

Arkansas' Nonpoint Source Pollution Management Program Annual Report 2002



Prepared pursuant to Section 319 of the Federal Clean Water Act



Arkansas Soil and Water Conservation Commission
January 2003

**Arkansas' Nonpoint Source Pollution Management
Program
2002 Annual Report**

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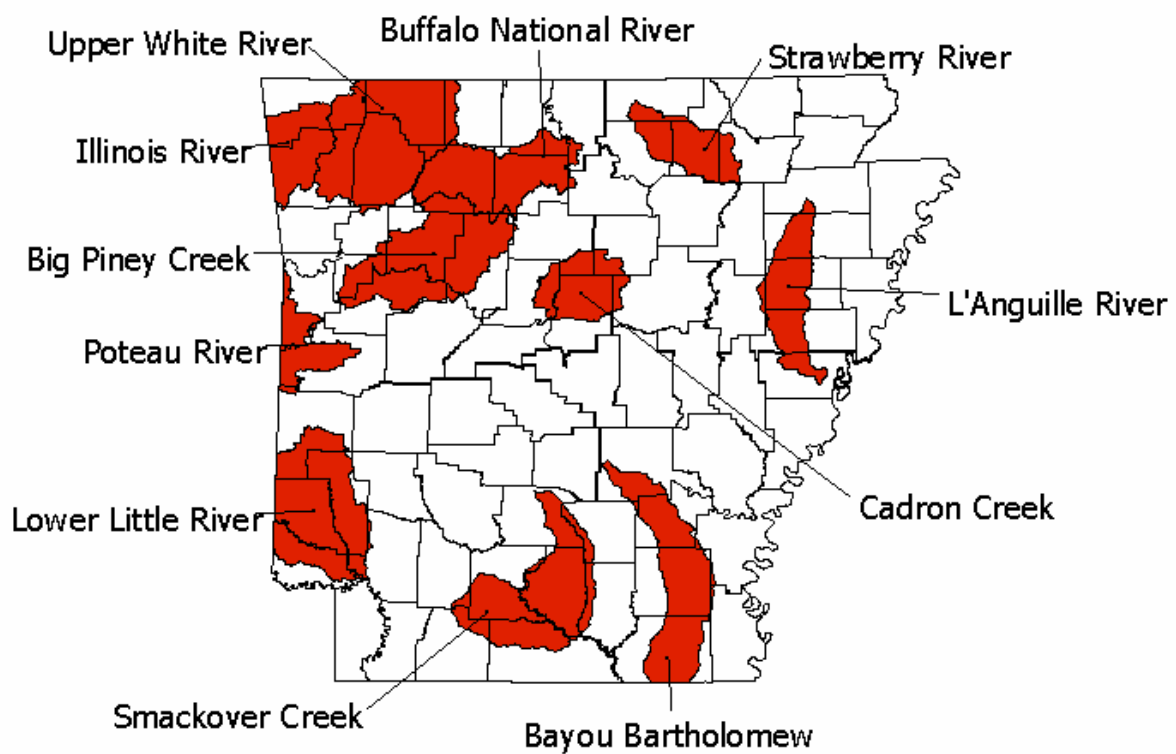
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Priority and TMDL Watersheds



**Illinois River Watershed
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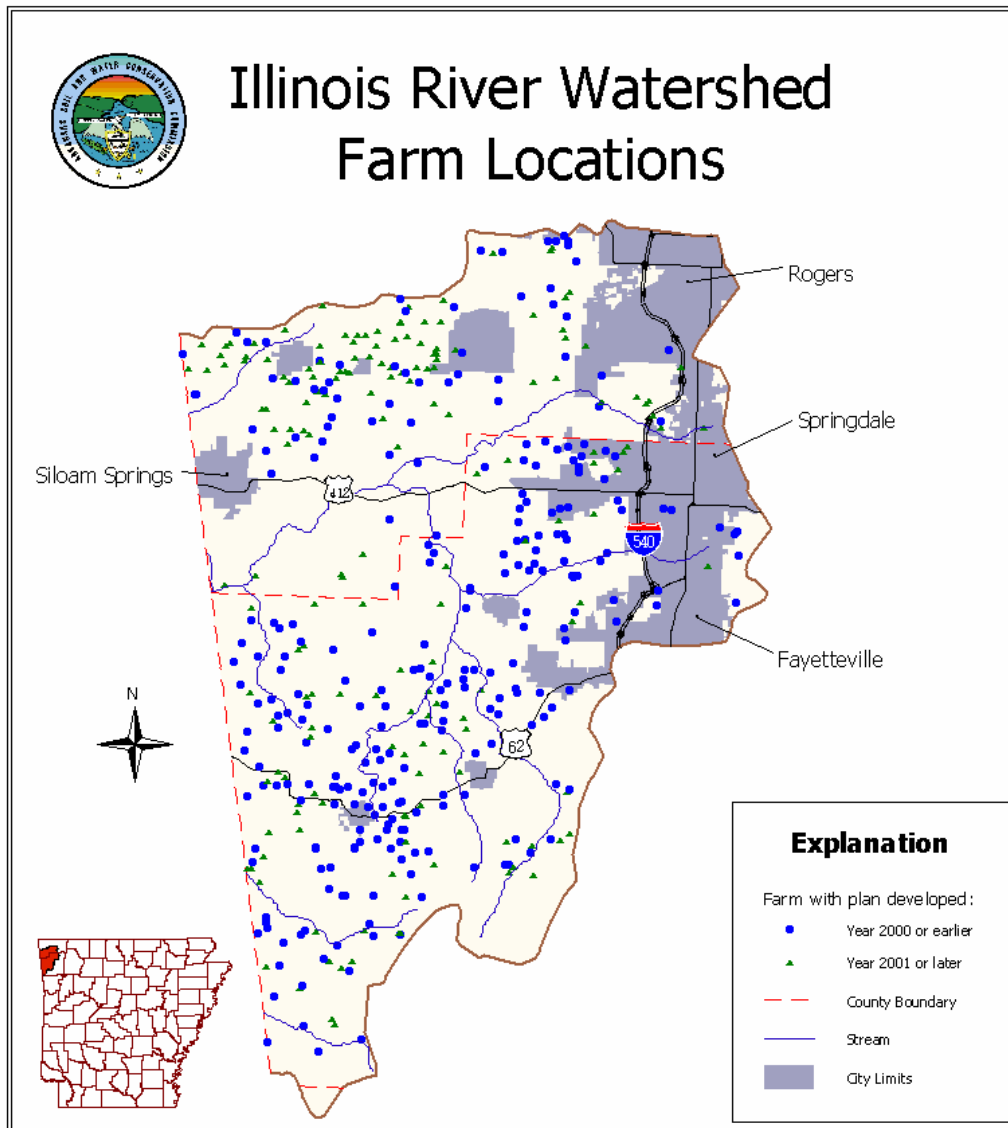


Figure 1. Farm Locations within the Illinois River Watershed

**Summary of Water Quality in the
Illinois River Watershed**

Elevated nutrient levels have been a major concern in the Illinois River watershed, especially phosphorus loading of Lake Tenkiller in Oklahoma. A Clean Lakes study sponsored by the Oklahoma Conservation Commission, completed in 1996, recommended a short-term goal of 40% nutrient input reductions to the reservoir

and a long-term goal of 70 – 80% input reductions. Arkansas / Oklahoma Arkansas River Compact Commission have agreed to work toward the 40% reduction goal. Designated uses of the Illinois River are:

- Aquatic life
- Primary and secondary contact recreation
- Public, industrial, and agricultural water supplies

**Illinois River Watershed
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**Nonpoint Source Pollution
Management Issues**

A comprehensive management program was prepared for the Illinois River in Arkansas in 1994. This plan went into the development of the milestones for the Illinois River contained in Arkansas' Nonpoint Source Pollution Management Program for 1998 – 2002. Issues raised in these documents are:

- Confined Animal Management
- Streambank Erosion
- Urban Runoff
- Rural Roads
- Resource Extraction
- Construction

Summary of Management Activities

Management activities were concentrated in agriculture, urban nonpoint source pollution, resource extraction and construction.

Agriculture:

The emphasis of the confined animal management program since 1990 has been on voluntary implementation of Best Management Practices by local land users. The Washington and Benton County Conservation Districts provide technical assistance in the form of comprehensive nutrient management planning and the Washington and Benton County Cooperative Extension Services provide information/education programs on water quality management. The ASWCC's Water Quality Technician Program and the NRCS's Assistance to Districts program, support the technical assistance program. In addition, financial assistance is available for implementation of BMPs through the ASWCC's Title X Cost Share Program, the Environmental Quality Incentives Program and the State Revolving Fund program.

A summary of accomplishments is given below:

Table 1. Agricultural Accomplishments for the Illinois River Watershed

Percent of poultry farms with nutrient management plans (see map below)				95
Nutrient Management Plans prepared and implemented prior to 2001				306
Comprehensive Management Plans prepared and implemented post 2001			94	
ASWCC Agreements,	Cost	Share		1
SRF Loans				\$122,623
Poultry Farmers attending water quality training				>300

The Washington County Cooperative Extension Service has been conducting a watershed education and training program in the Ballard Creek tributary to the Illinois River for several years. The project Steering Committee is now working with the Washington County Conservation District to develop guidelines for a follow-up BMP implementation project.

The University of Arkansas Department of Bio-Agricultural Engineering has initiated a project on the Lincoln Lake watershed to evaluate the status of BMP implementation from the last several years. The results will go into a new watershed management plan developed in conjunction with the local residents.

Urban Nonpoint:

The Washington County office of the Cooperative Extension Service has taken the lead role in public awareness and education for urban nonpoint source pollution. Significant accomplishments include:

- Storm drain stenciling
- Watershed signage
- Localized urban Home-A-Syst program for Fayetteville

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- "Streams as Living Laboratories" program (for Fayetteville Schools and local camps)
- Storm Water educational forum (for City Planners, Councils and Quorum Courts)
- Lake Fayetteville watershed group formed and received nonprofit corporation status. Focus is on local environmental education and the collection of water quality data

The city of Rogers is continuing its nonpoint source management program through monitoring of the Osage Creek to identify problem areas, employment of a water quality educator by the city, and demonstration of greenways as a nonpoint source BMP.

The Northwest Arkansas Regional Planning Commission has initiated an ad-hoc committee of its local members to develop an outline for a regional stormwater management program based on the requirements of EPA's Phase II NPDES Stormwater rules.

Resource Extraction:

The mining division of the Arkansas Department of Environmental Quality, Regulation 15, now regulates resource extraction from surface waters.

Construction:

The Northwest Arkansas Regional Planning Commission has convened an ad-hoc committee of local officials to develop a plan to meet the new regulatory requirements. A construction BMP manual is currently under review.

Water Quality Trends

Arkansas and Oklahoma monitor progress in meeting the 40% phosphorus load reduction goal by comparing a rolling five-year average load to the historic data from the period of 1980 through 1993. By agreement in the Arkansas-Oklahoma Compact Commission, data from the ADEQ's ambient monitoring stations are used in Arkansas to monitor the trend. A summary of phosphorus load reduction for the latest five-year period versus the base line is provided in the following figure.

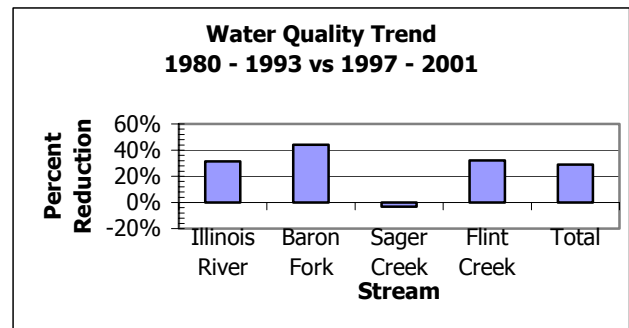


Figure 2. Water Quality Trends in Illinois River Watershed

In addition, the ASWCC has contracted with the AWRC for the last five years to collect storm event samples. These data shows considerable difference from the ambient monitoring station data, but it cannot be used for comparison to the 1980 through 1993 period because equivalent data was not available in the earlier period for comparison.

Upper White River Watershed 2002 Annual Nonpoint Source Pollution Management Report

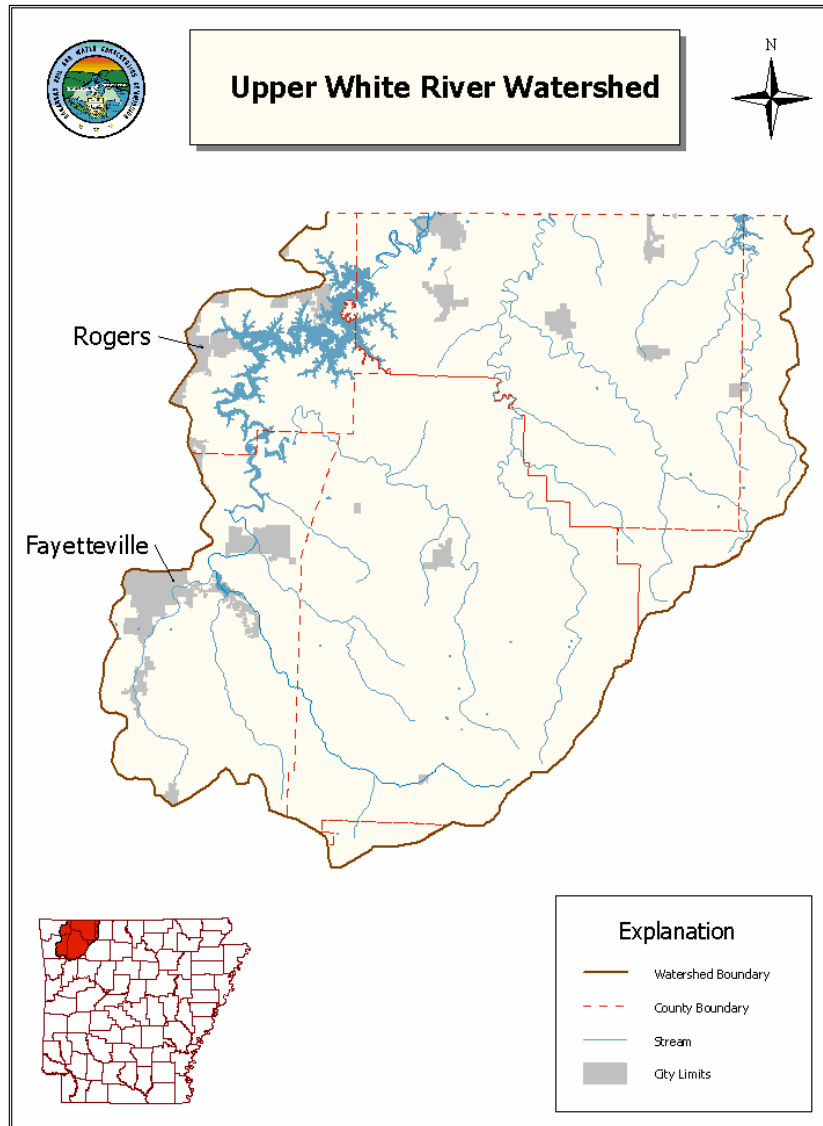


Figure 3. Upper White River Watershed

Summary of Water Quality in the Upper White River Watershed

Of six designated uses of the Upper White River Watershed, two are not being met. The major causes of non-support are due to high turbidity levels and excessive silt loads. Three primary nonpoint sources are cited: (1) agriculture land clearing; (2) road construction and maintenance; and (3) gravel removal from streambeds. Due to a

point source discharge, Holman Creek is impaired by excessive nitrates. (2002 Water Quality Inventory Report)

Designated uses:

- Aquatic life
- Primary and secondary contact recreation
- Domestic water supply
- Agricultural water supply

**Upper White River Watershed
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- Industrial water supply
- 20% outstanding state or national resource waters

Table 2. Non-supported Uses in the Upper White River Watershed

Stream	Non-supported use	Miles
West Fork	Aquatic Life	27.2
White River above Beaver Lake	Aquatic Life	6.2
Holman Creek	Drinking Water	9.1

The Beaver Reservoir Watershed (the western half of the Upper White River) was selected as top priority. Selection factors within this watershed included:

- One state extraordinary water resource
- One imperiled aquatic species
- Drinking water supplies serving a population greater than 250,000
- One state impaired water body
- Numerous state waters of concern
- Three USDA EQIP projects
- One state 319 priority area
- Interstate waters of concern

Nonpoint Source Pollution Management Issues

Arkansas' Nonpoint Source Pollution Management Program for 1998 – 2002 lists the following as potential sources of pollution in the watershed:

- Agricultural Operations (confined animals and pasture)
- Rural Roads
- Resource Extraction

Other reports ("Water Quality Macroinvertebrate and Fish Community Survey of the Upper White River Watershed" by the Arkansas Department of Environmental Quality (ADEQ) and Beaver Lake Clean Lake Study by FTN Associates, Ltd.) indicate that on-site wastewater disposal and urban runoff may be issues in some areas.

Summary of Management Activities

The Nonpoint Source Support Group selected the Beaver Lake Watershed as its

top priority watershed. Incremental funds from EPA's section 319(h) program totaling 1.9 million dollars are targeted at the watershed with roughly 1.5 million dollars of non-federal matching funds provided by state and local groups.

A summary of significant results is given below:

Public Awareness:

The Cooperative Extension Service has completed the following public awareness items in the Beaver Lake Watershed:

- 17 local news articles
- 3 television interviews
- 8 displays at local festivals
- Presentations to over 400 civic club members
- 1,397 students reached by water quality programs

In addition, the ADEQ in conjunction with the Beaver Lake Partners conducted the first Beaver Lake Awareness Day. The ASWCC made presentations to 810 individuals in the Beaver Lake Watershed on NPS pollution.

Agriculture:

There are an estimated 229 confined animal feeding operations in the Beaver Lake Watershed. The emphasis of the agricultural program in the watershed has been to assist these operations in management of manure and fertilizer on their farms. Accomplishments include:

- 149 Comprehensive Nutrient Management Plans prepared since January 1, 2001
- 517 Nutrient Management Plans prepared prior to January 1, 2002
- 155 ASWCC BMP cost share applications received
- \$207,735 payments made for implemented BMPs by ASWCC
- \$138,541 payments made by EQIP program for water quality BMPs

Streambank Erosion:

- ADEQ is completing a geomorphological survey of the West Fork of the White River

**Upper White River Watershed
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- Four streambank erosion restorations

Rural Roads:

Section 319(h) FY 99 Incremental Funds:
The Madison County Judge in cooperation with the Madison County Conservation District have:

- Completed seven roadside erosion control projects
- Hydromulched 6.55 miles of county road shoulder and ditch

Construction:

- 55 local officials, contractors, and engineers attended training on construction BMPs (conducted by the Civil Engineering Department of the University of Arkansas)
- The Northwest Arkansas Regional Planning Commission is producing a regional BMP manual for stormwater management.

Urban:

The Northwest Arkansas Regional Planning Commission has initiated planning to develop and implement Phase II stormwater plans in northwest Arkansas.

Watershed Assessment:

The ASWCC, in cooperation with the project workgroup for project 99-1100, has completed a watershed action strategy for the Beaver Lake portion of the Upper White River Watershed.

Water Quality Trends

The AWRC has been monitoring storm and baseflow water quality in the watershed since 2000. Load values for the Kings River at Hwy 143 and West Fork of the White River are summarized in Table 3 for 2000 and 2001. Load values for the White River in 2001 are included in Table 3 also. The change in the loads from 2000 to 2001 is represented in Figure 4.

Table 3. Load Calculations for Kings River and the West Fork of White River

	2000		2001		
	Illinois River	Kings River	Illinois River	Kings River	White River
Discharge	600	320	596	367	352
NO₃ lbs/yr	2,419,032	550,291	3,354,785	1,032,273	244,039
T-P lbs/yr	621,470	225,130	562,520	273,763	231,112
NH₄ lbs/yr	57,216	24,129	81,315	38,094	22,355
TKN lbs/yr	1,016,098	463,322	984,168	495,757	464,702
PO₄ lbs/yr	281,184	103,633	277,105	76,548	13,978
TSS lbs/yr	139,822,953	78,419,807	155,701,740	80,851,505	110,419,807

Upper White River Watershed
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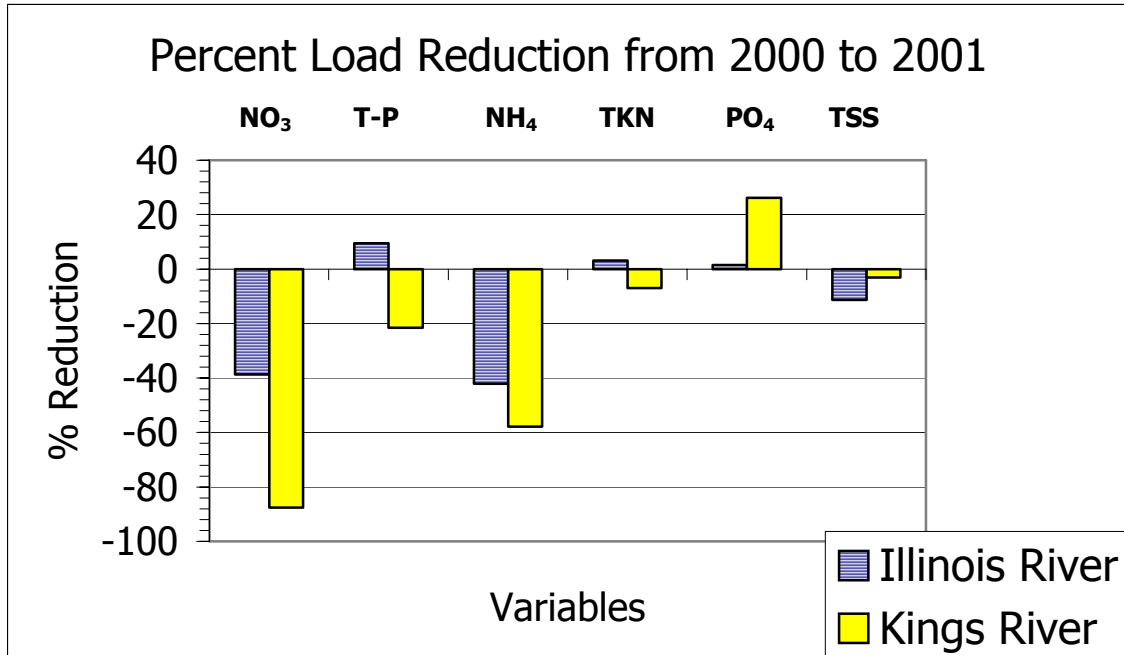


Figure 4. Percent Load Reduction from 2000 to 2001 in the Illinois and Kings Rivers

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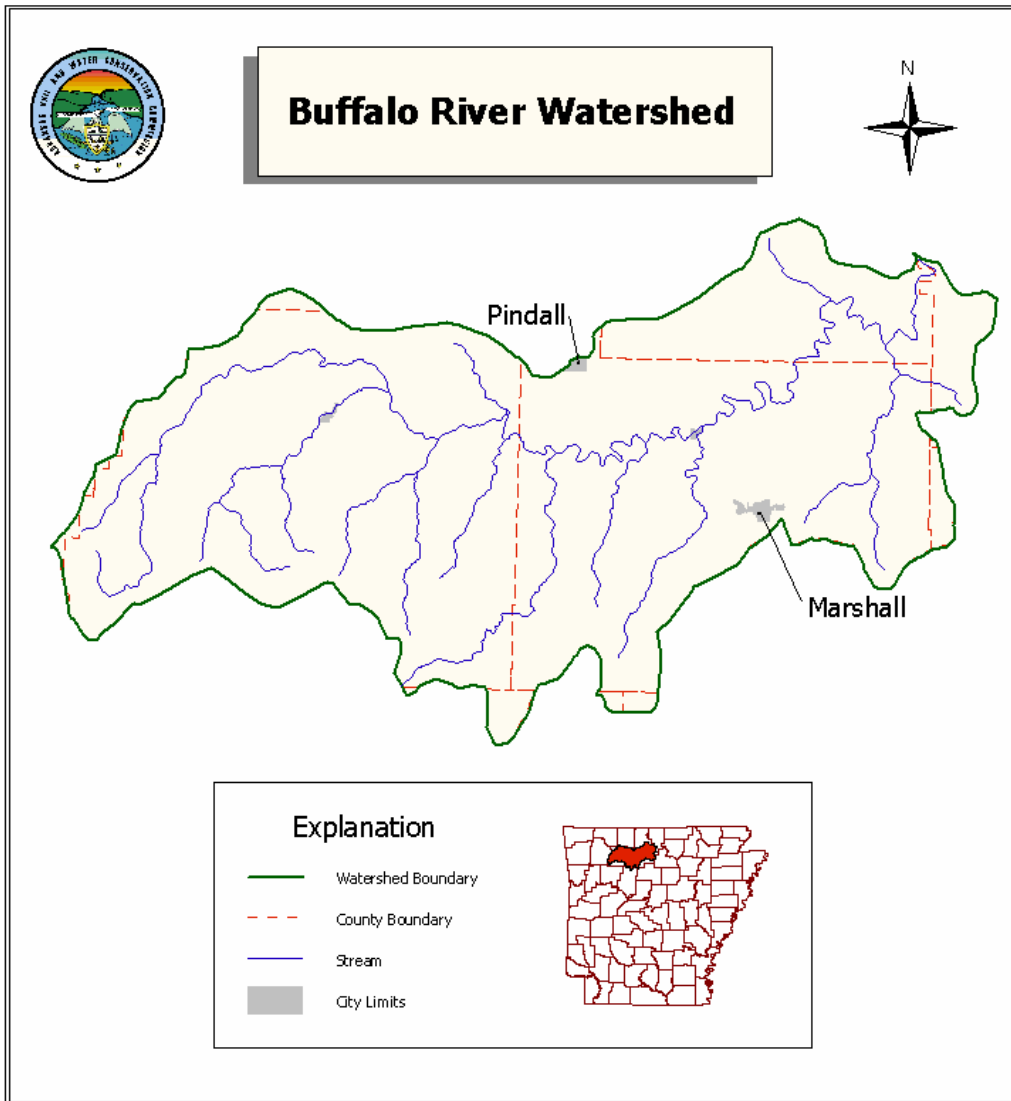


Figure 5. Buffalo River Watershed

**Summary of Water Quality in the
Buffalo River Watershed**

According to the 2002 Water Quality Inventory Report prepared by the Arkansas Department of Environmental Quality, all waters within this planning segment are meeting their designated uses.

Designated uses:

- Fish and wildlife
- Primary and secondary contact recreation
- Domestic water supplies
- Agricultural water supplies
- Industrial water supplies
- Outstanding state or national resource waters

Buffalo River Watershed 2002 Annual Nonpoint Source Pollution Management Report

Non-point Source Pollution Management Issues

Potential sources of pollutants in the watershed are:

- Agriculture
 1. Confined Animal Management
 2. Pasture Management
- Streambank erosion
- Rural roads
- Recreation
- Land conversion

Summary of Management Activities

A summary of projects currently being implemented in the Buffalo River Watershed is given below.

Agriculture:

Significant accomplishments of the Agriculture NPS program in the watershed are:

- 42 applications for ASWCC cost sharing assistance totaling \$105,934
- 335 applications for USDA cost sharing assistance
- \$181,691 of \$286,154 spent in Newton and Searcy Counties for USDA cost share assistance
- One dairy waste management systems installed
- 3,408 acres of pasture improvement/re-establishment
- 29 comprehensive nutrient management plans implemented
- Initiation of a cooperative watershed assistance program, developed by the ADEQ, NRCS, and the Buffalo Conservation District, to manage both liquid and dry waste dairy operations
- The Buffalo Conservation District purchased a manure spreader and pit agitator and provided an operator for the cooperative watershed assistance program
- Ten dairies participated in the cooperative watershed program, which included long-term manure

planning, nutrient management strategies, manure sampling, access to a manure handling service, and cost sharing

Streambank Erosion:

The combined efforts of the ASWCC, AGFC, NRCS and the Buffalo National River have resulted in 836 feet streambank stabilization.

Water Quality Trends

Quoting from the 2002 Water Quality Inventory Report prepared by the ADEQ, "Only one routine monitoring station is located in this segment; however, over the past several years, a cooperative project with the Buffalo National River has added nine sites on the Buffalo River, 20 tributary sites and three spring sites. This has allowed for a much more detailed assessment of the river and its tributaries. All waters assessed in this segment met all designated uses. Although nutrient values are low in the Buffalo River, nitrite/nitrate-nitrogen values show an increase in a downstream direction. The most significant increases were noted below Boxley Valley and below Mill Creek (between Pruitt and Hastey). Of the 20 tributary sites, highest nitrite/nitrate-nitrogen concentrations were found in Mill Creek, Calf Creek, Brush Creek, and Tomahawk Creek.

The mean nitrate values on the main stem of the Buffalo River during 1995-1998 are compared to the mean nitrate values for 1999-2001 in Figure 5. An increase in the mean nitrate concentration is indicated at most all stations except the uppermost station and two of the lower stations. The stations near Ponca and Gilbert showed the greatest increase. Nitrate concentrations in the main channel of the Buffalo National River are, on average, two thirds lower than those seen in the tributaries.

A similar comparison was made among the tributary streams and is shown in Figure 6. Mill (Pruitt), Brush and Tomahawk Creeks show highest mean nitrate values. Mill

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Creek, Davis Creek, Clabber Creek and Big Creek (lower) showed the greatest increase in nitrates since the 1995-1998 data set.”

During 2002, the ADEQ completed a major demonstration project on Dairy Waste Management in the Buffalo River. Water quality was monitored upstream and downstream of a dairy facility. During the project, the dairy was converted to a beef cattle operation. Monitoring results for the project before and after the conversion are summarized below and in Figures 7 and 8.

- Eight sampling events before and after the conversion were monitored
- Pre-conversion conductivity 240 $\mu\text{S}/\text{cm}$ to 2080 $\mu\text{S}/\text{cm}$
- Post-conversion conductivity 150 $\mu\text{S}/\text{cm}$ to 330 $\mu\text{S}/\text{cm}$
- In general, when comparing similar storm runoff events, the flow weighted concentrations of Total Phosphorus and Nitrogen were reduced after the conversion, with Phosphorus reductions as high as 77% and Nitrogen reductions as high as 85%.
- During one intensive storm event before the conversion, approximately, 200 lbs of Total Phosphorus and 600 lbs of Total Nitrogen loads were estimated in the runoff from the dairy facility

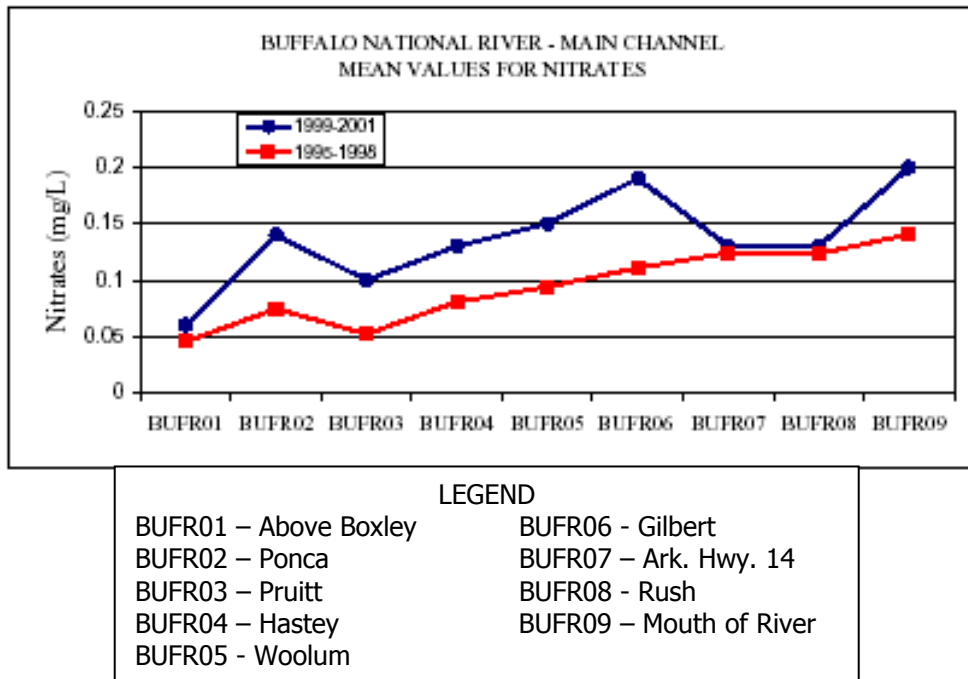


Figure 6. Mean Concentration Values for the Buffalo River Main Channel

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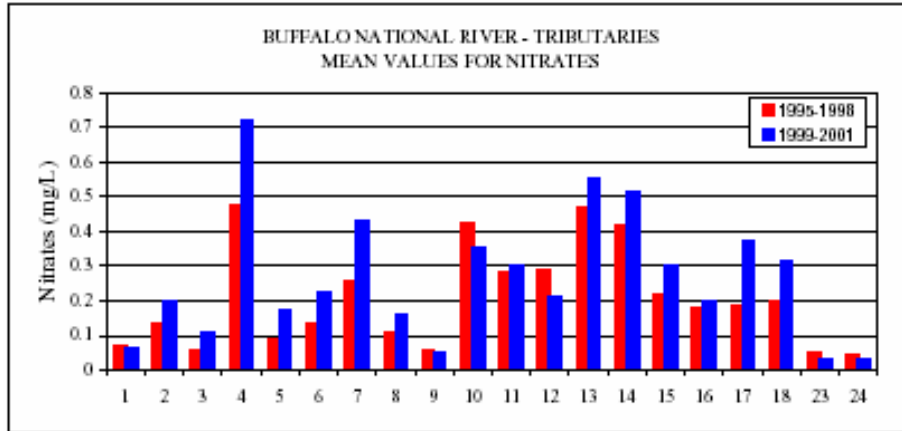


Figure 7. Mean Concentration Values for the Buffalo River Tributaries

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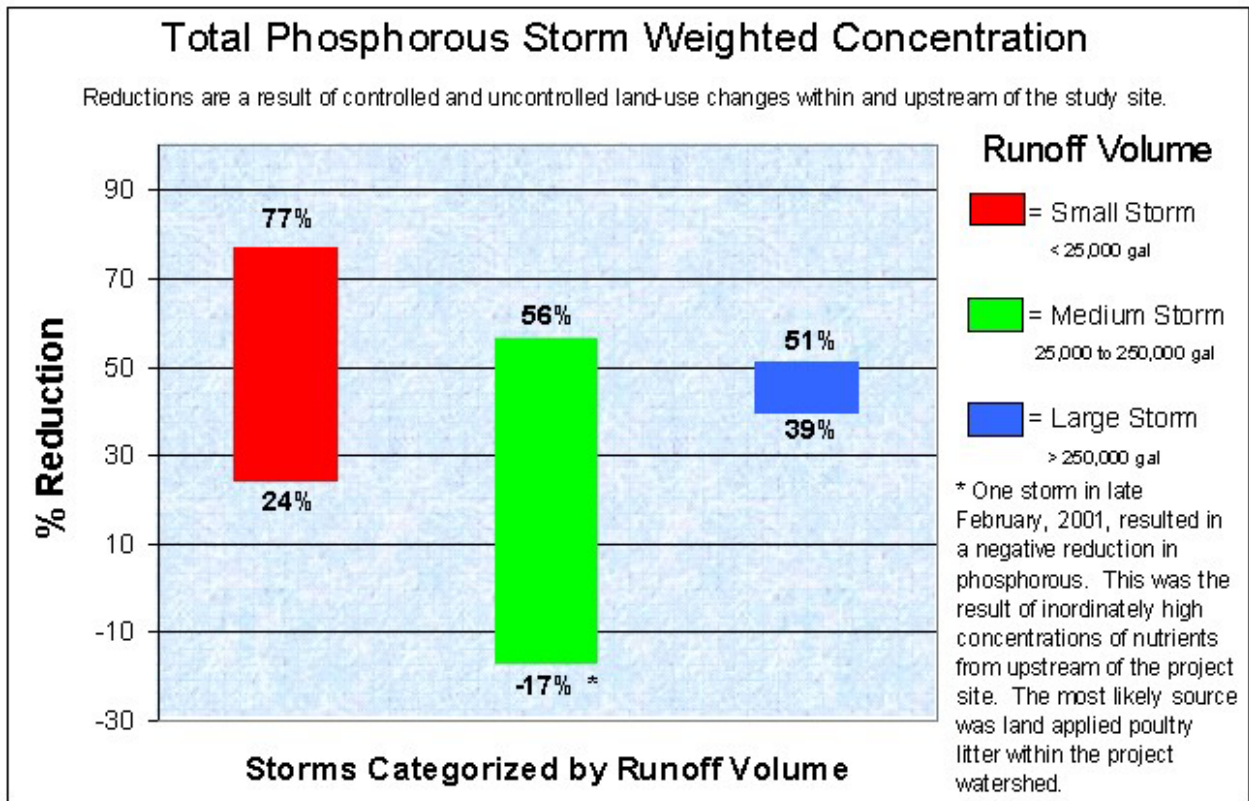


Figure 8. Concentrations of Total Phosphorus

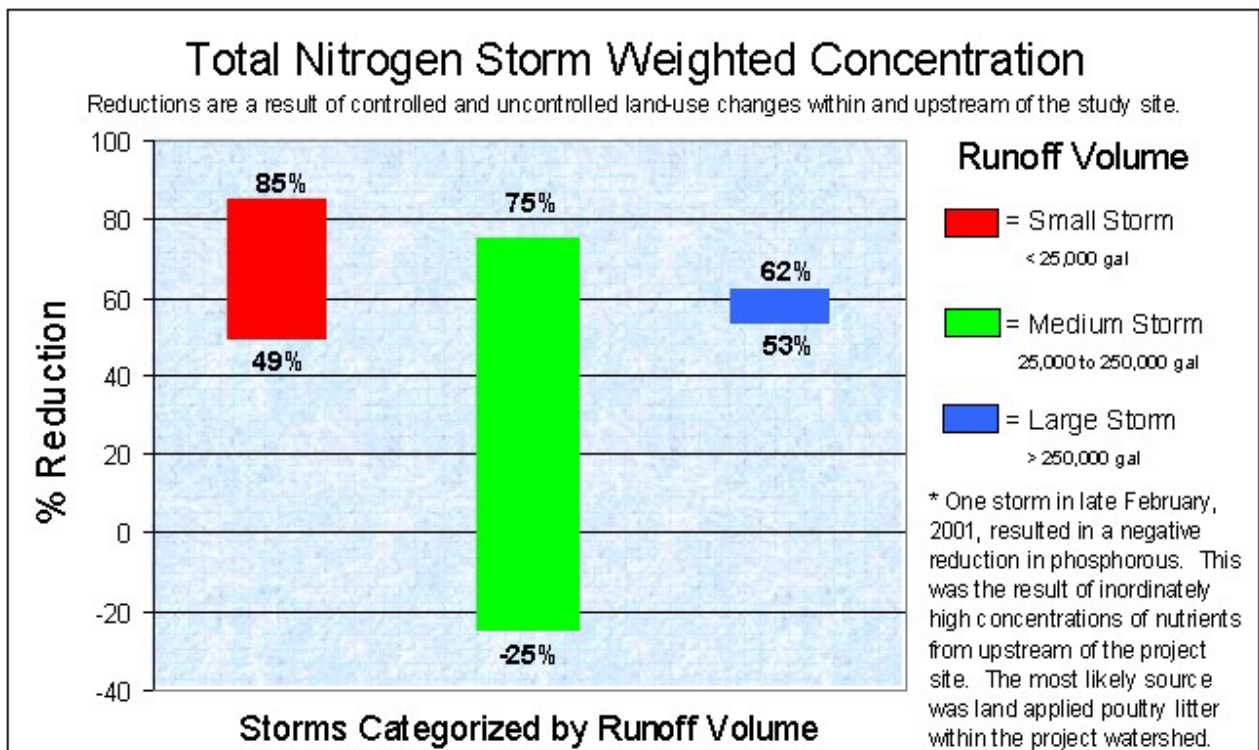


Figure 9. Concentrations of Total Nitrogen

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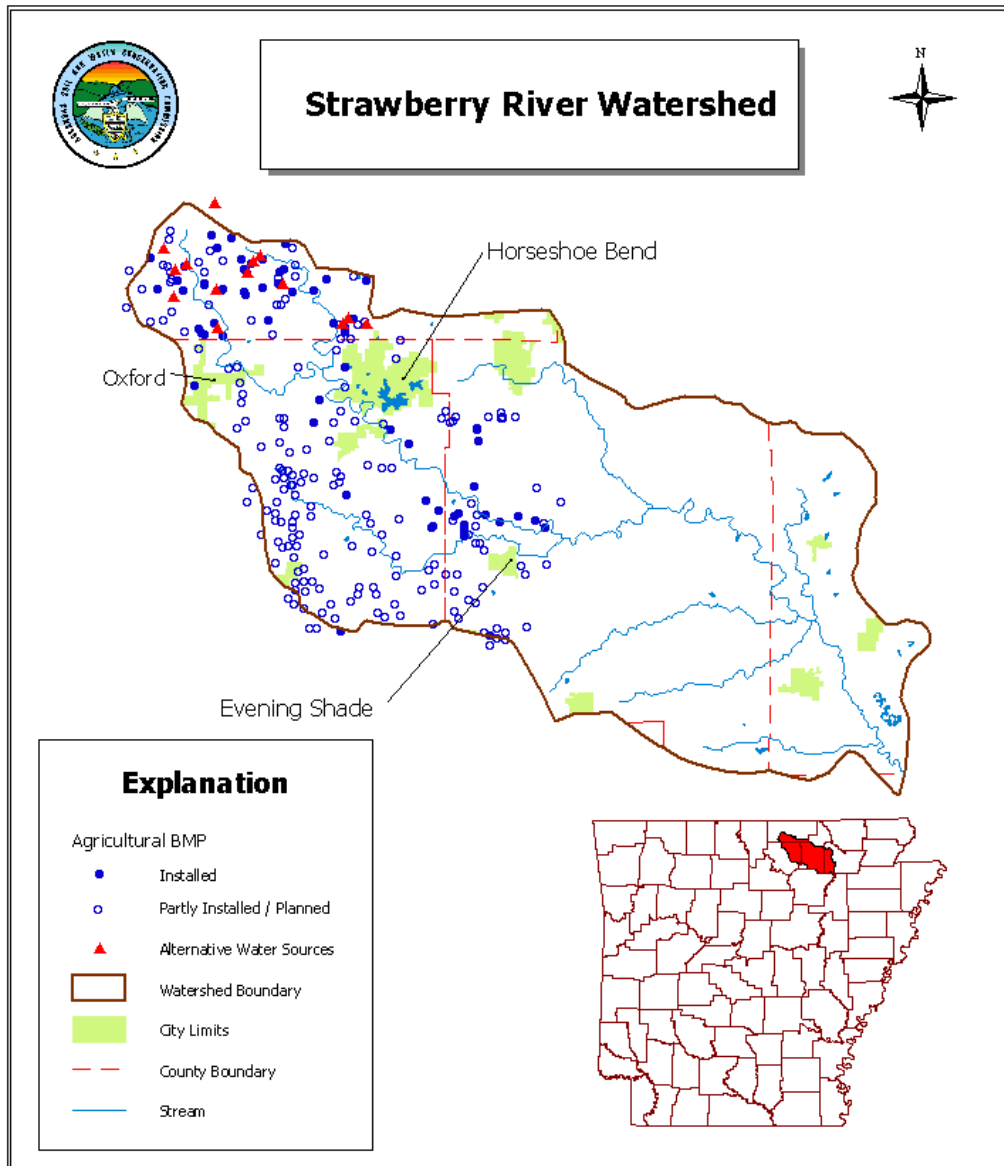


Figure 10. Strawberry River Watershed

Summary of Water Quality in the Strawberry Watershed:

The Strawberry River, a tributary of the Black River, is located in the Ozark Highland Ecoregion in north central Arkansas. The headwaters arise near the town of Salem in Fulton County. The river flows southeasterly through Izard, Sharp and Lawrence Counties before it enters the Black River near Strawberry, Arkansas. The Strawberry River watershed supports a

variety of land uses. The watershed offers year-round recreational activities that include hunting, fishing, hiking and camping, but canoeing, primary, and secondary contact pursuits are the most dominant recreational uses. Commercial activities in the watershed include confined animal operations, pastureland for livestock, and silviculture.

Designated uses of the Strawberry River include *Outstanding Resource Waters*:

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- Extraordinary Resource Stream
- Natural and Scenic Waterway
- Ecologically Sensitive Water body
- Ozark Highlands Ecoregion Fishery

Specific Uses that support:

- Aquatic life
- Swimming (Primary contact)
- Wading (Secondary contact)
- Public, industrial, agricultural water supplies.

The watershed is also home to several "endangered" and/or "species of special concern" listed by Federal and State agencies and is considered to host one of the most diverse collections of aquatic species in the State.

The ADEQ has identified 40.4 miles of stream as not supporting the aquatic life use (Perennial or Seasonal Ozark Highlands Fishery) and 20.4 of these miles as also not supporting swimming (primary contact recreation). That is 19% of the stream miles do not support all designated uses.

The major cause of the non-support is sediment and pathogens are a minor cause of non-support. Agriculture is identified by the ADEQ as the likely source of the sediment and pathogens¹. Large portions of the streams in the watershed are not monitored.

Land use in the water is approximately 43% agriculture, 53% forest, 3% urban, 1% mining/other.

Watershed Assessment:

During 2000, the Fulton County Conservation District conducted an inventory of likely non-point sources in the Strawberry River watershed². Pastures, Stream banks, and Roads were assessed. Results of the pasture assessment indicate some overall improvement but 31% of pastureland in the watershed was in poor condition, with only 2% in excellent condition. Pastures in poor

quality are responsible for approximately 65% of all pastureland erosion. Significant improvement could still be made in reducing erosion and sedimentation from pastureland. The stream bank inventory conducted in 2000 identified 44,795 feet of eroding stream bank which could account for up to 25,000 to 50,000 tons of sediment per year. The roadways inventory identified 6.9 miles of roadway as having severe erosion, 99 miles with moderate erosion, 466.4 miles with slight erosion and 212.8 with little or no erosion.

Nonpoint Source Pollution Management Issues:

Agriculture:

The ASWCC, Nonpoint Source Section 319 selected projects in FY 98, FY 00, and FY 01, to address pasture management issues that were previously identified as the major source of sediment in the watershed. These projects address Category 10 "Agriculture", Goal "A" of the Nonpoint Source Management Plan. Restore designated uses in streams where sedimentation from Pasture Management is causing impairment and "D" restore designated uses in streams where pathogens from Confined Animal Management are identified as causing impairment.

Projects 01-800 and 00-600 directly address sediment runoff from pastures in poor condition by designing pasture improvement plans and implementing agricultural BMPs. During 2002, the three counties applied 296 BMPs, completed 65 plans, totaling 10,988 acres, and used no-till drills on 748 acres in Reach I. Sharp County reported 108 requested pasture plans and 566 BMPs were planned on 13,374 acres.

Project 98-1600 reported all demonstration projects completed and are being maintained in excellent condition. Informative newsletters have been sent to all landowners with more than 20 acres. Total soil savings in Reach I when all plans are completed would be approximately 388,417 tons from 28,000 acres. In Reach II estimated soil saved was calculated at

¹ Water Quality Inventory Report, Arkansas Department of Environmental Quality, 2000.

² Strawberry River Inventory Report, Fulton County Conservation District, 2001.

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46,317 tons from 13,337 acres. BMP's for pastureland normally include prescribed grazing, nutrient management, pest management, fencing, ponds, trough tanks, pipes, spring development pasture and hay land planting.

Silviculture

Project 98-1500 is to make available to small landowners private consultants to develop management plans from timber harvest.

Stream bank Erosion:

Project 01-1900 was designed to demonstrate alternative methods for watering livestock in order to protect stream banks. Demonstration models have been set up on three farms where ranchers can view each of the 3 types of watering models. 31 plans have been completed on 7,459 acres of riparian buffer, excluding 162,973 feet of stream bank from livestock degradation.

Monitoring

Project 00 -1200 has been collecting data on the chemical, physical, and biological attributes of the river and its tributaries. Data collection is complete and a report should be available next year.

County Roads and Ditches:

Project 01-2100 addresses sediment runoff from roads and ditches. A Hydromulcher has been purchased and two demonstration sites selected for training on the machine. A 1 ton truck has been purchased to be used with the hydromulcher. Before and after photos have been taken at each demonstration site and site restoration plans are being implemented.

Watershed Accomplishments:

- Pasture Improvement Plans have been implemented on 66 farms in Fulton, Sharp, and Izard Counties.
- Plans implemented effect approximately 12,034 acres of the watershed, resulting in estimated soil savings of 152,424 tons.
- Another 195 farms are developing plans for 32,543 acres will keep an estimated 302,409 tons of soil from reaching the River.
- 300,000 feet of stream bank have been protected from livestock through the use of alternative watering methods. With an average of 15 feet on each side of the stream.

Big Piney Creek Watershed 2002 Annual Nonpoint Source Pollution Management Report

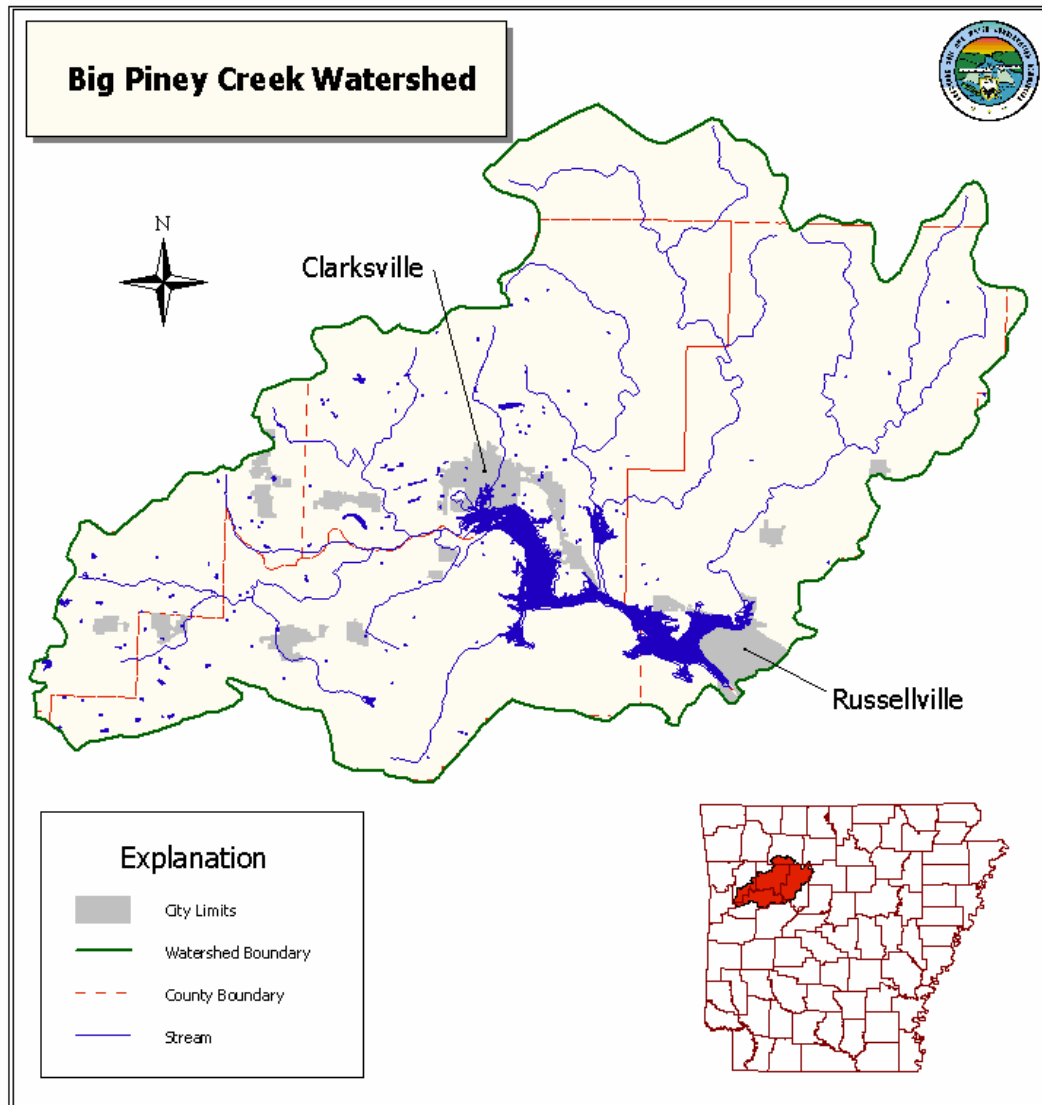


Figure 11. Big Piney Creek Watershed

Summary of Water Quality in the Piney Creek Watershed

In January of 1999, the Arkansas Department of Environmental Quality (ADEQ) completed an eighteen-month assessment of water quality in Piney Creek Watershed. As a result of this work, it was determined that the Piney Creek Watershed is currently meeting all of their designated uses and are fully supporting the specified aquatic life uses throughout the watersheds. However, there were some areas of concern noted including:

- Occasional high turbidity
- Low dissolved oxygen concentrations at some sampling sites
- Elevated sulfate and TDS concentrations in Home and Curtis creeks
- Slightly elevated nutrient concentrations
- Elevated fecal coliform bacteria in the lower portion of the watershed
- Eroding streambanks

Big Piney Creek Watershed 2002 Annual Nonpoint Source Pollution Management Report

Nonpoint Source Pollution Management Issues

Potential sources of nonpoint source pollution in the Big Piney Creek Watershed are:

- Agriculture
 1. Confined Animal Operations
 2. Pasture Management
- Unpaved rural and forest access roads
- On-site wastewater disposal
- Eroding streambanks
- Degraded riparian zones

Summary of Management Activities

ASWCC Watershed Plan Development: A watershed action strategy plan has been developed to address water quality concerns identified in ADEQ's 1999 assessment. The plan suggests conservation practices for each finding. A water quality technician has been procured to determine the quantity of each conservation practice needed to fully address the water quality concerns. A summary of projects currently being implemented in the Piney Creek Watershed are given below.

Agriculture:

ASWCC Water Quality Technician Program: Johnson, Pope, and Newton County Conservation Districts all have employed water quality technicians. These technicians work with local livestock and poultry producers to produce waste management plans for their farms. At the end of June 2001, waste management plans had been produced for 95% of producers in Johnson County and 100% of those in Pope County. Livestock producers in the Newton County portion of the watershed are mostly hog producers and required to be permitted by the NPDES program at ADEQ. However, thirteen plans have been produced for growers in Newton County.

Section 319(h) FY 99, Project 600 (Demonstration of Pasture Renovation): ADEQ is demonstrating the use of a pasture renovator to reduce runoff of phosphorus

and nitrogen from fields fertilized with animal manure by collecting edge of field water quality data. The University of Arkansas is cooperating on the project to demonstrate the efficacy of pasture renovation at the plot level. ADEQ is demonstrating the use of a pasture renovator to reduce runoff of phosphorus and nitrogen from fields fertilized with animal manure. The project provides a pasture renovator to the local conservation district and cost sharing assistance to farmers in the watershed wishing to try the practice. The project is approximately 50% complete.

Section 319(h) FY 01, Project 2200 The Johnson, Newton, and Pope counties Roadside Erosion Project: The Johnson County Conservation District is spearheading this project. The conservation district is utilizing composted chicken litter in combination with a hydro-mulching process to promote vegetation growth on unprotected roadsides throughout the Big Piney Creek Watershed. The Johnson, Newton, and Pope county governments are participating along with the conservation district and the US Forest Service (the Ozark National Forest contains a large portion of the watershed).

Streambank Erosion:

Section 319(h), FY 99, Project 800 (Demonstration of Streambank Restoration): The ASWCC worked with Dr. Robert Newberry, to demonstrate non-structural streambank stabilization practices in Piney Creek. A site, 1000 ft long, roughly ¼ mile upstream from the Hwy 164 bridge has been completed as a demonstration. This site is visible from the highway and readily accessible for tours and field days. In addition to the demonstration, the ASWCC and Dr. Newberry have conducted training workshops for conservation personnel in the design of streambank stabilization projects.

Big Piney Creek Watershed 2002 Annual Nonpoint Source Pollution Management Report



Figure 12. Example of Streambank Erosion

Streambank erosion is a major source of sedimentation in the Big Piney Creek. In many instances, non-structural stabilization practices coupled with riparian zone re-establishment will both reduce sedimentation, and prevent loss of productive pasture.

Silviculture:

Ozark National Forest: Forestlands within the Ozark National Forest are managed in accordance with the "Land and Resource

Management Plan" for the Ozark-St Francis National Forest. This plan requires forest harvests to utilize best management practices and puts a special emphasis on streamside management zones. According to the Arkansas Forestry Commission survey conducted in 1999, the BMP Compliance Rating for forest harvests in federally controlled lands is 96%.

Water Quality Trends

There are no current studies that indicate trends in water quality in the Piney Creek Watershed over time. The watershed assessment conducted by the ADEQ in 1999 serves as the base line for water quality comparison. All designated uses of the waters in the watershed are currently being met. With continued voluntary implementation of conservation practices by landowners and users in the watershed, we can expect that uses will be maintained in the future.

**Cadron Creek Watershed
2002 Annual Nonpoint Source Pollution Management Report**

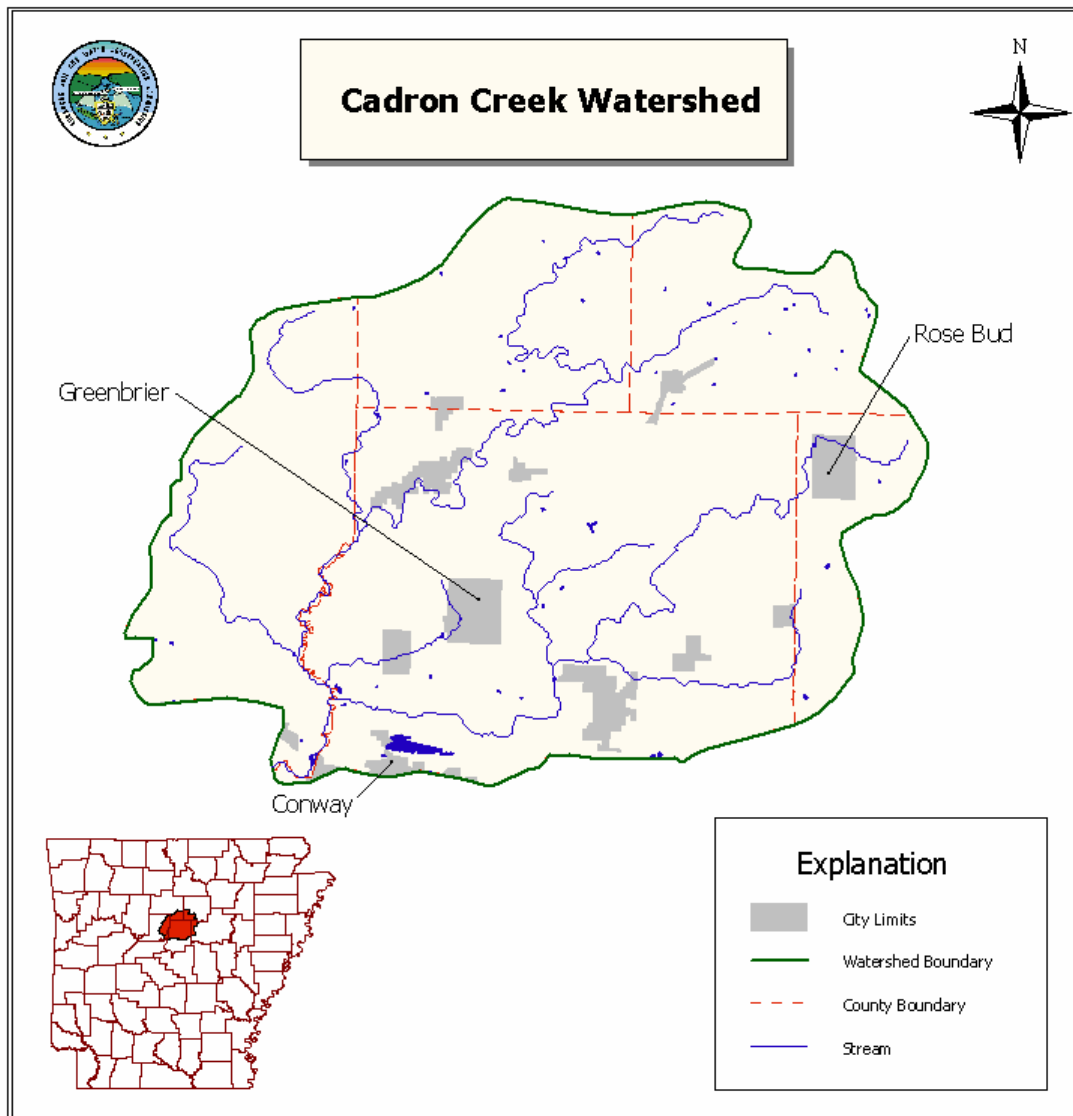


Figure 13. Cadron Creek Watershed

**Summary of Water Quality in the
Cadron Creek Watershed**

All waters within this segment are designated for propagation of fish and wildlife, primary and secondary contact recreation, domestic, agricultural and industrial water supplies. All waters assessed in this watershed are supporting all designated uses. (2002 Water Quality Inventory Report)

Even though the Water Quality Inventory Report indicates support for all uses in the watershed, the Five-County Cooperative River Basin Study indicates that there is concern for water quality in the basin. Especially noted in the report were concerns over elevated nutrients, bacterial contamination, and sedimentation of area lakes and streams. The River Basin Study was an effort of the NRCS, with cooperation from the Resource Conservation and

Cadron Creek Watershed 2002 Annual Nonpoint Source Pollution Management Report

Development Council, City of Plumerville, AR
Department of Health, Conway Corp.,
Arkansas Forestry Commission, the
Conservation Districts, and the ASWCC.

Nonpoint Source Pollution Management Issues

The Five County Cooperative River Basin Study identifies the following NPS issues in the Cadron Creek Watershed:

- Animal Waste Management (or AFOs),
- Erosion and Sediment Control
 1. Roads
 2. Urban areas
 3. Forest and grassland
- Grassland management

Summary of Management Activities

A summary of projects currently being implemented in the Cadron Creek basin is given below.

Animal Feeding Operations (AFOs):

The Cadron Creek watershed contains approximately 100 dairies, over 50 poultry farms and ten swine farms. Swine farms and dairies are subject to Regulation # 5 of the ADEQ that requires permits for all farms producing liquid waste. Small dairies (<100 cows) may be exempted from the Reg. #5 permit if they have implemented a dry stack waste management system in accordance with NRCS standards.

The following projects are in place in the Cadron Creek Watershed to assist with management of AFOs:

ASWCC Water Quality Technician Program:
The Conway, Cleburne, White, and Van Buren County Conservation Districts have employed Water Quality Technicians (WQT) since the early 1990s. The purpose of these technicians is to prepare custom manure management plans for poultry and dairy farms. During 2002, the WQTs prepared 37 plans.

ADEQ's Liquid Waste Permitting Program:
There are 46 liquid waste permits issued in the Cadron Creek watershed. Each permitted farm is required to utilize a waste

management system designed and constructed to NRCS technical standards. The ADEQ inspects approximately one-third of these farms per year.

USDA EQIP Priority Area: The Cadron Creek priority area was funded at \$150,000 in 1998, \$84,000 in 1999. In 2001, Cadron Creek/Point Remove Creek Watershed received \$94,739. In 2002, all EQIP priority areas were eliminated as funding categories. In 2002, Conway, Faulkner, and Van Buren counties received \$217,115 in EQIP funds of which at least half was in the Cadron Creek Watershed.

Dairy Waste Management Coop Program:

The Van Buren County Conservation District has provided a cooperative waste management service to dairy farmers in the Cadron Creek Watershed for several years. This project was started in 1992 when the district used section 319(h) funds to purchase pond clean out and land application equipment. Cooperating farmers pay a maintenance fee to the district for the clean out service. This allows the farmers to stay in compliance with their liquid waste permit and to utilize nutrients from the animal waste for forage production. The district now operates the clean out project as an ongoing program. During 2001, fourteen pond clean outs totaling more than 3,100,000 gallons of liquid waste were performed on farms in the watershed.

Watershed Assessment:

The Conway County Conservation District is conducting a watershed assessment of Cadron Creek. The assessment is being conducted on septic tanks (100% complete), county roads (65% complete), streambank erosion occurring along third order and higher streams (0% complete), and pasture conditions (0% complete). The project has not been completed due to personnel changes in the conservation district.

Cadron Creek is one of seven top priority watersheds in the Unified Assessment because of the presence of one USDA EQIP

**Cadron Creek Watershed
2002 Annual Nonpoint Source Pollution Management Report**

project, one drinking water supply serving a population of about 50,000, and one state extraordinary water resource within the watershed.

**Poteau River Watershed
2002 Annual Nonpoint Source Pollution Management Report**

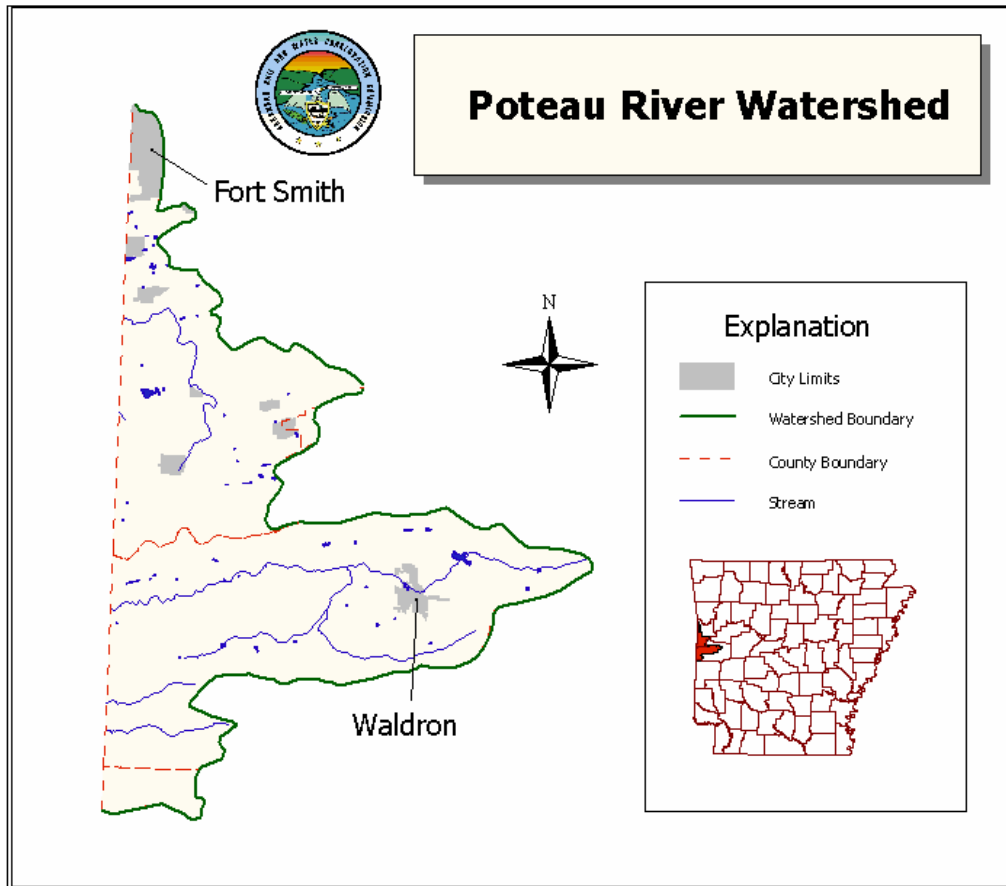


Figure 14. Poteau River Watershed

Summary of Water Quality in the Poteau River Watershed

The waters within the Poteau River Watershed have been designated by the Arkansas Department of Environmental Quality (ADEQ) as suitable for the propagation of fish/wildlife, primary and secondary contact recreation, and public, industrial, and agricultural water supplies. A short section of the Poteau River below Waldron is listed as not supporting aquatic life due to elevated metals and nutrients. The remainder of the Poteau River below Waldron has elevated nutrients and suspended sediments, which is a concern for aquatic life support. (Water Quality Inventory Report, 2002)

The State of Oklahoma is very concerned about the quality of water in Lake Wister that receives water from the Poteau River. They have determined that the lake has been eutrophic and excessively turbid since the early 1970's. Their study (Wister Lake Watershed Project Annual Report FY 93) indicates 26% of the phosphorus loading to Lake Wister is coming from the Poteau River.

Nonpoint Source Pollution Management Issues

According to the ADEQ's 1998 Water Quality Inventory Report, the sources of nutrients and suspended sediments in the Poteau River are agriculture activities and municipal

**Poteau River Watershed
2002 Annual Nonpoint Source Pollution Management Report**

and industrial discharge. The only other significant land use in the watershed is for silviculture. Much of the watershed in Arkansas is within the boundaries of the Ouachita National Forest.

Summary of Management Activities

Agriculture:

EQIP. The Poteau River has been an EQIP priority area since initiation of the EQIP program. In 2000, the area was funded at \$139,586. In 2001, the funding was reduced to \$66,864. In 2002, all EQIP priority areas were eliminated as funding categories. Scott County received \$74,644 in EQIP funds.

ASWCC Water Quality Technician Program: The water quality technician from Sebastian County provides technical assistance to poultry farmers in the Poteau River Watershed. In 2002, 23 plans were prepared.

Poteau River Agricultural Watershed Project: The Poteau River Conservation District

received a FFY 319 grant to provide technical and cost share assistance to the watershed land users.

Poultry Water Quality Training Program: Roughly two-thirds of all poultry growers in the Poteau River Watershed in Arkansas have attended voluntary training on water quality issues. This training was presented as a cooperative effort of the ASWCC, CES, NRCS, Poteau River Conservation District, Scott County Cooperative Extension Service, and the poultry industry.

Silviculture:

Arkansas Forestry Commission: The AFC conducts BMP training sessions and compliance surveys on forest harvests on private and industrial lands in Arkansas.

Watershed Restoration Action Strategy. The Poteau River Conservation District has prepared the equivalent of a draft WRAS for agriculture for the watershed.

**Lower Little River Watershed
2002 Annual Nonpoint Source Pollution Management Report**

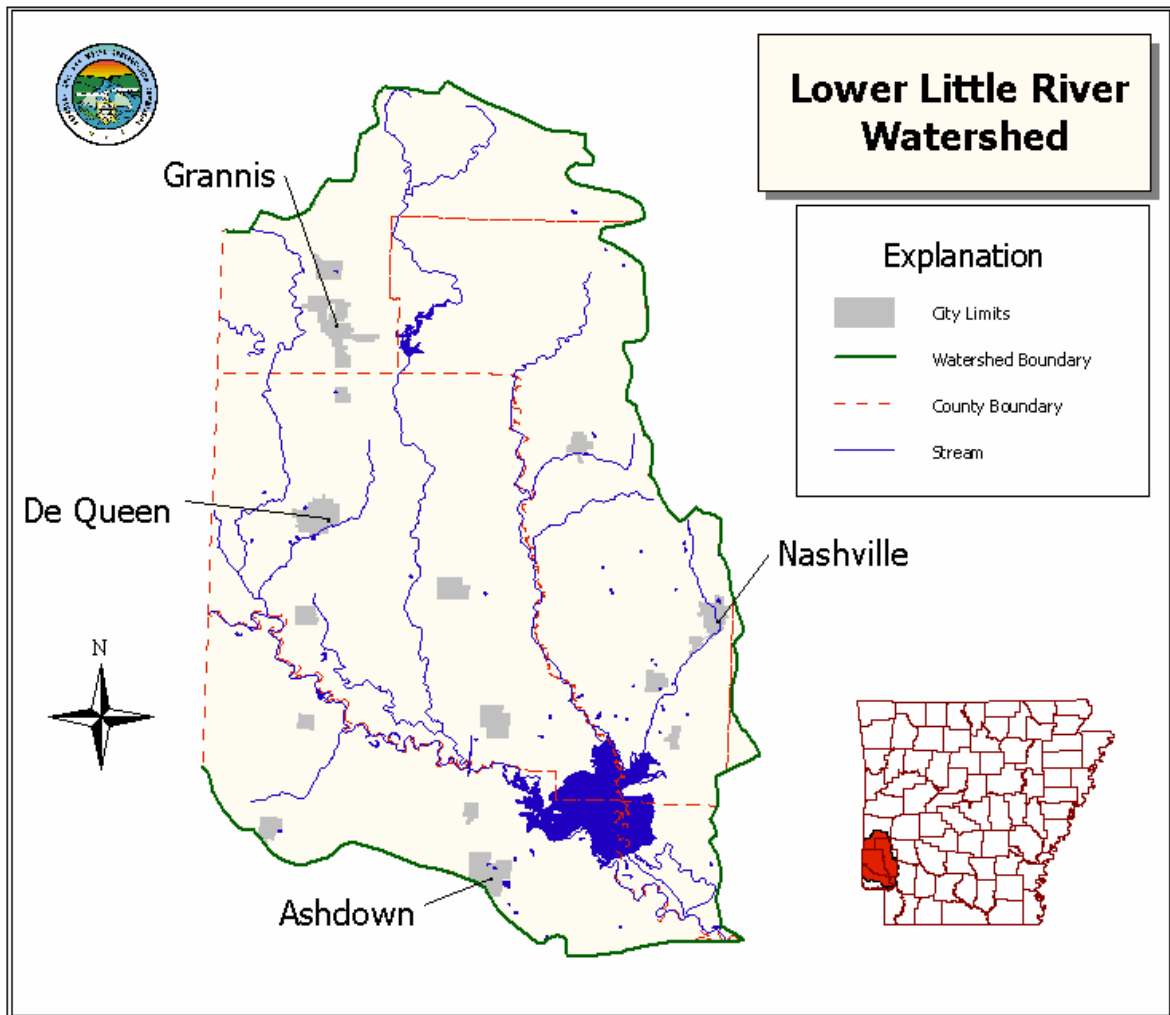


Figure 15. Lower Little River Watershed

Summary of Water Quality in the Lower Little River Watershed

The waters within the Little River Watershed have been designated by the Arkansas Department of Environmental Quality (ADEQ) as suitable for the propagation of fish/wildlife, primary and secondary contact recreation, and public, industrial and agricultural water supplies. Overall water quality is fair in the basin with the exception of several long-term problem areas.

Several stream segments in the basin display degradation that is the result of agricultural nonpoint pollution. The Rolling Fork River above DeQueen Reservoir has periodically elevated nutrient concentrations that are causing concern for the aquatic life uses. This may be due to point source contributions. (Water Quality Inventory Report, 2002)

**Lower Little River Watershed
2002 Annual Nonpoint Source Pollution Management Report**

**Nonpoint Source Pollution
Management Issues**

Several studies have been completed concerning the waters tributary to the Millwood Reservoir on the Little River. These studies include the ADEQ's biennial Water Quality Inventory Report and the Nonpoint Source Assessment Report, the NRCS' Little River Basin Study and a Clean Lakes Study completed by FTN Ltd. for the ADEQ. The following were identified in one or more of these reports as potential sources of contamination to the reservoir.

Table 4. Potential Sources of Contamination in the Millwood Reservoir

Agriculture	Roads and Ditches
Forestry	Construction
Mining	Degraded Riparian Zones

Agriculture issues are related to Animal Feeding Operations (primarily swine and poultry) and pasture management. This area has the highest concentration of swine farms of the entire state.

Summary of Management Activities

Agriculture:

EQIP. The Little River has been an EQIP Priority area since initiation of the EQIP program. In 1998, the area was funded at \$250,000. In 1999, because of reduced funding on the federal level, that amount was lowered to \$140,000. In 2000, the area was funded at \$254,002. In 2001 the funding was \$171,000. In 2002, all EQIP Priority areas were eliminated as funding categories. Howard, Little River, Polk, and Sevier counties received \$391,112 in EQIP funds.

ASWCC Water Quality Technician Program. The water quality technicians are employed in Cossatot, Mine Creek, and Rich Mountain Conservation Districts. These technicians have provided technical assistance to poultry farmers in the Little River watershed for several years. Approximately one-half to two-thirds of the farmers in the watershed were voluntarily using conservation district prepared waste management plans. In 2002

the water quality technicians prepared 82 plans.

Poultry Water Quality Training Program. Approximately 500 of the poultry growers in the Little River Watershed in Arkansas have attended voluntary training on water quality issues related to poultry production. The lead for this training was by CES and was presented as a cooperative effort of the ASWCC, CES, NRCS, the conservation districts, local Cooperative Extension Service offices, and the poultry industry.

Public Water Quality Education for Lower Little Watershed: The CES has a grant to create public awareness of water quality problems, to deliver education, to promote locally-led conservation efforts, to provide 4-H and youth education through school programs, and to hold an Annual Watershed Festival/Meeting.

Liquid Animal Waste Management Training. In Arkansas, all producers of liquid animal wastes (mostly swine farmers) are required to attend annual training in waste management for water quality. The Cooperative Extension Service conducts this program with cooperation for the NRCS, ASWCC, ADEQ, and the livestock industry

Silviculture:

Arkansas Forestry Commission: The AFC conducts BMP training sessions and compliance surveys on forest harvests on private and industrial lands in Arkansas.

Watershed Restoration Action Strategy. The six Arkansas Conservation Districts have formed the Lower Little River Watershed Coalition to advance the cause of conserving the natural resources of the Lower Little River and Millwood Lake. These six districts have received funding to develop a complete WRAS for the watershed.

Originally NRCS had been contracted to provide coordination, but demands on NRCS prevented adequate coordination from being available. Cossatot Conservation District hired a coordinator/watershed keeper to

**Lower Little River Watershed
2002 Annual Nonpoint Source Pollution Management Report**

provide the necessary coordination and leadership.

**Smackover Creek and Ouachita River Watershed
2002 Annual Nonpoint Source Pollution Management Report**

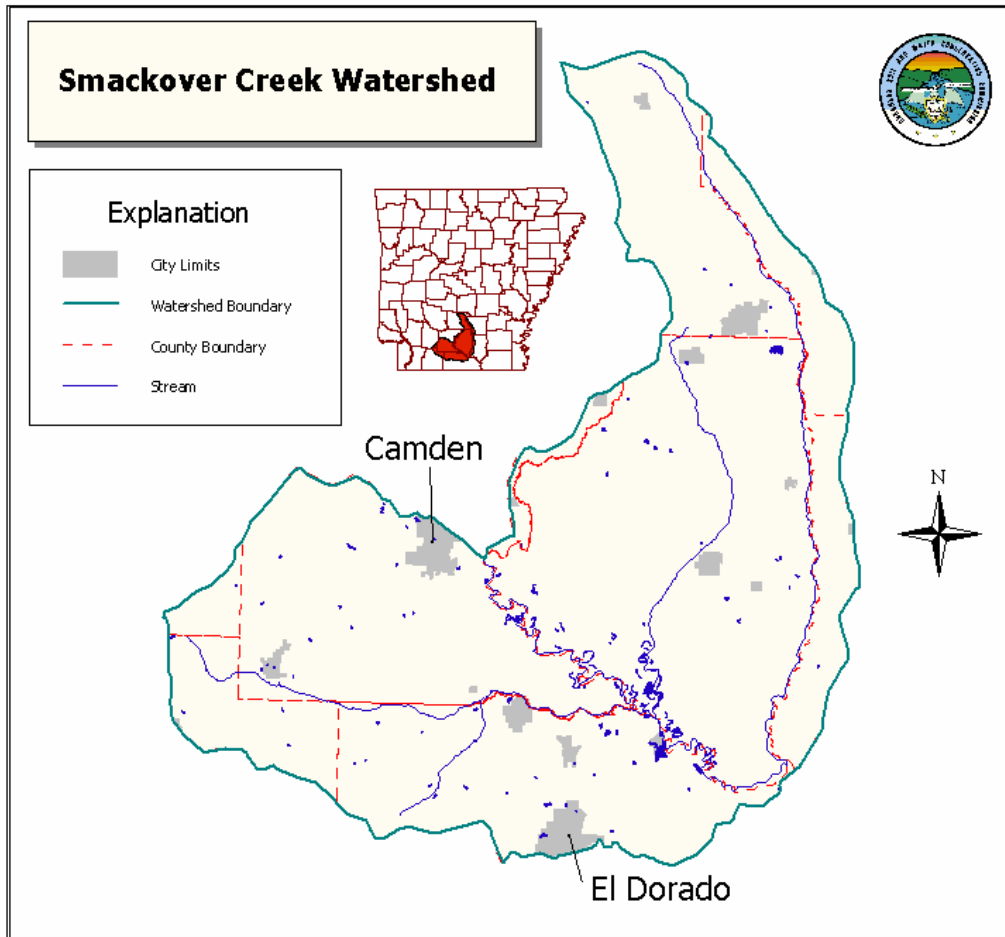


Figure 16. Smackover Creek Watershed

Summary of Water Quality in the Smackover Creek and Ouachita River Watershed

The waters within the Smackover Creek Watershed have been designated by the Arkansas Department of Environmental Quality (ADEQ) as suitable for the propagation of fish/wildlife, primary and secondary contact recreation, and public, industrial, and agricultural water supplies. Smackover Creek still displays the same problems now that it has for several decades. However, there has been significant improvement over the last five to ten years in the level of chlorides and total dissolved solids in the stream. The oil, brine

and bromine extraction industry has contributed point and nonpoint source contamination to waters in this stream for many years. (Water Quality Inventory Report, 2002)

Nonpoint Source Pollution Management Issues

The primary nonpoint source issue in the Smackover Creek Watershed is the thousands of acres of land devoid of vegetation because of past oilfield discharge of brine water and liquid oil. Soil erosion is a problem with as much as 4.2-tons/acre lost per year. Soil particles, salts, and other contaminants are discharged into

Smackover Creek and Ouachita River Watershed 2002 Annual Nonpoint Source Pollution Management Report

Smackover Creek and transported downstream.

Summary of Management Activities

Carlisle Salt Affected Soils Project (CARSAS): The CARSAS project is a long-term project being conducted under the leadership of the Union County Conservation District. This project proposes to utilize innovative soil remediation technologies such as constructed salt and brackish water wetlands, commercial aquaculture, improved forestation, development of park and recreational land and waters, demonstration of emerging remediation technologies such as new mulches, chicken and cattle manure and chemical amendments. In addition to facilitating surface remediation while protecting surface and subsurface water, project goals include attracting new industry into Union County. Another primary goal is to demonstrate that well-conceived multi-party environmental action can provide substantial economic and social benefits for local citizens affected with environmentally damaged surroundings.

FY 98-Project 1000 and 01-2300 (Smackover Creek Watershed Restoration Demonstration): This project was to demonstrate the use of salt tolerant vegetation as a Best Management Practice for remediating salt affected soils in drainage ways. This grant is to extend the effort started under FY 98-1000. It was made by EPA late in FY 01 based on the continued financial support of the Phillips Petroleum Company. A variety of situations have provided difficulties to the project.

These difficulties were made apparent when gauging the damage to plantings of 1999, 2000, and 2001 from summertime drought, wintertime high water and summer rains of up to 10 inches in the relatively small watershed (+/- 2000 acres) containing the planting areas.

The summer flash floods and wintertime (2000-2001) high water played havoc with obtaining enough runoff samples in low lying sampling stations so that the project

remains short of data sufficient to note any water quality trends. Although subjective and incomplete, there are numerous deposition areas downstream of the planted sites with improved grass growth.

There was scant evidence of improvement in the tree planting areas during the latter half of FY 2001. At this time ASWCC has no summary counts of number of trees planted, located on 5 acre sites, or number of trees surviving at the close of FY 01.

Water Quality Trends

There have been no water quality studies in Smackover to determine trends in water quality during the last several years. However, in the 2002 Water Quality Inventory Report, the ADEQ states, "there has been significant improvement over the last five to ten years in the level of chlorides and total dissolved solids in this stream." This improvement is attributed to, "increased reliance on saltwater injunction wells, clean up of the extraction sites; improved storage, such as phasing out open pits; and better maintenance of transmission lines, e.g., repair and replacement of broken and leaking pipelines."

Monitoring efforts have been focused on finding suitable sites for new plantings over time. Once these are successful, other monitoring efforts should provide some measure of water quality change.

Late in the winter of 2000-2001 high water conditions in all planting areas prevented runoff sampling and planting. The high water also had a deleterious effect on plantings of the years 1999 and 2000 such that measurement of success was not possible.

Watershed Accomplishments

Significant accomplishments of the Smackover Creek Watershed Restoration Extension include:

- Quality Assurance Project Plan

**Smackover Creek and Ouachita River Watershed
2002 Annual Nonpoint Source Pollution Management Report**

- Test use of soil amendments for halophyte survival
- Three delineations of planting sites
- 27 bench trials
- Fourteen field demonstrations of soil amendments
- Seventeen demos of automated site preparation techniques and equipment
- One public outreach meeting

**Bayou Bartholomew Watershed
2002 Annual Nonpoint Source Pollution Management Report**

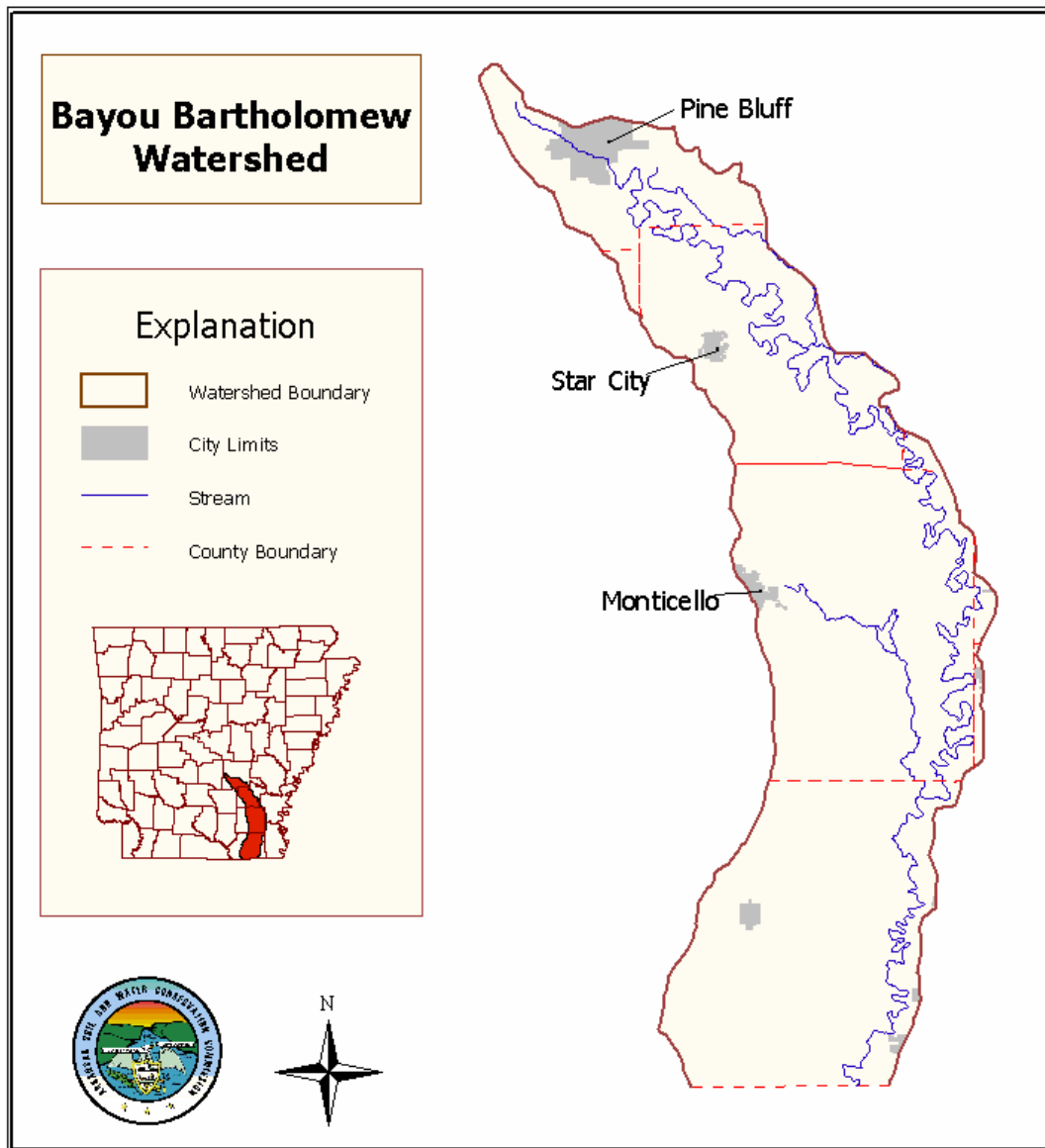


Figure 17. Bayou Bartholomew Watershed

Summary of the Water Quality in the Bayou Bartholomew Watershed

The Bayou Bartholomew Watershed is located in southeastern Arkansas. Portions of the watershed are in Jefferson, Lincoln, Drew, and Ashley counties. Land use in the watershed is diverse with approximately 30% agricultural cropland, 60% forest, 2% urban, and 8% pasture and water.

An assessment completed by the Arkansas Department of Environmental Quality (ADEQ) in 2001 identified six stream segments of the bayou and its tributaries not supporting aquatic life due to heavy silt loading. A draft TMDL was developed for this watershed by FTN addressing turbidity in terms of Total Suspended Solids (TSS). The TMDL states a need for a 34% reduction in TSS during the December through June time frame. This time frame coincides with crop harvest and residuals

Bayou Bartholomew Watershed 2002 Annual Nonpoint Source Pollution Management Report

being "plowed in" and seedbed preparation in the spring. Additionally, denuded riparian areas contribute to silt loading. The Arkansas Soil and Water Conservation Commission (ASWCC) will be utilizing the Soil and Water Assessment Tool (SWAT) to evaluate BMPs that would be the most beneficial and cost effective in specific areas of the watershed.

Nonpoint Source Pollution Management Issues

Agriculture:

The ASWCC, Nonpoint Source Section 319 selected projects in FY 99, FY 00, and FY 02 to address sedimentation within the watershed. The focus of these projects are to address Category 10 "Agriculture", Goal "A" – Restore designated uses in streams where sedimentation from irrigated/non-irrigated row crop production is identified as causing impairment.

Projects 99-400, 00-1300, and 02-1100 have been coordinated by the Bayou Bartholomew Alliance (BBA). The alliance has partnered with the U of A Cooperative Extension Service, Ducks Unlimited, Conservation Districts, as well as many other agencies, concerned citizens and groups to develop, initiate, and complete projects.

Projects 00-1300 and 02-1100 focus on reducing sediment through conservation planning and BMP implementation. Furthermore Project 02-1100 incorporates a conservation riparian easement and establishment component. Project 99-400 was completed in September 2002. The project provided funds for conservation district technicians in two counties. These technicians developed conservation farm plans for 52% of the farms that occur within the watershed that lies in Jefferson and Lincoln counties. Approximately 184 BMPs have been implemented effecting over 31,000 acres. Furthermore, over 750,000 hardwood trees have been planted and an additional 316,100 seedlings will have been planted by the end of winter, which translates to 2,654 acres of land reforested

or approximately four square miles. This is an effort to enhance or re-establish riparian areas, thus reducing erosion on over sixty miles of stream and increase wetlands. In a goal to clean up the bayou, a total of over 114 tons of trash removed from Bayou Bartholomew. Additionally, 36 logjams have been cleared opening up 20 miles of bayou that was not previously accessible by boat.

The 99-400 and the 02-1100 project continues to promote awareness by distributing over 1,000 newsletters to persons/organizations who live or own land along the stream or expressed an interest and have signed up to receive the newsletter. In addition, a web site is maintained and distributes information to those per request. The BBA has developed a great relationship with local newspapers and receives coverage on any of its activities. The BBA always credits EPA, ASWCC and the intended goal to reduce NPS pollution within the watershed through its activities. Project 02-1100 will continue with the development of conservation plans within the watershed. The goal is to have plans on a minimum of 75% of the agricultural lands within the watershed in Jefferson and Lincoln counties. The 02-1100 project also incorporates sampling of fish communities. These data will build on existing data collected from 1992-1994, and 2000-2001. Improvement of fish communities were noted when comparing the 1992-1994 data to the 2000-2001 data set (report available). The most recent data and sampling scheduled are and will continue to be the best indicators that a positive effect of NPS management is occurring within the watershed

Silviculture:

The ASWCC, Nonpoint Source Section 319 selected a project in FY 01 (01-200) to address silvicultural activities that may create sedimentation. This project addresses Category 20 "Silviculture", Goal "A" Item 3 – develop and deliver an information / education program for landowners, loggers, and District Foresters emphasizing BMP planning and

Bayou Bartholomew Watershed 2002 Annual Nonpoint Source Pollution Management Report

implementation for erosion control and sediment management.

The BBA coordinates the project and partnered with the Arkansas Forestry Commission to develop and deliver educational materials through a series of workshops to private landowners with regard to timber harvest management. These workshops give guidance and options to landowners for proper timber harvest and effective BMP implementation. To date, approximately 168 individuals have attended six workshops.

Urban:

The Bayou Bartholomew Alliance has worked with the City of Pine Bluff and recently received a grant from the Arkansas Highway Department to build and develop a nature trail. The trail will wind through 1.8 miles of wetland and riparian habitat along the bayou within city limits and thus prevent the area from being developed thereby protecting the bayou headwaters indefinitely.

Water Quality Trends

The ADEQ has recently published a draft TMDL for turbidity for the Bayou Bartholomew. In the TMDL study, a relationship is presented between sediment and turbidity and the TMDL is stated as a 29 to 37 percentage reduction in sediment. Cropland is identified as the major source of sediment in the watershed. STEPL, a simple spreadsheet based model provided by EPA to evaluate BMPs, was used to estimate the effectiveness of BMPs implemented over the last year. With R and C of the USLE set at 350 and 0.31 respectively, STEPL computes an annual sediment load of 54,147 tons per

year. The other parameters of the USLE were left at the default values of the model. This compares very well to the 54,195 tons per year computed by the SWAT model used in the TMDL study. Data from the Conservation Districts indicates that approximately 11,100 acres in the watershed have been converted to some form of conservation tillage over the last couple years. In addition, 868 acres of riparian buffer have been established. Using the default sediment removal efficiency value of 0.75 for conservation tillage and streambank stabilization, an estimated sediment load reduction of 650 tons per year is made. This is an annual sediment load reduction of 1.2%.

Watershed Accomplishments

- Conservation Plans developed for 52% of the farms in Jefferson and Lincoln counties
- 184 BMPs implemented effecting over 31,000 acres
- Increased wetlands by 8,000 acres
- Over one million hardwood trees planted on over 60 miles of stream
- Over 114 tons of trash removed from the bayou
- Over 1,000 newsletter recipients
- Improvement of fish communities
- Improved media relationships for NPS pollution outreach
- Development of teaching modules.
- Approximately 168 individuals attended BMP and timber harvest workshops
- ADEQ published draft TMDL
- Annual sediment load reduction of 1.2%

L'Anguille River Watershed Annual Nonpoint Source Pollution Management Report

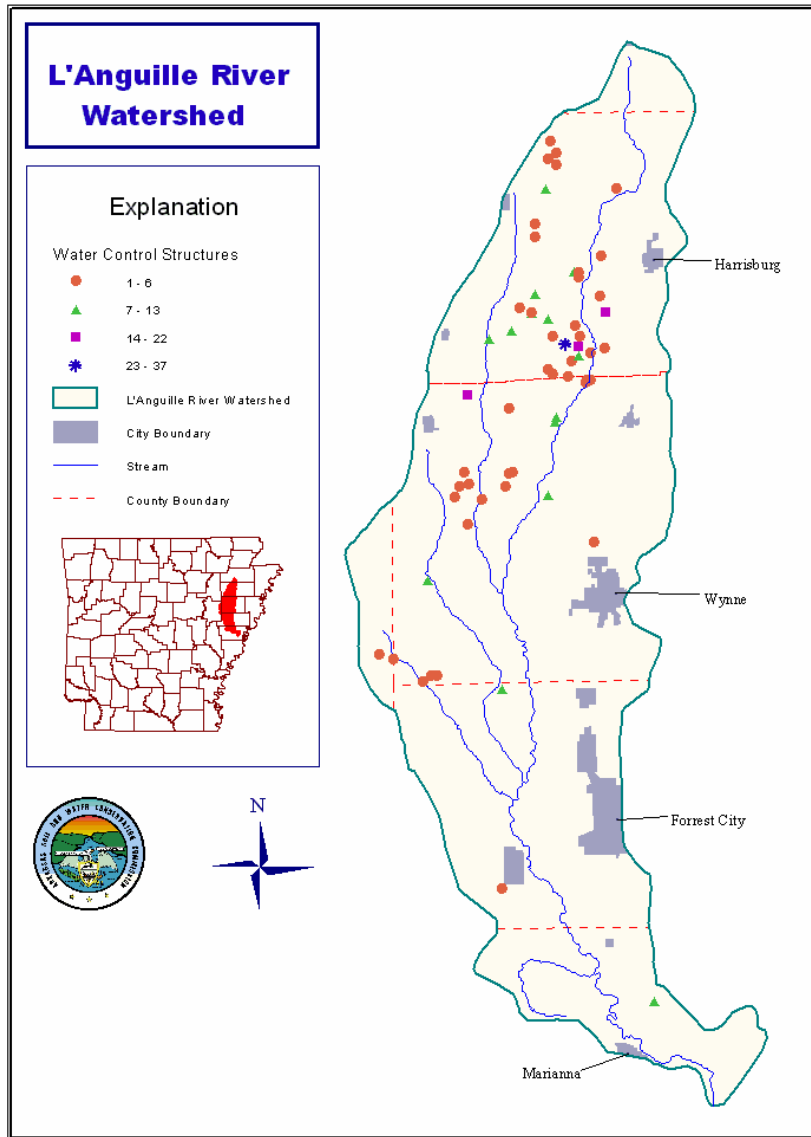


Figure 18. L'Anguille River Watershed

Summary of Water Quality in the L'Anguille Watershed

The L'Anguille watershed is located in northeastern Arkansas. Portions of the watershed are in Craighead, Poinsett, Cross, St. Francis, Woodruff, and Lee counties. Land use in the watershed is predominately agriculture cropland (60%); with rice, soybean, and wheat the major crops grown. Forest covers approximately 22% of the

watershed. Pasture, urban, and water comprises approximately 12% of the watershed.

A TMDL was developed by FTN for this watershed addressing turbidity in terms of Total Suspended Solids (TSS). Two critical times during the calendar year were noted: spring (February through April) and summer (July through October). The drainage of lowland areas by ditching and the

L'Anguille River Watershed Annual Nonpoint Source Pollution Management Report

channelization of streams contribute to high turbidity and silt loads carried into the streams from row crop agriculture activities. The TMDL states that existing NPS loads must be reduced by 40% in the spring and 38% during the summer.

Nonpoint Source Pollution Management Issues

The Arkansas Soil and Water Conservation Commission, Nonpoint Source Section 319, selected projects in FY 01 to address turbidity within the watershed. The focus of the projects is to address Category 10 "Agriculture", Goal "A" - Restore designated uses in streams where sedimentation from irrigated/non-irrigated row crop production is identified as causing impairment.

Projects include 01-400 coordinated by Ducks Unlimited and 01-500 coordinated by the Cross County Conservation District. An additional project 01-950 was initiated in December of 2001 and reallocation of some FY 00 funds allowed the funding of yet another project 00-1500 that began in July of 2002.

Summary of Management Activities

Agriculture:

Projects 00-1500 and 01-950 focus on sediment reduction through the use of No-Till planting. Although No-Till agriculture is not new to the watershed, these projects focus on small farmers that have lands directly adjacent to streams and tributaries of the L'Anguille River. Furthermore these projects target those small farmers that do not qualify for other assistance programs. Although these projects have not been in effect a complete year, 315 small farmers have been identified within the project area, 14 of which have utilized the No-Till drill for planting. Currently 1,791 acres have been planted with the No-Till drill that was

purchased as a part of the project. The acreage planted represents 51% of the goal of the projects.

Projects 01-400 and 01-500 focus on reducing sediment loss from row crop agriculture through the use of water control structures. These structures control the release of water (velocity and volume) from agricultural fields. This controlled release will reduce the TSS loads reaching receiving streams. Project 01-400 will assist with the installation of 375 water control structures on 75 farms. Project 01-500 has \$96,000 allocated for cost share assistance and also incorporates the use of filter strips. To date, 17 landowners have signed cost share agreements that will protect 3,067 acres from sediment loss.

Currently a Watershed Restoration Action Strategy (WRAS) is being developed as part of project 01-500. Once the WRAS is completed, monitoring components will be initiated. In the interim, ASWCC will be developing a Soil and Water Assessment Tool (SWAT) model for the watershed.

Calculated Soil Saved:

To date, 316 water control structures have been put in place effecting approximately 11,088 acres, thus a calculated soil saving of 148,069 tons per year.

Watershed Accomplishments

- WRAS under development
- SWAT model under development
- 17 signed cost share agreements signed protecting 3,067 acres in the watershed
- 14 farmers utilizing No-Till practices on 1,791 acres
- 316 water control structures in place on 11,088 acres
- 148,069 calculated tons of soil saved per year using water control structures

L'Anguille River Watershed Annual Nonpoint Source Pollution Management Report

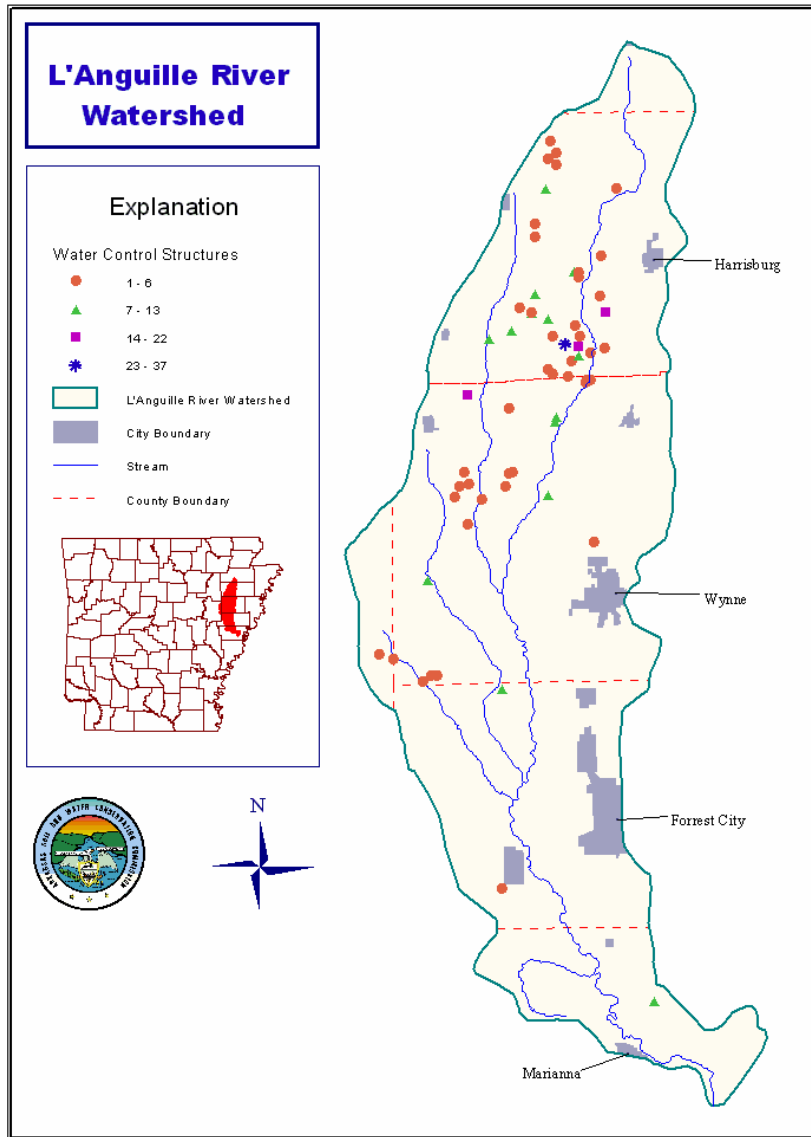


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L'Anguille River Watershed Annual Nonpoint Source Pollution Management Report

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Summary of Management Activities

Agriculture:

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Calculated Soil Saved:

To date, 316 water control structures have been put in place effecting approximately 11,088 acres, thus a calculated soil saving of 148,069 tons per year.

Watershed Accomplishments

- WRAS under development
- SWAT model under development
- 17 signed cost share agreements signed protecting 3,067 acres in the watershed
- 14 farmers utilizing No-Till practices on 1,791 acres
- 316 water control structures in place on 11,088 acres
- 148,069 calculated tons of soil saved per year using water control structures

**Categorical Implementation 10-Agriculture
2002 Annual Nonpoint Source Pollution Management Report**

ROW CROP

Arkansas farmers harvest more than 8 million acres annually. Significant crops include Cotton, Rice, Soybean, Hay, Wheat, Oats, Sorghum, Tomatoes, other field crops, Apples, Peaches, Grapes and Pecans. The total cash receipts for crops harvested in Arkansas are over two billion dollars. Arkansas is the number one producer of rice in the nation, with over 40% of the total produced.

The crop production area includes all or parts of 27 counties in Eastern Arkansas. Within this area, 55% of the streams assessed are identified as impaired. Sediment is generally the major cause of impairment. Pathogens are occasionally identified and nutrients are a minor source in the southern portion of the area.

Pesticides are not routinely found in Arkansas' waters in amounts above the EPA's action limits. However detection of pesticides is found in some wells at low levels.

**Nonpoint Source Pollution Issues
Related to Row Crop Agriculture**

The primary issues related to row crop agriculture in Arkansas are sedimentation and turbidity of streams in Eastern Arkansas causing loss of support of the aquatic life use in some streams and detection of pesticides in some wells in the alluvial aquifer in Eastern Arkansas.

The Goals of the Row Crop Program are:

- Restore designated uses in streams where sediment from irrigated/non-irrigated row crop production is causing impairment.
- Identify the source of pesticide contamination of wells in the Alluvial Aquifer in Eastern Arkansas and develop management measures to address those sources.

Summary of Management Activity

Assessment: Analysis for pesticides in surface water is conducted by the Arkansas Department of Pollution Control and Ecology as a component of their ambient monitoring program. Please see the 2000 Water Quality Inventory Report for a complete description of the sampling program.

Training / Technology Transfer: Using results from the demonstrations described above, the ASWCC and the CES conduct training programs for professional pesticide applicators, well contractors and farmers in proper handling of pesticides. All pesticide applicators in Arkansas are required to attend training and receive certification from the CES prior to application.

Technical Assistance: Technical assistance to row crop farmers is provided by the Natural Resource Conservation Service through their District Operations program.

Technology Transfer: The University of Arkansas Cooperative Extension Service (UA-CES) in partnership with ASWCC and NRCS transfer soil conservation technology directly to producers through county-based extension and Conservation District offices. The mode of delivery includes published materials (fact sheets, information bulletins, news articles, etc.), farm visits, demonstrations, field days, and other extension programming. CES completed project 96-550 which provided farmers and other interested parties a notebook outline of conservation practices and methodologies for farm use.

The UA-CES develops and distributes yearly crop budget estimates for conservation tillage for farm business planning. Fact sheets on the economics of conservation tillage for cotton and soil erosion control practices were published in the past year.

Several research and demonstration activities related to conservation tillage technology including Round-up Ready soybean and cotton demonstrations were conducted statewide. These activities are

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showcased to over 1000 people at field days sponsored by the University of Arkansas Division of Agriculture at their Research and Extension centers in Keiser, Stuttgart, and Rohwer.

An effort has been initiated to establish baseline assessment on the implementation of conservation tillage on a county-by-county basis.

Financial Assistance: Assistance for row crop farmers is mostly provided through USDA programs including the Environmental Quality Incentive Program (EQIP), the Conservation Reserve Program (CRP) and the Wetland Reserve Program (WRP). In some watersheds ASWCC, Title X Agricultural Cost Share funds are available.

EQIP: EQIP Priority Areas were not funded in FY 2002. Statewide nearly \$1,900,000.00 was spent for water quantity BMPs and \$650,000.00 for soil quality. Although a significant increases from 2000 it is not enough to meet all of the financial needs of row crop farmers wishing to implement Conservation Practices to protect water quality.

ASWCC: Title X Agricultural Cost Share Program: The ASWCC is providing financial assistance to Row Crop producers in targeted watersheds (L'Anguille River and Cache River) through its Title X program. Assistance may be provided where a Watershed Restoration Action Strategy identifies the need and prioritizes practices for implementation. To date a total of \$65,359 has been allocated to 31 farms with \$19,909 having been paid. This is detailed in the table below.

Public Awareness: The Cooperative Extension Service now conducts Farm-A-Syst programs across the state. This program is very useful in helping land owners/users to identify potential pollution problems on their operation.

Demonstrations: Demonstrations currently being conducted include: Section 319(h) FY 01-950 *St. Francis County No-till incentive project* (St. Francis County Conservation District).

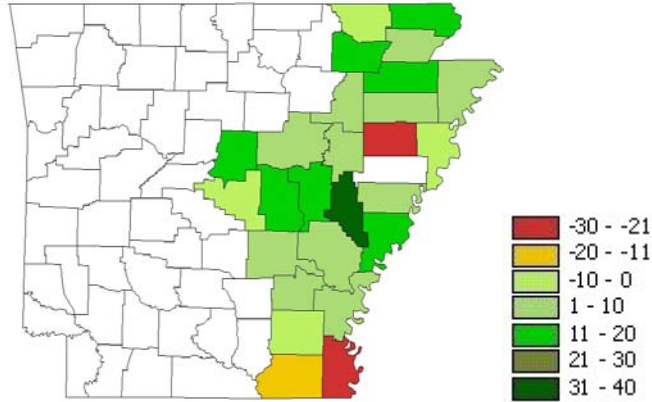
Enforcement: The State Plant Board is responsible for enforcement of pesticide regulations in Arkansas.

Table 5. Summary of ASWCC Title X Agricultural Cost Share Program

Project #	Watershed	\$ Allocated	# Farms	\$ paid
01-500	L'Anguille River	29,900	17	5,475
01-600	Cache River	35,459	14	14,434
	Totals	65,359	31	19,909

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**Conservation Tillage by County
Percent Change, 1989-2001**



**Conservation Tillage by County
Percent Change, 2000**

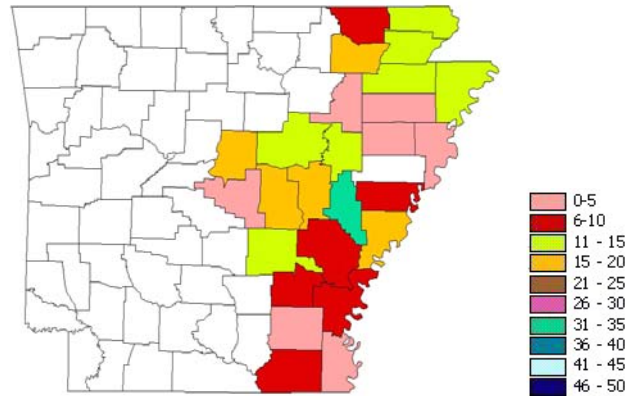


Figure 19. Conservation Tillage

PASTURE

Arkansas has roughly 6 million acres of pasture/hayland. These lands are mostly in the Ozark Highlands and Arkansas River Valley and to a lesser extent in the Boston and Ouachita Mountains and the Gulf Coastal Plain.

**Nonpoint Source Pollution Issues
related to Pasture Management**

The pollutants most often cited as causing water quality impairment under this

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subcategory are bacteria, nutrients, sediment, minerals and other inorganic chemicals. Sedimentation is by far the most common water quality impairment associated with pasture management.

pasture and grazing practices. This has resulted in conservation plans being developed on 142 farms covering 19,872 acres in the Strawberry River. The Spring River has had requests for 13 tracts covering 3,104 acres.

Summary of Management Activity

Training: Annual Grassland Management Schools were conducted in nine locations in Arkansas by the Cooperative Extension Service.

The NRCS has established four grassland or grazing land specialist positions to provide grazing lands technical assistance to grassland owners and managers.

Technical Assistance: Grassland specialists and Water Quality Technicians are now employed in Sharp, Fulton and Izard counties to provide assistance to ranchers in the Strawberry River watershed in improving

Financial Assistance: ASWCC, Title X Agricultural Cost Share Program: The ASWCC is providing financial assistance to land users for related pasture uses in targeted watersheds (Strawberry River; Brewer Lake, and Lower Spring River) through its Title X program. Assistance may be provided where a Watershed Restoration Action Strategy identifies the need and prioritizes practices for implementation. To date a total of \$276,210 has been allocated to 130 farms with \$77,634 having been paid. This detailed in the table below.

Table 6. Summary of ASWCC Title X Pasture Cost Share Program

Project #	Watershed	\$ Allocated	# Farms	\$ Paid
00-600	Strawberry Reach 1	140,208	65	50,886
00-1000	Brewer Lake	24,225	11	11,445
01-1900	Strawberry Alternate Water	66,467	20	2,891
01-2400	Lower Spring River	45,310	34	12,412
	Totals	276,210	130	77,634

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Demonstrations: Demonstrations currently being conducted include:

The Sharp County Conservation District is developing a model farm in the Strawberry River watershed for use in demonstrations of pasture and grazing management practices.

Significant Accomplishments

Over the past two years, the Arkansas Conservation Partnership (ASWCC, NRCS,

CES, University of Arkansas Pine Bluff, Ar. Assoc. of Conservation Districts and Ar. Assoc. of Conservation District Employees) has accomplished the following:

- Provided technical assistance to livestock producers resulting in conservation management systems
- Trained landowners at Arkansas Grazing Management Schools
- Conducted pasture management demonstrations.

CONFINED ANIMAL MANAGEMENT

Confined animal production is a major industry in Arkansas. According to the 2001 Annual Bulletin from the Arkansas Agricultural Statistics Service, Arkansas is second only to Georgia in production of commercial broilers in the United States. Arkansas also ranks high in the nation in production of Turkeys and Catfish. We have significant numbers of Hogs and Dairy Cattle as well.

In Arkansas, livestock producers that production facilities with water (liquid waste management systems) are required to obtain a permit from the Department of Environmental Quality (ADEQ). This permit sets standards for waste management on the farm. Producers that manage their manure in a dry state are encouraged to voluntarily implement conservation practices that protect local waters from contaminated runoff. The confined animal management program is a cooperative effort of the farmers, the livestock industry, ASWCC, NRCS, The Extension Service, ADEQ and local Conservation Districts.

In 2000, the EPA/NRCS Unified Strategy for Animal Feeding Operations set a national goal that all operations implement a Comprehensive Nutrient Management Plan (CNMP) by end of 2000. Arkansas livestock

industry has asked that we meet that goal in five years.

Nonpoint Source Pollution Issues related to Confined Animal Management

The pollutants most often cited as causing water quality impairment under this subcategory are nutrients and bacteria. Nutrient enrichment of streams, particularly phosphorus, is often cited as the cause of accelerated eutrophication of lakes and reservoirs in the State. The ADEQ has listed several streams in Western and Northern Arkansas as "Waters of Concern" because of elevated nutrient loads carried by the waters in those streams.

Management measures to prevent pollution from confined animal facilities include proper manure handling and storage, soil testing, waste utilization, nutrient management, timing of manure land application, filter strips and buffers. In some watersheds, farmers are encouraged to find alternate uses of manure in order to move the material out of the watershed.

Summary of Management Activity

Training: Manure management training is provided to poultry producers in Arkansas

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through a cooperative program of the Cooperative Extension Service, ASWCC, NRCS and the Poultry Integrators. Training includes discussion of the water quality issues related to poultry production, proper manure handling and application techniques and potential alternative uses. ADEQ Liquid Animal Waste Permit holders are required to attend annual training conducted by the Cooperative Extension Service with assistance from the NRCS and the ADEQ.

Technical Assistance: Manure management plans are provided for poultry producers through the local Conservation District. Plans may be prepared by a District "Water Quality Technician", or by the NRCS "District Conservationist", or his staff. There are currently approximately 35 water quality technicians or grassland specialists working in local conservation district offices in targeted areas. Collectively, approximately 80% of agricultural animal operations have comprehensive nutrient management plans. However, with the new standards for Comprehensive Nutrient Management Plans, virtually all of these will have to be updated. The new plans will use the Phosphorus Index to develop application rates and BMPs. During the last year, 840 plans meeting these new standards have been prepared for poultry farmers.

Demonstrations: Demonstrations currently being conducted include:

- Pasture Renovation to Reduce Phosphorus and Nitrogen Runoff from Fields Fertilized with Animal Manure (Section 319(h), FY 99 Project 600) demonstrates use of a pasture aerator to increase infiltration and water holding capacity of pasture thereby reducing runoff and loss of phosphorus in runoff.

Swine Waste Demonstration and Training Project: (Section 319(h) FY 98, Project 900) The U of A is Constructing, as part of their new swine facility, a waste training facility, develops and will implement training programs for swine producers and employees in waste management best management practices

Financial Assistance: ASWCC, Title X Agricultural Cost Share Program: The ASWCC is providing financial assistance to Confined Animal producers and related pasture uses in targeted watersheds (Beaver Lake, Strawberry River Reach 2, Buffalo River and Spavinaw Creek) through its Title X program. Assistance may be provided where a Watershed Restoration Action Strategy identifies the need and prioritizes practices for implementation. To date a total of \$964,106 has been allocated to 280 farms with \$265,863 having been paid. This detailed in the table below.

Table 7. Summary of ASWCC Title X Confined Animal Cost Share Program

Project #	Watershed	\$ Allocated	# Farms	\$ Paid
99-1100	Beaver Lake	459,008	144	199,579
01-800	Strawberry Reach 2	191,996	31	15,990
01-1800	Buffalo River	100,000	42	28,172
01-2000	Spavinaw Creek	213,102	63	22,122
	Totals	964,106	280	265,863

Categorical Implementation 10-Agriculture 2002 Annual Nonpoint Source Pollution Management Report

ASWCC, Clean Water Act SRF Loans: The ASWCC has established a low cost loan program for implementation of agricultural Best Management Practices through its State Revolving Fund. Loans are available in Benton, Carroll, Madison and Washington County.

EQIP Priority Areas were not funded in FY 2002. Statewide over \$4,000,000.00 was spent for water quality BMPs.

Phosphorus Index: A major change in the Comprehensive Nutrient Management Plan from earlier plans is that plans must also manage phosphorus. Arkansas has taken the Phosphorus Index approach. Our Phosphorus Index was developed by a joint effort of the NRCS, ASWCC, CES, University of Arkansas and the ADEQ. The Phosphorus Index is a risk assessment tool. A value is derived from the soil test phosphorus, the available phosphorus in the current application, hydrology of the soils and implemented best management practices. Using this index, a farmer and the water quality technician can evaluate the potential for loss of phosphorus from the farm and potential pollution of local streams. Plans strive for a low to medium risk.

Partnership Development: Arkansas has been participating regularly with the Tri-State Poultry Dialogue. This dialogue is composed of poultry companies from Arkansas, Kansas and Missouri, State and Federal agencies and Universities from those same states. Meetings are held approximately semi-annually to discuss current environmental issues in the area.

Significant Accomplishments

- Trained all liquid animal waste permit holders in waste management and water quality protection techniques.
- Trained 1555 poultry growers in water quality protection.
- Completed 840 poultry manure management plans meeting criteria for Comprehensive Nutrient Management Plans (CNMPs).
- Trained Conservation District Water Quality Technicians, NRCS personnel, and State Agency personnel in development of CNMPs.

Categorical Implementation 20-Silviculture 2002 Annual Nonpoint Source Pollution Management Report

Forests cover 18.4 million acres (55.3%) of the land area in Arkansas. Of this total area, 98% is classified as timberland, land producing a harvestable crop of trees. According to the Forest Survey, conducted by the USFS for 1998 to 1995, roughly 3% of this forestland is harvested annually. Even though it covers such a vast area, silviculture is identified as only a minor source of Nonpoint Source Pollution. Out of 4,112 miles of stream identified in the 1997 Nonpoint Source Assessment as impaired, Silviculture was identified as a minor source of impairment to 218 miles. Clearly, the timber industry is to be commended for their efforts to prevent pollution.

Nonpoint Source Pollution Issues related to Silviculture

Pollutants typically associated with forestry practices are sediment, nutrients, temperature increases, pesticides and pathogens. In Arkansas, sediment is the only pollutant related to forestry that has been significant. Management measures to prevent these pollutants from reaching our streams are: erosion control, protection of stream banks, riparian zones and wetlands, runoff/flow management, prescribed fire management, proper equipment operation and revegetation management. The American Forest and Paper Association has endorsed these management measures through its "Sustainable Forest Initiative". All forest managers, loggers, and timber producers are encouraged to implement Best Management Practices on each harvest site.

The goals of the Silviculture program are:

- By 2002, achieve a biennial statewide compliance rating of 90% or greater of implementation of needed BMPs.
- Establish the effectiveness of the BMPs in protecting waters from sedimentation
- Review and upgrade the NPS Management Program for

Silviculture to more completely achieve the objectives and to recruit a new staff member to manage the expanded Program.

Summary of Management Activity

Assessment: The AFC has completed its second BMP implementation survey. The results are given below¹.

Over all BMP implementation rate is 80%.

BMP Implementation Rate by Region:

Ozarks 77%	Ouachita 77%
Southwest 80%	Delta 85%

BMP Implementation by Category of Ownership:

Non-industrial Forest Landowners 75%
USFS 96%
Industrial 87%
State 82%

Road construction and maintenance and harvesting were the two areas needing the most attention.

Training: Forestry BMP Implementation and Effectiveness Monitoring (Section 319(h), FY 98, Project 1100). The AFC conducted meetings, workshops and demonstrations for landowners, foresters, and/or loggers on BMP planning and implementation.

Technical Assistance: The AFC, through its district offices prepares forest management plans for interested landowners.

Technology Transfer: The AFC has produced the revised Handbook titled "Best Management Practice Guidelines for Silviculture", which is now ready for printing. The Handbook will be distributed to foresters, loggers, and landowners as a technology transfer program.

¹ Eagle, Dennis; Arkansas Voluntary Forestry Best Management Practices, Implementation Report; Arkansas Forestry Commission; 2000

Categorical Implementation 20-Silviculture 2002 Annual Nonpoint Source Pollution Management Report

Financial Assistance: Forest Site Preparation (NRCS Practice 490) and Forest Stand

Demonstrations: Forestry BMP Implementation and Effectiveness Monitoring (Section 319(h), FY 98, Project 1100). The AFC has conducted eight BMP demonstration sites displaying a number of BMPs at each site. These demonstration sites were located to be convenient with BMP training sessions. Practices demonstrated included SMZs, waterbars, wing ditches, stream-crossing techniques, skid trails, and log landing treatments.

Program Upgrade: Silvicultural Best Management Practices for Streamside Management Zones in Arkansas (Section 319(h), FY 99, Project 1000). The AFC fully developed one task for streamside management zones for inclusion in the BMP handbook. This project was completed in the summer of 2002.

Improvements (Practice 666) are eligible for EQIP payments.

Partnership Development: The AFC has a very good working relationship with the American Timber and Paper Association (ATPA) in Arkansas. Programs delivered by the AFC for water quality are most often cooperative efforts with the ATPA

Significant Accomplishments

- 2,313 Foresters, loggers or landowners attended BMP training sessions.
- The AFC District Offices prepared 1,242 Forest Management Plans on 71,196 acres.
- Arkansas Foresters achieved a BMP compliance rating of 80%.

Categorical Implementation 30-Construction 2002 Annual Nonpoint Source Pollution Management Report

Road construction was identified by the 2002 Water Quality Inventory Report as causing major impacts on 33.4 miles stream miles and no minor impacts. Other construction is potentially causing similar impacts through no impact is identified in the report.

Nonpoint Source Pollution Issues related to Construction

The pollutant primarily associated with the road construction/maintenance is sediment. The principle source of this sediment is erosion from disturbed land areas during construction activities.

Summary of Management Activity

The Arkansas Highway and Transportation Department is responsible for implementation of erosion and sediment

control practice on highway construction. Standard for these practices are included in the department's standard specification and manuals. Erosion and sediment control are incorporated into standard bid documents for highway contracts.

Construction sites other than highways and containing more than one acre are regulated by the Arkansas Department of Environmental Quality's General Permit No. ARR10A.

The ASWCC is cooperating with the Civil Engineering Department at the University of Arkansas (Section 319(h) FY 2001, Project 700) to conduct demonstration of construction BMPs, and workshops for Engineers, Contractors and others concerning erosion and sediment control for construction sites.

Categorical Implementation 40-Urban 2002 Annual Nonpoint Source Pollution Management Report

Urban runoff is identified as having no major impact on streams in the state, but as having a minor impact on 13.5 stream miles in Arkansas' 2002 Water Quality Inventory Report 305(b). Storm water runoff from municipalities can cause short-term impairments to receiving streams. Continuous short-term storm events and extensive long-term storm events can cause partial and/or non-support of designated uses by impairing the aquatic life use.

Nonpoint Source Issues related to Urban Runoff

Increased runoff from disturbed land surfaces that carry sediment and suspended solid loads to streams is the greatest threat to designated water uses from urban areas. In addition, petroleum products, solids materials, toxic materials, nutrients and metals may all be produced during construction activities and runoff from parking lots, homesteads, etc., during storm events.

Summary of Management Activity

Public Awareness:

ASWCC has developed a statewide non-point source awareness program that targets the urban population of Arkansas (Section 319(h), FY 00, Project 1000). During the first year, of a three-year project, a tabletop display, adult and children brochures, and a PowerPoint presentation were created. The Mobile Awareness Trailer has setup in every Ecoregion of the state while attending festivals. Presentations at local civic meetings included everything from quorum courts to county C.D. meetings. Direct contact with over 1800 people has been made. Requests to attend festivals beyond 2005 have been received.

- Awareness truck, trailer, and generator purchased and customized
- Adult and children's brochure developed and printed
- Tabletop photo and informational display purchased and designed to represent each of the state's six Ecoregions

- Promotional items purchased and imprinted with NPS message
- 10 PowerPoint presentations given
- 15 festivals or fairs attended
- Direct contact made with over 1800 citizens

The Washington County Cooperative Extension Service has conducted an Urban Nonpoint Source Project in the City of Fayetteville (Section 319(h), FY 00, Project 400). The goal of this project is to create community awareness of urban non-point source pollution potential impacts through public education and demonstration in Fayetteville and document successes for use in other urban communities.

Assessment:

The City of Rogers has completed an Urban Watershed Management project (Section 319(h), FY 99, Project 1100). This project concentrated on assessment of urban impacts on Osage Creek and Prairie Creek during the first phase.

Expansion and Implementation of the Mud Creek Urban Project (Mud Creek II), 00-400: This education/demonstration project is designed to expand urban nonpoint pollution prevention public awareness and education, document successful programs into an Urban NPS Educational "Toolbox", and conduct statewide training so effective urban nonpoint pollution education programs can be replicated throughout communities in Arkansas.

This project focuses on increasing watershed residents' knowledge of the hydrologic cycle, the potential nonpoint pollution sources in their urban watershed, and the effect of fertilizers, pesticides, solvents and other common hazardous household products in runoff. Educational programs and demonstrations emphasize how individual decisions and actions of many residents in the watershed can combine to improve water quality for the entire community.

Project Results:

Examples of newspaper columns written, radio PSA scripts, fact sheets, and displays developed and used in Mud Creek I and II

Categorical Implementation 40-Urban 2002 Annual Nonpoint Source Pollution Management Report

have begun to be organized on CD's along with listings of national websites and sources for urban nonpoint source informational brochures and posters.

The process that the Cooperative Extension Service went through to work with the City of Fayetteville to paint "Don't Dump, Drains to Creek" messages on stormdrain manhole covers has been written up and included in Power Point presentations. Topics covered in these write-ups include how to make appropriate city division contacts, working with youth groups, stencil/message designs, paint types and sources, manhole cover locations, and using mass media to promote the program to the public.

Numerous educational PowerPoint programs have been developed and used in presentations to civic clubs and community organizations.

*Urban Home*A*Syst* tool is being revised and edited to make it more general and applicable for all Arkansas communities

Educational programs for youth have focused on the water cycle, watersheds, nonpoint pollution, water quality, pollution prevention, stream and lake ecology, and water conservation

Initiated the "bringing a creek into a school" program using Arkansas Game and Fish Commission mini-grants for 29-gallon aquariums. Students utilize an aquarium to illustrate the condition of a selected stream. This includes all aspects of the stream such as NPS pollution, fish communities, and abatement efforts.

The city of Fayetteville Engineering staff took the concept of painting messages on storm drain covers developed from this project have been ordering and installing stormdrain manhole covers pre-forged with the message "Don't Dump, Drains to Creek" (with a picture of a bass) for stormdrain inlets on all new developments

Installed creek signs in the Mud Creek sub-basin to help educate city residents about the names of local waterways, sources of runoff water and potential pollutants, and

the drainage pathways to regional water resources.

Two Project WET/Project WILD training sessions were conducted for 18 4-H Para-professionals, 4-H Adult Leaders, and school teachers who are now conducting educational programs across the 4-County area of Benton, Carroll, Madison, and Washington Counties.

Phase II Storm Water Regulations

Developed a fact sheet on Urban Stormwater and distributed more than 200 copies to City Mayors and City Council, Planning Commission, and Quorum Court members.

The ADEQ is conducting an assessment of the Rock Creek (Section 319(h), FY 00, Project 1100) in Little Rock as a first step in development of an Urban Watershed Project.

Implementation:

Fourche Creek Watershed Recovery and Restoration (Section 319(h), FY 02, Project 800). Fourche Creek Bottoms is one of the largest urban wetlands in the country. It drains eastern Saline and western Pulaski counties and the entire city of Little Rock where it receives the majority of the drainage and pollutants. The watershed spans 108,000 acres, of which an estimated 6,000 lie within the city limits of Little Rock.

To date, Audubon has reached over 400 children with nature based education activities and/or information about the Fourche Creek Watershed. Audubon has stabilized and restored stream banks with trees, plants, and filter strips and has conducted 3 trash clean up sessions, reducing approximately one ton of waste and effecting over 10 miles of stream. Audubon has developed detailed site restoration plans for reforestation to be conducted in the upcoming planting season and has conducted educational meetings with Little Rock City staff that have resulted in operational changes including "no mow zones" along the stream and BMPs for city property.

Categorical Implementation 50-Resource Extraction 2002 Annual Nonpoint Source Pollution Management Report

Resource Extraction is identified in the state's Nonpoint Source Assessment Report as the likely source of major impairment to 210.9 miles of streams, and the likely source of minor impairment to 112.3 miles of streams in the state. Uncontrolled runoff from abandoned mine sites and the practice of in stream gravel mining has been identified as possible sources of water quality impairment.

Nonpoint Source Pollution Issues related to Construction

The pollutants most often cited as causing water quality impairment under this subcategory are sediment, pH, inorganics, and bacteria. Pollutants may come from the following sources: a) soil erosion, b) surface water runoff or c) seepage from mines entering streams or groundwater from surface discharge or subsurface flow.

There are two primary non-point source problem areas for the resource extraction category: a) erosion/sediment control and b) water management.

Summary of Management Activity

The Arkansas Department of Environmental Quality's (ADEQ) Regulation # 15, "The Arkansas Open-Cut Mining and Land Reclamation Code, effective May 30, 2000" cover surface mining in Arkansas.

Conservation Practices for Reclaiming Surface Mines in Arkansas Handbook (Section 319(h), FY 98, Project 500): The ADEQ has prepared a handbook on BMPs for surface mining. The mining division at ADEQ will use this handbook in training sessions for surface mine operators.

**Categorical Implementation 60-Land Disposal (On-Site Wastewater Disposal)
2002 Annual Nonpoint Source Pollution Management Report**

Land disposal of domestic waste is not currently identified in the Arkansas Nonpoint Source Assessment Report or the Water Quality Inventory Report as the likely source of impairment to any stream or waters of the state. Rules and regulations of the Arkansas Health Department (ADH) cover this category. The ADH reorganized in 2000–2001 to a regional concept to address specific regional concerns and to promote involvement from the stakeholders within regions. Each region consists of management team composed of colleagues from all programs in which ADH administers within that region. Each management team is further subdivided into subcommittees that deal and emphasize specific stakeholder concerns.

**Nonpoint Source Pollution Issues
Related to Land Disposal**

The main issue associated with land disposal of domestic wastewater is pathogen contamination of waterways.

Summary of Management Activity:

In accordance with the rules and regulations pertaining to sewage disposal systems, designated representatives and installers, all on-site wastewater disposal system installation or modifications in Arkansas must be designed by a designated representative of the Arkansas Department of Health and installed by a licensed installer.

A Section 319(h) Project 01-1300 (University of Arkansas – Fayetteville), a watershed approach to managing on-site wastewater systems, is utilizing a unique data set build over a 30 year time period. These data have been and continues to be collected to assess the impact of on-site wastewater systems to ground and surface waters within a watershed. Data has been collected within a residential community that currently has over 300 living structures. Information gained from this project can be utilized to direct onsite wastewater development and possible usage within other watersheds.

Categorical Implementation 70-Hydrologic Modification 2002 Annual Nonpoint Source Pollution Management Report

Nonpoint Source Pollution Issues related to Hydrologic Modification

In Arkansas, the primary concern related to hydrologic/habitat modification is sedimentation and other physical changes to a stream as the result of loss of riparian zone vegetation and the resulting erosion. Hydrologic/habitat modification is generally associated with agricultural operations, silviculture management, urban growth, or resource extraction. Sedimentation and loss of habitat are the main problems associated with this category. Eroding streambanks and loss of riparian zone vegetation are the main causes of the problems. State and federal agencies with resource extraction responsibilities will conduct technical assistance, technology transfer, and demonstration projects related to streambank restoration and agricultural management. Streambank problems associated with gravel extraction will be handled by the ADEQ. Hydrologic modification problems associated with highway construction will be the responsibility of the Arkansas Highway and Transportation Department.

Summary of Management Activity

FY 98, 99, 00, 01 project years each have one activity demonstrating some type of streambank restoration. FY 01 began a different approach to protecting streambanks and riparian areas through the demonstration of alternative watering practices for cattle. Most of the interest in streambank restoration to date has been in the mountainous areas of the state. However, there is an increasing interest among all areas of the state.

Achievements:

- 11,000ft of streambank has been restored in 7 counties
- 57miles of streambank fenced with a minimum of 15ft or buffer on each side of stream
- Training provided to over 100 engineers & soil scientists
- Provided assistance to 45 private landowners

Types of Restoration:

Cedar Tree Revetment - This type of stream bank stabilization is perhaps the cheapest from a landowner's point of view but also the most labor intensive. It involves placing fresh cut cedar trees at the toe of the stream bank after the bank has been sloped to a 2:1 and covered with coconut fiber. This practice only works in streams with low bank full velocities and where the highest velocities are not against the stream bank.

Weirs - This method is probably the most cost effective from a project manager's point of view. The three basic types are upstream, downstream and perpendicular to stream flow. It has little hand labor involvement and can be used alone or in conjunction with other methods. Its primary function is to move the velocity off of the stream bank and into the center of the channel. The stream bank may or may not be sloped using this method.

Other methods that have been used by ASWCC include rock riffles to reduce head cutting and rip rap.

Needs:

Currently, most landowners wish to work on their streambank problems. However, cost sharing under current guidelines makes this next to impossible. Also, no agency has come forth and taken a lead role. Money needs to be made available for cost sharing with land owners. It isn't unusual for a restoration project to cost over \$60,000 to restore 1,000 linear feet of bank. Most surveys of streams show about 10% of the stream miles are raw eroding banks. But, when viewed at the cost for treating drinking water for sediment, the cost of fixing the problem at the source becomes feasible. The problem is convincing responsible parties for drinking water that it is feasible. It simply is easier to ask for more money to upgrade the treatment plant than to fix the source problem.

**2002 Annual Report
Utilization of Funds**

Total Grant Budget vs. Expenditure, 1993 through 2002
(Through Dec. 20012)

Grant #	Fiscal Year	Federal		Non-Federal		Total	
		Budget	Expenditure	Budget	Expenditure	Budget	Expenditure
999610301	1993	\$ 929,300.00	\$ 922,850.19	\$ 619,533.00	\$ 641,527.69	\$ 1,548,833.00	\$ 1,564,377.88
999610302	1994	\$ 782,897.00	\$ 725,184.31	\$ 521,932.00	\$ 487,667.88	\$ 1,304,829.00	\$ 1,212,852.19
999610303	1995	\$ 2,091,553.00	\$1,967,378.56	\$ 1,412,666.00	\$ 1,395,445.12	\$ 3,504,219.00	\$ 3,362,823.68
999610304	1996	\$ 1,957,400.00	\$1,624,468.47	\$ 1,304,934.00	\$ 1,028,946.84	\$ 3,262,334.00	\$ 2,653,415.31
999610305	1997	\$ 1,952,400.00	\$1,501,007.63	\$ 1,301,600.00	\$ 1,107,206.75	\$ 3,254,000.00	\$ 2,608,214.38
999610306	1998	\$ 2,080,300.00	\$ 991,743.23	\$ 1,386,866.00	\$ 669,251.29	\$ 3,467,166.00	\$ 1,660,994.52
999610307	1999	\$ 3,920,400.00	\$1,220,106.35	\$ 2,613,600.00	\$ 687,118.16	\$ 6,534,000.00	\$ 1,907,224.51
999610308	2000	\$ 3,884,200.00	\$ 493,063.05	\$ 2,589,467.00	\$ 159,020.41	\$ 6,473,667.00	\$ 652,083.46
999610309	2001	\$ 4,614,992.00		\$ 3,094,621.00		\$ 7,709,713.00	
999610310	2002	\$ 644,830.82		\$ 472,535.51		\$ 1,117,366.33	
	Total	\$22,858,272.82	\$9,445,801.79	\$15,317,754.51	\$6,176,184.14	\$38,176,127.33	\$15,621,985.93

SECTION 9

**ARKANSAS SOIL & WATER CONSERVATION COMMISSION
FISCAL YEAR 2002
ANNUAL 319 NONPOINT SOURCE PROGRAM REPORT
AUTHORIZING SIGNATURE OF STATE LEAD AGENCY**

A handwritten signature in black ink, appearing to read "J. Randy Young". The signature is fluid and cursive, with a large initial "J" and "Y".

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

1/29/02

Date