Charleston Water System

2018 Charleston Water System Water Quality Report

We met or surpassed all water quality requirements.

These were the only compounds found in our water during required, regulatory testing. All were below the regulatory limit.

	Required Regulatory Report	Maximum Contaminant Level (MCL) set by EPA	Maximum Contaminant Level Goal (MCLG)	Actual Level in CWS Water for 2018	Possible Sources in Water
	Turbidity A measure of the amount of suspended particles in the water (cloudiness); an indicator of overall water quality and filtration effectiveness.	Requires a specific treatment technique; 95% of monthly samples must be less than 0.3 NTU	NA	0.10 NTU Highest level detected 100% of monthly samples met the limit Range: 0.06 - 0.10	Soil runoff
	Cryptosporidium A parasite spread through human and animal waste that causes gastrointestinal illness.	None	Zero Cryptosporidium oocysts per 1 liter of water	0.0	Human and animal sources
	Giardia A parasite spread through human and animal waste that causes gastrointestinal illness.	None	Zero Giardia oocysts per 1 liter of water	0.0	Human and animal sources
Inorganic Compounds	**Copper** A metal widely used in household plumbing that may corrode into water.	90th percentile of all samples collected must be less than the 1.3 ppm action level	1.3 ppm	0.12 ppm (No samples exceeded the action level) Range: 0 to 0.18 ppm	Corrosion of household plumbing materials EPA requires testing for copper and lead once every three years.
Inorganic Compounds	**Lead** A metal no longer used in water pipes, but may be present in plumbing fixtures or old pipes; may corrode into water.	90th percentile of all samples collected must be less than the 15 ppb action level	0 ppb	90th percentile = 2.3 ppb (No samples exceeded the action level) Range: 0 to 11 ppb	Corrosion of household plumbing materials EPA requires testing for copper and lead once every three years.
Inorganic Compounds	**Nitrate/Nitrite** Nitrates and nitrites are nitrogen-oxygen compounds that can become a source of pollution in the form of unwanted nutrients.	10 ppm	10 ppm	0.09 ppm	Runoff from fertilizers
Inorganic Compounds	**Fluoride** A substance that is naturally occurring in some water sources, particularly groundwater. It is also added to drinking water to help prevent tooth decay.	4 ppm	4 ppm	0.16 ppm in source water 0.35 ppm in finished water Range <0.10 to 0.56 ppm	Naturally occurring in source water and adjusted during treatment to prevent tooth decay.
Disinfectants	**Chlorine Dioxide** A disinfection agent added in small amounts to protect against microbes.	800 ppb	800 ppb	260 ppb Range: 0 to 260 ppb	Added for disinfection
Disinfectants	**Chloramine Residual** A compound of chlorine and ammonia added in small amounts to treated water to protect against microbes.	4 ppm MRDL	4 ppm MRDLG	2.71 ppm Running Annual Average Range: 2.4 – 3.1 ppm	Added for disinfection
Disinfection Byproducts	**Total Trihalomethanes (Stage 2)** Stage 2 of the Disinfectants and Disinfection Byproducts Rule requires the locational running annual average (LRAA) for each sampling location to be below the MCL. CWS has eight sampling locations.	Locational Running Annual Average must be below 80 ppb	NA	Highest level detected: 17.01 ppb Range: 0 – 17.01 ppb	Byproduct of disinfection
Disinfection Byproducts	**Total Haloacetic Acids (Stage 2)** Stage 2 of the Disinfectants and Disinfection Byproducts Rule requires the locational running annual average (LRAA) for each sampling location to be below the MCL. CWS has eight sampling locations.	Locational Running Annual Average must be below 60 ppb	NA	Highest level detected: 17.8 ppb Range: 6.97 – 17.8 ppb	Byproduct of disinfection
Disinfection Byproducts	**Chlorite** A byproduct formed when chlorine dioxide is used to disinfect water.	1 ppm	1.0 ppm	Highest level detected: 0.78 ppm Range: 0.4 – 0.78 ppm	Byproduct of disinfection
Organics & Bacteria	**Total Organic Carbon (TOC)** The measure of organic substances in a body of water, mostly from naturally occurring sources such as plant material. TOC provides a measurement for the potential formation of disinfection byproducts.	No MCL; EPA requires a specific treatment technique.	Required % removal varies from 35% - 55% TOC removal, depending on source water quality	Removal Range: 52% to 66% 58.2 % removed	Naturally present in the environment
Organics & Bacteria	**Total Coliform Bacteria** A group of bacteria whose presence in water indicates possible contamination with soil or waste from warm blooded animals.	Presence of coliform bacteria greater than or equal to 5% of monthly samples	0%	3.1% highest % of positive monthly samples Range: 0 – 3.1% All repeat samples were satisfactory	Naturally present in the environment MONITORING VIOLATION: Due to human error, repeat samples were collected from the wrong locations. The error was corrected as soon as it was discovered.

Abbreviations: ppm: Parts per million (mg/L) ppb: Parts per billion (ug/L) ppt: Parts per trillion (ng/L) LRAA: Locational Running Annual Average RAA: Running Annual Average NTU: Nephelometric Turbidity Units

These unregulated compounds have EPA Health Advisories and all were detected below their EPA Health Advisory level.

Compounds With Health Advisories	Units	Aug 2018	Nov 2018	Feb 2019	May 2019	Aug 2020	Nov 2021	Feb 2022	May 2023	EPA Health Advisory	Secondary Drinking Water Standards
Atrazine	ppt	22	19	7.2						700,000 ppt*	
Barium	ppb	14	12	16						7,000 ppb*	
Bromodichloromethane	ppb	5.6	3.7	3.3						100 ppb*	
Chloroform	ppb	7.2	2.7	2.6						350 ppb*	
Dibromochloromethane	ppb	2.6	2.0	1.6						700 ppb*	
Manganese	ppb	13	6.4	3.3						1,600 ppb*	
Perchlorate	ppb	NA	NA	0.13						0.25 ppb*	
PFOA	ppt	5.0	4.1	4.4						70 ppt**	
PFOS	ppt	9.7	6.1	6.3							
Simazine	ppt	NA	6.9	14						700,000 ppt*	
Strontium	ppb	53	41	43						20,000 ppb*	
Zinc	ppb	NA	NA	6.3						10,000 ppb*	
Additional unregulated compounds detected during unregulated compound testing.											
1,4 Dioxane	ppb	0.11	0.14	0.32						NA	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	ppt	NA	4.0	NA						NA	
Acesulfame-K	ppt	NA	32	160						NA	
Aluminum	ppb	74	58	38						NA	50 to 200 ppb
Boron	ppb	37	32	26						NA	
Chromium, hexavalent	ppb	0.06	0.06	0.06						NA	
DEET	ppt	NA	12	NA						NA	
Iohexal	ppt	NA	19	19						NA	
Lincomycin	ppt	NA	24	NA						NA	
NDMA	ppt	7.5	3.4	5.6						NA	
NMEA	ppt	NA	2.5	NA						NA	
PFBA	ppt	7.0	NA	NA						NA	
PFBS	ppt	3.8	4.0	3.2						NA	
PFHpA	ppt	3.2	2.9	2.3						NA	
PFHxA	ppt	5.6	5.7	4.3						NA	
PFHxS	ppt	3.3	2.8	2.1						NA	
PFPeA	ppt	7.5	7.5	4.7						NA	
Quinoline	ppt	NA	19	NA						NA	
Sucralose	ppt	NA	950	640						NA	
Theobromine	ppt	NA	NA	16						NA	
Total Trihalomethanes	ppb	15.4	8.4	7.5						NA	

Notes

Thirty-four compounds on the EPA Health Advisory list were not analyzed because there are no analytical methods available at this time.

August 2018: we analyzed 597 individual compounds.

November 2018: we analyzed 595 individual compounds.

February 2019: We analyzed 627 individual compounds.

An EPA Health Advisory is an estimate of acceptable drinking water levels for a substance based on health effects information. It's not a legally enforceable Federal standard, but serves as technical guidance to assist Federal, State, and local officials.

*EPA Drinking Water Equivalent Level (DWEL).

**EPA Lifetime Health Advisory, as the data is not available as DWEL.

See our Unregulated Compounds Position Statement on the Water Quality Reports page at www.charlestonwater.com.

Water Characteristics

These parameters affect aesthetics, such as taste, odor, hardness, etc. The EPA has secondary standards for some of these parameters, which are recommended guidelines.

Parameter	2018 Average	Highest Level Recommended by EPA
Chloride	19 ppm	250 ppm
Color	4 PCU	15 PCU
Iron	<0.10 ppm	0.3 ppm
Manganese	<0.05 ppm	0.05 ppm
Total Dissolved Solids (TDS)	115 ppm	500 ppm
Sodium	13 ppm	No Standard
Alkalinity	29 ppm	
Conductivity	197 µmhos/cm	
Hardness	58 ppm (3.39 gpg)	
Ortho-phosphate	1.2 ppm	
Silica	7 ppm	
Temperature	69.8° F (21°C)	

Abbreviations:
ppm: Parts per million PCU: Platinum Cobalt Units gpg: Grains per gallon µmhos/cm: Micromohs/cm

DEFINITIONS

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.

Maximum Contaminant Level (MCL)
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.

Action Level (AL)
The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements that a water system must follow.

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

Maximum Residual Disinfectant Level (MRDL)
The highest level of disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG)
The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

FLUORIDE POSITION STATEMENT

Adopted by the Board of Commissioners October 24, 2017

The Charleston Water System (CWS) supports the recommendations of the World Health Organization, American Medical Association, Canadian Medical Association, Centers for Disease Control and Prevention (CDC), American Dental Association, Canadian Dental Association, South Carolina Dental Association and other professional organizations in the medical community, for the proper fluoridation of public water supplies as a public health benefit. We also support regular scrutiny of the most current peer reviewed research on fluoride and the positions of the medical and dental community.

We adjust the naturally occurring level of fluoride in our drinking water in a responsible, effective, and reliable manner that includes monitoring and controlling fluoride levels as mandated by state and/or federal laws, regulations and recommendations. We carefully monitor and adjust potable water to achieve the scientifically recommended concentration of fluoride for protection against dental caries, which is 0.7 parts per million. Our annual cost for this program is about $110,000, which equates to $0.25 per person across the approximately 450,000 people in our water service area.

The CWS participates in the fluoridation of water under the guidance of the South Carolina Department of Health and Environmental Control (SCDHEC), Oral Health Division. SCDHEC coordinates their program in conjunction with the CDC and the U.S. Department of Health and Human Services.

If there are questions regarding these programs, please contact:
SCDHEC, Division of Oral Health, 2100 Bull Street, Columbia, S.C. 29201
P: (803) 898-9577 • F: (803) 898-2065

Questions / Extra Copies:
Communications Manager: (843) 727-7146

En Español:
Este informe contiene información muy importante sobre su agua beber. Tradúzcalo ó hable con alguien que lo entienda bien.

Get Involved:
Our Board of Commissioners meets monthly and meetings are open to the public. Citizen participation is welcomed. Meetings are typically held the fourth Tuesday of every month at 9 a.m. at 103 St. Philip Street. More information: www.charlestonwater.com.

This report is published annually in May.

Public Water System ID#: 1010001

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www.charlestonwater.com

24/7 Customer Service: (843) 727-6800

Main Office (Downtown)
103 St. Philip Street
Charleston SC, 29403

North Area Office
6296 Rivers Avenue
North Charleston, SC 29418

MESSAGE FROM THE EPA

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with HIV/AIDS or other immune system disorders, persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, some elderly and some infants can be particularly at risk from infections.

These people should seek advice from their health care providers. EPA/CDC guidelines 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).

POSSIBLE CONTAMINANTS IN SOURCE WATER

The sources of drinking water, both tap water and bottled water, include rivers, lakes, streams, ponds, reservoirs, springs, and wells.

As water travels over land and into waterways, it dissolves natural minerals and picks up substances from animals or human activity.

To protect public health, water treatment plants reduce contaminants to safe levels established by regulations.

Microbes, such as viruses and bacteria, may come from septic systems, livestock, pets and wildlife.

Organic compounds, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, can also come from gas stations, runoff, and septic systems.

Inorganic compounds, such as salts and metals, which can be naturally occurring or the result of storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

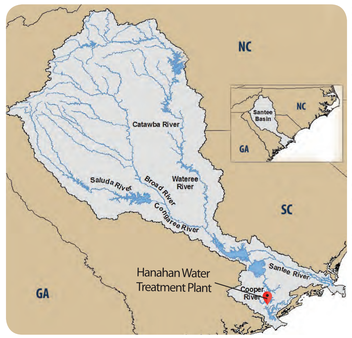
Radioactive compounds can be naturally occurring or the result of oil and gas production and mining activities.

Pesticides and herbicides may come from agriculture, runoff, and residential uses. NOTE: None were found in our source water or treated water when we tested for more than 250 of them in 2017. See website for complete list at www.charlestonwater.com

Charleston Water System

Hanahan Water Treatment Plant

BUSHY PARK RESERVOIR WATERSHED



Source Water Protection

To raise awareness about preventing water pollution, SC DHEC identifies potential sources of contamination for each drinking water source in the state. www.scdhec.gov/HomeAndEnvironment/Water/SourceWaterProtection/

You Can Help!

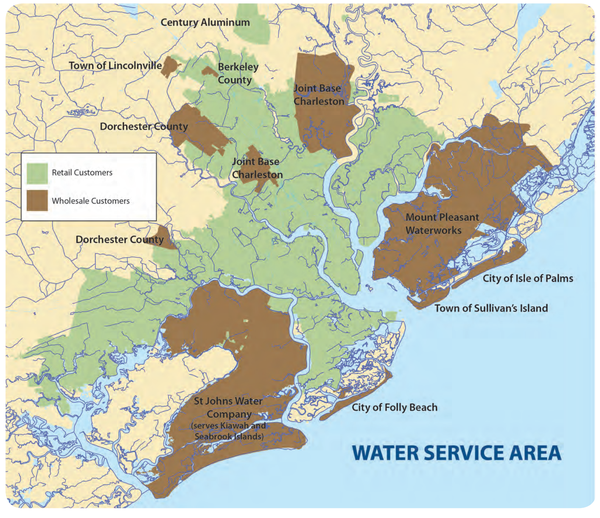
Stormwater runoff pollutes waterways.

Pick up the poop! Pet waste adds bacteria and excess nutrients, which contribute to algae growth that chokes out plants and wildlife.

Don't over-fertilize your lawn. It washes into storm drains, streams, rivers and oceans.

No dumping in storm drains. They empty directly into a waterway.

Proper disposal of oils, paints, and other chemicals.

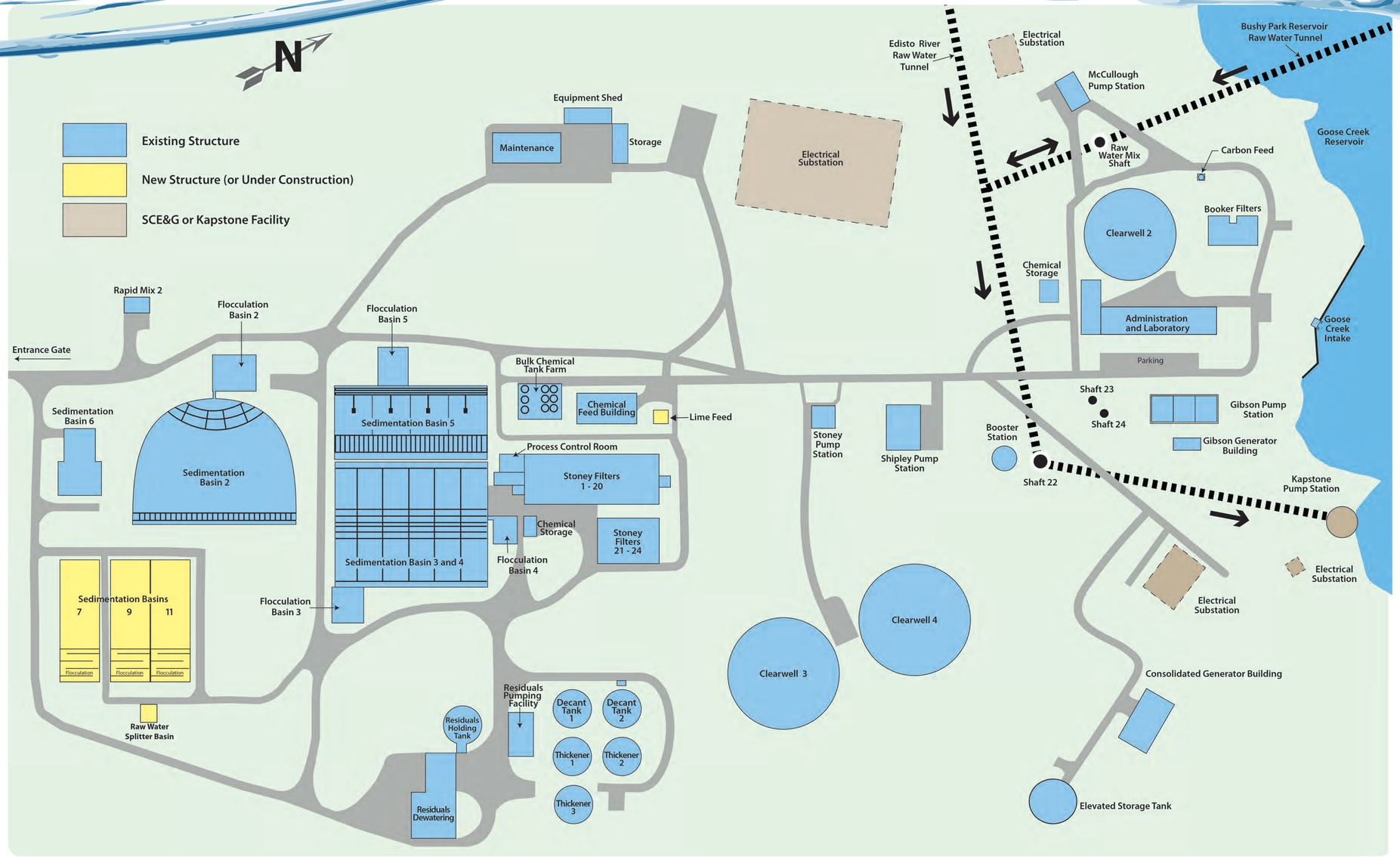


WATER SERVICE AREA

QUICK FACTS

1	Largest water treatment plant by permitted capacity in S.C.
2	Second largest watershed on the east coast (Santee-Cooper)
9	Wholesale customers
20,000	Total annual water quality tests
$60,000	Spent annually on voluntary unregulated compound testing
120,000	Retail customer accounts
450,000	People served in the tri-county area
58 MGD	Average daily volume of treated water
105.5 MGD	Largest recorded volume treated in one day
115.4 MGD	DHEC permitted capacity

MGD = Million Gallons Per Day



TREATMENT PROCESS