

2012 CONSUMER CONFIDENCE REPORT



Water Quality

Treatment
Sampling
Monitoring

Department of Public Works
Helena Water Treatment Division



Annual Water Quality Data for 2011

The City of Helena Public Water System Identification, (PWSID) Number MT0000241 currently serves 9,200 residential and 1,428 commercial water accounts with a yearly average of 5.0 million gallons of water each day flow through metered service connections. Water is also supplied to fire hydrants that ensure the safety of homes and businesses. Last year, the Water Treatment Division produced a total of 1.817 billion gallons with a maximum production of 12.5 million gallons on a single day. The City of Helena's Source Water Protection plan for Public Water System (PWS) # 0000241 can be viewed on the DEQ Web Site <http://nris.state.mt.us/wis/swap/SwapQuery.asp>

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 consist of a series of steps to remove impurities and disinfect the 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 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. This backwash water is presently discharged to the ground by percolation in large surface basins. This year the City has begun construction of a new backwash recycle upgrade to the MRTP. With the improvements, the City will begin to re-use filter backwash water for managed irrigation, or recycle the clarified water back into the facility. The upgrade will allow the MRTP to become 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 chlorine is added before the water is delivered to the distribution system. All of the collecting, treating, sampling and monitoring is performed by well trained, 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.

Last year, as in years past, your tap water met all EPA and state drinking water health standards. The City of Helena vigorously tests for water quality using independent laboratories and every effort is made to assure that the testing required by the State and Federal Government is completed. We are proud to report that our system has not exceeded any maximum contaminant level (MCL).

Turbidity is a measure of the clarity of water. We monitor this as an indicator of the effectiveness of our 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 the most caustic is 14. Natural waters typically have a pH between 6.8 and 8.5. The pH in our system ranges from 7.2 to 8.5.

Hardness of the Helena Waters		
Source Water	Level Detected /mg/L	Converted Grains/Gallon
Tenmile	24.67	1.7
Missouri River	135.71	9.5
Eureka Well	232.0	16.8
MCL	300.0	

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 our quality assurance program. Their independent testing by certified chemists and technicians follows precise procedures established by the U.S. Environmental Protection Agency (EPA).

Listed below are the substances that **were detected** and analyzed by Energy Lab Inc. for the Helena Water Treatment Division. The maximum contaminated levels (MCL) apply to the water within our distribution system, after treatment, including groundwater sources. The U.S. EPA and the State of Montana have established MCL's at levels that assure public health and safety with a very low risk of health impacts.

This table shows the results of our monitoring for the period of January 1 to December 31, 2011.

Tennile Water Treatment Plant, Missouri River Treatment Plant (MRTP), Hale/Eureka Water Sources

TEST RESULTS								
Contaminant	Compliance Y/N	Sample Date	Highest Level Detected	Range Detected/ RAA	Unit Measure	MCLG	MCL	Likely Source of Contamination
Microbiological Contaminants								
1. Turbidity Tennile MRTP	Y Y	Sep 10, 11 May 11, 11	0.21 0.24		NTU	NA	TT = <0.3 NTU 95% of the time TT = 1 NTU max	Soil run off.
2. Total Organic Carbon Tennile Raw Water MRTP Finished Water	Y Y	June 11 Sept 11	8.0 4.4	2.3 – 8.0 (RAA 4.32) 1.6 – 4.4 (RAA 1.83)	ppm	NA	TT	Naturally present in the environment.
3. Chlorine Residual Tennile	Y	Nov 11	1.5	0.2 - 2.0 (RAA 0.73)	ppm	MRDLG=4	MRDL=4	Water additive to control microbes.
Inorganic Contaminates								
4. Arsenic Tennile MRTP Hale / Eureka	Y Y Y	Jan 12, 12 Jun 15, 11 Apr 08, 11	ND ND .00002		ppb	NA	10	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
5. Copper 90 th percentile of 30 samples taken	Y	July 14, 09	.21		ppm	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.
6. Lead 90 th percentile of 30 samples taken	Y	July 14, 09	4		ppb	0	AL= 15	Corrosion of household plumbing systems; erosion of natural deposits.
7. Nitrate + Nitrite as N Tennile MRTP Hale / Eureka	Y Y Y	Jul 11, 11 Jul 11, 11 Jul 11, 11	ND .10 1.5		ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage;
8. Fluoride Tennile MRTP Hale / Eureka	Y Y Y	Jul 26, 07 Jul 26, 07 Jul 17, 08	0.20 0.8 0.30		ppm	4	4	erosion of natural deposits.
Volatile Organic Contaminants (voc's)								
9. Total Trihalomethanes Tennile MRTP Hale/Eureka	Y Y Y	May 11 Oct 11 Aug 11	65 83 .9	18 - 65 (RAA 49) 35- 83 (RAA 48) .4 - .9 (RAA .6)	ppb	NA	80.0 RAA	By-product of drinking water chlorination.
10. Total Haloacetic Acid Tennile MRTP Hale/Eureka	Y Y Y	Aug 11 Oct 11 Aug 11	59 71 .2	20 - 59 (RAA 39) 31 - 71 (RAA 47) .1 - .2 (RAA .2)	ppb	NA	60.0 RAA	By-product of drinking water chlorination

***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 in excess of 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.

Radon is a naturally occurring radioactive gas in the earth's crust. It is soluble in water and is tasteless, colorless and odorless. Helena's surface and ground water sources detection 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. There is no federal regulation for radon levels in drinking water as 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 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 man made. 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 1-800-426-4791**. 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, or who have had an organ transplant, 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 can not 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 <http://www.epa.gov/safewater/lead>

If you have any questions about this report or concerns with your water utility, please contact Donald Clark, Water/Wastewater Treatment Superintendent at 457-8556, or e-mail dclark@ci.helena.mt.us. To learn more about your City of Helena water utility, visit us on the web at <http://www.ci.helena.mt.us/>.

Prepared March 30th

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