

***The Flint River Basin's Changing Faces:  
Water Management Challenges For Georgia***

***Water Policy Working Paper Series***

***Dotti Crews and Kristina Dowling***  
*Working Paper # 2002-007*



Photo by Elaine Smith

Flint River, Colquitt County, GA

## **Acknowledgements**

The authors wish to thank Andrea Hinda for assisting in research and Kathy Banks for her help in design and production. In addition, we are grateful to the following people for their advice and guidance.

*Nancy Barbours, United States Geological Survey*

*Georgia Soil and Water Conservation Commission*

*Glenn Dowling, Office of the Lt. Governor, Mark Taylor*

*Tom Gehl, Georgia Municipal Association*

*Nolton Johnson, Georgia Department of Natural Resources*

The authors gratefully acknowledge financial support for this work provided by the U.S. Department of Agriculture (2001-38869-10607) and the Georgia State Soil and Water Conservation Commission (480-02-FR1001).

# The Flint River Basin

As one of Georgia's most precious natural resources located in southwestern Georgia, the Flint River drains an area of 8,460 square miles. The headwaters of the river begin near the Atlanta International Airport and flows 350 miles just above the Florida line at Lake Seminole. Major tributaries of the Flint are: The Ichawaynochaway Creek, Chickasawhatchee Creek, Kinchafoonee Creek, Muckalee Creek, and Spring Creek.



Photo by Elaine Smith

Flint River

The changing faces of the Flint River Basin have put increased demands on resources and have produced a challenging circumstances for water managers in the state. These changes impact the ecosystem, agricultural communities, industries, and municipalities.



Photo by Kristina Dowling

Flint River Flat Shoals

# The Ecosystem

Today, the Flint River is one of only 42 rivers left in the contiguous 48 states that flow freely for over 125 miles. It's original 350 miles of free flowing water has been altered by man made circumstances which have affected the ecological health of the river. Some of those changes are dams, reservoirs, lakes and the clearing of land for development and farming opportunities. Because of the addition of dams the Flint now flows freely for only about 150 miles, from the headwaters at Atlanta's International Airport to the first dam in Crisp County at Lake Blackshear. The two remaining dams on the Flint are at Lake Worth near Albany, and at Lake Seminole near the Florida line. The changes that have occurred vary, but the most obvious affect the quality and quantity of the water, the increase of endangered and threatened species, and the decrease of wetlands in the Flint basin. The Flint River and its tributaries are an irreplaceable natural resource for the people and the wildlife that live within its basin.

Wetlands are the vital link between land and water. They can be found along rivers, streams, lakes and coastal areas. The Flint River basin's wetlands are mostly swamps, marshes, bogs, ditches, and potholes (which can be seasonally wet or dry). At one time wetlands were considered to be useless. They often appeared as though they were foul smelling, mosquito ridden wastelands. This negative view caused more than one half of all of America's wetlands to be destroyed for municipal, industrial and agricultural uses, and they were used for dumping hazardous and household waste.



Courtesy U.S. Fish & Wildlife

Today we are becoming more ecologically aware of the importance of our natural resources and strive to protect and preserve what we do have. Wetlands serve a variety of functions from helping to regulate water levels to providing flood protection, improving water quality, and providing critical habitat for a large variety of fish and wildlife. They are also thought to be helpful in moderating the global climate by storing carbon and not releasing carbon dioxide.



Courtesy U.S. Fish & Wildlife

Wetlands perform these multifaceted duties just by being there without any cost to us. They help regulate water levels and provide flood protection by acting as a sponge, absorbing excess water and slowly releasing it. The vegetation found in wetlands not only helps by distributing the water over a larger area but also acts as erosion control. Water quality is improved by passing through wetlands causing surface and storm water runoff to be filtered before flowing into rivers and streams. Wetlands retain excess nutrients, some pollutants and help trap sediment before flowing downstream. The nutrients, pollutants and sediment are broken down making excellent habitats for many species. According to the U.S. Environmental Protection Agency (EPA), “more than one third of the United States’ threatened and endangered species live only in wetlands, and nearly half use wetlands at some point in their lives.” Because wetlands act as such an important buffer to the Flint River and its basin, we can only help protect and enhance them in order to keep the Flint healthy.

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Photo by Kristina Dowling

Flint River

# Endangered Species

The highest diversity of aquatic species is typically found in the Southeast's rivers and streams. The Flint River basin is no exception. The Flint is home to numerous species of fish, mussels, crayfishes, snails, aquatic insects, amphibians, and various birds and mammals. The Flint's native population of fish and wildlife has declined. One example of this is the mussel population. The Flint was originally home to about 29 species



Photo by Kristina Dowling

Mussels of Flint River Flat Shoals

of mussels and is now believed to only have 22 species and some of those are in dire straits. The following is a list from DNR and USFWS of some of the mussels that are either extinct, threatened or endangered.

- Winged spike-Extinct
- Lined pocket-Extinct
- Shinyrayed pocketbook-State and Federally Endangered
- Gulf moccasinshell-State and Federally Endangered
- Oval pigtoe-State and Federally Endangered
- Fat threeridge-State and Federally Endangered
- Purple bankclimber-State and Federally Threatened



Photo by Kristina Dowling

Flint River Flat Shoals

The problem with losing these mussels is multifaceted. Mussels are an indicator species of the water quality because they are filter feeders and rely on clean clear water to feed and flowing water to reproduce. These mussels are

one way nature is telling us when something is wrong; either too much pollution and or too little water. To complicate the matter Georgia has been experiencing a drought for the past four years. In the summer of 2000 a tributary of the Flint, Spring Creek dried up causing the creek bed to be littered with dead and dying mussels, fish and other aquatic species. The U.S. Fish and Wildlife Services employees and other volunteers went in and saved what they could of the remaining mussels. They were taken to near by Warm Springs fish hatchery to try and sustain them until the waters would rise.



Photo by K. Dowling - Flint River Flat Shoals



Courtesy U.S. Fish & Wildlife

Fishery biologists are working to save the mussel population by growing and propagating them. Mussels are filter feeders siphoning the water and nutrients across their gills. They also have a very interesting life cycle. Mussels release their eggs in numerous ways all with the same goal of attaching to a fish host to live off of

for a given period of time. They then drop off the fish and live out there life in the river/stream bed. The problems with propagating them in captivity are daunting. The exact fish host, temperature of the water, and their minute size make propagation a challenge. Other threats to the mussel population are habitat

destruction, channel modification, siltation, pollution, loss of fish hosts, over harvesting, and the introduction of nonindigenous species such as the Zebra Mussel. Without proper water levels fish are not abundant and mussels can not reproduce. With the continued effort of U.S. Fish and Wildlife, DNR and others around the State the mussels of the Flint basin may be saved.

# Agriculture



Photo by Elaine Smith

While over 50% of the basin is wetlands or forested area, approximately 29% is used for agriculture. This industry includes poultry, beef, dairy, crop, orchard and vegetable production. The majority of the agricultural areas are found in the lower Flint River Basin beginning near Cordele.



Photo by Elaine Smith

There is little data available on actual agricultural water use. Water use is concentrated in the months of May through August and demand is higher during a drought. Permits are required only if 100,000 gallons or more are used.



Photo by Elaine Smith

The Flint River Water Planning and Policy Center, in Albany, is presently monitoring 14 sites in southwest Georgia in an effort to collect data on actual agricultural water use. Estimations of agricultural water use are based on the capacity of the pump and not the actual water use.

# Industry



Utility Smokestacks

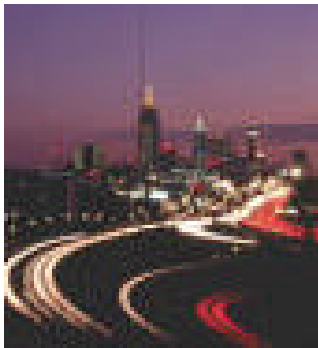
Anon

Industry is one of the significant water users of the Flint River. The data around the actual amounts of water used by industry is very limited. According to research conducted by Dr. Ronald G. Cummings, professor of economics at Georgia State University, there are 83 industrial water withdrawal permits in the ACT and ACF basin. These permiters use 1.4 billion gallons per day. In addition power plants in the area use 2.2 billion gallons per day. Total industrial withdrawals are larger. Historically industries withdrawing less than 100,000 gallons per day are not required to have a permit. Also, these data exclude industrial uses of water from urban water supply systems. It is Dr. Cummings opinion that in order to have reliable data concerning the consumptive use of water by industries, there needs to be a requirement that all industries report their water use and discharges. This reporting should be done in a standard way and the sources for withdrawals and discharges should be clearly defined.

Miller Brewing Company in Albany, Georgia is an example of an industry taking a proactive approach to their use of water conservation. According to Paul Deloach of Miller Brewing Company, “Our 6.5 million gallons per day aerobic treatment process is able to treat and remove 99% of the incoming biological load by the time it is discharged to the Flint River.” The plant has never had a water quality violation in its 23 years of operation and has received numerous environmental awards.



# Municipalities



Atlanta skyline

Anon

While the state of Georgia has increased in population by 26% during the last 10 years, the majority of the growth is in the metropolitan Atlanta area. According to the 2000 census, the population of the Flint River Basin is 783,850 and is rapidly changing from an agricultural to an urban composition. Over 50% of the population is in the upper third of the basin. .

Municipalities in the Flint River Basin use a monthly average of 154.43 million gallons per day. While the data for industrial and agricultural use is not certain, there is more certainty in municipal use. All withdrawals and discharges are permitted for municipalities.

Municipal governments within the Flint River Basin are doing their part to protect water quantity and quality by promoting wise water use throughout the basin. One example of wastewater treatment plant investments is the City of Albany's Joshua Street Wastewater Treatment Plant Project, which is expected to be completed by October 2002. The mission of this project is to ensure that the treated wastewater that is discharged into the receiving stream will not pose any threat to any of the water

“Municipalities have the most accurate water reporting system” says Nolton Johnson, Chief, Environmental Protection Division Water Resources Branch.

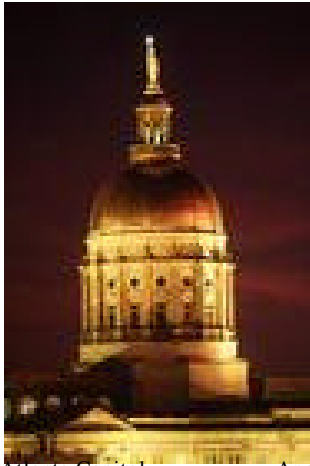
users. This major plant upgrade, which will cost \$ 13.7 million, will be built to handle eighty million gallons a day.

While it is hard to succinctly summarize the many public works projects in the basin, other examples of ongoing municipal initiatives include the following: the City of Griffin Storm Water Department has aggressively marketed in and out of classroom education, created a complaint tracking database, and programs to efficiently control non-point source pollution and storm water run-off. Although municipalities and the customers they serve is just one segment of the basin's water users, these efforts are aimed at enhancing the quality of life for all along the Flint River Basin.



Photo by Kristina Dowling

# Partnerships



Atlanta Capitol

Anon

The federal and state government are working together to find ways to protect the natural resources in the Flint River Basin. The Georgia Soil and Water Commission in partnership with the United States Fish and Wildlife Service have successfully implemented the Flint River Surface and Groundwater Conservation Project. The Commission received applications from over 200 center-pivot owners, including applications for over 300 irrigation systems to be evaluated. Owners were limited to two performance evaluations on their irrigation systems and were encouraged to enroll their poorest performing systems in order to increase their chances of qualifying for cost-share opportunities. The qualification for cost-share prospects were aimed toward water savings by either replacing outdated or worn nozzle packages or installing end-gun shut-off to systems wasting water through off-site application and/or spraying into roads.

The program has served 108 center-pivot irrigation systems in 11 southwest Georgia counties. The water savings from improvements made on these systems totaled 445,229,702 gallons per year. If all improvements and modifications were made to the systems that have been evaluated, the total approximate savings would be 763,100,585 gallons per year.

# Summary

Water management challenges for Georgia are daunting and there are no easy answers. The combination of a fast growing population and the continued drought has brought water management issues to the forefront.

Under the leadership of Governor Roy Barnes and the Georgia General Assembly, the state is looking at alternative solutions. On September 1, 2002 the Governor's Water Advisory Study Committee will report to the legislature their recommendations for a framework to address Georgia's water concerns.

As the state moves forward to create sound public policy, the changing faces of the Flint River stand ready to work in partnership to find answers that will serve the entire state.



Professor Cummings with Governor Barnes

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