

The United States Environmental Protection Agency (EPA) and the Montana Department of Environmental Quality (DEQ) require drinking water utilities to provide an annual Consumer Confidence Report (CCR). The purpose of the CCR is to help customers understand and make informed decisions about their drinking water. This report includes information about the source of the drinking water for the City of Great Falls and its consecutive systems, the treatment process, results of compliance and regulation testing, information about the EPA's Lead and Copper Rule, and other miscellaneous educational information.

The water treated at the Great Falls Water Treatment Plant supplies residences in the City of Great Falls, Malmstrom Air Force Base (MAFB), and Black Eagle. Additionally, people who employ the use of cisterns and live within Cascade County can purchase water for use in their homes from three public water stations located throughout the City of Great Falls.

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 the surface of the land or through the ground, it dissolves naturally-occurring minerals, salts, nutrients from animal or human activities, and in some cases radioactive material. Drinking water, including bottled water, may reasonably 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. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline at 800-426-4791. Oftentimes the most common issues associated with

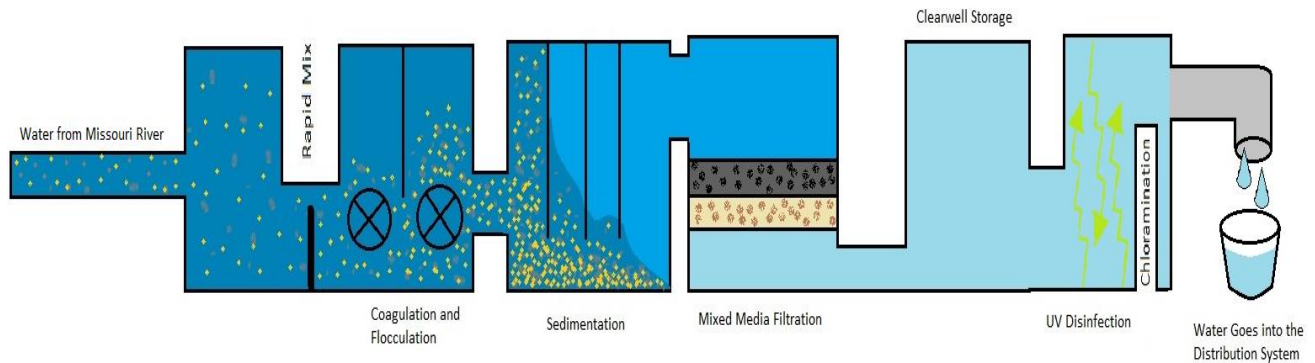
contaminants in the water are the taste, color, and odor. While undesirable, those characteristics do not necessarily pose any danger to consumers.

Common contaminants include:

- Viruses, bacteria and other microbes that can come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, like salts and metals. These can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides that may come from sources like agriculture, urban storm water runoff, and residential uses.
- Organic chemical contaminants that can be the by-products of industrial processes and petroleum production, but may also come from gas stations, urban storm water runoff, and septic systems.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as person with cancer undergoing chemotherapy, persons who have undergone organ transplants, 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 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 (800-426-4791).

## The Water Treatment Process



The Great Falls Water Treatment Plant employs a conventional water treatment process. The diagram above shows the steps the water goes through during the treatment process.

**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 particulate called floc. The larger size of the floc makes it settle more readily as the process continues.

**Sedimentation:** In this step the water moves to large basins causing it to slow it down. This allows all of the large floc particles and heavier sediments to settle out of the water and collect at the bottom of the basins.

**Mixed Media Filtration:** In this step of the process the water that has passed through the settling basins travels through a mixed media filter. The plant employs the use of 16 mixed media filters that are comprised of a layer of

anthracite (coal) and a layer of fine sand. This step further removes any fine sediments and materials that may have made it through the coagulation, flocculation, and sedimentation processes.

**UV Disinfection:** Ultraviolet disinfection (UV disinfection) follows filtration. The water is passed through UV light so that any bacteria or viruses that may still be present in the water are sterilized and no longer pose a threat. This step is especially effective at treating organisms such as *Cryptosporidium*, which are very hardy and can survive the chlorination process.

**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 of chloramine is that it does not impart as strong of a flavor or smell as chlorine which benefits people sensitive to those characteristics.

## Water Quality Information

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 during the process as well as finished water samples from throughout the distribution system. These samples are analyzed at the Treatment Plant laboratory and by commercial laboratories to ensure the effectiveness of the treatment process and safety of the finished drinking water.

The EPA has established regulations regarding the allowable limits for contaminants in drinking water. Detailed EPA/CDC guidelines to reduce the risk of infection or illness by the various contaminants including microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791) or website (<https://www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-information>). Below is a list of definitions that will assist you in understanding the following tables of data. These tables outline the concentration of all detected contaminants found in the drinking water and source water for The City of Great Falls. Unless otherwise specified in the table, all analytical data was collected during 2022.

Definitions	
Maximum Contaminant Level (MCL):	The highest level of a contaminant that is allowed in drinking water.
Maximum Contaminant Level Goal (MCLG):	The level of a contaminant in drinking water below which there is no known or expected risk to health.
Secondary Maximum Contaminant Level (SMCL):	The level of a secondary contaminant which when exceeded may adversely affect the aesthetic quality of the drinking water.
Variances or Exceptions:	State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
Treatment Technique:	A required process intended to reduce the level of a contaminant in drinking water.
Action Level (AL):	The concentration of a contaminant which, if exceeded, triggers treatment of other requirements which a water system must follow.
Maximum Residual Disinfection Level Goal (MRDLG):	The level of a 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 level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
Parts per million (ppm or mg/L):	A common concentration measurement for analytes. This concentration is the equivalent of four drops of ink in a 55-gallon barrel of water or one minute in the span of two years of time.
Parts per billion (ppb or µg/L):	A very small concentration measurement. This concentration is the equivalent to one second in 32 years of time.
Reporting Limit (RL):	The lowest concentration that can be reliably measured within a specified range of precision and accuracy limits during routine laboratory operations.
Primary Drinking Water Contaminants:	Contaminants that can be harmful to human health at low levels. This is divided into six categories: microorganisms, disinfectants, disinfectant by-products, organics, inorganics, and radionuclides.
Secondary Drinking Water Contaminants:	Contaminants that are not harmful to human health but may impart unpleasant characteristics to the water, such as poor taste, color, or bad smell.

# 2022 CONSUMER CONFIDENCE REPORT – GREAT FALLS, MT

<b>Regulated at Consumer Water Taps</b>					
<b>Samples were analyzed during triannual lead and copper testing in June 2020.</b>					
<b>Constituent</b>	<b>Results</b>	<b>AL</b>	<b>MCGL</b>	<b>Regulation Met?</b>	<b>Possible Sources of Contaminant</b>
Lead	0.003 mg/L at 90th Percentile	0.015 mg/L	0	Yes; 0 samples exceeded the AL	Corrosion of service lines and household plumbing systems. Erosion of natural deposits.
Copper	0.505 mg/L at 90th Percentile	1.3 mg/L	0	Yes; 0 samples exceeded the AL	Corrosion of service lines and household plumbing systems. Erosion of natural deposits.
<b>Finished water from the treatment plant was analyzed on 02/09/2022 for copper and lead. Both were non-detect (ND).</b>					

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily 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 30 seconds 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>.

In December of 2021 the EPA announced plans to adopt changes to the Lead and Copper Rule, though finalization of the changes are not expected to be announced until October of 2024. As part of the changes. The City of Great Falls is working diligently to determine the service line materials for the entire distribution system. To satisfy EPA triannual testing requirements, Great Falls Water Plant staff will be collecting samples from targeted homes throughout The City during the summer of 2023, which will be analyzed for lead and copper concentrations. Testing will occur again in 2024 per the rule change. 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>).

<b>Table of Unregulated Contaminants</b>					
<b>Contaminant</b>	<b>Concentration</b>	<b>MCL</b>	<b>MCGL</b>	<b>Monitoring Location</b>	<b>Possible Source/s of contamination</b>
Manganese (mg/L)	Not detected – 0.001	0.3	0	Finished Water (post-treatment)	Erosion of natural contaminants

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 below the health advisory limit for manganese.

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Regulated in the Distribution System					
Constituent	Concentration	MCL	MCGL	Regulation Met?	Possible Sources of Contaminant
Total Coliform Bacteria (TC)	0	<5% positive for TC	0	Yes	Naturally occurring bacteria in the environment.
Total Residual Chlorine (mg/L)	0.1 - 2.00	4.0	4.0	Yes	Disinfection additive that limits bacterial growth.
Haloacetic Acids (HAA5)(ppb)	19 - 32	60	--	Yes	Byproducts of drinking water disinfection process.
	Annual ave. = 25.2				
Total Trihalomethanes (TTHM) (ppb)	25 - 57	80	--	Yes	
	Annual ave. = 38.4				

70 samples are collected from throughout the distribution system and analyzed monthly for total coliform bacteria and total residual chlorine. No samples had a positive result for TC bacteria for the year and all samples fell below the EPA limit for the total residual chlorine concentrations (4.0 mg/L).

Regulated at the Treatment Plant					
Constituent	Concentration	MCL	MCGL	Regulation Met?	Possible Sources of Contaminant
Turbidity (NTU)	0.028-1.009	≤0.30 NTU, 95% of the time	0	Yes	Runoff.
	Ave. = <0.08 NTU				
Chlorine (mg/L)	1.78-2.15	4.0	4.0	Yes	Disinfection additive.
Chloramines (mg/L)	0.29-1.78	4.0	4.0	Yes	Disinfection additive.
Total Organic Carbon (TOC)	1.5 - 2.2 mg/L	15% removal required	--	Yes 20% removal achieved	Decaying organic matter.
Arsenic (As) (mg/L)	0.002 mg/L	0.01	0.0	Yes	Erosion of natural contaminants, mining wastes.
Fluoride (F) (mg/L)	0.9 mg/L	2.0 (SMCL)	2.0	Yes	Erosion of natural contaminants.
Nitrate (NO <sub>3</sub> ) (mg/L)	0.14	10.0	10.0	Finished Water (post treatment)	Runoff, fertilizers, septic leachates, industrial wastes

Miscellaneous Constituents of Interest					
Constituent	Concentration	MCL / SMCL	MCGL	Monitoring Location	Possible Source/s of Contaminant and Possible Effect on the Water
pH (pH units)	6.90 - 7.39	6.5 - 8.5 (SMCL)	6.5 - 8.5	Finished Water (post treatment)	Erosion of natural contaminants, runoff, human actions.
Arsenic (As) (mg/L)	0.024 mg/L	--	--	Source Water	Erosion of natural contaminants, mining wastes.
Arsenic (As) (mg/L)	0.002 mg/L	0.01	0.0	Finished Water (post treatment)	Erosion of natural contaminants, mining wastes.

Miscellaneous Constituents of Interest continued					
Constituent	Concentration	MCL / SMCL	MCGL	Monitoring Location	Possible Source/s of Contaminant and Possible Effect on the Water
Hardness (CaCO <sub>3</sub> ) (mg/L)	136	--	--	Finished Water (post treatment)	Erosion of natural contaminants. Can cause water spots and deposits on fixtures.
Alkalinity (mg/L as Calcium Carbonate)	92-130	--	--	Finished Water (post treatment)	Runoff. Can impart a salty or soda flavor, may contribute to dry skin
Chloride (mg/L)	14	250 (SMCL)	--	Finished Water (post treatment)	Runoff. Can cause a salty taste.
Sulfate (mg/L)	57	250 (SMCL)	--	Finished Water (post treatment)	Runoff. Can cause a medicinal or metallic taste. May contribute to a sulfur smell.
Total Dissolved Solids (TDS) (mg/L)	237	500 (SMCL)	--	Finished Water (post treatment)	Runoff. Can contribute to hardness and cause colored water, staining, and deposits.
Aluminum (Al) (mg/L)	0.06	0.05-0.2mg/L (SMCL)	--	Finished Water (post treatment)	Runoff
Calcium (Ca) (mg/L)	36	--	--	Finished Water (post treatment)	Runoff

## Summary and Upcoming Projects

The City of Great Falls Water Treatment Plant treated nearly 4 billion gallons of water to provide drinking water for the citizens of Great Falls in 2022. The plant operated the entire year with no violations and met or exceeded all EPA and DEQ water quality requirements. As part of the commitment to providing the residents of Great Falls with safe, quality drinking water the Water Treatment Plant is regularly undergoing routine maintenance and upgrades. During the fall of 2022 the second stage of a two stage filter upgrade project was started. This project includes updating the second half of the mixed media filters with air scour systems and replacing drains, hardware, and media from within the filters. This project will conclude in 2023.

Additionally, the City of Great Falls will continue to collect information about the composition of the water services lines to maintain a comprehensive service line inventory, as required by the EPA in the new Lead and Copper Rule. If there are questions about service lines to your home or business or you would like to contribute the most up-to-date information about the lines in your home, you can call the City of Great Falls lead service line hotline at 406-455-8401.

**If there are any questions about this report or the quality of the drinking water in your home please contact laboratory personnel or the Treatment Plant Manager, Jason Fladland at (406) 727-1325. The 2022 Consumer Confidence Report is also available online at <https://greatfallsmt.net/ccr2022>.**