City of Raleigh 2019 Consumer Confidence Report

System ID: 03-92-010

We are pleased to present the 2019 Consumer Confidence Report, which is a summary of last year's drinking water quality. Included are details about your sources of water, what it contains, and how it compares to standards set by regulatory agencies. Our goal is to provide you with a safe and dependable supply of drinking water and we strive to continually improve water treatment and delivery processes. We are committed to ensuring the high quality of your drinking water and to providing you with this information. If you wish to learn more about this report or request a paper copy, please contact Edward Buchan at edward.buchan@raleighnc.gov or (919) 996-3471.

Your Water Utility Working for You

We replaced **36,773** feet of old and poor condition water line throughout our water distribution system

17,816,730,000 gallons of water were treated at our two treatment facilities, the EM Johnson and Dempsey Benton plants

Over **17,000** water meters were replaced with Smart Meters, which allow for improved data analysis and quicker detection of leaks.

Your Drinking Water Sources

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. In Raleigh's case, our source water comes Falls Lake, located in northern Wake County, and Lake Benson which is located in Garner, NC. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up contaminants resulting from the presence of animals or from human activity. Contaminants that may be present in source water include microbial contaminants, inorganic contaminants, pesticides and herbicides, organic chemical contaminants and radiological contaminants.

Source Water Assessment Program (SWAP) **Results**

The North Carolina Department of Environmental Quality, 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 Contaminant Sources (PCSs). The results of the assessment are available in 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 the City of Raleigh 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 below:

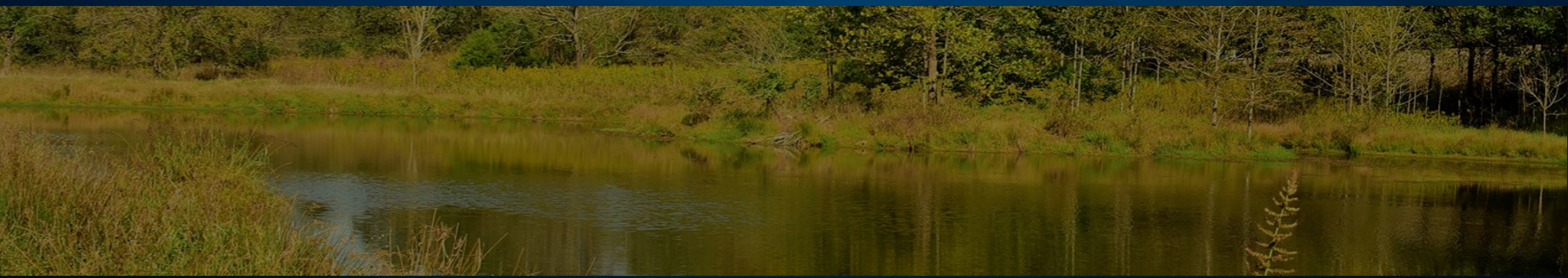
Source Name	Susceptibility Rating
Falls Lake	Higher
Lake Benson	Higher

To help reduce potential impacts of upstream contaminant sources, Raleigh Water established a Watershed Protection Program, which to date has helped permanently protected over 10,000 acres and 117 miles of streams in our drinking watersheds. More information about this program is available at this webpage:

https://www.upstreammatters.org/

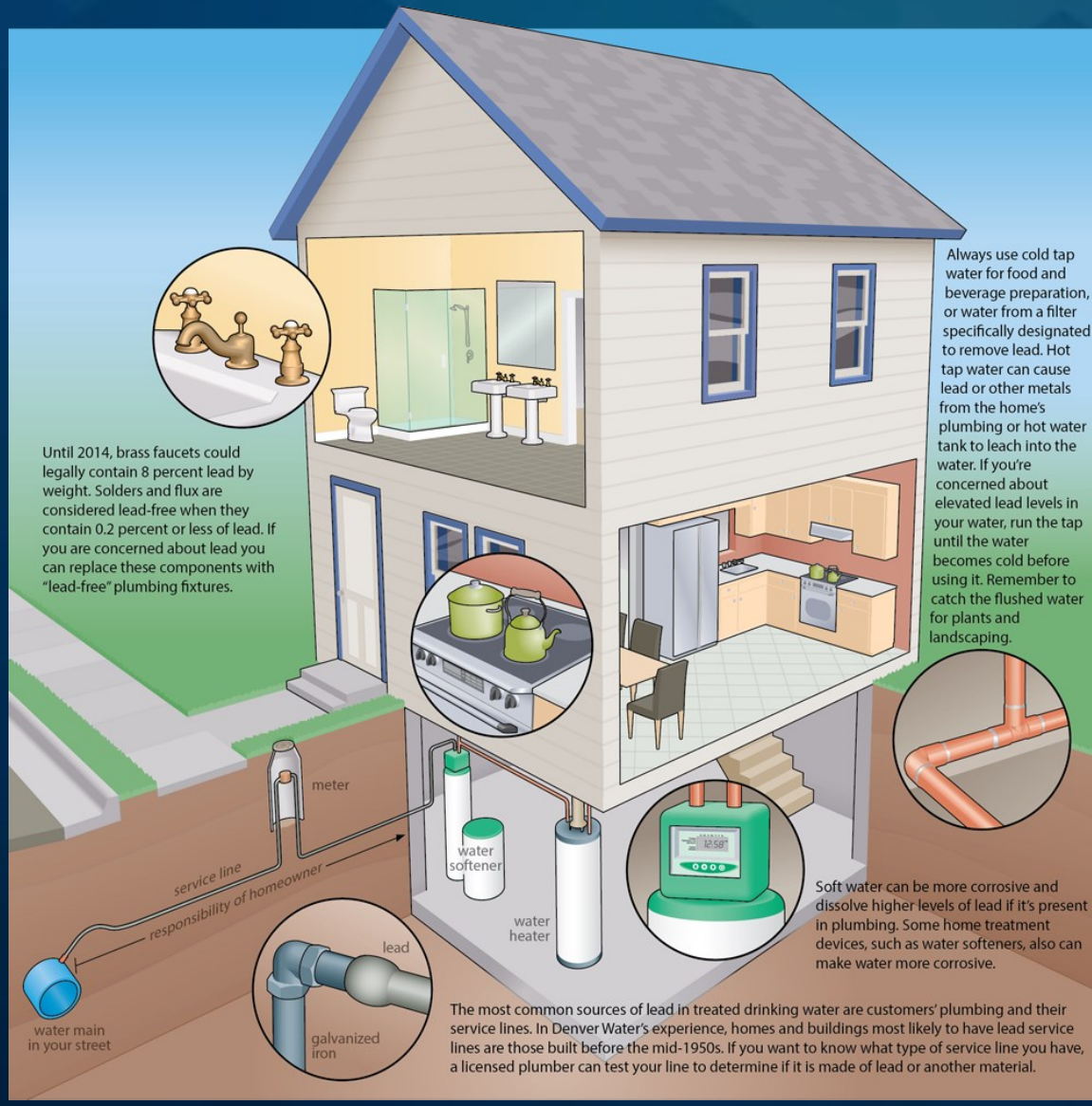
Raleigh Water also partners with the Center for Applied Ecology at NC State University to provide real time water quality data at Falls Lake to help detect potential water quality issues. More information is available at this webpage:

https://caae.cals.ncsu.edu/water-quality-data/



Get The Lead Out!

City of Raleigh Public Utilities Department maintains an active program to minimize the risk of lead exposure through its drinking water supply. Operations staff carefully monitor and adjust pH levels of water to a specific range that reduces the corrosive nature of the water, and corrosion inhibitor is added in our water treatment process to create and maintain a protective film on pipes that reduces the release of metals, such as lead, from household plumbing. The US EPA Lead and Copper Rule compliance is based on the 90th percentile of samples collected during each monitoring period from homes built in the target period between 1982 and 1985 or homes served by lead service lines. The City of Raleigh system is below the action level for lead and below the maximum contaminant level (MCL) for copper and is in compliance with the Lead and Copper Rule. The City of Raleigh has always been in compliance with the EPA Lead and Copper Rule. The City is currently on reduced monitoring for lead and copper and is required to monitor for lead and copper every three years. Based on the population served, the City is required to monitor at least 50 homes for lead and copper during the compliance year. We currently have 110 homes listed in our Lead and Copper Compliance Monitoring Plan. The City of Raleigh is proactive when it comes to public health and safety, in addition to our compliance monitoring; the City has a Volunteer Lead and Copper Sampling Program. This allows our customers to have their water tested anytime for lead and copper by our laboratory staff at no cost to the customer. City of Raleigh water utility customers may request a free kit to test for lead in their drinking water, by calling: 919-996-4H20 (4420) or by email: watersamples@raleighnc.gov



What EPA Wants You to Know

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does no necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791). Some people may be more vulnerable to contaminants in drinking water than the general population Immunocompromised persons such as persons with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their healt care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available fron the Safe Drinking Water Hotline (800-426-4791).

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Keeping Your Water Safe:

Laboratory staff from Raleigh Water's Treatment Plant Division perform an extensive level of testing to ensure the safety of your drinking water. The drinking water laboratories are certified and approved by the State of North Carolina and the USEPA to perform drinking water quality analysis. In 2019, staff chemists, microbiologist and technicians at the drinking water laboratory collected, tested and analyzed Raleigh's drinking water between 6,000 and 7,000 times per month for many substances such as trace metals, petroleum products, pesticides and bacteria. During 2019, the City of Raleigh was in compliance with all state and national Drinking Water Regulations. The following data represents results for both the EM Johnson and Dempsey E. Benton water treatment plants.

EM Johnson Treatment Plant

MICROBIOLOGICAL CONTAMINANTS

Contaminant (units)	MCL Violation Y/N	Your Water	MCLG	MCL	Like Source of Contamination
E. Coli (presence or absence)	N	0	0	(Note: If either an original routine sample and/or its repeat samples(s) are *E. coli positive, a Tier 1 violation exists)*	Human and animal fecal waste

TURBIDITY*

Contaminant (units)	Treatment Technique (TT) Violation Y/N	Your Water	Treatment Technique (TT) Violation if:	Like Source of Contamination
Turbidity (NTU) - Highest single turbidity measurement	N	0.10	Turbidity > 1 NTU	Soil runoff
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits	N	100%	Less than 95% of monthly turbidity measurements are ≤ 0.3 NTU	

*Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. The Turbidity rule requires that 95% or more of the monthly samples must be less than or equal to 0.3 NTU.

EM Johnson Treatment Plant (cont)

INORGANIC CONTAMINANTS

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Like Source of Contamination
Fluoride (ppm)	1/7/2019	N	0.59	N/A	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories

LEAD AND COPPER CONTAMINANTS

Contaminant (units)	Sample Date	Your Water	# of sites found above the AL	MCLG	MCL	Like Source of Contamination
Copper (ppm) (90th percentile)	2019	0.04	0	1.3	AL = 1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ppb) (90th percentile)	2019	<3	2	0	AL = 15	Corrosion of household plumbing systems, erosion of natural deposits

RADIOLOGICAL CONTAMINANTS

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Like Source of Contamination
Combined radium (pCi/L)	1/23/2017	N	1	NA	0	5	Erosion of natural deposits

DISINFECTION BYPRODUCT PRECURSORS CONTAMINANTS

Contaminant (units)	TT Violation Y/N	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low-High	MCLG	TT	Compliance Method (Step 1 or ACC#)	Likely Source of Contamination
Total Organic Carbon (removal ratio) (TOC) - TREATED	N	1.49	1.39 - 1.66	N/A	TT	Step 1	Naturally present in the environment

EM Johnson Treatment Plant (cont)

DISINFECTANT RESIDUALS SUMMARY

Disinfectant	Year Sampled	MRDL Violation Y/N	Your Water (highest RAA)	Range Low High	MRDLG	MRDL	Likely Source of Contamination
Chlorine (ppm)	2019	N	2.16	0.06 - 3.00	4	4	Water additive used to control microbes
Chloramines (ppm)	2019	N	2.70	0.01 - 3.76	4	4	Water additive used to control microbes

STAGE 2 DISINFECTION BYPRODUCT COMPLIANCE

Monitoring	Year Sampled	MCL Violation Y/N	Your Water (highest LRAA)	Range Low High	MCLG	MCL	Typical Source
TTHM (ppb)	2019	N	45.0 (highest LRAA at Site B12)	10.6 - 70.0	NA	80	Byproduct of drinking water disinfection
HAA5 (ppb)	2019	N	32.2 (highest LRAA at Site B11)	4.90 - 37.0	NA	60	Byproduct of drinking water disinfection

WATER CHARACTERISTICS CONTAMINANTS

Contaminant (units)	Sample Date	Your Water	Range Low High	Secondary MCL
Sodium (ppm)	1/7/2019	25.6	N/A	N/A
Sulfate (ppm)	1/7/2019	43.2	N/A	250
pH, SU	2019	8.4	8.40 - 8.40	6.5 to 8.5
Alkalinity (ppm)	2019	29.2	16.3 - 41.6	N/A
Hardness (ppm)	2019	24	19.7 - 29.7	N/A

Dempsey Benton Treatment Plant

TURBIDITY*

Contaminant (units)	Treatment Technique (TT) Violation Y/N	Your Water	Treatment Technique (TT) Violation if:	Like Source of Contamination
Turbidity (NTU) - Highest single turbidity measurement	N	0.06	Turbidity > 1 NTU	Soil runoff
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits	N	100%	Less than 95% of monthly turbidity measurements are ≤ 0.3 NTU	

*Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. The Turbidity rule requires that 95% or more of the monthly samples must be less than or equal to 0.3 NTU.

INORGANIC CONTAMINANTS

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Like Source of Contamination
Fluoride (ppm)	1/7/2019	N	0.72	N/A	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories

DISINFECTION BYPRODUCT PRECURSORS CONTAMINANTS

Contaminant (units)	TT Violation Y/N	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low-High	MCLG	TT	Compliance Method (Step 1 or ACC#)	Likely Source of Contamination
Total Organic Carbon (removal ratio) (TOC) - TREATED	N	1.61	1.52 - 1.69	N/A	TT	Step 1	Naturally present in the environment

WATER CHARACTERISTICS CONTAMINANTS

Contaminant (units)	Sample Date	Your Water	Range Low High	Secondary MCL
Sodium (ppm)	1/7/2019	34.8	NA	N/A
Sulfate (ppm)	1/7/2019	48.2	N/A	250
pH, SU	2019	8.42	8.38 - 8.47	6.5 to 8.5
Alkalinity, ppm	2019	35.1	28.2 - 45.4	N/A
Hardness, ppm	2019	24.2	21.0 - 28.7	N/A

Glossary of Terms

ACTION LEVEL (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

CHLORAMINATION: the process of adding ammonia to drinking water which already has chlorine added as a disinfectant. The ammonia combines with the existing chlorine which is called free chlorine to create chloramines.

CRYPTOSPORIDIUM: Cryptosporidium is a microorganism that can cause intestinal illness. The City of Raleigh voluntarily tests for Cryptosporidium and DID NOT detect Cryptosporidium in its drinking water in 2019.

HALOACETIC ACIDS (HAAS): A group of chemicals known as disinfection byproducts. These form when a disinfectant reacts with naturally occurring organic and inorganic matter in the water.

MAXIMUM RESIDUAL DISINFECTION LEVEL GOAL (MRDLG): The "Level" (MRDLG) 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 contaminants.

MAXIMUM RESIDUAL DISINFECTION LEVEL (MRDL): The "Highest Level" (MRDL) of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MAXIMUM CONTAMINANT LEVEL (MCL): The "Maximum Allowed" (MCL) is 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.

MAXIMUM CONTAMINANT LEVEL GOAL (MCLG): The "Goal" (MCLG) is 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.

MTBE: The City of Raleigh also tested for Methyl tert-butyl ether (MTBE) and found it to be below the detection limit of 5 ppb for MTBE. At this time no limit for MTBE has been established, however the EPA is considering a limit of 30 ppb.

NOT-APPLICABLE (N/A): Information not applicable/not required for that particular water system or for that particular Rule.

NEPHELOMETRIC TURBIDITY UNIT (NTU): Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

PARTS PER MILLION (PPM) OR MILLIGRAMS PER LITER (MG/L): One part per million corresponds to one minute in two years or a single penny in $10,000.

PARTS PER BILLION (PPB) OR MICROGRAMS PER LITER: One part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

PICOCURIES PER LITER (PCI/L): Picocuries per liter is a measure of the radioactivity in water.

RADON: Radon is a radioactive gas that you can't see, taste, or smell. It is found naturally occurring throughout the U.S. EPA expects to issue a Radon Rule, which will set a standard for Radon in drinking water. The City of Raleigh tested for Radon in its finished water and found it to be <100 pCi/L. There is no current MCL for Radon. However, the EPA is considering a MCL of 300 pCi/L.

TOTAL TRIHALOMETHANES (TTHMS): A group of chemicals known as disinfection byproducts. These form when a disinfectant reacts with naturally occurring organic and inorganic matter in the water.

TREATMENT TECHNIQUE (TT): A treatment technique is a required process intended to reduce the presence of a contaminant in drinking water.

NEED TO KNOW INFORMATION

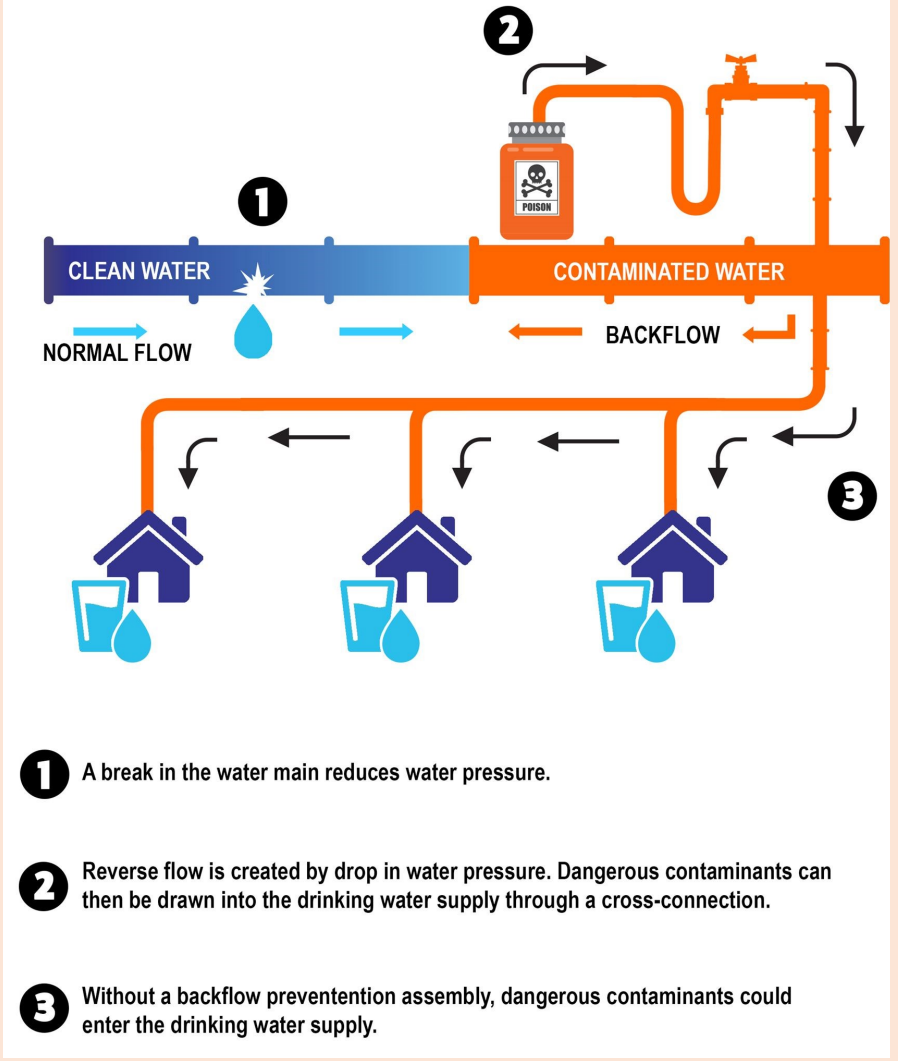
Backflow Prevention Assemblies

Backflow prevention assemblies protect the potable water supply by allowing water in only one direction to prevent potential backsiphonage of pollutants or contaminants from entering the public water supply. All commercial connections including domestic, fire and lawn irrigation are required to have a backflow assembly installed and tested annually. Every residential irrigation system is required to have a backflow assembly installed and tested every three years. Raleigh Water will be contacting customers with backflow assemblies to help ensure these devices are properly tested. If you would like to know more about backflow prevention, please call **(919) 996-2747**.

Raleigh FreeFILL Program

The Raleigh Water freeFILL program aims to promote the use of refillable water bottles among Raleigh residents and visitors. The program highlights locations around the city that will allow people to fill their water bottle for free. Americans use about 50 billion disposable bottles every year. Of those, about 38 billion are not recycled properly. They end up in landfills, or worse, make their way to our streams, rivers and oceans. Using a reusable water bottle and filling it with Raleigh's award-winning tap water can save a person hundreds of dollars every year, while replacing dozens of single-use bottles. More information is available at this website: https://raleighnc.gov/services/sustainability/raleigh-water-freefill-program

Raleigh Water
freeFILL
Site



1. A break in the water main reduces water pressure.
2. Reverse flow is created by drop in water pressure. Dangerous contaminants can then be drawn into the drinking water supply through a cross-connection.
3. Without a backflow preventention assembly, dangerous contaminants could enter the drinking water supply.

See a Water Problem?

Please call Raleigh to report an unusual taste or odor with your tap water, a water main break or sanitary sewer backup or overflow. To report a main break or sewer backup/overflow, please call **(919) 996-3245**. Thank you for your help!