



Statewide Summary Recommendations

Issues	Recommendations
<p>SURFACE WATER</p> <p>Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife, and aquifer recharge based on sound science is needed for all Arkansas streams. The amount of water available (i.e., 25%) for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, recreation) needs to be determined.</p>	<p>Recommendations for establishing excess surface water ranged from below 25% to as high as 75%. Because of these differences, it is recommended that the proportion of stream flow designated as excess surface water be determined by an independent entity for all perennial streams in Arkansas using a risk-based, flow-fisheries framework as the scientific approach for estimating the fish and wildlife component of instream flow uses through a stakeholder-driven process. Basins with estimated water gaps should receive higher priority for application of this approach. Intermittent streams should be evaluated through a different process to allow use during periods of high flow. The study should be conducted through an open and transparent process. ANRC and other state and federal grant monies should be sought to fund this scientific study.</p>
<p>INFRASTRUCTURE</p>	<p>The State of Arkansas benefits greatly from navigation as a water resource. Municipal and industrial water supply, irrigation and other agricultural uses, fish and wildlife habitat, recreation, flood risk reduction, and thermoelectric/hydropower are all benefits received in part from navigation. The state should work to maximize the full development of the Arkansas, Mississippi, Ouachita, Red, and White Rivers for navigation and the other benefits it receives.</p>
<p>WATER QUALITY</p> <p>Degradation of surface water quality from nonpoint sources is a problem throughout the state. Erosion and sedimentation (nonpoint source pollution) is a significant problem contributing to water quality problems and should be considered as high of a priority as water quantity.</p>	<p>Water quality authority is shared by ADEQ and ANRC. The AWP should reflect and integrate the water quality policies of ADEQ as the state's primary planning document regarding water quality policy. Both ADEQ and ANRC should collaborate to monitor, plan, and fund water quality improvement programs to reduce sediment and nutrient loading into state streams, lakes, rivers and wetlands with particular emphasis on maintaining the integrity of relatively unaltered, high quality streams. Increased water quality monitoring shall be implemented at a segment level to assess program implementation success.</p>
<p>WATER SHORTAGE</p> <p>A pre-shortage allocation process does</p>	<p>ANRC should create a state drought and shortage response team that develops drought and shortage</p>



Arkansas Water Plan Update



Statewide Summary Recommendations (continued)

Issues	Recommendations
<p>not exist so the amount of water needed to satisfy instream needs and the priority assigned to different water uses during times of shortage is unclear.</p>	<p>contingency plans for each planning region. The team should establish regional priorities for water use during droughts and shortages. The prioritization should include established inter and intra basin transfers. Allocation during drought should be tied to nearby stream gages.</p>
<p>Public Awareness There is a lack of public awareness about the importance of water for all sectors</p>	<p>Public awareness should be elevated through public education seminars about agricultural water uses, needs, importance for food security, and the importance of agriculture to the Arkansas economy. These seminars should be provided by and promoted by University of Arkansas Division of Agriculture field agents working in cooperation with local NRCS, Farm Bureau, County Conservation Districts, and local governing bodies, and should include information on both water quantity and quality.</p>
<p>Water Law and Regulation</p>	<p>Recommendations should NOT include restrictions, mandates, taxes, or assessments applicable to groundwater <u>or surface water</u> use without sound data and contemporaneously providing viable, timely, and economical solutions in lieu such restrictions or added costs.</p>
<p>WATER QUALITY Degradation of surface water quality from nonpoint sources is a problem throughout the state. Erosion and sedimentation (nonpoint source pollution) is a significant problem contributing to water quality problems and should be considered as high of a priority as water quantity.</p>	<p>ANRC should work closely with state and federal agencies, conservation districts, and non-governmental organizations to remove streams from ADEQ's 303(d) list through education, and state and federal conservation programs.</p>
<p>INFRASTRUCTURE Infrastructure, from municipal and rural water/wastewater distribution systems to dams, levees, and PL566 structures, are aging and failing.</p>	<p>Provide local/state funding support for repair, rehabilitation of PL566 dams and ongoing maintenance. These funds shall also be used to support technical assistance and equipment.</p>



Statewide Summary Recommendations (continued)

Issues	Recommendations
<p>GROUNDWATER</p> <p>Groundwater table declines are an on-going issue and are expected to increase in the future. In some regions, there are no groundwater models for estimating existing aquifer volumes and yields.</p>	<p>Establish a statewide groundwater monitoring network to determine the rate of decline and provide the basis for management recommendations to eliminate the decline, particularly in planning regions without groundwater models.</p>
<p>WATER STORAGE</p> <p>Additional surface water storage is needed, ranging from on-farm/off-channel storage, in-stream weirs, to new reservoirs, to locks and dams on navigable rivers to ensure there is adequate water to satisfy riparian and non-riparian uses, and instream needs.</p>	<p>ANRC Rule 14 should be amended to reduce the required storage volume to 1-2 ac-ft so additional entities are eligible for cost share of on-farm storage systems.</p>
<p>Measurement and Assessment</p>	<p>Critical streamflow gages should be identified and maintained through time in every planning region. Critical gages would be defined as those necessary for basin yield analysis, upstream flow requirements, drought allocation, and compact compliance.</p>



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Statewide Summary Recommendations (continued)

Issues	Recommendations
<p>SURFACE WATER</p> <p>Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife, and aquifer recharge based on sound science is needed for all Arkansas streams. The amount of water available (i.e., 25%) for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, recreation) needs to be determined.</p>	<p>Available Surface Water. Expand the statutory definition of excess surface water to raise the percentage of available water, thus providing access to more water for diversion purposes.</p>
<p>FUNDING</p>	<p>Identify the various types of potential funding and match with the most applicable type of project. 1) Public bonds and property owner assessments for regional projects, 2) public funds for local conservation districts, state, and federal agency support, 3) tax incentives for individual on-farm activities. Develop credible budget and plan for each funding type.</p>
<p>Public Awareness</p> <p>There is a lack of public awareness about the importance of water for all sectors</p>	<p>Support expanded research and hiring of researchers by U of A Extension and Conservation Districts for discovery of new conservation practices.</p>
<p>GROUNDWATER</p> <p>Groundwater table declines are an on-going issue and are expected to increase in the future. In some regions, there are no groundwater models for estimating existing aquifer volumes and yields.</p>	<p>Arkansas should commit to the efficient use and management of both of surface water and groundwater resources through conjunctive management, intentionally recharging the basin when excess water supply is available.</p>
<p>GROUNDWATER</p> <p>Groundwater table declines are an on-going issue and are expected to increase</p>	<p>Propose legislation that designates the highest and best use of any Arkansas water be for human consumption and that any Arkansas agency's permitting or program decisions first consider the effects of</p>



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Issues	Recommendations
<p>in the future. In some regions, there are no groundwater models for estimating existing aquifer volumes and yields.</p>	<p>decision on the availability, quantity or quality of existing drinking water supplies.</p>
<p>SURFACE WATER</p> <p>Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife, and aquifer recharge based on sound science is needed for all Arkansas streams. The amount of water available (i.e., 25%) for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, recreation) needs to be determined.</p>	<p>The proportion of stream flow designated as excess water be determined by an independent entity using a scientific approach through an open and transparent process. Intermittent streams should be evaluated through a separate process. ANRC and other state agencies should fund or seek funds for this study.</p>
<p>WATER STORAGE</p> <p>Additional surface water storage is needed, ranging from on-farm/off-channel storage, in-stream weirs, to new reservoirs, to locks and dams on navigable rivers to ensure there is adequate water to satisfy riparian and non-riparian uses, and instream needs.</p>	<p>ANRC, in conjunction with other state and federal agencies, should identify projects and determine how to transfer/store water to meet demand on a regional, watershed basis for conjunctive water management.</p>
<p>WATER STORAGE</p> <p>Additional surface water storage is needed, ranging from on-farm/off-channel storage, in-stream weirs, to new</p>	<p>On-farm water storage facilities.</p> <ul style="list-style-type: none"> a. Aggressively promote benefits of on-farm water storage. b. Enhance technical support from NRCS and state technicians. c. Streamline application process for approved on-farm projects. d. Increase incentives designed to encourage voluntary implementation (aggressive tax credits at



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reservoirs, to locks and dams on navigable rivers to ensure there is adequate water to satisfy riparian and non-riparian uses, and instream needs.	multiple of construction cost; higher multiple in critical ground water areas; expand annual limits for use of tax credits).
FUNDING	Propose an 1/8 cent sales tax to provide sustained funding for water quantity and quality projects, with an emphasis on projects that promote surface water use to reduce groundwater withdrawals. Surface water projects shall incorporate both water conservation and best management practices.
Public Awareness There is a lack of public awareness about the importance of water for all sectors	Encourage state natural resource agencies/entities to expand existing educational programs (Project WILD, Project WET, Arkansas Stream Team Program, plus others) to increase the level of awareness of the importance of water to the state for all 11 sectors and the need for water conservation measures and best management practices in order to sustain the Natural State's economy, environment, and society into the future.
INFRASTRUCTURE Infrastructure, from municipal and rural water/wastewater distribution systems to dams, levees, and PL566 structures, are aging and failing.	Continue to provide and sustain state tax exempt bonds for the maintenance of the aging infrastructure. Propose legislation for a sustainable sales tax for repairing, maintaining, and replacing infrastructure. Establish a higher ranking for cities/counties/regions/water districts that invest in themselves, as an incentive for those who generate some of their own funding.
FUNDING	Propose legislation to support conservation districts in addressing urban, suburban, and rural natural resources issues, such as technical assistance, staffing, and equipment.
WATER STORAGE Additional surface water storage is needed, ranging from on-farm/off-channel storage, in-stream weirs, to new reservoirs, to locks and dams on navigable rivers to ensure there is adequate water to satisfy riparian and	Regional Projects. <ul style="list-style-type: none"> a. Significant regional projects have been approved (Bayou Meto and White River) and should be completed and evaluated before alternative solutions are pursued. b. Publicly endorse a plan and schedule for completing these approved projects. c. Address funding challenges and develop a plan to obtain necessary funding for completion. d. Identify other viable regional projects, prioritize by need and likelihood of success, and initiate the new projects.



Arkansas Water Plan Update



Statewide Summary Recommendations (continued)

Issues	Recommendations
non-riparian uses, and instream needs.	
Public Awareness There is a lack of public awareness about the importance of water for all sectors	Propose the Governor appoint a taskforce of state agency personnel to develop a single source of the state's water data and information from all agencies and entities.
WATER QUALITY Incremental costs and benefits associated with water quality improvements should be understood and quantified. A cost/benefit analysis should be required for any water quality changes.	Incremental costs and benefits associated with water quality improvements should be understood and quantified. A cost/benefit analysis should be required for any water quality changes.
Measurement and Assessment	Conduct an assessment of progress in implementing the Arkansas Water Plan every 5 years and revise as needed to ensure it is moving toward its goals and objectives.
GROUNDWATER Groundwater table declines are an on-going issue and are expected to increase in the future. In some regions, there are no groundwater models for estimating existing aquifer volumes and yields.	Continued emphasis, tax incentives, and funding shall be given to converting from groundwater to surface water, implementing water management and conservation practices, particularly for agricultural irrigation.



Statewide Summary Recommendations (continued)

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<p>SURFACE WATER</p> <p>Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife, and aquifer recharge based on sound science is needed for all Arkansas streams. The amount of water available (i.e., 25%) for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, recreation) needs to be determined.</p>	<p>Propose legislation that designates the highest and best use of any Arkansas water be for human consumption and that any Arkansas agency's permitting or program decisions first consider the effects of decision on the availability, quantity or quality of existing drinking water supplies.</p>
<p>WATER STORAGE</p> <p>Additional surface water storage is needed, ranging from on-farm/off-channel storage, in-stream weirs, to new reservoirs, to locks and dams on navigable rivers to ensure there is adequate water to satisfy riparian and non-riparian uses, and instream needs.</p>	<p>Dedicated state funding should be provided to support ANRC Title 10 to help off-set a portion of the cost share to increase adopting on-farm storage systems.</p>
<p>FEDERAL REALLOCATION OF STORAGE</p> <p>Reallocation of water storage is needed for all Corps of Engineer impoundments. Storage in these reservoirs was originally allocated 50 to 60 years ago.</p>	<p>ANRC should pursue reallocation of storage in federal impoundments for additional water supply in areas where there is a critical need or increased projected demand is estimated to exceed supply.</p>
<p>REGULATIONS</p> <p>Federal and State regulations and</p>	<p>ANRC should review state and federal laws and regulations collaboratively with ADEQ, ADH, and AGFC and appropriate federal agencies and take appropriate steps to streamline and coordinate water development</p>



Statewide Summary Recommendations (continued)

Issues	Recommendations
<p>policies conflict among agencies and impede development of new water projects, effective management of existing water projects, and restoration of impaired streams.</p>	<p>project procedures and information sources while maintaining comprehensive review criteria.</p>
<p>FUNDING</p> <p>There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Maintaining existing and on-going water projects b. Development and construction of future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Propose legislative funding mechanisms and incentives for consolidating small municipal systems to create or expand regional water/wastewater utilities.</p>
<p>FUNDING</p>	<p>Propose legislation to increase allowable percentages via ANRC's tax credit program to landowners to encourage construction of on-farm reservoirs thereby reducing the dependence on groundwater and surface stream flow.</p>
<p>FUNDING</p>	<p>Support legislation to increase or at least maintain funding for University of Arkansas Research and Cooperative Extension Service education and outreach, including the University of Arkansas Discovery Farm Program. Increased funding could assist faster adoption of water conservation practices.</p>
<p>Public Awareness</p> <p>There is a lack of public awareness about the importance of water for all sectors</p>	<p>A coordinated educational effort among K through 12 schools, universities, nonprofit organizations, and state agencies should be administered through the Water Foundation over the next decade.</p>



Statewide Summary Recommendations (continued)

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<p>Public Awareness There is a lack of public awareness about the importance of water for all sectors</p>	<p>Increase incentives designed to encourage voluntary deployment of irrigation conservation measures and purchase of systems/equipment (aggressive tax credits at multiple of cost; higher multiple in critical ground water areas; expand annual limits for use of tax credits). Develop and promote best management practices (“BMP”), which include, but are not limited to, tail water recovery, PHAUCET/Pipe Planner, water monitoring devices, land leveling, surge valves, remote controls, soil moisture monitors, satellite monitoring of crops and soils, cooperative agreements with energy providers, and cellular links to weather stations.</p>
<p>MEASUREMENT AND ASSESSMENT All water that is withdrawn from a stream should not be assumed to be consumed. Demand estimates should include the return flow from these withdrawals</p>	<p>ANRC should modify permit and reporting forms to explicitly account for return flow.</p>
<p>WATER STORAGE Additional surface water storage is needed, ranging from on-farm/off-channel storage, in-stream weirs, to new reservoirs, to locks and dams on navigable rivers to ensure there is adequate water to satisfy riparian and non-riparian uses, and instream needs.</p>	<p>Propose legislation to increase the tax credits for landowners constructing on-farm reservoirs.</p>
<p>SURFACE WATER Surface water impoundments are needed on the Red River so southwest Arkansas can benefit: water supply – industrial and municipal, recreation, fish and wildlife, irrigation, flood risk reduction, and navigation.</p>	<p>Increase water storage capacity upstream from Shreveport, LA through construction of locks and dams for river navigation funded by usage fees on bulk transport, recreation usage, water sales to urban areas, and outside funding.</p>
<p>Surface Water</p>	<p>Propose comprehensive statewide study to determine capabilities for building new reservoir systems (large</p>



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	scale and small scale) to supply surface water and reduce ground water demand.
<p>GROUNDWATER</p> <p>Groundwater table declines are an on-going issue and are expected to increase in the future. In some regions, there are no groundwater models for estimating existing aquifer volumes and yields.</p>	<p>Establish a statewide groundwater monitoring network to determine the rate of decline or increase and provide the basis for management recommendations to reduce the declines, particularly in planning regions without groundwater models.</p>
<p>FUNDING</p>	<p>Propose legislation to modify the existing tax incentives available under the Water Resources Conservation and Development Incentives Act to account for increased water use efficiency or reduction in groundwater withdrawal. Create a graded tax credit with up to a 25% tax credit outside a critical groundwater area, and up to 80% tax credit within a critical groundwater area, with the maximum tax credits based on documented water use efficiencies of greater than 90% or complete transfer from ground water to surface water.</p>
<p>REGIONAL PERSPECTIVE</p> <p>Regional issues are not currently reflected in the Arkansas Water Plan</p>	<p>East Arkansas has areas with distinct water resource characteristics. County lines are not always the proper boundaries for identifying such characteristics or adopting a water conservation plan suitable for a given area. Develop regions or areas for water conservation planning based on identifiable and similarly aligned characteristics.</p>
<p>Public Awareness</p> <p>There is a lack of public awareness about the importance of water for all sectors</p>	<p>Public awareness should be elevated through public education seminars about agricultural water uses, needs, importance for food security, and the importance of agriculture to the Arkansas economy. These seminars should be provided by and promoted by University of Arkansas Division of Agriculture field agents working in cooperation with local NRCS, Farm Bureau, Ag Council, County Conservation Districts, and local governing bodies, and should include information on both water quantity and quality.</p>



Statewide Summary Recommendations (continued)

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<p>GROUNDWATER Overing of groundwater aquifers can lead to permanent loss of storage because the aquifers consolidate or subside. Overing contributes to reduced streamflow because of reduced groundwater discharge to streams.</p>	<p>Surface and groundwater should be managed conjunctively to address water needs for agriculture, drinking water, industry, recreation, and fish and wildlife. ANRC should develop and implement conjunctive management strategies in critical groundwater areas with specific goals to recover the aquifers in those areas.</p>
<p>WATER CONSERVATION Greater emphasis is needed on reuse, recycling, and water conservation education.</p>	<p>Propose legislation for additional funding to support and sustain the educational efforts of nonprofit entities.</p>
<p>INFRASTRUCTURE Funding is needed to repair, replace, maintain, and build infrastructure, including dams, levees, and PL566 structures.</p>	<p>Encourage funding for localized programs be directed by locally led workgroup.</p>
<p>INFRASTRUCTURE Funding is needed to repair, replace, maintain, and build infrastructure, including dams, levees, and PL566 structures.</p>	<p>Encourage local/state funding for support of repair, rehabilitation of PL566 dams and ongoing maintenance.</p>



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Statewide Summary Recommendations (continued)

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<p>MEASUREMENT AND ASSESSMENT Returned water should be included in the calculations of available water. “Withdrawn” does not necessarily always mean “consumed.”</p>	<p>Available water estimates for the Arkansas Water Plan update did incorporate return flow.</p>
<p>WATER SHORTAGE Coordination between state agencies, as well as adaptive management, is needed prior to drought conditions so that plans are made ahead of time. One way this could happen would be through more frequent revisions of the state water plan.</p>	<p>ANRC should encourage cooperation, collaboration, and communication among states’ and federal agencies, local governments, private business/industry, municipalities and individuals who rely on a shared water resource for withdrawal, discharge, recreation (including refuges, wildlife areas, etc.), and/or livelihood in anticipation of and prior to drought and/or possible low flow restrictions.</p>
<p>Water Conservation and Shortage</p>	<p>ANRC must develop water conservation plans to encourage more efficient use of water resources. Water Conservation plans must be based on scientific research and include user interaction to determine practical Best Management Practices (BMP) in water use and water conservation. ANRC must provide detailed user (profile based) action plans that water users can modify and implement in their respective daily operations. Water Conservation plans should be developed for the full water user profile including Domestic, Agricultural, Irrigation, Industrial, and Commercial, Mining, and Irrigation District water supply, power supply, municipal and county. ARNC should periodically survey a sampling of water users (by profile) to assess what BMPs are practical, successful and what is impractical. Surveys should ask users for new BMPs that might need research to determine viability or they have found useful. The ANRC website should encourage users to submit new ideas and critique present BMPs.*</p>
<p>Measurement and Assessment</p>	<p>Refine the data for measuring current irrigation usage and trends. (Current data is widely criticized and is not sufficient for policy matters that affect property rights.)</p>
<p>GROUNDWATER</p>	<p>Existing and on-going water projects (e.g., Grand Prairie and Bayou Meto irrigation projects) should be</p>



Statewide Summary Recommendations (continued)

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<p>Groundwater table declines are an on-going issue and are expected to increase in the future. In some regions, there are no groundwater models for estimating existing aquifer volumes and yields.</p>	<p>funded and completed. Funding recommendations are included with Issue AR-9.</p>
<p>GROUNDWATER Groundwater table declines are an on-going issue and are expected to increase in the future. In some regions, there are no groundwater models for estimating existing aquifer volumes and yields.</p>	<p>Continued emphasis, tax incentives, and funding shall be given to converting from groundwater to surface water, adoption of best water management and conservation practices, particularly for agricultural irrigation.</p>
<p>GROUNDWATER Groundwater table declines are an on-going issue and are expected to increase in the future. In some regions, there are no groundwater models for estimating existing aquifer volumes and yields.</p>	<p>Compile a list of available tools; conservation practices, funding incentives, and tax credits; and local, state, and federal funding sources for groundwater and surface water management and maintain on the ANRC website for public use.</p>
<p>GROUNDWATER Groundwater table declines are an on-going issue and are expected to increase in the future. In some regions, there are no groundwater models for estimating existing aquifer volumes and yields.</p>	<p>Compile a list of available tools; conservation practices, funding incentives, and tax credits; and local, state, and federal funding sources for groundwater and surface water management and maintain on the ANRC website for public use. Water plan should build upon existing incentives by expanding and increasing available incentives.</p>
<p>WATER STORAGE Additional surface water storage is needed, ranging from on-farm/off-</p>	<p>ANRC, in conjunction with other state and federal agencies, should identify projects and determine how to transfer/collect/store water to meet demand on a regional, watershed basis for conjunctive water management.</p>



Statewide Summary Recommendations (continued)

Issues	Recommendations
channel storage, in-stream weirs, to new reservoirs, to locks and dams on navigable rivers to ensure there is adequate water to satisfy riparian and non-riparian uses, and instream needs.	
WATER STORAGE Additional surface water storage is needed, ranging from on-farm/off-channel storage, in-stream weirs, to new reservoirs, to locks and dams on navigable rivers to ensure there is adequate water to satisfy riparian and non-riparian uses, and instream needs.	Propose legislation to increase the tax credits and other incentives for landowners constructing on-farm reservoirs.



Statewide Summary Recommendations (continued)

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<p>WATER QUALITY</p> <p>Degradation of surface water quality from nonpoint sources is a problem throughout the state. Erosion and sedimentation (nonpoint source pollution) is a significant problem contributing to water quality problems and should be considered as high of a priority as water quantity.</p>	<p>Request increased State funding for stream bank stabilization and riparian enhancement, for forestry education and stewardship plans, training for county road crews for road and ditch maintenance, and for paving critical areas of county gravel road systems that are high contributors of sediment. Incentives shall be implemented that encourage private (non-industrial) landowners to retain streamside management zones and use erosion control practices.</p>
<p>WATER QUALITY</p> <p>Degradation of surface water quality from nonpoint sources is a problem throughout the state. Erosion and sedimentation (nonpoint source pollution) is a significant problem contributing to water quality problems and should be considered as high of a priority as water quantity.</p>	<p>ANRC should continue to administer, fund, and implement the nonpoint source program leveraging EPA 319 funds in priority and nutrient sensitive watersheds. Request additional funding appropriations to increase available cost share funds for leveraging federal grants.</p>
<p>WATER QUALITY</p> <p>Degradation of surface water quality from nonpoint sources is a problem throughout the state. Erosion and sedimentation (nonpoint source pollution) is a significant problem contributing to water quality problems and should be considered as high of a priority as water quantity.</p>	<p>Designate additional areas of the State as nutrient surplus areas because of increased animal production. Nutrient management plans should be required in these nutrient surplus areas.</p>



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<p>WATER QUALITY</p> <p>Degradation of surface water quality from nonpoint sources is a problem throughout the state. Erosion and sedimentation (nonpoint source pollution) is a significant problem contributing to water quality problems and should be considered as high of a priority as water quantity.</p>	<p>Propose legislation to increase, or at least maintain, funding for nonpoint source controls (streambank restoration, erosion control, and forest management), prioritizing projects in "priority watersheds," and "nutrient sensitive" watersheds.</p>
<p>WATER SHORTAGE</p> <p>A pre-shortage allocation process does not exist so the amount of water needed to satisfy instream needs and the priority assigned to different water uses during times of shortage is unclear.</p>	<p>ANRC should create a state drought and shortage response team that develops drought and shortage contingency plans for each planning region. The team should establish regional priorities for water use during droughts and shortages. The prioritization should include established inter and intra basin transfers. Allocation during drought should be tied to nearby stream gages and groundwater aquifer monitoring.</p>
<p>REGULATIONS</p> <p>Federal and State regulations and policies conflict among agencies and impede development of new water projects, effective management of existing water projects, and restoration of impaired streams.</p>	<p>Establish a "mediator" as an advocate for cities/utilities with federal/state regulators to facilitate the permitting process.</p>



Statewide Summary Recommendations (continued)

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<p>FUNDING</p> <p>There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Maintaining existing and on-going water projects b. Development and construction of future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Propose legislation to create a water check-off program for all water users. These funds should be used to complete existing projects, fund new projects, and develop outreach and education programs. The program will emphasize surface water projects that reduce ground water withdrawals, integrated irrigation water conservation and management practices, and repair/replacement of water infrastructure.</p>
<p>FUNDING</p> <p>There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Maintaining existing and on-going water projects b. Development and construction of future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding 	<p>Propose legislation to create designated revenue streams from all water users to help finance water needs. These funds should be used to complete existing infrastructure development projects, fund new projects, and develop outreach and education programs. The program will emphasize surface water projects that reduce ground water withdrawals, integrated irrigation water conservation and management practices, and repair/replacement of water infrastructure.</p>



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Issues	Recommendations
incentives.	
FUNDING	Propose legislation to increase the bond funding authority under the existing Arkansas General Obligations Bond programs so monies can be utilized to cost share with federal or state programs for water projects.
FUNDING	Propose legislation to authorize a water resources reconstruction and repair funding program under the authority and management of ANRC, specifically to assist local and county entities in repairing, replacing, and maintaining infrastructure.
FUNDING	Propose a state-wide funding mechanism (potentially a sales tax) to provide sustained funding for water quantity and quality projects, with an emphasis on projects that promote surface water use to reduce groundwater withdrawals. Surface water projects shall incorporate both water conservation and best management practices.
FUNDING	Propose legislation to increase the duration of tax credits for projects that transfer groundwater to surface water use to encourage adoption, and extend this credit for early adopters of surface water projects.
FUNDING	Propose legislation to increase the duration of tax credits for projects that transfer use from groundwater to surface water to encourage adoption, and extend this credit for early adopters of surface water utilization systems.
FUNDING	Identify the various types of potential funding and match with the most applicable type of project. For instance, 1) public bonds and property owner assessments for regional projects, 2) public funds for state and federal agency support and 3) tax incentives for individual on-farm activities. Develop credible budget and plan for each funding type.
REGIONAL PERSPECTIVE Regional issues are not currently reflected in the Arkansas Water Plan	ANRC has committed to including regional uses and recommendations in the Arkansas Water Plan update.
Public Awareness There is a lack of public awareness about the importance of water for all sectors	The Arkansas Water Foundation should formulate a holistic and integrated framework for developing and promoting statewide awareness, outreach, and educational programs, and coordinate similar efforts among state agencies, universities, and nongovernmental organizations. This integrated framework should include training modules on water and water related issues and the broad implications of water for sustainable communities for community leaders, local authorities, and business leaders. There shall be a focus on



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Statewide Summary Recommendations (continued)

Issues	Recommendations
	prevention of water related problems as well as water conservation and the economic benefits of both prevention and conservation.
Public Awareness There is a lack of public awareness about the importance of water for all sectors	Prepare a proclamation for the Governor of the State of Arkansas to declare a Decade of Sustainable Water to encourage better understanding of the importance of water, water conservation and management in every facet of Arkansans' lives – environmental, social, and economic.
Public Awareness There is a lack of public awareness about the importance of water for all sectors	Establish a common website where all water oriented education and conservation information and data can be centralized (i.e., Arkansaswater.org).
Public Awareness There is a lack of public awareness about the importance of water for all sectors	Aggressively educate and promote the need for irrigation conservation measures and identify best management practices and technology.
Measurement and Assessment	Adjust irrigation usage trends/projections/goals as better data are gathered and measurable water savings are achieved.
Measurement and Assessment	Establish goals and aggressive incentives for achieving measurable water savings.
Water Conservation and Shortage	Establish goals and aggressive incentives for deploying best management practices and water conservation technologies.
Measurement and Assessment	Establish goals and aggressive incentives for increasing the use of water monitoring devices.
Measurement and Assessment	Establish milestones throughout the scheduled term of the Water Plan.
Measurement and Assessment	Conduct an assessment of progress in implementing the Arkansas Water Plan every 5 years and revise as needed to ensure it is moving toward its goals and objectives. Assessments should provide an accurate estimation of where we are today and provide an understanding of what the state's goals are for water savings, storage capacity development, and adoption of technologies and BMPs.
Measurement and Assessment	Critical streamflow gages should be identified and maintained through time in every planning region. Critical gages would be defined as those necessary for basin yield analysis, upstream flow requirements, drought allocation, and compact compliance.



Statewide Summary Recommendations (continued)

Issues	Recommendations
Measurement and Assessment	A consistent, standardized approach should be developed for estimating and reporting water use for different crops for a more precise accounting of water use across counties. Such an approach would be best if it was voluntary and incentivized if there are additional reporting requirements or data transmitted. In addition, such information should ensure appropriate measures to protect privacy of landowners.
Measurement and Assessment	A consistent, standardized approach should be developed for estimating and reporting water use for different crops for a more precise accounting of water use across counties.

Note: Reference to “aggressive incentives” or “aggressive tax credits” means something along the lines of tax credits equal to 2-3 times the cost of the conservation measure and much higher annual limits for use of the tax credit. These aggressive incentives would be available for years 1-4 (set a known expiration date) so as to attract more immediate and measurable participation in water monitoring and conservation.



East Region Summary Recommendations (continued)

East Region Summary Recommendations

Issues	Recommendations
<p>SURFACE WATER Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife, and aquifer recharge based on sound science is needed for all Arkansas streams to determine the amount of water available for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, recreation).</p>	<p>Recommendations for establishing excess surface water ranged from below 25% to as high as 75%. Because of these differences, it is recommended that the proportion of stream flow designated as excess surface water be determined by an independent entity for all perennial streams in Arkansas using a risk-based, flow-fisheries framework as the scientific approach for estimating the fish and wildlife component of instream flow uses through a stakeholder-driven process. Basins with estimated water gaps should receive higher priority for application of this approach. Intermittent streams should be evaluated through a different process to allow use during periods of high flow. The study should be conducted through an open and transparent process. ANRC and other state and federal grant monies should be sought to fund this scientific study.</p>
<p>Infrastructure</p>	<p>The State of Arkansas benefits greatly from navigation as a water resource. Municipal and industrial water supply, irrigation and other agricultural uses, fish and wildlife habitat, recreation, flood risk reduction, and thermoelectric/hydropower are all benefits received in part from navigation. The state should work to maximize the full development of the Arkansas, Mississippi, Ouachita, Red, and White Rivers for navigation and the other benefits it receives.</p>
<p>GROUNDWATER Overing of groundwater aquifers can lead to permanent loss of storage because the aquifers consolidate or subside. Overing contributes to reduced streamflow because of reduced groundwater discharge to streams.</p>	<p>Surface and groundwater should be managed conjunctively to address water needs for agriculture, drinking water, industry, recreation, and fish and wildlife. ANRC should develop and implement conjunctive management strategies in critical groundwater areas with specific goals to recover the aquifers in those areas.</p>
<p>WATER QUALITY Incremental costs and benefits associated with water quality improvements should be understood and quantified. A cost/benefit analysis should be required for any water</p>	<p>Incremental costs and benefits associated with water quality improvements should be understood and quantified. A cost/benefit analysis should be required for any water quality changes.</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
quality changes.	
<p>WATER SHORTAGE The state needs to be more proactive in addressing potential shortages before the need for allocation is required, and establish a pre-shortage allocation process through coordination of all stakeholders.</p>	<p>Shortage and drought contingency plans should be developed for the Bayou Bartholomew, Bayou Macon, Bayou DeView, St. Francis, Cache, and Beouf River basins. The Fish and Wildlife Flow Framework should serve as the stakeholder process for scientifically determining appropriate minimum flow levels for different classes of streams statewide. Priorities of use during a drought or shortage should be regionally determined by local landowners, recreationists, industry and fish/wildlife scientists before those shortages occur to reflect regional priorities.</p>
<p>Water Law and Regulation</p>	<p>Recommendations should not include restrictions, mandates, taxes or assessments applicable to groundwater use without sound data and contemporaneously providing viable, timely and economical solutions in lieu such restrictions or added costs.</p>
<p>GROUNDWATER Overing of groundwater aquifers can lead to permanent loss of storage because the aquifers consolidate or subside. Overing contributes to reduced streamflow because of reduced groundwater discharge to streams.</p>	<p>Reserve deep aquifers for use as municipal drinking water sources.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Propose legislation to increase allowable percentages of ANRC’s tax credit program to landowners to encourage construction of on-farm reservoirs thereby reducing the dependence on groundwater and surface stream flow.</p>
<p>FUNDING There is insufficient funding for:</p>	<p>Propose legislation to increase the bond funding authority under the existing Arkansas General Obligations Bond programs so monies can be utilized to cost share with federal or state programs for</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
<ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>water projects.</p>
<p>INFORMATION MANAGEMENT There is no single source of water data or information across agencies.</p>	<p>Designate Conservation Districts as the repository for various records, including but not limited to utility system records, and make that information accessible to those that may need to use it.</p>
<p>INFRASTRUCTURE Infrastructure for existing, on-going, and future projects is inadequate, including moving water from where it is, to where it is needed. This includes infrastructure for reducing flood flow and addressing drainage issues. In addition, the 25% excess surface water definition needs scientific justification.</p>	<p>Available Surface Water. Expand the statutory definition of excess surface water to raise the percentage of available water, thus providing access to more water for diversion purposes.</p>
<p>Water Conservation and Shortage</p>	<p>ANRC must develop water conservation plans to encourage more efficient use of water resources. Water Conservation plans must be based on scientific research and include user interaction to determine practical Best Management Practices (BMP) in water use and water conservation. ANRC must provide detailed user (profile based) action plans that water users can modify and implement in their respective daily operations. Water Conservation plans should be developed for the full water user profile including Domestic, Agricultural, Irrigation, Industrial, and Commercial, Mining, and Irrigation District water supply, power supply, municipal and county. ARNC should periodically survey a sampling of water users (by profile) to assess what BMPs are practical, successful and what is impractical. Surveys should ask users for new BMPs that might need research to determine viability or they have found useful. The ANRC website should encourage users to submit new ideas and critique present</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
	BMPs.*
<p>GROUNDWATER Overing of groundwater aquifers can lead to permanent loss of storage because the aquifers consolidate or subside. Overing contributes to reduced streamflow because of reduced groundwater discharge to streams.</p>	<p>Integrate surface water use, groundwater conservation and on farm conservation measures (tailwater recovery, land leveling, strategic water delivery practices) into an integrated and continuous planning process for the delta of Arkansas. Aquifers should be evaluated for quantity and quality as a source for domestic water needs and other uses.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Propose legislation to increase State funding for stream bank stabilization and riparian enhancement, for forestry education and stewardship plans, training for county road crews for road maintenance, and for paving critical areas of county gravel road systems that are high contributors of sediment.</p>
<p>WATER STORAGE Additional surface water storage is needed, ranging from on-farm/off-channel storage, in-stream weirs, to new reservoirs, to locks and dams on navigable rivers to ensure there is adequate water to satisfy riparian and non-riparian uses, and instream needs.</p>	<p>Regional Projects.</p> <ul style="list-style-type: none"> a. Significant regional projects have been approved (Bayou Meto and White River) and should be completed and evaluated before alternative solutions are pursued. b. Publicly endorse a plan and schedule for completing these approved projects. c. Address funding challenges and develop a plan to obtain necessary funding for completion. d. Identify other viable regional projects, prioritize by need and likelihood of success, and initiate the new projects.



East Region Summary Recommendations (continued)

Issues	Recommendations
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Propose legislation to support conservation districts in addressing urban, suburban, and rural natural resources issues, such as technical assistance, staffing, and equipment. Maintain, at a minimum, current funding for extension and research staff.</p>
<p>REGIONAL PLANNING Geographic subareas in the Delta must be considered in planning and implementing water projects. One size does not fit all areas.</p>	<p>Retain the Planning Region Work Groups for implementation of the Arkansas Water Plan, particularly related to subregional issues and considerations.</p>
<p>Measurement and Assessment</p>	<p>Refine the data for measuring current irrigation usage and trends. (Current data is widely criticized and is not sufficient for policy matters that affect property rights.)</p>
<p>SURFACE WATER Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife, and aquifer recharge based on sound science is needed for all Arkansas streams to determine the amount of water available for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, recreation).</p>	<p>Reasonable use of excess surface water should be determined by an independent entity in basins containing surface water gaps using the Fish and Wildlife Flow Framework as the scientific process to improve information about stream flow needs of fish and wildlife, with a stakeholder process to determine basin specific priorities of the in stream and out of stream of water uses. Intermittent streams should be evaluated through a different process to allow use during periods of high flow.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects 	<p>Propose a voluntary water check-off program for municipal, industrial, and agricultural users that can be used to fund projects converting groundwater to surface water use, water conservation practices,</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
<ul style="list-style-type: none"> b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>education and outreach, and repair/replacement of infrastructure.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>ANRC rules such as Title 10 & Title 14 should be amended so they are more accessible to livestock producers. Dedicated state funding is needed for Title 10 to help offset a portion of the cost share. This will increase adopting of on-farm storage. The AC-FT threshold required for eligibility under Title 14 should be lowered to 1-2 AC-FT.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Propose legislation for a 1/8 cent sales tax to provide sustained funding for water quantity and quality projects, with an emphasis on projects that promote surface water use to reduce groundwater withdrawals. Surface water projects shall incorporate both water conservation and best management practices.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects 	<p>Propose legislation to increase the duration of tax credits for projects that transfer groundwater to surface water use to encourage adoption, and extend this credit to early adopters of surface water projects.</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
<ul style="list-style-type: none"> b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	
<p>FUNDING</p> <p>There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Propose legislation to target tax credits:</p> <ul style="list-style-type: none"> o For flow metering, surge valves, multiple inlet irrigation systems, planned polypipe furrow irrigation systems, land improvements such as land leveling, surface water collection, storage and distribution systems, tail water recovery, and other irrigation BMPs known to reduce water usage.
<p>INFORMATION MANAGEMENT</p> <p>There is no single source of water data or information across agencies.</p>	<p>Propose the Governor of the State of Arkansas appoint a task force to develop a single source of the state's water data or information across agencies and Arkansas.</p>
<p>ADMINISTRATION</p> <p>A modernized administrative structure is needed for statewide water management (one authority) rather than having it distributed across multiple agencies</p>	<p>ANRC should formulate and propose an administrative structure for statewide water management within one agency.</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
<p>REGIONAL PLANNING Geographic subareas in the Delta must be considered in planning and implementing water projects. One size does not fit all areas.</p>	<p>East Arkansas has areas with distinct water resource characteristics. County lines are not always the proper boundaries for identifying such characteristics or adopting a water conservation plan suitable for a given area. Develop regions or areas for water conservation planning based on identifiable and similarly aligned characteristics.</p>
<p>WATER CONSERVATION Continue to pursue water conservation practices as an alternative to development for future needs.</p>	<p>ANRC should promote quantifying water usage and incorporation of this information into integrated irrigation water conservation and management practices through tax incentives, cost-share programs, and outreach and education.</p>
<p>WATER CONSERVATION Continue to pursue water conservation practices as an alternative to development for future needs.</p>	<p>Increase incentives designed to encourage voluntary deployment of irrigation conservation measures and purchase of systems/equipment (aggressive tax credits at multiple of cost; higher multiple in critical ground water areas; expand annual limits for use of tax credits). Develop and promote best management practices (“BMP”), which include, but are not limited to, tail water recovery, PHAUCET/Pipe Planner, water monitoring devices, land leveling, surge valves, remote controls, soil moisture monitors, satellite monitoring of crops and soils, cooperative agreements with energy providers, and cellular links to weather stations.</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
<p>INFRASTRUCTURE Infrastructure for existing, on-going, and future projects is inadequate, including moving water from where it is, to where it is needed. This includes infrastructure for reducing flood flow and addressing drainage issues. In addition, the 25% excess surface water definition needs scientific justification.</p>	<p>Regional Projects.</p> <ul style="list-style-type: none"> a. Significant regional projects have been approved (Bayou Meto and White River) and should be completed and evaluated before alternative solutions are pursued. b. Publicly endorse a plan and schedule for completing these approved projects. c. Address funding challenges and develop a plan to obtain necessary funding for completion. d. Identify other viable regional projects, prioritize by need and likelihood of success, and initiate the new projects.
<p>INFRASTRUCTURE Infrastructure for existing, on-going, and future projects is inadequate, including moving water from where it is, to where it is needed. This includes infrastructure for reducing flood flow and addressing drainage issues. In addition, the 25% excess surface water definition needs scientific justification.</p>	<p>On-farm water storage facilities.</p> <ul style="list-style-type: none"> a. Aggressively promote benefits of on-farm water storage. b. Enhance technical support from NRCS and state technicians. c. Streamline application process for approved on-farm projects. d. Increase incentives designed to encourage voluntary implementation (aggressive tax credits at multiple of construction cost; higher multiple in critical ground water areas; expand annual limits for use of tax credits).
<p>PUBLIC AWARENESS AND EDUCATION Education/training is needed to help urban users understand agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>	<p>Arkansas Conservation Districts should develop and implement, in conjunction with UA Cooperative Extension Service and ANRC, an education program about agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
<p>SURFACE WATER</p> <p>Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife, and aquifer recharge based on sound science is needed for all Arkansas streams. The amount of water available (i.e., 25%) for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, recreation) needs to be determined.</p>	<p>The proportion of stream flow designated as excess water be determined by an independent entity using a scientific approach through an open and transparent process. Intermittent streams should be evaluated through a separate process. ANRC and other state agencies should fund or seek funds for this study.</p>
<p>SURFACE WATER</p> <p>Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife, and aquifer recharge based on sound science is needed for all Arkansas streams. The amount of water available (i.e., 25%) for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, recreation) needs to be determined.</p>	<p>Available Surface Water. Expand the statutory definition of excess surface water to raise the percentage of available water, thus providing access to more water for diversion purposes.</p>
<p>FUNDING</p> <p>There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices 	<p>Encourage the legislature to increase or at least maintain funding for University of Arkansas Research and Cooperative Extension Service education and outreach, including the University of Arkansas Discovery Farm Program. Increased funding could assist faster adoption of water conservation practices.</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives.	
FUNDING There is insufficient funding for: a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives.	Propose legislation to target tax credits: <ul style="list-style-type: none"> ○ For flow metering, ○ For livestock watering, and ○ For more efficient suites of irrigation water management practices. Encourage a streamlined EQIP process for flow meters.
Water Quality	Buffer zones reduce or prevent suspended solids (soil) and associated contaminants from being deposited into lakes, rivers, streams, wetlands and/or sources of drinking water as rainfall or snowmelt moves over the ground. ANRC should offer state Tax credits (similar to those Tax credits available under the existing irrigation tax credits system) to Landowners, operators and producers who expand or create buffer zones (filter strips) around crop, pasture, forest and urban areas.
Planning	The water plan should focus on the following items: conservation, development of surface water supply, generating new funding opportunities to develop water infrastructure, education of public on water utilization/conservation, and incentives to increase adoption of conservation systems and best management practices, and research to develop new methods and technologies to reduce water use. Plan should also look to lower regulatory burdens that hamper implementation of the strategies listed above. The plan should avoid regulation, unnecessary taxes and fees, arbitrary limits on consumption, and mandatory adoption of irrigation systems or methods.
Measurement and Assessment	Conduct an assessment of progress in implementing the Arkansas Water Plan every 5 years and revise as needed to ensure it is moving toward its goals and objectives.
GROUNDWATER Overing of groundwater aquifers can lead to	Propose legislation to fund and complete the Grand Prairie and Bayou Meto projects.



East Region Summary Recommendations (continued)

Issues	Recommendations
<p>permanent loss of storage because the aquifers consolidate or subside. Overing contributes to reduced streamflow because of reduced groundwater discharge to streams.</p>	
<p>GROUNDWATER Overing of groundwater aquifers can lead to permanent loss of storage because the aquifers consolidate or subside. Overing contributes to reduced streamflow because of reduced groundwater discharge to streams.</p>	<p>Institute and enforce a penalty for wasteful use of groundwater in agriculture.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Propose a designated revenue stream from water users to help finance water use needs, including projects converting groundwater to surface water use, water conservation practices, education and outreach, research to improve water utilization, and repair/replacement/build new infrastructure.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and 	<p>Propose legislation for a state wide funding mechanism (perhaps a sales tax) to provide sustained funding for water quantity and quality projects, with an emphasis on projects that promote surface water use to reduce groundwater withdrawals. Surface water projects shall incorporate both water conservation and best management practices.</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
<p>f. Synthesis of existing, available tools, practices, and funding incentives.</p>	
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Modify the existing tax incentives available under the Water Resources Conservation and Development Incentives Act to account for increased water use efficiency or reduction in groundwater withdrawal. Create a graded tax credit with up to a 25% tax credit outside a critical groundwater area, and up to 80% tax credit within a critical groundwater area, with the maximum tax credits based on documented water use efficiencies of greater than 90% or complete transfer from groundwater to surface water.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Modify the existing tax incentives available under the Water Resources Conservation and Development Incentives Act to account for increased water use efficiency or reduction in groundwater withdrawal. Create a graded tax credit with up to a 25% tax credit outside a critical groundwater area, and up to 80% tax credit within a critical groundwater area, with the maximum tax credits based on documented water use efficiencies of greater than 50% or complete transfer from groundwater to surface water.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and 	<p>Propose legislation to provide more support for conservation districts in addressing urban, suburban, and rural natural resources issues, such as technical assistance, staffing, and equipment. Maintain, at a minimum, current funding for extension and research staff.</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
f. Synthesis of existing, available tools, practices, and funding incentives.	
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Prepare a synthesis of existing, available tools, practices, and funding incentives, tax credits, local, state, and federal funding sources for groundwater and surface water conservation, and maintain this on the ANRC website for public use.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Prepare a synthesis of existing, available tools, practices, and funding incentives, tax credits, local, state, and federal funding sources for groundwater and surface water conservation, and maintain this on the ANRC website for public use and distribute through the UofA Extension Service and Conservation Districts.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and 	<p>Propose legislation to fund additional research needed to improve water use efficiency, reuse of gray water for irrigation, genetic research on drought tolerant species, and aquifer storage and recovery.</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
f. Synthesis of existing, available tools, practices, and funding incentives.	
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	Identify the various types of potential funding and match with the most applicable type of project. For instance, 1) public bonds and property owner assessments for regional projects, 2) public funds for state and federal agency support and 3) tax incentives for individual on-farm activities. Develop credible budget and plan for each funding type.
<p>REGIONAL PLANNING Geographic subareas in the Delta must be considered in planning and implementing water projects. One size does not fit all areas.</p>	Retain the Planning Region Work Groups for implementation of the Arkansas Water Plan, particularly related to subregional issues and considerations by conservation district.
<p>REGIONAL PLANNING Geographic subareas in the Delta must be considered in planning and implementing water projects. One size does not fit all areas.</p>	ANRC has committed to including regional uses and recommendations in the Arkansas Water Plan update.
<p>WATER CONSERVATION Continue to pursue water conservation practices as an alternative to development for future needs.</p>	ANRC should quantify economic costs of irrigation and economic savings through implementing water conservation practices.
<p>WATER CONSERVATION Continue to pursue water conservation practices as an alternative to development for future needs.</p>	ANRC should emphasize soil health, cover crops, soil management, etc. as part of water conservation practices.



East Region Summary Recommendations (continued)

Issues	Recommendations
<p>WATER CONSERVATION Continue to pursue water conservation practices as an alternative to development for future needs.</p>	<p>Aggressively educate and promote the need for irrigation conservation measures and identify best management practices and technology.</p>
<p>WATER CONSERVATION Continue to pursue water conservation practices as an alternative to development for future needs.</p>	<p>Support expanded research and hiring of researchers by U of A Extension and Conservation Districts for discovery of new conservation practices.</p>
<p>INFRASTRUCTURE Infrastructure for existing, on-going, and future projects is inadequate, including moving water from where it is, to where it is needed. This includes infrastructure for reducing flood flow and addressing drainage issues. In addition, the 25% excess surface water definition needs scientific justification.</p>	<p>Propose legislation to establish funding mechanisms and incentives for consolidating small municipal systems to create or expand regional water/wastewater utilities.</p>
<p>INFRASTRUCTURE Infrastructure for existing, on-going, and future projects is inadequate, including moving water from where it is, to where it is needed. This includes infrastructure for reducing flood flow and addressing drainage issues. In addition, the 25% excess surface water definition needs scientific justification.</p>	<p>Propose legislation to authorize a water resources reconstruction and repair funding program under the authority and management of ANRC, specifically to assist local and county entities in repairing, replacing, and maintaining infrastructure.</p>
<p>PUBLIC AWARENESS AND EDUCATION Education/training is needed to help urban users understand agricultural water uses, needs, and the importance of agriculture to</p>	<p>Propose a proclamation for the Governor of the State of Arkansas to declare a “Decade of Sustainable Water” to encourage better understanding of the importance of water, water conservation, and management in every facet of Arkansan’s lives – environment, social, and economic.</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
the Arkansas economy.	
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Encourage the legislature to increase funding for University of Arkansas Research and Cooperative Extension Service education and outreach, including the University of Arkansas Discovery Farm Program. Increased funding could assist faster adoption of water conservation practices.</p>
<p>WATER CONSERVATION Continue to pursue water conservation practices as an alternative to development for future needs.</p>	<p>Propose legislation to make state and federal tax incentives and cost-share funds even more available to farmers and landowners so that water conservation measures are economically feasible and desirable in all regions of the state. Partner state and federal agencies should also aggressively promote increased use of effective management techniques already available. This could include funding for outreach and education and technical assistance to reduce impediments to management.</p>
<p>PUBLIC AWARENESS AND EDUCATION Education/training is needed to help urban users understand agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>	<p>ANRC should document the economic benefit of these water projects through jobs and food security, and the contributions to Arkansas GDP from agriculture. Include this information in education programs.</p>
<p>Measurement and Assessment</p>	<p>Prioritize the Water Plan activities on a time line from planning to implementation to measures of progress to outcomes</p>
<p>Water Law and Regulation</p>	<p>Require detailed, comprehensive economic analyses before any endangered species critical habitat designations are made to support the designation.</p>
<p>Water Conservation</p>	<p>ANRC and appropriate agencies should seek legislative authority to require all water users to comply with and implement water conservation measures in all affected areas during drought conditions, water shortage situations or in areas of critical water shortage.</p>



East Region Summary Recommendations (continued)

Issues	Recommendations
Water Conservation	Agriculture Irrigation is the major user of groundwater in Arkansas. New irrigation technologies and improved techniques in irrigation Best Management Practices (BMP) need to be developed and demonstrated to Arkansas Agriculture Irrigators. ANRC must partner with the Arkansas Department of Agriculture, the University of Arkansas, the University of Arkansas Cooperative Extension Service, Conservation Districts and the Natural Resources Conservation Service to develop better, practical BMPs, irrigation techniques, and technology to conserve our water resources. Arkansas Irrigators should implement these practical BMPs in their irrigation operations and provide feedback on their success to ANRC on a seasonal timeframe.
Funding and Incentives	Implementing improved irrigation technologies and improved techniques in irrigation Best Management Practices (BMPs) may require a significant investment in material and labor costs by Arkansas Agricultural Irrigators. ANRC should encourage Arkansas Agricultural Irrigators to invest in this operational cost by offering state tax incentives similar to irrigation project tax credits for Impoundments (of at least 20 acre – feet), Conversions (from ground to surface water irrigation) and land leveling.
Water Quality	ANRC should continue to work closely with the Arkansas Department of Environmental Quality (ADEQ) and the Arkansas Department of Health (ADH) in protecting our State’s precious water supply. New issues regarding potential and existing problems with our water resources have to be identified, addressed and reassessed by these agencies on a continual, periodic basis. Joint agency reports on these problem areas and potential solutions should be reported to the Governor, the State legislature and made available to the Public. ANRC, ADEQ and ADH must encourage other state agencies, water users and the general public to help identify potential water resource quality/quantity problems and solutions.



East Region Summary Recommendations (continued)

Issues	Recommendations
Funding and Incentives	Currently, ANRC offers irrigation project tax credits for Impoundments (of at least 20 acre – feet), Conversions (from ground to surface water irrigation) and land leveling. There are no similar tax credits available for ranchers who use livestock ponds (surface water) to water their livestock operations. Livestock waterway barrier fences are the key measure protecting Arkansas streams, ditches, and other waterways from pollution by unrestricted livestock access. Heavy rains or flooding situations often require ranchers to repair or replace these livestock waterway barrier fencing. Ranchers should be offered tax credits for installing livestock ponds and installing livestock waterway barrier fencing or for the repair/replacement of livestock waterway barrier fencing damaged by heavy rains, flooding conditions or some other natural disaster.
Measurement and Assessment	Establish milestones throughout the scheduled term of the Water Plan.
Measurement and Assessment	Establish goals and aggressive incentives for increasing the use of water monitoring devices.
Water Conservation and Shortage	Establish goals and aggressive incentives for deploying best management practices and water conservation technologies.
Measurement and Assessment	Establish goals and aggressive incentives for achieving measurable water savings.
Measurement and Assessment	Adjust irrigation usage trends/projections/goals as better data are gathered and measurable water savings are achieved.

Note: Reference to “aggressive incentives” or “aggressive tax credits” means something along the lines of tax credits equal to 2-3 times the cost of the conservation measure and much higher annual limits for use of the tax credit. These aggressive incentives would be available for years 1-4 (set a known expiration date) so as to attract more immediate and measurable participation in water monitoring and conservation.



Arkansas Water Plan Update



North Region Summary Recommendations

Issues	Recommendations
<p>SURFACE WATER The Fish and Wildlife Framework for Documenting Alternative Approaches for Estimating Fish and Wildlife Flows in Arkansas and Implementing the State Water Plan needs to be incorporated into the water plan to provide for alternative measure of “excess surface water” and process for determining minimum low flows during times of shortages.</p>	<p>Reasonable use of excess surface water should be determined by an independent entity in basins containing surface water gaps using the Fish and Wildlife Flow Framework as the scientific process to improve information about stream flow needs of fish and wildlife with a stakeholder process to determine basin specific priorities on the in stream and out of stream of water use. Intermittent streams should be evaluated through a different process to allow use during periods of high flow. ANRC and other state and federal grant monies should be sought to fund this scientific study.</p>
<p>GROUNDWATER There is insufficient information on the volume and yield of groundwater aquifers in the North Region.</p>	<p>ANRC should improve groundwater well reporting to include ground elevation, GPS coordinates, yield, as well as depth to groundwater.</p>
<p>SURFACE WATER The 25% restriction used to estimate “excess surface water” should be increased so additional water is available for non-riparian use.</p>	<p>Propose legislation that designates the highest and best use of any Arkansas water be for human consumption and that any Arkansas agency’s permitting or program decisions first consider the effects of decision on the availability, quantity or quality of existing drinking water supplies.</p>
<p>SURFACE WATER The 25% restriction used to estimate “excess surface water” should be increased so additional water is available for non-riparian use.</p>	<p>ANRC should re-evaluate the non-riparian water permitting process associated with the shale industry assuring the consideration of seasonal flows and cumulative impacts.</p>



Arkansas Water Plan Update



North Region Summary Recommendations (continued).

Issues	Recommendations
<p>WATER QUALITY Water quality is as important as water quantity, and should be considered in the water plan.</p>	<p>AWP should include a Healthy Streams policy statement for flow alterations and non-point source pollution, similar to, and complimentary of, ADEQ's Regulation 2 anti-degradation policy for point source discharges. ANRC will develop the Healthy Streams policy statement in collaboration with ADEQ and sector stakeholders. Encourage ANRC to work with private landowners to remove barriers to the implementation of Best Management Practices.</p>
<p>Public Awareness There is a lack of public awareness about the importance of water for all sectors</p>	<p>Public awareness should be elevated through public education seminars about agricultural water uses, needs, importance for food security, and the importance of agriculture to the Arkansas economy. These seminars should be provided by and promoted by University of Arkansas Division of Agriculture field agents working in cooperation with local NRCS, Farm Bureau, Ag Council, County Conservation Districts, and local governing bodies, and should include information on both water quantity and quality.</p>



North Region Summary Recommendations (continued).

Issues	Recommendations
<p>WATER CONSERVATION Conservation, particularly on-farm and off-channel storage, needs to be emphasized as the way to offset groundwater use.</p>	<p>Water in the form of rainfall must be slowed in its travel from the time it hits the ground until it reaches the Gulf. ANRC should promote public education in the wise use and conservation of water. More funding would be needed for conservation organizations and conservation districts.</p>
<p>INFRASTRUCTURE Infrastructure for existing, on-going, and future projects is inadequate, including moving water from where it is, to where it is needed. This includes infrastructure for reducing flood flow and addressing drainage issues. In addition, the 25% excess surface water definition needs scientific justification.</p>	<p>Available Surface Water. Expand the statutory definition of excess surface water to raise the percentage of available water, thus providing access to more water for diversion purposes.</p>
<p>REGULATIONS Regulatory restrictions make it difficult to restore streams and need to be changed.</p>	<p>ANRC should streamline permitting requirements (more user friendly) for efforts to improve stream stability, e.g., allow short term deviations, with specific stipulations and requirements. Long term benefits can be achieved through cooperative efforts with regulatory agencies.</p>
<p>WATER CONSERVATION Conservation, particularly on-farm and off-channel storage, needs to be emphasized as the way to offset groundwater use.</p>	<p>Surface and groundwater should be managed together to address water needs of all sectors.</p>
<p>REALLOCATION IN FEDERAL PROJECTS Reallocation of storage in Corps of Engineer reservoirs needs to occur</p>	<p>The Issue is the Recommendation.</p>
<p>FUNDING Additional funding sources are needed for water/sewer projects.</p>	<p>Propose legislation to establish a sustainable funding source dedicated to maintain, repair, and upgrade infrastructure for public water and sewerage treatment, and addressing MS4 by implementing green infrastructure as defined by the EPA and the US Forest Service to manage rainwater where it falls.</p>



Arkansas Water Plan Update



North Region Summary Recommendations (continued).

Issues	Recommendations
<p>WATER QUALITY Water quality is as important as water quantity, and should be considered in the water plan.</p>	<p>ANRC should develop solutions to the “impaired water” designation for the water below Bull Shoals and Norfork Dams caused by low dissolved oxygen water passed through the dams.</p>
<p>WATER QUALITY Water quality is as important as water quantity, and should be considered in the water plan.</p>	<p>BMP economics and effectiveness are important to adoption across the state. The Discovery Farm Program at the U of A is an excellent way to truly determine potential impacts and to realize actual benefits of BMP implementation. Funding for this program should continue and be expanded to address potential impacts from agriculture, to educate farmers on BMP effectiveness, and to educate the general public on the importance of agriculture to the state's economy and feeding the world.</p>
<p>MEASUREMENT AND ASSESSMENT All water that is withdrawn from a stream should not be assumed to be consumed. Demand estimates should include the return flow from these withdrawals</p>	<p>ANRC should modify permit and reporting forms to explicitly account for return flow.</p>
<p>WATER CONSERVATION Conservation, particularly on-farm and off-channel storage, needs to be emphasized as the way to offset groundwater use.</p>	<p>ANRC should provide a model for “Best Site Selection” for new impoundments built for public or agriculture water supply. It should specifically include consideration for proximity to areas of deficit and cost of infrastructure for allocation, and preference of non perennial streams and streams that do not have significant ecological sensitivity.</p>
<p>WATER CONSERVATION Greater emphasis is needed on reuse, recycling, and water conservation education.</p>	<p>Propose legislation for additional funding to support and sustain the educational efforts of nonprofit entities.</p>



Arkansas Water Plan Update



North Region Summary Recommendations (continued).

Issues	Recommendations
<p>WATER QUALITY</p> <p>Degradation of surface water quality from nonpoint sources is a problem throughout the state. Erosion and sedimentation (nonpoint source pollution) is a significant problem contributing to water quality problems and should be considered as high of a priority as water quantity.</p>	<p>Water quality authority is shared by ADEQ and ANRC. The AWP should reflect and integrate the water quality policies of ADEQ as the state’s primary planning document regarding water quality policy. Both ADEQ and ANRC should collaborate to monitor, plan, and fund water quality improvement programs to reduce sediment and nutrient loading into state streams, lakes, rivers and wetlands with particular emphasis on maintaining the integrity of relatively unaltered, high quality streams. Increased water quality monitoring shall be implemented at a segment level to assess program implementation success.</p>
<p>INFRASTRUCTURE</p> <p>Infrastructure, from municipal and rural water/wastewater distribution systems to dams, levees, and PL566 structures, are aging and failing.</p>	<p>Provide local/state funding support for repair, rehabilitation of PL566 dams and ongoing maintenance. These funds shall also be used to support technical assistance and equipment.</p>
<p>GROUNDWATER</p> <p>Overing of groundwater aquifers can lead to permanent loss of storage because the aquifers consolidate or subside. Overing contributes to reduced streamflow because of reduced groundwater discharge to streams.</p>	<p>Integrate surface water use, groundwater conservation and on farm conservation measures (tailwater recovery, land leveling, strategic water delivery practices) into an integrated and continuous planning process for the delta of Arkansas. Aquifers should be evaluated for quantity and quality as a source for domestic water needs and other uses.</p>



North Region Summary Recommendations (continued).

Issues	Recommendations
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none">a. Existing and on-going water projectsb. Future projectsc. Conservation/water management practicesd. Researche. Outreach and education, andf. Synthesis of existing, available tools, practices, and funding incentives.	<p>Encourage the legislature to increase funding for University of Arkansas Research and Cooperative Extension Service education and outreach, including the University of Arkansas Discovery Farm Program. Increased funding could assist faster adoption of water conservation practices.</p>
<p>PUBLIC AWARENESS AND EDUCATION Education/training is needed to help urban users understand agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>	<p>Arkansas Conservation Districts should develop and implement, in conjunction with UA Cooperative Extension Service and ANRC, an education program about agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>
<p>PUBLIC AWARENESS AND EDUCATION Education/training is needed to help urban users understand agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>	<p>ANRC should document the economic benefit of these water projects through jobs and food security, and the contributions to Arkansas GDP from agriculture. Include this information in education programs.</p>



Arkansas Water Plan Update



North Region Summary Recommendations (continued).

Issues	Recommendations
<p>MEASUREMENT AND ASSESSMENT Returned water should be included in the calculations of available water. “Withdrawn” does not necessarily always mean “consumed.”</p>	<p>Available water estimates for the Arkansas Water Plan update did incorporate return flow.</p>
<p>WATER SHORTAGE Coordination between state agencies, as well as adaptive management, is needed prior to drought conditions so that plans are made ahead of time. One way this could happen would be through more frequent revisions of the state water plan.</p>	<p>ANRC should encourage cooperation, collaboration, and communication among states’ and federal agencies, local governments, private business/industry, municipalities and individuals who rely on a shared water resource for withdrawal, discharge, recreation (including refuges, wildlife areas, etc.), and/or livelihood in anticipation of and prior to drought and/or possible low flow restrictions.</p>
<p>SURFACE WATER Excess water is estimated using average annual values. Using the drought of record instead for estimating excess water should be considered.</p>	<p>Reasonable use of excess surface water should be determined by an independent entity in basins containing surface water gaps using the Fish and Wildlife Flow Framework as the scientific process to improve information about stream flow needs of fish and wildlife with a stakeholder process to determine basin specific priorities on the in stream and out of stream of water use. Intermittent streams should be evaluated through a different process to allow use during periods of high flow. ANRC and other state and federal grant monies should be sought to fund this scientific study.</p>



North Region Summary Recommendations (continued).

Issues	Recommendations
<p>SURFACE WATER</p> <p>Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife, and aquifer recharge based on sound science is needed for all Arkansas streams. The amount of water available (i.e., 25%) for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, recreation) needs to be determined.</p>	<p>Recommendations for establishing excess surface water ranged from below 25% to as high as 75%. Because of these differences, it is recommended that the proportion of stream flow designated as excess surface water be determined by an independent entity for all perennial streams in Arkansas using a risk-based, flow-fisheries framework as the scientific approach for estimating the fish and wildlife component of instream flow uses through a stakeholder-driven process. Basins with estimated water gaps should receive higher priority for application of this approach. Intermittent streams should be evaluated through a different process to allow use during periods of high flow. The study should be conducted through an open and transparent process. ANRC and other state and federal grant monies should be sought to fund this scientific study.</p>
<p>WATER SHORTAGE</p> <p>A pre-shortage allocation process does not exist so the amount of water needed to satisfy instream needs and the priority assigned to different water uses during times of shortage is unclear.</p>	<p>ANRC should create a state drought and shortage response team that develops drought and shortage contingency plans for each planning region. The team should establish regional priorities for water use during droughts and shortages. The prioritization should include established inter and intra basin transfers. Allocation during drought should be tied to nearby stream gages.</p>
<p>SURFACE WATER</p> <p>The 25% restriction used to estimate “excess surface water” should be increased so additional water is available for non-riparian use.</p>	<p>Reasonable use of excess surface water should be determined by an independent entity in basins containing surface water gaps using the Fish and Wildlife Flow Framework as the scientific process to improve information about stream flow needs of fish and wildlife with a stakeholder process to determine basin specific priorities on the in stream and out of stream of water use. Intermittent streams should be evaluated through a different process to allow use during periods of high flow.</p>



Arkansas Water Plan Update



North Region Summary Recommendations (continued).

Issues	Recommendations
	ANRC and other state and federal grant monies should be sought to fund this scientific study.
<p>REGULATIONS Regulatory restrictions make it difficult to restore streams and need to be changed.</p>	ANRC should encourage public outreach concerning the problems caused by instream gravel mining to protect and preserve the integrity of Ozark Streams.
<p>WATER CONSERVATION Conservation, particularly on-farm and off-channel storage, needs to be emphasized as the way to offset groundwater use.</p>	ANRC should encourage outreach and education on water conservation to reduce the need to build impoundments. Emphasize outreach to small communities.
<p>WATER CONSERVATION Conservation, particularly on-farm and off-channel storage, needs to be emphasized as the way to offset groundwater use.</p>	Conservation issues can be offset by additional storage on farms that will be filled during the night while uses for homes and businesses would be at the lowest.
<p>FUNDING Additional funding sources are needed for water/sewer projects.</p>	Propose legislation for a sustainable sales tax for repairing, maintaining, and replacing infrastructure.
<p>WATER CONSERVATION Greater emphasis is needed on reuse, recycling, and water conservation education.</p>	Regional planning teams should become regional implementation teams for implementation and adaptive management of the Arkansas Water Plan.
<p>WATER QUALITY Incremental costs and benefits associated with water quality improvements should be understood and quantified. A cost/benefit analysis should be required for any water quality changes.</p>	Incremental costs and benefits associated with water quality improvements should be understood and quantified. A cost/benefit analysis should be required for any water quality changes.



West-central Region Summary Recommendations

Issues	Recommendations
<p>SURFACE WATER Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife resources, and aquifer recharge based on sound science is needed for all Arkansas streams to determine the amount of water available for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, and recreation).</p>	<p>Reasonable use of excess surface water should be determined by an independent entity in basins containing surface water gaps using the Fish and Wildlife Flow Framework as the scientific process to improve information about stream flow needs of fish and wildlife with a stakeholder process to determine basin specific priorities on the in stream and out of stream of water use. Intermittent streams should be evaluated through a different process to allow use during periods of high flow. ANRC and other state and federal grant monies should be sought to fund this scientific study.</p>
<p>FUNDING Increased state funding in the form of cost-share programs should be provided for agriculture in developing on-farm surface storage facilities.</p>	<p>Propose legislation to increase allowable percentages via ANRC’s tax credit program to landowners to encourage construction of on-farm reservoirs thereby reducing the dependence on groundwater and surface stream flow, from 2015 through 2050.</p>
<p>GROUNDWATER Groundwater monitoring and modeling need to be included (for West-central region) in the state water plan to help us determine if radial wells in the sandy alluvial aquifer along the Arkansas River could be considered to provide water supply for communities, understanding that overdrafting of groundwater aquifers can lead to permanent loss of storage because the aquifers collapse.</p>	<p>The sandy alluvial aquifer along the Arkansas River Valley should be evaluated for quantity and quality as a source of water supply. Locate funding to study and evaluate this aquifer. This would alleviate the need for building new surface water impoundments on flowing waters in the highlands.</p>



West-central Region Summary Recommendations (continued).

Issues	Recommendations
<p>WATER QUALITY Erosion, inadequate nutrient management, and other impairments exist on all Arkansas streams as well as Extraordinary Resource Waters. Streams and Extraordinary Resource Waters need more protection (i.e., conservation programs).¹</p>	<p>The water authorities of our State are shared by ANRC and ADEQ. Both ANRC and ADEQ should collaborate to monitor, plan, and fund water quality improvement programs to reduce sediment and nutrient loading into our state streams, rivers, wetlands, and lakes with particular emphasis on maintaining the integrity of relatively unaltered, high quality streams. In importance of water quality and quantity, the Arkansas State Water Plan revision and ANRC should support the existing ADEQ regulations.</p>
<p>WATER SUPPLY New surface water impoundments are needed to provide adequate water supply.</p>	<p>ANRC should support development and construction of new water supply projects in areas of critical need, or where projected demand exceeds projected water availability.</p>
<p>INFRASTRUCTURE Funding is needed to repair, replace, maintain, and build infrastructure, including dams, levees, and PL566 structures.</p>	<p>A federal match of 65% is available for rehabilitation of PL566, but is not being accessed because local entities cannot generate the 35% match. Propose legislation for dedicated State funds to offset a portion of the 35% so local entities can upgrade and maintain these structures. PL566 funding needs to be appropriate for development of new sources for drinking water, agriculture, flood control, etc. Watershed assessments should be updated.</p>
<p>WATER SHORTAGE There is inadequate water supply for livestock watering during summer months.</p>	<p>Excess surface water should be captured during times of abundance, stored in on-farm reservoir, and used during low flow/shortage situations for livestock watering, irrigation, and other uses.</p>
<p>GROUNDWATER Groundwater monitoring and modeling need to be included (for West-central region) in the state water plan to help us</p>	<p>Public outreach and education is needed to improve groundwater well reporting/monitoring to get a greater understanding of the sustainability and condition of our aquifers in the West-central Region of the state.</p>

¹ The agriculture stakeholders disagree with the overly broad and generalized statement that nutrient management is inadequate “on all Arkansas streams as well as Extraordinary Resource Waters.” ERWs already receive additional protections in some cases. Any additional protections provided must include a comprehensive cost benefit analysis and must account for recreational impacts to water quality.



West-central Region Summary Recommendations (continued).

Issues	Recommendations
<p>determine if radial wells in the sandy alluvial aquifer along the Arkansas River could be considered to provide water supply for communities, understanding that overdrafting of groundwater aquifers can lead to permanent loss of storage because the aquifers collapse.</p>	
<p>REALLOCATION IN FEDERAL PROJECTS Reallocation of storage for water supply in Corps lakes needs to occur.</p>	<p>ANRC shall pursue reallocation of storage in federal impoundments in areas where there is a critical need, or projected increased demand, for additional water supply.</p>
<p>Public Awareness There is a lack of public awareness about the importance of water for all sectors</p>	<p>Support expanded research and hiring of researchers by U of A Extension and Conservation Districts for discovery of new conservation practices.</p>
<p>WATER QUALITY Erosion, inadequate nutrient management, and other impairments exist on all Arkansas streams as well as Extraordinary Resource Waters. Streams and Extraordinary Resource Waters need more protection (i.e., conservation programs).²</p>	<p>Continue support of voluntary locally led conservation programs.</p>
<p>WATER SHORTAGE</p>	<p>Propose legislation to increase state funding for surface water infrastructure to capture, store, and</p>

² The agriculture stakeholders disagree with the overly broad and generalized statement that nutrient management is inadequate “on all Arkansas streams as well as Extraordinary Resource Waters.” ERWs already receive additional protections in some cases. Any additional protections provided must include a comprehensive cost benefit analysis and must account for recreational impacts to water quality.



West-central Region Summary Recommendations (continued).

Issues	Recommendations
There is inadequate water supply for livestock watering during summer months.	distribute available supply for agriculture, navigation, drinking water, flood control, fish and wildlife habitat, and recreation.
WATER SUPPLY New surface water impoundments are needed to provide adequate water supply.	Propose legislation that designates the highest and best use of any Arkansas water be for human consumption and that any Arkansas agency's permitting or program decisions first consider the effects of decision on the availability, quantity or quality of existing drinking water supplies.
REGULATIONS Federal and state regulations impede implementing and effectively managing water utility projects.	ANRC should establish "mediator" between federal/state regulators to facilitate permitting process as an advocate for cities/utilities.
INFRASTRUCTURE Funding is needed to repair, replace, maintain, and build infrastructure, including dams, levees, and PL566 structures.	Propose legislation to establish a sustainable funding source dedicated to maintain, repair, and upgrade infrastructure and dams for public drinking water reservoirs, water treatment, and sewage facilities. By doing this, it would discourage building new impoundments on flowing streams which takes away from in-stream flows.
INFRASTRUCTURE Funding is needed to repair, replace, maintain, and build infrastructure, including dams, levees, and PL566 structures.	Encourage funding for localized programs be directed by locally led workgroup.



West-central Region Summary Recommendations (continued).

Issues	Recommendations
<p>MEASUREMENT AND ASSESSMENT Returned water should be included in the calculations of available water. “Withdrawn” does not necessarily always mean “consumed.”</p>	<p>Available water estimates for the Arkansas Water Plan update did incorporate return flow.</p>
<p>GROUNDWATER Overing of groundwater aquifers can lead to permanent loss of storage because the aquifers consolidate or subside. Overing contributes to reduced streamflow because of reduced groundwater discharge to streams.</p>	<p>Integrate surface water use, groundwater conservation and on farm conservation measures (tailwater recovery, land leveling, strategic water delivery practices) into an integrated and continuous planning process for the delta of Arkansas. Aquifers should be evaluated for quantity and quality as a source for domestic water needs and other uses.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects b. Future projects c. Conservation/water management practices d. Research e. Outreach and education, and f. Synthesis of existing, available tools, practices, and funding incentives. 	<p>Encourage the legislature to increase or at least maintain funding for University of Arkansas Research and Cooperative Extension Service education and outreach, including the University of Arkansas Discovery Farm Program. Increased funding could assist faster adoption of water conservation practices.</p>
<p>FUNDING There is insufficient funding for:</p> <ul style="list-style-type: none"> a. Existing and on-going water projects 	<p>Propose legislation to support conservation districts in addressing urban, suburban, and rural natural resources issues, such as technical assistance, staffing, and equipment. Maintain, at a minimum, current funding for extension and research staff.</p>



West-central Region Summary Recommendations (continued).

Issues	Recommendations
<ul style="list-style-type: none">b. Future projectsc. Conservation/water management practicesd. Researche. Outreach and education, andf. Synthesis of existing, available tools, practices, and funding incentives.	
<p>FUNDING</p> <p>There is insufficient funding for:</p> <ul style="list-style-type: none">a. Existing and on-going water projectsb. Future projectsc. Conservation/water management practicesd. Researche. Outreach and education, andf. Synthesis of existing, available tools, practices, and funding incentives.	<p>Propose legislation to target tax credits:</p> <ul style="list-style-type: none">o For flow metering,o For livestock watering, ando For more efficient suites of irrigation water management practices. <p>Encourage a streamlined EQIP process for flow meters.</p>



Arkansas Water Plan Update



West-central Region Summary Recommendations (continued).

Issues	Recommendations
<p>INFORMATION MANAGEMENT There is no single source of water data or information across agencies.</p>	<p>Designate Conservation Districts as the repository for various records, including but not limited to utility system records, and make that information accessible to those that may need to use it.</p>
<p>PUBLIC AWARENESS AND EDUCATION Education/training is needed to help urban users understand agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>	<p>Arkansas Conservation Districts should develop and implement, in conjunction with UA Cooperative Extension Service and ANRC, an education program about agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>
<p>FUNDING Increased state level funding incentives and cost share are needed to encourage more on-farm storage for crop irrigation and livestock watering.</p>	<p>Propose legislation to sustain and increase tax incentives & cost sharing options for constructing more on-farm storage systems.</p>
<p>FUNDING Increased state level funding incentives and cost share are needed to encourage more on-farm storage for crop irrigation and livestock watering.</p>	<p>Due to extremely limited groundwater and poor water quality, additional emphasis should be on surface water storage in the West-central Region to meet its livestock needs.</p>
<p>FUNDING Increased state level funding incentives</p>	<p>Propose legislation to fund research on water conservation practices.</p>



West-central Region Summary Recommendations (continued).

Issues	Recommendations
<p>and cost share are needed to encourage more on-farm storage for crop irrigation and livestock watering.</p>	
<p>FUNDING Increased state level funding incentives and cost share are needed to encourage more on-farm storage for crop irrigation and livestock watering.</p>	<p>Provide multiple support levels for conservation districts to address urban, suburban, and rural natural resources issues, such as technical assistance, staffing, and equipment.</p>
<p>SURFACE WATER Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife resources, and aquifer recharge based on sound science is needed for all Arkansas streams to determine the amount of water available for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, and recreation).</p>	<p>Solutions should include reasonable surface water use, groundwater conservation, and on farm conservation (i.e., on farm storage reservoirs, land leveling, and tailwater recovery systems).</p>
<p>SURFACE WATER Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife resources, and aquifer recharge based on sound science is needed for all Arkansas streams to determine the amount of water available for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, and recreation).</p>	<p>ANRC should re-evaluate and establish meaningful minimum flow for Arkansas River projects.</p>



West-central Region Summary Recommendations (continued).

Issues	Recommendations
INFRASTRUCTURE Funding is needed to repair, replace, maintain, and build infrastructure, including dams, levees, and PL566 structures.	Propose legislation to fund critical maintenance of locks and dams on MKARNS as navigation pools provide benefits to agriculture, recreation, municipal and industrial water supply, habitat for fish and wildlife, hydropower, and navigation.
INFRASTRUCTURE Funding is needed to repair, replace, maintain, and build infrastructure, including dams, levees, and PL566 structures.	Propose legislation to establish funding mechanisms and incentives for consolidating small municipal systems into regional water and wastewater systems.
INFRASTRUCTURE Funding is needed to repair, replace, maintain, and build infrastructure, including dams, levees, and PL566 structures.	Compile a list of existing available tools; conservation practices, funding incentives, and tax credits; and local, state, and federal funding sources and maintain on the ANRC website for public use.
INFRASTRUCTURE Funding is needed to repair, replace, maintain, and build infrastructure, including dams, levees, and PL566 structures.	Encourage local/state funding for support of repair, rehabilitation of PL566 dams and ongoing maintenance.



West-central Region Summary Recommendations (continued).

Issues	Recommendations
<p>WATER QUALITY Erosion, inadequate nutrient management, and other impairments exist on all Arkansas streams as well as Extraordinary Resource Waters. Streams and Extraordinary Resource Waters need more protection (i.e., conservation programs).³</p>	<p>Propose legislation to increase state funding for stream bank stabilization, riparian enhancement, and forestry education and stewardship plans.</p>
<p>WATER SUPPLY New surface water impoundments are needed to provide adequate water supply.</p>	<p>ANRC should maintain existing and ongoing water supply projects.</p>
<p>REGULATIONS Federal and state regulations impede implementing and effectively managing water utility projects.</p>	<p>ANRC should revisit regulations that may be impeding the implementation and effective management of water utility projects. Integrate continuous adaptive management as resources and technology changes. Regional workgroup planning teams should continue as currently structured to determine how best to meet the needs of water users in the future.</p>
<p>REGIONAL PLANNING Any legislation needs to be tailored to regions. One statewide size does not fit all regions.</p>	<p>ANRC has committed to including regional uses and recommendations in the Arkansas Water Plan update.</p>

³ The agriculture stakeholders disagree with the overly broad and generalized statement that nutrient management is inadequate “on all Arkansas streams as well as Extraordinary Resource Waters.” ERWs already receive additional protections in some cases. Any additional protections provided must include a comprehensive cost benefit analysis and must account for recreational impacts to water quality.



Arkansas Water Plan Update



South-central Region Summary Recommendations

Issues	Recommendations
<p>WATER QUALITY Degradation of surface water from nonpoint sources is a problem throughout the state. Degradation of groundwater due to over-withdrawal is a problem in specific regions in the state. Erosion and sedimentation (nonpoint source pollution) is a significant problem contributing to water quality problems and should be considered as high of a priority as water quantity.</p>	<p>Responsibility and authority for maintaining and improving water quality is shared by ADEQ and ANRC. The AWP should reflect and integrate the water quality policies of ADEQ as the state's primary planning document regarding water quality policy. ADEQ and ANRC should collaborate to develop policies and regulations that improve water quality by reducing sediment and nutrient loading into streams, lakes, and rivers with particular emphasis on maintaining the integrity of unaltered, high quality streams. Removing streams from ADEQ's 303d list should be a major goal of the AWP.</p>
<p>FUNDING Increased state funding in the form of cost-share programs should be provided for agriculture in developing on-farm surface storage facilities.</p>	<p>Propose legislation to increase allowable percentages via ANRC's tax credit program to landowners to encourage construction of on-farm reservoirs thereby reducing the dependence on groundwater and surface stream flow, from 2015 through 2050.</p>
<p>SURFACE WATER Quantification of in-stream water needs for navigation, riparian use, interstate compacts, fish and wildlife, and aquifer recharge based on sound science is needed for ALL Arkansas streams.</p>	<p>Reasonable use of excess surface water should be determined by an independent entity in basins containing surface water gaps using the Fish and Wildlife Flow Framework as the scientific process to improve information about stream flow needs of fish and wildlife with a stakeholder process to determine basin specific priorities on the in stream and out of stream water use. Intermittent streams should be evaluated through a different process to allow removal/diversion during periods of high flow. ANRC and other state and federal grant monies should be sought to fund this scientific study.</p>
<p>FUNDING There is a Lack of funding to construct additional surface water impoundments in critical groundwater areas.</p>	<p>Propose legislation to increase Federal and State funding for on farm storage. Projects should include normal practices such as ponds for livestock water but should also be available for rainwater harvesting and storage for use in poultry houses.</p>



Arkansas Water Plan Update



South-central Region Summary Recommendations (continued).

Issues	Recommendations
<p>Public Awareness There is a lack of public awareness about the importance of water for all sectors</p>	<p>Support expanded research and hiring of researchers by U of A Extension and Conservation Districts for discovery of new conservation practices.</p>
<p>FUNDING There is a Lack of funding to construct additional surface water impoundments in critical groundwater areas.</p>	<p>Educate the public in water issues pertaining to Sparta & Alluvial Aquifers.</p>
<p>WATER SHORTAGE Coordination between state agencies, as well as adaptive management, is needed prior to drought conditions so that plans are made ahead of time. One way this could happen would be through more frequent revisions of the state water plan.</p>	<p>ANRC should create a state drought and shortage response team with representatives from all pertinent state agencies that develops adaptive drought and shortage contingency plans for each planning region. The team should establish regional priorities for water use during droughts and shortages.</p>
<p>FUNDING Increased state level funding incentives and cost share are needed to encourage more on-farm storage for crop irrigation and livestock watering.</p>	<p>Propose legislation to sustain and increase tax incentives & cost sharing options for constructing more on-farm storage systems.</p>
<p>SURFACE WATER Industry should be encouraged to</p>	<p>ANRC should encourage industry, agriculture, others to use surface water in Critical Groundwater Areas by proposing legislation to amend Act 341 of 1995 as amended (ACA 26-51-1001 et seq.) to apply the tax credit</p>



Arkansas Water Plan Update



South-central Region Summary Recommendations (continued).

Issues	Recommendations
use surface water.	to industries and agriculture that choose to construct surface use infrastructure rather than use groundwater.
WATER STORAGE More surface water impoundments are needed in critical groundwater areas.	ANRC should encourage industry, agriculture, others to use surface water in Critical Groundwater Areas by proposing legislation to amend Act 341 of 1995 as amended (ACA 26-51-1001 et seq.) to apply the tax credit to industries and agriculture that choose to construct surface use infrastructure rather than use groundwater.
WATER STORAGE More surface water impoundments are needed in critical groundwater areas.	Help new Industries to area, as well as existing industries stay informed through Chamber of Commerce or other local agencies on the benefits of using surface water.
WATER STORAGE More surface water impoundments are needed in critical groundwater areas.	Propose legislation for tax incentives for replacing of water systems to accommodate surface water use.
WATER STORAGE More surface water impoundments are needed in critical groundwater areas.	ANRC should require industry to use surface water when available.
WATER STORAGE More surface water impoundments are needed in critical groundwater areas.	Propose legislation to extend tax credits/incentives to 20 years for entities who have constructed surface water incentives so early adopters can receive credit.



Arkansas Water Plan Update



South-central Region Summary Recommendations (continued).

Issues	Recommendations
<p>REGIONAL PLANNING Geographic subareas in the Delta must be considered in planning and implementing water projects. One size does not fit all areas.</p>	<p>Retain the Planning Region Work Groups for implementation of the Arkansas Water Plan, particularly related to subregional issues and considerations.</p>
<p>WATER CONSERVATION Continue to pursue water conservation practices as an alternative to development for future needs.</p>	<p>Propose legislation to make state and federal tax incentives and cost-share funds even more available to farmers and landowners so that water conservation measures are economically feasible and desirable in all regions of the state. Partner state and federal agencies should also aggressively promote increased use of effective management techniques already available. This could include funding for outreach and education and technical assistance to reduce impediments to management.</p>
<p>SURFACE WATER Industry should be encouraged to use surface water.</p>	<p>Help new Industries to area, as well as existing industries stay informed through Chamber of Commerce or other local agencies on the benefits of using surface water.</p>
<p>NAVIGATION Lock and dam maintenance on the Ouachita River is needed to ensure navigation pools continue to provide for municipal/industrial water supply, recreation, and flood damage protection.</p>	<p>Propose a legislative resolution that funding be maintained for the Ouachita River navigation system. Document the economic benefits of water transport of goods and delivery of heavy equipment compared to other forms of transportation to the region, as well as benefits from municipal/industrial water supply, fish & wildlife recreation, flood risk reduction, and agricultural, thermoelectric & industrial water supply.</p>
<p>NAVIGATION Lock and dam maintenance on the Ouachita River is needed to ensure navigation pools continue to provide</p>	<p>Encourage congressional representatives to pass legislation to fund the dredging and maintenance of the navigation system.</p>



Arkansas Water Plan Update



South-central Region Summary Recommendations (continued).

Issues	Recommendations
for municipal/industrial water supply, recreation, and flood damage protection.	
<p>FUNDING There is a Lack of funding to construct additional surface water impoundments in critical groundwater areas.</p>	Existing ANRC rules such as Title 10 & Title 14 should be amended so they are more accessible to livestock producers. Propose legislation for dedicated state funding for Title 10 to help offset a portion of the cost share. This will increase adopting of on farm storage. Modify the eligibility requirement under Title 14 to lower the storage threshold to 1-2 ac-ft.
<p>WATER QUALITY Degradation of surface water from nonpoint sources is a problem throughout the state. Degradation of groundwater due to over-withdrawal is a problem in specific regions in the state. Erosion and sedimentation (nonpoint source pollution) is a significant problem contributing to water quality problems and should be considered as high of a priority as water quantity.</p>	ANRC should encourage implementation of reuse and recycling practices for irrigation water that are being used in other states (LA).
<p>REGULATIONS Outstanding Resource Waters need special protection for both water quantity and quality.</p>	In a unified effort to protect the water resources of the State of Arkansas, and in recognition of the connected importance of water quality and water quantity, the updated Arkansas State Water Plan shall support the existing Arkansas Pollution Control and Ecology Commission Regulation #2.



Arkansas Water Plan Update



South-central Region Summary Recommendations (continued).

Issues	Recommendations
<p>WATER SHORTAGE Coordination between state agencies, as well as adaptive management, is needed prior to drought conditions so that plans are made ahead of time. One way this could happen would be through more frequent revisions of the state water plan.</p>	<p>ANRC should encourage cooperation between multiple government agencies & public officials and representatives to put plans in place before there is a crisis.</p>
<p>WATER SHORTAGE Coordination between state agencies, as well as adaptive management, is needed prior to drought conditions so that plans are made ahead of time. One way this could happen would be through more frequent revisions of the state water plan.</p>	<p>ANRC should encourage cooperation, collaboration, and communication among states' and federal agencies, local governments, private business/industry, municipalities and individuals who rely on a shared water resource for withdrawal, discharge, recreation (including refuges, wildlife areas, etc.), and/or livelihood in anticipation of and prior to drought and/or possible low flow restrictions.</p>
<p>REALLOCATION IN FEDERAL PROJECTS Reallocation of storage for water supply is needed in federal Corps lakes to make those sources more readily available for drinking water.</p>	<p>Propose the reallocations of storage in Corps Lakes with the Corps of Engineers and Congressional representatives to make it more available for drinking water.</p>
<p>WATER SUPPLY The highest and best use of water (surface or ground) is as drinking water. This should be reflected in</p>	<p>Drinking water should be designated as the highest and best use, and should have the highest priority for allocation during times of shortage.</p>



Arkansas Water Plan Update



South-central Region Summary Recommendations (continued).

Issues	Recommendations
state policy (state water plan) and in state regulations (higher priority in ADEQ regulations No. 2 and No. 6).	
<p>NAVIGATION A threat of change in federal laws for navigation threatens the maintenance of Ouachita River pool elevations.</p>	Propose a legislative resolution that federal funding be maintained for the Ouachita River navigation system. Document the economic benefits of water transport of goods and delivery of heavy equipment compared to other forms of transportation to the region, as well as benefits from municipal/industrial water supply, fish & wildlife recreation, flood risk reduction, and agricultural, thermoelectric & industrial water supply.
<p>NAVIGATION A threat of change in federal laws for navigation threatens the maintenance of Ouachita River pool elevations.</p>	Encourage congressional representatives to pass legislation to fund the dredging and maintenance of the navigation system.
<p>NAVIGATION A threat of change in federal laws for navigation threatens the maintenance of Ouachita River pool elevations.</p>	The State of Arkansas benefits greatly from navigation as a water resource. Municipal and industrial water supply, irrigation and other agricultural uses, fish and wildlife habitat, recreation, flood risk reduction, and thermoelectric/hydropower are all benefits received in part from navigation. The state should work to maximize the full development of the Arkansas, Mississippi, Ouachita, Red, and White Rivers for navigation and the other benefits it receives.
<p>SURFACE WATER Industry should be encouraged to use surface water.</p>	Propose legislation for tax incentives for replacing of water systems to accommodate surface water use.
<p>SURFACE WATER Industry should be encouraged to use surface water.</p>	ANRC should require industry to use surface water when available.
<p>SURFACE WATER Industry should be encouraged to use surface water.</p>	Propose legislation to extend tax credits/incentives to 20 years for entities who have constructed surface water incentives so early adopters can receive credit.



Arkansas Water Plan Update



South-central Region Summary Recommendations (continued).

Issues	Recommendations
<p>SURFACE WATER It has been over 20 years since the last water plan update. We have more data and more sophisticated models; therefore, greater accuracy. These increased accuracies should allow a greater percentage of the excess surface water to be used.</p>	<p>Reasonable use of excess surface water should be determined by an independent entity in basins containing surface water gaps using the Fish and Wildlife Flow Framework as the scientific process to improve information about stream flow needs of fish and wildlife with a stakeholder process to determine basin specific priorities on the in stream and out of stream water use. Intermittent streams should be evaluated through a different process to allow removal/diversion during periods of high flow. ANRC and other state and federal grant monies should be sought to fund this scientific study.</p>
<p>FUNDING Increased state level funding incentives and cost share are needed to encourage more on-farm storage for crop irrigation and livestock watering.</p>	<p>Educate the public in water issues pertaining to Sparta & Alluvial Aquifers.</p>



Southwest Region Summary Recommendations

Issues	Recommendations
<p>SURFACE WATER Excess water is estimated using average annual values. Using the drought of record instead for estimating excess water should be considered.</p>	<p>Reasonable use of excess surface water should be determined by an independent entity in basins containing surface water gaps using the Fish and Wildlife Flow Framework as the scientific process to improve information about stream flow needs of fish and wildlife with a stakeholder process to determine basin specific priorities on the in stream and out of stream of water use. Intermittent streams should be evaluated through a different process to allow use during periods of high flow. ANRC and other state and federal grant monies should be sought to fund this scientific study.</p>
<p>WATER CONSERVATION Water conservation practices are not being aggressively pursued as an alternative to development to meet future needs.</p>	<p>Incorporate education/awareness programs into the public schools K-12. Existing Aquatic Wild (educational frameworks) program has lesson plans already prepared. Statewide approach to the emphatic importance of the next generation understanding water conservation, issues, and problem solving. Focus on long term sustainability of water as a natural resource.</p>
<p>FUNDING Increased state funding in the form of cost-share programs should be provided for agriculture in developing on-farm surface storage facilities.</p>	<p>Propose legislation to increase allowable percentages via ANRC's tax credit program to landowners to encourage construction of on-farm reservoirs thereby reducing the dependence on groundwater and surface stream flow, from 2015 through 2050.</p>
<p>WATER STORAGE Additional surface water impoundments are needed for better utilization of water to meet human needs.</p>	<p>Streamline regulations dealing with construction of dams and impoundments to provide additional surface water sources.</p>
<p>SURFACE WATER Surface water impoundments are needed on the Red River so southwest Arkansas can benefit: water supply – industrial and municipal, recreation, fish and wildlife, irrigation, flood risk reduction, and navigation.</p>	<p>Increase water storage capacity upstream from Shreveport, LA through construction of locks and dams for river navigation funded by usage fees on bulk transport, recreation usage, water sales to urban areas, and outside funding.</p>
<p>INFRASTRUCTURE</p>	<p>The State of Arkansas benefits greatly from navigation as a water resource. Municipal and industrial water supply, irrigation and other agricultural uses, fish and wildlife habitat, recreation, flood risk reduction, and thermoelectric/hydropower are all benefits received in part from navigation. The state should work to maximize the full development of the Arkansas, Mississippi, Ouachita, Red, and</p>



Southwest Region Summary Recommendations (continued).

Issues	Recommendations
	White Rivers for navigation and the other benefits it receives.
<p>REGULATIONS There is concern that the first priority for Arkansas water may not be for Arkansas residents.</p>	ANRC Title 3 should be amended to state that surface water needs to be first priority for use, and Arkansas should be given first priority in using Arkansas water.
<p>FUNDING Increased state funding in the form of cost-share programs should be provided for agriculture in developing on-farm surface storage facilities.</p>	On surface water: ANRC Title 10- should be adequately funded by the state as well as continue funding of federal 319 program. The funding should be equally distributed to all regions of the state. ANRC Title 14 should be modified to make it more applicable to livestock – 1 acre-foot storage.
<p>SURFACE WATER Excess water is estimated using average annual values. Using the drought of record instead for estimating excess water should be considered.</p>	During drought, water needs to be allocated based on a state prioritization basis. For instance, the highest priority always must be municipal and domestic uses, but beyond that a prioritization is needed for industrial, agriculture, and instream uses. The prioritization should include established inter and intra basin transfers which may be affected by local circumstances.
<p>SURFACE WATER Excess water is estimated using average annual values. Using the drought of record instead for estimating excess water should be considered.</p>	Allocation during drought should be tied to nearby stream gages.
<p>Public Awareness There is a lack of public awareness about the importance of water for all sectors</p>	Support expanded research and hiring of researchers by U of A Extension and Conservation Districts for discovery of new conservation practices.



Southwest Region Summary Recommendations (continued).

Issues	Recommendations
<p>WATER SHORTAGE The state needs to be more proactive in addressing potential shortages before the need for allocation is required, and establish a pre-shortage allocation process through coordination of all stakeholders.</p>	<p>Shortage and drought contingency plans should be developed for the Bayou Bartholomew, Bayou Macon, Bayou DeView, St. Francis, Cache, and Beouf River basins. The Fish and Wildlife Flow Framework should serve as the stakeholder process for scientifically determining appropriate <u>minimum</u> flow levels for different classes of streams statewide. Priorities of use during a drought or shortage should be regionally determined by local landowners, recreationists, industry and fish/wildlife scientists before those shortages occur to reflect regional priorities.</p>
<p>MEASUREMENT AND ASSESSMENT Returned water should be included in the calculations of available water. “Withdrawn” does not necessarily always mean “consumed.”</p>	<p>Available water estimates for the Arkansas Water Plan update did incorporate return flow.</p>
<p>SURFACE WATER Industry should be encouraged to use surface water.</p>	<p>Help new Industries to area, as well as existing industries stay informed through Chamber of Commerce or other local agencies on the benefits of using surface water.</p>
<p>REGULATIONS Surface water should be the first priority source for all water uses.</p>	<p>ANRC Title 3 should be amended to state that surface water needs to be first priority for use, and Arkansas should be given first priority in using Arkansas water.</p>
<p>WATER CONSERVATION Water conservation practices are not being aggressively pursued as an alternative to development to meet future needs.</p>	<p>Develop incentive programs to encourage the public to practice water conservation, and thus reduce wasteful practices.</p>
<p>MEASUREMENT AND ASSESSMENT The number of stream gages throughout the state is declining. Stream gaging networks need to be maintained so changes in water supply can be assessed.</p>	<p>Conduct an assessment of the existing stream gage network and identify critical gaps in the network. A critical gage would be defined as necessary for basin yield analysis, upstream flow requirements, drought allocation, and compact compliance. Fund the implementation of these gages and sustain funding through a check-off program of water users, or sustainable water resources tax.</p>



Southwest Region Summary Recommendations (continued).

Issues	Recommendations
<p>MEASUREMENT AND ASSESSMENT</p> <p>All water that is withdrawn from a stream should not be assumed to be consumed. Demand estimates should include the return flow from these withdrawals</p>	<p>ANRC should modify permit and reporting forms to explicitly account for return flow.</p>
<p>WATER CONSERVATION</p> <p>Conservation, particularly on-farm and off-channel storage, needs to be emphasized as the way to offset groundwater use.</p>	<p>Water in the form of rainfall must be slowed in its travel from the time it hits the ground until it reaches the Gulf. ANRC should promote public education in the wise use and conservation of water. More funding would be needed for conservation organizations and conservation districts.</p>
<p>SURFACE WATER</p> <p>Quantification of instream water needs for navigation, current and future riparian use, interstate compacts, fish and wildlife, and aquifer recharge based on sound science is needed for all Arkansas streams. The amount of water available (i.e., 25%) for diversion from surface water to satisfy beneficial out of stream uses (i.e., agriculture, livestock, industrial, recreation) needs to be determined.</p>	<p>The proportion of stream flow designated as excess water be determined by an independent entity using a scientific approach through an open and transparent process. Intermittent streams should be evaluated through a separate process. ANRC and other state agencies should fund or seek funds for this study.</p>
<p>Public Awareness</p> <p>There is a lack of public awareness about the importance of water for all sectors</p>	<p>Public awareness should be elevated through public education seminars about agricultural water uses, needs, importance for food security, and the importance of agriculture to the Arkansas economy. These seminars should be provided by and promoted by University of Arkansas Division of Agriculture field agents working in cooperation with local NRCS, Farm Bureau, Ag Council, County Conservation Districts, and local governing bodies, and should include information on both water quantity and quality.</p>



Southwest Region Summary Recommendations (continued).

Issues	Recommendations
<p>INFORMATION MANAGEMENT There is no single source of water data or information across agencies.</p>	<p>Designate Conservation Districts as the repository for various records, including but not limited to utility system records, and make that information accessible to those that may need to use it.</p>
<p>PUBLIC AWARENESS AND EDUCATION Education/training is needed to help urban users understand agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>	<p>Arkansas Conservation Districts should develop and implement, in conjunction with UA Cooperative Extension Service and ANRC, an education program about agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>
<p>WATER QUALITY Incremental costs and benefits associated with water quality improvements should be understood and quantified. A cost/benefit analysis should be required for any water quality changes.</p>	<p>Incremental costs and benefits associated with water quality improvements should be understood and quantified. A cost/benefit analysis should be required for any water quality changes.</p>
<p>PUBLIC AWARENESS AND EDUCATION Education/training is needed to help urban users understand agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>	<p>Increase federal and state funding through ANRC to promote conservation education statewide.</p>
<p>PUBLIC AWARENESS AND EDUCATION Education/training is needed to help urban users understand agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>	<p>Utilize all state resource agencies in programs to increase public awareness of water importance.</p>
<p>PUBLIC AWARENESS AND EDUCATION Education/training is needed to help urban users understand agricultural water uses, needs, and the importance of agriculture to the Arkansas economy.</p>	<p>Utilize media and news articles to increase public awareness of the importance of water and its quality.</p>



Southwest Region Summary Recommendations (continued).

Issues	Recommendations
WATER SHORTAGE Coordination between state agencies during times of drought, shortages, and when permitting non-riparian uses needs to be explicitly incorporated into the water plan.	Allocation during shortage should be tied to nearby stream gages.
WATER STORAGE Additional surface water impoundments are needed for better utilization of water to meet human needs.	On surface water: ANRC Title 1- should be adequately funded by the state as well as continue funding of the federal 319 program. The funding should be equally distributed to all regions of the state. ANRC Title 14 should be modified to make it more applicable to livestock – 1 ac-ft storage.
WATER STORAGE Additional surface water impoundments are needed for better utilization of water to meet human needs.	Increase funding to agricultural and urban areas specifically tied to water storage facilities.
WATER SHORTAGE The process of allocating water is unclear. Our concern is, how will water be set aside to meet demand of future industrial plants – timber or food related?	Formulate an allocation process for water in time of shortage/drought to make sure that all of Arkansas’ needs – consumers, navigation, agricultural, industrial, and commercial – are met before any water leaves the state.