

Comments on the Water Management Issues in Alabama by the Alabama University Irrigation Initiative Executive Committee

The Alabama University Irrigation Initiative (AUII) is very pleased that the Governor Bentley through the Alabama Water Agencies Working Group (AWAWG) has addressed water management issues in Alabama. Alabama is blessed with on average abundant water resources with more water running off it than almost any state in the country. However, extended periods of below average precipitation can take streams to very low flows. Thus, it is critical to recognize that droughts happen and the need to have in place management plans and infrastructure to mitigate the impact of drought. While many have pushed for water management in the State to protect water resources and to mitigate the impacts of drought, it is also true that a full management plan is needed for the State to take full economic advantages of its water resources. Alabama with relatively poor water holding soils is especially vulnerable to agricultural droughts. Even seven days with no rain can have a major impact on yields crops. Historical data show all major row crops in the State seldom reach their potential yield because of a lack of water during the growing season. These short-term agricultural droughts put Alabama farmers at a competitive disadvantage to Midwest farmers with deep water holding soils and to Western irrigating farmers. Thus, for Alabama to stop its loss of agriculture and, in fact, to expand its agriculture it must have access to the States water resources for irrigation to be competitive. The resurrection of Alabama's row crop agriculture is critical to reviving rural economies in the poorest parts of the State such as the Blackbelt.

From its outset the AUII has taken as a priority the expansion of irrigation in a sustainable fashion that will not harm to water resources and ecological systems in the State. We have worked closely with environmental groups such as the Alabama Rivers Alliance, the Southern Environmental Law and State agencies such as the Alabama Department of Conservation. The AUII work has shown that on-farm off-stream reservoirs coupled with careful management strategies that only withdraw when the stream has adequate water can protect critical flows in the streams or rivers. However, at some point small streams can become over allocated and many farmers don't have riparian access larger rivers. Our studies have also shown that it is much better to take small fractions of bigger rivers and streams than to take large fractions of small streams. Thus, we applaud the statements in the AWAWG that inter-basin transfers and a revisit of the riparian system are part of the comprehensive water management plan.

The AUII has embraced the use of mathematical models in its studies from crop models, to hydrologic models to flood plain models. We believe such models exercised with long climatological runs (50 years or more) can provide robust statistics on irrigation demand, run-off, stream flows and ecological impacts. Managing water resources in Alabama is a complex problem, but, mathematics is a method to make complex problems tractable. Thus, we have added some language in the attached document that the AWAWG embrace modeling as a path to understand Alabama's water resources and to manage them.

We further believe that with today's real-time data availability that crop model, hydrologic models and water withdrawal data can be used to manage water resources in real-time. One of the key findings of the AUII is that for the overwhelming majority of time that Alabama's water resources are not stressed

by anthropogenic demands. However, there are times when some water sheds can be stressed. **The AWAAG should make sure that farmers and industries do not lose access to the State's water resources for the vast majority of times when water resources are not stressed trying to protect water resources when they are stressed** .The State needs water management tools that can determine when watersheds are stressed so that active management can take place to reduce withdrawals. These tools can also be used to develop actuarial information on water insurance programs that can be used to protect users from financial harm should withdrawals be limited.

Universities in the State can play an important role in developing water resource tools for assessing water availability and water use. They can also serve as an independent voice in the analysis of water issues since they are not users of water or regulators. The Alabama University Irrigation Initiative is an example of how universities can contribute to water issues and water management. They also have the ability to bring extra funds to the State's water analysis needs since they can compete nationally for competitive grant funds. The State can help the competitiveness of some of these grants by providing cost share to match federal funds.

Because most water resources research is carried out in universities and universities can often provide a voice that is not constrained by government structure and possible turf protection, we suggest that State Universities be added as one of the entities to be involved the AWAAG. Actual representatives on the (AWAAG) could be nominated by individual universities and then selected by the Alabama Water Resources Research Institute (WRI) Board which has representatives from all State Research Universities.

The AUII looks forward to working with the AWAAG as you move forward in your activities.

Thank you.



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AUII COMMENTS IN BOLD RED IN DOCUMENT

WATER MANAGEMENT ISSUES IN ALABAMA

A Report to
The Honorable Robert Bentley
Governor of Alabama

by the

Alabama Water Agencies Working Group

WATER MANAGEMENT ISSUES IN ALABAMA

GOAL

A group of state agency representatives, herein referred to as the *Alabama Water Agencies Working Group (AWAWG)*, is comprised of the membership listed below. The purpose of this document is to provide overviews, considerations, and policy options for important water resource issues in Alabama.

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WATER MANAGEMENT ISSUES IN ALABAMA

INTRODUCTION

Alabamians assume that water resources will be available for their use in sufficient quantities to drink, facilitate commerce and transportation, help meet our energy needs, and provide recreation and wildlife habitat. This has indeed been the case since the beginning of statehood, but Alabama's water resources face an uncertain future due to several landmark events specifically: population and industrial growth, development (with its associated impact on land use), increased occurrences of drought, the legal unpredictability of interstate water disputes, and the vagaries of riparian common law when there is increased demand for finite water resources. In light of these events, current state water policies need to be reformed and a comprehensive statewide water management plan created to guide the development, use, and protection of water resources and to protect Alabama from future uncertainty with respect to water availability. The lack of adequate water management policies and a comprehensive statewide water management plan places state resources at risk and invites the continued and ever increasing encroachment of federal entities into managing Alabama's water resources.

This situation can, however, be changed by adopting comprehensive statewide policies on water resources, developing a statewide water management plan and by state agencies working cooperatively on water issues. A statewide water management plan will have implications in future interstate water negotiations, provide for better drought coordination and management, encourage economic development, and create an improved water quantity assessment process.

Accordingly, Governor Robert Bentley created the Alabama Water Agencies Working Group (AWAWG) in 2011 to conduct an assessment of water resource programs and policies and provide recommendations on how to update water policies and improve the planning and management of this resource. The Working Group was initially comprised of:

- The Alabama Office Water Resources (OWR), a division of the Alabama Department of Economic and Community Affairs (ADECA)
- The Alabama Department of Environmental Management (ADEM)
- The Geological Survey of Alabama (GSA)
- The Alabama Department of Conservation and Natural Resources (ADCNR)

After reviewing the Working Group's initial summary of water issues in Alabama, Governor Robert Bentley issued a new charge to the agencies on April 18, 2012, with four objectives:

- Continue meetings and report progress and developments to the Governor's Office;
- Create a comprehensive database of Alabama's water resources by gathering all existing data and reviewing surface water, groundwater and instream flows/ecosystems assessments to provide a full understanding of the State's water resources, the use of those resources and need for those resources (including, but not limited to, industrial, economic, public health and safety and environmental needs);
- Conduct stakeholder meetings with the Governor's staff, key legislators and outside stakeholders from groups that represent—at a minimum—economic, industrial,

utility, public drinking water supply, public safety, recreational, environmental, ecological and agricultural interests; and

- Recommend a statewide water management plan and timeline that takes into account and equitably manages the demands on the State's water resources. Include in the plan any proposed legislation necessary to implement such a plan.

Later, on June 11, 2012, the Governor's Office added a fifth agency, the Alabama Department of Agriculture and Industries (AGI) to the AWAAG to provide insight on farming, irrigation and the agribusiness sector. The Governor's Office has also been an active participant in the AWAAG since the Governor issued the new charge in April 2012. The AWAAG is working to develop a set of recommendations, based on sound science, policy and law, for water resources management that will benefit all Alabamians now and for generations to come.

While these state agencies have worked cooperatively for years on a number of key issues, the creation and tasking of this group provided a timely and critical opportunity to focus on developing specific recommendations needed to update water policies and advance water resource planning and management in Alabama. Many water-related issues were debated and, while there were some differences of opinion, there was no debate about the need to identify the future water needs of the state and improve water management by developing comprehensive water policies and a flexible and "living" statewide water resources management plan. Water management policies and plans are important to Alabama's water future in three significant areas:

Economic stability and quality of life—Population growth without adequate water and infrastructure planning often results in economic uncertainty and increased risk of higher costs for water supply and environmental degradation. There is a need to invest in water management to protect state resources and make Alabama more competitive with other southeastern states. Examples from other states demonstrate that “business-as-usual” with regard to water planning is not an effective business model, nor an effective economic development tool.

Water availability—Water resources should be systematically and fairly allocated during water shortage periods. Only through a stakeholder accepted statewide water management plan with appropriate legislative implementation can this be done in an economically feasible, environmentally acceptable, and legally binding manner.

Resource protection—Maintaining and protecting the integrity and health of natural stream channels, floodplains and riparian zones, groundwater aquifers, and aquatic biological resources is essential to a sustainable water resource future and is fundamental to any statewide water management plan.

Adopting comprehensive policies and creating a statewide water management plan will ensure sustainability of our water resources and will profoundly influence Alabama's future economic competitiveness and quality of life for its citizens. While the Working Group recognizes that state agencies have extensive expertise and institutional knowledge to assist in this effort, we also understand that public input and review is a vital component to this effort as well. We encourage the Governor and Legislature to ensure that appropriate and timely input for stakeholders and the public is included in this process.

CURRENT STATUS OF WATER RESOURCES MANAGEMENT IN ALABAMA

The current status of water management in Alabama reflects the fact that water resources are managed through a series of policies, laws, and regulations under the jurisdiction of multiple agencies without a comprehensive management framework. Historically Alabama has had adequate water resources with brief but intense periods of water shortfalls. While a drought crisis creates a temporary groundswell of public concern, once rains return there is little pressure to implement major changes to our current water management system.

State agencies have mandates in many water resources areas. OWR has responsibilities for administering the Alabama Water Use Reporting Program, water planning, drought response planning, hydrologic modeling of rivers and reservoirs, coordination of federal water resources funding, and providing technical support to interstate water negotiations and litigation. ADEM has expertise in water quality management, administers several water permitting programs, conducts water-quality and biological monitoring, and coordinates a statewide stakeholder and public education and outreach effort focusing on water quality. ADCNR has responsibilities in state land management, boating safety, as well as protection of wildlife resources. ADCNR also serves as the lead natural resource trustee for the state. The GSA conducts water and other natural resources investigations, including but not limited to, surface-water hydrology and groundwater hydrogeology, water and biological resource assessments, and serves as the state groundwater trustee. The AGI provides expert regulatory control over product, business entities, movement, and application of goods and services for which applicable state and federal law exists and works to initiate and support economic development activities including the use of water in the extensive agribusiness sector. In addition, OWR, ADEM, ADCNR, and GSA have a statutory advisory role to the Permanent Joint Legislative Committee on Water Policy and Management (created by Act No. 2008-164).

Although state agencies have conducted water resource investigations for some time, the level of detail and statewide coverage of information regarding water resource availability is incomplete. State agencies, constrained by limited budgets, must prioritize activities to fulfill their respective missions. Accurate and meaningful water resource assessments are a continual process that depends on daily infusions of water resource data (streamflows, groundwater levels, rainfall, water quality). Declines in federal funding are placing additional pressure on state budgets thus reducing agency capacities for monitoring and assessments. **Universities in the State can play an important role in developing water resource tools for assessing water availability and water use. They can also serve as an independent voice in the analysis of water issues since they are not users of water or regulators. The Alabama University Irrigation Initiative is an example of how universities can contribute to water issues and water management. They also have the ability to bring extra funds to the State's water analysis needs since they can compete nationally for competitive grant funds. The State can help the competitiveness of some of these grants by providing cost share to match federal funds.**

Creation of the Permanent Joint Legislative Committee on Water Policy and Management by the Alabama Legislature was a major step forward in evaluating and addressing water-related issues in the state. The meetings of this committee were valuable and afforded the opportunity to further educate the Legislature and stakeholders about water issues and water management and allowed better coordination and communication between stakeholders and state

agencies that deal with water. Limited funding was appropriated by the Legislature to work on some water data needs. Future issues that the Committee identified in its 2009 report were as follows:

- Assessing the proper structure for a regionalized approach to water planning and management.
- Exploring the application and efficacy of the existing riparian doctrine as it relates to future water demand.
- Creating a statewide water conservation policy and program that is sensitive to regional parameters in its application and is based on sound science principles.
- Exploring water management technologies and developing appropriate legislative initiatives to support greater use of such technology.
- Examining and recommending appropriate flow dynamics [instream flows] for rivers and streams to support biological, recreational, and industrial/transportation needs and requirements.

WORKING GROUP'S FINDINGS AND POLICY OPTIONS

Over the course of fourteen meetings in four months, the Alabama Water Agencies Working Group evaluated critical water issues drawing on the conclusions of the Joint Legislative Committee on Water Policy and Management, the 1990 report *Water for a Quality of Life*, and on the vast professional experience and institutional knowledge of respective representatives from the water agencies. Twelve issue areas were identified and discussed. Detailed summaries for each issue area are found in the appendix. The following list highlights each issue area and key policy options.

Water Resources Management

- Direct the Alabama Water Agencies Working Group to develop a process for creating a statewide water management plan and identify the necessary components consistent with the Alabama Water Resources Act.
- Involve the Alabama Water Resources Commission in the development of a statewide water resources management plan.

Enhanced Certificates of Use/Permitting

- Review the benefits, costs, and issues associated with establishing a more formal system for managing water withdrawals in the state.
- Determine the legal basis under which Alabama will manage its water resources.
- Any enhanced system for managing water should be part of a comprehensive statewide plan based on water quality, water quantity, instream flow, and water use data.

Economic Development

- Provide policies and guidance for water resources development by encouraging: regional/local planning, public/private partnerships, and the use of water development concepts such as off-stream storage.
- Consider water resource implications in all business and industry recruiting efforts.
- Support recommendations for water-resource related infrastructure that would benefit economic development.
- Encourage long-term new water source infrastructure planning and regional cooperation.
- Protect existing water needs and promote the sustainable use of water in Alabama's growing agribusinesses and industries.
- Establish an information clearinghouse to provide eligibility criteria, funding sources and contact information for programs available to support infrastructure development.

Surface Water and Groundwater Availability

- Enhance funding and expand the State's capability for acquiring and evaluating surface water and groundwater resources data and information.
- Establish groundwater regulations relative to water production rates, protection of aquifer recharge zones, and identification of priority groundwater uses and integrate them into a statewide water management plan.
- Support, enhance, and implement protective measures of groundwater quality through existing water-quality programs.

Drought Planning

- Establish a statutory basis and mechanism for drought planning, monitoring, and management.
- Require periodic review of the state's drought management plan and promote water conservation and water reuse in the plan.
- Develop standard operating procedures for input into the Alabama portion of the U.S. Drought Monitor program.
- **Develop plans for storage and/or water transfer that can mitigate drought impacts in watersheds that have high frequencies of drought stress due to high demand and low water availability.**
- **Develop tools that can provide real-time information on water demand and water availability.**

Water Conservation and Reuse

- Develop a public education program concerning the need for and benefits of water conservation and reuse.

- Support development of water reuse regulations to conserve water while being protective of human health and water quality and promote water reuse as a practical conservation measure.
- Encourage water conservation and efficiency for public drinking water utilities through the statewide water management plan.
- **Encourage water conservation and efficiency for both agricultural and landscape irrigation.**

Interbasin Transfers

- Determine an appropriate basin unit for evaluating and accounting for interbasin transfers of water resources.
- Identify and summarize existing interbasin transfers.
- Establish a regulatory mechanism for interbasin transfers that provides for existing transfers and establishes criteria for new or expanded transfers to ensure they are reasonable and beneficial to the state.

Instream Flows

- Provide funding and resources for instream flow investigations and for evaluating appropriate instream flow hydrologic tools.
- Develop a policy concerning instream flows which can serve as a cornerstone of a statewide water management plan.
- Develop an acceptable legal and regulatory framework for implementation of an instream flow policy.
- **Develop operational real-time tools that can estimate in-stream flows in ungauged watersheds for use in management decisions.**

Water Resources Data

- Provide enhanced funding to support state efforts to develop a robust and scientifically based surface-water and groundwater data foundation for conducting assessments and determining water allocations.
- Encourage the Governor and other officials and representatives to work with federal water agencies to fund water flow gages in Alabama.
- Expand Alabama's rainfall monitoring network working through the State Climatologist and through public climate data collaboratives.
- Develop and apply consistent data quality standards and protocols for acquisition, management, and disposition of water resources data.
- **Develop tools that can provide integrated information on both water demand (usage) and water availability (run-off).**

Interstate Coordination

- Provide meeting support to strengthen staff-level peer relationships with neighboring states to improve coordination and information sharing.
- Support agencies' activities that involve interstate water resources.
- In accordance with the Alabama Water Resources Act, establish a clearinghouse to keep the Governor's office updated on all interstate water resources related issues.

Key Stakeholder Education and Outreach and Public Education and Outreach

- Identify key stakeholder groups to facilitate a more efficient and effective dialog for statewide water management.
- Afford the opportunity for all stakeholders to participate in the process of developing water policies and a statewide water management plan.
- Publicize and promote Alabama's water resources as fundamental to sustaining a desirable quality of life, future economic development, aquatic habitat, and biological diversity.
- **Educate the public that while water resources must be managed and protected during times of drought that in fact Alabama and the Southeast as a whole only consume less than three-percent of its average surface water resources.**
- **Promote the view that while times of scarcity and drought must be addressed the generally abundant water resources of the State should be actively used and managed for the good of the State.**

BUILDING BLOCKS FOR A FUTURE STATEWIDE WATER MANAGEMENT PLAN

Alabama has taken significant steps over the years in its efforts to manage water resources. However, current water demands, issues, and controversies and the need for a more secure water future require the state to now undertake the process of enhancing water policies and creating a statewide water management plan. This can be done by taking the existing components of water management that work well, developing approaches for addressing issues such as interbasin transfers and instream flows, and reviewing the various agency roles and functions related to water resources management.

There exists a solid structure of state agencies working effectively in their water-related tasks, and stakeholder groups throughout the state with a keen interest in water resources management to begin crafting a statewide water management plan once sound water resources policies have been developed by the Governor and Legislature. As previously noted, many components of a plan currently exist in agencies' mandates and functions. What is needed is a legislative charge and authority to begin the process and a planning framework for creation of a comprehensive and adaptive plan that will serve the state well into the future. The state needs comprehensive water policies that provide legal clarity with respect to water rights to help ensure that future needs cannot be thwarted by federal intervention, actions by other states, or outside user/commercial entities.

Traditionally, most eastern states have relied on some variation of “riparian law” (i.e. legal rights associated with land ownership adjacent to a watercourse). However, pure riparian law as is used in Alabama is not an effective way to manage water resources for the betterment of all users. A regulated riparian legal structure is evolving in the southeastern states as a more effective way to manage water resources, ensuring that public and private needs are met and minimizing conflicts and litigation.

Statewide water management consists of the following basic components. Implementation of a plan, however, can be very complex, tedious, and expensive. The basic steps in the development of a plan include:

- The collection of pertinent water resources data including but not limited to:
 - Water Use—Determine how much water is used in what sectors of society and how this water can be used more efficiently.
 - Water Availability—Determine how much water of sufficient quality is available from surface and groundwater sources. Explore the possibilities of tapping underutilized aquifers and increasing the use of surface water in new yet sustainable ways.
 - Instream Flows—Determine how much water should remain in surface channels to support fish and wildlife and the functions of natural hydrologic systems. Determine how surface water and groundwater are linked in this context.
- **While actual observational data is important it can be costly both for establishment and maintenance. Watershed models with appropriate validation can be used to provide critical estimates of water availability and demand. The development of such models should be a priority for the State.**
- Complete water resources assessments and establish a statewide surface water and groundwater monitoring network. Determine data and knowledge deficiencies and provide resources to address the identified deficiencies.
- Forecast water needs for drinking water and industrial use, economic development, agriculture, recreation, and energy production. Determine flow needs for wastewater assimilation, sustaining biological condition, and protecting the hydrologic system.
- Identify management practices necessary to meet the identified water needs and protect water resource functions. Stakeholder and political interaction are critical in this process.
- Implement the approved water management program. Proceed with an adaptive management approach for all stakeholders and have in place a robust conflict resolution process.
- Regionalize the state into smaller watershed/basin management units with local management and decision making relative to water resources in accordance with state policies and plans.

- Provide for stakeholder input as important decisions are made and during key process development steps.

PROPOSED NEXT STEPS

The Alabama Water Agencies Working Group believes all of the policy options presented in this paper will need to be implemented to eventually develop comprehensive water policies and a statewide water management plan. Several important steps to move this process forward will be required. These include:

- A document comparable to this report and any other available pertinent water issues studies should be made available to all interested parties to develop a common base from which to conduct policy and plan development;
- Funding should be provided to complete surface water and groundwater assessments, determination of instream flows and other data necessary to provide a scientific basis for development of a statewide water policy and a comprehensive statewide water management plan;
- The Governor's Office and the Permanent Joint Legislative Committee on Water Policy and Management should solicit water policy input and considerations from key stakeholders. Some work in this area is already underway and efforts by the Governor's Office and Joint Legislative Committee should be accelerated;
- Considering input from key stakeholders, the Governor's Office and the Permanent Joint Legislative Committee on Water Policy and Management should prepare draft policy statements and seek to reconcile them into a single policy statement;
- Identify the critical components, schedule, and costs to develop a statewide water management plan; and
- The Alabama Water Agencies Working Group should continue to be utilized in ongoing water policy and plan development.
- **Even the absence of a final comprehensive water plan, specific activities that include a full analysis of water use and availability which protect water sheds during droughts and which provide significant economic benefits to the State should be implemented as part of water management in the State.**

CONCLUSION

It is the conclusion of the Alabama Water Agencies Working Group that maintaining the status quo with regard to water management in Alabama is an unwise option. There are many issues that must be addressed before comprehensive water policies and a statewide water management plan can be developed. The path forward will require commitment from the Executive and Legislative Branches of State government as well as key stakeholders to negotiate a workable solution.