

2022 CONSUMER CONFIDENCE REPORT

***Abbreviated Definitions:**

AL	Action level. The concentration of a contaminant, which if exceeded, triggers treatment or other requirements.
NA	Not Available.
ND	No Detection.
TT	Treatment Technique. Required process intended to reduce the level of a contaminant in drinking water.
ppm or mg/L	Parts Per Million. One part per million corresponds to one minute in two years.
ppb or ug/L	Parts Per Billion. One part per billion corresponds to one minute in 2,000 years.
NTU	Nephelometric Turbidity Unit. A measure of the clarity of water. Turbidity more than 5 NTU is just noticeable to the average person.
pCi/L	Picocuries per liter--measure of radioactivity in water.
MCL	Maximum Contaminant Level. Highest allowable amount of a contaminant that is allowed in drinking water.
MCLG	Maximum Contaminant Level Goal. Level of a contaminant in drinking water below which no known or expected risk to health exists. MCLG's allow for a margin of safety
MRDL	Maximum Residual Disinfectant Level. 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.
MRDLG	Maximum Residual Disinfectant Level Goal. The level of a drinking water disinfectant below which there is no known or expected risk to health.
RAA	Running Annual Average.



Water Quality

Treatment Sampling Monitoring

Radon is a naturally occurring radioactive gas in the earth's crust. It is soluble in water and is tasteless, colorless, and odorless. Detection in Helena's surface and ground water sources ranged from 220 pCi/L to 1770 pCi/L. The U.S. EPA is proposing a MCL of 300 pCi/L in drinking water with an alternative MCL of 4000 pCi/L for systems that implement a Multi-Media Mitigation Program. No federal regulation for radon levels in drinking water exist at the time of this printing. Exposure to air transmitted radon over a long period of time may cause adverse health effects. For additional information call the State radon program at 406-444-5318, or EPA's Radon Hotline 800-SOS-RADON.

All sources of drinking water are subject to potential contamination by constituents that are naturally occurring or manmade. Those constituents can be microbes, organic or inorganic chemicals, or radioactive materials. All 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 U.S. EPA's **Safe Drinking Water Hotline at 800-426-4791.**

Some people may be more vulnerable to contaminants in drinking water than others. Persons with immuno-compromised diseases such as HIV/AIDS or other immune system disorders, persons receiving chemotherapy, who have had an organ transplant, or the elderly and infants can be susceptible to infections. These people should seek advice about drinking water from their health care providers. The EPA and Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbiological contaminants are available from the **Safe Drinking Water Hotline 800-426-4791.**

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 Helena is responsible for providing high quality drinking

water, but cannot control the variety of materials used in plumbing components. When 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 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 methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or www.epa.gov/safewater/lead

Prepared February 27, 2023
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Moose at Walker Creek Headgate



**Department of Public Works
Helena Water Treatment Division**

2022 Annual Water Quality Data

The City of Helena's Public Water System (PWS) Identification Number MT0000241 currently serves 12,019 residential and 1,637 commercial water accounts. Last year, the Water Treatment Division produced a total of 2.15 billion gallons, (5.9 million gallons on average per day) with a maximum production of 13.6 million gallons on a single day. August was the month with the highest usage at 369.4 million gallons. Water is also supplied to fire hydrants that ensure the safety of homes and businesses. For more information on the PWS # MT0000241 go to the Montana Department of Environmental Quality Website <http://deq.mt.gov/Water>. If you have any questions about this report, or concerns with your water utility, please contact Ben Rigby, Water Production Superintendent at 406-457-8511, or e-mail brigby@helenamt.gov. To learn more about your City of Helena (City) water utility, visit us on the web at <http://www.helenamt.gov>

Disinfection By-Products: In 2022, the City exceeded the maximum contaminant level (MCL) for disinfectant by products at one of the City's four testing sites for the third and fourth testing quarters. The City has performed actions to correct the issue, and subsequent results have been below the compliance levels for the past two testing quarters. At this time, there are no public health concerns as a result of this violation and the City will continue to implement actions to ensure the issue is corrected.

Water System -- To meet Helena's water needs, the City's Water Treatment Division operates two surface water treatment plants: the Missouri River Treatment Plant (MRTP) east of Helena and the Tenmile Water Treatment Plant (TMTP) west of Helena. Additional water is produced from the Eureka Well located at Cruise and Park Avenues. This pure groundwater source does not require further treatment.

Water Treatment – The City's treatment process consists of a series of steps to remove impurities and disinfect untreated or raw water. When the raw water is first delivered to the treatment plants, chemicals are added that cause small particles to combine and become heavy

(flocculation). Next the impurities are allowed to settle in sedimentation basins at the MRTP or collect on special media in the contact absorption clarifiers (CACs) at the TMTP. Then, the water is filtered through sand and anthracite coal filters to remove remaining small particles. These filters are cleaned or "backwashed" with treated water to remove accumulated particles and sediment. The backwash water from the MRTP is used for managed irrigation and recycled back into the plant to be retreated. The process allows the MRTP to be a "zero discharge facility," not only saving permitting and operational costs, but also conserving previously wasted water. At the end of the treatment process a small amount of sodium hypochlorite is added for disinfection before the water is delivered to the distribution system.

All the collecting, treating, sampling, and monitoring is performed by well trained, State of Montana (State) certified water treatment professionals, and assisted by a SCADA (supervisor control and data acquisition) computer system that makes it possible to monitor the storage tanks and pump stations from the treatment plants.

In 2022, your tap water met all US Environmental Protection Agency (EPA) and State drinking water health standards, except for Disinfection By-Products (See italicized paragraph to the left.) The City continually tests for water quality using independent laboratories and every effort is made to ensure that the testing required by State and Federal Regulators are performed.

Turbidity is a measure of the clarity of water. The City monitors turbidity as an indicator of the effectiveness of the filtration system.

pH is an expression of the basic or acidic condition of a liquid. The pH scale ranges from 0 to 14. Neutral being 7, the most acidic is 0 and the most caustic is 14. Natural waters typically have a pH between 6.8 and 8.5. The pH in the system ranges from 7.2 to 8.5.

Water Produced by each plant in 2022:
 TMTP 1.459 billion gallons
 MTRP 519.8 million gallons
 Eureka 169.4 million gallons

Radioactive Contaminants	Collection Date	Highest Level Detected	Range of Levels Detected	MCLG	MCL	Units	Violation	Likely Source of Contamination
Gross alpha excluding radon and uranium	07/11/2017	4.1	0 - 4.1	0	15	pCi/L	N	Erosion of natural deposits.
Uranium	07/11/2017	3	0 - 3	0	30	ug/l	N	Erosion of natural deposits.

Hardness of Helena Water

Source Water	Detect Level	Grains/Gal
TMTP	33 mg/l	1.9
MRTP	123 mg/l	7.2
EUREKA	229 mg/l	13.4

MCL for hardness is 300mg/L

Sampling – Regular sampling and testing is an important assurance of the quality of water. Sampling includes the following:

Daily	Chlorine residuals, turbidity, pH, temperature, and color, (NTU).
Weekly	Bacteria (total coliform).
Quarterly	Trihalomethanes, Haloacetic Acids.
Yearly	Inorganics, VOC's (volatile organic contaminants), SOC's (synthetic organic contaminants), and nitrates.
Every 3 years	Lead and Copper
Every 4 years	Radioactivity

Monitoring – Both Energy Laboratories, Inc. & Alpine Analytical Inc. in Helena are at the heart of the quality assurance program. Their independent testing by certified chemists and technicians follows precise procedures established by the U.S. EPA.

Listed below are the substances that were detected and analyzed by Energy Lab Inc. and Alpine Analytical Inc. for the Helena Water Treatment Division. The MCLs apply to the water within the distribution system, after treatment, including groundwater sources. The U.S. EPA and the State have established MCLs that assure public health and safety with a very low risk of health impacts.

The State allows the City to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative, are more than one year old.

The table below shows the City's monitoring results for the period of January 1, 2022, to December 31, 2022.

Tenmile Water Treatment Plant (TMTP), Missouri River Treatment Plant (MRTP), and Hale/Eureka Water Sources

TEST RESULTS								
Contaminant	Compliance Y/N	Sample Date	Highest Level Detected	Range Detected / RAA	Unit	MCLG	MCL	Likely Source of Contamination
Contaminants								
1. Turbidity TMTP MRTP	Y Y	May 2022 June 2022	0.17 0.11		NTU	NA	TT = <0.3 NTU 95% of the time TT = 1 NTU max	Soil runoff.
2. Total Organic Carbon TMTP Raw Water TMTP Finished Water MRTP Raw Water MRTP Finished Water	Y Y Y Y	April 2022 April 2022 Sept 2022 Sept 2022	5.9 4.3 2.7 2.0	2.5-5.9 (RAA 4.1) 2.0-4.3 (RAA 2.9) 2.0-2.7 (RAA 2.4) 1.6-2.0 (RAA 1.8)	ppm	NA	TT	Naturally present in the environment.
3. Chlorine Residual Tenmile & MRTP	Y	Jan-Dec 2022	1.60	0.28 – 1.6 (RAA – .99)	ppm	MRDLG =4	MRDL=4	Water additive to control microbes.
Inorganic Contaminants (IOCs)								
4. Arsenic TMTP MRTP Hale / Eureka	Y Y	July 1, 2022 July 1, 2022 Oct 27, 2020	3.0 8.0 2.0		ppb	NA	10	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
5. Copper 90 th percentile for all 30 samples taken	Y	Aug 2021	0.317		ppm	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.
6. Lead 90 th percentile for all 30 samples taken	Y	Aug 2021	3.0		ppb	0	AL= 15	Corrosion of household plumbing systems; erosion of natural deposits.
7. Nitrate + Nitrite as N TMTP MRTP Hale / Eureka	Y Y Y	July1, 2022 July1, 2022 July1, 2022	0.01 0.01 1.10		ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage;
8. Fluoride TMTP MRTP Hale / Eureka	Y Y Y	Aug 16, 17 Aug 16, 17 Aug 16, 17	ND 0.8 0.10		ppm	4	4	Erosion of natural deposits.
Volatile Organic Compounds (VOCs)								
9. Total Trihalomethanes DBP-1 DBP-2 DBP-3 DBP-4	Y Y Y Y	Nov 2022 Nov 2022 Nov 2022 Sept 2022	51 32 57 85	24-51 (RAA 40) 27-51 (RAA 36) 37-57 (RAA 49) 37-90 (RAA 67)	ppb	NA	80.0 RAA	By-product of drinking water chlorination.
10. Total Haloacetic Acid DBP-1 DBP-2 DBP-3 DBP-4	Y Y Y N	Mar 2022 Mar 2022 June 2022 June 2022	2.1 31 52 106	0-32 (RAA 13) 18-31 (RAA 25) 24-52 (RAA 35) 27-106 (RAA 62)	ppb	NA	60.0 RAA	By-product of drinking water chlorination