Consumer Confidence Report 2020

City of Great Falls, Public Drinking Water Supply

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The City of Great Falls prepared this report to inform the public about the quality of our municipal drinking water. Please take a few minutes to review this document and feel free to call us with any questions.

The source of our water

The drinking water used by the residents of Great Falls, Malmstrom Air Force Base (MAFB), and Black Eagle comes from the Missouri River. We process it at The Great Falls Water Treatment Facility, located just up gradient from the Missouri's confluence with the Sun River.

Water treatment and purification

Great Falls utilizes a conventional water treatment process, producing nearly 4 billion gallons of drinking water in 2020. We continuously monitor the process, both electronically and by analyzing grab samples. Our personnel stay informed of new federal and state regulations so that we can promptly apply applicable treatment and/or monitoring changes. The City is committed to providing its citizens with a safe and dependable supply of drinking water. We completed the 2020 year by operating without any violations.

What contaminants are present in our source water?

Rainwater flows across the surface of the land and/or percolates through the soil. Natural minerals dissolve and some of those, along with contaminants from other sources, travel with the water. This water becomes groundwater or makes its way to a stream, river, pond, lake, or reservoir.

Some contaminants that may need removal from source water before consumption include:

- **Microbial contaminants including viruses, bacteria, and protozoa**. These can originate from sewage treatment plants, leaky septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants such as salts and metals**. These can be naturally occurring or the result of urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, and/or farming.
- **Pesticides and herbicides**. These may come from a variety of sources including agriculture, urban storm water runoff, and/or residential uses.
- **Organic chemical contaminants.** Commonly by-products of industrial processes and petroleum production. They can also come from gas stations, urban storm water runoff, and/or septic systems.
- **Radioactive contaminants**. These can be naturally occurring, the result of oil and gas production, and/or the result mining activities.

The Montana Department of Environmental Quality (MDEQ) completed a Great Falls source water delineation and assessment report, which defines a protection area for Great Falls (an area of surface water and land that contributes water to the Great Falls Public Water Supply). Additionally, it outlines possible contamination sources and their potential for contributing contamination to our drinking water.

Do I need to take special precautions?

The Environmental Protection Agency (EPA) establishes regulations by setting allowable limits for contaminants in drinking water supplied by municipalities. Therefore, one can reasonably expect drinking water to contain allowable amounts of some contaminants. The presence of these contaminants does not necessarily mean the water will pose a specific health risk. You can obtain detailed information about specific contaminants by calling the EPA's Safe Drinking Water Hotline at (800)426-4791 or from our local city-county health department at (406)454-6950.

Some individuals determined to be immuno-compromised (or display other immune system disorders), with cancer undergoing chemotherapy, and/or who have undergone organ transplants under certain conditions, may be more sensitive to certain contaminants. Some elderly and infants may exhibit a higher risk of infection brought on by microbiological contamination. These people should seek advice about their drinking water from their health care provider. EPA/CDC guidelines on appropriate means to lessen these risks are also available from the Safe Drinking Water Hotline.

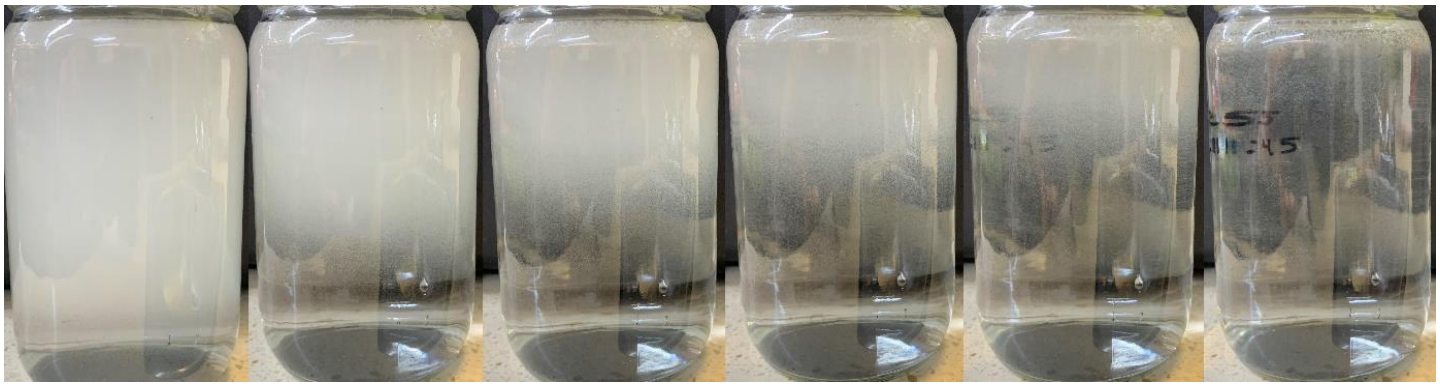
Answers to Common Questions

Q: How often is our drinking water tested?

A: Testing requirements depend upon the source water and the number of people served. We are a medium-sized, surface-water-sourced system, as we serve between 50,000 and 100,000 people and our water is "sourced" from the Missouri River. As such, Great Falls is required to continually monitor the levels of several drinking water parameters (e.g. turbidity and chlorine residual), while other parameters are tested less frequently.

Q: Why does the water coming out of my tap have a milky appearance but then clears up?

A: The water coming into your home may contain air held in solution by the pressure of the water distribution system. As your water exits the tap, the pressure can drop rapidly and may release an abundance of tiny air bubbles. As shown below, the water clears from bottom to the top within a few minutes, as the air bubbles rise and return to the atmosphere.



Q: **How hard is Great Falls water?**

A: On a scale ranging from soft to very hard, Great Falls water is hard, measuring 155 milligrams per liter (mg/L) as calcium carbonate in 2020. Typically, our water ranges from 127 to 167 milligrams per liter as calcium carbonate or 7.4 to 9.8 grains per gallon. Some homeowners install water softeners as a matter of personal preference but softening is generally not necessary.

Water Analysis Data

Data tables on the following pages contain terms and abbreviations with which you may be unfamiliar. In order to help you better understand this data we offer the following definitions and explanations:

Parts per million (ppm) or milligrams per Liter (mg/L) - one part per million is approximately equivalent to one minute in two years or one ounce in 7,812 gallons of water

Parts per billion (ppb) or micrograms per Liter (μg/L) - one part per billion is approximately equivalent to one minute in 2,000 years or one ounce in 7,812,000 gallons of water.

ND – Not detected or below the reporting limit allowed by the analysis method

Nephelometric Turbidity Unit (NTU) - a measure of the clarity of water. Water having turbidity in excess of 5 NTU would appear noticeably cloudy to the average person.

Secondary Maximum Contaminant Level (SMCL) – The SMCL represents reasonable goals for drinking water quality and provides a guideline for public water suppliers. Secondary contaminants affect mainly the aesthetic qualities such as undesirable taste or odors.

Maximum Contaminant Level Goal (MCLG) - the "Goal" 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.

Maximum Contaminant Level - the "Maximum Allowed" (MCL) is the highest allowable level of a contaminant in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Residual Disinfection Level Goal or 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 contaminants.

Maximum Residual Disinfection Level or MRDL - the highest level of a disinfectant allowed in drinking water. There is convincing evidence that the addition of a disinfectant is necessary for control of microbial contaminants.

Action Level (AL) - the concentration of a contaminant which, if exceeded, triggers additional treatment(s) or other requirements which a water system must follow.

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

Variances and Exemptions – State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

The City of Great Falls monitors for contaminants in drinking water according to Federal and State laws. The data summary tables included in this report, document test results from monitoring conducted during the 2020 calendar year. The State of Montana requires monitoring for some contaminants at a frequency less than once per year; therefore, some results may be older than one year. The tables are presented as follows:

Table I. Regulated Water Quality Contaminants
Table II. Secondary Contaminants and Other Parameters
Table III. Unregulated Contaminant Rule 4 and Additional Unregulated Contaminants

Additional report copies are available free of charge from the Great Falls Water Treatment Plant. An electronic copy can be located at https://greatfallsmt.net/ccr2020. If you have any questions about this report or your water utility, please contact us at 727-1325.

Table I. Regulated Water Quality Contaminants					
Contaminant	**Range Detected**	**MCL**	**MCLG**	**Violation Yes/No**	**Likely Source of Contamination**
Microbiological Contaminants					
Total Coliform Bacteria	0	5% of Samples	0%	No	Naturally present in environment
Turbidity (NTU)	0.117 NTU on 5/25/20 <0.30 NTU 100% of time	TT = 1 NTU maximum; TT < 0.30 NTU 95% of the time	0	No	Soil Runoff
Inorganic Contaminants					
Arsenic (ppb)	1	10	0	No	Erosion of natural deposits, volcanic activity and mining waste. More prevalent in groundwater(s).
Chlorine (ppm)	0.02 – 2.03	4	4	No	Disinfectant added to limit microbial growth.
Chloramines (ppm)	1.37 – 1.76	4	4	No	Created to prolong disinfectant life in distribution.
Fluoride (ppm)	0.7	4	4	No	Erosion of natural deposits, discharge from fertilizers and Industrial emissions.
Nitrate – NO_3 (ppm)	0.12	10	10	No	Runoff from fertilizer use, leaching from septic tanks, sewage, and erosion of natural deposits.
Copper (ppm)*	0.505 ppm @ 90th percentile	AL = 1.3 ppm 90th percentile must be less than 1.3 ppm	1.3	No	Corrosion of service lines, household plumbing systems and erosion of natural deposits.
Lead (ppb)*	3.0 ppb @ 90th percentile	AL = 15 ppb; 90th percentile must be less than 15 ppb	0	No	Corrosion of service lines, household plumbing systems, erosion of natural deposits, and leaching from wood preservatives
***In treated drinking water sampled on 2/6/20, both lead and copper were non-detect (ND).**					
Volatile Organic Compounds					
Contaminant	**Annual Average**	**MCL**	**Violation Yes/No**	**Likely Source**	
Haloacetic Acids (HAA5) (ppb)	31.7	60	No	By-product of drinking water disinfection	
Total trihalomethanes (TTHM) (ppb)	40.7	80	No	By-product of drinking water disinfection	
Total Organic Carbon (TOC)	2.9 ppm 18.8% achieved removal	15% required removal	No	Decay of organic plant/animal matter	

Table II. Secondary Contaminants			
Contaminant	**Level Detected**	**SMCL**	**Effects at Elevated Levels**
Aluminum (ppb)	0.04	50 - 200	Colored Water
Chloride (ppm)	14	250	Salty Taste
Sulfate (ppm)	52	250	Salty Taste
Total Dissolved Solids (ppm)	239	500	Hardness, deposits, colored water, staining, and salty taste
pH (s.u.)	6.79 – 7.5	6.5 - 8.5	Low pH: bitter metallic taste, corrosion High pH: slippery feel, soda taste, deposits
Other Parameters			
Total Hardness as $CaCO_3$ (ppm)	155	None	Water spots, deposits
Alkalinity (ppm)	62 - 126	None	None
Potassium (ppm)	3	None	None
Sodium (ppm)	0.24	None	None
Magnesium (ppm)	12	None	None

Important information on finished water monitoring

During 2020, our personnel collected 70 routine distribution system samples per month. Each sample was tested for residual chlorine concentration, pH, turbidity, and for the microbial contaminants of Total Coliform (TC) and Escherichia coli (E. coli) bacteria. Every sample yielded results within acceptable limits and no sample resulted with any indication of any microbial contamination.

The City of Great Falls also completed our second round of triannual lead and copper testing in June 2020. The sampling included 56 private residences, chosen for having one, or multiple, of the following parameters: copper plumbing with lead solder installed after 1982 but before 1987, lead plumbing, and/or a lead service line. The 90th percentile for this round was 3.0 ppb for lead and 0.505 ppm for copper, well below their respective MCL's of 15 ppb and 1.3 ppm.

Unregulated Contaminant Monitoring Rule (UCMR 4) – Once every five years, the EPA issues a list of unregulated contaminants to be monitored by public water supplies. This testing provides EPA and other interested parties with scientifically valid data on the occurrence of contaminants in drinking water and is one of the primary sources of information on occurrence and levels of exposure that the Agency uses to develop regulatory decisions for contaminants in the public drinking water supply. In 2019 and 2020, our water system was tested for 17 unregulated contaminants including two metals, eight pesticides plus one pesticide manufacturing byproduct, three alcohols, and three semi-volatile organic compounds per UCMR 4. Additionally, the City conducted sampling on the finished and raw water for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA). While not currently regulated, both PFOS and PFOA are emerging health concerns for water systems. As shown in the table below, the finished and raw water was non-detect for both PFOS and PFOA.

Table III. Unregulated Contaminant Monitoring Rule 4 (UCMR4) and Additional Unregulated Contaminants			
Contaminant	**Range Detected**	**Reporting Limit**	**Likely Source of Contamination**
Distribution System			
Bromochloroacedic acid (µg/L)	ND – 3.79	0.30	By-product of drinking water chlorination
Bromodichloroacedic acid (µg/L)	ND – 6.51	0.50	
Chlorodibromoacedic acid (µg/L)	ND – 0.740	0.30	
Dibromoacedic acid (µg/L)	ND – 0.353	0.30	
Dichloroacedic acid (µg/L)	0.64 – 19.20	0.20	
Monochloroacedic acid (µg/L)	ND – 2.67	2.0	
Trichloroacedic acid (µg/L)	ND – 24.6	0.50	
Finished Water			
Manganese (µg/L)	0.472-0.692	0.40	Naturally occurring in rocks and soil, contamination from mining and industrial discharges
Anatoxin-a (µg/L)	ND	0.30	Produced by harmful algal blooms
Cylindrospermopsin (µg/L)	ND	0.090	
Microcystins & Nodularins (µg/L)	ND	0.30	
Perfluorooctanoic acid (PFOA) (ng/L) *	< 2.0	2.0	Contamination from synthetic compounds used in a variety of industrial and consumer product applications including non-stick cookware and firefighting foams
Perfluorooctanesulfonic acid (PFOS) (ng/L) *	< 2.0	2.0	
Source Water			
Total Organic Carbon (µg/L)	2500 – 3660	1000	Decay of organic plant/animal matter
Bromide (µg/L)	22.4 – 3660	20	Occurs naturally in Earth's crust, seawater, and fossil fuels
Perfluorooctanoic acid (PFOA) (ng/L) *	< 2.0	2.0	Contamination from synthetic compounds used in a variety of industrial and consumer product applications including non-stick cookware and firefighting foams
Perfluorooctanesulfonic acid (PFOS) (ng/L) *	< 2.0	2.0	
* Not included in UCMR4. Analyzed to determine current levels for future regulations.			

Summary

The City is committed to providing its citizens with safe and abundant drinking water and continues to work with the MDEQ on solutions to maintain safe drinking water for its consumers. Our new process implementations have been online since February 2019 and include the following: two UV reactors, chlorine feeder lines, a Liquid Ammonia Sulfate (LAS) feeder, and a 1-million-gallon surge/storage tank. The UV reactors assure continued compliance with the LT2 Surface Water Treatment Rule and the chlorine feeder lines have aided in decreasing the formation potential of HAA5s. The LAS system enables us to control our chloramination process with more precision and the surge tank gives us the ability to purge, or flush out, any poor-quality water prior to sending out to our consumers. Since implementation of these new features, there has been a vast reduction in HAA5 production and an increase in overall confidence that we are providing a higher quality water with no concern of microbial contamination. Additionally, in late 2019 – 2020, the City began rehabbing/replacing our dual-media filters with updated underdrain system and air-scour backwash technology. Due to the age of the filters, this was a much-needed improvement to ensure the best quality of water for the City of Great Falls.

Again, if you have any questions about this report or your water quality, please contact our lab personnel or Plant Manager at (406) 727-1325.