gardens with vertical walls and open or closed bottoms that collect and absorb runoff from sidewalks, parking lots, and streets. Planter boxes are elevated structures containing plants or trees that may be used as non-point source treatments in urban environments. It is estimated that 50% phosphorus removal is achieved for the first 0.5” of runoff from impervious areas that enters the planter box. Planter boxes are ideal for space-limited sites in dense urban areas and as a streetscaping element.

5. **Green streets and alleys**: Integrate green infrastructure elements into the street and/or alley design to store, infiltrate, and evapotranspire rain water. Permeable pavement, bioswales, planter boxes, and trees are among the many green infrastructure features that may be woven into street or alley design.

The primary project objective was to implement 15 green infrastructure projects in highly visible public and quasi-public (i.e. municipal, school, church) locations within the Illinois River watershed. The secondary objective was the training of 75 persons on the design, implementation, and maintenance of green infrastructure elements. Through this project, the instillation of 6 Rain gardens covering 7,928 square feet, 2 Bioswales covering 2,316 square feet and 1 Pervious Pathway covering 200 square feet have been completed. This project has also held 166 Outreach and Education events with a stakeholder attendance of 10,096, along with 26 Technical Training sessions with 1,103 stakeholders in attendance.

16-600 Water Quality Demonstration and Educational Program for Main Street Little Rock, Phase II

The City of Little Rock began work in July of 2012 creating a Low Impact Development (LID) program that would demonstrate the benefits of rain gardens and other water filtrations using green infrastructure applications and clean water initiatives to reduce volume, velocity and improve water quality from runoff. That project was completed in 2015 and was a very successful LID project that received numerous national and international awards. It was a natural progression to continue to build on that first project's success and initiate a Phase II project that would install more LID practices along Main Street in Downtown Little Rock. Phase I of the original Section 319(h) grant focused on LID facilities in parts of the 100, 200, 300, and 500 blocks of Main Street. Phase II will focus on the 600 and 700 blocks of Main Street. Rain gardens, LID Facilities (pervious pavers for parking and vegetated walls), and the revision of tree wells will be the focus of the work to be completed in this project area. The City of Little Rock plans to continue to partner with the eStem Public Charter School to create a living classroom experience. So far, accomplishments that have been made with this project are as follows: a thorough financial audit was conducted and completed in September 2017, engineering and contractors have been hired, the design was completed, construction contracts were approved, public participation was initiated, public meetings and press releases were completed, , coordination began with eStem, and initial demolition and construction began.

15-500 Lake Atalanta Sediment Reduction and LID Demonstration Project

The Ozark Water Watch project's goal was to reduce water quality impairments in Beaver Lake Reservoir from excessive nutrients and sediments. Sources of impairment included wastewater systems, agricultural and urban runoff, soil erosion and others. This project reduced the influx of sediment and nutrients into the Prairie Creek tributary of Beaver Lake. Ozark Water Watch successfully installed two Best Management Practices: pervious parking areas and weirs.

This project demonstrated new technologies to reduce sediment and nutrient pollution loading from impervious areas such as parking lots. This was done through installation of two different types of pervious parking areas. Lake Atalanta Park totaled approximately 10,800 square feet and gravel-paved parking areas totalling 6,757 square feet. These areas were bounded by either sidewalk or conventional asphalt driving lanes and delineated the parking spaces using concrete tire stops.

The construction of this parking surface included underlying soils, 18+ inches of stone base composed of clean, broken, angular stone, from 3-inch at the bottom graduating to ½-inch which was compacted to set in place. This is caped with the EZ-roll and a pervious plastic grid held the top layers of decorative gravel for the parking surface. The more than 4,047 square feet of pavers were supported by similar layers of coarse, angular gravel which interlocked even when compacted and allowed water to pass through it while even supporting the heaviest traffic. The soil below the pervious parking areas acted as a filter to remove contaminants through natural bacterial action and chemical processes.

Estimated total suspended solids (TSS) reduction was estimated to have a reduction of up to 267 pounds per year, depending upon site conditions and use. The estimate for this project was derived by taking the average rainfall received in the Rogers, AR area (47 inches/yr) and calculating the volume that would produce across the 10,804 square feet of area in pervious pavement achieving approximately 42,316 cubic feet of rainfall per year.

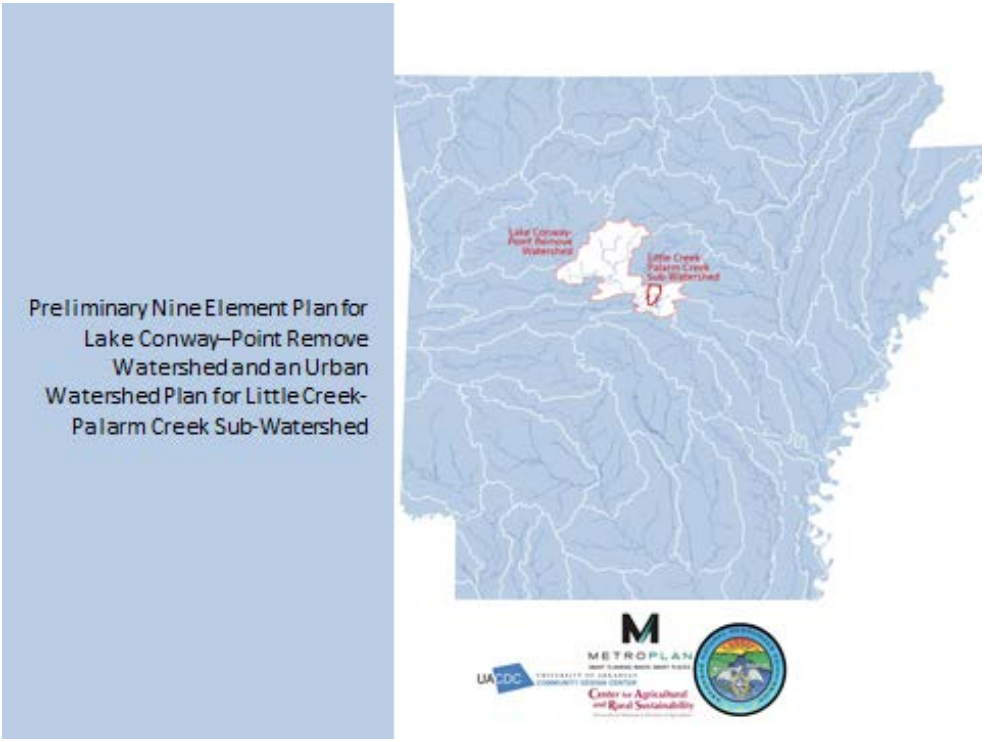
The project also installed a series of weirs on an unnamed tributary to Prairie Creek that was carrying a massive amount of sediment into this stream with each storm event. The installation of weirs allowed for retention and periodic removal of sediments preventing their transport to Beaver Lake watershed.

The sediment detention weirs are expected to reduce the influx of gravel, sand and soil from the un-named tributary to Prairie Creek by capturing the sediment behind the series of three weir structures

during heavy rain events. The sediment is then cleaned out periodically by the City of Rogers maintenance staff. At least 50 tons of sediment may be captured by the weir structure annually.

Conway Project Wins LafargeHolcim Acknowledgement Award

The University of Arkansas Community Design Center and the University of Arkansas Office of Sustainability received the LafargeHolcim Acknowledgement Award on October 12th, 2017 at a ceremony in Chicago, Illinois. The project that was recognized was "12-700 Initiation of Watershed Management Plan (WMP) for Little Creek-Palarm Creek Sub-Watershed and a Low Impact Development Plan for Lake Conway Urban Watershed". The international LafargeHolcim Awards competition is held every three years and recognizes innovative projects and future-oriented concepts on regional and global levels. Each award cycle recognizes 35 projects globally from more than 5,000 submissions from 121 countries. Steve Luoni, director of the Community Design Center, and Marty Matlock, executive director of the Office for Sustainability were there to receive the award for this three year project funded by EPA, administered by ANRC, and supported by the City of Conway, Faulkner County, the University of Central Arkansas and the Lake Conway Property Owners Association.



3 Education and Outreach

Education and outreach projects continue to be an important focus of the Arkansas 319(h) program. Educating landowners on the possible implications of non-point source pollution is a daunting task, but with the implementation of these types of projects there has been success in the overall understanding of non-point source pollution prevention, while showing how best management practices achieve this goal.

Education and Outreach projects tend to overlap with Green Infrastructure and Low Impact Development. Below are two projects that highlight the efforts of partners providing education, outreach, and BMP demonstrations:

15-900 Connecting NPS Management to Receiving Streams through BMP Education and Demonstration

The University of Arkansas Division of Agriculture Cooperative Extension Service initiated this project to increase awareness and knowledge of best management practices to improve stream water quality of the Beaver Reservoir (11010001) and Illinois River (11110103) Watersheds. They are also implementing storm drain inlet and low impact development BMP demonstrations in an effort to reduce NPS pollution. The demonstration "catches" and allows the debris caught to be categorized. This effort through public outreach, education, and engagement including signage, digital media, and community clean up events provides the public a visual representation of potential homeowner and residential activities that may affect water quality. The BMP demonstrations that are either planned or have been installed are storm drain inlet filter demos with storm drain art, whisker demos (helps visualize pollutant path), LID demonstrations (rain gardens), and ballot bin collection boxes. Several of these demonstrations have already been installed in the Fayetteville and Springdale areas. Plans for FY 2018 include implementing more LID demonstrations, finalizing a pollutant path video, and completing the match requirements for the project. This project is in year 2 of a 3 year period and accomplishments thus far include: conducting planning and input meetings, acquiring BMP demonstration materials, receiving technical assistance, installing BMPs installed (3 inlet filters, 9 cigarette butt disposal bins, storm drain demos, whisker demos), and conducting outreach and education.

16-500 White River and Richland Creek Watershed Opportunity Assessment

The Beaver Watershed Alliance (BWA) is currently overseeing an education and outreach project in Middle Fork-White River, East Fork-White River, Headwaters-White River, and Richland Creek Watersheds in Northwest Arkansas. The goal is to increase landowner awareness and knowledge of Beaver Reservoir priority watershed issues as listed in the Beaver Lake Watershed Protection Strategy (BLWPS). They are encouraging individual management actions described in the BLWPS to address priority issues through public outreach, education, and demonstration programs, as well as collect information necessary to increase detail, local relevance, and updating of the nine-element BLWPS. In FY 2017, BWA has completed 15 outreach meetings, 2 field days and 24 other events (including BMP tours, clean-ups, and various speaker series). This project has also implemented various BMP demonstration sites. The table below shows the variety of BMPs installed and area that will be affected. For year two and three of the project, BWA plans on engaging riparian landowners through newsletters, educational materials, workshops and individual site visits; implement BMP demonstrations and have creek cleanups; draft watershed opportunity maps; and document all meetings, successes/failures, and stakeholder attitudes.

BMP Name	BMP #	Number of Farms with this BMP	Total Amount (ac/ft)
Filter Strip	332	2	1274 ac/ 41.5 ft
Land Clearing	460	2	1274 ac/ 41.5 ft
Herbaceous Weed Control	315	3	1274 ac/ 170.5 ft
Brush Management	314	2	1274 ac/ 41.5 ft
Mulching	484	2	1274 ac/ 41.5 ft
Riparian Forest Buffer	391	1	0.1 ac/ 83.4 ft
Riparian Herbaceous Cover	390	2	0.81 ac/ 780 ft
Tree/Shrub Establishment	612	32	72.79 ac/45294 ft
Riparian Buffer Establishment	395	12	6.96 ac/ 10557 ft
Upland Wildlife Habitat Management	645	28	61.31 ac/35591.4 ft
Site Prep	490	34	73.69 ac/46207.4 ft

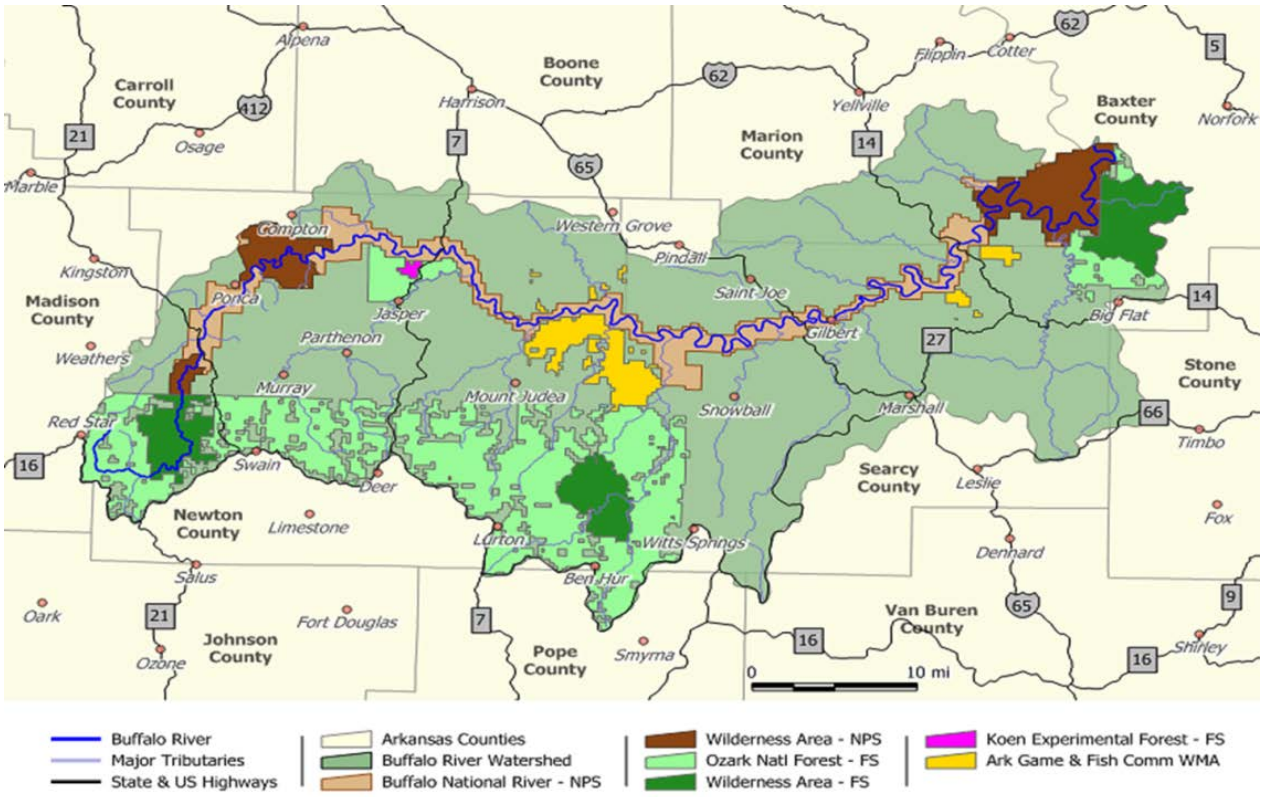
4 Watershed Management Plans (WMPs)

Nine Element Watershed Management plans are developed in a cooperative effort between ANRC and local watershed stakeholders. The goal with developing Watershed Management Plans is to preserve, protect, and enhance resources and surface waters throughout the state. A watershed approach considers the entire geographic area that a watercourse drains to address a broad range of issues.

For FY 2017, ANRC and stakeholders didn't have a Watershed Management Plan fully developed or completed. However, there was progress made with the initiation of the Buffalo River Watershed Management Plan.

Buffalo River Watershed Management Plan

The Buffalo River, located in Northern Arkansas, was the first National River to be designated in the United States. The Buffalo River is 153 miles (246 km) long. The lower 135 miles (217 km) flow within the boundaries of an area managed by the National Park Service, where the stream is designated the Buffalo National River. The Buffalo National River was established by an Act of Congress on March 1, 1972, ending the recurring plans of the U.S. Army Corps of Engineers to construct one or more dams on the river. The National River designation protects natural rivers from industrial uses, impoundments and other obstructions that may change the natural character of the river or disrupt the natural habitat for the flora and fauna that live in or near the river. With its towering limestone bluffs, pristine water, Ozark Mountain terrain and abundant wildlife, this ruggedly beautiful National Park is truly home to Arkansas' finest hiking trails, river trips and scenic drives.



The Buffalo River watershed encompasses parts of Searcy, Newton, Boon, Stone, Marion and Baxter Counties. The watershed is approximately 1400 sq mi. Landownership is divided between private (61%), state (1%) and federal ownership (38%). Of the total watershed are 80% is forested. The water quality in Buffalo River watershed is the least impaired in Arkansas.

On September 30, 2016, Governor Asa Hutchinson directed several state agencies, including ANRC, to develop an Arkansas-led approach to identify and address potential issues of common concern in the Buffalo River Watershed. A committee was formed, the Beautiful Buffalo River Action Committee, and there were several goals set for the committee. Goals include establishing measurable objectives, setting achievable action items, establishing partnerships, sharing agency resources, and informing policymakers and the public of progress that was being made. The first year goals were to create an open forum for stakeholders to engage with one another, initiate the development of a WMP, implement effective projects, and evaluate current research prioritizing future research needs.

As of the writing of this report, four stakeholder meetings were held during 2017, two in Marshall and two in Jasper (the largest municipal areas within the watershed). The four meetings were well attended by stakeholders who actively participated in the discussions. The input that was received from stakeholders was incorporated into the plan where applicable. A draft copy of the WMP is being developed and ANRC anticipates the plan will be submitted to EPA in the early part of 2018.

5 Program Success Stories in FY 2017

For FY 2017, ANRC did not have any success stories that were eligible in meeting EPA's criteria. There were no waterbodies that were either fully restored or partially restored in the state. However, ANRC does believe that there were improvements to waterbodies and watersheds through the work that was accomplished in FY 2017. ANRC will continue to strive for success stories and anticipates the work that was accomplished in FY 2017 will reflect in future reports and success stories.

To the right are Arkansas' Success Stories to date:

Arkansas

State	Waterbody	Year	Type	Waterbodies
Arkansas	Days Creek (PDF) (2 pp, 331 K, 2009)	2009	1	1
Arkansas	St. Francis River (PDF) (2 pp, 417 K, 2014)	2014	1	2
Arkansas	Bayou DeView (PDF) (2 pp, 193 K, 2014)	2014	1	4
Arkansas	Illinois River (PDF) (2 pp, 302 K, 2015)	2015	1	1
Arkansas	Cache River (PDF) (2 pp, 923 K, 2016)	2016	1	5

6 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, but are not limited to, the Natural Resources Conservation Service (NRCS), Arkansas Natural Heritage Commission (ANHC), Arkansas Department of Environmental Quality (ADEQ), the University of Arkansas Cooperative Extension Service (UACES), The Nature Conservancy (TNC), Beaver Watershed Alliance (BWA), Illinois River Watershed Partnership (IRWP) and various other entities funding and/or implementing projects that augment the efforts of the Arkansas 319(h) program. Listed below are several examples of implemented projects and programs which enhanced the mission of the Arkansas NPS program in FY 2017.

Natural Resources Conservation Service (NRCS)

The Natural Resources Conservation Service (NRCS) Arkansas Annual Report is available in February of each year. The NRCS 2016 Arkansas Annual Report noted more than $138 million in financial assistance was obligated through Farm Bill conservation efforts. NRCS enhanced technical assistance addressing irrigation water management, water quality and conservation planning, watershed coordination, soil health, organic farming, and cropland. Several programs through NRCS helped producers implement conservation practices and address resource concerns. The goal of the NRCS is to help Arkansas producers get conservation on the ground better and quicker than ever before, and that goal continued in FY 2017.

Environmental Quality Incentives Program (EQIP)

EQIP promotes agricultural production and environmental quality as compatible goals, providing technical and financial assistance to install or implement structural and management conservation practices on agricultural lands. Farmers received more than $45.2 million in financial assistance. There were 1,496 applications funded on more than 207,945 acres. Top practices installed included: Fence, Heavy Use Area Protection, Forage and Biomass Planting, Watering Facilities, Irrigation Water Management, Structure for Water Control, Irrigation Pipeline, Nutrient Management, Irrigation Land Leveling, Livestock Pipeline, and Cover Crops. For FY 2017, EQIP has allocated more than $42 million in funds through its various programs.

Agricultural Conservation Easement Program (ACEP)

There were 18 easements that Arkansas NRCS enrolled under ACEP Wetlands Reserve Easements (WRE). More than $11.4 million was obligated for 4,827.19 acres. Under the Wetlands Reserve Easement Restoration program, another $3.4 million was obligated to landowners. This program offers landowners opportunities to protect, restore and enhance wetlands on their properties. For FY 2017, NRCS has 27 easements selected for acquisition for a total of 11,820 acres and over $33 million in funds.

Conservation Stewardship Program (CSP)

The goal of CSP is to encourage agricultural and forestry producers to undertake additional conservation activities to improve and maintain existing conservation on their land. With financial and technical assistance provided, this program conserves and enhances soil, water, air, and related natural resources. There were 719 contracts developed and 679,889 acres enrolled in FY 2016. These contracts will provide over $17 million in financial assistance to participants over the five year agreement. Payments made for the CSP program totaled more than $75 million.

Regional Conservation Partnership Program (RCPP)

RCPP is a program that promotes coordination between NRCS and partners to deliver assistance to producers and landowners. The top 5 practices utilized under this program are as listed: irrigation water management, nutrient management, shallow water development, pumping plant, and amendments for the treatment of agriculture waste. This program aims to address water quality degradation, groundwater declines, and inadequate habitat for fish and wildlife on irrigated croplands in the Bayou Meto Lower Arkansas region; reducing nutrient and sediment loads entering the Red River; improving water quality in the Illinois River Watershed; and assisting rice producers to address water quality and quantity in Arkansas, Mississippi, California, Louisiana, Missouri, and Texas. There were three projects in the Illinois River, Bayou Meto-Lower Arkansas, and Red River watersheds with 90 contracts funded, 23,988 acres treated, and over $3.2 million in obligations made.

Mississippi River Basin Healthy Watersheds Initiative (MRBI)

Since 2012, NRCS, conservation partners, and landowners have installed conservation practices to address water quality concerns through MRBI projects in Arkansas. This locally-led, voluntary program has provided financial and technical assistance to agricultural producers with the goal of reducing nitrogen, phosphorus, and sediment levels in several watersheds. There has been a total federal investment of over $32 million with a total output of over $50 million. In this 4 year span (2012-2016), there have been reductions in nitrogen of 681,539 pounds, phosphorus by 524,688 pounds, and sediment savings of 208,755 tons. MRBI accounted for 134 contracts, treated over 27,000 acres, and obligated over $9 million.

National Water Quality Initiative (NWQI)

Through NWQI, NRCS and partners work with producers and landowners to implement voluntary conservation practices that improve water quality in high-priority watersheds while maintaining agricultural productivity. NWQI is designed to help individual agricultural producers take actions to reduce the loss of sediment, nutrients, and pathogens into waterways where water quality is a critical concern. The goal of NWQI is to implement conservation practices in sufficient quantity in a concentrated area so that agriculture no longer contributes to the impairment of water bodies within these priority watersheds. In Arkansas, NWQI has helped landowners implement these conservation practices since 2012. NRCS has obligated over $5.2 million to 176 contracts with varying best management practices including: cover crop, crop rotation, irrigation pipeline, nutrient management, residue management, and streambank and shoreline protection. NWQI has treated 28,431 acres of land and installed 21 edge-of-field monitoring locations. In FY 2017, the NWQI Pilot Program initiated and will be focusing implementation in the Buffalo Slough-Cache River Watershed. There is also proposed work for FY 2018 to be implemented in the Greasy Creek-Strawberry River Watershed.

Arkansas Department of Environmental Quality (ADEQ)

ADEQ's mission is to protect, enhance, and restore the natural environment for the well-being of all Arkansans. ADEQ is the state's main environmental protection agency, charged with protecting, enhancing, and restoring the environment for Arkansans. Quarterly multi-agency meetings began in late 2014 where several agencies and organizations partnered to better understand and coordinate water quality data in the State. Agencies and Organizations consisted of ANRC, ADEQ, U.S. Geological Survey (USGS), Arkansas Department of Health (ADH), Arkansas Natural Heritage Commission (ANHC), and Equilibrium a NGO. It has been a great opportunity for ANRC to better understand various assessment methodologies and processes that ADEQ frequently uses. Unfortunately, for FY 2017 there were no quarterly multi-agency meetings held due to various reasons (scheduling and time conflicts). Quarterly meetings have been scheduled for the upcoming year (FY 2018).

The Nature Conservancy (TNC)

The mission of TNC is to conserve the lands and waters on which all life depends. The Nature Conservancy has worked with many partners to conserve more than 300,000 acres of critical natural lands in Arkansas for people to use and enjoy. The Conservancy has priority programs that focus on each of the state's ecosystems in each of the state's eco-regions. Priority programs include: Big Woods: Ecological Significance and Threats, Blacklands Program, Cache River, Conservation Forestry Program, Interior Highlands/Fire Restoration Program, Ozark Highlands Karst Program, Ozark Rivers Program, Ouachita Rivers Program, and The Conservancy's Work in the Big Woods. The Nature Conservancy also has 21 preserves all around the state. Some of the accomplishments from this last year include (but are not limited to): purchasing 1,425 forested acres on a mountain near Mt Judea along Big Creek, which flows into the Buffalo River, the Arkansas chapter of The Nature Conservancy has been working on a large scale restoration project on the Kings River to help reduce sedimentation and improve habitat for several species, making 16 acquisitions totaling more than 2,500 acres, planting 500,000+ trees, conducting 65 prescribed burns on 11,157 acres, enrolling 6,705 acres in wetland easements, and implementing 10 new unpaved roads projects.

Arkansas Economic Development Commission (AEDC)

The mission of the Arkansas Economic Development Commission, Division of Rural Services and the Arkansas Rural Development Commission is to enhance the quality of life in rural Arkansas. The Division of Rural Services (DRS) is charged with assisting rural communities with a population of 20,000 and under. Established under Act 302 of 1991, and merged with the Arkansas Economic Development Commission under Act 8 of the 2015 First Extraordinary Session, DRS assists local agencies in rural areas with information and technical assistance. The Division of Rural Services strives to assist citizens of rural Arkansas through in-house grant programs, funding opportunity research, information-sharing and educational opportunities through regional forums and the annual Arkansas Rural Development Conference. One way that the DRS is helping improve water quality in the State is through the Unpaved Roads Program. Created by Act 898 of the 90th General Assembly,

the purpose of the Unpaved Roads Program (Program) is to create a better unpaved county road system with a reduced negative environmental impact on priority water resources in Arkansas. The Program focuses on best management practices (BMPs) that reduce the impact of sediment and road runoff to streams, rivers, and drinking water supplies while reducing long term unpaved county road maintenance costs. The Arkansas Unpaved Roads Grant Program awarded 5 counties (Calhoun, Lawrence, Stone, Van Buren, and Washington) with funds totaling $250,000. Approximately $300,000 is expected for this program in fiscal year 2018, which is applicable to any county in Arkansas, regardless of size or population.

Beaver Watershed Alliance (BWA)

The BWA works to proactively protect, enhance, and sustain the high water quality of Beaver Lake and its tributaries through voluntary best management practice implementation, outreach and education, and scientific evaluation. BWA provides strategic, valued, and meaningful programing to provide watershed landowners and environmental stewards with the resources they need to help protect the water quality of Beaver Lake and its tributaries. The Alliance represents a diverse stakeholder group from conservation, education, water utilities, technical and science, business, agriculture, recreation and local government groups working together for the cause of clean water. For FY 2017, the Beaver Watershed Alliance generated over $650,000 source water protection dollars for the Beaver Lake Watershed, reached 23,586 watershed stakeholders, generated over $150K in volunteer service hours, removed 11 tons of trash from 100 miles of river and lakeshore, implemented over 1,000 BMPs including riparian buffers, 58 rain gardens, and hundreds of acres of forest management plans, placed 80 signs throughout the watershed, conducted 151 watershed outreach, education, and stewardship programs, and reduced the annual loads of sediment and phosphorus delivery to Beaver Lake.

University of Arkansas Cooperative Extension Service (U of A CES)

The U of A CES is a valuable partner in the NPS arena and have partnered with ANRC to enhance the overall mission of the Arkansas NPS program. During FY 2017, UACES staff have compiled responses from stakeholders across Arkansas and incorporated them into the draft 2017 – 2022 Arkansas NPS Management Plan. Other accomplishments have included supporting a stormdrain art program in Jefferson County as well as providing youth and adult stormwater education programs, participating in water quality boards and committees, and increasing our social media reach across Arkansas to educate about NPS and water quality best management practices.

Illinois River Watershed Partnership (IRWP)

The IRWP works to improve the integrity of the Illinois River through education and outreach, conservation and restoration practices, and water quality monitoring throughout the watershed. Accomplishments in IRWP's education and outreach programs include informative outreach events and technical assistance for landowners, partnering with NRCS to promote the

Regional Conservation Partnership Program (RCPP), and providing support and education for K-12 students through the Illinois River Watershed Sanctuary and Learning Center. IRWP's conservation and restoration projects for the year include implementing urban green infrastructure practices, riparian plantings, creek clean-ups, and invasive species removal events. IRWP also recently implemented two monitoring projects. One is partnering with local EAST classes to conduct a Streambank Inventory Assessment at 15 monitoring sites across the impaired priority subwatersheds which include habitat and macroinvertebrate community research. The second is in collaboration with Arkansas Water Resources Center to study nutrient loading and its sources to IRWP's Partner's Lake to guide future lake management practices. IRWP looks forward to actively working with ANRC in the coming years to implement the goals of the non-point source program for the Illinois River Watershed.

Discovery Farms

The University of Arkansas' Division of Agriculture along with many partners is helping farmers address NPS pollution in agricultural runoff through the Arkansas Discovery Farm Program. A Discovery Farm is a real working farm that has volunteered to help document the effects agriculture and conservation has on water quality and quantity. This program is needed to address water quality concerns, quantify nutrient and sediment losses, and involve agricultural producers in the solution process. There are 13 Discovery Farms located across the state and they each provide an opportunity to collect economic and environmental data. There has been several documented positive impacts from the Arkansas Discovery Farm Program over the last 8 years and some of these impacts include:

- Decreases in nutrient and sediment runoff from poultry production areas
- Conservation tillage, cover crops, and riparian buffers reducing nutrient runoff (depending on rainfall fluctuations)
- Irrigation efficiency improving with the use of PHAUCET or PipePlanner
- Decreases in dissolved Phosphorus between irrigation water added to rice and corn fields
- Measured losses of Nitrogen and Phosphorus was less than those predicted by SPARROW and SWAT Models

Snapshot Reporting for FY 2017 (July 2016 – August 2017)

Snapshot reporting was developed in 2014 as a method 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 Nonpoint Source Management Program. Snapshot reports have helped ANRC better understand the work that was being accomplished around the state for NPS pollution. These reports demonstrate the commitment partners have to enhance or improve water quality.

The table below represents projects that were reported to ANRC for FY 2017. There were 18 projects reported from various groups managing them with assistance from various partners. If you would like more information on any of these projects please contact ANRC at (Allen.Brown@arkansas.gov or Kevin.Mcgaughey@arkansas.gov).

Title	Management	Timeframe	Location	Project Type	Partners
StreamSmart Volunteer Monitoring	Ozarks Water Watch	August 1, 2012 – ongoing	Upper White River Watershed HUC 11010001; Washington, Benton, and Madison Counties	Monitoring / Training (20 sites)	Arkansas Water Resources Center, Beaver Water District, Beaver Watershed Alliance, Northwest Arkansas Master Naturalists
Friends of Fourche Creek	Audubon Arkansas / Friends of Fourche Creek	October 2016 – May 2017	Little Fourche Creek-Fourche Creek, HUC: 1111020702	Volunteer Cleanups and trail construction	Riggs CAT, City of Little Rock, ADEQ, AGFC, AR State Parks, ARDOT, AFC, CAW, LR Water Rec. Authority, LR Regional Recycling District, AR Canoe Club, Keep LR Beautiful, UALR, AR State Fair, AR Geocachers Assoc., Audubon Society of Central AR, 3M, AR Master Naturalists, Boy Scouts, EAST Labs, First Security Bank, and Perry County 4H
Riparian, Forest, and Source Water Protection Landowner Outreach	Beaver Watershed Alliance	2013 – Ongoing	HUCs 1101000104 1101000107 1101000106	Outreach/ Education; BMP Implementation	Beaver Water District, Walton Family Foundation, AFC, U of A CES, AGFC, Maddison, Carroll, Benton, and Washington Counties
Peak Flow Reduction Pond Study	Beaver Watershed Alliance	2015 – 2019	HUC 1101000104	Modeling/ Assessment	University of Arkansas, Baylor University, and Landowners
Source Water Protection Speaker Series	Beaver Watershed Alliance	2013 – Ongoing	HUCs 1101000104 1101000107 1101000106	Education/ Outreach	Arkansas Forestry Commission, Cooperative Extension Service, Northwest Arkansas Land Trust, and USGS
Rain Garden Mini Grant Program	Beaver Watershed Alliance	April 2016-September 2017	HUC 11010001	BMP Implementation	Beaver Water District, Camp War Eagle, and 3 Landowners in the Middle Fork Watershed
Murdock stream bank stabilization and restoration project	City of Fort Smith	Sep. 2017 – Nov. 2017	HUC-111102010401 and HUC-111102010402 Crawford county Arkansas	Streambank Stabilization and Stream Restoration	City of Fort Smith

Middle Fork Saline River Tributary Restoration	The Nature Conservancy	April 2017 – December 2017	Upper Saline Watershed 08040203, Saline County	Stream restoration/ Natural channel design, reforestation	US Fish and Wildlife Service Partners for Fish and Wildlife Program
Illinois River Watershed Partnership Activities	Illinois River Watershed Partnership	Ongoing	Washington and Benton Counties HUC #11110103	BMP Implementation; Education and Outreach; Monitoring; Restoration Programs	USF&W, ANHC, NRCS, TNC, AGFC, AFC, Cities of Fayetteville, Rogers, Bentonville, Springdale, Benton Co., Springdale Water Utilities, AR River Compact Commission, AWRC, AR Master Naturalists, Wingate Foundation, Walton Family Foundation, BWD, Tyson, Cargill, SE Poultry, UofA Extension, EAST, Walmart/Sam's Club, Simmons Foods, Coca-Cola, George's, Multi-Craft Contractors, Farm Bureau, McKee, AEP SW Electric Power Company, and HCH Consulting
Beaver Lake Watershed Landowner Assistance	Arkansas Game and Fish Commission	October 1, 2016 – Sep. 30, 2017	Carroll, Madison, and Washington Counties HUC 11010001	Landowner Assistance/ Bank Stabilization	Beaver Lake Watershed Alliance and Various Landowners
Buffalo River Watershed Landowner Assistance	Arkansas Game and Fish Commission	October 1, 2016 – Sep. 30, 2017	Searcy and Newton Counties HUC 11010005	Landowner Assistance/ Bank Stabilization	NRCS and Various Landowners
Bull Shoals Watershed Landowner Assistance	Arkansas Game and Fish Commission	October 1, 2016 – Sep. 30, 2017	Boone and Marion Counties HUC 11010003	Landowner Assistance/ Bank Stabilization	NRCS and Various Landowners
Elk Watershed Assistance/ Bank Stabilization	Arkansas Game and Fish Commission	October 1, 2016 – Sep. 30, 2017	Benton County HUC 11070208	Landowner Assistance/ Bank Stabilization	Beaver Watershed Alliance and Various Landowners
Illinois River Watershed Landowner Assistance	Arkansas Game and Fish Commission	October 1, 2016 – Sep. 30, 2017	Benton and Washington Counties HUC 11110103	Landowner Assistance/ Bank Stabilization	IRWP and Various Landowners
Little Red River Landowner Assistance/ Bank Stabilization	Arkansas Game and Fish Commission	October 1, 2016 – Sep. 30, 2017	Van Buren County HUC 11010014	Landowner Assistance/ Bank Stabilization	US Fish and Wildlife Service and Various Landowners
Cave Springs Lake Study	Arkansas Water Resources Center	April 2017 – Sep. 2017	HUC #11110103	WQ Monitoring Study	U of A Division of Agriculture and Illinois River Watershed Partnership
West Fork of the White River WQ Monitoring	Arkansas Water Resources Center	June 2014 - Ongoing	Washington Co. HUC# 11010001	WQ Monitoring	BWA, U of A Division of Ag, and ADEQ
Water Treatment Residuals Study	Arkansas Water Resources Center	June 2016 – May 2017	HUC #1101001	WQ Monitoring Study	U of A Division of Ag, City of Fayetteville, and BWD

7 NPS Pollution Management Program Milestones

Milestones for the NPS Pollution Management Program for FY 2017

In FY 2014, the Arkansas NPS program staff incorporated a section in the Annual Report outlining the specific milestones that the ANRC NPS program staff, cooperating partners, and stakeholders were making progress toward. In FY 2017, there were several funded projects that directly addressed specific milestones.

ANRC continues to conduct baseline monitoring in priority watersheds to better assess the status of those watersheds and the impact that BMP implementation is making. These baseline monitoring projects, for the most part, are continuations of previous monitoring projects that have several years of data and trends.

BMP implementation projects continue to be vital in meeting several milestones including Milestone 6 and those milestones dealing with load reductions and the Grants Reporting and Tracking System (GRTS) database. These implementation projects are crucial in producing tangible loads that can be measured and entered into the GRTS database.

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 meet in September of each year and review progress toward project objectives and established program milestones. ANRC will continue to review milestones, track progress toward meeting milestones, and discuss possible additions, deletions and/or revisions, as appropriate.

ANRC and the U.S. EPA recognize the achievement of goals and milestones are subject to potential changes in national funding levels, 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. Because of these possible changing factors, Arkansas will re-evaluate and update applicable goals and milestones of the plan. This adaptive management approach enables the state to make appropriate modifications to the Management Program for the continuation of attaining satisfactory progress.

Below are the milestones with contributing projects or work that has been done in FY 2017:

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.

The NPS Pollution Management Program's priority watersheds (8 digit HUC level) were finalized at the NPS Annual Stakeholder and Project Review meeting in September 2016. These watersheds are the focus for the 2017-2022 Arkansas NPS Management Plan and. Further assessment beyond initial 8 digit SWAT modeling has not been conducted. Due to economic conditions, technical assistance is not readily available. ANRC continues to work with various partners to address this issue.

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.

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 2017 are as follows: There were 368 grab samples and 78 routine samples collected from 10 monitoring locations, in-situ data was recorded at each monitoring station, 392 samples were analyzed, stage height data and velocity measurements were surveyed at 5 locations, data has been imported into WQX database, and two publications were developed for education and outreach. This project is scheduled to conclude November 2017 with the submission of the final report.

15-200 Water Quality Monitoring for the L'Anguille River Watershed- This project is a continuation of baseline monitoring and is located in a priority watershed. There are ten monitoring locations in selected 12 digit HUCs of the L'Anguille watershed. The accomplishments that have been made for FY 2017 are as follows: There were 514 grab samples and 104 routine samples that were collected from the monitoring locations, in-situ data was recorded at each monitoring station, 464 samples were analyzed, 50% of the daily discharge has been estimated, and 25% of the WQX task has been completed. A presentation was also given at the 2017 NPS Annual Project Review. This project is scheduled to conclude in September 2019.

15-300 Water Quality Monitoring for the Lake Conway Point Remove Watershed - This project is a continuation of the baseline monitoring from 2014 (11-600) and is located in a priority watershed. There are ten monitoring locations in selected 12 digit HUCs of this watershed. The accomplishments that have been made for FY 2017 are as follows: There were 520 grab samples and 104 routine samples collected from the monitoring locations, in-situ data was recorded at each monitoring station, 468 samples were analyzed, 50% of the daily discharge has been estimated, and 25% of the WQX task has been completed. A presentation was also given at the 2017 NPS Annual Project Review. This project is scheduled to conclude in September 2019.

15-400 Water Quality Monitoring in the Upper Illinois River Watershed and Upper White River Basin - This project is also a continuation of baseline monitoring that has continued for several years. There are 15 sites that are being monitored in both of these priority watersheds. The accomplishments that have been made for FY 2017 are as follows: A financial review was conducted for FY 2017, there were 9-14 samples collected from each monitoring site every quarter during base and storm flow conditions, all samples were analyzed and are being used to estimate annual loads and trends, and this project was selected as one of the project presenters for the 2017 NPS Annual Project Review Meeting. This project is scheduled to conclude December 2018.

16-700 Strawberry River Watershed Monitoring - The Strawberry River Watershed was and will continue to be a designated priority watershed in the 2017-2022 NPS Pollution Management Plan. The main objective of this project is to measure the effectiveness of BMP's implemented over time by the 319 program and other partners and will hopefully help glean data that will help delist impaired stream segments in the watershed. A total of 384 samples were taken and analyzed during FY 2017.

16-800 Bayou DeView Watershed Monitoring - Bayou DeView is a portion of the Cache River Watershed which will once again be a designated priority watershed in the 2017-2022 NPS Pollution Management

Plan. The main objective of this project is to measure the effectiveness of BMP's implemented over time by the 319 program and other partners and will hopefully help glean data that will help delist impaired stream segments in the watershed. A total of 350 samples were taken and analyzed during FY 2017.

16-1000 Water Quality Monitoring in the Lower Ouachita Smackover Watershed - The Lower Ouachita Smackover watershed was designated as a priority by ANRC in the 2011-2016 NPS Pollution Management Plan and remained a priority for the 2017-2022 NPS Pollution Management Plan. This project aims for monitoring water quality in the Lower Ouachita Smackover Hydrologic Unit to better understand the possible deficiencies in this watershed. The accomplishments that have been made for FY 2017 are as follows: A Quality Assurance Project Plan (QAPP) was developed, submitted to EPA, and finalized, ten monitoring stations were installed at selected 12 digit HUC locations, there were 520 grab samples and 104 routine samples collected, in-situ data and any deviations were recorded during sampling, 468 samples were analyzed, and reporting requirements were met. Also, this project was presented at the 2017 NPS Annual Project Review Meeting. This project is scheduled to conclude in December 2020.

16-1100 Poteau River Monitoring and Assessment - The goal of the project is to complete monitoring and assessment on the Poteau River and its major tributaries in Arkansas. The Poteau River is a priority watershed in Arkansas and is listed on the Arkansas 303(d) list for nutrients and metals. The City of Waldron and GBMc and Associates have partnered with ANRC to complete the necessary work in this project. The accomplishments that have been made for FY 2017 are as follows: A Quality Assurance Project Plan (QAPP) was developed, submitted to EPA, and finalized, four baseflow samples and three storm flow samples were collected from each of the 9 sampling locations, in-situ measurements were collected, and data from all sampling gauges have been placed into a database. This project is scheduled to conclude in July 2018.

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.

The ANRC and the UA Division of Agriculture hosted the annual Nonpoint Source Pollution Stakeholder & Project Review Meeting on Sept. 27-28, 2017 in Little Rock. The meeting took place at the Cooperative Extension Service facility and had 71 attendees on the first day and 62 attendees on the second day. The agenda for day one had topics consisting of Nonpoint Source Program Updates, ADEQ Assessment Methodology, Water Use Reporting, AR Discovery Farms, AR Soil Health, Engineering in Watersheds, and NRCS Updates. There were presenters from ANRC, EPA Region 6, ADEQ, FTN Associates, U of A Cooperative Extension Service, NRCS, and GBMc and Associates. Once again it was a goal to provide the opportunity to NPS program partners to highlight their successes and challenges. The Day One meeting also provided the opportunity to network with new and existing partners. Day One was a productive day and concluded after 3 pm that afternoon.

Day Two was the NPS Project Review Meeting and 62 attendees took part that day. There were 15 presenters this year from watershed groups, non-profits, academia, and government agencies. The following projects were presented and discussed.

Project Number	Project Name	Project Type
15-400	Water Quality Monitoring in the Upper Illinois River Watershed and Upper White River Basin	WQ Monitoring
13-400, 15-200, 15-300, & 16-1000	Monitoring Water Quality in Impaired Watersheds: Bayou Bartholomew, Lake Conway Point Remove, Lower Ouachita-Smackover, and L'Anguille Watershed	WQ Monitoring
14-400, 16-700, & 16-800	Water Quality Monitoring in the Bayou DeView, Little River Ditches, and Strawberry River Watersheds	WQ Monitoring
15-1000	Cover Crop Education and Demonstration Project for the Bayou Bartholomew Watershed	Education/ Demonstration
15-600	Boone County Beaver Reservoir Watershed Project	BMP Implementation/ Demonstration
15-700	Cross County L'Anguille River Watershed Water Quality Project	BMP Implementation/ Demonstration
15-1100	Strawberry River Subwatershed Cost Share	BMP Implementation/ Demonstration
16-200	Hicks Creek-White River Watershed Project	BMP Implementation/ Demonstration
16-300	Big Creek-White River Watershed Project Project	BMP Implementation/ Demonstration
16-900	Strawberry River Improvement Project	BMP Implementation/ Demonstration
15-1200	Arkansas Silvicultural Nonpoint Source Project	Forestry Assessment
13-1100	White River Bank Restoration and Monitoring Project	Streambank Restoration
15-800	Improving Water Quality Through Green Infrastructure in the Illinois River Watershed	Green Infrastructure and Education
15-900	Connecting NPS Management to Receiving Streams through BMP Education and Demonstration	BMP Education and Demonstration
16-500	White River and Richland Creek Watershed Opportunity Assessment	Education/ Outreach and Assessment

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 Abandoned Pesticide Program has been conducted in all 75 counties in the state, successfully recovering over 3.6 million pounds of left over agricultural pesticides. Over the past year, NPS staff has participated in quarterly meetings of the Abandoned Pesticide Collection Advisory Committee, giving input as to where and when collection events should be held. Collection events safely removed over 750,000 pounds of chemicals from the environment last year.

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

The 2016 Arkansas Annual Report was submitted January 20, 2017 to EPA Region VI. ANRC received correspondence dated March 24, 2017 from the Region related to receipt, review, acceptance and suggestions to the report. Comments on the report were very positive and encouraging. The letter received regarding the Annual Report mentioned that it was well organized, concise, and a good summary of the success of the program for FY 2016. EPA congratulated ANRC on the three accepted Watershed Based Plans (WBPs), excellent partnerships, LID projects, load reductions made, the Annual

NPS Stakeholder Meeting, and the success story from the Cache River. Recommendations consisted of continued engagement with federal, state, and local partners, estimated load reductions from NRCS, and continued progress on ANRC's Watershed Stewardship Program. ANRC was appreciative of EPA's timely and helpful review of the 2016 NPS 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.

14-500 Sediment & Nutrient Management in the L'Anguille River Watershed in St. Francis County Cost-Share project- St. Francis County has assisted 49 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.

15-600 Boone County Beaver Reservoir Watershed Project- This project with the Boone County Conservation District is trying to address water quality concerns in the Upper White River watershed. The project offers eligible landowners technical and financial assistance to implement BMPs on their property. So far, 9 applicants have received assistance and implemented BMPs such as cross fencing, brush management, and alternative water sources for cattle. This project started in October 2015 and will continue thru September 2018. Load reductions for the project have been calculated and entered into the GRTS database.

15-700 Cross County-L'Anguille River Watershed Water Quality Project-Cross County has assisted 21 landowners 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, Nutrient Management, and Grade Stabilization.

15-1100 Strawberry River Sub Watershed Project-Fulton County Conservation District has assisted 60 applicants in helping improve water quality in the Strawberry River Watershed. BMPs implemented include: Fencing, Herbaceous Weed Control, Pasture Planting, Brush Management, Watering Facility and Heavy Use Areas. Also, field days, newsletters, newspaper articles and radio spots were used in informing landowners in the area about ways to prevent non-point source pollution.

16-200 Hicks Creek – White River Watershed Project- Baxter County Conservation District has assisted 56 applicants in helping maintain water quality in the Hicks Creek-White River Watershed in Baxter County. BMPs implemented include: Brush Management, Fencing, Forage and Biomass Planting, Livestock pipeline, Heavy Use Areas and Watering Facilities.

16-300 Big Creek – White River Watershed Project-Crooked Creek Conservation District has assisted 56 applicants in helping maintain water quality in the Big Creek-White River Watershed in Marion County. BMPs implemented include: Brush Management, Fencing, Forage and Biomass Planting, Livestock pipeline, Heavy Use Areas, Watering Facilities, and Spring Development.

16-900 Strawberry River Improvement Project - This project with the Sharp County Conservation District is trying to address water quality concerns in the Strawberry River watershed. The project offers eligible landowners technical and financial assistance to implement BMPs on their property. At this writing, 15 applicants have received assistance and implemented BMPs such as cross fencing, brush management, pasture planting and heavy use areas for cattle. This project started in October 2016 and will continue thru September 2019. Load reductions for the project have been calculated and entered into the GRTS database.

The table below is a reflection of the load reductions that have been accomplished during FY 2017. 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. This table depicts active projects that had a quantifiable reported load reduction during the period of FY 2017.

FY 2017 ACTIVE PROJECT LOAD REDUCTIONS

	Nitrogen Reduced (lbs./year)		Phosphorus Reduced (lbs./year)		Sediment Reduced (tons/year)	
Project #	FY 17	Project Life	FY 17	Project Life	FY 17	Project Life
14-500	2,456	11,915	1,228	5,956	996	4,770
15-500	1.9	1.9	1	1	95-267	95-267
15-600	1,551	1,807	775	902	641	815
15-700	1,793	1,793	896	896	720	720
15-1100	13,311	13,911	6,651	6,950	5,375	5,705
16-200	19,225	19,225	9,609	9,609	7,440	7,440
16-300	18,149	18,149	9,068	9,068	7,284	7,284
16-400	573	573	286	286	237	237
16-900	6,688	6,688	3,342	3,342	2,635	2,635
Totals	**63,747.9**	**74,062.9**	**31,856**	**37,010**	**25,423 – 25,595**	**29,701 – 29,873**

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.

ANRC continues to participate in the State Technical Committee (STC). Meetings (WQ subcommittee and the general STC) were attended in April, July and November 2017. ANRC also assisted with the selection of three 12 digit HUCs in the Upper Cache River watershed for inclusion in the NWQI. Monitoring continues in the original three 12 digit HUCs in the Bayou Bartholomew watershed. To date WQ monitoring data has not been fully compiled and statistical analysis performed.

The STC also recognized the Arkansas Soil Health Alliance (ASHA) and asked them be a contributor to the STC. The ASHA was given "start up" funding by NRCS. The ASHA focus is consistent with the NRCS goal to promote better soil health (fertility, water holding capacity, stability, structure and sustainability).

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 NWQI. The accomplishments that have been made for FY 2017 are as follows: There were 368 grab samples and 78 routine samples collected from 10 monitoring locations, in-situ data was recorded at each monitoring station, 392 samples were analyzed, stage height data and velocity measurements were surveyed at 5 locations, data has been imported into WQX database, and two publications were developed for education and outreach. This project is scheduled to conclude November 2017 with the submission of the final report.

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 June of 2018. The project has a goal of collecting 450 samples of which 325 have been collected and analyzed to date. The project collected and analyzed 96 of those samples in FY 2017.

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 continues to send all baseline monitoring data to ADEQ annually and at the conclusion of monitoring projects. The data is sent by October 1 of every year but can be sent at other times of the year depending on when projects are completed. The following projects have had data submitted to ADEQ during FY 2017: 13-400, 13-500, 14-400, 15-200, 15-300, and 15-400.

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.

ANRC used the draft 2016 stream segment delistings for determining potential waterbodies coming off the list. On July 19, 2017, EPA officially approved the 2010, 2012, 2014, and 2016 State of Arkansas 305(b) report, which contained the 303(d) impaired waterbodies list. ADEQ is currently in the process of

developing the 2018 Integrate Monitoring and Assessment Report and ANRC will review the report when it is available.

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.

ANRC has solicited partners to further expand the Arkansas Stewardship Program. Specific partners solicited included: U of A Cooperative Extension Service, Illinois River Watershed Partnership and the Arkansas Department of Health. Due to uncertainty in state and federal funding, at this time no agency or organization has stepped forward to lead this effort.

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.

For FY 2017, ANRC has been involved in the initiation and development of the Buffalo River Watershed Management Plan. As of the writing of this report, there has been a draft Buffalo River Watershed Management Plan developed and publicized for review. The plan will be submitted to EPA for review and acceptance in early 2018. There were no other watershed management plans initiated, developed, or completed for FY 2017.

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

ANRC continues to initiate and implement LID projects within priority watersheds. LID is a valuable tool in managing urban runoff in a more natural way protecting the water quality in urban settings. For FY 2017, ANRC had several active projects implementing these green infrastructure techniques in priority watersheds. Listed below are the associated projects that contributed to this milestone:

13-300 IRWP Greenway project was completed and the final project report accepted by EPA in July 2016. This project demonstrated the benefits of rain gardens and other LID practices to stake holders within the watershed. The IRWP installed 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.

The IRWP has successfully 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 during the project timeframe.

15-500 The Ozark Water Watch project's goal was to reduce water quality impairments in Beaver Lake Reservoir from excessive nutrients and sediments. Sources of impairment included wastewater systems, agricultural and urban runoff, soil erosion, and others. Through this project there was a reduction of the influx of sediment and nutrients into the Prairie Creek tributary of Beaver Lake.

This project demonstrated new technologies in reducing sediment and nutrient pollution loading from pervious areas, such as parking lots. This was done through installation of two different types of pervious parking areas. Lake Atalanta Park totalled approximately 10,800 square feet. Gravel-paved parking areas totaled 6,757 square feet and were located closer to Lake Atalanta. These areas were bounded by either sidewalk or conventional asphalt driving lanes and delineate the parking spaces using concrete tire stops.

The construction of this parking surface included underlying soils, 18+ inched of stone base composed of clean, broken, angular stone, from 3-inch at the bottom graduating to ½-inch which is compacted to set in place. This was caped with the EZ-roll, pervious plastic grid to hold the top layers of decorative gravel for the parking surface. More than 4,047 square feet of pavers were supported by similar layers of coarse, angular gravel which interlocks even when compacted and allowed water to pass through it while supporting even the heaviest traffic. The soil below the pervious parking acted as a filter to remove contaminants through natural bacterial action and chemical processes.

The project also installed a series of weirs on an unnamed tributary to Prairie Creek that was carrying a massive amount of sediment into this stream with each storm event. The installation of weirs allowed for retention and periodic removal of sediments to prevent transportation to Beaver Lake watershed.

15-800 IRWP The primary project objective was to implement 15 green infrastructure projects in highly visible public and quasi-public (i.e. municipal, school, church) locations within the Illinois River watershed. The secondary objective was the training of 75 persons on the design, implementation, and maintenance of green infrastructure elements. Through this project, the instillation of 6 Rain gardens covering 7,928 square feet, 2 Bioswales coving 2,316 square feet and 1 Pervious Pathway covering 200 square feet have been completed. This project has also held 166 Outreach and Education events with a stakeholder attendance of 10,096, along with 26 Technical Training sessions with 1,103 stakeholders in attendance.

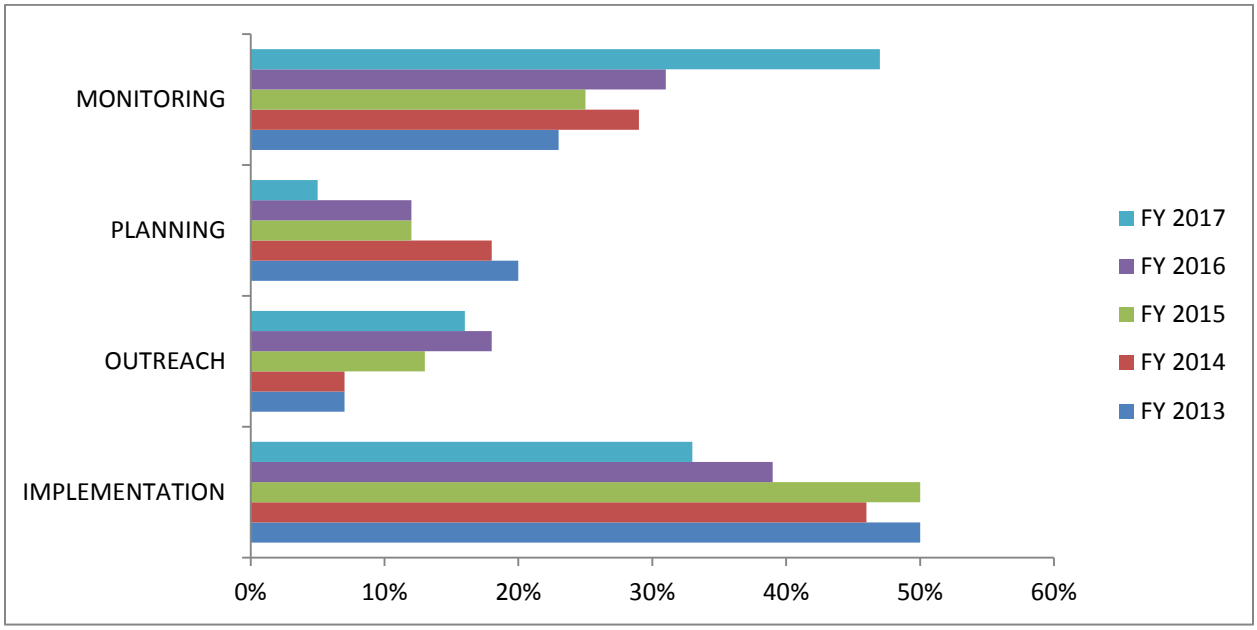
16-600 The City of Little Rock continued work from its 2015 successful LID project. It received numerous national and international awards. It was a natural progression to continue to build on that first project's success and initiate a Phase II project that would install more LID practices along Main Street in Downtown Little Rock. The Phase I project focused on parts of the 100, 200, 300, and 500 blocks of Main Street. Phase II will focus on the 600 and 700 blocks of Main Street. Rain gardens, LID Facilities (pervious pavers for parking and vegetated walls), and revision of tree wells will be the focus of the work to be completed in this project area. The City of Little Rock will continue its partnership with the eStem public charter school to create a living classroom experience. Accomplishments made to date include: a thorough financial audit was conducted and completed in September 2017, engineering and contractors have been hired, construction contracts were approved, public participation was initiated, public meetings and press releases were completed, the design was completed and coordination began with eStem public charter school.

8 FEDERAL RESOURCE ALLOCATION

Program Expenditures for FY 2017:

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 2017, ANRC and its project partners spent approximately $1.99M 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 increased 16% of federal expenditures from FY 2016 to FY 2017. Planning and outreach expenditures decreased to 5% and 16% respectively. Implementation expenditures had a slight decrease from 39% to 33 % in FY 2017 mainly due to the increase in monitoring efforts by various partners.



9 Best Management Practices

Best Management Practices Implemented in FY 2017

The table below contains BMPs that have been implemented during FY 2017 and the quantity of each practice.

		Demonstration Projects								
Best Management Practices	**NRCS #**	**14-500**	**15-600**	**15-700**	**15-1100**	**16-200**	**16-300**	**16-400**	**16-900**	**Total**
Structure for Water Control (feet)	587			366						366
Irrigation Pipeline (feet)	430	5,100		1,016						6,116
Critical Area Planting (acres)	342				1					1
Pond (units)	378				2					2
Cover Crop (acres)	340	211		1,600						1,811
Grade Stabilization Structure (feet)	410	440								440
Fencing (feet)	382		17,073		29,184	19,905	38,960		25,421	130,544
Forage and Biomass Planting (acres)	512		114		514		485	45	267	1,425
Heavy Use Area (units)	561		5		9	11			3	28
Watering Facility (units)	614		5		9	7	2		4	27
Brush Management (acres)	314		10		116	1,806	924		491	3,347
Herbaceous Weed Control (acres)	315				327					327
Pipeline	516		1,143		4,234	1,550	100		1,432	8,459
Spring Development	574						1			1
Prescribed Grazing	528				166					166

10 FY 2017 Non-point Source Program Accomplishments

- **Watershed Management Plans**- The Buffalo River Watershed Management Plan was initiated in FY 2017. There were no other Watershed Management Plans developed or initiated.

- **Education and Outreach-** Projects 15-900 "Connecting NPS Management to Receiving Streams through BMP Education and Demonstration" and 16-500 "White River and Richland Creek Watershed Opportunity Assessment" are just two examples of the continuation of efforts to educate the public of Arkansas. Through projects like 15-900 and 16-500, we are seeing the public buy into LID/GI techniques for their aesthetic and water quality benefits.

- **Enhancing Partnerships-**Partnerships continued to be strengthened for FY 2017. ANRC, EPA, NRCS, ADEQ, TNC, ANHC, U of A CES, IRWP, BWA, FTN, LMAV, Waterkeepers, and various other partners worked together through several initiatives and programs reducing nonpoint source pollution. Several partners participated and were involved in the NPS Annual Project Stakeholder Meeting and Project Reviews. Meetings and workshops continue to build on existing or future partnerships for the ANRC 319 Program and enhancing these partnerships will continue to be a primary goal for the NPS Program in the coming years.

- **GRTS Reporting**- For FY 2017, there were load reductions achieved that directly relate to 319(h) funded projects. Load reductions were found in many of the priority watersheds around the State. Total load reductions for FY 2017 were 25,595 tons/acre for sediment, 31,856 lbs./acre for phosphorus, and 63,747 lbs./acre for nitrogen. All of these load reductions were 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 Arkansas.

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

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Program Coordinator

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

Allen Brown,
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- Project Development and Management
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Robbie Alberson,
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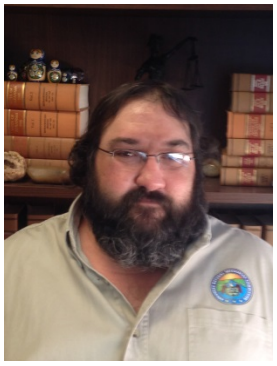

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