



***Greenville Utilities***

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Water Quality Report

We are pleased to provide you with this Water Quality Report. It contains information about the high quality water we treat and deliver to homes and businesses throughout Greenville/Pitt County.

Our goal is to provide you with a safe and dependable supply of drinking water. The highly-trained, state-certified staff at our Water Treatment Plant (WTP) continuously monitors the treatment process to ensure our water quality meets regulatory requirements. More than 100,000 tests are performed on hundreds of substances each year to ensure that your drinking water is safe.

The WTP currently has the capacity to treat 22.5 million gallons per day (mgd). During 2009, we treated an average of 10.9 million gallons of water a day, with zero drinking water quality violations.

We welcome questions and feedback about this report, or any general inquiries you may have. Please contact us at 551-1551.



Sources of drinking water – both tap and bottled – include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive materials, and may pick up substances resulting from human activity or the presence of animals.

Substances that may be present in source water include: biological contaminants, such as viruses and bacteria; inorganic contaminants, such as salts and metals; pesticides and herbicides; organic chemicals from industrial or petroleum use; and natural or man-made radioactive materials.

To ensure tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations limiting the amount of certain substances in water provided by

public systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection of public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants, but the presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained from the EPA's Safe Drinking Water Hotline 1-800-426-4791.

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#### WHERE OUR WATER COMES FROM

Greenville Utilities' Water Treatment Plant receives its water from the Tar River, which is classified as a surface water supply. Additionally, eight area deep wells supplement our surface water supply.



# TREATMENT PROCESS

Water from the Tar River is pumped into a 63-million-gallon pre-settling reservoir where large, heavy dirt particles begin to settle out as the water slowly moves to the outlet of the reservoir. From there, the water flows to the plant where a coagulant (chemical to help smaller dirt particles come together to form larger particles called floc) is added. Next the water passes through a series of mixers, called flocculators, designed to facilitate the formation of floc. After the mixers, the water slows to a snail's pace as it enters the sedimentation basins. As it passes through the basins, about 95% of the floc settles to the bottom. The cleaner water from the top of the basin is then channeled to ozone tanks where it is ozonated. This part of the process is called primary disinfection. Harmful bacteria, germs, viruses, and microorganisms are killed or inactivated by this process.

Next the water is filtered where a majority of the remaining particles are removed. Additional chemical treatment happens next. Fluoride is added to help prevent tooth decay, sodium hydroxide (caustic) is added to increase pH, phosphate is added for corrosion control and chlorine and ammonia are added to form chloramines which function as the secondary disinfection in the distribution system.

Finished water is then pumped into two three-million-gallon ground storage tanks and then into the distribution system which includes our customers' homes and businesses as well as two elevated tanks.

## WHAT YOU SHOULD KNOW ABOUT CHLORAMINES

The WTP uses chloramines as its secondary disinfectant. Chloramines are intended to form fewer chemicals (by-products) in water, improve the taste and odor of water (compared to chlorine), and last longer in the distribution system to prevent bacterial growth.

Chloraminated water is safe for bathing, drinking, cooking and all uses we have for water every day. However, there are two groups of people who need to take special care with chloraminated water: kidney dialysis patients and fish owners. Just like chlorine, chloramines must be removed from water used in kidney dialysis machines. If you are a dialysis patient or have questions, please call your physician or dialysis center.

Like chlorine, chloramines are toxic to fish. Fish owners need to remove chlorine, ammonia and chloramines from the water before use with tropical fish. Local pet stores carry water conditioners that remove chloramines. If you have questions, contact your pet store for information and detailed instructions. For further information about chloramines and chlorine, please call 551-1551.

## WHAT YOU SHOULD KNOW ABOUT CRYPTOSPORIDIUM

Cryptosporidium is a microscopic organism that can cause diarrhea, fever and other gastrointestinal symptoms if ingested. The organism occurs in human and animal wastes and may be present in local streams and lakes. State and Federal regulations do not

require Greenville Utilities to test for cryptosporidium. We go the extra mile to protect our customers and conduct tests monthly. The WTP includes an ozonation process that inactivates cryptosporidium.

## INFORMATION FOR AT-RISK CUSTOMERS

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those undergoing chemotherapy, organ transplant patients, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk for infections. These people should seek advice about drinking water from their healthcare providers. EPA/Center for Disease Control guide-

lines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline, 1-800-426-4791.

## LEARN MORE ABOUT WATER AND GET INVOLVED

We provide tours of the WTP and make presentations to groups, including civic organizations and schools. We also have a variety of educational brochures available upon request. For more information, please contact us at 551-1562. Our Board of Commissioners meets on the third Tuesday of every month at 5:30 p.m. Meetings are held in the Board Room on the second floor of our Main Office, 401 South Greene Street.



Above is one of GUC's Aquifer Storage and Recovery wellheads. Grants from the Economic Development Administration of the U.S. Department of Commerce and the NC Rural Center are funding \$1.2 million of the construction costs.

## SYSTEM IMPROVEMENTS

### Aquifer Storage and Recovery

GUC is nearing completion on its industry-leading Aquifer Storage and Recovery (ASR) project. ASR is the storing of treated drinking water in underground sand deposits during periods of low customer usage and recovering, or using, the water during periods of high customer usage and emergencies. Environmentally-friendly ASR will allow us to store in excess of 300 million gallons of treated drinking water for a fraction of the cost of storing water in above-ground tanks.

During periods of high water demand, the stored treated water will be recovered and pumped into the distribution system. The only additional treatment that is required at the ASR site is disinfection, and possibly pH adjustment.

Work on the project's final phase, which involves construction of the wellhead facilities, continued this year. The wellhead facilities are necessary to inject and withdraw treated water from the ASR well. There are approximately 72 operating ASR sites in the United States, but the Greenville Utilities project will be the first ASR system in North Carolina.

"ASR will have a significant economic impact to our region," said Ron Elks, GUC's General Manager/CEO. "By helping to meet peak demands, ASR also effectively extends the life of the current treatment and production facilities, delays costly expansions and enhances the reliability of service to our customers."

### WTP SCADA Upgrade Project

A project to upgrade the Supervisory Control and Data Acquisition (SCADA) system software and hardware at the Water Treatment Plant (WTP) was completed this year. The SCADA system provides automated computer monitoring and control of the entire treatment process, including groundwater wells and elevated storage tank sites.

### Raw Water Pump Station Improvements

GUC treats water from the Tar River, and water is pumped into the WTP through the Raw Water Pump Station (RWPS). The pump station, which was constructed in 1982, is located on the bank of the Tar River and houses the pumps, valves, piping and wet well that connect to the raw water intake pipes. Two 30" intake pipes extend 180 feet from the RWPS into an outer bend of the Tar River with a pair of intake screens at the end.

The improvement project that began this year consists of installing two new 30" intake pipes with multiple screens that will connect to the existing RWPS. The improvements will increase reliability and redundancy by enabling us to withdraw water from the Tar River in the event the original intake pipes and screens are damaged or fail. We will also have multiple places for withdrawal to increase the water supply available during drought conditions.

# SOURCE WATER ASSESSMENT PROGRAM

The NC Department of Environment and Natural Resources (DENR), Public Water Supply (PWS) section, Source Water Assessment Program (SWAP) conducted assessments for all drinking water sources across North Carolina. The purpose of the assessments was to determine the susceptibility of each drinking water source (well or surface water intake) to Potential Contaminants Sources (PCSs). The results of the assessment are available in the SWAP Assessment Reports that include maps, background information and a relative susceptibility rating of Higher, Moderate or Lower. The relative susceptibility rating of each source for Greenville Utilities was determined by combining the contaminant rating (number and location of PCSs within the assessment area) and the inherent vulnerability rating (i.e., characteristics or existing conditions of the well or watershed and its delineated assessment area). The assessment findings are summarized in the table at right.

The report for GUC may be viewed on the web at: <http://www.deh.enr.state.nc.us/pws/swap>. To obtain a

printed copy of this report, please mail a written request to: Source Water Program, Report Request, 1634 Mail Service Center, Raleigh NC 27699-1634, or email a request to [swap@ncmail.net](mailto:swap@ncmail.net).

If you have any questions about the SWAP report, please contact the Source Water Assessment Program by phone at 919-715-2633.

A susceptibility rating of “higher” does not imply poor water quality, only the system’s potential to become contaminated by PCSs in the assessment area.

<b>SWAP Findings</b>	
Greenville Utilities has nine water sources from which to draw: the Tar River (Water Treatment Plant) and eight wells located throughout our system. Susceptibility ratings are as follows:	
<b>Water Sources</b>	<b>Susceptibility</b>
Eight Wells and the WTP	Higher



## BACKFLOW PREVENTION

All customers expect their water to be clean and safe. That is why GUC makes sure the water delivered to each customer is of the highest quality. When water leaves our WTP, it is at its freshest and purest. One of the ways GUC safeguards the water delivered to its customers is through the cross-connection control program. This program is designed to prevent contamination of the public water system through an unprotected cross-connection. Whether these connections are permanent or temporary, they can be dangerous and could contaminate or pollute the public water system through backflow. Protective measures must be taken to prevent this potential backflow hazard.

require all industrial, most commercial and all irrigation customers to install backflow prevention assemblies. These assemblies must be installed before any branching of the customer’s plumbing can occur. Different types of backflow preventers are required depending on the hazard. Severe hazards exist when there is potential that backflow could create a health threat. Lawn irrigation systems, hospitals, medical offices or manufacturing plants using chemicals are some examples of a severe hazard. Moderate hazards exist from a backflow occurrence that causes discolored or aesthetically objectionable water, but is not a health threat. Restaurants and convenience stores are examples of moderate hazards.

Federal law requires GUC to protect the water supply from potential contamination or pollution. To do this, we

See **BACKFLOW** on the back cover

# OUR 2009 FINDINGS

Listed on the next page are substances detected in GUC's treated water during 2009, unless otherwise noted. Not listed are other substances that were tested for (i.e., MTBE, Mercury, Petroleum products, etc.), but were not detected.



Substances: Description and Origin of Substance	Highest Level Allowed [MCL]	Highest Level Detected	Range Detected	Ideal Goals [MCLG]
<b>Beta Emitters</b> (pCi/L): Decay of natural and man-made radioactive deposits. Last monitored 2006.	50.0	21.0	21.0 - <4.0	0.0
<b>Chloramines</b> (ppm): Water additive used to control microbes.	4.0 (Running Annual Avg.)	3.0 (System Avg.)	5.2 - 1.5 (highest and lowest site values)	4.0
<b>Chlorine</b> (ppm): Water additive to control microbes.	4.0 (Running Annual Avg.)	1.4 (System Avg.)	3.3 - 0.2 (highest and lowest site values)	4.0
<b>Copper</b> (ppm): Occurs naturally in soil but can be present in drinking water due to corrosion of private household plumbing.	1.3 (Action Level)	0.19	n/a	1.3
<b>Fluoride</b> (ppm): A naturally occurring mineral; also added to water to promote dental health.	4.0	1.3	1.3 - 0.5	4.0
<b>Haloacetic Acid</b> (ppb) By-product of drinking water chlorination.	60.0 (Running Annual Avg.)	25.0 (Running Annual Avg.)	63.0 - 6.0	n/a
<b>Lead</b> (ppb): Occurs naturally in soil but can be present in drinking water due to corrosion of private household plumbing.* One of 105 sample sites exceeded the action level.	15.0 (Action Level)	5.0 (90th Percentile)	n/a	0.0
<b>Radium 228</b> (pCi/L): Erosion of natural deposits. Last monitored 2006.	2	1.5	1.5 - <1.0	0.0
<b>Sulfate</b> (ppm): A naturally occurring mineral found in soil.	n/a	34.0	34.0 - <15.0	n/a
<b>Total Coliform:</b> Naturally present in the environment.† One total coliform found in October.	Presence of coliform bacteria in >5% of monthly samples	1.0	n/a	0.0
<b>Total Organic Carbon Raw</b> (ppm): Naturally present in the environment.†	TT	13.0	13.1 - 4.4 (highest and lowest site values)	n/a
<b>Total Organic Carbon Treated</b> (ppm): Naturally present in the environment.†	TT	4.0	4.0 - 2.1 (highest and lowest site values)	n/a
<b>Trihalomethanes</b> (ppb): By-product of drinking water chlorination.	80 (Running Annual Avg.)	33 (Running Annual Avg.)	65 - 14 (Highest and lowest site value)	n/a
<b>Turbidity</b> (NTU): A measure of cloudiness in water. It may be caused by inorganic matter that can interfere with treatment.	1.0 and 95% of samples below 0.3 (TT)	0.43 and 96% of samples below 0.3	n/a	0.3

**Notes:** \*Lead Health Effects: Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water could develop kidney problems or high blood pressure.

† We collect a minimum of 90 samples throughout the distribution system each month for total coliform bacteriological analyses. During October of 2009, one sample tested positive. Within hours of the result, three followup samples were collected, one from the original location and two from areas nearby. All were negative for total coliform bacteria. No MCL violation occurred.

## GLOSSARY OF TERMS

**Action Level** – The concentration of a contaminant which, if exceeded, triggers additional treatment measures by the public water system.

**Maximum Contaminant Level (MCL)** – The highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technique.

**Maximum Contaminant Level Goal (MCLG)** – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**Nephelometric Turbidity Units (NTU)** – Turbidity is a measure of cloudiness in water.

**Ninetieth Percentile** – The concentration value exceeding the lower ninety percent of samples analyzed and exceeded by the upper ten percent.

**Parts Per Billion (ppb)** – One part per billion is comparable to one minute in two thousand years or one penny in \$10,000,000.

**Parts Per Million (ppm)** – Equivalent to milligrams per liter. One part per million is comparable to one minute in two years, or one penny out of \$10,000.

**Picocuries Per Liter (pCi/L)** – A measurement of radioactivity per liter.

**Treatment Techniques (TT)** – A required process intended to reduce the level of contaminants in water.

> – is greater than; < – is less than.

## Backflow, continued from page 5

Facilities on GUC's public water system are evaluated to determine which hazard(s), if any, may potentially exist and the type of backflow prevention assembly that will be required. After an approved backflow prevention assembly has been installed and tested, it must be re-tested annually. Only individuals who have been certified through our testing school or a school approved by GUC can test backflow assemblies. GUC constructed the Backflow Testing Lab to ensure contractors and plumbers have the knowledge and skills needed to install and test backflow assemblies. Opened in March 2008, the Lab is housed in its own building on the grounds of the WTP and provides a site for quarterly recertification classes and bi-annual training classes. For more information on the Cross-Connection Control Program, call 551-1551.

## Water Conservation and Protection

### Save water and money—use water wisely:

- Repair all leaks and drips. At one drop per second, a leaky faucet wastes nearly 2,500 gallons/year—enough water for 160 full dishwasher cycles.
- Limit showers to five minutes or less.
- Water lawns only when needed, and only before 10 a.m. or after 6 p.m. One inch of water per week is sufficient to keep your plants and lawn healthy.
- Ensure sprinklers water only the landscape, not driveways/streets.

### To properly dispose of hazardous products:

- Motor Oil/Batteries: Take to the Pitt County Landfill on Allen Road 902-3350.

- Paint: Remove container lid and let paint harden completely. Containers with lids removed will be collected curbside.
- Pesticides/Herbicides: Contact Pitt County Cooperative Extension Service, 902-1700.
- You can prevent sanitary sewer overflows by disposing of cooking oils and grease as solid waste in your home garbage collection.

## For More Information

### Environmental Protection Agency

Ariel Rios Building  
1200 Pennsylvania Avenue NW  
Mail Code 3213A  
Washington, DC 20460  
(202) 260-2090 (fax)  
[www.epa.gov](http://www.epa.gov)  
Safe Drinking Water Hotline  
(800) 426-4791

### NC Department of Environment and Natural Resources

1601 Mail Service Center  
Raleigh, NC 27699-1601  
(919) 733-4984  
[www.enr.state.nc.us](http://www.enr.state.nc.us)

### American Water Works Association

6666 West Quincy Avenue  
Denver, CO 80235  
(800) 926-7337  
[www.awwa.org](http://www.awwa.org)

### Greenville Utilities

PO Box 1847  
Greenville, NC 27835-1847  
(252) 551-1551  
[www.guc.com](http://www.guc.com)  
  
[www.waterwiser.org](http://www.waterwiser.org)



PO BOX 1847  
GREENVILLE, NC 27835-1847  
[www.guc.com](http://www.guc.com)

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### Atención

Este folleto tiene información importante acerca de la calidad del agua que provee la Ciudad de Greenville. Si tiene preguntas acerca de la calidad del agua, llame al Departamento de Water Resources al Greenville Utilities durante las horas de trabajo.

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