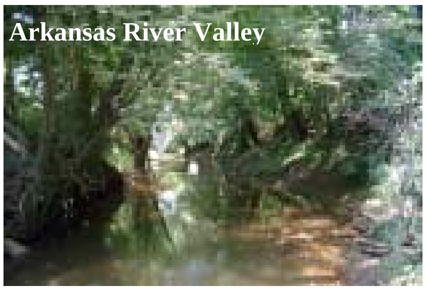

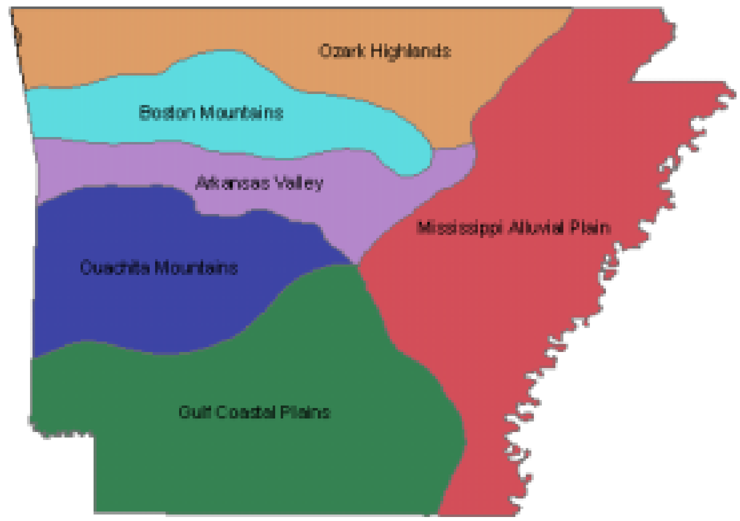

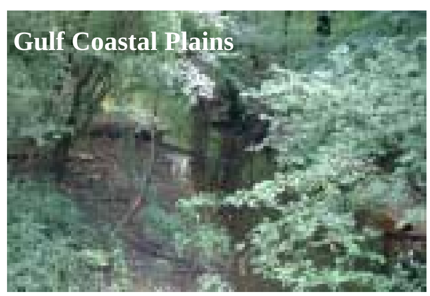

2002 Integrated Water Quality Monitoring and Assessment Report

Prepared pursuant to Section 305(b) and 303(d) of the Federal Water Pollution Control Act

Arkansas Department of Environmental Quality
Water Division

STATE OF ARKANSAS

DEPARTMENT
OF
ENVIRONMENTAL QUALITY

**INTEGRATED WATER QUALITY MONITORING
AND ASSESSMENT REPORT
2002**

Prepared pursuant to Section 305(b) and 303(d)
of the
Federal Water Pollution Control Act

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ACKNOWLEDGMENTS

Special thanks are given to the Computer Services and Technical Services Divisions of the Department of Environmental Quality for their assistance in extracting, organizing and displaying the various types of data which was from numerous sources. The assistance of Alan Price was especially helpful in the technical manipulation of the data from STORET and organization of data sets into forms easily displayed and compiled into the report. Numerous individuals from the Planning Section of the Water Division contributed to the report.

PART I: EXECUTIVE SUMMARY/OVERVIEW

Section 305(b) of the Clean Water Act requires the States to perform a comprehensive assessment of the quality of waters of the State; this is to be reported to Congress every two years. In addition, Section 303(d) of the Act requires the states to prepare a list of impaired waters on which TMDLs (total maximum daily loads) must be determined. Current EPA guidance recommends the States produce an integrated report combining the requirements of the Act for Section 305(b) reporting and 303(d) submissions. The combined report is referred to as the *Integrated Water Quality Monitoring and Assessment Report.* The 2002 version of this report uses the 1996 - 305(b) Guidance Document from EPA which is supplemented by a Memorandum from the Director of EPAs Office of Wetlands, Oceans and Watersheds, subject "2002 Integrated Water Quality Monitoring and Assessment Report Guidance". The reporting period for Arkansas' 2002 report is from October 1998 to January 2002.

The use of River Reach File 3 (RF3) by the EPA to tabulate and classify waterbodies significantly increases the tabulation of the total waters within the State. All waters or water courses that are apparent on the USGS 7.5 minute quadrangle maps were digitized by digital line graph traces and tabulated by different types of waterbody (e.g., perennial streams, intermittent streams, ditches, etc.). The number of stream miles tabulated for Arkansas increased from approximately 11,900 miles (RF1) to almost 90,000 miles (RF3). However, since the RF3 database includes many waters with only ephemeral flows and very short- term uses, we have chosen to retain the RF1 data as the base delineation and tabulation of Arkansas' waters.

Specific guidance was developed by the EPA for all states to use in making use determinations. This guidance is intended to provide national consistency in the assessment process rather than allowing states to establish its own assessment criteria. However, it was necessary to modify this criteria based on the type and amount of data available from each state. A major additional request by EPA was to report aquatic life use support based on biological communities within a waterbody.

The databases from which to draw have improved in area coverage as well as parameters sampled. Additionally, the length of time which the database has existed is now allowing valuable trend determinations, although these are not a required part of the report. The primary database used for this assessment is the Arkansas Department of Environmental Quality's ambient water quality monitoring network which currently includes 142 stations monitored monthly for several key water quality parameters. In addition, 114 stations were added to assess previously unassessed waters or waters that have not been monitored in several years. These stations were sampled quarterly or bimonthly. Special projects within the last three years include the continued monitoring of 32 sites on the Buffalo River and its tributaries; an intensive watershed survey of 25 sites in the Bayou Bartholomew basin; an intensive survey of 19 sites in the watershed of Millwood Lake and the initiation of an intensive watershed survey of the Strawberry River basin.

Additionally, numerous toxicity tests have been completed and reviewed during this reporting period including self monitoring test by the dischargers and compliance testing by the Department. The bacteria monitoring program was continued at selected regular monitoring stations which were sampled seasonally for fecal coliform bacteria, and all of the quarterly and bimonthly monitored stations included fecal coliform sampling.

The assessments in this report have been based on the rather extensive database as described above as well as the use of personal, professional judgement from Department employees with substantial background in water quality conditions in Arkansas' waters.

Generally, the monitoring data has been used to assess only the specific river reach on which it was generated. Other reaches within the segment, with no monitoring data available, were either evaluated by general knowledge of waterbody conditions or placed in a category labeled "unassessed".

The following is a summary of the assessment of Arkansas' waters:

Total miles of streams in RF1	12,071.7
Total miles of streams in RF3	87,617.4
Miles assessed for use attainment	8,606.0
miles monitored	5,966.6
miles evaluated	2,639.4
Miles meeting all assessed uses	7,313.3
Assessed miles not meeting fishable goal	898.8
Assessed miles not meeting swimmable goal	33.1

This data indicates that about 85 percent of the assessed waters are meeting all of the assessed designated uses. This is a conservative estimate and this percentage cannot be extrapolated to all waters of the State for the following reasons: (a) if any of the designated uses of a waterbody is not met, the waterbody is listed as "not meeting uses" even though all of its other uses are adequately met; (b) because a large number of the water quality monitoring stations are purposely located in areas known or suspected of having water quality contamination, this results in a higher percentage of problem areas being monitored, thereby skewing the results toward the use impaired areas; (c) much of the data from the Delta Region of the State was listed as unassessed due to the difficulty of determining water quality impacts where severe physical alteration of the habitat has occurred. and (d) although fish consumption is not a statutory or a water quality standard designated use, EPA guideline requires this be evaluated and waters with restricted fish consumption advisories are assessed as impaired and therefore, do not meet all uses. Previously, overall use support was based on the full support of all designated uses; if one of those uses was not assessed, it was not counted as supporting all uses. New guidance requires tabulation of waters supporting all assessd uses; therefore, if one or more uses were not assessed, but all assessed uses were fully supported, the water is counted as "supporting all assessed uses".

Among the Department's numerous water quality management programs, the wetlands program is driven by the Section 404 process and the requirement for Section 401 (water quality) certification. Such certification is determined on the basis of protection of designated uses, specifically those associated with the fishery uses and the antidegradation requirement of the State's water quality standards.

Ground-water assessment activities by the Department have expanded significantly in the last 6-8 years. The Arkansas Ambient Ground Water Quality Monitoring Program currently maintains approximately 250 monitoring sites across the state, which are sampled every three years. In 1998, the Department added an ambient monitoring site in Sharp and Fulton counties(Hardy Monitoring Area) in order to describe the ground water quality in the Ordovician-aged outcrops of northeastern Arkansas. In addition to the ambient monitoring sites established in the mid 1980's, the Department has initiated several investigations in order to evaluate areas of the state with special concerns including impact of pesticide use in the Delta, impact of confined animal operations in northwest Arkansas, and areas of saltwater intrusion in southeast Arkansas.

The increasing focus on ground water quality in recent years directly reflects the increased attention on nonpoint sources of contamination. As such, other state and federal agencies are involved in ground water case studies on an unprecedented level, including agencies which in past years had little involvement in ground water quality concerns such as the U of A Cooperative Extension Agency and the Natural Resources Conservation Service, among others. In addition to water quality concerns, declining ground water levels prompted the Arkansas Soil and Water Conservation Commission to enact legislation in 1991 to address the overuse of ground water. The present report on ground water assessment activities generally follows the 1996 EPA guidance, which enacted many changes primarily related to consistency among states.

Arkansas' point source discharge controls are managed through the NPDES program which has been delegated to the State from the EPA. This program is guided by the State's Water Quality Management Plan and the State's Surface Water Quality Standards. Enforcement activities are administered through the NPDES permitting system with monitoring data compiled through monthly discharge monitoring reports.

The initial Nonpoint Source Pollution Assessment for Arkansas was prepared using pre-1988 data. An assessment update was completed in 1990 and again in 1997, which indicated agricultural activities as the major source of waterbody impairment. Data from the current water quality assessment indicates little significant differences. The major efforts of nonpoint source management is oriented toward the waste management activities of the confined animal production areas such as northwest Arkansas, the Beaver Reservoir watershed and, more recently, in the Arkansas River Valley and in southwest Arkansas. Increased intensity of ground water and surface water monitoring and applied research on the fate of animal waste applied to pastures are attempting to address the nonpoint source impacts from confined animal activities. Expansion of the nonpoint source management program is underway. Program expansion is to include management plans for resource extraction, silviculture, road construction and maintenance and, possibly, urban activities. Due to recent assessments of impaired waters in the row-crop, Delta area of the State and the completion of TMDLs, implementation of watershed management plans are expanding into row-crop agriculture areas.

The classification of the State's waters by ecoregions not only categorize them by physical, chemical and biological features, but separates the major pollution problems, most of which are land use related. A general summary of the water quality by ecoregion follows.

Water quality in the Delta Region is significantly influenced by nonpoint source runoff from its highly agriculturalized areas. The vast majority of the waterways within this region form a network of extensively channelized drainage ditches. Long-term government programs have been used to develop this highly productive agricultural land. In contrast, many of the practices utilized in making this land more productive actually impair the designated water quality uses. Recent work within this region indicates that in the majority of these waters, the best that can be expected in terms of a fishery is an altered fishery. Once a natural stream has been channelized, only those organisms which do not require in-stream cover and can exist in highly turbid waters will survive. Within these systems the fishable goal of the CWA is being met, even though the aquatic life communities have been substantially altered. Many of the waterways within the Delta Region of Arkansas do not consistently maintain the swimmable criteria set forth in the Arkansas water quality standards even though the contaminants are not from human fecal sources. The current standard is based on the fecal coliform test which supposedly indicates the amount of fecal contamination within the water. However, this test also reads positive for numerous soil bacteria which bear no relationship to fecal contamination. Also, the highest incidence of measurable pesticide residue in the water occurs in this region.

The Gulf Coastal Region of southern Arkansas exhibits site-specific impacts due to resource extraction activities. These include extraction of petroleum products, brine, bromine, barite, gypsum, bauxite, gravel and others. Impacts occur from the extraction site, from storage and transmission of the product and from the processing facilities. Although timber is the major resource harvested in this area, no large scale impairments from these activities have been identified in this area.

The Ouachita Mountains Region has characteristically been described as a recreational region which possesses exceptionally high quality water. The predominant land use throughout this region is silviculture, both in private timber companies and National Forest holdings. Some of the Ouachita Mountains have been plotted on a national scale map as areas potentially sensitive to acidification (acid rain). Data is currently inconclusive concerning any impact on the region due to acid precipitation. Additional concerns have been voiced by various groups and organizations dealing with potential erosion and siltation as a result of management practices used in timber harvest. Periodic water quality monitoring data has not indicated significant impairments to the streams within this region. Occasional above normal turbidity values have been observed during periods of significant rainfall events. Potential impairments to waters in this region include land clearing for pasture without protective riparian zones, in-stream gravel removal and increasing areas of confined animal production.

The Arkansas River Valley Region exhibits distinct seasonal characteristics of its surface waters with zero flows common during summer critical conditions. Peak runoff events from within this region tend to introduce contaminants from the predominantly agricultural land use, which is primarily pasture lands with increasing hog, poultry and dairy production. Fecal coliform bacteria is one parameter of concern due to its preclusion of the swimmable use as determined by the current test. Measurements during storm events routinely exceed the water quality standard, although the source is not from human fecal contamination. The current exploitation of natural gas deposits has resulted in some site-specific water quality degradation. Most recently, this area has experienced rapid expansion of confined animal activities. Soil types in much of this area are highly erosive and tend to easily go into colloidal suspension, thus causing long-lasting, high turbidity values.

The Boston Mountains Region, located in north central Arkansas, is a sparsely populated area; the dominant land use is silviculture and much of the region is located within the Ozark National Forest. It is a high-use recreational region with exceptionally high quality water. A large percentage of the streams from this region are designated as extraordinary resources. Major concerns about potential water quality degradation include: 1) conversion of hardwoods to improved pastures, 2) expansion of confined animal operations, 3) even-aged timber management, and 4) localized natural gas production. Current monitoring data from within this region continues to reflect high quality water. Periodic, elevated levels of turbidity are noted in some waters in this region. This is most likely caused by clearing of timberland adjacent to major streams for conversion to pastures. This accelerates stream channel and bank erosion. In addition, secondary and tertiary road construction and maintenance and in-stream gravel removal are aggravating the turbidity problems.

The Ozark Highlands Region, located in extreme north Arkansas, is noted for its mountainous terrain with steep gradients and fast-flowing, spring-fed streams. A large percentage of the streams from within this region are designated as extraordinary resource waters. The fractured limestone geology of the region allows a direct linkage from surface waters to ground waters. The water quality problems within this region are directly related to land use. Within this region are some of the highest animal production rates in the United States, specifically, chickens, swine and cattle. The waste generated from these animal production facilities is generally land applied and, therefore, has the potential for contaminating both surface and ground waters. The nitrate levels measured from this region are atypically high and are trending upward. The large human population increase in this area also results in increased water contamination from infrastructure development as well as human waste generation. Removal of gravel from the banks and beds of streams is a very frequent activity. This causes direct habitat destruction and greatly accelerates siltation problems within the streams.

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PART II: BACKGROUND

CHAPTER ONE: ATLAS OF ARKANSAS

There are approximately 34 million acres of land and water inside Arkansas' boundaries. Of this, 15.1 million acres are in agriculture production; approximately 8.2 million acres in crop production and 6.9 million acres in pasture land and other agricultural uses. There are approximately 17 million acres of forests in the state; however, not all of these acres are managed for timber production. The remaining 1.9 million acres is in state parks and wildlife areas, waterways, highways, roads, urban areas and other non-agricultural lands. There are approximately one-half million acres of impounded surface waters in the State.

River Basins/Total River Miles

The State is divided by six major river basins: the Red River Basin, Ouachita River Basin, Arkansas River Basin, White River Basin, St. Francis River Basin and the Mississippi River Basin. Arkansas has 12,071.7 miles of rivers and streams digitized in the EPA River Reach File (RF1) with some additions by the Department. The RF1 files were digitized from 1:500,000 scale maps and includes only the major water bodies. Recently the EPA has redigitized the State's water bodies from the 7.5 minute topographic maps, thus significantly increasing the detail and the number of water bodies. This includes the intermittent streams and ephemeral drainages that flow only during a rainfall event.

For comparison, the following data was developed from the EPA RF3/DLG database for the State of Arkansas:

Total river and stream miles	87,617.4	
Perennial stream miles	28,408.2	
Intermittent stream miles	53,465.2	
Ditches and canal miles	5,250.6	
Border stream miles	493.5	
Total acres of lakes, reservoirs, ponds		514,245

Since most of the water bodies identified in the RF3 File are not assessed, the State has chosen to retain the RF1 database in its assessment process.

The six major river basins are subdivided into 38 water quality planning segments (Figure II-1) based on hydrological characteristics, human activities, geographic characteristics, etc. The planning segments are further broken down into 492 smaller watersheds, based on discrete hydrological boundaries as defined by the U.S. Natural Resources Conservation Service.

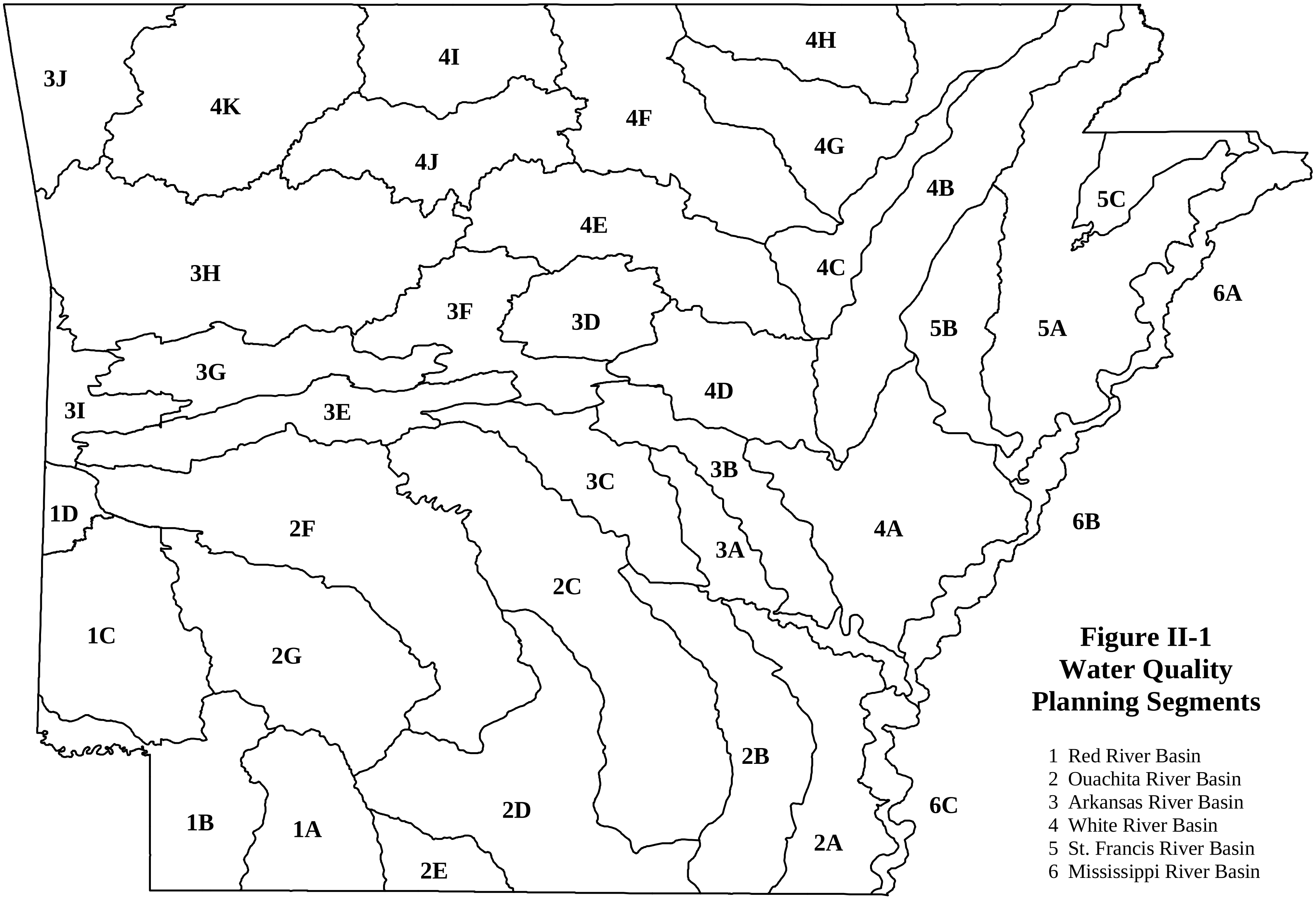

Figure II-1
Water Quality
Planning Segments

1 Red River Basin
2 Ouachita River Basin
3 Arkansas River Basin
4 White River Basin
5 St. Francis River Basin
6 Mississippi River Basin

Publicly-Owned Lakes/Reservoirs

A discussion of lakes and reservoirs is included in Part III, Chapter Five and includes a list of Arkansas' publicly-owned lakes and reservoirs and their trophic status. The State has a total of 356,254 acres of significant publicly-owned lakes. The EPA RF3/DLG calculation identifies a total of 514,245 acres of lakes, ponds and other impounded waters in the State some of which are private fish production facilities and water treatment facilities.

Wetlands

The draft National Wetlands Priority Conservation Plan (NWPCP) identified Arkansas as one of nineteen states that experienced significant decreases in wetlands from 1954 to 1974. Most of the States' wetlands are located in the Delta which is dominated by row-crop agriculture and the primary threat to wetlands is conversion to cropland. Although the conversion rate appears to have peaked in the 1960's and is now decreasing, the total wetland base has declined substantially making smaller losses more critical. Without significant changes in wetlands protection strategies, it was predicted that the Arkansas' Delta Region would continue to lose wetlands at a rate of over 15,000 acres per year. Additional discussion about the States wetlands is located in Part III, Chapter Six.

Summary of Classified Uses

Essentially, all waters of the state are classified for specific designated uses. Approximately 1,833 miles (about 16%) of Arkansas' streams are classified as high quality, outstanding state or national resources. The designated uses assigned to various water bodies include:

- Extraordinary Resource Waters
- Ecologically Sensitive Water bodies
- Natural and Scenic Waterways
- Primary Contact Recreation ("swimmable")
- Secondary Contact Recreation
- Fisheries ("fishable")
  - Trout
  - Lake and Reservoir
  - Stream
    - Ozark Highlands
    - Boston Mountains
    - Arkansas River Valley
    - Ouachita Mountains
    - Typical Gulf Coastal
    - Spring water-influenced Gulf Coastal
    - Least-altered Delta
    - Channel-altered Delta
- Domestic Water Supply
- Industrial Water Supply
- Agricultural Water Supply

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CHAPTER TWO: WATER POLLUTION CONTROL PROGRAMS

Watershed Approach

The watershed approach for water quality management in Arkansas was initiated in the early to mid 1970's with the development of Water Quality Planning Segments. In accordance with Section 303(e) of the Clean Water Act, wasteload allocation studies to establish TMDLs (total maximum daily loads) for waters in each segment were performed. The water quality management plan has been continuously updated with new or expanded facilities, or in compliance with modifications of the water quality standards. Similarly, assessment of the State's water quality is based on individual stream reaches grouped by planning segments and based on watersheds. The statewide monitoring program, as well as the NPDES permitting program is organized by these same planning segments. The planning segments are congruent with the hydrologic unit code (HUC) boundaries in EPA's River Reach File. This allows GIS capabilities to assist with designation, characterization, assessment and management.

Water Quality Standards

Arkansas' water quality standards are based on extensive data collection of the physical, chemical and biological characteristics of least-disturbed streams within ecoregions which were established by land surface forms, potential natural vegetation, soil types and land uses. All waters of the State have been designated to support multiple uses based on the potential attainability of the use in each waterbody.

Specific criteria to protect the designated uses of each waterbody were developed from the intensive ecoregion studies, an abundance of historical data, numerous additional scientific data and considerable public and other governmental agency input. These criteria include numeric values, narrative limitations and prohibitions on physical alterations of certain waters. The aquatic life uses are specifically defined to provide a measure for aquatic life use support which includes community structure as well as toxicity limitations.

Provisions are established in the water quality standards to allow modifications of the criteria and the designated uses of specific water bodies based on existing uses, the level of classification of the waterbody and the social and economic needs of the area of concern.

Point Source Control Program

In accordance with the federal Clean Water Act, Section 303(e), Arkansas maintains a "continuous planning process" in order to integrate the National Pollutant Discharge Elimination System (NPDES) permit program, state permit program and the state water quality standards with the Water Quality Management Plan (WQMP). The WQMP is the controlling document for determining all point source discharge limits statewide. As new information is developed, revisions to the WQMP are made in accordance with the public participation requirements of the Clean Water Act.

The state of Arkansas presently administers the state permit program, which has been in operation since 1949; as of November 1, 1986 the State also has been authorized by EPA to administer the NPDES program under the Clean Water Act.

The state program involves the issuance of permits for construction or physical modification to a waste treatment or disposal system. It requires (1) that a permit be obtained prior to construction or alteration of the treatment system; (2) submission of an acceptable application characterizing the waste; and (3) submission of plans and specifications concerning the treatment method to ensure that water quality standards will not be violated. Also, the State Permits Branch regulates the confined animal industry requiring swine, poultry and dairy farms with liquid animal waste handling and storage facilities to obtain a State Water Permit.

Arkansas currently operates a NPDES program patterned very closely after the EPA program, using the federally approved forms for permit applications as well as monitoring reports. In the administration of the program, the Department has adopted by reference, in Regulation No. 6, most of the federal regulations applicable to a wastewater discharge permitting program. Figure II-2 shows the distribution of all major and selected minor NPDES permits in Arkansas.

<u>Storm Water Requirements</u>

The Storm Water Section (SWS) of the NPDES Branch was created to help reduce the pollutant loadings on streams from storm runoff from industrial areas. The SWS has approximately 1618 general storm water runoff permits for industrial activity (ARR00A000) and approximately 551 general storm water runoff permits for construction activity (ARR10A000). Twelve groups of industry have to monitor storm water runoff annually per the general permit (ARR00A000). Five hundred and four of the industrial permittees monitor their runoff annually. Additionally, there is a municipal separate storm sewer system (MS4) permit (ARS000001). This permit has been issued as a co-permit to the City of Little Rock and the Arkansas State Highway and Transportation Department (AHTD).

The general storm water permits require facilities to develop a Storm Water Pollution Prevention Plan (SWPPP) using Best Management Practices (BMPs). These BMPs should address reduction in pollutants exposed to the storm water runoff and/or removal of the pollutants after the storm water has been contaminated. The SWPPP must include a list of personnel that will inspect the facility, a non-storm water certification, good housekeeping, spill prevention and response, and inventory of exposed material.

<u>Point Source Impacts Monitoring</u>

The impacts from major point source discharges of concern is monitored primarily through strategically located monitoring stations within the statewide ambient monitoring network. These stations not only document areas of concern needing enforcement or some other type of abatement activity, but they also demonstrate improved conditions resulting from pollution control activities.

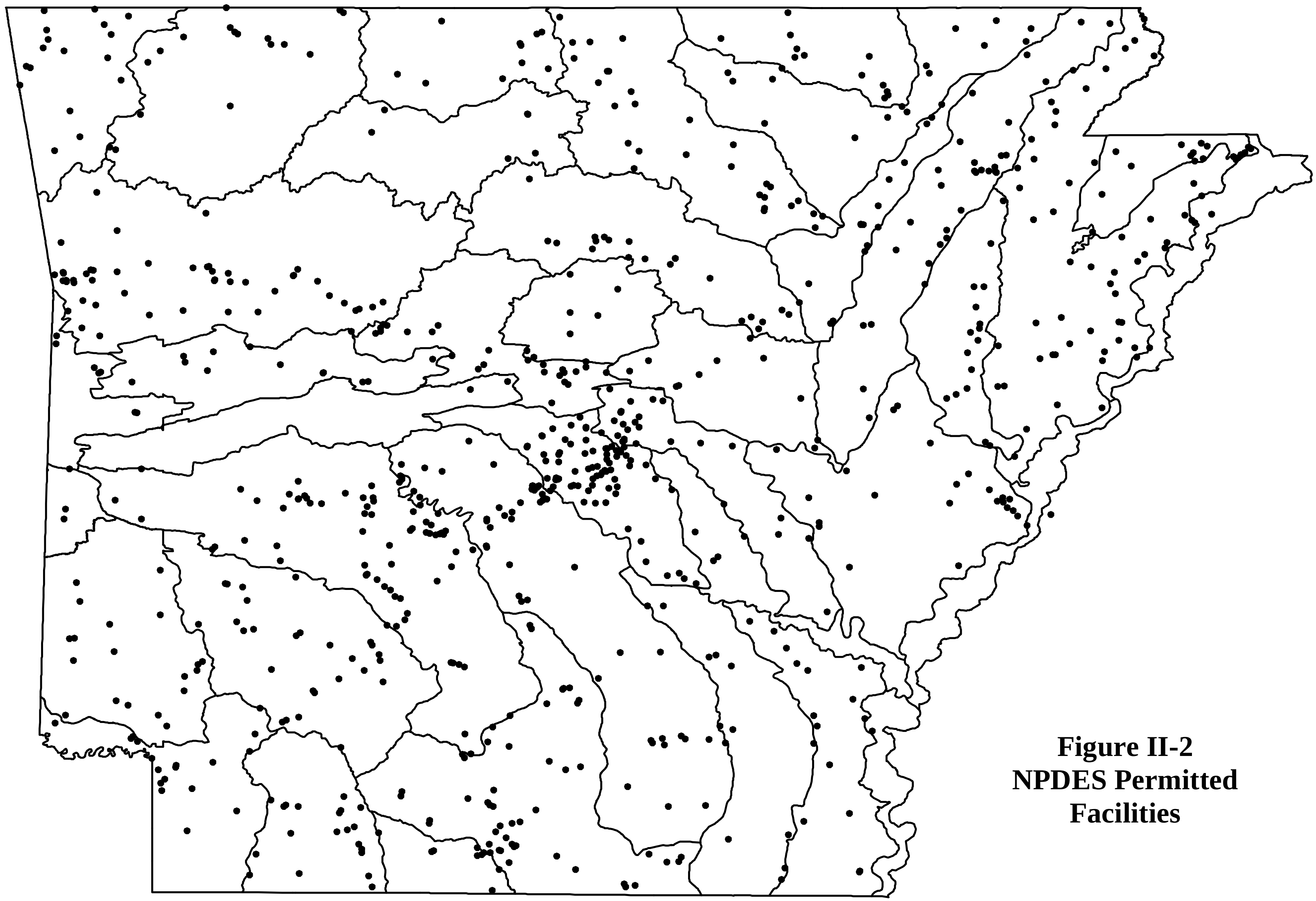

Figure II-2
NPDES Permitted
Facilities

In addition, self-monitoring through monthly discharge monitoring reports is required in the NPDES permits of most dischargers (see enforcement).

Toxics Strategy

Since FY87, the Department has utilized toxicity testing as a monitoring tool to measure compliance with its narrative toxicity standard which states "Toxic materials shall not be present in receiving waters, after mixing, in such quantities as to be toxic to human, animal, plant or aquatic life, or to interfere with the normal propagation, growth and survival of the indigenous aquatic biota." The actual intent of the toxics strategy is that there shall be no discharge of any wastewater from any source which:

1. results in the endangerment of any drinking water supply

2. results in aquatic bioaccumulation which endangers human health

3. results in any in-stream acute or chronic aquatic toxicity or

4. violates any other applicable general or numerical state water quality standard.

The toxicity testing program consists of both self-monitoring conducted by the permittee and compliance monitoring conducted by the state. The state has been and will continue to implement the post-third round permit policy endorsed by EPA Region 6, with minor revisions. Whole effluent toxicity testing requirements are included in all major and selected minor permits. Biomonitoring requirements are placed in permits at renewal or, in some instances, prior to renewal if information indicates a significant probability of toxicity.

In 1991, the Arkansas Pollution Control and Ecology Commission adopted specific numeric criteria for 12 pollutants in terms of their acute and chronic toxicity (Section 2.508 of Reg. No. 2). On December 22, 1992, EPA promulgated numeric criteria for 10 heavy metals and cyanide into Arkansas water quality standards. These criteria were initially expressed as total recoverable metals. Later EPA modified these values by applying a conversion factor to the total recoverable values and expressed them as dissolved values. The promulgated standards for chromium(VI), mercury and cyanide are expressed as a function of the pollutant's water-effect ratio (WER), while standards for cadmium, chromium(III), copper, lead, nickel, silver, and zinc are expressed as a function of the pollutant's WER and as a function of hardness. In January 1998, the Commission adopted the National Toxic Rule Numbers previously promulgated by EPA as a part of the States water quality standards. However, currently the federally promulgated heavy-metal standards still exist as part of the State’s water quality standards.

When applications for NPDES permits are submitted, the in-stream waste concentrations (IWC) for all potential pollutants for which there is no adopted state standard are calculated and compared to values listed in the Quality Criteria For Water 1986 (Gold Book). If toxicity values published in the

Gold Book are exceeded by the calculated IWC, whole effluent biomonitoring is required as a permit condition.

Self Monitoring for Toxicity

During this reporting period, biomonitoring was required in 83 major and significant minor industrial NPDES permits. Toxicity was indicated in 23% of 1320 toxicity tests submitted by these permittees. Six industrial facilities are performing, or have completed, Toxicity Reduction Evaluations (TRE's). from October 1998 – December 2001. Depending on the results of the TRE's, these facilities have discontinued or relocated discharges or improved treatment capabilities.

Sixty-eight municipal permittees reported results of approximately 1120 toxicity tests performed in this time span. Twelve percent (12%) of these analyses exhibited toxicity.

When the general storm water runoff permit for industrial activity (ARR00A000) was first issued on October 1, 1992, acute toxicity testing was required for approximately 220 facilities. These facilities fell under the first three monitoring categories found in Part V.B of the general permit. After the first three years of the permit, these requirements were removed for those facilities that successfully passed the requirement (approximately 60 percent).

Quarterly testing was required from 1996 until the general permit was renewed on October 1, 1998. During this time, 60 of the 90 facilities were able to pass the quarterly acute toxicity testing. When the general storm water runoff permit for industrial activity (ARR00A000) was renewed, the biomonitoring requirements were not continued. The facilities that were still having trouble passing the biomonitoring requirements (approximately 30) were placed back on annual testing until they passed two consecutive tests. As of October 1, 1998, 16 industrial facilities were required to conduct annual acute biomonitoring. Between October 1, 1998 and December 31, 2001 permits have expired or biomonitoring is no longer required for six facilities. Currently, 10 facilities are required to biomonitor yearly, using acute toxicity tests.

Certification of Monitoring Data

Pursuant to the provisions of Act 322 of the 79th General Assembly of 1993, the Arkansas Pollution Control and Ecology Commission established mandatory certification for certain environmental testing laboratories. This Act clarifies the Department's existing power to refuse to accept invalid test results and expands the enforcement powers over environmental testing. Regulation No. 13 establishes the fee system for laboratory certification. As of December 2001, 85 environmental testing laboratories have received certification from the State of Arkansas.

Enforcement

Enforcement responsibilities for the NPDES permits are divided between EPA Region 6 and the NPDES enforcement section. Those facilities subject to ongoing enforcement actions by EPA at the time of program authorization remain the responsibility of EPA until the facility is in compliance.

The state has enforcement responsibility for the remainder. The primary basis for enforcement is the self-monitoring data submitted by permittees on monthly discharge monitoring reports (DMRs). All DMR data is entered into the Permit Compliance System (PCS) national database. The state addresses all permit violations reported by permittees through an informal enforcement action, initially; an escalation of enforcement actions occur if the violation is not resolved. Other violations are judged on their severity and actions are taken as necessary.

Wastewater Licensing/Training

Wastewater treatment plant operator licensing and training continues to be a necessary and integral part of the overall scope of the point source pollution control program. The licensing and training verification program administered by the Wastewater Licensing Section, Water Division of the Department operates within the authority of Arkansas Act 211 of 1971, as amended, and Act 1103 of 1991. Both of the above Acts set the requirements by law that requires a licensed operator at most wastewater treatment facilities in Arkansas. Act 211 has required licensed operators at Privately Operated Treatment Works (POTW) since 1971. There are approximately 3000 licensed operators in Arkansas, which includes both municipal and industrial operators. Classification of wastewater treatment plants by population served and the unit processes determine the level of operator staffing and the licensing level of the plant operators.

Most training of wastewater treatment plant operators is accomplished by the Arkansas Environmental Academy, a branch of Southern Arkansas University located at Camden, Arkansas. Approximately 100 training sessions are accomplished annually with offerings in all phases of wastewater training at various state locations by the adjunct faculty. Other sources of training are provided by private contractors, formal organizations, and other institutes of higher learning.

Construction Assistance

The Revolving Loan Fund, as of July 1, 2001, Construction Assistance is no longer a division of ADEQ and has been transferred to Arkansas Soil and Water Conservation Commission (ASWCC). The program is now part of the Water Development Division, Water Resources Cost Share Revolving Fund at ASWCC. However, prior to July 1, 2001, the Revolving Loan Fund, as enacted under Title VI of the Clean Water Act, as amended in 1987, provided loans to communities for the same purpose as grants. The Department offered communities an interest rate well below the market rate. The loans should have been repaid within 20 years of project completion, and the debt could be serviced from a variety of repayment sources such as sales tax, sewer user charges, etc. When necessary, assistance was offered in restructuring the existing debt.

Nonpoint Source Control Program

In 1988, the Department conducted a nonpoint source assessment and prepared a management plan pursuant to Section 319 of the Clean Water Act, as amended by the 1987 Water Quality Act. This assessment and portions of the original management program were approved by EPA Region 6 nonpoint source program personnel.

In 1996, the Arkansas Soil and Water Conservation Commission (ASWCC) was designated as the Nonpoint Source Program Management Agency and the lead agency for the Agriculture nonpoint source category; the Arkansas Forestry Commission assumed the responsibilities for the Silviculture category; and the Department has retained the responsibility of preparing and updating the Nonpoint Source Assessment report, watershed prioritization, and the responsibilities associated with the Construction, Resource Extraction (mining), Land Disposal, Recreation, Other, and Unknown categories. The Department and the Municipal League share responsibilities for the Urban Runoff category, and the Department and the ASWCC share responsibilities for the Hydrologic/Habitat Modification category.

Assessment

The initial Arkansas Nonpoint Source Pollution Assessment in 1988, assessed approximately 36 % of the 11,300 stream miles in the state. Based on assessment criteria established in 1988, 58% of the assessed streams were not meeting all designated uses. Limited data for the 72 significant publicly-owned lakes indicated no use impairment by nonpoint sources. There was also inadequate data to identify specific areas of groundwater impairment. The 1988 assessment identified agriculture and mining as the primary categories of nonpoint source (NPS) pollution causing impairments to water bodies of the State.

The 1988 assessment was updated in June 1997, using updated assessment criteria. The 1997 report assessed 8700 stream miles and indicated that NPS pollution was impacting (but not necessarily impairing) over 4100 stream miles. Agricultural impacts were identified as the major cause of impacts on 3197 stream miles. Other major impacts were related to silviculture activities, road construction/maintenance activities and unknown sources. The unknown source was mercury contamination of fish tissue.

Management Program

The Arkansas Nonpoint Source Pollution Management Plan was updated and fully approved in 1999. It provides for continued monitoring of water quality, research into the effectiveness of Best Management Practices (BMPs), and implementation strategies of BMPs. Current, the ASWCC is updating the Management Plan.

Current Activities

In 1997, ASWCC initiated a Priority Watershed Program that targets NPS impacted watershed for BMP implementation. A multi-agency task force prioritizes watersheds using many parameters, including the degree of impairment, State importance, and public participation. Ten watersheds were selected in 1997 for either more intensive survey activities or BMP implementation activities. A copy of Arkansas Nonpoint Source Pollution Management Program, Priority Watershed Program can be obtained by contacting the Arkansas Soil and Water Conservation Commission.

A physical, chemical and biological water quality assessment was completed by the Department on the Piney Creek watershed in north-central Arkansas in 1999. Findings of the assessment indicated that all designated uses were being attained in the watershed. However, recommendations were made to implement BMPs to reduce in stream turbidity and bacteria concentrations, update agriculture management plans, and stabilize streambanks across the watershed.

A Total Maximum Daily Load (TMDL) was completed for the L'Anguille River in October 2001. The TMDL indicated that a reduction of total suspended solids by 38% to 40% was needed in order to meet in stream turbidity water quality standards.

In addition, a similar assessment of the Bayou Bartholomew watershed was completed in 2001. Findings from this survey indicated possible impairments to the biological community due to excessive turbidity and inadequate in-stream habitat. In addition, fecal coliform concentrations in isolated sections of the watershed occasionally exceeded the primary contact recreation standard. A TMDL for the watershed addressing these impairments should be completed by January 2003.

The Department initiated a physical, chemical and biological water quality assessment of the Strawberry River watershed in January 2000. This survey should be completed by December 2004. Two segments of the watershed have been previously assessed as not meeting water quality standards for turbidity and/or fecal coliform bacteria concentrations. The final assessment report will better determine designated uses and water quality standards attainment, the causes of the impairments, and their sources. The data generated will be used to develop a TMDL for those segments not currently meeting water quality standards. The report will also prioritize sub-watersheds for BMP implementation and make recommendations on types of BMPs to implement. A TMDL for the watershed should be completed in late 2004.

CHAPTER THREE: SPECIAL STATE CONCERNS

Areas of special concern within the State's water quality management program include many of the national concerns and priorities as well as state or area-specific problems. These concerns extend from wide-range, philosophical concerns impacting long-range goals and objectives to area or issue-specific concerns which can be addressed within a short-term program cycle. Many of these concerns are listed below simply as an exercise of compiling thoughts which are likely to shape future activities.

1. Currently, the major issue of concern in water quality management is the 303(d) TMDL process as required in the Clean Water Act vs. EPA policy decisions concerning the process as influenced by numerous lawsuits. The philosophy and intent of Section 303(d) is entirely proper. The intent was to identify waters which do not or will not meet water quality standards using technology based permit limits. It is clear that background and/or nonpoint sources must be considered and, where possible, controlled in the process, and that water-quality based permits must be issued. The process has mutated to a mass of often changing "guidance" (requirements) in an attempt to standardize and formalize the process to fit every occasion. This has, and in the future will, result in masses of plans, proposals, documents and more lawsuits; whereas, these efforts could better be used to implement corrective actions based on the site-specific conditions and needs. Previously proposed, but currently "on-hold" amendments to water quality management regulations concerning the TMDL process, if implemented, will result in the process changing from a water quality management tool to a regulatory process for both point and nonpoint source controls.

2. A logical and manageable solution is needed for the elimination of toxic, point source discharges. This would be accommodated by improved information for the assessment and interpretation of metals concentrations in fish tissue and sediment; acceptable and consistently used analyses techniques for the problematic form of metals contaminants in water; and improved equipment detection limits, specifically for the persistent and/or carcinogenic organics such as the pesticides, herbicides, their many metabolites, and the highly bioaccumulating compounds such as dioxin.

3. Protection of the existing, naturally occurring wetlands through a mechanism other than discharge permits for dredge and fill materials which are being extended into farmed fields and address only limited activities.

4. More effective methods are needed to identify NPS impacts and their causes. This will require the use of in stream biotic indicators rather than conventional water quality parameters. Emphasis must be placed on identifying and controlling NPS impacts within extraordinary resource watersheds and protecting rare, unique and/or endemic aquatic communities. Load allocation and GIS models must be utilized in establishing NPS loads.

5. An active program(s) to control excessive turbidity and silt loading to water bodies is needed. This should include procedures to control major sources such as stream bank erosion from riparian land clearing, road construction and maintenance, streambed gravel removal and runoff from urban construction sites.

6. Impacts of the expansion of confined animal production into different regions of the state.

7. Development of a process to establish watershed-specific goals for nutrients. Emphasis should be on nutrient management and restriction of nutrient impacts to an acceptable level and based on waterbody specific uses, feasibility of treatment and desires of the stakeholders.

8. Incorporation of a multi-discipline approach to pollution control to include the interrelationships of air, water, solid waste, and impacts of the groundwater. This has recently been conceptualized as part of the watershed management approach.

9. Identification of initial impacts of silviculture activities on water quality and long-term impacts from forest conversions of hardwoods to pine.

10. Assessment of impacts to ground water from contamination sources not currently regulated under existing programs, including both point and nonpoint sources; and a ranking of these sources according to their potential to contaminate ground water and the mobility, persistence and toxicity of the contaminant.

11. Promulgation of ground water standards which reflect existing water quality in different aquifers and different regions of the state; similar to the ecoregion approach to the protection of surface waters.

12. Comprehensive, multi-discipline approach to ground water protection through total agency cooperation in both investigating and preventing ground water contamination.

13. Development of a statewide ground water quality database and/or more effective data management to improve access across programs by other agencies and the private sector.

14. Development of lake management water quality control programs including water quality monitoring and watershed management.

15. Incorporation of rainfall quantity and quality data into the STORET system to allow cause and effect considerations of rainfall contributions.

16. Improvement and protection of Arkansas River water quality to provide it as an alternative source of domestic, agriculture and industrial water supply.

17. Developing information to expand our knowledge of quality vs. quantity in protecting designated uses. As increasing demands are exerted on water quantity, flow and/or volume of water must be considered in protecting specific designated uses.

18. Establishment of land use zoning and watershed management plans at local levels to facilitate the development/protection of the State's ground and surface water resources.

19. Identifying the magnitude, source and control of pesticides in surface and ground waters, particularly in the agriculture areas of the State.

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PART III: SURFACE WATER ASSESSMENT

CHAPTER ONE: SURFACE WATER MONITORING PROGRAM

The ambient river and stream monitoring program, which began in 1974, was an expansion and modification of an earlier interstate network. Some of the basic purposes of that monitoring network were to establish background levels and baseline water quality, including physical, chemical, and biological data, as well as seasonal and chronological variations. The monitoring program helps to establish cause and effect relationships between known point and nonpoint sources of pollution and the quality of the State's waters. The ambient monitoring program will always be vital in evaluating the effectiveness of the Department's pollution control program by assessing overall water quality before and after the implementation of pollution controls. This ultimately helps to update or redirect pollution control efforts.

In 1982, the Department evaluated the monitoring network and four goals were established for the new network to accomplish. The first was to better assess the effects of point source dischargers upon water quality; the second was to observe the impact of known nonpoint source problems over the long term. The third goal was to continue monitoring our major rivers due to their basic importance to the state. Finally, carefully selected, high quality (least-impaired) streams would be monitored to provide long-term chemical data by physiographic region for use in future water quality standards revisions. All of the work necessary to revise the previous network has been accomplished.

Each year some modifications in the network are made, but they are limited so that the integrity and the original objectives of the program can be met. Major additions to the program in 1992 included special projects designed to get a synoptic picture of a designated watershed over a limited period of time. These projects will normally add 40 to 100 stations to the network for one or two years. Each project has specific goals unique to the needs for management of the watershed.

In 1994, the major waters of the state, which had never been monitored or had not been monitored within the last 10 years, were identified. An extensive network of approximately 100 stations was established to monitor the water quality of these “unassessed” waters. Quarterly sampling began at these sites in May of 1994 and continued through October 1996. In October 1998, these stations were divided into four groups. Each group would be sampled for one year on a bimonthly basis. Additional sites are added to each group to bring the total number of stations to near 40 for each sampling event. These stations are known as the “Roving Monitoring Network”.

Table III-1 lists the water quality monitoring stations that are sampled monthly. Table III-2 lists the Roving Monitoring Network stations. Table III-3 and Table III-4 list the special projects and their sample stations. Table III-5 lists the parameters analyzed.. Figure III-1 and Figure III-2 depict the statewide distribution of the monthly and quarterly monitoring stations and special project sampling stations, respectively.

TABLE III-1: AMBIENT WATER QUALITY MONITORING STATIONS

RED RIVER BASIN

Station No.	Planning Segment	Station Description	Type*	Flow Gauge
RED 27	1A	Bodcaw Creek south of Lewisville	W	*
RED 15A	1A	Dorcheat Bayou east of Taylor	W	*
RED 45	1B	Red River @ Hwy 82 nr Garland	W	
RED 46	1B	Red River @ Fulton RR crossing	W	
RED 04A	1B	Days Creek southeast of Texarkana	WK	*
RED 09	1B	Red River near Doddridge	W	*
RED 25	1B	Red River south of Foreman	W	*
RED 05	1B	Sulphur River south of Texarkana	W	*
RED 33	1C	Bear Creek below Process City	WK	
RED 22	1C	Cossatot River @ Hwy. 24 bridge	W	
RED 31	1C	Cossatot River near Wickes at Hwy. 4	W	
RED 34A	1C	Holly Creek above Dierks	WK	
RED 34B	1C	Holly Creek below Dierks	WK	
RED 02	1C	Little River near Horatio	W	*
RED 23A	1C	Rolling Fork R. @ County Rd N. of Hwy 24	W	
RED 30	1C	Rolling Fork R. above DeQueen Res.	W	
RED 32	1C	Saline River north of Dierks at Hwy. 4	W	
RED 21	1C	W. Saline River @ Hwy. 24 bridge	W	
RED 18B	1C	Mine Creek @ Hwy 355 S. of Nashville	W	
RED 48B	1C	Mine Creek @ Hwy 27 Bypass S. of Nashville	W	
RED 58	1C	Rolling Fork River near Grannis	W	
RED 01	1D	Mountain Fork near Hatfield	W	*

OUACHITA RIVER BASIN

Station No.	Planning Segment	Station Description	Type*	Flow Gauge
OUA 15A	2A	Boeuf River near AR-LA Line	W	
OUA 13	2B	Bayou Bartholomew near Jones, LA	W	*
OUA 33	2B	Bayou Bartholomew near Ladd	W	*
OUA 18	2C	Big Creek below Sheridan	WK	
OUA 43	2C	Big Creek at Hwy. 35	W	
OUA 31	2C	Hurricane Creek near Sardis	W	*
OUA 116	2C	Hurricane Creek @ Hwy. 270 bridge	W	
OUA 10A	2C	Saline River near Fountain Hill	W	*
OUA 26	2C	Saline River near Benton	WK	*
OUA 41	2C	Saline River below Benton (Shaw)	WK	*
OUA 42	2C	Saline River at Hwy. 167 (Sheridan	W	
OUA 117	2C	Saline River @ Ozment Bluff	W	
OUA 118	2C	Saline River @ Hwy. 79 bridge	W	
OUA 05	2D	Bayou L'Outre near Junction City	W	*
OUA 47	2D	Jug Creek below Fordyce	WK	
OUA 28	2D	Moro Creek east of Hampton	W	*
OUA 08B	2D	Ouachita River @ Felsenthal Dam	W	*
OUA 37	2D	Ouachita River below Camden	WK	*

OUACHITA RIVER BASIN (cont.)

Station No.	Planning Segment	Station Description	Type*	Flow Gauge
OUA 124B	2D	Ouachita River @ Pigeon Hill	W	
OUA 27	2D	Smackover Creek near Smackover	W	*
OUA 02	2E	Cornie Bayou near Three Creeks	W	*
OUA 23	2F	Caddo River near Amity	W	*
OUA 44T	2F	N.L. Baroid trib to South Fork Caddo	W	
OUA 06	2F	Ouachita River nr Malvern @ Rock Port	W	
OUA 21	2F	Ouachita River near Pencil Bluff	W	*
OUA 30	2F	Ouachita River near Donaldson	W	*
OUA 40	2F	Prairie Creek below Mena	WK	
OUA 44	2F	South Fork of Caddo River at Fancy Hill	W	
OUA 159	2F	Cove Cr. @ Hwy. 51 nr Magnet Cove		
OUA 22	2G	Little Missouri River near Langley	W	*
OUA 35	2G	Little Missouri River near Boughton	W	*
OUA 39B	2G	Little Missouri River below Murfreesboro	W	

ARKANSAS RIVER BASIN

Station No.	Planning Segment	Station Description	Type*	Flow Gauge
ARK 20	3A	Arkansas River at Dam #2	W	*
ARK 60	3B	Bayou Meto at W Main St Bridge, Jacksonville	WK	
ARK 50	3B	Bayou Meto below Jacksonville at Hwy. 161	WK	
ARK 23	3B	Bayou Meto near Bayou Meto	W	
ARK 97	3B	Bayou Two Prairie S. of Carlisle	W	
ARK 46	3C	Arkansas River at Lock & Dam #6	WK	*
ARK 48	3C	Arkansas River below Pine Bluff, L&D #4	WK	*
ARK 49	3C	Arkansas River above Pine Bluff, L&D #5	WK	*
ARK 29	3C	Arkansas River at Murray Lock & Dam	WK	*
ARK 37	3E	Fourche LaFave River near Gravelly	W	*
ARK037A	3E	Fourche La Fave River near Harvey	W	
ARK 52	3E	S. Fourche LaFave River above Hollis	W	*
ARK 30	3F	Arkansas River at Lock & Dam #8	W	*
ARK 51	3F	Stone Dam Creek below Conway	WK	
ARK 31	3F	Arkansas River at Lock & Dam #9	W	*
ARK 32	3F	Arkansas River near Dardanelle	W	*
ARK 67	3F	Whig Creek below Russellville	WK	
ARK 53	3F	White Oak Creek near Atkins	WK	
ARK 58	3G	Chickalah Creek at Chickalah	W	*
ARK 57	3G	Dutch Creek below Shark	W	*
ARK 34	3G	Petit Jean River above Booneville	WK	*
ARK 44	3H	Illinois Bayou northwest of Dover	W	*
ARK 33	3H	Arkansas River at Ozark Lock & Dam	W	*
ARK 38	3H	Arkansas River near Fort Smith, AR	W	*
ARK 43	3H	Big Piney Creek at Hwy. 164	W	*
ARK 42	3H	Mulberry River at I-40	W	*
ARK 11B	3H	Short Mountain Creek below Paris	WK	
ARK0146	3H	Arkansas River below Mayo L&D	W	*

ARKANSAS RIVER BASIN (cont.)

Station No.	Planning Segment	Station Description	Type*	Flow Gauge
ARK 14	3I	Poteau River near Fort Smith	W	
ARK 15	3I	James Fork Near Hackett	W	*
ARK 54	3I	Poteau River above Waldron	WK	*
ARK 55	3I	Poteau River below Waldron	WK	*
ARK 07A	3J	Barren Fork at County Road 11 near Dutch Mills	W	*
ARK 10C	3J	Clear Creek below Fayetteville	WK	
ARK 04A	3J	Flint Creek near W. Siloam Springs	W	*
ARK 06	3J	Illinois River @ Hwy. 59	W	*
ARK 06A	3J	Illinois River near Siloam Springs	W	*
ARK 40	3J	Illinois River near Savoy, AR	W	*
ARK 56	3J	Town Branch below Bentonville	WK	
ARK 41	3J	Osage Creek near Elm Springs	W	*
ARK 05	3J	Sager Creek near Siloam Springs	WK	
ARK 03	3J	Spavinaw Creek north of Cherokee	W	*
ARK 141	3J	Cincinnati Cr. @ Hwy 244	W	

WHITE RIVER BASIN

Station No.	Planning Segment	Station Description	Type*	Flow Gauge
WHI 74	4A	Boat Gunwale Slash at Hwy 146	W	
WHI 73	4A	Prairie Cypress Creek at Hwy 1	W	
WHI 36	4A	White River at St. Charles	W	*
WHI 26	4B	Bayou DeView west of Gibson	W	*
WHI 138	4C	White River @ Hwy 67 near Newport	W	
WHI 31	4D	White River at DeValls Bluff	W	*
WHI 72	4D	Wattensaw Bayou north of Hazen	W	*
WHI 59	4E	Little Red River below Searcy	WK	*
WHI 43	4E	Middle Fork Little Red River near Shirley	W	*
WHI 65	4F	Hicks Creek below Mountain Home	WK	
WHI 11	4F	South Sylamore Cr. below Lick Fork Cr.	W	
WHI 29	4F	White River at Oil Trough	W	
WHI 46	4F	White River near Norfork, AR	W	*
WHI 03	4G	Black River @ Hwy 63, E. Corning	W	
WHI 25	4G	Black River at Pocahontas	W	*
WHI 04	4G	Current River near Pocahontas	W	*
WHI 24	4G	Strawberry River south of Smithville	W	*
WHI 05B	4H	Eleven Point River near Pocahontas	W	*
WHI 89	4H	Mammoth Spring east bridge @ spillway	W	
WHI 23	4H	South Fork of Spring River near Saddle	W	*
WHI 06A	4H	Warm Fork Spring River near Thayer, MO	W	*
WHI 21	4H	Spring River south of Ravenden	W	*
WHI 22	4H	Spring River @ low water bridge nr Hardy	W	
WHI 88	4H	Spring River @ Town Bridge in Hardy	W	
WHI 48A	4I	Crooked Creek at Hwy 14 near Yellville	W	*
WHI 48B	4I	Crooked Creek S. of Flippin	W	
WHI 48C	4I	Crooked Creek at Hwy 101	W	
WHI 66	4I	Crooked Creek below Harrison	WK	

WHITE RIVER BASIN (cont)

Station No.	Planning Segment	Station Description	Type*	Flow Gauge
WHI 67	4I	Crooked Creek above Harrison	WK	
WHI 49A	4J	Buffalo River at Hwy 65 near St. Joe	W	*
WHI 71	4K	Long Creek below Denver	W	
WHI 70	4K	Holman Creek below Huntsville	WK	
WHI 09A	4K	Kings River north of Berryville	W	*
WHI 123	4K	Kings River NE Alabam	W	
WHI 103	4K	Middle Fork White River W. Elkins	W	
WHI 68	4K	Osage Creek above Berryville	WK	
WHI 69	4K	Osage Creek below Berryville	WK	
WHI 116	4K	War Eagle Cr. @ Hwy 45, N. Hindsville	W	
WHI 51	4K	West Fork White River near Fayetteville	WK	
WHI 52	4K	White River near Goshen	WK	*
WHI 106	4K	White River @ Durham	W	

ST. FRANCIS RIVER BASIN

Station No.	Planning Segment	Station Description	Type*	Flow Gauge
FRA 13	5A	St. Francis River at Hwy. 50	W	*
FRA 08	5A	St. Francis River @ Hwy 18	W	
FRA 10	5B	L'Anguille River near Marianna	W	*
FRA 12	5B	Second Creek north of Palestine	W	*

TABLE III-2: ROVING WATER QUALITY MONITORING STATIONS

RED RIVER BASIN

Station No.	Planning Segment	Station Description
RED0056	1A	Little Bodcaw Creek at Hwy. 29 near Lewisville
RED0057	1A	Bodcaw Creek at Hwy 355 near Hemstead County Line
UWBCH01	1A	Beech Creek at Hwy 82 nr. Waldo
UWBDT01	1A	Bayou Dorcheat at Hwy 355
UWBDT02	1A	Bayou Dorcheat at Hwy 82, 6 mi. W. of Waldo
UWBIG01	1A	Big Creek at Hwy 132 at Magnolia
UWHHC01	1A	Horsehead Creek at Hwy 19, 2 mi. N. of Walkerville
RED0054	1B	M^{c}Kinney Bayou at Hwy. 296 east of Mandeville
RED0055	1B	M^{c}Kinney Bayou at Hwy. 134 southeast of Fouke
UWBDK01	1B	Bois D'Arc Creek at Hwy 67 nr. Hope
UWBDK02	1B	Bois D'Arc Creek at Co. Rd. 7 mi. NW of Center Point

OUACHITA RIVER BASIN

Station No.	Planning Segment	Station Description
UWBFR01	2A	Boeuf River at Hwy 278, 4 mi. W. of Chicot
OUA 32	2A	Big Bayou at Hwy 144
OUA0172	2A	Ditch Bayou at G&F Access off US 82 near Lake Village
OUA0173	2A	Clay Bayou at Hwy 35
OUA0174	2A	Canal No. 43, Amos Bayou, at Hwy 35
OUA0175	2A	Macon Bayou at Hwy 1 near McArthur
OUA0176	2A	Amos Bayou off Hwy 1 near Rohwer
OUA0177	2A	Red Fork Bayou on Co. Rd. NE. of Kelso
OUA1078	2A	Oak Log Bayou at Co. Rd. off Hwy 277 southeast of Dumas
OUA0179	2A	Oak Bayou at Hwy 277 southeast of Dumas
OUA0180	2A	Cypress Creek on Co. Rd. off Hwy 277 southwest of Dumas
OUA0181	2A	Choctaw Bayou at Co. Rd. SW of Dumas
UWBGB01	2A	Big Bayou at Hwy 278, 5 mi. E. of Portland
UWBYM01	2A	Bayou Macon at Hwy 65 nr. Eudora
OUA0154	2B	Bartholomew at Hwy 278 west of Portland
UWBYB01	2B	Bayou Bartholomew at Hwy 82 nr. Thebes
UWBYB02	2B	Bayou Bartholomew at Hwy 4 nr. McGehee
UWBYB03	2B	Bayou Bartholomew at Hwy 54 at Garrett Bridge
AFS01	2C	Alum Fork Saline River at Hwy 5 east of Crows
MFS01	2C	Middle Fork Saline River on Co. Rd. S. of Crows off Hwy 5
NFS01	2C	North Fork Saline River on Hwy 5 near Benton
SFS01	2C	South Fork Saline River on Co. Rd. N. of Nance off US 70
OUA0166	2C	Hudgens Creek at Hwy 35 bridge, middle bridge
OUA167	2C	Derrieusseaux Creek at Hwy 35 bridge, northern most bridge
UWLGC01	2C	L'Aigle Creek at Farmville Road, 2 mi. SE of Farmville
UWLGC02	2C	L'Aigle Creek at Co. Rd., 2.5 mi. West of Ingalls
OUA0137A	2D	Flat Creek tributary at Hwy 7 spur near El Dorado
OUA0137B	2D	Flat Creek Tributary south of Norphlet on O'Rear Road
OUA0137C	2D	Flat Creek south of Norphlet on O'Rear Road
OUA0136D	2D	Salt Creek west of Norphlet on O'Rear Road

OUACHITA RIVER BASIN (cont.)

Station No.	Planning Segment	Station Description
UWCHC01	2D	Champagnolle Creek at Hwy 4 near Hampton
OUA0165	2F	Ouachita River off Hwy. 270 above Stone Quarry Creek
OUA0168	2F	Whiteoak Creek at Hwy 128 bridge 3.5 miles north of Hwy 9
OUA0169	2F	Tulip Creek at Hwy 128, 4 mi. north of Hwy 9
OUA0170	2F	Cypress Creek at Hwy 7 bridge north of Sparkman,
UWDPC01	2F	Deceiper Creek at Co. Rd., 8 mi. S.E. of Gurdon
UWFRE01	2F	Freeo Creek at Hwy 9, 5 mi. W. of Bearden
UWLEF01	2F	L'Eau Frais Creek at Hwy 128 nr. Joan
UWMZC01	2F	Mazarn Creek at Hwy 227 nr. Sunshine
UWOAR01	2F	Ouachita River at Co. Rd. off Hwy 88 nr. Boardcamp
UWSFM01	2F	Little Mazarn Cr. At Co. Rd., 1.5 mi. N. of Pettyview
UWSFO01	2F	S. Fork Ouachita River at Hwy 270 at Mt. Ida
UWATR01	2G	Antoine River at Hwy 26 at Antoine
UWCYC01	2G	Caney Creek at Hwy 24 nr. Bluff City
UWMFC01	2G	Muddy Fork at Co. Rd. off Hwy 27 nr. Murfreesboro
UWOZC01	2G	Ozan Creek at Hwy 24 nr. Blevins
UWTNR02	2G	Terre Noir Creek at Hwy 53 2 mi. S. of Hollywood
UWTNR01	2G	Terre Noir Creek at Hwy 51, 2.5 mi. E. of Red Springs
UWTRC01	2G	Terre Rouge Creek at Hwy 19, 5 mi. S. of Prescott

ARKANSAS RIVER BASIN

Station No.	Planning Segment	Station Description
UWWSB01	3A	Wabbaseka Bayou at Hwy 79 at Wabbaseka
UWBMO01	3B	Bayou Meto at Co. Rd. S.E. of Seaton Dump
UWBMO02	3B	Bayou Meto at Hwy 79, 2 mi S.W. of Stuttgart
ARK0130	3C	Fourche Creek at I-430 Bridge in Little Rock
ARK0131	3C	Fourche Creek at I-440 Bridge in Little Rock
ARK0140	3C	Little Maumelle River near Little Rock
UWPMB01	3C	Plum Bayou 1 mi. W. of Hwy 15 nr. Tucker
UWCCR01	3D	Cadron Creek at Co. Rd. 5 mi. W. of Wooster
UWCSC01	3D	Cypress Creek at Co. Rd. 2 mi S.E. of Hwy 92
UWEFC01	3D	East Fork Cadron Creek at Hwy. 287, 3 mi SE of Greenbrier
UWEFC02	3D	East Fork Cadron Creek at Hwy. 107 nr. Barney
UWNCC01	3D	North Cadron Creek at Hwy 65 near Damascus
UWNCC02	3D	North Cadron Creek at Co. Rd. 0.75 mi. N. Hwy 124
ARK036	3E	Fourche La Fave River at Hwy 113 south of Bigelow
UWBLF01	3E	Black Fork at TAR, 3.5 mi above Clear Fork Creek
UWCED01	3E	Big Cedar Creek at Hwy 28, 3 mi. E. of Cedat Creek
UWCLF01	3E	Clear Fork at TAR above Black. Fork, 8 mi. W. of Boyles
UWFLR01	3E	Fourche LaFave River at TAR nr. Boyles
UWGAF01	3E	Gafford Creek at Hwy 28 nr. Bluffton
ARK0136	3F	Palarm Creek at Hwy 36 east of Conway
UWEPR01	3F	East Fork Point Remove Creek at Hwy 95 nr. Hickory Hill
UWWPR01	3F	West Fork Point Remove Creek at Hwy 247 nr Atkins
UWPJR01	3G	Petit Jean River at Co. Rd. off Hwy 71 at Elm Park

ARKANSAS RIVER BASIN (cont.)

Station No.	Planning Segment	Station Description
UWPJR02	3G	Petit Jean River at Hwy 309 nr. Waveland
UWPJR03	3G	Petit Jean River at Hwy 10 at Danville
ARK0137	3H	Horsehead Creek at Hwy 64 east of Hartman
ARK0138	3H	Mulberry River at Hwy 103 west of Oark
ARK0139	3H	Mulberry River at low water bridge, 4.3 mi. east. of Hwy 23 near Cass
ARK 47	3H	Frog Bayou at Hwy 282
ARK 08	3H	Lee Creek at Hwy 59
UWLCK01	3H	Lee Creek at Hwy 220, 10 mi. N. of Cedarville

WHITE RIVER BASIN

Station No.	Planning Segment	Station Description
UWBGC02	4A	Big Creek at Hwy 49 nr. Poplar Grove
UWBGC03	4A	Big Creek at Hwy 79, 3 mi. W. of Moro
UWCPC01	4A	Big Cypress Creek at Hwy 1, 4 mi. N.E. of Crossroads
UWLGB01	4A	LaGrue Bayou at Hwy 33 at LaGrue
UWLGB02	4A	LaGrue Bayou at Hwy 17 at LaGrue Springs
UWLLB01	4A	Little LaGrue Bayou at Hwy 1 nr. DeWitt
WHI0037	4A	Big Creek at Hwy 318 near Watkins Corner
UWBDV02	4B	Bayou DeView at Hwy 64 east of McCrory
WHI033	4B	Bayou DeView at Hwy 70
WHI032	4B	Cache River at Hwy 70
UWCHR02	4B	Cache River at Hwy 64 at Petterson
UWCHR03	4B	Cache River at Hwy 18 near Gruggs
UWCHR04	4B	Cache River at Hwy 412 east of Walnut Ridge
UWDTC01	4C	DePartee Creek east of Bradsford
UWGSC01	4C	Glaise Creek at Hwy 64 east of Bald Knob
UWVGC01	4C	Village Creek at Hwy 37 east of Tuckerman
UWVGC02	4C	Village Creek at Hwy 228 at Miniturn
UWVGC03	4C	Village Creek at Hwy 224 near Newport
WHI056	4D	Bayou DesArc at Hwy 11
UWBDA01	4D	Bayou DesArc at county road above Cypress Bayou
UWBLB01	4D	Bull Creek at Hwy 367 near Beebe
UWCPB01	4D	Cypress Bayou at Hwy 13 S.E. of Beebe
WHI0153	4E	Meadow Creek on Co. Rd. NE of Old Lexington
UWAFK01	4E	Archey Fork Little Red River at Hwy 65 at Clinton
UWBCK01	4E	Big Creek off Hwy 110 near Hiram
UWBCR01	4E	Big Creek at Hwy 16 near Letona
UWMFK01	4E	Middle Fork Little Red River at Hwy 65 nr. Leslie
UWOFC01	4E	Overflow Creek 1.5 miles SE of Judsonia
UWSRR01	4E	South Fork Little Red River at Hwy 95 nr. Scotland
UWSRR02	4E	South Fork Little Red River at Hwy 65 at Clinton
UWTMC01	4E	Ten Mile Creek at Hwy 157 north of Providence
UWBKR01	4G	Black River above Strawberry River near Saffell
UWBKR02	4G	Black River at Hwy 37 east of Cord
UWCAC01	4G	Curia Creek at Hwy 25 north of Dowdy

WHITE RIVER BASIN (cont.)

Station No.	Planning Segment	Station Description
UWNBC01	4G	North Big Creek off Hwy 354 east of Center
UWRDC01	4G	Reeds Creek at Hwy 117 north of Strawberry
UWSBR01	4G	Strawberry River off Hwy 354near Wiseman
UWSBR02	4G	Strawberry River at Hwy 167 at Evening Shade
UWSBR03	4G	Strawberry River at Hwy 361 near Saffell
UWJNC01	4H	Janes Creek at Hwy 90 near Ravenden Springs
UWMTC01	4H	Martins Creek at Hwy. 63 near Williford
WHI0152	4J	Big Creek at Hwy 14 W. of Big Flat
UWBRK01	4J	Bear Creek at Hwy 65, 4 mi. W. of Marshall

ST. FRANCIS RIVER BASIN

Station No.	Planning Segment	Station Description
FRA0027	5A	Blackfish Bayou at Hwy 50 near Woldwood
FRA0028	5A	15 Mile Bayou at Simsboro Road near Proctor
FRA0029	5A	10 Mile Bayou at Hwy 147 near Edmondson
FRA0032	5A	Tyronza River at Hwy 184 near Earle
FRA0033	5A	Tyronza River at Hwy135 near Tyronza
FRA0036	5A	St. Francis River at Hwy 140 at Marked Tree
FRA0030	5B	First Creek Trib to L'Anguille near Horton
FRA0031	5B	Second Creek at Hwy 284 near Penrose
FRA0034	5B	Caney Creek at Hwy 305 near Wynne
FRA0035	5B	Prairie Creek at Hwy 1 north of Vanndale
UWLGR01	5B	L'Anguille River at Hwy 306, 3 mi. W. of Colt
UWLGR02	5B	L'Anguille River at Hwy 214, 3 mi. W. of Whitehall
FRA0037	5C	Left Hand Chute of Little River at Hwy 140 near Lepanto
FRA0038	5C	Right Hand Chute Little River at a Hwy 135 at Riverdale

TABLE III-3: RECENT SPECIAL PROJECTS

BAYOU BARTHOLOMEW (1997-2000)

Station No.	Planning Segment	Station Description
OUA0143	2B	Bayou Bartholomew at Oakwood road in Pine Bluff
OUA0144	2B	Nevins Creek at Good Faith Road in Pine Bluff
OUA0145	2B	Harding Creek at West 34th Street in Pine Bluff
OUA0146	2B	unnamed tributary at Main Street in Pine Bluff
OUA0147	2B	Bayou Imbeau at 38th Street in Pine Bluff
OUA033	2B	Bayou Bartholomew south of Ladd
OUA0148	2B	Bayou Bartholomew south of Tarry
OUA0160	2B	Melton's Creek south of Tarry
OUA0149	2B	Cousart Bayou south of Tamo
OUA0150	2B	Jack's Bayou south of Tamo
OUA0151	2B	Deep Bayou south of Tamo

BAYOU BARTHOLOMEW (1997-2000) cont.

Station No.	Planning Segment	Station Description
OUA0152	2B	Cross Bayou near Fresno
UWBYB03	2B	Bayou Bartholomew at Hwy 54, Garrett Bridge
OUA0153	2B	Able's Creek at Hwy 54 south of Tyro
OUA0158	2B	Able's Creek at Hwy 138 north of Selma
UWBYB02	2B	Bayou Bartholomew at Hwy 4 west of McGeHee
UWCOC02	2B	Cut-Off Creek at Hwy 4 east of Monticello
OUA0157	2B	Cut-Off Creek at Hwy 35 east of Collins
OUA0156	2B	Wolf Creek south of Collins
UWCOC01	2B	Cut-Off Creek northeast of Boydell
OUA0155	2B	Bearhouse Creek north of Snyder
OUA0154	2B	Bayou Bartholomew at Hwy 278 west of Portland
OUA013	2B	Bayou Bartholomew west of Jones, Louisiana
OUA012A	2B	Overflow Creek at La. Hwy. 590
OUA012	2B	Chemin-A-Haut Creek at La. Hwy. 834 near Bastrop

LAKE MILLWOOD TRIBUTARIES SURVEY(1992-1993, & 2000-2001)

Station No.	Planning Segment	Station Description
CEG01	1C	Cool Easy Greasy Creek southeast of Horatio
BRI01	1C	Bridge Creek at county road east of Central
COS01	1C	Cossatot River on county road east of Gillham
COS02	1C	Cossatot River at US Hwy 71 east of DeQueen
LCO01	1C	Little Cossatot River at Hwy 24 west of Lockesburg
BEL01	1C	Belville Creek at county road west of Belleville
COS03	1C	Cossatot River at county road east of Central
SAL01	1C	Saline River at US Hwy 70 west of Dierks
MES01	1C	Messers Creek at county road south of Dierks
SAL02	1C	Saline River at Hwy 24 west of Nashville
RSS01	1C	Rock Sulphur Slough at county road south of Hwy 24
BLB01	1C	Blue Bayou at county road off Hwy 27 near Shiloh
SAL03	1C	Saline River at Hwy 27 west of Mineral Springs
RED048A	1C	Mine Creek at Hwy 4 in Nashville
RED048B	1C	Mine Creek at Hwy 27 Bypass S. of Nashville
RED051	1C	Mine Creek below Nashville WWTP discharge
DIL01	1C	Dillard Creek at Hwy 27 north of Mineral Springs
MIN02	1C	Mine Creek at County Road 332 west of Tollette
PLMO1	1C	Plum Bayou at Hwy 355 south of Tollette

BUFFALO RIVER PROJECT (Planning Segment 4J)(1999-Present)

Station No.	Station Description	Station No.	Station Description
BUFR01	Buffalo River at Wilderness Boundary	BUFT10	Calf Creek
BUFR02	Buffalo River at Ponca	BUFT11	Mill Creek - Searcy County
BUFR03	Buffalo River at Pruitt	BUFT12	Bear Creek
BUFR04	Buffalo River at Hasty	BUFT13	Brush Creek
BUFR05	Buffalo River at Woolum	BUFT14	Tomahawk Creek
BUFR06	Buffalo River at Gilbert	BUFT15	Water Creek
BUFR07	Buffalo River at Ar. Hwy 14	BUFT16	Rush Creek
BUFR08	Buffalo River at Rush	BUFT17	Clabber Creek
BUFR09	Buffalo River at Mouth	BUFT18	Big Creek - Marion County
BUFT01	Beech Creek	BUFT19	Cedar Creek
BUFT02	Ponca Creek	BUFT23	Middle Creek
BUFT03	Cecil Creek	BUFT24	Leatherwood Creek
BUFT04	Mill Creek - Newton County	BUFT25	Little Buffalo River above Jasper
BUFT05	Little Buffalo River	BUFT26	Little Buffalo River below Jasper
BUFT06	Big Creek - Newton County	BUFS02	Luallen Spring
BUFT07	Davis Creek	BUFS33	Mitch Hill Spring
BUFT08	Cave Creek	BUFS41	Gilbert Spring
BUFT09	Richland Creek		

TABLE III-4: HISTORICAL SPECIAL PROJECTS

SOUTH FORK FOURCHE LA FAVE (SFR) (1991 - 1992)

Station No.	Station Description	Station No.	Station Description
SFR01	SFR off Hwy 27 east of Onyx	SFR06	SFR off Hwy 314 below Dry Fork Creek
GRC02	Graham Creek upstream of Negro Branch	SFR07	SFR at Hwy 7 bridge
GRC01	Graham Creek near Onyx	BRC01	Bear Creek near mouth
SFR02	SFR off Hwy 314 below Hutto Branch	SFR08	SFR off Hwy 7 below Bear Creek
SFR03	SFR off Hwy 314 above Loston Branch	CDC01	Cedar Creek above Cedar Lake
SFR04	SFR off Hwy 314 below Loston Branch	SFR09	SFR off county road below Cedar Creek
SFR05	SFR off Hwy 314 above Dry Fork Creek	SFR10	SFR near mouth near Deberrie
DFC01	Dry Fork Creek near mouth		

UPPER WHITE RIVER (1992 - 1994)

Station No.	Station Description	Station No.	Station Description
WFW01	West Fork White R. at Woosley Bridge	KGS01	Kings River off Hwy 74 S. of Kingston
WFW02	West Fork White R. above Dye Creek	KGS02	Kings River at Hwy 21 N. of Kingston
WFW03	West Fork White R. near Fayetteville	KGS03	Kings River at G&F Onion Creek Access
WFW04	West Fork White R. S. of Hwy 16	KGS04	Kings River Off Hwy 27 near Alabam
WHI051	West Fork White R. N of Hwy 16	DRF01	Dry Fork on county road W. of Metalton
MFW01	Middle Fork White R. at Hwy 119	PNY01	Piney creek TAR NW. of Metalton
MFW02	Middle Fork White R. at Hwy 32	KGS05	Kings River Hwy 221 SW. of Berryville
MFW03	Middle Fork White R. SW of Elkins	KGS06	Kings River at county road 46
WHR01	White R. S. of St. Paul	WHI09A	Kings River at Hwy 143 S. of Grandview
WHR02	White R. count road 328 near Crosses	OSG01	Osage Creek county road SE. of Osage
WHR03	White R. off Hwy 16 near Durham	OSG02	Osage Creek at Hwy 412 W. of Osage
WHR04	White R. at Hwy 74 bridge E. of Elkins	OSG03	Osage Creek at Hwy 103 NE. of Metalton
WHI052	White R. at Hwy 45 bridge W. of Goshen	OSG04	Osage Creek off Hwy 21 SE. of Berryville
RHC01	Richland Creek at Hwy 303 near Wesley	WHI069	Osage Creek off Hwy 221 N. of Berryville
RCH02	Richland Creek at Hwy 303 near Tuttle	LNG01	Long Creek off Hwy 62 near Alpena
RCH03	Richland Creek at Hwy 45 W. of Goshen	LNG02	Long Creek at county road S. of Denver
BRS01	Brushy Creek at Hwy 295	LNG03	Long Creek off Hwy 311 E. of Denver
BRS02	Brushy Creek of Hwy 303 near Mayfield	DRY01	Dry Creek off Hwy 311 SW of Denver
WRE01	War Eagle Creek off Hwy 23 N. of Aurora	YOC01	Yocum Creek off Hwy 311 NW. ofFarewell
WRE02	War Eagle Creek at Hwy 412 E. of Huntsville	YOC02	Yocum Creek off Hwy 311 E. of Oak Grove
WRE03	War Eagle Creek near Withrow Springs	WHI071	Long Creek off Hwy 311 N. of Denver
WRE04	War Eagle Creek at Hwy 45 N. of Hindsville		
WRE05	War Eagle Creek off Hwy 12 W. of Best		
CLF01	Clifty Creek off Hwy 12 W. of Best		
WRE06	War Eagle Creek at War Eagle Mill		

SAGER CREEK (1993 - 1994)

Station No.	Station Description
SAG01A	Sager Creek above Spring Branch near golf coure
SAGT01	Spring Branch above Sager Creek near golf course
SAG01	Sager Creek at Hwy 264 E. of Siloam Springs
SAGT02	Unnamed tributary north of Central in Siloam Springs
SAG03	Sager Creek at end of Central Avenue in Siloam Springs
SAG04	Sager Creek at low water dam in City Park in downtown
SAGT05S	Spring entering Sager Creek just below the low water bridge
SAGT05	Sager Creek tributary entering just below the spring draining south Siloam Springs
SAGT06	Sager Creek tributary draining north Siloam Springs
SAG07	Sager Creek just above the Siloam Springs WWTP
SAG08E	Siloam Spring WWTP effluent
SAG09	Sager Creek 500 feet below Siloam Springs WWTP discharge
SAGT10	Sager Creek tributary downstream of Siloam Springs WWTP
SAG11	Sager Creek 1.5 miles below Siloam Springs WWTP
SAG12	Sager Creek 3.2 miles below Siloam Springs WWTP
SAG13	Sager Creek just above confluence with Flint Creek

POTEAU RIVER (1994)

Station No.	Station Description	Station No.	Station Description
POT01A	Poteau River at US Hwy 80 E. of Waldron	POT02B	Poteau River above Square Rock Creek
POT01	Poteau River at US Hwy 71B	POT04	Poteau River at Ar. Hwy 80
POT01B	Poteau River below US Hwy 71	JNC01	Jones Creek at Ar. Hwy 248
POTEW	City of Waldron effluent	JNC02	Jones Creek at mouth near Hon
POTET	Tyson Effluent	POT06	Poteau River below Jones Creek
POT02	Poteau River at US Hwy 71	POT07	Poteau River off Ar. Hwy 28 near Cauthron

UPPER SALINE RIVER (1994 - 1995)

Station No.	Station Description	Station No.	Station Description
SFS01	South Fork off US 70 near Nance	NFS01	North Fork E. of Hwy 9 near Paron
MFS01	Middle Fork S. of Hwy 5 near Crows	NFS02	North Fork E. of Hwy 9 SE. of Paron
AFS01	Alum Fork at Hwy 5 E. of Crows	NFS03	North Fork E. of Hwy 298 E. of Bland
NFS01A	North Fork at Hwy 9 N. of Paron	NFS04	North Fork at Hwy 5 W. of Benton

ILLINOIS RIVER (1995 - 1996)

Station No.	Station Description	Station No.	Station Description
OSCO1A	Osage Creek above Rogers WWTP Outfall	CLR03	Clear Creek below Mud Creek confluence
OSCO1E	City of Rogers WWTP Ooutfall	CLR04	Clear Creek N. of Wheeler
OSCO2B	Osage Creek at Hwy. 112	CLR05	Clear Creek above Illinois R. confluence
OSCO3	Osage Creek off Hwy. 112 above Spring Cr.	MFI01A	Muddy Fork River above Prairie Grove WWTP Outfall
OSCO4	Osage Creek below Spring Creek confluence		
LOS01	Little Osage Creek at Hwy. 264 bridge	MFI01E	Prairie Grove WWTP Outfall
OSCO5	Osage Creek below Little Osage Creek	MFI02B	Muddy Fork W. of Piney Grove
OSCO6	Osage Creek nr. Washington County Line	MFI03	Muddy Fork N. of Viney Grove
OSCO7	Osage Creek at Logan Cave Rd. bridge	MFI04	Muddy Fork above Illinois R. confluence
SPG01A	Spring Creek Springdale WWTP Outfall	I1101	Illinois River above Muddy Fork confluence
SPG01E	City of Springdale WWTP Outfall	ILL02	Illinois River at Hwy. 16 near Savoy
SPG02B	Spring Creek above Puppy Creek	ILL03	Illinois River below Clear Creek confluence
SPG03	Spring Creek at Hwy. 112	ILL04	Illinois River N. of Hwy. 112
MUD01E	Fayetteville WWTP Outfall	ILL05	Illinois River S. of Hwy. 112
MUD02B	Mud Creek E. of U.S. Hwy. 71B	ILL06	Illinois River at Hwy. 16 nr Siloam Springs
CLR01R	Clear Creek above Mud Creek confluence	ILL07	Illinois River at Hwy. 59 nr Siloam Springs

PINEY CREEK WATERSHED (1997 - 1998)

Station No.	Station Description	Station No.	Station Description
ARK105	Big Piney Creek at Hwy. 359	ARK119	Hurricane Creek N. of Ft. Douglas
ARK107	Wilson Creek N. of Piney	ARK120	Big Piney Creek at FAS Rd.1202 bridge
ARK108	Tributary S. of Hwy. 164	ARK121	Cow Creek at Rd.1202 low water crossing
ARK109	Tributary E. of Twin Bridges on Hwy. 164	ARK122	Curtis Creek S. of Limestone
ARK110	Mill Creek W. of Twin Bridges on Co. Rd	ARK123	Home Creek W. of Limestone
ARK 43	Big Piney Creek at Twin Bridges, Hwy. 164	ARK124	Big Piney Creek at FAS Rd. 1458 bridge
ARK111	Dry Creek NW of Twin Bridges on Co. Rd.	ARK125	Walnut Creek at FAS Rd. 1217 bridge
ARK112	Levi Branch NE of Twin Bridges on Hwy. 7	ARK104	Little Piney Creek at Ar. Hwy. 359 bridge
ARK113	Big Piney Creek below Long Pool	ARK126	Little Piney Creek at. Ar. Hwy. 123 bridge
ARK114	Indian Creek at Rd. 1808 bridge	ARK127	Opossum Branch at Ar. Hwy. 359
ARK115	Moccasin Creek at Rd. 1805 bridge	ARK128	Slover Creek at Hwy. 315 bridge
ARK117	Haw Creek at Hwy. 123 nr. Ft. Douglas	ARK129	Minnow Creek at Co. Rd. 50 bridge
ARK118	Big Piney Creek below Hurricane Creek		

TABLE III-5

Parameters Sampled at Water Quality Monitoring Stations

Routinely Sampled

AIR TEMPERATURE	BORON
WATER TEMPERATURE	BERYLLIUM
PH	BARIUM
TURBIDITY	CADMIUM
DISSOLVED OXYGEN	CHROMIUM
5-DAY BIOCHEMICAL OXYGEN DEMAND	COPPER
FILTRABLE RESIDUE	CALCIUM
NON-FILTRABLE RESIDUE	LEAD
CHLORIDES	ZINC
SULFATES	IRON
AMMONIA NITROGEN	POTASSIUM
NITRITE + NITRATE NITROGEN	MAGNESIUM
TOTAL PHOSPHORUS	MANGANESE
ORTHO-PHOSPHORUS	SODIUM
TOTAL HARDNESS	NICKEL
	COBALT
	VANADIUM

Periodically Sampled

PROPACHLOR	METRIBUZIN	ENDOSULFAN I	HEPTACHLOR
P-P' DDE	METHYL PARATHION	ENDOSULFAN II	ALACHLOR
P-P' DDT	HEXAZINONE	DIELDRIN	ATRATON
P-P' DDD	METHOXYCHLOR	ENDRIN	PROPAZINE
METOLACHLOR	PROMETON	PENDIMETHALIN	DIMETHAZONE
SIMAZINE	BETA-BHC	DIAZINON	ATRAZINE
GAMMA-BHC	AMETRYN	PROMETRYN	TRIFLURALIN
DELTA-BHC	HEPTACHLOR	MALATHION	FONOFOS
TERBUTRYN	DIPROPETRYN	TERBUTHYLAZINE	HEPTACHLOR
EPOXIDE	CHLORPYRIFOS	CYPRAZINE	MOLINATE
CYANAZINE	ALPHA-BHC	ALDRIN	ATRATON

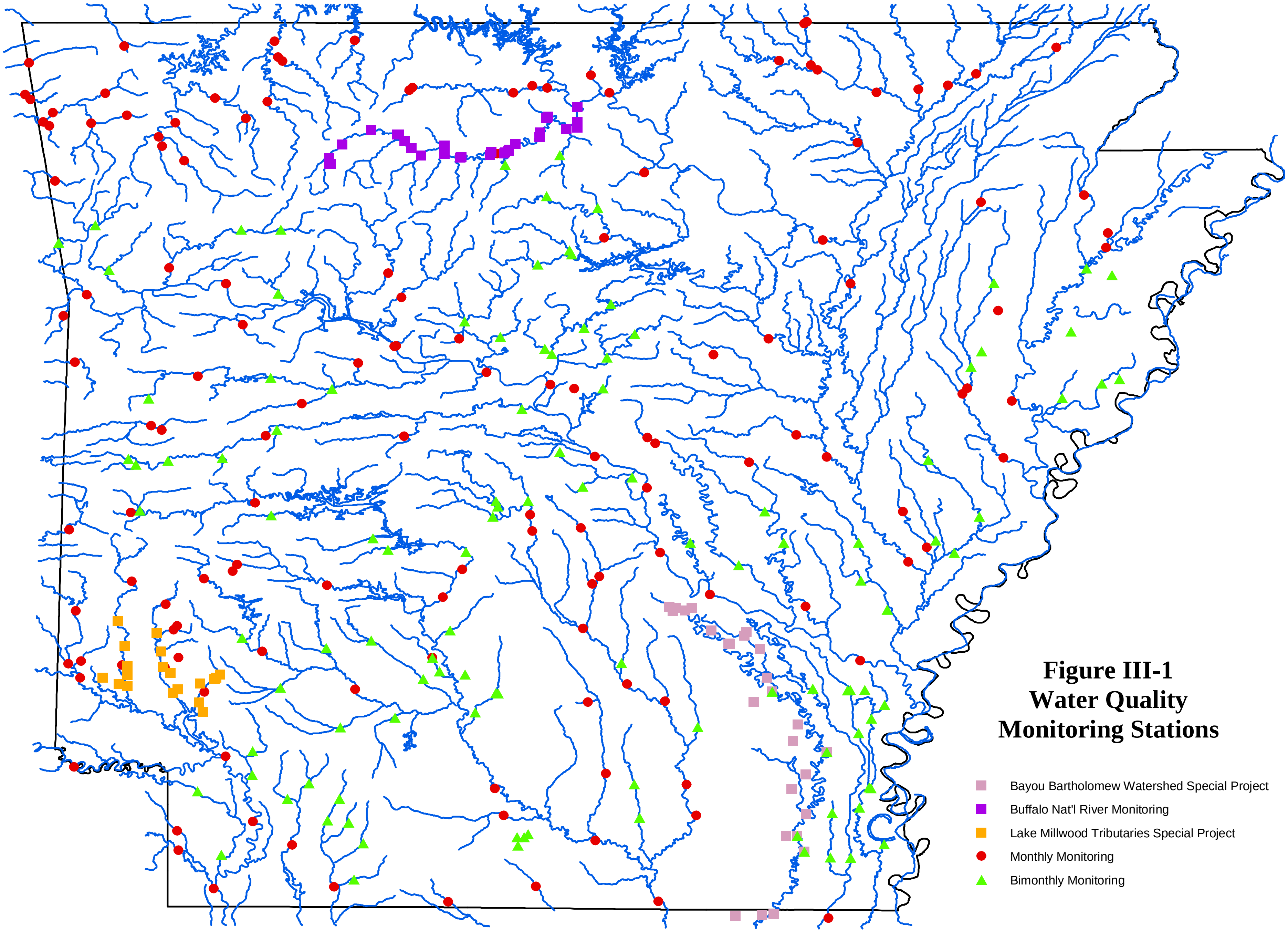

Figure III-1
Water Quality
Monitoring Stations

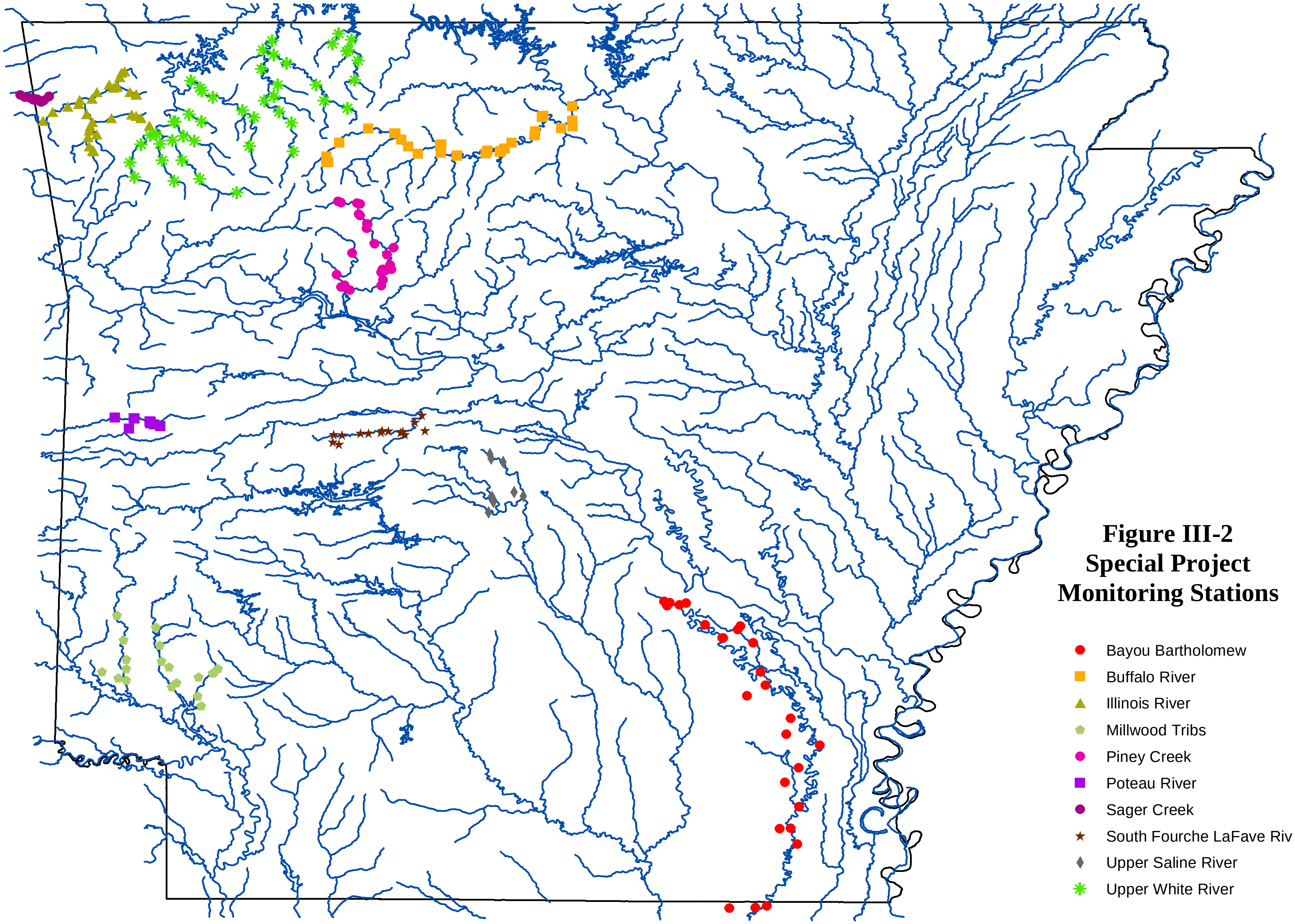

Figure III-2
Special Project
Monitoring Stations

Biomonitoring

The Arkansas Department of Environmental Quality (Department) maintains a monitoring system to evaluate the environmental impacts of pollutants on aquatic life and on human health. Monitoring programs include benthological assessments; fish community assessments; fish tissue analyses for contaminants which may be harmful for human consumption; and sediment testing for pesticides, toxic chemicals and heavy metals; in-lab toxicity testing; EPA toxicity testing (results available at www.epa.gov/earth1r6/6wq) and bacteriological analyses. These techniques are used either as stand alone methods or in conjunction with other biological or chemical analyses to monitor the biological health of waters throughout the state.

Benthological and Fish Community Assessment

One of the best ways to monitor the health of a stream or other waterbody is to examine its biological inhabitants. This is the primary reasoning behind surveys of the aquatic macroinvertebrate and fish communities. The Department has conducted biological community monitoring throughout the state since the 1970's. Early approaches were directed toward trend monitoring using artificial substrate samplers (quantitative) or qualitative sampling methods. These methods were time consuming and labor intensive. However, the rapid bioassessment technique (RBA) (Barbour et al. 1999; Shackleford, 1988) has greatly increased the benthic assessment efficiency and effectiveness and has allowed more extensive use of this monitoring approach.

Bacteriological Program

The bacteriological monitoring network has been substantially modified during the past several years. Due to the incompatibility of current network monitoring strategies and bacteriological sample holding times, a separate sampling scheme was developed. Technicians performed the sampling and analyses in the field in order to comply with the holding time of the methodology. The quarterly and bimonthly monitoring of the unassessed waters includes bacteriological analyses at all sites. The monthly monitored sites were sampled for bacteria on a rotating basis, resulting in approximately 8 samples per site per year during the swimming season.

CHAPTER TWO: PLAN FOR ACHIEVING COMPREHENSIVE ASSESSMENTS

Nationwide a major emphasis is being placed on providing a comprehensive assessment of waters of the nation. Each state is to provide a plan for assessment of the state's waters as part of the 305(b) report. Statewide assessments currently vary considerably; they range from very few monitoring stations which are infrequently sampled to an extensive monitoring network with frequently monitored stations. Many states have incorporated a variety of sampling schemes, techniques and parameters to meet their assessment needs. Due to the wide range of variability in state assessment programs, plans for comprehensive assessments may be equally as variable and the objectives of these programs may also be quite different.

In Arkansas, the water quality monitoring network has been very progressive and is one of the more intensive programs in the Nation (see Part III Chapter l). It is however, primarily limited to chemical monitoring of the water quality using long term, fixed and specifically targeted stations. Objectives of the programs have shifted with changes in types of water quality impacts, but the program has maintained its long-term, historical integrity. The benefits of the program include features other than assessment of the impaired status of the waters. These data are used to monitor long-term trends in least-disturbed areas as well as in rapidly developing areas of the state. The data establishes background (historical) data for parameters that may not be used for assessments, but are necessary in other programmatic functions, e.g., background levels of heavy metals, ecoregion hardness values and suspended solids values for permit implementation procedures.

The current basic water quality network in Arkansas is statewide in scope with over 140 fixed stations which are sampled monthly for over 30 parameters. This network is facilitated by the use of regionally located field personnel who collect water samples monthly. To convert the program to an intensive rotating basin plan would not only destroy the integrity of the program, but would severely disrupt personnel schedules and work activities. For the reasons discussed above the basic design of the Arkansas monitoring network should not be changed.

Within the past few years, additions to the network have included over 100 stations on previously unassessed waters which are sampled quarterly by a central-office crew. This process has been modified to a bimonthly sampling schedule for a two year period and is rotated to different parts of the State each two years. Additionally, several synoptic, watershed-intensive surveys have been performed on waters with identified or suspected problem areas. These may be one or multi-year projects. They are normally base flow and storm flow oriented and also include biological and physical assessments.

The weakest part of Arkansas assessment program is the reliance on chemical water quality data to assess the status of in-stream aquatic life. While some chemical parameters may be more conclusive than others in determining the aquatic life use support, the direct measure of aquatic life communities is the most precise. The subtle impact of parameters such as minerals, turbidity and nutrients is difficult to assess from only the chemical concentrations. In contrast, other designated uses, e.g., drinking water supply, primary contact recreation, etc. must rely on analyses of water samples directly.

At a minimum, a biological community sampling program is needed as a verification tool for assessment of aquatic life use support in waters where causes, sources and support/nonsupport cannot be definitely determined with chemical data.

Recent modifications of the Arkansas monitoring and assessment program has included: (1) reinitiation of the unassessed waters project on a rotating basin, covering about one-fourth of the state each year and increasing the sampling frequency to bimonthly, and (2) designing the TMDL process to utilize biological assessments to verify aquatic life impairments listed on the 303(d) list of impaired waters.

CHAPTER THREE: ASSESSMENT METHODOLOGY

The assessment methodology for the Integrated Report considers the requirements for both the 305(b) reporting and the 303(d) listing and essentially utilizes the same methodology for both activities.

Database

The primary database for the *2002 Integrated Water Quality Monitoring and Assessment Report* was from ADEQ's physical/chemical water quality monitoring network which includes 142 permanent stations sampled monthly, 114 stations on previously unassessed waters sampled on a bimonthly schedule and 76 stations sampled as part of special study projects. The period of record from which this data will be assimilated is from October 1998 to January 2002.

In addition, other agencies that routinely collect water quality data, e.g. USGS, USCOE, USFS, ASWCC, AWRC, were solicited for data which demonstrates impaired waterbodies. Data will be accepted for the period of record which includes the past five years, and all data used must be collected and analyzed under a quality-assurance/quality-control protocol equivalent to or more stringent than that of ADEQ or the USGS.

Assessment

In order to make a monitored assessment of "non-support" for a stream segment, the data must include at least twelve monthly samples or be supplemented with additional data such as aquatic life community data; except acutely toxic parameters require only two exceedences for non-support. However, an assessment of "support" can be made with less than 12 monthly samples, but not less than six bimonthly samples which are supplemented by other information, such as,visual knowledge of the waterbody and its watershed.

The percent exceedance criteria as shown in the Ecoregion Assessment Criteria are calculated using the total number of sampling visits, even if no sample is taken due to the absence of sufficient water. The number of data points exceeding the criteria which are necessary for a "non-support" decision will be calculated and rounded up to the nearest whole number, e.g. 25% of 38 data points = 9.5 or10 exceedances equal 25%. A routine sample event that found no water present will count as a sample event. For determination of "non-support" of primary contact use, four or more samples are required during the primary contact season. The samples should be taken no less than weekly.

An evaluated assessment can be made for adjacent stream segments or in similar watersheds to monitored waters if there is reason to believe that the segments are similar with respect to the potential cause and magnitude of an impairment. Unless documentation suggest otherwise, an evaluated assessment in the absence of data, but with general knowledge of the waterbody and watershed conditions, may be made as "support" of a use.

Numeric Criteria - ADEQ will assess all waters with qualifying data as either "support" or "non- support" based on the assessment criteria in the attached ecoregion/waterbody specific criteria. Waters will be listed as "threatened" if qualifying water quality data indicates a definitive trend toward impairment that most likely will result in a "non-support" status for the waterbody at the next listing of impaired waters.

Narrative Criteria - Waters will be assessed as "non-support" when violation of any narrative water quality standard has been verified by staff of ADEQ as not meeting the intent, as written, in the specific narrative water quality standards and if an associated numeric standard is violated in the specified waterbody. For example, production of objectionable algal densities or other nuisance aquatic vegetation must also result in diurnal D.O. fluctuations which violate the D.O. standard or result in violation of pH, dissolved metals or other numeric standards, or result in a significant alteration of the aquatic life community structure.

Designated Uses - A waterbody will be assessed as "non-support" if any of its designated uses are determined to be impaired by a water quality parameter which exceeds the frequency and magnitude established in the assessment criteria for that parameter or otherwise does not meet a descriptive, designated use.

The following parameters are most often associated with impacts on these designated uses:

Designated Uses	**Parameters**
Aquatic life use	D.O., pH, temp., turbidity/TSS, toxics, or any non-toxic compound which alters the aquatic life community structure beyond that which is expected
Drinking water	Compounds which are not easily removed by drinking water treatment facilities; compounds with established secondary MCL's, e.g., Cl, $SO_{4,}$ TDS, NO_3
Primary and Secondary contact	fecal coliform
Agriculture or Industrial uses	Compounds which would interfere with industrial uses such as cooling water or the water used in certain manufacturing processes; or waters unsuitable for livestock watering or crop irrigation; most often includes Cl, SO_4, TDS

Fish Consumption - Waters will be listed as "non-support" for fish consumption if a primary segment of the fish community (e.g., all perdators or all Largemouth bass) is recommended for non-consumption by any user group (e.g., general population or high risk groups). However, if a consumption restriction is recommended, e.g., no more than two meals per month or no consumption of fish over 15-inches, these waters will not be listed as "non-support"

Antidegradation - In compliance with the antidegradation policy, a Tier 3 waterbody will be listed as "non-support" if the water quality that existed at the time of designation has declined. For all other waters (Tier 1 and Tier 2), the listing requirements discussed above will apply.

Assessment criteria

Following are ecoregion or stream segment specific assessment criteria which were used to list all assessed waterbodies as either supporting or not supporting the designated uses. These criteria are developed from Arkansas' Water Quality Standards and, in part, from EPA guidance for determining support or non-support of a waterbody.

Key to the remarked entries in the assessment criteria are as follows:

1- Except for site specific standards approved in Water Quality Standards
2 - Based on ecoregion or stream specific hardness values.
3 -Refers to number of data points instead of percentage (i.e. greater than one value exceeding criteria = non-support).
4 - Criteria based on 90^{th} percentile of ecoregion values

ASSESSMENT CRITERIA FOR OZARK HIGHLANDS ECOREGION STREAMS

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	29 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI[2]	6	2				
10-100 MI[2]	6	5				
> 100 MI[2]	6	6				
TROUT WATERS	6	6				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	12.1 mg/L		≤1		>1	
CHRONIC	1.3 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS (E.R.)	17/23/250[1]		≤50%		>50%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	5.7	1.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	24.6	15.9	≤1	≤10%	>1	>10%
LEAD (Pb)	98.7	3.9	≤1	≤10%	>1	>10%
ZINC (Zn)	159.5	145.7	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	10 NTU		≤ 25%		>25%	
	17 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR BOSTON MOUNTAINS ECOREGION STREAMS

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	31 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI[2]	6	2				
> 10 MI[2]	6	6				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	39.1 mg/L		≤1		>1	
CHRONIC	2.3 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS (E.R.)	17/15/95 [1]		≤50%		>50%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	0.8	0.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	4.6	3.5	≤1	≤10%	>1	>10%
LEAD (Pb)	13.9	0.5	≤1	≤10%	>1	>10%
ZINC (Zn)	35.0	32.3	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	10 NTU		≤ 25%		>25%	
	19 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR ARKANSAS RIVER VALLEY ECOREGION STREAMS

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	31 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI^2	5	2				
10-150 MI^2	5	3				
151-400 MI^2	5	4				
>400 MI^2	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	44.6 mg/L		≤1		>1	
CHRONIC	2.4 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS (E.R.)	15/17/112[1]		≤50%		>50%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	0.8	0.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	4.6	3.5	≤1	≤10%	>1	>10%
LEAD (Pb)	13.9	0.5	≤1	≤10%	>1	>10%
ZINC (Zn)	35.0	32.3	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	21 NTU		≤ 25%		>25%	
	40 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR OUACHITA MOUNTAINS ECOREGION STREAMS

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	30 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI^2	6	2				
>10 MI^2	6	6				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	29.5 mg/L		≤1		>1	
CHRONIC	2.0 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS (E.R.)	15/20/142[1]		≤50%		>50%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	1.0	0.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	5.6	4.2	≤1	≤10%	>1	>10%
LEAD (Pb)	17.7	0.7	≤1	≤10%	>1	>10%
ZINC (Zn)	42.4	38.7	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	10 NTU		≤ 25%		>25%	
	18 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR GULF COASTAL ECOREGION (typical streams)

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	30 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI^2	5	2				
10-500 MI^2	5	3				
>500 MI^2	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	42.0 mg/L		≤1		>1	
CHRONIC	2.3 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS (E.R.)	19/41/138[1]		≤50%		>50%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	1.0	0.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	5.6	4.2	≤1	≤10%	>1	>10%
LEAD (Pb)	17.7	0.7	≤1	≤10%	>1	>10%
ZINC (Zn)	42.4	38.7	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	21 NTU		≤ 25%		>25%	
	32 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR DELTA ECOREGION (least altered)

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	30 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI^2	5	2				
10-100 MI^2	5	3				
>100 MI^2	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	19.9 mg/L		≤1		>1	
CHRONIC	1.6 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS (E.R.)	48/37/411[1]		≤50%		>50%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	2.9	0.9	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	14.0	9.5	≤1	≤10%	>1	>10%
LEAD (Pb)	51.3	2.0	≤1	≤10%	>1	>10%
ZINC (Zn)	95.7	87.4	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	45 NTU		≤ 25%		>25%	
	84 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR GULF COASTAL ECOREGION (springwater influenced)

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	30 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
ALL WATERSHEDS	6	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	48.8 mg/L		≤1		>1	
CHRONIC	2.5 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS (E.R.)	19/41/138[1]		≤50%		>50%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	1.0	0.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	5.6	4.2	≤1	≤10%	>1	>10%
LEAD (Pb)	17.7	0.7	≤1	≤10%	>1	>10%
ZINC (Zn)	42.4	38.7	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	21 NTU		≤ 25%		>25%	
	32 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR DELTA ECOREGION (channel-altered)

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	32 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI^2	5	2				
10-100 MI^2	5	3				
>100 MI^2	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	19.9 mg/L		≤1		>1	
CHRONIC	1.61 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS (E.R.)	48/37/411[1]		≤50%		>50%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	2.9	0.9	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	14.0	9.5	≤1	≤10%	>1	>10%
LEAD (Pb)	51.3	2.0	≤1	≤10%	>1	>10%
ZINC (Zn)	95.7	87.4	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	75 NTU		≤ 25%		>25%	
	100 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR WHITE RIVER(MAIN STEM)

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE			≤ 10%		>10%	
DAM #1 TO MOUTH	32 C					
OZARK HIGHLANDS	29 C					
TROUT WATERS	20 C					
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
DELTA	5	5				
OZARK HIGHLANDS	6	6				
TROUT WATERS	6	6				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
LOWER WHITE RIVER ACUTE	14.4 mg/L		≤1		>1	
CHRONIC	1.3 mg/L		≤25%		>25%	
TROUT WATERS (acute)	9.7 mg/l		≤1		>1	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS						
DAM #3 TO MO. LINE	20/20/180[1]		≤25%		>25%	
MO. LINE TO HEADWATERS	20/20/160[1]		≤25%		>25%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	4.3	1.2	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	19.6	12.9	≤1	≤10%	>1	>10%
LEAD (Pb)	75.9	3.0	≤1	≤10%	>1	>10%
ZINC (Zn)	129.8	118.5	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY DELTA	45 NTU		≤ 25%		>25%	
	84 NTU[4]		≤ 15%		>15%	
OZARK HIGHLANDS	10 NTU		≤ 25%		>25%	
	17 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR ST. FRANCIS RIVER

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	32 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
ALL WATERS[2]	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	19.9 mg/L		≤1		>1	
CHRONIC	1.6 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS						
MOUTH TO 36^0 N. LAT.	10/30/330[1]		≤25%		>25%	
36^0 N. LAT. TO 36^0 30'N LAT.	10/20/180[1]		≤25%		>25%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	3.8	1.1	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	17.5	11.6	≤1	≤10%	>1	>10%
LEAD (Pb)	66.7	2.6	≤1	≤10%	>1	>10%
ZINC (Zn)	117.3	107.2	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	75 NTU		≤ 25%		>25%	
	100 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR THE ARKANSAS RIVER

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	32 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
ALL WATERS	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	26.2 mg/L		≤1		>1	
CHRONIC	1.9 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS						
MOUTH TO L&D #7	250/100/500[1]		≤25%		>25%	
L&D #7 TO L&D #10	250/100/500[1]		≤25%		>25%	
L&D #10 TO OK LINE	250/120/500[1]		≤25%		>25%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS.METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	4.7	1.2	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	21.0	13.7	≤1	≤10%	>1	>10%
LEAD (Pb)	82.3	3.2	≤1	≤10%	>1	>10%
ZINC (Zn)	138.3	126.3	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	50 NTU		≤ 25%		>25%	
	52 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR THE OUACHITA RIVER BELOW LAKE CATHERINE

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE						
L. MISSOURI TO S.LINE	32 C		≤ 10%		>10%	
ABOVE L. MISSOURI	30 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
ALL WATERS[2]	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	36.1 mg/L		≤1		>1	
CHRONIC	2.2 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS						
LA LINE TO CAMDEN	160/40/350[1]		≤25%		>25%	
CAMDEN TO CARPENTER DAM	50/40/150[1]		≤25%		>25%	
CARPENTER DAM TO HEADWATERS	10/10/100		≤25%		>25%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	0.9	0.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	5.1	3.8	≤1	≤10%	>1	>10%
LEAD (Pb)	15.8	0.6	≤1	≤10%	>1	>10%
ZINC (Zn)	38.9	35.5	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	21 NTU		≤ 25%		>25%	
	32 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR THE RED RIVER

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	32 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
ALL WATERS[2]	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	14.4 mg/L		≤1		>1	
CHRONIC	1.3 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L		≤10%		>10%	
CL/SO_4/TDS						
OK LINE TO CONFLUENCE WITH LITTLE RIVER	250/200/850[1]		≤25%		>25%	
LITTLE RIVER TO LA LINE	250/200/500[1]		≤25%		>25%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	8.3	1.8	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	34.4	21.5	≤1	≤10%	>1	>10%
LEAD (Pb)	144.1	5.6	≤1	≤10%	>1	>10%
ZINC (Zn)	215.5	196.7	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	75 NTU		≤ 25%		>25%	
	75 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR THE MISSISSIPPI RIVER

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	32 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
ALL WATERS[2]	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	19.9 mg/L		≤1		>1	
CHRONIC	1.6 mg/L		≤25%		>25%	
NO_3-N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO_4/TDS						
LA LINE TO AR RIVER	60/150/425[1]		≤25%		>25%	
AR RIVER TO MO LINE	60/175/450[1]		≤25%		>25%	
CL/SO_4/TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS[3] (ug/L)	Acute	Chronic	Acute[4]	Chronic	Acute[4]	Chronic
CADMIUM (Cd)	3.7	1.0	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	17.0	11.4	≤1	≤10%	>1	>10%
LEAD (Pb)	64.6	2.5	≤1	≤10%	>1	>10%
ZINC (Zn)	114.4	104.5	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25%[1]	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25%[1]	
TURBIDITY						
	50 NTU		≤ 25%		>25%	
	50 NTU[4]		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

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CHAPTER FOUR: RIVERS AND STREAMS WATER QUALITY ASSESSMENT

Chemical Parameters

The following tables summarize the assessments of all of the state's river and stream water bodies. A detailed listing of each segment specific water body, water quality data summary, use assessment and other segment specific data can be found in Appendix A.

DESIGNATED USE SUPPORT IN ARKANSAS Type of Waterbody: Stream Miles			
	Assessment Basis		
Degree of Use Support	Evaluated	Monitored	Assessed Total
Supporting all assessed uses	2600.7	4712.6	7313.3
Not supporting a use	38.7	1254.0	1292.7
Total Waters Assessed	2639.4	5966.6	8606.0

DESIGNATED USE SUPPORT OF ASSESSED WATERS BY USE TYPE Type of Waterbody: Stream Miles		
Use	Support	Not Support
Fish consumption	8214.1	372.9
Aquatic life	7688.2	898.8
Primary contact	8337.7	33.1
Secondary contact	8587.0	0.0
Drinking supply	8257.3	77.7
Agri & industry	8587.0	0.0

TOTAL SIZES OF WATERS NOT SUPPORTING USES BY VARIOUS CAUSE CATEGORIES Type of Waterbody: Stream Miles		
Cause Categories	Major Impact	Moderate/Minor Impact
Priority organics	65.7	0.0
Metals	6.6	30.3
Ammonia	11.5	0.0
Minerals	24.0	191.5
Nutrients	55.0	3.0
Siltation/Turbidity	798.0	42.9
Organic Enrichment/DO	10.0	0.0
Pathogen indicators	12.7	20.4
Mercury	307.2	0.0
Dissolved Oxygen	2.0	0.0

TOTAL SIZES OF WATERS NOT SUPPORTING USES BY VARIOUS SOURCE CATEGORIES Type of Waterbody: Stream Miles		
Source Categories	Major Impact	Moderate/Minor Impact
Industrial point sources	93.6	12.7
Municipal point sources	67.9	26.9
Agriculture	764.6	76.3
Resource extraction	24.0	0.0
Unknown	307.2	0.0
Hydropower	2.0	0.0
Urban run-off	0.0	13.5
Road Const/Maintenance	33.4	0.0

Biological Parameters

Aquatic life use support assessment is a tool used to better characterize the attainment of designated uses of water bodies based on macroinvertebrate and fish community structures. Short-term water quality impairments from point and/or nonpoint source inputs, or from short-term seasonal and/or storm events may not always be detected by water quality data from grab samples. Individual short-term events most likely do not have a significant effect on the biological communities within a stream; however, these communities may be affected by frequent short-term events that limit full recovery between episodes.

Recently, portions of 118 stream segments from 18 planning segments were assessed for aquatic life use support using biological communities. These stream segments were either located above and below a point source discharge, or were part of a special water quality survey. Objectives of the surveys were to determine the impacts of a discharge, evaluate the biological community in ecoregion reference streams, or determine the use attainment in those waters not currently meeting all designated uses. Also, from 1991 to 1998, 214 biological samples were collected from portions of 127 stream segments from 15 planning segments. Each of these stream segments were assessed for aquatic life use support.

The macroinvertebrate communities were collected and evaluated following the Departments' Rapid Bioassessment Protocols. Habitat considerations were used in the evaluation of the macroinvertebrate communities through percent comparability evaluation techniques. An upstream-downstream comparison of the communities, and a comparison of the community to a least disturbed reference stream were also used to make the assessments. Fish communities were analyzed following EPA's "Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analysis", and direct comparisons were made with ecoregion fish community data outlined in the Department's "Physical, Chemical, and Biological Characteristics of Least-Disturbed Reference Streams in Arkansas' Ecoregions, 1987." In addition, an upstream-downstream comparison of the communities was made, and a comparison to a least-disturbed reference stream was conducted under the guidelines outlined in the Departments Quality Assurance Project Plan.

Table III-6 is a list of the stream segments where biological communities were collected for aquatic life use attainment determination or reference stream characterization.

TABLE III-6 AQUATIC LIFE DATA COLLECTIONS

Ecoregion Reference Stream

Stream Name	Year Sampled	H.U.C.	Reach	Planning Segment	Ecoregion	Macroinvertebrate Data Collected	Fish Community Data Collected
Rose Creek	2001	11110204	001t	3G	Arkansas River Valley	X	X
Big Shoal Creek	2001	11110202	008	3H	Arkansas River Valley	X	X
Bayou Des Arc	2001	8020301	007	4D	Arkansas River Valley	X	X
Bull Creek	2001	8020301	009	4D	Arkansas River Valley	X	X
Little Creek	2001	11010014	043	4E	Arkansas River Valley	X	X
Stevens Creek	2001	11010014	009t	4E	Arkansas River Valley	X	X
Reville Creek	2001	11110202	011t	3H	Arkansas River Valley	X	X
Friley Creek	1999	11110201	-012	3H	Boston Mountains	X	X
Hurricane Creek	1999	11110202	-022	3H	Boston Mountains	X	X
Indian Creek	1999	11110202	-020	3H	Boston Mountains	X	X
Little Mulberry Creek	1999	11110201	-012	3H	Boston Mountains	X	X
Wilburn Creek	1998	11010014	-014t	4E	Boston Mountains	X	X
Salado Creek	1998	11010004	-012	4F	Boston Mountains	X	X
Cave Creek	1999	11010005	-023	4J	Boston Mountains	X	X
Bear Creek	1999	11010005	-026	4J	Boston Mountains	X	X
Dials Creek	1998	08020304	-014t	4A	Delta	X	X
Hurricane Creek	1998	08020301	-015t	4D	Delta	X	X
Bear Creek	1998	08020203	-001t	5A	Delta	X	X
Cypress Creek	1998	08020205	-002t	5B	Delta	X	X
Cypress Creek	2000	11140203	026	1A	Ty Gulf Coastal Plains	X	X
Hanks Creek	2000	08040205	001t	2B	Ty Gulf Coastal Plains	X	X
Beech Creek	2000	08040205	001t	2B	Ty Gulf Coastal Plains	X	X
Flat Creek	2000	08040204	002t	2C	Ty Gulf Coastal Plains	X	X
Caney Bayou	2000	08040202	-003t	2D	Ty Gulf Coastal Plains	X	X
Caney Creek	2000	08040103	035	2G	Ty Gulf Coastal Plains	X	X
Sandy Bois D' Arc	2000	11040201	009t	1B	SI Gulf Coastal Plains	X	X
L. Eau Frais Creek	2000	8040102	003	2F	SI Gulf Coastal Plains	X	X
Greasy Creek	2000	8040102	003t	2F	SI Gulf Coastal Plains	X	X
East Fork Tulip Creek	2000	8040102	030	2F	SI Gulf Coastal Plains	X	X
Brushy Creek	1998	11140109	-020	1C	Ouachita Mountains	X	X
Big Fork Creek	1999	08040101	-036t	2F	Ouachita Mountains	X	X
Collier Creek	1999	08040101	-020t	2F	Ouachita Mountains	X	X
Fiddlers Creek	1998	08040101	-032	2F	Ouachita Mountains	X	X
Irons Fork Creek	1998	08040101	-038	2F	Ouachita Mountains	X	X
Polk Creek	1999	08040101	-022t	2F	Ouachita Mountains	X	X
South Fork Ouachita River	1999	08040101	-043	2F	Ouachita Mountains	X	X
Piney Creek	1999	11010004	-007	4F	Ozark Mountains	X	X
West Livingston Creek	1999	11010004	-006t	4F	Ozark Mountains	X	X
Wideman Creek	1999	11010004	-005t	4F	Ozark Mountains	X	X
Rock Creek	1999	11010012	-007t	4G	Ozark Mountains	X	X
Strawberry River	1999	11010012	-011	4G	Ozark Mountains	X	X
Diles Creek	1999	11010011	-002t	4H	Ozark Mountains	X	X
Weldon Creek	1999	11010010	-018t	4H	Ozark Mountains	X	X

Recent Special Survey Projects

Stream Name	Year Sampled	H.U.C.	Reach	Planning Segment	Ecoregion	Macroinvertebrate Data Collected	Fish Community Data Collected
Lake Millwood Tributaries Physical, Chemical, and Biological Community Assessment							
Cool-Easy Greasy Creek		11140109	-022t	1C	Gulf Coastal Plains		
Bridge Creek		11140109	-017t	1C	Gulf Coastal Plains		
Cosatot River		11140109	-918	1C	Gulf Coastal Plains		
Cosatot River		11140109	-017	1C	Gulf Coastal Plains		
Little Cosatot River	2000	11140109	-017t	1C	Gulf Coastal Plains	X	X
Belville Creek	2000	11140109	-017t	1C	Gulf Coastal Plains	X	X
Cosatot River		11140109	-017	1C	Gulf Coastal Plains		
Saline River		11140109	-917	1C	Gulf Coastal Plains		
Messers Creek	2000	11140109	-011	1C	Gulf Coastal Plains	X	X
Saline River		11140109	-012	1C	Gulf Coastal Plains		
Rock-Sulphur Slough	2000	11140109	-010t	1C	Gulf Coastal Plains	X	X
Blue Bayou	2000	11140109	-010t	1C	Gulf Coastal Plains	X	X
Saline River		11140109	-010	1C	Gulf Coastal Plains		
Mine Creek	1997	11140109	-033	1C	Gulf Coastal Plains		X
Mine Creek	1997	11140109	-033	1C	Gulf Coastal Plains		X
Mine Creek	1997	11140109	-033	1C	Gulf Coastal Plains		X
Dillard Creek	2000	11140109	-033t	1C	Gulf Coastal Plains	X	X
Mine Creek		11140109	-033	1C	Gulf Coastal Plains		
Plum Creek	2000	11140109	-004t	1C	Gulf Coastal Plains	X	X
Bayou Bartholomew Physical, Chemical, and Biological Community Assessment							
Bayou Bartholomew 143	'98 &'99	8040205	-006	2B	Gulf Coastal Plains	X	X
Nevins Creek	'98 &'99	8040205	-006t	2B	Gulf Coastal Plains	X	X
Harding Creek	'98 &'99	8040205	-006t	2B	Gulf Coastal Plains	X	X
Bayou Imbeau	'98 &'99	8040205	-006t	2B	Gulf Coastal Plains	X	X
Bayou Bartholomew 33	'98 &'99	8040205	-006	2B	Gulf Coastal Plains	X	X
Cousart Bayou	'98 &'99	8040205	-005t	2B	Gulf Coastal Plains	X	X
Jack's Bayou	'98 &'99	8040205	-005t	2B	Gulf Coastal Plains	X	X
Deep Bayou	'98 &'99	8040205	-005	2B	Gulf Coastal Plains	X	X
Bayou Bartholomew BYB03	'98 &'99	8040205	-013	2B	Gulf Coastal Plains	X	
Ables' Creek	'98 &'99	8040205	-012t	2B	Gulf Coastal Plains	X	
Ables' Creek	'98 &'99	8040205	-012t	2B	Gulf Coastal Plains	X	X
Cut-Off Creek coc02	'98 &'99	8040205	-011	2B	Gulf Coastal Plains	X	X
Cut-Off Creek 157	'98 &'99	8040205	-007	2B	Gulf Coastal Plains	X	X
Cut-Off Creek coc01	'98 &'99	8040205	-007	2B	Gulf Coastal Plains	X	X
Bearhouse Creek	'98 &'99	8040205	-001t	2B	Gulf Coastal Plains	X	
Bayou Bartholomew 154	'98 &'99	8040205	-001	2B	Gulf Coastal Plains	X	X
Bayou Bartholomew 13	'98 &'99	8040205	-001	2B	Gulf Coastal Plains	X	X

Recent Special Survey Projects (cont.)

Stream Name	Year Sampled	H.U.C.	Reach	Planning Segment	Ecoregion	Macroinvertebrate Data Collected	Fish Community Data Collected
Ecoregion Macroinvertebrate Metrics Development							
South Fork Spavinaw Creek	2000	11070209	-048t	3J	Ozark Highlands	X	
Flint Creek	2000	11110103	-031	3J	Ozark Highlands	X	
Cincinnatti Creek	2000	11110103	-021	3J	Ozark Highlands	X	
Mud Creek	2000	11110103	-029t	3J	Ozark Highlands	X	
Hicks Creek	2000	11010006	-015	4F	Ozark Highlands	X	
South Fork Spring River	2000	11010010	-012t	4H	Ozark Highlands	X	
Crooked Creek	2000	11010003	-049t	4I	Ozark Highlands	X	
West Fork White River	2000	11010001	-024	4K	Ozark Highlands	X	
War Eagle Creek	2000	11010001	-034	4K	Ozark Highlands	X	
Kings River	2000	11010001	-037	4K	Ozark Highlands	X	
Long Creek	2000	11010001	-054	4K	Ozark Highlands	X	
Yocum Creek	2000	11010001	-052	4K	Ozark Highlands	X	
Hurricane Creek	2001	11110202	-022	3H	Boston Mountains	X	
Indian Creek	2001	11110202	-020	3H	Boston Mountains	X	
N. Fork Illinois Bayou	2001	11110202	-015	3H	Boston Mountains	X	
Lee Creek	2001	11110104	-002	3H	Boston Mountains	X	
Mulberry River	2001	11110201	-008	3H	Boston Mountains	X	
Turkey Creek	2001	11010014	-025t	4E	Boston Mountains	X	
Kings River	2001	11010001	-042t	4K	Boston Mountains	X	
White River	2001	11010001	029t	4K	Boston Mountains	X	
Bear Creek	2001	11010005	-026	4J	Boston Mountains	X	
Richland Creek	2001	11010005	-024	4J	Boston Mountains	X	
Little Buffalo River	2001	11010005	-015	4J	Boston Mountains	X	
Buffalo River	2001	11010005	-0 14	4J	Boston Mountains	X	
Piney Creek Physical, Chemical, and Biological Community Assessment							
Piney Creek	‘97 &‘98	11110202	-018	3H	Boston Mountains	X	X
Unnamed Tributary	‘97 &‘98	11110202	-018t	3H	Boston Mountains	X	
Mill Creek	‘97 &‘98	11110202	018t	3H	Boston Mountains	X	X
Piney Creek	‘97 &‘98	11110202	-019	3H	Boston Mountains	X	
Dry Creek	‘97 &‘98	11110202	-019t	3H	Boston Mountains	X	
Indian Creek	‘97 &‘98	11110202	020	3H	Boston Mountains	X	X
Moccasin Creek	‘97 &‘98	11110202	-020t	3H	Boston Mountains	X	
Piney Creek	‘97 &‘98	11110202	-021	3H	Boston Mountains	X	X
Haw Creek	‘97 &‘98	11110202	-021t	3H	Boston Mountains	X	X
Hurricane Creek	‘97 &‘98	11110202	-022	3H	Boston Mountains	X	X
Piney Creek	‘97 &‘98	11110202	-023	3H	Boston Mountains	X	
Cow Creek	‘97 &‘98	11110202	-023t	3H	Boston Mountains	X	
Walnut Creek	‘97 &‘98	11110202	-023t	3H	Boston Mountains	X	
Little Piney Creek	‘97 &‘98	11110202	-024	3H	Boston Mountains	X	X
Opossum Branch	‘97 &‘98	11110202	-024t	3H	Boston Mountains	X	
Slover Creek	‘97 &‘98	11110202	-024t	3H	Boston Mountains	X	
Little Piney Creek	‘97 &‘98	11110202	-025	3H	Boston Mountains	X	X
Minnow Creek	‘97 &‘98	11110202	-026	3H	Boston Mountains	X	X

Historical Special Survey Projects (cont.)

Stream Name	Year Sampled	H.U.C.	Reach	Planning Segment	Ecoregion	Macroinvertebrate Data Collected	Fish Community Data Collected
Illinois River Physical, Chemical, and Biological Community Assessment							
Illinois River	‘95 &‘96	11110103	-028	3J	Ozark Highlands	X	
Muddy Fork	‘95 &‘96	11110103	-027	3J	Ozark Highlands	X	X
Muddy Fork	‘95 &‘96	11110103	-025	3J	Ozark Highlands	X	X
Illinois River	‘95 &‘96	11110103	-024	3J	Ozark Highlands	X	
Mud Creek	‘95 &‘96	11110103	-029t	3J	Ozark Highlands	X	X
Clear Creek	‘95 &‘96	11110103	-029	3J	Ozark Highlands	X	X
Clear Creek	‘95 &‘96	11110103	-029	3J	Ozark Highlands	X	X
Clear Creek	‘95 &‘96	11110103	-029	3J	Ozark Highlands	X	X
Illinois River	‘95 &‘96	11110103	-023	3J	Ozark Highlands	X	
Osage Creek	‘95 &‘96	11110103	-930	3J	Ozark Highlands	X	X
Osage Creek	‘95 &‘96	11110103	-930	3J	Ozark Highlands	X	X
Osage Creek	‘95 &‘96	11110103	-930	3J	Ozark Highlands	X	
Spring Creek	‘95 &‘96	11110103	-931	3J	Ozark Highlands	X	X
Spring Creek	‘95 &‘96	11110103	-931	3J	Ozark Highlands	X	X
Osage Creek	‘95 &‘96	11110103	-030	3J	Ozark Highlands	X	
Osage Creek	‘95 &‘96	11110103	-030	3J	Ozark Highlands	X	
Illinois River	‘95 &‘96	11110103	-022	3J	Ozark Highlands	X	
Weddington Creek	‘95 &‘96	11110103	-021t	3J	Ozark Highlands	X	X
Illinois River	‘95 &‘96	11110103	-020	3J	Ozark Highlands	X	X
Saline River Forks Physical, Chemical, and Biological Community Assessment							
North Fork Saline River	‘93 &‘96	08040203	-011	2C	Ouachita Mountains	X	X
Alum Fork Saline River	‘93 &‘96	08040203	-014	2C	Ouachita Mountains	X	X
Middle Fork Saline River	‘93 &‘96	08040203	-019	2C	Ouachita Mountains	X	X
South Fork Saline River	‘93 &‘96	08040203	-020	2C	Ouachita Mountains	X	X
Hurricane Creek	#	08040203	-006	2C	Gulf Coastal Plains	X	X
Holly Creek	#	08040203	-010t	2C	Gulf Coastal Plains	X	X
# 1993, 1997, 1999							
Poteau River Physical, Chemical, and Biological Community Assessment							
Poteau River	1994	11110105	-931	3I	Arkansas River Valley		X
Poteau River	1994	11110105	-831	3I	Arkansas River Valley	X	X
Poteau River	1994	11110105	-031	3I	Arkansas River Valley	X	X
Jones Creek	1994	11110105	-028	3I	Arkansas River Valley	X	X
Sager Creek Physical, Chemical, and Biological Community Assessment							
Sager Creek	1993	11110103	-032	3J	Ozark Highlands	X	X
Sager Creek	1993	11110103	-032	3J	Ozark Highlands	X	X
Sager Creek	1993	11110103	-032	3J	Ozark Highlands	X	X
Flint Creek	1993	11110103	-031	3J	Ozark Highlands	X	X
Battle Branch	1993	11110103	-032t	3J	Ozark Highlands	X	X

Historical Special Survey Projects (cont.)

Stream Name	Year Sampled	H.U.C.	Reach	Planning Segment	Ecoregion	Macroinvertebrate Data Collected	Fish Community Data Collected
Upper White River Physical, Chemical, and Biological Community Assessment							
West Fork White River	1993	11010001	-024	4K	Ozark Highlands	X	X
Middle Fork White River	1993	11010001	-026	4K	Ozark Highlands	X	X
White River	1993	11010001	-029	4K	Ozark Highlands	X	
White River	1993	11010001	-027	4K	Ozark Highlands	X	
White River	1993	11010001	-027	4K	Ozark Highlands	X	X
Richland Creek	1993	11010001	-039	4K	Ozark Highlands	X	
Brushy Creek	1993	11010001	-033	4K	Ozark Highlands	X	
War Eagle Creek	1993	11010001	-060	4K	Ozark Highlands	X	
War Eagle Creek	1993	11010001	-060	4K	Ozark Highlands	X	
War Eagle Creek	1993	11010001	-035	4K	Ozark Highlands	X	
War Eagle Creek	1993	11010001	-035	4K	Ozark Highlands	X	
Clifty Creek	1993	11010001	-036	4K	Ozark Highlands	X	
War Eagle Creek	1993	11010001	-034	4K	Ozark Highlands	X	X
Kings River	1993	11010001	-042	4K	Ozark Highlands	X	
Dry Fork Creek	1993	11010001	-043	4K	Ozark Highlands	X	
Piney Creek	1993	11010001	-044	4K	Ozark Highlands	X	
Kings River	1993	11010001	-041	4K	Ozark Highlands	X	
Kings River	1993	11010001	-040	4K	Ozark Highlands	X	
Kings River	1993	11010001	-040	4K	Ozark Highlands	X	X
White River	1993	11010001	-025	4K	Ozark Highlands	X	
Osage Creek	1993	11010001	-047	4K	Ozark Highlands	X	
Osage Creek	1993	11010001	-045	4K	Ozark Highlands	X	
Yocum Creek	1993	11010001	-061	4K	Ozark Highlands	X	
Yocum Creek	1993	11010001	-061	4K	Ozark Highlands	X	X
Dry Creek	1993	11010001	-055	4K	Ozark Highlands	X	
Long Creek	1993	11010001	-054	4K	Ozark Highlands	X	
S. Fourche La Fave River Physical, Chemical, and Biological Community Assessment							
S. Fourche La Fave River	1991	11110206	-014	3E	Arkansas River Valley	X	X
Graham Creek	1991	11110206	-014t	3E	Arkansas River Valley	X	X
S. Fourche La Fave River	1991	11110206	-014	3E	Arkansas River Valley	X	X
Dry fork Creek	1991	11110206	-014t	3E	Arkansas River Valley	X	X
S. Fourche La Fave River	1991	11110206	-014	3E	Arkansas River Valley	X	X
Bear Creek	1991	11110206	-015	3E	Arkansas River Valley	X	X
S. Fourche La Fave River	1991	11110206	-014	3E	Arkansas River Valley	X	X
Cedar Creek	1991	11110206	-014t	3E	Arkansas River Valley	X	X
S. Fourche La Fave River	1991	11110206	-013	3E	Arkansas River Valley	X	X
Ouachita River Fish community Assessment							
Ouachita River	‘91 &’92	8040101	-001	2F	Ouachita Mountains		X
Ouachita River	1992	8040102	-007	2F	Ouachita Mountains		X
Ouachita River	1991	8040102	-006	2F	Ouachita Mountains		X
Ouachita River	‘91 & ‘92	8040102	-001	2F	Ouachita Mountains		X
Ouachita River	‘1992	8040201	-005	2D	Ouachita Mountains		X
Ouachita River	‘91 &’92	8040201	-005	2D	Gulf Coastal Plains		X
Ouachita River	‘91 &’92	8040201	-005	2D	Gulf Coastal Plains		X
Ouachita River	‘91 &’92	8040201	-002	2D	Gulf Coastal Plains		X
Ouachita River	‘91 &’92	8040202	-003	2D	Gulf Coastal Plains		X
Ouachita River	‘91 & ‘92	8040202	-002	2D	Gulf Coastal Plains		X

Historical Special Survey Projects (cont.)

Stream Name	Year Sampled	H.U.C.	Reach	Planning Segment	Ecoregion	Macroinvertebrate Data Collected	Fish Community Data Collected
Ozark Highlands Macroinvertebrate Community Assessment							
Spring River	1995	11010010	-003	4H	Ozark Highlands	X	
Janes Creek	1995	11010010	-002	4H	Ozark Highlands	X	
Browns creek	1995	11010010	-003t	4H	Ozark Highlands	X	
No Name Creek	1995	11010010	-003t	4H	Ozark Highlands	X	
Martins Creek	1995	11010010	-004	4H	Ozark Highlands	X	
Spring River	1995	11010010	-005	4H	Ozark Highlands	X	
Sugar Creek	1995	11010010	-005t	4H	Ozark Highlands	X	
Pierce Creek	1995	11010010	-005t	4H	Ozark Highlands	X	
Spring River	1995	11010010	-006	4H	Ozark Highlands	X	
Gut Creek	1995	11010010	-006t	4H	Ozark Highlands	X	
Spring River	1995	11010010	-008	4H	Ozark Highlands	X	
Field Creek	1995	11010010	-008t	4H	Ozark Highlands	X	
Big Creek	1995	11010010	-008t	4H	Ozark Highlands	X	
English Creek	1995	11010010	-009	4H	Ozark Highlands	X	
Myatt Creek	1995	11010010	-010	4H	Ozark Highlands	X	
Harding Creek	1995	11010010	-018t	4H	Ozark Highlands	X	
Chaplin Creek	1995	11010010	-018t	4H	Ozark Highlands	X	
Weldon Creek	1995	11010010	-018t	4H	Ozark Highlands	X	
South Fork Spring River	1995	11010010	-014	4H	Ozark Highlands	X	
Mill Pond Creek	1995	11010010	-012t	4H	Ozark Highlands	X	
Camp Creek	1995	11010010	-013	4H	Ozark Highlands	X	
Gravelly Branch	1995	11010010	-014t	4H	Ozark Highlands	X	
Pine Hill Creek	1995	11010010	-014t	4H	Ozark Highlands	X	
Town Creek	1995	11010010	-014t	4H	Ozark Highlands	X	
Trace Creek	1995	11010010	-014t	4H	Ozark Highlands	X	
Strawberry River	1995	11010012	-009	4G	Ozark Highlands	X	
Little Strawberry River	1995	11010012	-010	4G	Ozark Highlands	X	
Strawberry River	1995	11010012	-011	4G	Ozark Highlands	X	
Greasy Creek	1995	11010012	-011t	4G	Ozark Highlands	X	
North Sylamore Creek	1995	11010004	-009	4F	Ozark Highlands	X	
South Sylamore Creek	1995	11010004	-010	4F	Ozark Highlands	X	X
Roasting Ear Creek	1995	11010004	-010t	4F	Ozark Highlands	X	

TMDL Investigation - Point Source Oriented

Stream Name	Year Sampled	H.U.C.	Reach	Planning Segment	Ecoregion	Macroinvertebrate Data Collected	Fish Community Data Collected
Holman Creek	1992	11010001	-059	4K	Ozark Highlands	X	X
Prairie Creek	1992	8040101	-048	2F	Ouachita Mountains	X	X
Hicks Creek	1994	11010004	-015	4I	Ozark Highlands	X	X
Jug Creek	1996	08040201	-901	2D	Gulf Coastal Plains	X	X
Cooks Creek	1996	08040201	-001t	2D	Gulf Coastal Plains	X	X
Whig Creek	1996	11110203	-931	3F	Arkansas River Valley	X	X
Stone Dam Creek	1996	11110203	-004	3F	Arkansas River Valley	X	X
Palarm Creek	1996	11110203	-001	3F	Arkansas River Valley	X	X
Big Creek Ditch	1996	08020302	-009t	4B	Delta	X	X
Lost Creek Ditch	1996	08020302	-009t	4B	Delta	X	X
Town Branch - M^{C}Kissic Cr.	1996	11070208	-003t	3J	Ozark Highlands	X	X
Little Sugar Creek	1996	11070208	-003	3J	Ozark Highlands	X	X
ELCC Tributary	1997	08070208	-606	2D	Gulf Coastal Plains	X	X
Flat Creek	1997	08040201	-706	2D	Gulf Coastal Plains	X	X
Salt Creek	1997	08040201	-806	2D	Gulf Coastal Plains	X	X
Mine Creek	1997	11140109	-033	1C	Gulf Coastal Plains	X	X
Rolling Fork River	1998	11140109	-028	1C	Ouachita Mountains	X	X

Surface Water Pesticide Analyses

Data Analyses for Pesticides Collected During 1995 and 1996

Analyses for approximately 50 pesticides were completed from the 133 monthly monitored stations from one sampling event. All quarterly sample sites were sampled for these pesticides during the July 1995 sample event. After the initial screening, 33 sites located in the State's Delta ecoregion were selected for additional sampling. These sites were sampled on two additional occasions, October 1995 and October 1996. This provided a total of 285 analyses for the 50 pesticides targeted during this survey. Only 26 of these compounds were found in detectable levels. The three pesticides which had the highest incidence of occurrence above the detection level were atrazine, metolachlor and molinate (Ordram). The detection level of all three compounds was generally less than 0.009 ug/L. Atrazine was detected in about 68% of the samples and at 102 of the samples sites; metolachlor was detected in approximately 73% of the samples and at 82 sample sites; and molinate was detected in approximately 62% of the samples and at 62 samples sites. The highest values found were 1.09 ug/L for atrazine in DePartee Creek near Bradford, 6.87 ug/L for metolachlor in Bayou Bartholomew near McGehee, and 332.65 ug/L for molinate in Glaise Creek near Worden.

Table III-7 lists the sample sites that had the most numerous pesticide detections. Atrazine, molinate, and metolochlor were responsible for over 66% of the total pesticide detections listed in the table.

Table III-7: Sample Sites With Numerous Pesticide Occurrences

Station	Segment	Location	No. of Detections[#]
BYM01	2A	Bayou Macon near Eudora	17(9)
BYM02	2A	Bayou Macon at Hwy. 65	16(7)
BGB01	2A	Big Bayou near Portland	13(7)
OUA 32	2A	Big Bayou at Hwy. 144	11(9)
BFR01	2A	Boeuf River at Hwy. 278	15(9)
OUA 15A*	2A	Boeuf River near the state line	9(3)
BYB01	2B	Bayou Bartholomew at Hwy. 82	11(7)
BYB02	2B	Bayou Bartholomew at Hwy. 4	16(7)
BYB03	2B	Bayou Bartholomew at Hwy. 54	13(7)
COC01	2B	Cut-Off Creek at Co. Rd. NE of Boydell	7(4)
COC02	2B	Cut-Off Creek at Hwy. 4	7(3)
WSB01	3A	Wabbaseka Bayou at Hwy. 79	16(8)
ARK 23*	3B	Bayou Meto near Bayou Meto	10(3)
BMO02	3B	Bayou Meto at Hwy. 79	6(5)
PMB01	3C	Plum Bayou near Tucker	10(8)
WHI37**	4A	Big Creek at Hwy. 318	10(4)
BGC02	4A	Big Creek at Hwy 49	6(4)
CPC01	4A	Big Cypress Creek at Hwy. 1	7(4)
LGB01	4A	LaGrue Bayou at Hwy 33	9(8)
LLB01	4A	Little LaGrue Bayou at Hwy. 1	8(7)
WHI33	4A	Bayou DeView at Hwy. 70	7(5)
BDV02	4B	Bayou DeView at Hwy. 64	9(8)
WHI32	4B	Cache River at Bradsbury, Ar	11(9)
CHR02	4B	Cache River at Hwy. 64	11(9)
CHR03	4B	Cache River at Hwy. 18	10(9)
CHR04	4C	Cache River at Hwy. 412	11(9)
VGC01	4C	Village Creek at Hwy. 37	11(9)
VGC02	4C	Village Creek at Hwy. 228	10(9)
VGC03	4C	Village Creek at Hwy. 224	11(9)
DTC01	4C	DePartee Creek near Bradford	9(8)
GSC01	4C	Glaise Creek at Hwy. 64	8(8)
WHI56**	4D	Bayou Des Arc at Hwy. 11	7(5)
BDA01	4D	Bayou Des Arc, County Road	6(5)
LGR02	5B	L'Anguille River at Hwy. 214	7(7)
LGR01	5B	L'Anguille River at Hwy. 306	7(7)
FRA 10*	5B	L'Anguille River near Marianna	10(3)
FRA 13*	5C	St. Francis River at Hwy. 50	9(3)

* Sampled one time only.
** Sampled on two sampling events only.
[#] (#) Number of detections of Molinate, Metalachlor and Atrazine.

Atrazine, molinate, and metolochlor were also detected at many sites during all sampling events that occurred from the Delta ecoregion sites and from the one time sample event from all of the other sites. Additionally, metribuzin, cyanazine and alachlor were also detected frequently from a number of different sampling sites. These compounds are commonly used for either broad-leaf weed control or grassy weed control throughout the Delta ecoregion on a variety of crops. Most of these compounds are only slightly toxic to aquatic organisms and generally have short half-lives in the environment. Molinate is the only pesticide that may be toxic, but it has a very short half-life. Metolachlor is very persistent in the environment, but it is non-toxic to aquatic organisms at the levels found.

The two sites located on Bayou Macon (BYM01 and BYM02) the lower Bayou Bartholomew site (BYB03) and the upper Boeuf River site (BFR01) had the highest number of pesticide detections. All of these sites are located in the southeastern section of the state where there is extensive rice and soybean production. All sample sites located in planning segments 2A and 2B had numerous detections of pesticides (usually more than 11 per sample station). Atrazine, molinate, and metolochlor were responsible for approximately 53% of the detections.

The Bayou Meto site near Bayou Meto (ARK23) and L'Anguille River site near Marianna (FRA10) had the highest number of different pesticide detections (10) per single sampling event. Atrazine, molinate, and metolochlor were all detected from both of these stations and from each of the other stations located within planning segments 3B and 5B. Both L'Anguille River quarterly sample sites (LGR01 and LGR02) had seven detections that consisted of only these three pesticides.

Those sites located in the White River drainage basin had from seven to eleven pesticides detections each. Atrazine, molinate, and metolochlor were responsible for approximately 80% of those detections. The highest percentage of those detections came from sample sites located in the Cache River drainage basin. Of the 75 total pesticide detections from the seven sample sites in the Cache River and Village Creek basins, 63 (84%) were either atrazine, molinate, and/or metolochlor.

Data Analyses for Pesticides Collected During 1999, 2000 and 2001

In 1999 and 2000, 23 stations were sampled three to four times and analyzed for pesticides in the water column. These analyses were performed at stations established in southeast Arkansas in conjunction with the Bayou Bartholomew Nonpoint Source Assessment. During 2001, water samples were collected for pesticide analyses at 35 stations in the Delta previously established for the Department's Roving Monitoring Network. These analyses consisted of the same parameters utilized in the 1995-1996 data with the addition of bentazon (Basagran) and aciflurofen (Blazer). Bentazon and aciflurofen are commonly used post-emergent herbicides and were added to the parameter list due to their wide use in Delta agriculture. Only 28 of the 52 analytes were found in detectable levels. Table III-8 lists sample sites that had the most numerous pesticide detections. The three pesticides with the highest incidence of occurrence above the detection level were metolachlor, molinate and bentazon. The detection level of these three pesticides was generally less than 0.01 ug/L.

Table III-8: Sample Sites With Numerous Pesticide Occurrences 1999, 2000, and 2001 Sampling Events

Station	Segment	Location	No. of Detections[#]
OUA178	2A	Oak Log Bayou near Watson	7(3)
OUA179	2A	Oak Bayou south of Pea Ridge	8(3)
OUA176	2A	Amos Bayou near Rohwer	9(3)
OUA175	2A	Macon Bayou near McArthur	10(3)
OUA174	2A	Amos Bayou Canal No. 43	10(3)
OUA13	2B	Bayou Bartholomew near Jones LA	15(6)
BYB03	2B	Bayou Bartholomew at Hwy. 54	11(6)
OUA148	2B	Melton's Creek south of Tarry	18(3)
OUA150	2B	Jack's Bayou south of Tamo	15(6)
OUA151	2B	Deep Bayou south of Grady	17(9)
BYB02	2B	Bayou Bartholomew at Hwy. 4	17(8)
OUA154	2B	Bayou Bartholomew near Portland	18(8)
OUA33	2B	Bayou Bartholomew near Ladd	7(5)
OUA149	2B	Cousart Bayou south of Tamo	11(6)
OUA152	2B	Cross Bayou southeast of Fresno	11
OUA147	2B	Bayou Imbeau southeast of Pine Bluff	9(2)
COC01	2B	Cut-Off Creek at Co. Rd. NE of Boydell	6(4)
OUA157	2B	Cutoff Creek east of Collins	6(3)
OUA146	2B	Tributary to Bayou Bart. Pine Bluff	6(2)
PMB01	3C	Plum Bayou near Tucker	6(2)
BGC02	4A	Big Creek at Hwy 49	12(6)
CPC01	4A	Big Cypress Creek at Hwy. 1	8(3)
LGB01	4A	LaGrue Bayou at Hwy 33	14(4)
WHI37	4A	Big Creek near Watkins Corner	24(6)
FRA28	5A	Fifteen Mile Bayou near Proctor	8(3)
FRA29	5A	Ten Mile Bayou near Edmondson	11(3)
FRA27	5A	Blackfish Bayou near Wildwood	14(6)
FRA36	5A	St. Francis River at Marked Tree	9(3)
FRA38	5A	Right Hand Chute near Riverdale	10(3)
FRA33	5A	Tyronza River near Tyronza	7(3)
FRA37	5A	Left Hand Chute near Lepanto	12(3)
FRA32	5B	Tyronza River near Earle	9(3)
LGR01	5B	L'Anguille River at Hwy 306	12(6)

[#] (#) Number of detections of Molinate, Metalachlor and Bentazon.

Metolachlor was detected in 89% of the samples and at 69 of the stations; molinate was detected in 73% of the samples and was present at 46 of the sampled stations; and bentazon was found in 69% of the samples and at 41 of the stations. The most elevated pesticide concentrations detected during this reporting period were 35.01 ug/L molinate in Amos Bayou near Rohwer , 11.06 ug/L aciflourfen in Oak Log Bayou near Watson and 9.15 ug/L metolachlor in Deep Bayou near the City of Grady. The herbicides 2-4-D and atrazine were also detected quite frequently at many of the stations throughout the delta. Metolachlor, molinate and bentazon were responsible for 39% of the detections listed in Table III-7.

The station on Big Creek (WHI37) had the highest number of pesticide detections recorded during this reporting period. This station is located in western Lee County and was sampled on two occasions. Western Lee and eastern Monroe counties are utilized extensively for rice, soybean and cotton production. All stations located in Planning Segment 4A had numerous pesticide detections. Metolachlor, molinate and bentazon were responsible for 33% of the detections in this planning segment.

Melton's Creek (OUA148) and Bayou Bartholomew near Portland (OUA154) had the highest number of detections in Planning Segment 2B. Metolachlor, molinate and bentazon were detected from both of these stations and from the other stations located within this planning segment.

Even though many pesticides have established acute and chronic toxicity values, actual direct toxicity due to water column pesticide concentrations is very difficult to assess in the environment. In addition, many other variables can play a role in aquatic life degradation (i.e. nutrients, turbidity, channel maintenance, etc.) in the forms of reduced aquatic vegetation causing lower dissolved oxygen concentrations; less habitat for macroinvertebrate and fish communities; and loss of microscopic plant-life at the base of the food chain. However, there have been no aquatic life use impairments detected in the state water bodies attributed to water column pesticide concentrations.

Acute toxicity to aquatic life is much easier to detect, however it is still somewhat difficult to determine its source and overall impact to the waterbody. During the 1993-1995 reporting period, two fish kills related to pesticides occurred, neither of which were in the Delta ecoregion. An over application of chlorpyrifos, an insecticide, caused a fish kill in a neighborhood lake. In another incident, cypermethrin, an insecticide, was spilled into a waterbody severely damaging the aquatic life in the system. In June 1999, chlorpyrofos leaked from a truck owned by a commercial pest control company in Garland County. This leak resulted in a fish kill in an unnamed tributary to Lake Hamilton. Another, more serious fish kill was reported in July, 2000. A fire at a Boone County farmers supply store resulted in the release of several pesticides including Pramitol, atrazine, propazine and chlorpyrofos into Crooked Creek. All of these incidences had relatively short term effects, as is normal with most acute toxicity events; however, they are examples of what can occur in areas of pesticide usage.

CHAPTER FIVE: LAKES WATER QUALITY ASSESSMENT

Background

Various estimates have been made concerning the size of Arkansas' surface water resource. Most of these estimate three-fourths of one million acres of flowing and impounded waters. Streams and rivers compose approximately one-third of this total. The remaining one-half million acres are divided between the large Corps of Engineers multi-purpose reservoirs and the small, usually specific-purpose lakes (including private ponds).

The large Corps of Engineers constructed reservoirs are multi-use, but most were constructed primarily for hydropower and flood control; some were constructed primarily for navigation. A few are presently used for municipal water supply. All receive substantial recreational uses such as fishing, swimming, boating, camping, and related uses. The smaller lakes in the state were normally constructed for a single purpose such as municipal water supply, but others were built for general recreation use and some were designed and managed for the primary purpose of public fishing. In the latter group, other recreational uses are permitted, unless they conflict with fishing, e.g., water skiing. Multiple uses are allowed on very few of the municipal water supply lakes; however, numerous uses are allowed on the industrial water supply impoundments.

Water quality data from the majority of Arkansas' lakes is sparse, although selected lakes have intensive, long-term data collection. Some have only specific-purpose data, e.g., fecal coliform sampling from swimming areas. A few lakes have been investigated as a short-term project when a specific or potential problem was identified. Such studies were associated with the Clean Lakes Section of the Water Quality Act or municipal water supply reservoirs with treatment problems. In contrast, the Corps' lakes of the Little Rock District have a relatively large amount of multi-parameter and multi-site water quality data. Additionally, DeGray Reservoir probably has the most extensive water quality database of any reservoir in this region of the country. The data extend from pre-impoundment to the current date.

Arkansas currently has identified seventy-nine (79) significant publicly-owned lakes ranging in size from 60 to over 45,000 acres and totaling 355,954 acres. The lakes are categorized into five groups by: (1) ecoregion; (2) the primary construction purpose; and (3) certain morphometric features such as size and average depth.

Table III-9 lists the significant publicly-owned lakes and selected characteristics of each. Figure III-3 is a map depicting the locations of ADEQ water quality monitoring sites on each lake. The number corresponds to the lake number in Table III-9; duplicate numbers indicate multiple sample sites on the same lake.

Table III-9: Significant Publicly-Owned Lakes

No.	Lake	County	Acres	Avg Depth	Water-shed[1]	W/A[2]	Eco-region[3]	Purpose[4]	Type
1	WINONA	SALINE	1240	30.0	44.4	22.9	OM	W	A
2	DIERKS	HOWARD	1360	22.0	114.0	53.6	OM	F	A
3	GILLHAM	HOWARD	1370	21.0	271.0	126.6	OM	F	A
4	DEQUEEN	SEVIER	1680	21.0	169.0	64.4	OM	F	A
5	CATHERINE	HOT SPRING	1940	18.0	1516.0	500.1	OM	H	A
6	GREESON	PIKE	7200	38.7	237.0	21.1	OM	H	A
7	HAMILTON	GARLAND	7300	26.0	1441.0	126.3	OM	H	A
8	MAUMELLE	PULASKI	8900	23.0	137.0	9.9	OM	W	A
9	DEGRAY	CLARK	13200	48.8	453.0	22.0	OM	H	A
10	NORFORK	BAXTER	22000	57.0	1806.0	52.5	OH	H	A
11	BEAVER	BENTON	28200	58.0	1186.0	26.9	OH	H	A
12	GREERS FERRY	CLEBURNE	31500	60.0	1153.0	23.4	BM	H	A
13	OUACHITA	GARLAND	40100	51.0	1105.0	17.6	OM	H	A
14	BULL SHOALS	MARION	45440	67.0	6036.0	85.0	OH	H	A
15	CRYSTAL	BENTON	60	12.0	4.5	48.0	OH	A	B
16	SHORES	FRANKLIN	82	10.0	26.0	202.9	BM	R	B
17	SPRING	YELL	82	23.0	10.5	82.0	AV	R	B
18	HORSEHEAD	JOHNSON	100	16.0	17.3	110.7	BM	R	B
19	WEDDINGTON	WASHINGTON	102	16.0	3.0	18.8	OH	R	B
20	COVE	LOGAN	160	10.0	8.5	34.0	AV	R	B
21	ELMDALE	WASHINGTON	180	8.0	6.0	21.3	OH	A	B
22	FAYETTEVILLE	WASHINGTON	196	15.0	6.0	19.6	OH	R	B
23	BOBB KIDD	WASHINGTON	200	13.3	4.0	12.8	OH	A	B
24	WILHELMENA	POLK	200	10.0	13.5	43.2	OM	A	B
25	BARNETT	WHITE	245	27.0	37.5	98.0	AV	A	B
26	SUGARLOAF	SEBASTIAN	250	12.0	5.0	12.8	AV	A	B
27	WRIGHT	SEBASTIAN	350	9.0	3.1	5.7	AV	A	B
28	FT. SMITH	CRAWFORD	416	28.0	73.0	112.3	BM	W	B
29	SEQUOYAH	WASHINGTON	500	8.0	275.0	352.0	OH	R	B
30	SWEPCO	BENTON	531	17.0	14.0	16.9	OH	W	B
31	SHEPHERD SPGS.	CRAWFORD	552	31.0	68.0	78.8	BM	W	B
32	CHARLES	LAWRENCE	562	8.0	18.0	20.5	OH	A	B
33	LEE CREEK	CRAWFORD	634	11.0	465.0	469.4	BM	W	B
34	BEAVERFORK	FAULKNER	900	10.0	11.5	8.2	AV	R	B
35	HINKLE	SCOTT	965	15.0	27.5	18.2	AV	A	B
36	BREWER	CONWAY	1165	20.0	36.4	20.0	AV	W	B
37	JUNE	LAFAYETTE	60	5.0	4.0	42.7	GC	A	C
38	BAILEY	CONWAY	124	8.0	7.5	38.7	AV	R	C
39	TRICOUNTY	CALHOUN	280	7.0	11.5	26.3	GC	A	C
40	COX CREEK	GRANT	300	6.0	17.0	36.3	GC	A	C
41	FRIERSON	GREENE	335	7.5	7.3	13.9	DL	A	C
42	STORM CREEK	PHILLIPS	420	7.0	8.0	12.2	DL	R	C
43	CALION	UNION	510	6.0	6.7	8.4	GC	A	C
44	POINSETT	POINSETT	550	7.0	4.5	5.2	DL	A	C
45	BEAR CREEK	LEE	625	10.0	6.0	6.1	DL	R	C
46	UP WHITE OAK	OUACHITA	630	8.0	20.7	21.0	GC	A	C

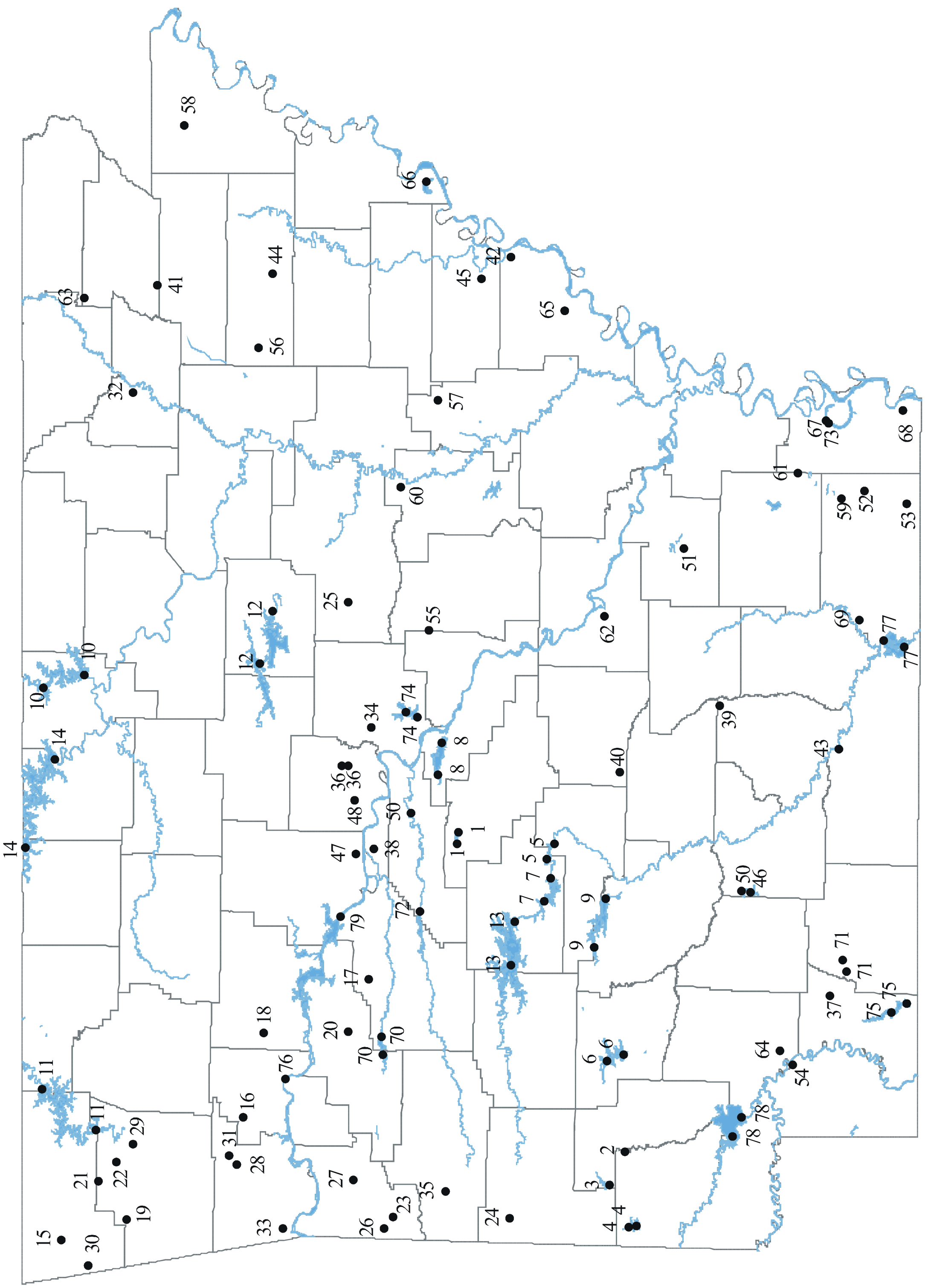
(continued)

Table III-9: Significant Publicly-Owned Lakes

No.	Lake	County	Acres	Avg Depth	Water-shed[1]	W/A[2]	Eco-region[3]	Purpose[4]	Type
(continued)									
47	ATKINS	POPE	750	5.5	10.2	8.7	AV	A	C
48	OVERCUP	CONWAY	1025	4.0	17.2	10.7	AV	A	C
49	LO WHITE OAK	OUACHITA	1080	8.0	42.5	25.2	GC	A	C
50	HARRIS BRAKE	PERRY	1300	6.0	11.2	5.5	AV	A	C
51	CANE CREEK	LINCOLN	1620	6.0	24.0	9.5	GC	A	C
52	WILSON	ASHLEY	150	5.0	1.0	4.3	DL	A	D
53	ENTERPRISE	ASHLEY	200	5.0	2.0	6.4	DL	A	D
54	1ST OLD RIVER	MILLER	200	4.0	2.0	6.4	GC	A	D
55	PICKTHORNE	LONOKE	207	5.0	13.2	40.8	DL	A	D
56	HOGUE	POINSETT	280	4.4	2.0	4.6	DL	A	D
57	GREENLEE	MONROE	300	6.0	0.5	1.1	DL	A	D
58	MALLARD	MISSISSIPPI	300	6.0	0.5	1.1	DL	A	D
59	GRAMPUS	ASHLEY	334	6.0	2.0	3.8	DL	A	D
60	DESARC	PRAIRIE	350	6.0	1.0	1.8	DL	A	D
61	WALLACE	DREW	362	5.2	1.0	1.8	DL	A	D
62	PINE BLUFF	JEFFERSON	500	6.0	4.0	5.1	DL	A	D
63	ASHBAUGH	GREENE	500	5.0	1.0	1.3	DL	A	D
64	BOIS D'ARC	HEMPSTEAD	750	4.0	4.0	3.4	GC	A	D
65	OLD TOWN	PHILLIPS	900	3.5	23.0	16.4	DL	R	D
66	HORSESHOE	CRITTENDEN	1200	10.0	13.5	7.2	DL	R	E
67	UPPER CHICOT	CHICOT	1270	15.0	14.0	7.1	DL	R	E
68	GRAND	CHICOT	1400	7.0	5.5	2.5	DL	A	E
69	GA. PACIFIC	ASHLEY	1700	4.0	4.0	1.5	GC	W	E
70	BLUE MT.	LOGAN	2900	8.6	488.0	107.7	AV	F	E
71	COLUMBIA	COLUMBIA	2950	11.0	48.0	10.4	GC	W	E
72	NIMROD	YELL	3600	8.2	680.0	120.9	AV	F	E
73	LOWER CHICOT	CHICOT	4030	15.4	350.0	55.6	DL	R	E
74	CONWAY	FAULKNER	6700	5.0	136.0	13.0	AV	A	E
75	ERLING	LAFAYETTE	7000	7.0	400.0	36.6	GC	W	E
76	OZARK	FRANKLIN	10600	14.0	151801.0	9165.3	AV	N	E
77	FELSENTHAL	BRADLEY	14000	7.0	10852.0	496.1	GC	R	E
78	MILLWOOD	LITTLE RIVER	29500	5.2	4144.0	89.9	GC	F	E
79	DARDANELLE	POPE	34300	14.2	153666.0	2867.2	AV	N	E
	TOTAL		355954						

1 — Watershed: square miles
2 — W/A: Watershed (acres)/Area of Lake
3 — Ecoregions: OM-Ouachita Mtns.; BM-Boston Mtns.; OH-Ozark Highlands; AV-Arkansas River Valley; GC-Gulf Coastal Plains; DL-Delta
4 — Purpose: W-Water supply; F-Flood Control; H-Hydropower; A-Angling (public fishing); N-Navigation; R-Recreation

FIGURE III-3
Location of Arkansas' Significant Publicly-Owned Lakes



Lake Water Quality Assessments

Three lake water quality assessments have been completed on Arkansas significant publicly-owned lakes since 1989. The "Water Quality Assessment of Arkansas' Significant Publicly-Owned Lakes, Summer 1999" is the latest of these assessments and it outlines the current trophic status and water quality of each of the lakes. Water quality samples, metals, pesticides, dissolved oxygen and temperature profiles, and fecal coliform bacteria were collected from most of these lakes between mid-July and the end of August in 1989, 1994, and 1999. Sediment samples were collected in 1994, and plankton samples were collected in 1999. This is the only data that has been collected from most of the States' lakes, except for some of the Corps of Engineers lakes and some of the large municipal water supply lakes that are sampled annually.

Using lake morphology, ecoregion and purpose of construction, all of the lakes were grouped in the following manner:

Type A - These are the larger lakes, usually of several thousand acres in size. They have average depths normally 30 to 60 feet and are located in the montane areas of the state in the Ozark Highlands, Ouachita Mountains and Boston Mountains. The watersheds of most are forest dominated, and the primary pupose of most of these lakes is hydropower and/or flood control. The watershed to lake area ratio (W/A) is relatively large for these impoundments, but the large reservoir volume lengthens the water residence time.

Type B - These are the smaller lakes of the uplands or steeper terrains of the mountainous regions and are probably the most heterogenous group of lakes. Most are 500 acres or less in size and are located in the Ozark Highlands, Ouachita Mountains and Boston Mountains. Several are located in the more mountainous areas of the Arkansas River Valley. Average depths range from 10 to 25 feet and watersheds are normally dominated by forest lands. The W/A ratios are normally high which results in a high flushing rate and low water retention time for these smaller lakes.

Type C - This group is composed of the smaller lakes of the lowlands or flat terrain areas. Sizes range from 300 to 1,000 acres with average depths of normally less than 10 feet. These lakes are located in the Arkansas River Valley, Gulf Coastal plains and Delta ecoregions. The Delta lakes of this group are generally associated with the Crowley's Ridge region. Watersheds of these lakes include timberlands of both lowland hardwoods and pines, but some are broken by pasture land and small farms. These lakes have relatively small storage volumes due to shallow average depths and those with higher W/A ratios have high flushing rates.

Type D - These are small impoundments of the Delta area of the state, but include two similar type lakes from the large river alluvium of the Gulf Coastal Ecoregion. These type lakes are generally 200 to 500 acres in size with average depths of around five feet. This group includes several natural, oxbow-cutoff lakes which have been modified by a water control structure to increase their isolation from the parent stream and maintain higher dry-season water levels. These lakes are only occasionally flooded by the parent stream and generally have very small direct runoff watersheds. The other lakes of this type are man-made, but they are almost totally isolated from their watershed by levees. Water levels are maintained through occasional pumping from adjacent waterways. Where watersheds exist that discharge directly to the oxbow lakes in this group, the runoff is primarily from row crop agriculture.

Type E - These are the large lowland lakes of the Delta, Gulf Coastal and the large alluvial areas of the Arkansas River Valley Ecoregion. They range from several thousand to over 30,000 acres in size, but average depth is usually less than 10 feet. This group also includes four large, oxbow-cutoff lakes which have been substantially modified by construction of drainage ditches, levees and other water control structures. Watershed types include mixtures of intensive row crop agriculture, small farms and pastures (with increasing amounts of confined animal production) and timberlands.

Lake Water Quality Trends

A comparison of trophic rankings for all lakes during the three surveys can be found in Table III-10. The Trophic Index was determined by taking the total phosphorus value of the epilimnion, multiplying it by the chlorophyll [a] concentration and then dividing that product by the secchi disk transparency in inches. Old Town Lake had the highest trophic index of all lakes. It had a chlorophyll [a] concentration of 123.40 *u*g/L, which was twice that of the next highest lake. Grand Lake had the second highest trophic index in 1999, as it did in 1989; however it was about half that of Old Town Lake. Lake Frierson's third highest trophic ranking in 1999 and second highest in 1994 was probably influenced by the excessive turbidity from suspended silt particles during both surveys. This resulted in low secchi disk transparencies, but was not related to the trophic status of the lake. The upper Blue Mountain Lake transect had the fourth highest trophic index in 1999. This was also caused by low secchi disk transparency related to suspended silt particles rather than plankton production. This transect was not sampled during the previous two surveys. Lake Mallard had the fifth highest trophic index in 1999 and 1994 and the third highest in 1989. It had the second highest chlorophyll [a] concentration in 1999. In the past, this lake was fertilized routinely for fisheries enhancement, which perhaps is the main reason for its high trophic rankings. The lowest trophic indices were from Type A and B lakes. Ninety-three percent (93%) of the Type D lake stations and two-thirds of the Type E lake stations were in the upper one-third of all lake station trophic indices. Eight of the ten lakes with the highest trophic rankings are located in the Delta ecoregion, one in the Gulf Coastal Plains and one in the Arkansas River Valley. The highest trophic indices were almost always comprised of the same lakes each year of the survey.

A comparison of the in-lake water quality data to water quality standards must be made with some qualifications. The State's in-lake water quality standards have been modified from the State's stream standards and often do not reflect conditions in a stratified lake. The vast majority of the water quality data collected from all of the State's lakes as a whole fell within the water quality standards.

Table III-10: Comparison of Trophic Rankings Between the 1989, 1994, and 1999 Surveys

			1999		1994		1989	
NO	NAME	TYPE	Index	Rank	Index	Rank	Index	Rank
66	OLD TOWN	D	42.45	1	16.81	4	41.19	1
69	GRAND	E	24.86	2	11.35	6	26.32	2
42	FRIERSON	C	12.85	3	24.34	2	4.09	21
71	BLUE MT. (B)	E	12.01	4				
59	MALLARD	D	11.16	5	11.64	5	22.56	3
62	WALLACE	D	10.71	6	5.92	15	11.08	8
74	LOWER CHICOT	E	9.32	7	10.70	7	4.38	20
57	HOGUE	D	9.16	8	7.29	11	2.02	38
67	HORSESHOE	E	8.95	9	17.72	3	14.44	5
65	BOIS D' ARC	D	8.65	10				
71	BLUE MT. (A)	E	7.99	11	4.57	21	1.11	49
68	UPPER CHICOT	E	6.72	12	10.04	8	13.70	6
64	ASHBAUGH	D	6.70	13	2.63	29	3.15	24
37	JUNE	C	6.05	14	6.20	14	12.81	7
63	PINE BLUFF	D	5.61	15	6.43	13		
53	WILSON	D	5.37	16	3.92	24	3.14	25
55	1ST OLD RIVER	D	5.11	17	8.96	10	7.24	15
76	ERLING (B)	E	4.90	18	3.40	27	7.45	14
39	TRICOUNTY	C	4.74	19	4.78	20	6.39	16
56	PICKTHORNE	D	4.20	20	1.73	41		
54	ENTERPRISE	D	4.09	21	2.57	25	3.06	26
46	BEAR CREEK	C	3.48	22	9.28	9	10.81	9
32	CHARLES	B	3.46	23	4.99	19	2.90	29
22	FAYETTEVILLE	B	3.30	24	1.80	39	0.65	54
61	DESARC	D	3.23	25	5.63	17	2.94	28
75	CONWAY (B)	E	3.06	26	4.27	22	7.86	12
80	DARDANELLE	E	3.05	27				
48	ATKINS	C	3.01	28	2.57	30	1.78	41
79	MILLWOOD (A)	E	2.79	29	2.19	34	1.54	42
43	STORM CREEK	C	2.78	30	5.64	16	7.84	13
75	CONWAY (A)	E	2.64	31	6.52	12	8.89	11
47	UP. WHITE OAK	C	2.24	32	3.40	26	3.00	27
52	CANE CREEK	C	2.10	33	0.98	54	3.66	22
29	SEQUOYAH	B	1.96	34	1.79	40		
23	BOBB KIDD	B	1.87	35	1.34	49	1.19	47
21	ELMDALE	B	1.81	36	0.70	59	2.03	37
30	SWEPCO	B	1.78	37	0.31	73	0.22	78
60	GRAMPUS	D	1.71	38	2.35	33	3.53	23
11	BEAVER (B)	A	1.49	39	0.46	69	0.80	51
76	ERLING (A)	E	1.42	40	2.09	36	4.64	18
15	CRYSTAL	B	1.40	41	0.68	61	0.25	75
44	CALION	C	1.35	42	1.48	47	2.57	33
38	BAILEY	C	1.34	43	2.52	31	4.90	17
24	WILHELMINA	B	1.33	44	2.06	37	1.30	46
79	MILLWOOD (B)	E	1.20	45	2.19	34	1.54	42
33	LEE CREEK	B	1.14	46	0.22	81		
78	FELSENTHAL (B)	E	1.13	47	5.54	18	2.32	34
40	COX CREEK	C	1.12	48	2.50	32		

			1999		1994		1989	
NO	NAME	TYPE	Index	Rank	Index	Rank	Index	Rank
4	DEQUEEN (B)	A	1.10	49	0.42	71	0.39	69
14	BULL SHOALS (A)	A	1.02	50	0.11	94	0.08	93
16	SHORES	B	0.94	51	0.23	80	0.41	67
78	FELSENTHAL (A)	E	0.93	52	3.96	23	1.96	39
50	LO. WHITE OAK	C	0.87	53	1.56	45	1.41	44
27	NOLAN (Wright)	B	0.85	54	1.68	42		
51	HARRIS BRAKE	C	0.70	55	1.02	52	2.89	30
36	BREWER (A)	B	0.68	56	0.86	56	0.76	53
4	DEQUEEN (A)	A	0.65	57	0.39	72	0.32	72
45	POINSETT	C	0.57	58	1.60	44	0.47	62
25	BARNETT	B	0.56	59	0.26	77	2.29	35
26	SUGARLOAF	B	0.52	60	0.63	65	0.49	58
72	COLUMBIA (B)	E	0.46	61	1.80	38	2.62	31
70	GA. PACIFIC	E	0.46	62	1.66	43	2.25	36
5	CATHERINE (A)	A	0.44	63	0.70	60	1.33	45
72	COLUMBIA (A)	E	0.37	64	1.00	53	2.59	32
2	DIERKS	A	0.35	65	0.51	68	0.43	66
5	CATHERINE (B)	A	0.32	66	1.40	48	1.48	43
3	GILLHAM	A	0.31	67	0.74	58	0.41	68
19	WEDDINGTON	B	0.29	68	0.16	86	0.22	77
34	BEAVER FORK	B	0.27	69	1.27	50	0.45	64
31	SHEPHERD SPGS	B	0.27	70	0.15	89	0.44	65
20	COVE	B	0.26	71	0.26	75	0.27	74
35	HINKLE	B	0.25	72	0.60	66	0.45	63
28	FT. SMITH	B	0.24	73	0.15	88	0.23	76
9	DEGRAY (B)	A	0.24	74	2.18	35	0.49	59
6	GREESON (B)	A	0.23	75	0.65	63	0.50	57
14	BULL SHOALS (B)	A	0.23	76	0.11	96	0.11	87
12	GREERS FERRY (B)	A	0.20	77	0.10	97	0.11	88
7	HAMILTON (B)	A	0.20	78	0.97	55	0.60	55
18	HORSEHEAD	B	0.17	79	0.20	84	0.48	60
1	WINONA (B)	A	0.15	80				
7	HAMILTON (A)	A	0.15	81	0.18	85	0.57	56
8	MAUMELLE (B)	A	0.13	82	1.06	51	0.38	71
6	GREESON (A)	A	0.13	83	0.59	67	0.13	83
8	MAUMELLE (A)	A	0.12	84	0.15	87	0.29	73
17	SPRING	B	0.11	85	0.24	79	0.38	70
9	DEGRAY (A)	A	0.11	86	0.27	74	0.11	86
12	GREERS FERRY (A)	A	0.11	87	0.25	78	0.13	84
1	WINONA (A)	A	0.08	88	0.11	92	0.2	80
13	OUACHITA (C)	A	0.08	89	0.26	76	0.22	79
13	OUACHITA (A)	A	0.07	90	0.15	90	0.08	92
11	BEAVER (A)	A	0.05	91	0.22	82	0.09	90
10	NORFORK (A)	A	0.03	92	0.12	91	0.09	89
10	NORFORK (B)	A	0.03	93	0.10	98	0.11	85
58	GREENLEE	D			288.74	1	15.64	4
49	OVERCUP	C			3.27	28	4.63	19
73	NIMROD	E			1.52	46	0.88	50

* (A) - Lower Lake Station (B) - Upper Lake Station ** U.S. Army Corps of Engineers data used to calculate trophic index Note: Some lake stations were not sampled during certain years for various reasons.

The pH standard was only exceeded on a few occassions, mostly in the lakes with anoxic hypolimnions or in the more productive lakes of the Delta. Several lakes exceeded the temperature standard, but these violations were most likely due to the unusually hot ambient temperatures and dry conditions that existed during the 1999 survey. Lake Swepco's elevated surface temperature, as well as the elevated sulfates, is a result of the lakes primary purpose as a cooling water facility.

Several lakes had hypolimnetic turbidity values above the 25 NTU standard and were probably caused by the settling of dead plankton organisms or the re-suspension of colloidal clay particles from inflows into the hypolimnion. Blue Mountain Lake and Lake Frierson have a history of elevated turbidity values most likely due to in-lake processes of wind action on shallow waters, soil types susceptible to colloidal suspensions, and/or disturbances in the watershed..

Lake Wilhelmina's fecal coliform count exceeded both the primary and secondary contact recreation criteria. This lake has a history of elevated bacteria counts, especially near the fish culture facility located in the lake. However, the bacteria being detected in Lake Wilhelmina is most likely not a fecal coliform bacteria since the only evident source of fecal contamination is from the fish production facility. The fecal coliform indicator is reported to be from the gut of warm-blooded animals. Fish are poikilotherms ("cold-blooded"). Some other bacteria was detected by the fecal coliform test. The in-lake fish production facility is most likely the source of this unidentified bacteria. The upper Lake Millwood site and Lake Calion values exceeded the primary contact recreation standard during the 1999 survey. These exceedances are probably short-term, event specific occurrences. Overall, fecal coliform concentrations were noticeably lower during the 1999 survey compared to the previous surveys.

An atypically high dissolved copper value was found in the hypolimnion of lower Lake Felsenthal in 1999. Both the acute and chronic standards were exceeded. The source is unknown. In general, there were only minimal and sporadic standards violations in the lakes surveyed, and many of these violations may be cyclic and related to local weather conditions.

Restoration Efforts

The Natural Resources Conservation Service (NRCS) initiated a Millwood Lake Watershed Demonstration Project in 1990 to encourage accelerated adoption of best management practices (BMP) and technologies that cost effectively reduce impacts from confined animal manure disposal and associated activities on ground and surface water that result in documented water quality benefits. This watershed was adopted as a priority watershed by the NRCS for BMP implementation. In addition, this watershed was listed as a priority watershed by the State Unified Watershed Assessment group in 1999 enabling additional nonpoint source funds to be utilized in the watershed.

In 1999, a group of concerned citizens formed the Beaver Lake Watershed Partnership. This group of citizens, along with the help of local, state, and federal governments, and private and academic entities, has begun an initiative to preserve and enhance the water quality in Beaver Lake. The main goals of this group are to educate the local citizens and watershed land owners about the effects of pollution on the lake; to develop a watershed management plan; and to solicit the membership of those businesses and citizens within the watershed.

In addition to these efforts, many federal, state and local agencies are involved in either in-lake or watershed restoration/enhancement/education activities across the state. The Arkansas Game and Fish Commission has implemented restoration and enhancement techniques on several lakes throughout the State; the U.S. Army Corps of Engineers has initiated rehabilitation techniques on a couple of its lakes in the State; the Arkansas Water Education Team (AWET) educates junior high and high school students from across the state with a hands-on, in-stream learning/monitoring curriculum; and the Arkansas Soil and Water Conservation Commission continually initiates demonstration projects for the control of nonpoint source pollution.

Impaired Uses of Lakes

None of the designated uses, i.e., public, agriculture or industrial water supply; propagation of fish and wildlife; primary and secondary contact uses; and navigation, have been eliminated or are impaired in any of the lakes. Similarly, the fishable/swimmable goals of the Clean Water Act have been attained in all lakes. However, fish consumption was not supported in some lakes due to fish consumption advisories which have been issued for waters where fish tissue contamination due to mercury have exceeded the Federal Drug Administration's action levels (See Part III, Chapter Seven).

The fish consumption use is not supported in lakes, Felsenthal and Columbia. These lakes total 16,950 acres (Table III-11). Eleven additional publicly-owned lakes and several privately-owned lakes have health advisories limiting the consumption of certain size classes of certain species of fishes. See Part III Chapter Seven, Table III-12, for additional details of the current health advisories on Arkansas publicly-owned lakes.

Table III-11 Lakes Use Support

Degree of Use Support	Assessment Category		Total Assessed (acres)
	Evaluated	Monitored	
Size Fully Supporting		339,004	339,004
Size Not Supporting		16,950	16,950
Total Assessed (acres)		355,954	355,954

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CHAPTER SIX: WETLANDS

When the first settlers arrived in Arkansas, the wetland resources comprised approximately 8.5 million acres over the State's six ecoregions. Most of these wetlands were in the Mississippi Alluvial Plain (Delta). Today, approximately 10 percent, or 800,000 acres, remain (Arkansas Department of Parks and Tourism, 1985).

The Delta is bordered by the Mississippi River on the east and extends to its most westward point at the base of the Ouachita Mountains near Little Rock. From there the Delta extends northeast along the "Fall Line" and Ozark Mountains' foothills into Missouri and southeast from Little Rock along the edge of the Gulf Coastal Plains to Louisiana. This area comprises approximately 15,625 square miles and all or part of 27 of the State's 75 counties.

The Delta's major streams north of the Arkansas River flow through channels carved by the Mississippi River. The Mississippi River once flowed west of Crowley's Ridge and carved portions of the channels that now form the Black, White, and Cache Rivers and Bayou DeView. After the Mississippi River moved east of Crowley's Ridge, it carved a channel that is now the St. Francis River. Over the millenniums, the Mississippi River deposited silt and organic material over the Delta during floods that developed one of the nation's most fertile land areas. The flat slopes of the Delta and the frequent flooding events produced extensive water-tolerant hardwood trees and allowed the formation of numerous "swamps" or wetlands.

Those first settlers found vast acres of bottomland hardwoods in the swamps upon their arrival in Arkansas. For 200 years they cleared the timber to farm the rich, fertile soil. The process was slow and labor intensive with only occasional help from the federal government. After WWII, mechanization allowed the clearing of wetland acreage faster than ever before. A dozer could clear more land in one day than some families could clear in a year only a generation earlier. Ninety percent (90%) of wetland acreage cleared in the last 35 to 40 years has been due to the expansion of soybean production (Holder 1969). Estimates of the loss of bottom land hardwood forest in eastern Arkansas since 1957 and projections of losses through 1995 are given in the 1996 305B.

In 1849-50, Congress passed the Swamp Land Acts, which transferred more than 7,686,000 acres of public domain land to the State of Arkansas. Funds collected from the sale of these lands were used for flood control structures in the Delta. But, major floods occurred in 1858, 1862, 1865, 1871, 1874, 1882, 1883, and 1884 justifying the Mississippi River Commission. The Mississippi River Commission was a cooperative effort of the federal government and local interests, formed to address the problems associated with these recurring floods in 1879. Levee boards and drainage districts were formed resulting in swamp drainage and clearing and ditch and levee construction for flood control. The passage of the Flood Control Act of 1928 removed the requirement for the local interests to pay half the cost of levee construction on the Mississippi River. Passage of these various flood control acts resulted in the conversion of thousands of acres of wetlands into productive agricultural lands.

Act 561 of the State of Arkansas Statutes in 1995 defines a wetland as "an area that has water at or near the surface of the ground at some time during the growing season (wetland hydrology). It contains plants adapted to wet habitats (hydrophytic vegetation) and is made up of soils that have developed under wet conditions (hydric soils) or any other definition promulgated by the Arkansas Soil and Water Conservation Commission (ASWCC)."

The term marsh appears in the state law under the Arkansas Water and Air Pollution Control Act, Act 472 of 1949, as amended. Subdivision 9(a): "waters of the State, means all streams, lakes, marshes, ponds, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or borders upon this state or any portion thereof."

Although the state does not have delegated 404 permitting authority, the state has used its Antidegradation Policy to protect wetland resources affected by projects requiring Section 404 dredge and fill permits. The State will deny water quality certification for such projects when, in the opinion of the state, the designated use will no longer be maintained and protected.

Currently, the state does not have a formal policy for Section 401 water quality certifications. Section 401 decisions made by the state are based on its Regulation No. 2, Regulation Establishing Water Quality Standard for Surface Water of the State of Arkansas.

In 1985, the Arkansas Department of Parks and Tourism (ADPT) prepared a Statewide Comprehensive Outdoor Recreation Plan (SCORP) to investigate wetland losses and propose a policy to abate these losses. The 1992 SCORP makes this Wetlands Issue Statement: "Arkansas must define and adopt a statewide no-net-loss wetland policy and take a proactive role to preserve, protect and restore our wetlands."

Several state agencies are working independently to preserve wetlands within the State. The Arkansas Game and Fish Commission (AGFC), the State's chief wildlife and fisheries agency, has a long standing commitment to protecting wetlands within the Delta because of its outstanding wildlife importance, particularly to migratory water fowl. The AGFC has acquired 12 areas within the Delta comprising more than 125,000 acres. The Arkansas Natural Heritage Commission (ANHC), an agency of the Department of Arkansas Heritage, focuses on the protection of rare plant and animal species and natural communities. This agency has made a comparable commitment of acquiring legal interest (fee title or conservation easement) in 57 areas of the state. Of these areas, 37 protect approximately 7,425 acres of wetlands and 29 miles of riparian corridor. The agency is also working cooperatively with landowners to manage wetlands along 16 miles of Bayou Dorcheat and its tributaries in Columbia and Lafayette Counties involving approximately 11,000 acres of bottom land forest and wetlands.

The AGFC and ANHC have committed to additional investments in the Delta and have begun developing comprehensive plans for the Cache/Lower White River Joint Venture Project under the North American Waterfowl Management Plan, and the White River/Lower Arkansas Megasite Plan. The AGFC and ANHC has also agreed to jointly purchase 3,750 acres of bottomland forest and cypress-tupelo swamp located in Seven Devils Swamp in southeast Arkansas. The Ramsar Convention, an international agreement providing the framework for international cooperation for conservation of wetland habitats, proclaimed the five state-and-federally-owned areas as "Wetlands of International Importance." The designation of the Cache/Lower White River is only the eighth wetland area in the United States to be recognized as a wetland of international importance under the Ramsar Convention.

During 1992, the State of Arkansas developed its first comprehensive strategy for protecting wetlands within the state. Four state agencies - AGFC, ASWCC, ANHC, and the Arkansas Department of Environmental Quality joined to discuss wetland protection efforts within the state. The group expanded to include the University of Arkansas Cooperative Extension Service, the Arkansas Forestry Commission (AFC), ADPT and the Arkansas Highway and Transportation Department, and was named the Multi-Agency Wetlands Planning Team (MAWPT).

In 1993, the Governor created the Water Resource and Wetlands Task Force "to provide recommendations to the Governor regarding protection of Arkansas' water resources and wetlands." Protection and preservation of Arkansas' water resources, the development of a wetlands policy that meets or exceeds the national wetlands policy, and a cooperative effort towards the development of plans for wetlands restoration and agricultural management practices between Arkansas and seven other delta states was cited in the document. Task force membership included representatives from federal and state agencies, environmental organizations, tourism, agricultural interests, academic institutions, and members of the Arkansas General Assembly.

The Task Force developed the following mission statement:

> "The Wetlands and Water Resource Task Force is to develop recommendations to the Governor that will result in the preservation and protection of Arkansas water and wetland resources, including conserving, enhancing, and restoring the acreage, quality, biological diversity and ecosystem sustainability of Arkansas Wetlands, and recommendations regarding the long term health of the aquifers including surface water projects, restoration and clean water initiatives as they relate to agriculture and wetlands."

Acts 561 and 562 were enacted during the 1995 General Assembly as recommended by the Governor's Wetland Task Force. These acts established the riparian zone/ wetland creation tax credit program and wetland mitigation banking program.

The Arkansas Wetlands Conservation Plan consists of two elements:

1. Statewide strategies for wetland protection and restoration (available at www.mawpt.org).
2. Watershed wetland conservation strategies based on GIS inventories and analysis requiring local partnership and decision sharing.

The Governor's Water Resources and Wetlands Task Force no longer exists, but the MAWPT continues this important work. To date, the MAWPT has acquired funds to complete GIS wetland inventories and prioritization for wetland preservation and restoration in all nine of the Wetland Planning Areas of the Delta, and for the whole of the Arkansas Coastal Plain. The Bayou Meto analysis is complete, and results have been published in a Wetland Planning Area (WPA) report for the watershed (available at www.mawpt.org). The report for Bayou Bartholomew is nearly complete, and the remaining have funds allocated to complete the GIS. In addition, the MAWPT developed the Arkansas Wetland Strategy, a document containing policy, program, and legislation recommendations for the implementation of the Arkansas Wetland Conservation Plan.

The MAWPT has also been instrumental in developing the hydrogeomorphic approach to wetland classification and functional assessment for Arkansas. To date, the MAWPT has completed a classification for the entire state, which is published on the MAWPT website (www.mawpt.org). This classification includes keys, descriptions of each wetland class with block diagrams illustrating the landscape positions of different wetland community types within the class. Each community type also has a page with a description, photograph, distribution map, and dominant species list. The development of the assessment procedure requires the identification of functions performed by each subclass, development of models for each function that include variables scientifically shown to affect the function, and the calibration of these models using data for reference wetlands in a given geographic region. To date the MAWPT has identified functions and developed models for the wetlands of both the Delta and Coastal Plain regions. The MAWPT has collected data from nearly 500 reference wetlands to calibrate the models in the two regions. The calibration is complete and a draft of the Regional Guidebook for Conducting Functional Assessments of Forested Wetlands in the Delta Region of Arkansas has been written and is currently in review. A similar draft is being written for the Coastal Plain, and funds have been requested from EPA to start field work in the Ouachita Mountains and Crowley's Ridge . The MAWPT plans to eventually develop regional assessment guidebooks for each of the 5 Wetland Planning Regions of Arkansas

The MAWPT has also completed several smaller education and public outreach projects. The MAWPT received a grant from EPA to assist in developing a curriculum for the Potlach Educational Center at Cook's Lake. This curriculum covers wetland topics such as hydrology, water quality, hydric soils, the water cycle, geomorphology, herpetology, tree identification, map-reading skills, and chapters on birds, mammals, litter decomposers, and other wetland residents. The MAWPT has also assisted with presenting many teacher's workshops, to help teachers incorporate wetland and water quality concepts into the classroom. The MAWPT published a Landowner's Guide to Voluntary Wetland Programs in Arkansas in 1996 and again in 2000. The MAWPT has also developed an extensive website with information on Arkansas wetlands, wetland functions, historic losses, the HGM classification, and most of the MAPWT publications, including the landowner's Guide, the Arkansas Wetland Strategy, and the Bayou Meto WPA Report.

A 320-acre site in Chicot County, Arkansas, Referred to as the Camp Nine Mitigation Bank, has been purchased by the State in order to establish the State's first wetland mitigation bank under *Act 562 of 1995, the "Arkansas Wetlands Mitigation Bank Act"*. Credits from the Camp Nine Mitigation Bank (CNMB) can be purchased to offset unavoidable wetland impacts occurring in the southeast region of Arkansas. Further information about CNMB can be obtained by contacting the Arkansas Soil and Water Conservation Commission.

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CHAPTER SEVEN: PUBLIC HEALTH/AQUATIC LIFE CONCERNS

Background

The 1994 Water Quality Inventory report contained an in-depth look at bioaccumulative compounds and trace metals in Arkansas' lakes and streams. It was the culmination of a cooperative effort with the Arkansas Game and Fish Commission (AGFC) to collect, analyze and evaluate data on compounds that could affect public health or aquatic life. The report contained data collected from numerous streams, rivers, and lakes. Overall, data collection and/or analysis during the 1994 reporting period was much more extensive than usual. Since that report, the collection and analysis of data has been concentrated on evaluating the mercury problems discussed in the 1994 report.

During the 1996 reporting period, the Department's monitoring program concentrated on mercury and its effects on public health. Edible fish tissue (fillets), usually from predator fishes, was analyzed for metals and pesticides from 32 lakes and numerous stream segments . These results are documented in the "1996 Water Quality Inventory Report".

The fish tissue sampling program has been scaled back from the intensive sampling of the previous years. Since the 1996 reporting period, fish tissue has only been collected from those areas of the state with the greatest risk and highest concentrations of mercury and/or other fish tissue contaminants. From 1999-2002, fish tissue analyses will be confined primarily to waters in Arkansas which were selected as a part of the "National Study of Chemical Residues in Lake Fish Tissue".

Public Health and Aquatic Life Impacts

Fish Consumption Advisories

Table III-12 lists the current fish consumption advisories for the State. The most significant health advisory changes in the State over the last four years has been the reduction in the total number of stream miles with dioxin advisories.

The Arkansas Department of Health is responsible for issuing fish consumption advisories. Few waters have been added to the fish consumption advisory list since the 1996 report. Some advisories concerning the consumption of fish tissue with mercury contamination have been better defined and some dioxin advisories have been removed and/or scaled back. It is important to contact the Department, the Arkansas Department of Health, or the Arkansas Game and Fish Commission for the latest advisories.

Table III-12: Fish Consumption Advisories in Place as of January, 2000

<table>
<tr><th rowspan="3">Name of Waterbody and Reach No.</th><th rowspan="3">Waterbody Type</th><th rowspan="3">Size Affected</th><th colspan="4">Type of Fish Consumption Restriction</th><th rowspan="3">Pollutant of Concern</th></tr>
<tr><th colspan="2">No Consumption</th><th colspan="2">Limited Consumption</th></tr>
<tr><th>General population</th><th>High risk groups</th><th>General population</th><th>High risk groups</th></tr>
<tr><td rowspan="2">Bayou Bartholomew
08040205 - 002
08040205 - 012</td><td>River</td><td>~48 miles</td><td></td><td>X</td><td>X</td><td></td><td rowspan="2">Mercury</td></tr>
<tr><td colspan="6">1. High risk groups should not consume flathead catfish, gar, bowfin or pickerel, and blue catfish over 20", largemouth bass over 12", or buffalo over 18" in length.
2. The general public should not consume more than 2 meals per month of flathead catfish, gar, pickerel, bowfin, or blue catfish over 20" in length, largemouth bass over 12" in length, or buffalo over 18" in length.</td></tr>
<tr><td rowspan="2">Bayou Meto
08020402-007</td><td>Stream</td><td>~48 miles</td><td>X</td><td>X</td><td></td><td></td><td rowspan="2">Dioxin</td></tr>
<tr><td colspan="6">3. Consumption of fish from this area is not recommended due to dioxin contamination. This applies to all risk groups.</td></tr>
<tr><td rowspan="2">Tributary of Big Creek
11140203 - XXX</td><td>Stream</td><td>~2 miles</td><td>X</td><td>X</td><td></td><td></td><td rowspan="2">PCBs</td></tr>
<tr><td colspan="6">4. This stream is closed to fishing due to polychlorinated biphenyl contamination.</td></tr>
<tr><td rowspan="2">Big Johnson Lake[1]
(Calhoun County)</td><td>Lake</td><td>80 acres</td><td></td><td>X</td><td>X</td><td></td><td rowspan="2">Mercury</td></tr>
<tr><td colspan="6">5. High risk groups have no restrictions on consumption of crappie or buffalo. They should not consume all other predators and non-predators.
6. The general public has no restrictions on the consumption of crappie or buffalo. They should not consume more than two (2) meals per month of all other predators. There is no restriction on consumption of non-predator fish.</td></tr>
<tr><td rowspan="2">Champagnolle Creek
08040201 - 003
Little Champagnolle
08040201 - XXX</td><td>Stream</td><td>~20 miles</td><td></td><td></td><td>X</td><td>X</td><td rowspan="2">Mercury</td></tr>
<tr><td colspan="6">7. High risk groups should not consume predator or non-predator species over 13".
8. The general public should not consume more than 2 meals per month of the predator species over 13". There are no restrictions on non-predator species.</td></tr>
<tr><td rowspan="2">Columbia Lake</td><td>Lake</td><td>2,950 acres</td><td></td><td>X</td><td>X</td><td></td><td rowspan="2">Mercury</td></tr>
<tr><td colspan="6">9. High risk groups do not have any restrictions on the consumption of crappie, channel or blue catfish. They should not consume all other predators and non-predators.
10. The general public has no restrictions on the consumption of largemouth bass less than 16 inches in length, or crappie, channel and blue catfish. They should not consume morel than 2 meals per month of all other predators. There are no restrictions on non-predator fish.</td></tr>
<tr><td rowspan="2">Cove Creek Lake
(Perry County)</td><td>Lake</td><td>46 acres</td><td></td><td></td><td>X</td><td>X</td><td rowspan="2">Mercury</td></tr>
<tr><td colspan="6">11. High risk groups should not consume largemouth bass 12" or longer. There are no restrictions on all other predator or non-predator species.
12. The general public should not consume more than 2 meals per months of largemouth bass 12-16" in length. They should not consume largemouth bass greater than 16" in length. There are no restrictions on all other predator or non-predator species.</td></tr>
<tr><td rowspan="2">Cut-Off Creek
08040205 - 007</td><td>Stream</td><td>16.8 miles</td><td></td><td>X</td><td>X</td><td></td><td rowspan="2">Mercury</td></tr>
<tr><td colspan="6">13. High risk groups should not consume predator or non-predator species.
14. The general public should consume no more than 2 meals per month of the predator species. They should d not consume the non-predator species.</td></tr>
</table>

(Continued)

Name of Waterbody and Reach No.	Waterbody Type	Size Affected	Type of Fish Consumption Restriction				Pollutant of Concern
			No Consumption		Limited Consumption		
			General population	High risk groups	General population	High risk groups	
Dorcheat Bayou **11140203 - 020** **11140203 - 022** **11140203 - 024** **11140203 - 026**	**Stream**	**50.6 miles**		**X**	**X**		**Mercury**
	15. High risk groups should not consume predator or non-predator species. **16. The general public should not consume largemouth bass >16" in length or consume more than 2 meals per month of all other predator species.**						
Dry Fork Lake **(Perry County)**	**Lake**	**104 acres**			**X**	**X**	**Mercury**
	17. High risk groups should not consume largemouth bass 16" or longer. **18. The general public should not consume more than 2 meals per month of largemouth bass 16" in length.** **19. There are no restrictions on all other predator and non-predator species.**						
Dupree Lake	**Lake**	**<10 acres**	**X**	**X**			**Dioxin**
	20. Consumption of fish from this area is not recommended due to dioxin contamination. This applies to all risk groups.						
Felsenthal Lake	**Lake**	**14,000 acres**		**X**	**X**		**Mercury**
	21. High risk groups have no restrictions on the consumption of crappie and channel catfish 19" in length or less. They should not consume all other predators. There are no restrictions on the consumption of bluegill, but high risk groups should not consume all other non-predators. **22. The general public should not consume more than 2 meals per month of blue catfish 18" in length or less. There are no restrictions on the consumption of crappie or channel catfish 19" in length or less. They should not consume all other predators. There are no restrictions on the consumption of bluegill, but the general public should not consume more than 2 meals a month of all other non-predator fish.**						
Fourche La Fave River **11110206 - 002**	**River**	**8.7 miles**			**X**	**X**	**Mercury**
	23. High risk groups should not consume largemouth bass 16" or longer. There are no restrictions on all other predator and non-predator species. **24. The general public should not consume more than 2 meals per month of largemouth bass 16" or longer. There are no restrictions on all other predator and non-predator species.**						
Grays Lake **(Cleveland County)**	**Lake**	**22 acres**		**X**	**X**		**Mercury**
	25. High risk groups should not consume largemouth bass over 16" in length, flathead catfish over 26" in length, or any gar, bowfin or pickerel. **26. The general public should not consume more than two meals per month of gar, bowfin, pickerel, flathead catfish over 26" in length, or largemouth bass 13" to 16" in length.** **27. The general public should not consume any largemouth bass over 16" in length.**						
Johnson Hole **(Van Buren County)**	**Lake**	**~50 acres**			**X**	**X**	**Mercury**
	28. High risk groups should not consume largemouth bass over 16" in length. **29. The general public should not consume largemouth bass over 16" in length.**						

(continued)

Name of Waterbody and Reach No.	Waterbody Type	Size Affected	Type of Fish Consumption Restriction				Pollutant of Concern
			No Consumption		Limited Consumption		
			General population	High risk groups	General population	High risk groups	
Moro Creek **08040201 - 001**	**Stream**	**~12 miles**	**X**	**X**			**Mercury**
	30. High risk groups should not consume predator or non-predator species. **31. The general public should not consume the predator species. They should not consume more than 2 meals per month of the non-predator species.**						
Nimrod Lake	**Lake**	**3,600 acres**			**X**	**X**	**Mercury**
	32. High risk groups should not consume largemouth bass 16" in length or greater. **33. The general public should consume no more than 2 meals per month of largemouth bass 16" or longer.** **34. There are no restrictions on all other predators.**						
Ouachita River **08040201 - 002** **08040201 - 004** **08040202 - 002** **08040202 - 003** **08040202 - 004**	**River**	**66.3 miles**	**X**	**X**			**Mercury**
	35. High risk groups should not consume predator or non-predator species. **36. The general public should not consume the predator species. They should not consume more than 2 meals per month of the non-predator species.**						
Saline River **08040204 - 001** **08040204 - 002**	**River**	**55.8**	**X**	**X**			**Mercury**
	37. High risk groups should not consume predator or non-predator species. **38. The general public should not consume the predator species. There are no restrictions on the non-predator species.**						
Saline River **08040204 - 004** **08040204 - 006**		**33.9 miles**		**X**	**X**		**Mercury**
	39. High risk groups should not consume predator or non-predator species. **40. The general public should not consume more than 2 meals per month of the predator or non-predator species.**						
Shepherd Springs Lake **(Crawford County)**	**Lake**	**552 acres**			**X**	**X**	**Mercury**
	41. High risk groups should not consume black bass 16" or longer. There are no restrictions on all other predator or non-predator species. **42. The general public should not consume more than 2 meals per month of black bass 16" to 20" long. No black bass over 20" should be consumed. There are no restrictions on all other predator or non-predator species.**						
South Fork Little Red River **11010014 - 036**	**River**	**2.0 miles**			**X**	**X**	**Mercury**
	43. High risk groups should not consume largemouth bass over 16" in length. **44. The general public should not consume more than 2 meals per month of largemouth bass 16" long or greater.** **45. There are no restrictions for all other predators.**						
Lake Sylvia **(Perry County)**	**Lake**	**14 acres**			**X**	**X**	**Mercury**
	46. High risk groups should not consume largemouth bass 16" or longer. **47. The general public should not consume more than 2 meals per month of largemouth bass 16" in length.** **48. There are no restrictions on all other predator or non-predator species.**						

(continued)

<table>
<tr><th rowspan="3">Name of Waterbody and Reach No.</th><th rowspan="3">Waterbody Type</th><th rowspan="3">Size Affected</th><th colspan="4">Type of Fish Consumption Restriction</th><th rowspan="3">Pollutant of Concern</th></tr>
<tr><th colspan="2">No Consumption</th><th colspan="2">Limited Consumption</th></tr>
<tr><th>General population</th><th>High risk groups</th><th>General population</th><th>High risk groups</th></tr>
<tr><td rowspan="2">Lake Monticello
(Drew County)</td><td>Lake</td><td>1,240 acres</td><td></td><td></td><td>X</td><td>X</td><td rowspan="2">Mercury</td></tr>
<tr><td colspan="6">49. High risk groups should not consume black bass, flathead or blue catfish, 12" or larger, or channel catfish 18" or larger.
50. The general public should not consume more than 2 meals per month of black bass 12" to 15" in length, or channel catfish 18" or larger.
51. The general public should not consume flathead catfish, blue catfish, or black bass over 15" in length.</td></tr>
<tr><td rowspan="2">Lake Winona
(Saline County)</td><td>Lake</td><td>1,240 acres</td><td></td><td></td><td>X</td><td>X</td><td rowspan="2">Mercury</td></tr>
<tr><td colspan="6">52. High risk groups should not consume black bass 16" or larger.
53. The general public should not consume more than two meals per month of black bass 16" or larger.</td></tr>
<tr><td rowspan="2">[1] These oxbow lakes are listed specifically as advisory areas. There is an advisory on all oxbow lakes, backwaters, overflow lakes and bar ditches formed by the Ouachita River below Camden. This includes waters inside the Felsenthal National Wildlife Refuge.</td><td>All types</td><td>Total Area not known</td><td>X</td><td>X</td><td></td><td></td><td rowspan="2">Mercury</td></tr>
<tr><td colspan="6">54. High risk groups should not consume predator or non-predator species not listed below.
55. The general public should not consume predator species not listed below. They should not consume more than 2 meals per month of all non-predator species not listed below.
56. There are no restrictions on the consumption of buffalo or crappie.</td></tr>
</table>

Fish Kills

Twenty-four fish kills, known or suspected to be pollution related, were recorded during the reporting period (Table III-13). Approximately 100,000 fish were estimated to be killed in approximately 40 stream miles and/or 35 lake acres. Eight fish kills were due to pesticides used in agricultural and urban areas. Anoxic waters, diesel fuels spills, and brine solution releases were responsible for two fish kills apiece. There were seven fish kills were no discernable cause could be determined. Sources for most of the fill kills included either storm water run off from industrial and/or agricultural areas, or accidental discharges from point source discharges. The most severe fish kill was caused by an accidental release of sodium hydrosulfide from a tank farm in southeast Arkansas.

Public Water Supply/Drinking Water Use

During 1995, water quality analyses included a comprehensive list of pesticides (See Table III-5) from at least one sampling event. These results indicated dectable levels of pesticides at some of the stations; however, none of the pesticide concentrations exceeded the Safe Drinking Water Act Maximum Contaminant Level (MCL) for that parameter.

Table III-13: Pollution Related Fish Kills (1995-1998)

Waterbody county or reach number	Waterbody Type	Size Affected	Pollutant of Concern	Pollutant Source	Number of fish killed
Grassy Flat Creek - 11110207-xxx	Stream	5.4 miles	Chlorpyrifos	Pest control	18,000
DeLoutre Bayou - relief area - 8040202-007	Stream	0.15 miles	Brine solution	Pipeline rupture	~ 100
Unnamed tributary of Rock Creek - 11110207-xxx	Stream	0.75 mile	Raw sewage	Manhole overflow	> 20
Unnamed tributary of Town Branch (Fayetteville) 11010001-xxx	Stream	1.0 mile	Chlorpyrifos	Pest control	<100
Unnamed Tributary to Horsehead Creek - 11140203-xxx	Stream	0.75 mile	Brine solution	Pipeline rupture	~ 125
Unnamed creek @ the Univ. of Arkansas - Washington Co. 11010001-xxx	Stream	0.25 mile	unknown	Urban runoff	~ 50
Mill Creek - 11110201-014	Stream	6.5 miles	Diesel Fuel	Fuel Tank	2,665
S. F. Saline River Trib - 08040202	Stream	1.0 mile	Cypermethrin	Urban	200
Coffee Creek - 08040202-xxx	Stream	0.25 miles	Anoxia	Industrial	200
Mud Creek Trib - 11110103-xxx	Stream	1.0 mile	Unknown	Runoff	300
Gin Creek - 11010014-xxx	Stream	3 miles	Unknown	Industrial	470
Arkansas River Trib - 11110203-xxx	Stream	<0.1 mile	Diesel Fuel	Unknown	30
Oakwood Bayou - 08050001-xxx	Stream	>0.1 mile	Unknown	Unknown	100
Chicot Bayou - 08050002-xxx	Stream	18 miles	Sodium Hydrosulfide	Tank Farm	40,348
Private Pond - Lee Co.	Pond	1.0 acre	unknown pesticide	Agricultural applications	> 600
Private Pond - Nevada Co.	Pond	1.0 acre	Guthion	Agricultural applications	> 600
Lake Dardanelle - Pope Co.	Lake	0.25 acre	Sodium Hypochlorite	Permit discharge	~ 875
Commercial fish pond - Monroe Co.	pond	26.0 acres	Methyl parathion	Agricultural applications	25,000
Bob Linn Lake - Faulkner Co.	Lake	5.0 acres	Chlorpyrifos	Pest control	2000
Lake Chicot - Chicot Co.	Lake	0.5 acres	Unknown	Unknown	30
Pleasure Lake Saline Co.	Lake	0.5 acres	Chlorpyrifos	Urban	>500
Hills Lake	Lake	Unknown	Unknown	Agricultural	250
Atkins Lake - Jefferson Co.	Lake	Unknown	Anoxic water	Storm runoff	~ 500
Murphy Park Lake - Washington Co.	Lake	1.0 acre	Unknown	Unknown	~300

A non-point source assessment completed in 1996 also provided valuable information regarding the Drinking Water Use designation of Arkansas' waters. Between 1994 and 1996, 103 sample stations were established across Arkansas and sampled quarterly. Analyses included nutrients, minerals, and both dissolved and total metals. All stations were also sampled for those pesticides in Table III-4 during a July 1995 sampling event. After this initial screening of the sample sites, 33 sites in the Delta ecoregion were selected for continued pesticide analyses. Samples were collected and analyzed from these sites in October 1995 and October 1996. This generated a total of 285 pesticide analyses. The three pesticides that had the highest incidence of occurrence above the detection level were atrazine, metolachlor, and molinate. As with the analyses performed on the 133 ambient stations previously discussed, none of the detections exceeded the listed MCLs.

The ambient monitoring network provided monthly data from all stations for nitrate and minerals (chlorides, sulfates, total dissolved solids) which were compared against the drinking water standards to assess the protection of the drinking water use. Of the more than 8,500 miles assessed for these parameters for drinking water use support, 77.7 miles were not meeting the use. Many of the exceedences were from nitrate values greater than 10 mg/L. In addition, several miles of streams have had the drinking water designation use removed through site specific amendments to the water quality standards.

Source Water Protection Program - Arkansas Department of Health

Arkansas' source Water Protection Program (SWAP) establishes a methodology to perform vulnerability assessments in an effort to provide information/data to water systems, customers, and government agencies. The Arkansas Department of Health (ADH) is responsible for the development of the SWAP and for conducting the vulnerability assessments. The vulnerability assessments are multi-step processes consisting of source location, delineation of source water assessment areas, potential contaminant identification, and a susceptibility analysis. The information/data obtained from the vulnerability assessments will be useful for the development of drinking water source protection programs. Source protection programs can help to assure a continued safe drinking water supply, provide for monitoring flexibility, and limit capital expenditures for treatment.

Preparation of the SWAP was required by the 1996 amendments to the Safe Drinking Water Act. Arkansas' SWAP was approved by the environmental Protection Agency, Region 6, in November, 1999 and it is scheduled to be completed by May 2003. After assessments are completed, the ADH will be providing technical assistance for the development of source water protection plans.

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PART IV: WATER QUALITY LIMITED WATERBODIES - 303(d) LIST

Introduction

Section 303(d) of the Clean Water Act requires that States identify waters which do not meet or are not expected to meet applicable water quality standards. These water bodies are compiled into a list known as the 303(d) list. The regulation (40 CFR 130.7) requires that each 303(d) list be prioritized and identify waters targeted for Total Maximum Daily Load (TMDL) development in the next two years.

As a result of several lawsuits concerning past 303(d)/TMDL processes, EPA has issued numerous administrative interpretations, administrative procedures, policies and guidance from both headquarters and regional offices for preparation of the 303(d) list. Currently, major revisions in the TMDL regulation process has been proposed; however several controversial sections in the proposal have resulted in a stay of the new regulations. As a result, the 303(d) process and the 305(b) activities are driven by previous guidance and administrative directives. Recent EPA guidance requests that the 303(d) Impaired Waterbody List be submitted with the 305(b) report as an *Integrated Water Quality Monitoring and Assessment Report*.

Methodology

The methodology used for listing of impaired waters (303d) is essentially the same as for the 305(b) assessments. This is detailed in Part III, Chapter Three of this document.

Water Quality Limited Waters

The waters listed as not meeting water quality standards, 303(d) listed, are listed in Table IV-1 for rivers and streams and Table IV-2 for lakes and reservoirs. These waters are illustrated in Figure IV-1. A key to the abbreviations used with the lists is attached. The lists include 60 stream segments totaling 1292.7 miles, and five lakes totaling 17,062 acres. Nine stream segments are located on small streams dominated and impacted by a point source discharge. These segments total 69.8 miles. TMDLs have been conducted on three of these which total 28.3 miles, and all of these impairments can be corrected by modification of NPDES permits.

Twenty (20) stream segments with a total of 307.2 miles are listed as non-support of fish consumption use due to mercury contamination. All lakes listed, except Lake Dupree, are for mercury contamination. An extensive multi-year investigation by a multi-agency task force has concluded that there is a source of this contaminant in the naturally occurring geological formations in the Ouachita Mountain area of the State, and it apparently manifests itself when the runoff from this area enters the sluggish, lowland areas of the State. The mercury impaired waters make up over one-fourth of the stream miles on the 303(d) list for the State. TMDLs for all mercury impaired waters in Arkansas are in progress and TMDLs for the Bayou Bartholomew basin, Flat Creek/Salt Creek basin and Strawberry River basin are currently being conducted. In addition, a TMDL has been completed on the L’Anguille basin. The total stream miles on which a TMDL has been completed or is in progress is 758.9. This also includes Lakes Columbia, Felsenthal, Big Johnson and Grays. Although numerous TMDLs have been completed or are in progress, the current 303(d) list retains the listing of these waters. These waters where a TMDL has been completed has a “Status” designation of “4A”; those waters where a TMDL is in progress or is required are designated as “Status 5".

Additional dissolved oxygen data was collected from the Arkansas River below the Dardanelle Lock and Dam and in the Ft. Smith area. Below standard DO values were confirmed only immediately below the Dardanelle Lock and Dam with recovery occurring approximately 2 miles downstream in most cases. This led to the listing of 2 miles of the Arkansas River as impaired from hydropower releases from the upstream reservoir during periods of hypoxic conditions in the bottom strata of the reservoir.

The 2002 listing of impaired waters contains seven additional segments and 121.9 additional miles compared to the 1998 list. The majority of this increase is from the southeast Arkansas delta area where additioinal monitoring indicates very high turbidity values in these channel-altered streams during high run-off events. It is questionable whether these high turbidity values or the physical alteration of the stream habitat has impaired the aquatic life uses.

Key to Abbreviations in 303 (d) List

Priority Rank - A ranking of waters in order of need for corrective action taking into account the severity of the pollution and the designated uses of the waters.

H = high priority	highest risk of affecting public health or welfare; substantial impact on aquatic life uses
M = medium priority	moderate risk to public health, welfare or to aquatic life uses
L = low priority	lowest risk to public health or welfare; secondary impact on aquatic life uses

Assessed Uses of waters include: fish consumption, aquatic life communities, primary contact (swimmable), secondary contact (limited body contact), water supply for raw drinking water, agriculture and industrial uses.

S = use is fully supported	M = monitored assessment
N = use not supported	E = evaluated assessment
R = designated use removed	

Sources of Contamination - the probable source of the contaminant causing impairment

AG = agriculture activities
RE = resource extraction (mining; oil and gas extraction)
IP = industrial point source
MP = municipal point source
RC = road construction/maintenance
HP = hydropower
UN = unknown

Causes of Impairment - the identified contaminant

SI = siltation/turbidity	CL = chlorides
PA = pathogen indicator bacteria	SO_4 = sulfates
PO = priority organics	TDS = total dissolved solids
OE = organic enrichment/low dissolved oxygen	CU = dissolved copper
AM = ammonia	ZN = dissolved zinc
HG = mercury	NO_3 = nitrate nitrogen
DO = dissolved oxygen	TP = total phosphorus
AL = Aluminum	

H.U.C. - Reach - a numerical identifier of a specific segment of a stream

Miles - the total length (in miles) of a specific reach or segment of a stream

Station - water quality monitoring station number

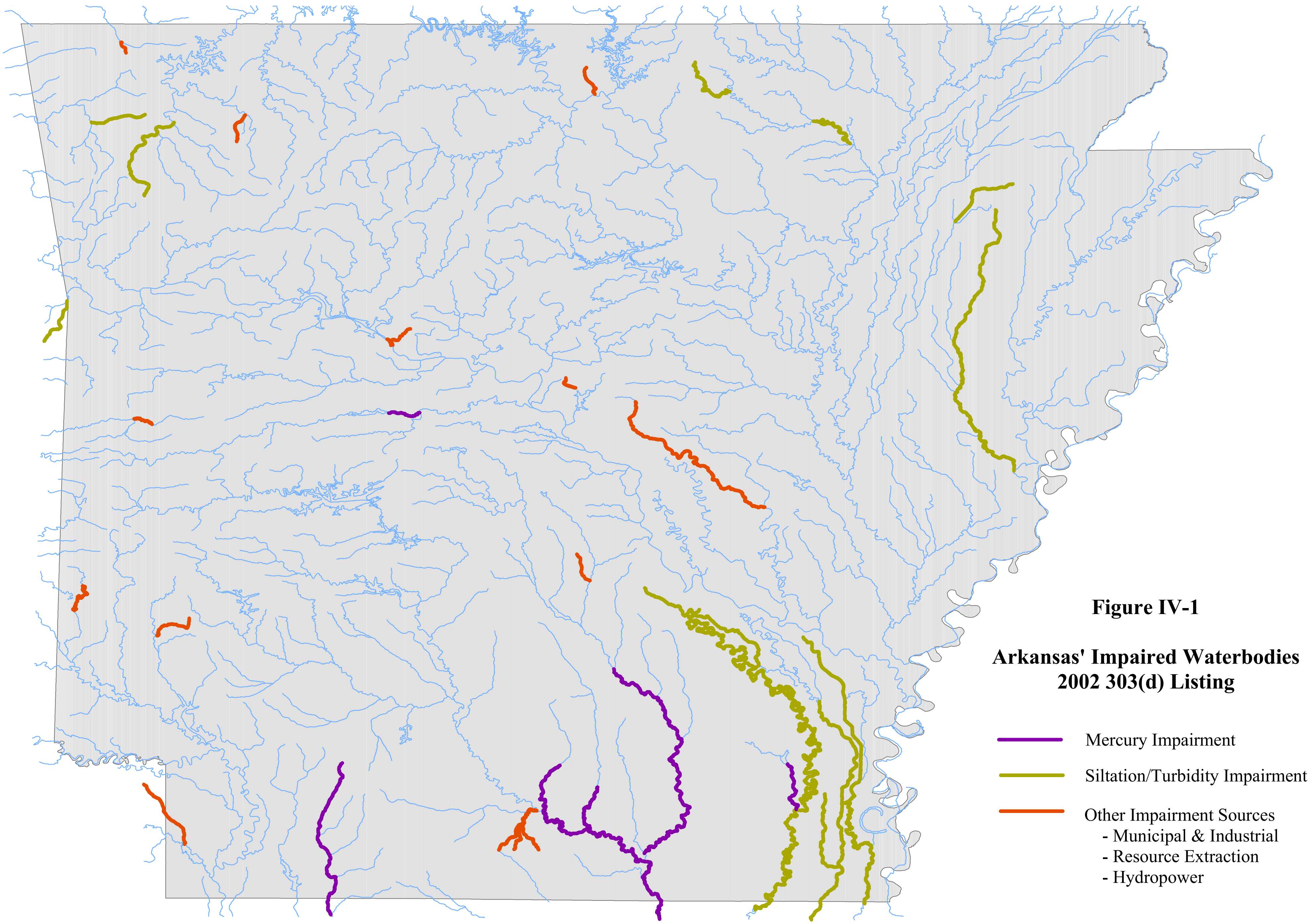
Figure IV-1
Arkansas' Impaired Waterbodies
2002 303(d) Listing
Mercury Impairment
Siltation/Turbidity Impairment
Other Impairment Sources
- Municipal & Industrial
- Resource Extraction
- Hydropower

Table IV-1. Water Quality Limited Waterbodies - 303(d) List
Rivers and Streams

PRIORITY	STREAM NAME	HUC	REACH	PLNG SEG	MILES	MONITORING STATIONS	ASSESS	FISH COMSUMP	AQUATIC LIFE	PRIMARY CONTACT	SECONDARY CONTACT	DRINKING WATER	AGRI & INDUSTRY	MAJOR SOURCE	MINOR SOURCE	MAJOR CAUSE	MINOR CAUSE	STATUS	TMDL DATE
H	Dorcheat Bayou	11140203	-026	1A	23.3	BDT01,02	M	N	S	S	S	S	S	UN		HG		5	2002
H	Dorcheat Bayou	11140203	-024	1A	7		E	N	S	S	S	S	S	UN		HG		5	2002
H	Dorcheat Bayou	11140203	-022	1A	8.4	RED15A	M	N	S	S	S	S	S	UN		HG		5	2002
H	Dorcheat Bayou	11140203	-020	1A	11.9		E	N	S	S	S	S	S	UN		HG		5	2002
M	Days Creek	11140302	-003	1B	11	RED04A	M	S	S	S	S	N	S	MP		NO_3		5	2005
M	Holly Creek	11140109	-013	1C	12.7	RED34A&B	M	S	S	N	S	S	S	MP	IP	PA		5	2005
M	Rolling Fork	11140109	-919	1C	12.8	RED30&58	M	S	N	S	S	S	S	IP		NO_3		5	2005
M	Rolling Fork	11140109	-919	1C		RED30&58	M	S	N	S	S	S	S	IP		TP		5	2005
L	Boeuf River	8050001	-018	2A	49.4	OUA15A	M	S	N	S	S	S	S	AG		SI	CL	5	2006
L	Boeuf River	8050001	-019	2A	58.1	BFR01	M	S	N	S	S	S	S	AG		SI	CL	5	2006
L	Big Bayou	8050001	-022	2A	27.1	BGB01,+	M	S	N	S	S	S	S	AG		SI	CL	5	2006
L	Macon Bayou	8050002	-003	2A	80.5	BYM02	M	S	N	S	S	S	S	AG		SI		5	2006
L	Macon Bayou	8050002	-006	2A	38.6	BYM01	M	S	N	S	S	S	S	AG		SI		5	2006
L	Oak Bayou	8050002	-010	2A	48.4	OUA179	M	S	N	S	S	S	S	AG		SI	CL	5	2006
L	Oak Bayou	8050002	-010	2A		OUA179	M	S	N	S	S	S	S	AG		SI	TDS	5	2006
H	B. Bartholomew	8040205	-001	2B	60.1	OUA13	M	S	N	S	S	S	S	AG		SI		5	2003
H	B. Bartholomew	8040205	-002	2B	17.9	BYB01	M	N	N	S	S	S	S	UN	AG	HG	SI	5	2003
H	B. Bartholomew	8040205	-006	2B	82.3	OUA33	M	S	N	S	S	S	S	AG		SI		5	2003
H	Deep Bayou	8040205	-005	2B	28.9	OUA151	M	S	N	S	S	S	S	AG		SI		5	2003
H	B. Bartholomew	8040205	-012U	2B	82.7	BYB02	M	S	N	S	S	S	S	AG		SI		5	2003
H	B. Bartholomew	8040205	-012	2B	25		M	N	N	S	S	S	S	UN	AG	HG	SI	5	2003
H	B. Bartholomew	8040205	-013	2B	33.9	BYB03	M	S	N	S	S	S	S	AG		SI		5	2003
H	Cutoff Creek	8040205	-007	2B	16.8	COC01	M	N	S	S	S	S	S	UN		HG		5	2003
H	Saline River	8040203	-001	2C	0.2		E	N	S	S	S	S	S	UN		HG		5	2002
L	Big Creek	8040203	-904	2C	10	OUA18	M	S	N	S	S	S	S	MP		OE		5	2010
H	Saline River	8040204	-001	2C	2.8		M	N	S	S	S	S	S	UN		HG		5	2002
H	Saline River	8040204	-002	2C	53	OUA10A&117	M	N	S	S	S	S	S	UN		HG		5	2002
H	Saline River	8040204	-004	2C	16.4		M	N	S	S	S	S	S	UN		HG		5	2002
H	Saline River	8040204	-006	2C	17.5	OUA118	M	N	S	S	S	S	S	UN		HG		5	2002
H	Ouachita River	8040202	-002	2D	4	OUA08B	M	N	S	S	S	S	S	UN		HG		5	2002
H	Ouachita River	8040202	-003	2D	8.4		M	N	S	S	S	S	S	UN		HG		5	2002
H	Ouachita River	8040202	-004	2D	28.9	OUA124B	M	N	S	S	S	S	S	UN		HG		5	2002
H	Moro Creek	8040201	-001L	2D	12		M	N	S	S	S	S	S	UN		HG		5	2002
H	Ouachita River	8040201	-002	2D	22.5		M	N	S	S	S	S	S	UN		HG		5	2002
H	Ouachita River	8040201	-004	2D	2.5		M	N	S	S	S	S	S	UN		HG		5	2002
H	Champagnolle	8040201	-003L	2D	20	CHC01	M	N	S	S	S	S	S	UN		HG		5	2002
H	Elcc Trib.	8040201	-606	2D	8.5	OUA137A+	M	S	N	S	S	N	S	IP		AM	CL	5	2003
H	Elcc Trib.	8040201	-606	2D		OUA137A+	M	S	N	S	S	N	S	IP		AM	SO_4	5	2003
H	Elcc Trib.	8040201	-606	2D		OUA137A+	M	S	N	S	S	N	S	IP		AM	TDS	5	2003
H	Flat Cr.	8040201	-706	2D	16	OUA137C	M	S	N	S	S	N	S	RE		CL		5	2003
H	Flat Cr.	8040201	-706	2D		OUA137C	M	S	N	S	S	N	S	RE		SO_4		5	2003
H	Flat Cr.	8040201	-706	2D		OUA137C	M	S	N	S	S	N	S	RE		TDS		5	2003
H	Salt Cr.	8040201	-806	2D	8	OUA137D	M	S	N	S	S	N	S	RE		CL		5	2003
H	Salt Cr.	8040201	-806	2D		OUA137D	M	S	N	S	S	N	S	RE		TDS		5	2003
L	Bayou Meto	8020402	-007	3B	65.7	ARK60,50	M	N	S	S	S	S	S	IP		PO		5	2010
M	Fourche LaFave	11110206	-002	3E	8.7		M	N	S	S	S	S	S	UN		HG		5	2004
M	Stone Dam Creek	11110203	-904	3F	3	ARK51	M	S	N		S	N	S	MP		AM	NO_3	5	2004
L	Arkansas River	11110203	-031U	3F	2		M	S	N	S	S	S	S	HP		DO		5	2010
H	Whig Creek	11110203	-931	3F	10	ARK67	M	S	N	S	S	N	S	MP		NO_3		4A	2001
H	Whig Creek	11110203	-931	3F		ARK67	M	S	N	S	S	N	S	MP			CU	5	2002

Table IV-1. Water Quality Limited Waterbodies - 303(d) List
Rivers and Streams

PRIORITY	STREAM NAME	HUC	REACH	P_SEG	MILES	MONITORING STATIONS	ASSESS	FISH COMSUMP	AQUATIC LIFE	PRIMARY CONTACT	SECONDARY CONTACT	DRINKING WATER	AGRI & INDUSTRY	MAJOR SOURCE	MINOR SOURCE	MAJOR CAUSE	MINOR CAUSE	STATUS	TMDL DATE
L	Poteau River	11110105	-001	3I	2	ARK14	M	S	N	S	S	S	S	AG		SI		5	2005
M	Poteau River	11110105	-031	3I	6.6	ARK55	M	S	N	S	S	R	S	IP	MP	CU		5	2005
M	Poteau River	11110105	-031	3I		ARK55	M	S	N	S	S	R	S	IP	MP	ZN		5	2005
M	Clear Creek	11110103	-029	3J	13.5	ARK10C	M	S	N	S	S	S	S	AG	UR	SI		5	2004
H	Town Branch	11070208	-901	3J	3	ARK56	M	S	S	S	S	N	S	MP		NU		5	2004
M	Bayou DeView	8020302	-009	4B	20.3	WHI26	M	S	N	S	S	S	S	AG	MP	SI	AL	5	2005
H	Hicks Creek	11010004	-015	4F	9.1	WHI65	M	S	S	S	S	N	S	MP		NO_3		4A	2001
M	Strawberry R.	11010012	-004	4G	0.3		E	S	N	S	S	S	S	AG		SI		5	2004
M	Strawberry R.	11010012	-005	4G	0.7		E	S	N	S	S	S	S	AG		SI		5	2004
M	Strawberry R.	11010012	-006	4G	19.0	WHI24	M	S	N	S	S	S	S	AG		SI		5	2004
M	Strawberry R.	11010012	-011	4G	20.4	SBR01	M	S	N	N	S	S	S	AG		SI	PA	5	2004
M	White River	11010001	-023	4K	6.2	WHI52	M	S	N	S	S	S	S	RC	AG	SI		5	2005
M	West Fork	11010001	-024	4K	27.2	WHI51	M	S	N	S	S	S	S	RC	AG	SI		5	2005
H	Holman Creek	11010001	-059	4K	9.1	WHI70	M	S	S	S	S	N	S	MP		NO_3		4A	2001
H	L'Anguille R.	8020205	-001	5B	19.7	FRA10	M	S	N	S	S	S	S	AG		SI		4A	2001
H	L'Anguille R.	8020205	-002	5B	16.8		E	S	N		S	S	S	AG		SI		4A	2001
H	L'Anguille R.	8020205	-003	5B	1.8		E	S	N		S	S	S	AG		SI		4A	2001
H	L'Anguille R.	8020205	-004	5B	16	LGR01	M	S	N	S	S	S	S	AG		SI		4A	2001
H	L'Anguille R.	8020205	-005	5B	44.1	LGR02	M	S	N	S	S	S	S	AG		SI		4A	2001

Stream Segments	60
Total Miles	1292.7

Table IV-2. Water Quality Limited Waterbodies - 303(d) List
Lakes and Reservoirs

PRIORITY	LAKE NAME	REACH CODE	LAKE NUMBER	PLNG SEGMENT	ACRES	FISH CONSUMP	AQUATIC LIFE	PRIMARY CONTACT	SECONDARY CONTACT	DRINKING WATER	AGRI & INDUSTRY	MAJOR SOURCE	MINOR SOURCE	MAJOR CAUSE	MINOR CAUSE	STATUS	TMDL DATE
H	COLUMBIA	11140203000286	71	1A	2,950	N	S	S	S	S	S	UN		HG		5	2002
H	FELSENTHAL	08040202001585	77	2D	14,000	N	S	S	S	S	S	UN		HG		5	2002
H	BIG JOHNSON			2D	80	N	S	S	S	S	S	UN		HG		5	2002
H	DUPREE			3B	10	N	S	S	S	S	S	IP		PO		5	2010
H	GRAYS			2C	22	N	S	S	S	S	S	UN		HG		5	2002

TOTAL ACRES 17,062

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PART V: GROUND WATER ASSESSMENT

Introduction

Section 106(e) of the Clean Water Act specifies that each State monitor the quality of its ground-water resources and report the results to Congress on a biennial basis in its State 305(b) report. The 1996 guidance for preparation of the 305(b) report contained many changes from the original broad-based approach, which is evidenced by the changes in the 1996 report for Arkansas. These changes included two tables; one, a summary of State ground-water protection programs and, two, a listing of the major sources of contamination in the State. The table format was designed by the EPA primarily for uniformity in reporting by the States.

The 1998, 2000 and 2002 guidance documents have varied little from the changes documented in the 1996 guidance. EPA continues to encourage states to 1) work toward assessing all ground waters of the state from the various aquifers, 2) use prescribed table formats for consistency among all states of the nation, and 3) describe major changes in ground-water protection programs including legislative amendments and policy directives. EPA also strongly re-emphasized the goal of reporting ground-water quality for specific aquifers or hydrologic setting by the year 2006.

Because summarizing the assessment of the entire State's ground-water resources on a biennial basis is such a monumental and burdensome task, the EPA has recommended reporting only on changes since the last hard-copy report. As such, the following is a summary of changes since the last publication of the 2000 Arkansas Water Quality Inventory Report, and mainly includes tasks and data for FY00 and FY01 (October, 1999 through September, 2001). However, because of the three-year rotational period for the monitoring areas, and for completeness of major program changes in other areas in the last five years, the present report may include some older information. The 1996 report should be referred to for specific information including tables and figures which describe in detail the geology, subsurface hydrology, and general ground-water quality for various portions of the State.

Overview

Ground water remains one of Arkansas' most important natural resources; accounting for over 60% of the total water use and over 40% of the drinking water use. Problems with the availability and quality of ground water around the nation has received intense and constant media attention, thus elevating the awareness of the national and statewide community as a whole to the importance of high-quality water for drinking and other uses. This awareness has led to more stringent legislation and increased program development on both a national and statewide scale for the protection of our ground-water resources.

Since as early as 1990, changes in State ground-water protection programs have included the startup of the Wellhead Protection Program (WHPP), which involves actions at the local level for protection of source water; the designation of Critical Ground Water Areas (Act 154 of 1991), which addresses over-pumping of ground water; and initiation of the Farm*A*Syst Program; which educates farmers on methods for protecting their ground water. These programs act in unison to prevent ground-water contamination and protect future use. They reflect a philosophical change from ground-water contamination response and remediation to ground-water contamination prevention.

<u>Ground-Water Protection Programs</u>

There are two main components of ground-water protection: (1) ensuring the available quantity necessary for the various uses and (2) protecting existing ground-water quality. Because of the large scope of both activities, the protection mechanisms commonly are addressed by multi-agency, multi-discipline approaches. Ground-water restoration unfortunately continues to demand a large portion of available resources in the form of remediation efforts, where protection mechanisms have failed or where not in place historically. Most all of the remedial activities are the sole responsibility of the various divisions of the Arkansas Department of Environmental Quality (ADEQ), which has been authorized by the EPA to administer federal programs consistent with the Safe Drinking Water Act (SDWA), Resource Conservation Recovery Act (RCRA) and the Clean Water Act (CWA), among others.

The multi-agency approach to ground-water protection has been manifested especially in the last ten years, which has seen an increase in joint ventures by both federal and state agencies in the monitoring and protection of Arkansas' ground-water resources. Current ground-water protection activities frequently involve joint efforts by two or more agencies, including state and federal agencies and universities.

<u>Ground-Water Availability and Use</u>

Each year approximately 4700 million gallons per day (mgd) of ground water is pumped from the State's aquifers. The greatest volume (4400 mgd) is pumped from the Mississippi River Valley alluvial aquifer (alluvial aquifer), primarily for irrigation purposes, and the next greatest is from the Sparta-Memphis Sand aquifer system (approximately 220 mgd), used for municipal and industrial purposes (ASWCC, 1998).

The increased demand on ground water has resulted in water-level declines and water-quality degradation in many areas of the State. This situation resulted in the passage of Act 154 of 1991, which acts to identify critical ground-water areas in the State and regulate the usage, where necessary. Classification of critical ground-water areas are made when certain criteria are met including water levels below the top of a given formation (confined aquifer), saturated thickness of the formation less than 50% of the total formation thickness (unconfined aquifer), water-level declines of more than 1 foot per year over a 5 year period, and trends indicating degradation of water quality (ASWCC, 1998).

In 1995, the Sparta aquifer was designated as a critical ground-water area by the Arkansas Soil and Water Conservation Commission (ASWCC) in south Arkansas in a five-county area (Ouachita, Calhoun, Bradley, Columbia, and Union). In 1998, the ASWCC designated an area encompassing Jefferson, Arkansas, Prairie, Lonoke and parts of Pulaski and White as a critical ground-water area for the alluvial and Sparta aquifers. Priority study areas for present and future analyses include the alluvial and Sparta aquifers in parts of northeastern and southeastern Arkansas, including the Cache (proposed critical area as of 2001) and St. Francis study areas in northeast Arkansas and the Boeuf-Tensas study area in southeast Arkansas.

Information used to evaluate water usage from the various aquifers are based on water-level measurement network maintained under cooperative agreements between the ASWCC, the U.S. Geological Survey (USGS), the Arkansas Geological Commission (AGC), and the Natural Resources Conservation Service (NRCS). Through these cooperative agreements, over 1000 measurements are collected annually. Trends in water-level changes are monitored by ASWCC for use in evaluating potential critical-use areas within the State.

<u>Ground-Water Quality Protection and Restoration</u>

There are many ground-water protection programs within the State that include both regulatory and voluntary ground-water contamination prevention activities. These programs include prevention of contamination from both point sources and non-point sources. The majority of the point-source prevention programs are regulatory programs and are administered by the ADEQ (indicated by ADEQ next to the headings which follow), while the majority of non-point sources are related to agriculture and other land-use activities and commonly include joint efforts by several agencies.

Regulated Storage Tank Division (ADEQ)

Several changes were implemented in the Regulated Storage Tank (RST) program in recent years, including the passage of Act 642 of 1997, which affected both the delegation of the Trust Fund and environmental policies. This act was self-implementing, which meant that adoption and implementation by the RST Division could be accomplished without amending Department Regulation #12, Storage Tank Regulations.

One of the legislative changes involved the addition of aboveground storage tanks (1,320 to 40,000 gallon capacity) to Petroleum Storage Tank Trust Fund coverage under the same conditions as underground storage tanks (UST). This change was important from the standpoint that the RST Division also became responsible for oversight of monitoring and remediation of impacts as a result of leaking aboveground tanks. Previously, the Water Division provided oversight on contaminant response at sites with aboveground tanks.

Although bringing the aboveground storage tanks under the oversight of the RST Division added approximately 6000 new tanks to the program, the RST Division estimates an approximate net loss of 2,500 tanks as a result of UST closures to meet the 1998 regulatory deadline for complete UST regulatory compliance. About 9,950 regulated tanks were located at 5,400 facilities as of July 2000.

New policies within the RST Division directly addressing contaminant monitoring and cleanup at RST sites include the adoption of the ASTM Risk-Based Corrective Action (RBCA) protocol.

RBCA provides a uniform means of assessing risk to various receptors from available transport pathways and calculates cleanup levels based on the determined values of risk. In addition, MTBE was added to the chemicals of concern for monitoring at RST sites in 1997. Previous to this addition, the important chemicals of concern included only BTEX and PAHs. Future policy considerations include addition of ecologic risk receptors into current environmental decision-making.

Underground Injection Control Program (ADEQ)

ADEQ's Underground Injection Control (UIC) program regulates the disposal of waste waters into underground sands. The UIC program is authorized under Part C of the Safe Drinking Water Act, which delegates to states that have obtained primacy, the responsibility for protecting ground water and underground sources of drinking water from contamination. Protection is accomplished through injection-well permitting, monitoring, reporting, well inspection, well testing and enforcement of the regulations in 40 CFR 124 and 144-148. This ADEQ program is 75% funded by a USEPA grant.

As of March 2002, there were 17 Class I hazardous and non-hazardous injection wells in the State. Three of these are being re-permitted for an additional 10 years, and a permit for an 18th well is being prepared at the time of this report.

ADEQ is proceeding toward the adoption of the Federal Class V injection well regulations, which became effective in the direct implementation (non-primacy) states on April 5, 2000. Those regulations apply to shallow injection wells, such as large-capacity septic systems, industrial disposal wells, motor-vehicle waste disposal, and any well or system which places fluids below the ground surface and has the potential to contaminate local ground-water supplies. The motor-vehicle waste disposal wells and large-capacity cesspools, which are addressed specifically by these regulations, already had been prohibited in Arkansas through legislation.

Hazardous Waste Division (ADEQ)

Regulation Number 29 became effective December 8, 2000, and is patterned after the federal Brownfields legislation, which establishes a means by which abandoned commercial, industrial or agricultural sites can be restored to productive use. The regulation provides the means by which the ADEQ can assist prospective purchasers determine the contaminants existing on abandoned properties and describes the steps available to remedy the condition. The new owner cannot be a potentially responsible party to the original contamination or degradation of the site. Fifteen (15) acres have been voluntarily cleaned up in the first year of the program and about fifty (50) acres are expected to be restored during 2002.

The Arkansas Hazardous Waste Code (Regulation No. 23) was most recently revised on December 7, 2001, and three new State Priority List Sites were added - Baird Manufacturing in Clarendon, Amity Lacquer Paint and Manufacturing in Amity (Clark County) and Red River Aluminum in Stamps. This will enable cleanup with federal and state matching funds.

In 2001, the Arkansas Voluntary Cleanup Act (Act 164 of 2001) was modified to change the term of the agreement between the prospective purchaser and the ADEQ to an “implementing agreement”. The Hazardous Waste Division (HWD) currently is developing a Voluntary/Brownfields Program to address cleanup of properties with either real or perceived hazardous substance contamination. Individuals, companies or real estate developers who did not contribute to the contamination and who wish to purchase an abandoned Brownfield property may enter into an agreement with the ADEQ for the cleanup. The ADEQ hopes to encourage the development of Brownfields as a sustainable land-use policy and to discourage the development of Greenfields or pristine properties. Encouraging private-sector funding of cleanups in Arkansas will enable the protection of the ecosystem and human health. The HWD is working toward development of a low interest revolving loan fund to be established in 2002, which is expected to further encourage and enhance Brownfields property redevelopment in Arkansas.

The HWD is currently developing an interim policy for the Application of Risk-Based Criteria in Remedial Decisions (Draft September 2001) and an interim policy on Groundwater Cleanup Standards. Also, the HWD is proposing the adoption of ASTM standards E-1528, E-1527, E-1903 for all voluntary Site Assessments, and the use of the guidances EPA Region 6 Corrective Action Strategy for RCRA Pilot Projects (November 2000) and EPA Handbook Of Groundwater Protection And Cleanup Policies For RCRA Corrective Action (Final September 2001).

USEPA Region 6 has developed a new guidance document for cleanups that is intended to demonstrate that corrective action can be accelerated through a streamlined process. Procedures were set in the US EPA Region 6 November 2000 Corrective Action Strategy (CAS) with guidance in implementing pilot projects for corrective action at sites with releases of hazardous constituents. The guidance is said to be based in part on policies referenced in the National Oil and Hazardous Substances Pollution Contingency Plan published on March 8, 1990 (55 FR 8666), and the Advanced Notice of Proposed Rulemaking Subpart S published on May 1, 1996 (61 FR 19432). Primary objectives of the guidance are to prioritize corrective action at facilities through a risk-based priority screening process, and streamline corrective action administrative procedures by using flexibilities available under RCRA or other statutes and guidance; resulting in the protection of human health and the environment.

Solid Waste Management Division (ADEQ)

In 1995, Solid Waste Management Regulation 22 was amended to incorporate the RCRA Subtitle D into the body of the regulation to include more stringent requirements for landfill design and operation. These requirements were implemented to better protect human health and the environment and, in part, included; the implementation of QA/QC protocols for landfill liner construction, a synthetic component (60 mil HDPE) overlying two feet of compacted clay (i.e., a composite liner), a leachate drainage layer designed to maintain less than one foot of hydrostatic pressure on the liner, and a certified ground-water monitoring system. Additional requirements for landfills located in the Boone-St. Joe outcrop area (Springfield Plateau aquifer) of the northern part of the State included, among other items, leak detection and an additional composite liner.

Since implementation of Solid Waste Management, Regulation 22, 98% of the Class I municipal solid waste (MSW) landfills have closed their pre-Subtitle D (unlined) units. These facilities are now disposing waste in cells which have a composite liners consisting of 24 inches of compacted clay and a 60 mil HDPE plastic liners. Each of these Class I facilities would also be required to have leachate collection and leachate removal piping installed above the liner and beneath the waste mass. One Class I MSW facility has been allowed to utilize additional cells which are clay-lined, because they were permitted prior to Subtitle D requirements being in force as per an agreement with the ADEQ.

All Class MSW landfills must actively monitor ground water for possible adverse impacts. These ground-water monitoring systems must be certified as capable of collecting water samples which are representative of water quality at a particular monitoring point. All active MSW landfills in the State of Arkansas have certified their ground-water monitoring systems as required under Regulation 22. These ground-water monitoring systems are designed to detect the presence of 70 constituents, which include 15 inorganic (metals), 47 organic (VOCs), and 8 indicator parameters in the uppermost aquifer beneath the landfill.

A facility is first placed in a detection monitoring phase for establishing background ground-water quality. Each facility must submit for review and approval a sampling and analysis plan, which includes a statistical-analysis package for ground-water data. Ground-water protection standards are submitted for specific parameters and approved by the ADEQ. If a specific parameter becomes elevated above established background concentrations, based on statistical analysis, the facility is placed in assessment monitoring. In assessment monitoring, the facility verifies the presence and statistical increase of the contaminate through additional sampling, while it continues to monitor ground water in and around the facility. If the concentration decreases for that parameter, the facility returns to assessment monitoring. If additional ground-water sampling indicates the parameter has increased and has exceeded the approved ground-water protection standards set for that given parameter, the facility is placed in Corrective Action.

Under Corrective Action, the facility must then characterize the nature and extent of the release by placing additional monitor wells down gradient from the impacted well(s). The investigation continues until the facility has established the extent of offsite impacts. Once the extent of contamination is clearly defined, the facility must meet with potentially affected land owners overlying the plume and discuss the Selection of Remedy process as outlined in Regulation 22. Ultimately, the facility will continue to implement corrective measures, including leachate recovery, de-watering the waste mass, improving the final cap and cover of the waste, and continue landfill gas recovery until sampling indicates those previously identified elevated parameters are at or below the established ground-water protection standards for the facility. Once the value falls below the established ground-water protection standard in the affected monitoring wells, the facility returns to assessment monitoring.

Ground-Water Contamination Prevention Programs

Although the objectives of all ground-water protection programs in the State are to protect and preserve ground-water quality, early legislation primarily was based on problematic, known sources of contamination and response to contamination events. The problems of technical-feasibility constraints and the large costs associated with cleanup activities mandated a new approach for preventing ground-water contamination. Existing and new regulatory programs focused on stricter controls aimed at preventing releases from regulated facilities. Throughout the 1990s, there has been an increasing amount of effort and funds expended toward voluntary programs, which strive to protect existing ground-water quality through outreach and assistance programs.

Arkansas Farm*A*Syst Program (Cooperative Extension Service)

The Arkansas Farm*A*Syst Program was initiated in 1992 and is administered by the Arkansas Cooperative Extension Service (CES). The program involves outreach and training activities designed to assist farmers in protecting their ground-water resources. Activities during FY96 and FY97 included expansion of the program into four counties: Benton, Howard, Sevier and Washington counties.

Actions taken through cooperative efforts with participants were the closing of abandoned wells, sampling and analyses of well water, installation of backflow devices, relocation of pesticide mixing and loading activities, calibration of litter-application devices, servicing of septic tanks, and construction of containments for petroleum tanks. Water-sample screening for nitrates was performed on 466 different water sources that included wells, ponds and streams. Less than 4% of the samples exceeded the 10 mg/L nitrate-N federal drinking-water standard.

Home*A*Syst has been developed by the University of Wisconsin as a companion to Farm*A*Syst with focus on the household. Arkansas served as the pilot program for testing the Home*A*Syst materials during development stages. The pilot-test participants indicated the materials were useful and recommended that they be made available statewide. Currently, the program is seeking funding to continue the existence of the Farm*A*Syst and implementation of the Home*A*Syst program.

The Farm*A*Syst materials have been linked to the EQIP program and are now on the internet through the CES Web Page. The Home*A*Syst materials are available through the county Extension offices. These materials have been used extensively in the Sparta Source-Water Protection Education Program, which involves five southern Arkansas counties and seven north Louisiana parishes. An Urban*A*Syst educational publication patterned from the Farm* and Home*A*Syst materials was developed by the Washington County staff.

A CES educational program on improving rice irrigation water management has promoted the use of a multiple inlet irrigation approach to rice irrigation. On-farm field demonstrations of this approach have indicated the potential for a 25% average reduction in irrigation water use, which is partially due to the increased ability to reduce runoff from the field.

Wellhead Protection Program (Arkansas Department of Health)

The Arkansas Department of Health's (ADH) Wellhead Protection Program (WHPP) was authorized in the 1986 Amendments to the Safe Drinking Water Act and is designed to prevent contamination of underground sources of public water supply. Wellhead Protection is a voluntary program that is developed by the local community with technical assistance and guidance in program development from ADH. A WHPP minimizes the potential for contamination by identifying the area that contributes water to municipal water supply wells and by implementing measures within the Wellhead Protection Area (WHPA) that will help avoid costly ground-water cleanup. The ADH was designated by the Governor in 1990 to be the lead agency in delegating the program.

The program is administered according to three main program elements:

1. Delineating a WHPA for each well or wellhead;
2. Identifying all potential man-made sources of contaminants injurious to public health within each WHP area; and
3. Developing a means to protect the ground water from future contamination.

The more successful WHP Programs integrate outreach activities for increasing public awareness and coordination of local pollution prevention efforts with existing state programs. Assistance with targeting local contacts and interest groups is also provided to public water systems, local officials, and utilities during development and implementation of a WHP Program. Emphasis on local public participation and control provides local solutions to local problems.

Fiscal years 2001 and 2002 saw increasing emphasis on modernizing the Arkansas WHP by converting manual analysis and report generation methods to electronic form. The principal aim of this effort is the use of a Geographic Information System (GIS) for an increasing share of the program's functions. Compiling and maintaining a steadily growing store of public water supply (PWS) information in the GIS is seen as an important means of introducing more consistency in analysis and depiction of results. A conscious effort to integrate the WHPP with the ongoing Source Water Assessment program (SWAP) has also been made, since two programs share many of the same objectives. Information compiled by the WHPP has proven a benefit to the SWAP and vice versa. This convergence of the two programs is being accomplished in ways that benefit both programs while maintaining the integrity of each program.

Water Well Construction Commission

Act 641 of 1969 created the Arkansas Water Well Construction Commission (AWWCC) which provides for the proper development of ground water in an orderly, sanitary and safe manner. Standards ensure proper well-construction and pump-installation procedures. AWWCC staff is provided by ASWCC and includes full-time field inspectors and various management and technical-support personnel. Several part-time employees assist in data entry into a data base, which includes information on well construction. The data base is designed to access and correlate information such as well-construction details, depth to static water level and water-producing formations, well yield, pump-setting information, and the geologic setting of each well.

Act 1426 was promulgated in 2001 for the purpose of requiring a properly functioning metering device for any well constructed after September 30, 2001, which withdraws ground water from a sustaining aquifer. The act further stipulates that after September 30, 2006, any well withdrawing ground water from a sustaining aquifer shall have a properly functioning meter. Sustaining aquifers include the Sparta, Memphis, Cockfield, Cane River, Carrizo, Wilcox, Nacatoch, Roubidoux and the Gunter. The alluvial aquifer is not considered a sustaining aquifer.

Ground-Water Quality Monitoring

Ground-water quality monitoring is performed on many levels including ongoing ambient monitoring, short-term, research-oriented monitoring, and mandated monitoring at regulated sites. The availability of the resulting data is thus dependent on the monitoring goals and ranges from hard-copy format in the forms of reports and/or journal articles to publicly-accessible, computer storage formats such as EPA's STORET data base. Table V-1 lists the various sources of ground-water quality data and availability of the data. Comparison of data from the various sources is difficult because of the differences in parameter lists, laboratory instrumentation and methods, and reporting criteria.

Ambient Ground-Water Quality Monitoring

Ongoing ambient monitoring is performed primarily by two organizations: the ADEQ and the USGS. Ongoing monitoring also takes places at numerous ADEQ-regulated facilities within the State. However, because the purpose of the monitoring is to evaluate potential and actual anthropogenic impacts, the data may be questionable for use as natural or background quality information, and the parameter list often includes a limited set of constituents. In the absence of other data, monitoring results from these sites, especially from background wells, can be a valuable source of information. Monitoring of water-supply wells by the ADH, which serves as the primacy agency for the SDWA, also provides another source of data. The ADH monitors approximately ±920 wells every three years. The Total Coliform Rule requires sampling on a monthly basis with the number of samples dependent on the size of population. Nitrate monitoring is conducted on a yearly basis unless a sample greater than or equal to 50% of the maximum contaminant level (MCL) triggers the need for increased sampling. However, the data similarly is limited by the required list of analytes and the fact that disinfection, among other processes performed on finished water, can alter the original chemical composition. Raw-water sampling has been implemented in order to detect microbial contaminants for selected ground-water wells found to be at risk from contaminated surface water (Surface Water Treatment Rule). This sampling (microscopic particulate analysis) is performed in conjunction with weekly, raw-water bacteriological testing, turbidity, temperature and pH determinations.

United States Geological Survey

TABLE V-1 GROUND WATER QUALITY DATA AVAILABILITY		
Agency	Number of wells/springs	Computer
ADEQ	~ 670 (RCRA) 200/12 (Water) 19 (Mining) ~ 260 (CERCLA) ~ 300 (Solid Waste) * (RST)	Paper Only (Storet) IBM Paper Only IBM Paper Only
ADH	~ 920 (Community) ~ 500 (Non-Community)	Wang
USGS	4,100 (Research Wells) 25 (Master Wells)	(Watstore)
CES	>2,900 (Wells) <100 (Springs)	IBM
US DOE (NURE)	1,369 (Wells)	IBM
UA & AR Tech	~ 455 (Wells) ~ 85 (Springs)	IBM

* Numerous wells used for leak detection - no estimate of actual number at present time.

The USGS has 25 master wells scattered throughout the State and these wells are sampled regularly every five years. The other wells utilized by the USGS are sampled for special investigations and do not provide long-term data for trend analyses. Most of the data derived from water-quality investigations is located in reports, which are easily obtainable at the local or national level.

Arkansas Department of Environmental Quality

The Arkansas Ambient Ground-Water Monitoring Program (Program) was begun in 1986 by the ADEQ to monitor overall ground-water quality in the State of Arkansas. The program, which was originally called the Arkansas Prototype Monitoring Program, was renamed to better describe the program activities. The program currently consists of nine monitoring areas with one additional area to be implemented during 2002 (Figure V-1). The monitoring areas were selected to gather water-quality data from various aquifers in select, representative areas of the State and to evaluate potential impacts from multiple land uses. The monitoring areas are sampled on an approximate three-year basis.

All of the monitoring areas are potentially affected by agricultural, industrial practices or a combination of both sources. Potential impacts from anthropogenic sources include organic and inorganic compounds. In addition, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA - Superfund) facilities, RCRA facilities, MSW landfills, and underground storage tank (UST) sites, potentially threaten or have impacted ground water in the monitoring areas.

Because of the various potential sources of contamination among the different monitoring areas and the expense of analyses, each area has a specific parameter list to best evaluate water quality. All of the monitoring areas include field analysis of pH, conductivity and temperature and laboratory analysis of nutrients, major cations and anions, total dissolved solids (TDS) and trace metals. Ground-water samples obtained from areas potentially impacted by industry are analyzed for volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC). Ground-water samples obtained from areas potentially impacted by agricultural activities are analyzed for pesticides. The current and proposed monitoring areas are listed below. For a listing of reports related to the monitoring areas, visit our web site at www.adeq.state.ar.us.

Athens Plateau Monitoring Area

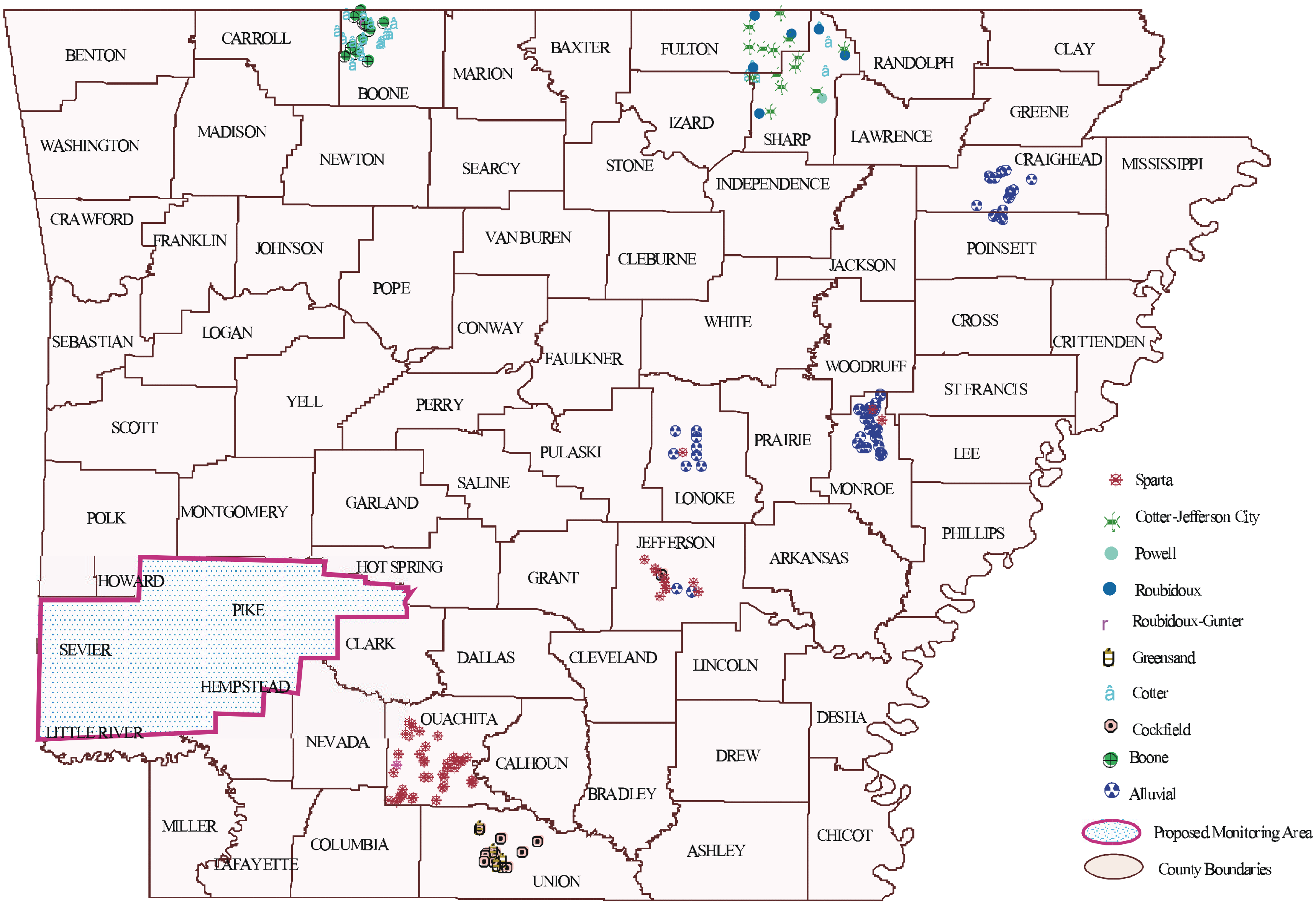
The Athens Plateau Monitoring Area is proposed for southwest Arkansas in the zone of Cretaceous-aged rocks associated with the Athens Plateau of the Gulf Coastal Plain physiographic province. The monitoring area tentatively includes portions of Hempstead, Howard, Little River, Pike, and Sevier counties and is scheduled to be first sampled in FY02. A well-log inventory and mapping exercise has demonstrated numerous available wells for potential monitoring sites.

Brinkley Monitoring Area

The Brinkley Monitoring Area encompasses the town of Brinkley and surrounding areas in northern Monroe County. It is in the Mississippi Embayment physiographic province. The alluvial and Sparta aquifers provide 100 percent of community water needs. The primary uses are for drinking water and crop irrigation. Because of elevated chloride levels and potential impacts from pesticides to the alluvial aquifer, ground-water monitoring in this area was initiated during FY89. A total of 27 ground-water wells were sampled during the most recent sampling event in FY98.

Chloride levels ranged from 4.3 to 458.0 mg/L; however, only two of the 27 wells exceeded the 250 mg/L secondary maximum contaminant level (SMCL). The SMCLs are unenforceable federal guidelines regarding taste, odor, color and other non-aesthetic effects of drinking water. Iron was elevated in all samples, and iron and manganese both exceeded the SMCL of 0.3 mg/L and 0.05 mg/L, respectively. Pesticide analyses were performed on 12 of the irrigation-well samples. Bentazon was detected in three of the samples and was the only pesticide detected in the pesticide scan. Information related to the wells and a summary of analyses for all wells are located in Tables 1B and 2B in Appendix B.

Figure V-1. Arkansas' Groundwater Monitoring Wells



Chicot Monitoring Area

The Chicot Monitoring Area is located west and south of the town of Lake Village in Chicot County and is also in the Mississippi Embayment physiographic province. The alluvial aquifer is the only actively-used water source and is used for crop irrigation, fish farming and municipal drinking water. In addition to potential impacts from pesticides, a zone of high chloride exists in western Chicot County. Although the high chloride water appears to benefit fish farming, it is detrimental to crops. Ground-water monitoring in the Chicot monitoring area began during the third quarter of FY90 and originally consisted of ten wells.

The number of sampled wells was increased during the fourth quarter of FY97 to 26 wells to better evaluate general water quality and the potential for expansion of the zone of elevated chloride concentrations. A summary of the sampling sites and their locations is in Table 3B in Appendix B of this report. Chloride was detected in 21 of 26 wells at concentrations at or above the recommended SMCL of 250 mg/L. Iron was detected in 24 of 26 wells above the recommended SMCL of 0.3 mg/L. Measured TDS was above the recommended SMCL of 500 mg/L in all wells. Manganese was detected in 24 of 26 wells above the recommended SMCL of 0.05 mg/L. Selected descriptive statistics are listed in Table 4B in Appendix B of this report. In addition to the routine analyses, pesticide analysis was conducted on selected samples that were adjacent to active crop-growing areas. Bentazon and p-p'-DDT were detected in two different wells at levels below their HALs. These data are summarized in Table 19B in Appendix B of this report. Based on the information gathered during this period and past investigations into the area (Fitzpatrick, 1995; Huff and Bonch, 1993; and Onellion and Criner, 1955), the ADEQ initiated a comprehensive investigation in the spring of 2000 (see Short-Term Investigations below).

El Dorado Monitoring Area

The El Dorado Monitoring Area includes the town of El Dorado and surrounding areas in central Union County and is located in the Gulf Coastal Plain physiographic province. Three aquifers, the Cockfield, Upper Sparta (Greensand) and Lower Sparta (El Dorado), were sampled in this area. The Cockfield aquifer is used primarily as a domestic drinking-water supply. The Greensand aquifer is used for domestic and industrial purposes. The El Dorado aquifer is used for industrial and municipal purposes. The El Dorado area is highly industrialized; primarily oil and gas production and bromide production. Several national and international corporations have production and refining plants in the area. Potential threats to ground water, particularly the shallow Cockfield aquifer, are numerous. Ground-water monitoring in the El Dorado Monitoring Area began in the first quarter of FY87 with the most recent sampling event conducted during the third quarter of FY01.

Ground-water samples were obtained from ten wells in the El Dorado aquifer, five wells in the Greensand aquifer and eight wells in the Cockfield aquifer. In addition to the routine parameters, the samples obtained from the Cockfield aquifer were analyzed for VOCs and SVOCs. A summary of the sampling sites and their locations is in Table 5B in Appendix B of this report. Overall ground-water quality of all three aquifers is good. Iron was detected in 4 of 23 wells above the recommended SMCL of 0.3 mg/L and manganese was detected in 6 of 24 wells above the recommended SMCL of 0.05 mg/L. Selected descriptive statistics are listed in Table 6B in Appendix B of this report. Several phthalate compounds, in addition to methylene chloride and acetone, were detected in all of the Cockfield well-water samples. All detections were less than 3 *u*g/L and are directly attributable to laboratory contamination (acetone and methylene chloride) or household plumbing materials (phthalate compounds). One sample, UNI094, had elevated concentrations of chloromethane, bromoform, chloroform, bromodichloromethane, and dibromochloromethane, ranging from 17 to 102 *u*g/L. The well owner, on the advise of a friend, had placed a large dose of household bleach into the well two weeks prior to the sampling date, and claimed to perform this disinfection technique twice a year. The resident is presently using municipal water for drinking purposes, and uses the well for watering purposes only.

Hardy Monitoring Area

The Hardy Monitoring Area is located in northeast Arkansas in Sharp and Fulton counties. The area was first sampled in May, 1998, and includes 28 wells ranging in depth from 120 to 1200 feet. Table 7B in Appendix B contains locations and well depths for all wells. The area was originally chosen because of the lack of water-quality data from the Lower Ordivician-aged rocks along the eastern end of the Ozark Plateaus physiographic province. The wells penetrate and receive water from various formations including the Cotter and Jefferson City Dolomites, the Roubidoux Formation, and the Gunter Sandstone Member of the Gasconade Formation.

The water type from all wells is a calcium plus magnesium bicarbonate water, in which equivalent concentrations of magnesium are approximately equal to equivalent concentrations of calcium in virtually every well-water sample. Sodium was less than 5 mg/L in all but three samples. TDS concentrations were below 500 mg/L in all wells including four wells exceeding 1000 feet in depth, and averaged 324 mg/L. The four deep wells had a lower mean nitrate-nitrogen concentration (~ 0.2 mg/L) than the overall mean for all wells (1.3 mg/L). Average TDS, nitrate, and other parameters compared closely with the Ozark aquifer samples from the Omaha Monitoring Area. A summary of the data from the 1998 sampling event is located in Table 8B in Appendix B.

Jonesboro Monitoring Area

The Jonesboro Monitoring Area includes the town of Jonesboro and surrounding areas in central Craighead County and northern Poinsett County and is located in the Mississippi Embayment physiographic province. The alluvial aquifer and the Memphis (northern extension of the Sparta) aquifer are the primary ground-water sources in this area. The monitoring area was selected because of the large population using ground water, the exposed condition of the municipal wells, and the extensive drawdown in the alluvial aquifer. This area of depression coincided with drawdown in the underlying Memphis aquifer, indicating minimal or no confining units between the two aquifers. In addition, many potential contaminant sources exist in the area including pesticides, industrial solvents, landfill leachate, and septic systems. This area was originally sampled during the third quarter of FY89 and was last sampled in July, 1998. Information related to the wells sampled for the Jonesboro Monitoring Area is located in Table 9B of Appendix B.

The water ranged from a calcium-bicarbonate to a strongly sodium-bicarbonate water type, with an intermediate mixed-water type containing approximate equal portions of calcium, sodium and magnesium. Two of the six Memphis aquifer samples were strongly sodium bicarbonate, containing sodium concentrations that comprised over 85 % of the total cations. These two wells were greater than 800 feet in depth. Nine of the fourteen alluvial aquifer water samples had calcium concentrations which comprised over 50 % of the total cations (calcium-bicarbonate water type), and the rest of the wells were a mixed-water type. This strongly suggests a gradual chemical evolution from a calcium-dominated water type in the shallow alluvial aquifer to a sodium-dominated water at depth within the Memphis aquifer. Overall water quality is suitable for most all uses, with TDS concentrations ranging from 74 to 605 mg/L. The highest nitrate-nitrogen concentration (3.0 mg/L) was in an alluvial water sample, and four of the five nitrate-nitrogen concentrations greater than 1.0 mg/L were in alluvial samples. All of the samples extracted from the Memphis aquifer, except for one sample, had nitrate-nitrogen concentrations of less than 1.0 mg/L. A summary of the water analyses is in Table 10B of Appendix B.

Lonoke Monitoring Area

The Lonoke Monitoring Area includes the town of Lonoke and surrounding areas in central Lonoke County and is also located in the Mississippi Embayment physiographic province. Ground water is withdrawn from the alluvial and Sparta aquifers for agricultural, domestic and municipal use. This monitoring area was selected because it represents a rural, agricultural community that relies entirely on ground water for all of its water needs. Pesticides are the primary potential contaminants in the area. Ground-water monitoring in the Lonoke Monitoring Area began in 1988 with the most recent sampling event occurring in the fourth quarter of FY01.

Ground-water samples were obtained from thirteen wells in the alluvial aquifer and one well in the Sparta aquifer. A summary of the sampling sites and their locations is in Table 11B in Appendix B of this report. Ground-water quality is generally good. Iron was detected in all fourteen wells above the recommended SMCL of 0.3 mg/L, and ranged from 2.14 to 28.4 mg/L. Manganese also was detected in all wells above the recommended SMCL of 0.05 mg/L, and ranged from 0.25 mg/l to 1.2 mg/L. Measured TDS was above the recommended SMCL of 500 mg/L in three of the wells. Selected descriptive statistics are listed in Table 12B in Appendix B of this report. In addition, the pesticide bentazon was detected in three wells (LON020, LON014 and LON016) and ranged from 0.008 *u*g/L to 0.35 *u*g/L. These concentrations are far below HAL of 200 *u*g/L. These data are summarized in Table 19B in Appendix B of this report.

Omaha Monitoring Area

The Omaha Monitoring Area encompasses the northwest quarter of Boone County and is located in the Ozark Plateaus physiographic province. Ground water is obtained from the Springfield Plateau and Ozark aquifers, which are in limestone and dolostone formations, respectively. Ground-water monitoring was initiated to evaluate potential impacts in an area of karst topography. Potential contaminant sources include abundant livestock farms and USTs. In addition, ground-water contamination was documented at a former wood treatment plant; a listed Superfund site. Ground-water samples are obtained from a combination of wells and springs. Ground-water monitoring began during the first and second quarters of FY89 with the most recent sampling event occurring during the second quarter of FY99.

Ground-water samples were obtained from twelve springs and fifteen wells. With one exception, all of the springs discharge from the Springfield Plateau aquifer. Similarly, all but one of the wells penetrated the Ozark aquifer. A summary of the sampling sites and their locations is in Table 13B in Appendix B of this report. Ground-water quality in both aquifers is good. Iron exceeded the SMCL of 0.3 mg/L in one of the 27 samples. Manganese exceeded its SMCL of 0.05 mg/L in one of the 27 samples. Selected descriptive statistics are listed in Table 14B in Appendix B of this report. One of the ground-water samples, from a spring located downgradient of the Superfund site, was analyzed for SVOC constituents. Several SVOC constituents, including pentachlorophenol at 707 *u*g/L, were detected in the sample. These data are summarized in Table 19B in Appendix B of this report. This well was cited in the 1998 305b Report as being impacted by a wood preservative site and was reported to the HWD. The spring water currently is being captured and treated at a plant constructed next to the spring. Current levels of SVOCs analyzed from a sample at the spring orifice, listed in Table 19B, demonstrate that SVOC concentrations are decreasing from original values listed in the 1998 report.

Ouachita Monitoring Area

The Ouachita Monitoring Area is located in western Ouachita County and includes the city of Camden. This monitoring area is located in the Gulf Coastal Plain physiographic province within the recharge area of the Sparta aquifer; one of the most heavily-used aquifers in the State. In addition, a portion of the Cockfield aquifer recharge area is located in the southwestern portion of this monitoring area. Ground water is the primary water source used for domestic, municipal and industrial purposes. Ground-water monitoring began during the first quarter of FY86 and has continued on a three-year interval. The most recent sampling event occurred during the third quarter of FY99.

Ground-water samples were obtained from 17 shallow to moderately-deep wells. Most of the wells penetrated the Sparta aquifer; however, several wells potentially penetrate the underlying Cane River Formation. This formation is considered the lower confining unit of the Sparta; however, some minor water-bearing zones exist which are used for domestic water supplies. A summary of the sampling sites and their locations is in Table 15B in Appendix B of this report. Water quality in this monitoring area is also good, with TDS concentrations ranging from 32 to 247 mg/L. Water type is variable and generally ranges from a calcium-bicarbonate water type at shallow depths to a sodium-bicarbonate water type in the deeper portions of the aquifer. Iron was detected in 5 of 17 wells above the recommended SMCL of 0.3 ppm. Manganese was detected in 4 of 17 wells above the recommended SMCL of 0.05 ppm. Selected descriptive statistics are listed in Table 16B in Appendix B of this report.

Pine Bluff Monitoring Area

The Pine Bluff Monitoring Area includes the town of Pine Bluff and surrounding areas in central Jefferson County. The monitoring area straddles the boundary between the Gulf Coastal Plain and Mississippi Embayment physiographic provinces. Ground water in the area is withdrawn from the alluvial, Cockfield and Sparta aquifers, which are the only sources of water to the community. The alluvial and Cockfield aquifers are used primarily for irrigation and domestic purposes, while the Sparta is used for municipal and industrial purposes. The Pine Bluff monitoring area was originally sampled during the first quarter of FY87. The most recent sampling event occurred during the third quarter of FY01.

Three wells penetrating the Cockfield aquifer, four wells penetrating the alluvial aquifer, and thirteen wells penetrating the Sparta aquifer were sampled in FY01. A summary of the sampling sites and their locations is in Table 17B in Appendix B of this report. The ground-water quality was generally good. The alluvial aquifer produces a calcium-bicarbonate water type; whereas, the Cockfield and Sparta aquifers produce a sodium-bicarbonate water type. Iron was detected in 19 of the 20 wells above the recommended SMCL of 0.3 mg/L. Manganese was detected in 18 of 20 wells above the recommended SMCL of 0.05 mg/L. Selected descriptive statistics are listed in Table 18B in Appendix B of this report. VOC analysis was conducted on the four alluvial samples. Methylene chloride, a common laboratory contaminant, was detected in three of the four samples, in addition to being detected in the trip blank.

<u>Short-Term Water Quality Monitoring (Special Investigations)</u>

An extensive ground-water quality data base has been developed as a result of numerous investigations primarily by the U of A at Fayetteville, the USGS, and the ADEQ. However, most of this information is available by hard-copy only in the form of reports and publications. A search of the list of publications for either organization will reveal numerous ground-water investigative reports for different areas of the State. These investigations are a valuable source of ground-water quality data. However, similar caveats apply to the quality of the data as discussed above concerning data from regulated sites; some of these investigations are performed at sites with known sources of contamination and do not necessarily represent ambient or background water quality.

United States Geological Survey

During FY00 and FY01, the USGS was involved in several projects related to the assessment of ground-water quantity and quality issues. Many of the projects involve cooperative efforts with other State agencies and are described below. Other projects involved cooperation on a national level as part of the National Water Quality Assessment Program (NAWQA).

The Ozark NAWQA study documented water quality in the Ozark regions of Arkansas, Kansas, Missouri, and Oklahoma from 1993-95. A full suite of parameters was analyzed for over 200 wells and springs including major and minor inorganic parameters and pesticides. Most of the activities related to the Ozark study have been finalized and results are located in Adamski (1996) and Petersen et al. (1998).

The Mississippi Embayment NAWQA study covers 48,200 square miles in the Mississippi Alluvial Plain of Arkansas and parts of six other states. In 1996, a three-year phase of intensive data collection on ground and surface water began. Ground-water activities in included the collection of water-quality samples from 12 municipal wells in Arkansas, installation of 32 wells for an urban-use study in Memphis, Tennessee, and 26 alluvial aquifer wells were sampled in Arkansas. Activities related to the Mississippi Embayment study have been finalized and results can be found in Kleiss et al. (2000).

The Mississippi River Valley alluvial aquifer, located in eastern Arkansas, supplies an average of 4.4 billion gallons of water per day (1994 data). Withdrawals from the aquifer have caused considerable drawdown in the water-table surface. Two digital ground-water flow models of the alluvial aquifer, first developed and calibrated in the early 1990's, will be updated to provide a valuable tool for testing water-use/water-management pumping strategies. The existing models will be adapted to an improved software platform, recalibrated, and the effects of projected ground-water withdrawals will be simulated for a period of 30-50 years into the future. Optimization models will be developed that will handle constraints and optimization of surface and ground water.

The Sparta aquifer is a major source of water supply in much of central and southern Arkansas and northern Louisiana. Heavy pumpage from the Sparta aquifer has resulted in substantial drawdown of its potentiometric surface in some areas including the cities of Pine Bluff, Magnolia, and El Dorado. To evaluate the regional effects of aquifer development on water-level declines, a digital ground-water flow model is being recalibrated and refined so that analysts are better able to reliably address the plausibility of various local water-use scenarios. A number of predictive scenarios will be run with the calibrated model and an optimization model will be constructed. The project will include the study area in both Arkansas and Louisiana.

States are required to prepare a source-water assessment for all public water supplies. The objective of the source-water assessment project is to determine the potential susceptibility of all 1,500 Arkansas public drinking-water supplies to contamination. Approximately 1,350 of these supplies are ground-water sources. This will be accomplished by performing four broad work elements: database development, delineation of source-water protection areas, potential sources of contamination inventories, and susceptibility assessments. This 4-year project began in 1998 in cooperation with the ADH and funded with the Drinking Water State Revolving Fund.

Ground-water level monitoring in Arkansas continued to be dynamic in 2000-01. Over 300 water levels were measured from wells in the alluvial aquifer (Schrader, 2001), Sparta aquifer (Joseph, 2000), and 110 water levels have been measured in the Cockfield and Wilcox aquifers (Schrader and

Joseph, 2000). Long-term hydrographs and potentiometric maps have been published in reports. Continuing ground-water programs include: a cooperative program to monitor the ground-water levels of Arkansas' eight major aquifers on a rotating basis, the master wells ground-water quality program, maintenance of six continuous recording ground-water level stations, geophysical logging of wells and conducting one aquifer test on a yearly basis.

Two projects are ongoing to gain hydrologic information on springs in Arkansas. In Hot Springs National Park, many of the springs are being sampled and temperature monitored to determine the local recharge contribution to the hot springs. A 3-year project to determine the location and extent of the recharge area that contributes water to four public drinking-water supply springs in northern Arkansas was begun. The study will investigate the boundaries of the recharge area and ground-water travel times by measuring spring flow and temperature, assess the hydrogeologic characteristics of the spring basins, perform dye trace studies, and collect water-quality samples in the springs.

The USGS has worked cooperatively with the ASWCC to collect water-use data for Arkansas since about 1985. The objectives of the water-use project are to assist in the collection and entry of data for public supply, industrial, commercial, power-generation, mining, agriculture, and irrigation into a database, maintain and support county level data bases and supporting software in 29 County Conservation Districts, and create a water-use area on the District's web page, which will contain current county tables of reported agricultural and irrigation data and statistics.

Arkansas Department of Environmental Quality

An extensive investigation was initiated in the spring of 2000 to evaluate the source and extent of saltwater intrusion in Chicot County, Arkansas. A general background and problem statement detailing past studies and preliminary findings is located in Kresse, et al. (2000). At the time of this report, 249 wells have been sampled in Chicot County, including 217 wells in the alluvial aquifer, 27 wells in the Cockfield Formation, four wells in the Sparta aquifer and one well in the Wilcox Formation. Five monitoring wells were drilled and completed in the Cockfield Formation and one monitoring well was completed in the Sparta aquifer during the spring and summer of 2000. Personnel from the USGS provided electrical logs of the borings during the drilling operation. Analyses performed on the alluvial wells included chloride, bromide, fluoride and sulfate in addition to field measurements of pH, temperature and electrical conductance. All other well samples were analyzed for a complete set of analyses including nutrients, major cations and anions, total dissolved solids and trace metals.

In early spring of 2002, prior to the irrigation season, water levels were measured in 100 alluvial wells to determine depth to water and ground-water flow directions. All data has been compiled, and chloride isoconcentration maps have been produced for both the alluvial and Cockfield aquifer systems, in addition to a potentiometric surface map for the alluvial aquifer. Personnel from the Chicot County Conservation District assisted in surveying elevations of three wells at one site, which included a Cockfield and Sparta monitoring well, in addition to an existing shallow well (alluvial) supplying a fish pond. Water-level measurements demonstrate a downward component of flow from shallow to deep for all three aquifer systems. A report of the findings from the investigation should be completed within the 2002 calendar year.

The ADEQ recently has become involved in a joint effort with the Nature Conservancy and the University of Arkansas at Fayetteville to monitor the water quality and biological diversity within selected caves in northwest Arkansas. Approximately 80 cave systems, extending from northwest to northeast Arkansas, were sampled in April, 2001 for a limited set of constituents by the University of Arkansas. The ADEQ analyzed 30 of these for a full suite of parameters including nutrients, major cations and anions, total dissolved solids and trace metals. One aspect of the investigation was to determine water type relative to area geology, with the intent of identifying the water chemistry resulting from water/rock interactions as opposed to anthropogenic impacts from various land-use activities, and water quality as related to health and diversity of cave biota. The active interest on the part of all parties to continue monitoring selected caves for long-term trend data has resulted in the commitment on the part of the ADEQ to add a selected list of caves to the ambient monitoring program. Current activities include selection of 25-30 caves, initiation of another sampling event in late spring of 2002, and the selection of key indicator parameters including inorganic and organic chemistry, bacteria analysis, and cave community surveys.

Pesticide Investigations

The investigation of pesticide impacts to shallow ground water in the State is listed separately from short-term monitoring activities because of the ongoing efforts and long-term implications of the monitoring process. Early stages of pesticide monitoring were manifested in gathering extensive well-water pesticide data for purposes of evaluating the extent and magnitude of contamination, in addition to determining the pesticides posing the greatest problem from both frequency and magnitude of detections. Future efforts will undoubtedly trend toward evaluating sources of pesticide contamination. Some early attempts at defining sources have been in the form of modeling with a modified DRASTIC program (Lin et al., 1999).

Ongoing pesticide monitoring has been performed primarily by the University of Arkansas Water Resources Center (AWRC) and the ADEQ. Monitoring by the AWRC is funded under EPAs FIFRA program, which is delegated by the Arkansas State Plant Board (ASPB). The AWRC provides pesticide monitoring and analysis services to the ASPB on a yearly basis with an average of about 40 sampling sites per year. The ADEQ monitors pesticides as part of the Ambient Monitoring Program in areas where pesticide use is prevalent, and also conducts special pesticide monitoring as the responsible agency for assessing Waters of the State under the 319 Nonpoint Assessment Program. The USGS has also monitored for the occurrence of pesticides as part of the NAWQA Program.

Several documents serve as an excellent introduction into the type and concentration of pesticides detected to date in eastern Arkansas within the alluvial aquifer. Steele, et al. (2002) lists results from the most recent (Phase VIII) sampling period by the AWRC, and also provides an excellent background including the results from all previous sampling periods conducted by the AWRC. Kresse, et al. (1997) provides an overview of the occurrence of pesticides in the alluvial aquifer in eastern Arkansas including the results from the sampling of 77 wells in parts of Arkansas, Phillips and Desha counties; a discussion of the type and chemical properties of the pesticides; and a section on potential transport mechanisms for the movement of pesticides into the ground water system. Kresse et al. (2002) presents the results of the sampling of 120 wells in the Bayou Bartholomew watershed with a discussion on sources of pesticide contamination. Because the ADEQ performs a complete chemical analysis of all wells monitored as part of the ongoing pesticide monitoring program, the data also serves as an excellent data base for inorganic chemistry and water quality associated with the alluvial aquifer in eastern Arkansas. Figure V-2 provides well locations for the 120 wells sampled during the Bayou Bartholomew study, which was conducted during the summer of 1999 and 2000. Table V-2 lists the concentrations for those wells with positive pesticide detections.

Because there is a difference in both the laboratory equipment and protocol for qualifying the data from the pesticide monitoring in eastern Arkansas, there is a difference in the detection frequency between the AWRC and the ADEQ. The rate of detection for the AWRC is approximately 5% of total wells; whereas the detection rate for ADEQ is probably closer to 30% or more for all samples analyzed to date. However, in spite of these differences, both organizations have noted that bentazon accounts for the highest percentage of total detected pesticides; accounting for over 45% of the total detections of the combined pesticide detections by both organizations (Figure V-2). The percent of bentazon for the total positive detections for the Bayou Bartholomew study was 55%. Although not the highest-use pesticide, bentazon apparently is problematic from the standpoint of its high solubility and relatively low sorption properties (Kresse, et al., 1997).

The source of the pesticide contamination is poorly understood at the present time, and point sources (spills, well contamination, etc.) versus non-point sources (general application and soil infiltration) as the principal source and transport mechanism for delivery to the ground water table is a topic of debate both nationwide and within Arkansas. One of the more promising aspects of the monitoring to the present date is that the concentrations are low and all detections have been below federal requirements and recommendations (MCLs and HALs). Most all of the detections are in the low *u*g/L range and are dominantly between 3-5 orders of magnitude below the listed MCLs and HALs (Kresse, et al., 2002).

Ground Water/Surface Water Interactions

The interaction of ground and surface water, manifested in the form of losing and gaining streams, impacts regulatory programs, ground-water pollution-prevention programs, and ground-water research programs. This problem has plagued the ADEQ in both policy and regulatory development and in regulation and cleanup at contaminated sites. For example, standards used for remediation of ground-water contamination associated with an industrial site may adhere to ground-water uses; however, these same concentrations may violate stream standards where the ground water discharges into a given stream. In addition, over-pumping of ground water, which previously provided base

Table V-2. List of wells with positive pesticide detections for Bayou Bartholomew Study Area (all detections in *u*g/L).

Station	2,4-D	Bentazon	Acifuorfenn	Molinate	Simazine	Prometryn	Terbutryn	Metolachlor	Cyanazine	Pendimethalin	p-p-DDE	Methoxychlor
DREW03										0.013		
LINC01		0.025										
ASH04		0.024										
DREW05		0.025										
ASH07		0.023										
ASH09						0.440						
ASH10						0.050						
ASH11						0.011						
ASH15											0.009	
ASH17		0.094										
ASH18		0.014										
LINC05	0.025						0.127					
JEF01		0.058										
JEF02		0.017							0.010			0.002
JEF09		0.033						0.007				
JEF13		0.519										
LINC08		0.018										
LINC10		0.069		0.048								
LINC11		0.014										
LINC14				0.486								
LINC16		0.043										
LINC17		0.006										
DREW16		0.035										
JEF022		0.040										
LINC21			0.265									
DREW31					0.015							
LINC22		0.007										
LINC23		0.009										

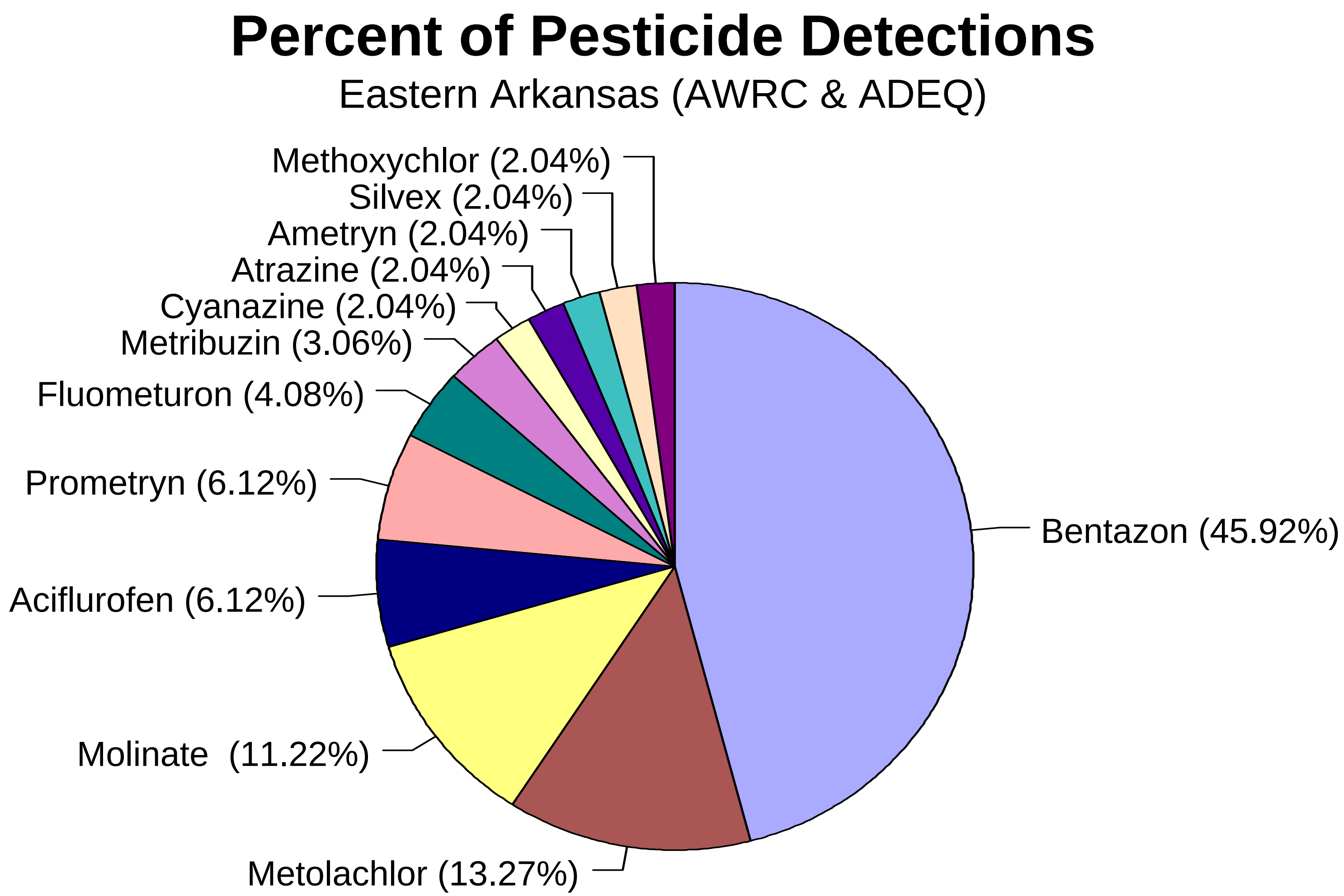


Figure V-2. Percent of pesticide detections for combined data from ADEQ and AWRC for wells with positive detections.

flow to a stream, may reduce the stream storage during dry periods resulting in an impact to the use of the stream. In the Coastal Plain area of the State, such reversal of a gaining stream to a losing stream has been documented in Ackerman (1996).

Water-quality relationships between ground water and surface water in the Coastal Plain is not well understood at the present time. Although both water sources are intensely sampled for general water quality and pesticides, the influence of one source as a contaminant transport pathway to the other source has not been identified. Analysis of pesticide data indicates some differences in the types and amounts of pesticides detected in surface water versus those pesticides detected in ground water (Kresse et al., 1997). The current investigation in Chicot County has included review of both stream-station and ground-water data to evaluate the potential for chloride contamination of streams from high-chloride, base-flow contributions. However, elevated chlorides occurred in the streams predominantly during the summer months, which might reflect runoff from ground-water irrigated fields rather than base-flow contributions.

In northwest Arkansas, both hydrologic budget analyses and contaminant transport have been studied to a greater degree in terms of surface-water/ground-water interaction than in any other portion of the State. During the last decade, numerous investigations coupled with ongoing monitoring efforts have been performed by dominantly multi-agency coalitions including the ADEQ, the University of Arkansas at Fayetteville, the USGS, the ASWCC and the National Park Service (NPS). Some of the studies have concentrated on nutrient budgets in addition to hydrologic budgets, while others focus on water-quality monitoring coupled with implementation of Best Management Practices (BMP). All studies, however, contain components of surface- and ground-water interaction.

Animal Holding/Management Areas Ground Water Program

Findings from previous spring monitoring efforts in northwest Arkansas demonstrated that Boone/St. Joe Formation springs have a significant component of surface water that enters the ground-water system via solutionally-enlarged fractures, sinkholes and losing streams. Bacteria concentrations from the limestone formation springs ranged from near zero at low flow conditions to over 49,000 CFU/100 ml during storm events (Peterson, et al., 2002; Peterson et. al., 2000a; Peterson et al., 2000b; Marshall et al., 1998).

In addition, this work demonstrated that water quality from springs within the mantled-karst aquifer in northwest Arkansas contain concentrations of bacteria, dominated by Escherichia coli (E. coli) that rise in the early portion of the storm hydrograph with peak bacterial concentrations occurring just prior to or coincident with peak spring-discharge, drop dramatically after the peak, and do not tend to follow the recessional curve. However, the transport and storage of bacteria within these environments are poorly understood.

One recent project was a multiple-tracer experiment with a main goal of elucidating the fate of bacteria within mantled-karst basins. Tracers included Eu-tagged bacteria and La-tagged clay that were tracked over long times and flowpaths in conjunction with conservative tracers (chloride and

Rhodamine WT dye). Questions pertaining to the study include 1) is the use of Eu-labeled bacteria and La-labeled clay a viable technique, 2) what can we infer about bacterial fate in the subsurface from the tracer breakthrough, and 3) what can we infer about the subsurface? The field study was conducted at the University of Arkansas Savoy Experimental Watershed (SEW).

Two mixed-tracer injections were performed. The first included 2156 g of chloride and 151 g of Rhodamine WT dye. This dye trace was used to estimate the dilution factor for the flow conduit to determine the quantity of labeled clay and bacteria to inject. Based on a dilution factor of 10E7, an estimated 100 g (wet) E.coli and 80 g of labeled clay were needed to be significantly above background and detection limits of the tag elements upon sample collection at the discharge springs.

The second tracer involved injection of 58 g of La-labeled clay, 120 g of E.coli and 250 g of Rhodamine WT dye. Lanthanum was added to a montmorillinitic clay tracer by cation exchange methods. Tagging small quantities (a few grams) of clay with lanthanum was a relatively easy process. However, tagging the 58 g that were injected proved onerous due to extensive washings after each exchange step. This quantity of tracer was sufficient to define the initial storm pulse in terms of the La-labeled clay, but was not sufficient to fully define tracer capture during low-flow periods or with any degree of confidence over multiple storm pulses.

Similar problems with scale-up occurred with the Eu-tagged bacteria. The Eu tag was easily attached to small quantities of bacteria (1 g) but when the batch size was increased to 120 g the procedure was not as effective. E.coli were isolated from fecal-contaminated sediments and spring water from SEW. The isolated cells were cultivated in 50-mL of Luria broth followed by inoculation in a bioreactor, and resuspension of about 0.1-g in 40-mL of a chilled 10-mM Eu solution. The chilled cell suspension were pulsed 10 times in an electroporator to facilitate Eu uptake. Spectrofluorimetric determination of dipocolinic-acid chelated Eu was used to quantify the Eu remaining in the supernatant after centrifugation of the cells. Eu uptake by the bacteria and La concentration of the tagged-clay was also measured through neutron-activation analysis.

Tracers were injected during low-flow conditions, allowing the E.coli and clay to settle from suspension within the aquifer, whereas the more conservative dye moved through as a continuous plume. The dye arrived approximately nineteen hours after injection and peak concentration occurred at twenty-seven hours. Twenty percent of the dye was captured during the first three days of sampling, while only a small portion of the clay was captured during this period. Six days after injection, a storm pulse mobilized the bacteria and clay tracer, resulting in more significant capture for the labeled-clay. During the storm pulse, peak concentrations of the clay tracer were coincident with peak concentrations of E.coli, suggesting that ground-water storage and transport mechanisms are similar for bacteria and clay. The results indicate that tagging bacteria and clay is feasible and that these sediment and bacterial tracers can be used as a low-environmental impact method for studying the transport and storage of bacteria in mantled-karst environments (Whitsett, 2002; Ting, 2002).

One project funded under the USGS 104 b seed grant program investigated the survivability of E Coli in a stream and spring environment in the mantled karst of northwest Arkansas. Survival chambers pre-innoculated with E. Coli were placed in sediments of a spring and stream environment in the mantled karst of northwest Arkansas. Individual chambers were retrieved and analyzed for viable E. Coli over a 75 day period. The results indicate that the bacteria can survive in these environments for extended periods, up to or greater than 75 days. This means that a resident population of bacteria can account for the pulse observed during the rising limb of storm-pulse hydrographs, as was previously hypothesized based on previous water-quality monitoring from selected springs throughout the region (Hamilton, 2001).

Savoy Experimental Watershed Project

The Savoy Project is a joint effort of the U of A at Fayetteville Departments of Animal Science and Geology, the ADEQ, the Agricultural Research Service of the USDA, and the USGS. The study is unique in that it is truly an experimental watershed with heavily-forested areas and limited grazing on small, pastured sections. Future plans include the construction of a confined-swine operation and the application of swine and poultry waste to pasture areas. Because extensive background water-quality analyses will have been performed prior to construction, researchers will have with the opportunity to document resulting changes in land use and potential degradation of ground-water quality at the site.

The study was initiated and designed around the problem that interaction of surface water and shallow ground water is highly variable in northwest Arkansas, ranging from almost nil (including water-tight lakes) to highly interrelated (including streams that lose their flow into swallow holes). Ground-water flow conditions and water quality are equally variable, with a high degree of interaction reflecting rapid flow and generally poorer water quality. Numerous land uses have significantly impacted shallow ground-water quality in the past, and a rapid population growth and expanding economy will further stress the system in the future.

As such, University, State and Federal researchers from organizations listed above collaborated on a preliminary study to define hydrologic and nutrient-flux budgets from recharge at the land surface, through the soil, regolith, epikarst, shallow and deep aquifers, to discharge at two springs that ultimately discharge into the Illinois River and its tributaries. The scope of the study includes, 1) precisely defining the ground-water part of the hydrologic budget, 2) precisely defining the ground-water part of the hydrochemical budget for selected parameters, and 3) determining ground-water flow paths and times of travel under variable-flow conditions (Brahana, 1996).

During the last two years, two additional deep wells (each about 300 feet deep) were completed, as were 19 shallow wells (from 8 to22 feet deep) to the epikarst zone at the regolith-bedrock contact. This brings the total number of deep wells on the site to 10, and the shallow wells to more than 50. Coupled with the spring and seep inventorying and sampling program, this site has nearly 100 data collection points with which to evaluate the impact of land use (primarily animal production) on water quality.

Sampling of water from springs, wells, seeps, ephemeral streams, and the Illinois River was actively pursued during 1998-1999, with sampling based on flow conditions rather than time-specified collection times. Results indicate that unexpected nitrate-N concentrations occur at Copperhead Spring, probably as a result of litter spreading and cattle production on private land near the spring on the south side of SEW. Slightly higher (2 to 3 times background) chloride and nitrate concentrations also were documented in basin 2, particularly around the upland fields that have animal activity. This gives us confidence that recurring sampling is a valuable tool to assess the impacts of specific land-use practices, and that by knowing the detailed attributes and ranges of selected water-quality parameters at specific sites, we can extrapolate and effectively identify activities, timing, and concentrations that warrant focused attention.

Involvement of the U.S. Geological Survey, the U.S. Department of Agriculture, Agricultural Research Service, and the University of Arkansas Departments of Geosciences, Animal Sciences, and Engineering also contributed significantly to hydrogeologic understanding at SEW. Tom Sauer of the USDA/ARS and his team conducted transects of infiltration studies that provided documentation of high recharge (and thus high ground-water contributions) for a variety of soils types. Van Brahana of the U of A and his team conducted ongoing assessment of defining recharge areas to specific springs and wells, and sampled selected sites for pharmaceuticals as part of a larger USGS effort. Three student theses shed light on results from continuous monitoring, weekly sampling, and long-term sampling, as well as documenting detailed water-budget components of Basins 1, 2, and 6, and dominant controls on the flow, velocity, stream piracy, and water quality in these basins. Precipitation was measured continuously at the full weather station on site, and basin-scale variations were documented with two additional rain gages on the SEW. Specifics about details of research may be accessed at the following web site: http://www.uark.edu/depts/savoyres/

Buffalo River Watershed Liquid Waste Management System Demonstration Project

The Buffalo River Swine Project, conceived and implemented by the ADEQ, is performed in cooperation with the U of A at Fayetteville, the ASWCC, the NRCS, the Arkansas Pork Producers Association, and the CES. Begun in FY95, the project evaluated BMPs and potential surface and subsurface water-quality impacts at six swine farm sites and also implemented BMPs and monitored water-quality changes associated with completed BMPs.

Ground-water quality was monitored at four of the confined swine facilities in Newton County. The sites are located on the upper reaches of two tributaries of the Buffalo River. Because the geology of the sites consisted dominantly of shale with sections of sandstone, the soils were dominantly composed of thick, weathered shale and clay sediments. Results of ground-water analyses revealed mostly non-detectable levels of nitrate-N in wells situated next to waste ponds. These results are believed to be the direct result of the thick weathered shale, which underlies the sites and acts as a natural liner system (Kresse et al., 1996).

There is evidence at one of the sites that pond overflow infiltrates into the upper (2-3 feet) loamy soil section and that the associated interflow results in waste delivered to the streams within hours or days past a given runoff event during storms. Waste percolating into the section of the stream where a weir and automatic sampler is located, migrated to the bottom of the ponded section under density differences, resulting in erroneous earlier calculations of nutrient loading. This finding demonstrates the importance of shallow interflow in terms of surface-water/ground- water interactions and delayed transport of contaminants. In addition to monitoring wells, shallow (2-3 feet), perched interflow water was collected at one site to disprove pond leakage as the source of pooled waste at the surface, which proved to be line leakage from the spray-irrigation system. Ground-water monitoring of all wells continued through FY99 with similar results as described above.

Buffalo River Watershed Dairy Dry-Waste Management System Demonstration Project

Designed and implemented by the ADEQ, the dairy project is a nonpoint source project funded by EPA's 319 Program, and is performed in cooperation with the ASWCC, the NRCS, the CES, and the U of A at Fayetteville. The dairy demonstration project, similar to the swine demonstration project, is currently monitoring both potential impacts to surface and ground water, will define the effectiveness of current BMPs, and will develop new BMPs or modify existing BMPs with the objective of documenting changes in water quality as a result of improved waste management.

A series of borings at six sites demonstrated the lack of a perched-water zone by which to monitor shallow ground water. Because of this situation and the difficulty of encountering a major fracture system in bedrock drilling, ground-impacts have been evaluated largely through the use of spring-water quality monitoring coupled with ground-water basin delineation.

Preliminary results to date include signing contracts with all potential cooperating farmers; completion of geologic mapping and 40 borings at six potential study sites; water-quality analyses of numerous seeps, springs, and runoff water during a storm event at one site to determine optimum sampling locations; four dye trace studies; analysis of dairy waste; analysis of soils from eight borings at one site; continuous monitoring of field parameters over a year and a half period at two springs; and numerous spring grab-sample analyses.

Buffalo National River Water Quality Monitoring Program

Nine river sites, twenty tributaries, and three springs are routinely sampled as part of Buffalo National River's Water Quality Monitoring Program. Of the monitored springs, Gilbert Spring has the highest average fecal coliform counts and nitrate-N concentrations and showed a positive trend for fecal coliform concentrations over ten years of monitoring. Storm-flow sampling revealed fecal coliform counts as high as 17,700 colonies/100mL from this spring. Highest nitrate concentrations are observed during base-flow. Higher and increasing concentrations of bacteria at Gilbert Spring may be related to septic leachate from the town of Gilbert migrating into the spring's karstic recharge area, and from cattle and dairy operations in the Dry Creek drainage which is pirated by Gilbert Spring.

In cooperation with the ADEQ, the NPS has funded a integrated surface and karst ground-water study which is intended to 1) conduct ground-water and septic-leachate tracing studies, 2) quantify the impacts of Gilbert's septic fields on the water quality of Gilbert Spring and the Buffalo River, 3) assess biotic communities within Gilbert Spring and compare them to a reference spring and previous work, and 4) determine the need and feasibility of converting from on-site septic systems to a sewage treatment plant. The residents of Gilbert have been very cooperative and deserve a high degree of credit for wanting to insure that their activities are not impacting the Buffalo River.
Mill Creek is a major tributary to the Buffalo National River that has been shown to contribute 96 percent of the nitrate/nitrite-nitrogen load to the Buffalo River below their confluence. Macroinvertebrate community structure and function analyses demonstrate this nitrate load and other pollutants detrimentally affect biologic communities within Mill Creek and the Buffalo River. A synoptic survey of Mill Creek revealed nitrate and orthophosphate concentrations increase upstream to peak at two springs near its head. Subsequent dye-tracing showed that the recharge area for these springs extended far beyond their surface watershed and into the adjacent Crooked Creek basin. Geologic mapping indicates that these springs discharge from the base of the Boone Formation, a 120-meter thick karst aquifer, and are localized near the corner of a fault-bounded block that extends beneath both watersheds.

Flow and water-quality measurements taken from 1998 to the present date and from both streams and springs in the adjoining Crooked Creek and Mill Creek basins help define and characterize the interbasin recharge . Stream discharge/watershed area ratios employed early in the study raised initial suspicions of interbasin transfer; later they verified the accuracy of the dye-trace delineated basins. Water-quality analyses showed that springs in the Mill Creek basin that receive interbasin recharge have similar water quality to both streams and springs in the Crooked Creek basin and reflect the more intense agricultural land use occurring in the Crooked Creek basin.

Major Sources of Contamination

There are numerous potential and actual sources of ground-water contamination in the State. Most of the sources are common to all states and include anthropogenic as well as natural sources of contamination. It is difficult to define which sources have the greatest impact on ground-water quality, because each source varies in the areal extent of resulting contamination and in the impact to water quality. For example, a hazardous waste site may result in a severe impact to ground water with numerous organic contaminants exceeding drinking-water standards. However, the areal extent of the contaminant plume may be very limited with no known receptors at risk. Conversely, contamination from agricultural activities may be areally extensive with little or no impacts to use of the water for drinking and/or other purposes.

Potential point sources of contamination from disposal sites, underground storage tanks, mining operations and other activities are regulated under various programs within the ADEQ. Agriculture and other land-use activities commonly are addressed by voluntary BMPs, which strive to protect ground water by educating farmers and others on management strategies. These programs are described in some detail in the section titled "Ground-Water Protection Programs."

Several investigations have documented nitrate problems in northwest Arkansas and ongoing monitoring programs in the Coastal Plain area of the State have revealed numerous detections of pesticides in conjunction with row-crop agriculture. Saltwater intrusion is a localized but very serious problem related to heavy drawdown, irrigation practices, and/or the area hydrogeology. Brine contamination is also a localized problem related to improperly lined surface impoundments, corroded casing of injection wells, or from earlier improper disposal to the land surface or streams. The Surface Water Treatment Rule (SWTR) has focused attention on microbial contamination in our public water systems. Recent documented waterborne disease outbreaks have been a cause of national concern. The intent of the ADEQ's ongoing, ambient water-quality monitoring program is to document changes in the quality of ground water over time; to determine if known areas of contamination are expanding (i.e. areas of saltwater intrusion); and to assist in water-quality planning.

In addition to anthropogenic sources of contamination, water-quality degradation has been documented from natural sources including saline water and naturally-occurring radioactivity. These contaminants are often unique to the stratigraphy of the aquifer and are related to environments in which the strata were deposited. Also, it is important to differentiate sources of water quality data when evaluating ground-water contamination. Contaminants documented in a water-supply system, domestic or municipal, may be related to problems in the distribution line or plumbing. As such, these problems may reflect contamination within the system, but not related to actual ground-water quality. Table V-3 lists the major potential sources of contamination.

The EPA 1996 305(b) guidelines encourage each state to list the ten highest priority sources of ground-water contamination. The factors considered when selecting these priority sources of ground-water contamination in Table V-3 are listed in order of importance next to each source. However, the contaminant sources are not ranked. The following factors are listed below:

1) Human health and/or environmental risk (toxicity)
2) Size of the population at risk
3) Location of the sources relative to drinking water sources
4) Number and/or size of contaminant sources
5) Hydrogeologic sensitivity
6) State findings, other findings
7) Other criteria

The following contaminants are considered to be associated with each of the sources that were checked:

A) Inorganic pesticides
B) Organic pesticides
C) Halogenated solvents
D) Petroleum compounds
E) Nitrate
F) Fluoride
G) Salinity/brine
H) Metals
I) Radionuclides
J) Bacteria
K) Protozoa
L) Viruses
M) Other

Table V-3: Major Sources of Ground Water Contamination

Contaminant Source	Ten Highest Priority Sources (X)	Factors Considered	Contaminants
Agricultural Activities			
Agricultural Chemical Facil.			
Animal Feedlots	X	1,4,5,6	E
Drainage Wells			
Fertilizer Applications	X	1,4,5,6	E
Irrigation Practices			
Pesticide Applications	X	1,5,6	A,B
Storage & Treatment Activities			
Land Application			
Material Stockpiles			
Storage Tanks Above Ground			
Storage Tanks Underground	X	1,2,3,4,5	C,D
Surface Impoundments	X	1,3,4,5	G,H,E
Waste Piles			
Waste Tailings			
Disposal Activities			
Deep Injection Wells			
Landfills	X	1,3,5,6	C,D,J,L,H
Septic Systems	X	1,3,4,5	E,J,K,L
Shallow Injection Wells			
Other			
Hazardous Waste Generators			
Hazardous Waste Sites	X	1,2,3,5,6	C,D,H
Industrial Facilities			
Material Transfer Operations			
Mining and Mine Drainage			
Pipelines and Sewer Lines			
Salt Storage and Road Salting			
Salt Water Intrusion	X	1,3,4	G
Spills	X	1.2,3,5	C,D
Transportation of Materials			
Urban Runoff			

Table V-4 lists the present status of the State Ground Water Protection Programs. As can be seen, most of the programs are fully established or are in the process of implementation. One progressive step that the ADEQ's Water Division has taken toward early detection at facilities with potential sources of ground-water contamination is to include ground-water monitoring requirements for certain facilities within NPDES and State Programs (no discharge) permits. This procedure assists in assessing the impact from sludge application, manure spreading, earthen lagoons, and other sources of potential ground-water contamination. Currently, the State Programs Branch has begun the permitting of commercial soil treatment facilities for treatment of petroleum contaminated soils. Ground-Water Protection Program personnel are active in reviewing these permits in order to insure that ground water will be protected beneath these facilities. In addition to these steps, the Ground-Water Protection Program is actively involved in expanding existing monitoring areas for further inclusion of aquifer systems which lack adequate monitoring, in addition to actively initiating and cooperating on numerous special investigations into ground-water threats statewide including confined animal operations, use of pesticides, and saltwater intrusion.

Table V-4. Summary of State Ground Water Protection Programs

Programs or Activities	Check (X)	Implementation Status	Responsible State Agency
Act. SARA Title III Program	X	Fully Established	ADEQ
Ambient GW Monitoring	X	Fully Established	ADEQ
Aquifer Vulnerability Assess.	X	Continuing Efforts	AS&WCC/UofA
Aquifer Mapping	X	Continuing Efforts	Multi-Agency
Aquifer Characterization	X	Continuing Efforts	Multi-Agency
Comp. Data Mgmt. System	X	Under Development	AS&WCC
EPA Endorsed CSGWPP	X	Pending	AS&WCC
Ground Water Discharge Pmt.	NA	NA	ADEQ
Ground Water - BMP's	X	Continuing Efforts	Multi-Agency
Ground Water Legislation			
Ground Water Classification	X	Continuing Efforts	ADEQ,AS&WCC
Ground Water Quality Stds.	X	Under Development	ADEQ
Interagency Coord. - GW	X	Continuing Efforts	AS&WCC
Nonpoint Source Controls	X	Continuing Efforts	AS&WCC,ADEQ
Pesticide State Mgmt. Plan	X	Fully Established	SPB
Pollution Prevention Program	X	Continuing Efforts	ADEQ,AS&WCC,ADH, SPB,CES,NRCS
RCRA Primacy	X	Fully Established	ADEQ
State Superfund	X	Fully Established	ADEQ
State RCRA Program - More Strict Than RCRA Primacy	NA	NA	ADEQ
State Septic Tank Regulations	X	Fully Established	ADH/ADEQ
UST Installation Requirements	X	Fully Established	ADEQ
UST Remediation Fund	X	Fully Established	ADEQ
UST Permit Program	X	Fully Established	ADEQ
UIC Program	X	Fully Established	ADEQ
Vulnerability Assessment For Drinking Water/Wellhead Protection	X	Continuing Efforts	ADH
Well Abandonment Regs.	X	Fully Established	AWWCC
EPA-Approved WHPP	X	Fully Established	ADH
Well Installation Regulations	X	Fully Established	AWWCC

ADEQ: Arkansas Department of Environmental Quality; AS&WCC: Arkansas Soil and Water Conservation Commission; ADH: Arkansas Department of Health; SPB: Arkansas State Plant Board; NRCS: Natural Resources Conservation Service;CES: University of Arkansas Cooperative Extension Service; AWWCC: Arkansas Water Well Construction Commission -(Under authority of AS&WCC).

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APPENDIX A

WATERBODY SPECIFIC INFORMATION BY PLANNING SEGMENT

A segment-specific analysis has been conducted for each of the 38 planning segments as a part of Appendix A. The assessment of water quality within the individual planning segments utilized the ambient monitoring network stations and other available data as described earlier in this document. The support or nonsupport of a designated use was assessed by reviewing monitoring data for specific criteria appropriate for those uses. Some professional judgment has been used in areas where inadequate or outdated data exists.

The surface waters being evaluated in this review are those currently listed within the EPA River Reach File (RF-1) with some additional segments added where necessary.

Data included for each planning segment includes:

1. A description of the segment location and its major waters.
2. A narrative summary of the water quality within the segment.
3. A planning segment map with river reaches identified by hydrologic unit code and reach numbers.
4. An assessment of use support by river reach.
5. A map of NPDES permitted discharges within the segment.
6. A listing of permitted discharges within the segment.
7. A summary of water quality data for each monthly monitored station within the segment from October 1, 1998, through December 31, 2001.

The stream reach assessment tables utilize the following abbreviations:

E	=	evaluated assessment	MP	=	municipal point source
M	=	monitored assessment	SI	=	siltation/turbidity
U	=	unassessed (unknown)	NU	=	nutrients
S	=	use supported	PA	=	pathogen indicators (bacteria)
N	=	use not supported	PO	=	priority organics
R	=	use removed	MN	=	minerals (chlorides/sulfates/TDS)
			DO	=	dissolved oxygen
AG	=	agriculture	ME	=	metals
RE	=	resource extraction	OE	=	organic enrichment
SV	=	silviculture	AM	=	ammonia
UR	=	urban runoff	HG	=	mercury
RC	=	road constructon/maint.	HP	=	hydropower
IP	=	industrial point source	UN	=	unknown

FC = fish consumption
AL = aquatic life use
PC = primary contact use (swimmable)
SC = secondary contact
DW = drinking water use
AI = agriculture and industrial use

MJS = major source of impairment
MNS = minor source of impairment
MJC = major cause of impairment
MNC = minor cause of impairment

STATUS = assessment status

1 - attaining water quality standards; no use threatened
2 - attaining some designated uses; no uses threatened. Insufficient data to determine if other uses are attained or threatened.
3 - Insufficient data to determine if any use is attained
4 - Impaired or threatened for one or more uses but does not require the development of a TMDL
    A. TMDL has been completed
    B. other pollution control requirements are expected to result in attainment of water quality standards
    C. Impairment not caused by pollutant
5 - Waterbody impaired or threatened for one or more designated uses; TMDL required

RED RIVER BASIN

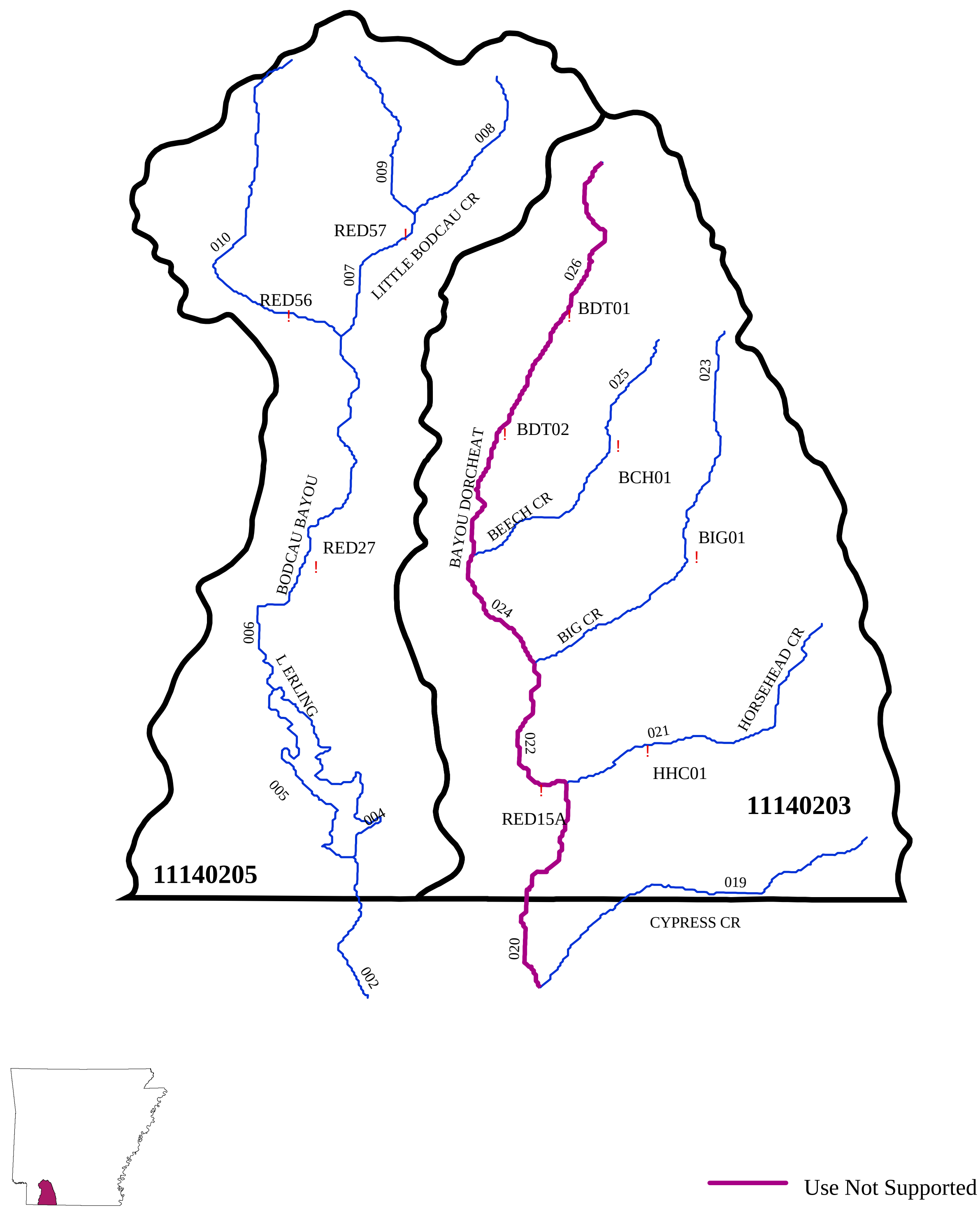
SEGMENT 1A - DORCHEAT BAYOU AND BODCAU BAYOU

This segment is located in the southwest corner of the State and includes most of Columbia County as well as parts of Nevada, Hempstead and Lafayette counties. The drainage is generally southward into Louisiana and the major streams are Dorcheat Bayou and Bodcau Bayou. Lake Erling is a major impoundment on Badcau Bayou

SUMMARY OF WATER QUALITY CONDITIONS

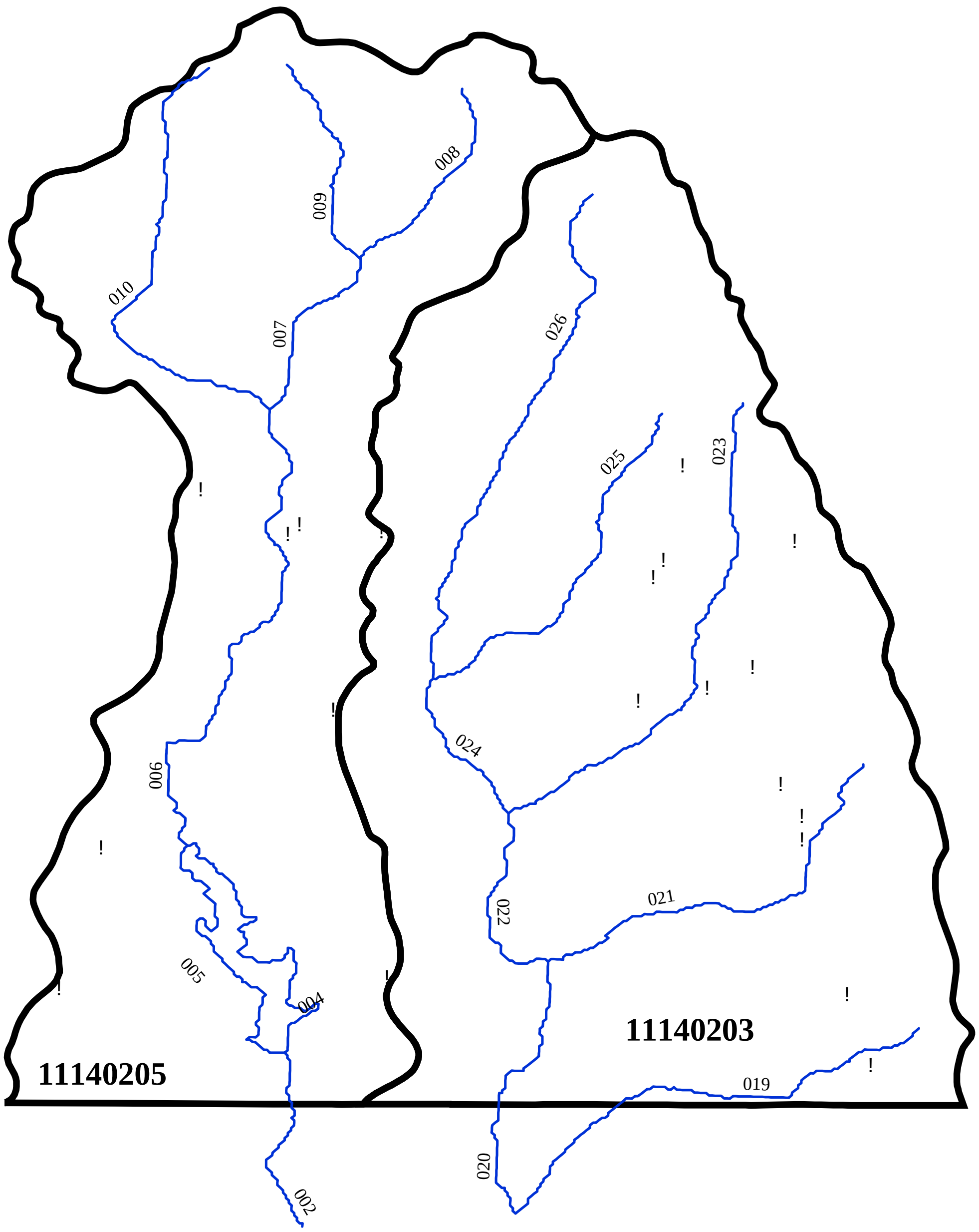
The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. Monitored data were used as the basis of assessing 108.4 miles of stream within this segment. An additional 70.8 miles were evaluated. Mercury contamination was the cause for 50.6 miles of Dorcheat Bayou being listed as not supporting fish consumption. All other stream segments in this basin support all designated uses. Lake Columbia is impaired for fish consumption due to high mercury content in some predator fishes.

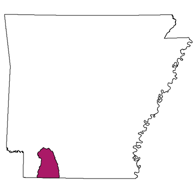
Planning Segment 1A - Monitoring Stations



STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-1A																			
Dorcheat Bayou	11140203	-026	23.3	BDT01,02	M	N	S	S	S	S	S	UN		HG		5	FISH CONSUMPTION	128.6	50.6
Dorcheat Bayou	11140203	-024	7		E	N	S	S	S	S	S	UN		HG		5	AQUATIC LIFE	179.2	0
Dorcheat Bayou	11140203	-022	8.4	RED15A	M	N	S	S	S	S	S	UN		HG		5	PRIMARY CONTACT	179.2	0
Dorcheat Bayou	11140203	-020	11.9		E	N	S	S	S	S	S	UN		HG		5	SECONDARY CONTACT	179.2	0
Cypress Creek	11140203	-019	18.5		U											3	DRINKING SUPPLY	179.2	0
Horsehead Creek	11140203	-021	16.8	HHC01	M	S	S	S	S	S	S					1	AGRI & INDUSTRY	179.2	0
Big Creek	11140203	-023	21.8	BIG01	M	S	S	S	S	S	S					1			
Beech Creek	11140203	-025	15.7	BCH01	M	S	S	S	S	S	S					1			
Bodcau Creek	11140205	-010	19.5		E	S	S	S	S	S	S					1			
Bodcau Creek	11140205	-009	9.5		E	S	S	S	S	S	S					1			
Bodcau Creek	11140205	-008	9.1		E	S	S	S	S	S	S					1			
Bodcau Creek	11140205	-007	7.8		E	S	S	S	S	S	S					1			
Bodcau Creek	11140205	-006	22.4	RED27	M	S	S	S	S	S	S					1			
Bodcau Creek	11140205	-002	6		E	S	S	S	S	S	S					1			
TOTAL MILES	197.7																		
MILES UNASSESSED	18.5																		
MILES EVALUATED	70.8																		
MILES MONITORED	108.4																		

Planning Segment 1A - NPDES Permitted Facilities





Permit Number	Facility Name	Receiving Waters	USGS H.U.C.	Planning Segment
AR0000434	AMERICAN FUEL CELL & COATED FA	TRIB,BIG CK,DORCHEAT BU,RED RV	11140203	1A
AR0000493	ENTERGY AR, INC-HARVEY COUCH	LK JUNE TRIB,BODCAW CK	11140205	1A
AR0020044	TAYLOR, CITY OF	LTL CROOKED CK	11140205	1A
AR0020621	BRADLEY, CITY OF	DIT,WHEELER CK	11140205	1A
AR0021555	MCNEIL, CITY OF	O'REAR CK,BIG CK	11140203	1A
AR0021920	STAMPS, CITY OF	BODCAU CK,RED RV	11140205	1A
AR0035696	LEWISVILLE, CITY OF	STEEL CK,BODCAU BU	11140205	1A
AR0038857	ALBEMARLE CORP-SOUTH PLANT	HORSEHEAD CK,DORCHEAT BU	11140203	1A
AR0039594	EMERSON, CITY OF	TRIB, LTL CYPRESS CK,DORCHEAT BU	11140203	1A
AR0043508	WALDO, CITY OF	TRIB,BIG CK	11140203	1A
AR0043613	MAGNOLIA, CITY OF	DIT, BIG CK,DORCHEAT BU,RED RV	11140203	1A
AR0043923	WILLAMETTE INDUSTRIES-EMERSON	S CYPRESS CK,DORCHEAT BU,L BISTINEA	11140203	1A
AR0045535	CAMP CANFIELD	MILL CK TRIB	11140205	1A
AR0046418	LONGVIEW GAS CO	TRIB,CROOKED C,WALKER C,BU DORCHEAT	11140205	1A
AR0046973	MAGNOLIA COUNTRY CLUB	TRIB,HORSEHEAD CK,DORCHEAT BU,RED R	11140203	1A
AR0047627	SMI STEEL - ARKANSAS	DIT,HURRICANE CK,BU DORCHEAT	11140203	1A
AR0047635	ALBEMARLE CORP-WEST PLANT	DISMUKES BR,BIG CK,BU DORCHEAT	11140203	1A
AR0047953	DELTIC FARM & TIMBER-WALDO MIL	TRIB,BEECH CK,LK COLUMBIA	11140203	1A
AR0048054	QUAD HARDWOOD PRODUCTS	TRIB,BIG CK,DORCHEAT BU, RED RV	11140203	1A
AR0048305	STAMPS, CITY OF-SOUTH WTF	DIT,BODCAU CK	11140205	1A

RED0015A
DORCHEAT BAYOU E OF TAYLOR AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	30	6.95	4.13	8.95	1.31
BOD_5 (mg/L)	31	1.51	0.53	2.88	0.60
pH (standard units)	31	6.29	5.6	7.56	0.44
Total Organic Carbon (mg/L)	31	14.08	9.65	20.11	2.56
Ammonia as N (mg/L)	33	0.03	<0.005	0.139	0.03
NO_2+NO_3 as N (mg/L)	33	0.12	<0.01	0.767	0.16
Orthophosphate as P (mg/L)	33	0.03	0.005	0.108	0.02
Total phosphorus as P (mg/L)	30	0.11	0.026	0.191	0.05
Total hardness (mg/L)	15	18.08	9	34	7.79
Chloride (mg/L)	33	19.71	7.38	55.36	10.52
Sulfate (mg/L)	33	17.01	3.33	122	28.06
Total dissolved solids (mg/L)	30	117.48	52	323	58.09
Total suspended solids (mg/L)	29	3.43	<1.0	8.5	2.43
Turbidity (NTU)	31	8.69	2.1	34	5.70

RED0027
BODCAW CR NEAR LEWISVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	34	6.26	3.5	9.28	1.38
BOD_5 (mg/L)	34	1.75	0.56	4.61	1.00
pH (standard units)	35	6.27	5.23	7.32	0.43
Total Organic Carbon (mg/L)	34	14.03	6.9	21.02	3.33
Ammonia as N (mg/L)	37	0.05	<0.005	0.28	0.06
NO_2+NO_3 as N (mg/L)	37	0.07	<0.01	0.394	0.08
Orthophosphate as P (mg/L)	37	0.03	<0.005	0.08	0.02
Total phosphorus as P (mg/L)	34	0.13	0.023	0.317	0.06
Total hardness (mg/L)	18	18.56	9	33.1	6.89
Chloride (mg/L)	37	22.38	8.02	98	16.72
Sulfate (mg/L)	37	4.28	1.9	12.04	2.18
Total dissolved solids (mg/L)	34	106.49	50	258	37.32
Total suspended solids (mg/L)	33	4.98	<1.0	16.5	4.06
Turbidity (NTU)	34	11.09	3.3	53	9.89

SEGMENT 1B - RED RIVER, SULPHUR RIVER, AND MCKINNEY BAYOU (RED RIVER BASIN)

Segment 1B is located in the southwest corner of the State. It includes all of Miller County and parts of Little River, Hempstead, and Lafayette Counties. Major streams within this segment are the Red River from its point of entrance into Arkansas to the Louisiana state line, the Sulphur River and McKinney Bayou.

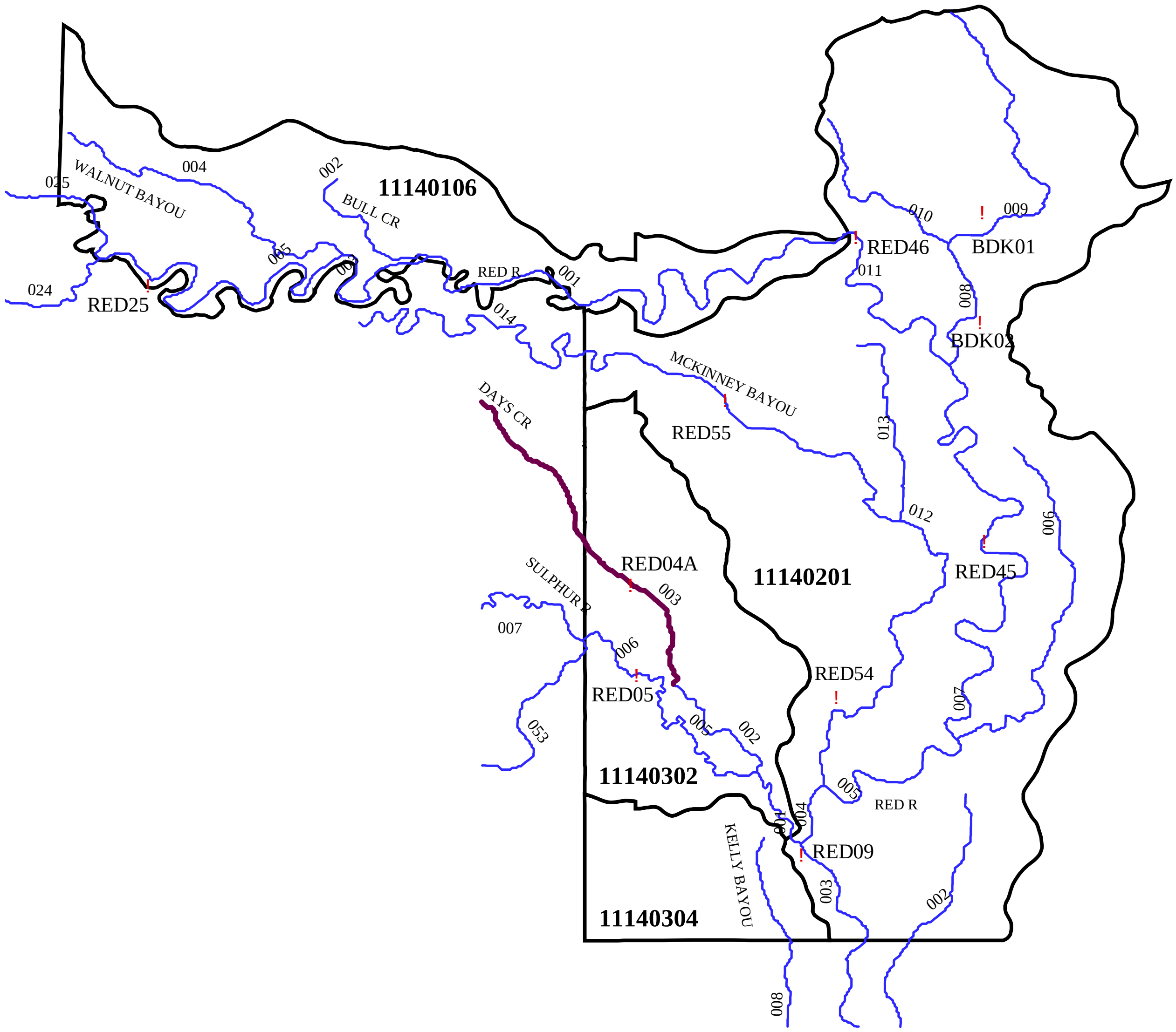
SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. Monitored data were used as the basis of assessing 142.9 miles of stream within the segment. An additional 202 miles of stream were evaluated bringing the total miles of assessed streams within this segment to 344.9. Monitored data on the Red River near its entrance into Arkansas clearly indicate that the total dissolved solids criteria protective of the public water supply use is not being maintained. However, the drinking water designated use has been removed from the Red River from its point of entrance into the state to its confluence with the Little River.

Data trends for Days Creek reveal major water quality improvements in the creek as a result of the City of Texarkana's improvement of its WWTF. Unfortunately, the creek is not meeting the drinking water designated use due to high nitrate levels.

The drinking water designated use has been removed from Bois d' Arc Creek due to the high mineral content in its upper reaches.

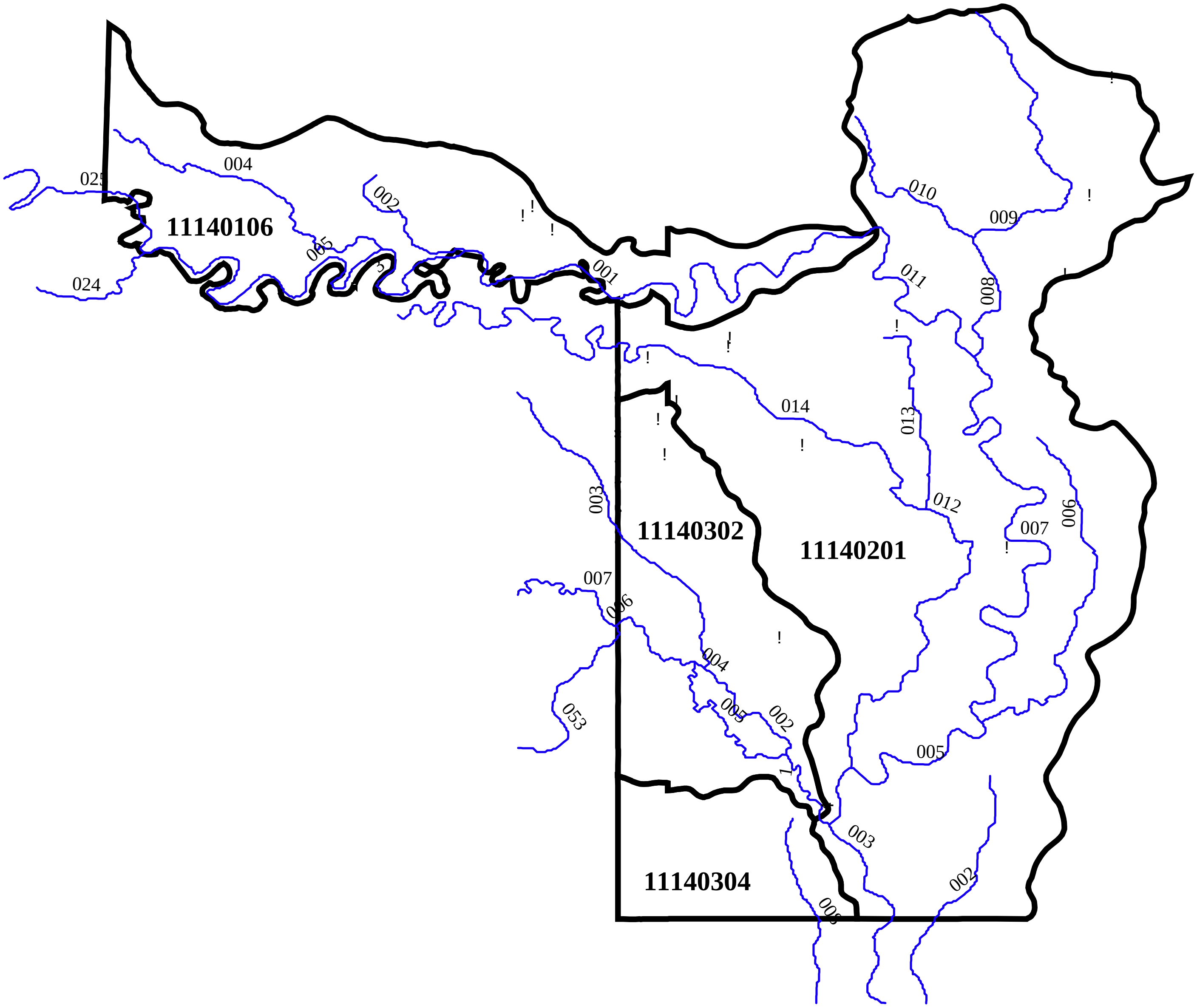
Planning Segment 1B - Monitoring Stations



Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-1B																			
Red River	11140201	-011	15.2	RED46	M	S	S	S	S	S	S					1	FISH CONSUMPTION	344.9	0
Red River	11140201	-007	40.1	RED45	M	S	S	S	S	S	S					1	AQUATIC LIFE	344.9	0
Red River	11140201	-005	12		E	S	S	S	S	S	S					1	SWIMMING	344.9	0
Red River	11140201	-004	4		E	S	S	S	S	S	S					1	SECONDARY CONTACT	344.9	0
Red River	11140201	-003	15.5	RED09	M	S	S	S	S	S	S					1	DRINKING SUPPLY	226.7	11
Posten Bayou	11140201	-002	18.7		E	S	S	S	S	S	S					1	AGRI & INDUSTRY	344.9	0
Maniece Bayou	11140201	-006	24.2		E	S	S	S	S	S	S					1			
Bois D'Arc Cr.	11140201	-008	8.9	BDK02	M	S	S	S	S	R	S					1			
Bois D'Arc Cr.	11140201	-009	20.4	BDK01	M	S	S	S	S	R	S					1			
Bridge Creek	11140201	-010	12.1		E	S	S	S	S	S	S					1			
McKinney Bayou	11140201	-012	23.1	RED54	U											3			
McKinney Bayou	11140201	-014	21.6	RED55	U											3			
Red Chute Creek	11140201	-013	12.5		E	S	S	S	S	S	S					1			
Sulphur River	11140302	-001	6.3		E	S	S	S	S	S	S					1			
Sulphur River	11140302	-002	8.5		E	S	S	S	S	S	S					1			
Sulphur River	11140302	-004	0.7		E	S	S	S	S	S	S					1			
Sulphur River	11140302	-006	6.5	RED05	M	S	S	S	S	S	S					1			
Sulphur River	11140302	-008	0.8		E	S	S	S	S	S	S					1			
Days Creek	11140302	-003	11	RED04A	M	S	S	S	S	N	S	MP		NU		1			
Mercer Bayou	11140302	-005	12.8		E	S	S	S	S	S	S					1			
Red River	11140106	-001	34.8		E	S	S	S	S	R	S					1			
Red River	11140106	-003	9.8		E	S	S	S	S	R	S					1			
Red River	11140106	-005	25.3	RED25	M	S	S	S	S	R	S					1			
Red River	11140106	-025	8		E	S	S	S	S	R	S					1			
Bull Creek	11140106	-002	9.3		E	S	S	S	S	S	S					1			
Walnut Bayou	11140106	-004	20.3		E	S	S	S	S	S	S					1			
Kelley Bayou	11140304	-006	7.2		E	S	S	S	S	S	S					1			
TOTAL MILES	389.6																		
MILES UNASSESSED	44.7																		
MILES EVALUATED	202																		
MILES MONITORED	142.9																		

Planning Segment 1B - NPDES Permitted Facilities



Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C.	Planning Segment
AR0002968	DOMTAR A W CORP-ASHDOWN OPERAT	RED RV	11140106	1B
AR0021326	HUDSON FOODS INC-HOPE	DIT,CANEY CK,BOIS D'ARC CK	11140201	1B
AR0038466	HOPE, CITY OF-BOIS D'ARC WWTP	BLACK BR,BOIS D'ARC CK,RED RV	11140201	1B
AR0038822	COOPER TIRE & RUBBER CO-TEXARK	DIT,NIX CK,DAYS CK	11140302	1B
AR0041181	GARLAND, CITY OF	RED RV	11140201	1B
AR0041548	FOUKE, CITY OF	TRIB,CHICKEN CK,BOGGY CK	11140302	1B
AR0042897	TEXARKANA RV PARK	BOIS D'ARC TRIB,FINN BU	11140201	1B
AR0042951	ASHDOWN, CITY OF	G.P. CANAL,RED RV	11140106	1B
AR0043346	AR HWY DEPT-RED RV TOURIST CTR	RED RV	11140106	1B
AR0044709	FLYING J TRAVEL PLAZA #5021	TRIB,BOIS D'ARC BU,RED RV	11140201	1B
AR0046345	SPRING HILL SCHOOL	TRIB,FLAT BOIS D'ARC C,LT BODCAW C	11140201	1B
AR0046671	CELOTEX CORP-TEXARKANA PLANT	TRIB;OAK,NIX,DAYS CKS	11140302	1B
AR0046795	ELECTRIC COWBOY OF TEXARKANA	TRIB,MCKINNEY BU	11140201	1B
AR0048348	TEXARKANA TIMBER CO	TRIB,MILL CK,MCKINNEY BU,RED RV	11140201	1B
AR0048356	RVAF - TEXARKANA	RED RV	11140201	1B
AR0048411	DOMTAR A W CORP-WOODLANDS WET	TRIB,HUDSON CK,LITTLE RV	11140106	1B
AR0048691	TEXARKANA, CITY OF - NORTH WWTP	MCKINNEY BU, RED RV	11140302	1B

RED0004A
DAYS CREEK SE OF TEXARKANA AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	34	7.45	4.08	9.3	1.07
BOD_5 (mg/L)	34	1.46	0.49	5.74	1.17
pH (standard units)	34	7.05	6.18	8.1	0.45
Total Organic Carbon (mg/L)	33	8.60	5.983	18.08	2.31
Ammonia as N (mg/L)	36	0.10	<0.005	0.26	0.06
NO_2+NO_3 as N (mg/L)	36	5.23	0.68	12.939	3.82
Orthophosphate as P (mg/L)	36	0.08	0.026	0.187	0.04
Total phosphorus as P (mg/L)	34	0.15	0.045	0.31	0.06
Total hardness (mg/L)	16	59.12	22	141	28.42
Chloride (mg/L)	36	37.47	8.08	82.78	19.69
Sulfate (mg/L)	36	27.72	8.76	54.2	13.76
Total dissolved solids (mg/L)	33	204.23	99.5	338	72.84
Total suspended solids (mg/L)	32	12.21	<1.0	209	36.60
Turbidity (NTU)	33	16.44	1.9	130	22.11

RED0005
SULPHUR RIVER S OF TEXARKANA AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	7.74	4.14	10.42	1.44
BOD_5 (mg/L)	36	2.64	0.57	4.87	1.29
pH (standard units)	37	7.28	6.5	8.58	0.47
Total Organic Carbon (mg/L)	36	10.78	6.744	24.5	3.57
Ammonia as N (mg/L)	39	0.09	<0.005	0.57	0.11
NO_2+NO_3 as N (mg/L)	39	0.12	0.014	0.277	0.07
Orthophosphate as P (mg/L)	39	0.04	0.008	0.099	0.02
Total phosphorus as P (mg/L)	36	0.13	0.01	0.243	0.05
Total hardness (mg/L)	18	67.27	42	96	16.20
Chloride (mg/L)	39	15.87	3.62	40.3	10.98
Sulfate (mg/L)	39	25.13	7.51	70.5	17.58
Total dissolved solids (mg/L)	36	172.94	96	348	69.95
Total suspended solids (mg/L)	35	36.55	2.2	106.5	23.55
Turbidity (NTU)	36	27.81	5.7	78	14.70

RED0009
RED RIVER NEAR DODDRIDGE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	8.08	4.49	11.58	1.43
BOD_5 (mg/L)	36	2.41	0.66	4.53	1.17
pH (standard units)	37	7.37	6.22	8.35	0.50
Total Organic Carbon (mg/L)	36	9.10	5.62	24.48	3.45
Ammonia as N (mg/L)	39	0.04	<0.005	0.24	0.05
NO_2+NO_3 as N (mg/L)	39	0.17	0.012	0.371	0.09
Orthophosphate as P (mg/L)	39	0.03	<0.005	0.12	0.03
Total phosphorus as P (mg/L)	35	0.13	0.024	0.224	0.04
Total hardness (mg/L)	18	147.17	50	333	100.27
Chloride (mg/L)	39	71.29	3.91	258	68.64
Sulfate (mg/L)	39	79.52	8.45	258	68.44
Total dissolved solids (mg/L)	36	368.74	104	933	246.30
Total suspended solids (mg/L)	35	67.14	21	218	44.60
Turbidity (NTU)	36	44.25	16	120	25.15

RED0025
RED RIVER S OF FORMAN AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	35	8.41	5.76	11.53	1.20
BOD_5 (mg/L)	35	2.38	0.76	5.32	1.21
pH (standard units)	37	7.52	5.92	8.5	0.63
Total Organic Carbon (mg/L)	35	7.26	4.53	16.15	2.29
Ammonia as N (mg/L)	38	0.02	<0.005	0.128	0.03
NO_2+NO_3 as N (mg/L)	38	0.14	<0.01	0.552	0.15
Orthophosphate as P (mg/L)	38	0.02	<0.005	0.1	0.02
Total phosphorus as P (mg/L)	35	0.11	0.032	0.201	0.04
Total hardness (mg/L)	18	180.24	52	334	106.64
Chloride (mg/L)	36	102.27	9.19	358	78.98
Sulfate (mg/L)	37	112.72	13	383	80.66
Total dissolved solids (mg/L)	35	478.96	104	1317	285.71
Total suspended solids (mg/L)	34	63.47	12	230	47.32
Turbidity (NTU)	35	41.93	8.2	150	30.25

RED0045
RED RIVER AT HWY 82 BRIDGE NR. GARLAND AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	8.36	6.89	10.78	0.93
BOD_5 (mg/L)	36	2.33	0.79	5.22	1.20
pH (standard units)	37	7.37	5.92	8.4	0.62
Total Organic Carbon (mg/L)	36	7.85	4.89	19.84	2.60
Ammonia as N (mg/L)	39	0.02	<0.005	0.12	0.03
NO_2+NO_3 as N (mg/L)	39	0.14	<0.01	0.5	0.13
Orthophosphate as P (mg/L)	39	0.03	<0.005	0.096	0.02
Total phosphorus as P (mg/L)	35	0.13	0.01	0.823	0.13
Total hardness (mg/L)	1	151.00	151	151	
Chloride (mg/L)	39	91.14	5.06	273	70.51
Sulfate (mg/L)	39	99.82	10.5	298	73.38
Total dissolved solids (mg/L)	36	430.72	104	1078	260.71
Total suspended solids (mg/L)	35	91.71	14	1305	217.28
Turbidity (NTU)	36	49.35	10	400	67.16

RED0046
RED RIVER AT FULTON AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	35	8.04	5.62	10.25	1.19
BOD_5 (mg/L)	35	2.24	0.8	5.28	1.15
pH (standard units)	36	7.45	6.26	9.22	0.65
Total Organic Carbon (mg/L)	35	7.61	4.995	21.82	2.88
Ammonia as N (mg/L)	38	0.02	<0.005	0.128	0.03
NO_2+NO_3 as N (mg/L)	38	0.15	<0.01	0.549	0.14
Orthophosphate as P (mg/L)	38	0.03	<0.005	0.11	0.02
Total phosphorus as P (mg/L)	35	0.11	0.03	0.219	0.04
Total hardness (mg/L)	1	149.00	149	149	
Chloride (mg/L)	36	95.60	9.45	324	76.87
Sulfate (mg/L)	37	107.11	9.47	356	80.09
Total dissolved solids (mg/L)	35	450.07	81.5	1217	284.73
Total suspended solids (mg/L)	34	55.03	14.5	236	42.31
Turbidity (NTU)	35	41.21	4.2	150	29.52

SEGMENT 1C - LITTLE RIVER AND TRIBUTARIES
(RED RIVER BASIN)

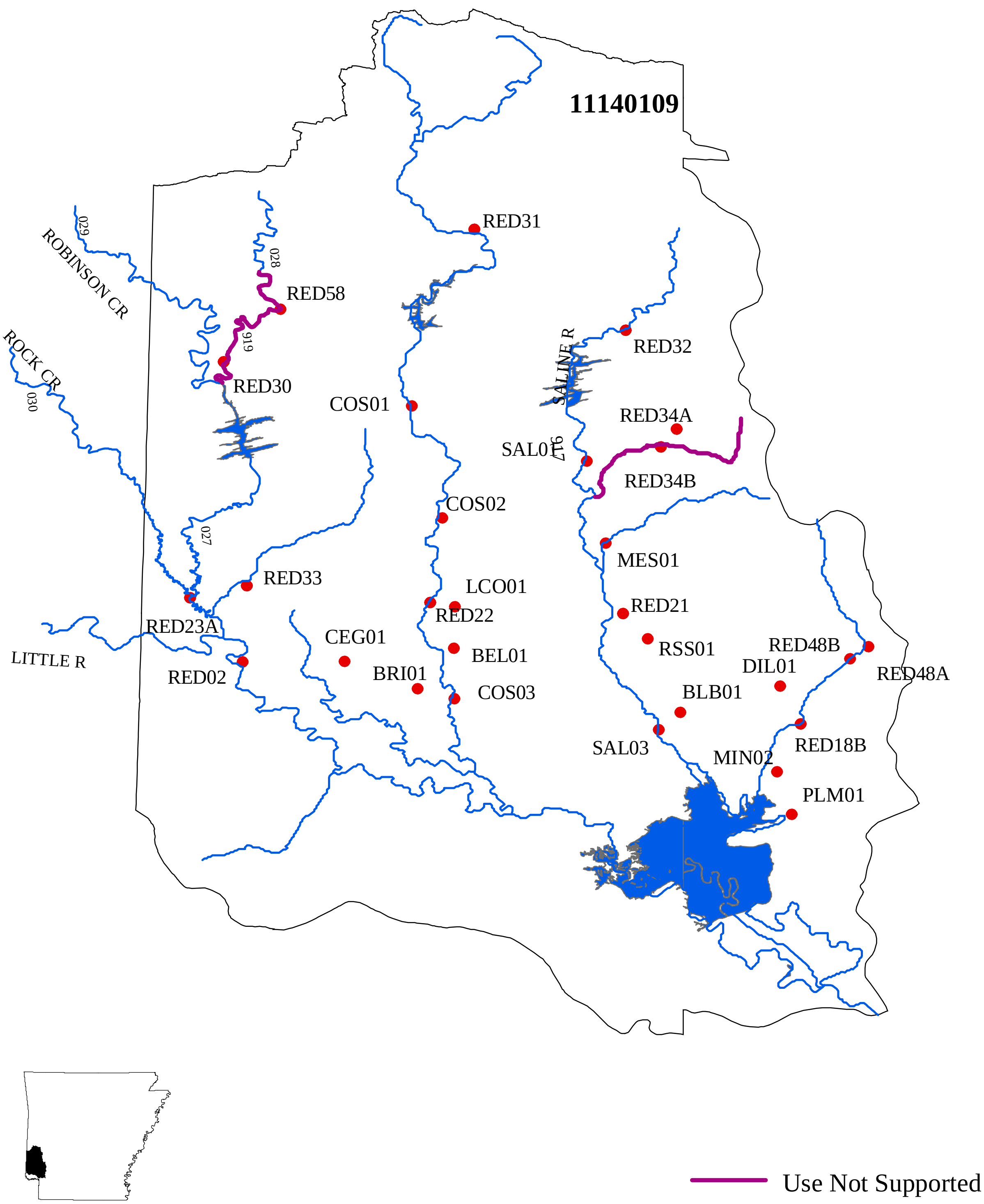
Segment 1C is located in southwest Arkansas north of Texarkana and includes all of Sevier County and parts of Polk, Howard, Hempstead and Little River counties. This includes the entire reach of the Little River in Arkansas from its point of entrance into the State to its confluence with the Red River. The major tributaries include Rolling Fork, Cossatot River, Saline River and Mine Creek. The major reservoirs located in this segment include DeQueen, Gillham and Dierks Reservoirs, all of which drain into Millwood Reservoir.

SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation, public, industrial and agricultural water supplies and contains ecologically sensitive waterbodies. Overall water quality is fair in the basin with the exception of several long-term problem areas. Holly Creek below Dierks is impacted by pathogen contamination originating from the city WWTF and/or Weyerhaeuser, Inc. discharges. Additionally, upstream from these discharges very high turbidity values have occurred on rare occasions. The source is unknown, but it appears to be from a major storm event flow. Bear Creek has shown major improvements over the last several years, but is still impacted by discharges from the City of DeQueen. The concern is elevated nutrients. Similarly, Mine Creek has elevated nutrients discharged from the Tyson, Inc., plant at Nashville and the City of Nashville's discharge.

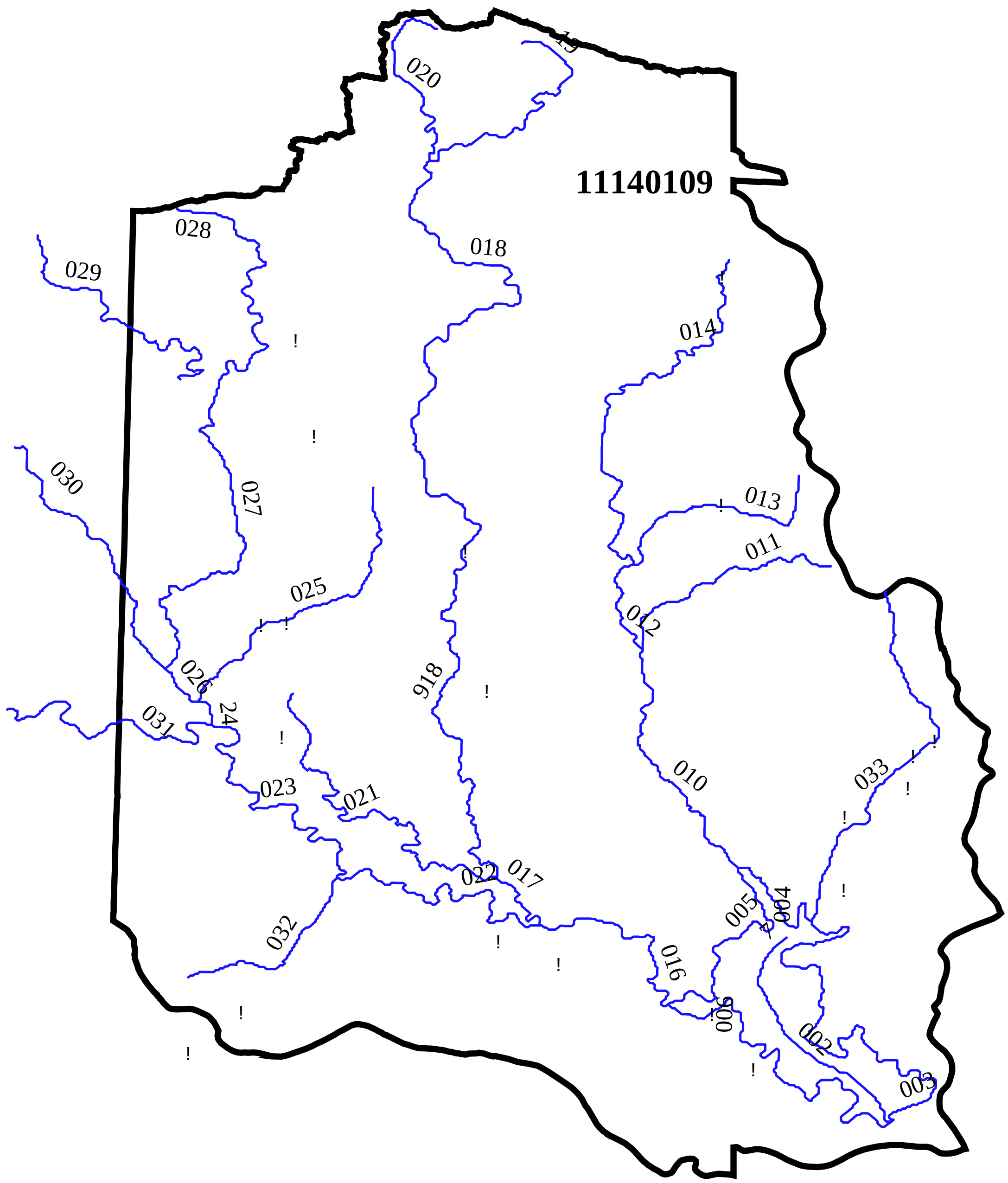
The Rolling Fork River above DeQueen Reservoir has significantly elevated nutrient concentrations (Figure A-1C-1).

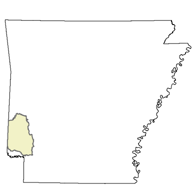
Planning Segment 1C - Monitoring Stations



STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-1C																			
Saline River	11140109	-001	4.0		U											3	FISH CONSUMPTION	330.9	0
Saline River	11140109	-002	10.5		U											3	AQUATIC LIFE	318.1	12.8
Saline River	11140109	-007	3.0		U											3	PRIMARY CONTACT	318.2	12.7
Saline River	11140109	-009	4.3		U											3	SECONDARY CONTACT	330.9	0
Saline River	11140109	-010	15.2	RED21	M	S	S	S	S	S	S					1	DRINKING SUPPLY	330.9	0
Saline River	11140109	-012	6.1		E	S	S	S	S	S	S					1	AGRI & INDUSTRY	330.9	0
Messer Creek	11140109	-011	12.6		E	S	S	S	S	S	S					1			
Holly Creek	11140109	-013	12.7	RED34A&B	M	S	S	N	S	S	S	MP	IP	PA		5			
Saline River	11140109	-014	15.3	RED32	M	S	S	S	S	S	S					1			
Saline River	11140109	-917	10.0		U											3			
Little River	11140109	-015	4.2		U											3			
Little River	11140109	-016	11.7		E	S	S	S	S	S	S					1			
Cossatot R.	11140109	-017	4.6		E	S	S	S	S	S	S					1			
Cossatot R.	11140109	-018	19.0	RED31	M	S	S	S	S	S	S					1			
Cossatot R.	11140109	-918	37.2	RED22	M	S	S	S	S	S	S					1			
Cossatot R.	11140109	-019	14.2		E	S	S	S	S	S	S					1			
Bushy Creek	11140109	-020	11.6		E	S	S	S	S	S	S					1			
Pond Creek	11140109	-021	23.5		E	S	S	S	S	S	S					1			
Little River	11140109	-022	15.8		E	S	S	S	S	S	S					1			
Little River	11140109	-023	17.8	RED02	M	S	S	S	S	S	S					1			
Rolling Fork	11140109	-024	1.7		E	S	S	S	S	S	S					1			
Bear Creek	11140109	-025	17.3	RED33	M	S	S	S	S	S	S					1			
Rolling Fork	11140109	-026	2.7	RED23A	M	S	S	S	S	S	S					1			
Rolling Fork	11140109	-027	15.1		E	S	S	S	S	S	S					1			
Rolling Fork	11140109	-919	12.8	RED30&58	M	S	N	S	S	S	S	IP		NU		5			
Rolling Fork	11140109	-028	8.3		M	S	S	S	S	S	S					1			
Robinson Creek	11140109	-029	25.6		M	S	S	S	S	S	S					1			
Rock Creek	11140109	-030	10.0		U											1			
Little River	11140109	-031	8.0		E	S	S	S	S	S	S					1			
Flat Creek	11140109	-032	10.7		U											3			
Mine Creek	11140109	-033	22.1	RED48B+	M	S	S	S	S	S	S					1			
TOTAL MILES	387.6																		
MILES UNASSESSED	56.7																		
MILES EVALUATED	124.9																		
MILES MONITORED	206																		

Planning Segment 1C - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C.	Planning Segment
AR0002909	WEYERHAEUSER CO-DEQUEEN WOOD T	BEAR CK,ROLLING FORK, LITTLE RED RV	11140109	1C
AR0002917	WEYERHAEUSER CO-DIERKS	HOLLY CK	11140109	1C
AR0003018	TYSON FOODS INC-GRANNIS	TRIB-ROLLING FORK RV,1C-RED RV BAS	11140109	1C
AR0021261	MINERAL SPRINGS, CITY OF	MINE CK,LITTLE RV	11140109	1C
AR0021377	LOCKESBURG, CITY OF	LTL COSSATOT RV TRIB	11140109	1C
AR0021709	DIERKS, CITY OF	HOLLY CK	11140109	1C
AR0021733	DEQUEEN, CITY OF	BIG BEAR CK	11140109	1C
AR0021776	NASHVILLE, CITY OF	MINE CK,MILLWOOD LK,LITTLE RV,RED R	11140109	1C
AR0023817	FOREMAN, CITY OF	E FLAT CK	11140109	1C
AR0035785	HORATIO, CITY OF	TRIB,POND CK,COSSATOT RV, LITTLE RV	11140109	1C
AR0037079	AR PARKS & TOURISM-MILLWOOD	DIT,BUSTER CK	11140109	1C
AR0040886	WILTON, CITY OF	LICK CK	11140109	1C
AR0041246	MILLWOOD WATER CORP	TRIB (MILLWOOD LK), LITTLE RV, RED RV	11140109	1C
AR0041734	TYSON FOODS INC-NASHVILLE	MINE CK, MILLWOOD LK	11140109	1C
AR0041769	DALTON MHP	TRIB, MINE CK, MILLWOOD LK	11140109	1C
AR0042846	ASH GROVE CEMENT CO	FRENCH CK,WALNUT BU,RED RV	11140109	1C
AR0045144	TOLLETTE, CITY OF	MINE CK,LITTLE RV	11140109	1C
AR0047996	GILLHAM REGIONAL WW DIST	BELLAH CK, ROLLING FORK, LK DEQUEEN	11140109	1C
AR0048593	BRUCE KENNEDY SAND & GRAVEL	MILL SLU BR,COSSATOT RV	11140109	1C
AR0049034	SEVIER COUNTY AGGREGATES, INC	SLU, HAIL CK, COSSATOT RV	11140109	1C
AR0049379	HANSON AGGREGATES - LITTLE RIVER	LITTLE RV TRIB	11140109	1C

RED0002
LITTLE RIVER NEAR HORATIO AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	8.47	4.7	12.43	1.98
BOD_5 (mg/L)	38	1.26	0	10.9	1.68
pH (standard units)	36	6.78	6.17	7.9	0.43
Total Organic Carbon (mg/L)	38	4.55	2.629	9	1.56
Ammonia as N (mg/L)	37	0.03	<0.005	0.121	0.03
NO_2+NO_3 as N (mg/L)	37	0.28	0.07	0.685	0.12
Orthophosphate as P (mg/L)	37	0.02	<0.005	0.07	0.02
Total phosphorus as P (mg/L)	36	0.06	0.01	0.14	0.04
Total hardness (mg/L)	19	16.54	10	26	4.35
Chloride (mg/L)	39	7.20	2.52	25.3	4.92
Sulfate (mg/L)	39	4.75	3.5	6.69	0.86
Total dissolved solids (mg/L)	38	51.82	30.5	79.5	11.66
Total suspended solids (mg/L)	37	13.73	<1.0	127	20.92
Turbidity (NTU)	38	13.52	1.8	57	11.78

RED0018B
MINE CREEK DOWNSTREAM OF NASHVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	7.74	3.57	12.14	2.23
BOD_5 (mg/L)	36	1.47	0	6.05	1.21
pH (standard units)	34	6.83	6.06	8.02	0.41
Total Organic Carbon (mg/L)	36	5.35	2.74	10.6	2.01
Ammonia as N (mg/L)	35	0.09	<0.005	0.281	0.07
NO_2+NO_3 as N (mg/L)	35	3.95	0.182	20.74	4.56
Orthophosphate as P (mg/L)	35	0.87	0.042	5.609	1.19
Total phosphorus as P (mg/L)	34	0.90	0.09	3.23	0.94
Total hardness (mg/L)	18	25.98	15	43	8.68
Chloride (mg/L)	37	21.11	3.48	81.5	21.60
Sulfate (mg/L)	37	30.60	6.46	111.04	30.77
Total dissolved solids (mg/L)	36	169.00	56.5	490	137.77
Total suspended solids (mg/L)	35	10.67	<1.0	56.5	10.05
Turbidity (NTU)	36	17.57	4.1	164	26.47

RED0021
SALINE RIVER NEAR LOCKESBURG AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	7.64	3.35	12.93	2.50
BOD_5 (mg/L)	39	1.34	0	5.04	1.10
pH (standard units)	37	6.65	4.84	8.3	0.61
Total Organic Carbon (mg/L)	39	6.35	3.225	14.2	2.82
Ammonia as N (mg/L)	38	0.05	<0.005	0.22	0.05
NO_2+NO_3 as N (mg/L)	38	0.43	0.054	2.47	0.44
Orthophosphate as P (mg/L)	38	0.04	<0.005	0.197	0.03
Total phosphorus as P (mg/L)	37	0.09	0.01	0.411	0.08
Total hardness (mg/L)	20	17.93	8	27	5.06
Chloride (mg/L)	40	2.85	1.71	4.01	0.58
Sulfate (mg/L)	40	4.80	2.91	12.3	2.10
Total dissolved solids (mg/L)	39	56.17	37	100.5	15.92
Total suspended solids (mg/L)	38	14.59	1	171.5	31.01
Turbidity (NTU)	39	19.77	3.4	150	26.73

RED0022
COSSATOT RIVER W OF LOCKESBURG AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	8.33	4.97	12.87	2.16
BOD_5 (mg/L)	38	1.03	0	2.3	0.55
pH (standard units)	36	6.70	6.15	7.87	0.43
Total Organic Carbon (mg/L)	38	4.37	2.558	11	1.82
Ammonia as N (mg/L)	37	0.05	<0.005	0.693	0.11
NO_2+NO_3 as N (mg/L)	37	0.27	0.016	0.776	0.21
Orthophosphate as P (mg/L)	37	0.02	<0.005	0.072	0.01
Total phosphorus as P (mg/L)	36	0.06	0.01	0.183	0.04
Total hardness (mg/L)	19	12.76	9	19	2.79
Chloride (mg/L)	39	2.31	1.59	3.81	0.43
Sulfate (mg/L)	39	3.74	2.37	5.35	0.68
Total dissolved solids (mg/L)	38	42.11	28	65	8.18
Total suspended solids (mg/L)	37	9.38	1	41	9.77
Turbidity (NTU)	38	12.26	2.6	62	11.07

RED0023A
ROLLING FORK RIVER @ COUNTY ROAD BRIDGE 1 1/2 MI N. HWY 24

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	8.04	4.04	12.86	2.07
BOD_5 (mg/L)	38	0.98	0	3.09	0.64
pH (standard units)	36	6.62	4.34	7.7	0.55
Total Organic Carbon (mg/L)	38	4.94	3.15	11	1.99
Ammonia as N (mg/L)	37	0.03	<0.005	0.122	0.03
NO_2+NO_3 as N (mg/L)	37	0.30	0.027	1.052	0.22
Orthophosphate as P (mg/L)	37	0.03	<0.005	0.088	0.02
Total phosphorus as P (mg/L)	36	0.08	0.01	0.314	0.06
Total hardness (mg/L)	19	12.88	7	22	3.25
Chloride (mg/L)	39	4.76	2.18	12.18	2.24
Sulfate (mg/L)	39	3.73	2.49	4.99	0.58
Total dissolved solids (mg/L)	38	46.24	33.5	66	8.24
Total suspended solids (mg/L)	37	8.96	<1.0	57.8	12.40
Turbidity (NTU)	38	12.72	1.4	88	17.38

RED0030
ROLLING FORK RIVER W OF GILLHAM AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	35	10.52	4.7	14.66	2.18
BOD_5 (mg/L)	35	1.65	0.23	9.76	2.02
pH (standard units)	35	7.70	6.37	9.94	1.01
Total Organic Carbon (mg/L)	36	4.77	1.8	13.5	2.83
Ammonia as N (mg/L)	37	0.01	<0.005	0.056	0.01
NO_2+NO_3 as N (mg/L)	37	7.26	0.014	43.7	14.04
Orthophosphate as P (mg/L)	37	2.35	0.005	9.294	3.07
Total phosphorus as P (mg/L)	36	2.45	0.01	11.53	3.20
Total hardness (mg/L)	19	22.25	<1.0	100	21.30
Chloride (mg/L)	39	15.69	1.82	54.2	17.42
Sulfate (mg/L)	39	9.95	3.28	28.85	7.50
Total dissolved solids (mg/L)	37	142.14	26	673	164.32
Total suspended solids (mg/L)	37	4.72	<1.0	36	6.54
Turbidity (NTU)	37	5.56	1.7	17	3.87

RED0031
COSSATOT RIVER @ HWY 4 E OF WICKES

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	9.33	5.07	13.52	2.51
BOD_5 (mg/L)	36	0.36	0	1.21	0.27
pH (standard units)	36	6.97	6.24	7.86	0.41
Total Organic Carbon (mg/L)	37	1.98	1.099	5.2	0.78
Ammonia as N (mg/L)	37	0.01	<0.005	0.029	0.01
NO_2+NO_3 as N (mg/L)	37	0.07	<0.01	0.443	0.09
Orthophosphate as P (mg/L)	37	0.01	<0.005	0.058	0.01
Total phosphorus as P (mg/L)	36	0.02	0.01	0.074	0.02
Total hardness (mg/L)	19	18.38	7	29	8.05
Chloride (mg/L)	39	1.86	0.26	3.29	0.47
Sulfate (mg/L)	39	4.83	0.35	8.17	1.44
Total dissolved solids (mg/L)	38	38.45	23.5	61	9.02
Total suspended solids (mg/L)	38	1.07	<1.0	4	0.93
Turbidity (NTU)	38	3.04	<1.0	12	2.85

RED0032
SALINE RIVER @ HWY 4 N OF DIERKS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	8.16	6.1	11.3	1.11
BOD_5 (mg/L)	37	0.95	0.16	5.7	0.96
pH (standard units)	38	7.05	6.05	8	0.33
Total Organic Carbon (mg/L)	34	3.37	1.8	9.8	1.43
Ammonia as N (mg/L)	39	0.03	<0.005	0.271	0.04
NO_2+NO_3 as N (mg/L)	39	0.61	<0.01	2.192	0.58
Orthophosphate as P (mg/L)	39	0.02	<0.005	0.082	0.02
Total phosphorus as P (mg/L)	37	0.05	0.01	0.213	0.04
Total hardness (mg/L)	18	15.39	10	27	4.69
Chloride (mg/L)	39	2.87	1.76	4.19	0.54
Sulfate (mg/L)	38	3.02	1.4	4.21	0.73
Total dissolved solids (mg/L)	39	43.33	32	58	7.03
Total suspended solids (mg/L)	38	2.82	<1.0	11.5	2.61
Turbidity (NTU)	38	6.46	1.1	61	9.49

RED0033
BEAR CR DOWNSTREAM OF WEYERHAEUSER NPDES DISCHARGES,PROCESS CITY AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	12	7.02	2.9	11.69	2.61
BOD_5 (mg/L)	12	1.86	0.44	5.86	1.62
pH (standard units)	12	6.85	6.12	7.57	0.49
Total Organic Carbon (mg/L)	12	6.27	2.2	7.864	1.51
Ammonia as N (mg/L)	12	0.49	<0.005	4.06	1.14
NO_2+NO_3 as N (mg/L)	12	4.29	0.495	12.93	4.54
Orthophosphate as P (mg/L)	12	0.05	<0.005	0.252	0.07
Total phosphorus as P (mg/L)	10	0.10	0.01	0.275	0.07
Total hardness (mg/L)	6	66.67	17	147	46.38
Chloride (mg/L)	12	28.70	2.74	67.16	23.29
Sulfate (mg/L)	12	34.22	5.49	86.64	26.49
Total dissolved solids (mg/L)	12	188.33	49.5	383.5	120.92
Total suspended solids (mg/L)	12	6.40	1.5	14.3	5.14
Turbidity (NTU)	12	10.90	2.5	22	6.94

RED0034A
HOLLY CREEK UPSTREAM OF DIERKS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	32	7.48	5.3	11.2	1.17
BOD_5 (mg/L)	32	0.84	0.3	2.3	0.49
pH (standard units)	32	7.04	5.98	8.2	0.35
Total Organic Carbon (mg/L)	30	5.39	2.91	14.5	2.44
Ammonia as N (mg/L)	33	0.03	<0.005	0.157	0.03
NO_2+NO_3 as N (mg/L)	33	0.41	0.041	1.289	0.28
Orthophosphate as P (mg/L)	33	0.01	<0.005	0.049	0.01
Total phosphorus as P (mg/L)	32	0.03	0.01	0.112	0.03
Total hardness (mg/L)	15	13.27	8	20	3.49
Chloride (mg/L)	33	2.91	2.08	4.54	0.56
Sulfate (mg/L)	32	4.10	2.59	5.73	0.91
Total dissolved solids (mg/L)	33	47.08	33.5	73.5	8.43
Total suspended solids (mg/L)	32	3.20	<1.0	14.5	2.87
Turbidity (NTU)	32	10.87	2.2	46	8.63

RED0034B
HOLLY CREEK DOWNSTREAM OF DIERKS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	6.87	5.2	10.9	1.02
BOD_5 (mg/L)	37	1.63	0.59	3.93	0.93
pH (standard units)	38	7.01	6.12	7.36	0.24
Total Organic Carbon (mg/L)	34	7.79	3.703	16.7	2.97
Ammonia as N (mg/L)	39	0.17	<0.005	0.999	0.20
NO_2+NO_3 as N (mg/L)	39	0.45	0.028	1.315	0.27
Orthophosphate as P (mg/L)	39	0.08	<0.005	0.32	0.07
Total phosphorus as P (mg/L)	37	0.14	0.01	0.458	0.11
Total hardness (mg/L)	18	27.56	14	53	10.67
Chloride (mg/L)	39	8.33	2.35	41.9	8.01
Sulfate (mg/L)	38	5.24	2.7	12.06	1.92
Total dissolved solids (mg/L)	39	86.35	52	175	32.75
Total suspended solids (mg/L)	38	4.21	1.3	10.5	2.18
Turbidity (NTU)	38	12.77	3.6	84	12.69

RED0048B
MINE CREEK SOUTHEAST OF NASHVILLE (MNC01B)

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	44	6.99	1.15	11.81	2.70
BOD_5 (mg/L)	43	1.68	0	5.84	1.21
pH (standard units)	42	6.99	5.9	9.78	0.73
Total Organic Carbon (mg/L)	44	5.47	2.62	15.45	2.47
Ammonia as N (mg/L)	42	0.14	<0.005	0.908	0.16
NO_2+NO_3 as N (mg/L)	42	5.55	0.181	22.2	6.14
Orthophosphate as P (mg/L)	42	2.05	0.073	9.347	2.31
Total phosphorus as P (mg/L)	41	2.18	0.106	9.999	2.32
Total hardness (mg/L)	25	30.15	14	50	10.66
Chloride (mg/L)	45	27.64	3.17	87.4	24.02
Sulfate (mg/L)	45	36.28	5.44	120	29.86
Total dissolved solids (mg/L)	44	210.97	55.5	640	153.62
Total suspended solids (mg/L)	43	9.24	<1.0	65.3	10.92
Turbidity (NTU)	44	13.34	3	88	15.42

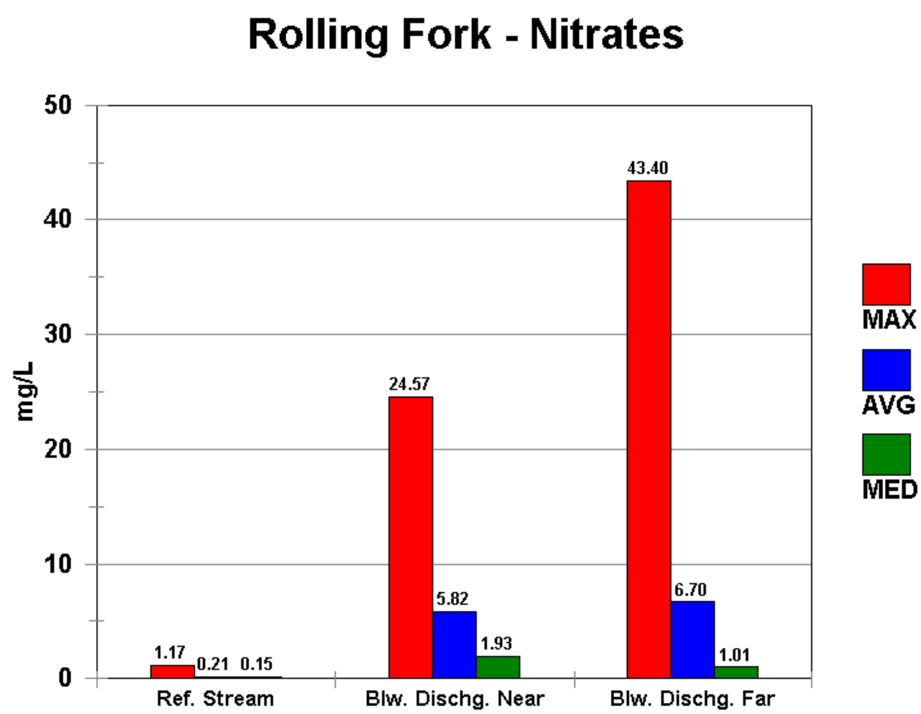
RED0058
ROLLING FORK RIVER WEST OF GRANNIS, ARKANSAS

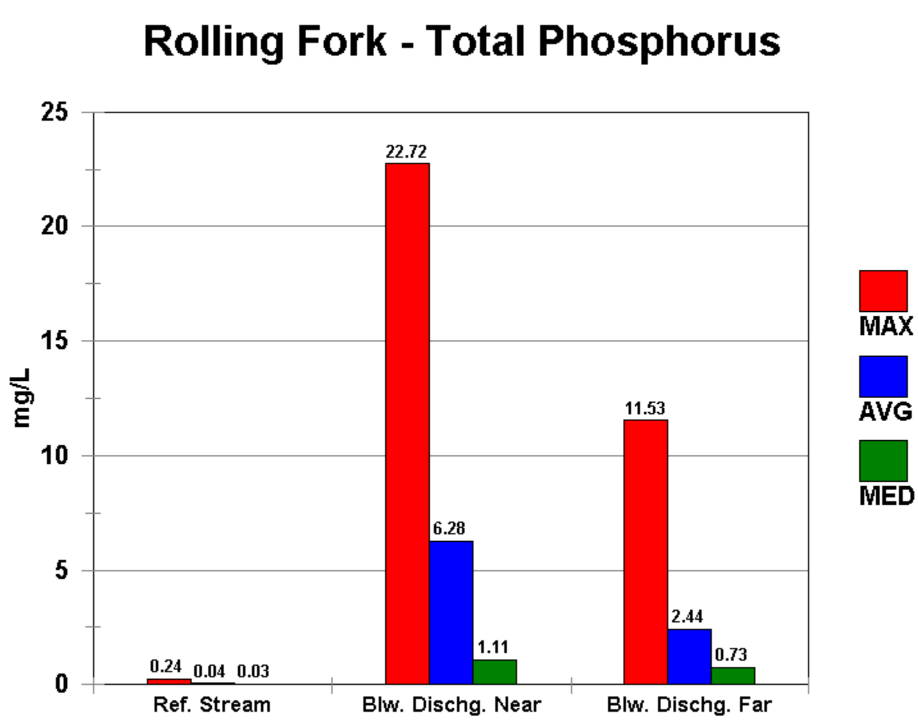
Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	23	10.22	7.78	13.46	1.60
BOD_5 (mg/L)	22	1.06	0.32	6.145	1.22
pH (standard units)	23	7.32	6.22	8.24	0.60
Total Organic Carbon (mg/L)	22	4.32	1.79	8.619	2.10
Ammonia as N (mg/L)	21	0.02	<0.005	0.08	0.02
NO_2+NO_3 as N (mg/L)	22	5.50	0.8	24.57	6.82
Orthophosphate as P (mg/L)	21	5.79	0.126	27.52	7.80
Total phosphorus as P (mg/L)	20	5.78	0.135	22.72	7.73
Total hardness (mg/L)	12	28.59	10	80	22.59
Chloride (mg/L)	23	16.63	2.54	59.6	18.12
Sulfate (mg/L)	23	11.43	3.43	31.2	9.30
Total dissolved solids (mg/L)	22	148.11	37.5	549	136.88
Total suspended solids (mg/L)	22	18.71	<1.0	347.3	73.41
Turbidity (NTU)	22	17.02	1.6	280	58.78

Figure A-1C-1

RED RIVER BASIN

Comparison of Nutrients in the Rolling Fork River to Reference Stream





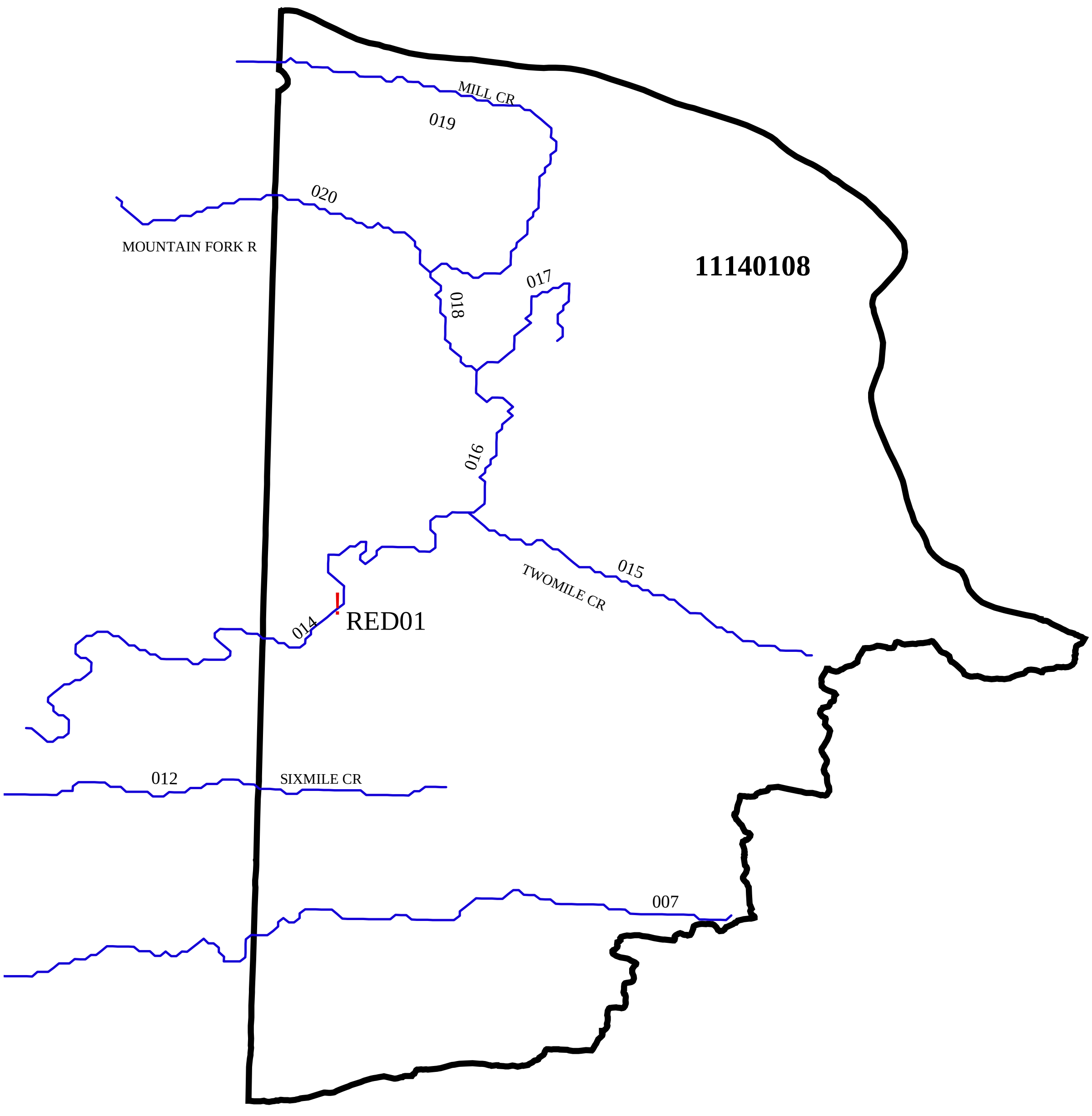
SEGMENT 1D - MOUNTAIN FORK AND TRIBUTARIES (RED RIVER BASIN)

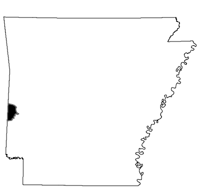
This segment is located on the western edge of Arkansas and covers a portion of Polk County. Basin Segment 1D encompasses a 20-mile reach of the Mountain Fork of Little River from its headwaters to the Arkansas-Oklahoma line.

SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. The Mountain Fork River also is designated as an extraordinary resource and an ecologically sensitive waterbody due to the occurrence of the leopard darter in this basin. Monitored data were used for assessing 11 miles of stream within this segment and an additional 11.3 miles of Mountain Fork Little River was evaluated as meeting designated uses.

Planning Segment 1D - Monitoring Stations

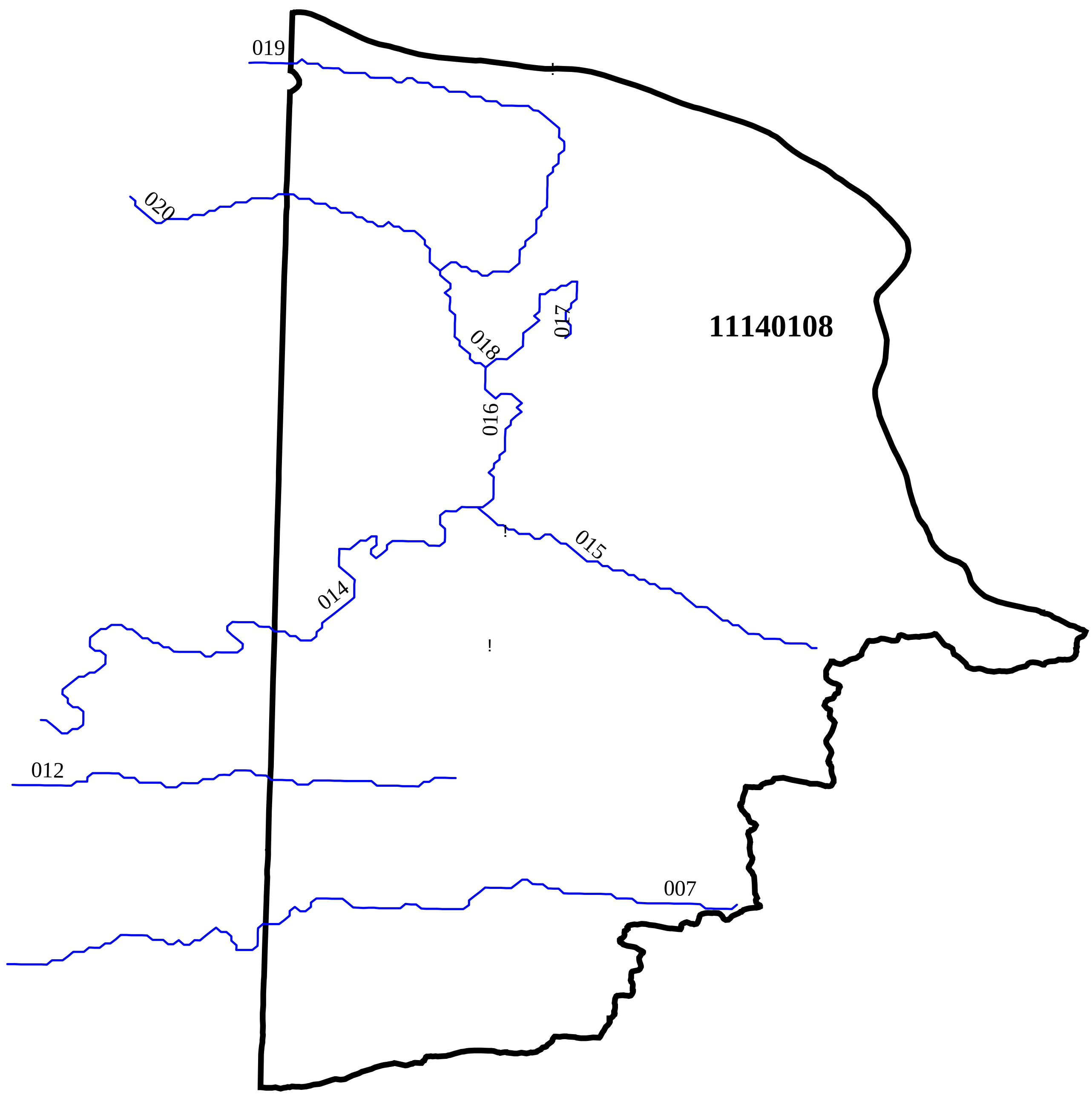




Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-1D																			
Buffalo Creek	11140108	-007	9.5		U											3	FISH CONSUMPTION	22.3	0
Sixmile Creek	11140108	-012	4.1		U											3	AQUATIC LIFE	22.3	0
Mountain Fork	11140108	-014	11	RED01	M	S	S	S	S	S	S					1	PRIMARY CONTACT	22.3	0
Twomile Creek	11140108	-015	8.1		U											3	SECONDARY CONTACT	22.3	0
Mountain Fork	11140108	-016	4.5		E	S	S	S	S	S	S					1	DRINKING SUPPLY	22.3	0
Mountain Fork	11140108	-018	2.8		E	S	S	S	S	S	S					1	AGRI & INDUSTRY	22.3	0
Powell Creek	11140108	-017	4.7		U											3			
Mill Creek	11140108	-019	12.2		U											3			
Mountain Fork	11140108	-020	4		E	S	S	S	S	S	S					1			
TOTAL MILES	60.9																		
MILES UNASSESSED	38.6																		
MILES EVALUATED	11.3																		
MILES MONITORED	11																		

Planning Segment 1D - NPDES Permitted Facilities



Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0035483	HATFIELD, CITY OF	JOSHLING CK, MOUNTAIN FORK RV	11140108	1D
AR0037605	AR PARKS & TOURISM-QUEEN WILHE	MILL CK TRIB,MTN FORK CK	11140108	1D
AR0046787	BOY SCOUTS OF AMERICA-CADDO PIO	2-MI CK,MTN FORK RV	11140108	1D

RED0001
MT FORK NEAR HATFIELD AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	9.52	4.26	14.19	2.02
BOD_5 (mg/L)	36	0.91	0	4.63	0.79
pH (standard units)	36	6.95	6.19	7.81	0.42
Total Organic Carbon (mg/L)	37	3.33	1.88	7.1	1.27
Ammonia as N (mg/L)	36	0.01	<0.005	0.039	0.01
NO_2+NO_3 as N (mg/L)	36	0.22	<0.01	1.173	0.27
Orthophosphate as P (mg/L)	36	0.02	<0.005	0.192	0.03
Total phosphorus as P (mg/L)	36	0.04	0.01	0.189	0.03
Total hardness (mg/L)	19	9.50	7	12	1.32
Chloride (mg/L)	39	2.37	0.26	3.72	0.55
Sulfate (mg/L)	39	3.08	2.14	5.48	0.63
Total dissolved solids (mg/L)	38	35.68	23	60	6.85
Total suspended solids (mg/L)	38	3.91	<1.0	23	5.00
Turbidity (NTU)	38	8.83	1.9	42	8.61

OUACHITA RIVER BASIN

Segment 2A - Boeuf River and Tributaries

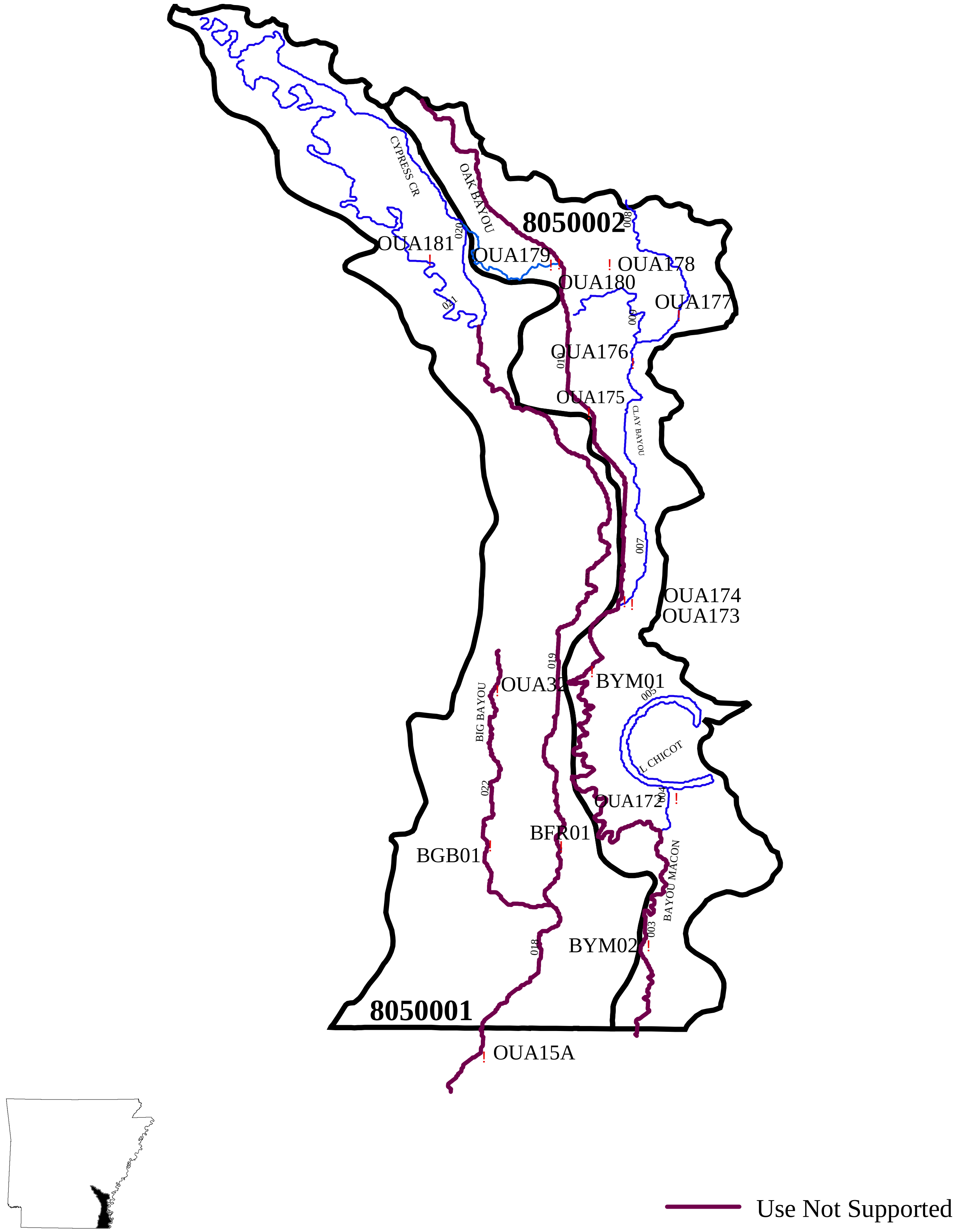
This segment is located in the extreme southeastern corner of Arkansas. It includes most of Chicot and Desha Counties, the northeastern part of Lincoln County, and small areas of Drew, Ashley and Jefferson Counties. Major streams within this segment include the Boeuf River and its tributaries - Macon Bayou, Cypress Creek, Big Bayou, Oakwood Bayou and others. The flows are generally southward into Louisiana.

SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation, and public, industrial and agricultural water supplies. The majority of the waters in this segment have been severely altered by channelization, ditching and rerouting the drainage patterns. Monitored data were used as the basis of assessing 306.1 miles of stream within this segment. Data assessed from those monitored reaches provided some indication that the aquatic life use may be impaired due to frequent and very high turbidity and suspended solids values. Bayou Macon, Big Bayou, Oak Bayou and Boeuf River were assessed as not meeting the aquatic life use. It is clear that these conditions are caused by the runoff from intensive row crop agriculture which is the dominant land use within this segment. Elevated chlorides occur in lower Boeuf River and in Big Bayou; this is probably from discharges of irrigation water taken from deep aquifers.

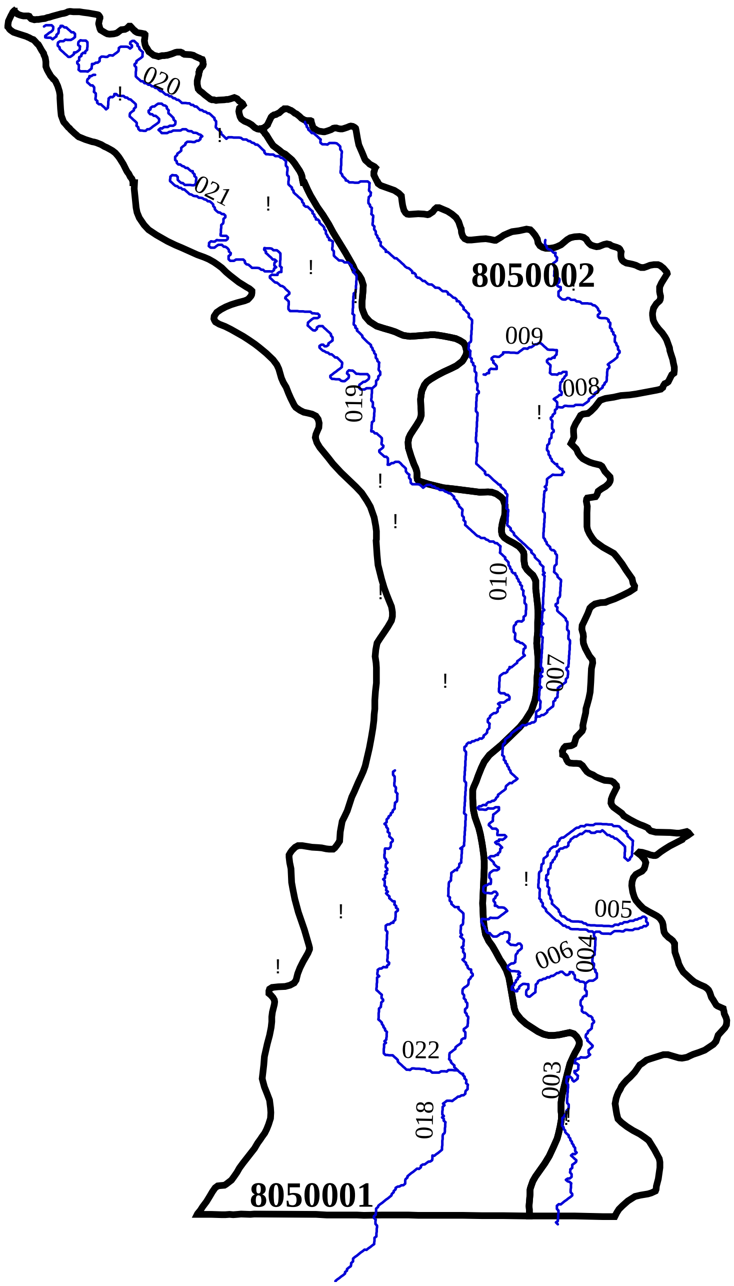
All stations monitored within this segment exhibited multiple occurrences of pesticides (several pesticides and/or more than one occurrence of the same pesticide) which were above the analytical detection level. This was the highest rate of occurrence of pesticides within any segment of the State, although no water quality standard or drinking water maximum contaminant level were exceeded.

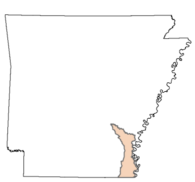
Planning Segment 2A - Monitoring Stations



STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-2A																			
Boeuf River	8050001	-018	49.4	OUA15A	M	S	N	S	S	S	S	AG		SI	MN	5	FISH CONSUMPTION	306.1	0
Boeuf River	8050001	-019	58.1	BFR01	M	S	N	S	S	S	S	AG		SI	MN	5	AQUATIC LIFE	4	302.1
Big Bayou	8050001	-022	27.1	BGB01,+	M	S	N	S	S	S	S	AG		SI	MN	5	PRIMARY CONTACT	306.1	0
Cypress Creek	8050001	-020	47.5	OUA180	U											3	SECONDARY CONTACT	306.1	0
Choctaw Bayou	8050001	-021	58.9	OUA181	U											3	DRINKING SUPPLY	306.1	0
Macon Bayou	8050002	-003	80.5	BYM02	M	S	N	S	S	S	S	AG		SI		5	AGRI & INDUSTRY	306.1	0
Ditch Bayou	8050002	-004	4	OUA172	M	S	S	S	S	S	S					1			
Macon Bayou	8050002	-006	38.6	BYM01	M	S	N	S	S	S	S	AG		SI		5			
Clay Ditch	8050002	-007	24.3	OUA173	U											3			
Boggy Creek	8050002	-009	12		U											3			
Oak Bayou	8050002	-010	48.4	OUA179	M	S	N	S	S	S	S	AG		SI	MN	5			
Red Fork Creek	8050002	-008	17	OUA177	U											3			
TOTAL MILES	465.8																		
MILES UNASSESSED	159.7																		
MILES EVALUATED	0																		
MILES MONITORED	306.1																		

Planning Segment 2A - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0021610	WATSON, CITY OF	REB FORK BU	8050002	2A
AR0021679	GOULD, CITY OF	TRIB,KERCH CAN,CYPRESS CK	8050001	2A
AR0021849	LAKE VILLAGE, CITY OF	LTL LAKE BU,BU MACON,BOEUF RV	8050002	2A
AR0022071	MCGEHEE, CITY OF	BU BARTHOLOMEW	8050001	2A
AR0022250	DERMOTT, CITY OF-SOUTH POND	BU BARTHOLOMEW,OUACHITA RV	8050001	2A
AR0033707	TILLAR, CITY OF	CAN #18,MACON BU,BOEUFF RV	8050001	2A
AR0033839	EUDORA, CITY OF	DIT,BU MACON	8050002	2A
AR0033987	DUMAS, CITY OF	CAN #19,BU MACON	8050001	2A
AR0034371	PORTLAND, CITY OF	TRIB, BU BARTHOLOMEW, OUACHITA RV	8050001	2A
AR0037125	MITCHELLVILLE, CITY OF	CAN #19,CYPRESS CK,AMOS BU,BOGGY BU	8050002	2A
AR0039039	DELTA SPECIAL SCHOOL DIST	DIT,BOGGY BU,CLAY BU	8050002	2A
AR0039381	GRADY, CITY OF	CAN #19,BU MACON	8050001	2A
AR0040827	AR DEPT OF CORRECTION-CUMMINS	CAN #19	8050002	2A
AR0041297	MONTROSE, CITY OF	WARD BU TRIB	8050001	
AR0042838	FARMLAND IND, INC-SOUTHERN	BU MACON	8050001	2A
AR0046507	AR HWY DEPT-MCGEHEE HQ	DIT,CAN#18,MACON BU,MACON L,CANEYBU	8050001	2A

OUA0015A
BOEUF RIVER NEAR AR-LA STATE LINE

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	7.38	4.8	11.1	1.18
BOD_5 (mg/L)	37	3.36	1.25	7.38	1.33
pH (standard units)	37	7.42	6.84	8.18	0.36
Total Organic Carbon (mg/L)	35	8.72	2.73	31.58	5.03
Ammonia as N (mg/L)	36	0.14	<0.005	1.073	0.22
NO_2+NO_3 as N (mg/L)	37	0.43	<0.01	1.49	0.44
Orthophosphate as P (mg/L)	36	0.17	<0.005	0.892	0.19
Total phosphorus as P (mg/L)	36	0.38	0.048	1.892	0.34
Total hardness (mg/L)	18	166.67	32	490	145.96
Chloride (mg/L)	37	60.85	4.45	162.35	45.43
Sulfate (mg/L)	36	29.63	5.59	92.44	25.29
Total dissolved solids (mg/L)	36	333.68	83.5	804	164.55
Total suspended solids (mg/L)	36	131.52	8	1396	248.20
Turbidity (NTU)	35	148.45	5	1220	238.40

SEGMENT 2B - BAYOU BARTHOLOMEW AND TRIBUTARIES (OUACHITA RIVER BASIN)

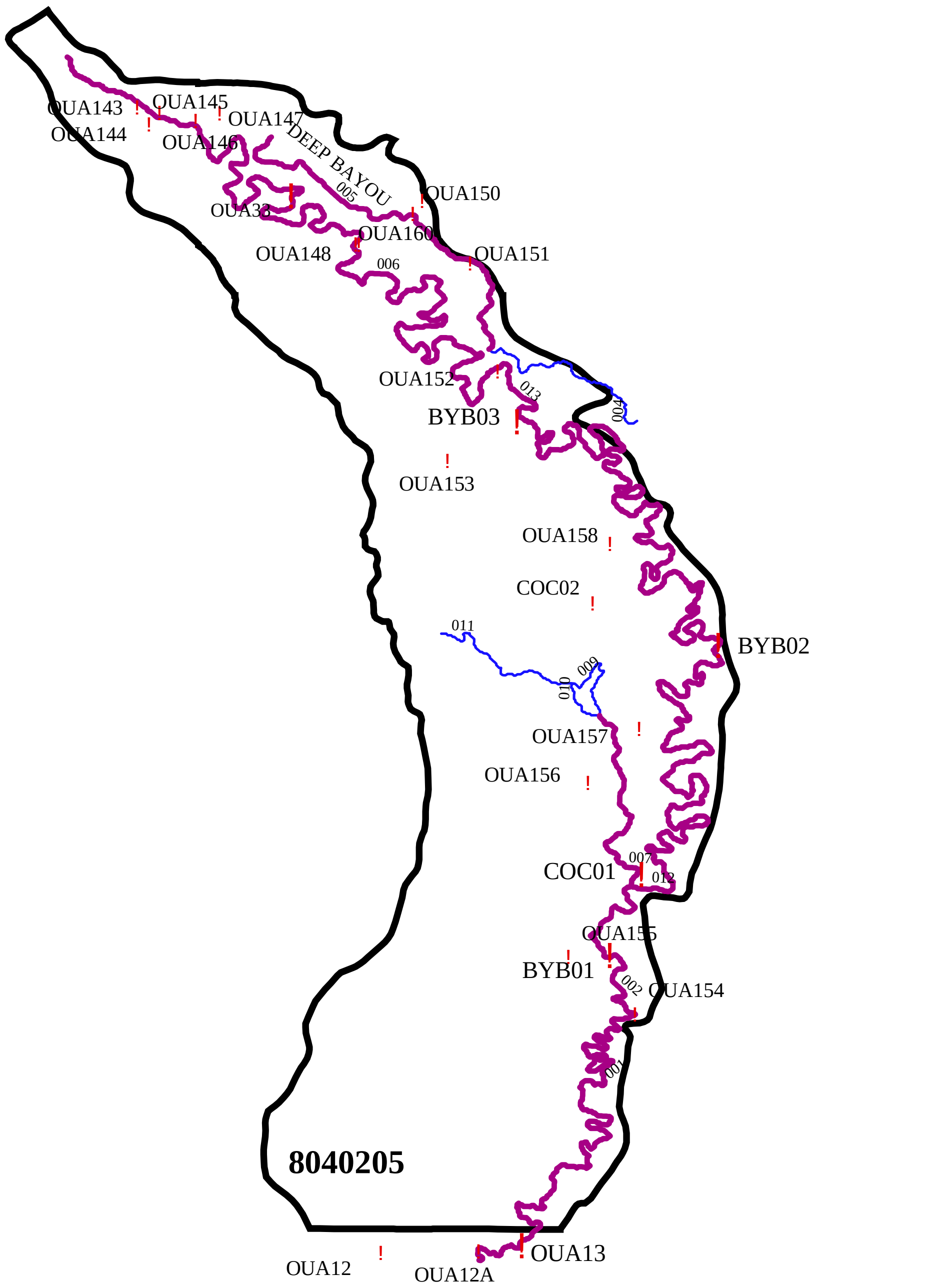
Segment 2B, located in the southeastern part of Arkansas, covers parts of Jefferson, Lincoln, Drew and Ashley Counties. The major streams in this segment are Bayou Bartholomew, Ables Creek, Cutoff Creek and their tributaries.

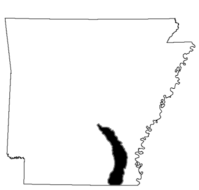
SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation, and public, industrial and agricultural water supplies. This segment contains a total of 359.4 stream miles, all of which are being assessed using monitoring data. Water quality is impacted in much of this segment by nonpoint pollution generated by row crop agriculture. Silt loads and turbidity are consistently very high, thus causing degradation to the aquatic life contained in many of these streams. The entire stretch of Bayou Bartholomew has been assessed as not meeting the aquatic life uses due to siltation and turbidity, this includes the tributary of Deep Bayou. A TMDL for siltation/turbidity is in progress for the entire basin.

Mercury contamination of fish tissue in 42.9 miles of Bayou Bartholomew and 16.8 miles of Cutoff Creek is limiting fish consumption in this basin. A TMDL for mercury is also being completed for this basin.

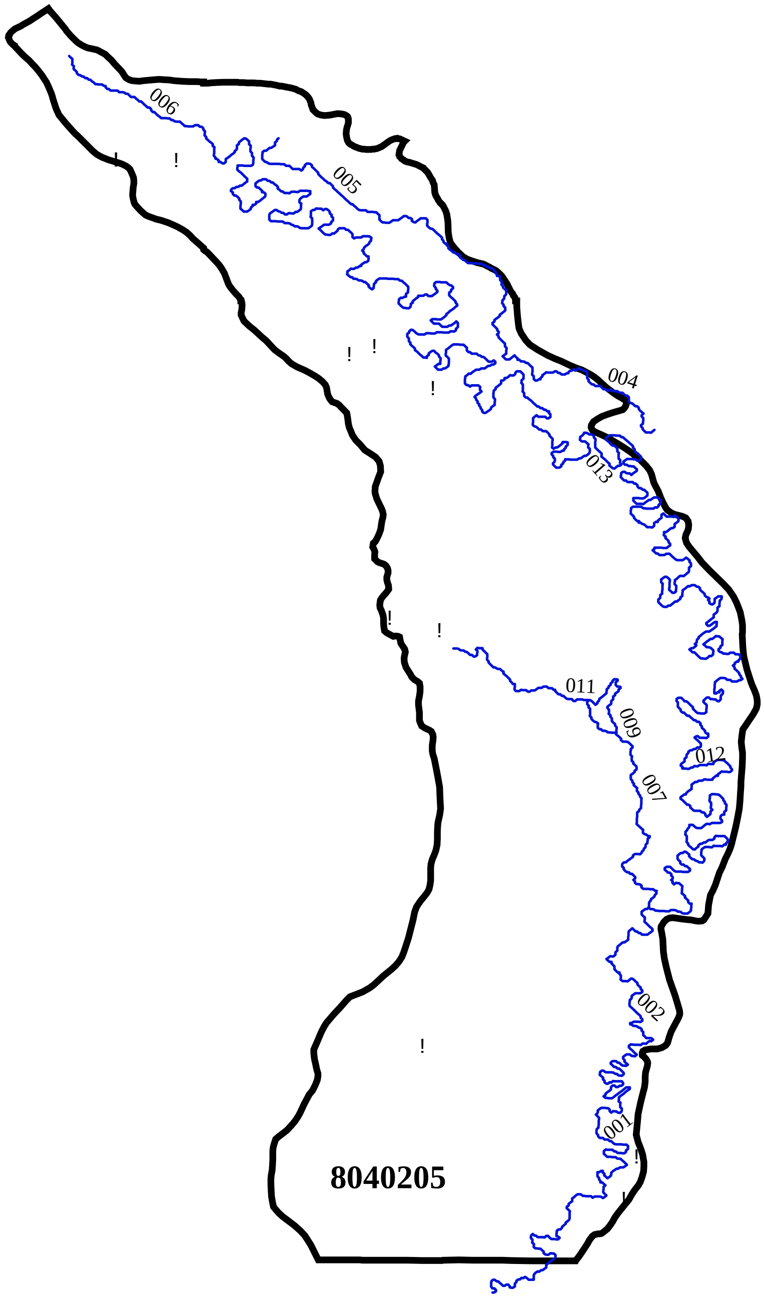
Planning Segment 2B - Monitoring Stations

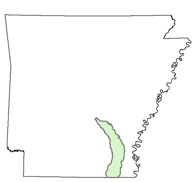




STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-2B																			
B. Bartholomew	8040205	-001	60.1	OUA13	M	S	N	S	S	S	S	AG		SI		5	FISH CONSUMPTION	299.7	59.7
B. Bartholomew	8040205	-002	17.9	BYB01	M	N	N	S	S	S	S	UN	AG	HG	SI	5	AQUATIC LIFE	28.6	330.8
B. Bartholomew	8040205	-006	82.3	OUA33	M	S	N	S	S	S	S	AG		SI		5	PRIMARY CONTACT	359.4	0
Deep Bayou	8040205	-005	28.9	OUA151	M	S	N	S	S	S	S	AG		SI		5	SECONDARY CONTACT	359.4	0
B. Bartholomew	8040205	-012U	82.7	BYB02	M	S	N	S	S	S	S	AG		SI		5	DRINKING SUPPLY	359.4	0
B. Bartholomew	8040205	-012	25		M	N	N	S	S	S	S	UN	AG	HG	SI	5	AGRI & INDUSTRY	359.4	0
B. Bartholomew	8040205	-013	33.9	BYB03	M	S	N	S	S	S	S	AG		SI		5			
Cutoff Creek	8040205	-007	16.8	COC01	M	N	S	S	S	S	S	UN		HG		5			
Cutoff Creek	8040205	-011	11.8	COC02	M	S	S	S	S	S	S					1			
TOTAL MILES	359.4																		
MILES UNASSESSED	0																		
MILES EVALUATED	0																		
MILES MONITORED	359.4																		

Planning Segment 2B - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0021831	MONTICELLO, CITY OF-EAST PLANT	GODFREY CK	8040205	2B
AR0022144	WILMOT, CITY OF	BU BARTHOLOMEW	8040205	2B
AR0034029	HAMBURG, CITY OF	CHEMIN-A-HAUT CK	8040205	2B
AR0037141	PARKDALE, CITY OF	BU BARTHOLOMEW	8040205	2B
AR0037885	BOGGY BAYOU SID	BOGGY BU,BU BARTHOLOMEW	8040205	2B
AR0039144	PINEWOOD SID #1	TRIB,NEVINS CK	8040205	2B
AR0041602	SUBURBIA SID #1	NEVIN CK,BU BARTHOLOMEW	8040205	2B
AR0045888	AR PARKS & TOURISM-CANE CREEK	CANE CK	8040205	2B
AR0046477	STAR CITY, CITY OF	CANE CK,BU BARTHOLOMEW, OUACHITA RV	8040205	2B
AR0047350	PINE HAVEN MOBILE LODGE	GODFREY CK TRIB,CUTOFF CK,BU BARTHO	8040205	2B
AR0047872	ROBERT FLOYD SAWMILL, INC	TRIB,CANE CK,BU BARTHOLOMEW	8040205	2B

OUA0013
BAYOU BARTHOLOMEW NEAR JONES LA

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	50	6.58	4	9.1	1.06
BOD_5 (mg/L)	50	1.34	0.6	3.05	0.45
pH (standard units)	50	7.09	6.33	7.81	0.37
Total Organic Carbon (mg/L)	49	9.74	4.51	23.81	3.87
Ammonia as N (mg/L)	50	0.05	<0.005	0.138	0.03
NO_2+NO_3 as N (mg/L)	50	0.22	<0.01	0.737	0.16
Orthophosphate as P (mg/L)	49	0.09	0.012	0.18	0.05
Total phosphorus as P (mg/L)	48	0.22	0.05	0.413	0.10
Total hardness (mg/L)	31	50.19	10	124	36.55
Chloride (mg/L)	51	14.66	1.73	42.3	12.35
Sulfate (mg/L)	50	7.21	3.34	30.7	5.20
Total dissolved solids (mg/L)	49	141.78	74	221.5	42.29
Total suspended solids (mg/L)	50	23.18	2.5	204.5	28.33
Turbidity (NTU)	50	42.36	7.2	100	23.96

OUA0033
BAYOU BARTHOLOMEW NEAR LADD AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	50	5.87	0.2	13.7	2.69
BOD_5 (mg/L)	48	2.14	0	5.21	1.15
pH (standard units)	49	6.83	6.07	7.85	0.44
Total Organic Carbon (mg/L)	47	10.62	6.041	17.2	2.71
Ammonia as N (mg/L)	50	0.08	<0.005	1.302	0.19
NO_2+NO_3 as N (mg/L)	49	0.13	<0.01	1.509	0.23
Orthophosphate as P (mg/L)	50	0.09	0.018	0.328	0.06
Total phosphorus as P (mg/L)	47	0.20	0.057	0.39	0.09
Total hardness (mg/L)	31	45.61	12	130	34.98
Chloride (mg/L)	47	5.87	1.46	16.7	3.63
Sulfate (mg/L)	48	4.97	1.54	8.94	1.97
Total dissolved solids (mg/L)	49	108.50	61.5	205.5	37.13
Total suspended solids (mg/L)	48	12.97	2	39.3	8.72
Turbidity (NTU)	50	23.39	4.4	72	16.94

OUA0151
DEEP BAYOU SOUTH OF GRADY

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	13	6.94	2.4	15.8	3.11
BOD_5 (mg/L)	12	3.00	0.98	6.96	1.77
pH (standard units)	13	7.58	6.81	8.17	0.44
Total Organic Carbon (mg/L)	13	10.89	5.7	15.2	2.83
Ammonia as N (mg/L)	13	0.15	<0.005	0.787	0.22
NO_2+NO_3 as N (mg/L)	13	0.31	<0.01	1.661	0.45
Orthophosphate as P (mg/L)	13	0.16	0.073	0.265	0.06
Total phosphorus as P (mg/L)	12	0.29	0.128	0.449	0.12
Total hardness (mg/L)	13	114.31	26	262	73.64
Chloride (mg/L)	13	28.88	2.75	68.5	22.41
Sulfate (mg/L)	12	12.60	2.75	25.62	7.39
Total dissolved solids (mg/L)	13	261.00	146	414	83.51
Total suspended solids (mg/L)	13	56.08	<1.0	293	77.09
Turbidity (NTU)	13	99.96	3	260	94.58

SEGMENT 2C - SALINE RIVER AND TRIBUTARIES
(OUACHITA RIVER BASIN)

Segment 2C is located in south central Arkansas and covers parts of Saline, Garland, Hot Spring, Grant, Jefferson, Cleveland, Lincoln, Drew, Bradley and Ashley Counties. This segment contains the Saline River drainage system from its headwaters in the Ouachita Mountains to its confluence with the Ouachita River. The principal tributaries are Hurricane Creek, Hudgins Creek, L'Aigle Creek, Derrieusseaux Creek and the four forks of the upper Saline River.

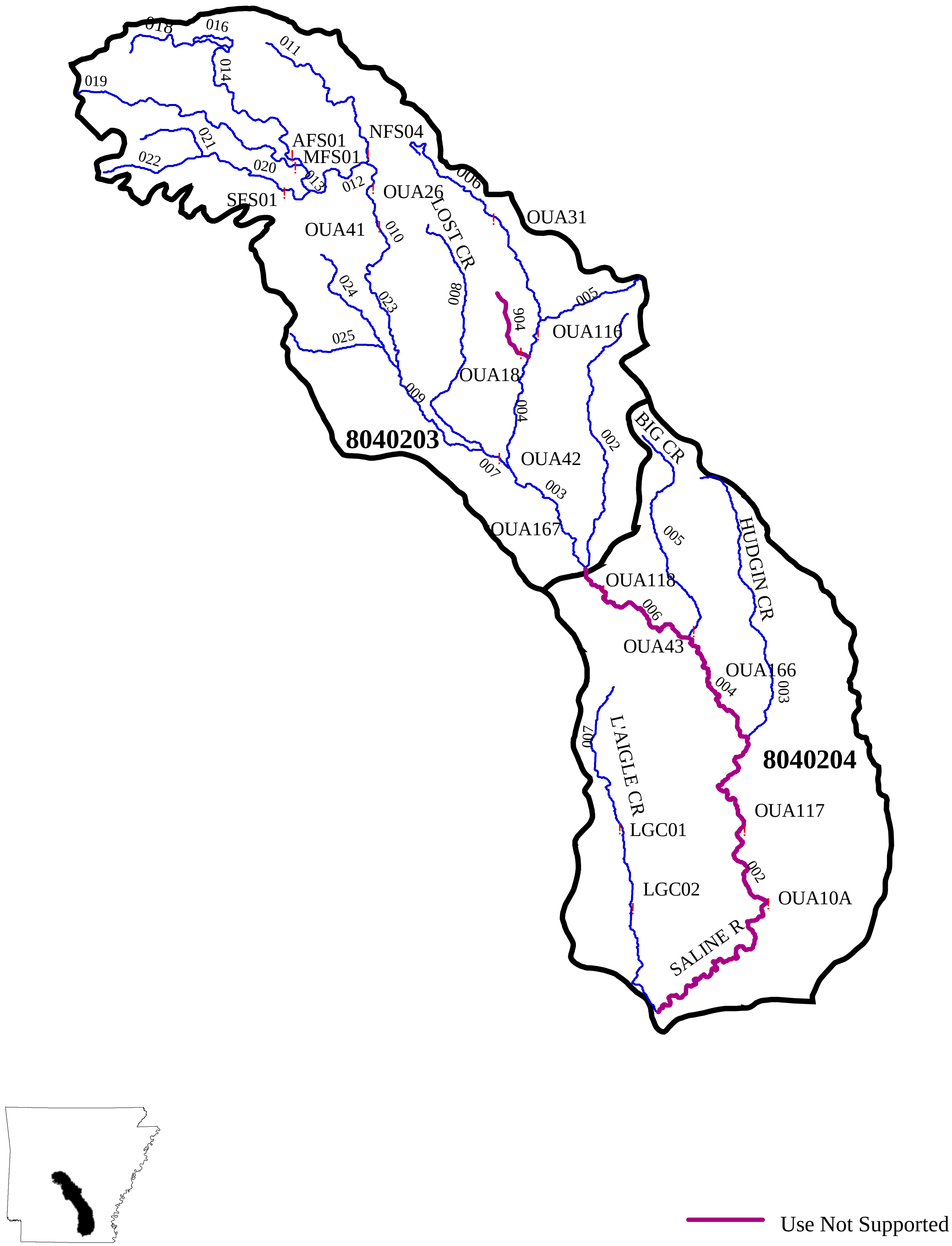
SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation, and public, industrial and agricultural water supplies. Slightly over one-half of the total stream miles within this segment are designated as extraordinary resource waters. This includes the Saline River and its primary headwater tributaries. Monitored data were used to assess 327.1 miles of stream and another 223.3 miles were evaluated. Total stream miles within the segment are 576.3 of which 550.4 were assessed within this process. The domestic water supply use has been removed from 83.8 miles in this segment due to excessive mineral content. Mineral content (chlorides, sulfates, other dissolved minerals) originates in this basin from open pit bauxite mining activities. A major reclamation project is underway in this area.

Big Creek below the City of Sheridan discharge has improved somewhat, but still displays dissolved oxygen violations and elevated BOD and TOC. This stream is classified as a seasonal fishery and the critical season D.O. standard is 2 mg/L to prevent nuisance conditions. Many small seasonal streams in this ecoregion have D.O. levels below 2 mg/L during the critical season.

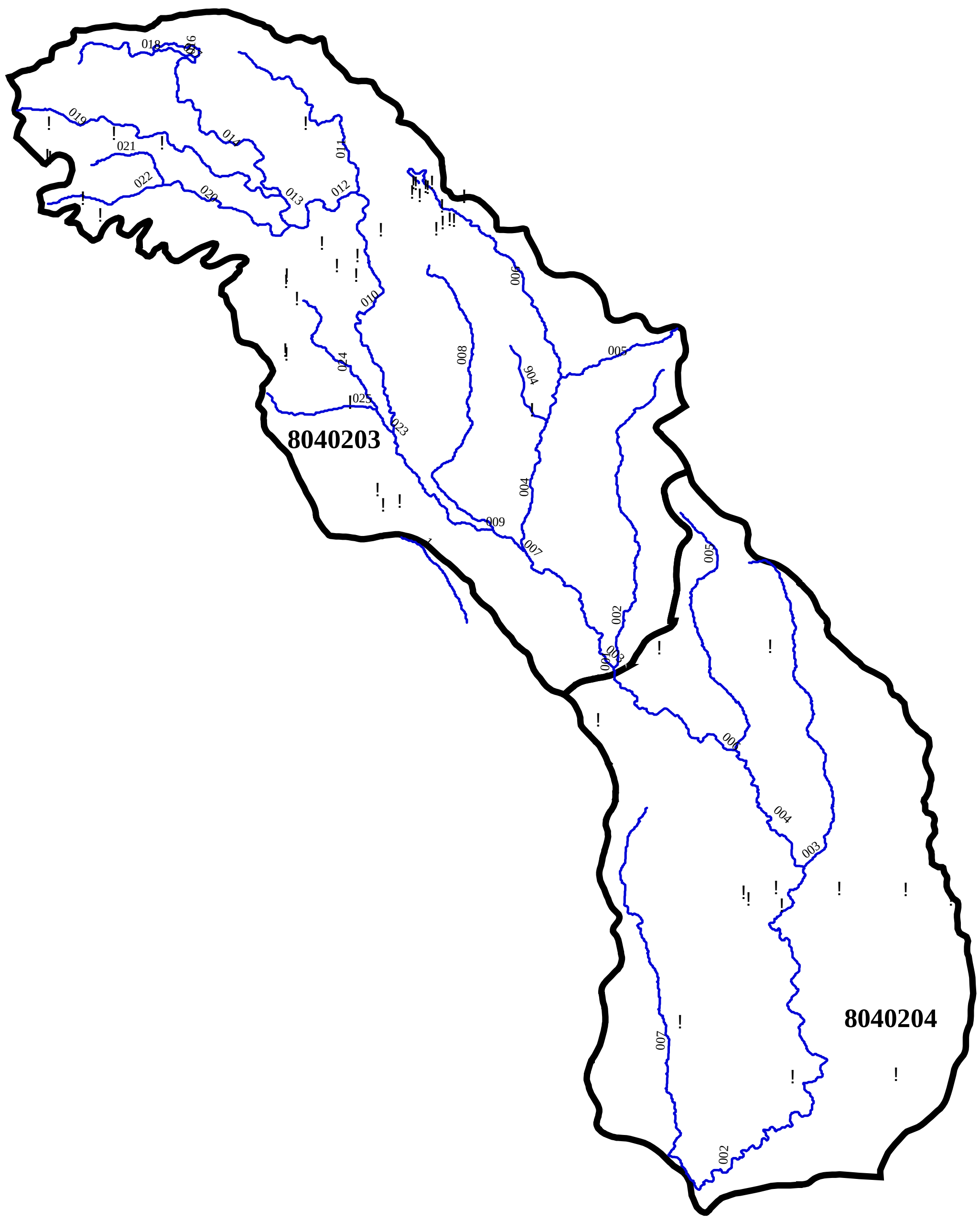
A fish consumption advisory has been placed on 89.9 miles of the lower Saline River because of mercury contamination. A TMDL is being completed on these waters.

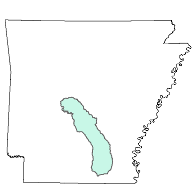
Planning Segment 2C - Monitoring Stations



STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-2C																			
Saline River	8040203	-001	0.2		E	N	S	S	S	S	S	UN		HG		5	FISH CONSUMPTION	460.5	89.9
Derrieusseaux	8040203	-002	34.3		E	S	S	S	S	S	S					1	AQUATIC LIFE	540.4	10
Saline River	8040203	-003	17.2		E	S	S	S	S	S	S					1	PRIMARY CONTACT	550.4	0
Hurricane Cr.	8040203	-004	19.5	OUA116	M	S	S	S	S	R	S					1	SECONDARY CONTACT	550.4	0
Simpson Creek	8040203	-005	12.3		E	S	S	S	S	S	S					1	DRINKING SUPPLY	466.6	0
Hurricane Cr.	8040203	-006	30.8	OUA31	M	S	S	S	S	R	S					1	AGRI & INDUSTRY	550.4	0
Saline River	8040203	-007	3.8	OUA42	M	S	S	S	S	S	S					1			
Lost Creek	8040203	-008	33.5		E	S	S	S	S	R	S					1			
Saline River	8040203	-009	15.6		E	S	S	S	S	S	S					1			
Saline River	8040203	-010	29.8	OUA26&41	M	S	S	S	S	S	S					1			
N.Fork Saline	8040203	-011	23.2	NFS04	E	S	S	S	S	S	S					1			
Saline River	8040203	-012	10.2		E	S	S	S	S	S	S					1			
Saline River	8040203	-013	4		E	S	S	S	S	S	S					1			
Alum Fork	8040203	-014	24.6	AFS01	M	S	S	S	S	S	S					1			
Alum Fork	8040203	-015	3.2		E	S	S	S	S	S	S					1			
Alum Fork	8040203	-018	10		E	S	S	S	S	S	S					1			
M.Fork Saline	8040203	-019	30.9	MFS01	M	S	S	S	S	S	S					1			
S.Fork Saline	8040203	-020	14.9	SFS01	M	S	S	S	S	S	S					1			
Cedar Creek	8040203	-021	9.1		E	S	S	S	S	S	S					1			
S.Fork Saline	8040203	-022	10.9		E	S	S	S	S	S	S					1			
Francois Cr.	8040203	-023	2.9		E	S	S	S	S	S	S					1			
Francois Cr.	8040203	-024	14.9		U											3			
Huskey Creek	8040203	-025	11		U											3			
Big Creek	8040203	-904	10	OUA18	M	S	N	S	S	S	S	MP		OE		5			
Saline River	8040204	-001	2.8		M	N	S	S	S	S	S	UN		HG		5			
Saline River	8040204	-002	53	OUA10A&11	M	N	S	S	S	S	S	UN		HG		5			
Saline River	8040204	-004	16.4		M	N	S	S	S	S	S	UN		HG		5			
Saline River	8040204	-006	17.5	OUA118	M	N	S	S	S	S	S	UN		HG		5			
Hudgins Creek	8040204	-003	36.7		E	S	S	S	S	S	S					1			
Big Creek	8040204	-005	28.9	OUA43	M	S	S	S	S	S	S					1			
L'Aigle Creek	8040204	-007	44.2	LGC01&02	M	S	S	S	S	S	S					1			
TOTAL MILES	576.3																		
MILES UNASSESSED	25.9																		
MILES EVALUATED	223.3																		
MILES MONITORED	327.1																		

Planning Segment 2C - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0000582	ALCOA CO-BAUXITE	HURRICANE CK,HOLLY CK,DRY LOST CK	8040203	2C
AR0000876	POTLATCH CORP-BRADLEY UNIT	TRIB,SALINE RV (1,2) & BRUSHY FK(3)	8040204	2C
AR0000914	POTLATCH CORP-SOUTHERN UNIT	FRANKLIN CK,SALINE RV,OUACHITA RV	8040204	2C
AR0001112	REYNOLDS METALS CO-HURRICANE	TRIB,HURRICANE CK	8040203	2C
AR0001236	BORDEN CHEMICAL, INC	BIG CK, FRANCIS CK, SALINE RV	8040203	2C
AR0021695	RISON, CITY OF	TRIB, HARRISON CK,SALINE RV	8040204	2C
AR0021822	MONTICELLO, CITY OF-WEST PLANT	TEN MILE CK,SALINE RV,OUACHITA RV	8040204	2C
AR0034002	BRYANT, CITY OF	TRIB,HURRICANE CK,SALINE RV,OUACHIT	8040203	2C
AR0034291	HOT SPRINGS VILLAGE POA	MILL CK, MIDDLE FK, ALUM FK, SALINE RV	8040203	2C
AR0034347	SHERIDAN, CITY OF-SOUTH WWTP	BIG CK,HURRICNE CK,SALINE RV	8040203	2C
AR0035955	BRYANT PUB SCHOOL-SALEM ELEM	TRIB,HURRICANE CK	8040203	2C
AR0036358	WABASH ALLOYS	DODSON CK TRIB	8040203	2C
AR0036498	BENTON, CITY OF	TRIB,DEPOT CK,SALINE RV	8040203	2C
AR0037559	CEDAR HILL INVESTMENTS, LLC	HURRICANE CK TRIB	8040203	2C
AR0038989	HERMITAGE, TOWN OF	BIG TOWN CK,L'AIGLE CK,SALINE RV	8040204	2C
AR0039284	HOT SPRINGS VILLAGE-CEDAR CK	CEDAR CK, SOUTH FORK, SALINE RV	8040203	2C
AR0040096	WILMAR, CITY OF	FLAT BRANCH CK,TEN MILE CK	8040204	2C
AR0041416	TIMBER RIDGE NEUROREHAB CENTER	HENDERSON CK,N FK/SALINE RV	8040203	2C
AR0042129	A.C.PAXTON-COLLEGEVILLE HEIGHT		8040203	2C
AR0042277	PAWNEE VILLAGE POA	TRACE CK TRIB,SALINE RV	8040203	2C
AR0042421	FOUNTAIN HILL, CITY OF	FLAT CK TRIB,SALINE RV	8040204	2C
AR0042889	JJ'S TRUCK STOP, INC	BRUSHY CK TRIB,FRANCOIS CK,SALINE R	8040203	2C
AR0043257	FARM FRESH CATFISH CO	TRIB,SALINE RV	8040203	2C
AR0043427	WARREN, CITY OF-WTR & SWR COMM	SALINE RV	8040204	2C
AR0043672	KINGSLAND, CITY OF	PANTHER CK,SALINE RV,OUACHITA RV	8040204	2C
AR0044075	FOUNTAIN LAKE SCHOOL DIST 18	TRIB, SOUTH FORK, SALINE RV	8040203	2C
AR0044105	WILLAMETTE INDUSTRIES-MALVERN	TRIB,BIG CK, SALINE RV	8040203	2C
AR0044156	ALCOA ROAD MHP	TRIB,HURRICANE CK	8040203	2C
AR0044423	JESSIEVILLE PUBLIC SCHOOL	TRIB,COLEMAN CK,SALINE RV	8040203	2C
AR0044547	HASKELL, CITY OF	TRACE CK,SALINE RV	8040203	2C

Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0044652	HURRICANE LAKE MHP	HURRICANE CK,SALINE RV	8040203	2C
AR0045047	VILLAGE SQUARE SHOPPING CTR	TRIB, MILL CK, SALINE RV	8040203	2C
AR0046141	MOUNTAIN VALLEY RETREAT CENTER	TRIB, SOUTH FORK SALINE RV	8040203	2C
AR0046698	INTERNATIONAL PAPER CO-LEOLA	TRIB,SALINE RV	8040203	2C
AR0046817	GLEN ROSE SCHOOL DIST	TRIB,TEN MILE CK	8040203	2C
AR0047210	SALEM SID #10	TRIB,HURRICANE CK,SALINE RV	8040203	2C
AR0047431	PATHWAY CAMPGROUND-AR CHURCH	TRIB,BRUSHY CK,SALINE RV	8040203	2C
AR0047732	J. P. PRICE LUMBER CO	TRIB, CLEAR CK, SALINE RV	8040204	2C
AR0047767	ROBBINS SYKES FLOORING	TRIB,SALINE RV	8040204	2C
AR0047830	JOHNSVILLE SAND & GRAVEL CO	HUNT BR,SALINE RV	8040204	2C
AR0047902	H.G.TOLER & SON LUMBER CO, INC	TRIB,SALINE RV	8040203	2C
AR0048003	ALUMINA & CERAMICS LAB-MALAKOF	DIT,SALINE RV	8040203	2C
AR0048135	BAUXITE SCHOOL DIST 14-PLANT 1	TRIB,HOLLY CK,SALINE RV	8040203	2C
AR0048194	N GARLAND CO YOUTH CTR	TRIB,COLEMAN CK,MID FK SALINE RV	8040203	2C
AR0048259	BAUXITE SCHOOL DIST 14-PLANT 2	HURRICANE CK TRIB,SALINE RV	8040203	2C
AR0048445	POYEN, CITY OF-WWTP	TRIB, BIG CK, FRANCOIS CK, SALINE RV	8040203	2C
AR0048569	WOODLAWN SCHOOL DISTRICT #6	TRIB,HUDGIN CK,SALINE RV	8040204	2C
AR0049018	BENTON, CITY OF-HURRICANE LK	HURRICANE CK, SALINE RV	8040203	2C
AR0049522	FRED’S STORE COMMERCIAL PARK	POND, HURRICANE CK TRIB, SALINE RV	8040203	2C

OUA0010A
SALINE RIVER NEAR FOUNTAIN HILL AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	7.79	6.6	9.4	0.62
BOD_5 (mg/L)	38	1.67	0.39	5.77	1.09
pH (standard units)	38	6.90	6.24	7.81	0.32
Total Organic Carbon (mg/L)	36	8.01	3.012	17.9	3.80
Ammonia as N (mg/L)	37	0.02	<0.005	0.101	0.02
NO_2+NO_3 as N (mg/L)	38	0.12	<0.01	0.477	0.12
Orthophosphate as P (mg/L)	37	0.01	<0.005	0.056	0.01
Total phosphorus as P (mg/L)	37	0.06	0.01	0.111	0.03
Total hardness (mg/L)	17	30.00	13	47	8.91
Chloride (mg/L)	38	4.30	1.84	8.47	1.51
Sulfate (mg/L)	37	18.70	6.9	44.47	8.99
Total dissolved solids (mg/L)	37	91.00	57	121	15.75
Total suspended solids (mg/L)	37	9.23	1.5	36.5	6.84
Turbidity (NTU)	37	10.98	2.8	29	6.02

OUA0018
BIG CREEK DOWNSTREAM OF SHERIDAN AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	21	6.04	0.79	11.83	3.51
BOD_5 (mg/L)	21	5.45	1.59	14.68	3.15
pH (standard units)	21	6.57	6.23	7.05	0.26
Total Organic Carbon (mg/L)	21	11.13	5.371	16.36	2.71
Ammonia as N (mg/L)	22	0.59	0.065	2.34	0.66
NO_2+NO_3 as N (mg/L)	22	0.22	0.037	0.526	0.12
Orthophosphate as P (mg/L)	22	0.26	0.035	0.991	0.27
Total phosphorus as P (mg/L)	21	0.55	0.093	1.465	0.43
Total hardness (mg/L)	11	36.15	13	77.7	21.51
Chloride (mg/L)	21	12.04	3.47	34.65	8.85
Sulfate (mg/L)	22	18.15	4.51	71.72	17.15
Total dissolved solids (mg/L)	22	132.66	67.5	318	69.18
Total suspended solids (mg/L)	21	23.46	3	44.7	12.26
Turbidity (NTU)	22	27.83	1.2	48	12.08

OUA0026
SALINE RIVER NEAR BENTON AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	8.32	5.07	13.4	2.15
BOD_5 (mg/L)	35	0.73	0.15	3.81	0.60
pH (standard units)	38	7.07	6.74	7.76	0.22
Total Organic Carbon (mg/L)	35	3.65	1.765	10.9	2.12
Ammonia as N (mg/L)	38	0.01	<0.005	0.048	0.01
NO_2+NO_3 as N (mg/L)	39	0.12	<0.01	0.422	0.11
Orthophosphate as P (mg/L)	38	0.01	<0.005	0.103	0.02
Total phosphorus as P (mg/L)	37	0.04	0.01	0.25	0.04
Total hardness (mg/L)	19	51.11	30	65	10.66
Chloride (mg/L)	37	2.79	1.65	8.83	1.27
Sulfate (mg/L)	38	6.13	4.18	8.74	1.15
Total dissolved solids (mg/L)	39	72.51	51.5	93.5	11.34
Total suspended solids (mg/L)	38	5.85	<1.0	45	7.81
Turbidity (NTU)	37	11.12	1.1	164	27.09

OUA0031
HURRICANE CREEK NEAR SARDIS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	32	8.37	5.15	13.4	2.39
BOD_5 (mg/L)	30	1.06	0.29	2.39	0.55
pH (standard units)	32	7.21	6.46	8.02	0.43
Total Organic Carbon (mg/L)	29	5.84	2.16	9.46	1.64
Ammonia as N (mg/L)	31	0.07	<0.005	0.319	0.09
NO_2+NO_3 as N (mg/L)	32	0.30	0.028	1.24	0.23
Orthophosphate as P (mg/L)	31	0.01	<0.005	0.085	0.02
Total phosphorus as P (mg/L)	30	0.06	0.01	0.278	0.05
Total hardness (mg/L)	15	82.53	43	140	29.81
Chloride (mg/L)	30	6.51	2.72	14.8	2.60
Sulfate (mg/L)	32	90.45	4.83	406	75.94
Total dissolved solids (mg/L)	32	239.44	97	653	126.81
Total suspended solids (mg/L)	31	17.25	<1.0	94.4	24.52
Turbidity (NTU)	31	17.10	1.4	94	20.56

OUA0041
SALINE RIVER DOWNSTREAM OF BENTON AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	8.13	5.03	13.1	2.17
BOD_5 (mg/L)	35	0.77	0.19	1.42	0.29
pH (standard units)	37	7.11	6.48	7.87	0.24
Total Organic Carbon (mg/L)	34	3.79	2.117	8.7	1.56
Ammonia as N (mg/L)	37	0.02	<0.005	0.073	0.02
NO_2+NO_3 as N (mg/L)	38	0.47	0.149	2.38	0.46
Orthophosphate as P (mg/L)	37	0.04	<0.005	0.2	0.04
Total phosphorus as P (mg/L)	36	0.08	0.01	0.265	0.05
Total hardness (mg/L)	19	49.53	31	62	10.10
Chloride (mg/L)	36	5.54	1.52	16	3.73
Sulfate (mg/L)	37	28.93	5.18	76.7	16.48
Total dissolved solids (mg/L)	38	114.55	60.5	203	31.74
Total suspended solids (mg/L)	37	9.40	2	54.7	10.93
Turbidity (NTU)	36	11.09	2.3	79	15.53

OUA0042
SALINE RIVER @ HWY 167

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	8.14	5.17	12.6	2.17
BOD_5 (mg/L)	38	0.75	0	1.41	0.31
pH (standard units)	37	6.94	6.05	7.73	0.40
Total Organic Carbon (mg/L)	36	5.68	2.707	9.558	1.83
Ammonia as N (mg/L)	39	0.02	<0.005	0.08	0.02
NO_2+NO_3 as N (mg/L)	38	0.16	<0.01	0.81	0.17
Orthophosphate as P (mg/L)	39	0.04	<0.005	0.149	0.04
Total phosphorus as P (mg/L)	36	0.08	0.01	0.22	0.05
Total hardness (mg/L)	19	39.81	23	53	8.98
Chloride (mg/L)	36	4.64	1.33	10.2	2.02
Sulfate (mg/L)	38	21.19	4.26	58.6	11.47
Total dissolved solids (mg/L)	38	94.88	48.5	164	20.32
Total suspended solids (mg/L)	38	8.67	2	43.5	8.36
Turbidity (NTU)	39	11.39	4.3	43	8.34

OUA0043
BIG CREEK @ HWY 35

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	23	7.59	4.2	12.1	2.59
BOD_5 (mg/L)	23	1.33	0.62	2.84	0.59
pH (standard units)	23	6.12	5.44	6.97	0.37
Total Organic Carbon (mg/L)	23	11.74	6.642	15.82	2.33
Ammonia as N (mg/L)	24	0.07	<0.005	0.89	0.18
NO_2+NO_3 as N (mg/L)	23	0.18	<0.01	0.858	0.20
Orthophosphate as P (mg/L)	24	0.05	<0.005	0.213	0.05
Total phosphorus as P (mg/L)	23	0.11	0.026	0.33	0.07
Total hardness (mg/L)	12	25.08	13	49	9.89
Chloride (mg/L)	22	4.27	1.4	7.41	1.29
Sulfate (mg/L)	23	17.66	4.43	34.6	8.05
Total dissolved solids (mg/L)	24	95.42	60.5	126.5	15.13
Total suspended solids (mg/L)	23	7.53	<1.0	30	7.40
Turbidity (NTU)	24	18.88	6	35	9.34

OUA0116
HURRICANE CREEK AT HWY 270 BRIDGE 3 MI EAST OF SHERIDAN,AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	6.52	1.3	12.06	2.98
BOD_5 (mg/L)	38	1.19	0	5.04	0.78
pH (standard units)	37	6.74	5.21	8.21	0.51
Total Organic Carbon (mg/L)	36	8.14	3.75	16	2.31
Ammonia as N (mg/L)	39	0.04	<0.005	0.206	0.04
NO_2+NO_3 as N (mg/L)	38	0.18	<0.01	0.64	0.18
Orthophosphate as P (mg/L)	39	0.03	<0.005	0.113	0.03
Total phosphorus as P (mg/L)	36	0.06	0.01	0.317	0.05
Total hardness (mg/L)	19	76.79	26	194	46.22
Chloride (mg/L)	36	6.64	2.37	17.41	3.43
Sulfate (mg/L)	38	74.32	9.82	336.04	73.40
Total dissolved solids (mg/L)	38	212.61	69.5	523	114.56
Total suspended solids (mg/L)	38	4.70	<1.0	19.3	4.40
Turbidity (NTU)	39	7.82	1.1	27	5.66

OUA0117
SALINE RIVER AT HWY 172 IN DREW COUNTY, AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	7.82	7.1	9.3	0.49
BOD_5 (mg/L)	38	1.54	0.25	6.53	1.26
pH (standard units)	38	6.90	6.27	7.28	0.25
Total Organic Carbon (mg/L)	36	8.24	3.226	16.63	3.74
Ammonia as N (mg/L)	37	0.03	<0.005	0.103	0.03
NO_2+NO_3 as N (mg/L)	38	0.12	<0.01	0.474	0.12
Orthophosphate as P (mg/L)	37	0.02	<0.005	0.048	0.01
Total phosphorus as P (mg/L)	37	0.06	0.01	0.13	0.03
Total hardness (mg/L)	18	29.89	12	45	8.68
Chloride (mg/L)	38	4.34	1.8	7.88	1.38
Sulfate (mg/L)	38	19.16	6.96	40.81	9.33
Total dissolved solids (mg/L)	37	91.04	58	121	16.23
Total suspended solids (mg/L)	37	8.05	1	24.5	5.49
Turbidity (NTU)	37	10.68	2.4	31	6.68

OUA0118
SALINE RIVER AT HWY 79 BRIDGE SOUTH OF RISON, AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	8.06	4.1	13.9	2.24
BOD_5 (mg/L)	38	0.80	0	1.5	0.36
pH (standard units)	37	6.89	5.86	8.06	0.46
Total Organic Carbon (mg/L)	36	7.22	2.292	16.13	3.32
Ammonia as N (mg/L)	39	0.02	<0.005	0.1	0.02
NO_2+NO_3 as N (mg/L)	38	0.13	<0.01	0.749	0.15
Orthophosphate as P (mg/L)	39	0.04	<0.005	0.194	0.05
Total phosphorus as P (mg/L)	36	0.09	0.01	0.26	0.07
Total hardness (mg/L)	19	36.40	12	49	9.38
Chloride (mg/L)	36	4.26	1.17	7.94	1.42
Sulfate (mg/L)	38	21.92	4.95	44	10.77
Total dissolved solids (mg/L)	38	97.93	61.5	127	18.05
Total suspended solids (mg/L)	38	5.59	<1.0	14.7	3.72
Turbidity (NTU)	39	9.37	2.6	23	4.67

SEGMENT 2D - LOWER OUACHITA RIVER AND TRIBUTARIES (OUACHITA RIVER BASIN)

Segment 2D occupies the south central part of Arkansas, covering all of Calhoun County, large portions of Bradley, Dallas, Ouachita and Union Counties and smaller areas of Ashley, Cleveland, Columbia and Nevada Counties. Segment 2D encompasses the lower Ouachita River and its tributaries from the confluence of the Little Missouri and Ouachita Rivers to the Louisiana state line. The major tributaries are Moro Creek, Lapile Creek, Champagnolle Creek and Smackover Creek.

SUMMARY OF WATER QUALITY CONDITIONS

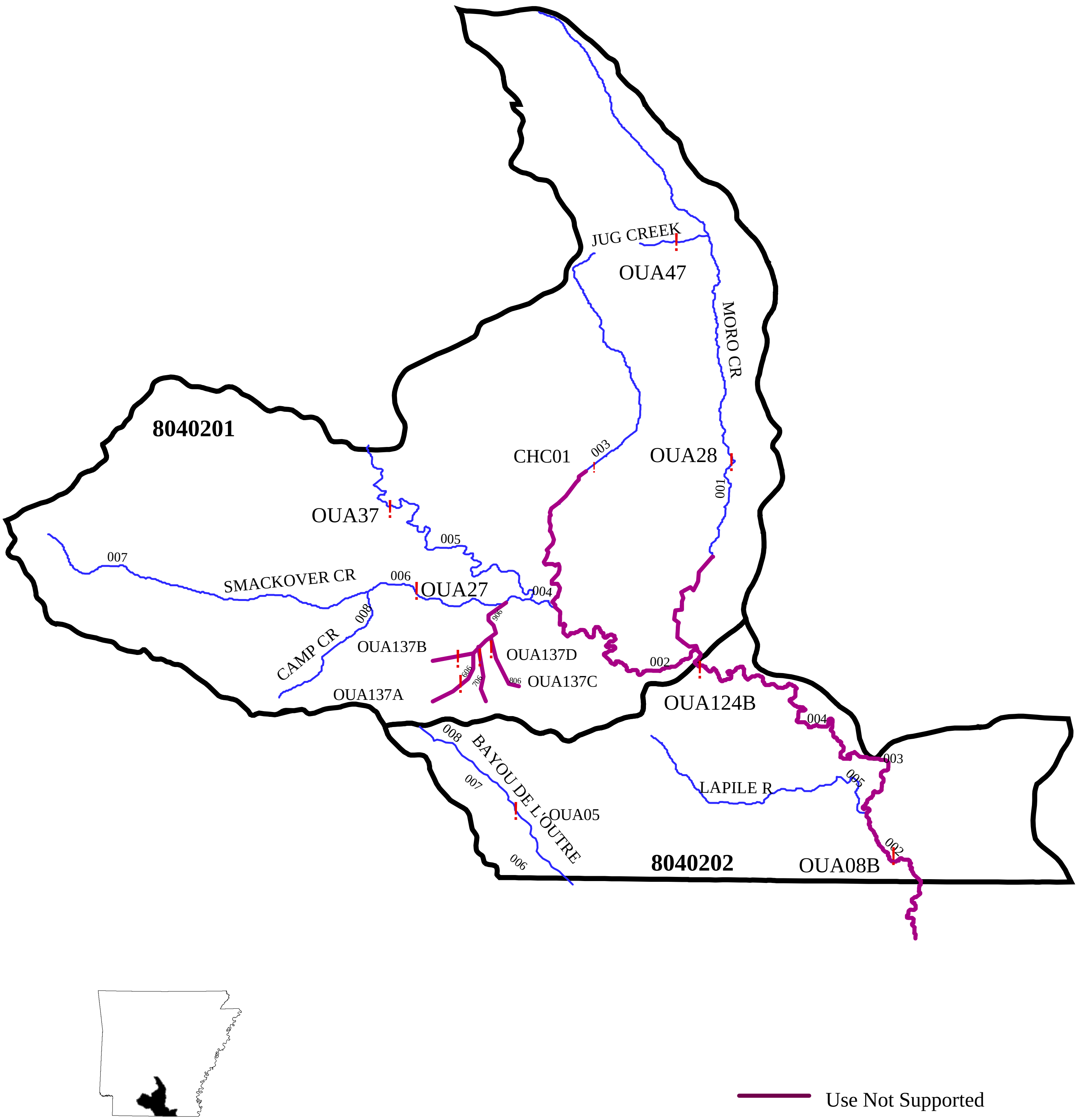
The waters within this segment have been designated as suitable for the propagation of fish/wildlife, primary and secondary contact recreation, and public, industrial and agricultural water supplies. Topping the list of water quality problems in this basin is the fish consumption advisory on the lower Ouachita River. The Ouachita River in this segment has fish consumption advisories due to mercury contamination. In addition, Champagnolle and Moro Creeks have similar advisories. A consumption advisory has been placed on 66.3 miles of the Ouachita River, 20.0 miles of Champagnolle Creek and 12 miles of Moro Creek. A TMDL is being conducted for mercury on the lower Ouachita River Basin in Arkansas and Louisiana. The source is unknown. Although still supporting its designated uses, Jug Creek below the City of Fordyce has elevated levels of nutrients and minerals.

There has been significant improvement over the last five to ten years in the level of chlorides and total dissolved solids in Smackover Creek. With one exception, both chlorides and total dissolved solids have been well below the water quality standard for these constituents in Smackover Creek since 1995.

The oil, brine and bromine extraction industry has contributed point and nonpoint source contamination to waters in this segment for many years. Recent water quality improvements are likely a result of 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.

Some of the most severe water quality problems exist in the unnamed tributary from ElDorado Chemical Company (ELCC), in Flat Creek and in Salt Creek. ELCC tributary contains toxic ammonia levels, very high nitrates and very high minerals (SO_4/ TDS); the source is from the ElDorado Chemical Company discharge. Flat Creek and Salt Creek have very high minerals(CL/ SO_4/TDS). The exact source is unknown, but these drainage basins are from the northern edge of ElDorado where numerous oil and brine processing and storage facilities exist along with numerous abandoned pumping facilities. These flows enter Smackover Creek below the ambient monitoring station on Smackover Creek.

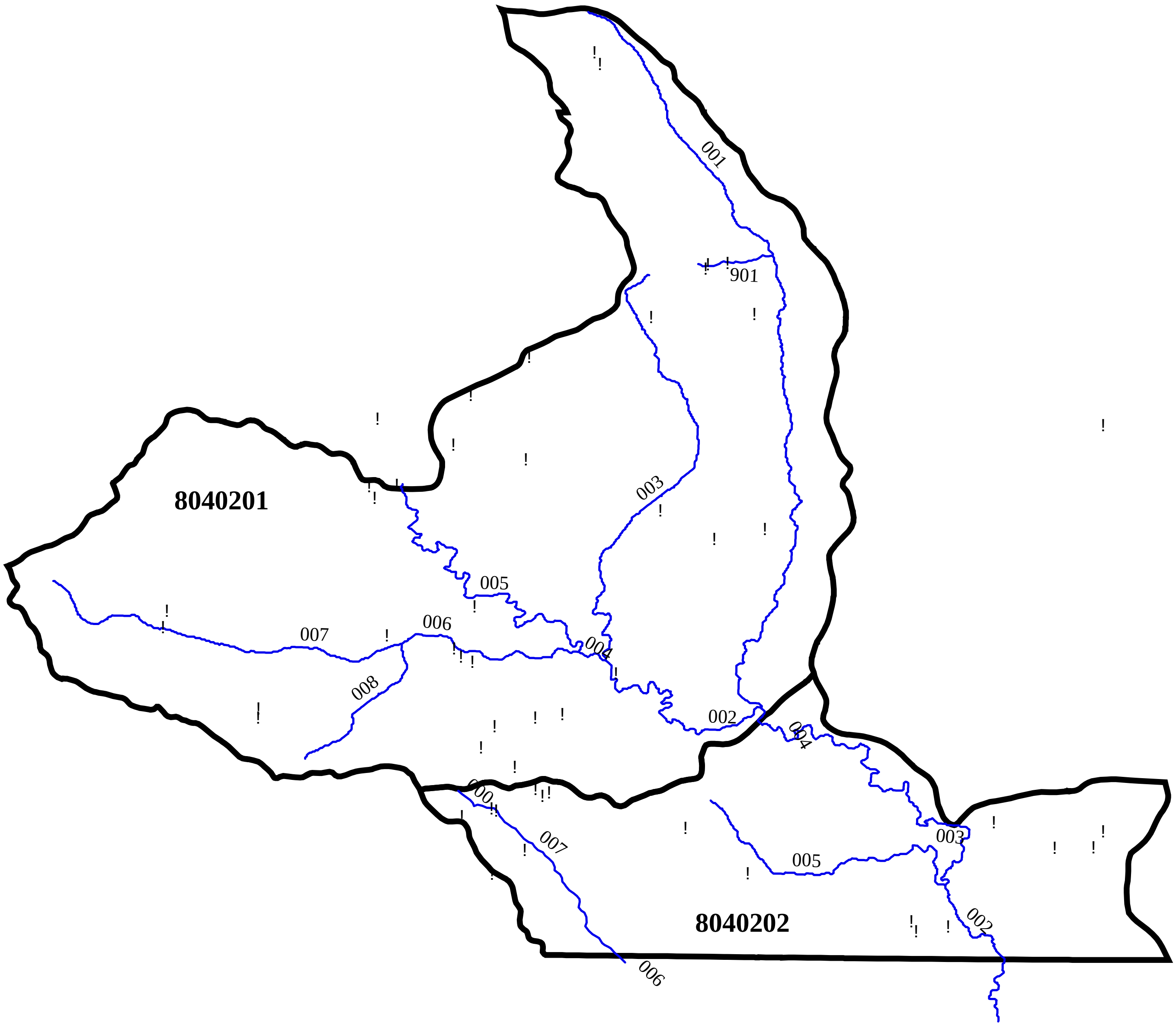
Planning Segment 2D - Monitoring Stations

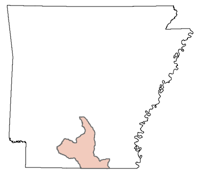


STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS
SEG-2D																
Ouachita River	8040202	-002	4	OUA08B	M	N	S	S	S	S	S	UN		HG		5
Ouachita River	8040202	-003	8.4		M	N	S	S	S	S	S	UN		HG		5
Ouachita River	8040202	-004	28.9	OUA124B	M	N	S	S	S	S	S	UN		HG		5
Lapile Creek	8040202	-005	25.3		U											3
B. De L'Outre	8040202	-006	32.4	OUA05	M	S	S	S	S	R	S					1
B. De L'Outre	8040202	-007	6.9		E	S	S	S	S	S	S					1
B. De L'Outre	8040202	-008	10.6		E	S	S	S	S	S	S					1
Moro Creek	8040201	-001U	57.9	OUA28	M	S	S	S	S	S	S					1
Moro Creek	8040201	-001L	12		M	N	S	S	S	S	S	UN		HG		5
Ouachita River	8040201	-002	22.5		M	N	S	S	S	S	S	UN		HG		5
Ouachita River	8040201	-004	2.5		M	N	S	S	S	S	S	UN		HG		5
Ouachita River	8040201	-005	34.2	OUA37	M	S	S	S	S	S	S					1
Champagnolle	8040201	003U	20.9		E	S	S	S	S	S	S					1
Champagnolle	8040201	003L	20	CHC01	M	N	S	S	S	S	S	UN		HG		5
Smackover Cr.	8040201	-006	14.8	OUA27	M	S	S	S	S	S	S					1
Smackover Cr.	8040201	-007	29.1		E	S	S	S	S	S	S					1
Camp Creek	8040201	-008	13.3		U											3
Elcc Trib.	8040201	-606	8.5	OUA137A+	M	S	N	S	S	N	S	IP		AM	MN	5
Flat Cr.	8040201	-706	16	OUA137C	M	S	N	S	S	N	S	RE		MN		5
Salt Cr.	8040201	-806	8	OUA137D	M	S	N	S	S	N	S	RE		MN		5
Haynes Cr.	8040201	-906	10		U											3
Jug Creek	8040201	-901	8	OUA47	M	S	S	S	S	S	S					1
TOTAL MILES	394.2															
MILES UNASSESSED	48.6															
MILES EVALUATED	67.5															
MILES MONITORED	278.1															

USE	SUPPORT	NOT SUPPORT
FISH CONSUMPTION	247.3	98.3
AQUATIC LIFE	313.1	32.5
PRIMARY CONTACT	345.6	0.0
SECONDARY CONTACT	345.6	0.0
DRINKING SUPPLY	280.7	32.5
AGRI & INDUSTRY	345.6	0.0

Planning Segment 2D - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0000558	INTERNATIONAL PAPER CO-CAMDEN	OUACHITA RV (001) & W TWO BU (002)	8040201	2D
AR0000574	COOPER TIRE & RUBBER CO	DIT,BOGGY CK,BU DE LOUTRE	8040202	2D
AR0000591	CROSS OIL REFINING & MARKETING	SMACKOVER CK (1-3) & HOLMES CK (4)	8040201	2D
AR0000647	LION OIL CO-EL DORADO REFINERY	LOUTRE CK,BU DELOUTRE,OUACHITA RV	8040202	2D
AR0000663	BERRY PETROLEUM CO-STEPHENS	TRIB,SMACKOVER CK,OUACHITA RV	8040201	2D
AR0000680	GREAT LAKES CHEMICAL CORP-SOUT	GUM CK-2D (1) & WALKER CK-2E (2,3)	8040201	2D
AR0000752	EL DORADO CHEMICAL CO, INC	TRIB,FLAT CK,HAYNES CK,OUACHITA RV	8040202	2D
AR0000841	ARKANSAS ELECTRIC COOP-MCCLELL	OUACHITA RV	8040201	2D
AR0001171	GREAT LAKES CHEMICAL CORP-CENT	BU DE LOUTRE (1,2,4) & LT CORNIE BU	8040202	2D
AR0001210	GEORGIA PACIFIC-CROSSETT	COFFEE CK,OUACHITA RV	8040202	2D
AR0020168	STEPHENS, CITY OF	SMACKOVER CK, OUACHITA RV	8040201	2D
AR0021440	SMACKOVER, CITY OF	SMACKOVER CK,OUACHITA RV	8040201	2D
AR0021474	BEARDEN, CITY OF	E TWO BU, OUACHITA RV	8040201	2D
AR0021687	STRONG, CITY OF	LAPILE CK,OUACHITA RV	8040202	2D
AR0021873	HAMPTON, CITY OF	CHAMPAGNOLLE CK	8040201	2D
AR0022268	HUTTIG, CITY OF	OUACHITA RV	8040202	2D
AR0022365	CAMDEN, CITY OF	W TWO BU (1) & OUACHITA RV (2)	8040201	2D
AR0033715	CARTHAGE, CITY OF	TRIB,MORO CK	8040201	2D
AR0033723	EL DORADO, CITY OF-SOUTH WWTP	BU DE LOUTRE	8040202	2D
AR0033758	FORDYCE, CITY OF	JUG CK,MORO CK,OUACHITA RV	8040201	2D
AR0033812	N CROSSETT UTILITIES	TRIB,BRUSHY CK,OUACHITA RV	8040202	2D
AR0033936	EL DORADO, CITY OF-NORTH WWTP	MILL CK,HAYNES CK,SMACKOVER CK,OUAC	8040201	2D
AR0034363	SHUMAKER PUBLIC SERVICE CORP	TWO BU CK	8040201	2D
AR0035653	NORPHLET, CITY OF	TRIB,FLAT CK,HAYNES CK,SMACKOVER CK	8040201	2D
AR0035661	THORNTON, CITY OF	TURNERS CK,CHAMPAGNOLLE CK,OUACHITA	8040201	2D
AR0036064	GEORGIA PACIFIC-FORDYCE PLYWOOD	JUG CK,MORO CK	8040201	2D
AR0036072	GEORGIA PACIFIC-EL DORADO SAWM	TRIB,BU DE LOUTRE	8040202	2D
AR0037761	LIBERTY BAPT ASSN-DBA BEECH	TRIB,OUACHITA RV	8040201	2D
AR0037800	TERIS, LLC	BOGGY CK	8040202	2D
AR0038211	CALION, CITY OF	CHAPELLE SLU,OUACHITA RV & RB	8040201	2D
AR0039659	FELSENTHAL, TOWN OF	WOLF SLOUGH	8040202	2D

Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0040517	LOUANN, CITY OF	BRUSHY CK,SMACKOVER CK,OUACHITA RV	8040201	2D
AR0042315	CROSSETT HARBOR PORT AUTHORITY	OUACHITA RV	8040202	2D
AR0042609	HARRELL, CITY OF	SPRING BR,BLANN CK,LLOYD CK,MORO CK	8040201	2D
AR0044431	JORDAN TOWN MHP	TRIB,BELL BRANCH	8040202	2D
AR0044733	WILDWOOD TRAILER PARK	TRIB,FLAT CK,HAYNES CK,SMACKOVER CK	8040201	2D
AR0045233	LOCKHEED MARTIN MISSILES & FIR	TRIB,LOCUST BU,QUACHITA RV	8040201	2D
AR0045659	WELSCO, INC	DIT,HOLMES CK	8040201	2D
AR0046116	WEST FRASER (SOUTH), INC	DOLLAR SLU (1, 2); BUCKHORN SLOUGH (4)	8040202	2D
AR0046451	ANTHONY TIMBERLANDS INC-FORDYC	DIT,JUG CK	8040201	2D
AR0047368	COLUMBIAN CHEMICALS CO	TRIB,BOGGY CK	8040201	2D
AR0047384	ANTHONY FOREST PRODUCTS CO	CATTAIL MARSH,N LAPILE CK	8040202	2D
AR0047503	IDAHO TIMBER CORP OF CARTHAGE	TRIB,MORO CK,OUACHITA RV	8040201	2D
AR0048046	ROGERS LUMBER CO OF CAMDEN, IN	TRIB,QUACHITA RV	8040201	2D
AR0048097	GEORGIA PACIFIC-NORTH LOG YARD	TRIB,LTL BRUSHY CK,BIG BRUSHY CK	8040202	2D
AR0048381	WATSON SAWMILL & LTM CHIPS, IN	TRIB,BEECH CK,SMACKOVER CK,OUACHITA RV	8040201	2D
AR0049123	MT HOLLY SCHOOL WASTEWATER SYS	TRIB,DRY CK,BEECH CK,SMACKOVER CK	8040201	2D
AR0049140	UNION POWER PARTNERS, LP-UNION	OUACHITA RV	8040202	2D
AR0049204	GEORGIA PACIFIC-FORDYCE OSB FA	TRIB, MORO CK,OUACHITA RV	8040201	2D
AR0049387	HANSON AGGREGATES - EAGLE MILLS	MIZZEL CK,OUACHITA RV	8040201	2D
AR0049492	MERIDIAN AGGREGATES CO - HARRELL	TRIB,DUNN CK,MORO CK,OUACHITA RV	8040201	2D

OUA0005
BAYOU LOUTRE NEAR JUNCTION CITY AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	5.97	3.2	10.1	1.34
BOD_5 (mg/L)	37	1.50	0.2	2.7	0.53
pH (standard units)	38	6.81	5.91	7.81	0.44
Total Organic Carbon (mg/L)	35	13.65	4.6	34.77	5.99
Ammonia as N (mg/L)	36	0.09	<0.005	0.428	0.08
NO_2+NO_3 as N (mg/L)	37	1.36	0.064	10.66	2.09
Orthophosphate as P (mg/L)	36	0.06	0.01	0.355	0.06
Total phosphorus as P (mg/L)	34	0.13	0.026	0.482	0.08
Total hardness (mg/L)	18	48.83	19	94	18.43
Chloride (mg/L)	37	122.61	8.06	235	55.09
Sulfate (mg/L)	36	116.14	6.68	420.12	99.73
Total dissolved solids (mg/L)	36	497.10	79	1161	254.09
Total suspended solids (mg/L)	36	6.32	<1.0	17	4.09
Turbidity (NTU)	36	8.25	3.4	19	3.93

OUA0008B
OUACHITA RIVER @ FELSENTHAL LOCK & DAM

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	7.64	6.2	8.8	0.63
BOD_5 (mg/L)	37	1.24	0.13	2.5939	0.52
pH (standard units)	37	6.85	6.23	7.31	0.26
Total Organic Carbon (mg/L)	35	7.37	3.07	15.9	3.83
Ammonia as N (mg/L)	36	0.04	<0.005	0.113	0.03
NO_2+NO_3 as N (mg/L)	37	0.14	<0.01	0.455	0.11
Orthophosphate as P (mg/L)	36	0.01	<0.005	0.055	0.01
Total phosphorus as P (mg/L)	34	0.06	0.01	0.117	0.02
Total hardness (mg/L)	17	26.71	13	125	25.63
Chloride (mg/L)	37	10.99	3.45	25.2	5.73
Sulfate (mg/L)	36	8.82	4.57	19.72	3.61
Total dissolved solids (mg/L)	36	75.49	50	102.5	12.88
Total suspended solids (mg/L)	36	10.11	1	46	8.74
Turbidity (NTU)	36	13.08	1.5	59	9.47

OUA0027
SMACKOVER CREEK NEAR SMACKOVER AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	6.36	2.3	11.5	1.69
BOD_5 (mg/L)	37	1.27	0.16	3.57	0.68
pH (standard units)	37	6.49	5.69	7.01	0.26
Total Organic Carbon (mg/L)	35	9.96	3.41	24.67	4.16
Ammonia as N (mg/L)	36	0.03	<0.005	0.1	0.03
NO_2+NO_3 as N (mg/L)	37	0.08	<0.01	0.409	0.08
Orthophosphate as P (mg/L)	36	0.03	<0.005	0.43	0.07
Total phosphorus as P (mg/L)	35	0.06	0.01	0.131	0.03
Total hardness (mg/L)	17	38.65	21	97	19.49
Chloride (mg/L)	37	68.66	5.6	164	39.77
Sulfate (mg/L)	36	5.59	2.45	14.78	2.54
Total dissolved solids (mg/L)	37	203.73	71	561	101.65
Total suspended solids (mg/L)	36	9.95	2.5	21.75	4.79
Turbidity (NTU)	36	13.19	3.9	22	5.54

OUA0028
MORO CREEK E OF HAMPTON AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	27	7.09	5.7	8.8	0.83
BOD_5 (mg/L)	28	1.47	0.77	3.46	0.60
pH (standard units)	28	6.55	6.11	7.36	0.29
Total Organic Carbon (mg/L)	25	13.35	8.573	19.82	2.52
Ammonia as N (mg/L)	27	0.04	<0.005	0.114	0.03
NO_2+NO_3 as N (mg/L)	28	0.08	<0.01	0.528	0.11
Orthophosphate as P (mg/L)	27	0.02	<0.005	0.062	0.01
Total phosphorus as P (mg/L)	28	0.07	0.01	0.384	0.07
Total hardness (mg/L)	14	12.50	8	22	4.42
Chloride (mg/L)	28	4.14	1.72	6.59	1.40
Sulfate (mg/L)	27	4.56	1.55	12.64	2.17
Total dissolved solids (mg/L)	27	73.22	48	95	12.01
Total suspended solids (mg/L)	27	6.59	1	16	4.05
Turbidity (NTU)	27	14.49	7.5	31	6.10

OUA0037
OUACHITA RIVER DOWNSTREAM OF CAMDEN AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	7.76	6.5	10.1	0.80
BOD_5 (mg/L)	37	1.08	0.33	6.3	1.00
pH (standard units)	38	6.93	6.44	7.51	0.25
Total Organic Carbon (mg/L)	36	5.68	1.53	13.49	2.65
Ammonia as N (mg/L)	37	0.04	<0.005	0.113	0.03
NO_2+NO_3 as N (mg/L)	38	0.18	<0.01	0.403	0.09
Orthophosphate as P (mg/L)	37	0.02	<0.005	0.059	0.01
Total phosphorus as P (mg/L)	35	0.06	0.01	0.132	0.03
Total hardness (mg/L)	18	20.50	15	25	2.87
Chloride (mg/L)	38	6.43	2.3	88.4	13.85
Sulfate (mg/L)	37	9.08	5.26	19.8	3.41
Total dissolved solids (mg/L)	38	65.62	44	208	25.39
Total suspended solids (mg/L)	37	13.52	4	41.5	8.43
Turbidity (NTU)	37	14.08	5.2	35	7.45

OUA0047
JUG CREEK DOWNSTREAM OF FORDYCE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	6.85	2.9	11.2	2.54
BOD_5 (mg/L)	38	2.60	0.85	7.92	1.81
pH (standard units)	37	7.07	6.61	7.7	0.27
Total Organic Carbon (mg/L)	36	11.84	7.18	19.5	2.47
Ammonia as N (mg/L)	38	1.17	0.045	8.94	2.07
NO_2+NO_3 as N (mg/L)	37	1.97	0.067	9.708	2.08
Orthophosphate as P (mg/L)	38	0.60	0.088	1.515	0.40
Total phosphorus as P (mg/L)	36	0.74	0.146	1.768	0.41
Total hardness (mg/L)	19	59.85	33	80	15.53
Chloride (mg/L)	36	49.84	11.8	294.5	45.27
Sulfate (mg/L)	38	17.07	8.96	31.85	5.61
Total dissolved solids (mg/L)	38	265.93	140	691	89.63
Total suspended solids (mg/L)	38	7.34	2.3	21.5	4.91
Turbidity (NTU)	39	16.45	4.9	72	13.25

OUA0124B

OUACHITA RIVER. DOWNSTREAM OF AR GAME & FISH PIGEON HILL ACCESS

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	7.58	6.8	8.6	0.53
BOD_5 (mg/L)	37	1.16	0.12	2.81	0.60
pH (standard units)	37	6.87	6.27	7.32	0.22
Total Organic Carbon (mg/L)	35	6.45	1.261	14.53	3.61
Ammonia as N (mg/L)	36	0.04	<0.005	0.197	0.04
NO_2+NO_3 as N (mg/L)	37	0.20	<0.01	0.634	0.15
Orthophosphate as P (mg/L)	36	0.02	<0.005	0.072	0.01
Total phosphorus as P (mg/L)	35	0.05	0.01	0.128	0.03
Total hardness (mg/L)	17	21.18	13	29	4.36
Chloride (mg/L)	37	12.83	2.88	48.1	8.96
Sulfate (mg/L)	36	8.46	4.19	16.6	3.00
Total dissolved solids (mg/L)	37	76.99	51	140.5	20.42
Total suspended solids (mg/L)	36	11.10	1.5	33	6.29
Turbidity (NTU)	36	13.16	6.1	47	6.97

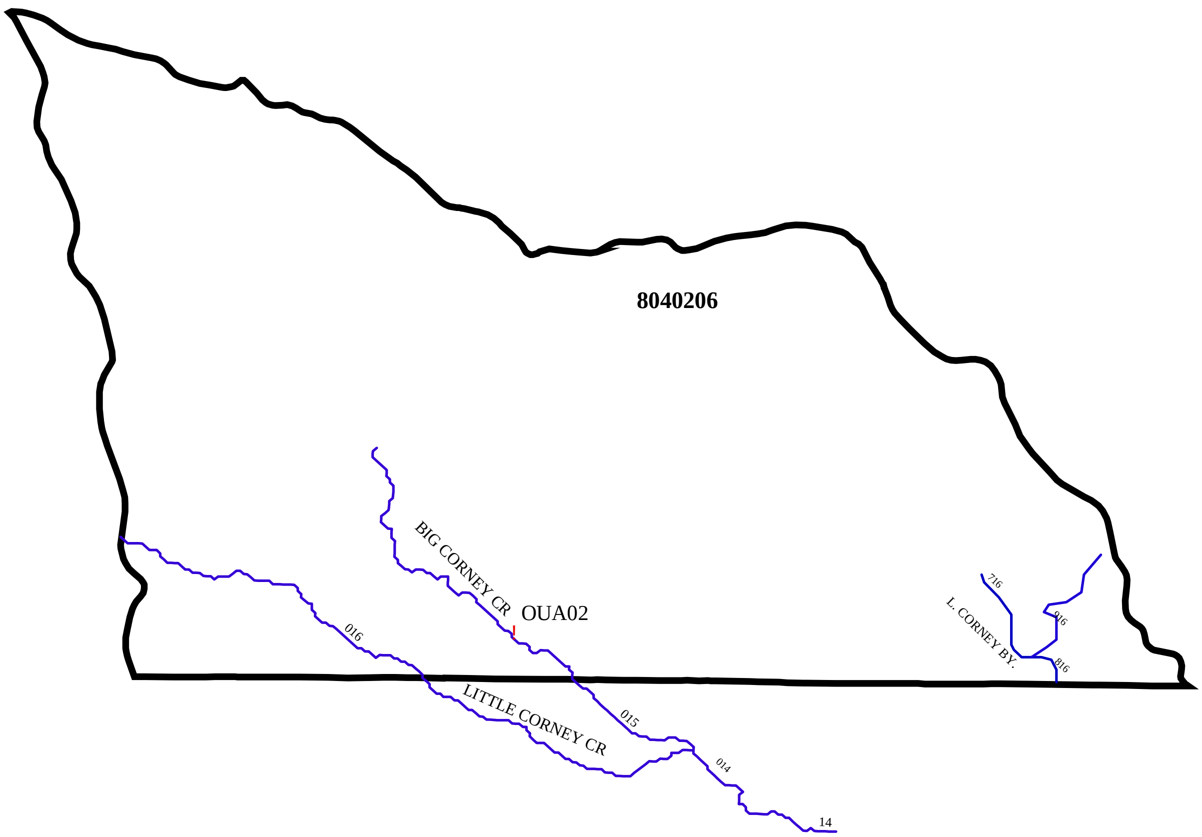
SEGMENT 2E - UPPER CORNIE BAYOU AND TRIBUTARIES (OUACHITA RIVER BASIN)

Segment 2E is located in southcentral Arkansas and covers parts of Columbia and Union Counties. This segment includes the upper portions of Cornie Bayou and Little Cornie Bayou, which eventually flow into the Ouachita River in northern Louisiana. The two major tributaries are Beech Creek and Three Creeks.

SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. From a total of 44.0 miles of stream within this segment, 15.0 miles were assessed using monitored data. The remainder were evaluated. In general, water quality within this basin has been improving. The oil industry has ceased discharging salt water almost entirely in this basin and chloride values have declined noticeably within the last several years.

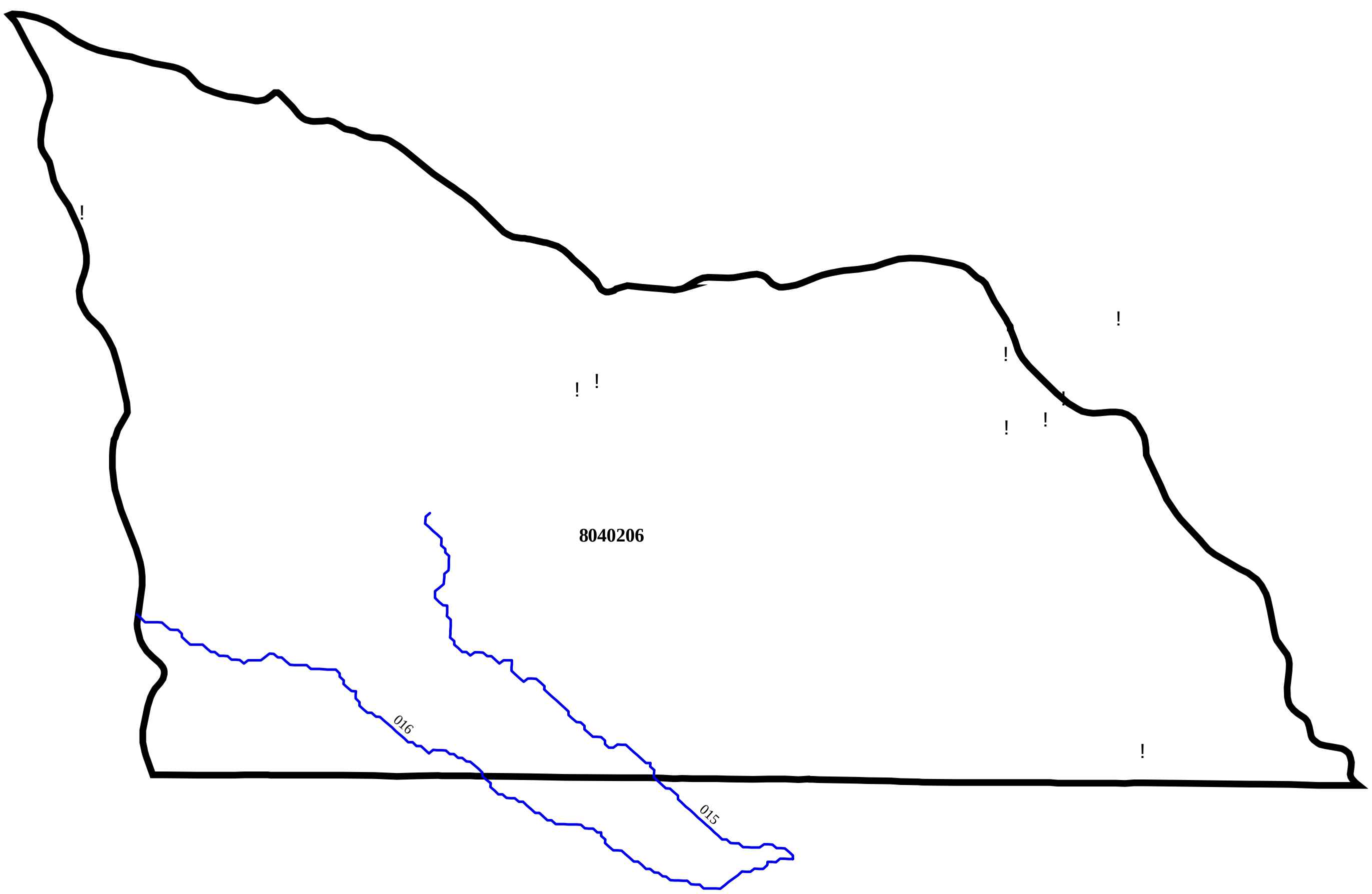
Planning Segment 2E - Monitoring Stations

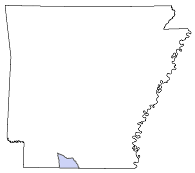


Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-2E																			
Big Cornie Cr.	8040206	-015	15	OUA02	M	S	S	S	S	S	S					1	FISH CONSUMPTION	44	0
Little Cornie Cr.	8040206	-016	18		E	S	S	S	S	S	S					1	AQUATIC LIFE	44	0
Little Cornie Bayou	8040206	-716	5		E	S	S	S	S	S	S					1	PRIMARY CONTACT	44	0
Little Cornie Bayou	8040206	-816	3		E	S	S	S	S	R	S					1	SECONDARY CONTACT	44	0
Walker Branch	8040206	-916	3		E	S	S	S	S	R	S					1	DRINKING SUPPLY	38	0
TOTAL MILES	44																AGRI & INDUSTRY	44	0
MILES UNASSESSED	0																		
MILES EVALUATED	29																		
MILES MONITORED	15																		

Planning Segment 2E - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0000981	GREAT LAKES CHEMICAL CORP-NEWE	TRIB,LTL CORNIE BU	8040206	2E
AR0022179	JUNCTION CITY, CITY OF	LTL CORNIE BU	8040206	2E
AR0043516	GREAT LAKES CHEMICAL CORP-WEST	SEWELL CK	8040206	2E
AR0047813	OAK MANOR WATER & WASTEWATER P	JAY DISON SPRING BR, CORNIE BU	8040206	2E
AR0047945	GUNNELS MILL, INC	TRIB, CORNEY CK, OUACHITA RV	8040206	2E
AR0048461	DEL-TIN FIBER L. L. C.	TRIB, CORNIE CK, OUACHITA RV	8040206	2E
AR0049000	ALBEMARLE CORP-EAST PLANT	SEWELL CK, THREE CKS, OUACHITA RV	8040206	2E
AR0049182	GAUNT, WILLIAM R.	STOCK POND, FLAT CK, HAYNES CK	8040206	2E
AR0049336	MAC’S GENERAL INV, LLC-DBA TIN	TRIB,DRY CK,LTL CORNIE BU	8040206	2E

OUA0002
CORNIE BAYOU NEAR THREE CREEKS AR

Parameter	Valid Data Points	Average	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	34	6.36	3.7	9.6	1.37
BOD_5 (mg/L)	34	1.44	0.54	2.39	0.47
pH (standard units)	35	6.59	5.77	7.33	0.29
Total Organic Carbon (mg/L)	32	11.41	4.996	24.66	3.49
Ammonia as N (mg/L)	33	0.06	<0.005	0.553	0.11
NO_2+NO_3 as N (mg/L)	34	0.39	<0.01	2.828	0.76
Orthophosphate as P (mg/L)	33	0.02	<0.005	0.062	0.01
Total phosphorus as P (mg/L)	33	0.07	0.01	0.146	0.03
Total hardness (mg/L)	16	37.56	20	67	13.32
Chloride (mg/L)	34	71.24	18	270	60.02
Sulfate (mg/L)	33	30.98	1.5	261.6	57.23
Total dissolved solids (mg/L)	34	243.22	97.5	767.5	183.10
Total suspended solids (mg/L)	33	7.72	1	19.5	4.24
Turbidity (NTU)	33	9.75	2.5	20	4.09

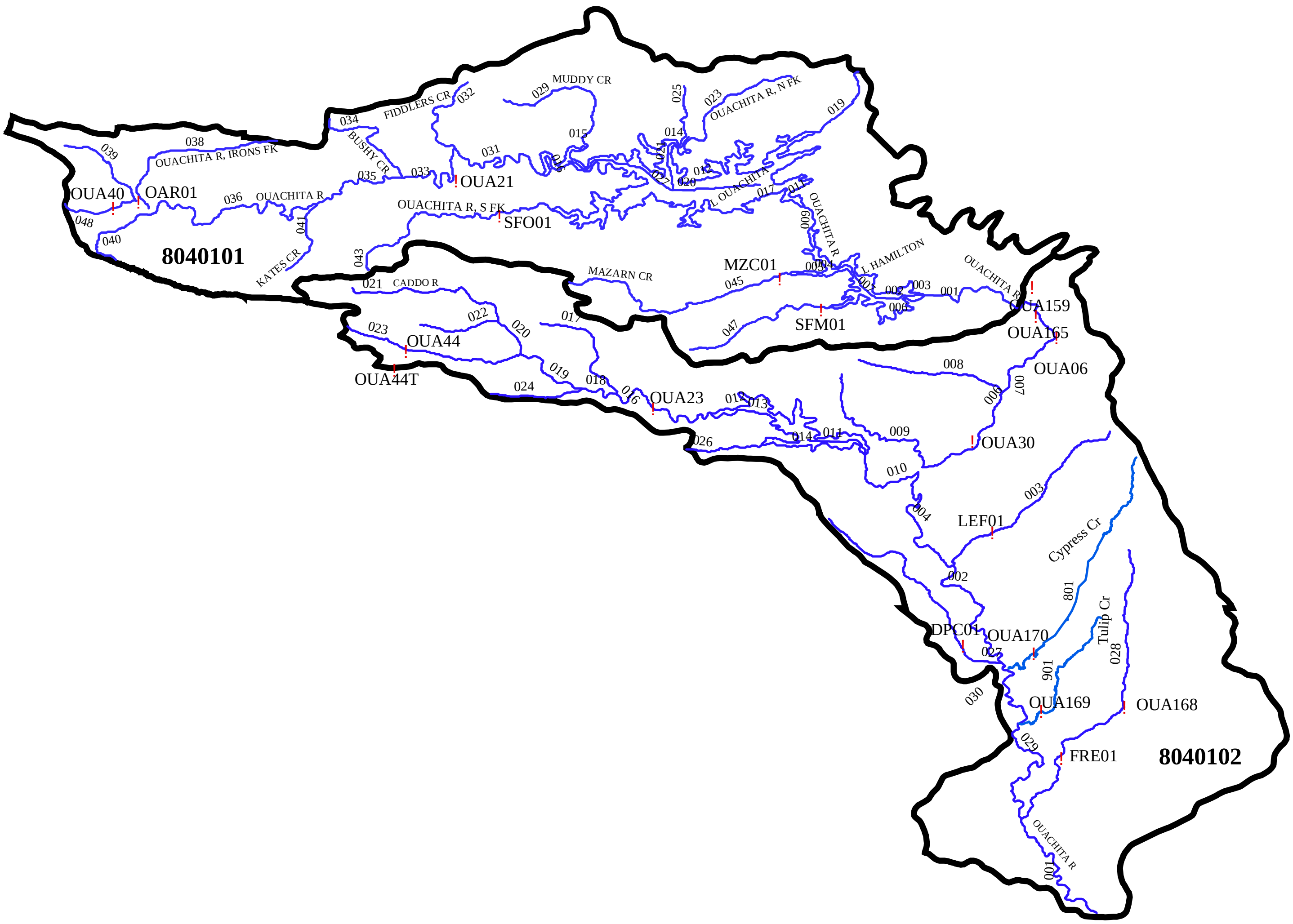
SEGMENT 2F - OUACHITA RIVER AND TRIBUTARIES: HEADWATERS TO ITS CONFLUENCE WITH THE LITTLE MISSOURI RIVER (OUACHITA RIVER BASIN)

Segment 2F, located in west central Arkansas, covers most of Hot Spring, Garland and Montgomery Counties, portions of Clark, Dallas, Pike, Polk and Yell Counties, and very small areas of Scott and Perry Counties. This segment consists of a 220-mile reach of the upper Ouachita River and a 70-mile reach of the Caddo River. Principal tributaries include the South Fork of the Ouachita River, Mazarn Creek, L'Eau Frais Creek and Irons Fork Creek. Segment 2F contains three major impoundments of the Ouachita River: Lake Ouachita, Lake Hamilton and Lake Catherine. DeGray Reservoir, an impoundment of the Caddo River, is also located in Segment 2F.

SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. Approximately 36 percent of the waters within this segment are designated as extraordinary resource waters. Water quality in Basin 2F is generally good and trends seem to indicate it is improving. Major rivers in the basin, such as the Caddo, South Fork of the Caddo, and the Ouachita above the lake are all improving or holding steady. All waters assessed in this segment were meeting all designated uses. However, in Prarie Creek below the City of Mena sewage treatment plant, elevated nutrients were seen.

Planning Segment 2F - Monitoring Stations

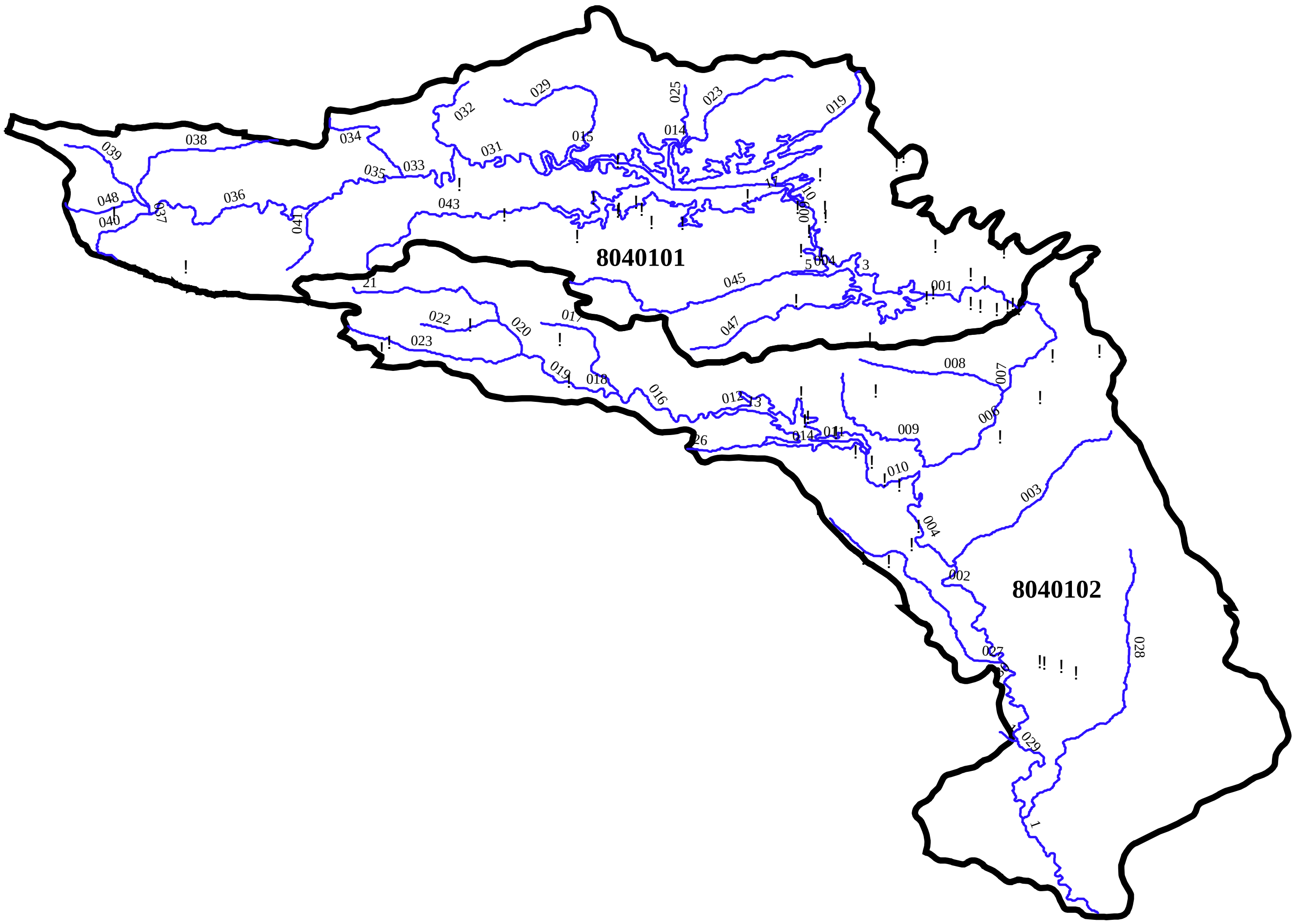


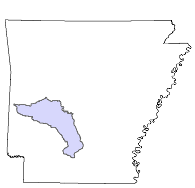
Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS
SEG-2F																
Ouachita River	8040102	-001	15.6		E	S	S	S	S	S	S					1
Ouachita River	8040102	-002	16.9		E	S	S	S	S	S	S					1
L'Eau Frais C.	8040102	-003	21.5	LEF01	M	S	S	S	S	S	S					1
Ouachita River	8040102	-004	15.8		E	S	S	S	S	S	S					1
Ouachita River	8040102	-005	0.6		E	S	S	S	S	S	S					1
Ouachita River	8040102	-006	12.1	OUA30	M	S	S	S	S	S	S					1
Ouachita River	8040102	-007	14.5	OUA06A+	M	S	S	S	S	S	S					1
Prairie Bayou	8040102	-008	13.5		E	S	S	S	S	S	S					1
DeRoche Cr.	8040102	-009	16.5		U											3
Caddo River	8040102	-010	8.1		E	S	S	S	S	S	S					1
Caddo River	8040102	-016	13.5	OUA23	M	S	S	S	S	S	S					1
Cornie Creek	8040102	-017	12.5		E	S	S	S	S	S	S					1
Caddo River	8040102	-018	4.1		E	S	S	S	S	S	S					1
Caddo River	8040102	-019	7.7		E	S	S	S	S	S	S					1
Caddo River	8040102	-020	4.1		E	S	S	S	S	S	S					1
Caddo River	8040102	-021	15.9		E	S	S	S	S	S	S					1
Mill Creek	8040102	-022	7.3		E	S	S	S	S	S	S					1
S. Fork Caddo	8040102	-023	16.6	OUA44	M	S	S	S	S	S	S					1
D.C. Creek	8040102	-923	5	OUA44T	M	S	S	S	S	S	S					1
Rock Creek	8040102	-024	8.1		E	S	S	S	S	S	S					1
Brushy Creek	8040102	-026	6.9		U											3
Deceiper Cr.	8040102	-027	24.4	DPC01	M	S	S	S	S	S	S					1
Bayou Freeo	8040102	-028	33.9	FRE01	M	S	S	S	S	S	S					1
Ouachita River	8040102	-029	13.3		E	S	S	S	S	S	S					1
Tulip Creek	8040102	-901	20	OUA169	M	S	S	S	S	S	S					1
Cypress Creek	8040102	-801	30	OUA170	M	S	S	S	S	S	S					1
Ouachita River	8040102	-30	12		E	S	S	S	S	S	S					1
Ouachita River	8040101	-001	10.4		E	S	S	S	S	S	S					1
Ouachita River	8040101	-009	2.7		E	S	S	S	S	S	S					1
Blakely Creek	8040101	-019	8.3		E	S	S	S	S	S	S					1
N.ForkOuachita	8040101	-023	10.9		E	S	S	S	S	S	S					1
Irons Fork	8040101	-025	4.8		E	S	S	S	S	S	S					1
Muddy Creek	8040101	-029	15.3		E	S	S	S	S	S	S					1
Ouachita River	8040101	-031	14.4		E	S	S	S	S	S	S					1
Fiddlers Cr.	8040101	-032	10.6		E	S	S	S	S	S	S					1
Ouachita River	8040101	-033	11.9	OUA21	M	S	S	S	S	S	S					1
Ouachita River	8040101	-035	10.2		E	S	S	S	S	S	S					1
Ouachita River	8040101	-036	24.1	OAR01	M	S	S	S	S	S	S					1
Bushy Creek	8040101	-034	12.1		E	S	S	S	S	S	S					1
Ouachita River	8040101	-037	0.7		E	S	S	S	S	S	S					1
Ouachita River	8040101	-039	11	OAR01	M	S	S	S	S	S	S					1
Iron Fork	8040101	-038	17.3		E	S	S	S	S	S	S					1
Carters Creek	8040101	-040	9		U											3
Kates Creek	8040101	-041	8.2		U											3
S.Fork Ouachita	8040101	-043	22.5	SFO01	M	S	S	S	S	S	S					1
Mazarn Creek	8040101	-045	23.3	MZC01	M	S	S	S	S	S	S					1
Little Mazarn	8040101	-047	14.8	SFM01	M	S	S	S	S	S	S					1
Prairie Creek	8040101	-048	10	OUA40	M	S	S	S	S	S	S					1
TOTAL MILES	622.9															
MILES UNASSESSED	40.6															
MILES EVALUATED	273.2															
MILES MONITORED	309.1															

USE	SUPPORT	NOT SUPPORT
FISH CONSUMPTION	582.3	0
AQUATIC LIFE	582.3	0
PRIMARY CONTACT	582.3	0
SECONDARY CONTACT	582.3	0
DRINKING SUPPLY	582.3	0
AGRI & INDUSTRY	582.3	0

Planning Segment 2F - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0000523	US VANADIUM CORP-STRATCOR	LK CATHERINE (1,2,3)/WILSON CK (5)	8040101	2F
AR0000531	REYNOLDS METALS CO-GUM SPRINGS	OUACHITA RV	8040102	2F
AR0000833	WEYERHAEUSER CO-MOUNTAIN PINE	GLAZYPEAU CK	8040101	2F
AR0000850	MOUNTAIN VALLEY SPRING CO	TRIB,GLAZYPEAU CK,OUACHITA RV	8040101	2F
AR0000868	HOT SPRING CO-JONES MILL WWTF	COVE CK	8040102	2F
AR0001147	ENTERGY AR, INC-LK CATHERINE	LK CATHERINE,OUACHITA RV	8040101	2F
AR0001201	BICC GENERAL CABLE IND, INC	TRIB, COVE CK	8040102	2F
AR0020109	USDAFS-OUACHITA CCC	OUACHITA RV	8040101	2F
AR0020222	USA-COE IRON MTN REC AREA-DEGRAY	DEGRAY LK	8040102	2F
AR0020231	USA-COE SHOUSE FORD REC AREA	DEGRAY LK	8040102	2F
AR0020605	ARKADELPHIA, CITY OF	OUACHITA RV	8040102	2F
AR0021539	MOUNTAIN PINE, CITY OF	GLAZYPEAU CK,OUACHITA RV	8040101	2F
AR0022781	USA-COE SPILLWAY REC AREA-OUAC	LK OUACHITA	8040101	2F
AR0022799	USA-COE LITTLE FIR REC AREA-	LK OUACHITA	8040101	2F
AR0022802	USA-COE BRADY MTN REC AREA-OUA	LK OUACHITA	8040101	2F
AR0033855	MOUNT IDA, CITY OF	S FORK OUACHITA RV, OUACHITA RV	8040101	2F
AR0033880	HOT SPRINGS, CITY OF (HOT SPGS	LK CATHERINE	8040101	2F
AR0034126	MALVERN, CITY OF	OUACHITA RV	8040102	2F
AR0035394	USA-COE DENBY POINT REC AREA	LK OUACHITA	8040101	2F
AR0035408	USA-COE TOMPKINS BEND REC AREA	LK OUACHITA	8040101	2F
AR0035416	USA-COE CRYSTAL SPRINGS REC AR	LK OUACHITA	8040101	2F
AR0035424	USA-COE JOPLIN RECREATION AREA	LK OUACHITA	8040101	2F
AR0035432	USA-COE CADDO DRIVE REC AREA-	DEGRAY LK	8040102	2F
AR0035459	USA-COE ALPINE RIDGE REC AREA-	DEGRAY LK,CADDO RV	8040102	2F
AR0035645	GLENWOOD, CITY OF	CADDO RV	8040102	2F
AR0035939	SPARKMAN, CITY OF	TRIB,CYPRESS CK,OUACHITA RV	8040102	2F
AR0036013	USA-COE ARLIE MOORE REC AREA-	DEGRAY LK,CADDO RV,OUACHITA RV	8040102	2F
AR0036021	USA-COE SPILLWAY REC AREA-DEGR	DEGRAY LK	8040102	2F
AR0036609	TREMONT CORP - FORMERLY NL IND	BLACK VALLEY CK TRIB,S FK CADDO RV	8040102	2F
AR0036692	MENA, CITY OF	TRIB,PRAIRIE CK,QUACHITA RV	8040101	2F
AR0036749	ARKADELPHIA HUMAN DEV CTR	CADDO RV TRIB	8040102	2F
AR0037061	AR PARKS & TOURISM-LK DEGRAY	DEGRAY LK	8040102	2F
AR0036811	AR PARKS & TOURISM-LK OUACHITA	LK OUACHITA	8040101	2F

Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0038121	AR PARKS & TOURISM-LK CATHERIN	LK CATHERINE,OUACHITA RV	8040101	2F
AR0038270	BAKER-HUGHES INTEQ	SOUTH FORK CADDO RV	8040102	2F
AR0039403	HARBOR EAST POA	DIT,LK OUACHITA	8040101	2F
AR0040801	SHANGRI-LA RESORT	LK OUACHITA	8040101	2F
AR0041050	CHURCH OF NAZARENE-HEATH VALLE	MACKS CK	8040101	2F
AR0041319	MILL POND VILLAGE-GARLAND CO	SORRELLS CK,LK HAMILTON	8040101	2F
AR0042293	HARBOR SOUTH DEVELOPMENT POA	LK OUACHITA TRIB	8040101	2F
AR0043125	NORMAN, CITY OF	CADDO RV	8040102	2F
AR0043354	ACME BRICK COMPANY-PERLA FACIL	TOWN CK,OUACHITA RV	8040102	2F
AR0044172	WESTWOOD VILLAGE POA	LK HAMILTON	8040101	2F
AR0044814	GS ROOFING PRODUCTS CO-SLATE	FIVE MILE CK	8040102	2F
AR0045128	MCCLARD SHOPPING CTR	TRIB,LOST CK,LK HAMILTON	8040102	2F
AR0045411	CADDO VALLEY, CITY OF	CADDO RV	8040102	2F
AR0045501	AR HWY DEPT-SOCIAL HILL REST A	TRIB,OUACHITA RV,2F-OUACHITA RB	8040102	2F
AR0045438	RIVIERA UTILITIES OF AR, INC	OUACHITA RV	8040101	2F
AR0045594	MOUNT IDA RETIREMENT CTR	TRIB,TWIN CK,LK OUACHITA	8040101	2F
AR0045624	LAKE HAMILTON SCHOOL DIST #5	LOST CK TRIB	8040101	2F
AR0045829	O'BRIEN'S PIZZA PUB	GLAZYPEAU CK TRIB	8040101	2F
AR0046612	BRAZEALE LUMBER CO	TRIB,BRUSHY CK,OUACHITA RV	8040102	2F
AR0047139	RAY WHITE LUMBER CO	TRIB,CYPRUS CK,OUACHITA RV	8040102	2F
AR0047228	MALVERN MINERALS-HOT SPRINGS	TRIB,E GULPHA CK,LK CATHERINE	8040101	2F
AR0047856	SHIELDS WOOD PRODUCTS, INC	TRIB,OUACHITA RV	8040102	2F
AR0047881	WELLS RBS TRAVEL CENTER	TRIB,DECEIPER CK, OUACHITA RV	8040102	2F
AR0048020	DONALDSON, TOWN OF	OUACHITA RV,2F-OUACHITA RB	8040102	2F
AR0048241	LAKE CENTER GROCERY	BIG HILL CK,DEGRAY LK	8040102	2F
AR0048275	CAMP OZARK	TRIB/OUACHITA RV	8040101	2F
AR0048615	DIAMONDHEAD RESORT-RIVIERA UTI	TRIB,LK CATHERINE	8040101	2F
AR0048755	ENTERGY AR, INC-CARPENTER DAM	OUACHITA RV	8040101	2F
AR0048763	ENTERGY AR, INC-REMMEL DAM	OUACHITA RV	8040101	2F
AR0048950	UMETCO MINERALS CORP-WILSON MI	WILSON CK, LK CATH	8040101	2F
AR0049026	GARLAND GASTON LUMBER CO	BRUSHY CK, OUACHITA RV	8040102	2F
AR0049115	MAGIC SPRINGS DEVELOPMENT CO	TRIB,GULPHA CK,LK CATHERINE	8040101	2F

Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0049417	DUKE ENERGY HOT SPRINGS, LLC	OUACHITA RV	8040102	2F

OUA0006A
OUACHITA RIVER NEAR MALVERN, AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	32	8.94	7.1	11	0.88
BOD_5 (mg/L)	31	0.57	0.09	1.22	0.24
pH (standard units)	32	7.20	6.91	7.41	0.12
Total Organic Carbon (mg/L)	31	3.50	2.62	5.5	0.68
Ammonia as N (mg/L)	35	0.02	<0.005	0.073	0.02
NO_2+NO_3 as N (mg/L)	35	0.22	0.1	0.407	0.07
Orthophosphate as P (mg/L)	35	0.01	<0.005	0.036	0.01
Total phosphorus as P (mg/L)	34	0.03	0.01	0.191	0.03
Total hardness (mg/L)	16	22.25	18	26	2.24
Chloride (mg/L)	35	2.73	2.11	3.66	0.42
Sulfate (mg/L)	34	9.75	4.64	16.54	2.97
Total dissolved solids (mg/L)	35	51.50	40.5	63.5	6.45
Total suspended solids (mg/L)	34	3.92	<1.0	12	2.42
Turbidity (NTU)	34	3.67	1.6	7.5	1.56

OUA0021
OUACHITA RIVER NEAR PENCIL BLUFF AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	9.10	4.95	13.38	2.13
BOD_5 (mg/L)	36	0.70	0	4.06	0.66
pH (standard units)	37	6.96	5.82	7.78	0.48
Total Organic Carbon (mg/L)	37	3.28	1.49	8.84	1.64
Ammonia as N (mg/L)	38	0.01	<0.005	0.096	0.02
NO_2+NO_3 as N (mg/L)	37	0.20	<0.01	1.385	0.28
Orthophosphate as P (mg/L)	38	0.01	<0.005	0.036	0.01
Total phosphorus as P (mg/L)	37	0.05	0.01	0.296	0.06
Total hardness (mg/L)	21	24.90	14	40	8.39
Chloride (mg/L)	38	2.42	1.35	4.53	0.50
Sulfate (mg/L)	39	4.35	2.92	8.9	1.13
Total dissolved solids (mg/L)	38	46.04	32	62	7.69
Total suspended solids (mg/L)	38	4.06	<1.0	18	3.78
Turbidity (NTU)	38	6.89	1.6	22	5.40

OUA0023
CADDO RIVER NEAR AMITY AR UPSTREAM OF HWY 84 BRIDGE

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	8.49	6.6	11.1	1.20
BOD_5 (mg/L)	35	0.55	0	1.51	0.31
pH (standard units)	38	7.46	6.87	7.71	0.18
Total Organic Carbon (mg/L)	34	2.15	1.221	4.2	0.64
Ammonia as N (mg/L)	39	0.01	<0.005	0.047	0.01
NO_2+NO_3 as N (mg/L)	39	0.16	<0.01	0.947	0.20
Orthophosphate as P (mg/L)	39	0.02	<0.005	0.048	0.01
Total phosphorus as P (mg/L)	37	0.04	0.01	0.23	0.04
Total hardness (mg/L)	19	35.61	<1.0	55	14.06
Chloride (mg/L)	39	2.43	1.98	3.07	0.30
Sulfate (mg/L)	38	5.38	3.94	12.1	1.44
Total dissolved solids (mg/L)	39	60.03	42	78	10.30
Total suspended solids (mg/L)	39	5.37	<1.0	49	7.78
Turbidity (NTU)	38	4.03	1.6	20	3.12

OUA0030
OUACHITA RIVER NEAR DONALDSON AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	35	8.61	6.9	10.2	0.79
BOD_5 (mg/L)	35	0.62	0.12	1.43	0.28
pH (standard units)	36	7.32	6.98	7.67	0.15
Total Organic Carbon (mg/L)	34	3.50	2.66	6.2	0.74
Ammonia as N (mg/L)	39	0.02	<0.005	0.084	0.02
NO_2+NO_3 as N (mg/L)	39	0.23	0.085	0.4	0.08
Orthophosphate as P (mg/L)	39	0.01	<0.005	0.037	0.01
Total phosphorus as P (mg/L)	37	0.03	0.01	0.06	0.01
Total hardness (mg/L)	18	23.00	18	28	2.66
Chloride (mg/L)	39	2.80	2.06	3.98	0.48
Sulfate (mg/L)	38	10.22	4.63	18.9	3.42
Total dissolved solids (mg/L)	39	53.09	39.5	72.5	7.35
Total suspended solids (mg/L)	39	3.65	<1.0	10.5	2.12
Turbidity (NTU)	38	3.53	1.7	7.3	1.47

OUA0040
PRAIRIE CREEK DOWNSTREAM OF MENA AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	8.79	4.44	12.88	2.18
BOD_5 (mg/L)	36	2.08	0.52	7.65	1.66
pH (standard units)	37	6.71	6.09	7.41	0.39
Total Organic Carbon (mg/L)	37	4.89	2.3	10.89	1.78
Ammonia as N (mg/L)	38	0.23	<0.005	1.436	0.31
NO_2+NO_3 as N (mg/L)	37	0.50	0.055	1.544	0.37
Orthophosphate as P (mg/L)	38	0.06	<0.005	0.305	0.07
Total phosphorus as P (mg/L)	37	0.15	0.022	0.486	0.12
Total hardness (mg/L)	21	23.68	10	36	7.52
Chloride (mg/L)	38	8.61	1.82	24.1	6.49
Sulfate (mg/L)	39	20.13	3.28	67.2	18.86
Total dissolved solids (mg/L)	38	82.51	32	180	40.06
Total suspended solids (mg/L)	38	12.70	1	63.5	12.27
Turbidity (NTU)	38	14.65	2.6	65	12.07

OUA0044
SOUTH FORK CADDO RIVER @ FANCY HILL AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	34	9.74	7.12	12.9	1.29
BOD_5 (mg/L)	33	0.29	0	1.16	0.28
pH (standard units)	36	7.19	6.74	7.42	0.13
Total Organic Carbon (mg/L)	32	1.35	<1.0	2	0.39
Ammonia as N (mg/L)	37	0.01	<0.005	0.032	0.01
NO_2+NO_3 as N (mg/L)	37	0.06	<0.01	0.141	0.03
Orthophosphate as P (mg/L)	37	0.01	<0.005	0.016	0.00
Total phosphorus as P (mg/L)	35	0.01	0.01	0.041	0.01
Total hardness (mg/L)	17	22.35	16	27	3.62
Chloride (mg/L)	37	1.62	1.37	2.13	0.17
Sulfate (mg/L)	36	12.23	4.18	18.7	3.04
Total dissolved solids (mg/L)	37	46.82	31	74	6.72
Total suspended solids (mg/L)	37	1.69	<1.0	8.5	1.54
Turbidity (NTU)	36	2.71	1	17	2.83

OUA0044T

UNNAMED TRIBUTARY OF SOUTH FORK CADDO RIVER NEAR FANCY HILL

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	35	9.91	6.85	12.3	1.22
BOD_5 (mg/L)	34	0.23	0	1.07	0.23
pH (standard units)	37	7.10	6.11	7.37	0.20
Total Organic Carbon (mg/L)	33	1.24	<1.0	2.15	0.45
Ammonia as N (mg/L)	38	0.01	<0.005	0.031	0.01
NO_2+NO_3 as N (mg/L)	38	0.07	<0.01	0.21	0.05
Orthophosphate as P (mg/L)	38	0.01	<0.005	0.038	0.01
Total phosphorus as P (mg/L)	36	0.04	0.01	0.749	0.12
Total hardness (mg/L)	18	27.39	14	40	7.05
Chloride (mg/L)	37	1.77	1.36	3.3	0.36
Sulfate (mg/L)	36	15.28	4.2	24.62	4.19
Total dissolved solids (mg/L)	38	56.24	33	78	9.62
Total suspended solids (mg/L)	38	1.73	<1.0	6.5	1.30
Turbidity (NTU)	37	2.85	1.5	7.2	1.12

OUA0159

COVE CREEK NEAR MAGNET COVE @ HWY. 51

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	29	8.97	6.9	13.5	1.19
BOD_5 (mg/L)	28	0.21	0	0.78	0.20
pH (standard units)	27	6.13	4.91	7.88	0.73
Total Organic Carbon (mg/L)	27	1.38	<1.0	2.3	0.45
Ammonia as N (mg/L)	30	0.00	<0.005	0.016	0.00
NO_2+NO_3 as N (mg/L)	30	0.15	0.01	0.892	0.20
Orthophosphate as P (mg/L)	30	0.01	<0.005	0.037	0.01
Total phosphorus as P (mg/L)	29	0.02	0.01	0.043	0.01
Total hardness (mg/L)	20	60.55	39	87	14.16
Chloride (mg/L)	30	2.51	1.86	3.21	0.33
Sulfate (mg/L)	28	60.19	23.99	97.76	18.35
Total dissolved solids (mg/L)	30	119.32	42	200.5	33.06
Total suspended solids (mg/L)	30	5.81	<1.0	13	3.68
Turbidity (NTU)	29	3.22	<1.0	8.6	2.16

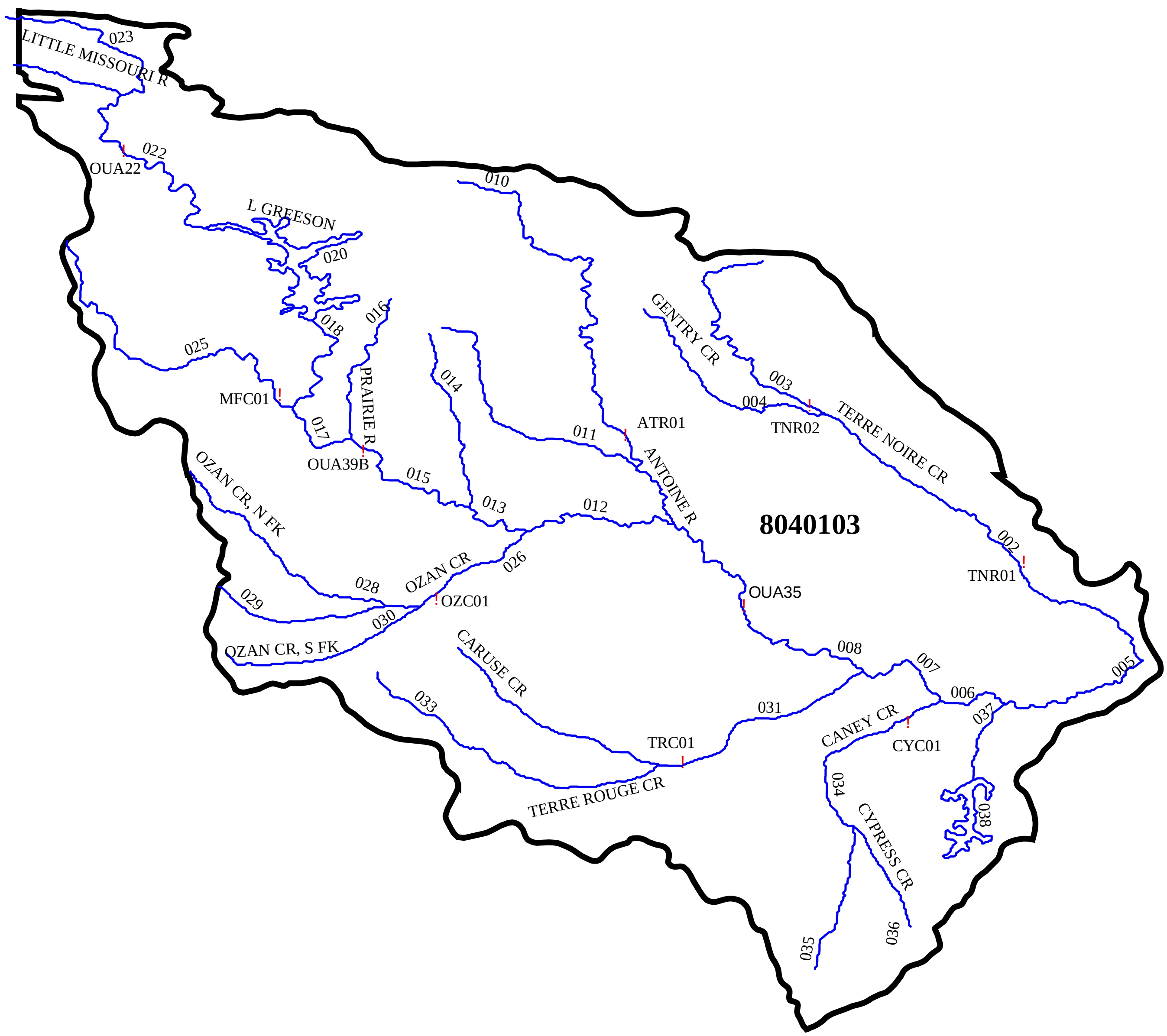
SEGMENT 2G - LITTLE MISSOURI RIVER AND ANTOINE RIVER (OUACHITA RIVER BASIN)

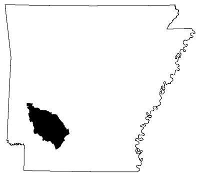
Segment 2G, located in the southwestern part of the State, covers most of Nevada and Pike Counties, large areas of Clark and Hempstead Counties, and small portions of Ouachita, Howard, Polk and Montgomery Counties. This segment encompasses the entire drainage area of the Little Missouri River with its tributaries. Major tributaries include the Antoine River, Muddy Fork, Caney Creek, Terre Noire Creek and Terre Rouge Creek. There are two large impoundments in the segment, Lake Greeson and White Oak Lake.

SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. Approximately 17 percent of the waters within this segment are designated as extraordinary resource waters. This segment contains a total of 427.5 stream miles, of which 354.6 are being assessed. Monitoring data were used to assess 208.1 miles of stream and the remaining 146.5 miles are evaluated. All assessed stream reaches in the basin are meeting all designated uses and water quality criteria.

Planning Segment 2G - Monitoring Stations

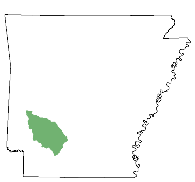




Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-2G																			
L. Missouri R.	8040103	-001	1.8		E	S	S	S	S	S	S					1	FISH CONSUMPTION	354.6	0
L. Missouri R.	8040103	-005	10.4		E	S	S	S	S	S	S					1	AQUATIC LIFE	354.6	0
L. Missouri R.	8040103	-006	4.6		E	S	S	S	S	S	S					1	PRIMARY CONTACT	354.6	0
L. Missouri R.	8040103	-007	7		E	S	S	S	S	S	S					1	SECONDARY CONTACT	354.6	0
L. Missouri R.	8040103	-008	19.6	OUA35	M	S	S	S	S	S	S					1	DRINKING SUPPLY	354.6	0
Terre Noire Cr.	8040103	-002	27.4	TNR01	M	S	S	S	S	S	S					1	AGRI & INDUSTRY	354.6	0
Terre Noire Cr.	8040103	-003	19.6	TNR02	M	S	S	S	S	S	S					1			
Gentry Creek	8040103	-004	15.4		U											3			
Antoine River	8040103	-009	5.4		E	S	S	S	S	S	S					1			
Antoine River	8040103	-010	31.6	ATR01	M	S	S	S	S	S	S					1			
Wolf Creek	8040103	-011	18		E	S	S	S	S	S	S					1			
L. Missouri R.	8040103	-012	10.8		E	S	S	S	S	S	S					1			
L. Missouri R.	8040103	-013	5		E	S	S	S	S	S	S					1			
L. Missouri R.	8040103	-015	10.5	OUA39B	M	S	S	S	S	S	S					1			
L. Missouri R.	8040103	-017	5.5		E	S	S	S	S	S	S					1			
L. Missouri R.	8040103	-018	8.9		E	S	S	S	S	S	S					1			
L. Missouri R.	8040103	-022	17.6	OUA22	M	S	S	S	S	S	S					1			
L. Missouri R.	8040103	-023	13.6		E	S	S	S	S	S	S					1			
Saline Creek	8040103	-014	13.1		E	S	S	S	S	S	S					1			
Prairie Creek	8040103	-016	11.2		E	S	S	S	S	S	S					1			
Long Creek	8040103	-024	6.8		E	S	S	S	S	S	S					1			
Muddy Fork	8040103	-025	24.4	MFC01	M	S	S	S	S	S	S					1			
Ozan Creek	8040103	-026	8.6	OZC01	M	S	S	S	S	S	S					1			
Ozan Creek	8040103	-027	2		U											3			
N. Fork Ozan	8040103	-028	16.4		U											3			
M. Fork Ozan	8040103	-029	10.9		U											3			
S. Fork Ozan	8040103	-030	13		U											3			
Terre Rouge	8040103	-031	14.5	TRC01	M	S	S	S	S	S	S					1			
Caruse Creek	8040103	-032	15.2		U											3			
Terre Rouge	8040103	-033	20.7		M	S	S	S	S	S	S					1			
Caney Creek	8040103	-034	13.6	CYC01	M	S	S	S	S	S	S					1			
Caney Creek	8040103	-035	10.6		E	S	S	S	S	S	S					1			
Cypress Creek	8040103	-036	7.9		E	S	S	S	S	S	S					1			
White Oak Creek	8040103	-037	5.9		E	S	S	S	S	S	S					1			
TOTAL MILES	427.5																		
MILES UNASSESSED	72.9																		
MILES EVALUATED	146.5																		
MILES MONITORED	208.1																		

Planning Segment 2G - NPDES Permitted Facilities



Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0000612	FIRESTONE BUILDING PRODUCTS CO	GARLAND CK & PINE CK	8040103	2G
AR0000906	POTLATCH CORP-OZAN UNIT	MILL CK,TERRE ROUGE CK,LTL MISSOURI	8040103	2G
AR0020729	JAMES HARDIE GYPSUM, INC	BLUFF CK,MUDDY FORK CK-LTL MISSOURI	8040103	2G
AR0021521	AMITY, CITY OF	LTL ANTOINE CK-RV,LTL MISSOURI RV	8040103	2G
AR0022551	GURDON, CITY OF	CANEY CK,TERRE NOIR CK,LTL MO RV	8040103	2G
AR0022764	USA-COE KIRBY LANDING REC AREA	LK GREESON	8040103	2G
AR0022772	USA-COE SELF CK REC AREA-GREES	LK GREESON	8040103	2G
AR0033481	PRESCOTT, CITY OF	TRB/SEWER CK,TERRE ROUGE CK,LT MO R	8040103	2G
AR0036048	USA-COE COWHIDE COVE REC AREA-	LK GREESON	8040103	2G
AR0037796	INTERNATIONAL PAPER CO-GURDON	DIT-HWY 67N,CANEY CK,TERRE NOIRE CK	8040103	2G
AR0038113	AR PARKS & TOURISM-DAISY STATE	LK GREESON	8040103	2G
AR0038458	HOPE, CITY OF-PATE CREEK WWTP	PATE CK,TERRE ROUGE CK,LTL MO RV	8040103	2G
AR0040339	INTERNATIONAL PAPER CO-WHELEN	DIT,TRIB,W FK BEECH CK	8040103	2G
AR0041432	DELIGHT, CITY OF	WOLF CK	8040103	2G
AR0041688	BLEVINS, CITY OF	TRIB,OZAN CK,LTL MISSOURI RV	8040103	2G
AR0041815	EMMET, CITY OF	TERRE ROUGE CK,LTL MO RV,OUACHITA R	8040103	2G
AR0042439	NEVADA SCHOOL DIST #1	TRIB,MID CANEY CK,LTL MISSOURI RV	8040103	2G
AR0043281	MURFREESBORO, CITY OF	LTL MISSOURI RV	8040103	2G
AR0043818	HANSON AGGREGATES WEST, INC	WOLF CK,ANTOINE CK,LTL MISSOURI RV	8040103	2G
AR0044270	AR HWY DEPT-GURDON REST AREA	TRIB,BOGGY CK	8040103	2G
AR0045551	DEATON’S SOUTHFORK TRUCK STOP	S. BOAT DIT,TERRE NOIR CK TRIB	8040103	2G
AR0047155	R.D. PLANT CONTRACTING CO	LTL MISSOURI RV	8040103	2G
AR0047180	PERRYTOWN, CITY OF	PATE CK,TERRE ROUCH CK,LTL MO RV	8040103	2G
AR0047546	ANTHONY TIMBERLANDS, INC	MCNEELEY CK,LTL MISSOURI RV	8040103	2G
AR0048038	DIAMOND OPERATIONS, INC	PARKER CREEK TRIB,PRAIRIE CK	8040103	2G
AR0048551	OKOLONA, CITY OF-WWTP	LTL MISSOURI RV TRIB	8040103	2G
AR0049395	HANSON AGGREGATES-PRESCOTT PLA	UPPER DIT,LTL MISSOURI RV	8040103	2G

OUA0022
LITTLE MISSOURI RIVER NEAR LANGLEY AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	9.38	7.06	10.9	0.97
BOD_5 (mg/L)	35	0.31	0.01	1.16	0.22
pH (standard units)	38	7.17	6.94	7.44	0.16
Total Organic Carbon (mg/L)	34	1.37	<1.0	2.52	0.48
Ammonia as N (mg/L)	39	0.01	<0.005	0.03	0.01
NO_2+NO_3 as N (mg/L)	39	0.06	<0.01	0.191	0.04
Orthophosphate as P (mg/L)	39	0.01	<0.005	0.039	0.01
Total phosphorus as P (mg/L)	37	0.01	0.01	0.043	0.01
Total hardness (mg/L)	18	15.72	7	26	5.30
Chloride (mg/L)	39	1.63	1.3	2.12	0.20
Sulfate (mg/L)	38	3.45	2.67	4.77	0.39
Total dissolved solids (mg/L)	39	33.45	23	45	5.62
Total suspended solids (mg/L)	39	1.42	<1.0	6.3	1.18
Turbidity (NTU)	38	1.89	<1.0	8.3	1.25

OUA0035
LITTLE MISSOURI RIVER NEAR BOUGHTON AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	7.97	4.77	11.83	1.42
BOD_5 (mg/L)	37	0.89	0	2.55	0.62
pH (standard units)	38	7.10	5.37	7.99	0.49
Total Organic Carbon (mg/L)	37	4.73	2.4	11.6	2.37
Ammonia as N (mg/L)	40	0.02	<0.005	0.1	0.02
NO_2+NO_3 as N (mg/L)	40	0.18	<0.01	0.89	0.18
Orthophosphate as P (mg/L)	40	0.02	<0.005	0.072	0.01
Total phosphorus as P (mg/L)	37	0.05	0.01	0.235	0.04
Total hardness (mg/L)	19	21.99	12	35	7.65
Chloride (mg/L)	40	2.97	1.85	5.38	0.79
Sulfate (mg/L)	40	8.04	3.35	18.97	4.20
Total dissolved solids (mg/L)	37	56.73	35	95	16.68
Total suspended solids (mg/L)	36	14.45	2.5	68	14.12
Turbidity (NTU)	37	17.24	7.1	69	13.17

OUA0039B
LITTLE MISSOURI RIVER DOWNSTREAM OF MURFREESBORO

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	8.72	6.4	11.5	1.30
BOD_5 (mg/L)	36	0.80	0.07	7.07	1.18
pH (standard units)	38	7.13	6.45	9.9	0.54
Total Organic Carbon (mg/L)	35	3.73	1.5	12.6	1.79
Ammonia as N (mg/L)	39	0.02	<0.005	0.073	0.02
NO_2+NO_3 as N (mg/L)	39	0.22	<0.01	0.606	0.13
Orthophosphate as P (mg/L)	39	0.01	<0.005	0.067	0.01
Total phosphorus as P (mg/L)	37	0.03	0.01	0.239	0.04
Total hardness (mg/L)	18	22.17	9	45	11.46
Chloride (mg/L)	39	2.72	1.66	4.67	0.78
Sulfate (mg/L)	38	14.94	3.24	117.9	19.60
Total dissolved solids (mg/L)	39	58.63	27	209	33.95
Total suspended solids (mg/L)	38	3.73	<1.0	13	2.66
Turbidity (NTU)	38	8.37	1.3	140	22.09

ARKANSAS RIVER BASIN

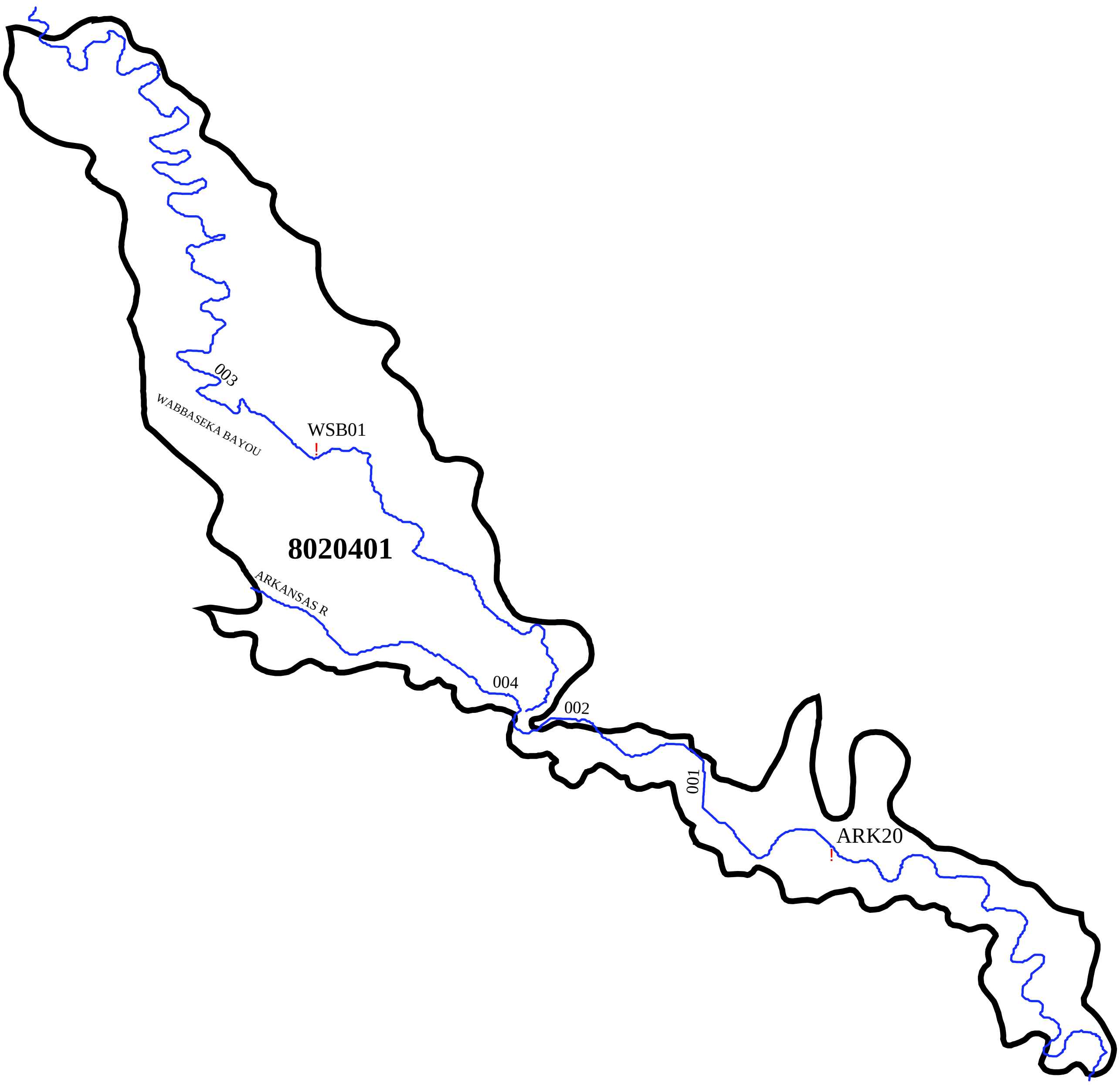
SEGMENT 3A - LOWER ARKANSAS RIVER

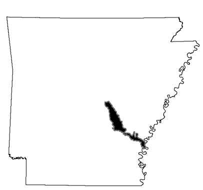
Segment 3A, located in the southeastern part of the State, includes small portions of Desha, Lincoln, Jefferson and Arkansas Counties. These waters make-up the last 52-mile segment of the main stem of the Arkansas River and the Wabbaseka Bayou tributary.

SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. Monitoring data was used to assess 52.2 stream miles of the Arkansas River within this segment and 101.7 miles of Wabbaseka Bayou. The remaining 32.7 stream miles were evaluated. The data indicate that all designated uses are being maintained, although there was some concern for elevated bacteria and nutrients found in Wabbaseka Bayou.

Planning Segment 3A - Monitoring Stations

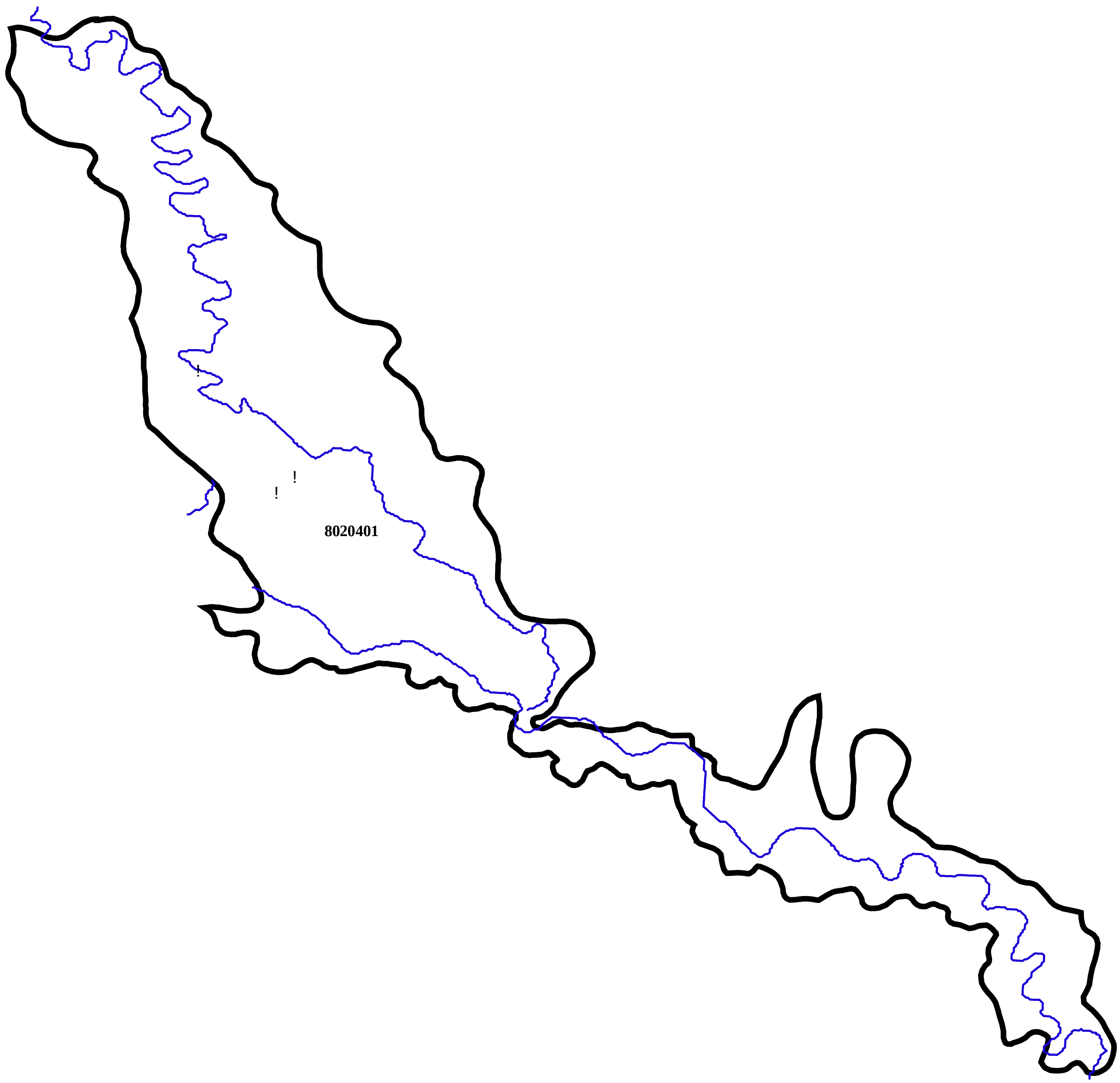




Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-3A																			
Arkansas River	8020401	-001	52.2	ARK20	M	S	S	S	S	S	S					1	FISH CONSUMPTION	186.6	0
Arkansas River	8020401	-002	13.3		E	S	S	S	S	S	S					1	AQUATIC LIFE	186.6	0
Wabbaseka B.	8020401	-003	101.7	WSB01	M	S	S	S	S	S	S					1	PRIMARY CONTACT	186.6	0
Arkansas River	8020401	-004	19.4		E	S	S	S	S	S	S					1	SECONDARY CONTACT	186.6	0
TOTAL MILES	186.6																DRINKING SUPPLY	186.6	0
MILES UNASSESSED	0																AGRI & INDUSTRY	186.6	0
MILES EVALUATED	32.7																		
MILES MONITORED	153.9																		

Planning Segment 3A - NPDES Permitted Facilities



Active NPDES Permits				
Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0034771	ALTHEIMER, CITY OF	ARKANSAS RV	8020401	3A
AR0035980	AR DEPT OF CORRECTION-TUCKER	LAGOON/WABBASEKA BU/ARK RV/3B-AR RB	8020401	3A
AR0039896	WABBASEKA, CITY OF	TRIB,BRADLEY SLOUGH,3B-AR RB	8020401	3A

ARK0020
ARK RIVER @ DAM NO 2

Parameter	Valid Data Points	Average	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	8.18	5.5	11.53	1.35
BOD_5 (mg/L)	36	1.38	0.29	3.59	0.66
pH (standard units)	35	7.71	6.47	8.73	0.48
Total Organic Carbon (mg/L)	36	5.50	2.55	7.7	1.01
Ammonia as N (mg/L)	37	0.06	<0.005	0.448	0.08
NO_2+NO_3 as N (mg/L)	38	0.36	0.01	0.85	0.27
Orthophosphate as P (mg/L)	37	0.07	0.018	0.592	0.09
Total phosphorus as P (mg/L)	35	0.12	0.047	0.31	0.06
Total hardness (mg/L)	19	126.16	74	177	30.47
Chloride (mg/L)	38	68.93	4.72	114.68	28.05
Sulfate (mg/L)	39	53.30	6.47	97.6	24.26
Total dissolved solids (mg/L)	37	306.40	132	447.5	86.53
Total suspended solids (mg/L)	37	27.42	<1.0	215.5	44.24
Turbidity (NTU)	37	28.89	2.9	240	42.57

SEGMENT 3B - BAYOU METO AND TRIBUTARIES (ARKANSAS RIVER BASIN)

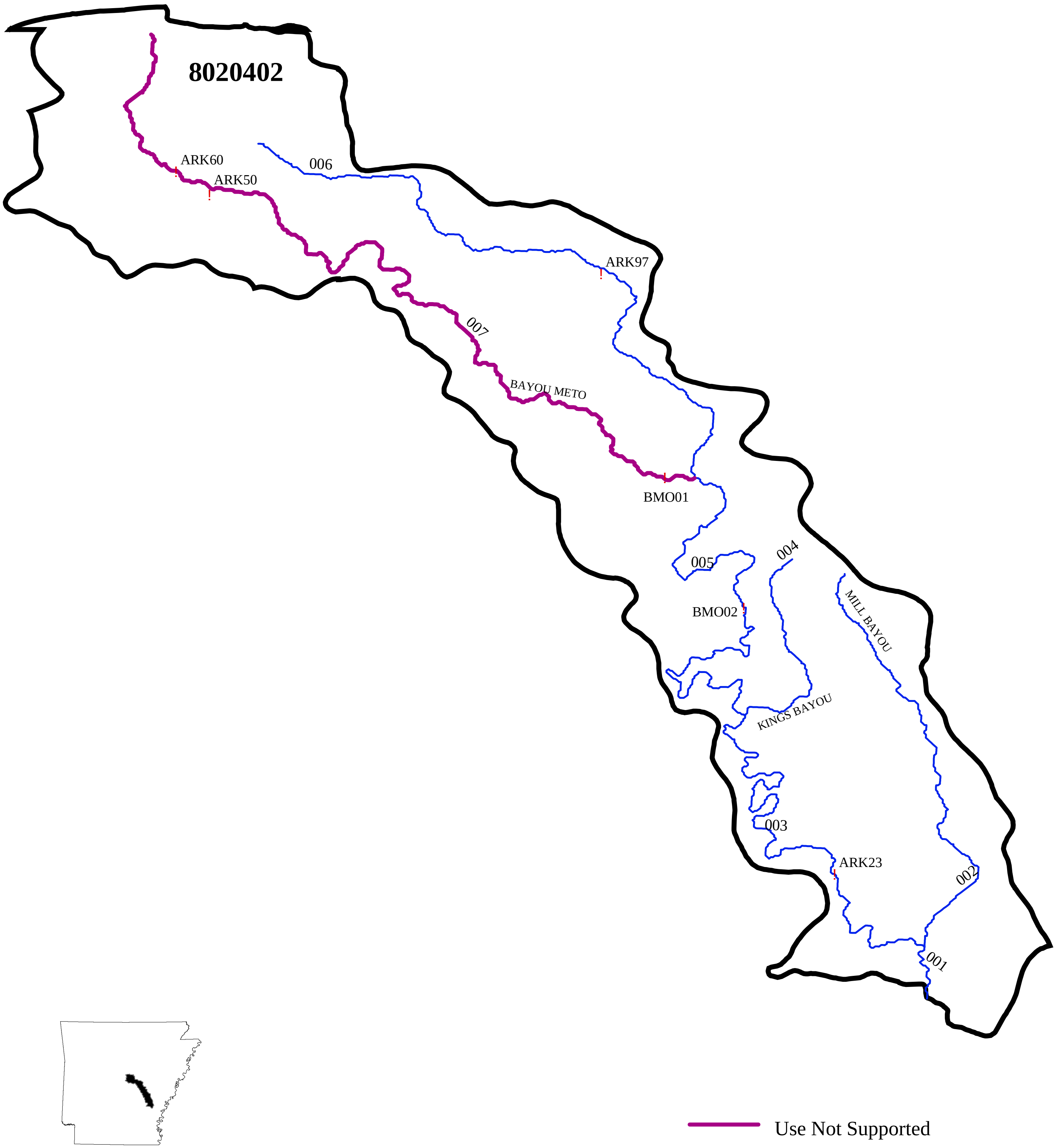
Segment 3B is located in the east central portion of Arkansas and includes a major portion of Lonoke County, as well as parts of Arkansas, Jefferson, Faulkner, Pulaski and Prairie Counties. Bayou Meto and its tributaries comprise the major surface water resource in the segment. Major tributaries include Bayou Two Prairie, Mill Bayou, and Kings Bayou.

SUMMARY OF WATER QUALITY CONDITIONS IN SEGMENT 3B

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. This segment contains a total of 242.3 stream miles, of which the majority are being assessed. This report uses monitoring data from four monthly and one quarterly stations to assess 191.7 miles of stream. The monitoring data from these stations was used to evaluate an additional 4.3 miles of streams. The remaining 46.3 miles of stream were unassessed.

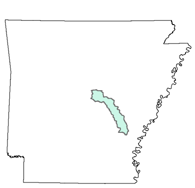
The upper reach of Bayou Meto is under a fish consumption advisory due to the presence of dioxin in fish tissue. The source has been eliminated and the contamination is being addressed through natural attenuation. One of the most common complaints concerning this stream is that pumping water from the Bayou for irrigation purposes is severely impairing the stream uses.

Planning Segment 3B - Monitoring Stations



STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-3B																			
Bayou Meto	8020402	-001	4.3		E	S	S	S	S	S	S					1	FISH CONSUMPTION	130.3	65.7
Bayou Meto	8020402	-003	39.8	ARK23	M	S	S	S	S	S	S					1	AQUATIC LIFE	196	0
Bayou Meto	8020402	-005	41.5	BMO02	M	S	S	S	S	S	S					1	PRIMARY CONTACT	196	0
Bayou Meto	8020402	-007	65.7	ARK60,50	M	N	S	S	S	S	S	IP		PO		5	SECONDARY CONTACT	196	0
Mill Bayou	8020402	-002	31		U											3	DRINKING SUPPLY	196	0
Kings Bayou	8020402	-004	15.3		U											3	AGRI & INDUSTRY	196	0
B.Two Prairie	8020402	-006	44.7	ARK97	M	S	S	S	S	S	S					1			
TOTAL MILES	242.3																		
MILES UNASSESSED	46.3																		
MILES EVALUATED	4.3																		
MILES MONITORED	191.7																		

Planning Segment 3B - NPDES Permitted Facilities



Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0000949	USAF-LITTLE ROCK AFB-JACKSONVI	CYPRUS BRANCH/JACK BAYOU/ARK. RIVER	8020402	3B
AR0001163	REMINGTON ARMS CO-LONOKE	BU METO,AR RV	8020402	3B
AR0021661	CABOT, CITY OF	BU TWO PRAIRIE TRIB,BU METO	8020402	3B
AR0022284	HUMPHREY, CITY OF	LATERAL #5 DT,BEAR BU,SALT BU,AR RB	8020402	3B
AR0022390	GILLETT, CITY OF	FLAG LK SLU, FLAG LK	8020402	3B
AR0033642	GRAVEL RIDGE SID #213	KELLOGG CK TRIB,BU METO	8020402	3B
AR0033740	CARLISLE, CITY OF	BU TWO PRAIRIE/BU METO/ARK RV	8020402	3B
AR0034380	STUTTGART, CITY OF	KING BU,BU METO,AR RV	8020402	3B
AR0034746	LONOKE, CITY OF	BAYOU TWO PRAIRIE/BAYOU META/ARK RV	8020402	3B
AR0037176	SHERWOOD, CITY OF INDIAN HEAD	KELLOGG CK TRIB,BU METO	8020402	3B
AR0038075	RUNYAN SID #211	TRIB,KELLOGG CK,BU METO,AR RV	8020402	3B
AR0040126	MACON P0A, INC	TRIB-CYPRESS BAYOU/SEG 3B-ARK RV BS	8020402	3B
AR0041335	JACKSONVILLE SEWER COMMISSION	BU METO, ARKANSAS RV	8020402	3B
AR0041696	L'OREAL USA PRODUCTS, INC.	INK BU TRIB, AR RV	8020402	3B
AR0043761	ALMYRA, CITY OF	MILL BAYOU, BIG BU METO, AR RV	8020402	3B
AR0044318	SKEETER HOLE, LLC	INK BU	8020402	3B
AR0044598	PCSSD - BAYOU METO ELEMENTARY	BU METO	8020402	3B
AR0046311	FRESHOUR CONSTRUCTION CO, INC	TRIB, WHITE OAK BR	8020402	3B
AR0046540	STONE VALLEY MHP	BU METO	8020402	3B
AR0047309	ARKANSAS PRECAST CORP	TRIB, BU METO, AR RV	8020402	3B
AR0048313	H. A. C. T. WW IMPROVEMENT DIST	CROOKED CK, BU METO, AR RV	8020402	3B

Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0041149	AR MILITARY DEPT-CAMP ROBINSON	5-MI CK,AR RV,3C-AR RB	8020402	3B
AR0041335	JACKSONVILLE SEWER COMMISSION	BAYO METO THEN ARKANSAS RIVER	8020402	3B
AR0041696	MAYBELLINE, INC	INK BU TRIB,ARKANSAS RV	8020402	3B
AR0042315	CROSSETT HARBOR PORT AUTHORITY	OUACHITA RV	8020402	3B
AR0043761	ALMYRA, CITY OF	MILL BAYOU,BIG BU METO,AR RV	8020402	3B
AR0044318	SKEETER HOLE, LLC	INK BU	8020402	3B
AR0044598	PCSSD-BAYOU METO ELEM SCH	BAYOU METO,3B-AR RB	8020402	3B
AR0046311	FRESHOUR CONSTRUCTION CO, INC	WHITE OAK BRANCH TRIB	8020402	3B
AR0046540	STONE VALLEY MHP	BU METO/AR RV/SEG 3B OF ARKANSAS RB	8020402	3B
AR0047309	ARKANSAS PRECAST CORP	TRIB/BAYOU METO/ARK RV/3B-ARK RB	8020402	3B

ARK0023
BAYOU METO NEAR BAYOU METO AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	6.52	3.4	8.7	1.37
BOD_5 (mg/L)	36	2.78	1.11	6.77	1.42
pH (standard units)	35	7.22	5.87	8.53	0.61
Total Organic Carbon (mg/L)	36	9.58	5.201	15.71	2.73
Ammonia as N (mg/L)	37	0.05	<0.005	0.27	0.06
NO_2+NO_3 as N (mg/L)	38	0.14	<0.01	0.595	0.15
Orthophosphate as P (mg/L)	37	0.08	0.01	0.22	0.05
Total phosphorus as P (mg/L)	36	0.20	0.053	0.435	0.10
Total hardness (mg/L)	19	98.58	25	228	65.38
Chloride (mg/L)	38	29.43	4.2	100.16	25.56
Sulfate (mg/L)	39	18.22	4.67	81.12	17.61
Total dissolved solids (mg/L)	37	210.15	92	410.5	88.33
Total suspended solids (mg/L)	37	21.83	6	72.5	14.41
Turbidity (NTU)	38	40.01	7.3	180	37.68

ARK0050
BAYOU METO @ HWY 161 NEAR JACKSONVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	6.74	3.11	11.7	2.41
BOD_5 (mg/L)	35	1.80	0.71	5.36	0.91
pH (standard units)	38	7.04	6.72	8.84	0.36
Total Organic Carbon (mg/L)	35	6.69	3.322	9.176	1.42
Ammonia as N (mg/L)	38	0.09	<0.005	0.593	0.10
NO_2+NO_3 as N (mg/L)	39	2.46	0.107	8.395	2.47
Orthophosphate as P (mg/L)	38	0.85	0.027	3.39	0.96
Total phosphorus as P (mg/L)	37	0.98	0.062	3.239	0.92
Total hardness (mg/L)	19	36.05	13	59	15.62
Chloride (mg/L)	37	20.59	1.63	49.3	15.50
Sulfate (mg/L)	38	12.88	3.08	27.1	7.99
Total dissolved solids (mg/L)	39	130.60	37.5	264	72.11
Total suspended solids (mg/L)	38	26.49	3.2	266.8	43.61
Turbidity (NTU)	37	31.15	5	192	39.76

ARK0060
BAYOU METO @ W MAIN ST BRIDGE IN JACKSONVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	5.33	2.02	13.4	3.16
BOD_5 (mg/L)	35	2.01	0.58	5.88	1.09
pH (standard units)	38	6.89	6.39	7.55	0.26
Total Organic Carbon (mg/L)	35	5.54	3.42	9.96	1.50
Ammonia as N (mg/L)	38	0.04	<0.005	0.235	0.05
NO_2+NO_3 as N (mg/L)	39	0.14	<0.01	0.704	0.17
Orthophosphate as P (mg/L)	38	0.01	<0.005	0.093	0.02
Total phosphorus as P (mg/L)	37	0.08	0.01	0.237	0.04
Total hardness (mg/L)	19	21.53	10	41	9.26
Chloride (mg/L)	37	3.98	1.19	7.67	1.28
Sulfate (mg/L)	38	4.75	1.2	15.4	2.76
Total dissolved solids (mg/L)	39	68.08	36	344.5	56.42
Total suspended solids (mg/L)	38	14.45	2.5	228	35.84
Turbidity (NTU)	37	15.33	4.4	78	12.49

ARK0097
BAYOU TWO PRAIRIE @ HWY 13 SOUTH OF CARLISLE

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	6.10	2.89	11.4	2.41
BOD_5 (mg/L)	35	3.23	1.23	7.3	1.80
pH (standard units)	37	7.04	6.69	7.59	0.25
Total Organic Carbon (mg/L)	35	10.01	4.852	17.5	2.47
Ammonia as N (mg/L)	38	0.12	<0.005	0.5844	0.12
NO_2+NO_3 as N (mg/L)	39	0.35	0.042	0.98	0.22
Orthophosphate as P (mg/L)	38	0.76	0.018	7.33	1.41
Total phosphorus as P (mg/L)	37	0.93	0.087	7.058	1.36
Total hardness (mg/L)	19	83.05	15	140	40.90
Chloride (mg/L)	37	28.01	2.98	85.71	20.84
Sulfate (mg/L)	38	10.04	3.28	18.9	4.04
Total dissolved solids (mg/L)	39	182.95	64	376	79.86
Total suspended solids (mg/L)	38	28.19	5.2	287.6	45.49
Turbidity (NTU)	37	43.76	4	290	64.84

SEGMENT 3C - ARKANSAS RIVER AND TRIBUTARIES: LOCK AND DAM NO. 4 TO LOCK AND DAM NO. 7 (ARKANSAS RIVER BASIN)

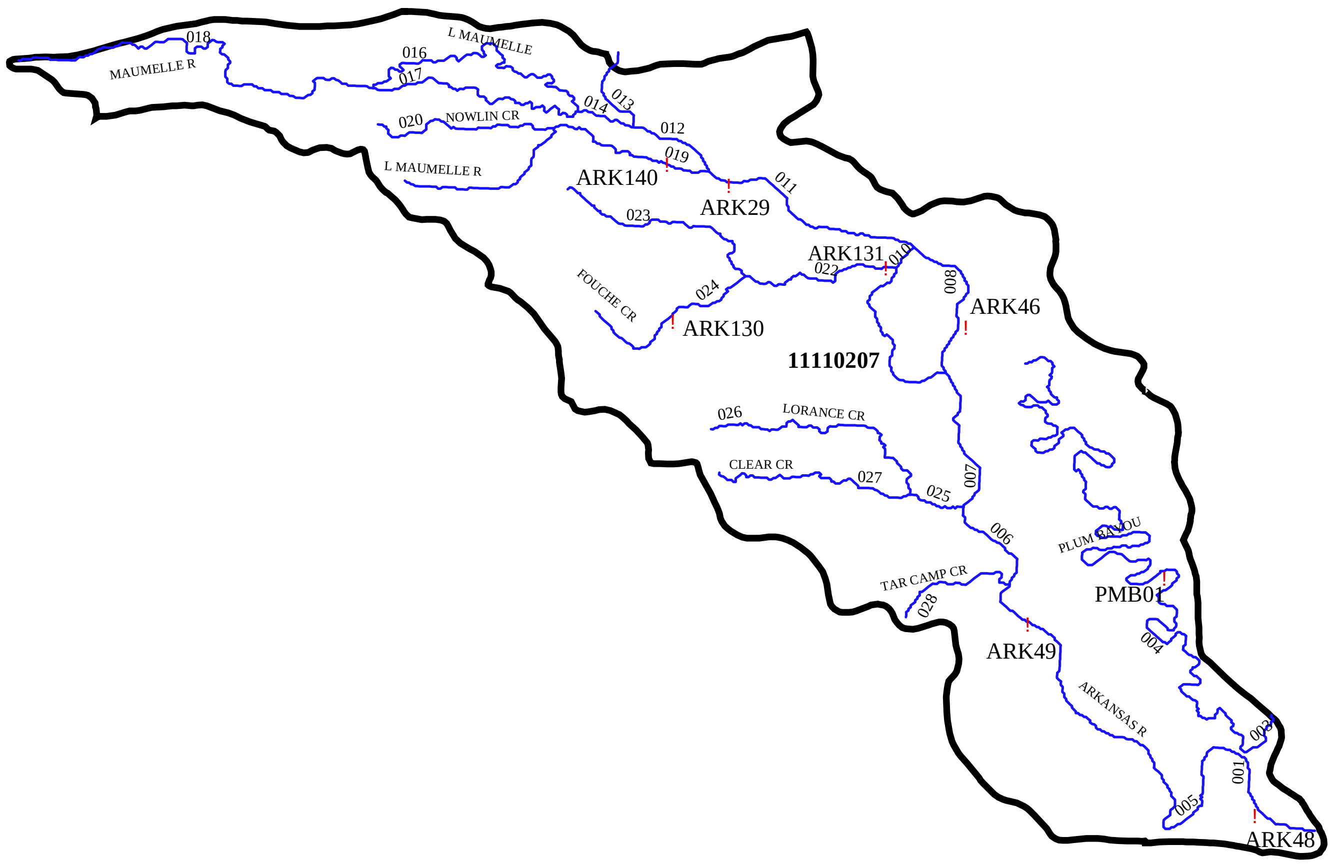
Segment 3C is located in central Arkansas and covers large portions of Pulaski and Jefferson Counties as well as small areas of Grant, Saline and Lonoke Counties. The Arkansas River, with its tributaries, is the major surface water resource in this segment. The principal tributaries within this segment are Plum Bayou, Maumelle River and Fouche Creek. Lake Pine Bluff and Lake Maumelle are located in this segment.

SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. This planning segment contains a total of 291.8 stream miles, and 214.6 miles are being assessed. Four monitoring stations are located on the main stem of the Arkansas River which provides monitored data for 52.2 miles of the river. An additional 15.4 miles of the Arkansas River were evaluated. Data from USGS studies on the Maumelle River was used to assess this stream. Quarterly monitoring was conducted at one station on Plum Bayou. The remaining 77.2 miles within this planning segment were unassessed.

Although occasional high turbidity values occur in the Arkansas River within this planning segment, the value and frequency of occurrence are relatively low. This may be due to lower magnitudes and frequency of storm events during the past years. As a result,the Arkansas River was assessed as supporting all designated uses. All other assessed waters in this segment were meeting all designated uses.

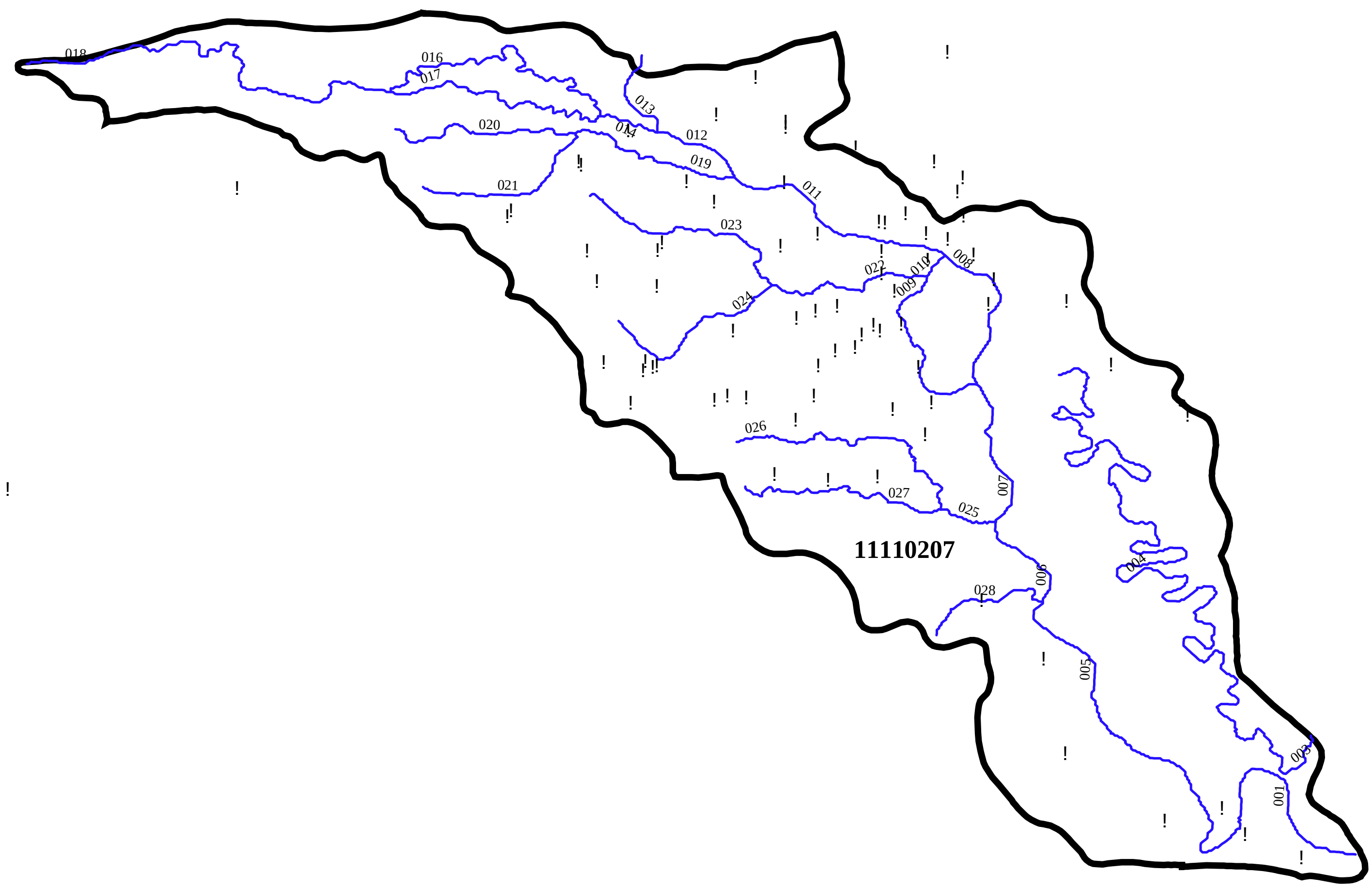
Planning Segment 3C - Monitoring Stations



Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-3C																			
Arkansas River	11110207	-001	6.7	ARK48	M	S	S	S	S	S	S					1	FISH CONSUMPTION	214.6	0
Plum Bayou	11110207	-002	0.3		M	S	S	S	S	S	S					1	AQUATIC LIFE	214.6	0
Indian Bayou	11110207	-003	3.2		U											3	PRIMARY CONTACT	214.6	0
Plum Bayou	11110207	-004	68.4	PMB01	M	S	S	S	S	S	S					1	SECONDARY CONTACT	214.6	0
Arkansas River	11110207	-005	28	ARK49	M	S	S	S	S	S	S					1	DRINKING SUPPLY	214.6	0
Arkansas River	11110207	-006	6.2		E	S	S	S	S	S	S					1	AGRI & INDUSTRY	214.6	0
Arkansas River	11110207	-007	9.2		E	S	S	S	S	S	S					1			
Arkansas River	11110207	-008	9.8	ARK46	M	S	S	S	S	S	S					1			
Fourche Bayou	11110207	-009	11		U											3			
Fourche Bayou	11110207	-010	1.6		U											3			
Arkansas River	11110207	-011	7.7	ARK29	M	S	S	S	S	S	S					1			
Arkansas River	11110207	-012	5.1		M	S	S	S	S	S	S					1			
Arkansas River	11110207	-013	5.7		E	S	S	S	S	S	S					1			
Maumelle River	11110207	-014	3.3		E	S	S	S	S	S	S					1			
Maumelle River	11110207	-018	24.2	USGS	M	S	S	S	S	S	S					1			
Little Maumelle	11110207	-019	9.5	ARK140	M	S	S	S	S	S	S					1			
Little Maumelle	11110207	-021	10.1		E	S	S	S	S	S	S					1			
Nowlin Creek	11110207	-020	10.5		U											3			
Fourche Creek	11110207	-022	9.2	ARK131	M	S	S	S	S	S	S					1			
Rock Creek	11110207	-023	13		U											3			
Fourche Creek	11110207	-024	11.2	ARK130	M	S	S	S	S	S	S					1			
Clear Creek	11110207	-025	3.2		U											1			
Lorance Creek	11110207	-026	15.2		U											1			
Clear Creek	11110207	-027	11.9		U											1			
Tar Camp Creek	11110207	-028	7.6		U											1			
TOTAL MILES	291.8																		
MILES UNASSESSED	77.2																		
MILES EVALUATED	34.5																		
MILES MONITORED	180.1																		

Planning Segment 3C - NPDES Permitted Facilities



Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0001376	ENTERGY AR, INC-LYNCH	ARKANSAS RV	11110207	3C
AR0001414	MINNESOTA MINING & MFG-ARCH ST	TRIB,FOURCHE CK,AR RV	11110207	3C
AR0001449	CELESTICA SERVICES, INC	TRIB/LITTLE FOURCHE CK	11110207	3C
AR0001503	MCGEORGE CONTRACTING CO, INC	TRIB-LITTLE FOURCH CK	11110207	3C
AR0001601	GAYLORD CONTAINER CORP	ARK. RV	11110207	3C
AR0001635	SMITH FIBERGLASS PRODUCTS-FIBE	TRIB,FOURCHE CK,AR RV	11110207	3C
AR0001643	GEORGIA PACIFIC-NLR	ARKANSAS RIVER	11110207	3C
AR0001678	USA-PINE BLUFF ARSENAL-PINE BL	TRIB/PHILLIPS CK & AR RV	11110207	3C
AR0001686	MINNESOTA MINING & MFG-COLLEGE	TRIB,FOURCHE CK,AR RV	11110207	3C
AR0001775	UNION PACIFIC RAILROAD CO	E.& W.BRNCH DARK HOLLOW CANAL	11110207	3C
AR0001848	POROCEL CORP	BAUXITE PIT,DIT/WILLOW SPR BR/FOURCHE CK	11110207	3C
AR0001970	INTERNATIONAL PAPER CO-PINE B	AR RV-3C (1) &COUSART BU-2B (2)	11110207	3C
AR0002542	ALLEN GRANITE INDUSTRIES, INC	TRIB/INK BU	11110207	3C
AR0020303	N LITTLE ROCK, CITY OF-FAULKNE	ARKANSAS RV	11110207	3C
AR0020320	N LITTLE ROCK WW UTILITY-5 MIL	AR RV	11110207	3C
AR0021806	LITTLE ROCK WW UTILITY-ADAMS F	ARKANSAS RV	11110207	3C
AR0022128	ENGLAND, CITY OF	WABBASEKA BU/PLUM BU/ARK RV	11110207	3C
AR0033316	PINE BLUFF WW UTILITY-BOYD PT	ARKANSAS RIVER	11110207	3C
AR0033626	MAUMELLE SUBURBAN IMPROVEMENT	ARKANSAS RV	11110207	3C
AR0035963	PCSSD-ROBINSON ELEM SCH	TRIB,LTL.MAUMELLE RV	11110207	3C
AR0036331	ENTERGY AR, INC-WHITE BLUFF PL	ARKANSAS RV	11110207	3C
AR0036421	FERNCLIFF CAMP & CONF CTR	TRIB,LTL MAUMELLE RV,AR RV	11110207	3C
AR0036447	GEO SPECIALTY CHEMICALS-WINROC	FISH CK	11110207	3C
AR0037338	BAKER APTS-CHASE PROPERTIES	PANTHER BR,BRODIE CK,FOURCHE CK	11110207	3C
AR0037613	KEO, CITY OF	TRIB, NORTH BU, PLUM BU	11110207	3C
AR0037745	LITTLE ROCK ZOOLOGICAL GARDENS	COLEMAN CK	11110207	3C
AR0038181	CENTURY TUBE CORP	LK LANHOFER,AR RV	11110207	3C
AR0038288	N LITTLE ROCK WW UTILITY-WHITE	ARKANSAS RV	11110207	3C
AR0038571	AR PARKS & TOURISM-PINNACLE MT	DIT,BIG MAUMELLE RV	11110207	3C
AR0039250	AR 4-H EDUCATION CENTER-FERNDA	FERNDALE CK	11110207	3C

Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0039357	REDFIELD, CITY OF	ARKANSAS RV	11110207	3C
AR0039543	MCALMONT CHURCH OF CHRIST-NLR	STARK BEND/FAULKNER LK	11110207	3C
AR0040177	LITTLE ROCK, CITY OF-FOURCHE C	AR RV	11110207	3C
AR0040266	ONE-FORTY-FIFTH ST WTR&SID#345	FISH CK (001) CANE CK (002)	11110207	3C
AR0040380	AR PARKS & TOURISM-TOLTEC MDS	TRIB/TERRE NOIR CK	11110207	3C
AR0040860	MAPLE CREEK POA-SID #1	MAPLE CK/PENNINGTON BU	11110207	3C
AR0041149	AR MILITARY DEPT-CAMP ROBINSON	5-MILE CK, ARKANSAS RV	11110207	3C
AR0041424	PLEASANT OAKS POA	TRIB/OTTER CK/FOURCHE CK	11110207	3C
AR0042544	CRILANCO OIL, INC	TRIB,FISH CK,BIG LK,PENNINGTON BU	11110207	3C
AR0042862	SHERIDAN SCHOOL DIST-EAST END	TRIB,MCCRIGHT BR,LORRANCE CK,BIG LK	11110207	3C
AR0042901	SYNGENTA CROP PROTECTION, INC	WEST BRANCH-DARK HOLLOW CANAL,AR RV	11110207	3C
AR0042927	PCSSD-AUXILIARY SERVICE FAC	FOURCHE BU,ARKANSAS RV	11110207	3C
AR0043079	STERLING PAINT, INC	6TH ST STRM SWR,AR RV	11110207	3C
AR0043826	WEYERHAUSER CO. DBA NORTHWEST	TRIB,FOURCHE CK,AR RV	11110207	3C
AR0043893	PCSSD-ROBINSON HIGH SCH	DIT, TRIB, LT MAUMELLE RV	11110207	3C
AR0043931	DIXON MANORMOBILE HOME PARK	TRIB,FISH CK,ARKANSAS RV	11110207	3C
AR0044393	SUNSET ACRES SUBDIVISION	TRB,LT FOURCHE CK,FOURCHE CK	11110207	3C
AR0044601	PCSSD-FULLER ELEM SCH	TRIB/FISH CK	11110207	3C
AR0044610	PCSSD-LANDMARK ELEM SCH	TRIB,TREADWAY BR,LORANCE CK	11110207	3C
AR0044628	PCSSD-LAWSON ELEM SCH	DITCH/TRIB/FOUCHE CK/ARKANSAS RV	11110207	3C
AR0044750	PCSSD-OAK GROVE HIGH SCH	DIT,NEWTON CK,WHITE OAK BU	11110207	3C
AR0044881	SALINE CO WW & SANITARY SWR	CROOKED CR,FOURCHE CR,AR RV	11110207	3C
AR0045471	YOUTH HOME INC-GENESIS CAMPUS	MCHENRY CK,FOURCHE CK	11110207	3C
AR0045560	OASIS RENEWAL CENTER	BRODIE CK TRIB	11110207	3C
AR0045608	CENTRAL ARKANSAS SEWER SYSTEMS	WOODRUFF CK	11110207	3C
AR0046051	OWEN CREEK SUBDIVISION	OWEN CK,FOURCHE CK	11110207	3C
AR0046060	PULASKI COUNTY SID #221	FOURCHE BU TRIB,ARKANSAS RV	11110207	3C
AR0046086	BLEMS, INC	TRIB,NEWTON CK	11110207	3C
AR0046299	MAVERICK TRANSPORTATION CO-NLR	DIT,STARK BEND TRIB,FAULKNER LK	11110207	3C

Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0046302	K MOBILE HOME PK	FOURCHE CK TRIB,AR RV	11110207	3C
AR0046370	WRIGHTSVILLE, CITY OF	FOURCHE BU @ ARKANSAS RV	11110207	3C
AR0046591	BEAZER EAST, INC-KOPPERS INDUS	DIT,REDWOOD TUNNEL	11110207	3C
AR0046710	GRANITE MTN QUARRIES	TRIBS OF FOURCHE CK/AR RV	11110207	3C
AR0046728	COULSON OIL-SHELL SUPERSTOP 38	TRIB, CROOKED CK, FOURCHE CK	11110207	3C
AR0046868	E. C. ROWLETT QUARRY & ASPHALT	WHITE OAK BU, AR RV	11110207	3C
AR0047236	B & M MHP	TRIB/CROOKED&FOUCHE CKS	11110207	3C
AR0047261	KRESTWOOD ESTATES SUBDIVISION	TRIB, LTL FOURCHE CK/ARK. RV-RB	11110207	3C
AR0047449	PCSSD-SCOTT SCHOOL TRT SYSTEM	ASHLEY BU/HORSESHOE/SCOTT BU	11110207	3C
AR0047848	SAFETY-KLEEN SYSTEMS, INC	DIT,WILLOW SPRINGS BR,LT.FOURCHE CK	11110207	3C
AR0047929	CENTRAL ARKANSAS WATER-OZARK P	DIT,AR RV	11110207	3C
AR0047937	CENTRAL ARKANSAS WATER-JACK H.	TRIB,GRASSYFLAT,ROCK,FOURCHE CKS	11110207	3C
AR0048399	MAPLE CREEK FARMS TRACT C H	TRIB, MAPLE CK, PENNINGTON BU	11110207	3C
AR0048542	N LITTLE ROCK ELECTRIC-MURRAY	ARKANSAS RV	11110207	3C
AR0048968	CEDAR HEIGHTS BAPTIST CHURCH	WHITE OAK BU TRIB	11110207	3C
AR0049042	OWEN CREEK WASTEWATER PLANT	OWEN CK,FOURCHE CK,ARKANSAS RV	11110207	3C
AR0049051	HUMANE SOCIETY OF PULASKI CO	TRIB, MCHENRY CK, FOURCHE CK	11110207	3C
AR0049131	PARKER SOLVENTS COMPANY	WESSON POND, FOURCHE CK	11110207	3C
AR0049255	KINDER MORGAN POWER CO-WRIGHTS	(1) TRIB,LORANCE CK; (2) ARKANSAS RV	11110207	3C

ARK0029
ARK RIVER @ MURRAY L & D NO 7

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	8.95	4.3	14.85	2.51
BOD_5 (mg/L)	37	1.35	0.22	4.07	0.99
pH (standard units)	37	7.61	6.64	8.58	0.52
Total Organic Carbon (mg/L)	36	5.09	3.472	6.7	0.75
Ammonia as N (mg/L)	39	0.04	<0.005	0.091	0.03
NO_2+NO_3 as N (mg/L)	38	0.38	<0.01	0.77	0.27
Orthophosphate as P (mg/L)	39	0.08	0.025	0.197	0.04
Total phosphorus as P (mg/L)	34	0.12	0.029	0.261	0.05
Total hardness (mg/L)	19	132.62	84	186	30.10
Chloride (mg/L)	36	72.50	32.2	109.24	21.86
Sulfate (mg/L)	38	57.58	26.6	96.1	16.84
Total dissolved solids (mg/L)	38	311.87	182	431.5	70.63
Total suspended solids (mg/L)	38	15.01	<1.0	89	19.51
Turbidity (NTU)	39	21.95	1.9	180	30.29

ARK0046
ARK RIVER @ DAVID D TERRY L & D

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	9.20	5.31	14.1	2.31
BOD_5 (mg/L)	36	1.26	0.17	3.06	0.69
pH (standard units)	36	7.67	6.65	8.69	0.50
Total Organic Carbon (mg/L)	35	5.21	3.496	7.008	0.85
Ammonia as N (mg/L)	38	0.06	<0.005	0.207	0.04
NO_2+NO_3 as N (mg/L)	37	0.42	<0.01	0.83	0.27
Orthophosphate as P (mg/L)	38	0.08	0.03	0.236	0.04
Total phosphorus as P (mg/L)	35	0.14	0.02	0.53	0.08
Total hardness (mg/L)	19	132.67	86	178	27.90
Chloride (mg/L)	35	75.04	32.7	151	24.68
Sulfate (mg/L)	37	58.60	27.6	115	17.53
Total dissolved solids (mg/L)	37	317.47	195	416	63.11
Total suspended solids (mg/L)	37	19.48	1	121	23.82
Turbidity (NTU)	38	26.20	2.4	190	31.75

ARK0048
ARK RIVER @ L & D NO 4

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	8.31	6.4	12.46	1.45
BOD_5 (mg/L)	36	1.41	0.38	3.15	0.84
pH (standard units)	35	7.74	6.86	8.59	0.37
Total Organic Carbon (mg/L)	36	5.13	3.446	7.18	0.81
Ammonia as N (mg/L)	38	0.05	<0.005	0.449	0.08
NO_2+NO_3 as N (mg/L)	39	0.39	0.01	0.939	0.27
Orthophosphate as P (mg/L)	38	0.10	0.005	1.42	0.22
Total phosphorus as P (mg/L)	36	0.11	0.05	0.289	0.05
Total hardness (mg/L)	19	131.74	82	182	27.08
Chloride (mg/L)	38	76.27	25.4	109	20.63
Sulfate (mg/L)	39	58.61	18.6	98	18.22
Total dissolved solids (mg/L)	37	321.16	155	438	66.31
Total suspended solids (mg/L)	37	20.90	1.5	192.5	35.10
Turbidity (NTU)	38	23.89	2.5	210	36.35

ARK0049
ARK RIVER @ L & D NO 5

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	8.26	5.7	12.43	1.40
BOD_5 (mg/L)	37	1.58	0.35	6.23	1.14
pH (standard units)	36	7.73	7.04	8.61	0.36
Total Organic Carbon (mg/L)	37	5.00	3.9	7.4	0.82
Ammonia as N (mg/L)	39	0.06	<0.005	0.451	0.10
NO_2+NO_3 as N (mg/L)	40	0.38	0.01	0.907	0.26
Orthophosphate as P (mg/L)	39	0.06	0.012	0.323	0.05
Total phosphorus as P (mg/L)	37	0.11	0.039	0.28	0.04
Total hardness (mg/L)	20	134.00	83	184	26.17
Chloride (mg/L)	39	74.76	24.3	108	20.85
Sulfate (mg/L)	40	57.64	16.5	100	18.34
Total dissolved solids (mg/L)	38	311.37	151.5	444	74.20
Total suspended solids (mg/L)	38	18.06	2.5	177	29.47
Turbidity (NTU)	39	22.80	2.9	210	34.93

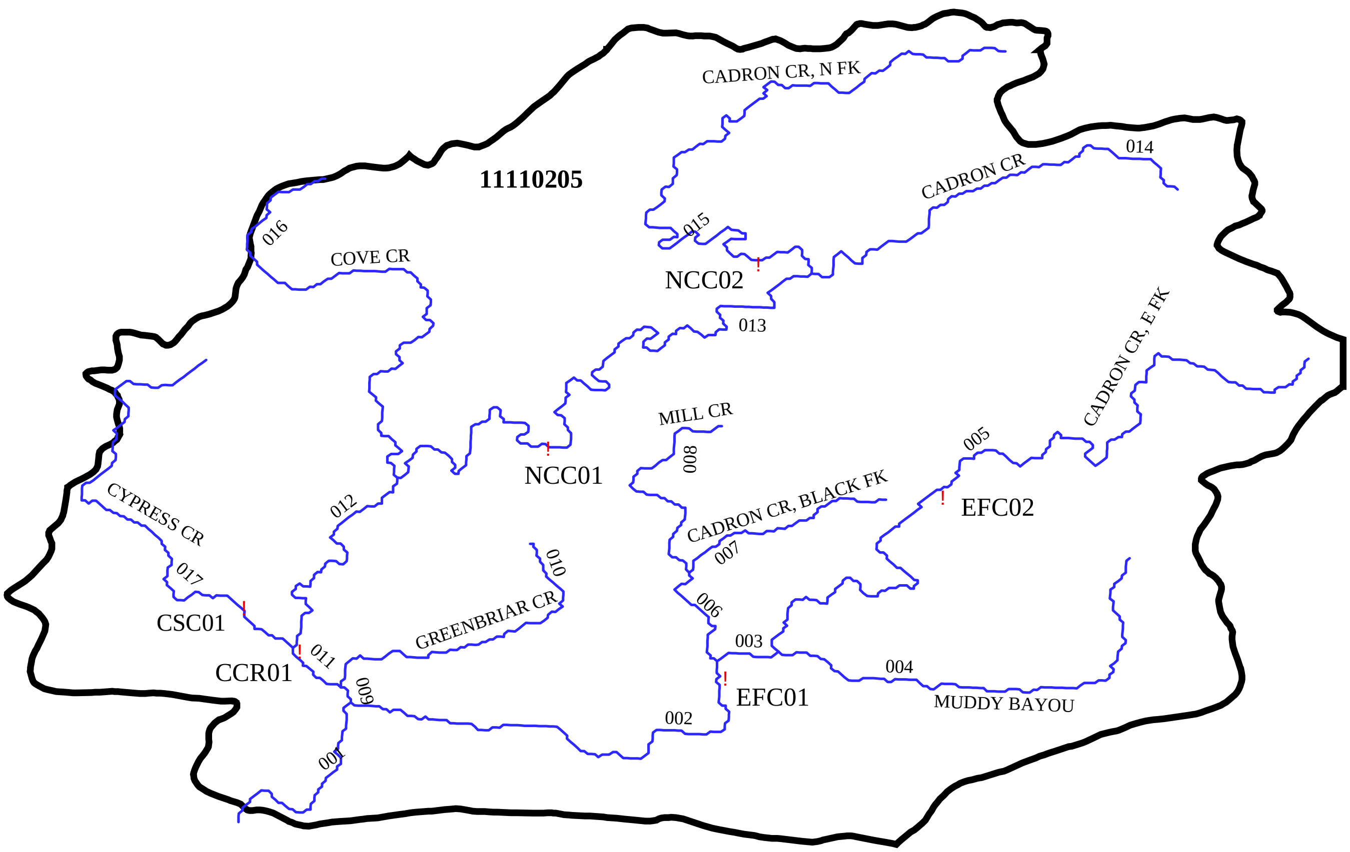
SEGMENT 3D - ARKANSAS RIVER AND TRIBUTARIES: LOCK AND DAM NO. 7 TO MORRILTON (ARKANSAS RIVER BASIN)

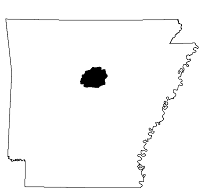
Segment 3D, located in upper central Arkansas, covers most of Conway County as well as parts of Cleburne and Van Buren Counties. The principal waters include the Cadron Creek basin.

SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supply. This planning segment contains a total of 221.6 stream miles, of which 119.8 stream miles were monitored. All waters assessed in this segment were supporting all designated uses.

Planning Segment 3D - Monitoring Stations

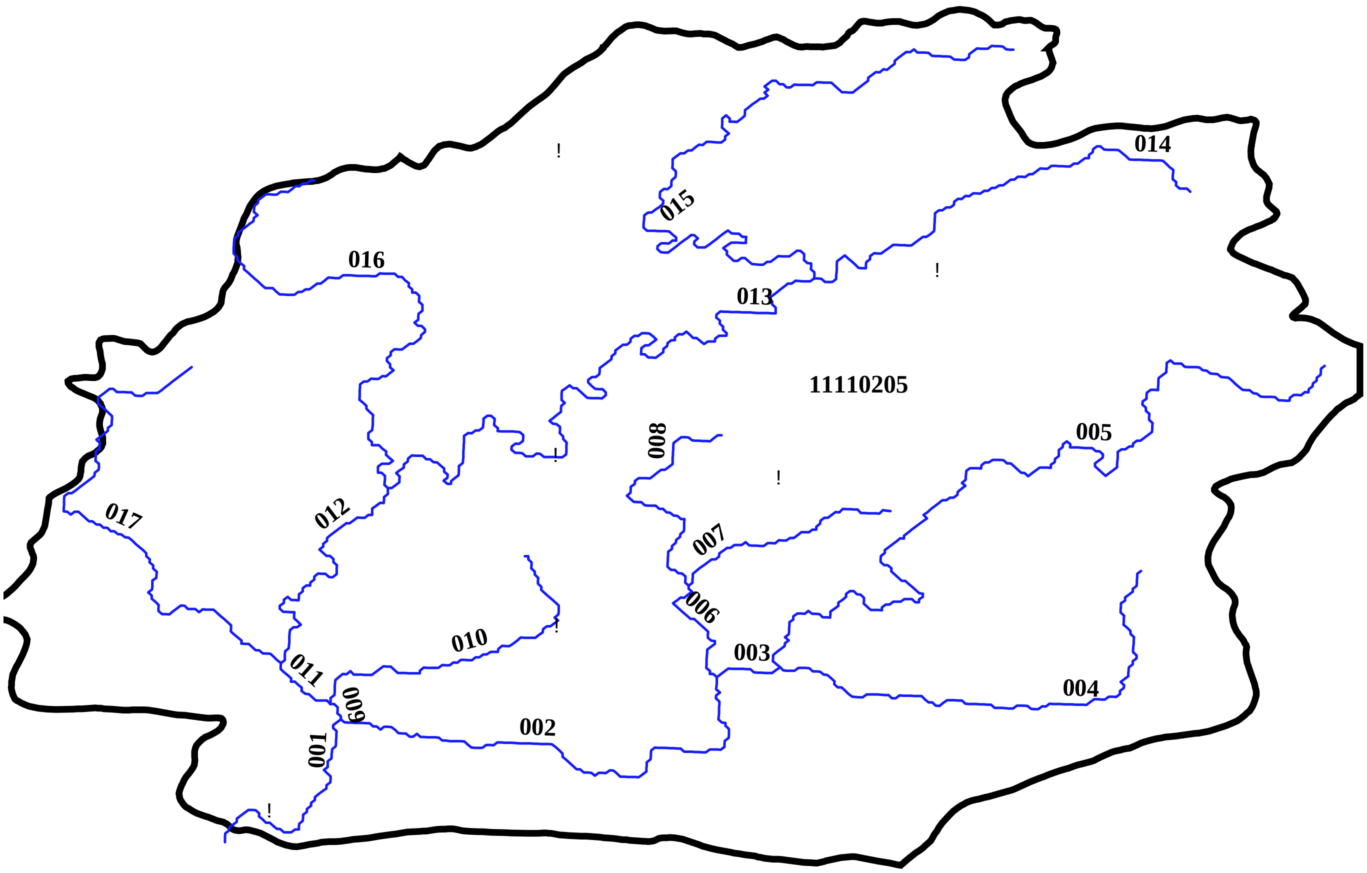


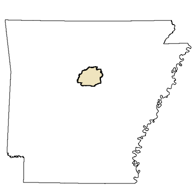


Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-3D																			
Cadron Creek	11110205	-001	7.7		E	S	S	S	S	S	S					1	FISH CONSUMPTION	163.3	0
E. Fork Cadron	11110205	-002	15.6	EFC01	M	S	S	S	S	S	S					1	AQUATIC LIFE	163.3	0
E. Fork Cadron	11110205	-003	2		E	S	S	S	S	S	S					1	PRIMARY CONTACT	163.3	0
E. Fork Cadron	11110205	-005	30.7	EFC02	M	S	S	S	S	S	S					1	SECONDARY CONTACT	163.3	0
Muddy Bayou	11110205	-004	15.7		U											3	DRINKING SUPPLY	163.3	0
Black Fork	11110205	-006	4.3		U											3	AGRI & INDUSTRY	163.3	0
Black Fork	11110205	-007	7.2		U											3			
Mill Creek	11110205	-008	8.9		E	S	S	S	S	S	S					1			
Cadron Creek	11110205	-009	0.7		E	S	S	S	S	S	S					1			
Cadron Creek	11110205	-011	2.2	CCR01	M	S	S	S	S	S	S					1			
Cadron Creek	11110205	-012	9.5		E	S	S	S	S	S	S					1			
Cadron Creek	11110205	-013	26.8	NCC01	M	S	S	S	S	S	S					1			
Cadron Creek	11110205	-014	14.7		E	S	S	S	S	S	S					1			
Greenbriar Cr.	11110205	-010	11.1		U											3			
North Cadron	11110205	-015	26.5	NCC02	M	S	S	S	S	S	S					1			
Cove Creek	11110205	-016	20		U											3			
Cypress Creek	11110205	-017	18	CSC01	M	S	S	S	S	S	S					1			
TOTAL MILES	221.6																		
MILES UNASSESSED	58.3																		
MILES EVALUATED	43.5																		
MILES MONITORED	119.8																		

Planning Segment 3D - NPDES Permitted Facilities





(Segment 3D)

Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0036536	GREENBRIER, CITY OF	GREENBRIER CK,CADRON CK,AR RV	11110205	3D
AR0037087	AR PARKS & TOURISM-WOOLY HOLLO	BLACK FORK CK,E FRK CADRON CK	11110205	3D
AR0040321	QUITMAN, CITY OF	MILL CK/CADRON CK/ ARKANSAS RV	11110205	3D
AR0047112	ROGERS GROUP, INC-GREENBRIER Q	CADRON CK,ARKANSAS RV	11110205	3D
AR0047457	CADRON CREEK CATFISH HOUSE	WARD CK TRIB/PINE MTN CK/COVE CK	11110205	3D
AR0048119	INTERNATIONAL PAPER CO-CADRON	CADRON CK	11110205	3D
AR0048879	SHILOH CREEK ESTATES	TRIB,GOLD CK,LK CONWAY	11110205	3D

SEGMENT 3E - FOURCHE LAFAVE RIVER
(ARKANSAS RIVER BASIN)

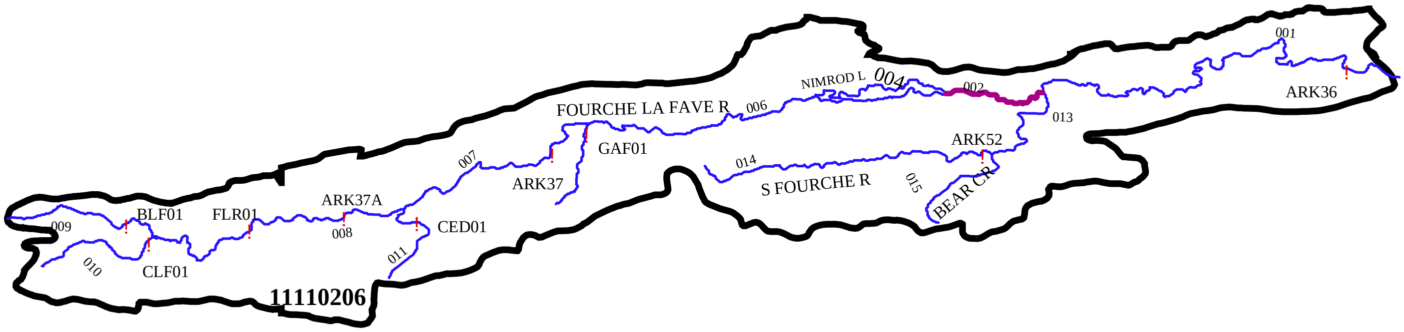
Segment 3E, located in west central Arkansas, includes portions of Perry, Yell, and Scott Counties. This segment contains a 148-mile reach of the Fourche LaFave River and its tributary streams, which include Big Cedar Creek, Mill Creek, Gafford Creek and South Fourche LaFave River. Major impoundments in this segment are Nimrod Lake (formed by a dam on Fourche LaFave River), and Harris Brake Lake.

SUMMARY OF WATER QUALITY CONDITIONS

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. All 211.5 stream miles in this segment were assessed. Both monthly and quarterly sampled stations were used to monitor 125.1 miles of stream. The remaining 86.4 miles were evaluated. Previous data has shown occasional periods of elevated turbidity values which was associated with agriculture and silviculture activities since these are two of the main land uses within the watershed. However, the construction and maintenance of an abundance of dirt and gravel roads for timber access and general transportation is likely to be a contributing factor. The most recent data indicates all designated uses are being supported in these waters.

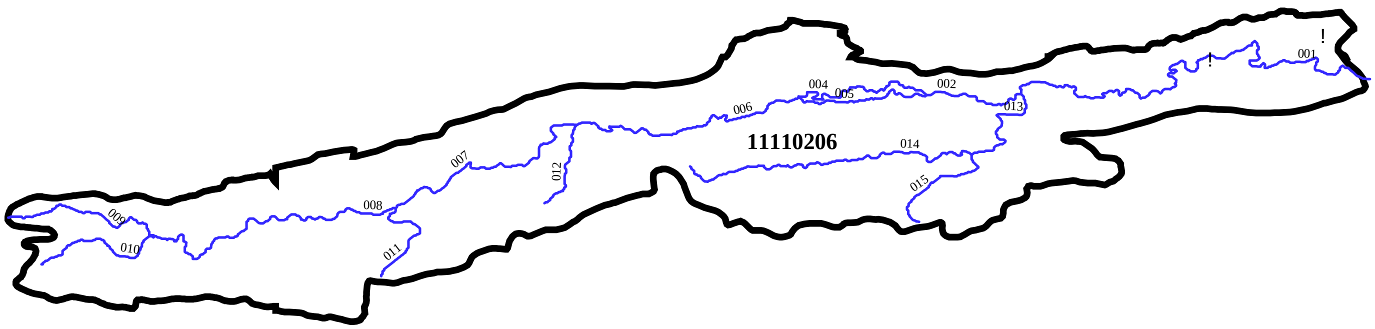
A statewide sampling effort has determined that some fishes from Lake Nimrod and the Fourche LaFave River below Nimrod Dam have elevated concentrations of mercury. TMDLs are currently being conducted on these waters.

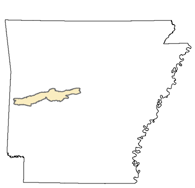
Planning Segment 3E - Monitoring Stations



STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-3E																			
Fourche LaFave	11110206	-001	44.4		E	S	S	S	S	S	S					1	FISH CONSUMPTION	202.8	8.7
Fourche LaFave	11110206	-002	8.7		M	N	S	S	S	S	S	UN		HG		5	AQUATIC LIFE	211.5	0
Fourche LaFave	11110206	-006	21.5		E	S	S	S	S	S	S					1	PRIMARY CONTACT	211.5	0
Fourche LaFave	11110206	-007	20.2	ARK37	M	S	S	S	S	S	S					1	SECONDARY CONTACT	211.5	0
Fourche LaFave	11110206	-008	25.7	FLR01	M	S	S	S	S	S	S					1	DRINKING SUPPLY	211.5	0
Black Fork	11110206	-009	14.3	BLF01	M	S	S	S	S	S	S					1	AGRI & INDUSTRY	211.5	0
Clear Fork	11110206	-010	12	CLF01	M	S	S	S	S	S	S					1			
Cedar Creek	11110206	-011	9.6	CED01	M	S	S	S	S	S	S					1			
Gafford Creek	11110206	-012	8.5	GAF01	M	S	S	S	S	S	S					1			
S.FourcheLaFave	11110206	-013	10.3		E	S	S	S	S	S	S					1			
S.FourcheLaFave	11110206	-014	26.1	ARK52	M	S	S	S	S	S	S					1			
Bear Creek	11110206	-015	10.2		E	S	S	S	S	S	S					1			
TOTAL MILES	211.5																		
MILES UNASSESSED	0																		
MILES EVALUATED	86.4																		
MILES MONITORED	125.1																		

Planning Segment 3E - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0020125	PERRYVILLE, CITY OF	FOURCHE LAFAVE RV	11110206	3E
AR0046957	ANNE WATSON ELEMENTARY SCHOOL	TRIB/MILL CK/FOURCHE LAFAVE RV/AR R	11110206	3E

ARK0037
FOURCHE LAFAVE R NEAR GRAVELL AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	11	8.64	5.6	11.6	2.22
BOD_5 (mg/L)	13	0.82	0.26	1.58	0.35
pH (standard units)	13	7.46	6.49	8.21	0.38
Total Organic Carbon (mg/L)	13	2.60	1.61	4.525	0.78
Ammonia as N (mg/L)	13	0.01	<0.005	0.02	0.01
NO_2+NO_3 as N (mg/L)	12	0.20	0.02	1.053	0.30
Orthophosphate as P (mg/L)	13	0.02	<0.005	0.09	0.02
Total phosphorus as P (mg/L)	13	0.03	0.01	0.081	0.02
Total hardness (mg/L)	6	11.67	8	15	3.01
Chloride (mg/L)	13	2.77	2.2	3.27	0.31
Sulfate (mg/L)	13	3.70	2.37	4.46	0.49
Total dissolved solids (mg/L)	13	35.96	29.5	44.5	5.06
Total suspended solids (mg/L)	13	2.90	<1.0	4.5	1.42
Turbidity (NTU)	13	10.15	3.6	50	12.79

ARK0037A
FOURCHE LA FAVE RIVER NEAR HARVEY, ARKANSAS

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	15	7.62	5.3	11.1	1.54
BOD_5 (mg/L)	18	0.80	0.01	2.05	0.49
pH (standard units)	19	7.11	6.6	7.81	0.42
Total Organic Carbon (mg/L)	16	3.13	1.75	9.36	1.81
Ammonia as N (mg/L)	19	0.01	<0.005	0.036	0.01
NO_2+NO_3 as N (mg/L)	19	0.15	<0.01	0.497	0.13
Orthophosphate as P (mg/L)	19	0.01	<0.005	0.107	0.02
Total phosphorus as P (mg/L)	18	0.03	0.01	0.06	0.01
Total hardness (mg/L)	9	11.11	7	21	4.08
Chloride (mg/L)	19	3.07	1.9	6.16	1.03
Sulfate (mg/L)	19	4.51	3.1	12.1	2.04
Total dissolved solids (mg/L)	19	39.24	30	57	7.35
Total suspended solids (mg/L)	19	4.39	<1.0	11	2.60
Turbidity (NTU)	19	9.06	3.7	15	3.51

ARK0052
SOUTH FOURCHE LAFAVE R AB HOLLIS AR

Parameter	Valid Data Points	Average	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	8.26	4.8	12.94	1.98
BOD_5 (mg/L)	35	1.02	0.38	1.93	0.40
pH (standard units)	37	6.65	5.97	8.28	0.43
Total Organic Carbon (mg/L)	38	5.89	3.03	10.02	1.97
Ammonia as N (mg/L)	38	0.01	<0.005	0.053	0.01
NO_2+NO_3 as N (mg/L)	38	0.13	<0.01	0.456	0.11
Orthophosphate as P (mg/L)	38	0.01	<0.005	0.023	0.01
Total phosphorus as P (mg/L)	38	0.03	0.01	0.103	0.02
Total hardness (mg/L)	19	11.37	8	18	2.43
Chloride (mg/L)	39	2.98	1.51	4.32	0.56
Sulfate (mg/L)	39	3.79	2.05	10.4	1.40
Total dissolved solids (mg/L)	39	40.03	29	54	5.68
Total suspended solids (mg/L)	39	4.76	<1.0	23.5	6.13
Turbidity (NTU)	37	10.59	1.6	49	9.84

SEGMENT 3F - ARKANSAS RIVER
(ARKANSAS RIVER BASIN)

Segment 3F is located in the central portion of Arkansas and covers parts of Faulkner, Conway, Perry, Pope, Van Buren, Logan, and Searcy Counties. This segment contains the Arkansas River and its tributaries. The principal tributaries are the East and West Forks of Point Remove Creek, Overcup Creek, Gum Log Creek, Palarm Creek and Galla Creek.

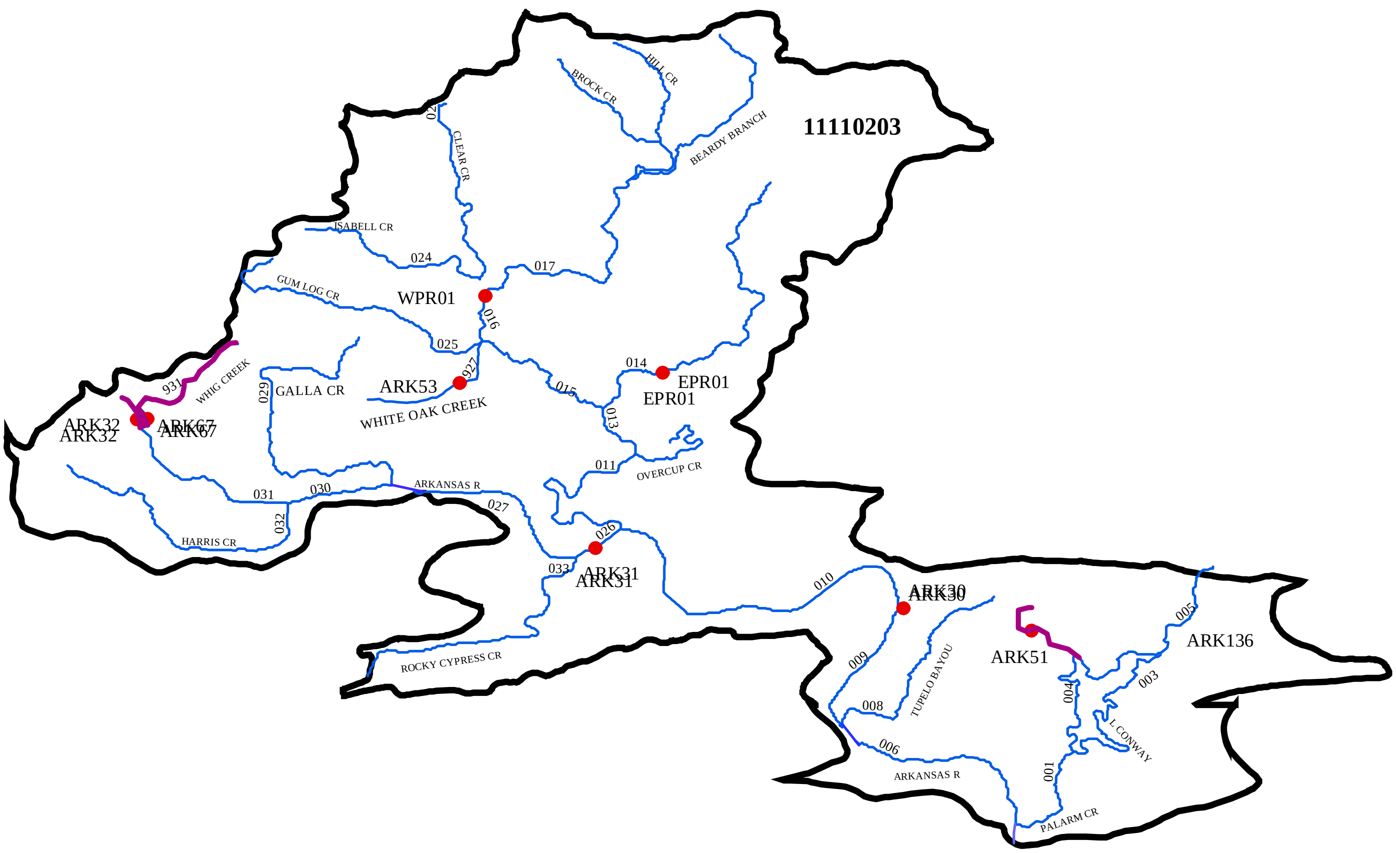
SUMMARY OF WATER QUALITY CONDITIONS

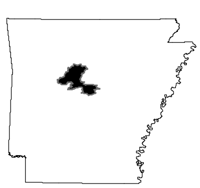
The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. This segment contains a total of 310.8 streams miles. Eight monitoring stations within this segment allow assessment of 71.8 streams miles with an additional 58.9 miles of stream being evaluated. The remaining stream segments were unassessed.

Whig Creek continues to be impaired by point source discharges. Both municipal and industrial discharges exist in Whig Creek. A TMDL has been completed for this waterbody. A municipal and industrial discharge also existed in White Oak Creek, however both were supposedly eliminated although evidence of continued discharges exist. High turbidity, probably from nonpoint sources, appears to be the major problem. Stone Dam Creek was also impaired by a municipal discharge with chronically toxic ammonia levels and nitrates exceeding the drinking water maximum contaminant level.

An approximate 2 mile segment of the Arkansas River below Dardanelle Reservoir occasionally had D.O. values below the standard during the summer period. This is related to hydropower releases from the upstream reservoir when very low D.O. values exist in the deeper levels of the reservoir. These low values seem to recover quickly downstream of the reservoir under low to moderate generation flows and in the presence of photosynthesis activity from planktonic algae (Figure A-3F-1).

Planning Segment 3F - Monitoring Stations

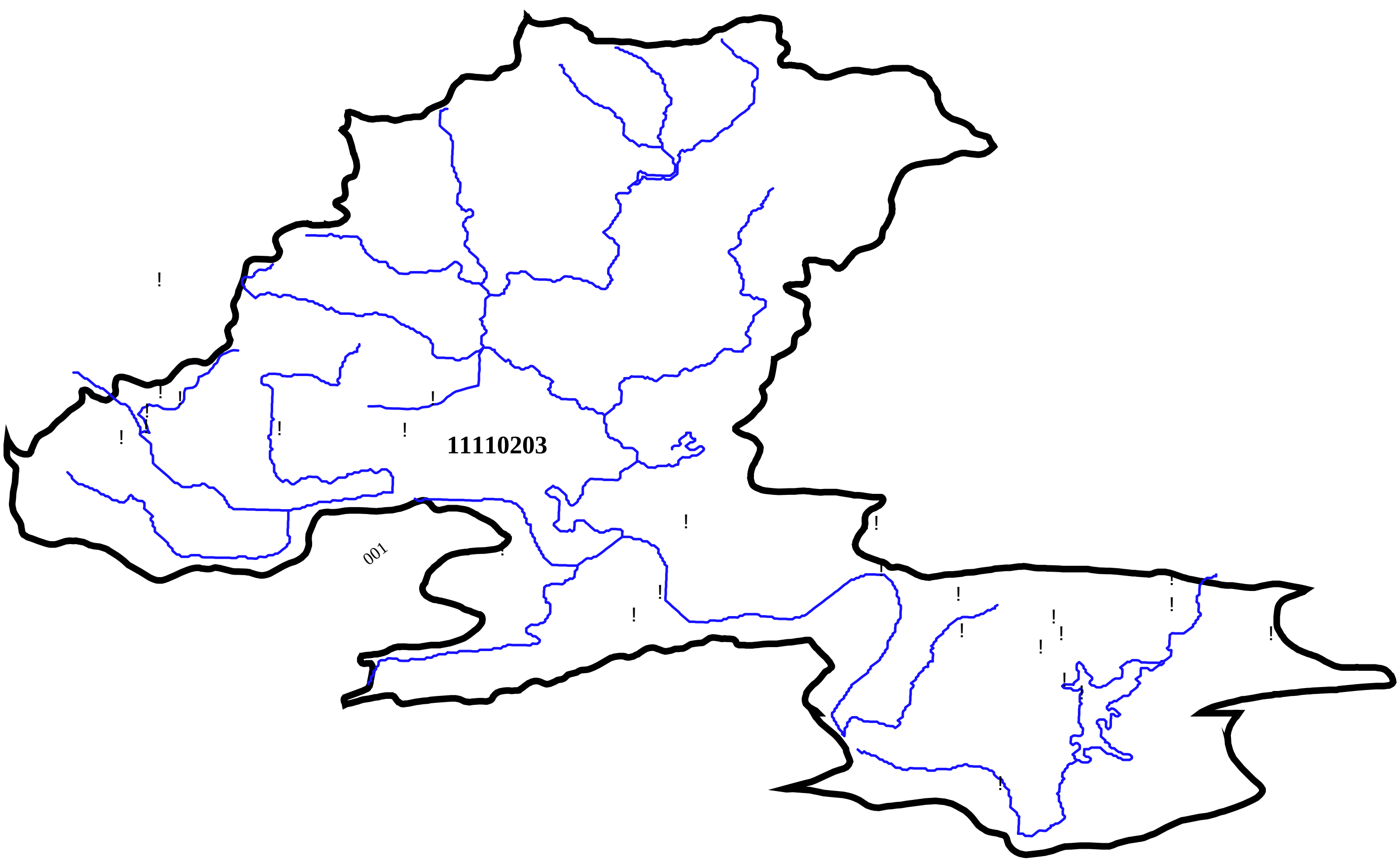


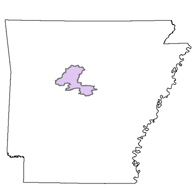


Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-3F																			
Palarm Creek	11110203	-001	6.4		U											3	FISH CONSUMPTION	130.7	0
Stone Dam Creek	11110203	-904	3	ARK51	M	S	N		S	N	S	MP		AM	NU	5	AQUATIC LIFE	115.7	15
Palarm Creek	11110203	-005	6.6		U											3	PRIMARY CONTACT	117.7	0
Arkansas River	11110203	-006	10.9		E	S	S	S	S	S	S					1	SECONDARY CONTACT	130.7	0
Arkansas River	11110203	-007	1		E	S	S	S	S	S	S					1	DRINKING SUPPLY	117.7	13
Tupelo Bayou	11110203	-008	13		U											3	AGRI & INDUSTRY	130.7	0
Arkansas River	11110203	-009	10.6	ARK30	M	S	S	S	S	S	S					1			
Arkansas River	11110203	-010	16.4		E	S	S	S	S	S	S					1			
Point Remove	11110203	-011	13.1		U											3			
Point Remove	11110203	-013	3.5		U											3			
Overcup Creek	11110203	-012	7.5		U											3			
East Pt.Remove	11110203	-014	20.9	EPR01	M	S	S	S	S	S	S					1			
West Pt.Remove	11110203	-015	8.2		U											3			
West Pt.Remove	11110203	-016	3.3	WPR01	M	S	S	S	S	S	S					1			
West Pt.Remove	11110203	-017	14.4		E	S	S	S	S	S	S					1			
West Pt.Remove	11110203	-019	4.1		U											3			
Beardy Branch	11110203	-018	12.9		U											3			
Hill Creek	11110203	-020	7.3		U											3			
Brock Creek	11110203	-021	7.4		U											3			
Clear Creek	11110203	-022	0.7		U											3			
Clear Creek	11110203	-023	11.7		U											3			
Isabel Creek	11110203	-024	10.5		U											3			
Gum Log Creek	11110203	-025	15.8		U											3			
Arkansas River	11110203	-026	2.6	ARK31	M	S	S	S	S	S	S					1			
Arkansas River	11110203	-027	9.9		E	S	S	S	S	S	S					1			
Arkansas River	11110203	-028	1.2		E	S	S	S	S	S	S					1			
Galla Creek	11110203	-029	20.1		U											3			
Arkansas River	11110203	-030	5.1		E	S	S	S	S	S	S					1			
Arkansas River	11110203	-031U	2.0		M	S	N	S	S	S	S	HP		DO		5			
Arkansas River	11110203	-031L	9.4	ARK32	M	S	S	S	S	S	S					1			
Harris Creek	11110203	-032	15.6		U											3			
Rocky Cypress	11110203	-033	15.7		U											3			
Whig Creek	11110203	-931	10	ARK67	M	S	N	S	S	N	S	MP		NU	ME	4C			
White Oak Creek	11110203	-927	10	ARK53	M	S	S		S	S	S					1			
TOTAL MILES	310.8																		
MILES UNASSESSED	180.1																		
MILES EVALUATED	58.9																		
MILES MONITORED	71.8																		

Planning Segment 3F - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0001830	GREEN BAY PACKAGING-AR KRAFT	SLOUGH-ARK. RV	11110203	3F
AR0021768	RUSSELLVILLE CITY CORP	WHIG CK,AR RV	11110203	3F
AR0033359	CONWAY, CITY OF-STONE DAM CK	STONE DAM CK,LK CONWAY	11110203	3F
AR0033421	DARDANELLE, CITY OF	ARKANSAS RIVER	11110203	3F
AR0034665	ATKINS, CITY OF-NORTH WWTF	ARKANSAS RIVER	11110203	3F
AR0034673	ATKINS, CITY OF-SOUTH WWTP	HORSE PEN CK,GALLA CK,AR RV	11110203	3F
AR0036714	TYSON FOODS INC-DARDANELLE	ARKANSAS RIVER	11110203	3F
AR0037206	MAYFLOWER, CITY OF	ARKANSAS RV	11110203	3F
AR0039454	GOLD CREEK LANDING-CONWAY	LAKE CONWAY,ARKANSAS RV	11110203	3F
AR0041301	GOLDEN MEADOWS POA-CONWAY	TRIB,TUCKER CK,TUPELO BU,AR RV	11110203	3F
AR0042536	ROLLING CREEK POA	WARREN CK TRIB,PALARM CK,LK CONWAY	11110203	3F
AR0042668	GRACE MANUFACTURING, INC	ARKANSAS RV	11110203	3F
AR0043028	PIONEER SOUTHERN, INC	TRIB/TANK LK	11110203	3F
AR0043214	ROGERS GROUP, INC-CONWAY ASPHALT	TRIB/STONE DAM CK/LK CONWAY/ARK RB	11110203	3F
AR0044474	FREEMAN BROTHERS, INC	TRIB,WHIG CK	11110203	3F
AR0044717	CAMP MITCHELL CONFERENCE CTR	TRIB,FLAT CYPRESS CK,CYPRESS CK	11110203	3F
AR0044997	BHT INVESTMENT-EXXON FOOD MART	TRIB/WARREN-PALARM CKS/LK CONWAY/AR	11110203	3F
AR0045071	WILLIAMS EXPRESS #3059	TRIB,STONE DAM CK,LK CONWAY	11110203	3F
AR0047104	ROGERS GROUP, INC-TOADSUCK QUARRY	SLU, ARKANSAS RV	11110203	3F
AR0047279	CONWAY, CITY OF TUCKER CREEK W	ARKANSAS RV	11110203	3F
AR0047520	ROGERS GROUP, INC-BERYL QUARRY	TRIB,PALARM CK,LK CONWAY	11110203	3F
AR0047643	OPPELO, CITY OF	TRIB,CYPRESS CK,AR RV	11110203	3F
AR0048011	POTTSVILLE, CITY OF	RTIB,GALLA CK,SWMA RES	11110203	3F
AR0048429	DOVER, CITY OF	BAKERS CK,ILLINOIS BU,LK DARDANELLE	11110203	3F
AR0048623	GERICORP, INC	CK, OLD RIVER LK, MILLER BU, AR RV	11110203	3F
AR0048682	WILHELMINA COVE POA	GOLD CK,LK CONWAY,PALARM CK,AR RV	11110203	3F

ARK0037
FOURCHE LAFAVE RIVER NEAR GRAVELL AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	11	8.64	5.6	11.6	2.22
BOD_5 (mg/L)	13	0.82	0.26	1.58	0.35
pH (standard units)	13	7.46	6.49	8.21	0.38
Total Organic Carbon (mg/L)	13	2.60	1.61	4.525	0.78
Ammonia as N (mg/L)	13	0.01	<0.005	0.02	0.01
NO_2+NO_3 as N (mg/L)	12	0.20	0.02	1.053	0.30
Orthophosphate as P (mg/L)	13	0.02	<0.005	0.09	0.02
Total phosphorus as P (mg/L)	13	0.03	0.01	0.081	0.02
Total hardness (mg/L)	6	11.67	8	15	3.01
Chloride (mg/L)	13	2.77	2.2	3.27	0.31
Sulfate (mg/L)	13	3.70	2.37	4.46	0.49
Total dissolved solids (mg/L)	13	35.96	29.5	44.5	5.06
Total suspended solids (mg/L)	13	2.90	<1.0	4.5	1.42
Turbidity (NTU)	13	10.15	3.6	50	12.79

ARK0037A
FOURCHE LA FAVE RIVER NEAR HARVEY, ARKANSAS

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	15	7.62	5.3	11.1	1.54
BOD_5 (mg/L)	18	0.80	0.01	2.05	0.49
pH (standard units)	19	7.11	6.6	7.81	0.42
Total Organic Carbon (mg/L)	16	3.13	1.75	9.36	1.81
Ammonia as N (mg/L)	19	0.01	<0.005	0.036	0.01
NO_2+NO_3 as N (mg/L)	19	0.15	<0.01	0.497	0.13
Orthophosphate as P (mg/L)	19	0.01	<0.005	0.107	0.02
Total phosphorus as P (mg/L)	18	0.03	0.01	0.06	0.01
Total hardness (mg/L)	9	11.11	7	21	4.08
Chloride (mg/L)	19	3.07	1.9	6.16	1.03
Sulfate (mg/L)	19	4.51	3.1	12.1	2.04
Total dissolved solids (mg/L)	19	39.24	30	57	7.35
Total suspended solids (mg/L)	19	4.39	<1.0	11	2.60
Turbidity (NTU)	19	9.06	3.7	15	3.51

ARK0052
SOUTH FOURCHE LAFAVE RIVER UPSTREAM OF HOLLIS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	8.26	4.8	12.94	1.98
BOD_5 (mg/L)	35	1.02	0.38	1.93	0.40
pH (standard units)	37	6.65	5.97	8.28	0.43
Total Organic Carbon (mg/L)	38	5.89	3.03	10.02	1.97
Ammonia as N (mg/L)	38	0.01	<0.005	0.053	0.01
NO_2+NO_3 as N (mg/L)	38	0.13	<0.01	0.456	0.11
Orthophosphate as P (mg/L)	38	0.01	<0.005	0.023	0.01
Total phosphorus as P (mg/L)	38	0.03	0.01	0.103	0.02
Total hardness (mg/L)	19	11.37	8	18	2.43
Chloride (mg/L)	39	2.98	1.51	4.32	0.56
Sulfate (mg/L)	39	3.79	2.05	10.4	1.40
Total dissolved solids (mg/L)	39	40.03	29	54	5.68
Total suspended solids (mg/L)	39	4.76	<1.0	23.5	6.13
Turbidity (NTU)	37	10.59	1.6	49	9.84

ARK0030
ARK RIVER @ L & D NO 8

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	34	9.51	5.7	13.52	2.08
BOD_5 (mg/L)	33	1.10	0.42	2.54	0.46
pH (standard units)	35	7.67	6.73	8.6	0.45
Total Organic Carbon (mg/L)	36	5.07	3.21	8.7	1.18
Ammonia as N (mg/L)	36	0.04	<0.005	0.102	0.02
NO_2+NO_3 as N (mg/L)	36	0.44	<0.01	0.99	0.30
Orthophosphate as P (mg/L)	36	0.05	0.02	0.098	0.02
Total phosphorus as P (mg/L)	36	0.10	0.027	0.19	0.03
Total hardness (mg/L)	18	138.39	86	194	31.57
Chloride (mg/L)	37	82.81	31.02	155.35	31.58
Sulfate (mg/L)	37	62.14	25.3	99.4	18.41
Total dissolved solids (mg/L)	37	345.86	162	512	81.82
Total suspended solids (mg/L)	37	17.33	3	80.5	16.94
Turbidity (NTU)	35	22.74	3	66	18.32

ARK0031
ARK RIVER @ L & D NO 9

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	34	9.38	5.5	13.24	2.08
BOD_5 (mg/L)	33	1.16	0.47	3.26	0.55
pH (standard units)	35	7.63	6.53	8.73	0.55
Total Organic Carbon (mg/L)	36	4.98	2.916	7.5	1.00
Ammonia as N (mg/L)	36	0.03	<0.005	0.08	0.03
NO_2+NO_3 as N (mg/L)	36	0.43	<0.01	0.96	0.28
Orthophosphate as P (mg/L)	36	0.05	0.021	0.105	0.02
Total phosphorus as P (mg/L)	36	0.10	0.056	0.18	0.03
Total hardness (mg/L)	18	142.39	86	205	32.35
Chloride (mg/L)	37	85.03	28.43	171	32.50
Sulfate (mg/L)	37	63.70	24.66	100	18.86
Total dissolved solids (mg/L)	37	343.35	71	558.5	97.02
Total suspended solids (mg/L)	37	17.11	<1.0	80.8	17.18
Turbidity (NTU)	35	22.41	3.1	68	19.41

ARK0032
ARK RIVER NEAR DARDANELLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	8.56	3.2	12.82	2.47
BOD_5 (mg/L)	36	1.31	0.46	6.68	1.06
pH (standard units)	38	7.61	6.56	8.82	0.42
Total Organic Carbon (mg/L)	39	4.94	2.893	7	0.91
Ammonia as N (mg/L)	39	0.05	<0.005	0.123	0.03
NO_2+NO_3 as N (mg/L)	39	0.41	0.028	1	0.27
Orthophosphate as P (mg/L)	39	0.06	0.0294	0.19	0.03
Total phosphorus as P (mg/L)	38	0.13	0.054	0.29	0.05
Total hardness (mg/L)	19	146.11	95	202	30.44
Chloride (mg/L)	40	88.85	26.37	191	34.95
Sulfate (mg/L)	40	65.82	21	110	18.84
Total dissolved solids (mg/L)	40	364.40	135	611	89.93
Total suspended solids (mg/L)	40	21.43	3	118.3	23.41
Turbidity (NTU)	38	25.72	4.7	86	20.92

ARK0051
STONE DAM CREEK DOWNSTREAM OF CONWAY AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	6.86	2.8	10.71	1.85
BOD_5 (mg/L)	36	4.01	0.72	7.58	2.11
pH (standard units)	37	6.76	6.24	7.6	0.27
Total Organic Carbon (mg/L)	39	8.09	1.6	12.7	2.18
Ammonia as N (mg/L)	39	3.16	<0.005	12.98	3.68
NO_2+NO_3 as N (mg/L)	39	5.87	0.984	13	3.37
Orthophosphate as P (mg/L)	39	1.54	0.185	3.714	0.76
Total phosphorus as P (mg/L)	39	1.69	0.27	3.145	0.66
Total hardness (mg/L)	20	76.55	50	101	16.92
Chloride (mg/L)	40	44.09	12.19	65.3	12.71
Sulfate (mg/L)	40	127.48	41.65	247.48	41.77
Total dissolved solids (mg/L)	40	367.31	142.5	606	96.72
Total suspended solids (mg/L)	40	15.67	4	50.5	10.30
Turbidity (NTU)	38	16.78	3.6	77	15.76

ARK0053
WHITE OAK CREEK NEAR ATKINS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	8.34	0.7	13.46	3.10
BOD_5 (mg/L)	34	4.94	0.7	66.7	11.96
pH (standard units)	37	6.93	6.02	8.65	0.53
Total Organic Carbon (mg/L)	37	14.84	3.66	169	32.56
Ammonia as N (mg/L)	37	0.32	<0.005	7.2	1.26
NO_2+NO_3 as N (mg/L)	37	0.28	<0.01	1.35	0.35
Orthophosphate as P (mg/L)	37	0.02	<0.005	0.161	0.03
Total phosphorus as P (mg/L)	38	0.11	0.037	0.333	0.07
Total hardness (mg/L)	18	54.78	21	214	47.87
Chloride (mg/L)	38	168.69	4.08	1890	408.54
Sulfate (mg/L)	38	17.33	3.18	48.6	8.21
Total dissolved solids (mg/L)	38	401.79	68	3531.5	777.09
Total suspended solids (mg/L)	38	11.95	1.8	32.5	8.49
Turbidity (NTU)	36	26.39	4.4	88	18.40

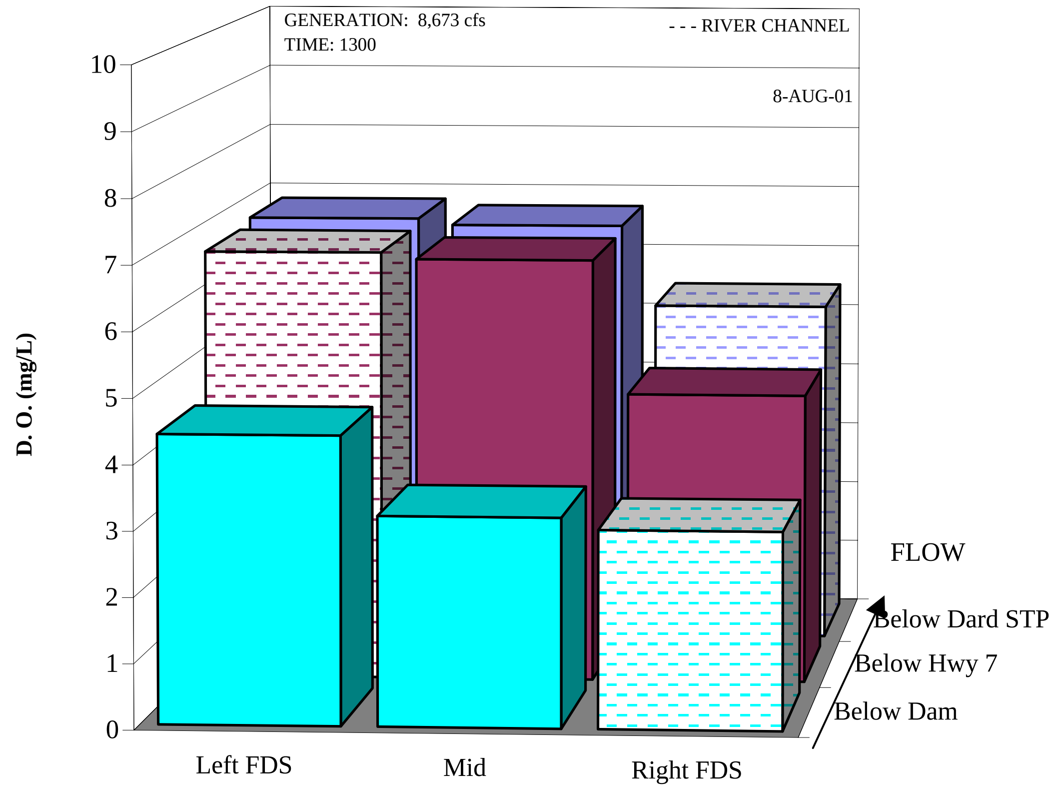
ARK0067
WHIG CREEK DOWNSTREAM OF RUSSELLVILLE AR

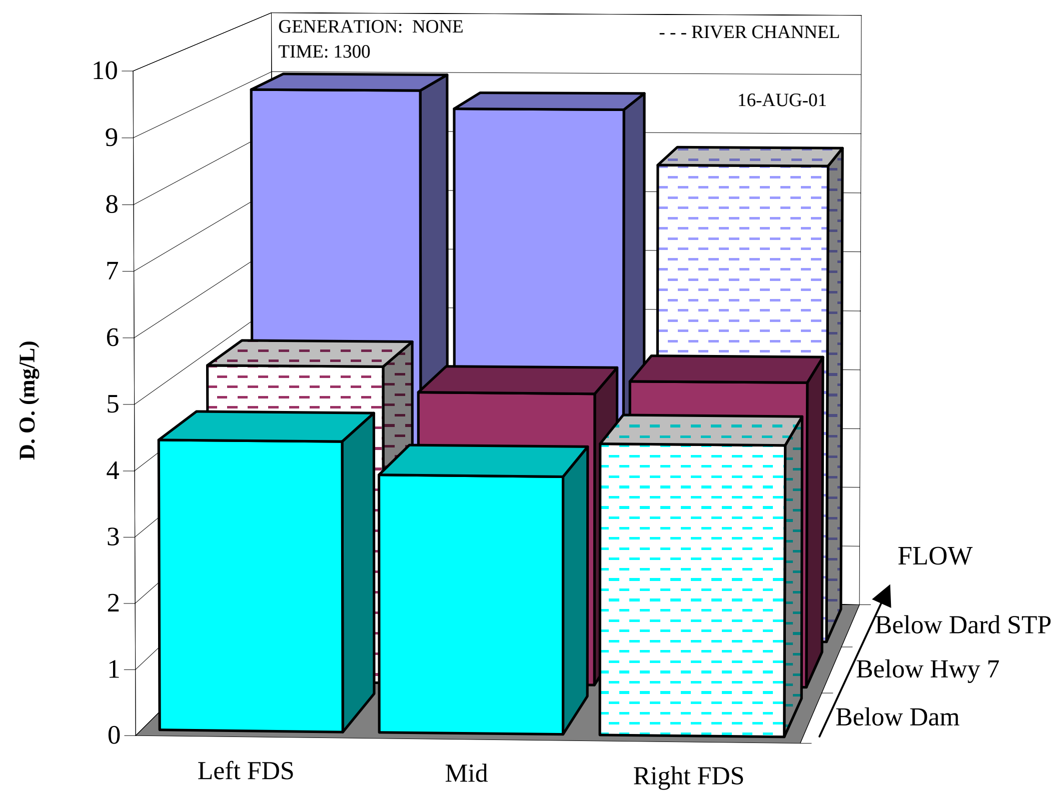
Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	7.66	4	11.2	1.77
BOD_5 (mg/L)	35	1.45	0.38	5.6	1.22
pH (standard units)	37	7.02	6.35	7.68	0.35
Total Organic Carbon (mg/L)	38	6.35	4.69	10.4	1.10
Ammonia as N (mg/L)	38	0.13	<0.005	1.686	0.27
NO_2+NO_3 as N (mg/L)	38	8.38	0.168	23.9	4.63
Orthophosphate as P (mg/L)	38	3.12	<0.005	8.54	2.17
Total phosphorus as P (mg/L)	38	3.29	0.37	7.14	1.91
Total hardness (mg/L)	19	49.89	17	67	13.83
Chloride (mg/L)	39	41.50	2.98	96.4	25.08
Sulfate (mg/L)	39	36.73	11.8	67.8	11.45
Total dissolved solids (mg/L)	39	265.94	35.5	424.5	106.43
Total suspended solids (mg/L)	39	57.48	<1.0	1348	229.06
Turbidity (NTU)	37	44.28	2.7	630	132.62

FIGURE A-3F-1

ARKANSAS RIVER

DISSOLVED OXYGEN SAMPLING AT 1-FOOT DEPTH BELOW DARDANELLE LOCK AND DAM, 2001





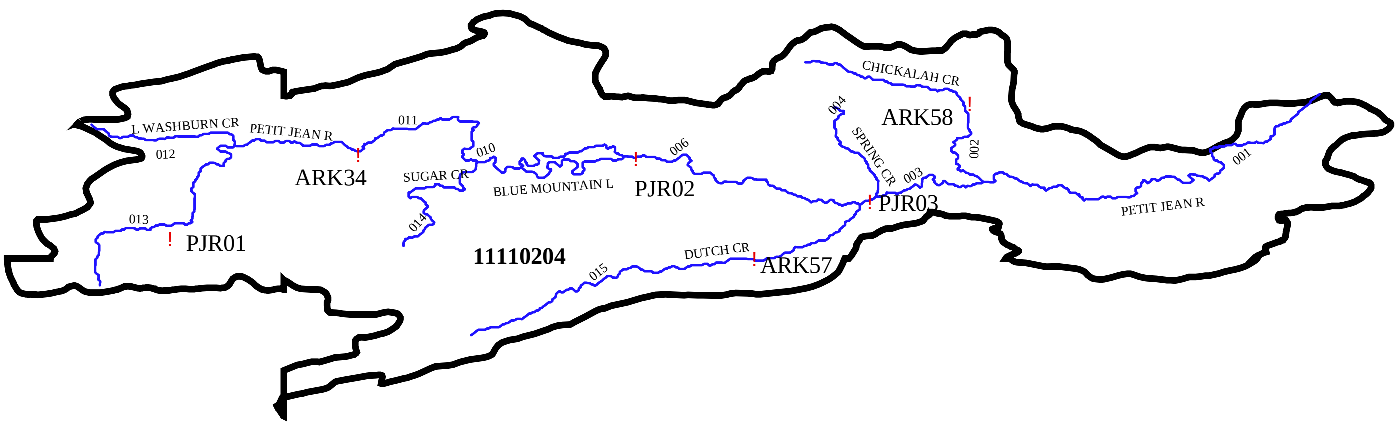
<u>SEGMENT 3G - PETIT JEAN RIVER AND TRIBUTARIES</u>
(ARKANSAS RIVER BASIN)

Segment 3G, located in west central Arkansas, includes portions of Yell, Conway, Perry, Logan, Sebastian, Franklin and Scott Counties. This segment includes the entire length of the Petit Jean River and its tributary streams. Major tributaries include Dutch Creek, Spring Creek, Chickalah Creek and Rose Creek. Blue Mountain Lake, formed by damming the Petit Jean River, is the largest impoundment in the segment.

<u>SUMMARY OF WATER QUALITY CONDITIONS</u>

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supply. This planning segment contains 198.5 stream miles. Monitoring data were utilized to assess 108.2 stream miles. An additional 8.7 stream miles were evaluated. The remaining stream miles within this segment did not have adequate information for assessment and are therefore listed as unassessed. The primary land use of the watersheds in this segment is agriculture activities (primarily pasture land) and timber harvest. None of the waters in this segment were assessed as “not meeting” designated uses.

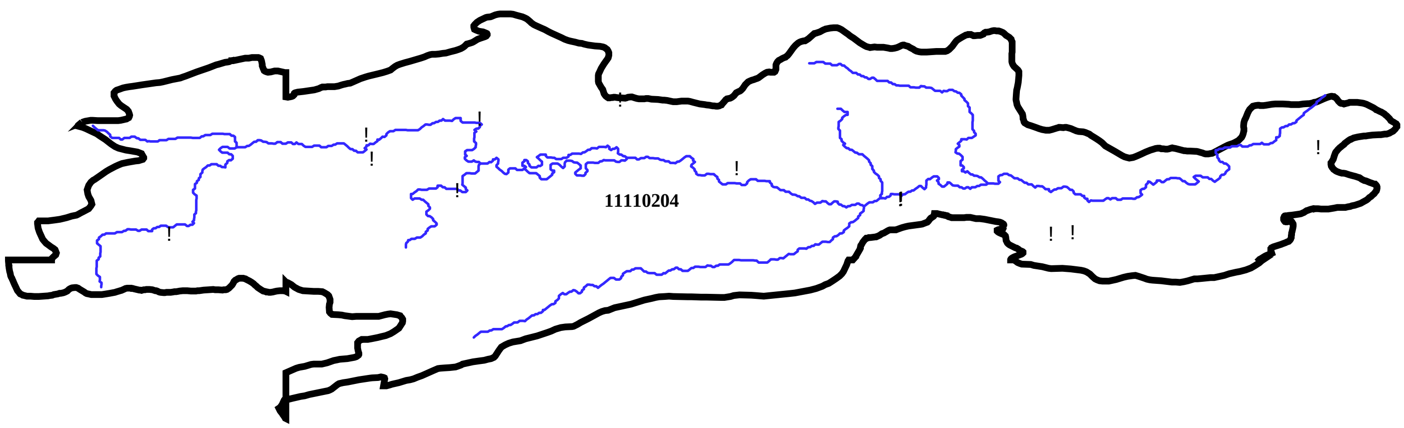
Planning Segment 3G - Monitoring Stations

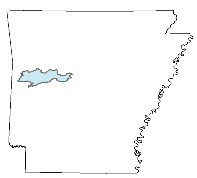


Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-3G																			
Petit Jean R.	11110204	-001	30.1		U											3	FISH CONSUMPTION	116.9	0
Petit Jean R.	11110204	-003	8.7		E	S	S	S	S	S	S					1	AQUATIC LIFE	116.9	0
Petit Jean R.	11110204	-005	1.3	PJR03	M	S	S	S	S	S	S					1	PRIMARY CONTACT	116.9	0
Petit Jean R.	11110204	-006	17.9	PJR02	M	S	S	S	S	S	S					1	SECONDARY CONTACT	116.9	0
Petit Jean R.	11110204	-007	6		U											3	DRINKING SUPPLY	116.9	0
Petit Jean R.	11110204	-010	4.1		U											3	AGRI & INDUSTRY	116.9	0
Petit Jean R.	11110204	-011	21.6	ARK34	M	S	S	S	S	S	S					1			
Petit Jean R.	11110204	-013	19.2	PJR01	M	S	S	S	S	S	S					1			
Chickalah Cr.	11110204	-002	19.3	ARK58	M	S	S	S	S	S	S					1			
Spring Creek	11110204	-004	18.6		U											3			
L. Washburn Cr.	11110204	-012	10		U											3			
Sugar Creek	11110204	-014	12.8		U											3			
Dutch Creek	11110204	-015	28.9	ARK57	M	S	S	S	S	S	S					1			
TOTAL MILES	198.5																		
MILES UNASSESSED	81.6																		
MILES EVALUATED	8.7																		
MILES MONITORED	108.2																		

Planning Segment 3G - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0021571	BOONEVILLE, CITY OF	TRIB,PETIT JEAN RV, AR RV	11110204	3G
AR0022241	DANVILLE, CITY OF	PETIT JEAN RIVER	11110204	3G
AR0035688	OLA, CITY OF	KEELAND CK,PETIT JEAN RV	11110204	3G
AR0037397	MAGAZINE, CITY OF	REVILLE CK TRIB,PETIT JEAN RV	11110204	3G
AR0037541	BOONEVILLE HUMAN DEV CTR-ADHS	PETIT JEAN RV	11110204	3G
AR0037648	AR PARKS & TOURISM-PETIT JEAN	DIT,CEDAR CK,PETIT JEAN RV,AR RV	11110204	3G
AR0038768	WAYNE FARMS	PETIT JEAN RIVER	11110204	3G
AR0045799	AR HWY DEPT-WALDRON REST AREA-	TRIB, PETIT JEAN RV	11110204	3G
AR0046256	HAVANA, CITY OF	PETIT JEAN RV	11110204	3G
AR0046426	AR GAME & FISH COMM-BLUE MTN	TRIB/SUGAR CR,PETIT JEAN R,BLUE MTN	11110204	3G
AR0048640	DELTIC TIMBER CORP - OLA MILL	KEELAND CK,PETIT JEAN RV	11110204	3G
AR0048852	AR PARKS & TOURISM-MT MAGAZINE	W BASS CK	11110204	3G

ARK0034
PETIT JEAN RIVER NEAR BOONVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	21	8.67	5.6	12.2	2.01
BOD_5 (mg/L)	26	1.20	0.52	2.78	0.53
pH (standard units)	26	7.26	6.6	8.21	0.46
Total Organic Carbon (mg/L)	24	4.23	2.7	6.92	1.10
Ammonia as N (mg/L)	27	0.02	<0.005	0.089	0.02
NO_2+NO_3 as N (mg/L)	26	0.34	0.037	0.889	0.28
Orthophosphate as P (mg/L)	27	0.02	<0.005	0.097	0.02
Total phosphorus as P (mg/L)	26	0.06	0.028	0.15	0.03
Total hardness (mg/L)	13	21.02	14	36	6.13
Chloride (mg/L)	27	6.70	2.86	68.35	12.35
Sulfate (mg/L)	27	10.05	5.02	42.09	7.06
Total dissolved solids (mg/L)	27	69.31	51	250	37.10
Total suspended solids (mg/L)	27	12.20	4	51	11.72
Turbidity (NTU)	27	18.34	6.3	49	11.35

ARK0057
DUTCH CREEK DOWNSTREAM OF SHARK AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	7.65	2.9	12.57	2.41
BOD_5 (mg/L)	35	1.28	0.15	4.11	1.00
pH (standard units)	37	6.67	5.95	7.31	0.30
Total Organic Carbon (mg/L)	38	3.96	1.84	7.6	1.47
Ammonia as N (mg/L)	38	0.04	<0.005	0.353	0.07
NO_2+NO_3 as N (mg/L)	38	0.54	<0.01	3.014	0.58
Orthophosphate as P (mg/L)	38	0.02	<0.005	0.083	0.02
Total phosphorus as P (mg/L)	38	0.08	0.01	0.515	0.10
Total hardness (mg/L)	19	19.37	10	42	10.32
Chloride (mg/L)	39	4.38	1.42	9.45	1.69
Sulfate (mg/L)	39	3.96	1.35	5.37	1.22
Total dissolved solids (mg/L)	39	56.69	37	81	12.64
Total suspended solids (mg/L)	39	22.08	<1.0	392.5	65.17
Turbidity (NTU)	37	25.04	3.8	192	43.10

ARK0058
CHICKALAH CREEK @ CHICKALAH AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	7.94	3.6	12.87	2.59
BOD_5 (mg/L)	36	1.76	0.17	10.16	2.28
pH (standard units)	38	6.70	6.13	8.31	0.38
Total Organic Carbon (mg/L)	39	3.67	1.45	9	1.91
Ammonia as N (mg/L)	39	0.10	<0.005	2.447	0.39
NO_2+NO_3 as N (mg/L)	39	0.56	<0.01	2.181	0.52
Orthophosphate as P (mg/L)	39	0.02	<0.005	0.102	0.02
Total phosphorus as P (mg/L)	39	0.08	0.01	0.485	0.10
Total hardness (mg/L)	20	21.60	10	54	15.09
Chloride (mg/L)	40	5.64	1.69	14.5	3.77
Sulfate (mg/L)	40	3.87	0.94	6.12	1.53
Total dissolved solids (mg/L)	40	62.46	34	113.5	22.38
Total suspended solids (mg/L)	40	21.63	<1.0	290	50.05
Turbidity (NTU)	38	28.72	7	280	45.29

SEGMENT 3H - ARKANSAS RIVER AND TRIBUTARIES: STATE LINE TO RIVER MILE 210 (ARKANSAS RIVER BASIN)

Segment 3H, located in the lower portion of the northwest quarter of Arkansas, includes most of Crawford, Franklin and Johnson Counties, as well as parts of Sebastian, Logan, Pope, Newton, Madison and Washington Counties. This segment contains a reach of the Arkansas River from the Oklahoma state line to the lower end of Lake Dardanelle. Major tributaries in this reach include Big Piney Creek, Lee Creek, Mulberry River, Six Mile Creek and Vache Grasse Creek.

SUMMARY OF WATER QUALITY CONDITIONS

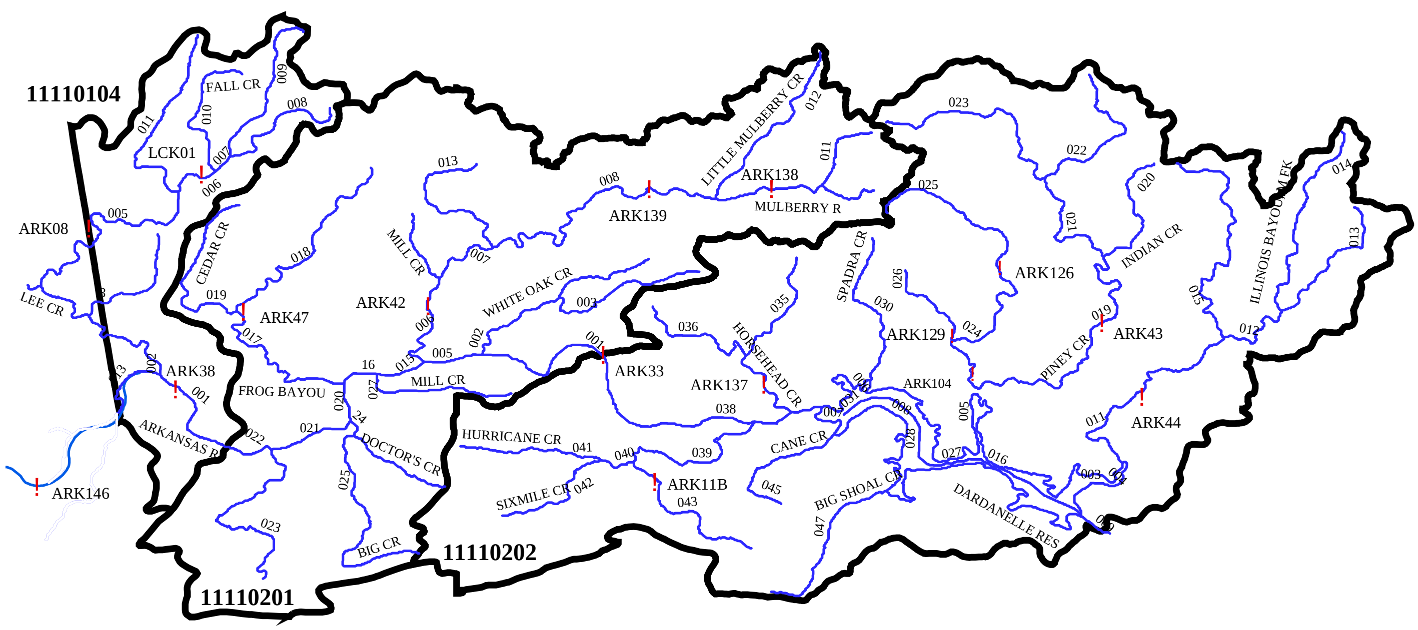
The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supply. Fourteen monitoring stations are located within this segment and were utilized to assess 234.9 miles of stream segments. An additional 220.6 stream miles were evaluated; the remainder of stream segments were unassessed.

Eleven ambient monitoring stations are located on the Arkansas River from above Ft. Smith to Pendleton (Lock & Dam #2); three of these are in Segment 3H. All of these stations are typically sampled monthly, except during 1993 and 1998 when only nine samples were collected. Minimum dissolved oxygen values and the number of dissolved oxygen standard violations, < 5 mg/L, are compared for Arkansas River monitoring stations in Figures A-3H-1 and A-3H-2. Toad Suck Lock & Dam, near Conway, and Lock & Dam #2 are not shown in Figures A-3H-1 and A-3H-2 since no standard violations occurred at these stations.

Minimum dissolved oxygen values declined substantially in segment 3H of the Arkansas River from Ft. Smith to Ozark since 1991 and has yet to recover to pre-1991 values although higher minimum values are noted in 1999-2001(Figure A-3H-1). A similar, but less pronounced, decline occurred with maximum dissolved oxygen values at Ft. Smith and Ozark. Between 1995 and 1998, 14% of dissolved oxygen values violated the standards at Ft. Smith, 12% of samples violated standards at Ozark and 13% of samples violated standards at Dardanelle (Figure A-3H-3). At Murray Lock & Dam, Terry Lock & Dam and Lock & Dam #5 the dissolved oxygen standard was violated once per station during this 4-year period. No standard violations occurred between 1995 to 1998 at Morrilton, Toad Suck Lock & Dam, Lock & Dam #4 and Lock & Dam #2.

During the period 1999 through 2001, two D.O. violations were recorded at Ark 32 (below Dardanelle Dam), approximately 5% exceedance; one at Murray Lock and Dam and none at the other Arkansas River stations (Figure A-3H-3)

Planning Segment 3H - Monitoring Stations

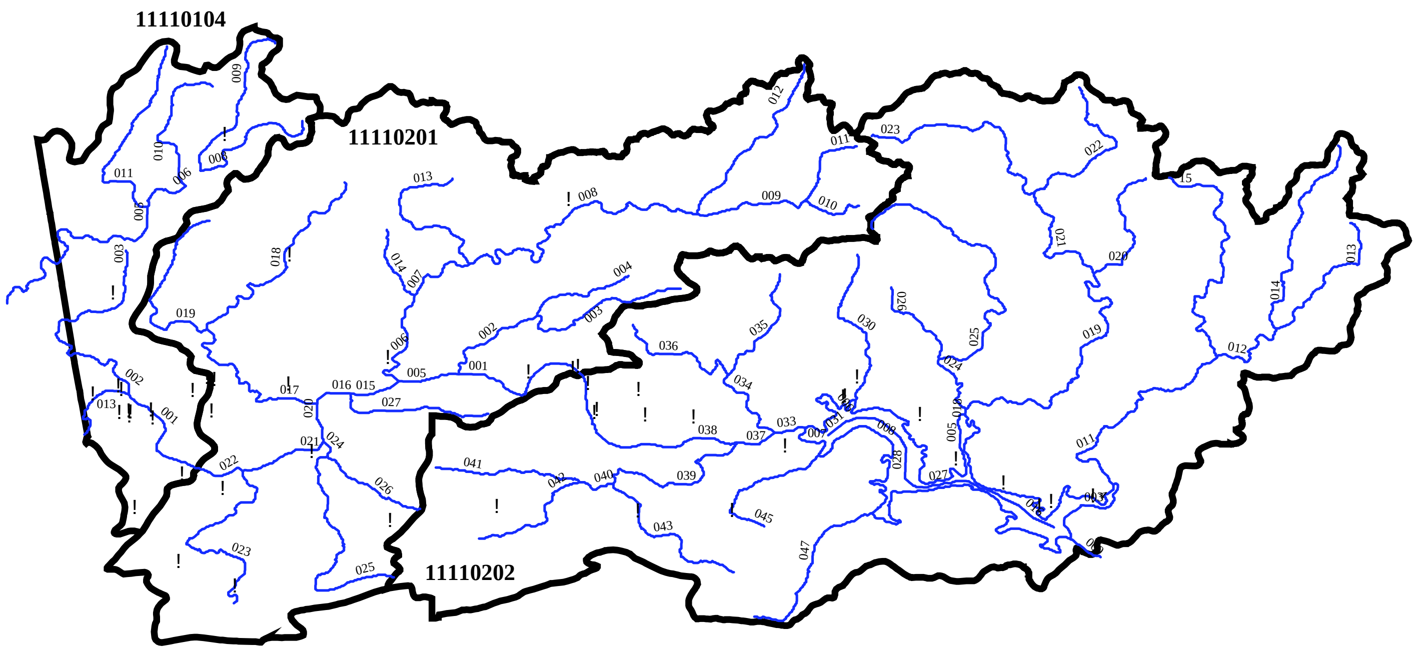


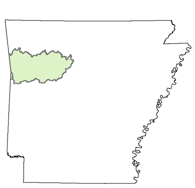
Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS
SEG-3H																
Arkansas River	11110202	-001	2.8		E	S	S	S	S	S	S					1
Illinois Bayou	11110202	-011	21	ARK44	M	S	S	S	S	S	S					1
Illinois Bayou	11110202	-012	8.1		E	S	S	S	S	S	S					1
Illinois Bayou	11110202	-013	14.1		E	S	S	S	S	S	S					1
M.Fk.Ill.Bayou.	11110202	-014	19.8		E	S	S	S	S	S	S					1
N.Fk.Ill.Bayou.	11110202	-015	24		E	S	S	S	S	S	S					1
Piney Creek	11110202	-018	0.5		E	S	S	S	S	S	S					1
Piney Creek	11110202	-019	26.3	ARK43	M	S	S	S	S	S	S					1
Indian Creek	11110202	-020	12.2		E	S	S	S	S	S	S					1
Piney Creek	11110202	-021	11.9		E	S	S	S	S	S	S					1
Hurricane Creek	11110202	-022	15.4		E	S	S	S	S	S	S					1
Piney Creek	11110202	-023	19		E	S	S	S	S	S	S					1
Little Piney	11110202	-024	6.2	ARK104	M	S	S	S	S	S	S					1
Little Piney	11110202	-025	27.2	ARK126	M	S	S	S	S	S	S					1
Minnow Creek	11110202	-026	8.6	ARK129	M	S	S	S	S	S	S					1
Arkansas River	11110202	-033	2.5		E	S	S	S	S	S	S					1
Horsehead Cr.	11110202	-034	7.9		U											3
Horsehead Cr.	11110202	-035	11.2		U											3
McKinney Cr.	11110202	-036	11.8		U											3
Arkansas River	11110202	-037	3.2		E	S	S	S	S	S	S					1
Arkansas River	11110202	-038	16.2		E	S	S	S	S	S	S					1
Sixmile Creek	11110202	-039	14.6		U											3
Sixmile Creek	11110202	-040	3		U											3
Hurricane Creek	11110202	-041	11.6		U											3
Sixmile Creek	11110202	-042	10.7		U											3
Short Mountain	11110202	-043	14.9	ARK11B	M	S	S	S	S	S	S					1
Cane Creek	11110202	-045	12.3		U											3
Big Shoal Cr.	11110202	-047	15.4		U											3
Arkansas River	11110201	-001	12.4	ARK33	M	S	S	S	S	S	S					1
White Oak	11110201	-002	9.2		U											3
S. Fork White Oak Cr.	11110201	-003	13.9		U											3
N. Fork White Oak Cr.	11110201	-004	8.8		U											3
Arkansas River	11110201	-005	4.5		E	S	S	S	S	S	S					1
Mulberry River	11110201	-006	10.4	ARK42	M	S	S	S	S	S	S					1
Mulberry River	11110201	-007	6.4		E	S	S	S	S	S	S					1
Mulberry River	11110201	-008	27.2	ARK138	M	S	S	S	S	S	S					1
Mulberry River	11110201	-009	9.1		E	S	S	S	S	S	S					1
Mulberry River	11110201	-010	5.1		E	S	S	S	S	S	S					1
Panther Creek	11110201	-011	7.4		U											3
Little Mulberry	11110201	-012	17.4		M	S	S	S	S	S	S					1
Hurricane Creek	11110201	-013	14.8		U											3
Mill Creek	11110201	-014	7		U											3
Arkansas River	11110201	-015	3.9		E	S	S	S	S	S	S					1
Arkansas River	11110201	-016	2.9		E	S	S	S	S	S	S					1
Frog Bayou	11110201	-017	15.7		U											3
Frog Bayou	11110201	-018	20.4	ARK47	M	S	S	S	S	S	S					1
Cedar Creek	11110201	-019	17		U											3
Arkansas River	11110201	-020	3.5		E	S	S	S	S	S	S					1
Arkansas River	11110201	-021	7		E	S	S	S	S	S	S					1
Arkansas River	11110201	-022	3		E	S	S	S	S	S	S					1
L. Vache Grass	11110201	-023	20.5		U											3
Doctors Creek	11110201	-024	1.5		U											3
Big Creek	11110201	-025	20.9		U											3
Doctors Creek	11110201	-026	9.1		U											3
Mill Creek	11110201	-027	11.9		U											3
Arkansas River	11110104	-001	11	ARK38	M	S	S	S	S	S	S					1
Arkansas River	11110104	_013	17	ARK146	M	S	S	S	S	S	S					1
Lee Creek	11110104	-002	10.5	ARK08	M	S	S	S	S	S	S					1
Lee Creek	11110104	-005	11.4		E	S	S	S	S	S	S					1
Lee Creek	11110104	-006	4.4	LCK01	M	S	S	S	S	S	S					1
Lee Creek	11110104	-007	1.8		E	S	S	S	S	S	S					1
Lee Creek	11110104	-008	12.3		E	S	S	S	S	S	S					1
Fall Creek	11110104	-009	15.2		U											3
Cove Creek	11110104	-010	13.3		U											3
Mt.Fork Creek	11110104	-011	18.9		U											3
TOTAL MILES	759.1															
MILES UNASSESSED	303.6															
MILES EVALUATED	220.6															
MILES MONITORED	234.9															

USE	SUPPORT	NOT SUPPORT
FISH CONSUMPTION	455.5	0
AQUATIC LIFE	455.5	0
PRIMARY CONTACT	455.5	0
SECONDARY CONTACT	455.5	0
DRINKING SUPPLY	455.5	0
AGRI & INDUSTRY	455.5	0

Planning Segment 3H - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0001341	ARKHOLA-VAN BUREN SAND PLANT	ARKANSAS RV	11110104	3H
AR0001392	ENTERGY AR, INC-AR NUCLEAR 1	LK DARDANELLE	11110202	3H
AR0001511	GERBER PRODUCTS CO-FT SMITH	AR RV	11110104	3H
AR0001759	ARKANSAS ELECTRIC COOP-FITZHUG	ARKANSAS RV	11110201	3H
AR0001791	FORT JAMES OPERATING CO	DIT, SIXTH ST DITCH, ARKANSAS RV	11110104	3H
AR0020648	USDAFS-CASS CCC-JOB CORPS	FANE CK,MULBERRY RV	11110201	3H
AR0020737	GREENVILLE TUBE CORP	DIT,SPADRA CK,LK DARDANELLE	11110202	3H
AR0021466	ALMA, CITY OF	ARKANSAS RV	11110201	3H
AR0021482	VAN BUREN, CITY OF-MAIN PLANT	ARKANSAS RV	11110104	3H
AR0021512	MOUNTAINBURG, CITY OF	TRIB/PIGEON CK,ARKANSAS RV	11110201	3H
AR0021563	OZARK, CITY OF	ARKANSAS RV	11110201	3H
AR0021750	FORT SMITH, CITY OF (MASSARD W	ARKANSAS RV	11110104	3H
AR0021857	PARIS, CITY OF	SHORT MOUNTAIN CK,6-MI CK	11110202	3H
AR0022187	CLARKSVILLE, CITY OF	BLUE CK,SPADRA CK,LK DARDANELLE	11110202	3H
AR0022454	GREENWOOD, CITY OF	TRIB/VACHE GRASSE CK/ARK RV	11110201	3H
AR0033278	FORT SMITH, CITY OF ("P" STREE	ARKANSAS RV	11110104	3H
AR0033791	CHARLESTON, CITY OF	DOCTORS CK/BIG CK	11110201	3H
AR0034070	LAVACA, CITY OF	ARKANSAS RV	11110201	3H
AR0034592	WIEDERKEHR WINE CELLARS INC	WATERSHED LK,DIRTY CK,HORSESHOE CK	11110202	3H
AR0034932	MULBERRY, CITY OF	ARKANSAS RV	11110201	3H
AR0035491	LAMAR, CITY OF	TRIB, CABIN CK,ARKANSAS RV	11110202	3H
AR0036552	BEKAERT CORPORATION	ARKANSAS RV	11110104	3H
AR0037567	VAN BUREN-LEE CK INDUSTRIAL PK	ARKANSAS RV	11110104	3H
AR0037851	SGL CARBON CORP	TRIB,WEST CK,AR RV	11110202	3H
AR0037940	AR PARKS & TOURISM-DEVIL'S DEN	DIT,LEE CK,ARKANSAS RV	11110104	3H
AR0037966	AR PARKS & TOURISM-MT NEBO ST PARK	TRIB, CHICKALAH CK	11110104	3H
AR0039268	TYSON FOODS INC-CLARKSVILLE	TRIB,BLUE CK,SPADRA CK,AR RV	11110202	3H
AR0039730	QUANEX CORP-MACSTEEL DIV	MASSARD CK TRIB	11110104	3H
AR0040720	VAN BUREN PUB SCHOOL-TATE ELEM	MAYS CK TRIB	11110201	3H
AR0040967	VAN BUREN, CITY OF-NORTH WWTP	LEE CREEK	11110104	3H

Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0040983	MOUNTAIN VIEW LODGE, INC	TRIB,ARKANSAS RV	11110201	3H
AR0040991	SUBIACO, TOWN OF	CANE CK	11110202	3H
AR0041289	CEDARVILLE PUBLIC SCHOOLS	LTL WEBER CK TRIB,LEE CK	11110104	3H
AR0042447	TYSON FOODS INC-TRAINING CTR	LK DARDENELLE ON AR RV	11110202	3H
AR0042455	TYSON FOODS INC-RIVER VALLEY	ARKANSAS RV	11110202	3H
AR0043699	CONCORD BAPTIST CHURCH	TRIB/FROG BU	11110201	3H
AR0044385	S&D PROPERTIES-D/B/A CABANA ES	TRIB,FLAT ROCK CK	11110104	3H
AR0044636	COUNTY LINE SCHOOL DIST	N FORK-LITTLE CK/6 MILE CK	11110202	3H
AR0044725	ALTUS, CITY OF	ARKANSAS RV	11110202	3H
AR0044938	ECOLOGY MGT, INC	ARKANSAS RV	11110104	3H
AR0045063	ARKHOLA-PRESTON QUARRY	DIT,TRIB,FLAT ROCK CK,ARKANSAS RV	11110104	3H
AR0045365	ARKHOLA-JENNY LIND QUARRY	DIT, BEAR CK, VACHE GRASSE CK	11110201	3H
AR0045683	AR HWY DEPT-BIG PINEY EAST	TRIB,BIG PINEY CK,LK DARDENELLE	11110202	3H
AR0045691	AR HWY DEPT-BIG PINEY-WEST	TRIB,LK DARDANELLE	11110202	3H
AR0046396	PLEASANT VIEW ESTATES	DIT,LK DARDANELLE	11110202	3H
AR0047686	COAL HILL, CITY OF	ARKANSAS RV	11110202	3H
AR0048267	CARGILL, INC	ARKANSAS RV	11110201	3H
AR0048801	BARLING, CITY OF	ARKANSAS RV	11110201	3H
AR0049212	CARGILL, INC-FEED MILL	HWY DIT,CEDAR CK,ARKANSAS RV	11110202	3H

ARK0011B
SHORT MOUNTAIN CREEK DOWNSTREAM OF PARIS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	29	7.95	4.8	12.8	2.14
BOD_5 (mg/L)	34	0.96	0.43	2.76	0.45
pH (standard units)	34	7.33	6.5	8.73	0.50
Total Organic Carbon (mg/L)	34	3.40	2.11	6.479	0.96
Ammonia as N (mg/L)	37	0.04	<0.005	0.133	0.04
NO_2+NO_3 as N (mg/L)	36	1.96	0.081	6.21	1.85
Orthophosphate as P (mg/L)	37	0.21	0.01	0.721	0.22
Total phosphorus as P (mg/L)	35	0.24	0.01	0.717	0.23
Total hardness (mg/L)	18	38.66	11	167	35.47
Chloride (mg/L)	36	12.38	2.04	129	21.02
Sulfate (mg/L)	37	18.93	3.94	74.2	13.57
Total dissolved solids (mg/L)	37	123.38	43.5	437	84.54
Total suspended solids (mg/L)	37	5.91	<1.0	32.5	5.66
Turbidity (NTU)	37	7.98	2.6	36	6.88

ARK0033
ARK RIVER @ OZARK L & D

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	31	8.51	5.6	13.9	2.20
BOD_5 (mg/L)	37	1.59	0.61	5.24	0.87
pH (standard units)	37	7.54	6.5	8.65	0.49
Total Organic Carbon (mg/L)	37	4.90	1.8	7.3	1.12
Ammonia as N (mg/L)	40	0.03	<0.005	0.086	0.02
NO_2+NO_3 as N (mg/L)	39	0.44	0.01	4.537	0.72
Orthophosphate as P (mg/L)	40	0.06	<0.005	0.7	0.11
Total phosphorus as P (mg/L)	36	0.12	0.033	0.7206	0.11
Total hardness (mg/L)	19	131.65	46	202	35.45
Chloride (mg/L)	38	79.43	17.4	160.76	31.49
Sulfate (mg/L)	40	61.91	20.4	108.96	18.26
Total dissolved solids (mg/L)	40	344.96	178	546.5	81.90
Total suspended solids (mg/L)	40	22.64	3.5	149	26.42
Turbidity (NTU)	40	26.19	4.6	150	27.78

ARK0038
ARK RIVER NEAR FT SMITH AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	30	8.75	5.4	15.4	2.36
BOD_5 (mg/L)	35	1.82	1	4.51	0.71
pH (standard units)	35	7.45	6.5	8.6	0.48
Total Organic Carbon (mg/L)	35	5.07	3.518	7.4	0.88
Ammonia as N (mg/L)	38	0.03	<0.005	0.093	0.03
NO_2+NO_3 as N (mg/L)	37	0.35	0.019	0.82	0.24
Orthophosphate as P (mg/L)	38	0.05	0.008	0.139	0.02
Total phosphorus as P (mg/L)	36	0.11	0.05	0.193	0.03
Total hardness (mg/L)	19	137.57	83	189	29.05
Chloride (mg/L)	36	80.10	29	151.72	32.39
Sulfate (mg/L)	38	62.28	31.8	98.17	17.90
Total dissolved solids (mg/L)	38	350.88	188	547	84.69
Total suspended solids (mg/L)	38	23.03	3.5	75	16.42
Turbidity (NTU)	37	28.83	5.3	130	25.29

ARK0042
MULBERRY RIVER @ I-40

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	24	8.68	6	12.6	2.22
BOD_5 (mg/L)	29	0.56	0.03	3.06	0.59
pH (standard units)	29	7.31	6.3	7.84	0.44
Total Organic Carbon (mg/L)	27	1.93	1.038	9.78	1.64
Ammonia as N (mg/L)	30	0.01	<0.005	0.041	0.01
NO_2+NO_3 as N (mg/L)	29	0.18	<0.01	0.468	0.13
Orthophosphate as P (mg/L)	30	0.01	<0.005	0.108	0.02
Total phosphorus as P (mg/L)	29	0.02	0.01	0.054	0.01
Total hardness (mg/L)	14	10.74	7	14	1.68
Chloride (mg/L)	30	1.85	1.22	3.49	0.57
Sulfate (mg/L)	30	3.06	2.08	7.6	0.92
Total dissolved solids (mg/L)	30	32.82	25	56	6.03
Total suspended solids (mg/L)	30	2.66	<1.0	11	2.25
Turbidity (NTU)	30	6.02	1.7	22	4.56

ARK0043
BIG PINEY CR @ HWY 164

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	9.40	6.2	13.49	1.69
BOD_5 (mg/L)	34	0.47	0.03	1.25	0.32
pH (standard units)	36	7.06	6.06	8.21	0.44
Total Organic Carbon (mg/L)	37	1.73	<1.0	3.7	0.66
Ammonia as N (mg/L)	37	0.01	<0.005	0.124	0.02
NO_2+NO_3 as N (mg/L)	37	0.11	<0.01	0.46	0.09
Orthophosphate as P (mg/L)	37	0.01	<0.005	0.048	0.01
Total phosphorus as P (mg/L)	37	0.02	0.01	0.11	0.02
Total hardness (mg/L)	18	21.44	13	30	5.81
Chloride (mg/L)	38	2.29	1.14	10.36	1.71
Sulfate (mg/L)	38	3.18	2.57	4.23	0.36
Total dissolved solids (mg/L)	38	45.47	28.5	257.5	36.28
Total suspended solids (mg/L)	38	2.42	<1.0	56	8.96
Turbidity (NTU)	36	5.25	<1.0	57	9.61

ARK0044
ILLINOIS BAYOU NW OF DOVER AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	8.56	2.9	12.18	2.00
BOD_5 (mg/L)	35	0.67	0.03	2.13	0.53
pH (standard units)	37	6.76	6.21	7.73	0.32
Total Organic Carbon (mg/L)	38	2.42	<1.0	4.7	1.00
Ammonia as N (mg/L)	38	0.01	<0.005	0.042	0.01
NO_2+NO_3 as N (mg/L)	38	0.25	<0.01	1.07	0.29
Orthophosphate as P (mg/L)	38	0.01	<0.005	0.023	0.01
Total phosphorus as P (mg/L)	38	0.03	0.01	0.16	0.03
Total hardness (mg/L)	19	10.84	8	15	1.92
Chloride (mg/L)	39	2.84	1.3	8.08	1.66
Sulfate (mg/L)	39	2.87	2.21	3.7	0.35
Total dissolved solids (mg/L)	39	34.03	24	63	7.19
Total suspended solids (mg/L)	39	5.45	<1.0	111	17.55
Turbidity (NTU)	37	9.60	2.2	81	14.03

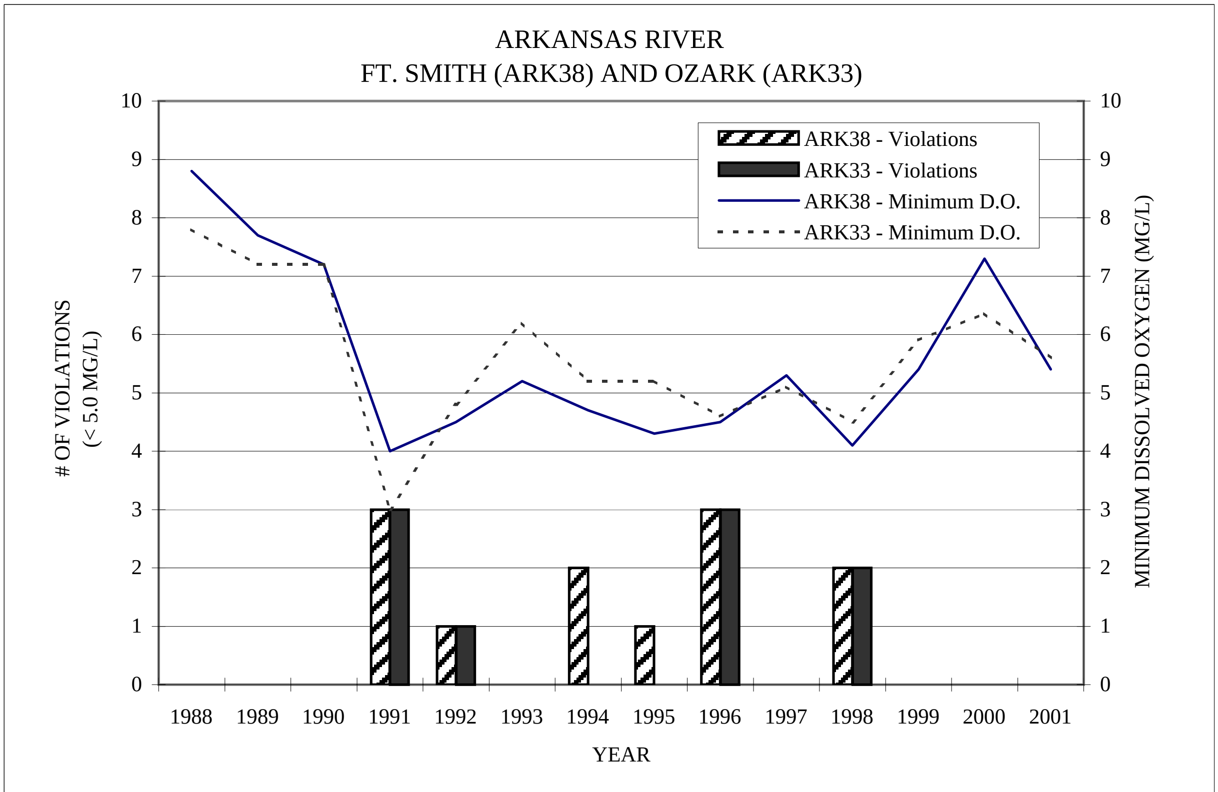
ARK0146
ARKANSAS RIVER NEAR W.D. MAYO LOCK AND DAM (IN OKLAHOMA)

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	16	9.47	5.8	12.7	2.14
BOD_5 (mg/L)	23	1.39	0.66	2.34	0.41
pH (standard units)	24	7.59	7.24	8.4	0.28
Total Organic Carbon (mg/L)	24	4.80	3.645	6.6	0.82
Ammonia as N (mg/L)	24	0.03	<0.005	0.061	0.02
NO_2+NO_3 as N (mg/L)	23	0.40	0.03	1.58	0.36
Orthophosphate as P (mg/L)	24	0.05	0.017	0.101	0.02
Total phosphorus as P (mg/L)	22	0.09	0.047	0.132	0.02
Total hardness (mg/L)	12	151.24	124	180	19.29
Chloride (mg/L)	23	95.78	44	166.48	33.24
Sulfate (mg/L)	24	67.55	43.5	96.15	14.45
Total dissolved solids (mg/L)	24	386.15	259	535	79.76
Total suspended solids (mg/L)	24	17.48	5.5	47.5	9.39
Turbidity (NTU)	24	21.09	5	57	14.75

FIGURE A-3H-1

ARKANSAS RIVER

MINIMUM VALUES FOR DISSOLVED OXYGEN AND NUMBER OF STANDARD VIOLATIONS



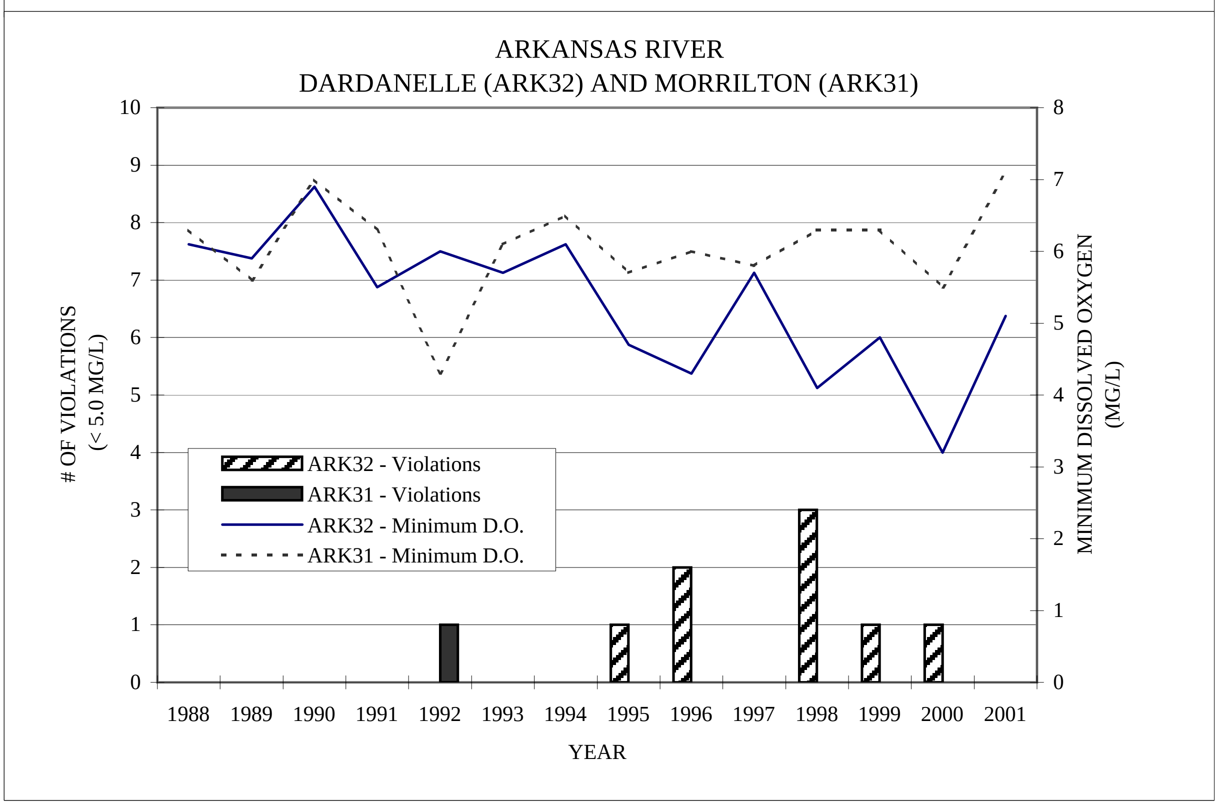
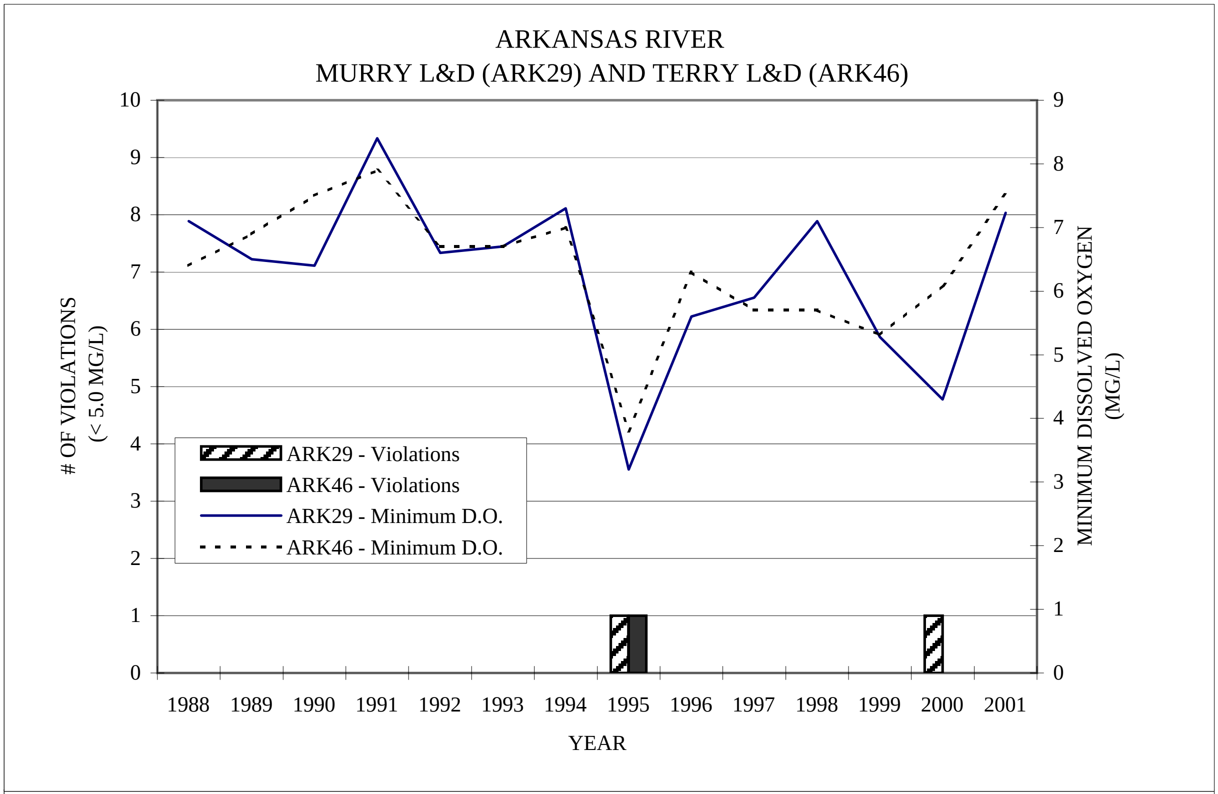


FIGURE A-3H-2

ARKANSAS RIVER

MINIMUM VALUES FOR DISSOLVED OXYGEN AND NUMBER OF STANDARD VIOLATIONS



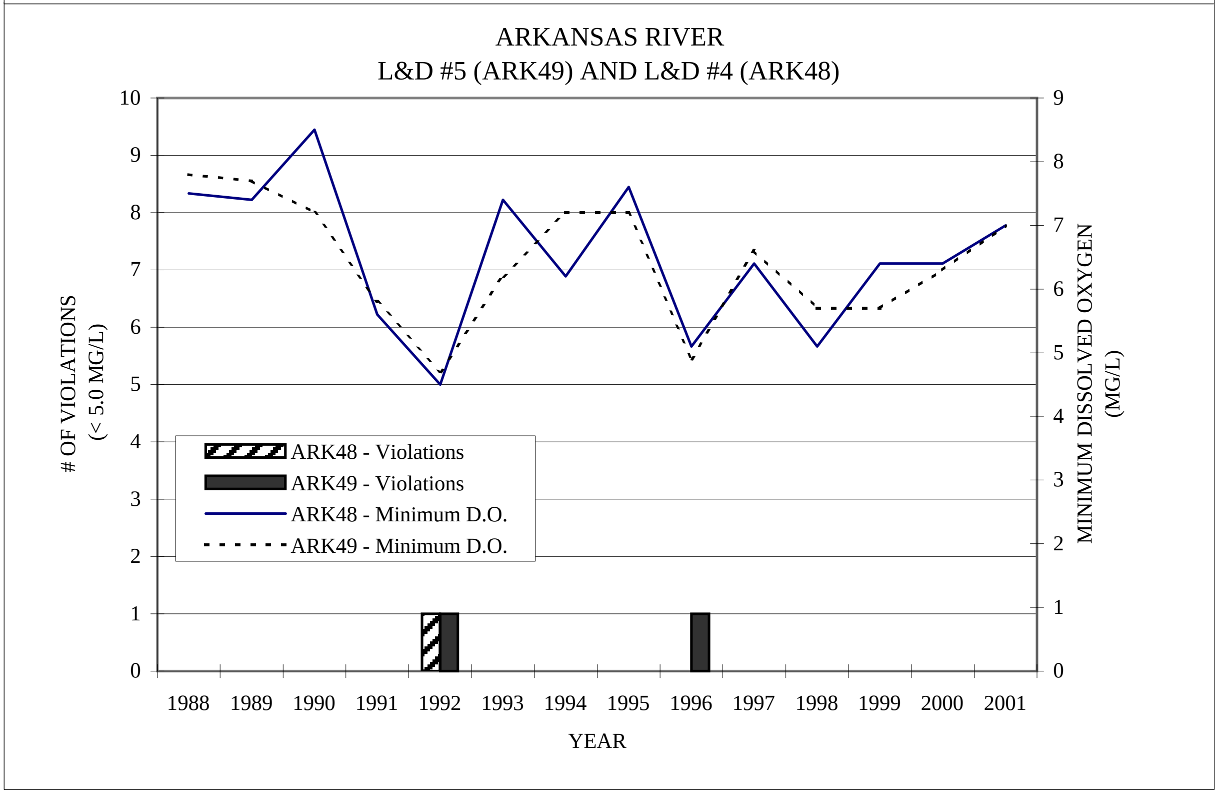
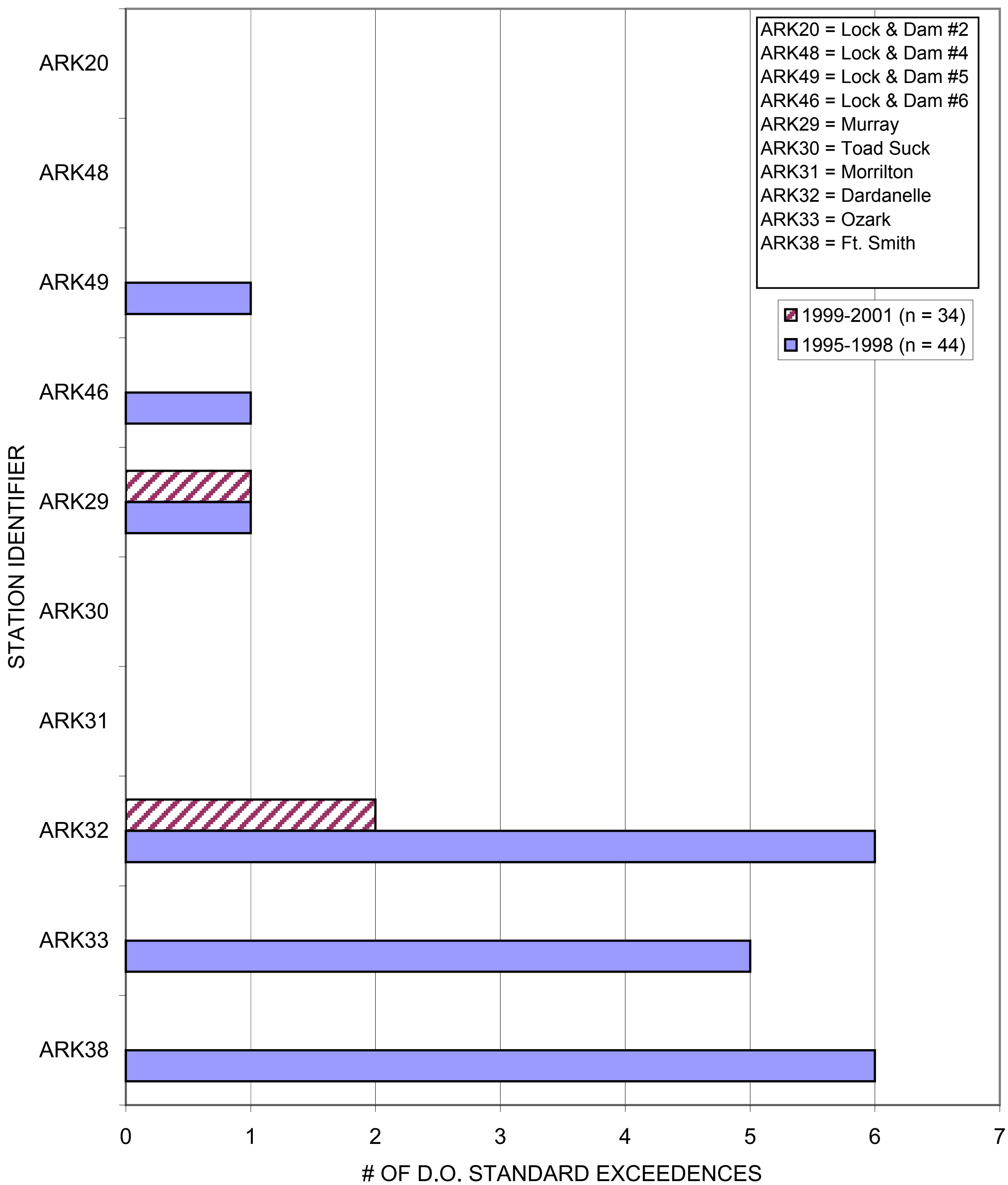


FIGURE A-3H-3

ARKANSAS RIVER

DISSOLVED OXYGEN STANDARD VIOLATIONS, 1995-2001



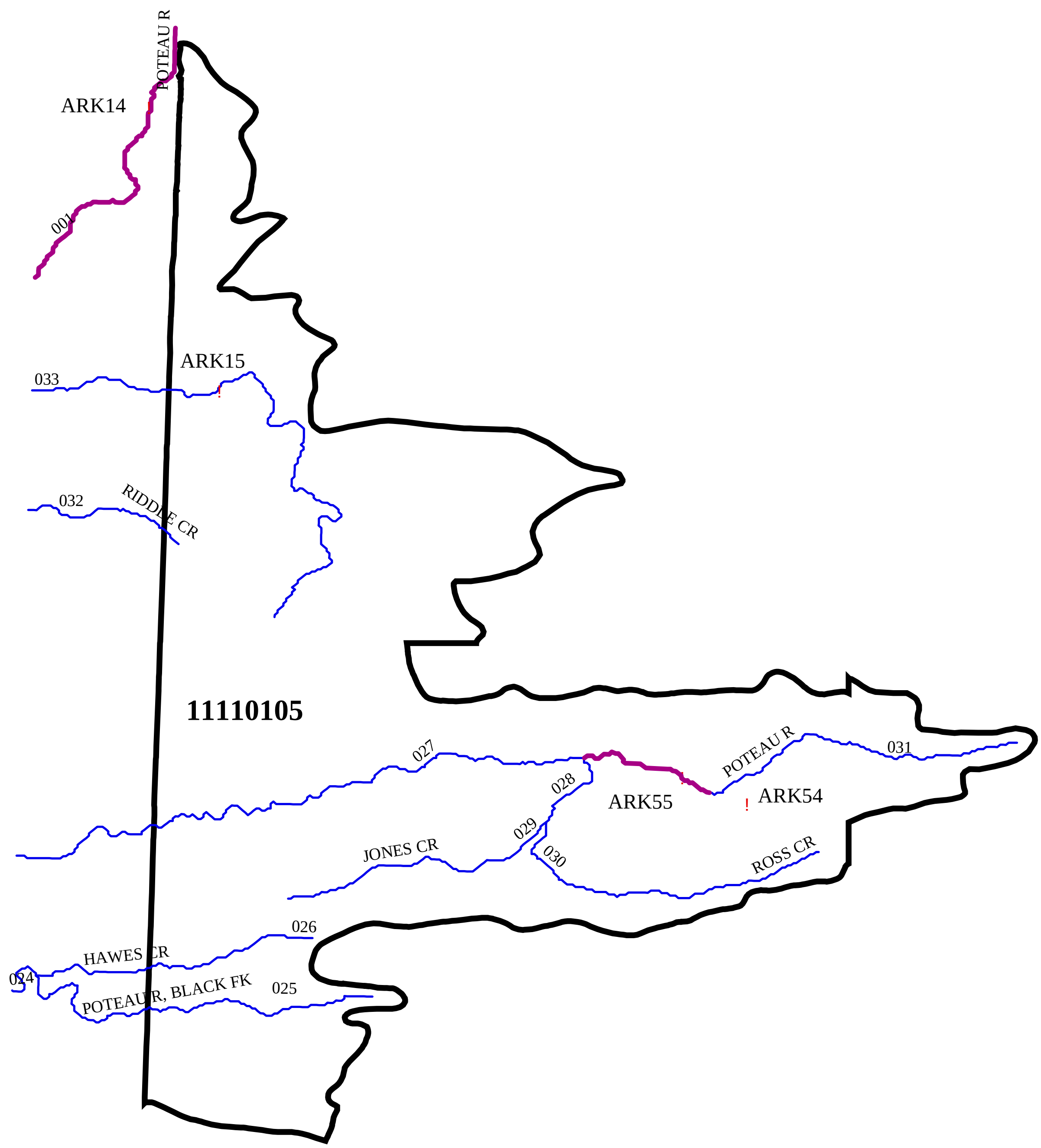
SEGMENT 3I - POTEAU RIVER
(ARKANSAS RIVER BASIN)

Segment 3I is located on the western edge of Arkansas, just south of the Arkansas River. This segment includes large portions of Scott and Sebastian Counties and a small part of northwestern Polk County. The waters of this segment include the Poteau River from its headwaters to the Oklahoma state line, as well as the tributary streams. Major tributaries include Jones Creek and James Fork.

SUMMARY OF WATER QUALITY CONDITION

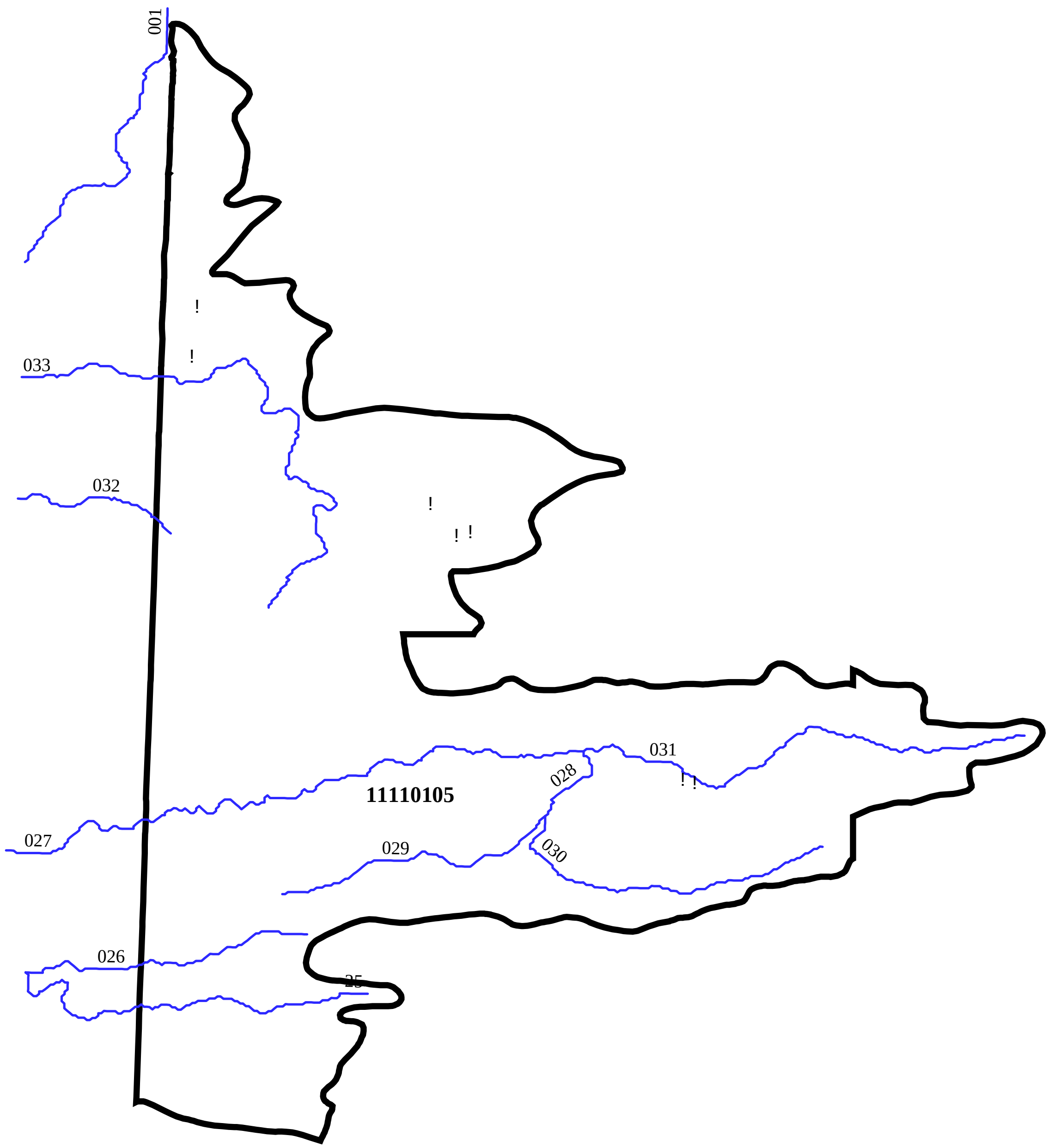
The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. This planning segment contains 105.3 stream miles. Five monitoring stations, including one operated by USGS, are located within this segment and were utilized to assess 55.8 stream miles. The remaining 49.5 miles were unassessed. A short section of the Poteau River below Waldron is listed as not supporting aquatic life uses due to elevated metals. Both a municipal and industrial discharge occurs in this segment. Additionally, very high nutrient values exist in the Poteau River below these discharges (Figure A-3I-1).

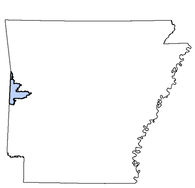
Planning Segment 3I - Monitoring Stations



STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-3I																			
Poteau River	11110105	-001	2	ARK14	M	S	N	S	S	S	S	AG		SI		5	FISH CONSUMPTION	55.8	0
Black Fork	11110105	-025	8		U											3	AQUATIC LIFE	47.2	8.6
Poteau River	11110105	-027	16	USGS	M	S	S	S	S	R	S					1	PRIMARY CONTACT	55.8	0
Hawes Creek	11110105	-026	11.6		U											3	SECONDARY CONTACT	55.8	0
Jones Creek	11110105	-028	4		U											3	DRINKING SUPPLY	33.2	0
Jones Creek	11110105	-029	11.6		U											3	AGRI & INDUSTRY	55.8	0
Ross Creek	11110105	-030	14.3		U											3			
Poteau River	11110105	-931	12.8	ARK54	M	S	S	S	S	S	S					1			
Poteau River	11110105	-031	6.6	ARK55	M	S	N	S	S	R	S	IP	MP	ME		5			
James Fork	11110105	-033	18.4	ARK15	M	S	S	S	S	S	S					1			
TOTAL MILES	105.3																		
MILES UNASSESSED	49.5																		
MILES EVALUATED	0																		
MILES MONITORED	55.8																		

Planning Segment 3I - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0035769	WALDRON, CITY OF	TRIB,POTEAU RV,AR RV	11110105	3I
AR0036293	MANSFIFLD, CITY OF	COOP-CHEROKEE CK/PRAIRIE CK	11110105	3I
AR0037419	HUNTINGTON, CITY OF	CHEROKEE CK,PRAIRIE CK,JAMES FRK RV	11110105	3I
AR0038482	TYSON FOODS INC-WALDRON	POTEAU RV TRIB	11110105	3I
AR0039781	HACKETT, CITY OF	BIG BR HACKETT CK,JAMES FK,POTEAU R	11110105	3I
AR0041165	SEBASTIAN LAKE UTILITY CO, INC	TRIB/HACKETT CK/BIG BRANCH	11110105	3I
AR0044679	HARTFORD SCHOOL DIST	TRIB/WEST CK	11110105	3I
AR0048232	TRAVIS LUMBER CO, INC	TRIB,COOPCK,CHEROKEE CK,JAMES FORK	11110105	3I

ARK0014
POTEAU RIVER NEAR FT SMITH AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	30	7.74	4.8	12.7	2.00
BOD_5 (mg/L)	35	2.02	0.76	6.47	1.24
pH (standard units)	36	7.32	6.3	7.97	0.42
Total Organic Carbon (mg/L)	35	5.65	3.5	9.19	1.20
Ammonia as N (mg/L)	38	0.05	<0.005	0.21	0.04
NO_2+NO_3 as N (mg/L)	37	0.34	0.01	0.95	0.24
Orthophosphate as P (mg/L)	38	0.02	<0.005	0.085	0.02
Total phosphorus as P (mg/L)	36	0.10	0.01	0.242	0.05
Total hardness (mg/L)	19	39.74	11	94	22.11
Chloride (mg/L)	37	6.39	1.79	26.53	5.05
Sulfate (mg/L)	38	16.15	3.18	33.9	7.09
Total dissolved solids (mg/L)	38	101.61	38.5	190.5	34.43
Total suspended solids (mg/L)	38	32.97	5.5	285	44.76
Turbidity (NTU)	38	38.88	2	83	21.22

ARK0015
JAMES FORK NEAR HACKETT AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	26	8.07	5.4	11.8	1.89
BOD_5 (mg/L)	31	1.11	0.36	3.28	0.60
pH (standard units)	30	7.33	6.31	8.2	0.49
Total Organic Carbon (mg/L)	29	4.02	2.62	8	1.28
Ammonia as N (mg/L)	32	0.02	<0.005	0.098	0.02
NO_2+NO_3 as N (mg/L)	31	0.28	0.017	1.568	0.34
Orthophosphate as P (mg/L)	32	0.02	<0.005	0.098	0.02
Total phosphorus as P (mg/L)	31	0.05	0.01	0.219	0.04
Total hardness (mg/L)	17	75.18	10	135	41.89
Chloride (mg/L)	32	5.31	2.56	8.06	1.44
Sulfate (mg/L)	32	46.76	5.87	111.6	24.57
Total dissolved solids (mg/L)	32	151.77	43	260	60.63
Total suspended solids (mg/L)	32	11.70	2.5	84.5	14.01
Turbidity (NTU)	32	14.78	4.4	79	13.60

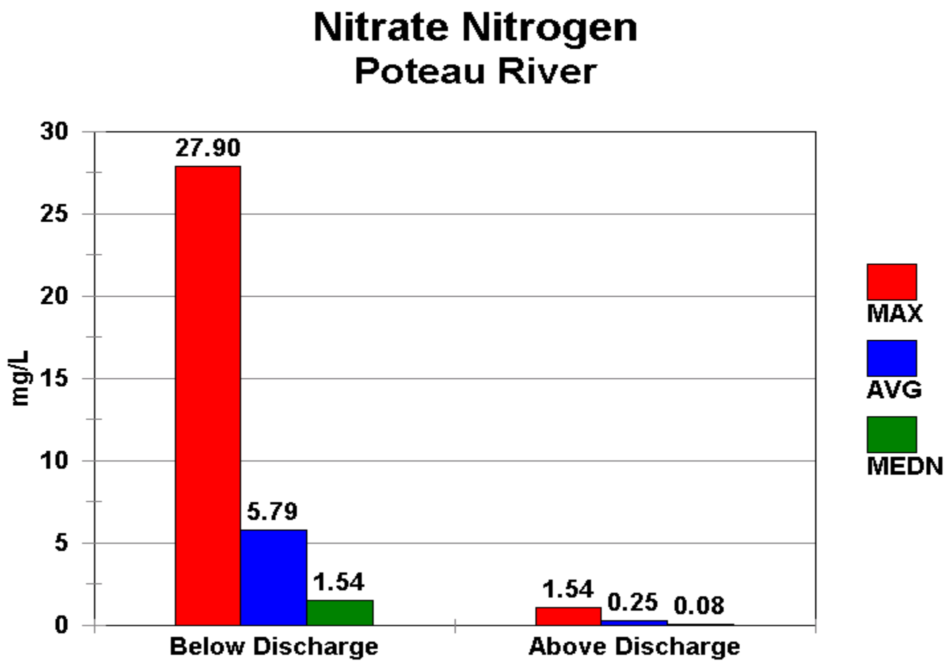
ARK0054
POTEAU RIVER UPSTREAM OF WALDRON AR

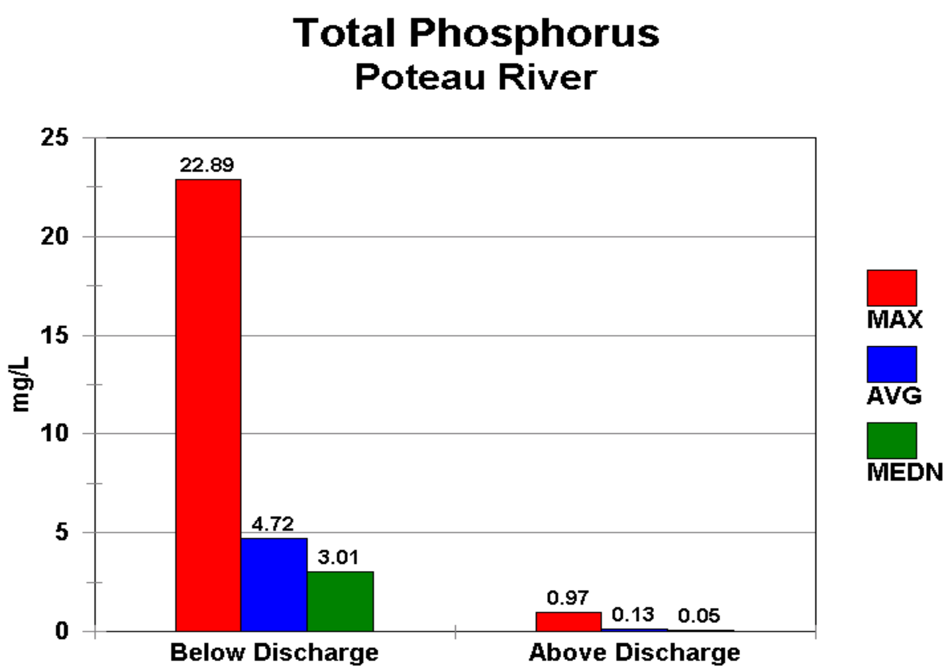
Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	18	9.12	6.2	13.9	2.24
BOD_5 (mg/L)	23	1.71	0.36	7.96	2.02
pH (standard units)	24	7.45	6.5	8.63	0.56
Total Organic Carbon (mg/L)	21	5.20	2.93	12.6	2.29
Ammonia as N (mg/L)	24	0.03	<0.005	0.258	0.06
NO_2+NO_3 as N (mg/L)	23	0.24	0.01	1.071	0.32
Orthophosphate as P (mg/L)	24	0.05	<0.005	0.443	0.12
Total phosphorus as P (mg/L)	23	0.13	0.01	0.966	0.24
Total hardness (mg/L)	12	20.28	12	31	6.41
Chloride (mg/L)	24	5.21	2.33	10.84	2.19
Sulfate (mg/L)	24	10.20	4.75	27.13	4.87
Total dissolved solids (mg/L)	24	68.92	45	159	24.98
Total suspended solids (mg/L)	24	26.05	<1.0	408	85.83
Turbidity (NTU)	24	35.20	2.2	390	82.68

ARK0055
POTEAU RIVER DOWNSTREAM OF WALDRON AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	31	7.34	3.8	12.1	2.00
BOD_5 (mg/L)	35	4.98	1.24	27.1	5.48
pH (standard units)	35	7.19	6.32	8.3	0.44
Total Organic Carbon (mg/L)	35	7.06	3.96	12.6	1.74
Ammonia as N (mg/L)	38	1.05	<0.005	12.4	2.15
NO_2+NO_3 as N (mg/L)	37	5.22	0.024	27.9	8.22
Orthophosphate as P (mg/L)	38	3.88	0.006	15.128	3.95
Total phosphorus as P (mg/L)	36	4.67	0.078	22.885	5.16
Total hardness (mg/L)	19	34.74	13	63	16.77
Chloride (mg/L)	36	44.09	3.62	90.15	28.88
Sulfate (mg/L)	38	57.35	5.82	142.84	37.50
Total dissolved solids (mg/L)	38	275.51	49.5	547	161.56
Total suspended solids (mg/L)	38	27.13	2	239.3	47.81
Turbidity (NTU)	38	14.81	1.4	190	29.85

Figure A-3I-1
POTEAU RIVER BASIN
Comparison of Nutrient Values in Poteau River Above and Below Discharges





SEGMENT 3J - GRAND NEOSHO BASIN
(ARKANSAS RIVER BASIN)

Segment 3J occupies the northwestern corner of Arkansas, and covers most of Benton County and a large part of Washington County. This segment includes the Illinois River and its tributaries within Arkansas. The main tributaries are Osage Creek, Spavinaw Creek, Little Sugar Creek, Flint Creek and Spring Creek.

SUMMARY OF WATER QUALITY CONDITIONS

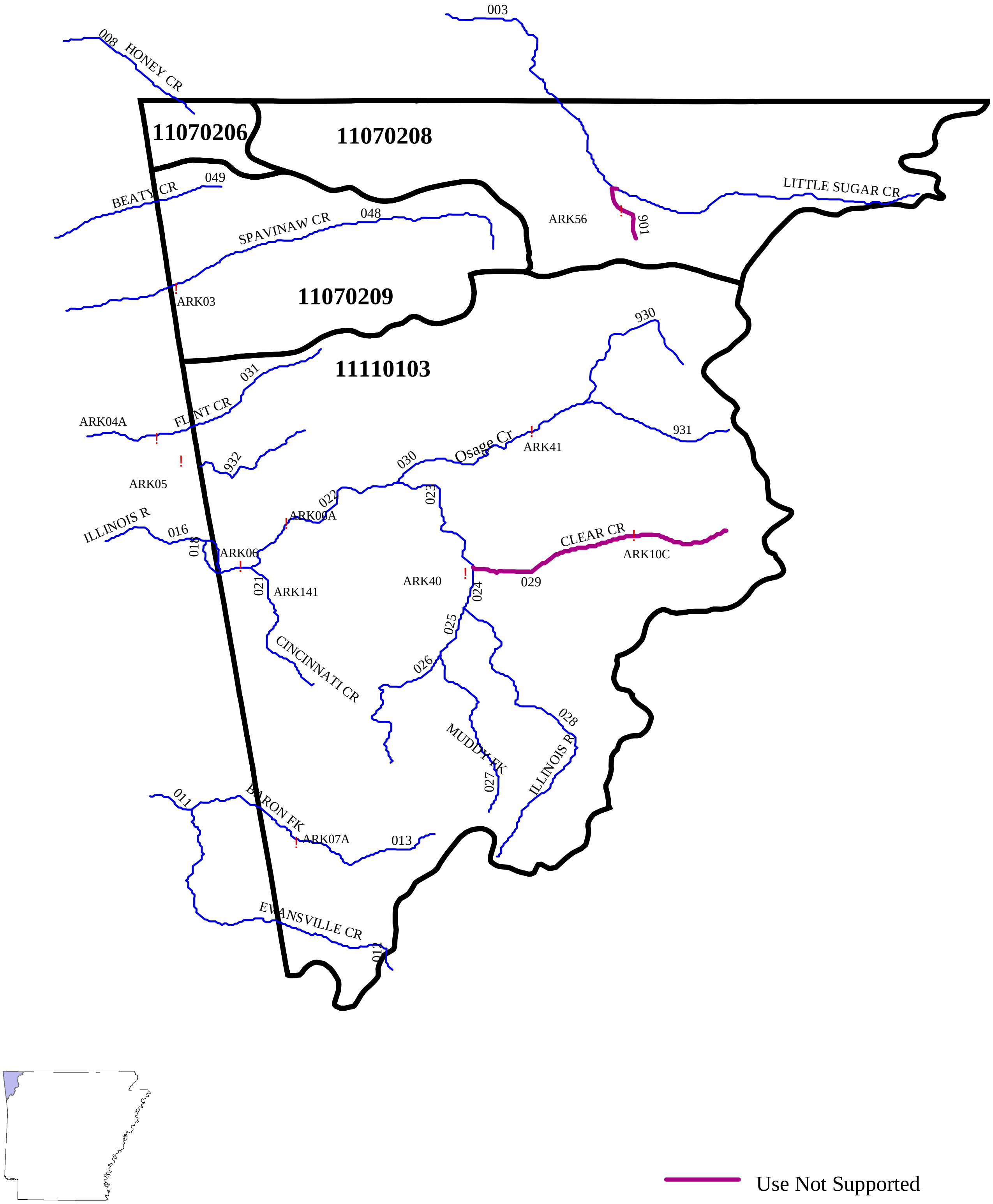
The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. This segment contains 203.7 stream miles. Eleven permanent monitoring stations and several temporary stations in this planning segment were utilized to monitor 171.6 stream miles. An additional 8.1 stream miles were evaluated. Nonpoint source impacts affecting waters in this segment are primarily from pasture land 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 siltation problems.

A municipal point source discharge is impairing the aquatic life use and the drinking water use in Town Branch from excessive nutrient discharges and elevated metals.

Three major municipal, point source discharges enter the Illinois River via Osage Creek and Clear Creek, and a minor municipal discharge enters the Illinois from Muddy Fork of the Illinois River. Other significant municipal discharges occur into Sager Creek and Spavinaw Creek.

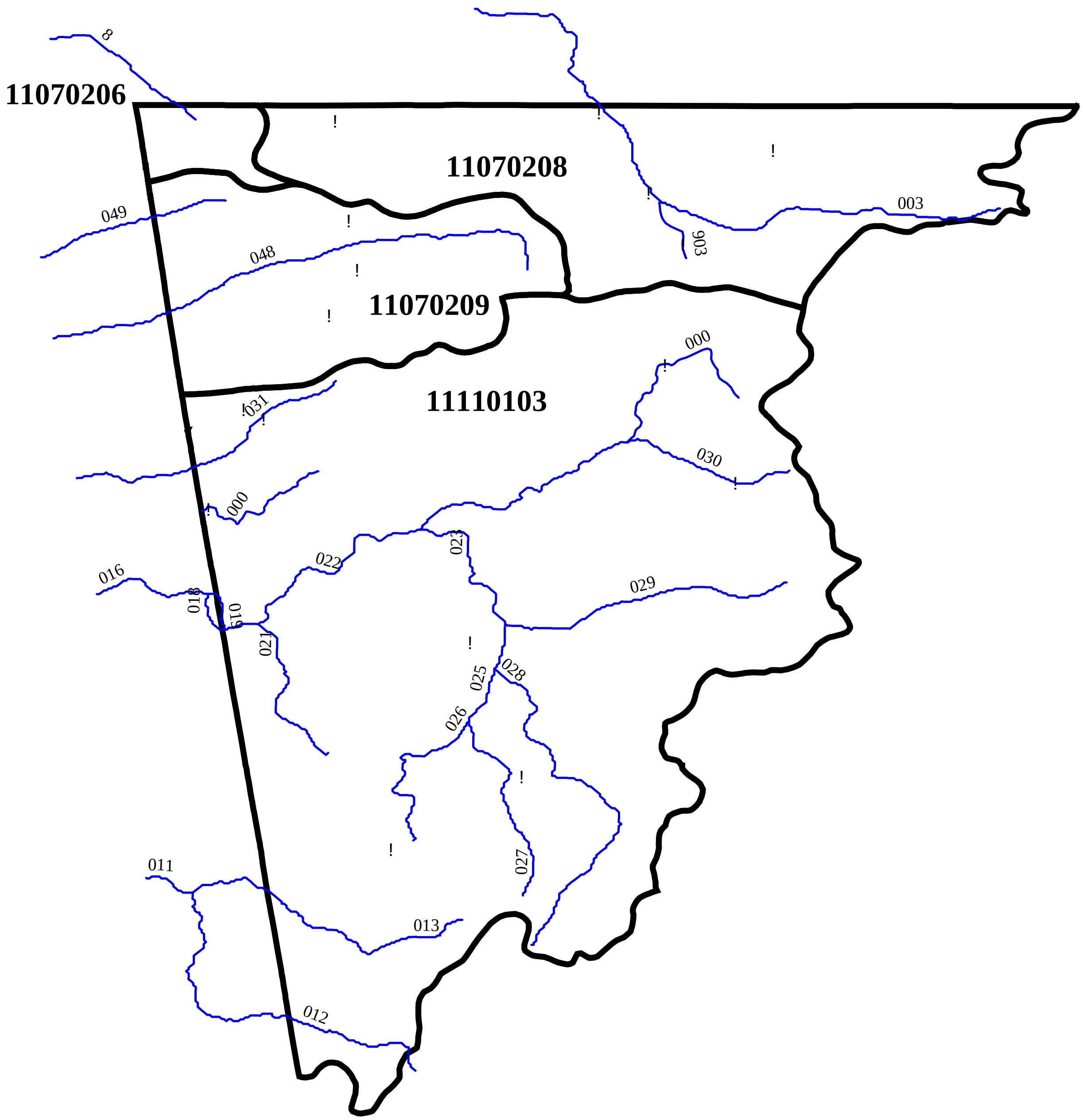
Figure A-3J-1 shows the monthly nitrate and total phosphorus values from the upper Illinois River above the major point source discharges. Since 1995, the trend of nitrite + nitrate nitrogen at this station has shown a noticeable increase; however the total phosphorus trend has remained fairly constant. At the Osage Creek station several miles above its confluence with the Illinois River, both nitrates and phosphorus trends are increasing and the values are noticeably greater than the upper Illinois River (Figure A-3J-2). The station on the Illinois River at the stateline also shows upward trends in nitrogen and phosphorus which most likely reflects the influence of Osage Creek on the Illinois River (Figure A-3J-3). This is most noticeable during low run-off periods. The plots in Figure A-3J-4 demonstrate the comparative magnitude of the nitrates and phosphorus values in the Illinois River, Osage Creek and Spavinaw Creek.

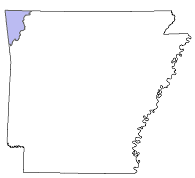
Planning Segment 3J - Monitoring Stations



STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-3J																			
Evansville Cr.	11110103	-012	9		U											3	FISH CONSUMPTION	179.7	0
Baron Fork	11110103	-013	10	ARK07	M	S	S	S	S	S	S					1	AQUATIC LIFE	166.2	13.5
Illinois River	11110103	-020	1.6	ARK06	M	S	S		S	S	S					2	PRIMARY CONTACT	99.8	0
Cincinnati Cr.	11110103	-021	9	ARK141	M	S	S		S	S	S					2	SECONDARY CONTACT	179.7	0
Illinois River	11110103	-022	10.8	ARK06A	M	S	S	S	S	S	S					1	DRINKING SUPPLY	176.7	3
Illinois River	11110103	-023	8.1		E	S	S	S	S	S	S					1	AGRI & INDUSTRY	179.7	0
Illinois River	11110103	-024	2.5	ARK40	M	S	S	S	S	S	S					1			
Muddy Fork.	11110103	-025	3.2	MFI04+	M	S	S		S	S	S					2			
Moores Creek	11110103	-026	9.8		U											3			
Muddy Fork	11110103	-027	11	MFI02B+	M	S	S		S	S	S					2			
Illinois River	11110103	-028	19.9	ILL01	M	S	S		S	S	S					2			
Clear Creek	11110103	-029	13.5	ARK10C	M	S	N	S	S	S	S	AG	UR	SI		5			
Osage Creek	11110103	-030	15	ARK41	M	S	S	S	S	S	S					1			
Osage Creek	11110103	-930	5	OSC03+	M	S	S		S	S	S					2			
Spring Creek	11110103	-931	6	SPG03+	M	S	S		S	S	S					2			
Flint Creek	11110103	-031	9.6	ARK04A	M	S	S	S	S	S	S					1			
Sager Creek	11110103	-932	8	ARK05	M	S	S	S	S	S	S					1			
Spavinaw Cr.	11070209	-048	19.3	ARK03	M	S	S	S	S	S	S					1			
Beaty Creek	11070209	-049	5.2		U											3			
Little Sugar	11070208	-003	24.2		M	S	S		S	S	S					2			
Town Branch	11070208	-901	3	ARK56	M	S	S	S	S	N	S	MP		NU		5			
TOTAL MILES	203.7																		
MILES UNASSESSED	24																		
MILES EVALUATED	8.1																		
MILES MONITORED	171.6																		

Planning Segment 3J - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0020184	GENTRY, CITY OF	SWEPCO LK,LT FLINT CK	11110103	3J
AR0020273	SILOAM SPRINGS, CITY OF	SAGER CK/FLINT CK/IL. RV	11110103	3J
AR0020672	PEA RIDGE, CITY OF	OTTER CK,BIG SUGAR CK,ELK RV	11070208	3J
AR0022063	SPRINGDALE, CITY OF	SPRING CK,OSAGE CK,IL.RV	11110103	3J
AR0022098	PRAIRIE GROVE, CITY OF	MUDDY FORK/ILLINOIS RV	11110103	3J
AR0022292	DECATUR, CITY OF	COLUMBIA HOLLOW CK,SPAVINAW CK	11070209	3J
AR0022403	BENTONVILLE, CITY OF	TOWN BR,LTL SUGAR CK	11070208	3J
AR0023833	GRAVETTE, CITY OF	RR HOLLOW/SPAVINAW/GRAND NEOSHO	11070209	3J
AR0033910	USDAFS-LAKE WEDINGTON REC AREA	ILLINOIS RV TRIB	11110103	3J
AR0034258	VILLAGE WASTEWATER CO-NORTH	LITTLE SUGAR CK	11070208	3J
AR0034266	VILLAGE WASTEWATER CO, INC	LTL SUGAR CK	11070208	3J
AR0035246	LINCOLN, CITY OF	BUSH CK TRIB	11110103	3J
AR0036480	SULPHUR SPRINGS, CITY OF	BUTLER CK	11070208	3J
AR0037842	SOUTHWESTERN ELECTRIC POWER CO	SWEPCO RSRVR,LTL FLINT CK,FLINT CK	11110103	3J
AR0043397	ROGERS, CITY OF	(1)OSAGE CK,ARK RV-(2) “C” LK AR R	11110103	3J
AR0046639	BENTON COUNTY STONE CO, INC	BUTLER CK TRIB	11070208	3J

ARK0003
SPAVINAW CREEK N OF CHEROKEE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	9.81	6.82	12.89	1.45
BOD_5 (mg/L)	38	0.38	0	1.24	0.33
pH (standard units)	36	7.69	6.88	8.71	0.38
Total Organic Carbon (mg/L)	34	1.58	<1.0	6.59	1.07
Ammonia as N (mg/L)	39	0.02	<0.005	0.282	0.05
NO_2+NO_3 as N (mg/L)	38	4.26	0.07	6.95	1.16
Orthophosphate as P (mg/L)	39	0.32	0.035	3.18	0.47
Total phosphorus as P (mg/L)	34	0.24	0.036	0.431	0.08
Total hardness (mg/L)	18	130.72	113	147	7.73
Chloride (mg/L)	38	12.43	6.29	17.89	2.51
Sulfate (mg/L)	39	6.75	6.04	7.94	0.47
Total dissolved solids (mg/L)	38	196.11	159	380	33.24
Total suspended solids (mg/L)	39	1.36	<1.0	13.5	2.62
Turbidity (NTU)	37	1.22	<1.0	10	2.01

ARK0004A
FLINT CREEK NW OF W SILOAM SPRINGS OK

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	11.41	6.07	88.82	13.37
BOD_5 (mg/L)	37	0.52	0.05	1.26	0.33
pH (standard units)	35	7.54	7.07	8.39	0.29
Total Organic Carbon (mg/L)	33	1.78	<1.0	4.15	0.82
Ammonia as N (mg/L)	38	0.01	<0.005	0.05	0.01
NO_2+NO_3 as N (mg/L)	37	2.36	0.372	8.05	1.56
Orthophosphate as P (mg/L)	38	0.06	<0.005	0.755	0.12
Total phosphorus as P (mg/L)	33	0.04	0.01	0.118	0.02
Total hardness (mg/L)	18	110.56	97	123	8.53
Chloride (mg/L)	37	10.01	7.1	14.6	1.34
Sulfate (mg/L)	38	19.38	10.03	33.3	6.09
Total dissolved solids (mg/L)	37	171.14	142	249	17.03
Total suspended solids (mg/L)	38	2.74	<1.0	13	2.92
Turbidity (NTU)	36	2.37	<1.0	11	2.23

ARK0005
SAGER CREEK NEAR SILOAM SPRINGS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	9.87	6.71	16.43	1.85
BOD_5 (mg/L)	38	0.80	0.12	3.21	0.57
pH (standard units)	35	7.55	6.23	8.93	0.57
Total Organic Carbon (mg/L)	34	3.38	1.76	5.9	1.15
Ammonia as N (mg/L)	39	0.01	<0.005	0.105	0.02
NO_2+NO_3 as N (mg/L)	38	7.79	1.34	15.6	2.81
Orthophosphate as P (mg/L)	39	0.87	0.012	1.74	0.37
Total phosphorus as P (mg/L)	34	0.88	0.146	1.836	0.35
Total hardness (mg/L)	18	127.28	98	166	18.03
Chloride (mg/L)	37	41.46	12.1	129.64	21.82
Sulfate (mg/L)	39	16.41	11.2	24.95	3.82
Total dissolved solids (mg/L)	38	258.46	159	416	60.82
Total suspended solids (mg/L)	39	2.76	<1.0	10.5	2.26
Turbidity (NTU)	37	2.78	<1.0	13	3.42

ARK0006
ILLINOIS RIVER S OF SILOAM SPRINGS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	9.44	5.71	13.6	1.81
BOD_5 (mg/L)	37	0.70	0.13	2.47	0.53
pH (standard units)	34	7.70	6.41	8.82	0.49
Total Organic Carbon (mg/L)	33	2.43	1.35	4.9	0.98
Ammonia as N (mg/L)	38	0.01	<0.005	0.124	0.02
NO_2+NO_3 as N (mg/L)	37	2.46	0.968	3.657	0.63
Orthophosphate as P (mg/L)	38	0.23	0.071	0.533	0.10
Total phosphorus as P (mg/L)	33	0.24	0.075	0.516	0.10
Total hardness (mg/L)	18	119.39	84	145	11.90
Chloride (mg/L)	37	14.35	6.97	23.61	4.80
Sulfate (mg/L)	38	12.80	8.4	20.23	2.86
Total dissolved solids (mg/L)	37	182.96	118.5	215	21.96
Total suspended solids (mg/L)	38	10.84	<1.0	78	16.95
Turbidity (NTU)	36	9.37	1	75	15.37

ARK0007A
BARON FORK ON COUNTY ROAD 21 NEAR DUTCH MILLS

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	11.29	3.41	18.17	2.99
BOD_5 (mg/L)	37	0.93	0.22	2.21	0.50
pH (standard units)	34	7.95	6.27	9.47	0.62
Total Organic Carbon (mg/L)	33	3.10	1.6	7.23	1.02
Ammonia as N (mg/L)	38	0.01	<0.005	0.058	0.01
NO_2+NO_3 as N (mg/L)	37	2.33	0.26	5.982	1.38
Orthophosphate as P (mg/L)	38	0.08	<0.005	0.235	0.06
Total phosphorus as P (mg/L)	34	0.09	0.01	0.245	0.06
Total hardness (mg/L)	18	139.56	112	177	17.45
Chloride (mg/L)	37	9.49	4.95	19.5	3.50
Sulfate (mg/L)	38	17.60	10.7	30.83	4.54
Total dissolved solids (mg/L)	37	186.86	138.5	240	22.37
Total suspended solids (mg/L)	38	2.20	<1.0	13.2	2.23
Turbidity (NTU)	36	3.44	<1.0	21	3.81

ARK0010C
CLEAR CREEK AT HWY. 112 BRIDGE

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	9.69	6.7	12.75	1.75
BOD_5 (mg/L)	38	1.14	0.18	7.37	1.33
pH (standard units)	36	7.69	7.21	8.34	0.29
Total Organic Carbon (mg/L)	34	3.79	1.89	15.6	2.21
Ammonia as N (mg/L)	39	0.05	<0.005	1.24	0.20
NO_2+NO_3 as N (mg/L)	38	2.43	1.32	4.47	0.69
Orthophosphate as P (mg/L)	39	0.05	<0.005	0.21	0.04
Total phosphorus as P (mg/L)	34	0.07	0.01	0.277	0.05
Total hardness (mg/L)	17	137.94	73	162	21.76
Chloride (mg/L)	38	16.97	6.52	34.93	7.55
Sulfate (mg/L)	39	34.94	9.87	65.55	14.10
Total dissolved solids (mg/L)	38	232.88	124	316	45.39
Total suspended solids (mg/L)	39	24.60	<1.0	630	103.49
Turbidity (NTU)	37	15.72	1.5	320	53.84

ARK0040
ILLINOIS RIVER NEAR SAVOY AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	9.66	6.05	14.39	1.97
BOD_5 (mg/L)	38	0.95	0.14	3.26	0.60
pH (standard units)	35	7.69	6.06	8.77	0.52
Total Organic Carbon (mg/L)	34	3.07	1.55	6.9	1.24
Ammonia as N (mg/L)	39	0.02	<0.005	0.182	0.03
NO_2+NO_3 as N (mg/L)	38	2.21	0.969	3.99	0.81
Orthophosphate as P (mg/L)	39	0.05	0.006	0.151	0.03
Total phosphorus as P (mg/L)	35	0.08	0.01	0.312	0.06
Total hardness (mg/L)	18	119.72	75	152	20.04
Chloride (mg/L)	38	7.66	4.37	10.8	1.78
Sulfate (mg/L)	39	10.62	4.91	18.24	3.15
Total dissolved solids (mg/L)	38	161.71	105	200	22.82
Total suspended solids (mg/L)	39	8.33	<1.0	34	8.61
Turbidity (NTU)	37	8.72	2	59	10.68

ARK0041
OSAGE CREEK NEAR ELM SPRINGS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	9.78	6.42	17.9	2.17
BOD_5 (mg/L)	39	0.66	0.14	1.34	0.30
pH (standard units)	36	7.60	6.38	8.46	0.47
Total Organic Carbon (mg/L)	35	2.75	1.6	5.64	0.82
Ammonia as N (mg/L)	40	0.02	<0.005	0.154	0.03
NO_2+NO_3 as N (mg/L)	39	3.72	2.52	6.303	0.78
Orthophosphate as P (mg/L)	40	0.84	0.155	3.395	0.59
Total phosphorus as P (mg/L)	35	0.84	0.218	2.49	0.53
Total hardness (mg/L)	19	127.89	97	152	10.31
Chloride (mg/L)	39	25.55	9.61	40.16	7.96
Sulfate (mg/L)	40	19.89	9.77	34.33	6.89
Total dissolved solids (mg/L)	39	235.41	169.5	283.5	30.81
Total suspended solids (mg/L)	40	4.77	<1.0	21	4.19
Turbidity (NTU)	38	3.83	1	18	3.79

ARK0056
LITTLE SUGAR CREEK DOWNSTREAM OF BENTONVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	7.89	5.46	10.51	1.26
BOD_5 (mg/L)	38	0.86	0.11	5.59	0.91
pH (standard units)	36	7.26	5.98	7.99	0.46
Total Organic Carbon (mg/L)	34	4.46	1.85	11.06	1.66
Ammonia as N (mg/L)	39	0.03	<0.005	0.242	0.05
NO_2+NO_3 as N (mg/L)	38	7.73	4.108	11.324	1.72
Orthophosphate as P (mg/L)	39	4.03	1.113	10.75	1.63
Total phosphorus as P (mg/L)	35	3.97	1.13	5.749	1.19
Total hardness (mg/L)	18	130.83	88	154	16.15
Chloride (mg/L)	38	35.57	15.3	54.12	9.21
Sulfate (mg/L)	39	35.67	17.48	51.8	8.16
Total dissolved solids (mg/L)	38	307.20	222	580	58.82
Total suspended solids (mg/L)	39	3.38	<1.0	32.5	5.73
Turbidity (NTU)	37	3.14	<1.0	33	5.55

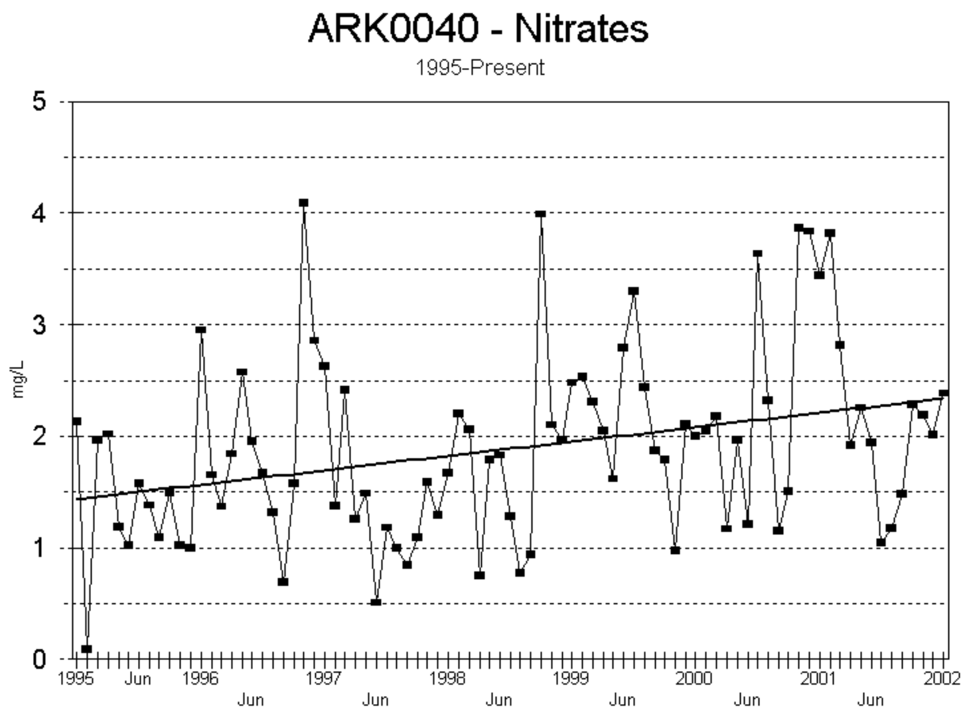
ARK0141
CINCINNATI CREEK NEAR CINCINNATI AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	9.76	5.93	13.48	1.87
BOD_5 (mg/L)	37	0.42	0	1.7	0.36
pH (standard units)	34	7.78	7.05	8.64	0.38
Total Organic Carbon (mg/L)	33	1.99	<1.0	5.95	1.15
Ammonia as N (mg/L)	38	0.01	<0.005	0.0281	0.01
NO_2+NO_3 as N (mg/L)	37	3.19	0.985	6.189	1.25
Orthophosphate as P (mg/L)	38	0.06	0.03	0.122	0.02
Total phosphorus as P (mg/L)	34	0.06	0.01	0.13	0.03
Total hardness (mg/L)	18	135.83	117	162	9.86
Chloride (mg/L)	37	8.50	5.77	10.35	1.29
Sulfate (mg/L)	38	7.65	4.33	12.02	2.16
Total dissolved solids (mg/L)	37	179.36	146.5	214	12.47
Total suspended solids (mg/L)	38	1.91	<1.0	26.3	4.32
Turbidity (NTU)	36	2.14	<1.0	15	3.21

Figure A-3J-1

ILLINOIS RIVER BASIN

Trends of Nutrient Concentrations in Upper Illinois River



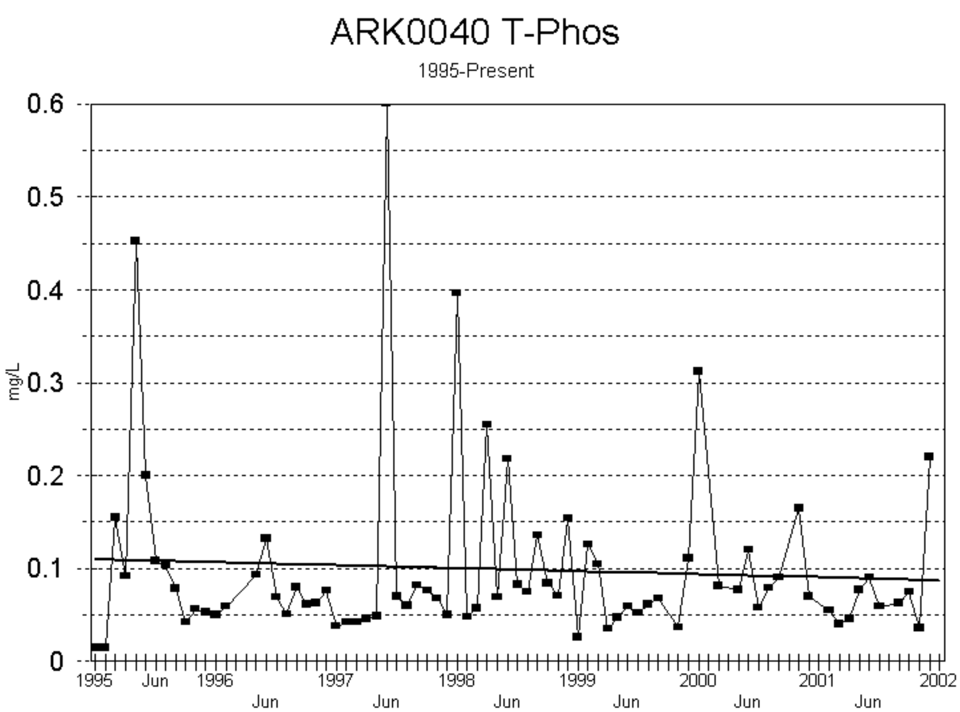
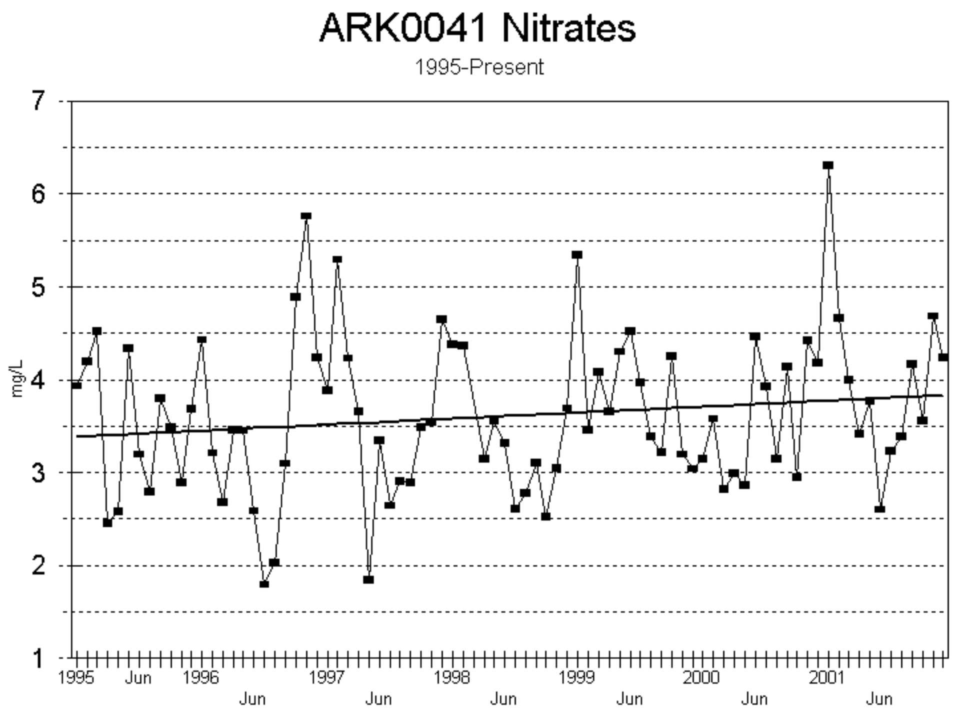


Figure A-3J-2

ILLINOIS RIVER BASIN

Trends of Nutrient Concentrations in Osage Creek



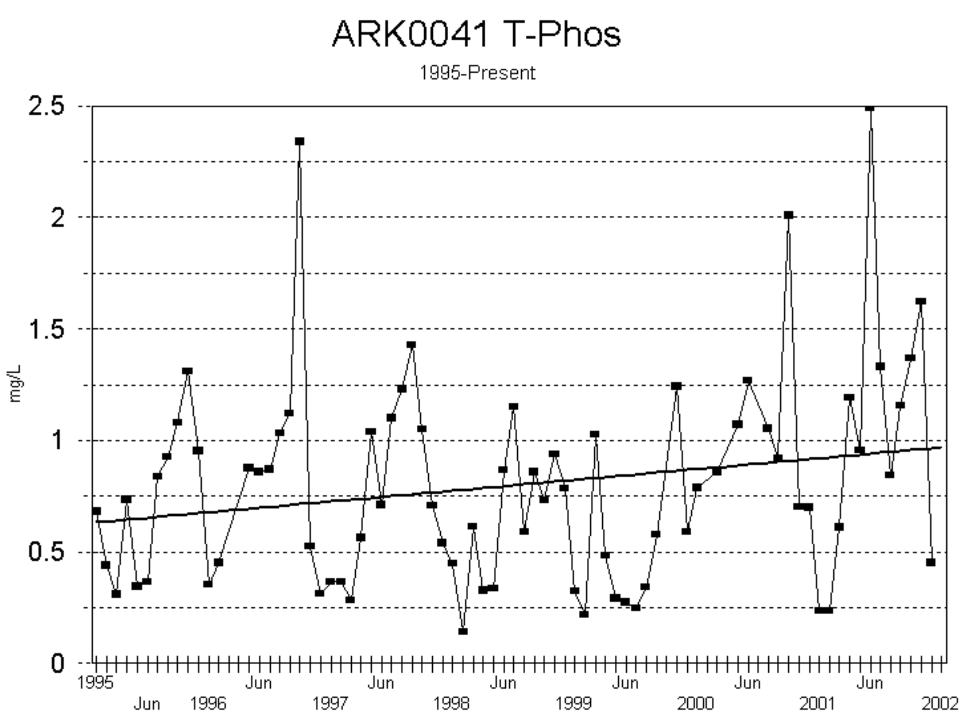
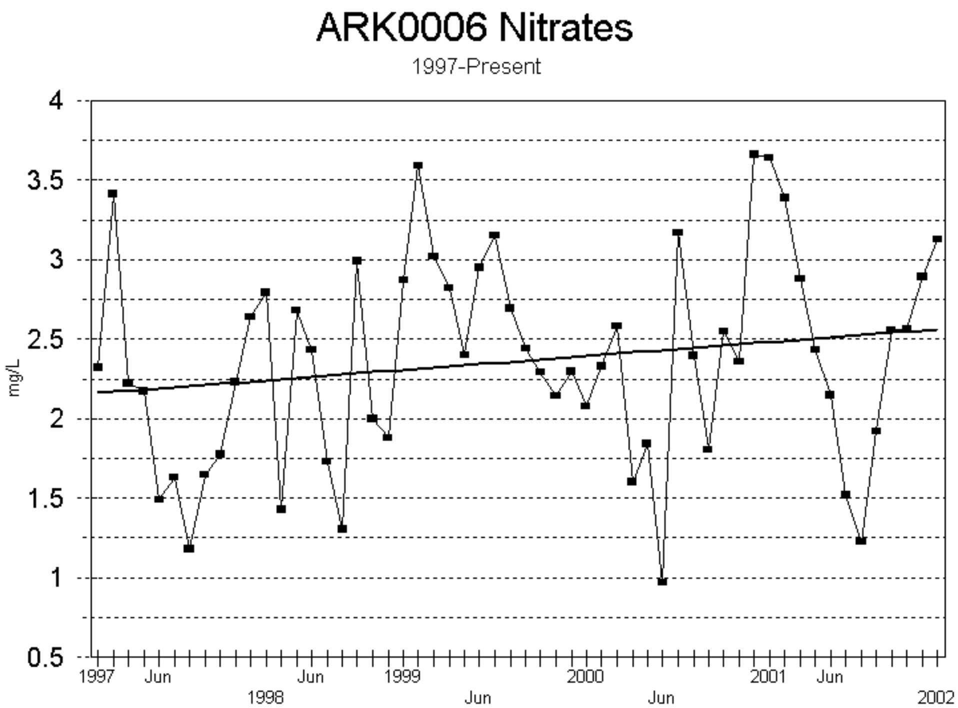


Figure A-3J-3

ILLINOIS RIVER BASIN

Trends of Nutrient Concentrations in Illinois River at Stateline



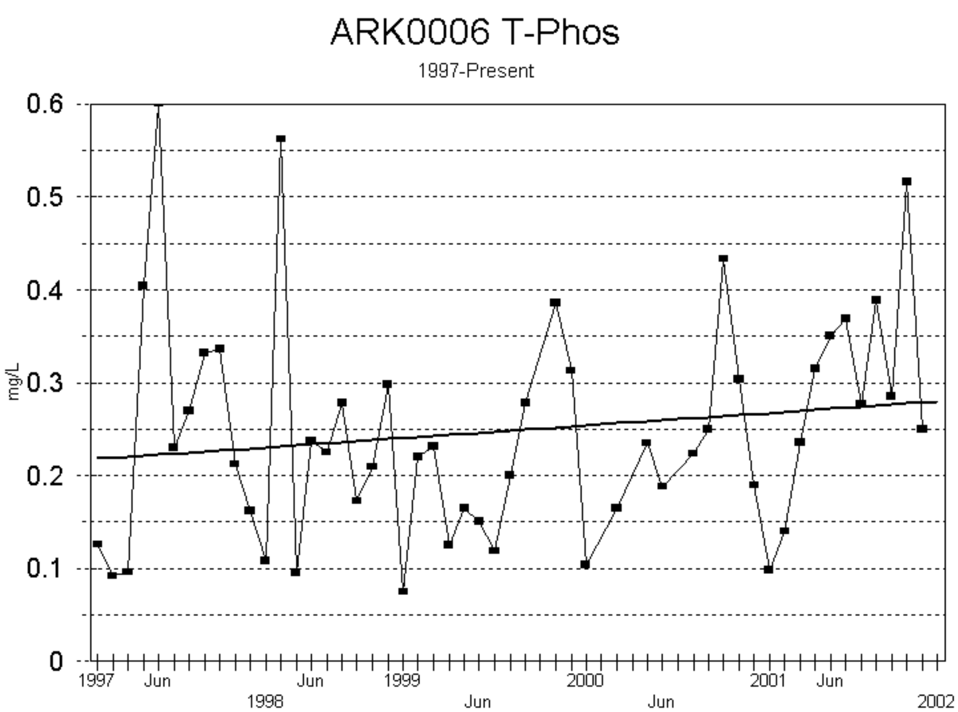
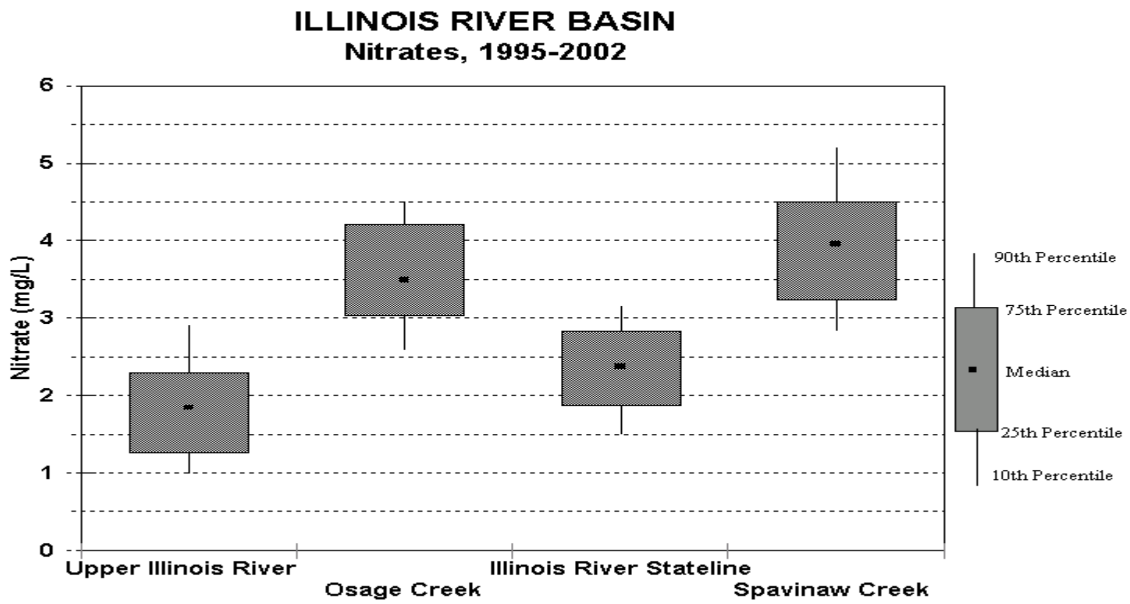
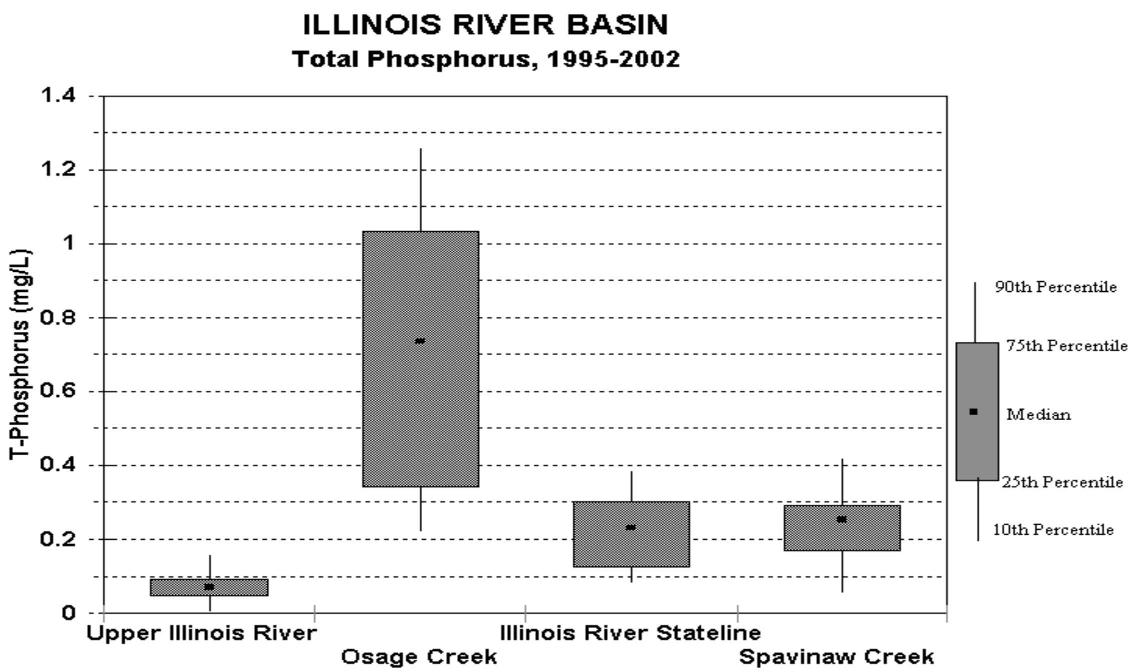


Figure A-3J-4

ILLINOIS RIVER BASIN

Comparison of Nutrient Data from Selected Streams in Northwest Arkansas





WHITE RIVER BASIN

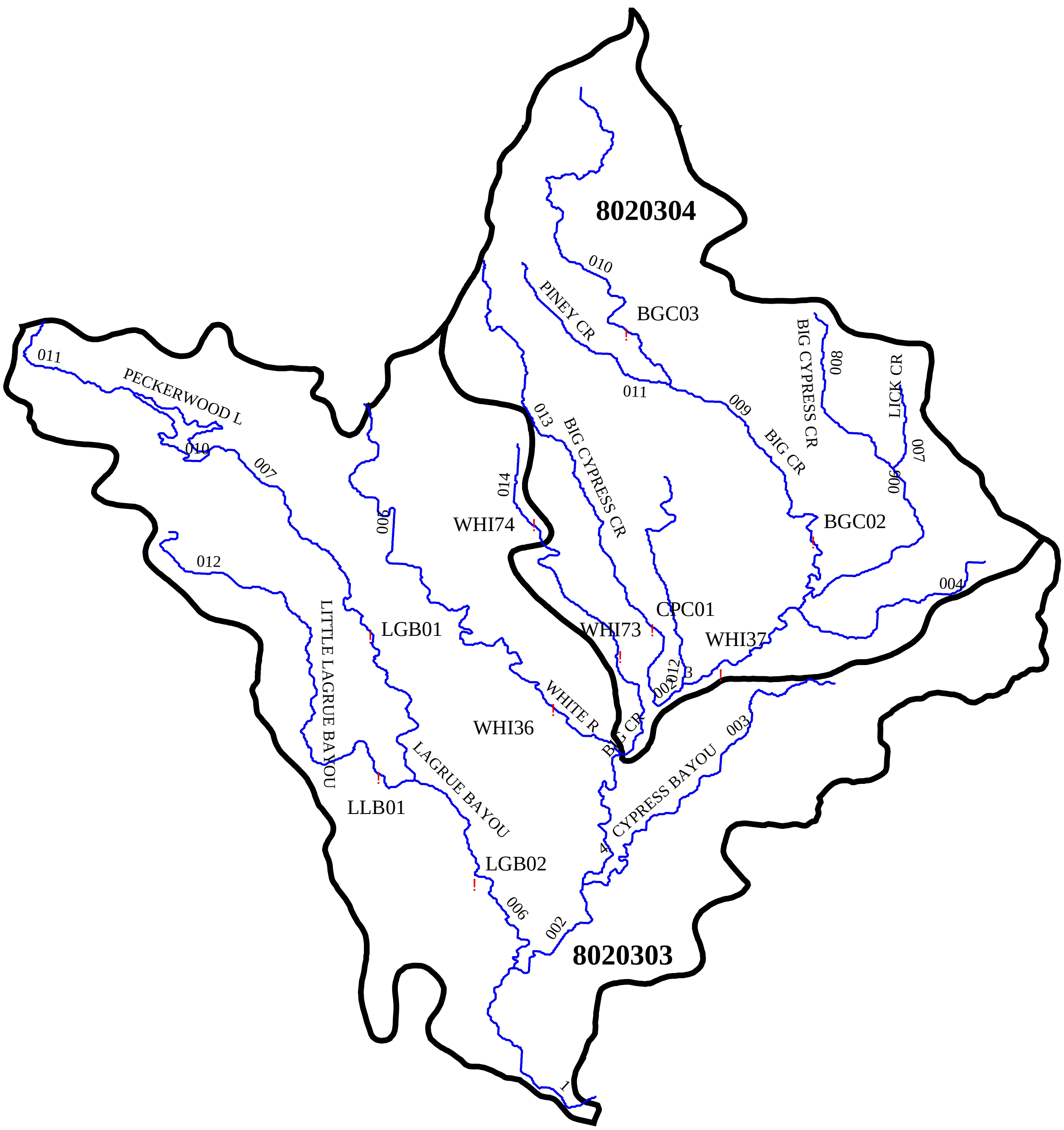
SEGMENT 4A - LOWER WHITE RIVER AND TRIBUTARIES

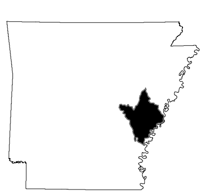
Segment 4A, located on the east central edge of Arkansas, includes most of the drainage from Monroe and Phillips Counties. It also includes parts of Arkansas, Desha, Prairie, Woodruff, St. Francis and Lee counties. This segment is drained by the lower 133-mile reach of the White River from Wattensaw Bayou to its mouth. Principal tributaries include Big Creek, La Grue Bayou, Lick Creek and Cypress Bayou.

SUMMARY OF WATER QUALITY CONDITIONS

All waters within this segment have been designated for propagation of fish and wildlife, primary and secondary contact recreation and domestic, agricultural and industrial water supply. None are designated as outstanding state or national resource waters. Monitoring stations within the segment allowed the assessment of 283.6 miles; an additional 44 miles were evaluated. All assessed waters were determined to be meeting designated uses.

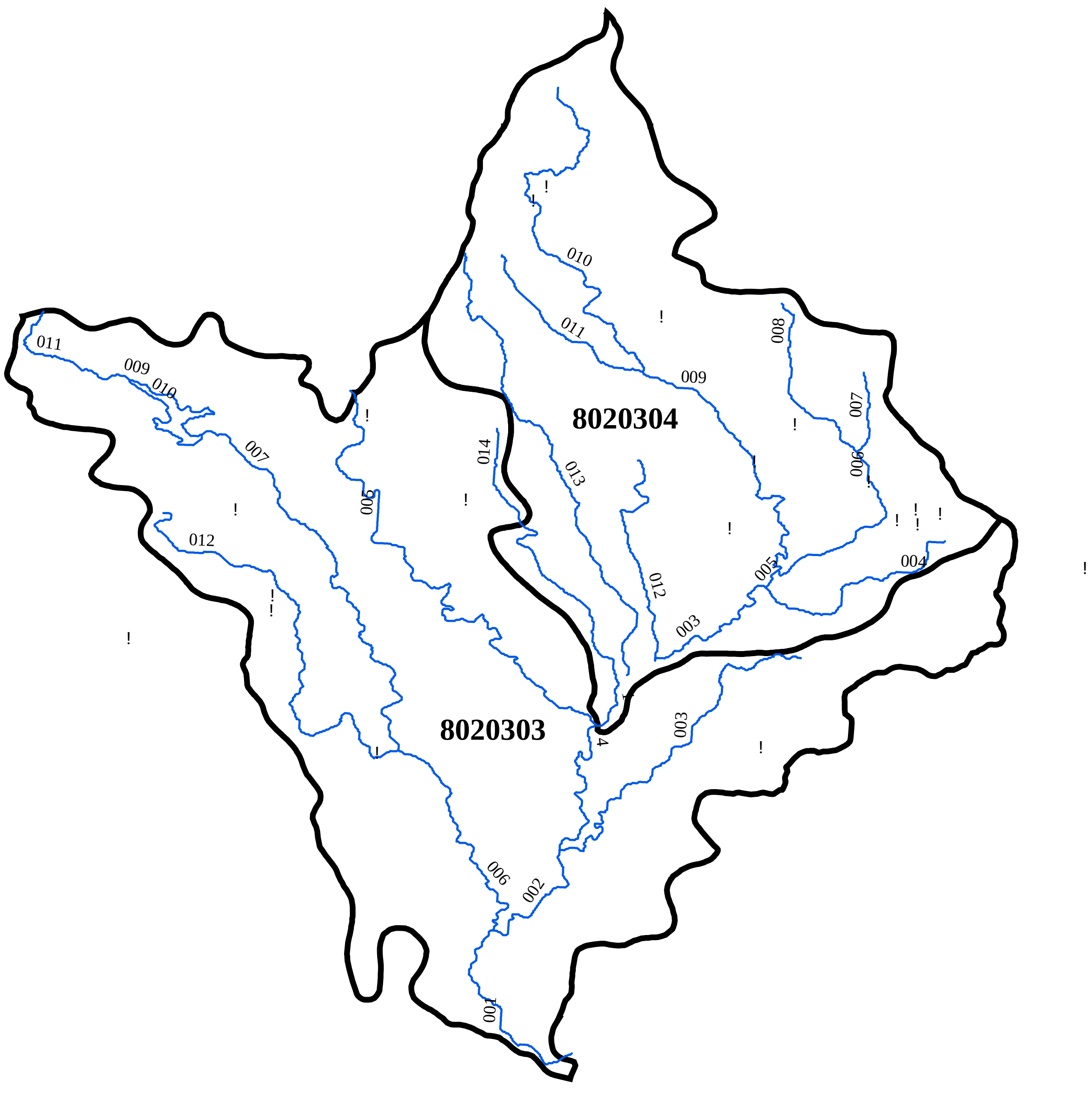
Planning Segment 4A - Monitoring Stations

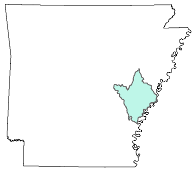




STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-4A																			
White River	8020303	-001	16.2		E	S	S	S	S	S	S					1	FISH CONSUMPTION	327.6	0
White River	8020303	-002	11.3		E	S	S	S	S	S	S					1	AQUATIC LIFE	327.6	0
Cypress Bayou	8020303	-003	30		U											3	PRIMARY CONTACT	327.6	0
White River	8020303	-004	14.8		E	S	S	S	S	S	S					1	SECONDARY CONTACT	327.6	0
White River	8020303	-005	46.6	WHI36	M	S	S	S	S	S	S					1	DRINKING SUPPLY	327.6	0
La Grue Bayou	8020303	-006	20.1	LGB02	M	S	S	S	S	S	S					1	AGRI & INDUSTRY	327.6	0
La Grue Bayou	8020303	-007	36.1	LGB01	M	S	S	S	S	S	S					1			
La Grue Bayou	8020303	-011	11.7		U											3			
L.La Grue Bayou	8020303	-012	37	LLB01	M	S	S	S	S	S	S					1			
Big Creek	8020304	-001	4.1		U											3			
Big Creek	8020304	-002	2.7		U											3			
Big Creek	8020304	-003	12.4	WHI37	M	S	S	S	S	S	S					1			
Beaver Bayou	8020304	-004	17.4		U											3			
Big Creek	8020304	-005	1.7		E	S	S	S	S	S	S					1			
Lick Creek	8020304	-006	15.5		U											3			
Lick Creek	8020304	-007	6.8		U											3			
Big Cypress Cr.	8020304	-008	14.9		U											3			
Big Creek	8020304	-009	25.2	BGC02	M	S	S	S	S	S	S					1			
Big Creek	8020304	-010	34.3	BGC03	M	S	S	S	S	S	S					1			
Piney Creek	8020304	-011	14.9		U											3			
Little Cypress	8020304	-012	19.3		U											3			
Big Cypress Cr.	8020304	-013	40.8	CPC01	M	S	S	S	S	S	S					1			
Prairie Cypress	8020304	-014	26.1	WHI73	M	S	S	S	S	S	S					1			
Big Creek	8020304	-015	1.2		U											3			
Boat Gunwale Slash	8020304	-914	5	WHI74	M	S	S	S	S	S	S					1			
TOTAL MILES	466.1																		
MILES UNASSESSED	138.5																		
MILES EVALUATED	44																		
MILES MONITORED	283.6																		

Planning Segment 4A - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0000418	HOFFINGER INDUSTRIES	DITCH/LICK-CROOKED-BIG CKS/WHITE RB	8020304	4A
AR0021431	DEWITT, CITY OF	CONF/BIG & LTL LAGRUE BU,WHITE RV	8020303	4A
AR0021644	CLARENDON, CITY OF	WHITE RV	8020303	4A
AR0022420	ELAINE, CITY OF	GOVAN SLOUGH/GAUZLEY/CYPRESSBU	8020303	4A
AR0022438	HOLLY GROVE, CITY OF	DIAL CK/CUT BLUFF SL/WHITE R	8020303	4A
AR0022756	HELENA CHEMICAL CO-PHILLIPS	DIT,LICK CK	8020304	4A
AR0034851	BAIRD MFG, INC	MILL BU TRIB	8020303	4A
AR0035840	MARVELL, CITY OF	BIG CK/WHITE RV	8020304	4A
AR0036315	WHEATLEY, CITY OF	FLAT FORK CK/BIG CK/WHITE RV	8020304	4A
AR0038008	ULM, CITY OF	TRIB/SHERRIL CK/LAGRUE BU	8020303	4A
AR0038237	MORO, CITY OF	HOG TUSK CK,BIG CK	8020304	4A
AR0038784	AUBREY, CITY OF	DITCH/TRIB/CAT CK/SPRING CK/WHITE R	8020304	4A
AR0041092	LEXA, CITY OF	LICK CK	8020304	4A
AR0041327	LAKE VIEW, CITY OF	JOHNSON BU/BIG CK/WHITE RV	8020304	4A
AR0042404	SOUTHLAND IMPROVEMENT DIST	CROOKED, LICK & BIG CKS/WHITE RV	8020304	4A
AR0044415	U OF A RICE RESEARCH & EXT CTR	LTL LAGRUE BU	8020303	4A
AR0045373	RONDO, CITY OF	DIT,BIG CYPRESS CK,LICK CK	8020304	4A
AR0046469	MONSANTO AG RESEARCH	WILDCAT DIT TRIB,LT LAGRUE BU	8020303	4A
AR0046752	MAPCO EXPRESS, INC-3154 WHEATL	TRIB, FLAT FORK CK	8020303	4A
AR0048534	P.E. BARNES & SONS, LTD	TRIB	8020304	4A
AR0048666	BROWN'S EQUIP & RENTAL-WYCAMP	TRIB,LICK CK,BIG CK,WHITE RV	8020303	4A
AR0049352	USDA-AQUACULTURE RESEARCH CENT	27 ACRE RSRVR,LTL.LAGRUE BU,WHITE RV	8020303	4A

WHI0036
WHITE RIVER @ ST CHARLES AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	8.57	5.9	14.78	1.83
BOD_5 (mg/L)	36	1.30	0.38	2.79	0.48
pH (standard units)	35	7.75	6.55	8.41	0.45
Total Organic Carbon (mg/L)	36	4.16	<1.0	13.9	2.26
Ammonia as N (mg/L)	37	0.01	<0.005	0.054	0.02
NO_2+NO_3 as N (mg/L)	38	0.13	<0.01	0.44	0.12
Orthophosphate as P (mg/L)	37	0.03	<0.005	0.083	0.02
Total phosphorus as P (mg/L)	35	0.09	0.048	0.197	0.04
Total hardness (mg/L)	19	118.79	23	169	39.91
Chloride (mg/L)	38	7.22	2.92	60	8.93
Sulfate (mg/L)	39	8.01	1.72	59	8.46
Total dissolved solids (mg/L)	37	160.11	91	299	32.80
Total suspended solids (mg/L)	37	49.27	1.5	217.5	40.34
Turbidity (NTU)	37	34.11	10	140	27.86

WHI0073
PRAIRIE CYPRESS CREEK @ HWY 1

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	26	5.44	1.1	9.43	2.39
BOD_5 (mg/L)	25	3.63	0.77	8.87	2.96
pH (standard units)	26	6.82	5.33	7.98	0.58
Total Organic Carbon (mg/L)	26	16.14	7	33.7	6.51
Ammonia as N (mg/L)	26	0.09	<0.005	0.648	0.15
NO_2+NO_3 as N (mg/L)	27	0.08	<0.01	0.429	0.13
Orthophosphate as P (mg/L)	26	0.09	0.015	0.32	0.08
Total phosphorus as P (mg/L)	26	0.33	0.04	0.807	0.24
Total hardness (mg/L)	13	47.38	13	131	30.82
Chloride (mg/L)	27	8.70	1.42	112	20.83
Sulfate (mg/L)	28	5.45	0.52	25.3	6.14
Total dissolved solids (mg/L)	26	130.77	53	410	69.31
Total suspended solids (mg/L)	26	16.42	<1.0	179	35.06
Turbidity (NTU)	26	29.48	1.4	200	44.94

WHI0074
BOAT GUNWALE SLASH @ HWY 146

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	29	5.31	0.8	11.06	2.61
BOD_5 (mg/L)	28	2.25	0.84	5.95	1.40
pH (standard units)	28	7.05	6.28	8.28	0.54
Total Organic Carbon (mg/L)	29	9.37	5.08	14.5	2.32
Ammonia as N (mg/L)	29	0.03	<0.005	0.134	0.04
NO_2+NO_3 as N (mg/L)	30	0.07	<0.01	0.439	0.11
Orthophosphate as P (mg/L)	29	0.07	<0.005	0.3	0.06
Total phosphorus as P (mg/L)	28	0.17	0.049	0.93	0.16
Total hardness (mg/L)	15	97.47	16	185	60.04
Chloride (mg/L)	30	9.56	1.42	72.8	12.72
Sulfate (mg/L)	31	6.70	1.41	61.9	10.78
Total dissolved solids (mg/L)	29	146.07	58.5	349	76.95
Total suspended solids (mg/L)	29	7.57	<1.0	48	9.13
Turbidity (NTU)	29	13.13	1.3	69	18.32

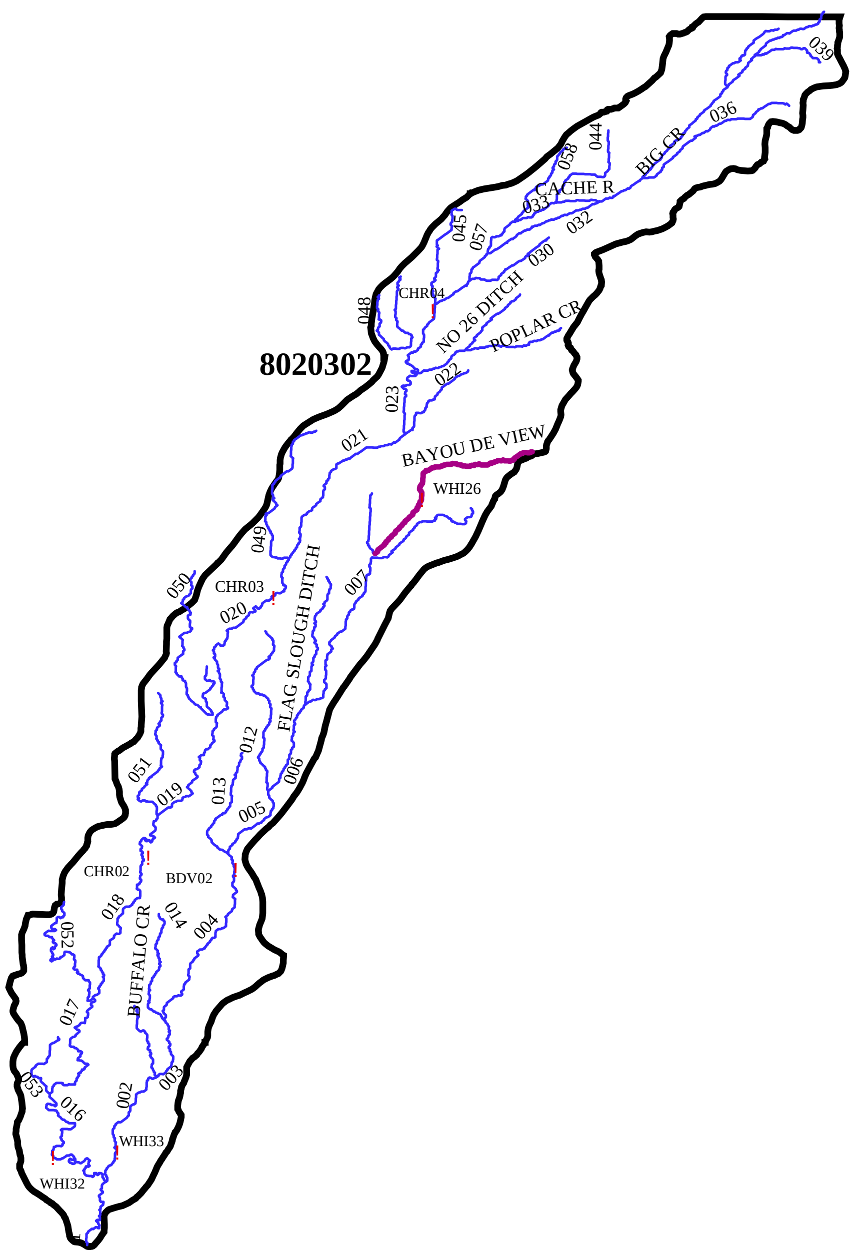
SEGMENT 4B - BAYOU DEVIEW AND CACHE RIVER
(WHITE RIVER BASIN)

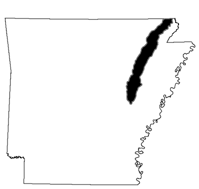
Segment 4B, located in the northeastern part of Arkansas, is a long, narrow segment that includes parts of Greene, Craighead, Poinsett, Jackson, Woodruff and Monroe counties. The segment includes Bayou DeView and Cache River and their major tributaries including Cow Ditch, Buffalo Creek and Flag Slough.

SUMMARY OF WATER QUALITY CONDITIONS

The 599.8 miles of streams in this segment are designated for propagation of fish and wildlife, primary and secondary contact recreation, domestic, agricultural and industrial water supplies. None of these are designated as outstanding state or national resource waters. Water sampling stations allowed monitoring of 130.5 miles in this segment. An additional 114.6 miles of this stream were evaluated. The upper section of Bayou DeView is not meeting the aquatic life use due to high turbidity and possibly toxic metals. Downstream reaches of this stream had some elevated turbidity values, but this section of the stream was assessed as meeting all designated uses. All other waters in this segment were meeting designated uses.

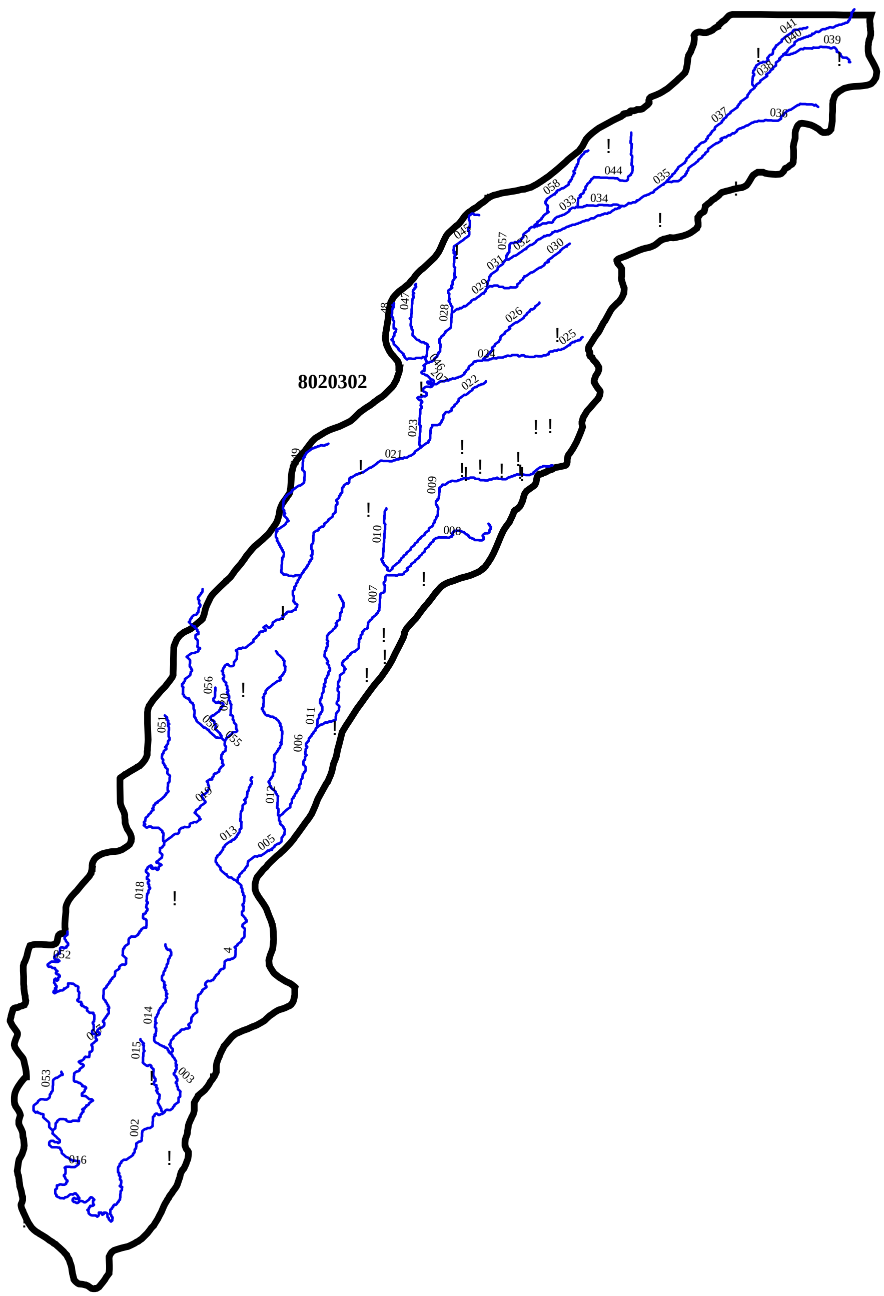
Planning Segment 4B - Monitoring Stations





STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-4B																			
Cache River	8020302	-001	8.6		U											3	FISH CONSUMPTION	245.1	0
Bayou DeView	8020302	-002	13.7	WHI33	M	S	S	S	S	S	S					1	AQUATIC LIFE	224.8	20.3
Bayou DeView	8020302	-003	7.1		E	S	S	S	S	S	S					1	PRIMARY CONTACT	245.1	0
Bayou DeView	8020302	-004	21.2	BDV02	M	S	S	S	S	S	S					1	SECONDARY CONTACT	245.1	0
Bayou DeView	8020302	-005	8.6		E	S	S	S	S	S	S					1	DRINKING SUPPLY	245.1	0
Bayou DeView	8020302	-006	10.2		E	S	S	S	S	S	S					1	AGRI & INDUSTRY	245.1	0
Bayou DeView	8020302	-007	18.2		E	S	S	S	S	S	S					1			
Bayou DeView	8020302	-009	20.3	WHI26	M	S	N	S	S	S	S	AG	MP	SI	ME	5			
Black Creek	8020302	-008	13		U											3			
Johnson Ditch	8020302	-010	6.5		U											3			
Flag Slough	8020302	-011	14.7		U											3			
Cow Ditch	8020302	-012	19.2		U											3			
May Br. Lateral	8020302	-013	12.6		U											3			
Buffalo Creek	8020302	-014	13.1		U											3			
Gum Flat	8020302	-015	8.8		U											3			
Cache River	8020302	-016	21.8	WHI32	M	S	S	S	S	S	S					1			
Cache River	8020302	-017	15.8		E	S	S	S	S	S	S					1			
Cache River	8020302	-018	25	CHR02	M	S	S	S	S	S	S					1			
Cache River	8020302	-019	13.7		E	S	S	S	S	S	S					1			
Cache River	8020302	-020	22.6	CHR03	M	S	S	S	S	S	S					1			
Cache River	8020302	-021	18.4		E	S	S	S	S	S	S					1			
Gum Slough	8020302	-022	9.5		U											3			
Cache River	8020302	-023	7.9		U											3			
Ditch 26	8020302	-024	5.4		U											3			
Poplar Creek	8020302	-025	9.2		U											3			
Ditch 26	8020302	-026	7.8		U											3			
Cache River	8020302	-027	3.9		E	S	S	S	S	S	S					1			
Cache River	8020302	-028	5.9	CHR04	M	S	S	S	S	S	S					1			
Cache River	8020302	-029	3.9		E	S	S	S	S	S	S					1			
Swan Ditch	8020302	-030	9.1		U											3			
Cache River	8020302	-031	3.4		E	S	S	S	S	S	S					1			
Cache River	8020302	-032	11.4		E	S	S	S	S	S	S					1			
Cache River	8020302	-033	4.3		U											3			
Cache River	8020302	-034	3.7		U											3			
Cache River	8020302	-035	4.6		U											3			
Big Creek	8020302	-036	16.2		U											3			
Cache River	8020302	-037	12.3		U											3			
Little Cache	8020302	-038	4.4		U											3			
Housman Creek	8020302	-039	6.7		U											3			
Little Cache	8020302	-040	8.1		U											3			
Cache River	8020302	-041	8.7		U											3			
Big Gum Lateral	8020302	-044	11.2		U											3			
Beaver Dam Cr.	8020302	-045	11.8		U											3			
Kello Ditch	8020302	-046	0.6		U											3			
Kello Ditch	8020302	-047	8.5		U											3			
Fry Ditch	8020302	-048	8		U											3			
Willow Ditch	8020302	-049	17.6		U											3			
Locust Creek	8020302	-050	18.8		U											3			
Overcup Creek	8020302	-051	15.7		U											3			
Cache Bayou	8020302	-052	18.7		U											3			
Hill Bayou	8020302	-053	8.1		U											3			
Locust Bayou	8020302	-055	0.4		U											3			
Cypress Creek	8020302	-056	6.5		U											3			
Cache River	8020302	-057	4.7		U											3			
Petersburg Ditch	8020302	-058	9.7		U											3			
TOTAL MILES	599.8																		
MILES UNASSESSED	354.7																		
MILES EVALUATED	114.6																		
MILES MONITORED	130.5																		

Planning Segment 4B - NPDES Permitted Facilities



Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0000175	GEN ELECTRIC CO-JONESBORO	CHRISTIAN CK/LOST CK...CACHE RV	8020302	4B
AR0020354	WEINER, CITY OF	BU DEVIEW TRIB	8020302	4B
AR0020699	BONO, CITY OF	TRIB/WHALEY SLOUGH DT/CACHE RV	8020302	4B
AR0021890	BRINKLEY, CITY OF	CANEY SLASH/BAYOU DEVIEW	8020302	4B
AR0022446	FISHER, CITY OF	TRIB/BAYOU DEVIEW	8020302	4B
AR0033391	COTTON PLANT, CITY OF	TURKEY CK,DIT,BU DEVIEW,CACHE RV	8020302	4B
AR0034614	GRUBBS, TOWN OF	CACHE RV	8020302	4B
AR0035947	AR PARKS & TOURISM-CROWLEY'S	DIT,BIG DIT,CACHE,WHITE RV	8020302	4B
AR0037834	ADM-RICELAND PARTNERSHIP-WALDE	DIT,BU DEVIEW	8020302	4B
AR0037907	JONESBORO CITY WATER & LIGHT-W	BIG CK TRIB,DEVIEW BU TRIB	8020302	4B
AR0038351	ADM-RICELAND PARTNERSHIP-OTWEL	TRIB,BIG CK LTRL #1	8020302	4B
AR0041629	WESTSIDE CONSOL SCHOOL DIST #5	TRIB,BIG CK DIT,BU DEVIEW,CACHE RV	8020302	4B
AR0042188	NORTHERN MHP	TRIB,BIG CK,CACHE RV	8020302	4B
AR0042552	TRI-COUNTY SAND & GRAVEL, INC	DORT CK, CACHE RV DIT #10, CACHE RV	8020302	4B
AR0042781	MCDOUGAL, CITY OF	LTL CACHE RV TRIB,WHITE RV	8020302	4B
AR0043290	KNOBEL, TOWN OF	TRIB/CACHE RV	8020302	4B
AR0043443	SEDGWICK, CITY OF	W. CACHE RV DITCH/CACHE RV	8020302	4B
AR0043486	TRI-CITY UTILITIES, INC	TRIB, BEAVER DAM DIT	8020302	4B
AR0043524	EGYPT, CITY OF	CACHE RV/WHITE RV	8020302	4B
AR0043605	WALDENBURG, CITY OF	TRIB/BU DEVIEW/CACHE RV	8020302	4B
AR0044211	OLIVETAN BENEDICTINE SISTERS,	TRIB/LOST CK/BIG CK DITCH	8020302	4B
AR0044954	MCCRORY, CITY OF	CACHE RV/WHITE RV	8020302	4B
AR0045284	CASH, CITY OF	TRIB/CACHE RV	8020302	4B
AR0045489	POLLARD, CITY OF	POLLARD CK,DIT #2,DIT #1	8020302	4B
AR0046604	AMAGON, CITY OF	CACHE RV TRIB,WHITE RV	8020302	4B
AR0046981	HEDGER AGGREGATE, INC.	TRIB-MUD CK/BIG&LOST CK DIT	8020302	4B
AR0047589	BISCOE, CITY OF	WHITE RV	8020302	4B
AR0048208	BEST PETROLEUM PLUS, INC	DAVIS BR	8020302	4B
AR0048402	LMJ TRAILER PARK	BIG CK DIT TRIB,WHITE RV	8020302	4B
AR0048771	WILLIAMS MHP	LOST CK TRIB	8020302	4B
AR0048909	LAFE, CITY OF	BIG CK	8020302	4B

WHI0026
BAYOU DEVIEW W OF GIBSON AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	7.48	3.94	12.1	1.96
BOD_5 (mg/L)	32	2.68	0.6	6.63	1.46
pH (standard units)	36	7.26	6.22	8.01	0.41
Total Organic Carbon (mg/L)	33	8.14	1.26	15.5	2.93
Ammonia as N (mg/L)	36	0.07	<0.005	0.419	0.08
NO_2+NO_3 as N (mg/L)	35	1.18	0.046	3.3	0.89
Orthophosphate as P (mg/L)	36	1.39	0.015	5.382	1.37
Total phosphorus as P (mg/L)	32	1.56	0.033	5.344	1.37
Total hardness (mg/L)	20	96.01	19	320	92.69
Chloride (mg/L)	36	22.60	2.98	62.68	15.76
Sulfate (mg/L)	36	15.22	4.38	32.61	6.91
Total dissolved solids (mg/L)	36	220.61	118	421	81.72
Total suspended solids (mg/L)	33	37.90	1	324.5	64.80
Turbidity (NTU)	36	58.10	1.1	310	72.52

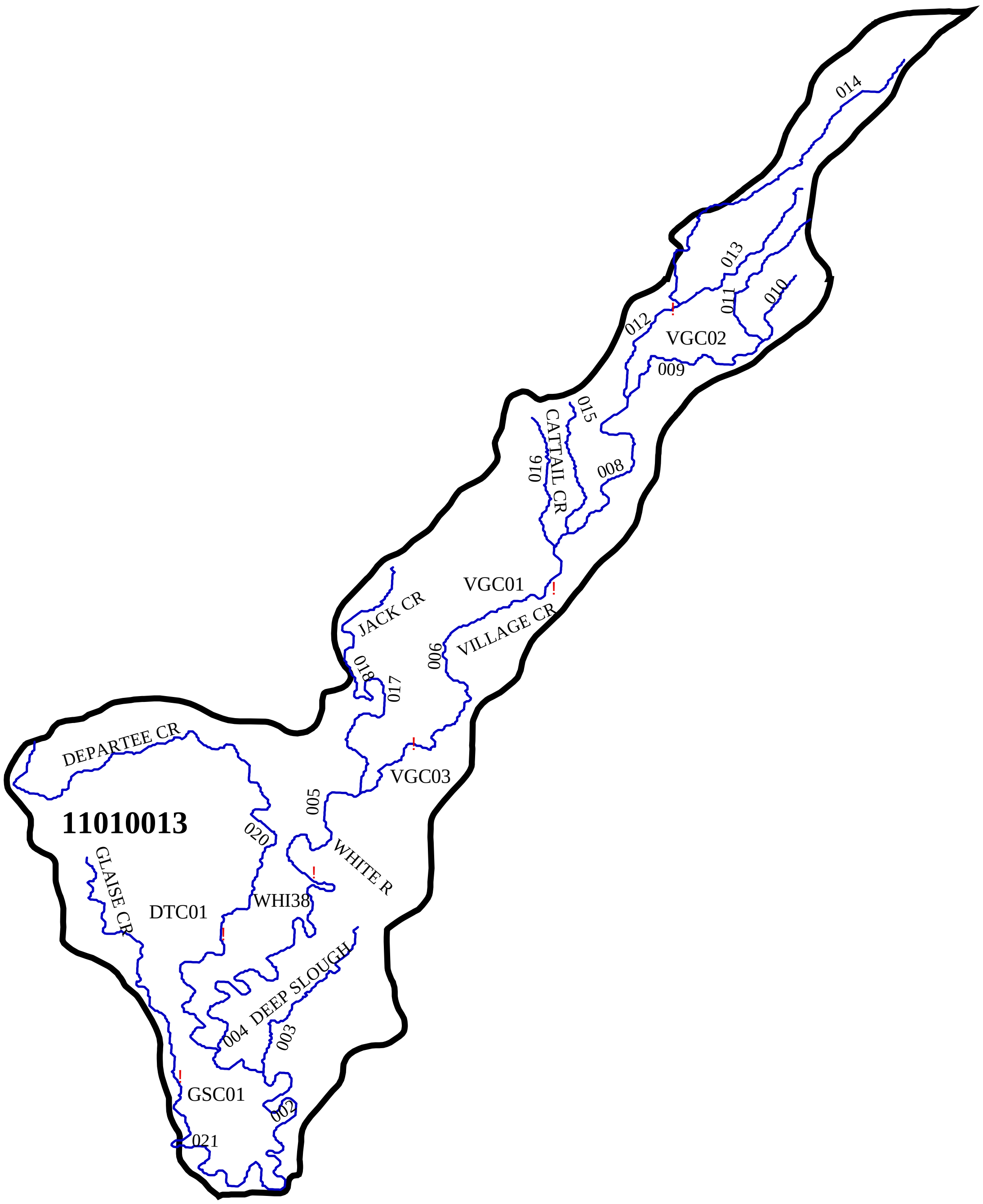
SEGMENT 4C - VILLAGE CREEK AND TRIBUTARIES
(WHITE RIVER BASIN)

Segment 4C includes portions of Clay, Greene, Lawrence, Craighead, Jackson, Woodruff and Prairie counties. This segment includes Village Creek and its tributaries and a segment of the White River and its tributaries of Departee and Glaise Creeks.

SUMMARY OF WATER QUALITY CONDITIONS

Propagation of fish and wildlife, primary and secondary contact recreation, domestic, agricultural and industrial water supply are the designated uses for all waters within this segment. Assessment of designated use support was made on 185.7 miles of the total of 285 miles of stream within this segment. All assessed stream segments were meeting designated uses.

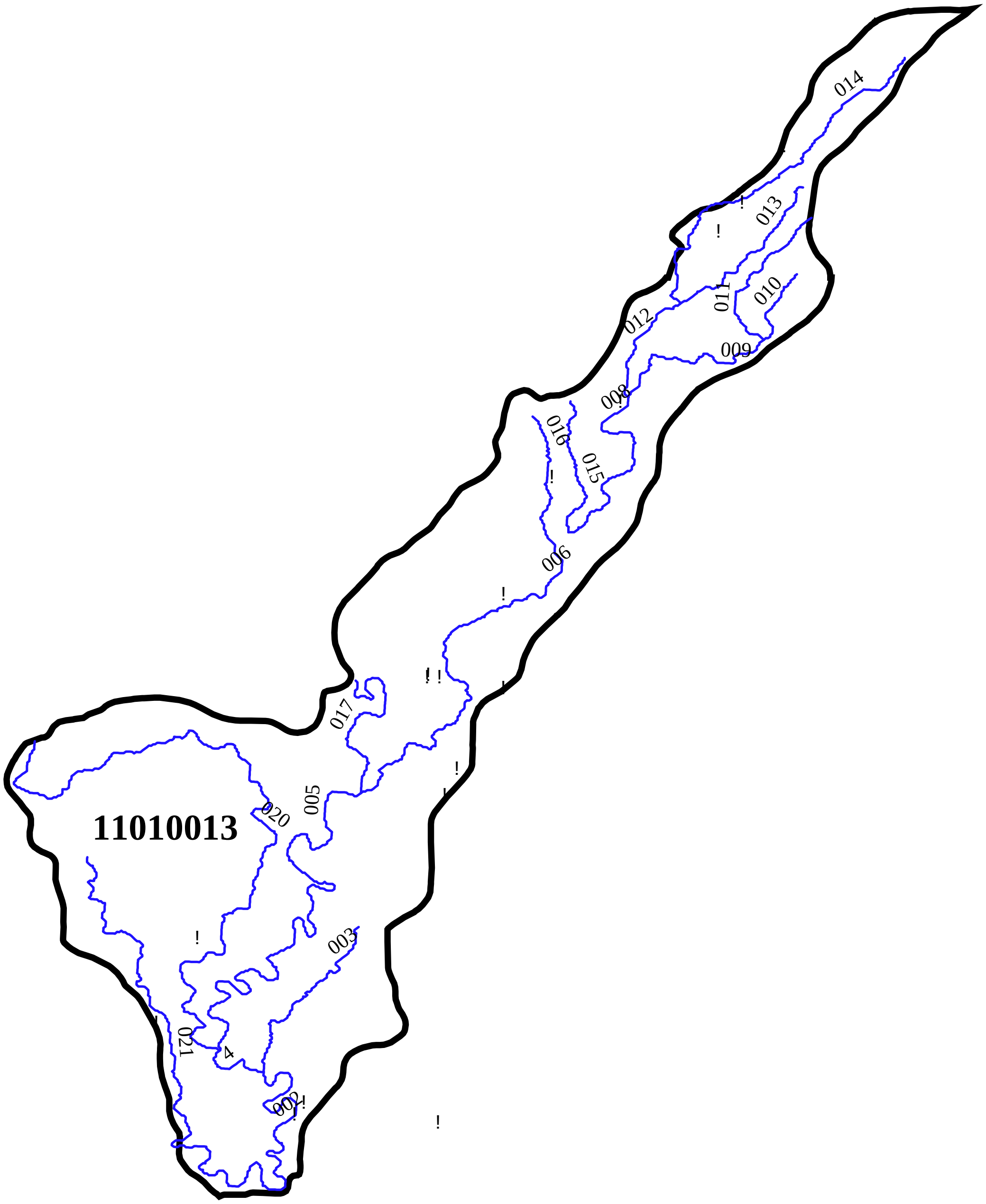
Planning Segment 4C - Monitoring Stations

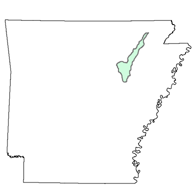


Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-4C																			
White River	11010013	-001	0.8		E	S	S	S	S	S	S					1	FISH CONSUMPTION	185.7	0
White River	11010013	-002	20.8		E	S	S	S	S	S	S					1	AQUATIC LIFE	185.7	0
Deep Slough	11010013	-003	12.7		U											3	PRIMARY CONTACT	185.7	0
White River	11010013	-004	4.4		E	S	S	S	S	S	S					1	SECONDARY CONTACT	185.7	0
White River	11010013	-005	36.7	WHI138	M	S	S	S	S	S	S					1	DRINKING SUPPLY	185.7	0
Village Cr	11010013	-006	25.2	VGC01&3	M	S	S	S	S	S	S					1	AGRI & INDUSTRY	185.7	0
Village Cr	11010013	-007	1.2		E	S	S	S	S	S	S					1			
Village Cr	11010013	-008	13		E	S	S	S	S	S	S					1			
Lick Pond Slough	11010013	-009	10.9		U											3			
Lick Pond Slough	11010013	-011	10.4		U											3			
Village Cr	11010013	-012	7.4	VGC02	M	S	S	S	S	S	S					1			
Village Cr	11010013	-014	22.8		U											3			
Maple Ditch	11010013	-015	9.5		U											3			
Cattail Cr	11010013	-016	9.3		U											3			
White River	11010013	-017	13.7		U											3			
Jack Creek	11010013	-018	9.6		U											3			
White River	11010013	-019	0.4		U											3			
Departee Creek	11010013	-020	46.1	DTC01	M	S	S	S	S	S	S					1			
Glaise Creek	11010013	-021	30.1	GSC01	M	S	S	S	S	S	S					1			
TOTAL MILES	285																		
MILES UNASSESSED	99.3																		
MILES EVALUATED	40.2																		
MILES MONITORED	145.5																		

Planning Segment 4C - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0000400	ARKANSAS ELECTRIC COOP-BAILEY	WHITE RV	11010013	4C
AR0001481	NORANDAL USA, INC	DIT,VILLAGE CK	11010013	4C
AR0020001	TUCKERMAN, CITY OF	TUCKERMAN DITCH/VILLAGE CK	11010013	4C
AR0020141	HOXIE, CITY OF	TRIB/TURKEY CK	11010013	4C
AR0022136	BRADFORD, CITY OF	BUTTER CK,DEPARTEE CK,WHITE RV	11010013	4C
AR0022217	RUSSELL, CITY OF	GRAISE CK,WHITE RV	11010013	4C
AR0034550	ARKANSAS STEEL ASSOC	VILLAGE CK TRIB	11010013	4C
AR0034738	AUGUSTA, CITY OF	WHITE RV	11010013	4C
AR0034860	SWIFTON, CITY OF	CATTAIL CK/VILLAGE CK	11010013	4C
AR0036668	FRIT INDUSTRIES, INC-WALNUT RI	TRIB,COON CK,VILLAGE CK,WHITE RV	11010013	4C
AR0037044	NEWPORT, CITY OF-HWY 14	VILLAGE CK	11010013	4C
AR0039675	ALICIA, CITY OF	BLACK SPICE DIT	11010013	4C
AR0039837	PATTERSON, CITY OF	CACHE RV	11010013	4C
AR0041033	DIAZ, CITY OF-WWTP	DIT,VILLAGE CK,WHITE RV	11010013	4C
AR0045225	NEWPORT, CITY OF-AIRPORT/IND	TRIB/LOCUST CK,VILLAGE CK	11010013	4C
AR0046566	WALNUT RIDGE, CITY OF	VILLAGE CK/WHITE RV	11010013	4C
AR0049441	CSO LLC	MAYBERRY SLOUGH TRIB	11010013	4C

WHI0138
WHITE RIVER @ HWY 14 BRIDGE SOUTH OF NEWPORT AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	34	8.53	4.92	12.6	2.06
BOD_5 (mg/L)	33	0.84	0.24	1.91	0.40
pH (standard units)	28	7.86	7.34	8.29	0.26
Total Organic Carbon (mg/L)	33	3.44	1.48	27	4.43
Ammonia as N (mg/L)	36	0.02	<0.005	0.095	0.02
NO_2+NO_3 as N (mg/L)	36	0.19	<0.01	0.581	0.13
Orthophosphate as P (mg/L)	36	0.02	<0.005	0.083	0.02
Total phosphorus as P (mg/L)	32	0.06	0.01	0.185	0.04
Total hardness (mg/L)	19	143.26	38	176	35.74
Chloride (mg/L)	36	4.85	1.98	6.87	1.25
Sulfate (mg/L)	35	6.74	3.97	9.07	0.89
Total dissolved solids (mg/L)	36	171.51	133	200	16.46
Total suspended solids (mg/L)	35	27.14	7.5	96	23.78
Turbidity (NTU)	35	15.35	1.8	68	15.33

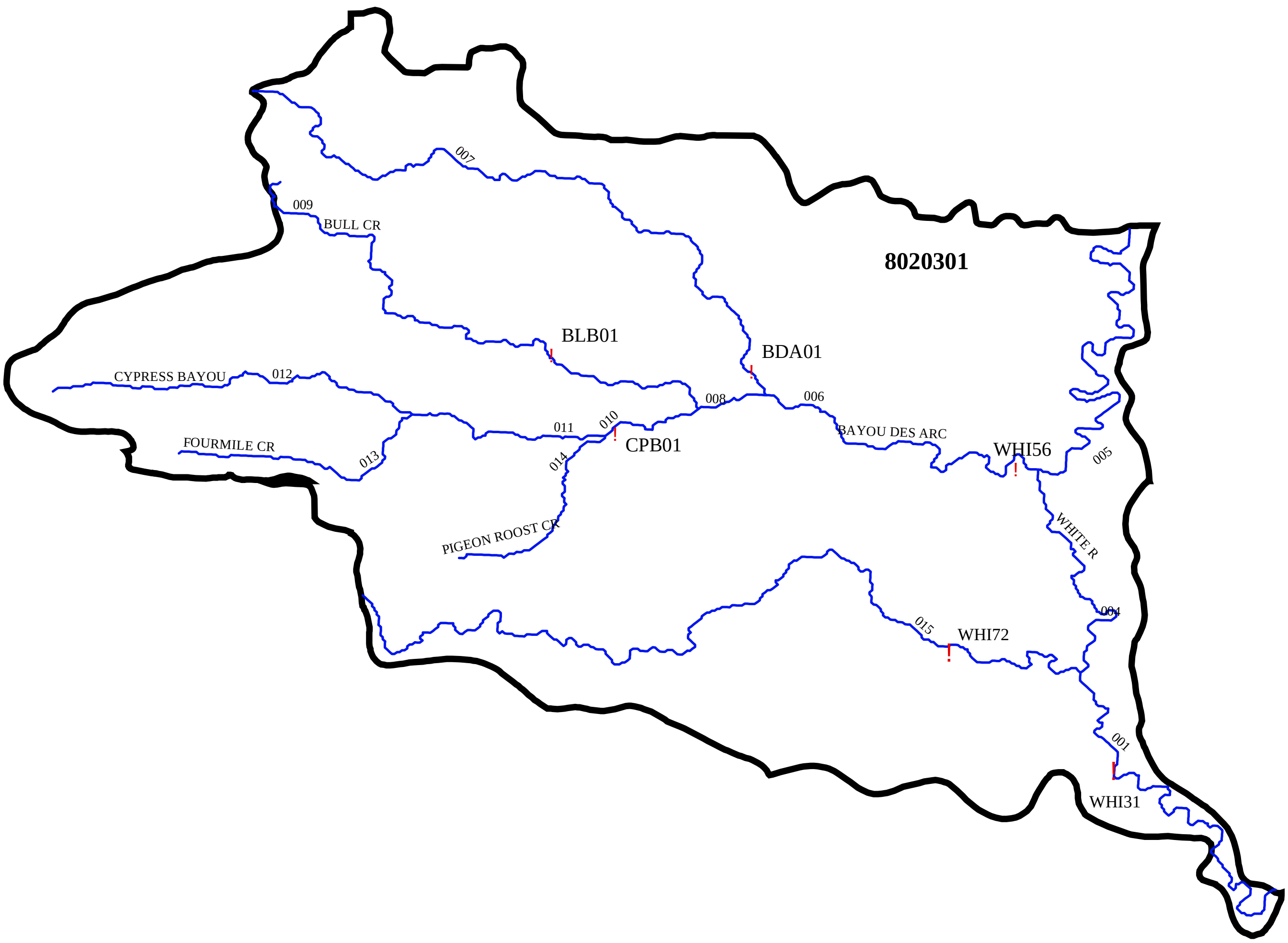
SEGMENT 4D - WHITE RIVER, WATTENSAW BAYOU AND BAYOU DES ARC (WHITE RIVER BASIN)

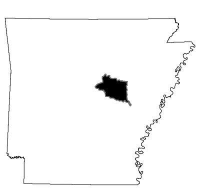
Segment 4D includes portions of White, Prairie and Lonoke Counties in central Arkansas. The segment encompasses a 67-mile stretch of the White River and Wattensaw and Des Arc Bayous, which are tributary to it.

SUMMARY OF WATER QUALITY CONDITIONS IN SEGMENT 4D

The designated uses for all waters within this segment include propagation of fish and wildlife, primary and secondary contact recreation, domestic, agricultural and industrial water supply. No outstanding state or national resource waters are located in this segment. Monitoring stations provided data to assess 160.7 miles of stream. An additional 70 miles were evaluated. All waters within this segment were evaluated as meeting all designated uses.

Planning Segment 4D - Monitoring Stations

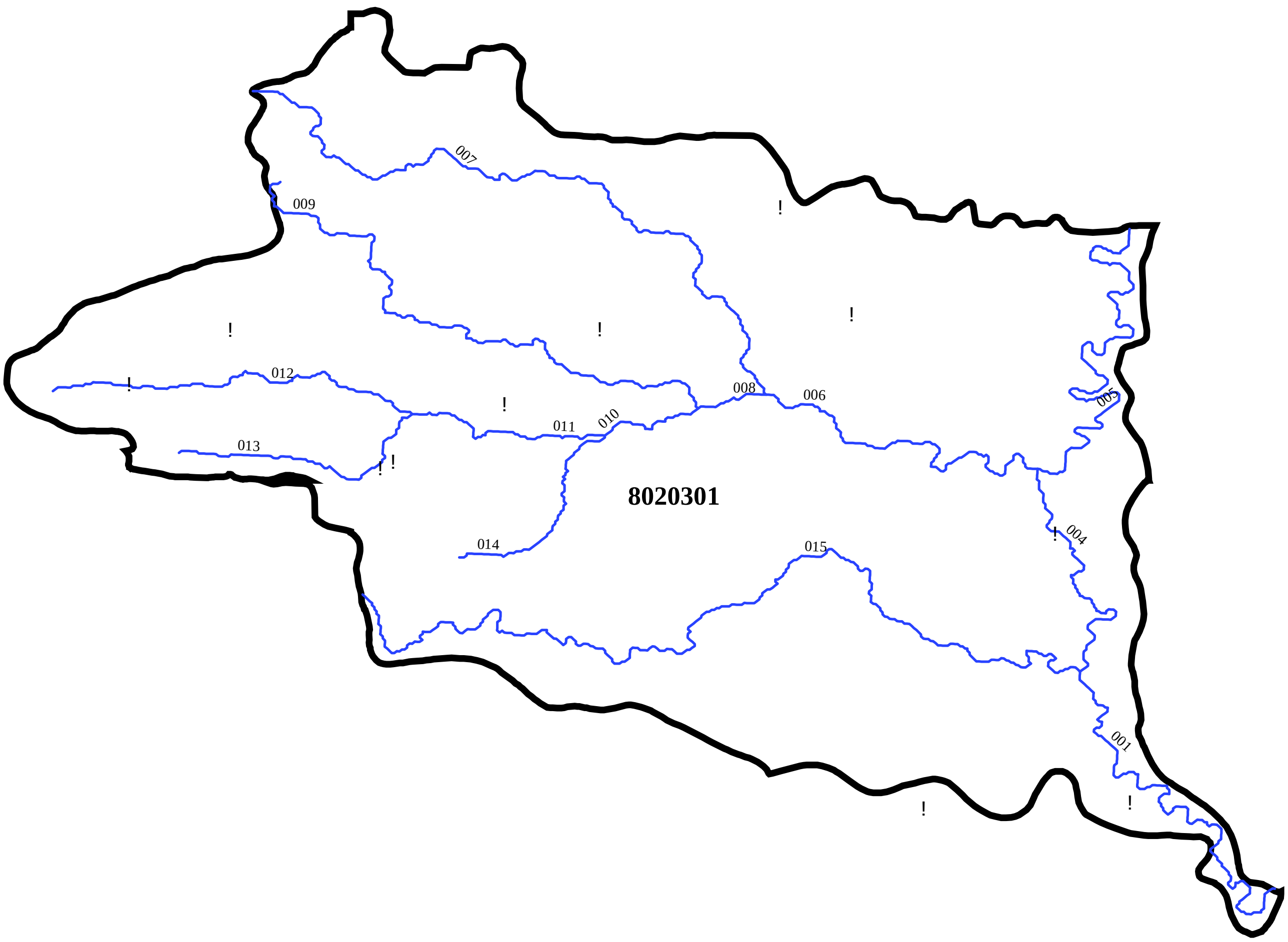


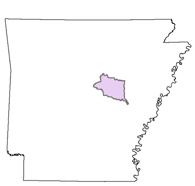


Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-4D																			
White River	8020301	-001	24.3	WHI31	M	S	S	S	S	S	S					1	FISH CONSUMPTION	230.7	0
White River	8020301	-004	14.8		E	S	S	S	S	S	S					1	AQUATIC LIFE	230.7	0
White River	8020301	-005	28.2		E	S	S	S	S	S	S					1	PRIMARY CONTACT	230.7	0
Bayou Des Arc	8020301	-006	17.8	WHI56	M	S	S	S	S	S	S					1	SECONDARY CONTACT	230.7	0
Bayou Des Arc	8020301	-007	36.4	BDA01	M	S	S	S	S	S	S					1	DRINKING SUPPLY	230.7	0
Cypress Bayou	8020301	-008	3.2		U											3	AGRI & INDUSTRY	230.7	0
Bull Bayou	8020301	-009	29	BLB01	M	S	S	S	S	S	S					1			
Cypress Bayou	8020301	-010	5	CPB01	M	S	S	S	S	S	S					1			
Cypress Bayou	8020301	-011	9.5		E	S	S	S	S	S	S					1			
Cypress Bayou	8020301	-012	17.5		E	S	S	S	S	S	S					1			
Fourmile Creek	8020301	-013	12.8		U											3			
Pidgeon Roost	8020301	-014	11		U											3			
Wattensaw Bayou	8020301	-015	48.2	WHI72	M	S	S	S	S	S	S					1			
TOTAL MILES	257.7																		
MILES UNASSESSED	27																		
MILES EVALUATED	70																		
MILES MONITORED	160.7																		

Planning Segment 4D - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0021504	MCRAE, CITY OF	DRY BRANCH CK, CANE CK, BU DES ARC	8020301	4D
AR0022101	BEEBE, CITY OF	CYPRESS BU/BU DES ARC/WHITE RV	8020301	4D
AR0022225	DES ARC, CITY OF	WHITE RV	8020301	4D
AR0022411	HAZEN, CITY OF	LITTLE HURRICANE CK	8020301	4D
AR0035611	DEVALLS BLUFF, CITY OF	DITCH/WHITE RV	8020301	4D
AR0038369	AUSTIN, CITY OF	FOUR MILE CK,BU DES ARC,WHITE RV	8020301	4D
AR0042803	GRIFFITHVILLE, CITY OF	TRIB,DOGWOOD CK,BAYOU DESARC CK	8020301	4D
AR0044822	HIGGINSON, CITY OF	GUM SPRINGSCK,GLADE CK,BU DES ARC	8020301	4D
AR0047121	VILONIA, CITY OF	CYPRESS BU	8020301	4D
AR0047554	WARD, CITY OF	4-MILE CK/CYPRESS&DES ARC BU	8020301	4D
AR0049301	RIVER CITY ENERGY CO-TEXACO MA	DIT,LTL CYRESS CK TRIB,CYPRESS BU	8020301	

WHI0031
WHITE RIVER @ DEVALLS BLUFF AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	9.24	5.72	14.31	1.99
BOD_5 (mg/L)	35	1.20	0.31	2.38	0.48
pH (standard units)	37	7.55	7.01	8.44	0.34
Total Organic Carbon (mg/L)	35	3.57	<1.0	9.595	1.73
Ammonia as N (mg/L)	38	0.02	<0.005	0.149	0.03
NO_2+NO_3 as N (mg/L)	39	0.17	<0.01	0.646	0.14
Orthophosphate as P (mg/L)	38	0.02	<0.005	0.097	0.02
Total phosphorus as P (mg/L)	37	0.08	0.01	0.18	0.04
Total hardness (mg/L)	19	127.95	81	183	31.09
Chloride (mg/L)	37	5.52	2.75	13.12	2.09
Sulfate (mg/L)	38	14.71	4.81	145.04	29.53
Total dissolved solids (mg/L)	39	159.90	62	336.5	48.13
Total suspended solids (mg/L)	38	42.36	1	143.3	25.99
Turbidity (NTU)	37	26.53	4.6	78	18.87

WHI0072
WATTENSAW BAYOU N OF HAZEN AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	6.40	2.07	11.9	2.69
BOD_5 (mg/L)	35	3.03	1.25	6.56	1.37
pH (standard units)	38	7.17	6.77	7.57	0.21
Total Organic Carbon (mg/L)	35	11.18	6.73	16.8	2.46
Ammonia as N (mg/L)	38	0.08	<0.005	0.606	0.14
NO_2+NO_3 as N (mg/L)	39	0.15	<0.01	0.532	0.14
Orthophosphate as P (mg/L)	38	0.08	0.019	0.138	0.03
Total phosphorus as P (mg/L)	37	0.18	0.08	0.373	0.06
Total hardness (mg/L)	19	92.11	23	202	48.12
Chloride (mg/L)	37	27.63	3.12	81.72	19.78
Sulfate (mg/L)	38	7.16	1.81	20.47	4.20
Total dissolved solids (mg/L)	39	190.50	61.5	351	76.51
Total suspended solids (mg/L)	38	14.93	2.5	104.3	17.48
Turbidity (NTU)	37	21.85	2.4	130	25.94

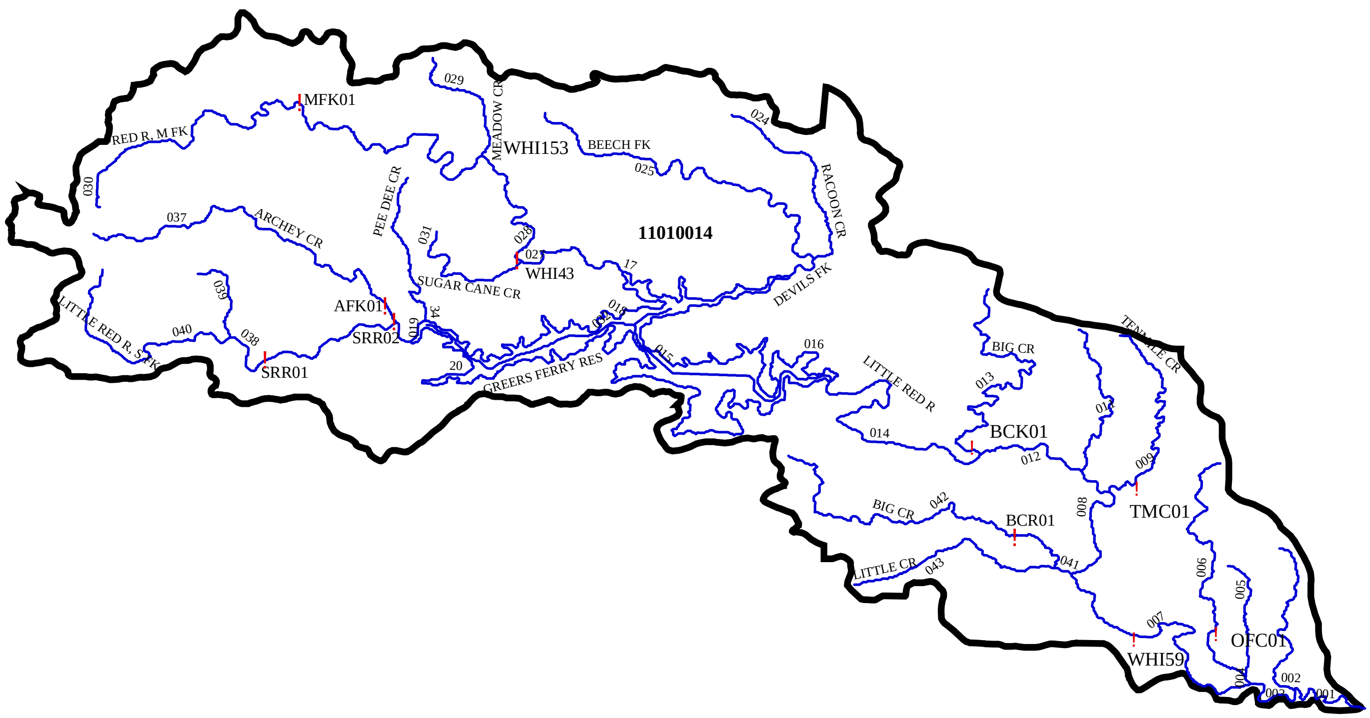
SEGMENT 4E - LITTLE RED RIVER: HEADWATERS TO MOUTH (WHITE RIVER BASIN)

Segment 4E includes portions of Searcy, Van Buren, Stone, Cleburne and White counties. The segment contains the entire 81-mile length of the Little Red River and its major tributaries the Middle, South, and North Forks, Big Creek, Devil's Fork and Archey Creek.

SUMMARY OF WATER QUALITY CONDITIONS IN SEGMENT 4E

The designated uses of waters within this segment include propagation of fish and wildlife, primary and secondary contact recreation, domestic, agricultural and industrial water supply. Additionally, 158.1 miles, approximately one-third of the stream miles, are designated as outstanding state or national resource waters. Monitoring stations allowed for use support assessment of 223.4 miles. Approximately two miles of the South Fork of the Little Red River at the upper end of Greers Ferry Reservoir was found to have mercury contamination of certain predator fishes and was placed under a fish consumption advisory. All other waters assessed were supporting all designated uses.

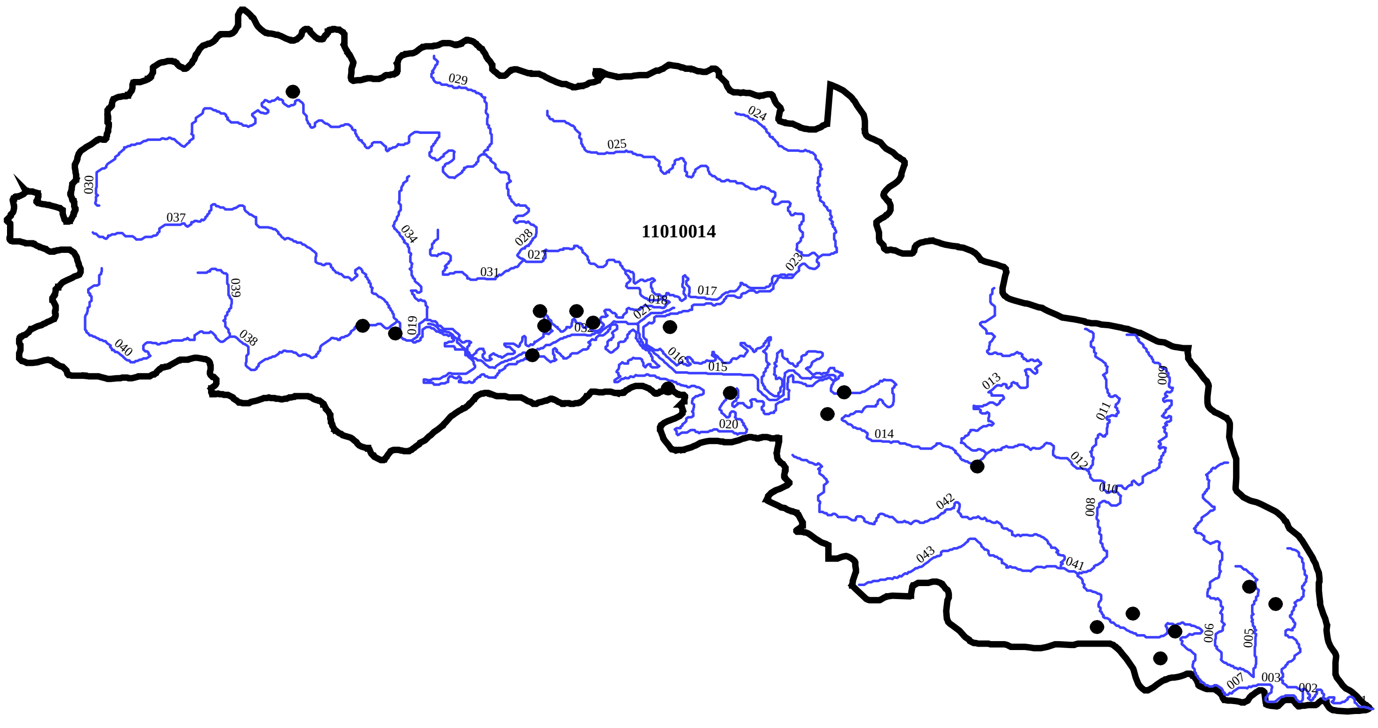
Planning Segment 4E - Monitoring Stations

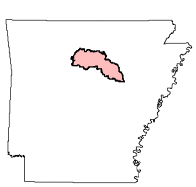


Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-4E																			
Little Red R.	11010014	-001	7.5		U											3	FISH CONSUMPTION	295.6	0
Big Mingo Cr.	11010014	-002	14.4		U											3	AQUATIC LIFE	295.6	0
Little Red R.	11010014	-003	5.4		U											3	PRIMARY CONTACT	295.6	0
Overflow Creek	11010014	-004	0.6		E	S	S	S	S	S	S					1	SECONDARY CONTACT	295.6	0
Unnamed	11010014	-005	9.5		U											3	DRINKING SUPPLY	295.6	0
Overflow Cr.	11010014	-006	21.7	OFC01	M	S	S	S	S	S	S					1	AGRI & INDUSTRY	295.6	0
Little Red R.	11010014	-007	21.4	WHI59	M	S	S	S	S	S	S					1			
Little Red R.	11010014	-008	9		E	S	S	S	S	S	S					1			
Ten Mile Creek	11010014	-009	18.6	TMC01	M	S	S	S	S	S	S					1			
Little Red R.	11010014	-010	2.9		E	S	S	S	S	S	S					1			
Fourteen Mile	11010014	-011	13.9		U											3			
Little Red R.	11010014	-012	8		E	S	S	S	S	S	S					1			
Big Creek	11010014	-013	26.9	BCK01	M	S	S	S	S	S	S					1			
Little Red R.	11010014	-014	22		E	S	S	S	S	S	S					1			
Devils Fork	11010014	-023	2.9		U											3			
Raccoon Creek	11010014	-024	15.7		U											3			
Beech Creek	11010014	-025	28.4		U											3			
Middle Fork	11010014	-027	8.8	WHI43	M	S	S	S	S	S	S					1			
Middle Fork	11010014	-028	12		E	S	S	S	S	S	S					1			
Middle Fork	11010014	-030	44.2	MFK01	M	S	S	S	S	S	S					1			
Meadow Creek	11010014	-029	10.3	WHI153	M	S	S	S	S	S	S					1			
Sugar Cane Cr.	11010014	-031	10.8		U											3			
Pee Dee Creek	11010014	-034	12.9		U											3			
Archey Creek	11010014	-037	27.3	AFK01	M	S	S	S	S	S	S					1			
South Fork	11010014	-036	2		M	S	S	S	S	S	S					1			
South Fork	11010014	-038	14.7	SRR01&2	M	S	S	S	S	S	S					1			
Opossum Walk	11010014	-039	7		U											3			
South Fork	11010014	-040	17.7		E	S	S	S	S	S	S					1			
Big Creek	11010014	-041	1.2		U											3			
Big Creek	11010014	-042	27.5	BCR01	M	S	S	S	S	S	S					1			
Little Creek	11010014	-043	15		U											3			
TOTAL MILES	440.2																		
MILES UNASSESSED	144.6																		
MILES EVALUATED	72.2																		
MILES MONITORED	223.4																		

Planning Segment 4E - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0021601	SEARCY, CITY OF	LITTLE RED RV	11010014	4E
AR0022322	KENSETT, CITY OF	BLACK CK,LTL RED RV	11010014	4E
AR0022381	HEBER SPRINGS, CITY OF	LTL RED RV	11010014	4E
AR0024066	EDEN ISLE CORP	GREERS FERRY RESERVOIR/L' RED RV	11010014	4E
AR0029181	USDIFWS-GREERS FERRY NATL FISH	LITTLE RED RV	11010014	4E
AR0034401	FAIRFIELD BAY-DAVE CREEK WWTP	DAVE CK,GREERS FERRY LK	11010014	4E
AR0034428	FAIRFIELD BAY-HIDDEN VALLEY	TRIB,LYNN CK,GREERS FERRY LK	11010014	4E
AR0034509	USDIFWS-GREERS FERRY NATL FISH	LITTLE RED RV	11010014	4E
AR0034657	LESLIE, CITY OF	COVE CK	11010014	4E
AR0035742	JUDSONIA, CITY OF	LITTLE RED RV	11010014	4E
AR0035807	BALD KNOB, CITY OF	BIG MINGO CK,LITTLE RED RV	11010014	4E
AR0037303	FAIRFIELD BAY-HAMILTON HILLS	TRIB,LYNN CK,GREERS FERRY LK	11010014	4E
AR0039233	PANGBURN, CITY OF	LITTLE RED RV	11010014	4E
AR0042714	ARKANSAS GENERAL INDUSTRIES	DIT,GUM CK,LTL RED RV,WHITE RV	11010014	4E
AR0043460	FAIRFIELD BAY-HOOTEN HOLLOW	HOOTEN HOLLOW/GREERS FERRY LK	11010014	4E
AR0043940	WEST SIDE SCHOOL DIST #4	TRIB/GREERS FERRY RES	11010014	4E
AR0044580	FAIRFIELD BAY-LYNN CREEK WWTP	LYNN CK, GREERS FERRY LK	11010014	4E
AR0044920	DIAMOND BLUFF ESTATES	E WILDCAT HOLLOW/GREERS FERRY/WHITE	11010014	4E
AR0046078	FAIRFIELD BAY-GRAND ISLE	HOOTEN HOLLOW CK,GREERS FERRY LK	11010014	4E
AR0048747	CLINTON, CITY OF-WEST WWTP	TRIB,S FK LT RED RV,GREERS FERRY LK	11010014	4E
AR0048836	CLINTON, CITY OF-EAST WWTP	TRIB,S FK LT RED RV,GREERS FERRY LK	11010014	4E
AR0049301	VULCAN MATERIALS CO-JUDSONIA	TRIB,ALDER CK,LTL RED RV	11010014	4E

WHI0043
MIDDLE FORK LITTLE RED RIVER NEAR SHIRLEY

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	7.66	4.64	12.2	2.03
BOD_5 (mg/L)	35	1.10	0.23	3.32	0.86
pH (standard units)	34	7.12	6.26	9.5	0.58
Total Organic Carbon (mg/L)	36	3.01	1.56	5.23	0.94
Ammonia as N (mg/L)	37	0.01	<0.005	0.055	0.01
NO_2+NO_3 as N (mg/L)	38	0.08	<0.01	0.579	0.13
Orthophosphate as P (mg/L)	37	0.01	<0.005	0.057	0.01
Total phosphorus as P (mg/L)	34	0.04	0.01	0.1	0.03
Total hardness (mg/L)	20	36.40	21	60	8.60
Chloride (mg/L)	38	2.37	1.54	3.47	0.49
Sulfate (mg/L)	37	5.81	2.64	14.9	2.56
Total dissolved solids (mg/L)	38	58.99	43	91	11.32
Total suspended solids (mg/L)	37	5.51	<1.0	19.5	3.91
Turbidity (NTU)	36	6.58	1.7	25	4.95

WHI0059
LITTLE RED RIVER DOWNSTREAM OF SEARCY AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	34	8.24	4.89	12.32	2.26
BOD_5 (mg/L)	35	0.79	0.2	2.645	0.50
pH (standard units)	29	6.70	5.53	7.79	0.49
Total Organic Carbon (mg/L)	36	2.94	1.72	6.15	0.97
Ammonia as N (mg/L)	37	0.07	<0.005	0.32	0.08
NO_2+NO_3 as N (mg/L)	38	0.31	0.027	1.598	0.33
Orthophosphate as P (mg/L)	37	0.03	<0.005	0.208	0.05
Total phosphorus as P (mg/L)	34	0.07	0.01	0.255	0.06
Total hardness (mg/L)	20	17.30	14	24	2.41
Chloride (mg/L)	38	2.92	1.9	5.95	1.01
Sulfate (mg/L)	37	4.65	3.48	7.06	0.73
Total dissolved solids (mg/L)	38	40.29	29	61.5	7.89
Total suspended solids (mg/L)	37	12.32	<1.0	128.5	24.24
Turbidity (NTU)	37	9.44	<1.0	81	15.12

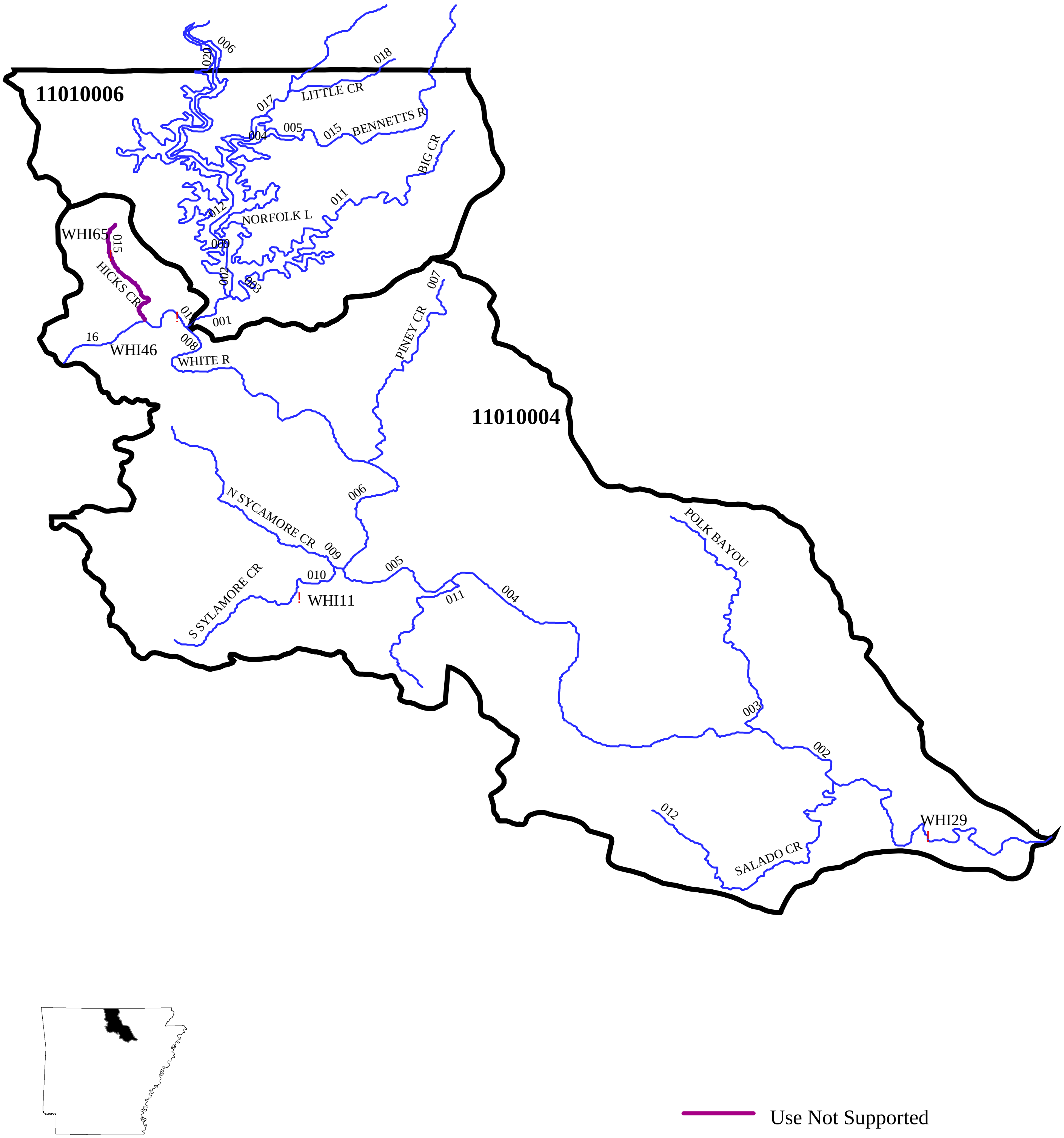
SEGMENT 4F - WHITE RIVER FROM MOUTH OF BLACK RIVER TO MOUTH OF BUFFALO RIVER (WHITE RIVER BASIN)

Segment 4F includes Baxter, Fulton, Izard, Stone, Independence and Sharp counties. The segment encompasses a 125-mile reach of the White River and its major tributaries - Polk Bayou, Sylamore Creek, Salado Creek, Hicks Creek, Norfork River and Bennett's River.

SUMMARY OF WATER QUALITY CONDITIONS IN SEGMENT 4F

Waters within this segment have been designated for fish and wildlife propagation, primary and secondary contact recreation, domestic, agricultural and industrial water supply uses. Outstanding state or national resource waters make up 19.1 miles within the segment. Use support assessments were made on 173.1 miles of streams. The 9.1 miles of Hicks Creek did not meet the drinking water use due to high nitrates. The source of the contaminant is a municipal point source discharge. A TMDL has been completed for Hicks Creek. All other waters assessed in this segment were found to be supporting all designated uses.

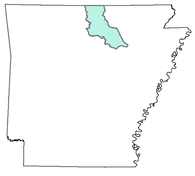
Planning Segment 4F - Monitoring Stations



STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS
SEG-4F																
White River	11010004	-001	26.7	WHI29	M	S	S	S	S	S	S					1
White River	11010004	-002	8.2		E	S	S	S	S	S	S					1
Polk Bayou	11010004	-003	23.4		U											3
White River	11010004	-004	32.6		E	S	S	S	S	S	S					1
White River	11010004	-005	9.6		E	S	S	S	S	S	S					1
White River	11010004	-006	12.5		E	S	S	S	S	S	S					1
White River	11010004	-008	23.6		E	S	S	S	S	S	S					1
Piney Creek	11010004	-007	19.7		U											3
North Sylamore	11010004	-009	18.4		E	S	S	S	S	S	S					1
South Sylamore	11010004	-010	16	WHI11	M	S	S	S	S	S	S					1
Rocky Bayou	11010004	-011	13.5		U											3
Salado Creek	11010004	-012	27.4		U											3
North Sylamore	11010004	-013	0.7		E	S	S	S	S	S	S					1
White River	11010004	-014	4.7	WHI46	M	S	S	S	S	S	S					1
Hicks Creek	11010004	-015	9.1	WHI65	M	S	S	S	S	N	S	MP		NU		4C
White River	11010004	-016	6.8		E	S	S	S	S	S	S					1
Norfork River	11010006	-001	4.2		E	S	S	S	S	S	S					1
Big Creek	11010006	-011	18.4		U											3
Bennetts River	11010006	-015	15.3		U											3
Bennetts River	11010006	-017	3		U											3
Bennetts River	11010006	-019	12.7		U											3
Little Creek	11010006	-018	7.8		U											3
TOTAL MILES	314.3															
MILES UNASSESSED	141.2															
MILES EVALUATED	116.6															
MILES MONITORED	56.5															

USE	SUPPORT	NOT SUPPORT
FISH CONSUMPTION	173.1	0
AQUATIC LIFE	173.1	0
PRIMARY CONTACT	173.1	0
SECONDARY CONTACT	173.1	0
DRINKING SUPPLY	164.0	9.1
AGRI & INDUSTRY	173.1	0

Planning Segment 4F - NPDES Permitted Facilities



Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0001589	GALLOWAY SAND & GRAVEL	WHITE RV	11010004	4F
AR0001783	BAXTER HEALTHCARE CORP-WALKER	WALKER CK TRIB,PIGEON CK,NORFORK LK	11010006	4F
AR0001899	UNIMIN CORP-GUION PLANT	ROCKY BAYOU (1) & BACKWATER SLU (2)	11010004	4F
AR0002437	USDIBSFW-NORFORK NATL FISH HAT	DRY RUN CK,N FORK RV,WHITE RV	11010006	4F
AR0020036	MELBOURNE, CITY OF	MILL CK,PINEY CK,WHITE RV	11010004	4F
AR0020117	MOUNTAIN VIEW, CITY OF	HUGHES CK/SYLAMORE CK	11010004	4F
AR0020664	USDAFS-BLANCHARD SPRINGS	N SYLAMORE CK,S SYLAMORE CK,WHITE R	11010004	4F
AR0020702	BATESVILLE, CITY OF	WHITE RV	11010004	4F
AR0021211	MOUNTAIN HOME, CITY OF	HICKS CK,BIG CK,WHITE RV,WHITE RV	11010004	4F
AR0021229	NEWARK, CITY OF	TRIB,MUD CK	11010004	4F
AR0034517	USDIBSFW-NORFORK NATL FISH HAT	DRY CK/NORTH FORK RV	11010006	4F
AR0034606	CALICO ROCK, CITY OF	WHITE RV	11010004	4F
AR0035386	EASTMAN CHEMICAL CO	DIT,WHITE RV	11010004	4F
AR0036081	HOLIDAY MOUNTAIN RESORT	SYLAMORE CK	11010004	4F
AR0037451	ENTERGY AR, INC-INDEPENDENCE	WHITE RV	11010004	4F
AR0042226	ROLLING MEADOWS MOBILE HOME ES	PANTHER CK TRIB	11010004	4F
AR0043036	NORFORK, CITY OF	TOWN CK/WHITE RV	11010004	4F
AR0044016	AR DEPT OF CORRECTION-IZARD CO	TRIB-MOCCASIN CK	11010004	4F
AR0044113	CALVARY BIBLE SCHOOL	MILL CK/WHITE RV	11010004	4F
AR0045357	MOUNT PLEASANT HOUSING AUTH	BARREN FORK CK,POLK BU,WHITE RV	11010004	4F
AR0046680	SULPHUR ROCK, CITY OF	BIG CK	11010004	4F
AR0046779	SOUTHSIDE SCHOOL DIST #3	E BR/DOUBLE CK,CANEY C	11010004	4F
AR0047031	CUSHMAN HOUSING AUTH	TRIB/SPRING CK	11010004	4F
AR0047406	MIDWEST LIME CO	DITCH/MILLER CK/POKE BU/WHITE RV/AR	11010004	4F
AR0047597	OIL TROUGH, CITY OF	WHITE RIVER	11010004	4F
AR0048631	RLH LANDFILL #3	HUTCH CK TRIB,PIGEON CK,LK NORFORK	11010006	4F
AR0048798	OZARK CAR WASH	LK NORFORK TRIB	11010006	4F
AR0048992	AR HWY DEPT-DISTRICT 5 HQ	DOUBLE BR, CANEY CK, SALADO CK	11010006	4F
AR0049069	CUSHMAN SAW MILL INC	CR DIT,HWY 25 DIT,PFEIFER CK	11010004	4F

WHI0011
SOUTH SYLAMORE CREEK BELOW LICK FORK CREEK

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	35	8.20	4.9	12	2.20
BOD_5 (mg/L)	34	0.35	0	0.86	0.22
pH (standard units)	33	7.62	6.36	8.55	0.39
Total Organic Carbon (mg/L)	34	1.90	<1.0	5.2	0.94
Ammonia as N (mg/L)	36	0.01	<0.005	0.054	0.01
NO_2+NO_3 as N (mg/L)	37	0.62	0.036	1.546	0.44
Orthophosphate as P (mg/L)	36	0.04	0.017	0.098	0.02
Total phosphorus as P (mg/L)	33	0.05	0.01	0.099	0.02
Total hardness (mg/L)	19	133.89	111	168	12.67
Chloride (mg/L)	37	5.47	2.2	7.6	1.27
Sulfate (mg/L)	36	10.72	6.28	18.3	2.55
Total dissolved solids (mg/L)	37	167.39	146	204.5	11.20
Total suspended solids (mg/L)	36	1.93	<1.0	7	1.64
Turbidity (NTU)	36	2.54	<1.0	15	2.68

WHI0029
WHITE RIVER @ OIL TROUGH AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	35	8.70	5.7	12.45	1.72
BOD_5 (mg/L)	35	0.66	0.2	1.2	0.28
pH (standard units)	34	7.83	7.05	8.4	0.32
Total Organic Carbon (mg/L)	35	2.53	<1.0	4.3	0.73
Ammonia as N (mg/L)	37	0.01	<0.005	0.063	0.01
NO_2+NO_3 as N (mg/L)	38	0.22	<0.01	0.631	0.13
Orthophosphate as P (mg/L)	37	0.02	<0.005	0.053	0.01
Total phosphorus as P (mg/L)	34	0.04	0.01	0.108	0.03
Total hardness (mg/L)	19	141.26	122	174	12.80
Chloride (mg/L)	38	5.35	3.16	7.11	1.11
Sulfate (mg/L)	37	7.74	4.87	10.12	1.17
Total dissolved solids (mg/L)	38	164.17	138	219.5	13.53
Total suspended solids (mg/L)	37	9.64	1.5	66	11.42
Turbidity (NTU)	37	5.36	1.5	31	5.14

WHI0046
WHITE RIVER NEAR NORFORK AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	10.32	7.75	13	1.41
BOD_5 (mg/L)	35	0.59	0	3.3	0.54
pH (standard units)	39	7.91	7.23	8.49	0.32
Total Organic Carbon (mg/L)	35	2.62	<1.0	4.94	0.89
Ammonia as N (mg/L)	37	0.01	<0.005	0.069	0.01
NO_2+NO_3 as N (mg/L)	37	0.23	<0.01	0.497	0.14
Orthophosphate as P (mg/L)	38	0.01	<0.005	0.035	0.01
Total phosphorus as P (mg/L)	36	0.02	0.01	0.104	0.02
Total hardness (mg/L)	18	124.01	99	135	10.21
Chloride (mg/L)	38	4.90	1.65	6.58	1.30
Sulfate (mg/L)	38	6.56	3.89	7.5	0.79
Total dissolved solids (mg/L)	36	146.49	107	164	12.64
Total suspended solids (mg/L)	37	2.09	<1.0	11.5	2.46
Turbidity (NTU)	38	2.65	<1.0	25	4.89

WHI0065
HICKS CREEK DOWNSTREAM OF MT HOME AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	10.81	7.04	13.3	1.77
BOD_5 (mg/L)	35	1.17	0	6.51	1.24
pH (standard units)	39	8.09	7.15	8.64	0.29
Total Organic Carbon (mg/L)	35	4.76	2.751	10	1.48
Ammonia as N (mg/L)	37	0.09	<0.005	1.36	0.27
NO_2+NO_3 as N (mg/L)	37	2.99	1.11	4.68	0.95
Orthophosphate as P (mg/L)	38	1.75	0.432	5.68	1.00
Total phosphorus as P (mg/L)	36	1.67	0.462	3.34	0.78
Total hardness (mg/L)	18	196.79	127	230	27.76
Chloride (mg/L)	38	59.00	18	125.35	22.68
Sulfate (mg/L)	38	23.02	14.9	29.4	3.41
Total dissolved solids (mg/L)	36	347.74	216.5	459.5	52.51
Total suspended solids (mg/L)	37	2.83	<1.0	9.5	2.11
Turbidity (NTU)	38	2.80	<1.0	8.4	2.02

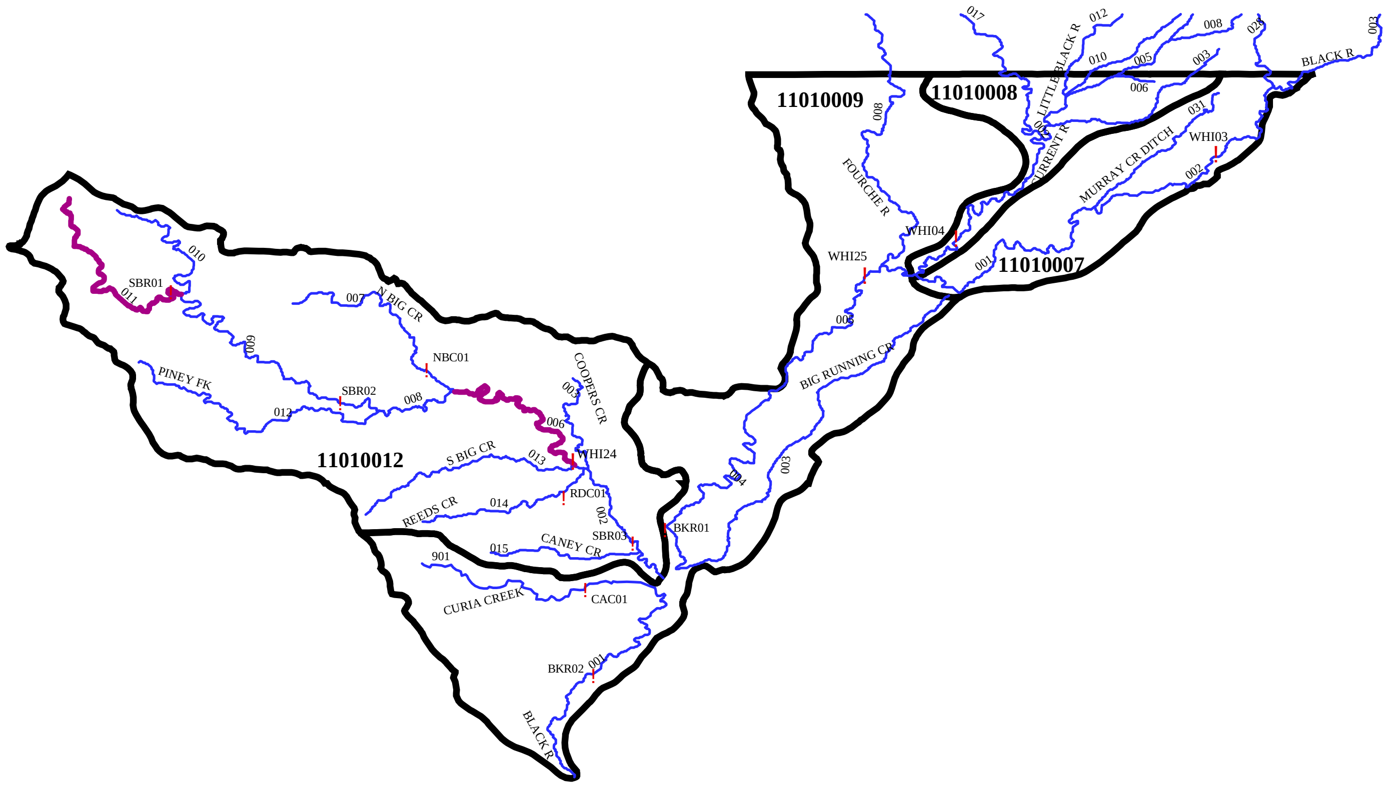
SEGMENT 4G - BLACK RIVER, STRAWBERRY RIVER AND TRIBUTARIES (WHITE RIVER BASIN)

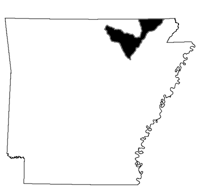
Segment 4G includes portions of Izard, Sharp, Independence, Lawrence, Randolph and Clay counties in the northeast corner of the state. This segment encompasses a 121-mile reach of the Black River to the Missouri state line, and its major tributaries - the Strawberry River and Current River.

SUMMARY OF WATER QUALITY CONDITIONS

Fish and wildlife propagation, primary and secondary contact recreation, domestic, agricultural and industrial water supplies are the designated uses for all waters within this segment. Also, 112.2 miles of these streams are designated as outstanding state or national resource waters. The water quality monitoring stations allowed for the monitored assessment of 248 miles of streams in the segment and the evaluation of 42.8 miles. Almost 40 miles of extraordinary resource waters in this segment were assessed as not supporting aquatic life uses due to excessive turbidity levels. Trend data from the monitoring station on the Strawberry River demonstrates these excessive turbidity levels occurring routinely over the last five to ten years. Concurrently, the total suspended solids and the total phosphorus levels show peaking values much above normal. This is most likely from agriculture activities probably associated with pasturing and animal grazing to the edge of the stream bank. An intensive study of this watershed is currently underway and will eventually lead to completion of a TMDL.

Planning Segment 4G - Monitoring Stations

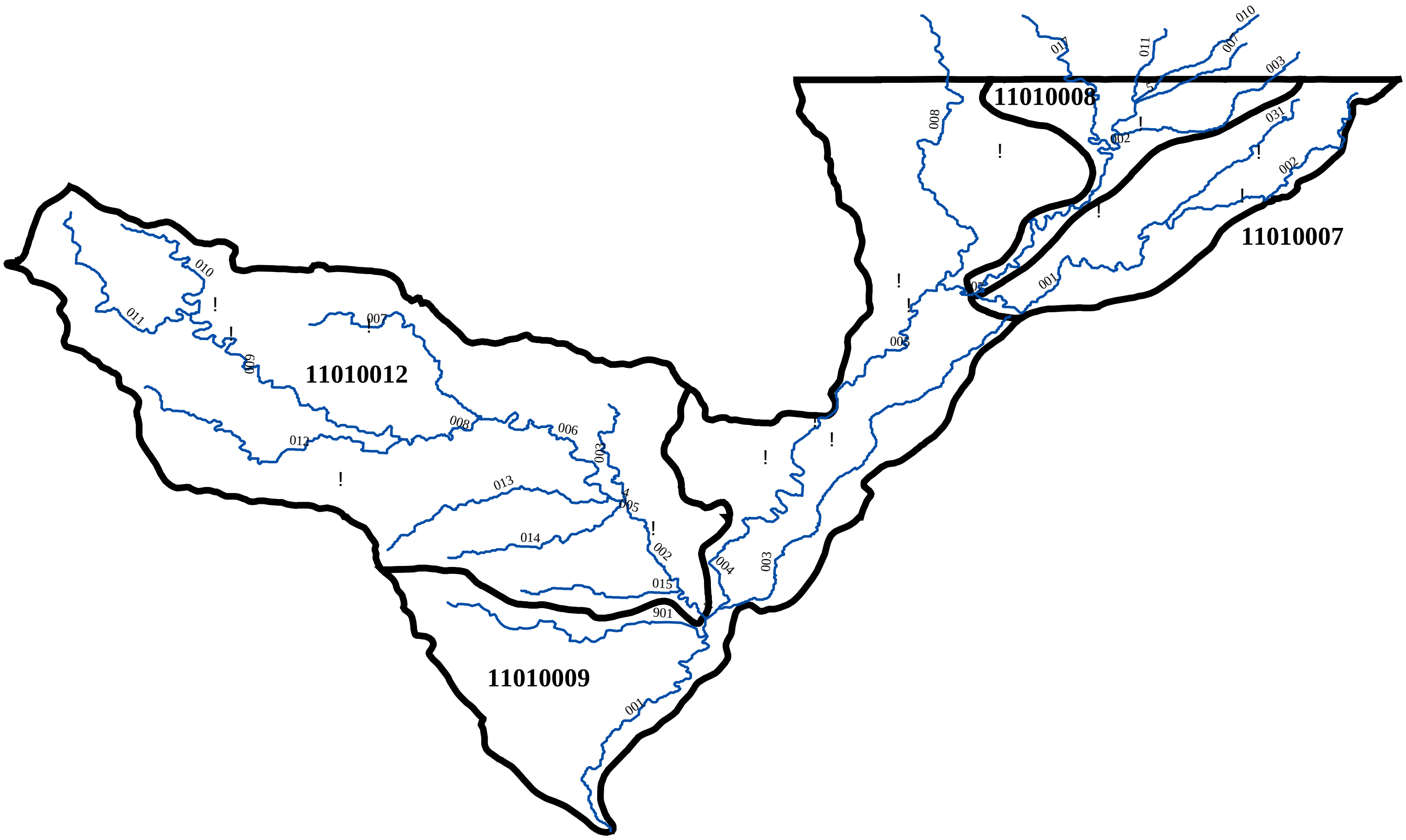


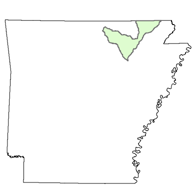


Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-4G																			
Black River	11010007	-001	24.2		E	S	S	S	S	S	S					1	FISH CONSUMPTION	290.8	0
Black River	11010007	-002	22.7	WHI03	M	S	S	S	S	S	S					1	AQUATIC LIFE	250.4	40.4
Murray Creek	11010007	-031	15.2		U											3	PRIMARY CONTACT	270.4	20.4
Current River	11010008	-001	23.6	WHI04	M	S	S	S	S	S	S					1	SECONDARY CONTACT	290.8	0
Current River	11010008	-017	12		E	S	S	S	S	S	S					1	DRINKING SUPPLY	290.8	0
Little Black	11010008	-002	2.5		U											3	AGRI & INDUSTRY	290.8	0
Byrnes Ditch	11010008	-003	16.2		U											3			
Little Black	11010008	-004	3.7		U											3			
Indian Creek	11010008	-005	4.1		U											3			
Black River	11010009	-001	25.8	BKR02	M	S	S	S	S	S	S					1			
Black River	11010009	-002	1.2		E	S	S	S	S	S	S					1			
Black River	11010009	-004	27.4	BKR01	M	S	S	S	S	S	S					1			
Black River	11010009	-005	17.5	WHI25	M	S	S	S	S	S	S					1			
Black River	11010009	-007	3.8		U											3			
Big Running C.	11010009	-003	36		U											3			
Fourche River	11010009	-008	25		U											3			
Strawberry R.	11010012	-001	4.4		E	S	S	S	S	S	S					1			
Strawberry R.	11010012	-002	9.4	SBR03	M	S	S	S	S	S	S					1			
Coopers Creek	11010012	-003	11.8		U											3			
Strawberry R.	11010012	-004	0.3		E	S	N	S	S	S	S	AG		SI		5			
Strawberry R.	11010012	-005	0.7		E	S	N	S	S	S	S	AG		SI		5			
Strawberry R.	11010012	-006	19	WHI24	M	S	N	S	S	S	S	AG		SI		5			
N. Big Creek	11010012	-007	20.8	NBC01	M	S	S	S	S	S	S					1			
Strawberry R.	11010012	-008	8.4		U											3			
Strawberry R.	11010012	-009	28.4	SBR02	M	S	S	S	S	S	S					1			
L.Strawberry	11010012	-010	16		U											3			
Strawberry R.	11010012	-011	20.4	SBR01	M	S	N	N	S	S	S	AG		SI	PA	5			
Piney Fork	11010012	-012	26.1		U											3			
S. Big Creek	11010012	-013	19.3		U											3			
Reeds Creek	11010012	-014	15	RDC01	M	S	S	S	S	S	S					1			
Caney Creek	11010012	-015	11.6		U											3			
Curia Creek	11010009	-901	18	CAC01	M	S	S	S	S	S	S					1			
TOTAL MILES	490.5																		
MILES UNASSESSED	199.7																		
MILES EVALUATED	42.8																		
MILES MONITORED	248																		

Planning Segment 4G - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0022110	CAVE CITY, CITY OF	CURIA CK/BLACK RV	11010009	4G
AR0022209	REYNO, CITY OF	MURRAY CK DITCH/BLACK RV/WHITE RV	11010007	4G
AR0033979	CORNING, CITY OF	BLACK RV	11010007	4G
AR0034835	POCAHONTAS, CITY OF	BLACK RV	11010009	4G
AR0035254	HORSESHOE BEND, CITY OF-WHITE	LT STRAWBERRY RV TRIB,STRAWBERRY RV	11010012	4G
AR0036820	MACLEAN-ESNA	MANSKER CK TRIB,BLACK RV	11010009	4G
AR0037508	BLACK ROCK, CITY WATER & SEWER	TRIB/BLACK RV/WHITE RV	11010009	4G
AR0038199	AR PARKS & TOURISM-LK CHARLES	LAKE CHARLES	11010009	4G
AR0038326	ALLEGHENY WASTEWATER ASSN	TRIB,WORTHINGTON CK,HACKNEY CK	11010012	4G
AR0039608	HORSESHOE BEND, CITY OF-PARADI	HUBBLE BR,LTL STRAWBERRY RV	11010012	4G
AR0040355	PORTIA, CITY OF	BLACK RV,	11010009	4G
AR0040533	DEER RUN PARK RESORT	DEER RUN LK, MILL CK, PINEY FRK	11010012	4G
AR0041742	ASH FLAT, CITY OF	TRIB,N BIG CK,STRAWBERRY RV,BLACK R	11010012	4G
AR0043834	MAYNARD, CITY OF	LEMMONS-BIG CKS/FOURCHE-BLACK/WHITE	11010009	4G
AR0047911	J.W. BLACK LUMBER CO	TRIB,CORNING LK	11010007	4G
AR0048071	SUCCESS, TOWN OF	TRIB,L.BLACK RV,CURRENT RV,BLACK RV	11010008	4G
AR0048488	WESTERN LAWRENCE CO WWT DIST	STRAWBERRY RV TRIB	11010012	4G

WHI0003
BLACK RIVER NEAR CORNING AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	7.07	3.69	11.4	1.87
BOD_5 (mg/L)	34	1.22	0.2	4.27	0.81
pH (standard units)	38	7.63	6.56	8.68	0.38
Total Organic Carbon (mg/L)	35	3.28	1.26	11.87	2.48
Ammonia as N (mg/L)	38	0.04	<0.005	0.164	0.04
NO_2+NO_3 as N (mg/L)	37	0.14	<0.01	0.409	0.10
Orthophosphate as P (mg/L)	38	0.04	0.009	0.161	0.04
Total phosphorus as P (mg/L)	34	0.11	0.01	0.59	0.12
Total hardness (mg/L)	19	119.06	34	154	34.82
Chloride (mg/L)	38	4.04	2.12	7.91	1.39
Sulfate (mg/L)	38	8.66	4.93	14.05	2.02
Total dissolved solids (mg/L)	38	150.21	89	191	23.83
Total suspended solids (mg/L)	35	35.25	4	372	64.47
Turbidity (NTU)	38	38.40	4.6	260	62.00

WHI0004
CURRENT RIVER NEAR POCAHONTAS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	7.56	4.63	10.9	1.59
BOD_5 (mg/L)	34	0.76	0	2.59	0.61
pH (standard units)	38	7.68	6.57	8.92	0.39
Total Organic Carbon (mg/L)	35	2.07	<1.0	7.4	1.50
Ammonia as N (mg/L)	38	0.02	<0.005	0.079	0.02
NO_2+NO_3 as N (mg/L)	37	0.23	0.03	0.523	0.12
Orthophosphate as P (mg/L)	38	0.02	<0.005	0.118	0.03
Total phosphorus as P (mg/L)	34	0.05	0.01	0.334	0.06
Total hardness (mg/L)	19	153.41	58	181	32.17
Chloride (mg/L)	38	2.97	1.87	5.79	0.71
Sulfate (mg/L)	38	4.27	3	9.07	1.23
Total dissolved solids (mg/L)	38	170.12	115	215	21.52
Total suspended solids (mg/L)	35	12.42	1	149	24.99
Turbidity (NTU)	38	14.00	1.2	150	28.29

WHI0024
STRAWBERRY RIVER S OF SMITHVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	40	8.10	4.51	12.52	1.95
BOD_5 (mg/L)	41	0.77	0.11	2.18	0.40
pH (standard units)	40	7.84	7.34	8.18	0.25
Total Organic Carbon (mg/L)	41	2.72	<1.0	9.6	1.81
Ammonia as N (mg/L)	43	0.01	<0.005	0.1	0.02
NO_2+NO_3 as N (mg/L)	44	0.16	<0.01	0.808	0.17
Orthophosphate as P (mg/L)	43	0.02	<0.005	0.138	0.02
Total phosphorus as P (mg/L)	40	0.04	0.01	0.195	0.04
Total hardness (mg/L)	25	200.52	131	234	24.47
Chloride (mg/L)	44	2.98	2.18	5.15	0.62
Sulfate (mg/L)	43	5.08	3.71	7.88	1.17
Total dissolved solids (mg/L)	44	205.85	145	235	21.73
Total suspended solids (mg/L)	43	19.14	2	223	36.74
Turbidity (NTU)	43	9.24	1.4	78	13.91

WHI0025
BLACK RIVER @ POCAHONTAS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	7.28	4.05	11.5	1.76
BOD_5 (mg/L)	34	0.81	0	2.58	0.63
pH (standard units)	38	7.61	6.56	8.29	0.36
Total Organic Carbon (mg/L)	35	2.69	<1.0	8.3	1.79
Ammonia as N (mg/L)	38	0.02	<0.005	0.076	0.02
NO_2+NO_3 as N (mg/L)	37	0.18	<0.01	0.39	0.09
Orthophosphate as P (mg/L)	38	0.03	<0.005	0.084	0.02
Total phosphorus as P (mg/L)	34	0.07	0.01	0.395	0.07
Total hardness (mg/L)	18	147.99	77	179	28.91
Chloride (mg/L)	38	3.95	1.99	25.06	3.64
Sulfate (mg/L)	38	5.91	2.97	27.58	3.75
Total dissolved solids (mg/L)	38	163.32	116	212.5	23.04
Total suspended solids (mg/L)	35	21.05	2	171	27.88
Turbidity (NTU)	38	20.26	1.1	170	30.93

SEGMENT 4H - SPRING RIVER, SOUTH FORK SPRING RIVER, AND ELEVEN POINT RIVER (WHITE RIVER BASIN)

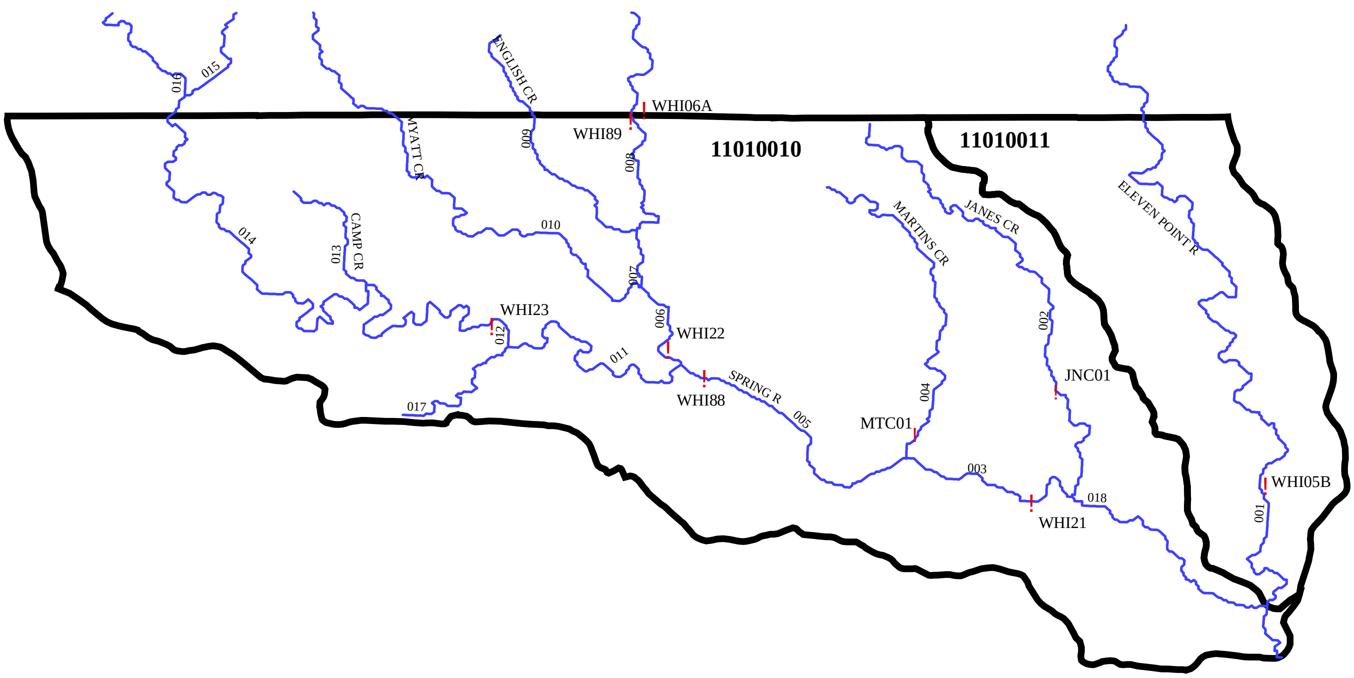
Segment 4H, in north central Arkansas, includes portions of Fulton, Sharp and Randolph counties. The segment encompasses the entire 46-mile length of the Spring River and its major tributaries, the South Fork Spring River, the Eleven Point River, Myatt Creek and Martin's Creek.

SUMMARY OF WATER QUALITY CONDITIONS

Designated uses for all waters within this segment include propagation of fish and wildlife, primary and secondary contact recreation, domestic, agricultural and industrial water supplies. Additionally, about 74 percent of these waters are designated as outstanding state or national resource waters. Approximately 134.2 miles of the waters were assessed from seven permanent and two temporary monitoring stations; 16 miles were evaluated. All waters in this segment were meeting designated uses. The lower reaches of the Spring River occasionally show high turbidity levels. These levels seem to be associated with major storm events and are likely caused by land clearing to the edge of the stream. However, the long-term trend data for the lower Spring River station do not show significant upward trends in turbidity and TSS. The South Fork of the Spring River, which in the past has contributed high bacteria and excessive turbidity to the Spring River, has not demonstrated these excessive values over the past several years. Janes Creek water quality appears to be near pristine levels.

Figure A-4H-1 demonstrates the distribution of nutrients in the Spring River. A similar pattern has existed over the last two monitoring cycles and there appears to be a slight decrease in nutrients at all stations during the 1999-2001 period. Highest nitrate values occur in Mammoth Spring and decline in a downstream direction with lowest values in South Fork of Spring River. In contrast, total phosphorus values are highest in the lower sections of Spring River. Although all phosphorus values are low, the higher concentrations are associated with the highest inputs of suspended silt particles.

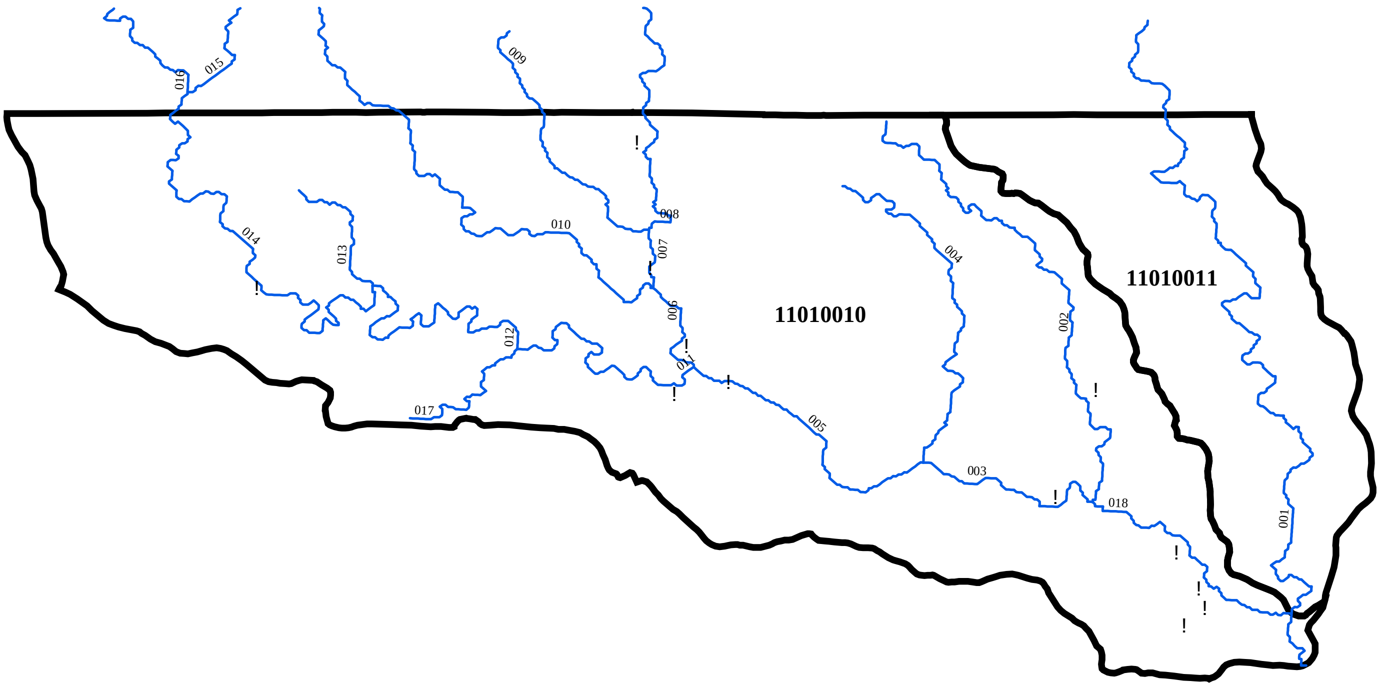
Planning Segment 4H - Monitoring Stations

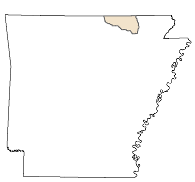


Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-4H																			
Spring River	11010010	-001	3.3		U											3	FISH CONSUMPTION	150.2	0
Janes Creek	11010010	-002	26.7	JNC01	M	S	S	S	S	S	S					1	AQUATIC LIFE	150.2	0
Spring River	11010010	-003	9.4	WHI21	M	S	S	S	S	S	S					1	PRIMARY CONTACT	150.2	0
Martins Creek	11010010	-004	19	MTC01	M	S	S	S	S	S	S					1	SECONDARY CONTACT	150.2	0
Spring River	11010010	-005	13.2	WHI88	M	S	S	S	S	S	S					1	DRINKING SUPPLY	150.2	0
Spring River	11010010	-006	5.3	WHI22	M	S	S	S	S	S	S					1	AGRI & INDUSTRY	150.2	0
Spring River	11010010	-007	4		E	S	S	S	S	S	S					1			
Warm Fork Spring R.	11010010	-008t	3.1	WHI06A	M	S	S	S	S	S	S					1			
Spring River	11010010	-008	8.8	WHI89	M	S	S	S	S	S	S					1			
English Creek	11010010	-009	6.5		U											3			
Myatt Creek	11010010	-010	26		U											3			
S. Fork Spring	11010010	-011	13.4		U											3			
S. Fork Spring	11010010	-012	15.6	WHI23	M	S	S	S	S	S	S					1			
S. Fork Spring	11010010	-014	24		U											3			
Camp Creek	11010010	-013	7		U											3			
Wild Horse C.	11010010	-017	7.7		U											3			
Spring River	11010010	-018	12		E	S	S	S	S	S	S					1			
Eleven Point	11010011	-001	33.1	WHI05B	M	S	S	S	S	S	S					1			
TOTAL MILES	238.1																		
MILES UNASSESSED	87.9																		
MILES EVALUATED	16																		
MILES MONITORED	134.2																		

Planning Segment 4H - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0002879	AR GAME & FISH COMM-SPRING RV	SPRING RV	11010010	4H
AR0021628	IMBODEN, TOWN OF	WAYLAND CK/SPRING RV/BLACK RV	11010010	4H
AR0023850	MAMMOTH SPRING, CITY OF	SPRING RV TRIB,SPRING RV	11010010	4H
AR0034282	CHEROKEE VILLAGE SEWER INC	SOUTH FORK SPRING RV	11010010	4H
AR0034789	SALEM, CITY OF	SOUTH FORK/SPRING RV	11010010	4H
AR0037991	HARDY, CITY OF	SPRING RV,BLACK RV	11010010	4H
AR0040312	HIGHLAND SQUARE COIN OPERATED	TRIB/LK MIRANDY	11010010	4H
AR0041254	RAVENDEN, CITY OF	TRIB/SPRING RV/BLACK RV/WHITE RB	11010010	4H
AR0046922	VULCAN CONSTR MATERIALS-BLACK	HWY 63 DIT, BRUSHY CK,. . . , BLACK RV	11010010	4H
AR0047198	MARTIN MARIETTA MATERIALS-BLAC	STENNITT CREEK	11010010	4H
AR0048712	RAVENDEN SPRINGS, TOWN OF	JOHNS CK TRIB, JANES CK, SPRING RV	11010010	4H
AR0049107	MARTIN MARIETTA MATERIALS-CAVE	SPRING RV	11010010	4H

WHI0005B
ELEVEN POINT RIVER NEAR POCAHONTAS AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	7.59	3.91	11.9	1.80
BOD_5 (mg/L)	34	0.46	0	1.33	0.33
pH (standard units)	38	7.75	6.95	8.58	0.31
Total Organic Carbon (mg/L)	35	1.60	<1.0	4.6	0.90
Ammonia as N (mg/L)	38	0.01	<0.005	0.0343	0.01
NO_2+NO_3 as N (mg/L)	37	0.37	0.096	0.825	0.17
Orthophosphate as P (mg/L)	38	0.01	<0.005	0.028	0.01
Total phosphorus as P (mg/L)	34	0.03	0.01	0.098	0.02
Total hardness (mg/L)	18	199.55	158	224	18.49
Chloride (mg/L)	38	2.46	1.53	3.43	0.39
Sulfate (mg/L)	38	3.38	2.33	5.05	0.61
Total dissolved solids (mg/L)	38	208.39	159	251	16.27
Total suspended solids (mg/L)	35	6.93	<1.0	29.5	6.27
Turbidity (NTU)	38	5.34	<1.0	56	9.00

WHI0006A
SPRING RIVER NEAR THAYER MO

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	7.95	3	12.8	2.47
BOD_5 (mg/L)	35	0.74	0	2.68	0.49
pH (standard units)	39	7.65	6.88	8.62	0.42
Total Organic Carbon (mg/L)	35	2.32	<1.0	5.75	0.99
Ammonia as N (mg/L)	38	0.04	<0.005	0.131	0.03
NO_2+NO_3 as N (mg/L)	37	0.59	0.139	1.202	0.27
Orthophosphate as P (mg/L)	38	0.07	<0.005	0.3	0.06
Total phosphorus as P (mg/L)	36	0.12	0.01	1.051	0.17
Total hardness (mg/L)	19	267.19	218	345	28.90
Chloride (mg/L)	38	8.74	2	27.1	5.67
Sulfate (mg/L)	38	6.02	3.27	53.45	8.01
Total dissolved solids (mg/L)	36	283.94	194	344.5	36.91
Total suspended solids (mg/L)	37	4.93	<1.0	32	6.00
Turbidity (NTU)	38	5.39	1	29	6.81

WHI0021
SPRING RIVER S OF RAVENDEN AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	7.74	3.95	12.3	1.75
BOD_5 (mg/L)	34	0.69	0	5.07	0.85
pH (standard units)	38	7.83	6.41	8.65	0.39
Total Organic Carbon (mg/L)	34	2.05	<1.0	8.72	1.54
Ammonia as N (mg/L)	38	0.02	<0.005	0.06	0.02
NO_2+NO_3 as N (mg/L)	37	0.42	0.067	3.939	0.62
Orthophosphate as P (mg/L)	38	0.12	<0.005	3.999	0.65
Total phosphorus as P (mg/L)	34	0.15	0.01	4.238	0.72
Total hardness (mg/L)	19	226.99	188	254	19.58
Chloride (mg/L)	38	4.46	1.37	54.08	8.29
Sulfate (mg/L)	38	4.25	2.82	20.7	2.81
Total dissolved solids (mg/L)	38	237.24	189	288	16.48
Total suspended solids (mg/L)	35	7.27	1.5	46	7.47
Turbidity (NTU)	38	4.64	1.6	29	4.58

WHI0022
SPRING RIVER NW OF HARDY AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	40	9.61	7.5	12.9	1.35
BOD_5 (mg/L)	35	0.45	0	1	0.22
pH (standard units)	40	8.12	7.37	8.74	0.28
Total Organic Carbon (mg/L)	36	1.57	<1.0	4.8	0.83
Ammonia as N (mg/L)	39	0.01	<0.005	0.059	0.01
NO_2+NO_3 as N (mg/L)	38	0.54	0.307	1.175	0.20
Orthophosphate as P (mg/L)	39	0.02	<0.005	0.052	0.01
Total phosphorus as P (mg/L)	37	0.04	0.01	0.074	0.02
Total hardness (mg/L)	19	230.48	198	263	14.80
Chloride (mg/L)	39	3.35	1.65	8.11	1.03
Sulfate (mg/L)	39	3.65	2.63	7.14	0.79
Total dissolved solids (mg/L)	37	241.53	205	260	11.09
Total suspended solids (mg/L)	38	4.56	<1.0	29.5	4.72
Turbidity (NTU)	39	3.51	1.2	26	4.16

WHI0023
SOUTH FORK SPRING RIVER NEAR SADDLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	9.25	5.7	12.9	1.96
BOD_5 (mg/L)	35	0.72	0	2.12	0.45
pH (standard units)	39	7.91	7.39	8.58	0.26
Total Organic Carbon (mg/L)	35	2.39	<1.0	6.6	1.06
Ammonia as N (mg/L)	37	0.01	<0.005	0.053	0.01
NO_2+NO_3 as N (mg/L)	37	0.14	<0.01	0.535	0.15
Orthophosphate as P (mg/L)	38	0.01	<0.005	0.04	0.01
Total phosphorus as P (mg/L)	36	0.03	0.01	0.088	0.02
Total hardness (mg/L)	19	212.08	174	255	22.66
Chloride (mg/L)	38	3.56	1.93	4.82	0.77
Sulfate (mg/L)	38	3.49	2.29	6.61	0.92
Total dissolved solids (mg/L)	36	220.63	144	279	30.33
Total suspended solids (mg/L)	37	3.64	<1.0	38	6.02
Turbidity (NTU)	38	3.26	1.1	29	4.84

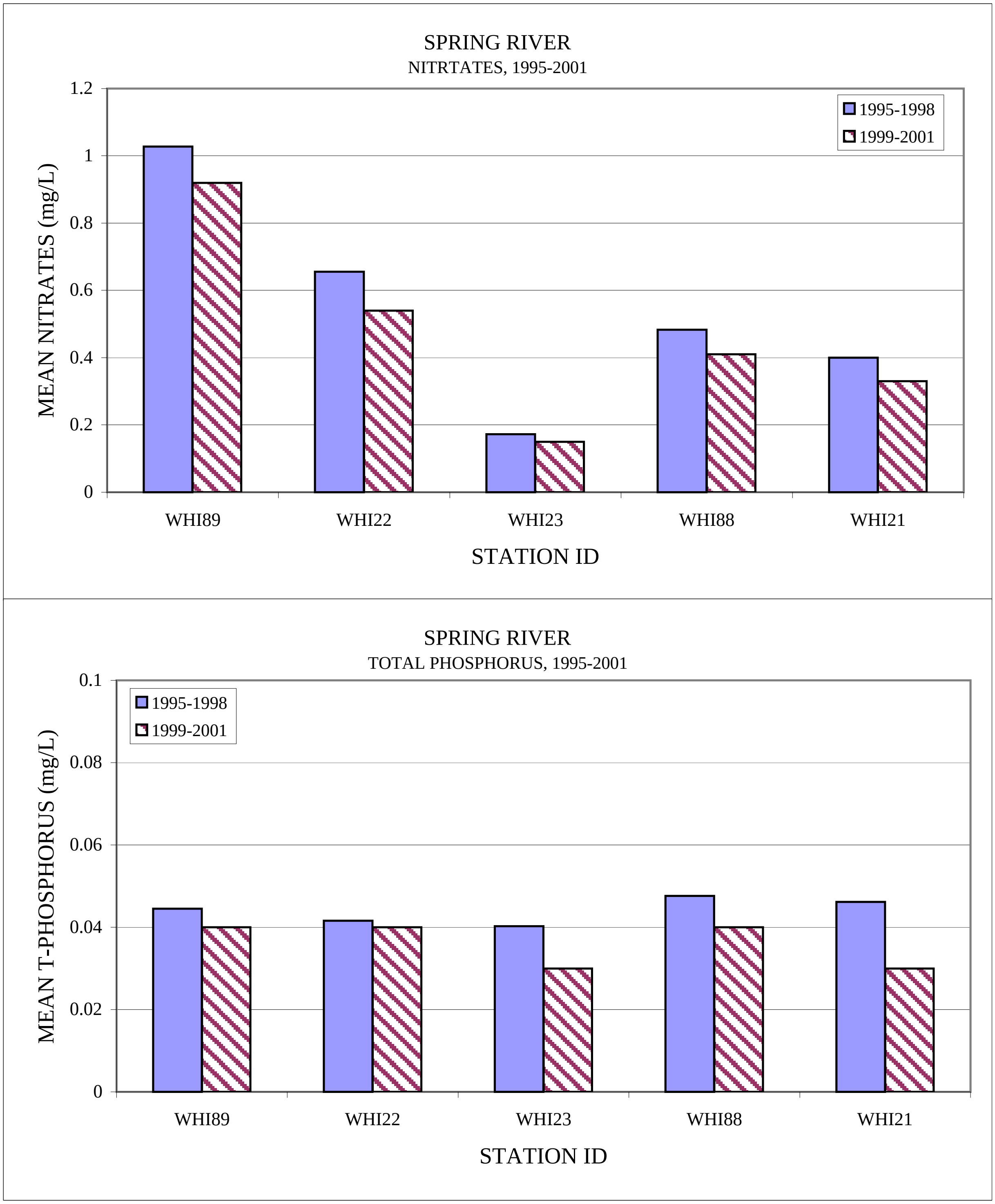
WHI0088
SPRING RIVER AT TOWN BRIDGE CROSSING IN HARDY,AR.

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	9.61	7.4	12.6	1.49
BOD_5 (mg/L)	35	0.69	0	2.68	0.46
pH (standard units)	39	8.08	7.51	8.64	0.24
Total Organic Carbon (mg/L)	35	1.89	<1.0	5.3	1.03
Ammonia as N (mg/L)	37	0.01	<0.005	0.059	0.01
NO_2+NO_3 as N (mg/L)	37	0.41	0.219	0.873	0.15
Orthophosphate as P (mg/L)	38	0.02	<0.005	0.092	0.02
Total phosphorus as P (mg/L)	36	0.04	0.01	0.139	0.03
Total hardness (mg/L)	19	231.59	199	270	15.73
Chloride (mg/L)	38	3.23	1.64	4.63	0.65
Sulfate (mg/L)	38	3.59	2.62	4.78	0.55
Total dissolved solids (mg/L)	36	241.22	187	258	13.77
Total suspended solids (mg/L)	37	5.40	1	31	5.01
Turbidity (NTU)	38	3.99	1.4	26	4.41

WHI0089
SPRING RIVER AT EAST WALK BRIDGE IN MAMMOTH SPRINGS,AR.

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	40	7.38	6.2	11.2	0.97
BOD_5 (mg/L)	36	0.40	-0.05	1.33	0.34
pH (standard units)	40	7.33	6.26	8.07	0.35
Total Organic Carbon (mg/L)	36	1.12	<1.0	2.9	0.66
Ammonia as N (mg/L)	38	0.00	<0.005	0.021	0.00
NO_2+NO_3 as N (mg/L)	38	0.91	0.575	1.88	0.28
Orthophosphate as P (mg/L)	39	0.04	0.017	0.097	0.01
Total phosphorus as P (mg/L)	37	0.03	0.01	0.108	0.02
Total hardness (mg/L)	19	223.90	174	253	19.66
Chloride (mg/L)	39	3.50	1.73	5.92	0.88
Sulfate (mg/L)	39	3.44	2.48	4.75	0.49
Total dissolved solids (mg/L)	37	236.50	207	249.5	11.73
Total suspended solids (mg/L)	38	1.30	<1.0	4.5	0.99
Turbidity (NTU)	39	2.64	<1.0	19	3.01

FIGURE A-4H-1
SPRING RIVER
MEAN NITRATE AND TOTAL PHOSPHORUS, 1995-1998



WHI89 - Spring River at Mammoth Spring
WHI23 - South Fork Spring River nr Saddle
WHI21 - Spring River nr Ravenden
WHI22 - Spring River N. of Hardy
WHI88 - Spring River @ town bridge in Hardy

SEGMENT 4I - WHITE RIVER FROM CROOKED CREEK TO LONG CREEK (WHITE RIVER BASIN)

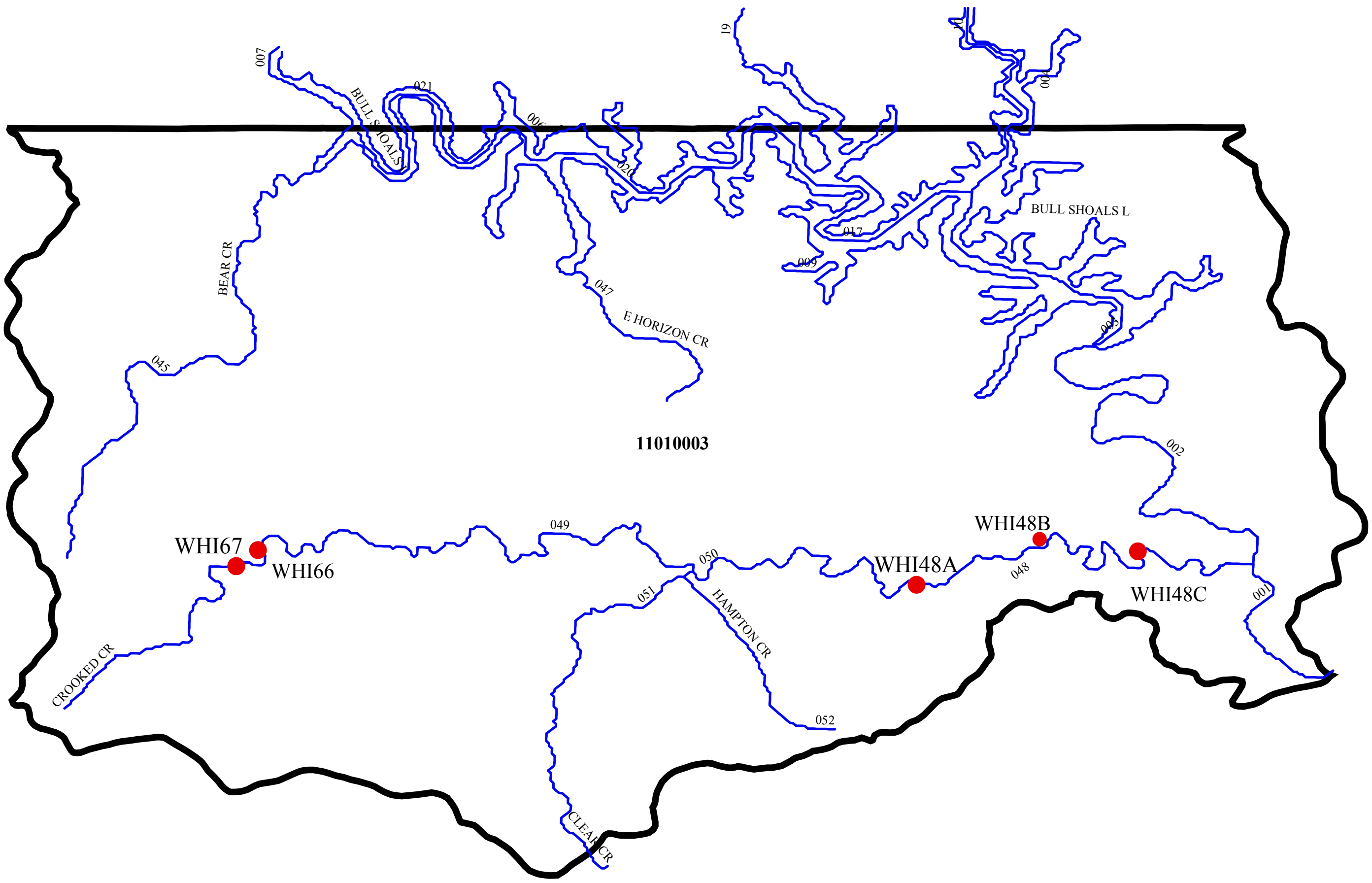
Segment 4I, located in north central Arkansas, includes portions of Carroll, Boone and Marion counties. This segment encompasses a 31-mile reach of the White River and Crooked Creek and its tributaries.

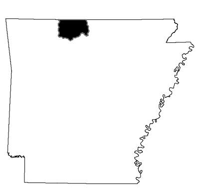
SUMMARY OF WATER QUALITY CONDITIONS

All waters within this segment are designated for fish and wildlife propagation, primary and secondary contact recreation, domestic, agricultural and industrial water supplies. None of these waters, except Bull Shoals Reservoir, are designated as outstanding state or national resources. Five monitoring stations were used to assess 67.9 miles of stream uses, and 31 miles were evaluated. All waters assessed in this segment were supporting all designated uses.

Data from Crooked Creek above and below the City of Harrison sewage treatment plant demonstrates some elevated parameters from this discharge and also reflects urban area runoff during storm events.

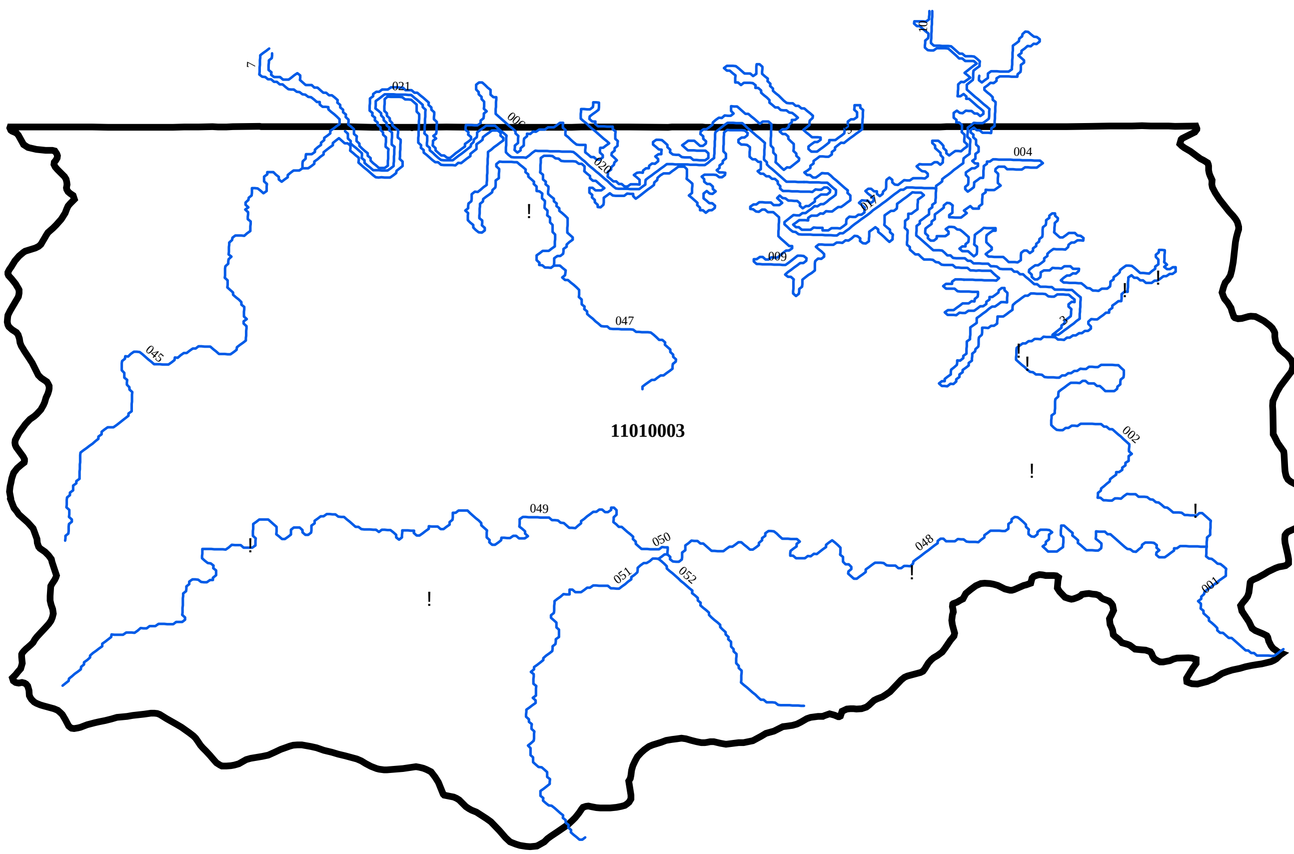
Planning Segment 4I - Monitoring Stations

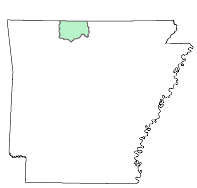




STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
Seg 4I																			
White River	11010003	-001	7.6		E	S	S	S	S	S	S					1	FISH CONSUMPTION	98.9	0
White River	11010003	-002	23.4		E	S	S	S	S	S	S					1	AQUATIC LIFE	98.9	0
Bear Creek	11010003	-045	25.9		U											3	PRIMARY CONTACT	98.9	0
E. Horizon C.	11010003	-047	8.9		U											3	SECONDARY CONTACT	98.9	0
Crooked Creek	11010003	-048	31.7	WHI48A,B,C	M	S	S	S	S	S	S					1	DRINKING SUPPLY	98.9	0
Crooked Creek	11010003	-049	36.2	WHI66&67	M	S	S	S	S	S	S					1	AGRI & INDUSTRY	98.9	0
Clear Creek	11010003	-050	0.4		U											3			
Clear Creek	11010003	-051	17.6		U											3			
Hampton Creek	11010003	-052	9.1		U											3			
TOTAL MILES	160.8																		
MILES UNASSESSED	61.9																		
MILES EVALUATED	31																		
MILES MONITORED	67.9																		

Planning Segment 4I - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0021717	FLIPPIN, CITY OF	FALLEN ASH CK,WHITE RV	11010003	4I
AR0033545	COTTER-GASSVILLE, TOWNS OF	WHITE RV	11010003	4I
AR0034037	YELLVILLE, CITY OF	CROOKED CREEK, WHITE RV	11010003	4I
AR0034321	HARRISON, CITY OF	CROOKED CK,WHITE RIVER	11010003	4I
AR0037028	BULL SHOALS, CITY OF	WHITE RV	11010003	4I
AR0037052	AR PARKS & TOURISM-BULL SHOALS	WHITE RV	11010003	4I
AR0037435	HOLIDAY SHORES RESORT	BULL SHOALS LK TRIB	11010003	4I
AR0043753	SUGARLOAF WASTEWATER DIST	E.SUGARLOAF CK,BULL SHOALS LK	11010003	4I
AR0045390	HOLTBY’S INC	TRIB/MEEK CK	11010003	4I
AR0048518	LAURENCE'S CEDAR OAKS RESORT	BULL SHOALS LK	11010003	4I

WHI0048A
CROOKED CREEK @ YELLVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	35	10.60	8.01	12.9	1.37
BOD_5 (mg/L)	34	0.62	0	1.21	0.28
pH (standard units)	37	8.05	7.53	8.75	0.23
Total Organic Carbon (mg/L)	33	8.22	<1.0	204	35.16
Ammonia as N (mg/L)	35	0.01	<0.005	0.081	0.02
NO_2+NO_3 as N (mg/L)	35	0.78	<0.01	2.7	0.75
Orthophosphate as P (mg/L)	36	0.01	<0.005	0.127	0.02
Total phosphorus as P (mg/L)	35	0.03	0.01	0.119	0.02
Total hardness (mg/L)	17	156.92	119	182	16.77
Chloride (mg/L)	36	8.17	4.05	12.73	2.25
Sulfate (mg/L)	36	6.81	4.36	8.74	1.30
Total dissolved solids (mg/L)	34	188.40	156	215.5	13.68
Total suspended solids (mg/L)	35	3.87	<1.0	26	4.74
Turbidity (NTU)	36	2.29	<1.0	9.5	2.17

WHI0048B
CROOKED CREEK 2 MILES SOUTH OF FLIPPIN

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	11	11.13	9.8	13.1	1.15
BOD_5 (mg/L)	12	0.81	0.28	2	0.44
pH (standard units)	13	8.13	7.8	8.36	0.16
Total Organic Carbon (mg/L)	12	2.46	1.2	3.6	0.76
Ammonia as N (mg/L)	13	0.01	<0.005	0.04	0.01
NO_2+NO_3 as N (mg/L)	12	1.55	0.534	2.7	0.54
Orthophosphate as P (mg/L)	13	0.01	<0.005	0.028	0.01
Total phosphorus as P (mg/L)	13	0.02	0.01	0.05	0.01
Total hardness (mg/L)	5	172.80	162	183	7.82
Chloride (mg/L)	13	6.45	3.94	10.06	1.82
Sulfate (mg/L)	13	6.49	4.85	7.85	0.87
Total dissolved solids (mg/L)	12	195.58	163	215	14.87
Total suspended solids (mg/L)	12	5.40	<1.0	26.5	8.64
Turbidity (NTU)	13	4.75	1	19	5.19

WHI0048C
CROOKED CREEK AT HWY 101 2 MI. N OF REA VALLEY (AKA UWCKC02)

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	11	10.75	6.7	12.7	1.84
BOD_5 (mg/L)	12	1.64	0.41	3.26	0.95
pH (standard units)	13	8.12	7.65	8.55	0.28
Total Organic Carbon (mg/L)	12	4.04	1.6	8.223	1.94
Ammonia as N (mg/L)	13	0.01	<0.005	0.036	0.01
NO_2+NO_3 as N (mg/L)	12	1.37	0.02	2.61	0.76
Orthophosphate as P (mg/L)	13	0.01	<0.005	0.03	0.01
Total phosphorus as P (mg/L)	13	0.04	0.01	0.083	0.02
Total hardness (mg/L)	6	160.67	138	188	16.68
Chloride (mg/L)	13	5.66	3.89	8.37	1.56
Sulfate (mg/L)	13	6.91	4.5	14.17	2.41
Total dissolved solids (mg/L)	12	192.54	165.5	214	17.00
Total suspended solids (mg/L)	12	5.31	<1.0	19	5.64
Turbidity (NTU)	13	4.08	<1.0	12	3.21

WHI0066
CROOKED CREEK DOWNSTREAM OF HARRISON AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	10.40	7.1	15.2	2.06
BOD_5 (mg/L)	38	0.87	0.14	3.46	0.68
pH (standard units)	37	7.51	6.2	8.13	0.39
Total Organic Carbon (mg/L)	34	2.39	1.36	5.3	0.77
Ammonia as N (mg/L)	39	0.05	<0.005	0.462	0.08
NO_2+NO_3 as N (mg/L)	39	2.83	1.21	5.08	0.78
Orthophosphate as P (mg/L)	39	0.22	0.027	0.542	0.13
Total phosphorus as P (mg/L)	35	0.23	0.045	0.564	0.14
Total hardness (mg/L)	18	152.25	<1.0	196	44.01
Chloride (mg/L)	39	16.33	6.83	29	5.90
Sulfate (mg/L)	39	12.90	6.02	21.7	4.73
Total dissolved solids (mg/L)	39	226.72	162.5	269	28.53
Total suspended solids (mg/L)	39	4.97	<1.0	25.5	5.54
Turbidity (NTU)	37	6.90	<1.0	53	11.23

WHI0067
CROOKED CREEK UPSTREAM OF HARRISON AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	9.71	6.6	14	1.64
BOD_5 (mg/L)	38	0.71	0.05	2.76	0.61
pH (standard units)	37	7.16	5.65	7.88	0.41
Total Organic Carbon (mg/L)	34	1.90	1.03	4.9	0.88
Ammonia as N (mg/L)	39	0.03	<0.005	0.123	0.03
NO_2+NO_3 as N (mg/L)	39	1.66	1.071	2.334	0.32
Orthophosphate as P (mg/L)	39	0.02	<0.005	0.1	0.02
Total phosphorus as P (mg/L)	35	0.04	0.01	0.167	0.04
Total hardness (mg/L)	18	161.61	108	207	23.41
Chloride (mg/L)	39	7.25	4.63	10.73	1.38
Sulfate (mg/L)	39	5.96	4.8	8.28	0.89
Total dissolved solids (mg/L)	39	201.49	154	229.5	19.74
Total suspended solids (mg/L)	39	5.27	<1.0	23.5	5.33
Turbidity (NTU)	37	6.92	1	51	11.39

SEGMENT 4J - BUFFALO RIVER AND TRIBUTARIES
(WHITE RIVER BASIN)

Segment 4J includes portions of Newton, Searcy and Marion counties in north central Arkansas. This segment contains the entire 113-mile length of the Buffalo River and its major tributaries - Big Creek, Little Buffalo, Richland Creek, Water Creek, Bear Creek and others.

SUMMARY OF WATER QUALITY CONDITIONS

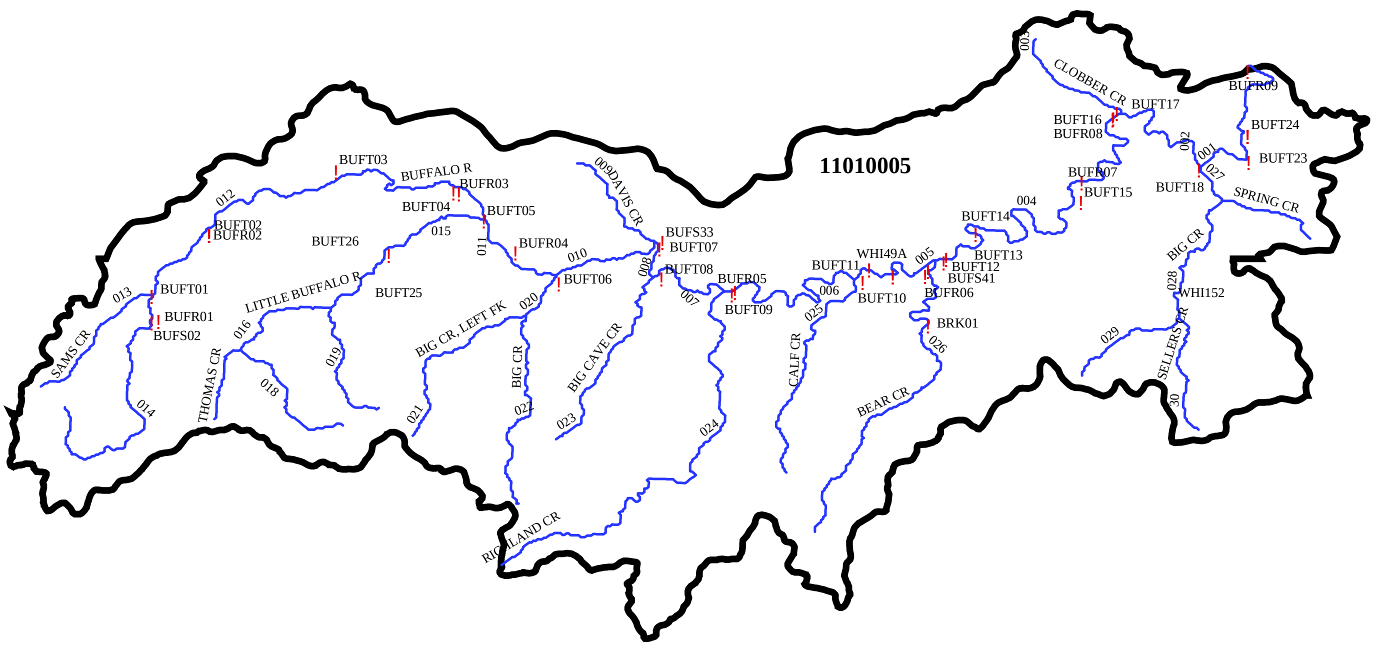
Designated uses of waters in this segment include propagation of fish and wildlife, primary and secondary contact recreation, domestic, agricultural and industrial water supplies. Almost 48 percent are also designated as outstanding state or national resource waters. Only one routine monitoring station 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. Although nutrient values are low in the Buffalo River, nitrite/nitrate-nitrogen values show an increase in a downstream direction. The most significant increases were noted below Boxley Valley and below Mill Creek (between Pruitt and Hastey). Of the 20 tributary sites, highest nitrite/nitrate-nitrogen concentrations were found in Mill Creek, Calf Creek, Brush Creek and Tomahawk Creek.

The mean nitrate values on the main stem of the Buffalo River during 1995-1998 is compared to the mean nitrate values for 1999-2001 in Figure A-4J-1. An increase in the mean nitrate concentration is indicated at most all stations except the uppermost station and two of the lower stations. The stations near Ponca and Gilbert showed the greatest increase. Nitrate concentrations in the main channel of the Buffalo National River are, on average, two thirds lower than those seen in the tributaries.

A similar comparison was made among the tributary streams and is shown in Figure A-4J-1. Mill (Pruitt), Brush and Tomahawk Creeks show highest mean nitrate values. Mill Creek, Davis Creek, Clabber Creek and Big Creek (lower) showed the greatest increase in nitrates since the 1995-1998 data set.

Nitrate values in the springs sampled were about three times higher than in the main channel of the Buffalo River.

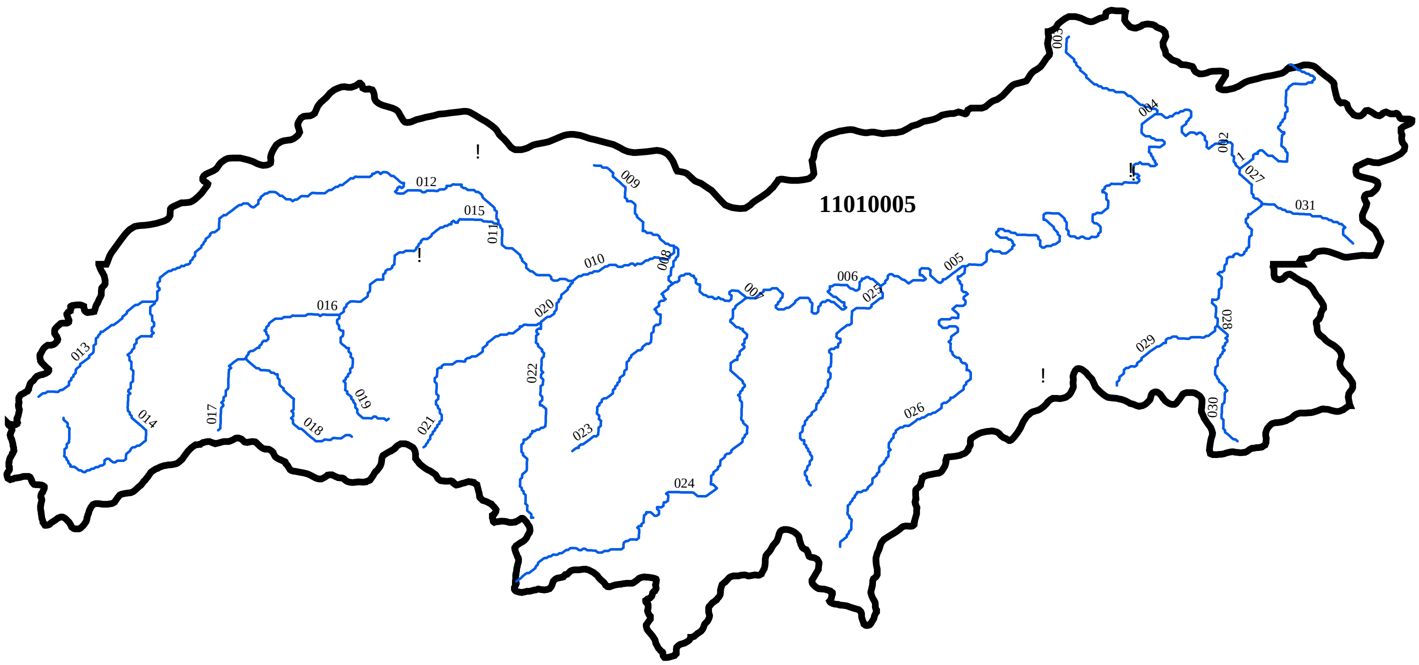
Planning Segment 4J - Monitoring Stations

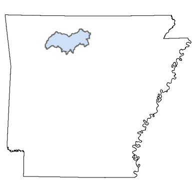


Use Not Supported

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
Seg 4J																			
Buffalo River	11010005	-001	11.3	BUFR09	M	S	S	S	S	S	S					1	FISH CONSUMPTION	308.1	0
Buffalo River	11010005	-002	8.7		M	S	S	S	S	S	S					1	AQUATIC LIFE	308.1	0
Clabber Creek	11010005	-003	7.3	BUFT17	M	S	S	S	S	S	S					1	PRIMARY CONTACT	308.1	0
Buffalo River	11010005	-004	27.8	BUFR07&08	M	S	S	S	S	S	S					1	SECONDARY CONTACT	308.1	0
Buffalo River	11010005	-005	6.9	WHI49A	M	S	S	S	S	S	S					1	DRINKING SUPPLY	308.1	0
Buffalo River	11010005	-006	13.7		M	S	S	S	S	S	S					1	AGRI & INDUSTRY	308.1	0
Buffalo River	11010005	-007	5.9	BUFR05	M	S	S	S	S	S	S					1			
Buffalo River	11010005	-008	2.6		M	S	S	S	S	S	S					1			
Davis Creek	11010005	-009	7.3	BUFT07	M	S	S	S	S	S	S					1			
Buffalo River	11010005	-010	6.2		M	S	S	S	S	S	S					1			
Buffalo River	11010005	-011	6	BUFR04	M	S	S	S	S	S	S					1			
Buffalo River	11010005	-012	25.8	BUFR02&03	M	S	S	S	S	S	S					1			
Sams Creek	11010005	-013	9		U											3			
Buffalo River	11010005	-014	18.2	BUFR01	M	S	S	S	S	S	S					1			
Little Buffalo	11010005	-015	11.6	BUFT05	M	S	S	S	S	S	S					1			
Little Buffalo	11010005	-016	6.6		E	S	S	S	S	S	S					1			
Thomas Creek	11010005	-017	5.2		U											3			
East Fork	11010005	-018	8.9		U											3			
Shop Creek	11010005	-019	8.6		U											3			
Big Creek	11010005	-020	3.2	BUFT06	M	S	S	S	S	S	S					1			
Big Creek Left Fk.	11010005	-021	11.7		E	S	S	S	S	S	S					1			
Big Creek	11010005	-022	13.7		E	S	S	S	S	S	S					1			
Big Cave Cr.	11010005	-023	13	BUFT08	M	S	S	S	S	S	S					1			
Richland Creek	11010005	-024	28.7	BUFT09	M	S	S	S	S	S	S					1			
Calf Creek	11010005	-025	15	BUFT10	M	S	S	S	S	S	S					1			
Bear Creek	11010005	-026	23.9	BRK01,+	M	S	S	S	S	S	S					1			
Big Creek	11010005	-027	2.6	BUFT18	M	S	S	S	S	S	S					1			
Big Creek	11010005	-028	9.4	WHI152	M	S	S	S	S	S	S					1			
Big Creek	11010005	-029	7.1		E	S	S	S	S	S	S					1			
Sellers Creek	11010005	-030	8.1		E	S	S	S	S	S	S					1			
Spring Creek	11010005	-031	5.8		E	S	S	S	S	S	S					1			
TOTAL MILES	339.8																		
MILES UNASSESSED	31.7																		
MILES EVALUATED	53																		
MILES MONITORED	255.1																		

Planning Segment 4J - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0034011	MARSHALL, CITY OF	FOREST CR,BEAR CR,BUFFALO R	11010005	4J
AR0034088	MARBLE FALLS SID #1-DOGPATCH	TRIB, MILL CK	11010005	4J
AR0034584	JASPER, CITY OF	L' BUFFALO RV/BUFFALO RV/WHITE RV	11010005	4J
AR0034941	USDINPS-BUFFALO NATL RIVER-BUF	BUFFALO RV	11010005	4J
AR0034959	USDINPS-BUFFALO NATL RIVER-BUF	PANTHER CK,BUFFALO RV	11010005	4J

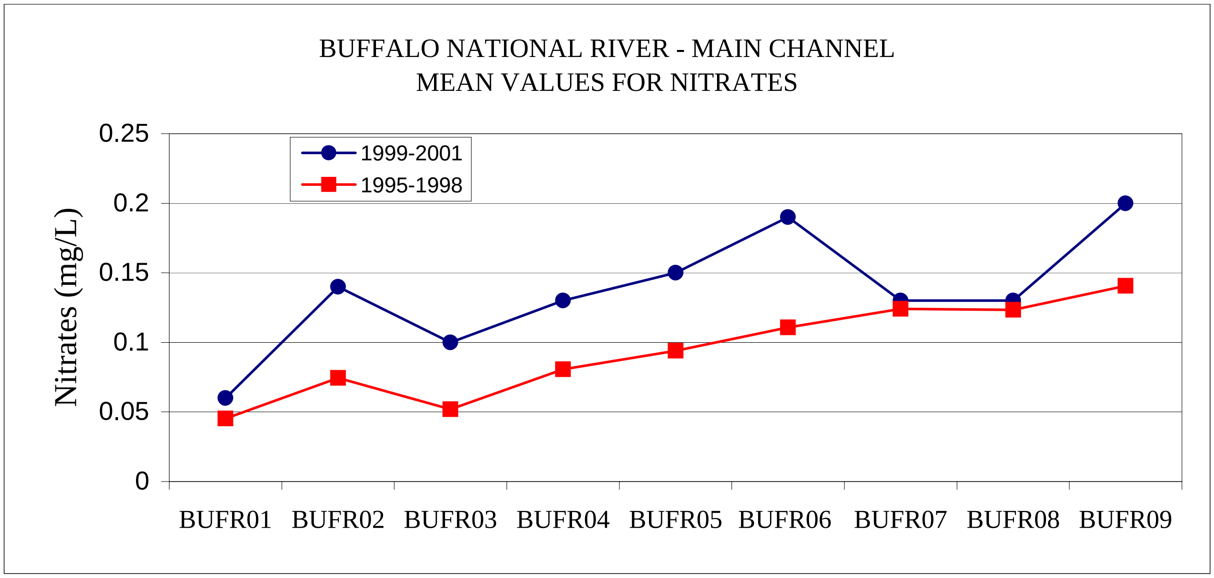
WHI0049A
BUFFALO RIVER NEAR ST JOE AR

Parameter	Valid Data Points	Average	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	33	8.02	4.83	12	2.17
BOD_5 (mg/L)	36	0.50	0.04	1.77	0.33
pH (standard units)	34	7.61	6.87	8.36	0.38
Total Organic Carbon (mg/L)	35	1.83	<1.0	3.829	0.77
Ammonia as N (mg/L)	37	0.01	<0.005	0.037	0.01
NO_2+NO_3 as N (mg/L)	38	0.18	<0.01	0.95	0.22
Orthophosphate as P (mg/L)	37	0.01	<0.005	0.041	0.01
Total phosphorus as P (mg/L)	34	0.02	0.01	0.085	0.02
Total hardness (mg/L)	19	98.47	67	134	20.44
Chloride (mg/L)	38	2.49	1.37	3.75	0.54
Sulfate (mg/L)	37	5.18	3.82	6.64	0.65
Total dissolved solids (mg/L)	38	118.53	86.5	151	21.23
Total suspended solids (mg/L)	37	2.79	<1.0	22.5	4.71
Turbidity (NTU)	37	3.68	<1.0	27	5.96

FIGURE A-4J-1

BUFFALO NATIONAL RIVER

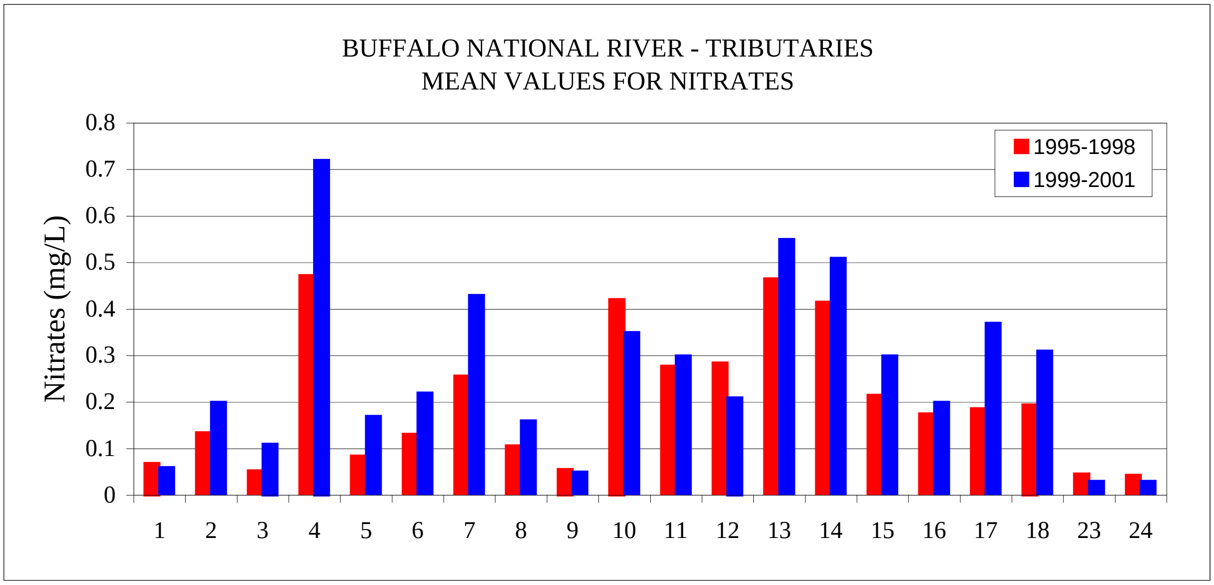
MEAN VALUES FOR NITRATES



LEGEND

BUFR01 - Above Boxley
BUFR02 - Ponca
BUFR03 - Pruitt
BUFR04 - Hastey
BUFR05 - Woolum

BUFR06 - Gilbert
BUFR07 - Ark. Hwy. 14
BUFR08 - Rush
BUFR09 - Mouth of River



LEGEND

1 - Beech Creek
2 - Ponca Creek
3 - Cecil Creek
4 - Mill Creek (Pruitt)
5 - Little Buffalo

6 - Big Creek (S. Hasty)
7 - Davis Creek
8 - Cave Creek
9 - Richland Creek
10 - Calf Creek

11 - Mill Creek (St. Joe)
12 - Bear Creek
13 - Brush Creek
14 - Tomahawk Creek
15 - Water Creek

16 - Rush Creek
17 - Clabber Creek
18 - Big Creek (lower)
23 - Middle Creek
24 - Leatherwood Creek

SEGMENT 4K - UPPER WHITE RIVER AND KINGS RIVER
(WHITE RIVER BASIN)

Segment 4K includes portions of Washington, Benton, Madison and Carroll counties in northwest Arkansas. This segment encompasses a 66-mile reach of the White River and its tributaries and an 85-mile reach of the Kings River and its tributaries. It also includes Long Creek and Yocum Creek.

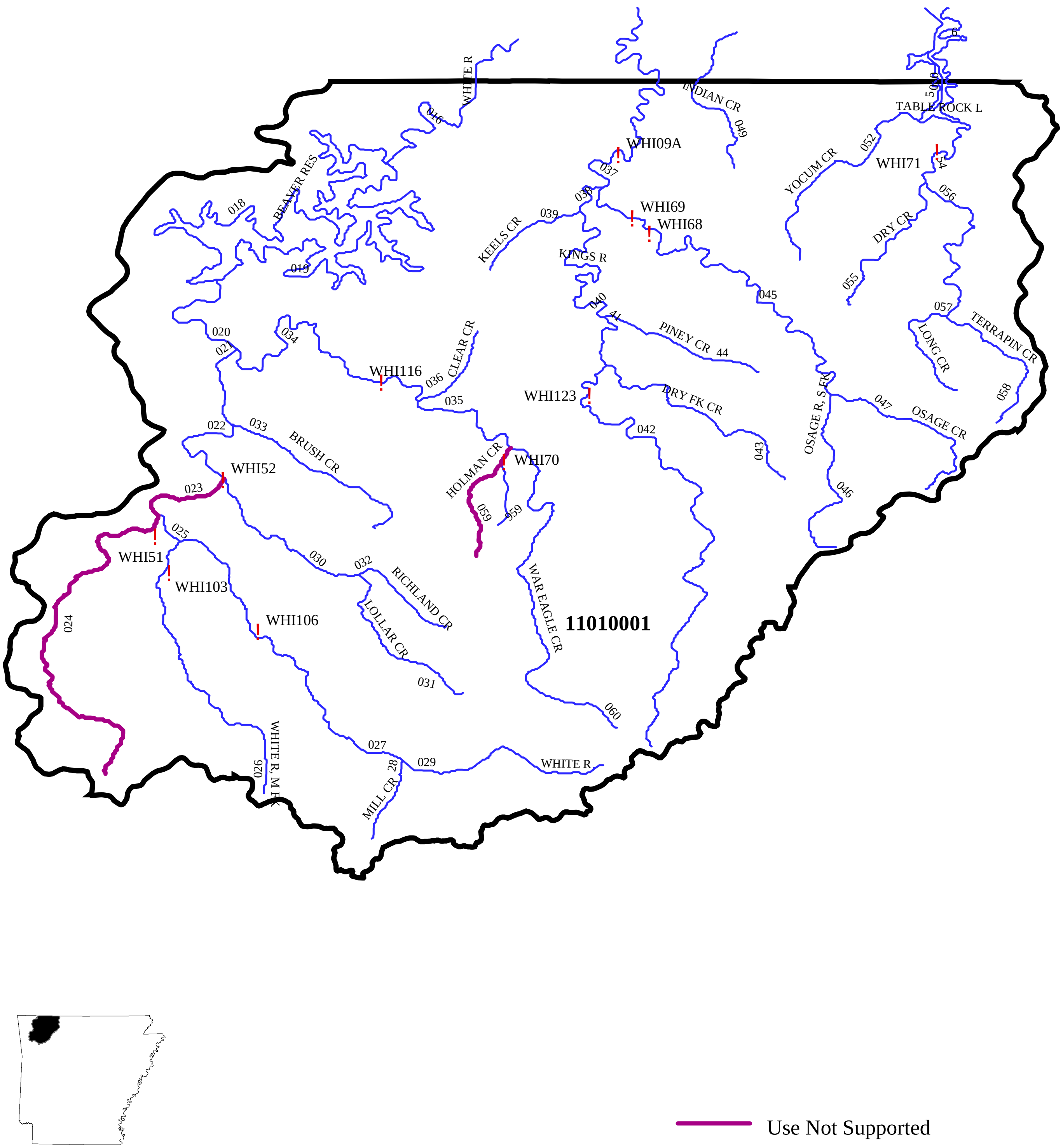
SUMMARY OF WATER QUALITY CONDITIONS IN SEGMENT 4K

All waters within this segment are designated for propagation of fish and wildlife, primary and secondary contact recreation, domestic, agricultural and industrial water supplies. Also, about 20 percent of these waters are designated as outstanding state or national resource waters. A total of 208 miles of streams were monitored for use support utilizing data from 11 routine monitoring stations. An additional 193.3 miles were evaluated. Aquatic life use was assessed as not supported in 33.4 miles of the West Fork of the White River. The major cause was high turbidity levels and excessive silt loads. A comparison of the monthly turbidity values in the West Fork with the other two forks of the upper White River is shown in Figure A-4K-1. The West Fork consistently has the highest values. The probable sources are: (1) agriculture land clearing; (2) road construction and maintenance; and (3) gravel removal from stream beds.

A point source discharge to Holman Creek has impaired the drinking water use of the lower section of this stream by discharges of excessive levels of nitrates. A TMDL has been completed for this stream segment for nitrates.

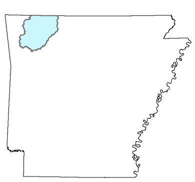
Figure A-4K-2 is a plot of the nitrite + nitrate nitrogen and the total phosphorus in Osage Creek above and below a point source discharge. Nitrate values are somewhat similar, however phosphorus values are substantially higher below the discharge. Additionally in Figure A-4K-3, plots of total phosphorus in Osage Creek and in the Kings River below the confluence of Osage Creek demonstrate that the high phosphorus values in Osage Creek influences the phosphorus levels in Kings River, primarily during the low run-off periods.

Planning Segment 4K - Monitoring Stations



STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-4K																			
White River	11010001	-016	2.4		U											3	FISH CONSUMPTION	401.3	0
White River	11010001	-020	9.8		U											3	AQUATIC LIFE	367.9	33.4
White River	11010001	-021	6.1		U											3	PRIMARY CONTACT	296.6	0
White River	11010001	-022	8.3		U											3	SECONDARY CONTACT	401.3	0
White River	11010001	-023	6.2	WHI52	M	S	N	S	S	S	S	RC	AG	SI		5	DRINKING SUPPLY	392.2	9.1
West Fork	11010001	-024	27.2	WHI51	M	S	N	S	S	S	S	RC	AG	SI		5	AGRI & INDUSTRY	401.3	0
White River	11010001	-025	2.4		U											3			
Middle Fork	11010001	-026	21.9	WHI103	M	S	S	S	S	S	S					1			
White River	11010001	-027	23.8	WHI106	M	S	S	S	S	S	S					1			
Mill Creek	11010001	-028	6.1		U											3			
White River	11010001	-029	13.5		E	S	S	S	S	S	S					1			
Richland Cr.	11010001	-030	12.1		E	S	S	S	S	S	S					1			
Lollar Creek	11010001	-031	12.5		U											3			
Richland Cr.	11010001	-032	7.1		U											3			
Brush Creek	11010001	-033	13.5		E	S	S		S	S	S					2			
War Eagle Cr.	11010001	-034	22.2	WHI116	M	S	S	S	S	S	S					1			
War Eagle Cr.	11010001	-035	8.6		E	S	S	S	S	S	S					1			
Clear Creek	11010001	-036	6.7		U											3			
Kings River	11010001	-037	19.1	WHI09A	M	S	S	S	S	S	S					1			
Kings River	11010001	-038	3.4		E	S	S	S	S	S	S					1			
Kings River	11010001	-040	17.9		E	S	S	S	S	S	S					1			
Kings River	11010001	-041	4.8		E	S	S	S	S	S	S					1			
Kings River	11010001	-042	39.5	WHI123	M	S	S	S	S	S	S					1			
Keels Creek	11010001	-039	7.3		U											3			
Dry Fork	11010001	-043	16.5		E	S	S		S	S	S					2			
Piney Creek	11010001	-044	10.2		E	S	S		S	S	S					2			
Osage Creek	11010001	045U	25.6	WHI68	M	S	S	S	S	S	S					1			
Osage Creek	11010001	045L	5	WHI69	M	S	S	S	S	S	S					1			
South Fork	11010001	-046	13.8		U											3			
Osage Creek	11010001	-047	13.4		E	S	S		S	S	S					2			
Yocum Creek	11010001	-052	16.2		E	S	S		S	S	S					2			
Long Creek	11010001	-054	8.4	WHI71	M	S	S	S	S	S	S					1			
Dry Creek	11010001	-055	12		E	S	S		S	S	S					2			
Long Creek	11010001	-056	14.3		E	S	S		S	S	S					2			
Long Creek	11010001	-057	8.6		E	S	S		S	S	S					2			
Terrapin Cr.	11010001	-058	11.2		U											3			
Holman Creek	11010001	-059	9.1	WHI70	M	S	S	S	S	N	S	MP		NU		4A			
War Eagle Cr.	11010001	-060	28.3		E	S	S	S	S	S	S					1			
TOTAL MILES	495																		
MILES UNASSESSED	93.7																		
MILES EVALUATED	193.3																		
MILES MONITORED	208																		

Planning Segment 4K - NPDES Permitted Facilities



Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0020010	FAYETTEVILLE, CITY OF	W FK WHITE RV (1) & MUD CK-AR RV(2)	11010001	4K
AR0021741	GREEN FOREST, CITY OF	TRIB,DRY CK,LONG CK	11010001	4K
AR0021792	BERRYVILLE, CITY OF	FREEMAN BR,OSAGE CK,KINGS RV	11010001	4K
AR0021865	EUREKA SPRINGS, CITY OF	LEATHERWOOD CK	11010001	4K
AR0022004	HUNTSVILLE, CITY OF	TOWN BRANCH/HOLMAN CK/WAR EAGLE CK	11010001	4K
AR0022373	WEST FORK, CITY OF	W FK WHITE RV	11010001	4K
AR0033197	HERITAGE BAY HOMEOWNERS ASSN	BEAVER LK	11010001	4K
AR0036676	LOST BRIDGE VILLAGE W&S DIST	BEAVER LAKE	11010001	4K
AR0037249	HOLIDAY ISLAND SID	TABLE ROCK LK	11010001	4K
AR0037320	BEAVER LODGE, INC	MONTE NE COVE-BEAVER LK	11010001	4K
AR0040118	COUNTRY MOUNTAIN INN	TRIB-KEELS CK/KINGS RV	11010001	4K
AR0044059	CARROLL ELECTRIC COOP CORP	TRIB,CLABBER CK,KING RV	11010001	4K
AR0044300	TEYAR LLC	LEATHERWOOD CK	11010001	4K
AR0045667	APAC-ARKANSAS, INC-WEST FORK	TRIB/W FK/WHITE RV	11010001	4K
AR0047619	CARROLL COUNTY STONE, INC	TRIB, WARDEN BR, OSAGE CK	11010001	4K
AR0048844	OUTDOOR RESORTS OF THE OZARKS	TABLE ROCK RSRV, IMPD, WHITE RV	11010001	4K
AR0049191	CRICKETT CREEK RV ESTATES	TABLE ROCK LK	11010001	4K

WHI0009A
KINGS RIVER N OF BERRYVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	9.55	6.4	13.9	1.96
BOD_5 (mg/L)	38	0.69	0.11	1.76	0.39
pH (standard units)	38	7.66	6.04	8.71	0.54
Total Organic Carbon (mg/L)	35	2.32	1.06	5.45	0.83
Ammonia as N (mg/L)	40	0.02	<0.005	0.206	0.03
NO_2+NO_3 as N (mg/L)	40	0.63	0.033	1.918	0.55
Orthophosphate as P (mg/L)	40	0.38	0.009	2.331	0.45
Total phosphorus as P (mg/L)	36	0.35	0.034	2.35	0.44
Total hardness (mg/L)	18	120.72	97	151	13.89
Chloride (mg/L)	40	9.24	2.21	35.6	7.32
Sulfate (mg/L)	40	7.40	5.35	13.94	1.83
Total dissolved solids (mg/L)	40	162.25	84	297	41.52
Total suspended solids (mg/L)	40	4.25	<1.0	21	4.18
Turbidity (NTU)	37	4.30	<1.0	20	4.44

WHI0051
WEST FORK WHITE RIVER NEAR FAYETTEVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	8.96	5.86	13.82	2.10
BOD_5 (mg/L)	38	0.93	0.1	2.74	0.69
pH (standard units)	35	7.51	6.78	8.84	0.40
Total Organic Carbon (mg/L)	34	2.95	1.14	5.9	1.06
Ammonia as N (mg/L)	39	0.02	<0.005	0.06	0.01
NO_2+NO_3 as N (mg/L)	38	0.69	0.019	2.39	0.56
Orthophosphate as P (mg/L)	39	0.01	<0.005	0.077	0.01
Total phosphorus as P (mg/L)	35	0.04	0.01	0.145	0.03
Total hardness (mg/L)	18	96.33	62	142	22.34
Chloride (mg/L)	38	4.90	2.55	12.56	1.85
Sulfate (mg/L)	39	33.96	12.77	66.53	12.94
Total dissolved solids (mg/L)	38	145.41	85.5	203	34.86
Total suspended solids (mg/L)	39	15.23	<1.0	49.5	12.44
Turbidity (NTU)	37	17.98	1.4	74	15.25

WHI0052
WHITE RIVER NEAR GOSHEN AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	31	8.94	6	12.2	1.93
BOD_5 (mg/L)	32	1.29	0.26	5.33	0.92
pH (standard units)	32	7.04	5.97	7.58	0.41
Total Organic Carbon (mg/L)	30	3.22	1.31	7.11	1.44
Ammonia as N (mg/L)	33	0.04	<0.005	0.26	0.05
NO_2+NO_3 as N (mg/L)	33	1.38	0.021	4.86	1.16
Orthophosphate as P (mg/L)	33	0.04	<0.005	0.34	0.07
Total phosphorus as P (mg/L)	29	0.08	0.01	0.387	0.07
Total hardness (mg/L)	15	67.60	38	122	25.68
Chloride (mg/L)	33	12.23	2.76	59.1	16.47
Sulfate (mg/L)	33	31.11	9.58	110.48	29.29
Total dissolved solids (mg/L)	33	147.59	70	427	97.29
Total suspended solids (mg/L)	32	13.19	2.5	40.5	8.21
Turbidity (NTU)	32	14.80	1.8	69	13.70

WHI0068
OSAGE CREEK UPSTREAM OF BERRYVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	9.42	5.4	14.7	2.40
BOD_5 (mg/L)	38	0.79	0.06	2.56	0.52
pH (standard units)	37	7.44	5.49	8.46	0.56
Total Organic Carbon (mg/L)	34	2.48	1.32	3.9	0.65
Ammonia as N (mg/L)	39	0.02	<0.005	0.098	0.02
NO_2+NO_3 as N (mg/L)	39	0.88	0.065	3.418	0.81
Orthophosphate as P (mg/L)	39	0.03	<0.005	0.145	0.03
Total phosphorus as P (mg/L)	35	0.04	0.01	0.21	0.04
Total hardness (mg/L)	18	138.22	92	192	28.06
Chloride (mg/L)	39	5.39	3.12	8.08	1.26
Sulfate (mg/L)	39	8.16	5.56	12.68	1.85
Total dissolved solids (mg/L)	39	160.72	108.5	212	27.31
Total suspended solids (mg/L)	39	3.66	<1.0	17.8	3.45
Turbidity (NTU)	37	4.33	<1.0	18	4.10

WHI0069
OSAGE CREEK DOWNSTREAM OF BERRYVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	30	8.75	4.8	14.8	2.75
BOD_5 (mg/L)	31	0.79	0.04	1.87	0.37
pH (standard units)	29	7.63	6.43	8.67	0.51
Total Organic Carbon (mg/L)	29	3.33	1.44	6.664	1.28
Ammonia as N (mg/L)	31	0.02	<0.005	0.074	0.02
NO_2+NO_3 as N (mg/L)	31	1.35	0.21	3.861	0.87
Orthophosphate as P (mg/L)	31	2.04	0.076	8.07	2.30
Total phosphorus as P (mg/L)	27	1.85	0.023	7.8	2.07
Total hardness (mg/L)	14	139.57	109	185	21.72
Chloride (mg/L)	31	26.64	5.07	107	25.48
Sulfate (mg/L)	31	13.57	6.6	41	6.34
Total dissolved solids (mg/L)	31	266.35	129	644.5	122.43
Total suspended solids (mg/L)	31	3.81	<1.0	8	2.30
Turbidity (NTU)	30	3.17	<1.0	8.2	1.70

WHI0070
HOLMAN CREEK DOWNSTREAM OF HUNTSVILLE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	10.21	7.28	14.5	1.88
BOD_5 (mg/L)	38	0.65	0	1.76	0.37
pH (standard units)	37	7.64	5.9	8.98	0.62
Total Organic Carbon (mg/L)	34	2.88	1.4	4.35	0.72
Ammonia as N (mg/L)	39	0.04	<0.005	0.48	0.08
NO_2+NO_3 as N (mg/L)	39	5.90	0.394	25.3	4.84
Orthophosphate as P (mg/L)	39	1.75	0.12	7.296	1.44
Total phosphorus as P (mg/L)	35	1.65	0.128	6.55	1.38
Total hardness (mg/L)	17	137.00	71	263	43.34
Chloride (mg/L)	38	70.35	8.59	220	49.30
Sulfate (mg/L)	39	18.40	8.68	24	3.92
Total dissolved solids (mg/L)	39	319.95	97	687	147.73
Total suspended solids (mg/L)	39	3.14	<1.0	11.5	2.08
Turbidity (NTU)	37	3.18	<1.0	17	2.91

WHI0071
LONG CREEK DOWNSTREAM OF DENVER AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	10.08	6.8	14	1.89
BOD_5 (mg/L)	38	0.60	0.04	1.84	0.39
pH (standard units)	37	7.66	6.24	8.35	0.44
Total Organic Carbon (mg/L)	34	1.97	1.19	3.53	0.56
Ammonia as N (mg/L)	39	0.01	<0.005	0.032	0.01
NO_2+NO_3 as N (mg/L)	39	1.81	0.572	3.305	0.66
Orthophosphate as P (mg/L)	39	0.29	0.016	0.558	0.16
Total phosphorus as P (mg/L)	35	0.29	0.022	0.537	0.16
Total hardness (mg/L)	18	155.89	119	193	23.47
Chloride (mg/L)	39	12.99	3.72	23.67	5.09
Sulfate (mg/L)	39	9.01	6.51	15.1	1.97
Total dissolved solids (mg/L)	39	205.36	143	240	27.97
Total suspended solids (mg/L)	39	2.86	<1.0	10.5	2.26
Turbidity (NTU)	37	3.24	1.1	15	2.86

WHI0103
MIDDLE FORK WHITE RIVER OFF CO. RD. 2 MI. S.W. OF ELKINS

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	9.63	5.07	13.37	2.01
BOD_5 (mg/L)	38	0.46	0	2.11	0.41
pH (standard units)	35	7.57	6.55	8.93	0.48
Total Organic Carbon (mg/L)	34	1.56	<1.0	3.14	0.60
Ammonia as N (mg/L)	39	0.01	<0.005	0.134	0.02
NO_2+NO_3 as N (mg/L)	37	1.08	0.07	3.781	0.89
Orthophosphate as P (mg/L)	39	0.02	<0.005	0.165	0.03
Total phosphorus as P (mg/L)	35	0.03	0.01	0.214	0.04
Total hardness (mg/L)	18	49.22	34	70	10.23
Chloride (mg/L)	38	3.12	2.23	4.67	0.57
Sulfate (mg/L)	39	7.23	4.48	12.49	2.01
Total dissolved solids (mg/L)	38	75.07	51	99.5	13.45
Total suspended solids (mg/L)	39	2.37	<1.0	34.1	5.44
Turbidity (NTU)	37	4.80	<1.0	26	5.83

WHI0106
WHITE RIVER. OFF CO. RD. @ DURHAM-ADJACENT TO HWY 16

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	9.48	5.33	12.68	1.93
BOD_5 (mg/L)	38	0.57	0	1.44	0.40
pH (standard units)	35	7.42	6.36	8.63	0.55
Total Organic Carbon (mg/L)	34	1.56	<1.0	3.2	0.66
Ammonia as N (mg/L)	39	0.01	<0.005	0.048	0.01
NO_2+NO_3 as N (mg/L)	37	0.64	0.015	2.082	0.52
Orthophosphate as P (mg/L)	39	0.01	<0.005	0.108	0.02
Total phosphorus as P (mg/L)	35	0.02	0.01	0.075	0.02
Total hardness (mg/L)	18	24.50	12	50	10.22
Chloride (mg/L)	38	2.31	1.69	3.09	0.44
Sulfate (mg/L)	39	6.22	3.11	23.36	4.54
Total dissolved solids (mg/L)	38	46.86	28	87	12.37
Total suspended solids (mg/L)	39	3.12	<1.0	18.5	4.04
Turbidity (NTU)	37	6.17	1	26	5.63

WHI0116
WAR EAGLE CREEK AT HWY 45

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	8.79	6	12.9	1.80
BOD_5 (mg/L)	38	0.65	0.13	2.23	0.51
pH (standard units)	37	7.13	5.8	7.84	0.45
Total Organic Carbon (mg/L)	34	2.05	<1.0	4.596	0.81
Ammonia as N (mg/L)	39	0.02	<0.005	0.06	0.02
NO_2+NO_3 as N (mg/L)	39	1.53	0.538	2.89	0.59
Orthophosphate as P (mg/L)	39	0.04	<0.005	0.215	0.04
Total phosphorus as P (mg/L)	35	0.06	0.01	0.24	0.05
Total hardness (mg/L)	18	89.44	53	153	27.50
Chloride (mg/L)	39	9.10	3.4	22.69	4.78
Sulfate (mg/L)	39	6.00	3.77	10.49	1.30
Total dissolved solids (mg/L)	39	123.97	75	179.5	29.29
Total suspended solids (mg/L)	39	7.20	<1.0	99	16.11
Turbidity (NTU)	37	8.27	1.4	57	13.31

WHI0123
KINGS RIVER @ CO. RD. BRIDGE 3 MI. N.E. OF ALABAM

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	38	9.69	7.2	14	1.67
BOD_5 (mg/L)	38	0.64	0	1.64	0.42
pH (standard units)	37	7.41	6.12	8.4	0.42
Total Organic Carbon (mg/L)	34	1.86	1.18	3.637	0.49
Ammonia as N (mg/L)	39	0.01	<0.005	0.031	0.01
NO_2+NO_3 as N (mg/L)	39	0.74	0.239	3.53	0.60
Orthophosphate as P (mg/L)	39	0.01	<0.005	0.084	0.02
Total phosphorus as P (mg/L)	35	0.02	0.01	0.077	0.02
Total hardness (mg/L)	18	89.17	41	157	31.59
Chloride (mg/L)	39	3.57	2.32	7.97	0.97
Sulfate (mg/L)	39	4.95	2.94	7.04	1.08
Total dissolved solids (mg/L)	39	117.32	66	246	35.71
Total suspended solids (mg/L)	39	3.59	<1.0	21.2	3.67
Turbidity (NTU)	37	4.48	1.2	25	5.31

Figure A-4K-1

WHITE RIVER BASIN

Comparison of Turbidity Values in the Forks of the Upper White River

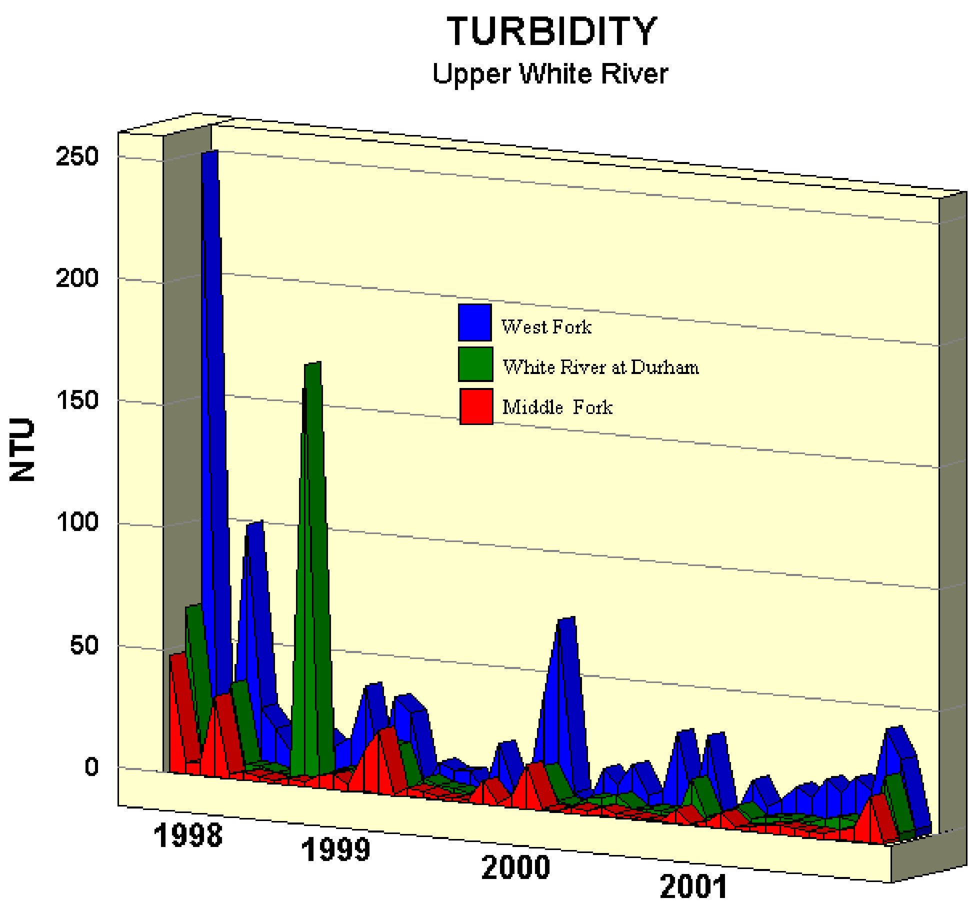
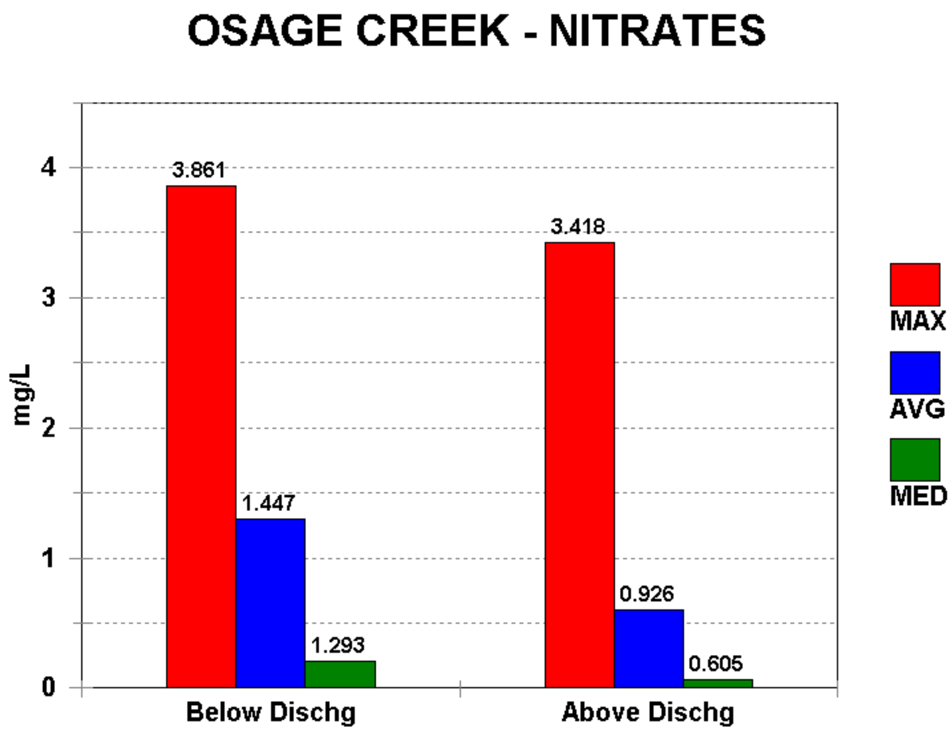


Figure A-4K-2

OSAGE CREEK BASIN

Comparison of Nutrients in Osage Creek Above and Below Discharge



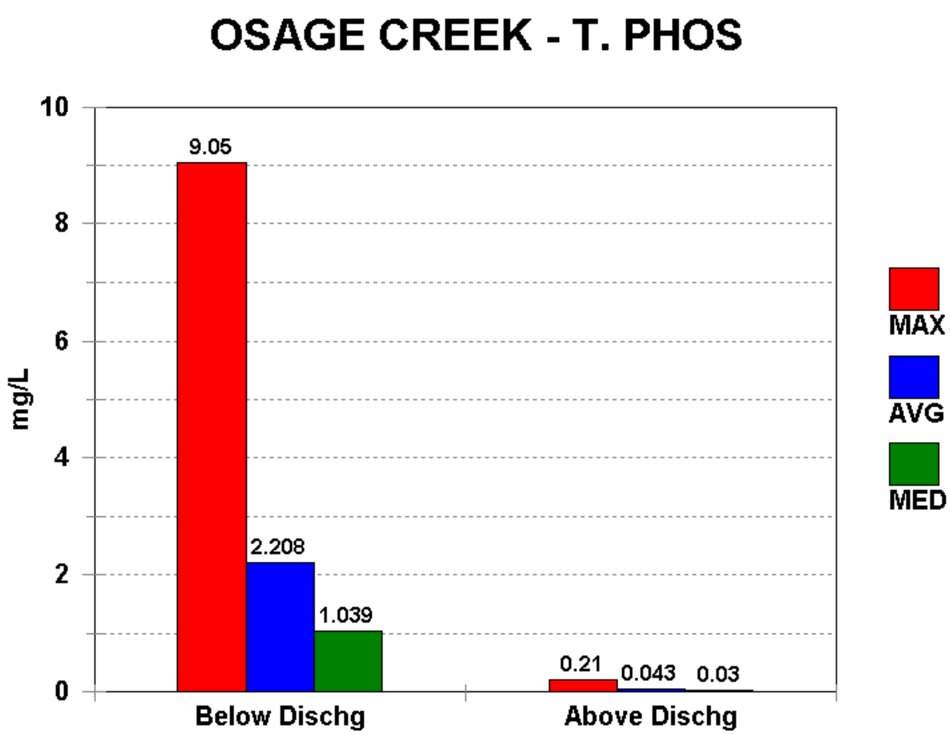
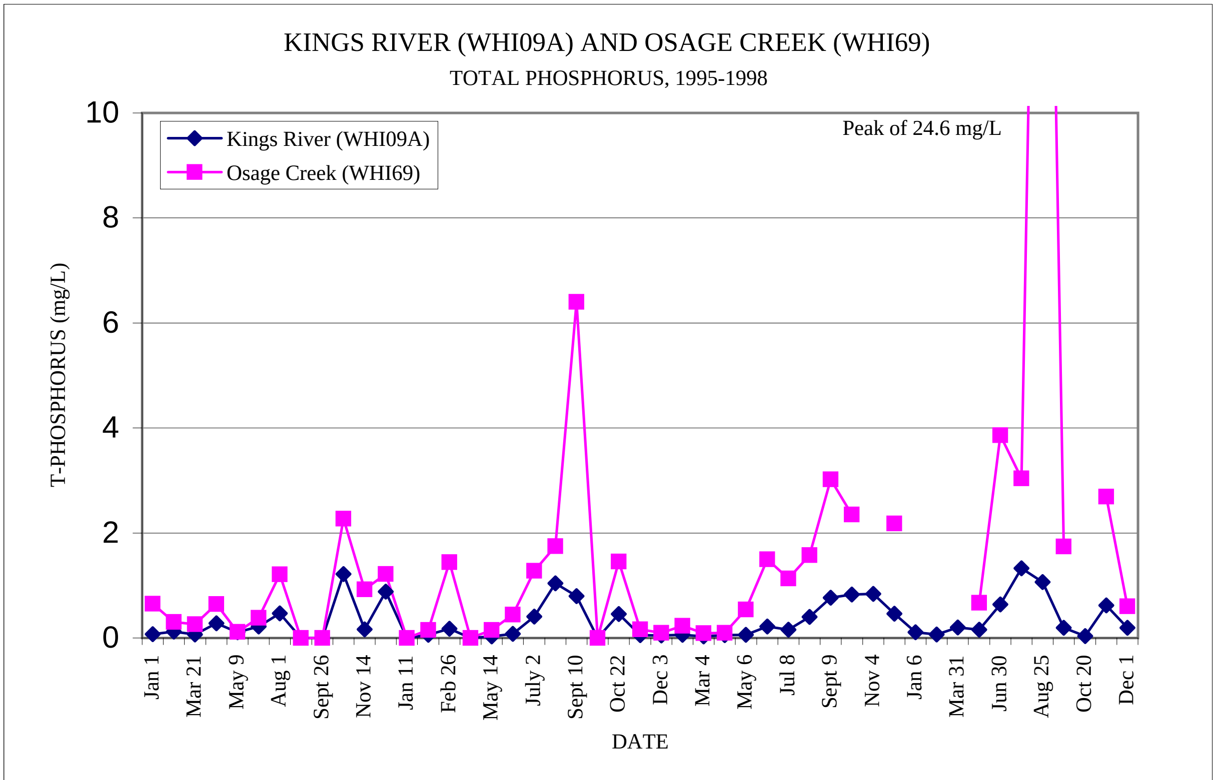
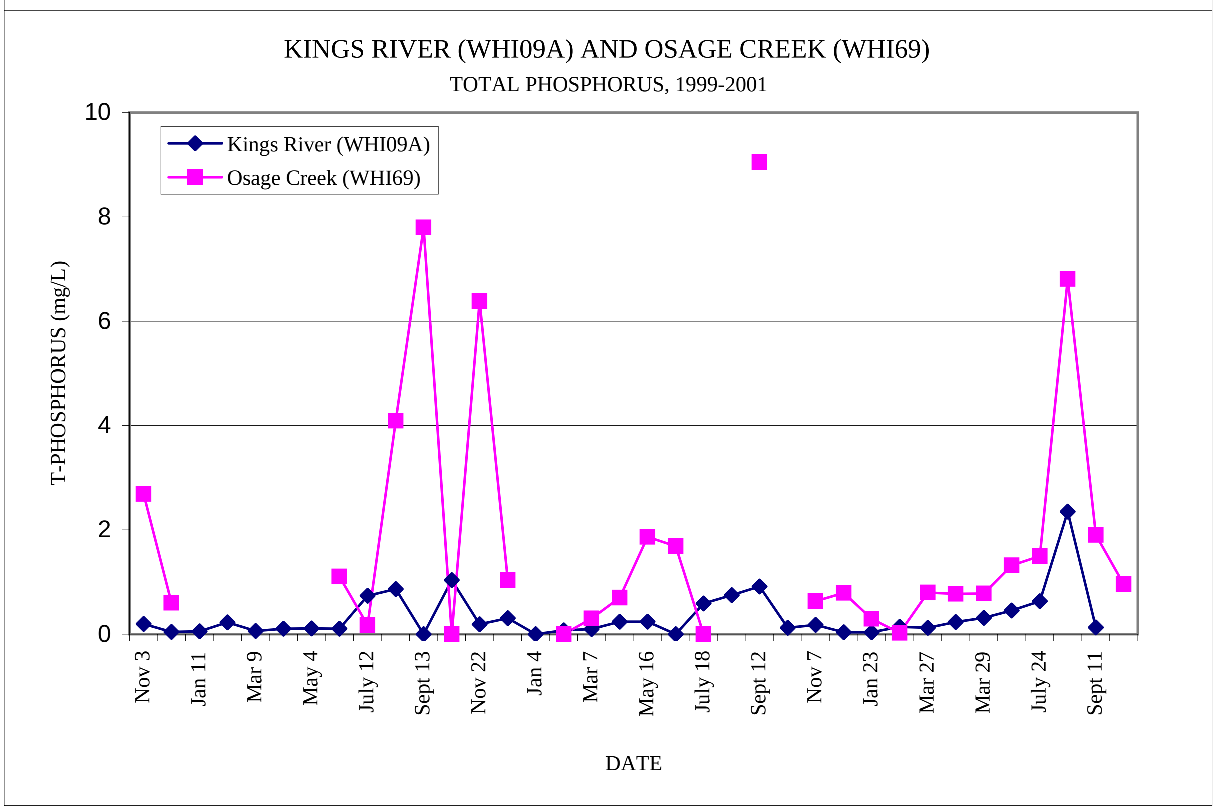


FIGURE A-4K-3
KINGS RIVER AND OSAGE CREEK
TOTAL PHOSPHORUS, 1995-2001





ST. FRANCIS RIVER BASIN

SEGMENTS 5A, 5B, 5C - THE ST. FRANCIS RIVER BASIN
(ST. FRANCIS RIVER BASIN)

Segment 5A is located on the east central edge of Arkansas and covers parts of Crittenden, St. Francis, Lee, Phillips and Cross counties. This segment contains the St. Francis River and its principal tributaries Fifteen Mile Bayou, Blackfish Bayou and Tyronza River.

Segment 5B is located in northeast Arkansas and covers parts of Craighead, Poinsett, Cross, St. Francis and Lee counties. This segment includes the entire 98-mile length of the L'Anguille River. The principal tributaries are Brushy Creek, First Creek, Second Creek and Larkin Creek.

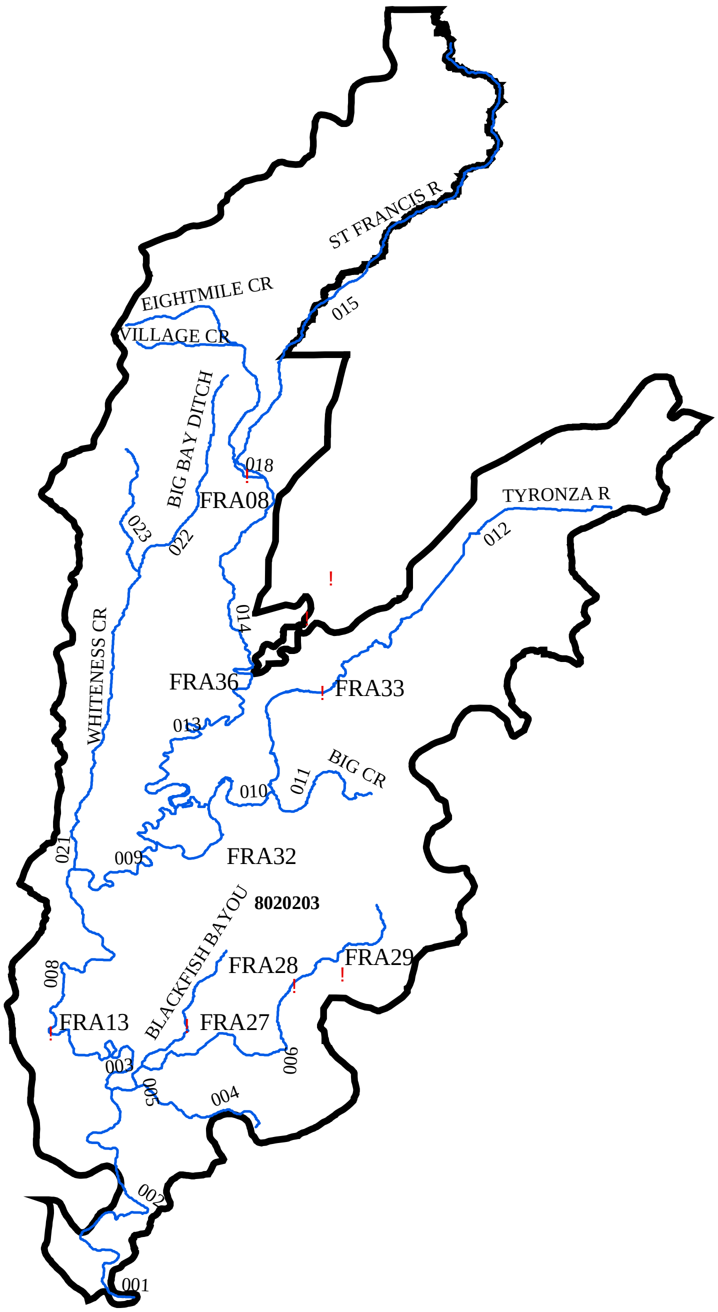
Segment 5C is located in the northeast corner of Arkansas and covers parts of Clay, Greene, Craighead, Mississippi, Poinsett and Cross counties. This segment includes the Little River Basin and Pemiscot Bayou.

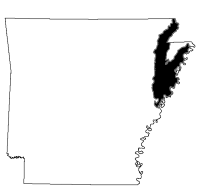
SUMMARY OF WATER QUALITY CONDITIONS IN THE ST. FRANCIS RIVER BASIN

The waters within these segments have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. These three segments are discussed as one unit due to the consistent nature of the water quality. The overriding impact of land use on water quality can be seen in this segment. This basin contains 902.4 stream miles of which approximately 15 percent are designated as outstanding resources. Approximately 61% of the waters within this basin were assessed; 350.1 miles were monitored and 199.5 miles evaluated. The assessment concludes that essentially all of the streams within these segments have high turbidity and silt loads carried into the streams from row crop agriculture activities. This condition was encouraged by the drainage of lowland areas and by ditching and the channelization of streams to facilitate the runoff. The continuation of such activities and the continuous maintenance dredging of the ditches and streams aggravates and further deteriorates the conditions.

Because of the very high levels of turbidity during high flows and consistently elevated values during other flows, the entire length of the L’Anguille River was assessed as not supporting the aquatic life uses. A TMDL has been completed for siltation/turbidity in the L’Anguille River basin.

Planning Segment 5A - Monitoring Stations

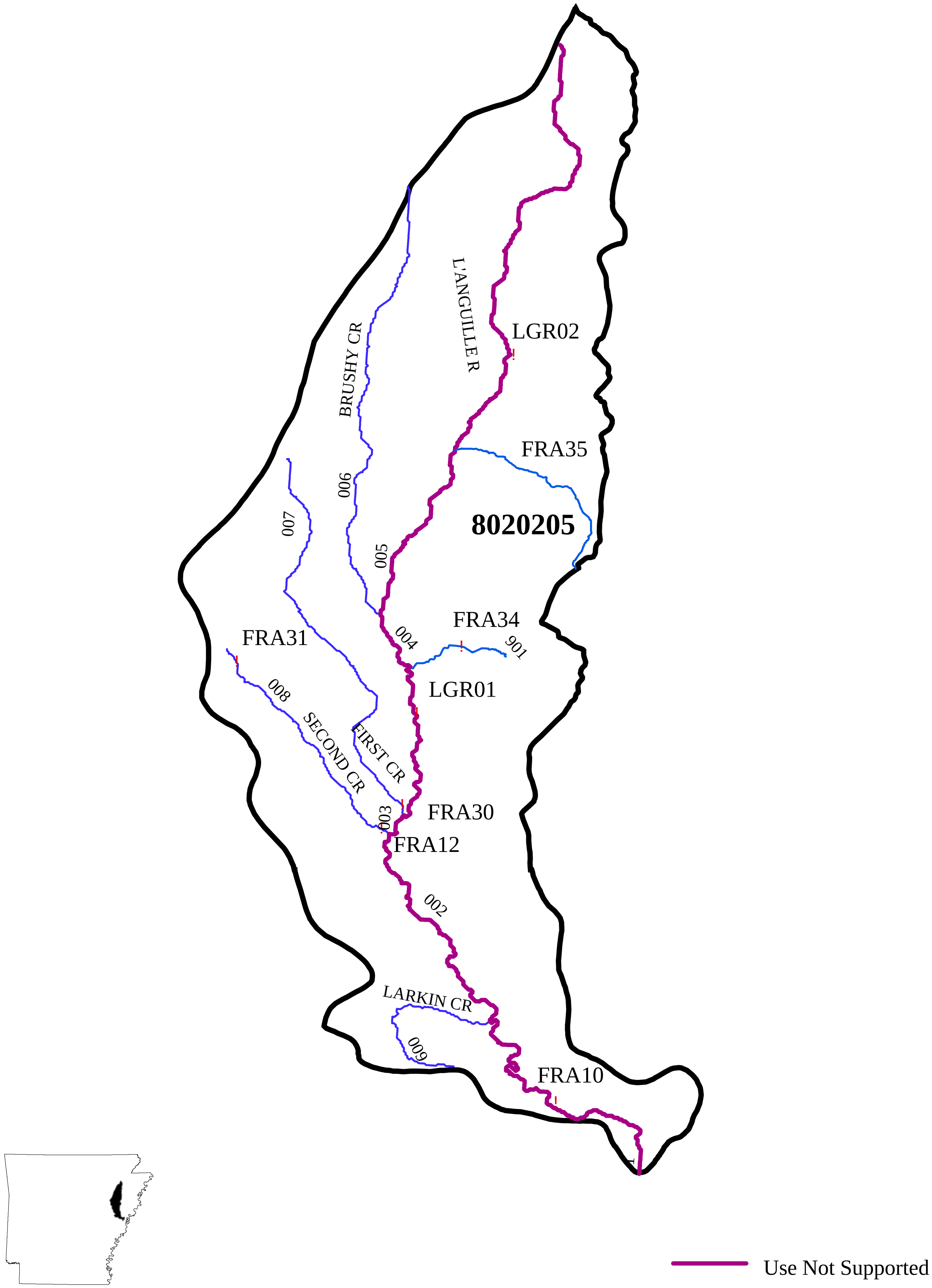




Use Not Supported

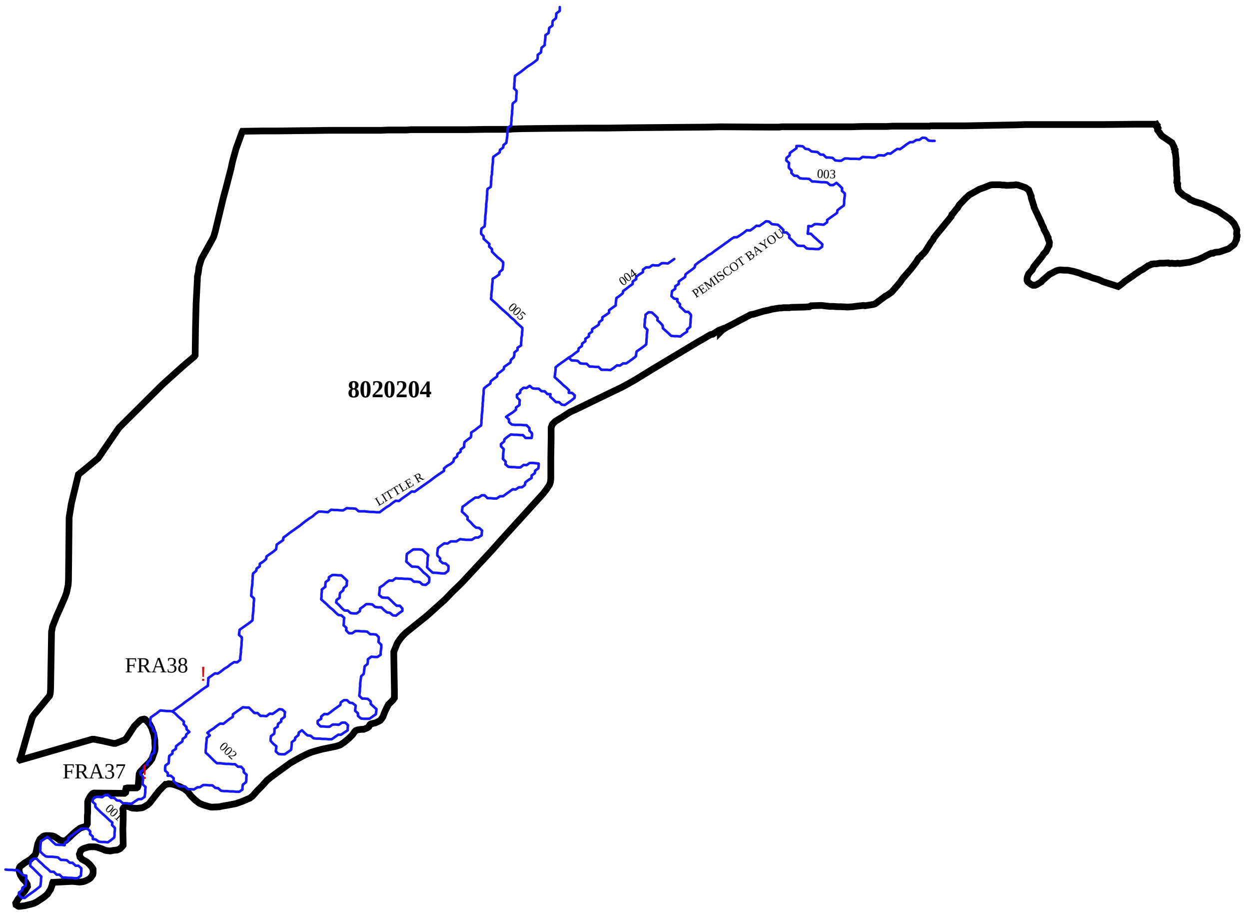
STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-5A																			
St. Francis R.	8020203	-001	11.9		U											3	FISH CONSUMPTION	340.6	0
St. Francis R.	8020203	-002	25.5		E	S	S	S	S	S	S					1	AQUATIC LIFE	340.6	0
Blackfish Bayou	8020203	-003	2.4		U											3	PRIMARY CONTACT	340.6	0
Frenchmans B.	8020203	-004	14.5		U											3	SECONDARY CONTACT	340.6	0
Blackfish Bayou	8020203	-005	2.6		U											3	DRINKING SUPPLY	340.6	0
Fifteen Mile B.	8020203	-006	38.4		U											3	AGRI & INDUSTRY	340.6	0
Blackfish Bayou	8020203	-007	16.1		U											3			
St. Francis R.	8020203	-008	55.9	FRA13	M	S	S	S	S	S	S					1			
St. Francis R.	8020203	-009	17.1		E	S	S	S	S	S	S					1			
Tyronza River	8020203	-010	31	FRA32	M	S	S	S	S	S	S					1			
Big Creek	8020203	-011	15.8		U											3			
Tyronza River	8020203	-012	50	FRA33	M	S	S	S	S	S	S					1			
St. Francis R.	8020203	-013	47.5		E	S	S	S	S	S	S					1			
St. Francis R.	8020203	-014	22.8	FRA08	M	S	S	S	S	S	S					1			
St. Francis R.	8020203	-015	90.8		E	S	S	S	S	S	S					1			
Eightmile Ditch	8020203	-018	17.8		U											3			
Eightmile Ditch	8020203	-019	12.8		U											3			
Village Creek	8020203	-020	9		U											3			
Whiteness Cr.	8020203	-021	33.6		U											3			
Big Boy Creek	8020203	-022	24.2		U											3			
Whiteness Cr.	8020203	-023	15		U											3			
TOTAL MILES	554.7																		
MILES UNASSESSED	214.1																		
MILES EVALUATED	180.9																		
MILES MONITORED	159.7																		

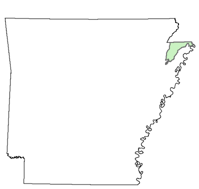
Planning Segment 5B - Monitoring Stations



STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-5B																			
L'Anguille R.	8020205	-001	19.7	FRA10	M	S	N	S	S	S	S	AG		SI		4A	FISH CONSUMPTION	151.7	0
L'Anguille R.	8020205	-002	16.8		E	S	N		S	S	S	AG		SI		4A	AQUATIC LIFE	53.3	98.4
L'Anguille R.	8020205	-003	1.8		E	S	N		S	S	S	AG		SI		4A	PRIMARY CONTACT	133.1	0
Caney Creek	8020205	-901	9	FRA34	M	S	S	S	S	S	S					1			
L'Anguille R.	8020205	-004	16	LGR01	M	S	N	S	S	S	S	AG		SI		4A	SECONDARY CONTACT	151.7	0
L'Anguille R.	8020205	-005	44.1	LGR02	M	S	N	S	S	S	S	AG		SI		4A	DRINKING SUPPLY	151.7	0
Brushy Creek	8020205	-006	30.7		U											3	AGRI & INDUSTRY	151.7	0
First Creek	8020205	-007	27.9	FRA30	M	S	S	S	S	S	S					1			
Second Creek	8020205	-008	16.4	FRA12+	M	S	S	S	S	S	S					1			
Larkin Creek	8020205	-009	12.3		U											3			
TOTAL MILES	194.7																		
MILES UNASSESSED	43																		
MILES EVALUATED	18.6																		
MILES MONITORED	133.1																		

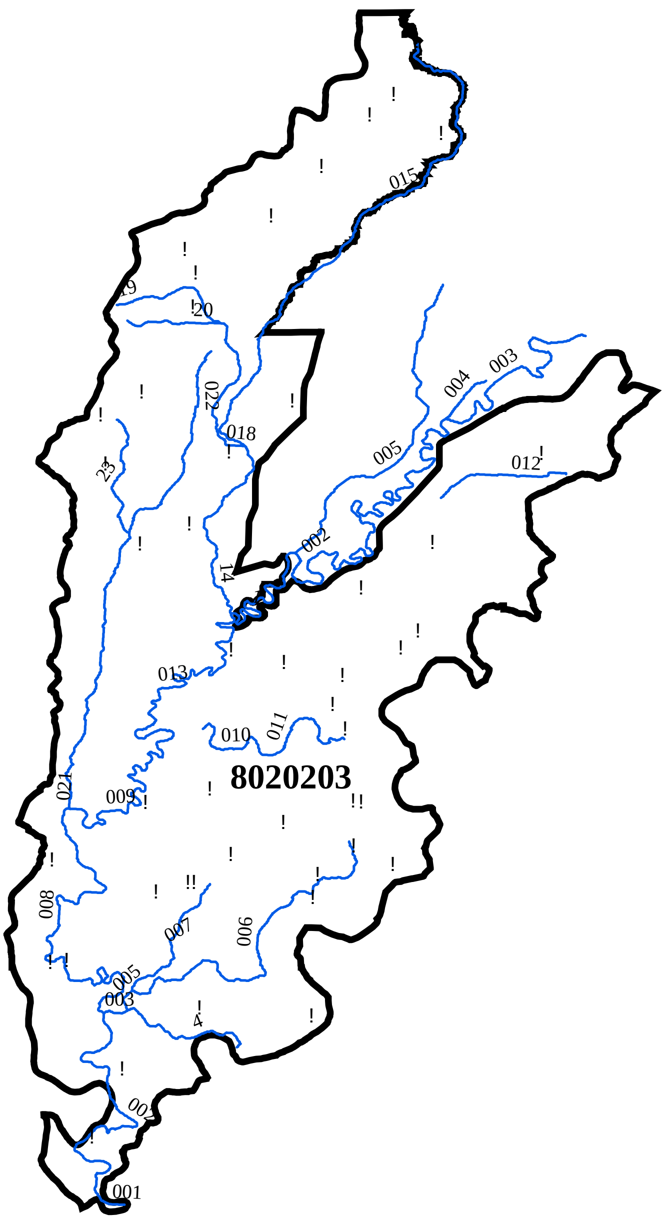
Planning Segment 5C - Monitoring Stations

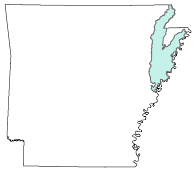




STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-5C																			
Little River Left	8020204	-001	20.3	FRA37	M	S	S	S	S	S	S					1	FISH CONSUMPTION	57.3	0
Little River	8020204	-002	61.7		U											3	AQUATIC LIFE	57.3	0
Pemiscot Bayou	8020204	-003	28		U											3	PRIMARY CONTACT	57.3	0
Little River	8020204	-004	6		U											3	SECONDARY CONTACT	57.3	0
Little River Right	8020204	-005	37	FRA38	M	S	S	S	S	S	S					1	DRINKING SUPPLY	57.3	0
TOTAL MILES	153																AGRI & INDUSTRY	57.3	0
MILES UNASSESSED	95.7																		
MILES EVALUATED	0																		
MILES MONITORED	57.3																		

Planning Segment 5A - NPDES Permitted Facilities





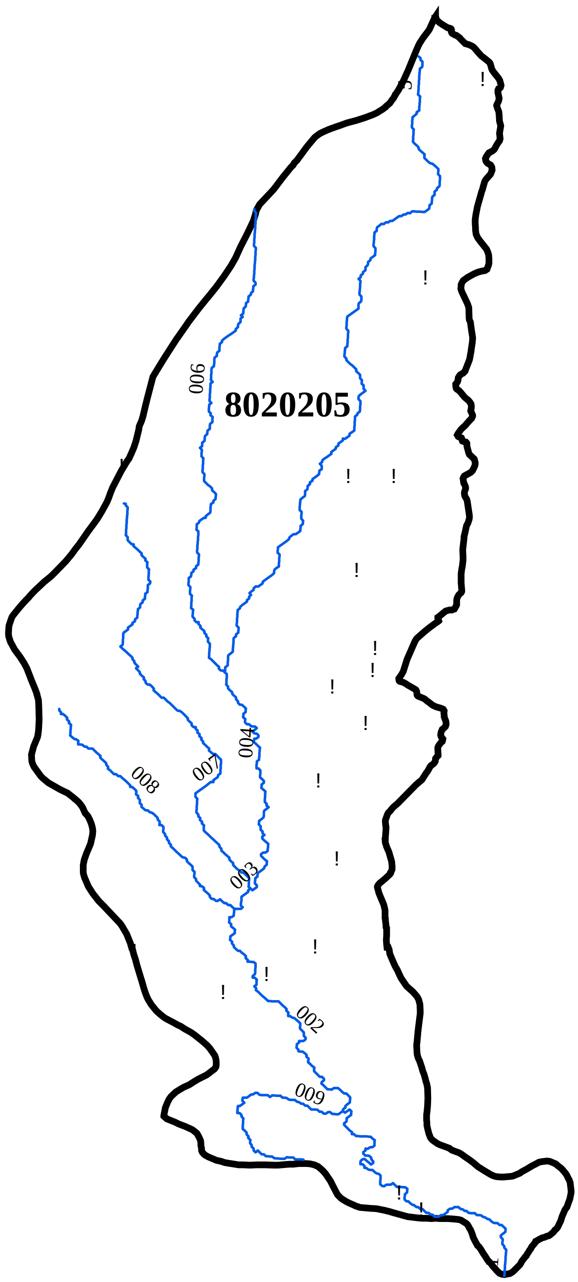
Active NPDES Permits

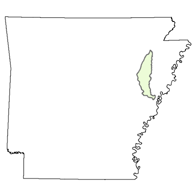
Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0021547	HUGHES, CITY OF	CROOKED BU/MILLSEED LK/FRENCHMAN BU	8020203	5A
AR0021911	RECTOR, CITY OF	POST OAK CK,BIG SLOUGH DIT	8020203	5A
AR0021954	TURRELL, CITY OF	BIG CK/TYRONZA RV/ST FRANCIS RV	8020203	5A
AR0021971	MARION, CITY OF	15 MI BU	8020203	5A
AR0022152	JOINER, CITY OF	DITCH 4&7/FRENCHMAN'S BU	8020203	5A
AR0022195	CRAWFORDSVILLE, CITY OF	ALLIGATOR BU	8020203	5A
AR0033430	MARKED TREE, CITY OF-POND #2	ST FRANCIS RV	8020203	5A
AR0033472	PIGGOTT, CITY OF	BIG SLOUGH DIT, ST FRANCIS RV	8020203	5A
AR0033766	PARAGOULD, CITY LIGHT, WATER &	DIT, 8-MILE CK, ST FRANCIS RV	8020203	5A
AR0033588	PARKIN, CITY OF	ST FRANCIS RV	8020203	5A
AR0033651	MONETTE, CITY OF	LITTLE DITCH #3	8020203	5A
AR0034134	LAKE CITY, CITY OF	PURCELL SLOUGH (DT 9)	8020203	5A
AR0034304	EARLE, CITY OF	TYRONZA RV	8020203	5A
AR0034312	BAY, CITY OF	DITCH #6/MAIN DITCH	8020203	5A
AR0034754	KEISER, CITY OF	TYRONZA RV	8020203	5A
AR0035602	TRUMANN, CITY OF-WWTP	DIT #60	8020203	5A
AR0035629	MARMADUKE, CITY OF	BIG SLOUGH DITCH	8020203	5A
AR0035637	TYRONZA, CITY OF	TYRONZA RV	8020203	5A
AR0036790	GARLOCK RUBBER TECHNOLOGIES	JOHNSON CREEK TRIB	8020203	5A
AR0036897	USA-COE W.G.HUXTABLE PUMP PLAN	ST.FRANCIS RV	8020203	5A
AR0037010	VOSS TRUCK PORT	DIT,TEN MILE BU	8020203	5A
AR0037893	MADISON, CITY OF	ST. FRANCIS RV	8020203	5A
AR0037974	BROOKLAND, CITY OF	MAPLE SLOUGH DITCH/ST FRANCIS RV	8020203	5A
AR0038202	AR PARKS & TOURISM-VILLAGE CK	VILLAGE CK, CLARK CORNER CUTOFF	8020203	5A
AR0039047	DYESS, CITY OF	TYRONZA RIVER	8020203	5A
AR0042196	NIMMONS, CITY OF	DIT,HAMPTON SLU	8020203	5A
AR0043087	WIDENER, CITY OF	ST. FRANCIS RV	8020203	5A
AR0043320	GREENWAY, CITY OF	BIG SLOUGH DIT TRIB	8020203	5A
AR0043401	JONESBORO CITY WATER & LIGHT-E	WHITEMAN’S CK	8020203	5A
AR0043591	ST FRANCIS, CITY OF	ST FRANCIS RV	8020203	5A
AR0044024	BEST HOLIDAY TRAV-L-PARK	DIT, 15-MILE BU, ST FRANCIS RV	8020203	5A

Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0044237	BURDETTE, TOWN OF	DIT #24,#6,TYRONZA RV,ST.FRANCIS RV	8020203	5A
AR0044521	HERITAGE HILLS MHP	TRIB-LATERAL #1	8020203	5A
AR0044661	EDMONDSON, CITY OF	15-MI BU,BLACKFISH BU	8020203	5A
AR0044695	SUPER 8 MOTEL	SHELL LK,BLACKFISH BU	8020203	5A
AR0044890	NIMOCKS OIL COMPANY, INC.	TRIB,15-MILE BU	8020203	5A
AR0045021	GILMORE, CITY OF	LT CYPRESS DIT,BIG CK,GIBSON BU	8020203	5A
AR0045403	TRUCK CENTERS OF AMERICA	DIT #22,5A-ST FRANCIS RB	8020203	5A
AR0045578	AR DEPT OF CORRECTION-EAST AR	ST. FRANCIS RV (NEAR ALLIGATOR BU)	8020203	5A
AR0045837	OAK GROVE HEIGHTS, CITY OF	TRIB/LOCUST CK	8020203	5A
AR0045934	BIRDSONG, TOWN OF	SNAKE LK,LAMB BU,DIT#1,...,BIG CK	8020203	5A
AR0046272	BASSETT, CITY OF	DIT #5 TRIB	8020203	5A
AR0046761	MAPCO EXPRESS, INC-3155 HETH	TRIB/N.BLACKFISH BU	8020203	5A
AR0047490	FLASH MARKET	RR DIT,15-MI BU	8020203	5A
AR0048151	JEANNETTE, CITY OF	BLACKFISH BU, ST FRANCIS RV	8020203	5A
AR0049531	HORSESHOE LAKE, CITY OF-WWTF	MISSISSIPPI RV	8020203	0.208333333

Planning Segment 5B - NPDES Permitted Facilities

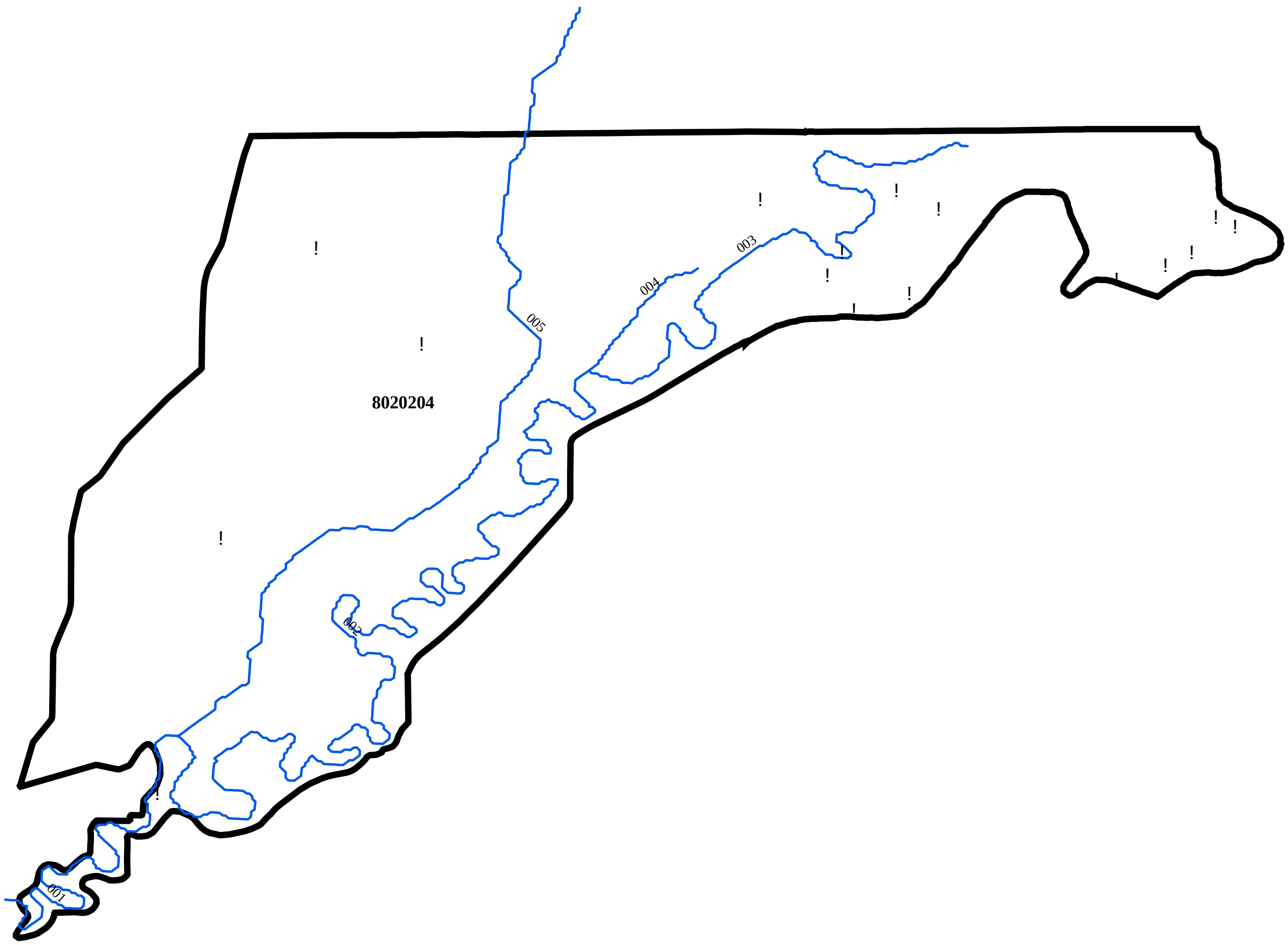


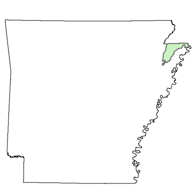


Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0000370	ENTERGY AR, INC-HAMILTON MOSES	TRIB,L'ANGUILLE RV	8020205	5B
AR0020087	FORREST CITY, CITY OF-WWTP	TRIB,L'ANGUILLE RV	8020205	5B
AR0021393	CHERRY VALLEY, CITY OF	COPPER CK,WOLF CK,L'ANGUILLE RV	8020205	5B
AR0021903	WYNNE, CITY OF	DIT,CANEY,CK,L'ANGILLE RV	8020205	5B
AR0022632	MUELLER IND, INC	TURKEY CK,L'ANGUILLE RV	8020205	5B
AR0033863	HARRISBURG, CITY OF	TOWN CK,LTRL T,HOLLOW BR,L'ANGUILLE	8020205	5B
AR0034142	MARIANNA, CITY OF-POND B	L'ANGUILLE RIVER/ST FRANCIS RV	8020205	5B
AR0034169	MARIANNA, CITY OF-POND A	L'ANGUILLE RV/ST FRANCIS RV	8020205	5B
AR0034720	HICKORY RIDGE, CITY OF	BAYOU DEVIEW	8020205	5B
AR0038679	ANDREWS TRAILER PK	BEAR&CANEY CK/L'ANGUILLE RV	8020205	5B
AR0038806	FORREST CITY SCHOOLS-CALDWELL	BIG TELICO CK/SO. HWYS 1 & 261 INTR	8020205	5B
AR0039365	PALESTINE, CITY OF	TRIB-COFFEE CK/L'ANGUILLE RV	8020205	5B
AR0041394	POLYONE CORP	TURKEY CK,INDIAN CK,L'ANGUILLE RV	8020205	5B
AR0043192	COLT, CITY OF	TAYLOR CK DIT/L'ANGUILLE RV	8020205	5B
AR0044041	CROSS CO SCHOOL DIST #7	COOPER CK,L'ANGUILLE RV	8020205	5B
AR0048658	HUNTER GLEN SUBDIVISION	CK, DIT #1, MULLIGAN LTRL, L’ANGUILLE	8020205	5B
AR0049409	VANNDALE BIRDEYE WATER	LANGUILLE RV	8020205	5B
AR0049476	MUELLER COPPER TUBE PRODUCTS	DIT, INDIAN CR, LANGUILLE RV	8020205	5B

Planning Segment 5C - NPDES Permitted Facilities





Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0020028	CARAWAY, CITY OF	DITCH/ASHER & #4 DIT	8020204	5C
AR0021881	MANILA, CITY OF	DITCH #81/LITTLE RV	8020204	5C
AR0021962	GOSNELL, CITY OF	DITCH 29/PEMISCOT BU	8020204	5C
AR0022012	LEACHVILLE, CITY OF	HONEY CYPRESS DT 2/BUFFALO	8020204	5C
AR0022560	BLYTHEVILLE, CITY OF-WEST WWTF	DITCH 27	8020204	5C
AR0022578	BLYTHEVILLE, CITY OF-SOUTH WWP	DIT,DIT 17,6,1	8020204	5C
AR0022586	BLYTHEVILLE, CITY OF-NORTH TRE	DIT, DIT #30,DIT #27,L CHUTE LITTLE	8020204	5C
AR0023841	LEPANTO, CITY OF-BOARD OF PUB	LEFT HAND CHUTE,LITTLE RV	8020204	5C
AR0039713	ENTERGY AR, INC-BLYTHEVILLE	DIT #36	8020204	5C
AR0044181	WHEEL ACRES	DIT 36,PEMISCOT BU	8020204	5C
AR0045977	NUCOR STEEL-ARKANSAS	DIT38,CROOKED L BU,PEMISCOT BU	8020204	5C
AR0046094	FOX MEADOWS MHP	KRUTZ DIT TRIB	8020204	5C
AR0046523	MAVERICK TUBE CORP	DIT #38,CROOKED BU,PEMISCOT BU	8020204	5C
AR0046663	MG INDUSTRIES	DIT, DIT 14A, DIT 13, TYRONZA RV	8020204	5C
AR0048178	HUNTCO STEEL, INC	DIT,DIT #38 (1,2)-5C & MS RV (3)-6C	8020204	5C
AR0049166	IPSCO TUBULARS, INC BLYTHEVILL	DIT,DIT #42,CROOKED LK BU	8020204	5C
AR0049468	R & S MATERIALS	ROOKER CK, LIGHTHOUSE DIT, BIG BAY DIT	8020204	5C

FRA0008
ST FRANCIS RIVER @ LAKE CITY AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	39	6.40	2.71	10.1	1.97
BOD_5 (mg/L)	34	2.15	0.9	6.09	1.29
pH (standard units)	38	7.20	6.17	8.63	0.57
Total Organic Carbon (mg/L)	35	5.81	3.181	16	2.74
Ammonia as N (mg/L)	38	0.05	<0.005	0.16	0.04
NO_2+NO_3 as N (mg/L)	37	0.13	<0.01	0.454	0.11
Orthophosphate as P (mg/L)	38	0.10	0.02	0.36	0.08
Total phosphorus as P (mg/L)	34	0.20	0.069	0.709	0.14
Total hardness (mg/L)	19	104.58	16	165	40.04
Chloride (mg/L)	38	9.65	3.03	36.2	7.50
Sulfate (mg/L)	38	9.40	6.04	19	2.27
Total dissolved solids (mg/L)	38	163.61	101.5	264	36.59
Total suspended solids (mg/L)	35	39.88	6.8	266	43.71
Turbidity (NTU)	38	49.69	8.1	410	72.30

FRA0013
ST FRANCIS RIVER @ HWY 50

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	36	8.21	3	14.45	2.23
BOD_5 (mg/L)	36	1.97	0.9	4.06	0.79
pH (standard units)	34	7.63	6.69	8.6	0.46
Total Organic Carbon (mg/L)	35	5.86	2.19	10.6	1.86
Ammonia as N (mg/L)	36	0.03	<0.005	0.135	0.04
NO_2+NO_3 as N (mg/L)	37	0.13	<0.01	0.861	0.19
Orthophosphate as P (mg/L)	36	0.09	0.035	0.151	0.03
Total phosphorus as P (mg/L)	34	0.23	0.099	0.583	0.12
Total hardness (mg/L)	19	127.32	37	212	51.94
Chloride (mg/L)	37	8.99	3.08	21.44	4.35
Sulfate (mg/L)	38	15.23	5.17	31.22	6.03
Total dissolved solids (mg/L)	36	196.22	106.5	318	51.40
Total suspended solids (mg/L)	36	58.50	11.5	225	55.78
Turbidity (NTU)	36	52.96	7.9	270	58.58

FRA0010
L'ANGUILLE RIVER NEAR MARIANNA AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	35	7.87	2.6	13.48	2.35
BOD_5 (mg/L)	36	2.15	0.83	5.87	1.10
pH (standard units)	34	7.55	6.23	8.35	0.44
Total Organic Carbon (mg/L)	35	5.86	1.08	16.09	2.68
Ammonia as N (mg/L)	36	0.03	<0.005	0.143	0.04
NO_2+NO_3 as N (mg/L)	37	0.15	<0.01	0.674	0.18
Orthophosphate as P (mg/L)	36	0.10	0.018	0.279	0.06
Total phosphorus as P (mg/L)	34	0.26	0.081	0.658	0.15
Total hardness (mg/L)	19	136.11	39	240	66.77
Chloride (mg/L)	37	9.62	3.15	43.41	7.10
Sulfate (mg/L)	38	15.15	4.3	29.1	6.21
Total dissolved solids (mg/L)	36	204.28	104	359.5	64.65
Total suspended solids (mg/L)	36	64.09	10.5	286	64.87
Turbidity (NTU)	36	56.88	7.2	260	62.04

FRA0012
SECOND CREEK N OF PALESTINE AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	37	5.87	1.8	10.86	2.22
BOD_5 (mg/L)	36	1.22	0.36	3.82	0.75
pH (standard units)	35	7.41	6.28	8.49	0.43
Total Organic Carbon (mg/L)	36	8.67	5.182	14.5	2.24
Ammonia as N (mg/L)	37	0.02	<0.005	0.064	0.02
NO_2+NO_3 as N (mg/L)	38	0.05	<0.01	0.283	0.06
Orthophosphate as P (mg/L)	37	0.11	0.047	0.32	0.05
Total phosphorus as P (mg/L)	35	0.15	0.06	0.45	0.08
Total hardness (mg/L)	19	141.95	31	314	89.05
Chloride (mg/L)	38	37.98	5.25	110	29.61
Sulfate (mg/L)	39	7.19	1.66	20.64	5.11
Total dissolved solids (mg/L)	37	241.11	92	450	108.24
Total suspended solids (mg/L)	37	5.58	<1.0	29	5.63
Turbidity (NTU)	37	17.95	1.4	120	25.62

UWLGR01
L' ANGUILLE RIVER AT HWY 306 3 MI. W. OF COLT, AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	9	5.35	0.9	7.4	2.19
BOD_5 (mg/L)	7	2.86	1.09	6.26	1.84
pH (standard units)	9	7.38	6.67	7.88	0.39
Total Organic Carbon (mg/L)	6	10.37	6.5	18.98	4.44
Ammonia as N (mg/L)	8	0.06	<0.005	0.188	0.06
NO_2+NO_3 as N (mg/L)	8	0.16	0.022	0.819	0.27
Orthophosphate as P (mg/L)	8	0.11	0.038	0.204	0.05
Total phosphorus as P (mg/L)	9	0.31	0.16	0.916	0.23
Total hardness (mg/L)	7	154.14	48	227	71.06
Chloride (mg/L)	9	25.98	5.07	65.28	19.62
Sulfate (mg/L)	9	15.85	4.31	34.7	11.06
Total dissolved solids (mg/L)	9	253.00	114	374	88.98
Total suspended solids (mg/L)	9	32.49	8	55.5	17.72
Turbidity (NTU)	9	36.78	10	97	28.58

UWLGR02
L' ANGUILLE RIVER AT HWY 214 3 MI. W. OF WHITEHALL, AR

Parameter	Valid Data Points	Mean	Minimum	Maximum	Standard Deviation
Dissolved Oxygen (mg/L)	7	5.51	1.72	9.5	2.96
BOD_5 (mg/L)	7	5.81	1.54	16.9	5.25
pH (standard units)	6	7.47	7.12	7.83	0.30
Total Organic Carbon (mg/L)	6	13.49	6.232	23.74	6.80
Ammonia as N (mg/L)	7	0.07	<0.005	0.239	0.08
NO_2+NO_3 as N (mg/L)	7	0.07	0.023	0.22	0.07
Orthophosphate as P (mg/L)	7	0.15	0.038	0.429	0.13
Total phosphorus as P (mg/L)	7	0.34	0.17	0.7	0.21
Total hardness (mg/L)	6	152.50	62	313	91.10
Chloride (mg/L)	7	20.72	5.71	45.9	13.25
Sulfate (mg/L)	7	18.75	6.04	30.67	10.01
Total dissolved solids (mg/L)	7	242.00	106.5	429.5	101.35
Total suspended solids (mg/L)	7	33.37	14.3	51	13.16
Turbidity (NTU)	7	45.86	10	120	38.26

MISSISSIPPI RIVER BASIN

SEGMENTS 6A, 6B AND 6C

These three segments comprise the Mississippi River Basin, which consists of a 437 mile reach of the Mississippi River. It is levied throughout its total length within the state. Segment 6A contains a 129.9-mile reach of the Mississippi from its confluence with the Arkansas River to the Arkansas-Louisiana state line. No surface drainage enters this reach below the Arkansas River except from the Lake Chicot pumping plant on Macon Bayou. Segment 6B consists of a 137.2-mile reach of the Mississippi from its confluence with the St. Francis River to the confluence with the Arkansas River. All drainage from the Arkansas and the White River Basins reaches the Mississippi River at the lower end of this reach. Segment 6C is a 174.4-mile reach of the Mississippi from the Arkansas-Missouri state line to its confluence with the St. Francis River. All surface drainage from the St. Francis River Basin within Arkansas enters the Mississippi River via the St. Francis River at the end of this reach.

SUMMARY OF WATER QUALITY CONDITIONS IN THE MISSISSIPPI RIVER BASIN

The waters within these segments have been designated as suitable for the propagation of fish/wildlife, primary and secondary contact recreation and public, industrial and agricultural water supplies. These three segments include 437 miles of the Mississippi River. No recent data was available to assess the Mississippi River; however, USGS Circular 1133 provides an extensive review of the Mississippi River water quality from 1987-92. For this report all waters of the Mississippi River adjacent to Arkansas are listed as unassessed. However, most of the water contributed to the Mississippi River from Arkansas is from the White and Arkansas River Basins, both of which are assessed as meeting all designated uses in their lower segments prior to flowing into the Mississippi River.

STREAM NAME	H.U.C.	REACH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	MJS	MNS	MJC	MNC	STATUS	USE	SUPPORT	NOT SUPPORT
SEG-6																			
Mississippi R.	8010100	-001	6.2		U											3	FISH CONSUMPTION	0	0
Mississippi R.	8010100	-002	7.8		U											3	AQUATIC LIFE	0	0
Mississippi R.	8010100	-003	8.6		U											3	PRIMARY CONTACT	0	0
Mississippi R.	8010100	-004	4.8		U											3	SECONDARY CONTACT	0	0
Mississippi R.	8010100	-005	4.8		U											3	DRINKING SUPPLY	0	0
Mississippi R.	8010100	-007	2.3		U											3	AGRI & INDUSTRY	0	0
Mississippi R.	8010100	-008	10.1		U											3			
Mississippi R.	8010100	-009	19.4		U											3			
Mississippi R.	8010100	-010	24.3		U											3			
Mississippi R.	8010100	-011	4.8		U											3			
Mississippi R.	8010100	-012	4		U											3			
Mississippi R.	8010100	-013	5.8		U											3			
Mississippi R.	8010100	-017	16.8		U											3			
Mississippi R.	8010100	-018	43.6		U											3			
Mississippi R.	8010100	-034	6.6		U											3			
Mississippi R.	8020100	-001	18		U											3			
Mississippi R.	8020100	-002	76.1		U											3			
Mississippi R.	8020100	-003	43.1		U											3			
Mississippi R.	8030100	-003	56.6		U											3			
Mississippi R.	8030100	-005	4.7		U											3			
Mississippi R.	8030100	-006	8.9		U											3			
Mississippi R.	8030100	-007	3.8		U											3			
Mississippi R.	8030100	-009	2.6		U											3			
Mississippi R.	8030100	-011	19.2		U											3			
Mississippi R.	8030100	-012	34.1		U											3			
TOTAL MILES	437																		
MILES UNASSESSED	437																		
MILES EVALUATED	0																		
MILES MONITORED	0																		

Active NPDES Permits

Permit Number	Facility Name	Receiving Waters	USGS H.U.C. Code	Planning Segment
AR0035751	ARKANSAS CITY, CITY OF	MISSISSIPPI RV	8030100	6A
AR0035823	POTLATCH CORP-MCGEHEE	MISSISSIPPI RV	8030100	6A
AR0000388	ENTERGY AR, INC-RITCHIE PLANT	MS RV (1,2,3) & LONG CK BU (4,5)	8020100	6B
AR0036412	CEDAR CHEMICAL CORPORATION	MISSISSIPPI RV	8020100	6B
AR0043389	HELENA, CITY OF	MS. RIVER - SEG. 6B OF MS. RVR. BAS	8020100	6B
AR0000361	TERRA NITROGEN LTD PARTNERSHIP	MISSISSIPPI RV (1) &DIT #47 (2)	8010100	6C
AR0021580	OSCEOLA, CITY OF	MISSISSIPPI RV	8010100	6C
AR0022021	WEST HELENA WATER UTILITIES	MISSISSIPPI RV	8010100	6C
AR0022039	WEST MEMPHIS, CITY OF-WWTP	MISSISSIPPI RV	8010100	6C
AR0022314	WILSON, CITY OF	MISSISSIPPI RV	8010100	6C
AR0033782	LUXORA, CITY OF	MISSISSIPPI RV	8010100	6C
AR0036544	VISKASE CORP-OSCEOLA PLANT	MS RV (1) &BIG SANDY SLU-5A (2)	8010100	6C
AR0037770	CIBA SPECIALITY CHEMICALS WT	MISSISSIPPI RV	8010100	6C
AR0041831	S-R OF ARKANSAS	MS RV-6C (2) & TYRONZA RV-5D (1)	8010100	6C
AR0043117	NUCOR-YAMATO STEEL CO-ARMOREL	MISSISSIPPI-6C (1) & DIT #14A-5D (2)	8010100	6C
AR0045101	FRUIT OF THE LOOM, INC	MISSISSIPPI RV	8010100	6C
AR0049557	PLUM POINT ENERGY ASSOCIATES,	MISSISSIPPI RV	8010100	6C

APPENDIX B

AMBIENT GROUND WATER MONITORING PROGRAM DATA

The following tables list data specific to each monitoring area sampled during the Federal Fiscal years 1997 through 2001. The tables identify sampling locations for each monitoring area, list descriptive statistics for each monitoring area, and summarize all volatile organic compounds and semi-volatile organic compounds (including pesticides) detected during the referenced period. Most of the tables contain spaces occupied by a single dash. These dashes represent unavailable data or, in the case of Table 19B, indicate a non-detectable concentration. For statistical analyses (calculating mean), a value of one half the detection limit was used in cases where the value is displayed as “less than” the detection limit.

The following abbreviations are used in the Sampling Locations tables:

NA	=	not applicable
S	=	spring
W	=	well
C/I	=	commercial/industrial
D	=	domestic
I	=	irrigation
M	=	municipal
St	=	stock
U	=	unused
NT	=	not tested (not analyzed for specified parameter)

The following chemical abbreviations are used in the Selected Descriptive Statistics tables:

TDS	=	total dissolved solids	Cl	=	chloride
HCO_3	=	bicarbonate	Fe	=	iron
NH_3-N	=	ammonia-nitrogen	F	=	fluoride
NO_3-N	=	nitrate-nitrogen	K	=	potassium
O-Phos.	=	ortho-phosphate	Mg	=	magnesium
T-Phos.	=	total phosphorous	Mn	=	manganese
SO_4	=	sulfate	Na	=	sodium
Ba	=	barium	SiO_2	=	silica
Ca	=	calcium			

Table 1B - Brinkley Monitoring Area Sampling Locations

Sample ID	Sample Date	T/R Location	Latitude	Longitude	Well Depth (ft.)	Aquifer	Use
MON103	08/25/98	03N02W08ABB1	34 53 47.4	91 13 55.7		Alluvial	D
MON116	08/25/98	03N02W08ABB1	34 53 47.4	91 13 55.7		Alluvial	D
MON121	08/25/98	03N02W16AAA1	34 52 55.0	91 12 18.4	160	Alluvial	I
MON122	08/25/98	03N02W22ACD1	34 51 42.8	91 11 43.4	65	Alluvial	D
MON129	09/01/98	03N02W23CCD1	34 51 14.3	91 11 04.5	100	Alluvial	D
MON162	08/24/98	04N02W22DAD1	34 56 37.5	91 11 18.8		Alluvial	I
MON182	08/24/98	04N02W30BAC1	34 56 17.0	91 15 13.6	101	Alluvial	P
MON183	08/24/98	04N02W30BAD1	34 56 16.7	91 15 04.2	111	Alluvial	P
MON304	08/25/98	04N02W02DDD1	34 57 17.9	91 10 54.1	110	Alluvial	D
MON310	09/01/98	02N02W14ACB1	34 47 23.6	91 10 51.5	140	Alluvial	I
MON315	08/24/98	04N02W28DDD1	34 55 36.6	91 12 19.9	~120	Alluvial	I
MON316	08/24/98	04N02W29DDB1	34 55 47.9	91 13 35.4	~60	Alluvial	I
MON318	08/24/98	04N02W21CDA1	34 55 47.6	91 12 28.0	121	Alluvial	I
MON322	08/24/98		34 56 24.4	91 11 34.9			I
MON323	08/25/98		34 45 24.0	91 10 20.0			I
MON324	08/25/98		34 44 45.5	91 12 03.0			I
MON325	08/25/98		34 44 47.2	91 17 00.8			I
MON326	08/25/98		34 45 20.0	91 16 59.8			I
MON327	08/25/98		34 52 04.6	91 12 54.9			I
MON328	09/01/98		34 48 31.7	91 11 14.8			I
MON329	09/01/98		34 51 60.0	91 08 55.4			D
MON330	09/01/98		34 49 04.6	91 07 07.8			I
MON331	09/01/98		34 49 54.0	91 07 03.4			I
MON332	09/01/98		34 51 10.9	91 08 34.1			I
MON333	09/01/98		34 47 17.3	91 14 32.1			I
MON334	09/01/98		34 49 17.7	91 13 28.5			I
MON335	09/01/98		34 49 20.3	91 14 44.3			I

Table 2B - Brinkley Monitoring Area Selected Descriptive Statistics

Sample ID	pH	Conductivity	TDS	Alkalinity	HCO3	NH3-N	NO3-N	O-Phos.	T-Phos.	SO4	Ba	Ca	Cl	Fe	F	K	Mg	Mn	Na	SiO2
		uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L
MON103	7.43	948	541	327	399	0.496	<0.010	0.021	0.522	7.49	246.50	86.80	115	4920	0.318	1.620	28.7	388.3	80.60	40.00
MON116	7.32	791	498	378	461	0.453	<0.010	0.02	0.356	23.8	264.30	97.22	36.4	2840	0.221	<0.46	33.1	328.5	34.30	37.30
MON121	7.16	1015	652	394	481	0.631	<0.010	0.02	0.488	112	409.40	105.90	44.7	3200	0.207	<0.46	41.5	389.1	38.50	33.90
MON122	7.22	1042	655	434	529	0.735	<0.010	0.02	0.466	46.2	398.40	131.20	82.5	3230	0.209	1.110	41.6	345.2	49.60	31.90
MON129	7.04	1080	733	422	515	0.205	0.0170	0.241	0.409	121.3	48.8	30.8	50.1	779	0.206	2.600	9.0	108.4	229.0	29.8
MON162	7.16	544	305	261	318	0.258	<0.010	0.04	0.199	1.58	151.30	69.24	7.8	1230	0.234	0.950	19.7	372.8	17.00	33.90
MON182	6.88	209	140	73	89	0.071	0.0460	0.031	0.23	9.06	119.20	21.50	4.33	4830	0.147	1.460	6.7	586.7	6.98	42.00
MON183	6.70	193	132	61	74	0.072	0.2410	0.037	0.132	10.5	112.80	13.83	6.75	6190	0.129	<0.46	5.7	700.6	7.58	42.40
MON304	7.28	1033	684	354	432	0.553	<0.010	0.05	0.504	154	195.20	111.60	56.1	2020	0.237	0.670	35.4	931.4	90.40	31.40
MON310	7.46	1521	1048	430	525	1.002	0.0190	0.012	0.369	94.7	466.1	151.5	242	4470	0.224	4.000	53.1	414.4	143.0	28.7
MON315	7.21	2160	1130	383	467	0.857	<0.010	0.031	0.321	9.32	430.40	102.70	458	2160	0.307	8.880	27.6	392.1	316.00	30.80
MON316	8.12	867	462	235	287	0.742	<0.010	0.665	0.726	1.89	56.22	8.81	98	212	0.814	2.850	1.9	18.4	173.00	18.80
MON318	7.30	1440	768	360	439	0.69	<0.010	0.277	0.615	11.4	248.30	45.08	212	1270	0.808	4.550	12.8	161.1	239.00	22.20
MON322	6.95	704	392	322	393	0.321	<0.010	0.022	0.252	5.65	177.80	60.99	20.9	1620	0.241	0.540	22.2	427.6	43.70	33.30
MON323	7.30	861	576	368	449	0.64	<0.010	0.019	0.132	53.4	305.30	115.80	66.4	2150	0.197	2.260	35.6	365.4	50.50	33.90
MON324	7.12	688	454	304	371	0.283	<0.010	0.021	0.482	56.5	511.30	89.38	20.4	4450	0.269	0.890	28.9	879.8	21.40	48.00
MON325	7.24	651	409	260	317	0.344	<0.010	0.012	0.339	35.2	604.40	94.07	43	3990	0.21	2.130	23.4	606.2	17.60	38.60
MON326	7.32	736	486	334	407	0.353	<0.010	0.02	0.417	43	752.50	116.20	36.4	5710	0.208	2.470	29.4	1037.0	27.00	42.30
MON327	7.27	715	443	338	412	0.61	<0.010	0.024	0.433	20.7	232.50	106.80	35.5	2220	0.215	1.150	29.2	273.7	28.90	35.10
MON328	7.53	1252	821	434	529	0.850	0.0440	0.015	0.616	38.3	312.0	96.4	168	3890	0.23	3.000	36.7	426.6	145.0	28.5
MON329	7.60	801	518	386	471	0.540	0.0190	0.013	0.469	42.6	333.4	87.8	33	4110	0.237	<0.46	35.6	423.0	27.7	34.3
MON330	7.53	740	518	370	451	0.454	0.0190	0.014	0.353	68.7	370.4	96.1	23.2	4390	0.226	2.200	34.8	525.6	32.9	31.5
MON331	7.41	721	464	374	456	0.205	0.0200	0.012	0.184	30.6	247.4	93.8	19.6	2470	0.203	2.000	30.5	571.1	31.6	34.1
MON332	7.22	634	432	310	378	0.476	0.0170	0.014	0.426	39.4	278.6	77.0	25	2820	0.249	1.200	28.2	475.0	22.1	34.4
MON333	7.46	1890	1208	430	525	1.278	0.0190	0.011	0.39	13.2	952.6	120.1	402	7910	0.267	5.000	46.5	324.0	249.0	32.8
MON334	7.54	1218	805	460	561	0.946	0.0190	0.012	0.514	24.3	570.1	109.1	158	4890	0.228	3.700	35.9	483.0	140.0	32.0
MON335	7.52	613	404	280	342	0.558	0.0170	0.012	0.483	22.0	352.3	75.7	46.8	3180	0.258	2.200	24.9	229.1	35.1	30.7
Min.	6.70	193.00	132.00	61.00	74.42	0.07	<0.010	0.01	0.13	1.58	48.80	8.81	4.33	212.00	0.13	<0.46	1.86	18.40	6.98	18.80
Max.	8.12	2160.00	1208.00	460.00	561.20	1.28	0.2410	0.67	0.73	154.00	952.60	151.50	458.00	7910.00	0.81	8.880	53.10	1037.00	316.00	48.00
Mean	7.3	928.4	580.7	336.4	410.4	0.5	0.0187	0.1	0.4	40.6	338.8	85.8	93.0	3376.0	0.3	2.127	28.1	451.3	85.1	33.8

Table 3B - Chicot Monitoring Area Sampling Locations

Sample ID	Sample Date	T/R Location	Latitude	Longitude	Well Depth (ft.)	Aquifer	Use
CHI001	07/08/97	16S03W32BCB1	33 16' 44.6"	91 26' 31.6"	-	Alluvial	I
CHI002	07/08/97	16S03W34BBB1	33 16' 14.7"	91 24' 27.9"	-	Alluvial	D
CHI003	07/08/97	16S03W27ADD1	33 16' 46.3"	91 23' 30.5"	-	Alluvial	D
CHI004	07/07/97	17S03W33BBA1	33 11' 00.9"	91 25' 11.0"	-	Alluvial	I
CHI005	07/08/97	18S03W16CDD1	33 07' 37.0"	91 24' 54.8"	-	Alluvial	I
CHI008	07/08/97	17S03W15DAD1	33 13' 03.7"	91 23' 24.2"	-	Alluvial	I
CHI009	07/07/97	17S03W28ACD1	33 11' 26.6"	91 24' 41.3"	-	Alluvial	I
CHI010	07/07/97	16S02W08DDC1	33 18' 56.2"	91 19' 26.3"	-	Alluvial	I
CHI011	07/07/97	16S03W11ADC1	33 19' 19.3"	91 22' 33.4"	-	Alluvial	I
CHI012	07/07/97	16S03W15CDD1	33 18' 01.4"	91 23' 57.7"	-	Alluvial	I
CHI013	07/07/97	16S03W05BCA1	33 20' 22.9"	91 26' 15.9"	-	Alluvial	I
CHI014	07/07/97	17S03W16BBB1	33 13' 36.7"	91 25' 27.0"	-	Alluvial	I
CHI015	07/07/97	17S03W09AAA1	33 14' 30.1"	91 24' 29.6"	-	Alluvial	I
CHI016	07/07/97	16S03W25CAC1	33 16' 28.4"	91 22' 01.5"	-	Alluvial	I
CHI017	07/08/97	17S03W10AAD1	33 14' 20.4"	91 23' 23.7"	-	Alluvial	I
CHI018	07/08/97	16S03W35CAB1	33 15' 45.7"	91 23' 09.7"	-	Alluvial	I
CHI019	07/08/97	17S03W03AAB1	33 15' 19.8"	91 23' 31.0"	-	Alluvial	I
CHI020	07/08/97	16S03W20BCD1	33 17' 37.7"	91 26' 17.9"	-	Alluvial	I
CHI021	07/08/97	17S03W20AAD1	33 12' 32.9"	91 25' 27.1"	-	Alluvial	I
CHI022	07/08/97	17S03W32BBC1	33 10' 54.8"	91 26' 28.9"	-	Alluvial	I
CHI023	07/08/97	17S03W06DCC1	33 14' 34.2"	91 27' 00.3"	-	Alluvial	I
CHI024	07/08/97	18S03W14BBC1	33 08' 14.6"	91 23' 21.7"	-	Alluvial	I
CHI025	07/08/97	18S03W08DCC1	33 08' 26.6"	91 25' 56.3"	-	Alluvial	I
CHI026	07/08/97	18S03W08AAD1	33 09' 05.8"	91 25' 31.5"	-	Alluvial	I
CHI027	07/08/97	18S03W11CBD1	33 08' 39.8"	91 23' 12.6"	-	Alluvial	I
CHI028	07/08/97	17S03W35CCD1	33 10' 11.0"	91 23' 05.7"	-	Alluvial	I

Table 4B - Chicot Monitoring Area Selected Descriptive Statistics

Sample ID	pH	Conductivity uS/cm	TDS mg/L	Alkalinity mg/L	HCO3 mg/L	NH3-N mg/L	NO3-N mg/L	O-Phos. mg/L	T-Phos. mg/L	SO4 mg/L	Ba ug/l	Ca mg/l	Cl mg/l	Fe ug/l	F mg/l	K mg/l	Mg mg/l	Mn ug/l	Na mg/l	SiO2 mg/l
CHI001	7.17	1070	772	365	445	0.55	0.01	0.015	0.44	25	623.5	102	220	4620	0.41	3.9	30.8	284	136.4	-
CHI002	8.1	1480	1116	248	303	0.961	0.01	0.247	0.29	8	180.4	17.2	385	146	0.39	4.5	3.9	22	480.6	-
CHI003	6.56	1450	922	258	315	1.005	0.01	0.143	0.17	11	68.3	6	380	52	0.28	3.3	1.4	6	393.2	-
CHI004	7.17	2080	1334	368	449	0.701	0.01	0.015	0.56	45	416	212	460	13200	0.17	6.2	45.4	552	207.9	-
CHI005	6.95	898	2944	394	481	0.949	0.01	0.015	0.49	200	239.4	320	1230	12700	0.23	6.8	148	2130	473.4	-
CHI008	7.15	1688	1173	395	482	0.534	0.01	0.015	0.85	145	561	129	340	8000	0.34	2.9	54.5	1460	204.4	-
CHI009	7.08	2970	2064	422	515	0.751	0.01	0.015	0.59	161	495.3	237	890	8010	0.2	7.4	70.6	692	450.9	-
CHI010	7.16	1264	894	419	511	0.266	0.01	0.015	0.26	200	160.9	129	82.53	3450	0.21	2.3	49.5	532	100.9	-
CHI011	7.05	2730	2086	376	459	0.578	0.01	0.015	0.32	200	120	278	680	8010	0.19	6.1	99.6	875	238.2	-
CHI012	7.01	2910	2075	370	451	0.588	0.01	0.015	0.48	200	100	247	780	8470	0.19	5.1	88.2	1090	354.3	-
CHI013	6.91	1410	831	306	373	0.637	0.01	0.032	0.75	84	781	149	260	14900	0.2	5.1	28.7	902	104.2	-
CHI014	7.24	1320	815	342	417	0.424	0.01	0.015	0.53	34	373.3	140	250	8130	0.24	3.3	27.4	530	127.2	-
CHI015	6.99	2920	2043	404	493	1.028	0.01	0.015	0.61	189	428	284	840	14200	0.18	3.6	74	1400	288	-
CHI016	7.01	2290	1597	334	407	0.728	0.01	0.015	0.4	200	320	276	570	6400	0.24	3.2	76	1070	183	-
CHI017	7.1	2360	1421	338	412	0.836	0.01	0.045	0.76	70	668	154	630	9000	0.28	3.6	45	1260	244	-
CHI018	7.19	2510	1816	374	456	0.989	0.01	0.015	0.44	-	485.6	270	700	7740	0.2	5.6	77.9	999	286.5	-
CHI019	7.35	2770	1922	466	569	1.026	0.01	0.015	0.61	145	699.2	207	780	6460	0.28	5.6	62.7	1080	502.7	-
CHI020	6.97	947	690	336	410	0.573	0.01	0.015	0.65	46	724.2	111	180	6610	0.28	3.5	30.1	248	86.8	-
CHI021	7.13	1072	669	348	425	0.405	0.01	0.015	0.52	30	409.6	109	170	6560	0.23	3.2	25.6	383	89.9	-
CHI022	7.14	671	434	266	325	0.169	0.01	0.015	0.31	30	295.8	84.3	48.47	4710	0.2	2.7	18.6	880	29.4	-
CHI023	7.15	736	445	290	354	0.367	0.01	0.015	0.66	17	422.9	90.3	68.02	5160	0.31	2.4	20	532	37	-
CHI024	7.07	1406	1115	337	411	0.728	0.01	0.015	0.51	177	276.2	166	320	8020	0.26	3.4	47.2	1060	159.6	-
CHI025	7.13	1414	1193	350	427	0.431	0.054	0.015	0.36	90	935.4	196	390	10500	0.16	5.3	44.3	776	127	-
CHI026	6.76	1884	1693	397	484	0.531	0.01	0.031	0.26	154	522	239	640	11100	0.16	4.7	56.2	836	243.6	-
CHI027	7.04	1990	1773	388	473	0.752	0.01	0.034	0.5	174	332.9	226	690	8590	0.25	6.1	81	688	277.5	-
CHI028	-	2770	3132	446	544	1.14	0.01	0.034	0.78	145	1138	313	1460	12200	0.22	8.6	141	1420	620.9	-
Min.	6.56	671.00	434.00	248.00	302.56	0.17	0.01	0.02	0.17	8.00	68.30	6.00	48.47	52.00	0.16	2.30	1.40	6.00	29.40	-
Max.	8.10	2970.00	3132.00	466.00	568.52	1.14	0.05	0.25	0.85	200.00	1138.00	320.00	1460.00	14900.00	0.41	8.60	148.00	2130.00	620.90	-
Mean	7.10	1808.08	1421.88	359.12	438.12	0.68	0.01	0.03	0.50	111.20	452.96	180.45	517.08	7959.15	0.24	4.55	55.68	834.88	247.98	-

Table 5B - El Dorado Monitoring Area Sampling Locations

Station ID	Collect Date	T/R Location	Latitude	Longitude	Well Depth (ft.)	Aquifer	Use
UNI008	010605	17S15W32BDD1	33 11 42.0	92 40 47.0	712	El Dorado	C/I
UNI010	010604	18S15W16ACB1	33 09 37.0	92 39 22.5	295	Greensand	D
UNI011	010605	17S16W24BBC1	33 14 02.5	92 42 58.5	704	El Dorado	M
UNI015	010605	18S16W01DBC1	33 11 02.0	92 42 25.5	770	El Dorado	C/I
UNI021	010604	17S15W16BBA1	33 15 01.5	92 39 44.5	37	Cockfield	C/I
UNI023	010604	16S16W34BDD1	33 17 21.5	92 44 38.0	56	Cockfield	D
UNI024	010604	17S15W09BBB1	33 15 54.0	92 39 54.5	550	El Dorado	C/I
UNI026	010604	17S14W14DBC1	33 14 17.0	92 31 03.0	49	Cockfield	D
UNI027	010604	18S14W07BBA1	33 10 37.0	92 35 16.0	783	El Dorado	M
UNI028	010604	17S14W32CBB1	33 11 53.0	92 34 28.5	120	Cockfield	D
UNI029	010604	16S16W34BDD2	33 17 19.5	92 44 43.5	300	Greensand	D
UNI061	010604	18S15W21DAC1	33 08 23.0	92 39 08.0	40	Cockfield	D
UNI062R	010604	-	-	-	-	Cockfield	C/I
UNI063	010604	18S15W20BDC1	33 08 37.0	92 40 44.5	320	Greensand	D
UNI094	010605	18S16W02AAA1	33 11 35.5	92 43 04.5	43	Cockfield	D
UNI099	010605	18S16W11CDD1	33 09 53.5	92 43 37.0	70	Cockfield	D
UNI116	010604	17S16W01CCC1	-	-	-	El Dorado	C/I
UNI117	010605	-	-	-	700	El Dorado	M
UNI118A	010605	-	33 12 27.5	92 39 37.1	746	El Dorado	M
UNI119	010605	17S15W22CCD1	33 13 23	92 38 43	330	Greensand	D
UNI120	010604	18S15W27AAB	-	-	662	El Dorado	C/I
UNI121	010604	18S15W21DAC2	33 08 22	92 39 09	310	Greensand	D
UNI122A	010605	-	-	-	566	El Dorado	C/I

Table 6B - El Dorado Monitoring Area Selected Descriptive Statistics

Sample ID	pH	Conductivity	TDS	Alkalinity	HCO3	NH3-N	NO3-N	O-Phos.	T-Phos.	SO4	Ba	Ca	Cl	Fe	F	K	Mg	Mn	Na	SiO2
		uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L
UNI008	-	-	362	153	186.66	0.348	<0.010	0.078	-	47.31	11	6.9	69.9	280	0.25	1.9	1.4	90.2	125	11.8
UNI010	8.27	282	169	141.5	172.63	0.72	0.014	0.115	-	3.2	62.7	9.3	2.03	35.4	0.08	3.2	1.9	22.3	52.6	11.9
UNI011	8.63	430	254.5	183	223.26	0.429	0.01	0.269	-	0.83	<8.8	0.8	22.82	<15	0.24	2	<.13	6.5	98	11.4
UNI015	8.56	559	323	190	231.8	0.554	0.01	0.202	-	23.84	<8.8	1.5	40.11	<15	0.26	2.3	<.13	2.1	126	11.5
UNI021	5.79	136	102.5	23.5	28.67	<0.005	0.052	0.008	-	27.39	72.3	6.5	3.83	219	0.05	3.3	2.9	52.7	11.9	23
UNI023	6.51	136	121	34.5	42.09	<0.005	0.113	0.021	-	4.49	35.7	7.1	14.79	585	0.11	3.9	3.3	90.2	10.5	49.6
UNI024	8.53	429	264	184	224.48	0.495	0.011	0.203	-	0.81	<8.8	1.1	25.52	<15	0.17	1.8	<.13	8	104	11.4
UNI026	5.78	49	67	15	18.3	<0.005	0.164	0.015	-	3.34	34	3.5	2.73	334	0.08	1.4	0.6	5.3	3.3	35.5
UNI027	8.65	728	416	201.5	245.83	0.568	0.026	0.207	-	31.81	<8.8	1	81.28	<15	0.26	1.5	<.13	0.6	157	11.7
UNI028	6.37	125	125.5	19.5	23.79	0.02	<0.010	0.097	-	3.26	52.1	4.3	15.92	795	0.09	2.8	1.5	26.2	15.2	60.7
UNI029	7.96	313	192.5	170	207.4	0.479	<0.010	0.05	-	1.41	101.6	14.1	2.43	103	0.1	4.8	3	24.5	55.3	15.7
UNI061	6.87	124	99	53.5	65.27	0.013	0.108	0.014	-	4	48.6	18.1	1.76	265	0.09	1.4	0.4	68.4	3.3	18
UNI062R	6.35	293	147.5	107.5	131.15	0.304	0.431	<0.005	-	3.67	291.3	19.7	11.25	10400	0.08	10.1	9.7	2898	6.4	10.4
UNI063	8.01	284	170	142	173.24	0.935	<0.010	0.192	-	3.15	53.8	7.7	2.59	54	0.09	3.1	1.7	19.7	54.7	12.6
UNI094	6.24	425	328	50	61	<0.005	0.102	0.213	-	44.63	28.2	12.6	59.75	20.9	0.13	1.7	2.3	0.7	64.1	82.2
UNI099	5.91	67	67	9	10.98	<0.005	3.746	0.005	-	0.88	45.6	3.9	4.11	<15	0.03	2.9	1.5	58.5	3.2	11.7
UNI116	8.71	431	258.5	185.5	226.31	0.432	<0.010	0.245	-	0.85	<8.8	0.4	22.99	<15	0.21	1.6	<.13	5.1	105	11.7
UNI117	8.45	480	278	191	233.02	0.518	0.012	0.236	-	0.82	11.1	2.1	35.22	<15	0.21	2.7	0.3	8.3	106	11
UNI118A	8.55	630	352	186	226.92	0.597	<0.010	0.212	-	1.46	13.5	2.2	81.7	15.3	0.25	2.1	0.3	5	138	11.7
UNI119	8.24	287	177	145	176.9	0.689	0.011	0.17	-	3.03	63.7	8.2	2.27	66.3	0.1	3.3	2	22.2	55.4	12.5
UNI120	8.79	632	361.5	191	233.02	0.534	<0.010	0.221	-	28.25	<8.8	0.8	58.4	<15	0.24	2.8	<.13	0.9	139	11.7
UNI121	8.14	305	186	151.5	184.83	0.787	0.013	0.318	-	2.06	85.6	11.7	4.21	28	0.07	3.5	2.5	21	53.7	15.4
UNI122A	8.58	504	293.5	191.5	233.63	0.477	0.031	0.216	-	8.25	<8.8	1	32.92	16	0.27	1.5	<.13	5.1	113	11.1
Min.	5.78	49	67	9	10.98	<0.005	<0.010	<0.005	-	0.81	<8.8	0.4	1.76	<15	0.03	1.4	<.13	0.6	3.2	10.4
Max.	8.79	728	416	201.5	245.83	0.935	3.746	0.318	-	47.31	291.3	19.7	81.7	10400	0.27	10.1	9.7	2898	157	82.2
Mean	7.63	347.68	222.39	126.91	154.83	0.39	0.21	0.14	-	10.81	45.29	6.28	26.02	577.26	0.15	2.85	1.55	149.63	69.59	20.62

Table 7B - Hardy Monitoring Area Sampling Locations

Sample ID	Sample Date	T/R Location	Latitude	Longitude	Well Depth (ft.)	Aquifer	Use
SHA001	05/18/98	17N06W23BCC1	36 06 36.1	91 36 12.6	1045	Cotter-Jefferson City	D
SHA002	05/18/98	18N07W01DCD1	36 14 23.2	91 40 47.2	-	-	D
SHA003	05/18/98	18N07W01CBB1	36 14 39.6	91 41 28.2	263	Cotter	D
SHA004	05/18/98	18N06W05DCA1	36 14 26.7	91 39 07.9	368	Cotter	D
SHA005	05/18/98	18N05W19BBA1	36 12 21.1	91 33 44.2	563	Cotter-Jefferson City	D
SHA006	05/19/98	19N05W11BDB1	36 18 59.0	91 29 09.3	1180	Roubidoux-Gunter	M
SHA007	05/19/98	19N05W10ADC1	36 18 52.1	91 29 39.9	150	Cotter-Jefferson City	M
SHA008	05/19/98	19N05W22CBC1	36 17 01.0	91 30 36.2	368	Cotter-Jefferson City	C
SHA009	05/19/98	20N04W05ABA1	36 25 17.1	91 25 16.4	685	Roubidoux	D
SHA010	05/19/98	21N04W33ACC1	36 25 51.4	91 24 23.0	158	Cotter	D
SHA011	05/19/98	20N04W23BAA1	36 22 35.4	91 22 26.1	120	Cotter	D
SHA012	05/20/98	19N03W05DCC1	36 19 08.4	91 19 11.8	830	Roubidoux	D
SHA013	05/20/98	20N03W29ADB1	36 21 22.0	91 18 52.2	-	-	D
SHA014	05/20/98	19N04W26CCB1	36 15 45.1	91 22 59.3	188	Cotter	D
SHA015	05/20/98	17N04W04DBD1	36 08 49.2	91 24 30.7	293	Powell	D
SHA016	05/20/98	18N04W28BBB1	36 11 15.5	91 25 22.4	-	-	D
SHA017	05/20/98	17N06W32BBD1	36 05 10.9	91 39 22.9	1200	Roubidoux	D
FUL001	05/18/98	19N06W30BBC1	36 16 46.4	91 40 20.4	368	Cotter	D
FUL002	05/18/98	19N07W36AAB1	36 16 03.6	91 40 39.8	1050	Roubidoux	M
FUL003	05/18/98	20N07W26DAA1	36 21 44.7	91 41 30.3	200	Cotter-Jefferson City	D
FUL004	05/18/98	21N07W35DAA1	36 26 04.9	91 41 30.9	-	-	D
FUL005	05/18/98	21N06W12ACD1	36 29 30.5	91 34 10.0	220	Cotter-Jefferson City	D
FUL006	05/19/98	20N06W35DBB1	36 20 44.9	91 35 27.6	180	Cotter-Jefferson City	SP
FUL007	05/19/98	19N06W36CCD1	36 15 04.5	91 34 50.6	160	Cotter-Jefferson City	D
FUL008	05/19/98	20N05W09BCD1	36 24 14.4	91 31 32.6	260	Roubidoux	SP
FUL009	05/19/98	20N05W17ADA1	36 23 28.0	91 31 49.4	140	Cotter-Jefferson City	SP
FUL010	05/19/98	21N06W18CBD1	36 28 34.6	91 40 07.2	760	Roubidoux	D
FUL011	05/20/98	20N06W33BBD1	36 21 05.5	91 38 03.0	160	Cotter-Jefferson City	SP

Table 8B - Hardy Monitoring Area Selected Descriptive Statistics

Sample ID	pH	Conductivity	TDS	Alkalinity	HCO3	NH3-N	NO3-N	O-Phos.	T-Phos.	SO4	Ba	Ca	Cl	Fe	F	K	Mg	Mn	Na	SiO2
		uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Mg/L	mg/L	ug/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L
SHA001	7.45	526	286	274	334	0.008	0.36	0.016	-	3.13	22.7	59.8	3.62	10.90	0.04	0.4	31.2	<2.0	1.4	13
SHA002	7.37	545	295	266	325	0.01	0.948	0.008	-	6	14.8	59.4	2.13	2.00	0.035	0.8	33	<2.0	1.3	10.2
SHA003	7.49	469	255	230	281	0.005	1.058	0.011	-	4.37	23.9	49.7	6.33	<1.8	0.045	0.5	28.3	<2.0	2.2	11.4
SHA004	7.59	548	293	284	346	0.007	0.477	0.01	-	2.58	21.5	60.5	1.31	8.50	0.022	0.5	33.9	<2.0	0.8	11.4
SHA005	7.38	626	313	300	366	0.04	1.104	0.01	-	4.34	19.2	64.1	3.16	<1.8	0.034	0.4	35.9	<2.0	0.2	11.5
SHA006	7.31	631	373	362	442	0.008	0.049	0.007	-	9.4	35.1	74.7	2.39	4.80	0.016	1.1	44.1	<2.0	1.3	11
SHA007	7.29	807	459	438	534	0.009	1.183	0.009	-	6.49	38.2	93.7	8.22	<1.8	0.023	1.1	49.5	<2.0	2.4	13.6
SHA008	7.8	609	319	262	320	0.014	1.797	0.008	-	4.23	33.7	61.5	30.9	40.50	0.007	0.5	33.9	4.80	6.1	10.8
SHA009	7.75	409	229	208	254	0.008	0.602	0.008	-	3.74	29.1	46	6.58	<1.8	0.016	0.5	25.5	<2.0	1.5	10.3
SHA010	7.79	418	195	156	190	0.008	1.181	0.013	-	2.47	18.2	36.8	16.7	86.00	0.031	0.6	20.6	<2.0	4.1	10.2
SHA011	7.78	580	276	268	327	0.007	1.377	0.011	-	3.66	25	57	1.48	3.70	0.031	0.3	30.9	<2.0	1.2	12
SHA012	7.48	654	334	326	398	0.006	0.199	0.008	-	8.87	9.6	45.8	1.51	6.00	0.028	1.2	47.2	<2.0	14.2	11.9
SHA013	7.39	726	390	380	464	0.009	0.723	0.008	-	6.12	24.8	79.4	3.89	<1.8	0.027	0.3	44.2	<2.0	0.5	9.4
SHA014	7.72	480	258	244	298	0.005	0.246	0.011	-	3.73	15.6	53.1	2.63	7.10	0.017	0.3	29.4	<2.0	1.6	12.4
SHA015	7.33	703	375	354	432	0.009	0.292	0.007	-	11.3	18.4	80.6	2.48	<1.8	0.027	1.2	40	<2.0	1	9.6
SHA016	7.4	583	297	288	351	0.006	0.364	0.01	-	6.74	20.6	60.2	1.61	<1.8	0.026	0.4	34.3	<2.0	0.9	8.9
SHA017	7.25	761	393	380	464	0.008	0.141	0.008	-	11.88	25	80.8	2.71	45.90	0.03	0.8	45	<2.0	0.8	11.8
FUL001	7.54	491	250	242	295	0.005	0.762	0.011	-	3.57	19.2	51.1	1.95	<1.8	0.04	0.5	28.7	<2.0	1.4	10.3
FUL002	7.62	191	247	238	290	0.007	0.2	0.012	-	4.38	22.3	52	1.81	45.80	0.031	0.6	28.4	<2.0	1.1	10.8
FUL003	7.24	726	376	338	412	<0.005	4.3	0.013	-	3.6	28.5	76.4	12.3	6.60	0.033	0.3	42.7	<2.0	3.1	15.5
FUL004	7.15	831	439	369	450	0.005	3.24	0.009	-	2.67	37.1	85.3	37.7	2.90	0.029	0.3	49.4	<2.0	5.5	13.6
FUL005	7.31	635	341	328	400	0.011	1.039	0.012	-	4.33	29.3	71.6	6.2	11.10	0.023	0.7	40.1	<2.0	1.6	13.6
FUL006	7.31	631	354	346	422	0.008	1.189	0.015	-	1.9	27.6	73.8	3.15	<1.8	0.021	0.6	40.6	<2.0	0.7	14.3
FUL007	7.8	471	245	231	282	0.014	2.32	0.012	-	1.41	24.4	51.5	2.19	<1.8	0.017	0.2	28.4	<2.0	0.2	11.8
FUL008	7.45	659	344	294	359	0.008	7.18	0.013	-	3.02	31.9	69	7.28	<1.8	0.028	0.6	36.7	<2.0	3.4	15.3
FUL009	7.35	636	389	370	451	<0.005	2.13	0.012	-	6.62	33	81.2	4.04	5.40	0.018	0.6	44.1	<2.0	1.3	12.6
FUL010	7.32	862	423	423	516	0.006	0.565	0.009	-	3.07	29.4	86.1	2.54	4.70	0.029	0.3	48.8	<2.0	<0.04	14.2
FUL011	7.56	594	313	306	373	0.006	1.513	0.012	-	1.98	22.5	67.2	1.31	19.60	0.027	0.3	36.7	<2.0	0.2	13.6
Min.	7.15	191.00	195.00	156.00	190.32	0.00	0.05	0.01	-	1.41	9.60	36.80	1.31	<1.8	0.01	0.20	20.60	<2.0	<0.04	8.90
Max.	7.80	862.00	459.00	438.00	534.36	0.04	7.18	0.02	-	11.88	38.20	93.70	37.70	86.00	0.05	1.20	49.50	4.80	14.20	15.50
Mean	7.47	600.07	323.61	303.75	370.57	0.01	1.30	0.01	-	4.84	25.02	65.30	6.36	9.87	0.03	0.57	36.84	1.14	2.14	11.96

Table 9B - Jonesboro Monitoring Area Sampling Locations

Sample ID	Sample Date	T/R Location	Latitude	Longitude	Well Depth (ft.)	Aquifer	Use
CRA002	07/27/98	14N04E07ABA1	35 51 52.2	90 42 01.1	70	Alluvial	D
CRA005	07/27/98	14N04E07CDC2	35 51 08.4	90 42 29.7	180	Memphis	P
CRA009	07/28/98	13N04E03ABB1	35 47 30.1	90 39 06.0	90	Alluvial	I
CRA010	07/27/98	13N04E09DCD1	35 45 52.6	90 39 58.1	105	Alluvial	A
CRA014	07/27/98	14N04E22CBD1	35 49 28.9	90 39 20.9	350	Memphis	P
CRA015	07/27/98	14N04E32BCA1	35 48 10.4	90 41 30.8	342	Memphis	P
CRA017	07/27/98	14N04E28DAB1	35 48 49.4	90 39 49.5	362	Memphis	P
CRA038	07/27/98	14N02E23CDD1	35 49 23.3	90 51 00.4	97	Alluvial	I
CRA039	07/27/98	14N03E14CAA1	35 50 30.3	90 44 22.7	173	Alluvial	I
CRA040	07/27/98	14N03E31ABA1	35 48 18.1	90 48 26.6	112	Alluvial	I
CRA042	07/28/98	14N05E20ABA1	35 50 04.6	90 34 30.7	167	Alluvial	I
CRA044	07/28/98	13N05E21BAA1	35 44 57.5	90 33 42.5	871	Memphis?	P
CRA045	07/27/98	15N03E29BBB1	35 54 28.5	90 48 01.3	160,180	Alluvial	P
CRA046	07/28/98	15N05E29DBB1	35 53 59.9	90 34 33.1			P
CRA047	07/27/98	14N05E27DDD1	35 48 32.6	90 32 08.0	~800	Memphis?	P
CRA048	07/27/98	14N02E14BDA1	35 50 51.6	90 50 49.5		Alluvial	I
CRA049	07/27/98	14N02E08DAB1	35 51 32.8	90 53 39.4		Alluvial	I
CRA050	07/28/98	13N04E10DDA1	35 46 13.5	90 38 35.2		Alluvial	I
CRA051	07/28/98	13N04E26DBD1	35 43 25.3	90 37 48.5		Alluvial	I
CRA052	07/28/98	13N03E13BDB1	35 45 33.4	90 43 34.5		Alluvial	I
PON019	07/28/98	12N03E12BBC1	35 41 24.9	90 43 47.3	160	Alluvial	I

Table 10B - Jonesboro Monitoring Area Selected Descriptive Statistics

Sample ID	pH	Conductivity	TDS	Alkalinity	HCO3	NH3-N	NO3-N	O-Phos.	T-Phos.	SO4	Ba	Ca	Cl	Fe	F	K	Mg	Mn	Na	SiO2
		uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L
CRA002	6.18	321	172	51	62.22	<0.005	3.0400	0.034	0.03	9.60	38.9	18.9	34.2	<15	0.038	2.1	7.9	<0.5	19.5	28
CRA005	6.48	249	137	59	71.98	<0.005	1.5670	0.023	0.024	16.2	15.3	16.9	11.3	<15	0.033	2.3	7.5	<0.5	13.6	25.8
CRA009	7.07	403	215	152	185.44	<0.005	0.0590	0.067	0.059	11.0	25.9	40.1	9.43	16.70	0.074	1.8	12.3	239.60	15.2	32.6
CRA010	7.00	306	175	97	118.34	<0.005	0.2050	0.072	0.058	18.9	48.2	21.7	12.3	<15	0.069	1.5	9.1	0.70	22.1	31.2
CRA015	6.22	175	98	45	54.9	<0.005	0.4890	0.021	0.031	4.25	15.2	9.7	9.06	78.70	0.028	1.1	4.2	2.60	10.7	26.3
CRA014	6.42	179	95	45	54.9	<0.005	0.7180	0.017	0.023	3.34	22.7	10.4	12.1	111.00	0.037	1.1	4.5	4.70	10.5	22.3
CRA017	6.29	212	114	60	73.2	<0.005	0.3720	0.031	0.030	6.93	22.1	12.8	11.4	<15	0.04	1.3	5.7	4.10	13.1	25.2
CRA038	7.00	548	361	193	235.46	0.071	0.0130	0.011	0.124	44.8	109.9	69.8	35.5	2520.00	0.083	1.9	17.5	637.30	21.8	44.6
CRA039	6.82	358	175	108	131.76	<0.005	0.2630	0.021	0.042	7.11	33	26.2	18.8	3510.00	0.06	1.4	11.8	101.70	13.6	25.7
CRA040	6.38	260	162	59	71.98	<0.005	2.2900	0.031	0.032	8.51	41.2	13.2	29.2	<15	0.074	0.8	5	<0.5	28.2	28.9
CRA042	7.21	869	460	335	408.7	0.210	0.0110	0.023	0.231	47.8	297.4	92.9	16.9	7410.00	0.036	1.5	22.5	280.10	39.6	36.2
CRA044	8.04	457	216	184	224.48	0.362	0.0130	0.234	0.214	0.325	14.4	1	3.25	88.30	0.105	2.7	0.4	13.10	85.5	10.4
CRA045	6.27	158	105	37	45.14	<0.005	1.4800	0.074	0.060	3.26	18.5	9	11.1	<15	0.066	2	2.7	5.20	11.9	35.8
CRA046	6.04	113	74	29	35.38	<0.005	0.3050	0.011	<0.02	1.98	26.6	6	8.55	15.00	0.014	1.4	2.6	<0.5	7.5	25.5
CRA047	7.93	430	208	172	209.84	0.357	0.0110	0.158	0.267	0.330	24.7	6.2	2.78	1210.00	0.115	2.1	1.7	29.70	70.4	12
CRA048	7.31	556	293	192	234.24	0.036	<0.010	0.011	0.146	23.6	79.8	55.7	16.4	4370.00	0.098	1.4	15.4	885.80	20	44.8
CRA049	6.95	927	555	243	296.46	0.305	0.0100	0.032	0.341	142.9	555.1	101.4	21.8	-	0.058	2	29.2	2283.00	20.8	41.1
CRA050	7.30	685	393	264	322.08	<0.005	<0.010	0.020	0.037	51.2	90.5	71.3	22.3	298.00	0.05	1.3	22	710.40	38.3	31.3
CRA051	7.44	980	591	441	538.02	0.091	0.0100	0.008	0.126	86.1	451	120.6	11.2	4160.00	0.03	1.9	36.2	247.40	45.1	29
CRA052	6.90	695	430	78	95.16	<0.005	1.1300	0.024	0.031	179.7	67.4	49.7	25.1	79.70	0.073	1.8	19.7	3.20	50.8	28
PON019	7.47	626	605	306	373.32	0.064	<0.010	0.033	0.113	130.8	282	125.8	47.3	4740.00	0.025	1.1	38.9	335.90	15.7	32.2
Min.	6.04	113.00	74.00	29.00	35.38	<0.005	<0.010	0.01	0.00	0.33	14.40	1.00	2.78	<15	0.01	0.80	0.40	<0.5	7.50	10.40
Max.	8.04	980.00	605.00	441.00	538.02	0.3620	3.0400	0.23	0.34	179.70	555.10	125.80	47.30	7410.00	0.12	2.70	38.90	2283.00	85.50	44.80
Mean	6.9	452.7	268.3	150.0	183.0	0.0728	0.5712	0.0	0.1	38.0	108.6	41.9	17.6	1432.62	0.1	1.6	13.2	275.50	27.3	29.4

Table 11B - Lonoke Monitoring Area Sampling Locations

Station ID	Collect Date	T/R Location	Latitude	Longitude	Well Depth, (ft.)	Aquifer	Use
LON003A	010619	03N08W30DDD1	34 50 58.8	91 53 40.2	160	Alluvial	C
LON009A	010619	-	34 49 55.0	91 56 41.0	~150	Alluvial	I
LON010	010612	02N08W06ADA1	34 49 46.1	91 53 40.4	128	Alluvial	D
LON014	010612	02N08W20BCD1	34 47 10.1	91 53 29.7	164	Alluvial	M
LON016	010619	02N09W28CCC1	34 45 49.1	91 59 09.7	136	Alluvial	I
LON017	010612	02N08W32BCC1	34 45 32.5	91 52 43.5	195	Alluvial	I
LON017R	010612	02N08W32	34 45 18.2	91 53 46.4	~250	Alluvial	I
LON020	010612	01N09W13BCB1	34 42 40.2	91 56 01.7	125	Alluvial	I
LON021	010619	01N09W21BAB1	34 42 19.2	91 59 21.2	100	Alluvial	I
LON022	010612	02N09W34AAA1	34 45 44.3	91 57 07.6	354	Sparta	C/I
LON024	010612	01N08W16BAC1	34 42 56.4	91 52 32.4	~150	Alluvial	I
LON040	010619		34 41 13.5	91 58 37.0		Alluvial?	C
LON041	010619		34 41 14.8	91 58 58.1			C
LON042	010619		34 42 19.7	91 58 02.1			I

Table 12B - Lonoke Monitoring Area Selected Descriptive Statistics

Sample ID	pH	Conductivity	TDS	Alkalinity	HCO3	NH3-N	NO3-N	O-Phos.	T-Phos.	SO4	Ba	Ca	Cl	Fe	F	K	Mg	Mn	Na	SiO2
		uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L
LON003A	6.66	208	130	61	74.42	0.043	0.035	-	0.3	5.66	112.9	12.3	7.93	4370	0.15	1.81	3.62	1211	11.2	41.8
LON009A	6.87	246	171	87.5	106.75	0.058	0.029	-	0.22	12.1	184	24.34	15.8	2200	0.16	1.76	7.25	421.7	13.4	35.4
LON010	6.72	295	189.5	113.5	138.47	0.083	0.024	0.011	0.24	6.32	179.5	29	19.58	4930	0.14	0.7	7.8	1038	15.8	35
LON014	7.14	366	222	141.5	172.63	0.116	0.03	<0.005	0.21	10	211.4	38.8	23.76	3120	0.18	0.9	11.3	446.4	19	32.9
LON016	7.22	805	540	297.5	362.95	0.522	0.031	-	0.48	131	527.1	130.1	18.3	18600	0.16	1.92	21.7	536.1	16.9	24.9
LON017	6.81	621	374.5	258.5	315.37	0.194	0.027	0.006	0.15	39.97	347.5	86.2	20.44	3620	0.16	1.3	18.4	679.9	16.3	29
LON017R	6.86	553	331.5	237.5	289.75	0.07	0.029	<0.005	0.2	40.74	317.8	73.1	7.72	2810	0.17	1.8	17.4	245.2	15.7	27.7
LON020	6.84	959	651.5	261.5	319.03	0.364	0.025	0.011	0.51	192.72	147.4	150.3	12.96	23600	0.12	1.6	24.8	951.9	14.8	29.6
LON021	7.58	664	423	299.5	365.39	0.364	0.029	-	0.72	50.6	543.8	107.6	18.4	7450	0.17	1.63	16.6	438.5	21.6	22.6
LON022	6.91	381	210	186	226.92	0.157	0.028	0.005	0.17	1.78	327.7	40	6.55	4240	0.14	1.9	10.6	254.5	22.4	14.8
LON024	6.91	672	396.5	294.5	359.29	0.419	0.029	<0.005	0.17	28.95	473.5	88.7	22.53	2140	0.16	1.7	17	423.3	29.7	26
LON040	7.18	823	486	282	344.04	0.992	0.033	-	0.59	65.4	633.9	95.38	60.6	24000	0.24	1.95	21.4	667.9	46.7	21.5
LON041	7.16	604	327	224	273.28	0.859	0.031	-	0.62	23.7	886.3	66.66	32.6	28400	0.2	1.64	16.4	396.7	24.1	21.7
LON042	7.52	913	676	398	485.56	0.315	0.038	-	0.38	140	799.7	174.1	19.4	12500	0.12	1.69	22.7	930.2	13.1	28.5
Min.	6.66	208	130	61	74.42	0.043	0.024	<0.005	0.15	1.78	112.9	12.3	6.55	2140	0.12	0.7	3.62	245.2	11.2	14.8
Max.	7.58	959	676	398	485.56	0.992	0.038	0.011	0.72	192.72	886.3	174.1	60.6	28400	0.24	1.95	24.8	1211	46.7	41.8
Mean	7.03	579.29	366.32	224.46	273.85	0.33	0.03	0.01	0.35	53.50	406.61	79.76	20.47	10141.43	0.16	1.59	15.50	617.24	20.05	27.96

Table 13B - Omaha Monitoring Area Sampling Locations

Sample ID	Sample Date	T/R Location	Latitude	Longitude	Well Depth (ft.)	Aquifer	Use
BNE002	03/03/99	19N21W14CDA1	36 17 53.1	93 11 05.9	NA	Springfield Plateau	U
BNE003	03/03/99	19N22W12CAB1	36 19 00.6	93 16 24.7	NA	Springfield Plateau	D
BNE005A	03/03/99				NA	Springfield Plateau	
BNE007	03/09/99	19N21W31ACB1	36 23 02.0	93 12 29.0	NA	Springfield Plateau	D
BNE007A	03/09/99				NA	Springfield Plateau	
BNE008	03/03/99	21N21W02DBB1	36 21 06.0	93 10 33.2	NA	Springfield Plateau	U
BNE012	03/02/99	21N20W29ACD1	36 26 47.0	93 07 31.0	NA	Springfield Plateau	D
BNE013	03/02/99	21N21W27BCB1	36 26 58.1	93 12 09.3	NA	Springfield Plateau	U
BNE015	03/02/99	21N21W17CCB1	36 28 19.0	93 14 24.0	NA	Springfield Plateau	U
BNE017	03/02/99	21N21W09BAD1	36 29 45.0	93 12 46.0	NA	Springfield Plateau	D
BNE023	03/03/99	20N21W33ACA1	36 22 31.0	93 14 29.5	565	Ozark	D
BNE025	03/09/99	20N21W15CAD1	36 23 18.0	93 11 52.0	455	Ozark	D
BNE027	03/09/99	20N20W03CCA1	36 24 34.0	93 05 54.0	240	Ozark	D
BNE028	03/03/99	20N22W03DDA1	36 25 01.0	93 17 50.9	400	Ozark	D
BNE029	03/02/99	21N21W26ADA1	36 26 54.0	93 10 10.0	675	Ozark	D
BNE030	03/09/99	21N20W23CDD1	36 27 05.0	93 04 36.0	755	Ozark	D
BNE032	03/02/99	21N21W15BDA1	36 28 43.2	93 11 49.2	705	Ozark	D
BNE033	03/02/99	21N22W12DCC1	36 29 10.0	93 16 00.0	550	Ozark	D
BNE036	03/02/99	21N21W22DDA1	36 27 24.0	93 11 19.4	1340	Ozark	M
BNE037	03/03/99	19N21W20BDC1	36 17 22.2	93 14 14.8	450	Ozark	D
BNE040	03/03/99	20N21W31ABC1	36 21 05.0	93 14 58.0	~160	Springfield Plateau	D
BNE042	03/09/99	20N20W09AAA1	36 24 22.0	93 06 18.0	NA	Ozark	U
BNE044	03/02/99				NA	Springfield Plateau	
BNE045	03/02/99				~550	Ozark	
BNE046	03/02/99				~245	Ozark	
BNE047	03/03/99					Ozark	
BNE048	03/09/99					Ozark	

Table 14B - Omaha Monitoring Area Selected Descriptive Statistics

Sample ID	pH	Conductivity	TDS	Alkalinity	HCO3	NH3-N	NO3-N	O-Phos.	T-Phos.	SO4	Ba	Ca	Cl	Fe	F	K	Mg	Mn	Na	SiO2
		uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L
Springfield Plateau Aquifer																				
BNE002	6.76	404	236.5	197	240	<0.005	1.65	0.019	<0.02	4.87	37.0	85.6	6.87	<15	0.049	<0.46	1.5	<0.5	3.5	10.3
BNE003	7.07	471	280	221	270	<0.005	2.80	0.014	<0.02	9.75	50.3	98.6	8.67	<15	0.065	0.5	1.7	<0.5	4.8	10.5
BNE005A	7.15	424	250	201	245	<0.005	2.11	0.020	0.0260	5.39	43.2	89.0	9.05	<15	0.048	1.7	1.3	<0.5	3.8	10.8
BNE007	7.48	356	224.5	170	207	<0.005	2.81	0.035	0.0510	5.93	37.2	68.9	8.03	41.50	0.046	<0.46	1.4	<0.5	3.4	11.0
BNE007A	7.45	358	227.5	160	195	<0.005	2.92	0.043	0.0540	6.03	35.6	69.2	8.12	39.10	0.04	<0.46	1.4	2.2	3.6	10.8
BNE008	7.59	370	219	133	162	0.045	3.22	0.078	0.1450	19.2	44.5	62.0	18.1	<15	0.049	1.0	3.5	21.500	12.4	11.6
BNE012	7.89	315	212.5	86	105	<0.005	11.5	0.019	0.0800	6.3	32.2	51.2	8.23	<15	0.047	0.5	2.8	<0.5	3.1	11.2
BNE013	-	-	215	178	217	0.061	0.053	0.008	0.0250	6.67	65.1	73.9	7.47	966.00	0.051	<0.46	3.5	1348.000	2.6	10.0
BNE015	7.84	344	219.5	102	124	<0.005	8.37	0.023	0.0260	5.49	44.7	54.3	18.2	<15	0.057	3.0	3.3	<0.5	6.8	11.0
BNE017	7.99	235	134.5	82	100	<0.005	2.36	0.020	0.0210	2.91	41.2	35.8	13.9	<15	0.069	<0.46	2.2	<0.5	6.9	9.9
BNE040	7.19	400	235	189	231	<0.005	3.10	0.017	0.0210	4.07	33.6	81.9	6.63	<15	0.04	1.0	1.3	<0.5	6.3	11.1
BNE044	7.72	200	113	52	63	<0.005	1.86	0.163	0.1640	4.92	43.2	23.4	20.7	<15	0.069	1.3	2.6	<0.5	9.9	9.2
Min.	6.76	200.00	113.00	52.00	63.44	<0.005	0.05	0.01	<0.02	2.91	32.20	23.40	6.63	<15	0.04	<0.46	1.30	<0.5	2.60	9.20
Max.	7.99	471.00	280.00	221.00	269.62	0.0025	11.50	0.16	0.1640	19.20	65.10	98.60	20.70	966.00	0.07	3.00	3.50	1348.000	12.40	11.60
Mean	7.47	352.45	213.92	147.58	180.05	0.0021	3.56	0.04	0.0513	6.79	42.32	66.15	11.16	92.84	0.05	0.85	2.21	114.313	5.59	10.62
Ozark Aquifer																				
BNE023	1.50	342	197	159	194	<0.005	0.041	0.007	<0.02	18.8	12.1	45.3	3.58	<15	0.306	<0.46	16.8	1.000	2.9	9.4
BNE025	7.27	605	362.0	204	249	<0.005	5.29	0.006	0.024	47.1	28.4	83.9	40.2	<15	0.161	2.1	23.6	<0.5	8.2	10.5
BNE027	6.93	655	369.0	322	393	<0.005	2.09	0.008	0.021	9.94	35.2	70.4	26.89	<15	0.257	<0.46	44.5	<0.5	8.9	13.1
BNE028	7.39	425	250.5	197	240	0.023	3.59	0.007	<0.02	13.5	8.9	61.4	8.77	<15	0.881	1.4	17.0	1.000	6.7	9.3
BNE029	7.50	625	364	285	348	<0.005	1.077	0.005	<0.02	52.4	39.4	86.6	3.75	<15	0.452	1.0	32.1	1.900	2.0	9.9
BNE030	6.81	526	298.5	282	344	<0.005	0.778	0.007	0.020	19.15	9.4	62.4	2.38	<15	0.46	1.4	35.5	<0.5	1.1	9.0
BNE032	7.56	344	192	136	166	<0.005	0.053	0.005	<0.02	37.7	10.2	37.3	1.41	<15	0.503	<0.46	19.5	1.900	1.1	8.4
BNE033	7.44	346	192	163	199	<0.005	0.384	0.007	<0.02	14.3	<8.8	38.2	2.97	<15	0.113	<0.46	20.7	<0.5	1.3	10.1
BNE036	7.67	338	186.5	164	200	<0.005	0.022	0.005	<0.02	13.5	<8.8	40.5	1.74	77.1	0.155	0.6	18.8	0.900	1.5	9.4
BNE037	7.01	509	295	240	293	<0.005	0.535	0.006	<0.02	25.59	25.5	81.8	6.92	<15	0.526	<0.46	16.4	1.400	10.4	9.4
BNE042	7.11	613	350.0	338	412	<0.005	2.01	0.007	0.024	5.08	34.2	71.1	6.5	<15	0.266	<0.46	44.0	<0.5	1.1	12.6
BNE045	7.65	328	183	152	185	<0.005	0.832	0.006	<0.02	13.0	<8.8	41.2	2.16	<15	0.083	<0.46	16.1	<0.5	1.2	9.5
BNE046	7.63	552	304	282	344	0.009	0.253	0.008	0.050	17.0	<8.8	65.2	2.3	<15	0.705	1.2	35.7	0.600	1.5	9.1
BNE047	7.19	716	460.5	285	348	<0.005	0.108	0.006	<0.02	121	21.4	93.9	2.38	<15	0.621	5.2	43.9	0.500	2.9	8.6
BNE048	6.94	497	265.0	218	266	<0.005	3.8	0.007	0.032	9.85	25.6	48.1	2.38	96.800	0.044	2.2	30.2	2.5	0.7	7.6
Min.	1.50	328.00	183.00	136.00	165.92	<0.005	0.02	0.01	<.02	5.08	0.00	37.30	1.41	<15	0.04	<0.46	16.10	<0.5	0.70	7.60
Max.	7.67	716.00	460.50	338.00	412.36	0.0025	5.29	0.01	0.050	121.00	39.40	93.90	40.20	96.800	0.88	5.20	44.50	1.900	10.40	13.10
Mean	6.91	494.73	284.60	228.47	278.73	0.0022	1.39	0.01	0.017	27.86	16.69	61.82	7.62	12.950	0.37	1.01	27.65	0.713	3.43	9.73

Table 15B - Ouachita Monitoring Area Sampling Locations

Sample ID	Sample Date	T/R Location	Latitude	Longitude	Well Depth (ft.)	Aquifer	Use
OUA005	04/12/99	12S19W13BCB1	33 41 42.4	93 01 06.4	60	Cane River	M
OUA006	04/12/99	12S19W13BBC1	33 41 44.3	93 01 05.2	52	Cane River	M
OUA013	04/13/99	13S17W35DBD1	33 33 14.2	92 49 16.8	274	Sparta	C/I
OUA017	04/12/99	13S19W28BCD1	33 34 32.8	93 04 16.9	52	Sparta	D
OUA021	04/13/99	14S17W10CDC1	33 31 19.1	92 50 48.2	90	Sparta	D
OUA024	04/12/99	14S18W27BDC1	33 29 16.3	92 57 06.6	55	Sparta	M
OUA028	04/12/99	14S19W20BAD1	33 30 26.0	93 05 13.4	61	Sparta	M
OUA030	04/12/99	15S19W10DCC1	33 26 18.0	93 03 18.4	370	Sparta	M
OUA031	04/12/99	15S19W22CCC1	33 24 37.0	93 03 50.3	375	Sparta	M
OUA033	04/12/99	15S19W30DBD1	33 23 56.7	93 06 18.3	59	Sparta	D
OUA036	04/13/99	14S17W30ACD1	33 29 10.2	92 29 10.2	52	Sparta	D
OUA038	04/13/99	13S17W34DAC1	33 33 14.8	92 50 16.9	278	Sparta	C/I
OUA039	04/12/99	15S19W22BDD1	33 25 00.9	93 03 26.2	294	Sparta	C/I
OUA041	04/12/99	14S18W28CAB1	33 29 16.3	92 58 06.2	10	Sparta	U
OUA042	04/13/99	13S17W35DCC1	33 33 00.3	92 49 26.2	271	Sparta	C/I
OUA044	04/13/99	15S18W25BCD1	33 23 57.0	92 55 20.8	335	Sparta	D
OUA048	04/12/99						

Table 16B - Ouachita Monitoring Area Selected Descriptive Statistics

Sample ID	pH	Conductivity	TDS	Alkalinity	HCO3	NH3-N	NO3-N	O-Phos.	T-Phos.	SO4	Ba	Ca	Cl	Fe	F	K	Mg	Mn	Na	SiO2
		uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L
OUA005	5.04	33	33	4	4.88	0.0060	0.181	0.016	<0.02	4.11	30.0	0.7	3.5	<15	0.053	0.7	0.6	8.6	3.4	9.3
OUA006	5.32	38	32	6	7.32	<0.005	0.185	0.014	<0.02	5.29	35.6	1.7	2.89	224.00	0.052	1.6	0.7	56.0	3.1	7.6
OUA017	5.54	47	43	4	4.88	<0.005	0.231	0.013	<0.02	8.2	43.1	1.4	4.77	<15	0.122	1.1	0.8	7.1	4.7	13.2
OUA028	5.32	58	69	17	20.74	0.0080	0.046	0.019	<0.02	7.19	76.0	7.5	2.68	39.70	0.087	0.7	0.3	10.4	2.4	32.2
OUA039	6.90	196	119	83	101.26	0.2090	0.066	0.015	0.254	5.83	132.4	13.8	6.02	3830.00	0.176	3.9	2.7	50.3	23.7	18.4
OUA030	6.50	187	126	67	81.74	0.1560	0.032	0.016	0.218	12.7	103.3	14.3	4.98	4870.00	0.171	3.9	2.6	73.4	19.6	27.7
OUA031	7.20	235	147	105	128.1	0.3330	0.053	0.017	0.188	9.31	127.9	12.4	6.81	1740.00	0.163	3.7	2.7	26.8	36.8	14.3
OUA033	5.49	107	85	13	15.86	<0.005	0.663	0.015	<0.02	15.4	54.9	6.1	11.2	<15	0.115	1.5	0.9	16.0	13.9	21.9
OUA024	6.81	118	85	13	15.86	<0.005	0.173	0.101	0.112	24.7	23.1	14.7	9.75	17.20	0.063	0.8	1.1	0.8	4.2	5.7
OUA041	4.91	27	37	2	2.44	<0.005	0.492	0.017	<0.02	2.32	18.2	0.5	2.96	105.00	0.093	1.0	0.3	6.6	2.7	16.6
OUA048	5.50	57	56	7	8.54	<0.005	0.834	0.015	<0.02	2.06	99.2	3.4	9.13	<15	0.108	1.4	1.0	14.0	4.5	18.7
OUA042	7.60	432	247	128	156.16	0.6860	0.043	0.114	0.184	19	185.4	20.6	46.9	352.00	0.115	4.1	4.2	48.4	65.4	15.6
OUA013	7.85	403	241	140	170.8	0.7600	0.033	0.217	0.247	12.2	144.0	13.4	38.9	181.00	0.168	3.7	3.1	27.1	73.2	18.1
OUA038	7.23	235	152	97	118.34	0.5980	0.099	0.149	0.261	10.8	93.8	8.2	9.42	430.00	0.109	2.5	2.0	19.8	45.0	18.6
OUA021	7.05	305	205	89	108.58	<0.005	0.170	0.032	0.119	63.8	118.6	38.0	3.1	<15	0.158	5.1	5.8	20.9	17.2	19.5
OUA044	7.37	335	207	157	191.54	0.2470	0.180	0.168	0.512	7.35	197.6	20.1	14.6	139.00	0.144	3.1	2.8	104.4	59.2	10.7
OUA036	5.27	71	66	5	6.1	<0.005	2.11	0.016	<0.02	3.25	99.5	3.9	9.29	<15	0.083	1.4	1.3	8.6	6.5	22.0
Min.	4.91	27.00	32.00	2.00	2.44	<0.005	0.03	0.01	<0.02	2.06	18.20	0.50	2.68	<15	0.05	0.70	0.30	0.80	2.40	5.70
Max.	7.85	432.00	247.00	157.00	191.54	0.7600	2.11	0.22	0.512	63.80	197.60	38.00	46.90	4870.00	0.18	5.10	5.80	104.40	73.20	32.20
Mean	6.30	175.95	117.32	57.68	70.37	0.1992	0.41	0.06	0.142	14.70	94.65	11.54	12.45	886.86	0.12	2.42	2.05	31.81	24.27	17.26

Table 17B - Pine Bluff Monitoring Area Sampling Locations

Station ID	Collect Date	T/R Location	Latitude	Longitude	Well Depth, (ft.)	Aquifer	Use
JEF001	010501					Sparta?	C
JEF003	010501	05S09W19BAA1	34 16 08.0	92 01 29.0	1275	Sparta	C/I
JEF004	010501	05S09W30DBA1	34 15 06.0	92 01 29.0	792	Sparta	C
JEF005	010501					Sparta	M
JEF007	010501					Sparta	C
JEF008	010501	05S10W11ACA1	34 17 40.0	92 03 24.0	992	Sparta	C
JEF010	010501	06S09W04BAB1	34 13 30.5	92 01 06.0	865	Sparta	M
JEF012	010501	06S09W17CCC1	34 11 49.0	92 02 29.0	848	Sparta	M
JEF016	010501	05S09W07CCC1	34 17 05.0	92 01 58.0	265	Cockfield	D
JEF024	010426	05S08W30AAB1	34 15 07.5	91 54 46.0	~900	Sparta	C/I
JEF028	010501					Alluvial	I
JEF034	010501	05S09W34CAB1	34 13 54.0	91 58 25.0	102	Alluvial	C/I
JEF038	010426	06S08W09ACC1	34 13 05.0	91 54 38.0	165	Alluvial	C/I
JEF039	010426	06S08W10CAA1	34 12 59.0	91 53 44.0	1020	Sparta	C/I
JEF041	010501					Sparta	M
JEF042	010501					Cockfield	D
JEF043	010523					Cockfield	I
JEF044	010523				~76	Alluvial	C
JEF045	010523				772	Sparta	C
JEF046	010523					Sparta	C

Table 18B - Pine Bluff Monitoring Area Selected Descriptive Statistics

Sample ID	pH	Conductivity	TDS	Alkalinity	HCO3	NH3-N	NO3-N	O-Phos.	T-Phos.	SO4	Ba	Ca	Cl	Fe	F	K	Mg	Mn	Na	SiO2
		uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	ug/L	mg/L	mg/L
JEF001	6.65	562	123	54.3	66.246	0.28	<0.010	0.01	0.06	27.85	124.7	7.5	3.82	2550	0.13	4.6	1.8	69.9	26.1	14.3
JEF003	6.46	113	79.5	46.2	56.364	0.18	<0.010	0.01	0.098	4.21	128.3	4.7	2.97	2620	0.14	5.6	1.3	51	14.5	15.5
JEF004	6.42	146.3	83	48.3	58.926	0.23	<0.010	0.01	0.084	3.56	106.2	3.9	2.8	4130	0.12	5.8	1.1	61.4	15.8	16.1
JEF005	6.67	118	77	47.5	57.95	0.18	<0.010	<0.005	0.114	3.13	116.4	6.3	2.44	2980	0.12	6.5	1.6	66.2	11.4	16.7
JEF007	6.75	122.3	75	43.9	53.558	0.13	<0.010	<0.005	0.087	3.57	117.8	7.5	2.79	2570	0.12	5.5	1.8	55.2	8.5	14.6
JEF008	6.72	130.4	82	49.5	60.39	0.18	<0.010	0.01	0.101	3.52	121.3	6	2.42	2740	0.14	6.1	1.6	63.5	12.6	14.4
JEF010	6.71	148	86	53.3	65.026	0.17	<0.010	0.01	0.119	3.56	135.1	7	2.21	2440	0.15	6.5	1.7	66	13.5	16.5
JEF012	6.8	145	99.5	63.9	77.958	0.21	<0.010	0.01	0.123	3.09	86.1	8.3	1.87	1590	0.15	6.6	1.6	74	16	18.1
JEF016	6.39	484	312	183.5	223.87	0.46	<0.010	0.06	0.246	24.83	61.4	20.1	19.66	2080	0.13	5.6	5.7	319.9	74.8	44.2
JEF024	6.78	177	112	62.3	76.006	0.23	<0.010	0.01	0.132	8.63	119.5	6.6	2.31	2420	-	7.2	1.6	59	22.2	17.4
JEF028	6.76	839	459	338	412.36	1.06	<0.010	0.02	0.704	21.71	340.4	97.1	30.19	10900	0.27	2.7	26.2	367	47.1	28.4
JEF034	6.71	399	352	258.8	315.736	0.58	<0.010	0.02	0.831	17.28	398.1	81.6	23.19	12600	0.21	1.5	21.3	262	15.3	31.4
JEF038	6.51	1625	802	530	646.6	0.7	<0.010	0.01	1.121	21.5	600.3	158.3	130.8	18400	-	4.9	28.3	1215	119	28.6
JEF039	6.6	224	116	65.6	80.032	0.23	<0.010	0.01	0.144	5.47	83.5	6.6	1.82	1610	-	8.2	1.4	50.9	23.3	16.5
JEF041	6.28	101.5	68	40	48.8	0.11	<0.010	0.03	0.07	3.09	129.5	5.3	2.53	2540	0.11	4.3	1.4	51.3	8.1	15.5
JEF042	7.48	480	343	144.8	176.656	0.68	<0.010	0.33	0.328	86.21	16.4	4.4	8.01	328	0.1	4.2	1	39.6	105	39.9
JEF043	8.61	678	401.5	197.7	241.194	1.237	0.032	0.057	-	68.98	66.3	15	37.2	16.7	0.5	6.1	2.6	27.2	127	10.7
JEF044	6.33	833	348	183.4	223.748	0.39	0.019	0.046	-	20.49	289	27.8	28.87	43500	0.08	3.1	12.9	2670	43.8	32.4
JEF045	6.36	129	83	47.61	58.0842	0.209	0.033	0.053	-	3.4	129	4.4	2.64	3680	0.11	6.1	1.3	65.2	13.4	16
JEF046	6.32	116	84	46.82	57.1204	0.183	0.019	0.053	-	3.41	135	5.2	2.59	3440	0.12	6.2	1.4	67.1	12.2	15.7
Min.	6.28	101.5	68	40	48.8	0.11	<0.010	<0.005	0.038	3.09	16.4	3.9	1.82	16.7	0.08	1.5	1	27.2	8.1	10.7
Max.	8.61	1625	802	530	646.6	1.237	0.033	0.33	1.121	86.21	600.3	158.3	130.8	43500	0.5	8.2	28.3	2670	127	44.2
Mean	6.72	378.53	209.28	125.27	152.83	0.38	0.01	0.04	0.27	16.87	165.22	24.18	15.56	6156.74	0.16	5.37	5.88	285.07	36.48	21.15