

**DRAFT - Selection of Draft Management Practices for Coastal Georgia - Discussion Points**

**Council Meeting 8 – November 3, 2010**

The following list was developed based on work sessions and collaboration among the members of the Coastal Georgia Regional Water Planning Council and the Council’s Management Practices Subcommittee. The major steps used in developing this list are summarized below.

1. The Planning Contractor developed an initial “universe” of management practices. This list was developed from a number of sources including but not limited to: guidance documents for the water plan, literature, existing rules and regulations, water resources studies and plans, local comprehensive plans, Total Maximum Daily Load Implementation Plans. This list was initially distributed to Council prior to Council Meeting 6.
2. This initial “universe” of management practices was vetted with the Management Practices Subcommittee and comments were solicited. The “universe” was then presented at Council Meeting 7 and comments were solicited from full Council. The Subcommittee and Council were requested to add to, modify, and delete from the list; justification for supporting or eliminating practices was requested based the effectiveness, technical feasibility and expected stakeholder support (implementability) of the practice.
3. A revised “universe” of practices was developed and a short list of potential practices was developed concurrently at Council Meeting 7 and a subsequent meeting with the Management Practices Subcommittee. Council comments were solicited between Council Meeting 7 and 8, and the information presented below is the product that emerged from the process.
4. The following list is proposed for adoption by full Council at Council Meeting 8.

<b>Preliminary Selected Management Practices – Coastal Georgia Regional Water Planning Council</b>			
<b>Affected Resource/Preliminary Management Practices</b>	<b>Gap</b>	<b>Need Vision and Goals</b>	<b>Implementation Considerations/Outreach Recommendations</b>
<b>Groundwater (See Also Resource Coordination Below)</b>	Yes	Yes	Municipal, Industrial (M&I), Agricultural Water Users
<b>Additional Groundwater Development</b> <ul style="list-style-type: none"> <li>• Continue to develop water from Upper Floridan in areas not impacting salt water intrusion</li> <li>• Continue to develop water from other aquifers not impacting salt water intrusion</li> </ul>	No	Yes	Counties, Cities, Utilities outside the yellow and red zones
	No	Yes	Counties, Cities, Utilities in the Regions

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<p><b>Groundwater Continued</b></p> <p><b>Water Conservation</b></p> <ul style="list-style-type: none"> <li>Encourage implementation and adherence to Water Conservation Implementation Plan by local governments/utilities; Tiers 1 and 2 for M&amp;I; Tiers 3 and 4 for M&amp;I, Agricultural and Energy groundwater use in gap areas See surface water for specific agricultural measures</li> </ul> <p><b>Additional/Alternate Groundwater Source(s)</b></p> <ul style="list-style-type: none"> <li>Regional groundwater development and/or management</li> <li>Develop/utilize additional surface water supplies to meet multi-sector uses</li> <li>Aquifer recharge to manage Salt Water Intrusion</li> <li>Increase surface water storage - reservoirs</li> <li>Increase surface water storage – aquifer storage and recovery (ASR) well fields</li> </ul>	<p>Yes and No</p> <p>Yes</p>	<p>Yes</p> <p>Yes</p>	<p>Gap is sub-regional and sub-county level The values below assume current levels of pumping can continue. Council may wish to consider the potential for reduction scenarios in current pumping. <u>Red zones - 12.26 MGD</u> forecasted increase in groundwater assumes does not include self supply and assumes half of Effingham demand split even green/red; no specific estimate made for “T” shaped plume Brunswick <u>Yellow zones – 16.87 MGD</u> forecasted increase in groundwater</p> <p>Multi-County Area outside the red and yellow zones. Counties, Cities and Utilities in proximity to demand locations; possible areas include – Effingham, Bulloch, Evans, Tattnall, Long, McIntosh [(Effingham, Chatham Red zone); [Bryan, Liberty Yellow zones)]. City of Savannah - Savannah Industrial and Domestic Plan</p>

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<p><b>Groundwater Continued</b></p> <p><b>Additional/Alternate Groundwater Source(s)</b></p> <ul style="list-style-type: none"> <li>• Optimize additional aquifer use</li> <li>• Implement water reuse</li> </ul> <p><b>Institutional</b></p> <ul style="list-style-type: none"> <li>• Formation of a regional groundwater use and development “Group” to coordinate groundwater development, infrastructure development/use, and optimize yield and sustainability</li> </ul> <p><b>Data Collection/Ordinance</b></p> <ul style="list-style-type: none"> <li>• Encourage land use practices that protect recharge areas of Upper Floridan</li> <li>• Research and incorporate South Carolina and Florida demands and issues for future modeling and refine modeling if warranted</li> <li>• Continue to monitor and improve our understanding of historic, current and future trends in groundwater levels</li> </ul>	Yes	Yes	
<b>Surface Water</b>	Yes	Yes	Agricultural Water Users in Regions with Gaps
<ul style="list-style-type: none"> <li>• <b>Data Collection/Additional Research</b> to confirm frequency, duration, and severity of Agriculturally-driven surface water gaps</li> </ul>			Counties, Municipalities, Industries in Canoochee and Ogeechee Watersheds

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<p><b>Surface Water Data Collection/Research Cont.</b></p> <ul style="list-style-type: none"> <li>○ Additional data/information on agricultural consumptive use; consider “sensitivity analysis” with Resource Assessment Models with “new” information on consumptive use</li> <li>○ Refine forecasts and Resource Assessment Models to improve data on source of supply and timing/operation of farm ponds</li> <li>○ Continue to improve metering data regarding Ag water use</li> <li>○ Collaborate/support research (University, State and Corporate) on improved irrigation efficiency measures and development of lower water use crops</li> <li>○ Promote practices and educate stakeholders to minimize impacts to surface water associated with excessive pumping/use of shallow/surficial aquifers that may impact surface water flows</li> </ul>	Yes	Yes	
<ul style="list-style-type: none"> <li>● <b>Water Conservation</b> - Selected from Tiers 3 &amp; 4 for Ag conservation portfolio</li> </ul> <p>Tier 3 Conservation Practices</p> <ul style="list-style-type: none"> <li>○ Conduct irrigation Audits</li> <li>○ Meter Irrigation Systems</li> <li>○ Inspect Pipes and Plumbing</li> </ul>			

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<p><b>Surface Water Continued Water Conservation</b></p> <ul style="list-style-type: none"> <li>○ Minimize or eliminate the use of High-pressure spray guns on fixed and traveler systems</li> <li>○ Cropping and crop rotation that promote efficiency</li> <li>○ Practice conservation tillage</li> </ul> <p>Tier 4 Conservation Practices</p> <ul style="list-style-type: none"> <li>○ Control water loss</li> <li>○ Install end-gun shutoff with pivots</li> </ul> <ul style="list-style-type: none"> <li>● Install low pressure irrigation systems where feasible soil specific <ul style="list-style-type: none"> <li>○ Encourage use of soil moisture sensors, ET sensors or crop water use model (s) to time cycles</li> </ul> </li> </ul>	Yes	Yes	
<ul style="list-style-type: none"> <li>● <b>Additional/Alternate Water Supply Sources</b> <ul style="list-style-type: none"> <li>○ Future Uses - encourage additional Ground Water development as preferred practice for future demand</li> <li>○ Future Users - if surface water is sought for future withdrawals (new permits), applicant should demonstrate that future surface water development will not make gaps worse</li> </ul> </li> </ul>			

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<p><b>Surface Water Continued - Additional/Alternate Water Supply Sources</b></p> <ul style="list-style-type: none"> <li>○ Existing Uses - conservation and data improvement will not fully close gaps possible options: <ul style="list-style-type: none"> <li>▪ Replace surface water with groundwater in critical periods</li> <li>▪ Direct pumping of groundwater to surface water during critical dry periods</li> <li>▪ Modify Ag Pond Operation minimum release in dry/gap years</li> </ul> </li> <li>○ Without a replacement source for surface water gap from groundwater - More complex longer-term concepts <ul style="list-style-type: none"> <li>▪ Incentives to restore wetlands and historically drained hardwood and other areas</li> <li>▪ Incentive based land use practices to help promote infiltration and aquifer recharge</li> <li>▪ Identify incentive based programs to increase wastewater returns/decrease LAS and Septic</li> <li>▪ Inter-basin transfer??</li> </ul> </li> </ul>	Yes	Yes	

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<p><b>Surface Water Continued - Additional/Alternate Water Supply Sources</b></p> <ul style="list-style-type: none"> <li>▪ Aquifer storage and recovery and/or recharge of surficial and maybe other aquifers to help retine flows to critical lower flow period in summer</li> <li>▪ Possible joint reservoir with Savannah-Upper Ogeechee, Oconee??</li> <li>○ Stormwater Practices - to address water quality (see Water Quality Practices)</li> </ul>	Yes	Yes	
<b>Water Quality (See Also Resource Coordination Below)</b>	Yes	Yes	Municipal, Industrial, Agricultural Users/Areas
<ul style="list-style-type: none"> <li>• Point Sources –dissolved oxygen <ul style="list-style-type: none"> <li>○ Data collection to confirm loading and/or receiving stream chemistry</li> <li>○ Modification of Discharge Location</li> <li>○ Upgrade or replacement of treatment facilities</li> </ul> </li> <li>• Non-Point Source – dissolved oxygen, fecal coliform, nutrients, and other impairments <ul style="list-style-type: none"> <li>○ Data Collection/Analysis to confirm if dissolved oxygen and/or fecal coliform is human induced</li> </ul> </li> </ul>	Yes	Yes	
	No	Yes	

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<p><b>Water Quality Continue - Non-Point Source – dissolved oxygen, fecal coliform, nutrients, and other impairments</b></p> <ul style="list-style-type: none"> <li>○ Urban Best Management Practices <ul style="list-style-type: none"> <li>▪ Use soil erosion and sediment control measures</li> <li>▪ Stormwater retention ponds, wetlands to manage runoff and support “base” flows</li> <li>▪ Consider measures to promote increased infiltration</li> <li>▪ Protect and maintain riparian buffers along urban streams</li> <li>▪ Limit development in floodplain</li> </ul> </li> <li>○ Forestry Best Management Practices <ul style="list-style-type: none"> <li>▪ Support GSWCC and GFC BMPs and Education Programs</li> <li>▪ Proper design and maintenance of Forestry roads and stream crossings</li> <li>▪ Erosion and sedimentation controls during harvesting</li> </ul> </li> </ul>	No	Yes	

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<p><b>Water Quality Continued - Non-Point Source – dissolved oxygen, fecal coliform, nutrients, and other impairments</b></p> <ul style="list-style-type: none"> <li>▪ Perform soil sampling to determine nutrient needs for silviculture and prevent over-application of fertilizer</li> <li>▪ Prevent conversion of wetlands for silviculture through provision of incentives</li> <li>○ Agricultural Best Management Practices (crop and pasture lands) <ul style="list-style-type: none"> <li>▪ Conservation tillage and cover crop</li> <li>▪ Field buffers, riparian forested buffers, and strip cropping to control run-off and reduce erosion</li> <li>▪ Livestock stock exclusions from surface water features and vegetation buffers</li> <li>▪ Responsible manure storage and handling</li> </ul> </li> <li>○ Incentives to restore wetlands and historically drained hardwood and other areas</li> </ul>	NA	Yes	

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<p><b>Water Quality Continued - Non-Point Source – dissolved oxygen, fecal coliform, nutrients, and other impairments</b></p> <ul style="list-style-type: none"> <li>• Existing Impairments – Total Maximum Daily Load Listed Streams <ul style="list-style-type: none"> <li>○ Data collection and confirmation of sources to remove streams listed due to “natural sources”</li> <li>○ Stormwater Management <ul style="list-style-type: none"> <li>▪ Urban Best Management Practices</li> <li>▪ Forestry Best Management Practices</li> <li>▪ Agricultural Best Management Practices</li> </ul> </li> </ul> <p>See Above Non-Point Source for Details</p> </li> <li>• Nutrients – Savannah and Satilla River Watershed Models <ul style="list-style-type: none"> <li>○ Align current land use with phosphorous and nutrient loading data and optimize management practice with predominant land uses <ul style="list-style-type: none"> <li>▪ Urban Best Management Practices</li> <li>▪ Forestry Best Management Practices</li> <li>▪ Agricultural Best Management Practices</li> </ul> </li> </ul> <p>See Above Non-Point Source for Details</p> </li> </ul>	NA	Yes	

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<b>Educational Practices</b>	NA	Yes	
<ul style="list-style-type: none"> <li>• Support Water Conservation Programs</li> <li>• Support Stormwater Educational Programs</li> <li>• Support Septic System Maintenance Programs</li> </ul>			
<b>Ordinance and Code Policy Practices</b>	NA	Yes	
<ul style="list-style-type: none"> <li>• Encourage local government to develop ordinances and standards – update stormwater regulations in conjunction with Georgia Stormwater Management Manual, Coastal Stormwater Supplement and Metro North Georgia Water Planning District Model Ordinances</li> <li>• Identify opportunities for green space on incentive and voluntary basis</li> <li>• Encourage coordinated environmental planning, landuse, stormwater, wastewater</li> </ul>			
<b>Shared Resources</b>	Yes	Yes	
To Be Determined			Altamaha, Savannah Upper Ogeechee, Upper Oconee, Suwannee-Satilla
<b>Resource Coordination</b>		Yes	
<b>Surface Water Quality- Savannah Harbor – Support TMDL Stakeholder Group</b>  <b>Ground Water Quality – Support Multi-State Salt Water Intrusion Stakeholder Process in the Savannah/Hilton Head Region</b>		Yes	South Carolina and Georgia

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<b>Resource Coordination Continued</b>  <b>Surface Water Quantity and Quality Saint Mary’s River South Georgia</b>  <b>Ground Water Quantity</b>			Florida and Georgia

**Additional Points of Discussion**

- Need to consider Role of State and Implementing Entities (GEFA, EPD, local municipalities, etc.)
- Need to verify Councils’ decision on closing Demand Gaps versus Flow Regime Gaps.