

Arkansas' Nonpoint Source Pollution Management Program Annual Report 2000



Prepared pursuant to Section 319 of the Federal Clean Water Act

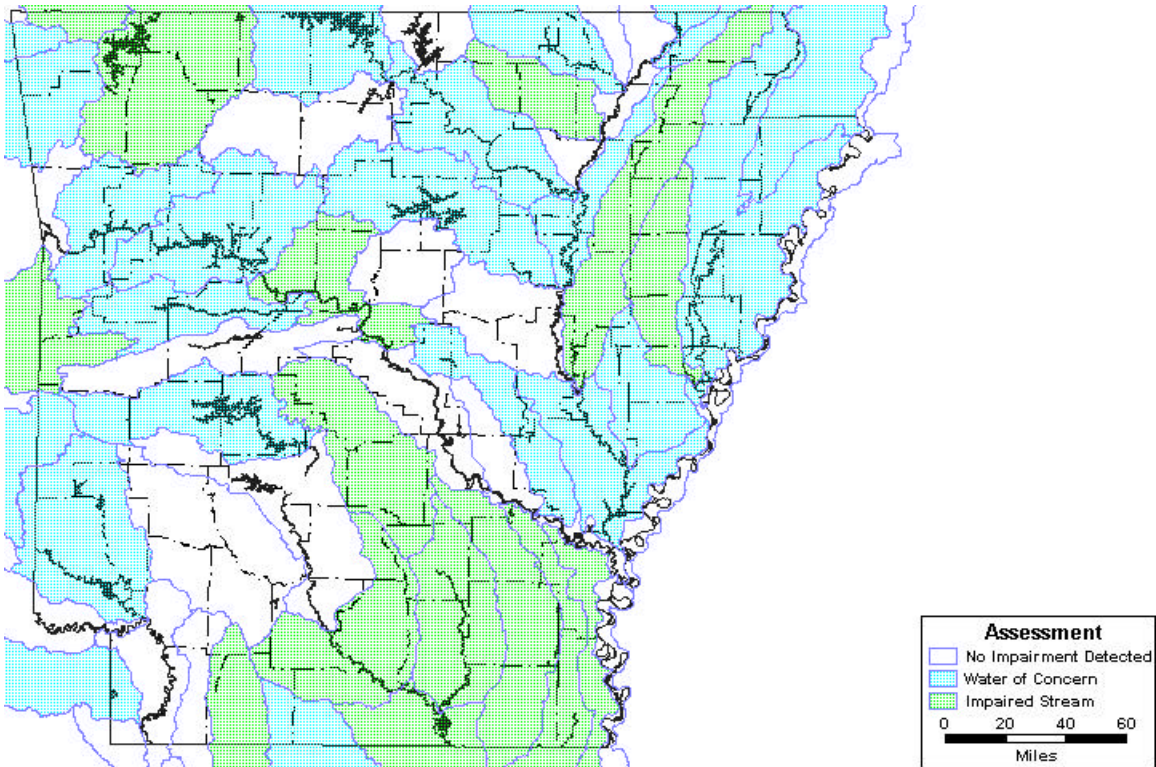


Arkansas Soil and Water Conservation Commission
January, 2001

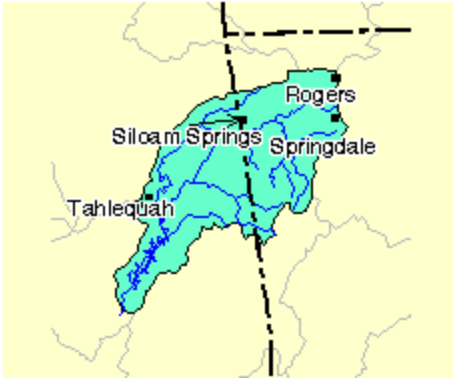
**Arkansas' Nonpoint Source Pollution Management
Program
2000 Annual Report
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Unified Assessment Watershed Classification



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

The waters within this watershed have been designated as suitable for the propagation of fish/wildlife, primary and secondary contact recreation, and public, industrial, and agricultural water supplies. The planing segment, which includes the Spavinaw Creek, Honey Creek, and Little Sugar Creek as well as the Illinois Watershed, contains 203.7 stream miles. Ten permanent monitoring stations and several temporary stations in this segment were utilized to assess 118.5 stream miles. An additional 67.2 stream miles were evaluated. Within this segment 115.9 miles show elevated nutrients and chronic turbidity exceedances. For these reasons, the waters are listed as concern for aquatic life uses. These impacts are primarily caused from pastureland that is also used for application of poultry waste products. In addition, in-stream gravel removal is destabilizing the streambed and causing excessive bank erosion. Road construction and maintenance is also contributing to significant siltation problems. (1998 Water Quality Inventory Report)

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 and completed in 1996 recommended that nutrient input into the reservoir be reduced by 40% as a short-term goal and gave a long-term goal of 70 – 80% reductions. Arkansas / Oklahoma Arkansas River Compact Commission has agreed to work toward the 40% reduction goal.

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 as:

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

Summary of Management Activities

A summary of projects currently being implemented in the Illinois River basin is given below:

Confined Animal Management:

ASWCC Water Quality Technician Program:

The Benton and Washington County Conservation Districts have employed Water Quality Technicians since the early 1990's. The purpose of these technicians are to prepare custom manure management plans for poultry farms. As of the close of 2000, over 50% of the poultry farms in the watershed had been planned.

USDA EQIP Priority Area:

During 2000, applications for assistance were approved for cooperating farmers in the Illinois River Priority Area. The total financial assistance provided in Illinois River Priority area totaled \$608,579. Assistance was also provided in the Eucha / Spavinaw watershed totaling \$288,159. The North Benton County area utilized \$259,940 of EQIP funds.

Poultry Producer Training Program:

During the fall of 2000, the ASWCC, NRCS, Cooperative Extension Service, Washington and Benton County Conservation Districts and the Poultry Industry cooperated to provide water quality management training to poultry producers. More than 300 growers received training from the cooperating agencies and industry team.

Section 319(h) Project 98-600 (Illinois River BMP Implementation & Phosphorus Management Demonstration):

The goal of the project is to implement BMPs on agricultural land that has the highest potential for reduction

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of nutrient transport, particularly phosphorus, into the Illinois River. Another parallel goal is to demonstrate the effectiveness of BMPs and to educate the public about the aquatic effects of nutrients in lake systems. Selected farms will be integrated with local farm education and grazing programs to demonstrate the benefits of the BMPs to interested agencies and landowners.

Section 319(h) Project 98-700 (Mud Creek Urban Nonpoint Source Demonstration): The intent of this project is to create the infrastructure for urban nonpoint source BMP implementation programs. Public acceptance and understanding will make future programs more effective. The approach to obtain this public acceptance will be through meetings, surveys, new education programs, adding to existing education programs, educational materials, and chemical and biological demonstrations. No water quality or nonpoint source pollution education programs are currently being undertaken in the watershed area.

Section 319(h) Project 99-500 (Upper Ballard Creek Watershed Project): This project is the first phase of a comprehensive watershed project addressing the Upper Ballard Creek, a sub-watershed of the Illinois River. The Washington County Conservation District is conducting an inventory of potential pollutant sources in the watershed. On completion of the inventory, the Cooperative Extension Service will design and implement an education program targeted at the identified sources.

Savoy Experimental Watershed: The University of Arkansas is continuing to develop the Savoy Experimental Watershed in the Illinois River basin. This study area is used cooperatively by the U of A, the USDA-ARS, USGS and ADEQ to study the impacts of animal waste management on water quality in the Ozarks.

Streambank Erosion:

Section 319(h) Project 99-100: The Washington County Conservation District was designated by the ASWCC to conduct an assessment of non-point source phosphorus loading into Ballard Creek watershed in Washington County. Previous research had shown that the Ballard Creek watershed was one of the largest contributors of phosphorus loading into the Illinois River watershed. The assessment considered sheet and rill erosion of pastures, eroded sediment from roadside ditches, and from

streambanks. Other possible sources that were examined were failed septic systems and eroded sediment from forested areas. The goal of this project was to quantify the contributions from each of these sources.

The results of this study showed that 51% of the soil test phosphorus entering the Ballard Creek watershed was from streambank erosion. Sediment from pasture erosion contributed 40% and road ditches 10% of soil test phosphorus to the watershed.

The conclusion reached as a result of the data analyzed in this assessment indicated that non-soluble phosphorus transport by sediment detached from sheet and rill erosion is a moderate contributor to total phosphorus loading in Ballard Creek. The only other apparent source of phosphorus is soluble phosphorus transported by runoff from various sources.

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

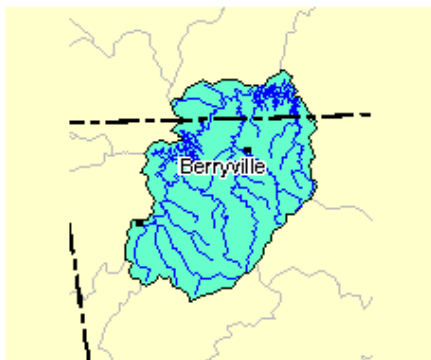
Construction: Phase I of the NPDES stormwater program requires construction sites of five acres or greater to implement an erosion/sediment control management plan. The Arkansas Department of Environmental Quality Permits Section administers this program.

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. Data from the ADEQ's ambient monitoring stations are used in Arkansas to monitor the trend.

The five-year rolling average trend continues to be downward. However, in a separate study conducted by the U of A using storm event monitoring at HWY 59 a 28% increase in total phosphorus load was measured from 1997 to 1998. Almost the entire increase can be attributed to a single storm that occurred on January 4, 1998. Unfortunately, there is not a history of storm event sampling on the stream for comparison.

Upper White River Watershed Annual Nonpoint Source Pollution Management Report



Summary of Water Quality in the Upper White River 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. About 20% of these waters are designated as outstanding state or national resource waters. Approximately 209 miles of streams were monitored for use support utilizing data from 11 routine monitoring stations. An additional 193.3 miles were evaluated. Concern for aquatic life use was assessed for 160.7 miles in this segment. Non-support for aquatic life use was assessed in 33.4 miles of the West Fork. The major cause was high turbidity levels and excessive silt loads. Three primary sources are cited: (1) agriculture land clearing; (2) road construction and maintenance; and (3) gravel removal from streambeds. A point source discharge to Holman Creek has impaired the drinking water uses of this stream and the stream is also listed a concern of aquatic life uses. The cause is excessive nutrients. (1998 Water Quality Inventory Report)

Unified Watershed Assessment:

Beaver Reservoir watershed (The western half of the Upper White River) was selected as top priority. Selection factors within this 8-digit hydrologic unit watershed included (in no particular order):

- one state extraordinary water resource,
- one imperiled aquatic species,
- drinking water supplies serving a population of about 250,000,
- one state impaired water body,
- numerous state waters of concern,
- three USDA EQIP projects,
- one state 319 priority area, and
- Interstate waters of concern.

Nonpoint Source Pollution Issues:

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

- 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 as its top priority watershed. of management measures. Incremental funds from EPA's section 319(h) program totaling 1.9 million dollars are targeted at the watershed this year with roughly 1.5 million dollars of non-federal matching funds provided by State and Local Groups.

A summary of projects currently being implemented in the Upper White River basin is given below:

Confined Animal Management:

ASWCC Water Quality Technician Program: The Carroll, Madison and Washington County Conservation Districts have employed Water Quality Technicians since the early 1990's. Technicians prepare custom manure management plans for poultry farms. **As of the close of 2000, approximately 75% of the poultry farms in the watershed are utilizing manure management plans.** Many of the plans are several years old and in need of revision.

USDA EQIP Priority Area: The Upper White River contains two EQIP priority areas, the Beaver Lake and War Eagle Watershed project and the Upper White River Watershed Project. In 2000 the Beaver Lake and War Eagle area utilized \$143,218 of EQIP funds. The projects goals included implement resource management systems on 40 animal waste operations, 60 planned grazing systems, develop nutrient management plans on 16,500 acres, reduce soil loss on 40,000 acres through pasture and hayland practices, and stabilize 10,000 feet of eroding stream-bank. . The Upper White River area utilized EQIP funds totaling \$477,517. The

Upper White River Watershed Annual Nonpoint Source Pollution Management Report

Upper White River project's goals include implement 30 resource management systems, 45 nutrient management plans per year, 1000 acres of pasture and hayland management, 3000 feet stream-bank stabilization and 45 animal waste management plans per year.

Poultry Producer Training Program: During the fall of 2000 the ASWCC, NRCS, Cooperative Extension Service (CES), Washington, Benton County, Carroll and Madison Conservation Districts and the Poultry Industry cooperated to provide water quality management training to 189 of the poultry producers in the watershed.

Section 319(h) Project 99 Incremental Funds: Both the Washington and Madison County Conservation Districts provide technical assistance targeting agricultural conservation practice implementation. Water quality technicians will work with livestock producers to develop Comprehensive Nutrient Management Plans. Approximately \$600,000 was available through the ASWCC to cost share with landowners on the implementation of conservation practices.

"Beaver Lake Watershed and Use Area" USDA: This CES project emphasizes nonpoint pollution prevention in urban and rural areas. Successful educational programs target urban homeowners, agricultural producers, school youth, civic club members, and local government. The goal is to encourage voluntary adoption of Best Management Practices.

Streambank Erosion: *Section 319(h), FY 98, Project 400, Demonstration of Stream-bank Restoration and Section 319(h), FY 99, Incremental Funds:* The Madison County Conservation District is demonstrating vegetative stream-bank stabilization practices on the War Eagle Creek. Approximately 380' of stream-bank has been stabilized. Restoration planting is scheduled for Spring of 2001. Cost sharing assistance is available for this practice through the ASWCC.

Rural Roads: *Section 319(h) FY 99 Incremental Funds:* The Madison County Conservation District has received \$150,000 to use as matching funds with the County for rural road erosion control practices.

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

Construction: Phase I of the NPDES storm-water program requires construction sites of five acres or greater to implement an erosion/sediment control management plan. Phase II of the program requires municipalities with a population of 100,000 or less that operate a storm-water system to permit construction sites of one acre or more as well as certain industries. The ADEQ Permits Section administers this program.

Urban: Section 319(h) FY 99, Incremental Funds Project: Provides support to the City of Rogers to develop an Urban Nonpoint Source Assessment and Management Plan for their portion of the watershed.

Public Outreach: Section 319(h) FY 99, Incremental Funds: The ADEQ and the Beaver Lake Partners are conducting Public Awareness programs in the watershed to increase awareness of water quality issues. Public awareness program will continue through 2001.

Assessment: *Section 319(h) FY 99, Incremental Funds:* The ASWCC and ADEQ are conducting an assessment of the West Fork of the White River to determine pollutant sources. The assessment work will continue through 2001.

Water Quality Trends

In 1997, Drs. Soerens, Haggard and Parker of the U of A Civil Engineering Department and the Arkansas Water Resource Center completed an analysis of water quality data collected during the Beaver Lake Water Quality Enhancement Project (US COE). The analysis used the modified Seasonal Kendall test for trends. This test compares a data value to data values taken during the same "season" in subsequent years. Trend analysis calculated decreasing trends for ortho phosphate and total phosphate at all stream and lake sites, although most of these trends were not statistically significant and there was uncertainty in the phosphorus data. Three stream sites, three lake sites and the combined lake data showed decreasing orthoP trends which were significant at the $\alpha = 0.10$ level. No total P trends were statistically significant. Trends in other water quality parameters were non-uniform and showed few significant trends.

Storm event sampling stations have been installed on the Kings River at Hwy 143 and the White River at Wyman Bridge. Parameters analyzed are discharge, nitrate nitrogen, total phosphorus, ammonia, total Kjeldhal nitrogen, and soluble reactive phosphorus. Load calculations will be prepared in 2001.

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Summary of Water Quality in the Buffalo River Watershed:

Designated uses of waters in this segment include propagation of fish and wildlife; primary and secondary contact recreation, domestic, agricultural and industrial water supplies. Almost 48 % are also designated as outstanding state or national resource waters. 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. However, due to the designation of these waters as an extraordinary resource, the very sensitive environmental conditions, the significant recreational potential and a substantial change in land use activities in some areas of the watershed, the Buffalo River has been listed as a threatened water-body in the nonpoint source assessment. Although nutrient values are low in the Buffalo River, nitrite/nitrate-nitrogen values have shown a distinct increase in a downstream direction during the 1989 – 1993 period (see 1996, 305(b) report). This was very evident in the maximum values recorded in the main channel sites. A similar, but less, pronounced pattern was also demonstrated by average concentrations, although a noticeable decline was noted near the mouth of the river. The most significant increases were noted below Boxley Valley and below Mill Creek. Of the 20 tributary sites, highest nitrite/nitrate-nitrogen concentrations were found in Mill Creek, Brush Creek and in Tomahawk Creek. The significantly higher minimum values in Mill Creek indicate a more continuous input of nitrates from a point source. Concentrations of

this parameter in the three springs sampled were about three times greater than main channel values. (1998 Water Quality Inventory Report)

Non-point Source Pollution Management Issues:

Conversion of forest to pasture is the most common activity noted with respect to water quality in the Buffalo River. Over the last three decades, over 90,000 acres of forest have been converted to other uses. Assessments conducted by the ADEQ indicate that the waters are currently meeting all designated uses. Therefore, management activities in this watershed are considered preventative rather than restorative. Potential sources of pollutants in the watershed are:

- Agriculture
 - Confined Animal Management
 - Pasture Management
- Streambank Erosion
- Rural Roads
- Recreation

Summary of Management Activities

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

Agriculture:

ASWCC Water Quality Technician Program: The Water Quality Technician in Boone County is assigned to work half time in the Buffalo River Watershed.

USDA PL 566 Project, Buffalo Tribs: The Buffalo River Tributaries PL 566 Watershed Project was initiated in 1996 and continues to be funded on an annual basis. The goals and current implementation of this project are:

Practice	Goal	Imp.
Dairy Waste Management Systems	25	6
Pasture improvement/reestablishment	33000 Acres	4,235
Riparian Zone Protection	34 Miles	1.4
Riparian Easements	820 Acres	0

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Streambank Stabilization	3 Miles	0.90
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Section 319(h) Project 96-1000 (Dairy Manure Management Alternatives" Demonstration Project. The objective of this project is to show that dairy operations with a dry waste management system can be operated without significant impacts to water quality and to reduce waste loads from the study sites and establish dry waste system design/operation guidelines that improve water quality and are practical. The ADEQ is the lead agency involved, with assistance from the Boone County and Buffalo Conservation Districts. The ADEQ has reviewed waste management practices at demonstration farms and has designed a local watershed assistance program for dairy farmers in which waste-handling services will be available through the Buffalo Conservation District.



The Buffalo National River hosts approximately one million visitors annually.

Streambank Erosion:

Section 319(h) Project 99-900 (Buffalo River Riparian Zones): This is a cooperative project of the Boone County Conservation District and the Buffalo River Stewardship Council (BRSC). The Conservation District is initiating a demonstration of non-structural streambank stabilization projects. The BRSC will be using the project to establish a riparian zone conservation easement program in the watershed. Both projects were initiated during 1999.

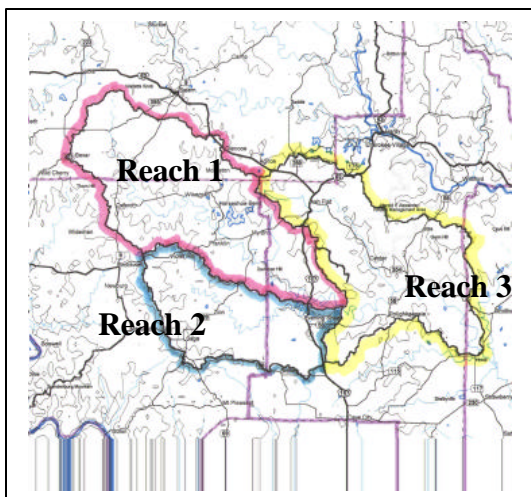
Riparian Restoration/Streambank Stabilization Project: National Park Service, Buffalo National Rive. Over the last several years, the Buffalo National River has used funds from the Natural Resources Preservation Program of the National Park Service to construct over one mile of cedar revetments at thirteen stream bank erosion sites, to construct three miles of fencing to exclude cattle from riparian buffers on park land, to cost share on an additional two miles of fencing and to reforest 5.4 miles of river.

Public Outreach: The ADEQ has two field resource specialists in the watershed to offer assistance in water quality issues and information. Also, the ADEQ and the Newton County Conservation District hosted an open house for local citizens on current conservation projects in the Buffalo River Watershed. Over 150 people attended the open house, which included information booths and presentations.

Water Quality Trends

There are no studies currently available that indicate a trend in water quality in the Buffalo River over time. The ADEQ's 1998 Water Quality Inventory Report indicates that all designated uses are met at this time. There are two studies currently being conducted that should provide a good base line for future reference. 1) The National Park Service has contracted with the University of Central Arkansas to develop a biomonitoring program specific to the Buffalo River and its tributaries. This study should provide a base line for biologic integrity to be used as a future comparison. The results of this program should be available next year. 2) The National Water-Quality Assessment Program (NAWQA) by the USGS has two basic fixed sites on the Buffalo River, one at the boundary of the Upper Buffalo Wilderness and one at Shine Eye, about one mile downstream from the Highway 65 bridge.

Strawberry River Watershed Annual Nonpoint Source Pollution Management Report



Summary of Water Quality in the Strawberry Watershed:

The Strawberry River watershed has many different uses. The watershed offers year-round recreational activities including hunting, fishing, hiking and camping, but canoeing and primary contact recreation activities are probably the most dominant recreational uses. Additional watershed uses include confined animal operations and pasture land for livestock, and silviculture. The Strawberry River is designated as an Extraordinary Resource Waterbody, a Natural and Scenic Waterway, and an Ecologically Sensitive Waterbody. Other designated uses include Primary and Secondary Contact Recreation, Domestic, Industrial and Agricultural Water Supply, and Ozark Highlands Ecoregion Fishery (ADEQ, 1998). In addition, there are several State and Federally listed “endangered” and/or “species of concern” species possibly occurring in the river; including the Strawberry River Darter, the Pink Mucket, Snuffbox, Curtis’s Pearly Mussel, Slippershell, Scaleshell, Western Fanshell and the Rabbits Foot mussel (Harris, 1997). The river also host one of the most diverse fish faunas in the State with approximately 100 species of fish being recorded from the river (Robinson & Buchanan, 1992).

Arkansas' 1998 Water Quality Inventory Report (305(b)) identified two stream segments as not fully supporting the aquatic life use, and two additional stream segments as “waters of concern” for aquatic life use. In addition, one

stream segment is listed as a “waters of concern” for the primary contact recreation use. The major cause of the impairment is thought to be from excessive turbidity from silt and suspended solids loadings, and fecal coliform bacteria entering the creek during storm events.

Nonpoint Source Pollution Management Issues:

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

- Agriculture activities
- Unpaved roads and ditches
- Silviculture activities
- Stream bank erosion

Summary of Management Activities

Watershed Management Team: The Strawberry River watershed project is directed by the Four County Steering Committee. This committee consists of representatives from each of the four Conservation Districts in the watershed and technical advisors from State and Federal Agencies and the Nature Conservancy.

Watershed Restoration Action Strategy: A draft Watershed Restoration Action Strategy has been prepared by the ASWCC and is currently being reviewed by the Four County Steering Committee.

A summary of projects currently being implemented in the Strawberry River Watershed is given below:

Watershed Assessment:

Section 319(h), FY 00 (Strawberry River NPS Inventory): The Four County Steering Committee has completed an inventory of pasture, stream banks, rural roads and septic tanks in the watershed. The results are being used in development of the WRAS.

Section 319(h), FY 00 (Physical, Chemical, and Biological Assessment of the Strawberry River Watershed): The Arkansas Department of Environmental Quality, starting in the fall of 2000 is conducting a two year intensive water quality assessment of the Strawberry River watershed. Data from this study will be used in

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development of the Total Maximum Daily Load for the stream and in completion of a final Watershed Restoration Action Strategy.

Total Maximum Daily Load: The ADEQ is currently scheduled to develop the TMDL for two reaches of the Strawberry River in 2001

Agriculture:

ASWCC Water Quality Technician Program: The IZard County Conservation District employs a Water Quality Technician for poultry farmers for preparation of management plans.

Section 319(h) FY 99, Project 600 (Strawberry River Agricultural Watershed Project, Reach 1): This project provides technical assistance for livestock producers in the upper Strawberry River watershed concerning pasture improvement practices.

Section 319(h) FY 01, Project 900: (Project Strawberry River Agricultural Watershed Project - Reach 2 - Piney Fork): This project will implement conservation plans on 16,170 acres of pastureland in the Piney Fork Watershed. Needs for animal waste BMPs for both dairy & poultry will be addressed as well as practices to reduce sedimentation from unpaved county roads.

Section 319(h) FY 98, Project 1600: (Strawberry River Model Farm): This project will demonstrate pasture and riparian zone management practices in the Strawberry River watershed.

Streambank Erosion:

Riparian Zone Tax Credit Program: The ASWCC offers tax credits for landowners willing to restore damaged or degraded riparian zones. Credits may be up to \$5,000 per year for ten consecutive years up to the cost of the project.

Silviculture:

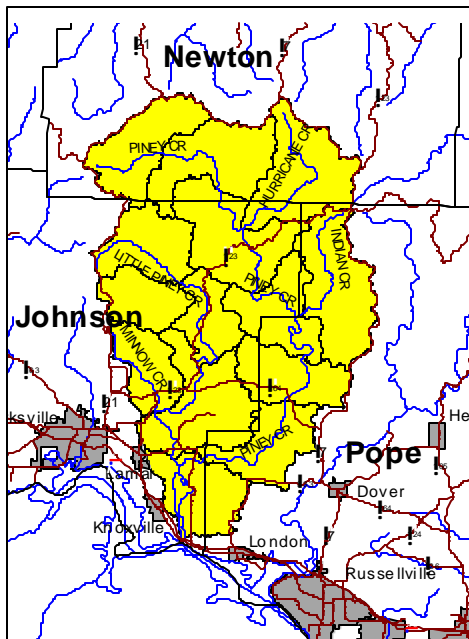
Section 319(h), FY 98, Project 1500 (Strawberry River Forestry Project): This project will be an Information / Education program for forestland owners concerning forestry BMPs and use of professional foresters. The goals of the project is to encourage use of professional foresters by private forestland owners in planning harvests and improve the implementation rate of voluntary forestry BMPs.

Water Quality Trends

There are no current studies that indicate trends in water quality in the Strawberry River watershed over time. The watershed assessment conducted by the ADEQ in 2000 through 2002 will serve as a base line for future comparison.



**Big Piney Creek Watershed
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Summary of Water Quality in the Piney Creeks Watershed:

In January of 1999, the Arkansas Department of Environmental Quality completed an eighteen-month assessment of water quality in Piney Creeks watershed. As a result of this work, it was determined that the Piney Creeks 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

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 Creeks Watershed is 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 2000, waste management plans had been produced for 94% 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.

Poultry Water Quality Training Program: During the fall of 1998, spring of 1999, and the fall of 2000 the ASWCC, Cooperative Extension Service, Natural Resource Conservation Service, Local Conservation Districts, County Extension Agents and Poultry Integrators cooperated to provide a training program on water quality issues related to poultry. Training programs were conducted in both Johnson and Pope counties.

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

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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.

Streambank Erosion:

Section 319(h), FY 99, Project 800 (Demonstration of Streambank Restoration): The ASWCC is working with Dr. Robert Newberry, to demonstrate non-structural streambank stabilization practices in the Piney Creek. A site roughly ¼ mile upstream from the Hwy 164 bridge has been selected for the 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 will conduct training workshops for Conservation Personnel in the design of streambank stabilization projects.



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.

Riparian Zone Tax Credit Program: The ASWCC offers tax credits for landowners willing to restore damaged or degraded riparian zones. Credits may be up to \$5,000 per year for ten consecutive years up to the cost of the project.

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%.

Section 319(h), FY 98, Project 1100 (Forestry BMP Implementation and Effectiveness Monitoring): The Arkansas Forestry Commission is monitoring the rate of BMP implementation by forest loggers in the Piney Creeks watershed. Data collected during the survey will be used to develop additional BMP training materials that will be delivered to foresters across the state. A BMP training session conducted by the Forestry Commission was held in the watershed. The BMP Compliance Rating for 1999 is 82%.

Water Quality Trends

There are no current studies that indicate trends in water quality in the Piney Creeks watershed over time. The watershed assessment conducted by the ADEQ in 1999 will serve as a base line for future 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
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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. (1998 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 Development Council, City of Plumerville, Ar. Dept. of Health, Conway Corp. Arkansas Forestry Comm. the Conservation Districts and the ASWCC.

Unified Watershed Assessment:

Cadron Creek is one of seven top priority watersheds in the Unified Assessment because of the presence of one USDA EQIP project, one drinking water supply serving a population of about 50,000, and one state extraordinary water resource within the watershed.

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, 53 poultry farms and 10 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 since the early 1990's. The purpose of these technicians is to prepare custom manure management plans for poultry and dairy farms. As of the close of July 1999, waste management plans had been prepared for fifty-three poultry farms and, seventy-one dairies in the watershed.

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 1/3 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. Cadron Creek / Point Remove Creek Watershed received \$325,000. Goals of the project are: 75 animal waste management systems, 120 nutrient management plans per year, reduce soil loss on grazing lands to T on 10,000 acres and to increase the acreage planted in Bermuda by 25%.

Dairy Waste Management Coop Program:

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

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 2000, thirteen pond clean outs were performed on farms in the watershed.



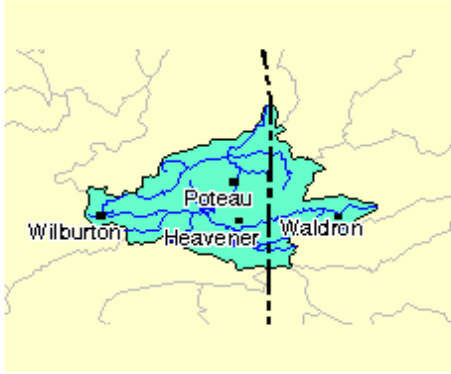
Grassland Management:

Riparian Zone Management: The ASWCC and the Cleburne County Conservation District are conducting a demonstration project for farmers grazing riparian zones. In the demonstration, riparian pastures are used only during certain seasons of the year to limit direct access of cattle to streams. The project is resulting in restored riparian vegetation and improved aquatic habitat. This project is funded with section 319(h) funds, FY 96-project 400.

Watershed Assessment

A watershed assessment of Cadron Creek is being conducted by the Conway County Conservation District. The assessment is being conducted on septic tanks (100% complete), county dirt roads (50% complete), streambank erosion occurring along 3rd order and higher streams (0% complete), and pasture conditions (0% complete). The project is to be completed by 2002.

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



**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 uses 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, 1999)

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 seventies. 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, a municipal and an 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. The priority area goals are:

- 20 waste management systems / year (3 yrs)
- 45 resource management systems / year (3 yrs) on 8250 acres
- Reduce soil erosion to T on 30,000 acres
- Increase the ratio of warm season to cool season grasses by 25% on 10,000 acres

Lack of full funding has prevented the project from totally meeting these goals.

ASWCC Water Quality Technician Program: The water quality technician from Sebastian County provides technical assistance to poultry farmers in the Poteau River watershed. As of the end of 1998, only about 1/4 of the farmers in the watershed were using Conservation District prepared waste management plans. The Poteau River Conservation District is seeking state funding for its own water quality technician.

Poultry Water Quality Training Program: Roughly 2/3 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:

Ouachita National Forest: Forest harvests in the Ouachita National Forest are managed by the National Forest Service. In 1999, according to a compliance survey conducted by the Arkansas Forestry Commission, the average compliance rating for harvests in the National Forest (Statewide) was 96%.

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

Planning Activities:

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
Annual Nonpoint Source Pollution Management Report**



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, 1998)

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:

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. The project goals are:

- 40 animal waste management systems per year for three years
- 60 nutrient management plans per year of 3 years on 27,500 acres
- Reduce soil erosion on forestland to T on 60,000 acres
- Increase the ratio of warm season to cool season grasses on 5,000 acres
- Reduce soil erosion on grazing land to T on 60,000 acres
- Install 100 acres streamside buffer

Lack of full funding has prevented the project from totally meeting these goals.

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. As of the end of 1998, approximately 1/2 to 2/3 of the farmers in the watershed were voluntarily using Conservation District prepared waste management plans.

Poultry Water Quality Training Program: Roughly 450 of the poultry growers in the Little River Watershed in Arkansas have attended voluntary training on water quality issues related to poultry production. This training was presented as a cooperative effort of the ASWCC, CES, NRCS, the Conservation Districts, local Cooperative Extension Service offices and the Poultry Industry.

Liquid Animal Waste Management Training: In Arkansas, all producers of liquid animal wastes

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

(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:

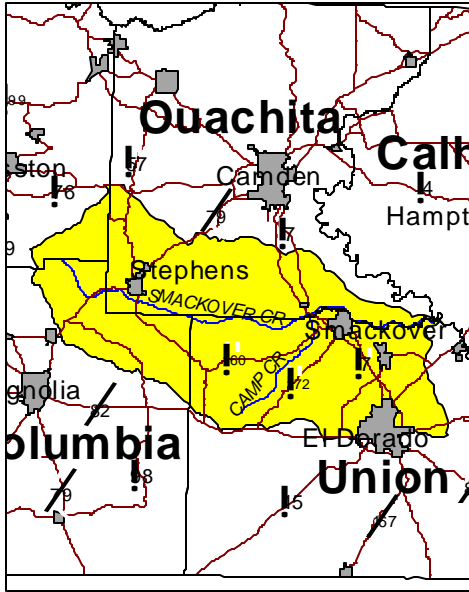
Ouachita National Forest: The National Forest Service manages Forest harvests in the Ouachita National Forest. BMPs are required for all harvests within the National Forest. In 1999, according to compliance survey conducted by the Arkansas Forestry Commission, the average compliance rating for harvests in the National Forest (Statewide) was 96%.

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

Planning Activities:

Watershed Restoration Action Strategy: The six Arkansas Conservation Districts forming 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.

Summary of Management Activities



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, 1998)

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 loss per year. Soil particles, salts and other contaminants are discharged into Smackover Creek and transported downstream.

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 saltwater 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.

Section 319(h), FY 98-Project 1000 (Smackover Creek Watershed Restoration Demonstration): This project is demonstrating the use of salt tolerant vegetation as a Best Management Practice for remediating salt affected soils in drainage ways.

Early in this fiscal year this project was considered worthy of an Assistance Grant from Philips Petroleum Company of Bartlesville, Oklahoma! This will greatly assist in providing for additional plants and installation costs that have presented themselves.

During this FY about 80 acres was being remediated using the chosen technology. Progress has been made during FY 2000 in terms of establishing additional plant growth within the 100-acre (Total) project site. This growth represents selections from a list of over 100 plant species-both native and exotic.

Wintertime flooding has caused some difficulty in maintaining plantings if lengthy. Technology transfer tours and field days are being conducted at the demonstration site. The goal of the project is that 100 additional acres will be remediated by willing landowners.

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 1998 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 injection 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.

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



Sediment	Nutrients	Dumping
Log Jams	In-Stream flow	Habitat alteration
Diverse uses	Lack of public access	Improper application of chemicals
Chemical barrels	Rock Weirs	Improper irrigation management
Dissolved Oxygen	Lack of information exchange	Mercury
Urban NPS		

Summary of Water Quality in the Bayou Bartholomew Watershed:

The waters within the Bayou Bartholomew 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. Silt loads and turbidity are consistently very high in Bayou Bartholomew, causing degradation to the aquatic life contained in the stream. Bayou Bartholomew also recorded the highest level of the pesticide metolachlor of any station sampled during the reporting period. The entire stretch of Bayou Bartholomew has been assessed as not meeting the aquatic uses due to siltation and turbidity.

Mercury contamination of fish tissue in 42.9 miles of the Bayou Bartholomew and 16.8 miles of Cutoff Creek is limiting fish consumption in this basin. The source of the mercury contamination is unknown.

(Water Quality Inventory Report, 1998)

Nonpoint Source Pollution Management Issues:

The following issues have been identified by the technical support group of the Bayou Bartholomew Alliance as being problematic in the Bayou (BBA):

Summary of Management Activities

Public Awareness: The Bayou Bartholomew Alliance has used funding from a section 319 (h) project (FY 96 – 1100) to develop and distribute over 4000 brochures concerning the Bayou Bartholomew watershed. The BBA continues to conduct public awareness work within the watershed using various sources of funding.

Information Exchange: The BBA’s technical support group consists of professionals from the resource management agencies and other organizations within the state. Open exchange of information and opinions is encouraged.

Assessment: The ADEQ is using funding from section 319(h), FY 98-project 300 to conduct a watershed wide assessment of water quality in the bayou. The results will be used to fine tune the action items listed in the Watershed Restoration Action Strategy.

The ADEQ has funding from EPA 104(b) 3 grants to investigate development of a model of the Bayou Bartholomew watershed.

Agriculture:

Section 319(h): The Cooperative Extension Service distributed 2,000 copies of a newsletter “On the Bayou” (FY 98-project 800) concerning best management practices for row crop agriculture and irrigation management. During 2000 a thirty-minute slide show focusing on water quality issues was delivered to the BBA to be presented at BBA business meetings. Jefferson and Lincoln County Conservation Districts are providing technical assistance through on-farm planning to row crop farmers in

the northern portion of the Bayou (FY 99-400). The goal of the project over three years is 300 on farm conservation plans. During 2000, forty-nine conservation plans were developed in Jefferson County and forty-five in Lincoln County. Implementation of these plans will occur over the next couple years.

The University of Arkansas at Monticello is conducting demonstrations of no-till cotton in Southeast Arkansas (FY 97-Project 800). Annual tours and field days are held. Support is building among influential farmers in the watershed for the use of no-till on cotton.

EQIP: The Bayou Bartholomew Priority area was funded at \$300,000 in 1998 and \$168,000 in 1999. The goal of the EQIP project is 180 nutrient and pesticide management systems on 31,500 acres, 120 animal waste management systems on 15,000 acres and reduce sheet and rill erosion by 20% from 15,000 acres.

Ducks Unlimited: Ducks Unlimited provides stop logs for farmers in the Delta to allow them to re-flood their fields after harvest. This practice provides habitat for ducks, and also has a water quality benefit of reducing erosion and sedimentation from these fields. During 1999, 25,500 acres throughout the Delta were flooded because of this program. An additional 4,200 acres were flooded in 2000.

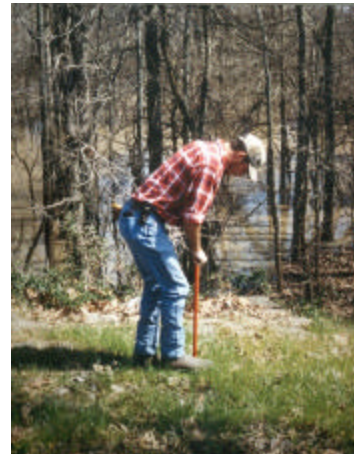
Silviculture: The Arkansas Forestry Commission conducts logger-training programs annually in the Bayou Bartholomew watershed. In addition the BBA is scheduled to provide landowner workshops focusing on the specifics of timber sale contracts / harvesting contracts and on alternatives such as conservation easements.

Riparian Zone Management: The BBA has effectively used donations from the Forestry Industry and volunteer labor to replant over 8 additional miles of riparian forest over the last year, bringing the total to 22 miles encompassing 431 acres

Urban: The BBA is working with the City of Pine Bluff to prepare an Urban Erosion and Sediment Control program (Section 319(h), FY 99-project 400). In cooperation with the City of Pine Bluff, the BBA is developing a proposal for a trail through 10 miles of riparian corridor. The BBA has also worked with White Hall schools to plant nearly 2,000 cypress trees in an abandoned sewage lagoon now connected to the Bayou.

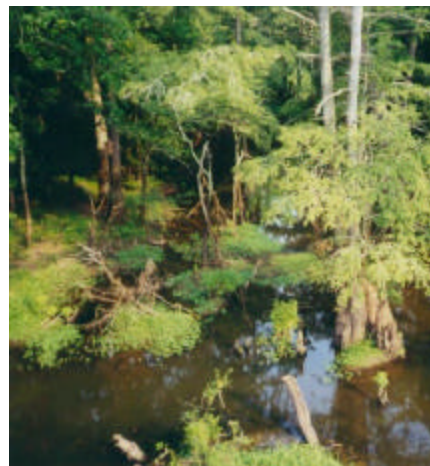


Dumping: One activity of the BBA is to hold volunteer project days at various points on the Bayou. During 2000, the BBA conducted four volunteer days to clean up illegal dumpsites in Jefferson, Drew, Ashley, and Lincoln counties.



Water Quality Trends

The BBA has contracted with Layer Biologics to sample fish communities at seven historical sampling locations. Species diversity, richness and biomass increased at all seven sites in Jefferson and Lincoln counties as compared to historical data collected in 1992, 1993, and 1994. This circumstantial evidence supports the hypothesis of improved conditions for aquatic life as a result of watershed restoration activities.



**Arkansas' Nonpoint Source Pollution Management
Program
2000 Annual Report
Categorical Implementation Program**

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2000 Annual Report Categorical Implementation Row Crop Agriculture

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 is over two billion dollars. Arkansas is the number one producer of rice in the nation, producing 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:

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.

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

Demonstrations: Demonstrations currently being conducted include: Poultry Litter as a Soil Amendment for Cotton Production (Section 319(h), FY 95-900, Arkansas Water Resource Center); Cotton Production BMPs (Section 319(h), FY 95-700, (Arkansas Water Resource Center); Tailwater Recovery (Section 319(h), FY 96-600, (Poinsett County Conservation District); Conservation Tillage for Cotton (Section 319(h), FY 97-810, University of Arkansas, Monticello), and Whole Farm Management Planning (Section 319(h), FY 97-820, (Arkansas Water Resource Center).

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.

The UA-CES and ASWCC are cooperating on a section 319(h) project (FY 96-500) to develop educational materials and curricula for sediment control from cropland in Arkansas.

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 showcased to over 1000 people at field days sponsored by the University of Arkansas Division of Agriculture at their at

2000 Annual Report Categorical Implementation Row Crop Agriculture

the Research and Extension centers in Keiser, Stuttgart, and Rohwer. In addition, two conservation field tours, the Upper Cache river tour (Craighead, Lawrence and Jackson Counties) and the Bayou Bartholomew tour (Desha and Lincoln Counties) were held in 1999 with over 130 people attending.

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

Nineteen youth in 10 counties participated in the 4-H Rice for Ducks program. This program implemented conservation practices on 15,055 rice acres to enhance waterfowl habitat and reduce sediment loss.

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). While the majority of EQIP funds in Arkansas are allocated to specific priority areas, Statewide \$175,000 was allocated for water quality. Clearly, this is not enough to meet all of the financial needs of row crop farmers wishing to implement Conservation Practices to protect water quality. Additional funds were allocated for soil quality and wildlife enhancement. These concerns, while are not directly water quality issues, do have benefits to the Nonpoint Source Program.

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.

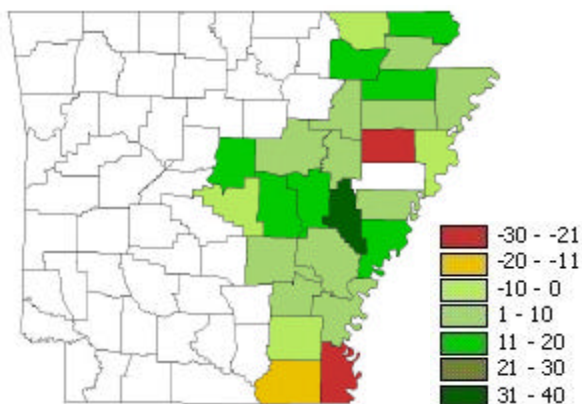
Demonstrations: (Section 319(h), FY 97, Project 500) The Cooperative Extension Service is demonstrating facilities for pesticide mixing and handling. One facility for commercial pesticide applicators the other an on-farm scale demonstration. The ASWCC (section 319h), FY 97, project 400) is demonstrating proper well construction BMPs and well abandonment at two additional sites in eastern Arkansas.

Training / Technology Transfer: Using results from the demonstrations described above, the

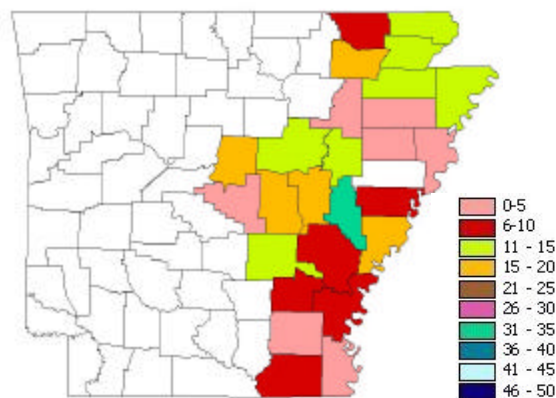
ASWCC and the CES are conducting training programs for professional pesticide applicators, well contractors and farmers in proper handling of pesticides. All pesticide applicators in Arkansas are required to attend training and receive certification from the CES prior to application.

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

**Conservation Tillage by County
Percent Change, 1989-2000**



**Conservation Tillage by County
2000, Percent of Cropland**



2000 Annual Report Categorical Implementation Pasture Management

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:



“A well managed pasture serves as it’s own filter.” Edwards et.al. University of Arkansas

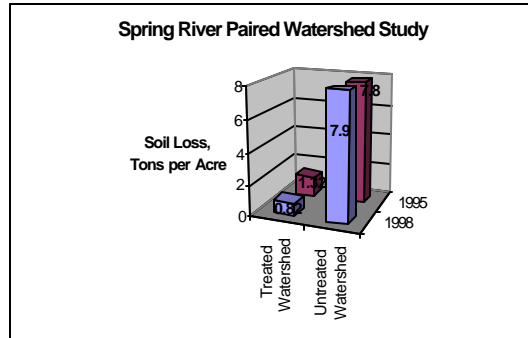
The pollutants most often cited as causing water quality impairment under this subcategory are bacteria, nutrients, sediment, minerals and other inorganic chemicals. Sedimentation is by far the most common water quality impairment associated with pasture management.

The 1992 NPS Assessment Report indicated pasture as the most likely source of impairment to 702.8 miles of stream. However, it is very difficult to separate pasture sediment from other sources such as rural roads or construction. It is likely more proper to say that pasture is a contributing factor to several hundred miles of stream impairment. More recent reports do not separate pasture from other categories of agriculture. The 1992 National Resource Inventory Report indicated that there were 771,000 acres of pasture in Arkansas with excessive erosion rates.

Summary of Management Activity:

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

Technical Assistance: Since 1995, the Fulton County Conservation District has employed (319h, FY 95, Project 200) a grassland specialist. This specialist works with ranchers in the District to improve grazing practices and pasture condition. This has resulted in conservation plans being developed on 206 farms covering 56,794 acres, and application of BMP’s on 20,500 acres of pastureland.



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

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.
- 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.

Technical Assistance: Grassland specialists and Water Quality Technicians are now employed in Fulton County and Izard County to provide assistance to ranchers in the Strawberry River watershed in improving pasture and grazing practices.

Financial Assistance: Pasture and Hayland Planting (NRCS #512) Forage Harvest Management (NRCS #511) and Proper Grazing Use (NRCS # 528) are all approved practices for EQIP assistance.

2000 Annual Report Categorical Implementation Pasture Management

Significant Accomplishments:

Over the past two years, the Arkansas Conservation Partnership (ASWCC, NRCS, CES, U of A Pine Bluff, Ar. Assoc. of Conservation Districts and Ar. Assoc. of Conservation District Employees) has accomplished the following:

- Provided technical assistance to 215 livestock producers resulting in conservation management systems for 7,900 acres of Arkansas grassland
- Trained more than 300 landowners at Arkansas Grazing Management Schools
- Conducted more than 150 pasture management demonstrations.
- The Cooperative Extension has demonstrated that BMP application on pastureland can lower available phosphorus on high phosphorus soils as much as 118.7 pounds over a three-year period¹. They are using this information in their training programs for livestock and poultry producers in areas where phosphorus is a major water quality concern.
- The ASWCC demonstrated that proper riparian pasture management could significantly improve streamside conditions and reduce sedimentation². In the demonstration area, ground cover was increased by an average of 20%. Erosion was reduced by an average of 2 tons per acre.
- A paired watershed study conducted by the ASWCC and the Fulton County Conservation District shows average erosion rates of 1.32 tons per acre on pasture treated with BMPs compared to 7.8 tons per acre for untreated pastures³.



Implementing conservation practices on pasture can result in significant improvement in ground cover and reduced erosion and at the same time improve production and income.

¹ Sandage, Larry J and Kratz, Douglas:
Managing Soil Phosphorus Levels in Arkansas
Pastures; Cooperative Extension Service, 1999

² Womack, David; Riparian Area Management
for Livestock; ASWCC 2000

³ Womack, David; Spring River Pasture Project;
ASWCC, 2000

2000 Annual Report Categorical Implementation Confined Animal Management

Confined animal production is a major industry in Arkansas. According to the 1998 Annual Bulletin from the Arkansas Agricultural Statistics Service, Arkansas is second only to Georgia in production of 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 the year 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:

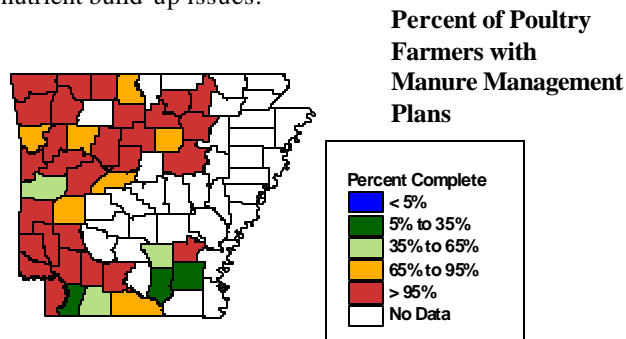
Manure management training is provided to poultry producers in Arkansas through a cooperative program of the Cooperative Extension Service, ASWCC, NRCS and the Poultry Integrators. Training includes discussion of the water quality issues related to poultry production, proper manure handling and application techniques and potential alternative uses.

All holders of Liquid Animal Waste System Permits are required to attend annual training. Poultry producer training is conducted in cooperation with local production complexes. Producers are encouraged to attend training by the complex manager. During 2000, 1555 poultry producers attended training sessions at one of 14 sites around the state.

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 35 Water Quality Technicians or Grassland Specialists working in local Conservation District offices in targeted areas.

Land Application of Accumulated Solids from Liquid Animal Waste Systems: FY 97 319(h)-Project 700: ADEQ and local Conservation Districts provide assistance to swine producers with sampling of liquid waste storage ponds and development of clean-out plans addressing nutrient build-up issues.



2000 Annual Report Categorical Implementation Confined Animal Management

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.

Technology Transfer:

An Evaluation of the Effectiveness of "Dairy Manure Management Alternatives" In Minimizing the Impact of Dry Waste Dairy Operations: (Section 319(h), FY 97, Project 700). The ADEQ is conducting an assessment of potential water quality impacts from dairies and demonstration of improved conservation practices.

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

Land Application of Accumulated Solids from Liquid Animal Waste Systems: FY 97 319(h)-Project 700: This project also provides technology transfer materials to swine producers concerning waste lagoon solids management

Financial Assistance:

ASWCC, Title X Agricultural Cost Share Program: The ASWCC provides financial assistance to agricultural producers in targeted watersheds through its Title X program. Assistance may be provided where a Watershed Restoration Action Strategy identifies the need and prioritizes practices for implementation.

ADEQ, Clean Water Act SRF Loans: The ADEQ 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: The following EQIP Priority Areas are targeted primarily at Animal Feeding Operations:

Priority Area or State Resource Concern	2000 Allocation.
Little Missouri	49,194
Spavinaw/Eucha Watershed	288,159
N. Benton Co	254,940
Upper White River	477,517
Beaver Lake/War Eagle	143,218
Upper Little Red River	424,505
Cadron Creek/Point Remove	324,999
Poteau River & Tribs	139,586
Illinois River	608,579
Little River	254,002
South Central Nutrient Management Project	80,550

Partnership Development: The resource management agencies in Arkansas are working cooperatively with the poultry and swine industries in the implementation of the recommendations of the National Poultry Dialogue. The Poultry Federation, which now represents Arkansas, Missouri and Oklahoma poultry industries, has invited representatives of the ASWCC, Arkansas NRCS, CES and ADEQ to be advisors to their "Environmental Committee".

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.
- Provided manure management plans for 5736 poultry producers since 1992.¹
- 59% of all dairies in Arkansas have implemented or are in the process of construction waste management systems.
- Secured funding from the Arkansas State Legislature for Conservation District Water Quality Technicians
- Participated in the Quad State and National
- Poultry Dialogues Developed Arkansas' Phosphorus Index

¹ While the majority of farms have manure management plans, new standards will require most of these plans to be revisited over the next five years.

2000 Annual Report Categorical Implementation Silviculture

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 Confined Animal Management:

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:

Private 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.

A third BMP implementation survey will be conducted starting in October 2000.

Training: Forestry BMP Implementation and Effectiveness Monitoring (Section 319(h), FY 98, Project 1100). The AFC is conducting a minimum of 60 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.

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

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

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Categorical Implementation
Silviculture**

Technology Transfer: The AFC has produced the booklet titled "Best Management Practice Guidelines for Silviculture". This booklet is distributed to foresters, loggers and landowners as a technology transfer program.

Program Upgrade: Silvicultural Best Management Practices for Streamside Management Zones in Arkansas (Section 319(h), FY 99, Project 1000). The AFC is developing standards for streamside management zones for inclusion in their BMP Handbook.

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

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%.

2000 Annual Report Categorical Implementation Construction and Urban

Road construction/maintenance was identified by the 1996 Water Quality Inventory Report as causing major impacts on 147.3 miles and minor impacts on 58.7 stream miles. 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 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 practices on highway construction. Standards for these practices are included in the department's standard specifications 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 demonstrations of construction BMPs and workshops for Engineers, Contractors and others concerning erosion and sediment control for construction sites.

Urban

Summary of Management Activity:

Urban runoff is not identified as impairing any of the States waterbodies in either Arkansas' 1991 Nonpoint Source Assessment Report or Arkansas' 1996 Water Quality Inventory Report (305(b)). However, 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 Pollution 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.

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.

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

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.

2000 Annual Report Categorical Implementation Resource Extraction

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 handbook is in the draft review stage and should be completed by mid-2001. The Mining Division at ADEQ will use this handbook in training sessions for surface mine operators.

Land Disposal (On-site wastewater disposal)

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 cover this category.

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 survey of the condition of septic tanks is included as an element of watershed assessments being conducted by the Conway County Conservation District in Cadron Creek, and the Fulton County Conservation District in the Strawberry River.

**2000 Annual Report
Categorical Implementation
Hydrologic Modification**

**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:

Project 400 FY98 CWA Section 319(h), Demonstration of Streambank Restoration: The ASWCC is cooperating with the Benton, Boone, Madison and Fulton County Conservation Districts to demonstrate streambank stabilization and restoration practices. One demonstration streambank is being restored in each district.

Project 800 FY99 CWA Section 319(h), Demonstration of Streambank Restoration: The ASWCC is conducting a streambank restoration workshop at a demonstration site on the Big Piney Creek and classroom workshops in Fayetteville, Monticello, Brinkley, Mountain Home and Hot Springs.

An introduction to stream hydraulics and restoration practices was taught at Arkansas Tech University by Dr. Bob Newbury. Class attendance totaled 104 with over 20 people turned away due to a full participation. The class was restricted to mostly Arkansas citizens. However, word circulated to Oklahoma, Texas, Missouri, Mississippi and Tennessee about the course but it was already full.

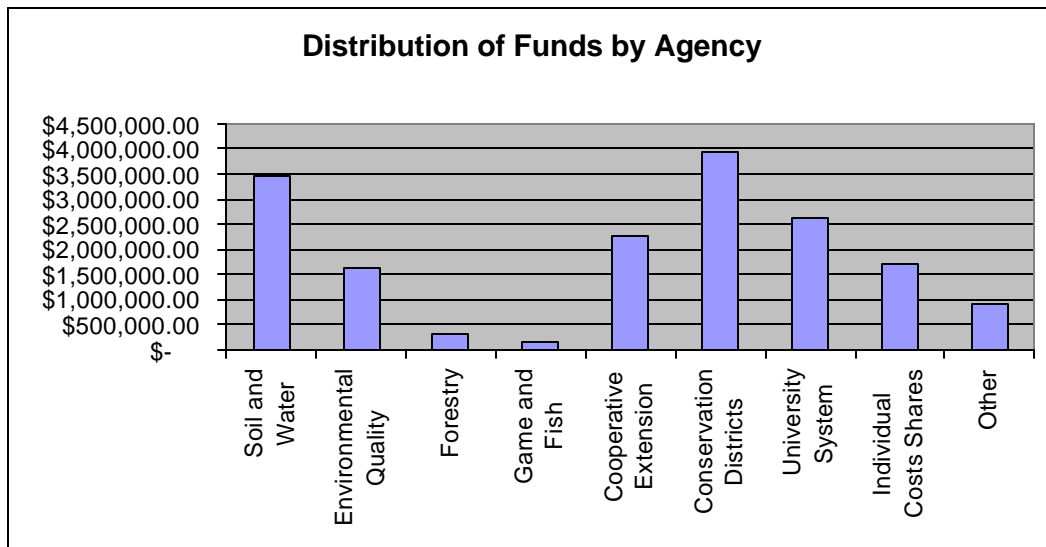
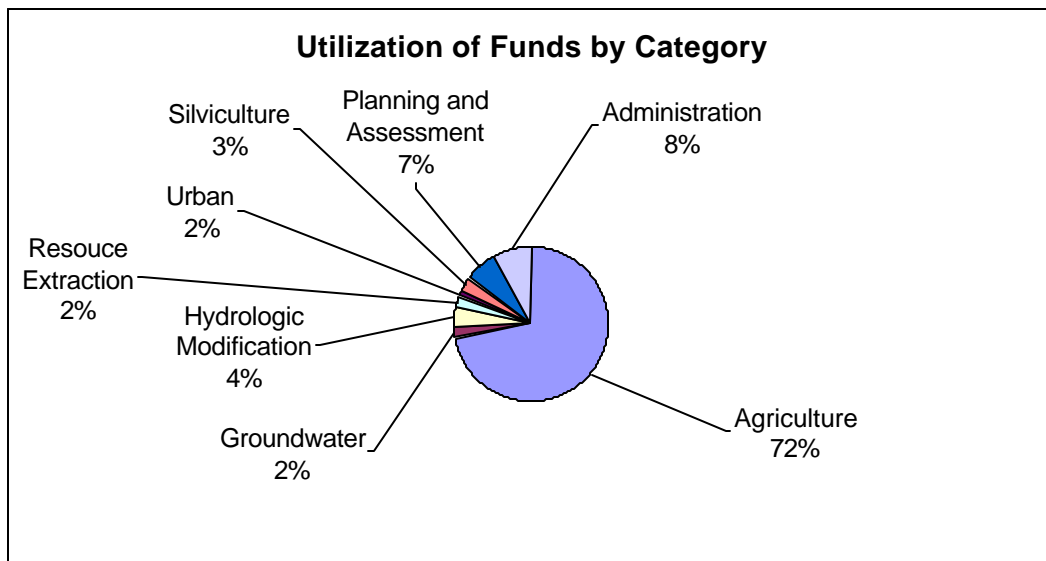
Water Quality Trends

Completed restoration to date: Fulton County 2,679 linear feet, Madison County 300 linear feet, and Boone County 1,700 linear feet. The Arkansas Game and Fish Commission's Private Lands Program have completed additional restoration projects.

2000 Annual Report Utilization of Funds

Total Grant Budget vs. Expenditure, 1993 through 2000 Through Dec. 2000

Fiscal Grant #	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
Total		\$17,598,450.00	\$9,445,801.79	\$11,750,598.00	\$ 6,176,184.14	\$ 29,349,048.00	\$ 15,621,985.93



SECTION 9

**ARKANSAS SOIL & WATER CONSERVATION COMMISSION
FISCAL YEAR 2000
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**

1/29/01

Date