

Section 9: LOCAL WATER PLANNING

This Water Supply and Water Conservation Management Plan is regional in breadth, looking holistically at regional issues. The action items in this Section are intended to be refined at the local level by the affected local water providers through local water master plans. A local water master plan typically evaluates local system current and future demands, as well as resources and facilities. They also typically recommend solutions to address the development of sources and the design, construction, and financing of facilities in order to meet anticipated regulatory requirements, residential and commercial growth and system reliability needs. Local water master plans are important for providing a dependable water service to existing and future customers.

Local water master plans, at a minimum, must conform to the goals of the Metro Water District's Water Supply and Water Conservation Management Plan to ensure that customer service goals are cost effectively met with a long-term regional perspective. The following Section discusses the actions required that are associated with local water master plans.

ACTION ITEM 9.1 – DEVELOP LOCAL WATER MASTER PLANS

ACTION ITEM

Develop a local water master plan that reflects available water sources, water source development, water treatment facility and/or water distribution system improvement needs based on future water demands.

OBJECTIVE

The objective of this measure is plan for future water supply, treatment and distribution needs in a manner consistent with this regional Water Supply and Water Conservation Management Plan.

DESCRIPTION OF MEASURE

The local water master plan (also called water management plan) will identify future demands, supply sources, water service areas, treatment facility needs and distribution system extensions and expansions to support proposed infrastructure improvements to the local water system. As part of the next regularly scheduled local plan update to existing water master plans, in some cases, revisions may be necessary to be consistent with Metro Water District Plans.

The master plans should have a minimum planning horizon of 30 years. To remain current and relevant, water master plans should be updated every 5 years, at a minimum. Recognizing that water master plans are “living documents,” local water providers should consult master plans when making critical infrastructure decisions and update these plans as necessary to address changing local conditions.

At times, water master plans will need to be amended to address proposed inter-jurisdictional projects. These master plan amendments should be developed in cooperation with all affected jurisdictions. These jurisdictions include the county, cities within the county, neighboring counties and local water providers. All inter-jurisdictional projects should be in compliance with O.C.G.A § 36-70-20, the Service Delivery Act.

Local water providers have flexibility in the development of their local water master plan, as a large system will likely have a more detailed master plan than a smaller system. Typically, water master plans include the following elements:

- **Introduction** – describes the planning period, program objectives, regulatory framework and key stakeholders involved in the planning process.
- **City/County Characteristics & Demographics** – describes the population, land use, physical and biological characteristics of the area including water quality, topography, wetlands, water resources and protected species.
- **Inventory & Evaluation of Existing Water System** – identifies the existing water sources and service areas and analyzes the local water distribution system, including hydraulic capacity, as well as water treatment capabilities, including optional analyses of water treatment processes and the identification of problems with treatment processes.

Responsible Party

- Local Water Provider
- Other: _____

In Coordination With

- Neighboring water providers (where appropriate)
- Local Wastewater Providers
- Local Stormwater Program
- Georgia EPD
- Community Development/ Zoning
- Other: _____

- **Future Water Demand Projections** – projects future water demands based on demographic projections, conservation, anticipated reuse, future land use, and the projected water service area boundary. Future demands should consider emergency supply needs and any additional interconnections with other local water providers.
- **Future Water Source, Distribution & Treatment Alternatives** – create water system alternatives for future extensions and demands with a recommended solution for new or expanded supply sources, treatment alternatives, system interconnections, and distribution system maintenance or capital needs.
- **Implementation of Recommended Alternative** – describes the recommended alternative, including a high level overview of the potential environmental impacts, required permits, institutional impacts, estimated costs and a capital improvements phasing plan associated with the recommended alternative.

OTHER CONSIDERATIONS

Additional elements that must be considered during the development of local water master plans include:

- Source water supply watershed or wellhead protection areas
- Water reuse management
- Consumptive use targets
- Interbasin transfers
- Interconnections facilities
- Cross-connection program
- Drought and emergency plans

The local master plans will refine the water treatment plant expansion details outlined in Section 8 and Appendix B of this Water Supply and Water Conservation Management Plan. Local water providers will develop water treatment expansion master plans that define the number, location, and capacities of water treatment facilities, and their implementation schedule. A life cycle cost analysis can be used to compare different expansion scenarios. Water treatment technologies, residuals handling, and management issues also will be included as part of this master planning.

Local water master plans must also be consistent with the Comprehensive State-wide Water Management Plan, which encourages integrated and sustainable water resources management. Local water master plans may be coordinated with local wastewater master plans and the Metro Water District's Wastewater Management Plan, as well as local watershed studies and plans, such as watershed assessments, watershed protection plans and the Metro Water District's Watershed Management Plan. Coordination on source water protection issues is required in the Metro Water District's Watershed Management Plan. Additionally, water master plans may coordinate ongoing monitoring requirements with the requirements of other local plans to maximize the benefit for the local investment.

SPECIFIC SUB-TASKS

Sub-Task	Description
Create and utilize a local water master plan with a 30 year planning horizon	Create and consult local water master plan when making critical infrastructure decisions. The master plan should outline future system expansions and capital projects.
Update local water master plan	Update local water master plans every five years, remaining consistent with regional and state requirements. The water master plan should include additional implementation details beyond the breadth included in this Plan.

ACTION ITEM 9.2 – DEVELOP OR UPDATE LOCAL EMERGENCY WATER PLANS

ACTION ITEM

Each water system must develop or update their written emergency water supply plan to include sufficient emergency water supply sources and detailed steps required to modify system operations in order to accept or share water with adjacent water providers.

Review interconnection reliability targets to estimate minimum water supplies for reliability, efficiency and emergencies.

OBJECTIVE

The objective of this measure is to ensure all local water providers in the Metro Water District are prepared for potential water emergencies by having an up-to-date emergency water supply plan.

Responsible Party

- Local Water Provider
- Other: _____

In Coordination With

- Neighboring water providers (where appropriate)
- Local Wastewater Providers
- Local Stormwater Program
- Georgia EPD
- Community Development/ Zoning
- Other: _____

DESCRIPTION OF MEASURE

Having a detailed emergency water supply plan in place is an essential component of compliance with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. Having an emergency plan in place is also crucial during droughts when systems may be forced to rely on neighboring local water providers for additional water supply.

When sufficient storage is not available for purposes of reliability, the local water provider should establish interconnections with neighboring communities. A District-wide Interconnection Reliability Target (IRT) is a goal for emergency needs. Depending on the water supply source, the IRT for each water system should be defined as in Table 9-1. Approximately 35 percent of the annual average daily demand (AAD) is estimated for meeting “emergency water needs”, including eating, drinking, toilet flushing, fire fighting and hospital use. Communities served by smaller water sources must identify connections to achieve either 35 percent of AAD demand in interconnections or another local target as appropriate for the system. Communities served by major water supply sources (Lake Lanier, Allatoona Lake, Chattahoochee River, and Etowah River), typically have more than one treatment facility and therefore do not need to provide connections for 35 percent of the total AAD demand, as shown in Table 9-1.

TABLE 9-1
Recommended Formula for Calculating Water System Interconnection Reliability Target (IRT)

Water Supply Source	Interconnection Reliability Target Formula
Lake Lanier Allatoona Lake Chattahoochee River Etowah River	$(35\% \times \text{AAD}) - (\text{Total WTP capacity} - \text{Largest WTP capacity})$
Other smaller water supply sources	$35\% \times [\text{AAD}]$

AAD = Average Annual Day

Each water system will need to define its own IRT and evaluate other factors affecting water system reliability, including raw and finished water storage, infrastructure conditions, equipment redundancy, and existing interconnection capability. Detailed hydraulic studies should be conducted for each county and each water system to determine the overall distribution system improvements that are required to meet projected 2035 demands. The pipe sizes, approximate locations and lengths for potential interconnections should be refined by the hydraulic evaluations. The actual location, pipe size, length and alignment of the future interconnections, pumping or pressure reducing arrangements at the desired location should be determined as part of detailed design. Each water system should evaluate the feasibility and cost-effectiveness of providing multi-directional flows at existing and future interconnections with a pipe diameter greater than or equal to 12 inches. Each water system should improve and continuously update its inventory of distribution system components, including location and size of pipes, valves, and storage facilities. An updated inventory, including good system maps, will be beneficial in locating future interconnection locations and addressing other system maintenance problems such as pipe breaks and leaks. The distribution system maps can be incorporated into a Geographical Information System format currently used by many water systems in the Metro Water District.

Local Considerations

The local emergency water plan should include what steps must be taken to receive water from an adjacent utility or to provide water to another utility. Existing drought contingency plans should be revised to coordinate water conservation measures with emergency water plans.

For the receiving local water provider, these steps may include defining: 1) sub-areas within water systems that can be served by other utilities; 2) valving, piping, and pumping changes for flow reversal in the sub-area during the water sharing period; and 3) public notice/media announcement requirements for additional water conservation and potential water quality changes.

For the supplying local water provider, these steps may include: 1) pumping and piping changes to supply the local water provider in need; and 2) public notice/media announcement requirements for additional water conservation.

Additional factors to take into consideration when establishing new interconnections between water systems or increasing flows through existing connections include the following:

Chemical Compatibility: In general, the critical chemical properties for the 38 publicly-owned WTPs in the Metro Water District are compatible with two exceptions. Both the DeKalb County Water System and the Cobb County-Marietta Water Authority maintain their finished water pH above 8.0 for corrosion control purposes. Systems connecting to either the DeKalb or Cobb systems for routine water sales will need to make significant adjustments to their treatment or operational practices as well as anticipate and have mitigation plans in place for exceeding the lead standard for drinking water. For emergency situations, these water quality differences are insignificant.

Treatment Requirements: A few water systems have large industrial water customers that require the hardness, iron, and manganese levels in treated water be below typical levels. These water systems may find it more cost-effective to invest in equipment redundancy and finished water storage facilities for day-to-day operational flexibility and reliability. Assuming industrial operations are halted during extreme emergencies, interconnections with utilities providing different finished water quality can still be used to meet the emergency needs.

Water Quality: Transferring water between local water providers will cause reversal of flow in some areas. These areas will likely experience short-term changes in the aesthetic qualities of the water caused by disturbance of sediment in the distribution pipes. This problem is primarily a nuisance; no health concerns are anticipated as long as the required disinfectant residual in the distribution system is maintained. A systematic flushing program can alleviate these short-term changes in water quality.

Operating Pressure: Systems with different operating pressures are not readily able to transfer water without modifications. For many of the existing interconnections, pumping stations or pressure reducing valves are required to adjust the pressure at the connection point. Water systems will need to evaluate the available water pressure at any potential connection point, to determine the specific requirements for transferring water from one system to another.

Impact on Water Withdrawal Permits: When a municipal water system applies for a water withdrawal permit from the Georgia EPD, the amount of water permitted is based on water supply needs and projected population growth for the water system's service area. If one system is providing water to another system on a routine basis, the Georgia EPD often includes Special Conditions to the permit, which may include the following:

- A certain agreed-upon amount of water between the two systems to be reserved as pass-through water from the supplying system to the receiving system is specified.
- Water withdrawal permit for the water provider acknowledges that it includes the receiving system's water supply allocation.
- Indication of whether or not this is a temporary transfer of the water supply allocation and the length of the agreement between the two systems is stated.
- If both water systems have existing water withdrawal permits, then modification of the permits for both systems is necessary to reflect an additional amount to the supplying system, assuming it has adequate treatment capacity. The receiving system's permit is reduced by the amount that is obtained from the supplying system.
- During emergency situations, Georgia EPD may allow permits to be amended to accommodate special needs.

SPECIFIC SUB-TASKS

Sub-Task	Description
Adopt a written emergency water supply plan	Develop, adopt and use a written plan that defines specific steps required to accept or share water in an emergency.
Assess the need for establishment and maintenance of service connections	Share existing regional water supplies where practicable.
If interconnections are needed, meet interconnection reliability targets	Ensure interconnections provided needed reliability, efficiency and emergency water supplies.
Update the emergency water supply plan	Update the plan as needed to remain viable during an emergency and remain consistent with this Plan.

ACTION ITEM 9.3 – SOURCE WATER SUPPLY WATERSHED PROTECTION

ACTION ITEM

Coordination between local governments and water providers on issues related to source water supply protection.

Adopt drinking water supply watershed buffers as required by Part V Environmental Planning Criteria.

Develop and implement inter-jurisdictional agreements as necessary.

OBJECTIVE

The objective of this measure is to protect the water quality and viability of drinking water supplies from nonpoint source pollution and spills of hazardous materials that could compromise drinking water quality.

Responsible Party
<input checked="" type="checkbox"/> Local Water Provider
<input type="checkbox"/> Other: _____
In Coordination With
<input type="checkbox"/> Neighboring water providers (where appropriate)
<input type="checkbox"/> Local Wastewater Providers
<input checked="" type="checkbox"/> Local Stormwater Program
<input type="checkbox"/> Georgia EPD
<input checked="" type="checkbox"/> Community Development/ Zoning
<input type="checkbox"/> Other: _____

DESCRIPTION OF MEASURE

Water supply watershed protection programs serve to protect water resources from contaminants, thereby effectively preserving the amount of water supply available. By limiting the amount of pollution that enters the water supply, local water providers can reduce the costs of treatment and help guarantee public health. The Metro Water District’s Watershed Management Plan outlines requirements for the protection of source water supply watersheds and establishes a coordination element between local water providers on water quality challenges in drinking water supply watersheds. Local water providers and local governments with source water supply watersheds within their jurisdictions are required to undertake these action items in order to protect these source water supplies.

SPECIFIC SUB-TASKS

Sub-Task	Description
Identify water supply watersheds	Identify water supply watersheds within the jurisdiction as well as priority issues and areas for watershed protection actions.
Adopt Environmental Planning Criteria	Local governments must adopt the Environmental Planning Criteria including adoption of drinking water supply watershed buffers in local ordinances.
Coordination on watershed protection	Water supply providers must coordinate at least annually with local governments to discuss local issues and priorities for water supply watershed protection as well as other challenges.

Part V Environmental Planning Criteria were developed by Georgia DNR and are enforced by the Georgia Department of Community Affairs (Georgia DCA) through the review of Comprehensive Land Use Plans. Related to drinking water protection, local governments are required to protect water supply watersheds and groundwater recharge areas within their jurisdictions. The planning criteria include buffer and lake management requirements intended to protect drinking water supplies. Local governments must adopt the stream buffers and other measures in compliance with the environmental planning criteria. The rules for source water supply watershed protection have recently changed, providing additional flexibility in the buffer requirements for small drinking water supply watersheds when communities adopt other measures to protect drinking water supplies.

Communities which are in compliance with the Georgia DCA's environmental planning criteria are in compliance with this requirement. New water supply sources planned or recommended in the Water Supply and Water Conservation Management Plan must be protected as they are formalized.

Source Water Assessment Plans (SWAPs): SWAPs were completed for public water systems as required by the Safe Drinking Water Act. The SWAPs include an assessment of the susceptibility of each drinking water supply watershed to sources of potential contamination and provide each supply watershed with a risk-based score. The SWAP plans may be a starting point for identification of potential parameters of concern.

Emergency Response Maps: Communities with source water supply watersheds and major transportation corridors may choose to provide emergency response personnel with maps outlining the source water supply watersheds. First responders to accidents, especially those with spills of hazardous materials, would be able to alert the appropriate water plant(s) of spills that the intake(s) can be shut down until the threat of pollution had passed. This measure should be coordinated with the Watershed Management Plan and the local water providers. It is recommended that maps show the emergency contact information for the water plant(s) associated with each source water supply watershed and that maps be laminated for field use by emergency responders.

Wellhead protection requirements are required under the SDWA based on 1986 amendments. Georgia EPD has established protection areas around drinking water supply wells that vary based on the local geology, well depth, and pumping rate. These wellhead protection areas are intended to help protect wells and springs used as sources of water supply for community public water systems from nearby pollution sources.

Coordination: Water suppliers must coordinate annually with all local governments with jurisdiction in the source water supply watershed to discuss any challenges or opportunities related to source water supply protection. Source water supply watershed challenges vary throughout the Metro Water District, therefore a one size-fits all solution is not advisable. Annual coordination meetings may include discussion of possible local actions based on the challenges and parameters of concern for the community.

ACTION ITEM 9.4 – WATER SYSTEM ASSET MANAGEMENT

ACTION ITEM

Develop an asset management program that ensures proper management of the water system.

OBJECTIVE

The objective of establishing a water system management program is to facilitate effective operation and maintenance of the system to ensure its proper functioning and to minimize the occurrence of water system leakage.

DESCRIPTION OF MEASURE

The condition of water infrastructure within the Metro Water District varies greatly from new systems in outlying counties to facilities over 100 years old in some of the most populous cities and counties. Aging water system infrastructure affects the safety, efficiency and reliability of the water system. Aging infrastructure can also cause financial challenges as operational funds are at risk, being diverted to cover emergency repair costs.

Asset management approaches to the maintenance of water infrastructure include managing and maintaining the system in a way that minimizes the lifecycle costs. Asset management for local water providers includes the regular inspections and maintenance from the source to the treatment facility through the distribution system up to the customer meters. Regular maintenance can extend the lifespan of the water system assets as well as prevent customer service interruptions.

SPECIFIC SUB-TASKS

Sub-Task	Description
Map water system assets	Develop a map of the distribution system and assets, either on paper or in a Geographic Information System (GIS) platform.
Develop a water system asset management program	Develop a written asset management program to inspect, maintain, and rehabilitate the local water system.
Coordinate asset management and leak detection programs	Coordinate the asset management program with the leak detection program discussed in Action Item 5.6.

Local water providers with smaller service areas may elect to compile asset information in paper maps. Most local water providers however will create a map of the system assets using GIS. The maps must at minimum include the location of water tanks, main distribution lines, water treatment facilities and fire hydrants. More detailed maps may include assets such as all water lines, meters, and valves. Regular maintenance of water system assets is recommended. Common elements of a water distribution system asset management program are outlined below.

<p>Responsible Party</p> <p><input checked="" type="checkbox"/> Local Water Provider</p> <p><input type="checkbox"/> Other: _____</p> <p>In Coordination With</p> <p><input type="checkbox"/> Neighboring water providers (where appropriate)</p> <p><input type="checkbox"/> Local Wastewater Providers</p> <p><input type="checkbox"/> Local Stormwater Program</p> <p><input type="checkbox"/> Georgia EPD</p> <p><input checked="" type="checkbox"/> Community Development/ Zoning</p> <p><input type="checkbox"/> Other: _____</p>

Cross connection control and backflow prevention – Backflow prevention devices are required to prevent water from a home or business from entering the public water supply through a reverse in flow caused by a pressure drop in the distribution system. Pressure drops that cause backflows could include water main breaks or fire fighting activities. Routine inspection of backflow devices, especially those that could lead to a cross-connection or hazardous materials entering the public water supply are common elements of an asset management program.

Water main and line repair/replacement – Waterlines have a finite lifespan therefore most asset management programs include a replacement schedule for pipelines based on age, material type, maintenance history, and criticality.

Storage tank maintenance – Most water tanks are made of steel and must be periodically painted to prevent corrosion. Other maintenance activities for water tanks may include replacing screens over vents and other points of access to insects, birds and rodents. Cell towers are often co-located with elevated water tanks and any structure adjacent to or attached to water tanks should be regularly inspected.

Pump maintenance – Maintenance of booster and other system pumps involves checking the pumps regularly for excessive vibration or noise, providing grease and lubrication regularly and checking the pumps bearings and packing glands.

Hydrant flushing – Water line flushing is performed to remove any accumulated sediments or other impurities which have been deposited in the pipe and improve the flow of water through the distribution system. Flushing is performed in conjunction with fire hydrant testing to reduce water wasting. Water mains may also be mechanically cleaned through the use of swabs or “pigs” which are devices that are pulled through a section of line that scrape the accumulated debris off the inside of the pipe. Dead end pipelines and those with low water pressure may need to be flushed more frequently for water quality purposes.

Valve maintenance – Water distribution system valves allow for the isolation of portions of the distribution system. Valves are critical if a water main breaks, as it allows the isolation of the break during the repair. Exercising the valves in the water distribution system can ensure their smooth operation if system isolation is needed for emergency purposes.