

# Georgia's Regional Water Plans

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## Recommendations for Implementation



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August 5, 2011

## **Acknowledgements**

I would like to thank my advisor Dr. Michael Elliott for his guidance during my time at Georgia Tech. I would also like to thank the rest of the faculty with the School of City and Regional Planning for their instruction and commitment to their students and program.

To all of my colleagues with the Georgia Environmental Protection Division I am truly grateful for your support over the last three years. It is a great feeling to have such amazing people rooting for you!

I would also like to thank my friends and family who have pushed and pulled when needed to keep my motivation and focus moving in the right direction.

Finally, I want to thank my amazing wife, Amanda; without her I could not have done it!

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## **Introduction**

State and local governments engage in many types of planning activities whose goals may differ widely in scale and purpose. These plans may range from regional transportation plans, to state economic development plans, to local land-use plans, to neighborhood redevelopment plans. Like many other states, Georgia has developed plans for a variety of purposes, including plans aimed at environmental protection. One of Georgia's primary environmental planning efforts during the last two decades has focused on water.

In 2008, the Georgia General Assembly adopted the Georgia State-wide Water Management Plan (SWP). The SWP provides a comprehensive framework for water planning in Georgia. This framework includes directives for assessing water resources, forecasting public water needs, stakeholder involvement, regional planning, and others. One of the major purposes of the SWP is to provide for the development of water plans that are tailored to specific regions within the state. Region-specific plans are intended to ensure statewide coordination and also acknowledges both political and watershed boundaries (State Water Plan, 2008). Regional Water Plans have been under development in Georgia since March 2009 and are scheduled for completion and adoption by the Georgia Environmental Protection Division (EPD) in September 2011. The SWP is intended to guide state agencies, EPD in particular, to in their development of Regional Water Plans. One area of planning not specifically addressed within the SWP, however, is plan implementation.

The implementation phase of planning has long been viewed as a major weakness of the planning process; indeed, mention of implementation is scarce throughout planning literature (Berke et al., 2006). The SWP mentions implementation of large-scale policies at the state level, but speaks little to plan implementation by local governments other than to recommend coordination between state and local efforts. This may prove to be short sighted given the critical role local governments play in water resource protection and planning (Kellogg, 1997). Failing to specifically guide plan

implementation in local governments might prove even more detrimental in home-rule states such as Georgia, where local governments can self determine, among other issues, both growth and land-use. In order for Regional Water Plans to function as effective tools for water management in Georgia, successful implementation is critical.

The objective of this paper is to provide a framework, as well as recommendations for implementing Regional Water Plans at the state and local levels. This paper will also attempt to provide a structure for coordination between various state, regional, and local entities within the context of implementation. To complete this paper, a number of research methodologies have been employed including literature searches, personal interviews, and review of state and local water plans. Interviews were conducted with a variety of individuals from state, regional, and local governments. Given the scope of this paper, a specific Regional Water Plan and several local governments were selected to conduct a case study. The focus of this paper will be on the Suwannee-Satilla Initial Regional Water Plan, which encompasses Lowndes County, the City of Valdosta, and the City of Hahira (See Appendix A). This paper is intended to provide recommendations to serve as a starting point for implementation of this and other Regional Water Plans within Georgia.

## **Background**

### ***Water Planning In Georgia***

Prior to 2008, comprehensive water planning did not exist in Georgia. Until the passage of the Comprehensive State-wide Water Management Planning Act in 2004 (O.C.G.A §12-5-522), Georgia had only attempted one other statewide initiative for water planning with the River Basin Management Planning Act of 1992 (O.C.G.A. §12-5-520). This legislation called for the development of what would ultimately be known as Comp Plans, which would be developed for each of Georgia's 14 major river basins in conjunction with a local advisory committee (Kundell, et al., 2000). This effort was directed and driven by the Georgia Environmental Protection Division (EPD), but did not provide the framework necessary to develop a truly comprehensive plan (Kundell et al., 2000). Although these River Basin Plans were completed, little was done in terms of implementation, which likely resulted from passage of the Comprehensive State-wide Water Management Planning Act (2004), which occurred, one year prior to completion of the final River Basin Plan (Kundell et al., 2000).

### ***Georgia's State-wide Water Plan***

The Comprehensive State-wide Water Management Planning Act established the context for the development of a truly state-wide comprehensive water management plan and provided the "far-reaching vision" that: "Georgia manages water resources in a sustainable manner to support the state's economy, to protect public health and natural systems, and to enhance the quality of life for all citizens" (Georgiawaterplanning.org, 2011). Using this vision, EPD, with direction from the Georgia Water Council (a body appointed by the Governor, Lt. Governor, and Speaker of the House), developed Georgia's first Comprehensive State-wide Water Management Plan (SWP), which was adopted by the General Assembly in 2008 (Georgiawaterplanning.org, 2011). The SWP provides the guiding policies and

framework and also describes how future water planning should be conducted at a regional level in Georgia.

The SWP divides Georgia into 10 Water Planning Regions and identifies the Metropolitan North Georgia Water Planning District (Metro District) as an eleventh region. It is worth noting that O.C.G.A. §§12-5-522 does not affect existing statutes (such as those in the Metro District) and therefore accepts the Metro District plans as completed regional plans. Each Water Planning Region is to have a Regional Water Planning Council, referred to in this paper as Water Councils, which are charged with the preparation of Regional Water Plans with the support of EPD and its partnering agencies. Regional Water Plans are to be completed using data collected on a number of issues including water use, water demand, population, energy needs, agricultural use, and other factors coupled with forecasts and projections for these data based on 10, 20, 30, and 40 year time horizons (SWP, 2008). These projections and forecasts must be completed using the same data collection methodologies for all regions and counties, which has not been done previously in Georgia.

Using the data collected for development of the Regional Water Plans, the Water Councils are directed to select management practices within the contexts of surface water quality and quantity, as well as groundwater quantity, which are intended to address future water needs and changing conditions (SWP, 2008). Currently, the Water Councils are finalizing their plans based on comments received from the public, EPD, and other agencies and are slated for submission to the EPD director for review and approval in September 2011.

Once these plans are completed, they will be used by EPD, and other agencies, for decision-making. RWPs will inform decisions regarding distribution of wastewater discharge permits, water withdrawal permits, state grants and loans, and others (SWP, 2008). Further implementation of these regional plans will be the responsibility of local jurisdictions with the support of EPD and other state agencies as stated in Section 14 of the SWP (Water Council, 2008). With respect to local governments,



Sections 13 and 14 contain language that calls for EPD, the Department of Community Affairs (DCA), and local jurisdictions to work in concert to ensure consistency between local plans and the Regional Water Plans, specifically within the context of land-use planning and Comp Plans (SWP, 2008). In order to for the Regional Water Plans to function as they are intended, thoughtful, holistic implementation methods must be employed.

## **Research Methodology**

### ***Background Research and Literature Review***

Reviews of literature relevant to the topic, including peer reviewed journal articles, laws, departmental rules, the Suwannee – Satilla Regional Water Plan (draft), Lowndes County Comprehensive plan, Georgia’s Comprehensive State-wide Water Management Plan, salient guidance documents published by the Georgia Environmental Protection Division and Department of Community Affairs, and other materials, were conducted to develop a foundation for the argument and recommendations presented in this paper. Journal articles primarily focused on the following topics: watershed management, comprehensive planning, barriers to plan implementation, integrated land-use and water management, and water planning and implementation at the local level. This research helped to form the basis of the paper and provided context and direction to better utilize interviews, discussed below, to inform recommendations. Information was also gathered on three regions outside of Georgia to assess integrated planning in varying locales. Florida, California, and New Mexico, were selected to illustrate how other states and local governments have interacted within the context of local and water plan implementation. These states were selected because initial searches indicated that these states 1) have state water plans and 2) have requirements for local governments to address either state / regional plans or at a minimum, include water planning in their comprehensive plans. Cities within each state, Tampa, Fresno, and Santa Fe respectively, were selected to provide a local perspective. Staff members from Tampa and Fresno city governments were interviewed, not using a specific protocol, to gain a broad and general understanding of the state and local interaction within the context of plan implementation.

### ***Local Case Studies in Georgia***

To obtain information which would serve to direct recommendations for plan implementation, a standardized case study and interview approach was taken. Assessments of individual opinions, experiences, and existing policies and regulations were made at the local level, as well as state level. Information gathered from the case studies were then synthesized to determine appropriate recommendations for local and state implementation efforts.

Local government case studies were conducted and focused on three Georgia local governments: Lowndes County, the City of Valdosta, and the City of Hahira for the purposes of making informed recommendations for Regional Water Plan implementation, as stated above. These locales were specifically chosen because they are outside Metropolitan Atlanta, whose municipalities have different rules applied to them in relation to water planning. It was also felt that these locations might be more representative of Georgia as a whole. In addition, the local governments that were selected have taken proactive steps in the area of local and environmental planning and implementation.

### ***Interviews***

In order to accomplish the goal of gaining a local government perspective, interviews were conducted with key individuals within the selected local governments. To incorporate the state perspective, interviews were conducted with key individuals within the following organizations: the Georgia Department of Community Affairs, the Georgia Environmental Protection Division, and the Southern Georgia Regional Commission. These organizations represent some of the leaders in local planning and water planning at the state and regional level. It is anticipated that participation by these groups will be critical if implementation of the Regional Water Plans is to be successful.

Individuals from Lowndes County, city of Valdosta, city of Hahira, and the Southern Georgia Regional Commission (SGRC) were interviewed. The interviewees included planners, city managers,

utilities directors, a city engineer, and a stormwater director. Each of these individuals brought his or her personal experience and knowledge to the interviews. Some of those interviewed have been employed by their local government or organization for more than 15 years, while others only have worked fewer than 5 years within their locale. Several of the interviewees had spent fewer than 3 years with their organization, but had been working in the field of utilities, water planning, and engineering for more than 10 years. Having previous experience with watershed planning, including water plan implementation in another state, allowed some of the interviewees to provide a unique perspective. These individuals provided insight into barriers and opportunities for implementation of the RWPs as well as other plans in general by their respective governments and agencies. All names are being withheld at the request of the interviewees. In doing so, more candid conversations took place and more details were given during the interviews.

Four representatives from the Georgia Environmental Protection Division (GAEPD) and Georgia Department of Community Affairs (DCA) were interviewed to collect a state government perspective on Regional Water Plan implementation. These agencies were consulted because both were previously, and are still, involved in providing technical support and guidance to the Water Councils during the RWP development process. These agencies also had the most contact with local governments during the RWP development process and will most likely have the greatest opportunity to interact with local governments during implementation. The individuals interviewed from GAEPD and DCA served as coordinators, advisors, project managers, and planners that have been providing direct technical assistance to the Water Councils throughout the development of the RWPs. These individuals often served as the link between various stakeholders and will be at the forefront of implementation efforts within their respective agencies.

Protocols for these interviews were developed and tailored, as much as possible, to the local governments and state government departments. To inform development of the protocols examples and information were gathered through a search of existing interview protocols and tools. The protocol *Engagement in Assessment: A Toolkit for Faculty and Administrators Involved in Student Assessment* (Stanford University, accessed 2011), was used as a foundation for the protocol utilized for this paper. The interview protocol consisted of an introductory script, baseline questions, topically-relevant questions, and instructions for conducting the interviews. Questions were written to assess both the local and state government personnel experiences and opinions regarding the RWP process, as well as its ultimate implementation. These questions were intended to gather the following pieces of information: 1) interviewee knowledge and experience with various types of planning, specifically water planning, 2) interviewee experience and perspectives on plan implementation, 3) important next steps in the planning and implementation process from the interviewees' perspective, and 4) the types of resources beyond funding will be most needed to see implementation of the RWPs completed. See Appendix B for a copy of the questions used for the interviews.

To accompany the questions, six management practices were selected from the Suwannee – Satilla Initial Regional Water Plan. These practices represent various types of planning solutions such as practices to address water quantity or land-use and water quality. These practices were also selected because it was believed they represented different challenges to and opportunities for implementation. Table 1 illustrates the selected practices used to guide the interviews.

**Table 1. Selected Management Practices from the  
Suwannee – Satilla Initial Recommended Regional Water Plan**

Surface Water Quantity	Surface Water Quality	Groundwater
<b>EDU-1</b> , Promote Conservation Programs, Support Water Conservation Programs, Section - Page: 6-17 / 7-14	<b>PSDO – 2</b> , Identify feasibility to move discharge location to higher flow streams with greater assimilative capacity Section - Page: 6-12 / 7-7	<b>ASWS – 8</b> , Incentive-based practices to promote infiltration and aquifer recharge, EPD & Municipalities Section - Page: 6-11 / 7-6
<b>ASWS – 9</b> , Incentives for greater wastewater return Flows; coordinated management Section - Page: 6-11 / 7-6	<b>NPSU-4</b> , Riparian Buffers, Protect and maintain riparian buffers along urban streams, Section - Page: 6-15 / 7-11	<b>GW-1</b> , Sustainable groundwater development Continue to drill wells and withdraw groundwater to meet regional needs Verify sustainable yield metrics and consider relevant localized impacts Section - Page: 6-13 / 7-9

Practices were taken directly from the Suwannee – Satilla Initial Recommended Regional Water Plan.

**ASWS** – Additional/Alternate to Existing Surface Water Supply Sources

**EDU** – Education

**GW** – Groundwater

**NPSU** – Nonpoint source Urban

**PSDO** – Point Source Dissolved Oxygen

## **Literature Review**

A review of planning literature was conducted, with specific focus on water planning and implementation in local governments. This review is intended to provide a foundation for understanding the various planning processes conducted within state and local governments. In addition, information regarding the inextricable nature of comprehensive and watershed planning will be provided. Finally, specific information regarding comprehensive water planning in Georgia will be discussed, providing evidence to support the concept that local governments should be an integral part of implementation of the Georgia's Comprehensive State-wide Water Management Plan (SWP) and, more specifically, the associated Regional Water Plans.

### ***Comprehensive Planning***

Comprehensive planning is carried out, primarily by local governments, to provide a framework for local leaders to make decisions based on the community's goals for future growth and public services (Kelly, 2010). Comprehensive planning has a long history dating back to the early 1900's with the passage of federal legislation, chiefly the Standard Zoning Enabling Act of 1926 (Kelly, 2010). This piece of legislation stated that land use regulation and zoning decisions must be made "in accordance with the comprehensive plan" (Juergensmeyer and Roberts, 2007). However, it wasn't until the passage of the Standard City Planning Enabling Act (1928) that basic elements for what constituted a comprehensive plan were outlined (Juergensmeyer and Roberts, 2007).

As stated above, comprehensive plans serve as growth guides for local governments. The Iowa State University Extension service provides the following definition for comprehensive plans:

"...a collection of information and materials designed to guide the future development of a city or county. Such a plan can provide a community with a firm foundation for policy and action that will allow it to function more efficiently and effectively. It can strengthen communities' policies and legislation, and it also can promote a more certain future."

This is an appropriate and succinct definition for comprehensive planning. Porter, et al. (2005) also identify comprehensive plans as documents that serve to help local governments achieve economic, environmental, transportation, and social goals.

Most comprehensive plans have similar elements within them aimed at specific areas. Comprehensive plans tend to contain elements for housing, transportation, parks, resources, utilities, and urban design (Iowa State University Extension, accessed 2011). These elements typically provide recommendations for actions that will allow the local government to achieve its stated goals within the context of sustained growth and prosperity. These recommendations are based on community objectives as well as forecasts for population, employment, transportation demands, and educational needs depending on the local government's needs.

However, even with all the relevant information contained within a comprehensive plan, these plans are often overly generalized and do not focus on specific issues such as long-term water management. This is one reason many local governments create more specific plans, such as utility master plans or transportation plans. Within the area of water management, local governments often engage in watershed planning to provide more focused and specific recommendations and actions for addressing their current and future water quality and quantity needs.

### ***Watershed Planning and Management***

Watershed plans tend to focus on smaller geographic areas and provide more specific context for the goals and needs of local governments with respect to water use. The United States Environmental Protection Agency (EPA) defines a watershed as any area that “drains to a common waterway, such as a stream, lake, estuary, wetland, aquifer, or even the ocean.” Water planning conducted at the watershed level typically employs the “watershed approach”, which incorporates planning and management of water quantity and quality using a flexible framework that involves



multiple stakeholders and interests and includes the use of data (including water quality and quantity, land use, population, etc.) gathered using “sound science” and technology (EPA, 2008).

Watershed plans are not entirely unlike comprehensive plans in that they reflect the goals and objectives of the group preparing the plan. Watershed plans, in their most basic form, contain information on conditions within the watershed such as land use, pollution sources, geography, and major resource demands. Also, much like comprehensive plans, watershed plans contain recommendations on addressing issues such as pollution and water conservation and will involve many different interests and perspectives from local stakeholders (EPA, 2008). Given the similarities between comprehensive plans and watershed plans, as well as the duplication of data between the different types of plans, integration of water and comprehensive plans makes for a more rational approach.

### ***Integration of Comprehensive and Watershed Planning***

Much work has been done linking land-use and growth to water quality and quantity. As local governments continue to promote growth in all sectors, there are limits to that growth in terms of resource availability, be it open-land, infrastructure, capital, and/or water supplies. With this growth comes a need to continue supplying high quality water, at increasing volumes to support residential, commercial, and industrial needs (Carter et al., 2005). Understanding this connection is critical in terms of future local planning activities.

A study in the Little Miami River Watershed in Southwest Ohio by Tong et al., found a 20% reduction in river flows when modeled using the riparian governments’ future growth and land-use plans. Their work supported that from a previous study in the same watershed, indicating the expected conversion of open farmland to low density residential would bring with it reduced runoff and recharge rates for the surrounding watershed. Their modeling also supported work completed by Karvonen et al. that changing land-uses can often result in degraded water quality (Tong et al., 2009). Along with the aforementioned urbanization of this watershed, it is also known that this increase leads to degradation

as well, due to increased runoff of metals, salts, and other harmful constituents and also alters the hydrology of a given watershed (Falkenmark, 1981, Kellogg, 1997, Tong and Chen, 2002).

Similar studies have been repeated with modeling and monitoring data. However, it appears from the literature that few plans are properly designed to account for both land use and water resources, particularly water supply. Oregon, Florida, New Jersey, and Maryland's local planning processes were reviewed for consistency and consideration of state level water plans, and all four were deemed woefully lacking in coordination (Cohen, 2004). Other states will be assessed later in this review.

Local governments that use water for the health and well being of their citizens, services and economy (and this author does not know of any who don't) must look at the nexus between water and land-use. The Clayton County Water Authority (CCWA) in Georgia currently attempts to integrate these two types of planning. CCWA views planning with a holistic approach and is able to determine the most sustainable uses of water within the land-use context to adequately plan for the future (Jeffcoat, 2009). This became apparent during the last severe drought in Georgia. Several municipalities were rationing water, with some doubting the sustainability of Lake Lanier, while the CCWA was able to provide sustained water supplies throughout their service area due to their application of integrated planning (Jeffcoat, 2009).

The need to better integrate land-use and water planning is clear. While federal and state governments tend to have regulatory control over water, local governments tend to have control over land-use planning decisions (Kellogg, 1997). This fact is important because it can also serve as a catalyst for integrating water and land-use planning, especially throughout Georgia with development of the Regional Water Plans and Comp Plans. These regional plans contain much of the data necessary to make decisions about future land-use, particularly within the context of growth. This idea further

manifests itself when looking at housing demands, a requirement for any amount of sustained growth within a jurisdiction.

As the supply and demand of housing increases, so does the demand on water resources due to both indoor and outdoor water uses (Hanak and Browne, 2006). Local governments have control over these demands through their zoning and ordinance powers, particularly with ordinances dealing with landscapes (which may be a bit larger issue in more arid regions but is still important) or other water uses (Hanak and Browne, 2006). Without adequate supplies of water, local governments could be faced with future problems supplying existing residents, while attempting to provide for additional growth. As stated earlier, the SWP calls for this integration of land-use and water planning and also provides the tools, vis-à-vis the Regional Water Plans, that could help make this a reality in Georgia. However, it will take efforts to implement these plans in a way that provides the necessary tools to achieve the SWP's above stated goal through land-use and water planning integration, and frequently, plan implementation is as much a barrier to achieving goals as planning, itself.

### ***Example of Other States' Water Plan Implementation at the Local Level***

Several other states have completed state level water plans aimed at managing water quantity and quality to support the state's growth. Many of these states, to one degree or another, attempt to integrate land-use and/or growth management with water planning. Three states' experiences with water plan implementation will be reviewed in brief, including Florida, California, and New Mexico. In addition to the brief analysis of state water plan implementation, local government implementation efforts are also summarized. Municipalities examined include Tampa, Florida; Fresno, California; and Santa Fe, New Mexico. The examples provided describe how local government comprehensive plans tie-in with state water plans and address the inextricable link between growth management and land use with water planning.

## **Florida**

The state of Florida has required both comprehensive planning and water planning since the 1970's. As a result, Florida is considered a leader in planning (Cohen, 2004). Within Florida exists Water Management Districts (WMDs), based on political and riparian boundaries, whose primary responsibilities include preparation of regional water management plans. Local governments in Florida have long benefited from WMDs, which have the ability to guide integration between comprehensive and water plans. In 2002, then-Governor Jeb Bush, signed legislation that attempted to strengthen the relationship between land-use planning/growth management and water management planning, particularly with regard to water supply. The legislation required that comprehensive plans be updated to include coordination with regional water supply plans, thereby forging a connection between water and land-use planning (Cohen, 2004).

There is, however, much debate on whether this legislation has effectively increased integration of growth management/land-use planning with water supply planning. Cohen selected Tampa as an example and found that little to no consideration was given to water planning by the city's comprehensive plans, and implications for Tampa could be severe, as the region is already growing beyond its water supply capacity (Cohen, 2004). This should not be seen as a failure of the updated legislation, but rather as a lesson speaking to the importance of integrated planning. Whether or not successful implementation is occurring within the Tampa Bay area is up for debate, but it is worth noting the language found within the city's comprehensive that does acknowledge water planning in the context of local growth planning. Although imperfect, the Tampa comprehensive plan attempts to incorporate an integrated planning approach. The following section describes planning as it relates to potable water:

*"Consistent with Florida Administrative Code section 9J-5.011, the purpose of the Potable Water Element is to assure that necessary public potable water facilities and services correlate to the City's future land use projections. "Potable water facilities" means a system of structures designed to collect, treat, or distribute potable water, and*

include water wells, treatment plants, reservoirs, and distribution mains. The update of the Potable Water Element reflects not only the actions recommended in the City's Evaluation and Appraisal Report of 2006, but also the mandated updates required by the Florida Statutes and the Florida Administrative Code." (Emphasis added)

This section of the plan further describes policy recommendations that link future land-use to water planning, specifically the Regional Water Supply Plan prepared by the Southwest Florida Water Management District (SWFWMD) (The Planning Commission, 2009). This piece of legislation shows the state's leadership recognizes the nexus between land use and water management and provides the necessary direction and framework for local governments to achieve their growth goals while sustaining their water resources.

### **California**

Long known for being at the forefront of environmental planning, California has adopted a water plan that directly addresses integrating land-use and water planning. Chapter 24 (Land-use Planning and Management) recognizes the need for planning future housing, transportation, economic growth, and others within the context of water supply and quality. This section also recognizes and cites statutes pertaining to local jurisdictions' ability and power to make land-use decisions. Chapter 24 provides suggested policy tools for use by local governments to address issues such as flooding, water supply, and climate change. This kind of approach can also be found within many of the comprehensive plans prepared by local governments in California.

Tang (2009) conducted a review of local comprehensive plans to evaluate integration of elements from California's strategic environmental assessments (SEA). SEA requires that potential impacts on the environment be assessed before a project can go forward, not unlike federally required environmental impact assessments (EIA). Tang found that many plans reviewed did contain elements from the SEA, which served as an indication that local governments can and will plan for these kinds of elements including watershed-based land-use management. However, efficacy of these requirements

and efforts could not be found, but as stated above, should not detract from the idea that local governments can use large, state level plans to better plan for their future. The City of Fresno is an example of a local government that must address water planning and land-use issues at the local level in California.

A discussion with a city engineer with the City of Fresno revealed the process Fresno is using to increase the integration of water planning with their local planning efforts. He explained that, according to state law, the city must not only address the regional water plans, but must also develop long-term sustainable water plans for the city's jurisdiction. Fresno is currently incorporating both regional and local water plans into their General Plan update as well as neighborhood focused plans. The city engineer emphasized that all plans completed within the city incorporate water management issues. Beyond the local level, many of these water plans will also inform current and future regional growth plans that will help address emerging water issues.

### **New Mexico**

The New Mexico State Water Plan (NMSWP) was completed in 2003, as a direct response to water allocation issues in a state that is dominated by an arid or semi-arid landscape (Lucero and Tarlock, 2003). Acknowledging the end of large scale federal dam building for water and the challenges of the "Western Water Law", the NMSWP attempts to address all water management issues from a quantity and quality perspective (NMSWP, 2003). One way in which it attempts to accomplish this is by promoting integrated water planning at the local level and encouraging the use of tools available at the local level to manage water resources throughout the state (NMSWP, 2003).

The NMSWP specifically addresses issues such as ordinances, zoning, and local level water supply planning. While the plan places the bulk of the responsibility for ensuring consistency between land-use and water on the state, it clearly outlines methods and provides a framework in which these elements should be implemented at the local level. One section specifically states that, "Local

governments use zoning and land-use regulations and design criteria to effectively mitigate many undesirable aspects of development. Zoning ordinances can assure that development will be restricted to appropriate areas, and design criteria can be used to promote water use efficiency, moderate water use and protect water quality.” This serves as a clear indicator, not only of the rationale for implementing water planning at the local level, but also that water planning fits well within the scope of local government activities.

Water planning at the local level is further validated when one considers the results of a review of water management in New Mexico by Lucero and Tarlock (2003). Their study highlights some of the approaches being taken by different local governments to incorporate water planning elements effectively into their comprehensive plans. They also recognize the existing regional water plans as more than adequate tools to help local governments conduct both land-use and water planning. It is worth noting that these regional plans are the foundation of the state level water plan, having been completed prior to its passage.

Santa Fe, New Mexico developed a comprehensive plan in 1999, which occurred several years prior to the completion of the NMSWP<sup>1</sup>. However, even at that time, there was efforts were underway to integrate water planning with future growth and local land-use. One policy recommendation even called for development of a regional water plan, long before regional water plans were routinely developed in New Mexico. Specifically, the Santa Fe Comprehensive Plan states for water supply:

“The majority of the regional growth should occur within the Urban Area, in consideration of a number of factors: (1) the groundwater resources are finite and the consequences of their continued mining could be disastrous; (2) a soundly designed “regional” water system achieved in cooperation with our immediate neighbors is a necessity more than an option and most residents of this “region” should be served by a central water system for the purposes of consistent long-term quality and protection of the groundwater resources that supply their needs; and (3) because the regional approach contributes to securing supply sources for a large number of people, it also helps in reducing the per-capita cost of the necessary infrastructure.

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<sup>1</sup> At the time of this writing, a more current Comp Plan was not available.

Again, this example highlights the need recognized at even a local jurisdiction to adequately plan and implement measures to address water issues. Santa Fe clearly looked to this connection between growth, land-use, and water at the local level prior to the NMSWP due to their local climate and geography as well as desired goals for growth over the next several years.

Efforts to plan for long-term water quantity and quality needs must be conducted within a framework that includes projections for land-use and growth. Both state and local government entities must expand their focus to consider the numerous and complicated factors that contribute to changing demands for natural resources, especially water. Integrated planning approaches will improve the likelihood that appropriate actions are taken to provide the necessary water resources for dynamic communities. Ultimately, however, even the best plans are useless in the absence of effective plan implementation.

### ***Plan Implementation***

Much work has been done assessing the quality of plans, but less emphasis has been placed on plan implementation. Laurian et al., (2004) completed a brief review of planning literature focused on implementation and found that the existing body of knowledge is considerably lacking. While heavy emphasis on plan quality within planning literature likely contributes to the dearth of scholarly work regarding plan implementation, difficulties associated with measuring plan implementation efforts also make study of implementation challenging (Brody and Highfield, 2005). Despite these limitations, some work has been done to address both barriers to and drivers of plan implementation.

Poor implementation can be the “Achilles’ heel” to a plan’s effectiveness, and failure to implement has long resulted in skepticism of the utility of planning (Berke et al., 2006). Implementation of newly developed plans often is challenging. Indeed, once the Regional Water Plans in Georgia are completed, state and local governments must then determine how to implement them. This task could be a significant challenge, as plans of this nature have never existed previously in Georgia. Given the



challenges associated with implementation of novel plans, the implementation process often is neglected, resulting in non-ideal outcomes, and sometimes complete failure (Blomquist & Schlager, 2005). Thus, understanding the barriers to successful plan implementation is essential to obtaining the plan's desired outcomes. Laurian et al. (2004), Berke et al. (2005), and Hull and Tricker (2005) outlined the following barriers to implementation efforts:

- Lack of political will from elected officials
- Concerns of funding and resources for implementation
- Lack of adequate supply of staff and personnel within the implementing agency
- Quality of the plan to be implemented
- Stakeholder awareness and desire for implementation

As many efforts conducted by state and local governments, political-will can be the limiting factor that determines whether projects are completed successfully. Often, community desires for sustained economic and population growth conflict with the need to conserve and manage finite water resources. Indeed, state water plans must address these conflicting issues. However, states whose elected officials support resource conservation efforts may be more likely to execute successful implementation of water plans at both the state and local level.

In an era when government resources are constantly scrutinized and funding is increasingly limited, concerns and lack of both financial resources and adequate personnel can impair efforts to implement plans. Both money and man-power are essential for realizing water planning goals. Again, political and agency will must be sufficient to provide the monetary and staff resources required to implement a plan. Not surprisingly, Talen (1996) highlights previous work indicating that when there is a lack of will for plan implementation, it can often result in plan revisions that have little or nothing to do with actual plan implementation or previous work completed.

Poor plan quality also is mentioned as a potential barrier to implementation. This is understandable given that implementation efforts are best conducted when the plan of interest provides clear guidance. However, even the best plans can fail during implementation. Indeed, Brody and Highfield (2005) reported evidence indicating that plan quality does not necessarily correlate with the degree to which it is successfully implemented (Brody and Highfield, 2005). Regardless, poorly developed plans are less likely to result in satisfactory implementation. Although the aforementioned barriers to implementation are significant, other factors may contribute to overcoming these obstacles.

Laurian et al., (2004) studied the factors that drive implementation and found several key elements, one of which was external pressure. Stakeholders outside the planning organization can sometimes act as a barrier due to a lack of understanding or general opposition to the proposed plan and associated activities. However, these same outside stakeholders can also function as an impetus for plan implementation through actions such as participating in the planning process or taking ownership of some implementation activities. Berke et al., (2006) and others identified staff capacity as a driver for implementation, emphasizing that when a planning organization has sufficient staff—particularly individuals who have the capacity and will to assist in overseeing implementation efforts—the chances for successful plan implementation improve significantly.

Berke et al. further cite “awareness building” or education and outreach as key tools for guiding the implementation process so that it aligns with the plan’s ultimate goal and objectives. This type of action, the authors contend, provides a deeper level of understanding of the issues being planned for and how implementation efforts might address those issues. Increased understanding by stakeholders both within and outside the planning agency improves the likelihood that a plan will be appropriately implemented.

Another potential driver in plan implementation is related to the kind of relationships that exist between the planning agency and those external stakeholders affected by implementation of the plan

(Laurian et al., 2004). By establishing a more communicative relationship between “planners” and “implementers” or those most affected by implementation, improved plan implementation may be realized (Laurian et al., 2004).

Given Georgia’s efforts to embark on an integrated approach to water resource planning, the implementation phase will be imperative in making the State-wide Water Plan and Regional Water Plans work as intended to prepare Georgia’s communities for their constantly changing water needs. The following section will explore in greater detail comprehensive and watershed planning activities specific to Georgia.

### ***Comprehensive and Watershed Planning in Georgia***

Local governments are granted and exercise powers of zoning which, in turn, affects how and where their jurisdictions grow (Nolan, 1994). This includes how these jurisdictions make use of resources, natural and otherwise, within their boundaries (Nolan, 1994). However, local planning can generate negative effects on resources when not completed with consideration of the regional implications of zoning and land-use decisions (Nolan, 1994 & Briffault, 1996). This issue can be exacerbated in places such as Georgia, where “home-rule” is in effect. Home-rule states confer certain powers on local governments, which often include zoning and local planning (Barron, 2003). Although Barron states that many people view “home-rule” as a barrier to managing growth and resources at the local level, home-rule can also be an effective tool that enhances a local government’s zoning and ordinance power for managing resources.

The Georgia Planning Act of 1989 requires local governments to develop Local Comprehensive Plans that are in accordance with the Official Code of Georgia (O.C.G.A.) §110-12-1, Minimum Standards and Procedures for Local Comprehensive Planning under the guidance and direction of the Department of Community Affairs (DCA). These plans contain a local government’s best estimates for growth over a given time horizon as well as policy and program recommendations for managing that growth. Local

comprehensive plans include elements such as housing, municipal services, transportation, and education. Comprehensive plans in Georgia are a clear example of a local government's power of "self-rule", giving local governments the ability to determine their own growth and development over time (Alexander, 2000). Further confirmation of self-rule is evidenced by the fact that local governments are able to determine zoning and pass ordinances more restrictive than those outlined in current state law as per the Georgia Constitution, article IX, §2, ¶2 (Alexander, 2000).

As of May 1, 2005, local governments in Georgia must, at a minimum, adhere to the Rules of DCA, Chapter 110-12-1 entitled "Standards and Procedures for Local Comprehensive Planning", also known as "Local Planning Requirements" (LPR). The LPR lays out the minimum requirements for developing a comprehensive plan based on municipality population and/or growth rate. Among the minimal requirements stated within this rule are goals for land-use, natural resources, growth preparedness (this includes adequate infrastructure to accommodate projected growth), environmental protections, and regional cooperation and solutions. These goals are further articulated within the requirements for data and mapping (O.C.G.A. §110-12-1-.07). The LPR addresses multiple informational areas including population, infrastructure, environmentally sensitive areas, land-use, transportation, and intergovernmental coordination.

Included in the LPR are the "State Planning Recommendations" (SPR) (DCA, accessed 2011). The SPR provide examples of basic policies local governments may choose to include in their Comp Plans. The SPR addresses multiple areas of focus, including: development patterns, resource conservation, community facilities and infrastructure, social and economic development, and governmental relations (DCA, accessed 2011). Under each of heading are the model policy recommendations that local governments can use to satisfy the required minimum elements detailed earlier. Some examples are (DCA, accessed 2011):

- “We support increases in residential density in areas where community design standards, environmental constraints and available infrastructure capacities can satisfactorily accommodate the increased density.
- We are open to land planning and development concepts that may be new to our area but have been tried successfully in other places.
- We will promote low impact development that preserves the natural topography and existing vegetation of development sites.
- We will ensure safe and adequate supplies of water through protection of ground and surface water sources.
- We will coordinate provision of public facilities and services with land use planning to promote more compact urban development.
- We will work jointly with neighboring jurisdictions on developing solutions for shared regional issues (such as growth management, watershed protection).”

These model policies highlight the requirements and actions that, at a minimum, should be included in all local comprehensive plans and are provided by DCA to help ensure some degree of consistency across municipalities in Georgia. The LPR further describe some of the implementation requirements that should be included within a comprehensive plan.

The Implementation Program, as it is defined in the LPR, requires a Short-Term Work Program, which should include the following elements (Chapter 110-12-1-.05):

- “Brief description of the activity;
- Timeframe for undertaking the activity;
- Responsible party for implementing the activity;
- Estimated cost (if any) of implementing the activity; and
- Funding source(s), if applicable.”

The Implementation Program addresses the first 5-years beyond plan completion. In addition to this requirement, the LPR also recommends completing a Long-Term Work Program. Also required are

policies to be implemented by the local governments, or other responsible party, that will work to achieve the goals and objectives described within the Comprehensive Plan.

It is worth highlighting the above-mentioned requirements, particularly those requirements related to environmentally sensitive areas, growth preparedness (which includes water supply), and regional cooperation. These areas of focus will help form the thesis of this paper, as local governments in Georgia already must make reference to the above-mentioned elements within their current comprehensive plans. These same requirements also provide necessary consistency with Georgia's Comprehensive State-wide Water Management Plan as it relates specifically to coordinated environmental planning (Section 13) and plan implementation (Section 14).

Georgia's SWP and the requirements for planning set out by DCA contain the necessary tools for integrated comprehensive and watershed planning. Because many of the required elements described in the SWP overlap with elements outlined in DCA's requirements for planning, integration between watershed and comprehensive planning is made possible. In addition, both DCA and the SWP attempt to address plan implementation and recognize the significant role of local governments. While plan implementation is discussed, it remains to be seen whether the Regional Water Plans in Georgia will result in the intended outcomes the plans detail. As was previously mentioned, literature addressing plan implementation is severely lacking, and Georgia is no exception in its need for more detailed implementation guidance processes. Feedback from state and local government stakeholders regarding previous implementation experiences could provide the necessary experiential information to best guide implementation of Regional Water Plans in Georgia, thereby optimizing the chances for complete plan implementation.

## **Local Government Case Study in Georgia**

In order to inform recommendations for Regional Water Plan implementation at both the state and local levels, a case study was conducted within one Georgia county and two of its associated municipalities. Lowndes County and the cities of Valdosta and Hahira were selected based on their geography, population, and administrative make-up. These locales were determined to be more representative of the state of Georgia than those counties and jurisdictions located within the Atlanta metropolitan area. Located in southern Georgia along the Florida border (See Appendix B), Lowndes County, including Valdosta and Hahira, represents many of the common demographic attributes found throughout Georgia. However, this area also has some unique challenges; solutions for which could be useful in many other Georgia communities.

### ***Geography***

As of 2010 Lowndes County had a population of 109,233, half of which is located within the city of Valdosta (pop. 54, 518). Hahira, a much smaller community, has a population of just, 2 737(2010 US Census, accessed 2011). These populations lie wholly within the Suwannee River Basin and utilize both surface and groundwater to supply their municipal, industrial, agricultural, and other water resource needs (Suwannee-Satilla Regional Water Council, 2011). Within the Suwannee Basin, these municipalities also rely on a mix of surface and groundwater depending on the use, which indicates a need to address water management from various perspectives given the unique issues relating to each. It is also worth noting that these water resources are shared not only intrastate, but also interstate with jurisdictions in Florida.

Physiographically, this area is within the Southern Coastal Plain, which is characterized by sandy soils and low relief as well as hot summers and mild winters (Suwannee – Satilla Regional Water Council,

2011). Land use in Lowndes County is characterized as mostly undeveloped rural with pockets of urbanized land-use, primarily in Valdosta.

### ***Administration***

While each of these jurisdictions is separate there is overlap in administration, specifically within the area of local planning. All of these municipalities rely on the Southern Georgia Regional Commission (SGRC) to provide the bulk of their planning services, particularly the development of local comprehensive plans. Comprehensive plans are designed to encompass all of Lowndes County as well as the cities of Valdosta and Hahira, along with other small municipalities within the county. However, each individual city is addressed within the comprehensive plan, and some, including Valdosta, have their own separate plans for issues such as utilities (SGRC, 2006). Beyond the larger regional structure provided by the SGRC exist smaller collaborative structures among some of the cities within the county. Valdosta provides support to Hahira by way of localized planning and zoning as they relate to ordinance development, zoning enforcement, and development plan review. This relationship allows for more coordination among local governments.

### ***Interview Findings***

The interviews conducted with officials in Lowndes County, Valdosta, and Hahira as well as officials with GAEPD and DCA provided invaluable information for the recommendations made later in this paper. The results of these interviews pertain, primarily, to those local governments interviewed. However, much of the information gathered here may easily translate to another community or at least may help guide overall implementation efforts in a more meaningful way.

#### **Local Government Interviews**

Overall, the interviewees that were familiar with the Regional Water Plans praised Georgia for its planning efforts. They appreciated the work completed to assess the state of its water resources as



well as the development of Regional Water Councils as two major benefits. One individual noted that “Georgia avoided a one-size fits all approach by allowing the regions to develop plans that best suited them.” Experience and knowledge of the Regional Water Plans varied amongst interviewees. Some of those interviewed were not at all familiar with Georgia’s RWP, while one individual actually participated in development of the SWP and has since remained actively involved in the development of RWP. While not everyone was intimately involved with RWP, each had previous experience with local planning efforts.

Representatives from each organization expressed at least some level of involvement with local planning efforts. Each individual’s involvement was primarily dictated by his or her job description and the type of planning effort. For instance, the utility directors were much more familiar with their Utility Master Plans than other plans, but found themselves involved in all many other planning efforts within their jurisdiction. Given their involvement in the planning process, all interviewees indicated that planning is an important part to their local governments’ decision making as well as their growth and resource management. A city engineer expressed the following about planning:

“Planning is “decision making.” No two communities are the same; and their defined differences (and similarities) often become apparent when you read and compare community-planning documents. Community plans can and do change to adjust to shifts in economic, political and social needs/priorities of the community over time.”

This sentiment seemed to capture the feelings expressed by the other individuals.

In terms of the Regional Water Plans, the staff that was most familiar was from the city of Valdosta while the other local governments were somewhat familiar but, according to a planner with SGRC, seemed to rely on SGRC for many of their updates given their role within the region. Those who had reviewed the RWP indicated they found nothing terribly surprising or beyond the scope of

expected planning activities. Much of this, they said, was due to the engagement of local government stakeholders throughout the region whose input was collected and included in this region's RWP. This was evident through activities such as involving planners from the SGRC on various sub-committees within the Water Planning Council (Councils), although they themselves were not officially appointed to the Council.

When asked to review the six selected management practices (Table 1) and rank them from easiest to most difficult to implement, their answers seemed to depend on their job responsibilities, which was acknowledged by one of the utilities directors interviewed. Every staff member interviewed expressed EDU – 1 (Education) as being the easiest to implement, primarily because education required the fewest resources, and in many cases, was already being done by the municipality. Although identified as the easiest component to implement, it is worth noting that the majority of interviewees also expressed education as being one of the most important practices. As one planner stated “lack of education of stakeholders is often a barrier to the implementation of any plan.”

**Table 1. Selected Management Practices from the Suwannee – Satilla Initial Recommended Regional Water Plan**

Surface Water Quantity	Surface Water Quality	Groundwater
<b>EDU-1</b> , Promote Conservation Programs, Support Water Conservation Programs, Section - Page: 6-17 / 7-14	<b>PSDO – 2</b> , Identify feasibility to move discharge location to higher flow streams with greater assimilative capacity Section - Page: 6-12 / 7-7	<b>ASWS – 8</b> , Incentive-based practices to promote infiltration and aquifer recharge, EPD & Municipalities Section - Page: 6-11 / 7-6
<b>ASWS – 9</b> , Incentives for greater wastewater return Flows; coordinated management Section - Page: 6-11 / 7-6	<b>NPSU-4</b> , Riparian Buffers, Protect and maintain riparian buffers along urban streams, Section - Page: 6-15 / 7-11	<b>GW-1</b> , Sustainable groundwater development Continue to drill wells and withdraw groundwater to meet regional needs Verify sustainable yield metrics and consider relevant localized impacts Section - Page: 6-13 / 7-9

Practices were taken directly from the Suwannee – Satilla Initial Recommended Regional Water Plan.

**ASWS** – Additional/Alternate to Existing Surface Water Supply Sources

**EDU** – Education

**GW** – Groundwater

**NPSU** – Nonpoint Source Urban

**PSDO** – Point Source Dissolved Oxygen

Several individuals next ranked NPSU – 4 (Nonpoint Source Urban) as the second easiest process to implement. The rationale expressed by most of the interviewees was that the requirement to protect buffers is already in place and that expansion of this existing rule could be readily accomplished. However, one planner expressed a contrasting opinion. He commented that existing regulations are often challenging to modify, particularly those that involve expansion of regulated land. Residents may consider increasing the protection of buffers as an additional step toward government control of private land.

The next order of management practices seemed to vary between individuals. Some see PSDO – 2 (Point Source Dissolved Oxygen) as relatively easy to implement, with one utilities director specifically referring to its feasibility and stating that “determining the feasibility of moving a wastewater discharge would not be that resource intensive.” In contrast, a stormwater director reasoned that trying to identify the receiving stream for the moved wastewater discharge could be very difficult given some of the water quality challenges within the region.

One theme that seemed to permeate the conversation about these specific management practices was that none appeared impossible given sufficient resources. Many of those necessary resources included funding, education, stakeholder support, and continued support from stakeholders at the state level, which were considered potential barriers to implementation. Given the current economic climate, funding is a major concern for all municipalities. Education and engagement of residents and local officials also is considered a major barrier (Berke, et al., 2006). However, a stormwater director pointed out that some municipalities use “lack of funding” as an artificial barrier and could accomplish more with better internal efficiency, coordination, and leadership. Interviewees also stated that the barriers are specific to each management practice, but these are some of the most prominent barriers that often transcend the various plan elements being implemented, no matter what kind of plan was involved.

In spite of the barriers these local governments are likely to face, the local government representatives also identified several opportunities that showed promise for the implementation of the RWPs. One of the greatest opportunities cited was the involvement of 30 regional stakeholders in the development of the RWPs over the last three years. Several interviewees were quick to point out that their local governments were already involved in practices like water conservation through education and ordinances. The city engineer and stormwater director both pointed out the inherent flexibility within the RWPs as an opportunity to ensure that implementation of various practices occurs when and where it makes the most sense for a given region. They also expressed that having this kind of flexibility provided by state regulators would also aid in implementation efforts.

One city manager stated that the RWPs provide an opportunity for larger communities to aid smaller communities with implementation through coordination and resource sharing and that communities could use the RWP structure as the avenue to make this happen. A planner also said “by having these plans on paper, communities are likely to use these plans as a guide when making decisions related to water resource management.” She also pointed to the regional focus of the plans, as opposed to a state-level focus, as another way in which the RWPs provided useful guidance for local governments since they deal with issues that are most relevant to them.

In addition to opportunities to aid in planning, interviewees were asked to identify existing tools and programs or policies they currently use to implement existing plans. Many interviewees highlighted ordinances as well as outreach programs as examples of current efforts to implement other plans, such as comprehensive plans, that could also be utilized for implementation of the RWPs. One planner specifically cited existing land-use policies, wetland protection ordinances, and stormwater ordinances that communities could use to achieve some of the goals within their RWP.

In addition to existing tools for plan implementation, the local government representatives were also asked to identify resources needed for implementation as well as those actors who should be

involved. The question of “who should be involved” largely depends on the elements being implemented. For instance, management practices dealing with wastewater, such as PSDO-2 (Point Source Dissolved Oxygen) referenced earlier, should involve utilities directors as well as organizations such as GAEPD, since they are responsible for regulating wastewater facilities. In general, everyone interviewed expressed the need to engage residents, local elected officials, state agencies, local government staff, as well as other stakeholders such as industry and the agricultural community. Specifically, one of the utilities directors interviewed expressed a desire to see the continued existence of the Water Councils, or a similarly structured group. He also expressed the need for continued involvement from the state. Involving various state agencies through goal setting and “benchmarking” could provide the necessary catalyst for implementation of the RWP.

In addition to state-led guidance, each of the government staff interviewed expressed the need for state-provided technical assistance, incentives, funding (if possible), and active engagement throughout the implementation process. Several of the interviewees articulated the desire that any guidance provided by the state to be given through similar mechanisms used to develop the RWPs. Most were explicit in their praise of the state for not using a “one-size fits all approach” that frequently is employed. By applying this same mentality, several of the individuals stated that any guidance provided would have more meaning and be much more useful as it would take into account local conditions. Also, anywhere the state could help provide necessary financial or technical resources would surely encourage successful implementation.

#### State Government Interviews

Each person interviewed had a slightly different view on what future roles his or her agency would provide during the implementation of the RWPs. Despite their differing capacities, each state interviewee believed that both GAEPD and DCA would and should continue to provide essential technical assistance and support to local governments during implementation. One individual also saw

their agency's role as that of "cheerleader", in that they would continue to work with stakeholders to educate them regarding the value the RWPs in terms of data acquisition, water management practices, and other critical elements. Another individual who expressed a more focused view of his agency's involvement, spoke of providing education, and outreach on management practices.

When asked about planning at the local level each individual felt that while planning was indeed conducted within local governments, the efforts undertaken were often limited and rarely went beyond the minimum requirements outlined by GAEPD and DCA. One person stated, "Many communities [only] prepared plans because funds were available." However, all agreed that even minimal planning activities were better than none, and one individual stated "by planning, local governments at least are able to make more informed decisions when needed" as opposed to if no planning occurred. Each interviewee also said that the role of planning was most likely very community specific and some communities probably relied more on planning than others in terms of decision-making and future growth.

Of the agency representatives who had read the Suwannee-Satilla Initial RWP, each said that this particular plan was one of the better RWPs, with one individual ranking it in the top one-third of all the plans they had reviewed. Another stated that while the RWP was more general than they would have preferred, it does show a desire for the RWP process to continue and stated explicitly "planning dollars were not wasted" on this process. Another response was that this particular plan showed an understanding by the Water Councils and local stakeholders of the value of their water resources and showed a good potential for future utility.

Each individual gave similar responses to the local government interviewees when asked who should be at the table within the context of implementation. The state representatives thought that people such as utility directors, city managers, and other local government representatives, as well as those representing other interests, should be involved. They also echoed many of the local government

representatives' statements that the state agencies should take the lead in maintaining the momentum gathered during the RWP development process. While one individual agreed that the state should continue supporting implementation efforts through technical assistance and management support, he also emphasized the caveat that local leaders should review the management practices within the RWPs and prioritize them in terms of implementation. This individual also stated that local leaders should look to the local government staff to develop "funding packages", which would identify the resources needed to implement various management practices and would aid the leaders in prioritized decision making.

Almost all of the state agency interviewees placed EDU-1 (Education), PSDO-2 (Point Source Dissolved Oxygen), and GW-1 (Groundwater) in their top three practices easiest to implement. One interviewee felt as though more information would be needed (in terms of cost and existing infrastructure) to properly rank the practices outlined in Table 1 below. The individuals who did rank the practices put these at the top of their list because many communities are already engaged in some variation of these practices. One even identified these three practices as focusing heavily on water conservation, which would "deliver a big bang for the buck" in terms of cost-benefit. The interviewees also placed ASWS- 8 & 9 (Additional/Alternate to Existing Surface Water Supply Sources) and NPSU-4 (Nonpoint Source Urban) at the bottom of their list, identifying them as the most difficult to implement. All of the state representatives tended to rank the top three and bottom three as equally simple or difficult to implement. One interviewee did place NPSU-4 (Nonpoint Source Urban) in their top three easiest to implement because they felt that just convincing people to enhance buffers would create a return on the resources invested; thus, garnering political and public will would be more readily accomplished. It is worth noting that much of the reasoning for their ranking paralleled that of the local government interviewees.

**Table 1. Selected Management Practices from the  
Suwannee – Satilla Initial Recommended Regional Water Plan**

Surface Water Quantity	Surface Water Quality	Groundwater
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<b>ASWS – 9</b> , Incentives for greater wastewater return Flows; coordinated management Section - Page: 6-11 / 7-6	<b>NPSU-4</b> , Riparian Buffers, Protect and maintain riparian buffers along urban streams, Section - Page: 6-15 / 7-11	<b>GW-1</b> , Sustainable groundwater development Continue to drill wells and withdraw groundwater to meet regional needs Verify sustainable yield metrics and consider relevant localized impacts Section - Page: 6-13 / 7-9

Practices were taken directly from the Suwannee – Satilla Initial Recommended Regional Water Plan.

**ASWS** – Additional/Alternate to Existing Surface Water Supply Sources

**EDU** – Education

**GW** – Groundwater

**NPSU** – Nonpoint source Urban

**PSDO** – Point Source Dissolved Oxygen

In terms of barriers and opportunities to implementation, all of the individuals interviewed expressed similar opinions. They all identified funding as the primary barrier to complete implementation of the RWP. Other barriers identified were limitations in staff availability, challenges in multi-government cooperation, politics, lack of understanding of the issues, and lack of incentives. These responses mirrored many of the responses provided by the local government representatives. The state agency representatives also said that the RWP presented opportunities for implementation through regional cooperation, interactions between the state and various stakeholders, and that the plans provided for increased understanding of various issues. Several interviewees also stated that by merely having the plans, it showed willingness to think differently about resource management.

The state interviewees, much like the local government interviewees, stated that in addition to funding, an increase in technical assistance would be needed to ensure successful implementation. One individual stated that their agency already has plans to conduct needs assessments with local governments to ensure that assistance would be tailored and provide the most benefit. Another person stated, “Technical assistance is out there, but [we] should collect regional thinking.” This same



individual stated that better understanding regional perspectives might increase regional cooperation, which most agreed was also critical to ensure implementation. They all also stated that the needs would most likely be specific to the elements of the plan being implemented. One individual did say that regardless of the practices being implemented, local leadership and priority setting will be key, as will avoiding a mentality of “all or nothing” within the context of implementation.

The issue of incentives elicited several responses. One individual stressed the need to provide some type of monetary incentives to encourage implementation. He specifically stated that “unfunded mandates are no way to encourage implementation” of the RWPs. Another individual highlighted state agencies’ relationships with the regulated community (this includes local governments, industries, and others). They were specifically referring to GAEPD’s interaction with the regulated community and stressed the importance of communication to ensure that permit holders are implementing those pieces of the RWP that relate to their permit. This individual also expressed opportunities to use elements of the RWPs and their implementation in lieu of fines and monetary penalties if there is a permit violation. Another individual proposed tying implementation to grant applications. By this, they meant that only applications that are consistent with their RWP would receive funding. This individual specifically mentioned Section 319(h) Grants and Community Development Block Grants as one example.

Several of the interviewees recommended reviewing documents such as comprehensive plans for overlap with RWPs. If other local government plans, like comprehensive plans, had identifiable areas of overlap with a RWP, the municipality would have an opportunity to implement similar elements simultaneously from two plans, increasing the likelihood for successful implementation. Another state representative also suggested reviewing existing state laws and statutes to understand where gaps might exist between those rules (in the general sense) and resource limitations, using the management practices within the RWPs to fill those gaps that may exist. This observation reinforces the concept that integrated government planning, particularly integration of watershed plans with land-use and growth

planning, not only enhances the utility of said plans, but also increases opportunities for successful implementation. Further, plans should consider existing laws and statutes to avoid leaving gaps that could hinder attaining the goals outlined in government plans.

In looking at the tools and kinds of guidance their respective agencies might have to offer, the responses were similar. In terms of state agency provided tools for implementation, the responses centered on providing technical assistance to local governments, with one person specifically stating that their agency should continue the process of coalition building among the various stakeholders. Two of the respondents also focused their comments on permit holders, stating that they would need specific guidance to ensure consistency with the RWPs. One individual also said that time should be given for the “dust to settle” before embarking on any radical changes to the permitting process, and in doing so, may provide a more “organic” process in terms of guidance development. One person also stated that the primary responsibility of any guidance issued should be to “synthesize” the large amounts of information from each plan into a more “digestible” format for both the regulated and non-regulated stakeholders depending on their needs.

### Summary of Findings

Within the context of implementation of the RWPs, all of the interviewees expressed a few common themes. The central piece to each of these themes appeared to be communication and collaboration. Each of the people interviewed at the state and local level recognized the significance of regional planning, particularly in Georgia. They also recognized the need for leadership and support to ensure successful implementation. They emphasized that much of the leadership and support should come from the state level, but that key decision-making activities should be the responsibility of the local elected officials. It appeared that the majority of people interviewed recognized the RWP process as having presented not only challenges to local governments in terms of implementation, but also opportunities, particularly with regard to regional cooperation. Each person acknowledged that each

management practice was different and that even among the six selected for the interviews, local governments would require different resources and that challenges would vary depending on the practice of interest. The local governments, however, appeared to see beyond many of the potential challenges and appreciate and acknowledge the fact that the Suwannee-Satilla Initial Regional Water Plan is not a “cookie-cutter” plan and will actually address pertinent regional concerns and issues.

The information gathered through these interviews revealed a sense of optimism in terms of water management within the Greater Lowndes County area. It remains to be seen, however, whether or not this same sentiment exists within other local governments. However, it is clear that through proper stakeholder outreach and involvement, accompanied by the right leadership, implementation of the RWP is possible.

## **Recommendations**

One of the most consistent themes observed during the interviews with local government staff was that the Regional Water Planning process was a success. Many of the people interviewed provided some recommendations as to what the next steps towards implementation should be. They also provided unique insight into what tools should be available for implementation with the proper guidance and collaborative relationships with state agencies. These recommendations are not intended to be exhaustive, but rather present a “next-steps” framework based on the information gathered through the research methods described previously in this paper.

### ***Regional Cooperation***

Many of the individuals interviewed acknowledged the collaborative process undertaken by state agencies and Water Councils to develop the RWPs. This positive step was marked not only by a more intentional watershed planning effort along hydrologic boundaries, but also by ensuring that the RWPs would be tailored to their respective regions through inclusion of regional stakeholders during the planning process. Prior to this effort, watershed planning was done piecemeal, at best, with little regard to potential issues within the rest of the region. By utilizing the regional planning approach the Initial RWPs show a clear effort to plan within a regional context. To ensure that future planning and implementation efforts occur within this regional context, a regional watershed planning structure should be maintained.

Ensuring that regional input is incorporated to future plans may best be accomplished by way of the Regional Commissions (RC), although water planning region boundaries do not always align exactly with RC boundaries. Another approach, and one favored by several local government representatives interviewed, is to maintain the Water Councils. Doing so could maintain momentum garnered during the RWP development process, and could help provide consistency across planning efforts. Maintaining

Water Councils could also help prioritize implementation activities and efforts that maximize benefit to local governments. By keeping a regional organization in place, it could also provide a critical interface between state and local governments as well as regional leadership that many interviewees expect will be necessary to see full and effective implementation.

### ***Regulatory Flexibility***

State regulatory agencies, such as GAEPD, and their associated responsibilities, are determined by federal and state laws, rules, and policies. The policies regulated and controlled by GAEPD were established primarily to prevent and control pollution. Often the regulations and statutes overseen by GAEPD are seen as too rigid and do not take into consideration the specific concerns of the regulated communities, be they local governments, industries, or others. Several interviewees at both the state and local level reflected this sentiment. This issue of how the regulators and the regulated interact has become central to the State and Regional Water Planning process, particularly with respect to language within the State Water Plan:

“Upon adoption, the Director shall use the water development and conservation plans to guide decisions regarding permitting...” (Georgia Water Council, 2008)

Given this charge to use the RWPs to guide decisions for permitting, regulatory agencies, particularly GAEPD, should assess their current rules and policies to identify areas where flexibility should be exercised when making decisions on permits as well as with compliance and enforcement of permits.

Permits should make use of the data gathered for the resource assessments conducted as part of the RWP development process. Incorporating region-specific data into permitting will allow permits to be based on consistent information as well as take into account conditions affecting the entire watershed within the context of natural conditions as well as existing anthropogenic conditions, such as water demand and land-use.

Compliance and enforcement actions should be based on the RWPs to develop alternatives to levying fines. As one state agency staff member expressed, “given the current economic climate, we should look for ways to reduce the burdens and costs to local governments” while also still enforcing our laws in ways that produce maximum benefits for all. An example of an existing alternative to fines is Supplemental Environmental Projects (SEPs). The USEPA states that:

“Most federal actions against businesses or individuals for failure to comply with the environmental laws are resolved through settlement agreements. As part of a settlement, an alleged violator may voluntarily agree to undertake an environmentally beneficial project related to the violation in exchange for mitigation of the penalty to be paid. A Supplement Environmental Project (SEP) furthers EPA's goal of protecting and enhancing the public health and the environment.” (USEPA, accessed 2011)

By allowing violators to participate in SEPs, it is possible to keep more money within the hands of local governments while also producing positive environmental outcomes through a project within the community. Using SEPs as a framework for an alternative enforcement action, GAEPD should consider using the management practices contained within the RWP as opportunities for enabling SEPs to be used as an alternative to enforcement actions. This would provide for implementation of the RWPs, but also allow violators the opportunity to return to a state of compliance as well as providing additional environmental benefits. GAEPD should explore additional opportunities for permitting and compliance flexibility by incorporating elements contained in the RWPs. Using a regional stakeholder- produced plan can also lend additional legitimacy to the process and product by using the information, management practices, and other elements within the RWPs as additional tools for permitting and regulation.

### ***Continued Assessments***

Each RWP contains a wealth of useful information pertaining to water demand, supply, and quality. These plans also contain population projections, employment forecasts, and information

regarding water supply needs by various sectors, including agriculture and industry. Given this large amount of information, continuous updates and refinements should be made as updated information becomes available. Both the state and local government representatives who were interviewed echoed this recommendation. Both groups applauded the work that has been done to date, but acknowledged the need to gather more information continually as it becomes available. This will become even more important when revisions to the RWPs are conducted five years after the completion of these plans as required by the SWP.

In addition to the information already contained in the RWPs, several local governments' interviewees expressed the need for more information on elements such as land-use and stormwater management. This information was not expressly included in the Suwannee-Satilla RWP, nor was it included in other RWPs that were briefly reviewed.

To ensure additional information is gathered, GAEPD and its partners, should inventory all data sources available such as water quality data from permit holders or population projects completed during comprehensive plan updates. After doing so, they should explore ways to include that information in resource assessment and future planning activities and implement those that are most appropriate. This information should be then included in future resource assessments to give the clearest scenario possible on current resource capacities and future resource needs.

### ***Identify Tools for Local Government Implementation***

One utilities director and stormwater director interviewed identified tools their local governments are currently using to implement components of their local comprehensive plans and by extension, management practices within the RWPs. Many of the tools used are ordinances addressing water conservation and stormwater management. These kinds of regulatory tools are commonplace within local governments, as are other tools such as education programs and incentives. State and local governments should work together to identify existing tools that could help drive and achieve RWP

implementation. A city manager interviewed expressed interest in having local governments share approaches and tools with one another, especially those that have experienced success using tools like ordinances. He stated that local governments who have had success could, and in fact should, work with other local governments to pass similar ordinances and employ other tools.

Many local governments include within their various plans policy recommendations and strategies to address various aspects of water management. These should be reviewed, and where possible, applied to the management measures identified within the RWPs. Doing so may help ease some of the burden of implementation laid on local governments, because they would have the ability to employ tools and strategies already available with little to no need to change their already established approaches to implementation. A review of the Suwannee-Satilla RWP reveals many management practices that are analogous to recommendations within the Greater Lowndes County comprehensive plan. The recommendations within comprehensive plans and their associated implementation actions could be used effectively to implement the RWPs. This same review should happen with other local governments and their associated RWPs to identify those tools that could be used to not only implement local plans, but also achieve implementation of the RWPs. Given this, state and local governments should work together to identify the nexus between local plans and the RWP.

### ***Continued and Increased Outreach / Education***

As a final recommendation, based on the interviews conducted, the state should work with local and regional entities to provide continued education and outreach based on the RWPs. Local elected officials must be kept up to speed on decisions made at the state and local levels that are based on the RWPs. They must also be made aware of the advantages of integrating their respective RWP into local planning and decision-making within the context of water management. Many of the decisions being made as to how implementation should occur are still under development, but as these decisions are made local governments should stay informed.



In particular, GAEPD and DCA should work in tandem to inform and educate local governments about the RWPs, which should also include how to employ those plans for local decision-making. These state agencies should consider creating opportunities for dialogue between themselves and local governments. GAEPD and DCA should view continued education and outreach as an even better opportunity to show real leadership and support for local implementation efforts. Much of this outreach should focus on regulatory decisions, resources for implementation, new data collected, and future planning efforts. Through this, state agencies can better engage local governments and ensure that implementation efforts do not falter. Through outreach and education, state agencies could also avoid what Laurian et al. (2004), Berke et al. (2005), and Hull and Tricker (2005) all identified as one of the greatest pitfalls to plan implementation.

## **Conclusion**

Georgia's history with respect to state and local planning efforts has fluctuated with time. Local governments engage in comprehensive planning efforts to manage their growth and resources, while Georgia's state agencies often have conducted independent planning efforts to manage resources, growth, transportation, and other issues on a regional and statewide scale. Within the context of water management, Georgia has prepared plans for entire river basins and has, over the last three years, focused that energy on supporting the development of stakeholder-prepared Regional Water Plans. These water plans are designed to provide a framework for managing water resources at a more localized level with regard to not only political boundaries, but also watershed boundaries (Water Council, 2008). Once the RWPs are finalized in September 2011, implementation efforts will begin, and according to the State Water Plan, much of this responsibility will fall upon the local governments with support from various state agencies. Local government representatives interviewed acknowledge this charge, but likewise expect to rely on the state for support, technical assistance, resources, and additional guidance.

Interviews conducted with local government representatives indicated that, local governments already have several tools at their disposal to implement their local plans. These same tools like ordinances, zoning, and capital improvements could also be used to aid with the implementation of the RWPs. Local governments have the responsibility to provide the highest quality water possible to encourage economic growth and protect the well being of their citizens (Carter et. al., 2005). To this end, they must find the balance between growth and land-use and responsible management of water resources to ensure future economic sustainability and quality of life.

Local governments in Georgia, such as Clayton County, have already begun the process of more closely integrating their land-use and water planning efforts (Jeffcoat, 2009). However, local governments cannot and should not be expected to carry out their implementation efforts within a

vacuum, particularly given the work done to complete the RWPs. This process established a structure that enhanced communication locally, regionally, and throughout the state with respect to water planning and management.

Many of the above implementation recommendations focus on maintaining a regional structure, through a mix of state and local leadership, to ensure continued communication and collaboration among a multiple stakeholders. Other recommendations focus on developing and expanding capacity to implement the RWPs at the state and local level. It is clear through the data collected that implementation must begin at the state level as to effectively guide local governments in their implementation efforts while also maintain the structures mentioned above to facilitate communications amongst all stakeholders. More work should be done to assess specific needs of all communities. Identifying the best methods for providing appropriate support and assistance could dramatically improve the quality of plan implementation that occurs. State agencies should consider specific efforts to continue dialogues already started with regional and local government representatives, intentionally addressing the complex issues related to RWP implementation.

Although not specifically addressed in the recommendations provided here, additional research regarding plan implementation should be done to inform the global planning profession. While assessment of plan implementation is a challenging task, efforts should be made by those in the planning community to understand successful methods for ensuring implementation of plans. It may be possible to apply lessons learned from other disciplines. Policy implementation research may be of particular use when looking for recommendations for planning implementation. Given that most plans typically contain policy prescriptions for various issues, policy implementation is an area of research that could provide valuable information and context for what plan implementation might look like.

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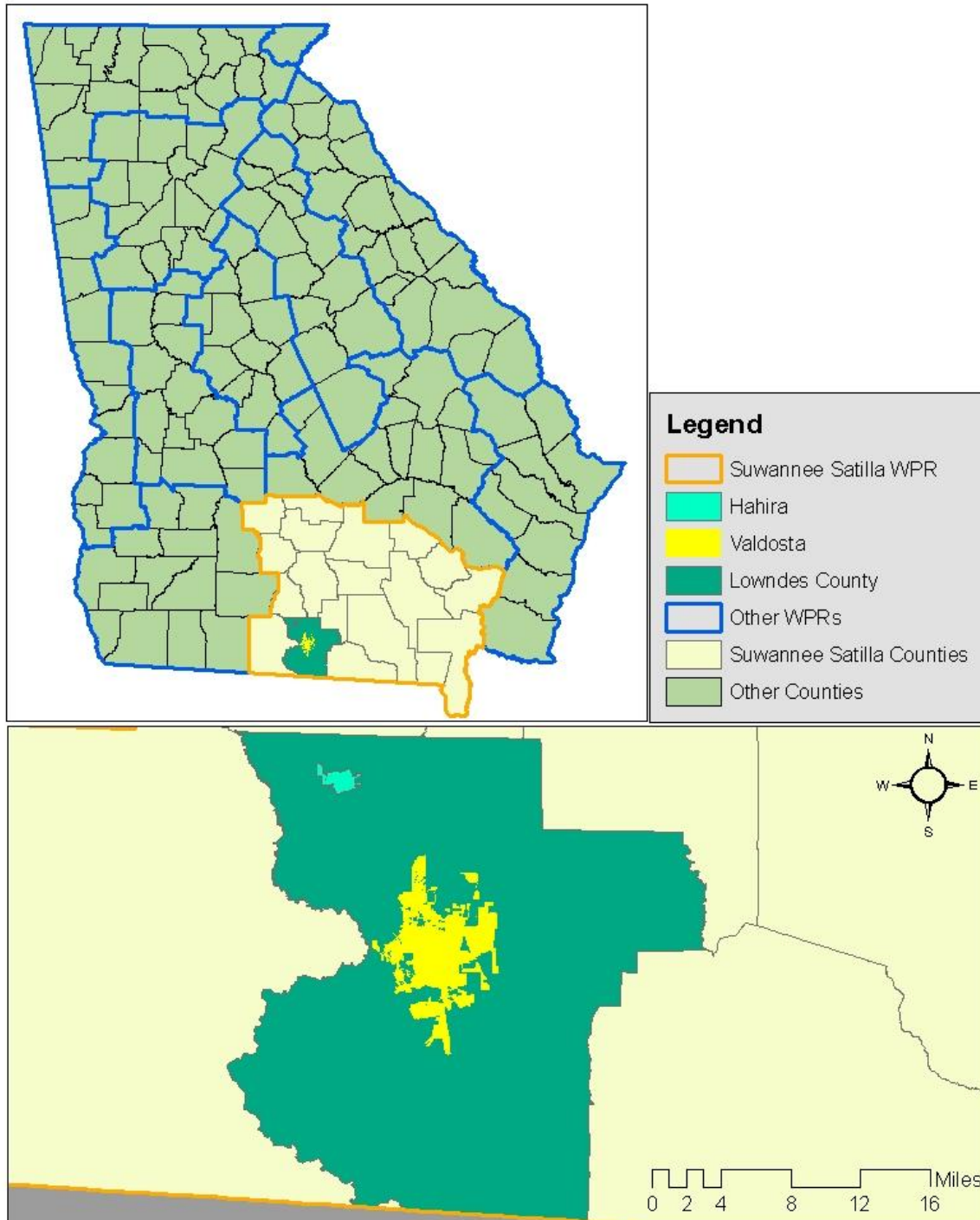
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**Appendix A. Map of Lowndes County with Valdosta and Hahira**

**Map of Lowndes County with Valdosta and Hahira**



## **Appendix B. Interview Questions**

### ***Regional / Local Government***

- 1) How important is planning in your community in terms of decision making? In other words, do you look to your local plans for guidance?*
- 2) How involved have you or has your department been in developing your local plans?*
- 3) How familiar are you with the State Water Plan and how the Regional Planning process works?*
- 4) How involved have you (or your department / government) been in the Regional Water Plan development process? (Attending meetings, contributed to plan, etc.)*
- 5) Have you had the opportunity to review the draft Regional Water Plan, and if so, what have your reactions been to the plan?*
- 6) Were there any parts of the plan that caught your attention, specifically related to management practices and if so, what were they?*
- 7) Who do you think needs to be most involved with implementation for these Regional Water Plans? Why?*
- 8) Please rank the selected practices from easiest to most difficult in terms of implementation. Why did you choose the order you did?*
- 9) What do you think the barriers to implementation of these practices might be?*
- 10) What do you think some of the opportunities for the implementation of these practices are?*
- 11) What resources beyond funding do you think might help with implementation? (Technical assistance, regional cooperation, etc.)*
- 12) What policies or components of your local plans could help with the implementation of the management practices in the Regional Plan? Please give examples if you can.*
- 13) What tools have you used to implement past plans that might prove helpful in implementing these management practices?*
- 14) What kind of guidance from the state would be beneficial to assist with implementation?*

### ***State Government***

- 1) What have you or your agency's role been throughout the water planning process?*
- 2) What do you imagine that role looking like in the future within the context of the water plan?*
- 3) Do you think planning is involved in decision making at the local level? Why or why not?*

- 4) *Have you had the opportunity to review the draft Suwannee – Satilla Regional Water Plan, if so what have your reactions been to the plan?*
- 5) *Where do you think the burden of implementation for these Regional Water Plans falls? Why?*
- 6) *Which of these practices do you think might be the easiest to implement? The hardest? Why?*
- 7) *What do you think the barriers to implementation of these practices might be?*
- 8) *What do you think some of the opportunities for the implementation of these practices are?*
- 9) *What resources beyond funding do you think might help with implementation? (Technical assistance, regional cooperation, etc.)*
- 10) *Given that many implementation efforts begin with incentives (or sometimes disincentives) what incentives exist or could be developed to encourage and facilitate implementation?*
- 11) *What policies or components of other plans could help with the implementation of the management practices in the Regional Water Plans? Please give examples if you can. This could include other state plans, comp plans, watershed management plans, or others.*
- 12) *What tools does your agency have that could aid in the implementation of these management practices?*
  - a) *Could these tools help with the implementation of Regional Water Plans?*
- 13) *What kind of guidance can/ will your agency provide to assist with implementation?*