

ARKANSAS 2010 ANNUAL REPORT

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



Arkansas

Natural Resources Commission

January 31, 2011



ARKANSAS 2010 ANNUAL REPORT

NOTES FROM THE DIRECTOR	4
--------------------------------	----------



2010 PROGRAM HIGHLIGHTS	5
--------------------------------	----------

Project 07-600 Implementation of Low Impact Development Best Management Practices to Control Sediment from Urban Development	5
--	---

Project 08-300 - A Comprehensive Watershed Response Modeling for 12 Digit Hydrologic Unit Code "HUC" in Selected Priority Watersheds in Arkansas	8
--	---

Developing Capacity for the Non-Point Source Program through New Partnerships	9
---	---

LESSONS LEARNED	12
------------------------	-----------

PROGRAM EXPENDITURES	13
-----------------------------	-----------

BMP IMPLEMENTATION & LOAD REDUCTIONS	14
---	-----------

ESTIMATED LOAD REDUCTIONS	14
----------------------------------	-----------

MONITORING AND ASSESSMENT PROJECTS	15
---	-----------

2010 NPS Monitoring Projects	15
------------------------------	----

ASSESSMENT PROJECTS	17
NPS Assessment Projects	17

ACTIVE PROJECTS	19
------------------------	-----------

PRIORITY & TMDL WATERSHEDS	19
Beouf	19
Bayou Bartholomew (NPS Priority)	19
Bayou Macon	19
Beaver Reservoir (NPS Priority)	20
Illinois (NPS Priority)	20

ARKANSAS 2010 ANNUAL REPORT

Lake Conway-Point Remove (NPS Priority)	21
L'Anguille (NPS Priority)	21
Lower Little (NPS Priority)	201
Poteau (NPS Priority)	
201 Strawberry	
202	
OTHER WATERSHEDS	222
Bayou Meto	202
Eleven Point	22
Lower Arkansas	212
Lower St. Francis	213
Lower White	223
MILESTONES	24
Appendix A: The 2010 Accomplishments toward the 2005-2010 NPS Management Program Plan	24

ARKANSAS 2010 ANNUAL REPORT

NOTES FROM THE DIRECTOR

The Arkansas Natural Resources Commission (ANRC) is proud to provide this 2010 Annual Report for the Arkansas Nonpoint Source Pollution Management Program. As for much of the nation, 2010 was a year of unstable weather patterns and economic hardship.

Arkansas was plagued with extreme dynamics related to weather. The eastern (delta) parts of the state suffered drought during the growing season, while the Ouachita and Ozark Mountains suffered tornados, ice, and severe thunderstorms early in the year and drought conditions the remainder of the year. In addition to the impacts the weather brought locally, the nation continues to experience major economic challenges that reached from Wall Street to Main Street. Amidst these two realities, the Commission is still resolved to carry out its purpose of managing and protecting our water and land resources for the health, safety, and economic benefit of the State of Arkansas.



Items to keep in mind while reviewing this report:

- ◆ The economic downturn of the last year took a toll on project partners' ability to begin new projects, execute existing projects, or produce local match sources for projects.
- ◆ Anxiety and tension over the Oklahoma poultry litter lawsuit. Although the trial has ended, the verdict has not been announced. Additionally, people in Northwest Arkansas are awaiting a TMDL for the Illinois River Watershed.
- ◆ The Arkansas NPS program endured personnel turnover. Staff changes were also made at and EPA Region VI. Arkansas was assigned a new grants officer and technical liaison from Region VI EPA.
- ◆ Arkansas' Low Impact Development project and subsequent technologies, ideas and publication continue to be recognized and receive national awards.

As you know, the NPS Management Program is a continually growing partnership. In addition to its agency partners, ANRC works closely with nonprofit organizations and local watershed groups as well as our local Conservation Districts across the state who are responsible for engaging landowners to make projects effective. These partnerships, not ANRC, are the strength of this program. Evidence of these partnerships is demonstrated in this report. Your dedication to and ongoing participation in the NPS program is deeply appreciated.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Randy Young". The signature is fluid and cursive, with a large loop at the end.

J. Randy Young, P.E., Executive Director



2010 Program Highlights

Arkansas' Nonpoint Source Pollution (NPS) Management Program continued to expand Arkansas' capacity to manage and reduce nonpoint source pollution during 2010. Statewide projects addressed nonpoint source pollution problems in the areas of agriculture, silviculture, urban streams, and recreation while continuing extensive assessment and monitoring projects. New project partners utilized the program for the first time and employed projects to install best management practices through a grass roots delivery system. A few of the program highlights are described below.

Project 07-600 Implementation of Low Impact Development Best Management Practices to Control Sediment from Urban Development

Growing metropolitan and urban areas are quickly becoming a nonpoint source pollution threat to watersheds in Arkansas. Heavy urban growth and the resulting stormwater runoff has become a major issue for stream quality. Increased impervious surfaces increase runoff volume and peak flow rates in streams. These added forces erode stream banks and channels, which



can destabilize banks and hydromodification causing even greater sedimentation of the stream.

The pictures on the left show some of the common impacts urban development has on water quality.

Project partners recognized this problem in Northwest Arkansas and initiated a project to implement Low Impact Development (LID) methods and technologies for restoring water quality impacted from sediment in the White River, specifically, and for protecting critical

ecological services in urban systems.

Notable objectives of the project was 1) create a calibrated and validated model to estimate the peak flows and Total Suspended Solids (TSS) in a pre-BMP state, 2) model BMPs that could be retrofit into the existing stormwater network and 3) to estimate what the potential reduction in runoff and TSS would be with BMPs implemented.

ARKANSAS 2010 ANNUAL REPORT

Project tasks included:

- Development of municipal policies, based upon modeling and monitoring results, to protect streams from NPS impact from urban development
- Design a green neighborhood for Habitat for Humanity to demonstrate the value and effectiveness of LID technologies in Fayetteville, AR
- Measure the impact of LID technologies in reducing sediment loads to the White River in Northwest Arkansas
- Develop and implement educational workshops for LID technologies

The modeling portion of the project focused on two watersheds, Town Branch and Clear Creek. Clear Creek runs into the Illinois River and Town Branch flows to the West Fork of White River. The project used the US Environmental Protection Agency's Stormwater Modeling Management (SWMM) software and estimated total runoff in College Branch could be reduced by roughly 27% and total suspended solids (TSS) could be reduced by 39% by implementing selected BMPs. The project concluded peak flows could be reduced by as much as 29% for 1 year storms and as much as 10% for 25 year events. The stormwater BMP technologies used include detention and retention, infiltration and filtration and removal by using grassy swales, bio-retention devices and infiltration zones.

Peak flow reduction minimized stream bed and bank erosion reducing sediment loads downstream. While the project area focused on the College Branch watershed, the results can be expanded to Town Branch and Clear Creek as well as other watersheds in Northwest Arkansas with similar soil, land use, topographic and rainfall patterns. Although the results of the project focused on BMPs for retrofitting urban systems, the methodology and results can be used for planning new neighborhood and urban development. The LID technologies are also applicable for retrofitting existing urban landscape. It should be noted that retrofitting can be significantly more expensive than implementing BMPs as development occurs.

While this project alone will likely not result in the delisting of a stream segment from the impaired water list, it will result in increased implementation of LID technologies in Northwest Arkansas and will produce a reduction in NPS pollution from urban sources. A threshold implementation level was also developed based on modeling results to determine the management objective for the community. Additionally approximately 30 local engineers and developers were trained in the use of LID technologies and hopefully will impact future development.

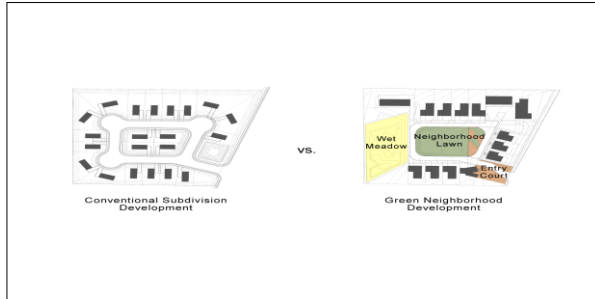


During the first year the group worked to develop municipal policies to protect streams from NPS impact from urban development using the LID technologies. They designed a green neighborhood for Habitat for Humanity (HH) to demonstrate the value and effectiveness of LID in Fayetteville, AR. The ideas behind the project and LID technologies were highlighted at a number of real estate, homeowner, landscape, and neighborhood development associations.

ARKANSAS 2010 ANNUAL REPORT

The HH design was practical, affordable, and met the needs of clientele and city code requirements. These elements were key factors when demonstrating how the ecological metrics can be incorporated into urban planning policy, land use, and infrastructure design.

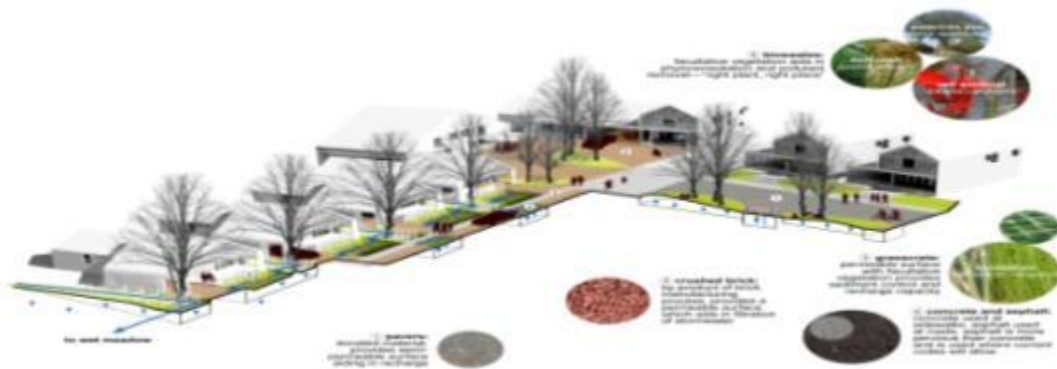
The group received unanimous support from the city planning commission and the city council for using the LID design and engineering principals in lieu of hard engineering. The Planned Zoning Development submittal is now used by the planning staff as an example for other developers to follow. Both the city and the developers would like to implement more LID planning in future projects.



The current design heralds a “shared street” infrastructure arrangement for integrating LID facilities with street networks and exceeds the green street retrofits used in the Northwest part of the country.

The project plan has received a national award in landscape architecture, state award in urban design, national award in engineering education, and has been featured in national publications. On January 7, 2011, the American Institute of Architects announced the 2011 AIA Honors Award in Regional and Urban Design. *Low Impact Development: A Design Manual for Urban Areas* was a recipient of this award. The AIA awards are the highest professional honors granted to design projects in architecture, urban design, and interior design.

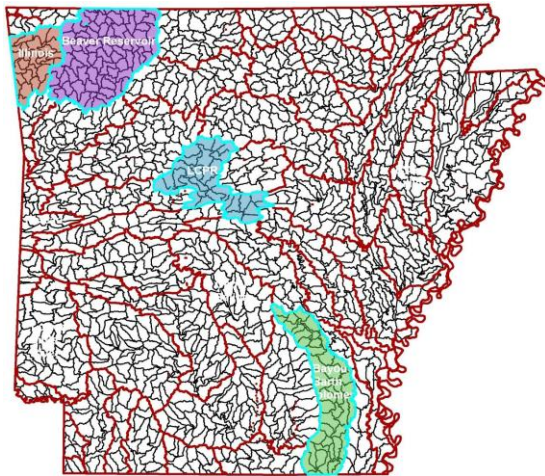
Award winning projects will be exhibited at the AIA convention in New Orleans and will be published in *Architect magazine*.



ARKANSAS 2010 ANNUAL REPORT

Project 08-300 - A Comprehensive Watershed Response Modeling for 12 Digit Hydrologic Unit Code "HUC" in Selected Priority Watersheds in Arkansas

The University of Arkansas Division of Agriculture initiated this project. The project proposed to calibrate the Soil and Water Assessment Tool (SWAT) model at the 12-digit HUC level in priority 8-digit HUC watersheds of Lake Conway Point Remove, Bayou Bartholomew, Beaver Reservoir, and Illinois River. The SWAT model was used to assess and rank the watersheds 12 digit HUCs based on their contribution to the non-point source pollution.



The Arkansas Natural Resources Commission (ANRC) has focused efforts on priority watersheds where there are known impairments or significant threats to water quality from present and future activities. The ANRC wants to ensure that planning activities and watershed management plans are commensurate with dynamic ground realities. Recent strides in the ability to use spatial data

provided by federal and state agencies make it possible to do more in-depth projects at the 12-digit HUC level and better identify those areas that need more monitoring and those sub-watersheds that are considered high priority for treatment with BMPs. This project conducted simulation modeling for at least one of the top ranked sub-watersheds in each of the four priority watersheds to help understand the effectiveness of BMPs for reducing sediments and nutrient loading. An assessment to determine the size of the critical source required or achieving the predicted reductions was also conducted. This critical knowledge about prioritized sub-watersheds will guide both the ANRC and concerned producers in devising and adopting effective mitigation strategies for the local ecosystem preservation.

Once the model determined the high priority sub-watersheds, the next step identified the sources of sediment and nutrients for each. The identification of sources was accomplished by site visits to each of the sub-watersheds. Information was collected on impairments, loss of riparian vegetation, land, disturbance, and stream bank erosion in order to quantify sources of the problem areas. Remote sensing data and other aerial or satellite data was used to identify potential "hot spots" of NPS pollution with those areas being ground-truthed by site visits.

Project organizers have completed the model setup, calibration, and validation for all four of the proposed 8-digit HUC watersheds. They have collected and organized the 12-digit sub-watershed data needed for SWAT modeling and have calibrated and validated the SWAT model. Using this data, they have identified and prioritized the 12-digit HUC watersheds and have identified the key contributing sources of sediment and nutrients.

Once the key sub-watersheds and sources of NPS pollutants were identified it was then necessary to select candidate BMPs to reduce transport of pollutants, helping project leaders to provide quantification of the effects, and an assessment determining what is required to

ARKANSAS 2010 ANNUAL REPORT

achieve the predicted reduction in sediment and nutrients. Known BMP areas within the identified watersheds were compared with non-BMP areas and simulations performed assuming the identified BMPs are extended over a greater percentage of land area within a watershed to assess the impacts of practice implementation over larger areas. This information was useful in deciding the size of critical source area over which the BMPs should be installed for achieving the predicted reductions in sediment and nutrient loadings at the watershed scale.

Project leaders encourage modeling results that can be compared with other local information for decision making purposes and noted that monitoring and modeling are complimentary of each other and reliable monitoring data is necessary to have confidence in modeling results. This project provided vital information about target areas within priority watersheds in the state and can help ANRC and project sponsors make better decisions on future projects.

A poster on this work received a first place award during the Cyber- Infrastructure Day organized by the University of Arkansas on May 16-17, 2010.

Developing Capacity for the Non-Point Source Program through New Partnerships

The Arkansas Natural Resources Commission is always looking for ways to expand the NPS Program through a variety of project partnerships. Conservation districts are one area where the NPS program wanted to expand its presence. In the past, ANRC had only been able to partner with a few of the 75 conservation districts in the state. It was obvious there were missed opportunities in the area of conservation districts.

In an effort to assist Conservation Districts and build capacity for the NPS Management Program, ANRC working with the Arkansas Association of Conservation Districts, funded a project in the years 2007-2009 to initiate the placement of two watershed coordinators to work with conservation districts throughout the state to provide education and training on the NPS Program and assist with writing proposals. The coordinators met with conservation district employees and district boards and presented information about the program and challenged districts to envision how the program could provide natural resource benefits in their short and long term plans.

As a direct result of the coordinators' work with conservation districts, several work plans were submitted with requests for funding from a group of relatively "new" partners. Out of these workplans, six conservation districts and one municipality had projects funded that had never before participated in the program.

Since the conservation districts have a long history of working directly with producers making recommendations to address natural resource concerns on their farming operations, they have a working knowledge of the type of BMPs that will best serve the needs of the producer and improve water quality. Sediment in runoff from agricultural fields degrades water quality in streams and tributaries all over the state. Conservation districts have identified two BMPs that reduce sediment leaving fields and do a tremendous job of



ARKANSAS 2010 ANNUAL REPORT

improving water quality. Installation of drop pipes (water control structures) in outlet areas of fields slows runoff and prevents gullies from forming along the edge of the field. The photo on page 9 shows a drop pipe with a splash guard installed on the outlet side. These pipes allow water to drain from the field through the pipe instead of cutting gullies into the drainage ditch. The splash guard will prevent high volume flows from eroding the ditch.

Another BMP used by the conservation districts is irrigation water conveyance systems. Open discharge systems from wells create significant erosion problems as well as do many of the open style delivery systems. Irrigation water is often delivered across the field through open ditches, levees, and canals increasing the amount of sediment in runoff from the field. Underground irrigation conveyance systems deliver irrigation water where it is needed without loss of water. The result reduces cutting into topsoil thus decreasing erosion. The photo on the right shows a closed irrigation water conveyance system.



Conservation district officials worked closely with their land owners and producers to educate them and generate interest in the projects. Districts used one on one contacts, newsletters, news articles, radio spots, and outreach meetings to get word out about current projects.

Projects with these newer partners have been relatively short-term. Funding is typically 1 to 2 years but make a direct impact on water quality by putting BMPs on the ground that will continue to improve water quality over the next 25 years.

Below are summaries of some of the projects of newer project partners have initiated:

Crittenden Conservation District 06-1600: This project sought to implement drop pipe and water control BMPs on farms throughout the county. According to information provided during the NPS Annual Project Review and in their annual project report, this project has been a tremendous success with BMPs being installed on 171 farms installing 4,736 feet of pipe. The conservation district partners stated that the project had won them favor with producers in the county and the water quality improvements installed through this project will continue to provide water quality benefits for years to come.

Cross County Conservation District 06-1700: The conservation district in Cross County saw an opportunity to improve water quality by utilizing the 319 program to help land users install BMPs to improve water quality in the L'Anguille River and St. Francis River watersheds. District cooperators were keenly interested in the project and as a result approximately \$880,000 was obligated to install BMPs on agricultural land that will provide lasting improvements in water quality in the L'Anguille River, Cache and Lower St. Francis watersheds.

Desha County Conservation District 07-1600: Project partners in Desha County proposed to install drop pipe, other water control structures, and irrigation water conveyance BMPs by working directly with producers and drainage associations. The BMPs implemented in this project will have a long-term positive impact on producers and water quality in the Boeuf and bayou Macon watersheds in Desha County.

ARKANSAS 2010 ANNUAL REPORT

Arkansas County Conservation District 10-400: The Arkansas County Conservation District is using this project to provide assistance to land owners and producers to install drop pipes, water control structures, and irrigation water conveyance BMPs in Bayou Meto, Lower White and Lower Arkansas watersheds in Arkansas County.

Poinsett County Conservation District 07-1500 and 09-1500: Conservation district officials worked with producers to determine the BMPs needed in Poinsett County and are using these projects to install drop pipes, water control structures, and irrigation water conveyance BMPs in the Cache, L'Anguille River and Lower St. Francis watersheds in Poinsett County. The projects in Poinsett County have treated 7,852 acres with BMPs that will keep 1-2 tons of sediment out of streams and will have approximately a 20-25 year life span. Total investment in Poinsett County is \$210,000 with 50% of that being provided by the producers installing BMPs.

Randolph County Conservation District 09-700: The board of directors initiated this project to provide assistance to land users to use and install BMPs that will decrease sedimentation and raise dissolved oxygen levels in the Eleven Point River Watershed. The district is providing assistance to install a number of BMPs on farms in Randolph County. Currently they have 27 farms implementing BMPs such as pond, waste storage facility, pasture and hay planting, fencing, critical area treatment, pipeline, watering facility, heavy use area, pest management and brush management.

The ANRC was also able to cultivate partnerships with municipal groups to improve water quality in stream reaches that are impacted by urban and city environments. Phase 2 of the Sager Creek Restoration Project **City of Siloam Springs 09-1300** is another example of an exemplary partnership between ANRC and the City of Siloam Springs. Using the NPS 319 Program to make changes to an existing stream in downtown Siloam Springs, the results will improved water quality by reducing sedimentation and increasing dissolved oxygen. This project will see a section of the stream restored with re-shaping of stream banks, construction of stepped boulder revetments, construction of bank-full bench and boulder toes, construction of step pools and riffles, and riparian areas planted to native vegetation. The result will be a healthy beautiful stream that not only improves water quality but provides an area of recreation that people in the City of Siloam Springs can enjoy.



Lessons Learned



The annual project review was held for FFY 2010 in September and project holders and NPS partners met to present progress of projects. The project review has become an annual event and is a valuable tool for project holders to present lessons learned and discover benefit from each other's experiences. As project leaders interact with participants, project partners and agencies, as well as stakeholders, learn valuable insight to what makes a project successful regardless of weather, economic conditions, and human nature. Learning from others' experiences and

their advice can help a new project make significant progress.

Project partners working on monitoring projects offered valuable information to those partners yet to do monitoring. It was demonstrated monitoring data must be collected routinely and in consistent methods to provide accurate results. Over the past several years monitoring project partners stated that some of the problems encountered were storm events in the middle of the night, equipment malfunction, access to equipment when problems occur during significant storm events, and even loss of monitoring equipment in a flood situation. These experiences helped project holders in understand what they may encounter and how to better prepare for it.

Partners also stressed when doing assessment projects it is crucial to involve as many stakeholders as possible. Looking at issues and problems with a complete set of stakeholders in a particular provides a better overall evaluation of the activities in the watershed that may or may not be contributing to a water quality problem. It is important to look at all activities (municipal, industrial, agricultural, and residential activities and concerns) and get input from those areas when doing assessments and planning projects.

Project partners have learned that BMP implementations will most likely have a positive impact on water quality impairment but they can only be effective when they are installed and used correctly. BMPs are site specific and should be designed accordingly. Land users implementing BMPs should be properly educated as to how the BMPs function, are to be installed, and maintained over the life of the practice. The 319 Program has projects implementing BMPs in riparian, agricultural, and forestry areas, and when employed properly will provide long-term improvement and protection of water quality.

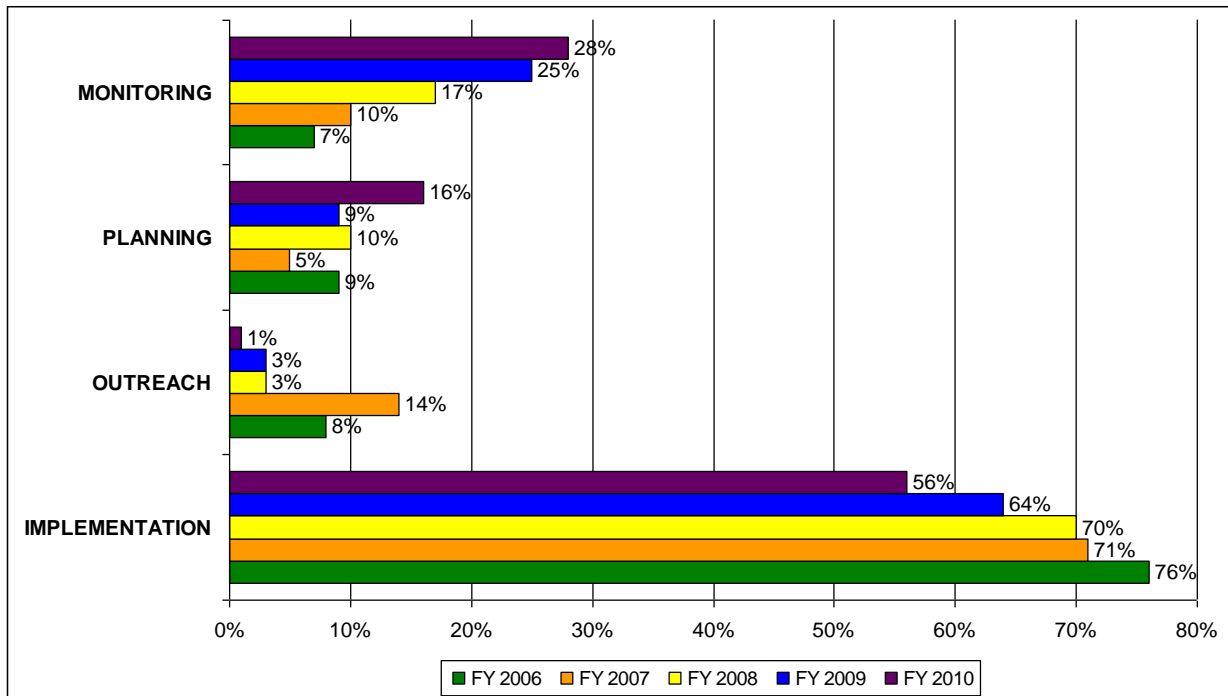


Program Expenditures

The Arkansas Nonpoint Source Program generally allocates most of its Clean Water Act 319(h) funds to partners implementing projects in priority watersheds who are capable of carrying out projects that best meet the goals and milestones of the Nonpoint Source Program. Project partners are generally required to provide a minimum of 43% match in non-federal funds.

In FFY 2010, ANRC and project partners spent approximately \$4.7 million dollars to initiate projects to address water quality resource concerns and reduce and prevent nonpoint source pollution in Arkansas. This included \$2.3 million in federal Clean Water Act Section 319 funds which were matched by \$2.4 million in non-federal funds.

The chart below shows how federal funds disbursed for projects were allocated among monitoring, planning, outreach, and implementation projects. Monitoring expenditures increased from 25% of federal dollars in FFY 2009 to 28% on FFY 2010. Planning expenditures increased from 9% in FFY 2009 to 16% in FFY 2010 while outreach expenditures fell from 3% to 1%. Implementation expenditures again saw a decrease in FFY 2010 with funds spent falling to 56%. Implementation projects still by far account for the greatest share of the total project budget.





BMP Implementation & Load Reductions

Estimated Load Reductions

Each implementation project reports BMPs installed on a standardized BMP reporting form. The BMP type and protected land area were entered in either the Region 5 or STEPL load estimation models. Depending on the model used and the type of BMP, several additional parameters (e.g. cover management factor, land use data, and animal population) may be required to complete the calculation. The models estimate annual pounds per year of nitrogen and phosphorus removed from water bodies as well as the annual tons per year of sediment removed.

Table 1: Load Reductions by Project, FFY 2010 and Life of Project

Project #	Nitrogen Reduced (lbs/yr)		Phosphorus Reduced (lbs/yr)		Sediment Reduced (tons/yr)	
	FY 10	Project Life	FY 10	Project Life	FY 10	Project Life
04-183	285	1,093	142	545	191	717
05-101	624	2,654	312	1,327	309	1,320
05-102	82	1,493	41	746	51	892
05-103	147	868	74	435	71	416
05-104	702	3,298	351	1,648	349	1,642
06-1200					73,485	73,485
06-1500					46,812	46,812
07-300					600	600
07-400					1,880	1,880
07-1100					59,908	59,908
08-500	5,418	10,770	2,710	5,384	2,887	5,774
09-300	334	334	166	166	173	173
09-700	85	85	42	42	45	45
TOTAL	7,677	20,595	3,838	10,293	186,761	193,664



Monitoring and Assessment Projects

Monitoring data is used to determine base line thresholds for sediment and nutrient levels and evaluate the effectiveness of restoration projects and BMP implementation. The Arkansas Natural Resources Commission's monitoring supplements ongoing ADEQ monitoring data. The Arkansas NPS Program relies on ADEQ monitoring data and its assessment of the waters of the state to assist in identifying priority watersheds. Watersheds requiring a TMDL are automatically considered priority watersheds provided the constituent of concern is from a potential nonpoint source. A variety of monitoring projects in the 2010 program collected data before, during, and after stream restoration projects and installation of soil erosion practices.

Project 09-400 Water Quality Trends across 319 Monitoring Sites was initiated to evaluate water quality changes where it is possible to identify the effects of management actions (BMP implementation) and identify sources of new pollutants. This project examined sites in the Upper White and Upper Illinois watersheds specifically. Project managers learned the only way to identify true trends in water quality is to institute long term consistent monitoring to establish base lines, to initiate storm sampling to account and establish loads on a rising hydrograph and stay abreast of changes within the watershed.

Below is a list of monitoring projects in the nonpoint source program for 2010:

2010 NPS Monitoring Projects

Monitoring Projects	Project #
Monitoring and Evaluation - West Fork of the White River	06-1000
Larkin Creek Baseline Monitoring	06-1800
Strawberry River Sub-watershed Monitoring	07-1000
Illinois River Voluntary Monitoring	08-400
Upper White River Monitoring	09-500
Illinois River Monitoring	09-600
Bayou Bartholomew Monitoring	09-800

ARKANSAS 2010 ANNUAL REPORT

L'Anguille River Monitoring	09-900
Galla Creek Monitoring	09-1000
Kings River Monitoring	09-1100

The U.S. Geological Survey, U.S. Army Corps of Engineers, some water districts, and other entities also maintain monitoring stations in selected water bodies across the state.

Assessment Projects



The Arkansas NPS Program typically relies on land use and condition assessments as related to water quality prior to approving implementation projects. The assessment generally contains data collection for projects that involve stream bank restoration,

pasture conditions, runoff volume and erosion rates from agricultural or silvicultural activities. From this information appropriate workplans detailing needed BMPs can be developed. The table below lists current assessment projects. These assessments will provide information/data at a 8-digit HUC level and some 12-digit HUC sub-watershed level to target implementation projects in the areas of greatest need.

NPS Assessment Projects

Project #	Assessment
08-700	Silvicultural Statewide Assessment

The *Silvicultural Statewide Assessment Project (08-700)* completed a state wide assessment to evaluate the use of best management practices in silvicultural activities. While the proper use of BMPs has been shown to reduce the likelihood of water quality impairment, BMPs are only effective to the extent that they are implemented correctly. Moreover, BMPs are site specific, and care must be taken to ensure they are properly employed for a given situation. Factors such as the attrition of trained and experienced personnel, as well as changes in technology and innovations, create an ongoing need for information dissemination and training. Continuing education and training, therefore, is critical to ensuring that forest landowners, foresters, and contractors are



ARKANSAS 2010 ANNUAL REPORT

knowledgeable of the importance of using BMPs, and that foresters and contractors are able to properly apply BMPs to various situations. One key to these education and training efforts is the ability to develop, print and disseminate BMP guideline materials that are used during training sessions. New platforms for training efforts have also been incorporated into this project. The addition of courtesy exams and a forestry conference are new venues that promise significant outreach opportunities in addition to traditional training platforms.

To ensure that training and education programs are effective, however, there should be a method to determine the rate of BMP implementation statewide. The *Arkansas BMP Implementation Survey* is a biennial assessment of BMP implementation utilized by the Arkansas Forestry Commission (AFC). Information taken from this statewide survey allows the AFC to identify deficiencies in BMP implementation by region, by ownership class, and/or by individual and categorical BMPs. Thus the survey provides a method to gauge the effectiveness of various training platforms over time, as well as identifying areas for targeted training in the future. In order to be statistically accurate and free from bias, the tracts randomly selected for the biennial survey are derived from a pool of tracts that have been identified via aerial reconnaissance. All analysis is performed within a 5 percent margin of error. Project managers state ...“participating in the 319(h) grant program has enabled the AFC to address NPS pollution resulting from forestry activity through guided and diligent training and education programs”...

The funding provided through the NPS Program allows for the production of various workshops and venues for training, as well as the production and dissemination of BMP guidebooks and other printed materials. The ability to identify deficiencies BMP implementation ensures that training and education efforts are designed to address the most pressing issues concerning the proper implantation of BMPs in the state.



Aerial assessments were done at 274 sites involving 3,339 logging operations. Results from the assessment prompted the Arkansas Forestry Commission to conduct technical training for all foresters and loggers, and to provide nontechnical landowner education.

Active Projects



Priority watersheds are listed in the Arkansas 2005-2010 NPS Management Program Update. Priority watersheds are selected using a risk assessment matrix. Water bodies having TMDLs from nonpoint sources automatically become a priority within Arkansas' Nonpoint Management Program. Summaries of active projects, categorized by watershed, can be found below. Project descriptions are provided only for projects that have not been presented thus far. Please note that some projects are in multiple watersheds, the project appears first in **bold** and in *italics* in each subsequent appearance.

PRIORITY & TMDL WATERSHED PROJECTS

*signifies a statewide project

Boeuf

07-1600 Desha County Erosion Control- See page 10

08-700 Arkansas Forestry Commission Statewide Silvicultural Assessment*
see page 17

Bayou Bartholomew (NPS Priority)

06-1200 Desha County Erosion Control

08-300 SWAT Modeling-The University of Arkansas Extension Service continues to use the SWAT to model to model Lake Conway Point Remove, Bayou Bartholomew, Beaver Reservoir, and Illinois River Watersheds at the 12 digit HUC scale and rank the 12 digit HUCs based on their contribution to NPS pollution. See page 8

*08-700 Arkansas Forestry Commission Statewide Silvicultural Assessment**

09-900 Bayou Bartholomew Monitoring – The Ecological Conservation Organization conducted water quality sampling, analysis, and developed a trend hypothesis for the Bayou Bartholomew Watershed by taking automated and grab samples.

Bayou Macon

06-1200 Desha County Erosion Control

*08-700 Arkansas Forestry Commission Statewide Silvicultural Assessment**

ARKANSAS 2010 ANNUAL REPORT

Beaver Reservoir (NPS Priority)

07-410 West Fork of the White River – Airport - The goal of the project is to develop the stream restoration plan to restore an unstable section of the West Fork White River (WFWR) that runs through the City of Fayetteville Municipal Airport property to reduce sediment loads from banks, improve water quality, and enhance aquatic and terrestrial habitat.

08-300 SWAT Modeling

*08-700 Arkansas Forestry Commission Statewide Silvicultural Assessment**

09-400 Northwest Arkansas Water Quality Trends-This project is analyzing water quality monitoring data collected over the last decade to determine water quality trends in selected watersheds. See page 15

09-1100 Kings River Monitoring – Using grab samples taken at regular intervals, this project used the regression method, considering seasonal changes where appropriate, to estimate loads in the Kings River.

09-1200 Clear Creek Riparian- The objectives of this project include: Outreach, education, and the development stakeholder ownership to implement stream and riparian protection. Project partners are using a variety of outreach methods to educate and initiate interest of all stakeholders that live, work, and play in the last line of a stream's defense.

Illinois (NPS Priority)

07-1400 Illinois River Watershed Management Plan- The overarching goal of this project was to develop a comprehensive Watershed Management Plan, to preserve, protect, and restore water quality of the Illinois River Watershed in Arkansas and support preservation, protection, and restoration of water quality in the entire Illinois River Watershed.

08-400 Illinois River Volunteer Monitoring – Using volunteers and a variety of media outlets, this project spawned interest in water quality and signed up volunteers to take regular water samples in numerous sites throughout the watershed.

*08-700 Arkansas Forestry Commission Statewide Silvicultural Assessment**

08-600 Demonstrating Runoff Capture from Poultry Houses – The primary objective of this project is to demonstrate the effectiveness of BMPs installed near poultry houses in capturing nutrients and sediment thus keeping the pollutants out of streams and the reuse of captured water.

09-1300 - Sager Creek Phase II – Phase II of this project will restore another section of stream that runs through downtown Siloam Springs and will improve water quality and aquatic habitat (increasing DO, reducing sedimentation and re-suspension of sediment and algal growth) by reshaping streambanks and installing step pools and riffles. See page 11

ARKANSAS 2010 ANNUAL REPORT

09-600 Illinois River Monitoring – The objective of this project was to collect data using auto-samplers and grab samples then use the regression method to predict loads. The project found that the regression method produced results similar to those using auto-samplers and flow weighted composites. The regression method allow for a significant increase in sampling sites across the watershed with the same financial investment.

Lake Conway-Point Remove (NPS Priority)

08-300 SWAT Modeling

*08-700 Arkansas Forestry Commission Statewide Silvicultural Assessment**

09-1000 Galla Creek Monitoring – An objective of this project was to better understand the fluctuating pollutant trends and dynamics within the water system. This was accomplished by the establishment and collection of weekly water samples in stream segments with similar physical attributes while maintaining precise and accurate sampling protocol.

L'Anguille (NPS Priority)

06-1700 Cross County – The Cross County Conservation District purchased and is installing pipes to assist landowners with erosion control thus reducing sediment to receiving streams. See page 10

*08-700 Arkansas Forestry Commission Statewide Silvicultural Assessment**

08-800 St. Francis & Lee County Larkin Creek Sediment Prevention Demonstration Project-The project involves the removal of accumulated sediment clogging a drainage lateral to Larkin Creek in the L'Anguille River Watershed. Landowners have taken the initiative to tax themselves to pay for a portion of the project and maintain it in the future. Cover crops, minimum tillage methods and the establishment of riparian buffers along the stream are the predominant practices being implemented.

09-300 Lower L'Anguille Cost Share Project – The St. Francis County Conservation District is providing cost share on a variety of BMPs to assist farmers with controlling erosion and sedimentation thus improving water quality in the L'Anguille Watershed.

09-900 L'Anguille Monitoring – The objectives of this project include collecting a number of samples to obtain sufficient data to determine trends in concentrations and estimate loading at each monitoring station and validate sampling results in the L'Anguille River Watershed.

Lower Little (NPS Priority)

*08-700 Arkansas Forestry Commission Statewide Silviculture Assessment**

Poteau (NPS Priority)

*08-700 Arkansas Forestry Commission Statewide Silviculture Assessment**

ARKANSAS 2010 ANNUAL REPORT

Strawberry

07-1000 Strawberry River Monitoring- This project is to monitor the effectiveness of BMPs through the collection of water quality samples from four sub-watersheds of the Strawberry River.

08-500 Fulton County- The Fulton County Conservation District is implementing and providing financial incentives for landowners in the Strawberry sub watersheds to implement water quality BMPs. The goals of this project will be to implement 150 farm plans, restore pasture lands, reduce sedimentation through no-till planting, and increase awareness through field days and demonstrations.

*08-700 Arkansas Forestry Commission Statewide Silvicultural Assessment**

OTHER WATERSHED PROJECTS

Bayou Meto

*08-700 Arkansas Forestry Commission Statewide Silvicultural Assessment**

10-400 Arkansas County Sediment Control

Eleven Point

09-700 Eleven Point River Watershed Improvement Project-The Randolph County Conservation District plans to implement a number of best management practices to reduce livestock traffic in and around the Eleven Point River and its tributaries. The major goals of this project will be to implement 132 farm plans, exclude cattle from streams through fencing, restore sub-par pasture land, decrease sediment movement through no-till planting and educate landowners with quarterly newsletters.

Lower Arkansas

07-1600 Desha County Erosion Control

*08-700 Arkansas Forestry Commission Statewide Silvicultural Assessment**

10-400 Arkansas County Sediment Control -The Arkansas County Conservation District will purchase and installed water control structures to reduce erosion and sediment loss in the White River, Bayou Meto, and Lower Arkansas Watersheds for the landowners of Arkansas County. See page 11

ARKANSAS 2010 ANNUAL REPORT

Lower St. Francis

06-1600 Crittenden County-The Crittenden Conservation District purchased and installed water control structures to assist landowners with erosion control and water quality improvement. See page 10

*08-700 Arkansas Forestry Commission Statewide Silvicultural Assessment**

09-1500 Poinsett County Erosion Control – The Poinsett County Conservation District will purchased and installed water control structures to assist landowners with erosion control and water quality improvement in the St. Francis and Lower Little River Watersheds. See page 11

Lower White

06-1200 Desha County Erosion Control

*08-700 Arkansas Forestry Commission Statewide Silvicultural Assessment**

10-400 Arkansas County Sediment Control

Milestones

Appendix A: The 2010 Accomplishments toward the 2005-2010 NPS Management Program Plan

The entirety of the Arkansas 2010 Annual Report is the documentation of the progress made toward achieving the NPS Management Program Plan. While the main focus of work done is in the field of agriculture, this program has made contributions toward silviculture, surface erosion, and household and business activities. Objectives listed below are milestones where progress occurred. *In Progress* status are those areas in which current work is ongoing, and *Accomplished* are areas where it is felt the milestone is in attainment.

Objective	Milestone Description	Status
Agriculture		
4.1	Continue to encourage and provide technical assistance for the development of conservation plans, nutrient management plans and comprehensive nutrient management plans as well as implementation of BMPs through wide-ranging education and outreach programs.	In Progress
4.3	Develop tools that enable measurement of the combined effect of implementing multiple BMPs in order to better evaluate the effectiveness of farming systems on the water quality of a watershed or sub-watershed.	In Progress
4.5	Identify additional sources of funding for projects that demonstrate systems approaches that enable farmers to achieve multiple goals (e.g., conserve water supply and protect water quality while achieving profitability goals).	In Progress
4.6.	Improve the availability and access to information on agricultural and other land uses at the watershed and sub-watershed levels in order to better target implementation projects. While maintaining mandated confidentiality, make available information on the types, extent and distribution of land uses, BMPs in use, riparian buffers and total acres enrolled in conservation programs.	Accomplished

ARKANSAS 2010 ANNUAL REPORT

4.7	Seek additional sources of funding to increase and improve the effectiveness of technical assistance to agricultural producers in planning resource management and with the implementation of BMPs, with special emphasis on nutrient surplus areas.	Accomplished
4.8	Coordinate conservation planning to take full advantage of cost-share programs for riparian habitat improvement, Wetland Reserve Program (WRP), Conservation Reserve Program (CRP), the Wetland and Riparian Zone Tax Credit Program (through ANRC), and other programs.	In Progress
4.9	Encourage plans for alternative irrigation water supply and supplemental stream augmentation, including off-stream storage of surplus flows	Accomplished
4.10	Continue to focus on BMP implementation to improve conservation practices for erosion control, sediment retention, irrigation management and nutrient management on row crop and animal agriculture and farm forests. As appropriate, direct technical assistance to landowners in targeted watersheds giving emphasis to developing new conservation plans and areas that connect established riparian corridors.	In Progress
4.11	Continue to provide and improve extensive education and training to promote BMP implementation (e.g., risk management, demonstrations to acquaint landowners with the conservation practices most effective in reducing runoff, sediment detachment and transport, including but not limited to no-till, conservation-till, ridge-till, pipe drop outlets, riparian zone management, and wetland restoration).	Accomplished
4.12	Continue to encourage landowners to establish riparian buffer strips, grass drainage ways, stabilize stream banks, and restore riparian areas.	Accomplished
4.13	Continue to provide technical assistance and make available financial assistance to agricultural operations where cost-share is a component of approved 319(h) implementation projects.	In Progress
4.14	Develop strategies to more effectively assess the contribution of agriculture as a source of impairment in relationship to other sources of impairment in order to more effectively target resources at the watershed and sub-watershed levels.	In Progress

ARKANSAS 2010 ANNUAL REPORT

4.15	Identify nutrient deficit areas more precisely to facilitate export of surplus poultry litter and develop a system for tracking where surplus litter is utilized. Continue to research and develop programs to remove surplus poultry litter from nutrient surplus areas.	Accomplished
4.16	Work with major integrators and farm workers as well as landowners to encourage input from and cooperation with nutrient management planning and implementation.	Accomplished
4.17	Promote nutrient planning for farms that are below the threshold for classification as a Confined Animal Feeding Operation with dry manure.	Accomplished
4.18	Expand education for poultry producers with a special focus on the role that the producer plays in the "Big Picture" of nonpoint source pollution management (e.g., the relationship between biological processes and agricultural production processes as they relate to water quality).	In Progress
4.19	Provide educational and technical assistance to support full implementation of nutrient application rules promulgated by the ANRC.	Accomplished
4.20	Continue to promote positive relationships between state and federal agencies and agricultural producers in order to cultivate open communication in an environment of trust.	In Progress

ARKANSAS 2010 ANNUAL REPORT

Silviculture		
5.1	<p>Continue to strengthen outreach and training programs in BMP implementation for landowners and loggers by:</p> <p>Developing additional mechanisms for delivering BMP implementation training targeted at private non-industrial landowners (e.g., educational workshops, expanded local partnerships in areas where there are high concentrations of private non-industrial landowners and increasing emphasis on woodland management in farm planning).</p>	Accomplished
5.3	<p>Continue to promote incentives for landowners and/or loggers to increase voluntary BMP implementation. Review options to increase landowner incentives to adopt BMPs.</p>	Accomplished
5.4	<p>Continue to improve the quality of BMP implementation monitoring (e.g., increasing the sample size to improve the validity of subgroup results, identifying sites in riparian areas, and investigating alternatives to better identify the universe of harvest sites).</p>	In Progress
5.5	<p>Continue assessing the effectiveness of silviculture BMPs to protect Arkansas water quality (e.g., reduce sedimentation) building on ongoing evaluation and recognizing that such assessment is a long-term, ongoing process. Consider conducting special assessments of high-quality headwater streams using synoptic surveys or other methods as resources allow.</p>	In Progress
5.6	<p>Continue to review new research as it becomes available to re-evaluate AFC silviculture BMP guidelines, involving both scientists and stakeholders in the dialogue.</p>	In Progress

ARKANSAS 2010 ANNUAL REPORT

Surface Erosion		
	<i>Instream Erosion:</i>	
7.6	Seek new sources of funds and promote increased cooperation aimed at shifting focus from bank stabilization to reach restoration.	In Progress
7.7	Develop and implement a watershed based assessment protocol and BMPs for stream bank erosion, including guidelines for riparian buffer widths for construction, as funds allow.	In Progress
7.8	Prioritize stream reaches and sites for restoration within priority watersheds, as funds allow.	In Progress
7.10	Promote tax credits, cost share and other incentive programs that are available for riparian zone and stream corridor restoration projects.	Accomplished
7.11	Improve coordination of existing data among cooperating entities	Accomplished
7.12	As funds allow, develop data and conduct analysis to fill information gaps...	In Progress

ARKANSAS 2010 ANNUAL REPORT

Household and Business Activities		
	<i>Household & Small Business Chemicals and Fertilizers:</i>	
8.5	Assess the impact of household and business use of fertilizers, pesticides and other common products that do not require permits but can affect water quality in order to more effectively target outreach and awareness programs aimed at increasing use of BMPs, as resources allow.	Accomplished
8.9	Hazardous waste and pesticide container collection programs aimed at agricultural producers will be encouraged to promote to and accept containers from households and businesses as well.	Accomplished