TOWARDS A SUSTAINABLE WATER FUTURE FOR HABERSHAM COUNTY

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Abstract Increasing population and demand for water supplies raise questions about the sustainability of Habersham County's water future. Growth projections by the Georgia Mountains Regional Development Center indicate that the population of the county will double in the next 20 years and nearly quadruple in the next 50 years. Based on current per capita consumption, and accounting for water conservation measures not yet in place, the 50 year Comprehensive Water Development Plan for the county anticipates the demand for an additional 19.2 million gallons per day (MGD) (annual average) by 2055.

Local surface water supplies are limited by Habersham's location in the headwaters of two major river basins. Approximately 80% of the land area of the county drains to the Chattahoochee River and 20% to the Savannah River. Additional withdrawals from Chattahoochee basin sources are unlikely without flow augmentation (reservoirs) to meet existing downstream allocations and provide for wastewater assimilative capacity. Savannah basin sources are also problematic. Most wastewater infrastructure and population centers in the county are in the Chattahoochee basin. Interbasin transfers from the Savannah would be discharged, via public sewer or septic systems, to the Chattahoochee. Local municipal groundwater supplies are also limited by geology and should not be counted on to meet the expected future demand.

Georgia's Statewide Water Plan has implications for water supply planning in the county. Habersham remains in the Coosa-North Georgia Water Planning Region after petitioning the Georgia Environmental Protection Division for a change to the Savannah-Upper Ogeechee Water Planning Region. It remains to be seen how regional water planning will be coordinated with downstream users in the Metro North Georgia Water Planning District (MNGWPD) and other planning regions.

Lack of available water supply will be a limiting factor for growth in Habersham County. Conservation and increased efficiency are imperatives if the county is to grow sustainably to meet the water demands of current and future residents.

BACKGROUND

Rapid population in Habersham County is expected to increase the demand for water supplies in coming years.

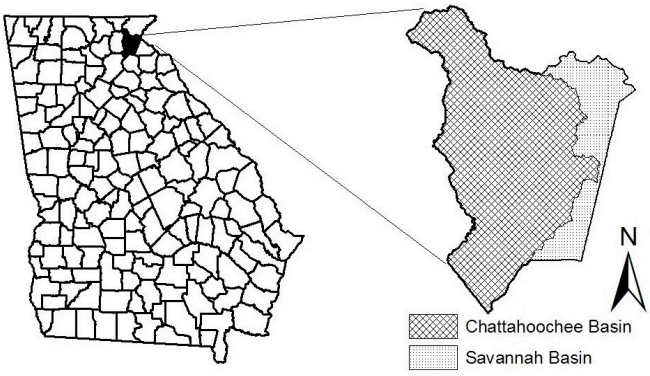

Figure 1. Location of Habersham County and 6 digit HUC basins

The Georgia Department of Community Affairs documented a 30% increase in the population of Habersham County between 1990 and 2000 (GADCA 2006). Growth estimates by the Georgia Mountains Regional Development Center forecast sustained growth over the next 45-50 years (HCCWDP 2006).

Table 1. Habersham County population projections

Year	Projected population
2005	39,603
2015	54,970
2025	75,001
2035	103,788
2045	125,201
2055	142,022

Meeting the increased water demands that accompany such population growth are complicated by several factors. First, municipal groundwater supply availability is unknown, but is generally considered limited due to underlying geology, soils, and groundwater hydrology. Also, the county is located in the

headwaters of two major river basins, the Chattahoochee and the Savannah. Surface water resources are limited by the small drainage areas of these watersheds.

Regulatory issues are problematic. Due to the ongoing interstate conflict over resource management of the Apalachicola-Chattahoochee-Flint River Basin (ACF), existing downstream allocations, and the need to maintain minimum flows for wastewater assimilation, substantial additional withdrawals from the Chattahoochee system are unlikely without flow augmentation in the form of reservoirs.

The framework of Georgia's Comprehensive Statewide Water Management Plan (CSWP) must also be considered in future water supply discussions. The CSWP puts forth guidance for future water resource management decisions impacting water quality, quantity, supply, and demand (GWC 2008).

WATER DEMAND

Peak demand for all municipal water supplies in Habersham County in 2005 was approximately 8.1 MGD. The current maximum estimated treatment capacity is 11.6 MGD (Table 2, GAEPD 2007). Faced with securing additional water supplies to meet anticipated future demands, Habersham County contracted out the Habersham County Comprehensive Water Development Plan (HCCWDP) to the engineering firm of Jordan, Jones, and Goulding. The plan includes demand projections and recommendations for short and long term alternatives to ensure adequate water supplies to meet those demands.

Based on estimates of water demand in the HCCWDP, current treatment capacity will be surpassed on peak days between 2010 and 2015 (Table 3; Figure 2). Capacity will be surpassed on average days between 2025 and 2030. Both of these instances account for anticipated demand reductions due to GAEPD requirements for water conservation that are not fully implemented at this time. The demand estimates without these conservation measures are even greater (HCCWDP 2006).

Table 2. Current peak day treatment capacity and source by municipality in the Chattahoochee Basin

Municipality	*Surface water (MGD)*	*Ground water (MGD)*
Alto	N/A	0.6
Baldwin	4.0	N/A
Clarkesville	1.5	N/A
Cornelia	4.0	N/A
Demorest	N/A	0.3
Habersham County	1.0*	N/A
Mount Airy	N/A	0.1
Tallulah Falls**	N/A	0.1
Total	**10.5**	**1.1**

***** *Habersham County has a 10 year contract to purchase up to 1.0 MGD from the City of Toccoa in the Savannah River Basin*

*** Tallulah Falls is in the Savannah River Basin*

Table 3. Habersham county total municipal water system demand

Year	*Annual Average Day (MGD)*	*Peak Day (MGD)*
2005	5.7	8.1
2015	7.7	11.8
2025	11.3	17.8
2035	16.6	26.8
2045	21.4	34.8
2055	24.9	40.6

Assuming the accuracy of these demand estimates, by 2035, Habersham County will need an additional 5.0 MGD on an average day and 15.2 MGD on a peak day more than the existing treatment capacity. By 2055, the increases are 13.3 MGD and 29.0 MGD respectively.

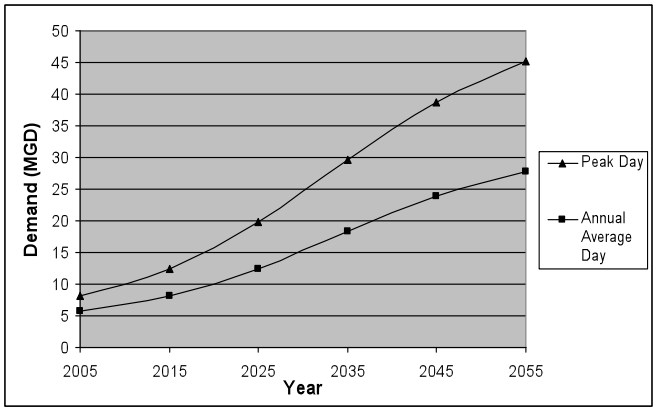

Figure 2. Habersham County water demand projections

Additionally, and not fully discussed here, municipal wastewater treatment capacity will need to be increased to keep up with water supply capacity. The current wastewater treatment capacity of all municipal systems in Habersham County, based on permitted average daily flow, is approximately 5.0 MGD (USEPA 2008).

SHORT TERM ALTERNATIVES

The only short term alternative deemed feasible in the HCCWDP, and in fact already implemented, is the purchase of treated water from the City of Toccoa. Habersham County has a 10 year contract (with an option for 10 additional years) to purchase up to 1.0 MGD. It was recommended that the transmission line from Toccoa be sized to accommodate additional volume pending future developments.

LONG TERM ALTERNATIVES

Three viable long term alternatives were recommended in the HCCWDP.

1. Increase treatment capacity at the City of Baldwin water plant and use Habersham Mills Lake for augmentation during periods of low flow.
2. Construct a new treatment plant, intake, and pump stations for water supply from Lake Yonah.
3. Work with the City of Toccoa to jointly expand treatment and pumping capacity to serve both areas

These alternatives have variable potential to meet long term water demand projections. The anticipated costs, associated regulatory issues, and potential obstacles to implementation also vary widely.

Option #1 is the cheapest and least able to meet long term demand, adding an additional 2.7 MGD of treatment capacity (enough to meet average daily demand until about 2030 or peak demand until about 2020). The estimated cost for land acquisition, new construction, and repairs and upgrades to the existing Baldwin treatment plant is $8.5 million (not including work on the distribution system).

The use of Habersham Mills Lake as a storage reservoir may also prove problematic. The lake is currently being dredged by the Habersham Mills Homeowners Association to increase the storage capacity. The upland erosion that resulted in the sediment deposition necessitating dredging must be addressed to ensure long term storage volume. There is also a point source discharge from a metal fasteners plant that has been in operation since the 1950's. While the facility operates within permit limits now (post Clean Water Act), it is unknown if any past contamination is present in lake bottom sediments.

Option #2 has the best potential to meet Habersham County's 50 year anticipated water demand. The regulatory and permitting process may prove complex, however. Multiple public and private agencies have jurisdiction, including GAEPD, Georgia Power, the U.S. Forest Service and municipal entities involved. The cost could be as high as $150 million.

The interbasin transfer (IBT) of water from Lake Yonah in the Savannah Basin, to water infrastructure in the Chattahoochee Basin in Habersham County, might be contested by downstream parties in Georgia and/or South Carolina. The CSWP calls for an integrated water policy that recognizes that "Georgia's water resources have capacities that govern their use," but allows for IBTs so that "capacities can be supplemented in a sustainable manner" provided protections are in place for other uses and users (GWC 2008). The allowable future allocations from within and outside the Chattahoochee Basin in Habersham County, governed by the CSWP, associated regional plans, and GAEPD will determine to a great extent if this option is truly viable.

Option #3 has an estimated cost somewhere between the first two (likely towards the higher end) and depends on continued cooperation with the City of Toccoa. Toccoa currently has two surface water withdrawal permits from Lake Yonah (6.0 MGD) and Lake Toccoa (9.0 MGD) (TSWAP 2003). Water demands for the Toccoa service area are currently approximately 4.2 MGD. Toccoa also sells water to Franklin County and is investigating sales of excess capacity to Banks County. The development of additional capacity funded jointly by Habersham County and the City of Toccoa would also require a new or modified withdrawal permit. At a minimum this would mandate a water conservation plan approved by the EPD Director, and a drought contingency plan and low flow protections (GAEPD 2008). It is unknown if this option will meet Habersham County's 50 year water demand and the future water demand of the City of Toccoa.

STATEWIDE WATER MANAGEMENT PLAN

The CSWP provides for meeting future water supply demands through a variety of options including; the construction of new reservoirs, future desalination projects, and IBTs that meet certain criteria. Newly constructed reservoirs in Habersham County are unlikely unless they are a part of a larger regional supply system. The cost will be high, and the process long. Desalination is not currently a viable option due to technological limitations and the proximity of Habersham County to the nearest body of salt water.

The CSWP allows for IBTs "in areas facing limitations," but recognizes that IBTs may have adverse impacts on donor basins. The CSWP calls for implementation of a process whereby the GAEPD Director "should consider" donor basin considerations (e.g.

number of downstream miles water is diverted from) and receiving basin considerations (e.g. wastewater treatment and receiving water assimilative capacity) when deciding whether to allow future IBTs (GWC 2008).

Another important component of the CSWP is the directive to complete regional planning for water resources. Habersham County was placed with fellow Upper Chattahoochee neighbors White and Lumpkin Counties in the Coosa-North Georgia Water Planning Region despite petitioning GAEPD for placement in the Savannah Ogeechee Water Planning Region. Habersham is also located adjacent to the 16 county MNGWPD. Downstream users in the Savannah Basin have expressed concerns in the past about IBTs to meet the water supply demands of Metro Atlanta. The Act that authorized the MNGWPD states that "the district shall neither study nor include in any plan any interbasin transfer of water from outside the district area" (O.C.G.A. 2001). The Habersham County Commission is on record as opposing inclusion in the MNGWPD. It would appear that under current law, IBTs from the Savannah Basin for Metro Atlanta are illegal. However, all IBTs from the Savannah to the Chattahoochee in Habersham County will be discharged via NPDES permitted facilities to surface water, or by onsite sewage disposal systems to groundwater, in the Chattahoochee Basin; a net gain for the Chattahoochee and Lake Lanier, the primary water supply for the City of Atlanta. Additionally, current law could be changed by the Georgia General Assembly to allow for IBTs from outside of in to the MNGWPD.

Increasing water conservation and efficiency are priorities according to the CSWP. Increasing available supply by decreasing demand will be vital to meeting Habersham County's future water needs. The CSWP calls for demand reducing practices including increased efficiency, consideration of graywater and other reuse, plumbing retrofit programs, and conservation rate structures. All of these suggestions and more must be a part of Habersham County's conservation program.

CONCLUSIONS

A sustainable water future for Habersham County will depend in great part on the development and implementation of regional plans under Georgia's Comprehensive Statewide Water Management Plan. It remains to be seen how multiple regional plans will be coordinated among river basins. For instance, the ACF Basin drains parts of 5 separate planning regions.

Many questions need to be addressed in this process. What is the capacity of the Savannah Basin to meet water supply demands in Habersham County while providing for wastewater assimilation and meeting the demands of downstream communities in Georgia and South Carolina? How will current excess permitted treatment capacity, like that which the City of Toccoa currently enjoys, hold up under increasing future demands? Where will the MNGWPD obtain future water supplies? Who will receive permits for additional withdrawals, allowing for continued economic development and growth, and who will not? How will Habersham County meet future water supply demands? The regional planning process, and the data coordination and additional monitoring recommended in the CSWP, may provide some insight into these and other questions.

It likely will be a difficult and expensive process to meet projected water demands in Habersham County over the next 50 years. The situation is not unique. Other municipalities in rapidly growing areas of Georgia that have long benefitted from "abundant" water supplies will be faced with very difficult decisions. These types of resource management allocation scenarios will play out increasingly across Georgia. All stakeholders, that is all citizens of Habersham County and the State of Georgia, must work within (and to improve) the system the CSWP puts forth. Implementing aggressive conservation programs and increasing efficient use of current and future water supplies will be paramount to securing a sustainable water future. Otherwise, economic and population growth will slow or cease as we meet our carrying capacity with regard to water resources.

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