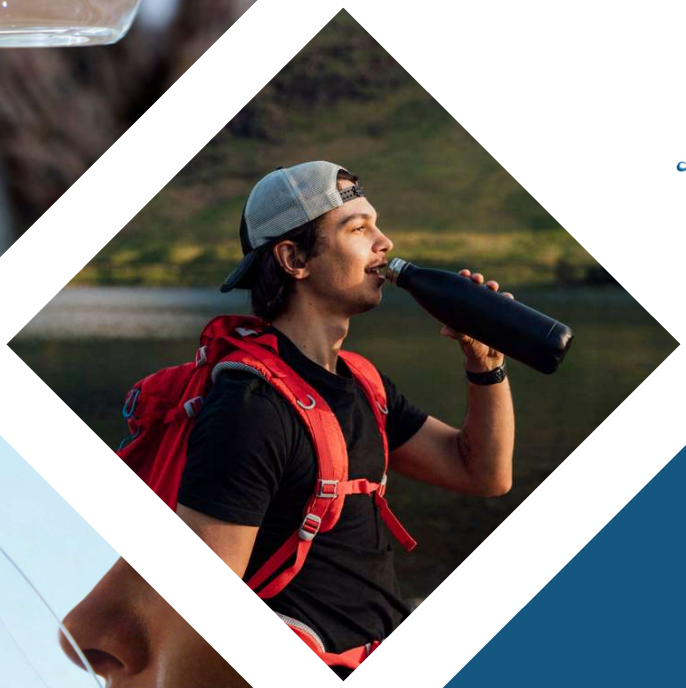


City of Great Falls Water Treatment Plant

CONSUMER CONFIDENCE REPORT

January 1, 2023 - December 31, 2023

The United States Environmental Protection Agency (EPA) requires drinking water utilities to provide an annual Consumer Confidence Report (CCR). The purpose of the CCR is to help people understand and make informed decisions about their drinking water. The CCR summarizes the quality of the drinking water supplied by the City of Great Falls over the past year, where the water comes from, how it is treated, and how it compares to EPA's standards for drinking water quality.

Where does your water come from?

The water treated at the Great Falls Water Treatment Plant comes from the Missouri River just south of its confluence with the Sun River. It is classified as a surface water source.

As water travels over land or through the ground, it dissolves naturally occurring salts and minerals, and can collect nutrients from animal and human activities. In some cases it can even pick up radioactive material. It is for this reason that all drinking water, including bottled water, may be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. Oftentimes the most common issues associated with contaminants in the water are the taste, color, and odor. While undesirable, those characteristics do not necessarily pose any danger to consumers.

More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline at 800-426-4791.

Some people may be more vulnerable to contaminants in drinking water than others. Immuno-compromised people, such as a person with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, and some elderly and infants can be particularly at risk for infections. These people should seek advice about drinking water from their health care providers.

EPA and CDC guidelines on ways to reduce the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Common Contaminants:

Microbial contaminants

Viruses, bacteria and other microbes that can come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants

Salts and metals can be naturally occurring or can result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Organic contaminants

Substances including synthetic and volatile organic chemicals can be the by-products of industrial processes and petroleum production, but they may also come from gas stations, urban storm water runoff, and septic systems.

Radioactive contaminants

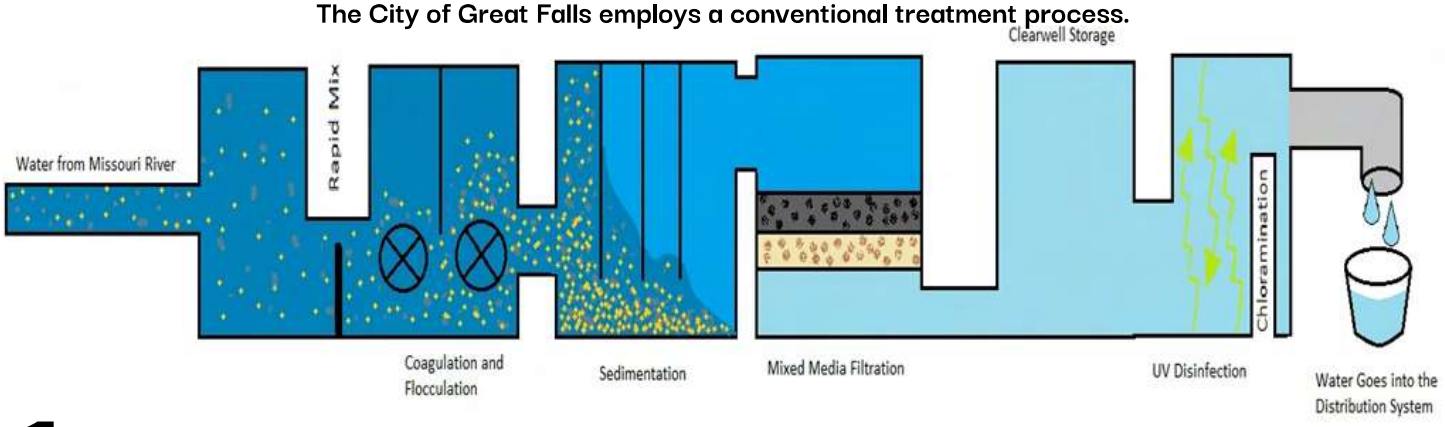
Radioactive substances can be naturally occurring or the result of oil and gas production and mining activities.

Pesticides and Herbicides

These substances result from a variety of sources like agricultural, urban, and residential stormwater runoff.

THE TREATMENT PROCESS

The City of Great Falls employs a conventional treatment process.



1 Coagulation and Flocculation

Water from the Missouri River is pumped to the plant where it is mixed with chlorine, alum (an aluminum sulfate solution) and polymer. The chlorine provides disinfection of the water and the alum and polymer help facilitate the coagulation and flocculation process. Coagulation and flocculation is a process that causes the fine particulate and dissolved contaminants to be pulled from solution and bound together to form larger, heavier particulate called floc. The larger size and weight of the floc make it settle more readily in the next step of the process.

2 Sedimentation

In this step the water moves into large, open basins. This slows the movement of the water and allows all of the large floc particles and heavier sediments to settle out of the water and collect at the bottom of the basins.

3 Mixed Media Filtration

From the settling basins, the water makes its way through flumes and into mixed media filters. At the plant 16 mixed media filters are used to collect any fine particulate and floating matter that may have made it through the previous steps. The filters are made up of a layer of anthracite (coal) and a layer of fine sand.

4 UV Disinfection

Ultraviolet disinfection (UV disinfection) follows filtration. The water flows through four foot diameter pipes outfitted with five rows of 12 UV lights. Any bacteria or viruses that may still be present in the water are sterilized by the UV light and no longer pose a danger to humans and animals. This step is especially effective at treating organisms such as Cryptosporidium, which are very hardy and can survive the chlorination process.

5 Chloramination

Lastly, an ammonia solution is added to the drinking water to react with the available chlorine to form chloramines. Chloramine is a more stable compound than chlorine and will remain in the drinking water as a solution much longer than chlorine. This ensures that the drinking water retains its disinfection properties as it travels from the treatment plant to the consumers. Another advantage to chloramination is that it does not impart as strong of a flavor or smell as chlorine which benefits people sensitive to those characteristics.

Nearly 4 billion gallons of water are processed at the Water Treatment Plant annually.

It would take a 1360 mile long train to hold the amount of water processed annually at the Water Plant.

Demand during the summer months can reach as high as 33,000,000 gallons of water per day.

Demand during the winter months is typically about 7,000,000 gallons of water per day.

The Great Falls Water Treatment Plant operators and staff monitor the treatment process continually. In-line analyzers coupled with electronic data collection software provide real-time information for the entire treatment process. Additionally, operators and staff collect a variety of samples at each treatment step at the Plant and finished water samples from various locations in the City. These samples are analyzed at the Treatment Plant Laboratory as well as commercial laboratories to ensure the effectiveness of the treatment process and safety of the finished drinking water.

Gore Hill elevated tank near the airport. This tank has a 500,000 gallon capacity. Construction on this elevated tank was completed in 2018.

The elevated tanks found around Great Falls hold about 2 million gallons of water.

The following tables and descriptions will provide useful information about the drinking water, inform you of any current or upcoming EPA regulations, and describe the latest changes and updates at the Water Treatment Plant.

Useful Definitions

Maximum Contaminant Level (MCL): the highest concentration that a contaminant is allowed in to be in drinking water.

Maximum Contaminant Goal Level (MCGL): the concentration level of a contaminant below which there is no known or expected risk to health.

Secondary Maximum Contaminant Level (SMCL): the concentration level of a secondary contaminant which when exceeded may adversely affect the aesthetic quality of the drinking water.

Primary Contaminant: Contaminants that can be harmful to human health at low concentrations.

Secondary Contaminant: contaminants in water that do not necessarily pose a health risk but interfere with the aesthetic quality of the drinking water.

Variances or Exceptions: State or EPA permission to not meet an MCL or a treatment technique limit under certain conditions.

Treatment Technique: A required process intended to reduce the levels of a contaminant or contaminants in drinking water.

Action Level (AL): the concentration of a contaminant which, if exceeded, triggers increased treatment requirements, which a water system must follow.

Contaminant: a constituent, impurity , or other undesirable element that makes a product polluted, unfit or inferior.

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

Maximum Residual Disinfection Level (MRDL): the highest concentration of disinfectant allowed in drinking water.

Reporting Limit (RL): the lowest concentration that can be reliably measured within a specified range of precision and accuracy limits during routine laboratory operation.

Non-Detect (ND): the concentration of a target analyte is below the method detection limit for the analysis.

Method Detection Limit: the minimum measured concentration of a substance that can be measured with 99% confidence, that is not a blank.

Secondary Maximum Contaminant Level (SMCL): guidelines to identify acceptable concentrations of contaminants that may cause unpleasant tastes, odors, or colors in drinking water.

Humans can smell chlorine at concentrations as low as 0.1 ppm. Household bleach concentration is about 60,000 ppm. The water leaving the Plant has a concentration of 2 ppm.

Contaminants regulated at your tap

Constituent	AL	Results at the 90th percentile	MCGL	# of sites above the AL	# of sites sampled	90th percentile AL exceedance	Possible Sources of Contaminant
Lead	15 ppb	10.6 ppb	0	2	35	No	Corrosion of service lines and household plumbing systems. Erosion of natural deposits.
Copper	1300 ppb	35.12 ppb	0	0	35	No	Corrosion of service lines and household plumbing systems. Erosion of natural deposits.

Finished water from the treatment plant was analyzed for lead and copper on 11/1/2023. Both were ND.

The 90th percentile is the result at which 90 percent of all sample sites fall below. If this number exceeds the AL for either metal, the Water Plant would need to make changes to the treatment process so the water will not cause metals to leach from the plumbing in homes.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water primarily comes from materials and components associated with service lines and home plumbing. The City of Great Falls is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. If you have a lead service line and your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for at least 30 seconds or up to 2 minutes before using the water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing materials, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

To satisfy EPA testing requirements, Great Falls Water Plant Lab staff collected water samples from targeted homes throughout the City during the summer of 2023. The results are in the table above.
Sampling will occur again in January of 2024 and will happen every six months. If you are interested in being included in future sampling events please contact the Water Plant. More information and regular updates about the Lead and Copper Rule can be found on the EPA's website (https://www.epa.gov/dwreginfo/lead-and-copper-rule).

		
ppm (parts per million)	1 drop of water in about eleven 8oz glasses of water	One penny in one million dollars
ppb (parts per billion)	1 drop of water in 10,600 8oz glasses of water	One penny in one billion dollars
ppt (parts per trillion)	1 drop of water in 10,600,000 8oz glasses of water	One penny in ten billion dollars

The EPA has developed a health advisory for the manganese in drinking water. While it is an essential nutrient for humans and animals at low concentrations, high concentrations of manganese could have adverse neurological effects. The health advisory limit has been set at 0.3 mg/L. The concentration of manganese in the finished drinking water for the City of Great Falls is ND.

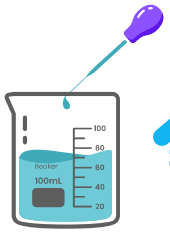
Contaminants regulated within the distribution system

Constituent	MCL	MCGL	Concentration	Regulation Met?	Possible Sources of Contaminant
Total Coliform Bacteria (TC)	<5% pos. for TC	0	0 positive TC samples out of 840 samples analyzed this year.	Yes	Naturally occurring bacteria in the environment.
Total Residual Chlorine (mg/L)	4.0	4.0	0.22 - 1.98	Yes	Disinfection additive that limits bacterial growth.
Haloacetic Acids (HAA5, ppb)	60	--	27.4 - 50.8 Annual Average= 36.8	Yes	Byproducts of drinking water disinfection process.
Total Trihalomethanes (TTHM, ppb)	80	--	23.3 - 61.5 Annual Average= 44.1	Yes	

While we employ the use of a UV system to sterilize viruses and bacteria, chlorine is the primary disinfection used in our system. Chlorine does an excellent job of killing bacteria and microorganisms that could be harmful, but it also reacts with naturally occurring organic materials that are commonly found in surface water sources. When chlorine reacts with the organic compounds, it can form what is called Disinfection Byproducts (DBPs), or HAA5 and TTHMs. The concentration of these byproducts can vary seasonally with higher concentrations typically found during the warmer months of the year. The City of Great Falls monitors chlorine levels and the concentrations of organic carbon in the river water to adjust our treatment techniques to try to minimize the formation of DBPs.

Major factors for DBP formation:

Natural organic material in source water.



Chlorine used to treat source water.

Time it takes to reach the consumer.

Constituent	MCL	Concentration	Regulation Met?
Total Organic Carbon (TOC)	15% removal rate required	2.0 - 2.8 ppm	Yes 15% removal requirement met

Typical sources of TOC found in surface water are decaying grasses, leaves, and other organic materials.

There are 324 miles of water mains throughout the City.

Contaminants regulated at the Treatment Plant

Constituent	MCL	MCGL	Concentration	Regulation Met?	Possible Sources of Contaminant
Turbidity (NTU)	<0.3, 95% of the time	0	0.025 - 0.138	Yes	Runoff.
Total Residual Chlorine (mg/L)	4.0	4.0	1.66 - 2.16	Yes	Disinfection additive.
Chloramine (mg/L)	4.0	4.0	1.65 - 2.12	Yes	Disinfection additive.
Arsenic (mg/L)	0.01	0.0	ND	Yes	Erosion of naturally contaminants, mining wastes.
Fluoride (mg/L)	2.0	2.0	0.7	Yes	Erosion of natural contaminants.
Nitrate (mg/L)	10	10.0	0.08	Yes	Runoff, fertilizers, septic tank leachates, industrial wastes.

The City of Great Falls does not fluoridate the water. The fluoride that is present in the water is naturally occurring.

The coagulation and flocculation process occurs at this location in underground chambers.

16 mixed media filters are located inside of this building.

Unregulated Contaminant Monitoring Rule (UCMR)

As part of the EPA's responsibility under the Safe Drinking Water Act, every five years a list of priority, unregulated contaminants of interest are listed for each public water system to monitor over a years time. This year the City of Great Falls Water Treatment Plant conducted testing for the UCMR5 (5 denoting the fifth monitoring event) on the finished drinking water. The targeted, unregulated contaminants for this round were lithium (Li) and 29 different PFAS compounds.

PFAS is short for perfluoroalkyl- and polyfluoroalkyl-substances. These synthetic compounds are considered forever chemicals because they do not easily breakdown. PFAS are very common and found in everyday things like non-stick cookware, waterproof clothing and shoes, outdoor equipment, tarps, food packaging, and dental floss, just to name a few. The health impacts of PFAS are still being investigated but it is suspected that they may cause some forms of cancer.

Here are a few ways to avoid PFAS:

- Avoid stain-resistant carpets and upholstery, as well as waterproofing sprays.
- Avoid lined take-out containers.
- Choose cookware made of cast iron, stainless steel, glass, or enamel instead of Teflon.
- Avoid products with the ingredient PTFE or other "fluor-" ingredients listed on the label.

Constituent	MCL	MCGL	Concentration	Possible Sources of Contaminant
Lithium (ppb)	Not Specified	0	57.0 - 80.8	Erosion of natural contaminants.
PFAS (ppb)	0.002-0.02	0	ND	Synthetic chemicals used in manufacturing and processing facilities, fire fighting foams, and in various daily use household products.

Most of what is known about the health affects of lithium is related to its use as a pharmaceutical drug. Very little is known about how the intake of lithium from food and water may effect health.

Learn more about PFAS by visiting the EPA's website: https://www.epa.gov/pfas

Learn more about the UCMR5 here: https://www.epa.gov/dwucmr/fifth-unregulated-contaminant-monitoring-rule

Miscellaneous Constituents of Interest

Constituent	SMCL	Monitoring Location	Concentration	Possible Sources of Contaminant
Hardness (mg/L)	--	Finished Water (post-treatment)	146	Erosion of natural contaminants. Can cause water spots and deposits on fixtures.
Alkalinity (mg/L as calcium carbonate)	--	Finished Water (post-treatment)	70 - 134	Runoff. Can impart a salty or soda flavor to the water. May also contribute to dry skin.
Chloride (mg/L)	250	Finished Water (post-treatment)	13	Runoff. Can give water a salty flavor.
Total Dissolved Solids (TDS, mg/L)	500	Finished Water (post-treatment)	232	Runoff. Can contribute to hardness and cause colored water, staining, and deposits.
Sulfate (mg/L)	250	Finished Water (post-treatment)	54	Runoff. Can give water a metallic, or medicine flavor. May also contribute to a sulfur smell.
Aluminum (mg/L)	0.05-0.2	Finished Water (post-treatment)	0.05	Runoff.
Calcium (mg/L)	--	Finished Water (post-treatment)	41	Runoff, erosion of natural contaminants.
pH (pH units)	6.5-8.5	Finished Water (post-treatment)	6.75-7.45	Erosion of natural contaminants, human actions.

The City of Great Falls Water Treatment Plant operated the entire 2023 year with no violations and met or exceeded all EPA and DEQ water quality standards.

Current and Upcoming Projects

As part of our commitment to providing the residents of Great Falls with quality drinking water, the Water Treatment Plant is regularly undergoing routine maintenance and upgrades. Below is a summary of the current and upcoming projects at the Plant.

Service Line Inventory

The EPA is requiring that all water systems have a comprehensive inventory of all drinking water service lines. As part of maintaining compliance, the City of Great Falls Engineering Department and Water Plant Staff have worked together with the public to identify the composition of the service lines entering all of the homes in Great Falls. This will be an ongoing process until all lines have been identified. If you have questions about your service line, or would like to inform us about what material your service line is comprised of, please call the Lead and Copper Hotline at 406-455-8401.

Stage 2 of Filter Building Upgrades Completed

The second stage of a two stage filter upgrade project was completed in the spring of 2023. This project included upgrading all filters to contain air scour cleaning systems and replacing old controls, drains, valves, hardware, and media in the filters. This upgrade means a much more efficient filter cleaning process to ensure optimal filter performance resulting in better quality drinking water for the public.

Construction of a Solids Handling Building

Currently the Water Plant collects all the solids removed during the treatment process and stores them in holding ponds on-site. When the water has evaporated from the surface and the sludge has frozen during the winter months, it is hauled off site using heavy equipment and dump trucks. In order to better manage the solids generated at the Plant, a solids handling facility is being built. The new facility will be finished in 2024. It will contain a gravity thickener and two screw presses. All three will work in unison to thicken and dewater the sludge produced during the treatment process.

The dewatered sludge will be collected in trash receptacles and disposed of as needed. This process will not only allow the Water Plant to better manage the solids, but also return more and cleaner water to the Missouri River.

More than 150 people from Great Falls and the surrounding areas toured the Water Treatment Plant in 2023.

If you are interested in a tour, call the Plant at 406-727-1327

If there are any questions about this report or the quality of the drinking water in your home please contact the Water Plant Laboratory Personnel, or the Water Utility Branch Manager, Jason Fladland, at 406-727-1325.