

SUSTAINABLE WATER RESOURCES FOR GWINNETT COUNTY, GEORGIA

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Abstract. In the past years Gwinnett County water supply and treatment has grown from a few wells, a small intake on the river and a treatment plant to a current 225 million gallons a day of water production capacity and about 64 million gallons a day of wastewater treatment capacity. Sound planning for 50 years and regular coordination with the regulatory agencies, the public, upstream and downstream neighbors are the keys to water resources management for the future.

HISTORY

Gwinnett County's first water supply intake was on the Chattahoochee River near Duluth, Georgia. This intake was permitted for 10 million gallons per day (mgd) and the treatment plant was just north of the railroad near Buford Highway and Rogers Bridge Road. This plant served a small service area of Gwinnett County until the Lanier Filter Plant was built near Lake Lanier. Most of the cities in Gwinnett County such as Lawrenceville and Norcross had their own wells from which they supplied small in-city service areas. Many homeowners in rural areas also had wells that serve their homestead. These wells and the small intake on the river and the treatment plant served the area well until the growth started to accelerate.

The leaders in Gwinnett realized that the present system would not support the growth and had the foresight to get Lake Lanier established as the water supply for Gwinnett County and construct the Lanier Filter Plant as the primary water supply for the citizens of Gwinnett County. These leaders also had the foresight to set up the primary distribution system consisting of a loop around the western half of the county. At this time many of the homes were served by septic tanks.

As the growth continued, areas were developed and subdivisions with oxidation ponds were built to provide limited wastewater treatment for these new developments with sewer. Later larger areas were sewerred and package treatment plants treated wastewater with NPDES permits to small tributaries of the Yellow River or the

Chattahoochee River. Some of these package plants are still in operation today.

As growth continued, larger wastewater plants were constructed and the Lanier Filter Plant was expanded. The distribution system for potable water continued to be improved and expanded. The small sewer systems serving developments started to be connected and routed to the larger wastewater treatment facilities making obsolete the oxidation ponds and some of the smaller package plants.

PRESENT

Presently, Gwinnett County has about 64 mgd of wastewater treatment capacity and 225 mgd of water production capacity. Of this 64 mgd, 27 mgd is permitted to be discharged to the Ocmulgee Basin per existing NPDES permits and the remainder is discharged to the Chattahoochee River, land applied or contracted with other utilities such as DeKalb County and the City of Buford.

During 1996 to 1998 Gwinnett County developed a 50-year Water and Sewer Master Plan that outlined the water and sewer service for the County from then until projected build out (2050). The population projections used were the best available produced by Gwinnett County's Planning and Development Department. The plan envisioned the F. Wayne Hill Water Resources Center being built at 20 mgd with future expansion to 60 mgd. An NPDES permit was obtained from EPD for the initial 20 mgd to be discharged to the Chattahoochee River in combination with the 16 mgd Crooked Creek Plant 20 miles up I-85 at the intersection of I-85 and I-985.

The construction of the F. Wayne Hill Water Resources Center was started and the plant came on line in February, 2001. The Master Plan envisioned a new intake on Lake Lanier and a new water treatment plant across the road from the new intake with interconnections between both water treatment plants and both intakes for increased redundancy and reliability for the increasing population of the county and its contracted out of county customers.

The need for expansion of the wastewater treatment capacity was clear with the completion of the Master Plan and a discharge permit was issued to return 40 mgd of reclaimed water to Lake Lanier in November, 2000. As most everyone in Georgia knows this permit was appealed and the appeal was taken to the Georgia Supreme Court. The Court ruled in November 2004 and stipulated that the treatment levels provided in the permit were not as low as the Hill Plant was capable of producing and therefore the permit limits must be lowered.

Returning reclaimed water to Lake Lanier is a major step in Georgia to providing sustainable water resources. After studying the results of the 2000 census, it was apparent to Gwinnett County that the Water and Sewer Master Plan had to be revised because the population projections used in the 1998 Master Plan had understated the growth and therefore the demand curves for water supply and wastewater treatment needs had to be revised.

About the same time the Legislature passed the North Georgia Metropolitan Water Planning District (Water Planning District) with the directive to produce and Water Supply and Water Conservation Plan, A Wastewater Plan and a Watershed Protection Plan. Gwinnett revised its Water and Sewer Master Plan and closely coordinated with the Water Planning District to make sure that the independent planning efforts resulted in plans that were compatible.

Gwinnett County has a sub-continental divide going through it with about 26 percent of its 437 square miles draining to the Chattahoochee River Basin, 12 percent to the Oconee River Basin and the remaining 62 percent to the Ocmulgee Basin. This geographic location provides unique water resource issues since there are only three water bodies that have the ability to assimilate large volumes of highly treated reclaimed water. These are the Yellow River, Lake Lanier and the Chattahoochee River. As we all know, each location brings its own set of challenges and the potential for challenges by third parties including neighboring states.

However, Gwinnett and Georgia must provide for its existing citizens and its future economic growth and stability. The result of Gwinnett County's and the Water Planning District's efforts have produced coordinated plans that will take our citizens to 2030 with ample water supply and protection of the water resources in this part of the state.

FUTURE

Gwinnett projects that our 2050 water supply need is for 256 mgd (required withdrawal permit) and our reclaimed water treatment capacity need is 183 (NPDES discharge permits).

The Georgia Supreme Court has settled the legality of discharging to Lake Lanier. Assuming that the permit

limits required by the Georgia Supreme Court decision can be set and accepted by all, the remaining water resource questions for Gwinnett County are what will future load allocations for discharge be and will additional withdrawal increases from Lake Lanier for water supply be forthcoming.

As to the Gwinnett County needs past 2030, we believe that a conscientious water conservation program, used of reclaimed water for irrigation and tiered water pricing should justify the build out water supply needs for Gwinnett County to be withdrawn from Lake Lanier.

The issue of future load allocations and discharge locations for capacities beyond the expansion of the Hill Plant to 60 mgd remains clouded. Gwinnett County has in its Master Plan the construction of a new 40 mgd water reclamation facility at the present location of our Jackson Creek Plant near Highway 29 and Indian Trail Road. This plant has been planned to discharge to the Chattahoochee River at the existing Hill Plant and Crooked Creek Plant discharge location.

The Water Planning District Wastewater Plan says this discharge will be either to Lake Lanier or to the Chattahoochee River. Gwinnett County has requested a load allocation to the Chattahoochee River for an additional 40 mgd. The State responded that they could not answer this question at this time due to the ongoing study of this section of the River to determine if the water quality standards for trout should be revised. This leaves Gwinnett County with no certainty of wastewater capacity demand and the clock ticks.

Gwinnett County is of the opinion that when Georgia Power removes the heat load from the River as they have promised to do, there will be ample load allocation for highly treated wastewater for Gwinnett County and other local governments in the metro area. We believe that Gwinnett should have an additional 49 mgd of load allocation in the River that will take us to our 2030 projected demand as outlined in both the Master Plan and the Water Planning District Wastewater Plan. This 49 mgd would permit the Jackson Creek Plant and the expansion and rebuilding of our Crooked Creek Plant to 25 mgd.

Gwinnett will need an additional 40 mgd of wastewater capacity to take us to 2050. It is anticipated that this additional 40 mgd can be built at the Hill Plant site with some small additional property acquisition. The load allocation for this additional capacity remains in question. Perhaps improved technology for phosphorus removal or improved technology for oxygen demanding organics or both will allow either discharge to Lake Lanier and/or the River.

Depending on the revised water quality standards for the Chattahoochee River, temperature may become the largest issue the river dischargers have to accommodate in

the future. This remains a “hot” topic for future discussions.

SUMMARY

In summary, Gwinnett County is well prepared for a sustainable water future. We believe that sound planning for fifty years and regular coordination with the regulatory agencies, the public, upstream and downstream neighbors are the keys to water resources management for the future.