Management Practice Decision Making Process

PREPARED FOR: Georgia Environmental Protection Division

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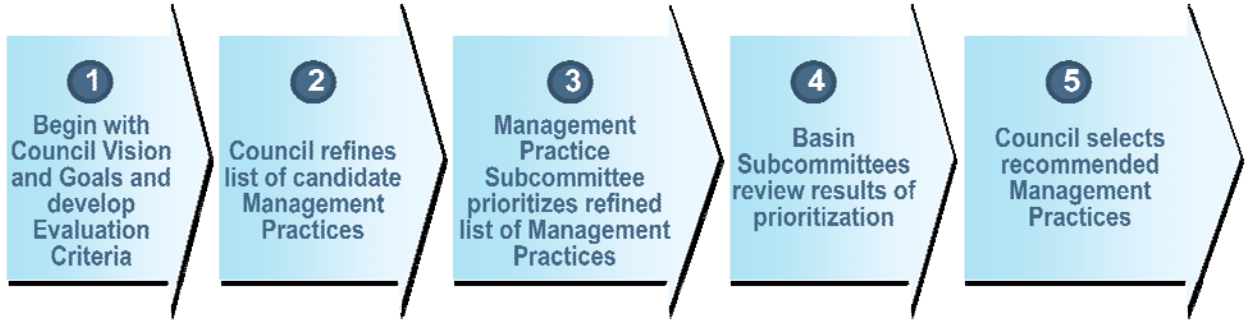
Introduction

This memorandum describes the management practice decision making process that was endorsed by the Upper Oconee WPC at the March 24, 2010 meeting. Exhibit 1 provides the basic steps in the selection of recommended Management Practices for further modeling by GA EPD and ultimately, inclusion in the Upper Oconee WPC Water Development and Conservation Plan (WDCP).

EXHIBIT 1
Decision Making Flow Chart



This approach to decision making provides a variety of benefits to the Council as they consider the wide variety of management practices:

- Build momentum and consensus
- Decision aid to support "human" decision
- Provides mechanism where multiple competing objectives (as defined by the Council's goals) can be evaluated and compared against each other
- Transparent process, everyone can see why one practice scores higher than another
- Provide a clear, defensible and well-documented results

Vision, Goals and Evaluation Criteria

The development of this decision making process began in early 2009 at the project kickoff meeting where the members discussed important issues to keep in mind during the planning process through the "35 exercise". The Council continued these discussions for a number of months and ultimately adopted the Council's Vision Statement and Goals on August 11, 2010 as identified below in Exhibit 2.

EXHIBIT 2
Upper Oconee WPC Adopted Vision and Goals

Vision
Create a regional plan that focuses on managing water as a critical resource vital to our health, economic, social and environmental well being. Build trusting partnerships with neighboring regions and develop an educated and engaged citizenry that embraces sound water management.
Goals
1. Promote alternatives and technologies that conserve, reuse, return, and recycle water within the Upper Oconee region
2. Ensure that management practices balance economic development, recreation, and environmental interests
3. Educate stakeholders in the region on the importance of water quality and managing water as a resource including practices such as water conservation and increased water efficiency
4. Encourage the development of and accessible to data and information to guide management decisions
5. Identify programs, projects, and educational messages to reduce non-point source pollution to protect water quality in lakes and streams
6. Recommend innovative strategies (water, sewer, and/or stormwater) that provide sufficient revenues to maintain a high level of service while promoting water conservation and efficiency
7. Identify and plan measures to ensure sustainable, adequate water supply to meet current and predicted long-term population, environmental, and economic needs

These goals and objectives were used to develop specific evaluation criteria supporting each goal to allow objective scoring of management practices on a 10-point performance scale. Key attributes of the evaluation criteria are as follows:

- Linked to values – Evaluation criteria were linked to the Council's vision and goals and articulate what is important for the Council to accomplish.
- Non-redundant – Evaluation criteria do not address overlapping aspects of management practices. (Redundant evaluation criteria could result in "double-counting" for that particular aspect in the scoring process).
- Independent – Accomplishment of one evaluation criteria cannot be dictated by any other measure.

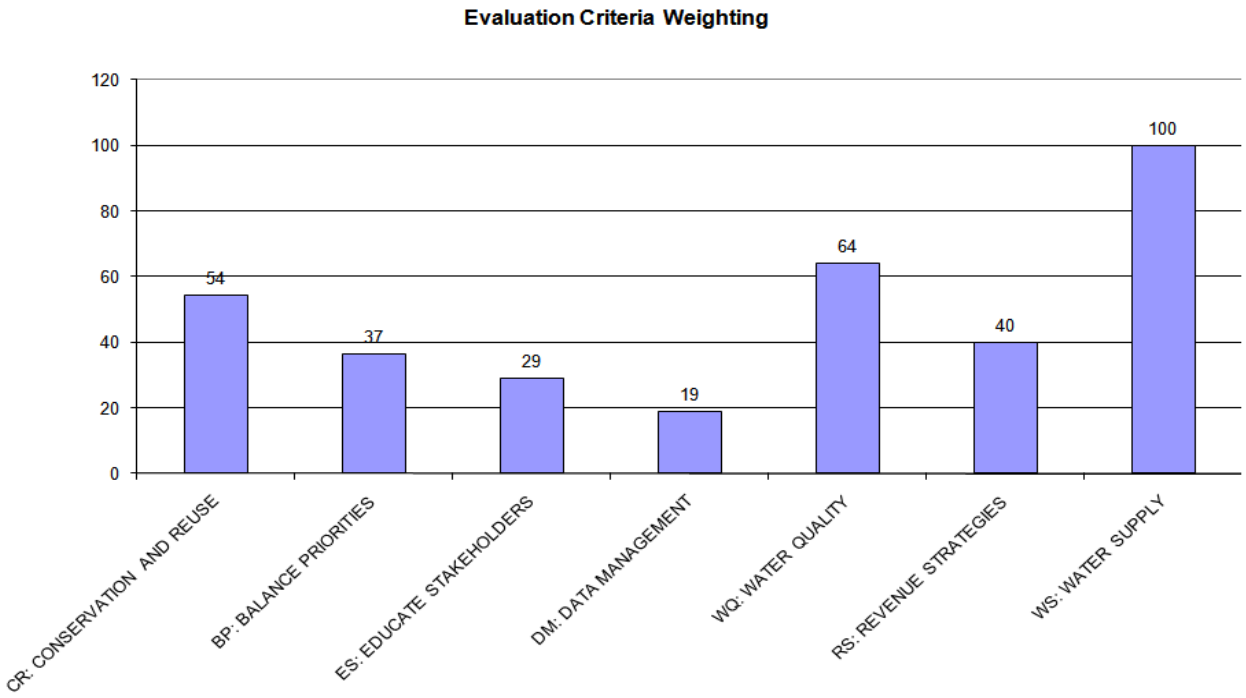
A draft set of evaluation criteria were presented to the Council on August 11, 2010, where the criteria were revised to include a Water Supply criteria (based on an added water supply based goal). The final set of seven evaluation criteria is summarized in Exhibit 3 and the complete criteria are included as Appendix A.

EXHIBIT 3
Summary of Evaluation Criteria

CR: CONSERVATION AND REUSE - Promote alternatives and technologies that conserve, reuse, return, and recycle water within the Upper Oconee region.
BP: BALANCE PRIORITIES - Ensure that management practices balance economic development, recreation, and environmental interests.
ES: EDUCATE STAKEHOLDERS - Educate stakeholders in the region on the importance of water quality and managing water as a resource including practices such as water conservation and increase water efficiency.
DA: DATA MANAGEMENT - Encourage the development of and accessibility to data and information to guide management decisions.
WQ: WATER QUALITY - Identify programs, projects, and educational messages to reduce non-point source pollution to protect water quality in lakes and streams.
RS: REVENUE STRATEGIES - Recommend innovative strategies (water, sewer, and/or stormwater) that provide revenues to maintain a high level of service while promoting water conservation and efficiency.
WS: WATER SUPPLY – Identify and plan measures to ensure sustainable, adequate water supply to meet current and predicted long-term population, environmental and economic needs.

The Council also completed a process to weight the importance of the evaluation criteria to be used in the scoring process; the results are shown in Exhibit 4. The weights reflect the relative importance of each criterion to the Council members.

EXHIBIT 4
Initial Evaluation Criteria Weighting



Council Refines Candidate Management Practices

The Council began the identification and refinement of management practices in late 2009 with discussions about the various types of practices. This discussion was developed further in early 2010 Council meetings and was the primary topic at Subcommittee (Upper, Central, and Lower areas) meetings held in June 2010.

Based on these discussions, a preliminary list of eighty-five potential management practices was developed for four categories of practices (Demand Management/Water Conservation, Water Supply, Wastewater, and Water Quality). This preliminary list was based on a combination of recent management practices developed for other studies in the region to ensure that regionally accepted practices were taken into consideration and this list is attached as Appendix B.

At Council Meeting 7, the Council reviewed the preliminary list of management practices and provided initial feedback. A final list of thirty-eight management practices was produced based on revisions from feedback received at this meeting and is included in Appendix C.

Total Benefits Prioritization of Management Practices

The results of any prioritization are best regarded and applied as *decision aids*. Results should inform rather than dictate the decision. The analysis provides a way of organizing and comparing complex information. To the extent the Council believes that the evaluation criteria represent the important issues, the weights and performance measures are appropriate, and the scores are accurate, they may be confident in the results.

Also, sensitivity analysis often provides insights. If the results of the prioritization do not change unless there are substantial changes in weights, then the Council may be confident in the results. If the results do change, further reflection about scales, weights, and goals will help illuminate the tradeoffs faced by the Council.

To facilitate the efficient evaluation of the management practices, the Council agreed to use representatives from the existing management practice selection Subcommittees (combined) to perform a detailed evaluation of the management practices against the Council selected Evaluation Criteria. The Subcommittee representatives met on August 24, 2010 for a scoring workshop to assign scores to each evaluation criteria for each management practice. The combination of the assigned scores and the weighting of each criteria resulted in a calculated total benefit score for each management practice.

Following the scoring workshop, a conference call was held on September 22, 2010 with the Subcommittee to review the resulting total benefit scores. The total benefit scores provided the Subcommittee with a means to evaluate the extent to which each practice supports each criterion, as well as facilitate relative comparisons between management practices. The Subcommittee provided feedback which resulted in revisions to the scores; see Appendix D for the final benefit score results for each practice category (Water Conservation, Water Supply, Wastewater, and Water Quality).

In addition to the total benefits calculation, the Subcommittee reviewed a rough order of magnitude cost evaluation of each of the management practices that was performed by CH2M HILL. Each practice was assigned a relative cost of high, medium or low (See

Appendix C). These estimates were primarily used to compare practices against each other within each of the four categories of management practices, although they provided some benefit in comparing costs across categories.

The relative cost was used by the Council to select management practices that will be acceptable for use in the region. It is important to note that the actual costs for any given community will likely vary widely based on the size of the community, level of implementation already underway, and other local conditions.

Basin Subcommittees Review Results and Selects Management Practices

Based the revisions from Subcommittee review feedback, a finalized list of thirty-eight management practices to be implemented in the Upper Oconee WDCP were presented to the Council at Council Meeting 8 on October 13, 2010. All of the presented management practices were agreed upon by Subcommittee, as illustrated in Appendix E, and the Council accepted all of the proposed management practices.

Appendix A- Evaluation Criteria

Appendix A

2010 UPPER OCONEE WATER PLANNING COUNCIL

Management Practice Evaluation Criteria

Upper Oconee WPC VISION: Create a regional plan that focuses on managing water as a critical resource vital to our health, economic, social and environmental well being. Build trusting partnerships with neighboring regions and develop an educated and engaged citizenry that embraces sound water management.

0 (Negative Impact)	1 (No Impact)	3 (Low Impact)	7 (Medium Impact)	10 (High Impact)
CR: CONSERVATION AND REUSE **Promote alternatives and technologies that conserve, reuse, return, and recycle water within the Upper Oconee region.**				
Inhibits conservation, reuse, and recycling	No effect on conservation, reuse, return, or recycling	Uses alternatives and technologies that will result in SOME conservation, reuse, return, and recycling	Uses alternatives and technologies that will result in MODERATE conservation, reuse, return, and recycling	Uses alternatives and technologies that will result in SIGNIFICANT conservation, reuse, return, and recycling
BP: BALANCE PRIORITIES **Ensure that management practices balance economic development, recreation, and environmental interests.**				
Hinders economic development OR Prevents recreational use OR Creates environmental degradation	No effect on economic development, recreation, or the environment OR No change in current balance of economic development, recreational use, and environmental protection	Provides SOME balance between economic development, recreational considerations, and environmental protection	Provides MODERATE balance between economic development, recreational considerations, and environmental protection	SIGNIFICANTLY balances economic development, recreational considerations, and environmental protection
ES: EDUCATE STAKEHOLDERS **Educate stakeholders in the region on the importance of water quality and managing water as a resource including practices such as water conservation and increased water efficiency,**				
Potential to discourage public participation in water resources management OR May result in negative media coverage	Will not motivate stakeholders to engage in water management practices to conserve water and increase efficiency	SOMEWHAT improves stakeholder and/or public understanding of water resource management OR Potential to secure positive media coverage	Encourages stakeholders to take voluntary action to protect and conserve water resources OR Results in MODERATE levels of media coverage	SIGNIFICANTLY motivates stakeholders to take action to manage water resources, including actions to conserve and increase efficiency
DA: DATA MANAGEMENT **Encourage the development of and accessiblity to data and information to guide management decisions.**				
Prohibits or creates obstacles to the accessibility of water resource data and information	Does not hinder or promote the accessibility of water resource data and information	Provides SOME improvement in accessibility of water resource data and management	Provides MODERATE opportunity to access water resource data and management	Provides SIGNIFICANT opportunity for access to water resource data and information
GOAL WQ: WATER QUALITY **Identify programs, projects, and educational messages to reduce non-point source pollution to protect water quality in lakes and streams.**				
Creates potential for water quality degradation due to nonpoint source pollution	Does not address nonpoint source pollution or water quality	Will provide SOME reduction in nonpoint source pollution to protect lakes and streams	Will provide MODERATE reduction in nonpoint pollution to protect lakes and streams	Will provide SIGNIFICANT reductions in nonpoint source pollution to protect for lakes and streams
RS: REVENUE STRATEGIES **Recommend innovative strategies (water, sewer, and/or stormwater) that provide sufficient revenues to maintain a high level of service while promoting water conservation and efficiency.**				
Create potential for decreases in revenues to maintain high levels of service OR Discourages water conservation and efficiency	Does not affect revenue to support levels of service AND Does not promote water conservation and efficiency	Provides SOME revenue to maintain high levels of service while promoting conservation and efficiency	Provides MODERATE revenue to maintain high levels of service AND Promotes conservation and efficiency	Provides SIGNIFICANT revenue to maintain high levels of service AND Promotes water conservation and efficiency
GOAL WS: Identify and plan measures to ensure sustainable, adequate water supply to meet current and predicted long-term population, environmental and economic needs				
Decreases supply for any community within the planning area OR Eliminates a potential supply from future use OR Depletes supply within the planning area without a beneficial return	Does not impact supply or capacity at the present time or in the future	Maintains and protects existing supplies OR Increases storage capacity to meet some gaps AND Aids in compliance with some provisions of mandates	Meets most identified gaps with reliable/redundant supply AND Complies with existing mandates Ensures adequate supplies for emergencies	Significantly increases storage capacity AND Provides reliable/redundant supply to meets long-term (40 year planning horizon) gaps during drought/emergencies AND Complies and exceeds provisions of existing mandates related to conservation and water use efficiency

Appendix B- Initial Management Practice List

UPPER OCONEE POTENTIAL MANGEMENT PRACTICE- DEMAND MANAGEMENT (WD)								
Number	**Sector**	**Element**	**Description/Comments**	**Committee Discussions**	**Stewardship Act**	**WCIP**	**EPA Reg 4 Reservoir Guidelines**	**MNGWPD**
1	All	Implement education and public awareness plan	-Develop a local public education program -Perform public education and outreach activities -Perform public participation and involvement activities			X	X	X
2	All	Develop water conservation goals	-May vary by basin/entity				X	
3	Institutional	Assess and reduce water system leakage	STEWARDSHIP ACT: 1/1/12 deadline for systems servicing more than 10,000 people, 1/1/13 deadline for other systems above 3,300 people -Assess local water losses annually -Develop a program for identifying and reducing local water system loss -Set a goal for real water losses		X	X	X	X
4	Institutional	Install 1.28 gpf toilets & low flow urinals in government buildings	-Develop a list of eligible government buildings -Develop a retrofit schedule and program -Retrofit fixtures		X		X	X
5	Institutional	Non-Potable Reuse	-Irrigation with high quality treated effluent in unrestricted areas such as golf courses and parks			X	X	X

UPPER OCONEE POTENTIAL MANGEMENT PRACTICE- DEMAND MANAGEMENT (WD)								
Number	**Sector**	**Element**	**Description/Comments**	**Committee Discussions**	**Stewardship Act**	**WCIP**	**EPA Reg 4 Reservoir Guidelines**	**MNGWPD**
6	Residential	Conservation pricing	-Eliminate declining block rate structures -Perform a rate and revenue analysis -Irrigation meter pricing -Billing system functionality -Review and update pricing			X	X	X
7	Residential	Conduct residential water audits	-Develop a water audit program -Distribute water audits guidelines			X		X
8	Residential	Distribute low-flow retrofit kits to residential users	-Purchase low flow retrofit kits -Distribute low flow retrofit kits			X	X	X
9	Residential	New watering restriction	-Limits allowable periods for residential irrigation		X			
10	Commercial	Sub-meters in new multi-family buildings	STEWARDSHIP ACT: "All new multiunit residential buildings permitted on or after July 1, 2012, shall be constructed in a manner which will permit the measurement by a county, municipal, or other public water system or by the owner or operator of water use by each unit."		X	X	X	X
11	Residential	Replace older, inefficient plumbing fixtures	-Establish a replacement strategy (through the Metro Water District program or local program) -Enhance replacement program		X	X	X	X
12	Residential	Rain sensor shut-off switches on new irrigation systems	-Enact rain sensor shut-off legislation -Update building inspection checklists			X		X
13	Institutional	Indirect Potable Reuse	-Return highly treated wastewater to water supply reservoirs					X

UPPER OCONEE POTENTIAL MANGEMENT PRACTICE- DEMAND MANAGEMENT (WD)								
Number	**Sector**	**Element**	**Description/Comments**	**Committee Discussions**	**Stewardship Act**	**WCIP**	**EPA Reg 4 Reservoir Guidelines**	**MNGWPD**
14	Residential/ Commercial/ Institutional	Encourage efficient outdoor practices	- Could be accomplished through incentives, xeriscaping, pricing	X	X	X	X	
15	Commercial	Encourage certification of irrigation specialists		X		X		
16	Commercial	Conduct commercial water audits	-Train personnel -Advertise water audit program -Conduct audits with interested commercial partners -Report results to commercial partners			X		X
17	Commercial	Require new car washes to recycle water	-Adopt a local ordinance or regulation -Update plan review procedures -Evaluate mobile car washes					X
18	Agriculture	New ag permit requirements	Addresses existing active and inactive permits		X			
19	Agriculture	Meter water withdrawals				X		
20	Agriculture/ Golf Courses	Implement leak detection and repair program				X		
21	Agriculture	Variable rate irrigation systems				X		
22	Agriculture	Conservation tillage				X		
23	Golf Courses	Develop site specific plan to conserve water				X		
24	Golf Courses	Precondition turf grass through agronomic programs to minimize water needs				X		
25	Commercial/ Institutional	High-efficiency cooling towers in new construction permitted on or after July 1, 2012			X			

UPPER OCONEE POTENTIAL MANGEMENT PRACTICE- DEMAND MANAGEMENT (WD)								
Number	**Sector**	**Element**	**Description/Comments**	**Committee Discussions**	**Stewardship Act**	**WCIP**	**EPA Reg 4 Reservoir Guidelines**	**MNGWPD**
26	Golf Courses	Identify alternative water sources (non-potable)				**X**		

Stewardship Act - 2010 SB 370
WCIP - Water Conservation Implementation Plan
EPA Reg 4 Reservoir Guidelines - Environmental Protection Agency Region 4 Guidelines on Water Efficiency Measures For Water Supply projects in the Southeast (6-21-10)
MNGWPD - Metropolitan North Georgia Water Planning District

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER SUPPLY (WS)						
Number	**Element**	**Description/Comments**	**Committee Discussions**	**EPA Region 4**	**UOC Planning**	**MNGWPD**
1	Develop water master plans every 5 years	-Create and utilize a local water master plan with a 30 year planning horizon -Update local water master plan				X
2	Develop water budgets on regional/watershed scale	- Update regional planning work completed to date periodically - Evaluate potential for partnerships in meeting future water supply		X		
3	Use Integrated Resource Management Approach - recognize interrelationships between water, wastewater, stormwater, energy	- Evaluate cost-benefits of various water resources planning measures across water, wastewater, stormwater		X		
4	Expand existing reservoirs	-Evaluate potential expansion of existing facilities - Evaluate potential for NRCS impoundments to serve as WS sources			X	
5	Construction of new water supply reservoirs	- Upper area: Implement existing Hard Labor Creek in Walton County, Braselton project on Mulberry River, Barrow County project, and investigate Jackson County and City of Jefferson Opportunities -Middle area: Focus on use of existing reservoirs -Evaluate when needed to meet demands -Begin process to permit			X	X
6	Develop new groundwater wells	-Evaluate potential for groundwater (likely as supplemental source) -Permit as needed/practicable			X	
7	Indirect potable reuse	-Return highly treated wastewater to water supply reservoirs	X			

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER SUPPLY (WS)						
Number	**Element**	**Description/Comments**	**Committee Discussions**	**EPA Region 4**	**UOC Planning**	**MNGWPD**
8	Expand existing/construct new water treatment plants	-Evaluate when needed to meet demands -Begin process to permit	**X**			**X**
9	Develop or update local emergency water plans	-Adopt a written emergency water supply plan -Assess the need for establishment and maintenance of service connections -If interconnections are needed, meet interconnection reliability targets -Update the emergency water supply plan - Evaluate potential to purchase from other water systems for short term - Continue to Evaluate longer term solutions				**X**
10	Water System Asset Management	-Map water system assets -Develop a water system asset management program -Coordinate asset management and leak detection programs				**X**
11	Source water supply watershed protection	-Identify water supply watersheds -Adopt Environmental Planning Criteria -Coordination on watershed protection		**X**		**X**
12	Expand Existing Withdrawals from available reservoirs	-Negotiate with GPC on potential expansion of existing withdrawals	**X**		**X**	

EPA Reg 4 Reservoir Guidelines - Environmental Protection Agency Region 4 Guidelines on Water Efficiency Measures For Water Supply projects in the Southeast (6-21-10)
UOC Planning- Proposed or planned projects within the UOC Basin.
MNGWPD - Metropolitan North Georgia Water Planning District

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WASTEWATER (WW)				
Number	**Element**	**Description/Comments**	**Committee Discussions**	**MNGWPD**
1	Evaluate wastewater treatment and disposal options to meet future demands/Develop local wastewater master plans and update every 5 years at a minimum	- Evaluate future wastewater capacity needs - Identify and evaluate options to treat and dispose of wastewater - Consider opportunities for reuse (indirect potable, non-potable, etc.)		**X**
2	Implement centralized sewer in developing areas	- Identify areas where centralized sewer would benefit water quality (areas around lake; smaller lots that wouldn't support septic systems) - Work with developers to ensure they understand program	**X**	
3	Coordinate with local government on the development of a private wastewater system ordinance	-Adopt a private wastewater system ordinance -Provide a copy of the ordinance to Georgia EPD and Georgia DCA		**X**
4	Develop recommendations for decentralized sewer system	- Evaluate potential for designing decentralized systems so can tie on to central sewer when available - Identify implementation issues - Develop design standards - Implement design standards -Establish policies for connections to public sewer	**X**	
5	Develop and implement a local wastewater education and public awareness program			**X**
6	Provide local government with acceptable parameters for septage disposal at facilities	-Develop a plan and acceptable parameters for septage disposal -Collect septage manifests and provide to County Board of Health -Consider septage disposal needs when upgrading or designing new wastewater treatment facilities		**X**
7	Septic system planning	-Determine future septic system areas and local requirements -Develop near term and long-term policies for transitioning unsewered areas to sewered areas.		**X**

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WASTEWATER (WW)				
Number	**Element**	**Description/Comments**	**Committee Discussions**	**MNGWPD**
8	Septic system critical area management	-Identify critical areas -Conduct additional management of septic systems in those critical areas		**X**
9	Septic system maintenance education	Subtasks: -Implement a septic system homeowner education program		**X**
10	Track septic system pumping history	- Identify implementation issues - Develop tracking system - Implement tracking system - Pass pumping history on to new homeowners	**X**	
11	Identify septic systems on plats	- Develop methodology - Provide information on County databases for access by homeowners and others	**X**	
12	Study effects of failing septic systems on water quality	- Develop plan to evaluate effects of septic systems on water quality - Perform monitoring - If needed, develop program to reduce pollutant loading from septic systems		
13	Sewer system inventory and mapping	-Determine sewer system mapping strategy -Collect field data for sewer system database development -Create a sewer system map -Update sewer system maps		**X**
14	Sewer system inspection and maintenance program	-Establish and implement inspection and maintenance program		**X**
15	Establish policies for connections to public sewer	-Develop policies for connections to public sewer		**X**
16	Sewer system inspection and maintenance training	-Review existing staff certifications -Secure additional needed training		**X**

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WASTEWATER (WW)				
Number	**Element**	**Description/Comments**	**Committee Discussions**	**MNGWPD**
17	Sewer system rehabilitation program	-Prioritize rehabilitation projects -Develop schedule and budget -Implement rehabilitation program -Annual planning and budgeting -Rehabilitation project documentation		**X**
18	Capacity certification program	-Maintain a flow and rainfall monitoring program -Maintain a hydraulic model or manual calculation approach -Determine system capacity -Maintain procedures for certifying available capacity -Certify availability of capacity for proposed developments		**X**
19	Grease management program	-Develop procedures for grease control and enforcement -Fats, oils and grease (FOG) education		**X**
20	Sewer system overflow emergency response program	-Review overflow response program -Add SOPs to ensure proper response to overflows		**X**
21	Sewer system asset management	-Select a CMMS or asset management approach -Implement a CMMS or asset management system		**X**
MNGWPD - Metropolitan North Georgia Water Planning District				

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER QUALITY (WQ)									
Number	**Category**	**Element**	**Description/ Comments**	**Committee Discussions**	**MS4**	**MNGWPD**	**Braselton/ Mulberry Creek**	**Barber/ Calls Creeks**	**Jackson Co**
1	Agricultural Practices	Fence cattle away from streams	Fence cattle out of streams to prevent stream bank erosion and reduce pollutant loadings. Provide an alternative water source for cattle.	Ag practices promoted by NRCS; farmers participate when cost sharing provided				**X**	
2	Agricultural Practices	Fertilizer Management Programs	Apply fertilizer at rates that are used by plants to avoid excessive nutrient runoff	Ag practices promoted by NRCS; farmers participate when cost sharing provided					
3	Agricultural Practices	Cropland Management Practices	Conservation Tillage, Cover Crop, Field Border, Riparian Forested Buffer, Land Conversion (Crop to Forest), Strip Cropping, Nutrient Management	Ag practices promoted by NRCS; farmers participate when cost sharing provided					
4	Agricultural Practices	Animal Waste Management Programs - includes waste storage/coverage, manure testing, composting	Identify potential projects and funding sources. Implement where funding available	Ag practices promoted by NRCS; farmers participate when cost sharing provided					
5	Agricultural Practices	Forestry Management Practices	Streamside Management Zones, Mechanical Site Preparation and Main Haul Roads (as adopted and enforced by the GA Forestry Commission).						

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER QUALITY (WQ)									
Number	**Category**	**Element**	**Description/ Comments**	**Committee Discussions**	**MS4**	**MNGWPD**	**Braselton/ Mulberry Creek**	**Barber/ Calls Creeks**	**Jackson Co**
6	Erosion and Sediment Control	Construction Erosion and Sediment Control	Practices to reduce runoff from construction sites when a given threshold of land is disturbed; may need to develop compliance and enforcement for existing programs Training program for contractors who implement erosion and sediment control programs		X	X	X	X	X
7	Stormwater	Post-Development Stormwater Management	Managing runoff from new development and redevelopment areas such that pre- and post-construction runoff volume is maintained	Tie to development density	X	X	X	X	
8	Stormwater	Site Design Practices	Remove barriers and encouraging site design practices which minimize environmental impacts. This can include: conservation subdivisions where larger amounts of open space are left on development (individual lot size reduced, but overall density allowed), low impact design, and processes to review site plans.			X	X		
9	Stormwater	Stormwater Infrastructure Inventory	Inventory and map stormwater system			X			
10	Stormwater	Stormwater System Operations and Maintenance Program	Develop a program to inspect and monitor stormwater control structures to ensure they are built and maintained as planned			X			

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER QUALITY (WQ)									
Number	**Category**	**Element**	**Description/ Comments**	**Committee Discussions**	**MS4**	**MNGWPD**	**Braselton/ Mulberry Creek**	**Barber/ Calls Creeks**	**Jackson Co**
11	Stormwater	Pollution Prevention/ Good Housekeeping for Local Operations	Local governments develop practices to prevent pollutant runoff from their land		X	X		X	
12	Stormwater	Illicit Discharge Detection and Elimination Program	Identify illicit discharges to stormwater system and develop a program to eliminate them		X	X	X	X	
13	Stormwater	Local Education and Public Awareness Program	Develop a program to educate the public about measures they can take to minimize their impacts on water resources		X	X	X	X	
14	Operations	Capital Improvement Program	Replace failing stormwater infrastructure to manage flooding, water quality and other environmental benefits			X	X		
15	Stormwater	Regional BMPs - regional ponds, habitat protection	Includes regional stormwater ponds and other watershed practices such as stream or buffer restoration						
16	Riparian Buffers	Stream Buffer Protection	Practice in which a vegetated (often forested) corridor is left along side streams. Buffers protect habitat and filter pollutants	Recommend locations where wider buffers may be appropriate		X	X	X	X
17	Floodplain Protection	Floodplain Management/Flood Damage Prevention - Existing Floodplains	Site plan review practices to prohibit or minimize development in the floodplain	Eliminate because of cost of hydrology		X	X		X

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER QUALITY (WQ)									
Number	**Category**	**Element**	**Description/ Comments**	**Committee Discussions**	**MS4**	**MNGWPD**	**Braselton/ Mulberry Creek**	**Barber/ Calls Creeks**	**Jackson Co**
19	Land Use Planning	Comprehensive Land Use Planning and Zoning	Land use planning and zoning can be used to encourage development in certain areas and discourage development in environmentally sensitive areas Open Space Planning and Acquisition - Protecting open space along riparian corridors, wetlands, groundwater recharge areas can help protect water resources			X	X	X	
20	Natural Resource Protection	Litter Control	Litter prevention protects streams as well as aesthetics; could also include street sweeping			X	X		
21	Natural Resource Protection	Part V. Environmental Planning Criteria	This includes protection of endangered species, wetlands, aquifer recharge areas, drinking water supplies			X			
22	Natural Resource Protection	Tree Conservation	Protecting older growth trees from development protects water resources and provides an aesthetic benefit	Athens/Clarke County has fairly successful implementation				X	X
23	Other Practices	Total Maximum Daily Load (TMDL) Management	Evaluate existing impaired waters, investigating potential pollutant sources, and participating in the TMDL development and implementation planning process; comply with TMDLs			X	X		

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER QUALITY (WQ)									
Number	**Category**	**Element**	**Description/ Comments**	**Committee Discussions**	**MS4**	**MNGWPD**	**Braselton/ Mulberry Creek**	**Barber/ Calls Creeks**	**Jackson Co**
24	Other Practices	Water Quality Credit Trading	Point-to-point trading; nonpoint-to-point trading	Requested this practice be added; State Plan notes credit trading; no rulemaking needed					
25	Monitoring	Long-term Ambient Trend Monitoring	Long term monitoring can help watershed stakeholders evaluate whether watershed practices are working	Could be costly; who would pay?		**X**	**X**	**X**	**X**
26	Monitoring	Habitat and Biological Monitoring	Often runoff will impact biological communities before pollutants exceed state standards. Biological monitoring can help watershed stakeholder evaluate whether watershed practices are working	Could be costly; who would pay?		**X**	**X**	**X**	**X**

MS4 - Municipal Separate Storm Sewer System Permit (Counties: Barrow, Clarke (Athens-Clarke), Oconee, Walton; Cities: Athens, Auburn, Bogart, Loganville, Winterville)
MNGWPD - Metropolitan North Georgia Water Planning District
Braselton/ Mulberry Creek- Mulberry River Watershed Protection(Jackson County, Town of Braselton)
Barber/ Calls Creek- Watershed Protection Plan: Barber Creek and Calls Creek Watershed (Oconee County)
Jackson Co- Watershed Protection Plan for Jackson County, GA

Appendix C- Revised Management Practice List

UPPER OCONEE POTENTIAL MANGEMENT PRACTICE-WATER CONSERVATION

Number	Sector	Practice	Description	Comments	References	Relative Cost
1	All	Implement education and public awareness plan	-Research existing education programs to determine if one already exists that meets needs - If none exists, develop a local public education program -Perform public education and outreach activities -Perform public participation and involvement activities -Encourage efficient outdoor practices	Public education is often most efficiently completed through partnerships as the same messages are needed across local governments. Therefore, this is something that a group similar to Council or EPD could be responsible for. Local governments could then fill in with any education that may be desired to meet a local need. Local governments may also need to identify manner in which to disseminate the materials within their jurisdiction.	EPA's Water Sense program can be accessed at: http://www.epa.gov/WaterSense/ AWWA's Water Conservation Education Programs contains a database of existing water conservation education programs http://www.awwa.org/waterwiser/corepage.cfm?CI=9&showLogin=N	Low
2	All	Develop water conservation goals	-Conservation goals will help local governments evaluate their long term water supply needs. -These goals and a program to implement them may also help a local government extend the life of its water supply, thereby delaying the need for new infrastructure.	Conservation goals may vary slightly across the planning area; thus local governments should develop their own conservation goals.	Georgia Water Conservation Implementation Plan includes a purpose statement at the beginning of the Introduction; sector specific goals are included in each subsequent chapter: http://www.conservewatergeorgia.net/documents/wcip.html	Low
3	Institutional	Encourage non-potable reuse	-Identify areas for potential reuse application -Irrigation with high quality treated effluent in unrestricted areas such as golf courses and parks; some industries can also use reclaimed water	Public utilities would work to identify potential users of reuse water. Most efficient to identify areas in close proximity to treatment facilities.	Section 7 of Metropolitan North Georgia Water Supply and Water Conservation Plan includes information on non-potable reuse: http://www.northgeorgiawater.com/html/88.htm	Medium

UPPER OCONEE POTENTIAL MANGEMENT PRACTICE-WATER CONSERVATION						
Number	**Sector**	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
4	Residential	Encourage conservation pricing	This practice provides economic incentive for people to use less water -Eliminate declining block rate structures -Perform a rate and revenue analysis -Review and update pricing	Public utilities would work to identify an inclining block rate structure that covers their costs and provides economic incentives for their customers to conserve water.	MNGWPD includes an example rate structure and other references on its website: http://www.northgeorgiawater.com/html/217.htm	Low
5	Residential	Encourage residential water audits	-Develop a water audit program -Distribute water audits guidelines -Encourage voluntary audits	Public utilities would implement this program.	MNGWPD has developed a "do it yourself" water audit program for its customers. Information found at: http://www.northgeorgiawater.com/html/212.htm	Low
6	Residential	Rain sensor shut-off switches on new irrigation systems	-This practice includes irrigation systems that automatically shut off when it rains. -Smart irrigation systems can also be linked to soil moisture. Currently this would be a voluntary program unless legislation or local government ordinance enacted to make it a mandatory program. -Encourage retrofits	Local governments could implement this on a voluntary basis. Local governments which identify a high outdoor water use in their service area could benefit from this practice.	In 2004, the Georgia General Assembly passed a law (Georgia Code Section 12-5-6), which requires rain sensor shut-off switches on new landscape irrigation systems for both residential and nonresidential properties within the MNGWPD. Further information is found at: http://www.northgeorgiawater.com/html/284.htm	Low

UPPER OCONEE POTENTIAL MANGEMENT PRACTICE-WATER CONSERVATION						
Number	**Sector**	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
7	Commercial	Encourage certification of irrigation specialists	-Trained irrigation specialists will understand the timing and amount of water needed by plants -Trained specialists will also understand technology and install systems such that water not wasted.	The Irrigation Industry could promote certification of its members; certification programs are provided through the Irrigation Association. Specialists who complete training could advertise that certification to potential customers.	Irrigation Association is an organization of irrigation companies and specialists. It offers a certification program: http://www.irrigation.org/Certification/Certification_Splash.aspx	Low
8	Commercial	Encourage commercial water audits	-Train personnel -Advertise water audit program -Conduct audits with interested commercial partners -Report results to commercial partners	Training program could be developed by GAEPD or university system. Public utilities would implement the auditing program in partnership with their commercial customers. Water data could be used to identify priority commercial areas.	MNGWPD includes links to several resources on its website concerning commercial water audits: http://www.northgeorgiawater.com/html/210.htm	Low
9	Commercial	Require new car washes to recycle water	-New car washes would recycle their water to minimize the amount of potable water they need. -This could also be set up as a voluntary incentive program with car washes which recycle receiving a certification that they could advertise.	GAEPD or university system could develop model ordinance; could build on ordinances developed in other jurisdictions. Local governments would then need to adopt an ordinance and update their plan review procedures for new car washes. University could also evaluate the cost-effectiveness of a similar program for mobile car washes.	MNGWPD has developed an example ordinance: northgeorgiawater.org/.../Public_Comment_on_Example_Car_Wash_Ordinance.pdf	Low

UPPER OCONEE POTENTIAL MANGEMENT PRACTICE-WATER CONSERVATION						
Number	**Sector**	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
10	Agriculture	Meter water withdrawals (> 100,000 gpd)	-Agricultural water use can be a high local use in some watersheds. -Metering agricultural withdrawals would allow EPD to estimate safe yield and available supplies more accurately.	GAEPD would implement this proposed program.	Recommendations in the WCIP can be viewed at: http://www.conservewatergeorgia.net/documents/wcip.html	Medium
11	Agriculture/ Golf Courses	Implement golf course water management education program	-Develop site specific plan to conserve water -Precondition turf grass through agronomic programs to minimize water needs -Identify alternative water sources (non-potable)	-GAEPD could develop an incentive-based program to minimize leaks in these users' irrigation systems. -Golf course managers would develop and implement these plans. -Public utility systems would work in conjunction with golf course managers to identify potential golf course reuse sites.	GAEPD has developed a standard water conservation plan outline for self-supplied golf courses which can be viewed at: www.gaepd.org/Files_PDF/forms/wpb/golfwconsplan.pdf	Medium
12	Agriculture	Encourage variable rate irrigation systems	-Different crops require different amounts of water. -Different soil types hold different amounts of water. Variable rate irrigation systems allow for different irrigation rates depending on site specific water needs.	Farmers would install these programs. Grant/cost-share programs should be identified by agricultural agencies to help implement this program.	This University of Georgia PowerPoint presentation provides a good overview variable rate irrigation and its benefits; does not discuss costs or potential barriers to installing: www.cpes.peachnet.edu/.../Agricultural%20Irrigation/Variable%20Rate%20Irrigation.ppt	High

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER SUPPLY					
Number	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
13	Develop water master plans every 5 years	-Create and utilize a local water master plan with a 30 year planning horizon -Update local water master plans -Develop or update local emergency water plans	-Public utilities would develop a water master plan that includes 30-year population and water demand projections. The local water supply would be evaluated against the demand to identify potential short falls early. EPD would identify safe yields. -Identify emergency water needs during drought or in the event their water supply source is contaminated.	The MNGWPD has developed a water supply master plan and will do updates at least every five years. The Plan can be viewed at: http://www.northgeorgiawater.com/html/88.htm	Low
14	Expand existing reservoirs	-Evaluate potential expansion of existing facilities; evaluate yield - Evaluate potential for NRCS impoundments to serve as WS sources; estimate yield; identify any potential water quality issues	Regional Councils or EPD could evaluate the potential to expand existing reservoirs or use NRCS impoundments in cooperation with local governments. Local governments would use their collective water plans to determine whether the yields would meet their projected demands or whether additional supply needed.	-Schnabel Engineering evaluated the potential to use USDA impoundments in Georgia for water supply in a 2007 report entitled "Inventory and Assessment of USDA/Soil and Water Conservation District Watershed Dams". -Douglas County, Dog River Reservoir: http://www.ddcwsa.com/water-service/the-reservoir.html	Medium
15	Expand Existing Withdrawals from available reservoirs	-Negotiate with GA Power Company on potential expansion of existing withdrawals	Local governments would permit an expanded withdrawal from existing water supply source. May require modifications to existing structures.	Douglas County, Dog River Reservoir: http://www.ddcwsa.com/water-service/the-reservoir.html	Medium

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER SUPPLY					
Number	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
16	Construction of new water supply reservoirs	-Local governments to develop water demand projections (can be as part of water plan) -Councils and GAEPD identify safe yield of current sources -identify when gap between available supply and demand would occur -Local governments should begin permitting process early for new water supplies	Several potential new supplies are planned in UOC: -Hard Labor Creek in Walton County -Braselton project on Mulberry River -Barrow County proposed reservoir -Jackson Co and City of Jefferson should complete their local reservoir studies. Local governments should work cooperatively with the agencies to implement these projects. Local governments in the middle basin should evaluate whether existing reservoirs could meet their water demands if used as water supply.	-USACE Savannah District would need to issue a 404 permit for any new reservoir. Information is found at: http://www.sas.usace.army.mil/regulatory/permits.html -Project information on the Hard Labor Creek project is found at: http://hardlaborcreek.com/	High
17	Develop new groundwater wells	-Evaluate potential for groundwater (likely as supplemental source) -Permit as needed/practicable	In upper basin, groundwater likely would not meet needs, but could potentially be used to supplement surface water supplies. Local governments in the middle and lower basins should evaluate their long range water supply demands and whether projected groundwater supplies would meet them. Local governments would then apply for permits as needed.	Georgia EPD's website contains permitting forms and other information: http://www.gaepd.org/Documents/epdforms_wpb.html	Medium

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER SUPPLY					
Number	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
18	Indirect potable reuse	-Return highly treated wastewater to water supply reservoirs -This has been implemented in Lake Lanier which helped augment water supplied in drought conditions.	GAEPD would need to permit these systems; applicant would need to demonstrate that the proposed discharge would meet water quality standards in the lake to comply with Clean Water Act requirements.	-GAEPD has developed guidelines for water reclamation and urban water reuse and is available at: www.gaepd.org/Files_PDF/techguide/wpb/reuse.pdf. -GAEPD also developed a guidance document on evaluating the feasibility of reuse water for coastal communities: www1.gadnr.org/cws/Documents/Reuse_Feasibility_Analysis.pdf -Clayton County's treatment wetlands and indirect reuse program are described at: http://www.ccwa.us/operations/water.reclamation.aspx	Medium
19	Water system asset management	-Map water system assets -Develop a water system asset management program -Coordinate asset management and leak detection programs	Local governments would develop an asset management plan which would identify their assets and prioritize projects. Assets can include their staff. Asset management can save operation money.	Georgia Association of Water Professionals has formed an Asset Management Committee. A brief overview is found at: http://gawp.org/committees.php#asset	Medium

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WASTEWATER					
Number	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
20	Evaluate wastewater treatment and disposal options to meet future demands/Develop local wastewater master plans	- Evaluate future wastewater capacity needs - Identify and evaluate options to treat and dispose of wastewater - Consider opportunities for reuse (indirect potable, non-potable, etc.) -Focus on existing public utilities -Update every 5 years (min)	Public utilities would develop a wastewater master plan that includes 30-year population and wastewater flow projections. Plan would identify when expansions to WWTP are needed and should be linked to local comprehensive plans.	The MNGWPD has developed a wastewater management plan and will do updates at least every five years. The Plan can be viewed at: http://www.northgeorgiawater.com/html/87.htm	Low
21	Implement centralized sewer in developing areas where density requires it	- Identify areas where centralized sewer would benefit water quality (areas around lake; smaller lots that wouldn't support septic systems) - Work with developers to ensure they understand program	Local governments would identify areas where they would like centralized sewer based on the wastewater infrastructure planning and land use planning efforts. They could require that areas not yet sewered meet design criteria so they can easily tie on when service is later extended.	University of Georgia Cooperative Extension has compiled information on areas that are conducive to septic systems: http://www.fcs.uga.edu/pubs/current/C819-2.html	Medium
22	Grease management program	-Develop procedures for grease control and enforcement -Fats, oils and grease (FOG) education	Identify existing education programs; if any new educational material needed, it should be developed on regional or statewide basis. Public utilities would disseminate educational materials to homeowners and restaurants.	Most utilities are implementing a fats, oils and grease program as part of their CMOM programs.	Low

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WASTEWATER					
Number	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
23	Develop recommendations for decentralized sewer system	- Evaluate potential for designing decentralized systems so can tie on to central sewer when available - Identify implementation issues - Develop design standards - Implement design standards -Establish policies for connections to public sewer -Coordinate with local government on the development of a private wastewater system ordinance	Committee or other regional group could develop a set of design standards. Local governments could then tailor them to meet their individual needs. Plan reviewers would need to be trained to ensure minimum standards met.	-Local governments across the country require minimum design standards within their planning areas where sewer is not currently available. HUD has a publication for developers: http://www.hud.gov/offices/adm/hudclips/handbooks/hsgh/4940.3/index.cfm -Athens-Clarke County has developed standard specifications for wastewater systems: http://74.231.24.153/DepartmentsEngineering.asp -MNGWPD has recommendations for decentralized systems: http://www.northgeorgiawater.org/html/175.htm	Low
24	Provide local government with acceptable parameters for septage disposal at facilities	-Develop a plan and acceptable parameters for septage disposal -Collect septage manifests and provide to County Board of Health -Consider septage disposal needs when upgrading or designing new wastewater treatment facilities	On regional basis, facilities should be identified which will accept septage. There should be consistency between the requirements from various regional facilities which accept septage - can build on requirements of EPD.	-The Georgia DNR requires manifests and permits for septage haulers: health.state.ga.us/pdfs/environmental/LandUse/Manual/SectionI.pdf -Senate Committee studied septage disposal in 2006: Septage Disposal Study Committee Final Report - The State Senate : http://ww.legis.state.ga.us/legis/2009_10/senate/publications/sro/committee_reports/2006/senate_septage_disposal_study_committee_rpt.pdf	Low

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WASTEWATER					
Number	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
25	Septic system planning and management	-Determine future septic system areas and local requirements -Develop near term and long-term policies for transitioning unsewered areas to sewered areas where economically feasible. -Develop education program -Identify grant funds or other sources to develop and implement education program -Identify and manage septic systems in environmentally sensitive areas -Implement a septic system homeowner education program	Local governments would link their land use and sewer system planning. Policies for connecting (or future connections) would be created by the public utility system. Educational material on septic systems could be disseminated through Realtors.	http://www.northgeorgiawater.org/html/175.htm www.northgeorgiawater.com/.../Sec10_StateRecommendations_WW_May2009.pdf http://www.dca.state.ga.us/toolkit/ToolDetail.asp?GetTool=158 http://www.ces.ncsu.edu/wake/environmentalquality/septic.php	Low
26	Develop and implement sewer system capacity, management, operation and maintenance (CMOM) program	-Create a sewer system map -Implement sewer inspection and maintenance program -Conduct inspection and maintenance training -Implement sewer system rehabilitation program -Develop sewer system overflow emergency program -Develop sewer system asset management program	Public utilities would develop programs and prioritize areas for rehabilitation based on the results of their inspection and maintenance program.	-Most utilities are implementing CMOM programs. -MNGWPD requires its members to have a sewer system inspection and maintenance program which includes training: http://www.northgeorgiawater.com/html/173.htm -EPA CMOM fact sheets: http://cfpub.epa.gov/npdes/sso/featuredinfo.cfm	Medium

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER QUALITY						
Number	**Category**	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
27	Agricultural Practices	Nutrient management programs	-Apply nutrients at rates that are used by plants to avoid excessive nutrient runoff -Typically developed for row crops -Includes animal waste management	These program can save the farmer money by avoiding the use of excessive fertilizer. Cost share money can be used for this practice.	EPA's Watershed Academy includes an agriculture module with nutrient management practices: http://cfpub.epa.gov/watertrain/moduleFrame.cfm?module_id=33&parent_object_id=1362&object_id=1362	Medium
28	Agricultural Practices	Cropland management practices	Crop practices include: -conservation tillage -cover crops -field borders -riparian forested buffers -land conversion (crop to forest) -strip cropping	These practices reduce soil erosion; also have added benefit of higher amounts of rainfall infiltratration, thus reducing irrigation needs. Cost share money can be used for this practice.	EPA's Watershed Academy includes an agriculture module with crop management practices: http://cfpub.epa.gov/watertrain/moduleFrame.cfm?module_id=33&parent_object_id=1362&object_id=1362	Medium
29	Agricultural Practices	Forestry management practices	Practices include: -Continued implementation of Georgia Forestry Commission BMP manual	This is good example of education program that is effective. Foresters who do not follow practices are red flagged; those who are red flagged have trouble finding buyers for their wood.	The Georgia Forestry Commission educates the forest industry about practices to protect water quality and promotes management practices. http://www.gfc.state.ga.us/ForestManagement/bmp.cfm	Medium
30	Erosion and Sediment Control	Construction erosion and sediment control	-Practices to reduce runoff from construction sites when a given threshold of land is disturbed -May need to develop compliance and enforcement for existing programs -Training program for contractors who implement erosion and sediment control programs	Local governments would need to review erosion and sediment control ordinance and provide adequate implementation. Local governments could also require pre-construction conferences to minimize site disturbance and the time of disturbance through project phasing on large projects.	The Georgia Erosion and Sedimentation Act and GAEPD rules regarding erosion and sediment control are located at: http://www.gaepd.org/Documents/rules_exist.html	Low

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER QUALITY						
Number	**Category**	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
31	Stormwater	Post-development stormwater management	-Implement post development stormwater controls for new development and redevelopment areas to address hydrology and water quality	Local governments would need to develop an ordinance and implement the program. Existing design standards in the GA Stormwater Management Manual could be used for reference. Staff would need to be trained in reviewing development plans.	Georgia Stormwater Management Manual can be downloaded at: http://www.georgiastormwater.com/ EPA fact sheet can be downloaded at: http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm	Medium
32	Stormwater	General stormwater practices	Practices include: - elements to minimize stormwater runoff through site planning (conservation subdivisions and other practices) and land use planning -stormwater system inventory and maintenance -preventing pollutants from reaching stormwater systems through good house keeping or illicit discharge detection programs -public education -capital programs to develop BMPs, regional ponds, and other watershed practices	MS4 compliance programs would typically include these stormwater management measures. Implementation would be based on population or development density	EPA fact sheets can be downloaded at: http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm	Medium

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER QUALITY						
Number	**Category**	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
33	Riparian Buffers	Stream buffer protection	-Practice in which a vegetated (often forested) corridor is left along side streams -Buffers protect habitat and filter pollutants	Local governments may wish to require buffers (or wider buffers) in environmentally sensitive areas. This could be accomplished by zoning (zoning areas where they wish to minimize development in buffer as conservation areas), floodplain protection (in large stream or in lower part of watershed, floodplain may be wider than recommended buffers), and incentives (providing density bonuses for developers who implement them).	-Model ordinances are reviewed by Etowah Initiative at: www.etowahhcp.org/research/.../tech_rpt_stream_buffers_4-30-07.pdf -MNGWPD model ordinance at: http://www.northgeorgiawater.com/html/86.htm	Medium
34	Floodplain Protection	Floodplain management/ flood damage prevention - existing floodplains	-Site plan review practices to prohibit or minimize development in the floodplain	Local governments would develop ordinances to prohibit development in the floodplain. This minimizes the risk for downstream flooding, protects property, and protects public health and safety. Plan reviewers would need training in reviewing site plans.	MNGWPD model ordinance at: http://www.northgeorgiawater.com/html/86.htm	Medium

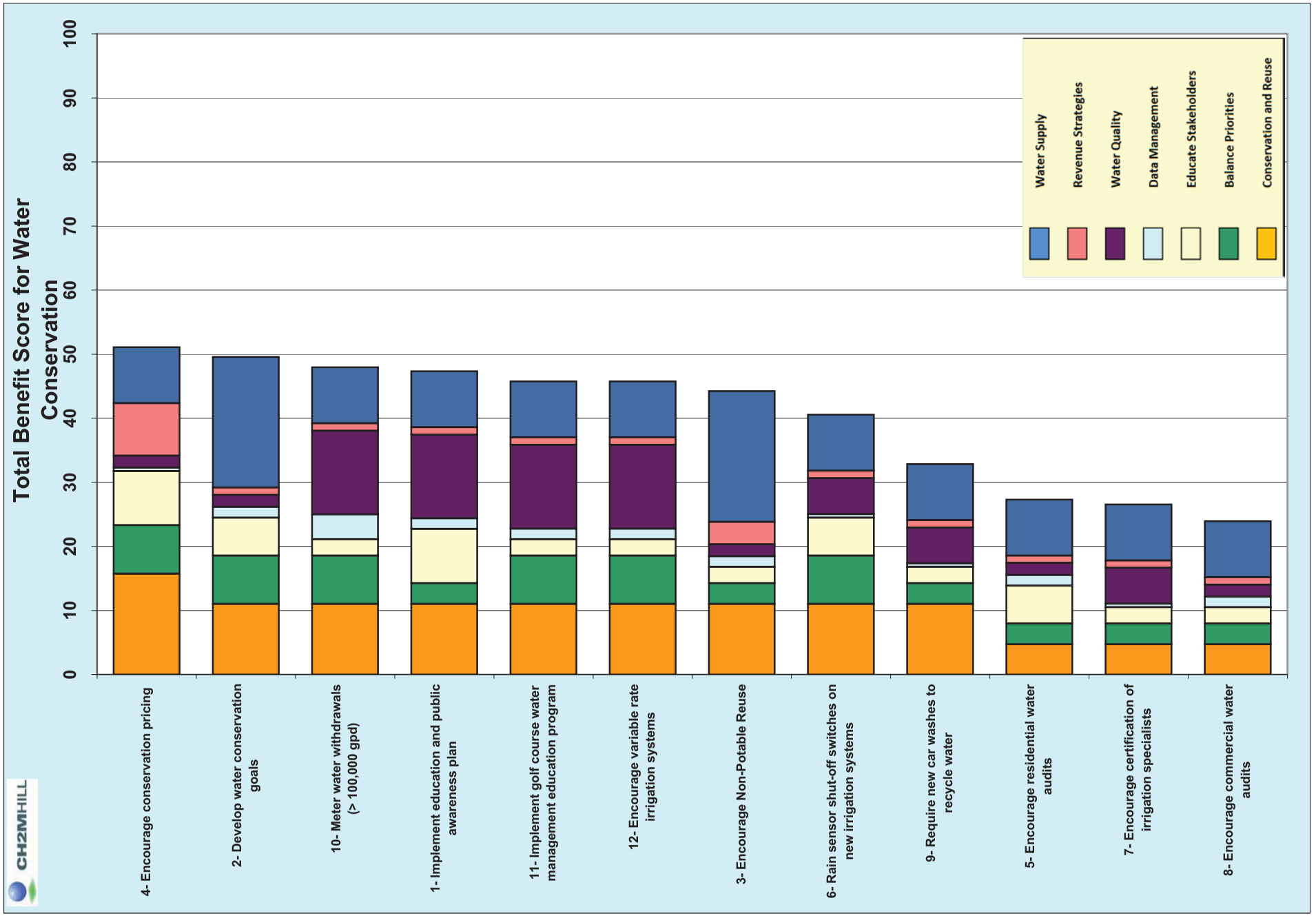
UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER QUALITY						
Number	**Category**	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
35	Land Use Planning	Comprehensive land use planning and zoning	-Land use planning and zoning can be used to encourage development in certain areas and discourage development in environmentally sensitive areas -Open Space planning and Acquisition - protecting Open Space along riparian corridors, wetlands, groundwater recharge areas can help protect water resources -Compliance with Part V. environmental criteria	Local planning departments would identify environmentally sensitive areas where they may have lower allowable density or prioritize for open space when funding is available.	-MNGWPD has model conservation subdivision ordinance at: http://www.northgeorgiawater.com/html/86.htm -University of Georgia's School of Environmental Design prepared paper on land development practices which protect water quality: http://www.uga.edu/coastalnemo/Documents/Literature/landdevelopmenttoprotectwaterquality.pdf	Low
36	Other Practices	Total maximum daily load (TMDL) management	Evaluate existing impaired waters, investigating potential pollutant sources, and participating in the TMDL development and implementation planning process; comply with TMDLs	GA EPD develops TMDLs; local governments could provide data collected through their monitoring programs and information on potential sources. Local governments and public utilities would develop programs to comply with the TMDLs.	-Information about the requirements of the Clean Water Act can be found on EPA's website at: http://www.epa.gov/owow/tmdl/intro.html -Georgia TMDLs downloaded at: http://www.georgiaepd.org/Documents/techguide_wpb.html#tmdl	Medium
37	Other Practices	Water quality credit trading	-Develop point-to-point trading -Develop nonpoint-to-point trading	Trading programs enable pollutant sources that can achieve pollutant reductions more cost-effectively to create credits which can be sold to other pollutant sources. Trading can result in water quality being improved more cost effectively than under a traditional approach.	Basic information on water quality credit trading can be found on EPA's website at: http://www.epa.gov/owow/watershed/trading.htm	Medium

UPPER OCONEE POTENTIAL MANAGEMENT PRACTICE- WATER QUALITY						
Number	**Category**	**Practice**	**Description**	**Comments**	**References**	**Relative Cost**
38	Monitoring	Long-term ambient trend monitoring	-Monitoring would include long-term water quality, habitat, and biological -Long term monitoring can help watershed stakeholders evaluate whether watershed practices are working -Implement consistent, equitable monitoring across the basin	Monitoring could be conducted more efficiently on a regional basis than through each individual local government. GA EPD should clarify how it uses the data, and what changes would be needed for them to use in its biennial water assessments required by the Clean Water Act and in its TMDLs. Needs to be performed by a neutral party using consistent protocols.	Information on how to submit data to EPD for its 303(d) list of impaired waters is found at: http://www.georgiaepd.org/Documents/techguide_wpb.html#fiqa	Medium

Appendix D- Final Benefit Scores

Water Conservation Ranked by Total Benefit

Appendix D



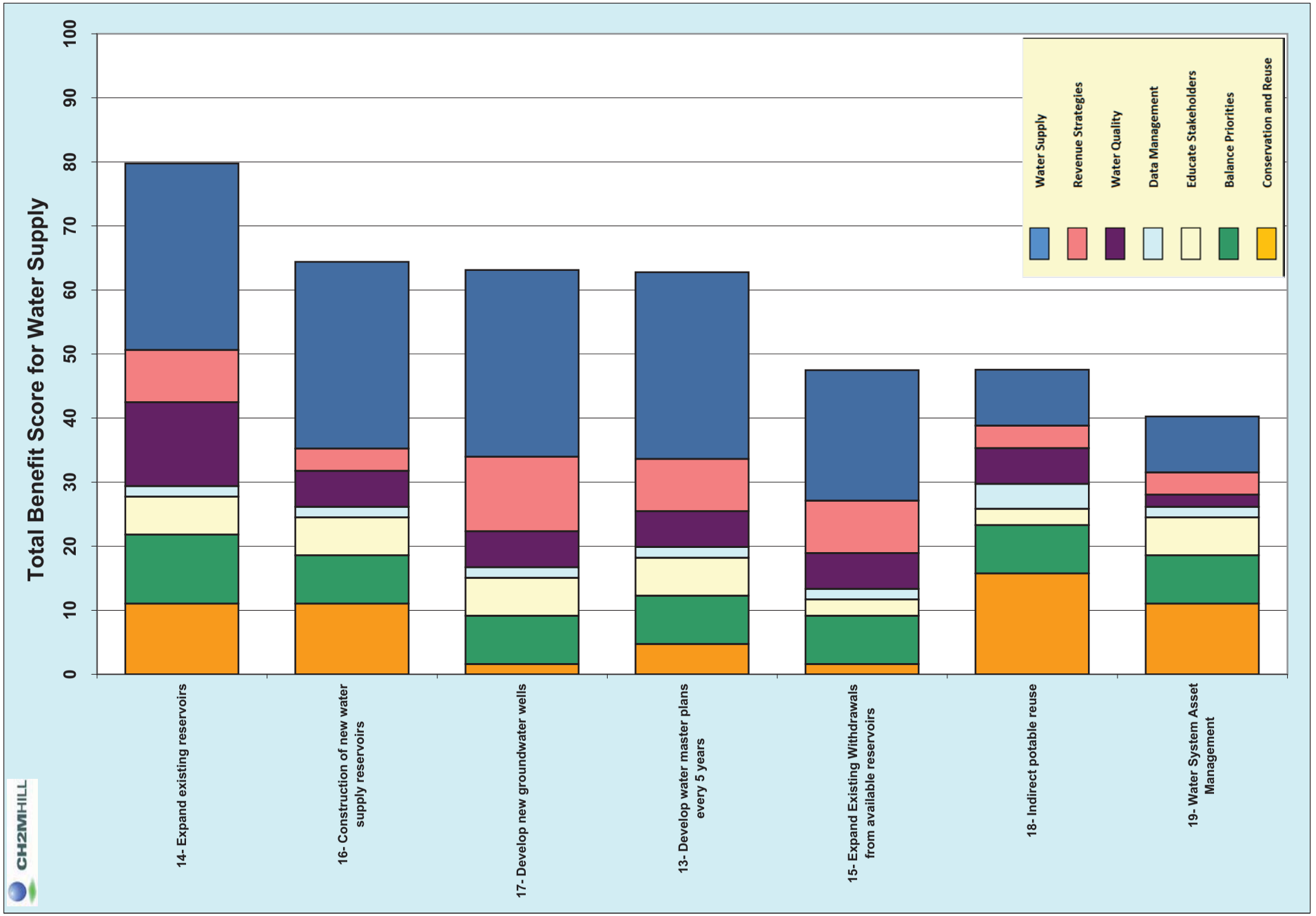
Appendix D

Upper Oconee Prioritization Scoring

Number	Practices	Category	Sector	CR	BP	ES	DM	WQ	RS	WS	Total Benefit	Relative Cost	Comment
4	Encourage conservation pricing	Water Conservation	Residential	10	7	10	1	1	7	3	51.07	Low	
2	Develop water conservation goals	Water Conservation	All	7	7	7	3	1	1	7	49.59	Low	
10	Meter water withdrawals (> 100,000 gpd)	Water Conservation	Agriculture	7	7	3	7	7	1	3	47.96	Medium	
1	Implement education and public awareness plan	Water Conservation	All	7	3	10	3	7	1	3	47.34	Low	
11	Implement golf course water management education program	Water Conservation	Agriculture/ Golf Courses	7	7	3	3	7	1	3	45.74	Medium	
12	Encourage variable rate irrigation systems	Water Conservation	Agriculture	7	7	3	3	7	1	3	45.74	High	
3	Encourage Non-Potable Reuse	Water Conservation	Institutional	7	3	3	3	1	3	7	44.22	Medium	
6	Rain sensor shut-off switches on new irrigation systems	Water Conservation	Residential	7	7	7	1	3	1	3	40.55	Low	
9	Require new car washes to recycle water	Water Conservation	Commercial	7	3	3	1	3	1	3	32.85	Low	
5	Encourage residential water audits	Water Conservation	Residential	3	3	7	3	1	1	3	27.31	Low	
7	Encourage certification of irrigation specialists	Water Conservation	Commercial	3	3	3	1	3	1	3	26.56	Low	
8	Encourage commercial water audits	Water Conservation	Commercial	3	3	3	3	1	1	3	23.93	Low	

Water Supply Ranked by Total Benefit

Appendix D



Appendix D

Upper Oconee Prioritization Scoring

Number	Practices	Category	Sector	CR	BP	ES	DM	WQ	RS	WS	Total Benefit	Relative Cost	Comment
14	Expand existing reservoirs	Water Supply	None	7	10	7	3	7	7	10	79.76	Medium	
16	Construction of new water supply reservoirs	Water Supply	None	7	7	7	3	3	3	10	64.39	High	
17	Develop new groundwater wells	Water Supply	None	1	7	7	3	3	10	10	63.11	Medium	
13	Develop water master plans every 5 years	Water Supply	None	3	7	7	3	3	7	10	62.76	Low	
18	Indirect potable reuse	Water Supply	None	10	7	3	7	3	3	3	47.55	Medium	
15	Expand Existing Withdrawals from available reservoirs	Water Supply	None	1	7	3	3	3	7	7	47.49	Medium	
19	Water System Asset Management	Water Supply	None	7	7	7	3	1	3	3	40.26	Medium	

Wastewater Ranked by Total Benefit

Appendix D

09-09-10

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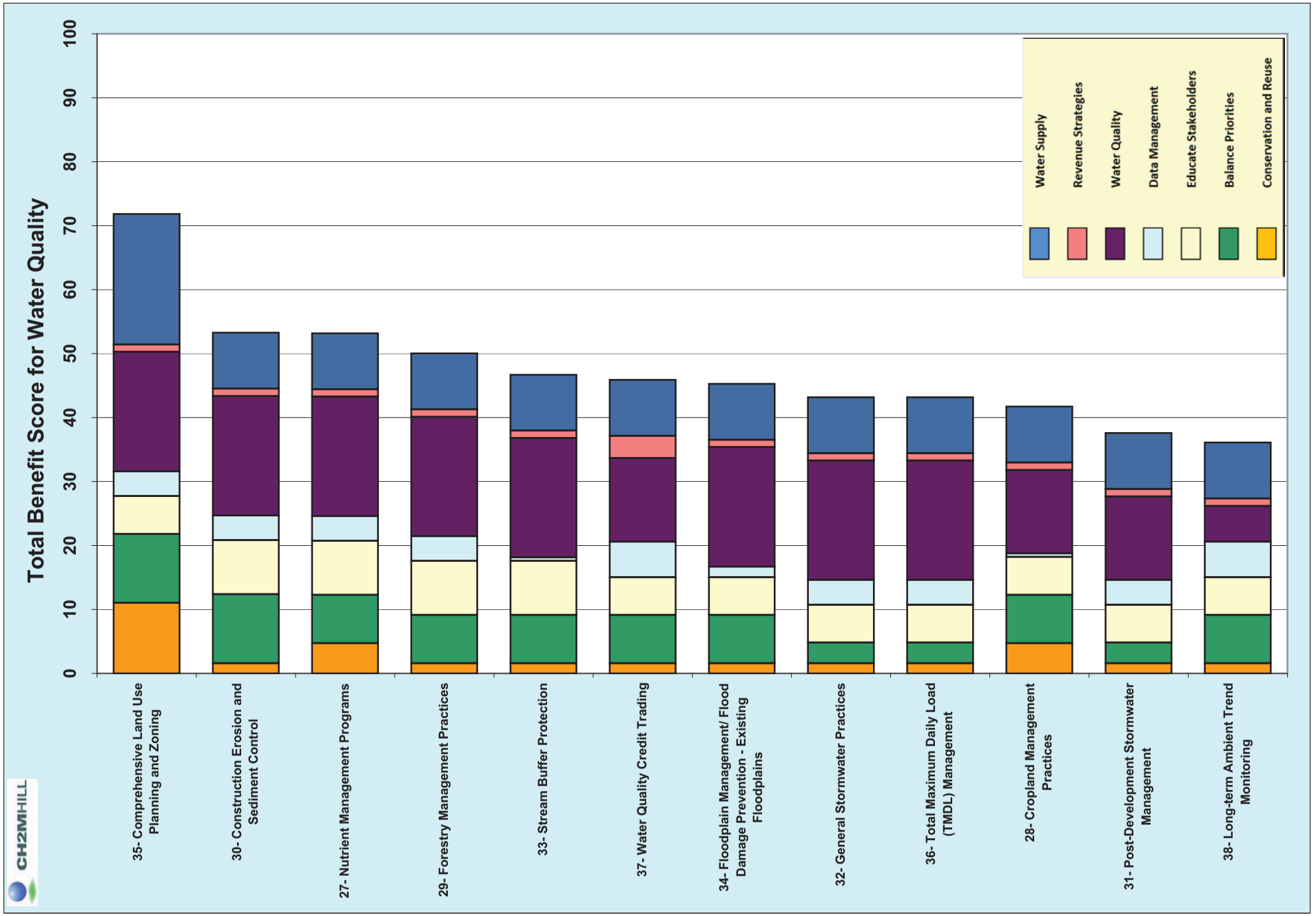
Appendix D

Upper Oconee Prioritization Scoring

Number	Practices	Category	Sector	CR	BP	ES	DM	WQ	RS	WS	Total Benefit	Relative Cost	Comment
21	Implement centralized sewer in developing areas where density requires it	Wastewater	None	3	7	7	7	10	7	7	69.30	Medium	
20	Evaluate wastewater treatment and disposal options to meet future demands/Develop local wastewater master plans	Wastewater	None	3	7	7	3	7	7	7	61.48	Low	
23	Develop recommendations for decentralized sewer system	Wastewater	None	3	7	3	3	10	3	3	47.38	Low	
25	Septic system planning and management	Wastewater	None	1	7	10	1	10	1	3	46.70	Low	
26	Develop and implement sewer system capacity, management, operation and maintenance (CMOM) program	Wastewater	None	1	7	3	7	7	3	3	40.85	Medium	
24	Provide local government with acceptable parameters for septage disposal at facilities	Wastewater	None	1	3	7	7	7	3	3	39.91	Low	
22	Grease management program	Wastewater	None	1	3	7	3	7	3	1	31.86	Low	

Appendix D


Total Benefit Score for Water Quality
0
10
20
30
40
50
60
70
80
90
100
Water Supply
Revenue Strategies
Water Quality
Data Management
Educate Stakeholders
Balance Priorities
Conservation and Reuse
35- Comprehensive Land Use Planning and Zoning
30- Construction Erosion and Sediment Control
27- Nutrient Management Programs
29- Forestry Management Practices
33- Stream Buffer Protection
37- Water Quality Credit Trading
34- Floodplain Management/ Flood Damage Prevention - Existing Floodplains
32- General Stormwater Practices
36- Total Maximum Daily Load (TMDL) Management
28- Cropland Management Practices
31- Post-Development Stormwater Management
38- Long-term Ambient Trend Monitoring
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Appendix D

Upper Oconee Prioritization Scoring

Number	Practices	Category	Sector	CR	BP	ES	DM	WQ	RS	WS	Total Benefit	Relative Cost	Comment
35	Comprehensive Land Use Planning and Zoning	Water Quality	Land Use Planning	7	10	7	7	10	1	7	71.83	Low	
30	Construction Erosion and Sediment Control	Water Quality	Erosion and Sediment Control	1	10	10	7	10	1	3	53.26	Low	
27	Nutrient Management Programs	Water Quality	Agricultural Practices	3	7	10	7	10	1	3	53.17	Medium	
29	Forestry Management Practices	Water Quality	Agricultural Practices	1	7	10	7	10	1	3	50.03	Medium	
33	Stream Buffer Protection	Water Quality	Riparian Buffers	1	7	10	1	10	1	3	46.70	Medium	
37	Water Quality Credit Trading	Water Quality	Other Practices	1	7	7	10	7	3	3	45.89	Medium	
34	Floodplain Management/ Flood Damage Prevention - Existing Floodplains	Water Quality	Floodplain Protection	1	7	7	3	10	1	3	45.28	Medium	
32	General Stormwater Practices	Water Quality	Stormwater	1	3	7	7	10	1	3	43.18	Medium	
36	Total Maximum Daily Load (TMDL) Management	Water Quality	Other Practices	1	3	7	7	10	1	3	43.18	Medium	
28	Cropland Management Practices	Water Quality	Agricultural Practices	3	7	7	1	7	1	3	41.72	Medium	
31	Post-Development Stormwater Management	Water Quality	Stormwater	1	3	7	7	7	1	3	37.58	Medium	
38	Long-term Ambient Trend Monitoring	Water Quality	Monitoring	1	7	7	10	3	1	3	36.09	Medium	

Appendix E- Accepted Management Practices

Upper Oconee WPC- Management Practices "Strawman"

Number	Category	Sector	Practices	Total Benefit	Upper	Central	Lower
1	Water Conservation	All	Implement education and public awareness plan	47.34	✓	✓	✓
2	Water Conservation	All	Develop water conservation goals	49.59	✓	✓	✓
3	Water Conservation	Institutional	Encourage Non-Potable Reuse	44.22	✓	✓	✓
4	Water Conservation	Residential	Encourage conservation pricing	51.07	✓	✓	✓
5	Water Conservation	Residential	Encourage residential water audits	27.31	✓	✓	✓
6	Water Conservation	Residential	Rain sensor shut-off switches on new irrigation systems	40.55	✓	✓	✓
7	Water Conservation	Commercial	Encourage certification of irrigation specialists	26.56	✓	✓	✓
8	Water Conservation	Commercial	Encourage commercial water audits	23.93	✓	✓	✓
9	Water Conservation	Commercial	Require new car washes to recycle water	32.85	✓	✓	✓
10	Water Conservation	Agriculture	Meter water withdrawals (> 100,000 gpd)	47.96	✓	✓	✓
11	Water Conservation	Agriculture/ Golf Courses	Implement golf course water management education program	45.74	✓	✓	✓
12	Water Conservation	Agriculture	Encourage variable rate irrigation systems	45.74	✓	✓	✓
13	Water Supply	None	Develop water master plans every 5 years	62.76	✓	✓	✓
14	Water Supply	None	Expand existing reservoirs	79.76	✓	✓	✓
15	Water Supply	None	Expand Existing Withdrawals from available reservoirs	47.49	✓	✓	✓
16	Water Supply	None	Construction of new water supply reservoirs	64.39	✓	✓	✓
17	Water Supply	None	Develop new groundwater wells	63.11	✓	✓	✓
18	Water Supply	None	Indirect potable reuse	47.55	✓	✓	✓
19	Water Supply	None	Water System Asset Management	40.26	✓	✓	✓

Upper Oconee WPC- Management Practices "Strawman"

Number	Category	Sector	Practices	Total Benefit	Upper	Central	Lower
20	Wastewater	None	Evaluate wastewater treatment and disposal options to meet future demands/Develop local wastewater master plans	61.48	✓	✓	✓
21	Wastewater	None	Implement centralized sewer in developing areas where density requires it	69.30	✓	✓	✓
22	Wastewater	None	Grease management program	31.86	✓	✓	✓
23	Wastewater	None	Develop recommendations for decentralized sewer system	47.38	✓	✓	✓
24	Wastewater	None	Provide local government with acceptable parameters for septage disposal at facilities	39.91	✓	✓	✓
25	Wastewater	None	Septic system planning and management	46.70	✓	✓	✓
26	Wastewater	None	Develop and implement sewer system capacity, management, operation and maintenance (CMOM) program	40.85	✓	✓	✓
27	Water Quality	Agricultural Practices	Nutrient Management Programs	53.17	✓	✓	✓
28	Water Quality	Agricultural Practices	Cropland Management Practices	41.72	✓	✓	✓
29	Water Quality	Agricultural Practices	Forestry Management Practices	50.03	✓	✓	✓
30	Water Quality	Erosion and Sediment Control	Construction Erosion and Sediment Control	53.26	✓	✓	✓
31	Water Quality	Stormwater	Post-Development Stormwater Management	37.58	✓	✓	✓
32	Water Quality	Stormwater	General Stormwater Practices	43.18	✓	✓	✓
33	Water Quality	Riparian Buffers	Stream Buffer Protection	46.70	✓	✓	✓
34	Water Quality	Floodplain Protection	Floodplain Management/ Flood Damage Prevention - Existing Floodplains	45.28	✓	✓	✓
35	Water Quality	Land Use Planning	Comprehensive Land Use Planning and Zoning	71.83	✓	✓	✓
36	Water Quality	Other Practices	Total Maximum Daily Load (TMDL) Management	43.18	✓	✓	✓
37	Water Quality	Other Practices	Water Quality Credit Trading	45.89	✓	✓	✓
38	Water Quality	Monitoring	Long-term Ambient Trend Monitoring	36.09	✓	✓	✓