

# **Building Strong Collaborative Relationships for a Sustainable Water Resources Future:**

**STATE OF ARKANSAS**

SUMMARY OF STATE WATER PLANNING

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The findings contained in this report are based on the information collected from the literature search and interviews for this initiative and should not be construed as an official Department of the Army position, policy or decision unless so designated by other official documentation.

# **STATE OF ARKANSAS**

## **1. STATE/REGIONAL WATER PLANNING STATUS**

Through the passage of Act 217 in 1969, the Arkansas Legislature declared Arkansas Natural Resources Commission (ANRC) responsible for state-level water planning and charged them with the development of the first Arkansas Water Plan (AWP) (ANRC, 2009a). In 1985, the Arkansas General Assembly broadened ANRC's planning responsibilities to include an inventory of the State's water resources, determination of current and projected needs for all water uses, and determination of existing excess surface water that could be put to beneficial use through the Assembly's decision to allow the ANRC to issue non-riparian water use permits for the first time (Act 1051 Section 2). The rules and regulations set forth by the General Assembly also included an emphasis on instream water needs. Currently the ANRC is in the process of determining minimum streamflow levels on the White River in order to determine the point where withdrawals (excluding drinking water) should cease in order to meet the necessary instream flow requirements to meet navigation and ecological needs and to set the appropriate streamflow level threshold to determine when diversions should be halted.

In 1986, ANRC began development of eight river basin reports and undertook a major revision of the AWP. Each basin report contains an inventory of all land use and soil resources; surface water quantity, quality, problems and solutions, and recommendation; and groundwater geology, hydrology, quality, problems and solutions, and recommendations (ANRC, 2009a). The eight river basins are: Arkansas, Boeuf-Tensas, Eastern Arkansas, Lower Ouachita, Red River (above Fulton), Red River (below Fulton), Upper Ouachita, and Upper White. The AWP has not been revised since its release in 1990.

In accordance with the Arkansas Ground Water Protection and Management Act of 1991 (Arkansas Code Annotated §15-22-906), ANRC produces an annual report on groundwater protection and conservation programs administered by the ANRC, including water-level monitoring, development of water-quality standards, and studies of water use trends.

During the last several sessions of the Arkansas General Assembly, the ANRC has requested funding to update and revise the state water plan. The ANRC is waiting on the approval of funding to move forward with its updates and revisions.

## **2. RESPONSIBLE STATE AGENCIES/REGIONAL ENTITIES**

The Arkansas Natural Resources Commission (ANRC), formerly known as the Arkansas Soil and Water Conservation Commission, is the State's lead water resources planning and management agency. The name change occurred four years ago, however, the duties and responsibilities remained the same.

ANRC is divided into three divisions: Conservation, Water Development, and Water Management. The Water Management Division is responsible for the development, updates to, and implementation of the AWP.

In cooperation with Arkansas Department of Environmental Quality (ADEQ), ANRC provides numerous programs that address water quality in the state. The two agencies work together in addressing interstate water issues and review each other's rules and regulations. Since 1990, ANRC has been the lead agency for the Arkansas Nonpoint Source Pollution Management Program. Under the program, the DEQ provides the designation of impaired streams while the ANRC implements the projects designed to remove those designations.

The state has discussed employing an integrated water resources management approach to the next state water plan. The authority over water resources is split among many state agencies, making it difficult to implement an integrated management strategy. Maintaining a comprehensive interagency focus will require commitment not only from the agencies themselves, but also from the executive branch of state government.

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ADEQ's Water Quality Planning Branch conducts water quality monitoring, develops and updates the state's water quality standards, conducts biennial assessments of the state's water quality for EPA, and develops total maximum daily loads (ADEQ, 2009b).

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### 3. WATER MANAGEMENT VISION AND GOALS

The vision of the AWP is:

*The vision of Arkansas is that every individual in the State will have all of the water they need for any beneficial purpose. Land is wealth, but land without water is much less valuable. Arkansas is rich in water resources. The State's economic prosperity and quality of life are closely tied to water. We must plan and act to provide adequate water distribution to each area of the State where water is needed. Similarly, we must be faithful stewards of our water resources and move to prevent pollution and degradation of our waters and the systems they support.*

*Arkansas must have a progressive, forward-looking strategy to use, protect, and enhance its water resources. This will involve a continuing comprehensive planning process to identify and remedy water resource problems before they become serious and unmanageable. Each segment of society is in part dependent upon another. Therefore, water for municipal, industrial and agricultural use must be supplied, pollution must be abated, instream needs protected, and wetlands must be preserved. In evaluating these often competing uses, a balance must be struck that will yield the greatest benefit to our people. Human needs must be satisfied on an economically affordable basis with the least deleterious effect upon the natural environment.*

ADEQ's mission is: "To protect, enhance and restore the natural environment for the well-being of all Arkansans (ADEQ, 2007)." Their 2-part vision is (ADEQ, 2007): "We envision Arkansas with clean air, water and land where all Arkansans strive to conserve and protect these assets for the benefit and enjoyment of this and future generations. We envision the Arkansas Department of Environmental Quality as a respected steward of the environment, where pro-active, results-oriented staff, operating in a professional atmosphere, inspires Arkansans to conserve and protect our natural resources."

ADEQ's Department Goals are (ADEQ, 2007):

- Air: The air is clean and healthy
- Water: The physical, chemical and biological integrity of all Arkansas' waters are protected and enhanced
  - Objective: Ensure that assessed surface water in Arkansas will meet water quality standards for all beneficial uses
  - Strategy: Management of a Water Division that maintains, protects, and enhances water quality and health through planning, technical assistance, watershed education and outreach, permitting, wastewater operator licensing & testing, compliance monitoring and enforcement
- Land: Land-based activities achieve, maintain and enhance a healthy environment
- Environmental Management: The Department efficiently and effectively applies its resources and authorities to achieve the highest standards of agency and environmental management

The Hazard Mitigation Plan lays out the following mitigation goals:

1. Reduce the vulnerability in Arkansas to all hazards and the promotion of sustainable infrastructure and environment.
2. Identify mitigation grant opportunities for state and local governments, their sub-jurisdictions and the general public, and provide effective technical support.
3. Offer training, education, and technical assistance to local jurisdictions as they develop local hazard mitigation plans and mitigation projects.
4. Formulate objectives using state of the art knowledge to reduce vulnerability to all identified hazards.

#### **4. SCOPE OF WATER RESOURCES PLANNING AND MANAGEMENT**

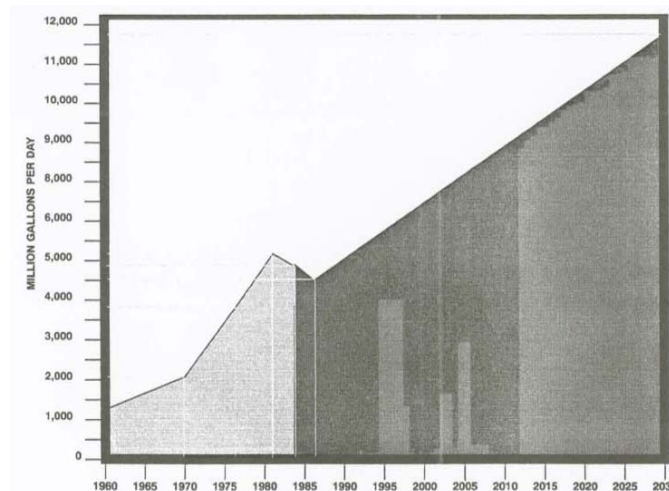
Over the past two to three decades, Arkansas has experienced a steady increase in water demand across all sectors. The agricultural and municipal water supply sectors are responsible for the greatest rise in demand. The state is experiencing more water shortages now than in the past with the indicators being declining water tables and lower flows. Declining water tables are concentrated in the eastern one-third of the state which is characterized by row crop agriculture. Dry conditions over the past five years have led to insufficient water during the summer months. As part of a decision making structure during a water shortage, the state has developed a priority list that takes into account the priorities of use based on past court decisions to determine where allocation restrictions should be implemented.

New industrial demand as a result of natural gas drilling in the Fayetteville Shales of central Arkansas are creating not only a spike in water demand, but also concerns over water quality. The poor quality water that is a result of the drilling and fracing process has become an issue in recent years with uncertainty regarding the disposal and treatment of the water.

The AWP begins with a general description of the state's surface and groundwater resources, quantification of current and future water needs (Figure 1), determination of safe yields for surface and groundwater, and identification of potential critical water areas. Following the overview, the AWP lists general statewide and specific regional water resources issues and provides recommendations. Issues include:

- Declining groundwater levels due to rapid withdrawals in alluvial aquifer in the Grand Prairie Region and area west of Crowleys Ridge. Threats include permanent dewatering of the aquifer or saltwater intrusion.
- Declining groundwater levels in the Sparta Sand aquifer in the Gulf Plain. Threats include permanent dewatering of the aquifer or saltwater intrusion.
- Water use along Bayou Meto and Plum Bayou exceeds supply during the irrigation season.
- Water demand in the Boeuf Basin and Bayou Bartholomew exceeds supply during the irrigation season.
- Conjunctive use is necessary to provide for future needs. Surface water will need to provide approximately 20% of supply and must be regulated to prevent adverse impacts to instream needs.
- Nonpoint source pollution continues to degrade water quality.

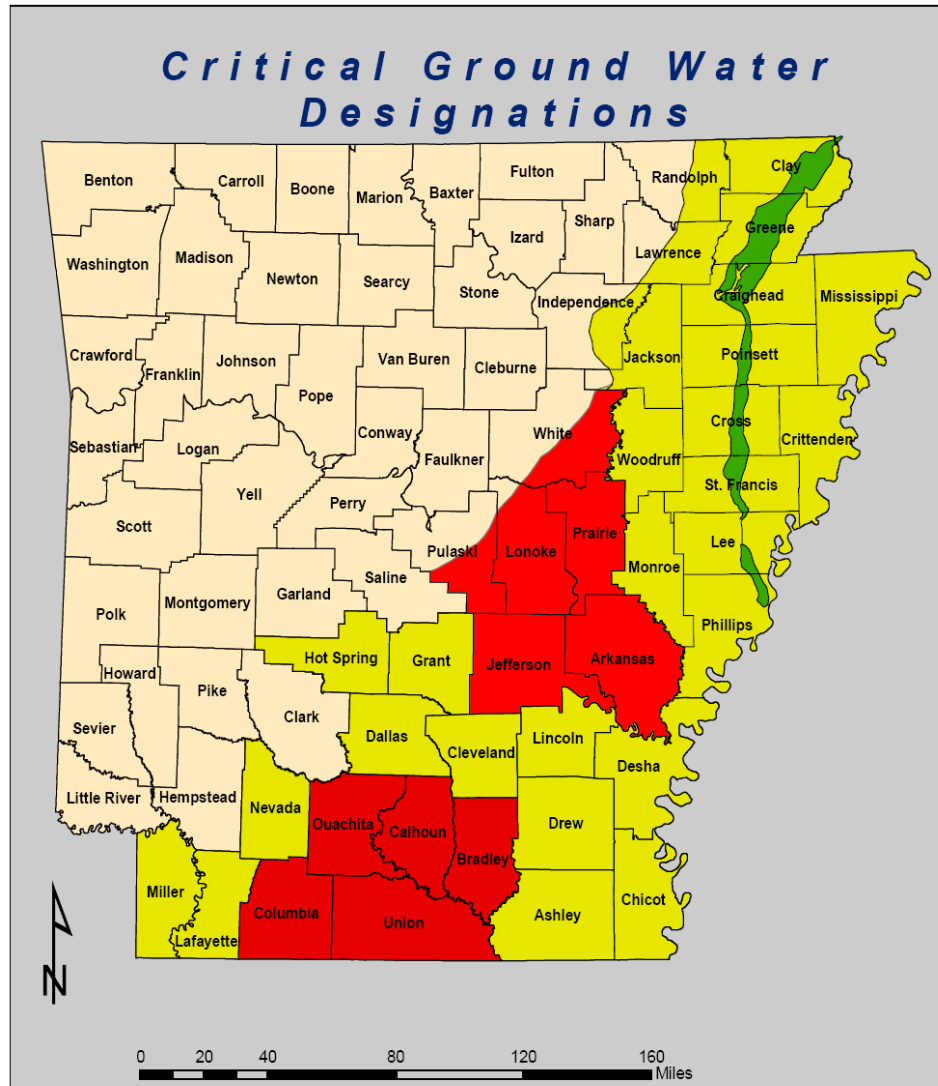
- Saltwater intrusion is a significant problem in several Arkansas aquifers. Saltwater contamination also occurs where oil, gas, or water wells penetrate saltwater aquifers that are under artesian pressure.
- Water quality is threatened by poorly constructed and/or abandoned oil, gas, and water wells.
- A statewide program to comprehensively monitor groundwater quality is needed to identify possible problem areas.
- During dry years, water from natural flows may not be available for direct diversion from surface water sources.
- Authority to manage use of excess surface water at the local level is ambiguous.
- Water conservation must be pursued more aggressively as an alternative to development to meet future water needs.
- Due to the 25 percent limit on water transfer mandated by Act 1051, over 26 million acre-feet of water is allowed to flow downstream.
- Cities and towns along Highway 67 from Searcy to Arkadelphia currently, on in the future, lack adequate water supplies to support economic expansion because groundwater supplies limited or non-existent.
- Many areas along the Arkansas River have insufficient sources of water for municipal, industrial, and agricultural uses.
- Naturally occurring low yields and poor quality of water in shallow aquifers is the most extensive groundwater problem in the Interior Highlands.
- Impaired drainage and floodwater damages continue to limit agricultural production in Arkansas.
- Proposals to develop surface water supply sources often conflict with conservation efforts.
- Water resource development projects often have significant environmental effects.
- The public is generally unaware of the problems associated with effective conservation and use of water resources. In addition, many individuals with legal and planning responsibilities are not trained in resource management.



**Figure 1. Total Water Use and Projected 2030 Water Use (AWP)**

Areas in the state that have serious water supply problems are designated as critical water areas (AWP). Although the AWP identifies both critical surface water and groundwater areas, only five counties have been official declared as critical groundwater areas (Figure 2). This

designation is meant to encourage local interests to develop a plan of action to address water supply problems. In 1999, the Arkansas legislature passed Act No. 1050 authorizing the creation of groundwater conservation boards in counties designated as critical groundwater areas. Designation as a critical area qualifies the county for enhanced tax credits for conservation activities, focuses education programs there, and sets the area as a state priority for federal programs and funding (ANRC, 2008).



- Legend**
- Crowleys Ridge
  - Current Study Areas
  - Current Critical Areas
  - County Boundary

South Arkansas Study Area for Sparta in 1996  
 Grand Prairie Study Area for Sparta & Alluvial in 1998



Fig. 3

**Figure 2. Critical Groundwater Areas (ANRC, 2008)**

Interstate water issues are a concern in Arkansas. Currently the state is experiencing conflicts with Tennessee, Mississippi, and Louisiana regarding the withdrawal of water from the Sparta



Aquifer. Open dialogue is also maintained with Oklahoma and Missouri regarding shared water resources issues and concerns. Arkansas is a member of two interstate river compacts, the Red River Compact Commission with Oklahoma, Texas, and Louisiana, and the Arkansas River Compact with Oklahoma.

The Arkansas Department of Emergency Management (ADEM) publishes the Arkansas Emergency Operations Plan (ADEM, 2008) that provides guidance on how local, state, and federal resources can be used to respond to all types of natural and man-made disasters. ADEM also prepares the state Hazard Mitigation Plan (ADEM, 2007). According to the Plan, flooding occurs every year and poses one of the greatest natural threats to the state.

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- 2. Identify mitigation grant opportunities for state and local governments, their sub-jurisdictions and the general public, and provide effective technical support.*
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- 4. Formulate objectives using state of the art knowledge to reduce vulnerability to all identified hazards.*

The effects of climate change are not considered in the AWP, however, the state has a Governor's Commission on Global Warming that was established in 2007. In late 2008, the Commission released a final report that recommends the adoption of statewide pollution reduction goals for greenhouse gas emissions and 54 policies aimed at climate, energy, and commerce issues. Reduction goals are based on year 2000 emission levels and are: 20 percent by 2020, 35 percent by 2025, and 50 percent by 2035. Among the recommended policies is improved water management and use in the agricultural, forestry, and waste management sectors.

To effectively address the priority water resources needs in the state, Arkansas needs the proper resources to re-examine how planning is done in Arkansas and to identify gaps in achieving their vision. In order to initiate the process to update the state water plan, the state needs money to fund staff and data collection and modeling. An update to the state water plan will also need to involve an exploration of policy issues to determine the appropriate role of the state in the management of resources and to identify what management tools are needed. The state also plans to do more public outreach in the development of a state water plan to allow citizens to express their needs and concerns and to convince the public of the need to make changes to the existing laws and mechanisms of water resources planning and management.

Solving water resources problems at the local level is a priority in Arkansas. The state feels that having local entities in place to help develop and deliver the planning process is an effective way to solve conflicts. As an example the ANRC has worked with local irrigation districts and the USACE to utilize excess surface water to meet agricultural demands and to reduce the demand for groundwater to sustainable levels. Additional policy, infrastructure, and authority are needed to more effectively address water resources issues at the local or watershed level.

## 5. PARTNERSHIPS, STAKEHOLDER, AND PUBLIC INVOLVEMENT

Arkansas partners with numerous federal agencies, including: the U.S. Army Corps of Engineers on construction projects and developing basin reports, U.S. Environmental Protection Agency on the non-point source pollution program, U.S. Department of Agriculture, U.S. Geological Survey on data collection and model development, Federal Emergency Management Agency, and the Federal Energy Regulatory Commission. ANRC and ADEQ also collaborate with several state agencies such as the Arkansas Association of Conservation Districts, the Arkansas Game and Fish Commission, Department of Health, Pollution Control and Ecology Commission, Water Well Construction Commission, Arkansas Watershed Advisory Group, and Waterways Commission.

The public is involved in the ANRC planning process through the meetings of the state's 75 county-based conservation districts (Figure 3).

## 6. PLAN IMPLEMENTATION STRATEGY

Arkansas implements actions to address water supply and water for environmental purposes through its water development projects. All state water development projects must be certified by the ANRC for compliance with the AWP (ACA §15-22-503(e)(1)). In 2007, the Commission defined new criteria for drinking water, drainage and flood control projects requiring AWP compliance review (ANRC, 2007). Types of water development projects that require ANRC review are (ANRC, 2009b):

- Projects that involve the development of new water supply source
- Projects that utilize a new or different place of withdrawal
- Projects that increase water treatment plant capacity
- Projects involving system expansion that would result in an aggregate increase of existing and additional water demand being greater than 80 percent of existing water treatment capacity
- Projects involving an expansion that would result in an increase of more than 20 percent of the current average water use
- Projects involving flood control or drainage
- Projects that would serve areas that are being served by other entities or projects that would serve areas on which other projects have, or have applied for, water plan certification



**Figure 3. Arkansas County-Based Conservation Districts**

Funding for water development projects is available through four fund sources managed by ANRC: Water Development Fund; Water, Sewer & Solid Waste Fund; Water Resource Cost-Share Revolving Fund; and Drinking Water State Revolving Fund. The Water Development Fund supports the following types of projects, in order of priority (ANRC, 2009c): public water supply, irrigation (water conservation), flood control and/or drainage, erosion and sediment control, streambank stabilization, recreation and/or fish & wildlife, hydroelectric power, and navigation. The Water, Sewer & Solid Water Fund supports, in order of priority (ANRC, 2009e): public water supply, sewer systems, and solid waste collection/disposal. The following types of cost-share projects qualify for assistance through the Water Resources Revolving Fund (ANRC, 2009d):

- Construction, replacement, acquisition, and ownership of facilities
- Land and easement procurement
- Improvements for developing and utilization of water resources
- Projects to supply quality water to residents
- Provide water for navigation
- Provide recreational access to lakes and streams
- Reclaim, preserve and protect the state's land resources
- Protect the wealth of the state from disastrous floods

ADEQ's Arkansas Watershed Advisory Group assists local citizens and organization with watershed management and conservation (ADEQ, 2009a).

## **7. OUTCOMES ASSESSMENT PROCESS**

There is no defined outcomes assessment process in Arkansas' state water planning efforts at this time. ANRC produces an annual report on groundwater protection and conservation programs

administered by the ANRC, however, including water-level monitoring, development of water-quality standards, and studies of water use trends. According to ANRC's 2007 Annual Ground Water Report, the general trend throughout the state is that groundwater levels are declining due to continued withdrawals at rates that are not sustainable.

## 8. NEEDS, CHALLENGES, AND CRITICAL PRIORITIES – INTERVIEW INSIGHTS

The key water resources issues/needs in the state of Arkansas are:

- Steady increase in water demand, especially in the agricultural and municipal sectors
- Increase in the number of water shortages throughout the state
- Declining water tables and lower stream flows
- New industrial water demand from natural gas drilling in the Fayetteville Shale formation in north and central Arkansas
- Cooperative management of shared water resources with neighboring states
- Need to develop an update or revisions to the 1986 state water plan
- Need more management tools (i.e. policy, authority, and infrastructure) to develop and deliver the planning process
- Need to engage more with the citizens of Arkansas to get their support for policy changes

An increase in water demand coupled with declining supplies indicated by lower water tables and decreased flows have become the most pertinent water resources issues in the state of Arkansas over the past few decades. Dry conditions along with an increased demand for water used to extract natural gas in portions of central and northern Arkansas have exacerbated the problem in recent years. In addition, Arkansas is guided by a state water plan that is over 20 years old and lacks the proper authority to effectively address the state's acute and emerging water resources issues.

Arkansas water resources policy is still operating under the principle that it is a water-rich state. As a result, the proper policy, authority, and infrastructure are not in place to plan and manage the state's water resources to effectively meet contemporary challenges and priorities. The ANRC hopes to address these needs in updating and revising the state water plan. The interview utilized in the development of this summary revealed that there is a willingness in Arkansas to discuss water resources issues in the state and work to solve problems into the future. What is needed most of all are the adequate resources to move forward. Requests to the Arkansas General Assembly for funding to develop an updated version of the plan have been made, but no money has been awarded.

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