Greenville Water System

Greenville, South Carolina

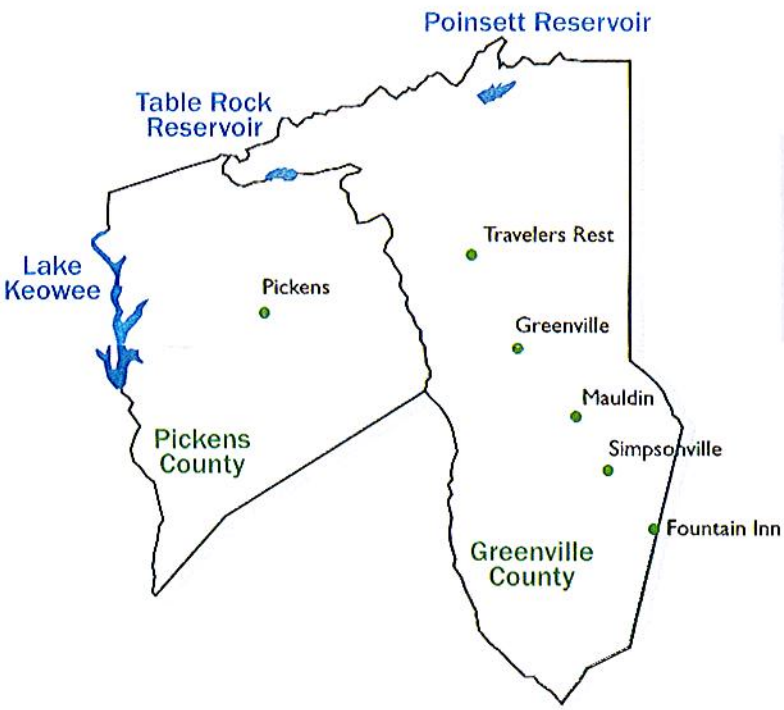
Water Quality Report for 2001

Greenville's Water Meets All Standards

The Environmental Protection Agency (EPA) and the State Department of Health and Environmental Control (DHEC) have established strict standards for all drinking water. These criteria are designed to protect consumers from bacteria and water-borne illnesses. In order to protect its customers, the Greenville Water System and DHEC collected over 33,000 samples and performed more than 77,000 meticulous tests for the parameters during 2001. The results of detected regulated compounds are detailed in the following pages. Also listed are regulated and unregulated compounds that were not detected.

Most of the tests are conducted by DHEC. The remaining analyses are performed by Greenville Water System in our DHEC certified laboratories or another private laboratory. The System ensures your water quality by testing water samples collected during the treatment process and as the water is delivered to customers en route through the 2,100 miles of local pipeline.

The Water Quality Reports indicate that the Greenville Water System's watershed protection practices and treatment procedures are highly effective. But more importantly, **our water is pure and safe to drink.**



Where does my water come from?

The Greenville Water System draws water from three sources: **Table Rock Reservoir** on the South Saluda River, **Poinsett Reservoir** on the North Saluda River and **Lake Keowee.**

Table Rock and Poinsett Reservoirs are both located in the foothills of the Blue Ridge Mountains in northern Greenville County. The Greenville Water System owns 100 percent of both watersheds. Additionally, the Water System regularly patrols and carefully maintains these uninhabited, pristine lands. The properties are further protected by a Conservation Easement with The Nature Conservancy.

Lake Keowee is owned by Duke Energy. The Water System has an agreement with Duke to ultimately withdraw up to 150 million gallons per day (MGD) for our customers' water needs. Table Rock and North Saluda have the capacity to deliver up to 30 and 63 MGD, respectively.

SC DHEC is conducting Watershed Assessments on all three sources. Results should be available from SC DHEC in 2003.

How is my water treated?

All water supplied by the Greenville Water System is filtered. The Adkins Filter Plant, a modern conventional filtration plant with a current capacity of 30 MGD, draws water from Lake Keowee. This plant uses coagulation, sedimentation, filtration and disinfection to treat the source water. Alum is used in the coagulation step along with small amounts of sodium hydroxide for pH adjustment. Chlorine, combined with ammonia, is used for disinfection to protect against water-borne diseases and a polyphosphate is added for corrosion control. Fluoridation is provided to prevent tooth decay.

We are happy to report that the Water System received the highest of three possible ratings from SC DHEC during its most recent annual inspection.

A new state-of-the-art filter plant was placed in service on July 8, 2000, to provide filtration for all water drawn from the Table Rock and Poinsett reservoirs. This new plant, with a capacity of 75 MGD, is the largest in the United States to use Dissolved Air Flotation (DAF) in the treatment process. The DAF Plant uses an innovative flotation process for particle removal rather than sedimentation. Remaining processes and chemicals used are similar to those at the Adkins Plant.

All treatment plants are rigidly maintained and monitored by State Certified Environmental Systems Operators who are thoroughly trained to make routine chemical and physical tests for treatment control.

What if I have questions?

If you would like more information about water treatment techniques or about our water quality, contact the Greenville Water System's Laboratory at *864.241.7838.* You can visit our web page at *greenvillewater.com,* or contact us by e-mail at *laboratory@greenvillewater.com.*

The tables in this report list all the drinking water contaminants that were detected during the **2001** calendar year. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the tables contain data from testing done **January 1-December 31, 2001.** SC DHEC requires us to monitor for certain contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, maybe more than one year old.

Terms and Abbreviations:

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

MCLG (Maximum Contaminant Level Goal):
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.

TT(Treament Technique):
A required process intended to reduce the level of a contaminant in drinking water:

AL (Action Level):
The concentration of a contaminant which triggers treatment or other requirement which a water system must follow.

ppm (Parts per Million):
This is the same as Milligrams per Liter, or one penny out of $10,000.

ppb (Parts per Billion):
This is the same as Micrograms per Liter, or one penny out of $10,000,000.

NA (Not Applicable):
Does Not Apply.

ND (Not Detected):
Not detected or below detection limits.

NTU (Nephelometric Turbidity Units):
Units of measure to indicate water clarity.

SU (Standard Units):
A measurement of acidity.

Primary Drinking Water Standards – All data from 2001

Parameter	Unit	MCL	MCLG	Range	Highest Level Detected	Possible Sources	Violations
Inorganic Compounds							
Fluoride	ppm	4	4			Drinking water additive	
DAF Plant				NA	0.67	*Fluoride added during treatment to prevent tooth decay*	NO
Adkins Plant				NA	0.80		NO
General Distribution				0.25-1.2	Avg=0.86		NO
Nitrate/Nitrite (as nitrogen)	ppm	10	10				
DAF Plant				NA	0.05	Erosion of natural deposits; fertilizer runoff	NO
Adkins Plant				NA	0.05		NO
General Distribution				ND – 1.2	Avg = ND		NO
Mercury	ppb	2	2				
DAF Plant (NS&TR Res.)				NA	0.5	Erosion of natural deposits	NO
Adkins Plant (Lake Keowee)				NA	0.6		NO
Organic Compounds							
Total Trihalomethanes	ppb	100	0				
General Distribution				4.0-33.0	Avg=17.0	Disinfection by-products	NO

Information Collection Rule

Parameter	Unit	MCL	MCLG	Range N Saluda	Range T Rock	Range Adkins	Possible Sources	Violations
Total Organic Carbon	ppm	*These parameters are not regulated and therefore have no MCL or MCLG*		0.86 – 1.61	0.83 – 1.24	0.71 – 2.78	Decay of natural deposits	NO
Total Organic Halide	ppb			71 – 100	99 – 140	ND – 110	Disinfection by-products	NO
Chloral Hydrate	ppb			0.99 – 3.21	1.75 – 4.08	ND – 5.28	Disinfection by-products	NO
Cyanogen Chloride	ppb			----------	----------	2.5 – 4.6	Disinfection by-products	NO
Haloacetic Acids (HAAS)	ppb			16.8 – 34.1	20.6 – 42.4	2.7 – 29.4	Disinfection by-products	NO
Total Trihalomethanes	ppb	100	0	9.3 – 26.2	13.7 – 29.8	5.2 – 20.4	Disinfection by-products	NO

'All ICR data was collected from July, 1997 to December; 1998

Microbial & Physical Characteristics

Parameter	Units	MCL	Results	Possible Sources	Violation
Total Coliform	% positive per month	Less than 5%	1.20% Maximum	Common in the environment; human and animal waste	NO
Turbidity					
DAF Filter Plant	NTU	NA	Maximum = 0.17; Average = 0.05	Soil runoff	NO
Adkins Filter Plant	NTU	0.5	Maximum = 0.19; Average = 0.04	Soil runoff	NO
General Distribution	NTU	0.5	0.13=highest avg monthly value	Soil runoff	NO

Lead & Copper Rule

Parameter	Units	Action Level (AL)	90th Percentile Value	Sample Sites Exceeding Action Level	Possible Sources	Violation
Lead	ppb	15	2.2	0 out of 50	Corrosion of household plumbing	NO
Copper	ppb	1300	80	0	Corrosion of household plumbing	NO

Secondary Standards

Parameter	Units	MCL	Range	Average	Possible Sources	Violation
Chloride	ppm	250	3.1 – 44	18	Soil runoff	NO
Color	color	15	ND – 12	ND	Naturally occurring	NO
Iron	ppb	300	ND – 670	28	Soil runoff	NO
Manganese	ppb	50	ND – 20	15	Soil runoff	NO
pH	SU	6.5 - 8.5	6.4 – 10.4	7.6	Controlled at treatment plant	NO
Solids (Total Dissolved)	ppm	500	28 – 54	38	Soil runoff	NO
Zinc	ppm	5	ND – 0.46	0.05	Drinking water additive	NO

Tests were performed during 2001(unless noted) for the following contaminants. NONE WERE DETECTED

Primary Inorganic Elements: Antimony; Arsenic; Barium; Beryllium; Cadmium; Chromium; Nickel; Selenium; Thallium.

Synthetic Organic Compounds (SOCs): 1,2-Dibromo-3- Chloropropane (DBCP); 1,2-Dibromoethane (EDB); 2,4,5- TP (Silvex); 2,4-D; Alachlor (Lasso); Aldicarb (Temik); Aldicarb sulfone; Aldicarb sulfoxide; Atrazine; Benzo(a)pyrene; Carbofuran; Chlordane (Technical Chlordane); Dalapon; Di(2-ethylhexyi)adipate; Di(2-ethylhexyi)phthalate; Dinoseb; Diquat; Endothall; Endrin; Glyphosate (Round-up); Heptachlor; Heptachlor epoxide; Hexachlorobenzene; Hexachlorocydopentadiene; Lindane (gamma-BHC); Methoxychlor; Oxamyl (Vydate); Pentachlorophenol (PCP); Pidoram; Polychlorinated biphenyls (PCBs); Simazine; Toxaphene.

Volatile Organic Compounds (VOCs)*: 1, 1, 1-Trichloroethane; 1, 1, 2-Trichloroethane; 1, 1-Dichloroethyiene; 1, 2-Dichloroethane; 1, 2- Dichloropropane; 1, 3-Dichlorobenzene; 1, 4-Dichlorobenzene; Benzene; Carbon Tetrachloride; Chlorobenzene; cis-1, 2-Dichloroethylene; Ethylbenzene; M, P-Xyienes; Methylene Chloride; o-Xylene; Styrene; Tetrachloroethylene; Toluene; trans 1,2-Dichloroethyiene; 1, 2, 4- Trichlorobenzene; Trichloroethylene; Vinyl Chloride.

Secondary Elements: Aluminum; Silver; Sulfate; Surfactants

Other Organic Compounds*: 1, 1, 1, 2- Tetrachloroethane. 1, 1, 2, 2-Tetrachloroethane; 1, 1-Dichloroethane; 1, 1-Dichloropropene; cis-1,3-Dichloropropene; 1, 2, 3-Trichlorobenzene; 1, 2, 3-Trichloropropane (TCP); 1, 2, 4-Trimethylbenzene; 1, 2-Dichlorobenzene; 1, 3, 5-Trimethylbenzene; 1, 3-Dichloropropane; 2, 2-Dichloropropane; 2-Chlorotoluene; 4-Chlorotoluene; Bromobenzene; Bromochloromethane; Bromomethane; Chloroethane; Chloromethane; Dibromomethane; Dichlorodifluoromethane; Hexachlorobutadiene (HCBD); Isopropylbenzene; Naphthalene; N-Butylbenzene; N-Propylbenzene; P-Isopropyitoluene; Sec-Butylbenzene; Tert-Butylbenzene; trans-1, 3-Dichloropropene; Trichlorofluoromethane

Unregulated Compounds: 3-Hydroxycarbofuran; Aldrin; Butachlor; Carbaryl; Dicamba; Dieldrin; Methomyl; Metolachlor (Dual); Metribuzin (Sencor); Propachlor.

In Compliance with Treatment Techniques for: Giardia; Legionella; Viruses.

Radiological: Gross alpha; Gross beta

Most recent testing conducted in 2000.

The Greenville Water System was monitored for four consecutive quarters during 2001 for 12 parameters (listed below) required under the Unregulated Contaminant Monitoring Rule. **NONE WERE DETECTED.** 2,4-Dinitrotoluene; 2,6-Dinitrotoluene; Acetochlor; DCPA mon-acid; DCPA di-acid; 4,4'-DDE; EPTC; Molinate; Methyl Tert-Butyl Ether (MTBE); Nitrobenzene;

The Information Collection Rule and *Cryptosporidium*

The Greenville Water System, along with all other large water systems throughout the United States, participated in a major testing program known as the Information Collection Rule (ICR). The ICR testing program covered a period of 18 months and began in July, 1997. It was intended to provide EPA with information about the occurrence of chemical by-products due to disinfection, plus information about disease-causing pathogens (microorganisms). The EPA will use the data gathered through the ICR to develop or revise drinking water standards. *Cryptosporidium* is one of the microorganisms analyzed under the ICR. No viable (living) oocysts were detected in Greenville's source water under the ICR program. Even before the ICR, the Greenville Water System began monthly testing at all three water sources for *Cryptosporidium. Since* 1994 when Cryptosporidium testing began, few oocysts have been detected. During 2001, only two organisms were detected in raw water and none in finished drinking water from the Adkins filter plant or the DAF filter plant. *Cryptosporidium* is a one celled protozoan, too small to be seen without a microscope. It can be found in the feces of infected animals or humans. When present in sufficient numbers, it can cause symptoms that include diarrhea, nausea and stomach cramps. Other sources of *Cryptosporidium* include unwashed hands, contaminated surfaces inside and outside the home, contaminated food and recreational waters. No precaution about our drinking water is currently needed for the general public. People with weakened immune systems should speak with their health care providers about how to protect themselves against *Cryptosporidium* from all sources.