MOORE INSPECTIONS LLC
4065816435
matt@mooreinspectionsllc.net

A SUMMARY OF LAB RESULTS FOR WATER SAMPLE

1234 Main St.

Buyer Name
12/09/2021 9:00AM

Inspector
Matt Moore
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4065816435
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Agent
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555-555-5555
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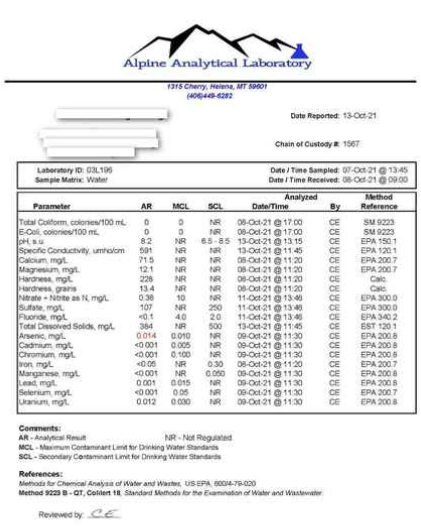
1: WELL WATER TEST SUMMARY

Information

Understanding Your Water Sample

Understanding your water sample can be daunting. Here is a link to the Water Quality Interpretation Tool https://erams.com/wqtool/ . Use the attached water quality laboratory analytics to fill in the tool. This tool will help you understand what is "acceptable" by EPA standards. I have also included a discussion below of a few of the more important analytes.



Alpine Analytical Laboratory

1315 Cherry, Helena, MT 59601
(406)449-5282

Date Reported: 13-Oct-21

Chain of Custody #: 1567

Laboratory ID: 03L196 — Date / Time Sampled: 07-Oct-21 @ 13:45
Sample Matrix: Water — Date / Time Received: 08-Oct-21 @ 09:00

Parameter	AR	MCL	SCL	Analyzed Date/Time	By	Method Reference
Total Coliform, colonies/100 mL	0	0	NR	08-Oct-21 @ 17:00	CE	SM 9223
E-Coli, colonies/100 mL	0	0	NR	08-Oct-21 @ 17:00	CE	SM 9223
pH, s.u.	8.2	NR	6.5 - 8.5	13-Oct-21 @ 13:15	CE	EPA 150.1
Specific Conductivity, umho/cm	591	NR	NR	13-Oct-21 @ 11:45	CE	EPA 120.1
Calcium, mg/L	71.5	NR	NR	08-Oct-21 @ 11:20	CE	EPA 200.7
Magnesium, mg/L	12.1	NR	NR	08-Oct-21 @ 11:20	CE	EPA 200.7
Hardness, mg/L	228	NR	NR	08-Oct-21 @ 11:20	CE	Calc.
Hardness, grains	13.4	NR	NR	08-Oct-21 @ 11:20	CE	Calc.
Nitrate + Nitrite as N, mg/L	0.38	10	NR	11-Oct-21 @ 13:46	CE	EPA 300.0
Sulfate, mg/L	107	NR	250	11-Oct-21 @ 13:46	CE	EPA 300.0
Fluoride, mg/L	<0.1	4.0	2.0	11-Oct-21 @ 13:46	CE	EPA 340.2
Total Dissolved Solids, mg/L	384	NR	500	13-Oct-21 @ 11:45	CE	EST 120.1
Arsenic, mg/L	0.014	0.010	NR	09-Oct-21 @ 11:30	CE	EPA 200.8
Cadmium, mg/L	<0.001	0.005	NR	09-Oct-21 @ 11:30	CE	EPA 200.8
Chromium, mg/L	<0.001	0.100	NR	09-Oct-21 @ 11:30	CE	EPA 200.8
Iron, mg/L	<0.05	NR	0.30	08-Oct-21 @ 11:20	CE	EPA 200.7
Manganese, mg/L	<0.001	NR	0.050	09-Oct-21 @ 11:30	CE	EPA 200.8
Lead, mg/L	0.001	0.015	NR	09-Oct-21 @ 11:30	CE	EPA 200.8
Selenium, mg/L	<0.001	0.05	NR	09-Oct-21 @ 11:30	CE	EPA 200.7
Uranium, mg/L	0.012	0.030	NR	09-Oct-21 @ 11:30	CE	EPA 200.8

Comments:
AR - Analytical Result — NR - Not Regulated
MCL - Maximum Contaminant Limit for Drinking Water Standards
SCL - Secondary Contaminant Limit for Drinking Water Standards

References:
Methods for Chemical Analysis of Water and Wastes, US EPA, 80094-79-020
Method 9223 B - QT, Colilert 18, *Standard Methods for the Examination of Water and Wastewater*.

Reviewed by: CE

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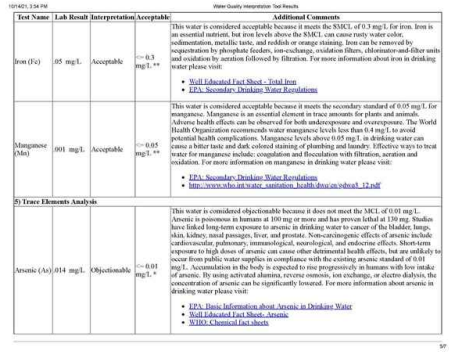
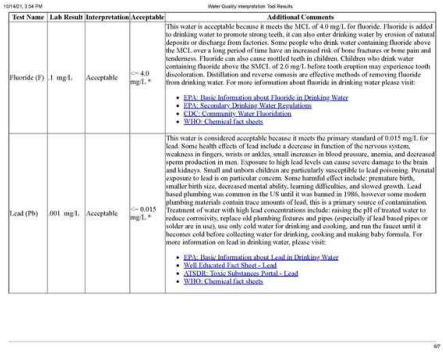
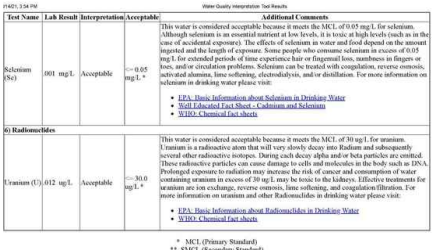


Test Name	Lab Result	Interpretation	Acceptable	Additional Comments
Iron (Fe)	.05 mg/L	Acceptable	<= 0.3 mg/L **	This water is considered acceptable because it meets the SMCL of 0.3 mg/L for iron. Iron is an essential nutrient, but iron levels above the SMCL can cause rusty water color, sedimentation, metallic taste, and reddish or orange staining. Iron can be removed by sequestration by phosphate feeders, ion-exchange, oxidation filters, chlorinator-and-filter units and oxidation by aeration followed by filtration. For more information about iron in drinking water please visit: • Well Educated Fact Sheet - Total Iron • EPA: Secondary Drinking Water Regulations
Manganese (Mn)	.001 mg/L	Acceptable	<= 0.05 mg/L **	This water is considered acceptable because it meets the secondary standard of 0.05 mg/L for manganese. Manganese is an essential element in trace amounts for plants and animals. Adverse health effects can be observed for both underexposure and overexposure. The World Health Organization recommends water manganese levels less than 0.4 mg/L to avoid potential health complications. Manganese levels above 0.05 mg/L in drinking water can cause a bitter taste and dark colored staining of plumbing and laundry. Effective ways to treat water for manganese include: coagulation and flocculation with filtration, aeration and oxidation. For more information on manganese in drinking water please visit: • EPA: Secondary Drinking Water Regulations • http://www.who.int/water_sanitation_health/dwq/en/gdwq3_12.pdf
5) Trace Elements Analysis				
Arsenic (As)	.014 mg/L	Objectionable	<= 0.01 mg/L *	This water is considered objectionable because it does not meet the MCL of 0.01 mg/L. Arsenic is poisonous in humans at 100 mg or more and has proven lethal at 130 mg. Studies have linked long-term exposure to arsenic in drinking water to cancer of the bladder, lungs, skin, kidney, nasal passages, liver, and prostate. Non-carcinogenic effects of arsenic include cardiovascular, pulmonary, immunological, neurological, and endocrine effects. Short-term exposure to high doses of arsenic can cause other detrimental health effects, but are unlikely to occur from public water supplies in compliance with the existing arsenic standard of 0.01 mg/L. Accumulation in the body is expected to rise progressively in humans with low intake of arsenic. By using activated alumina, reverse osmosis, ion exchange, or electro dialysis, the concentration of arsenic can be significantly lowered. For more information about arsenic in drinking water please visit: • EPA: Basic Information about Arsenic in Drinking Water • Well Educated Fact Sheet- Arsenic • WHO: Chemical fact sheets

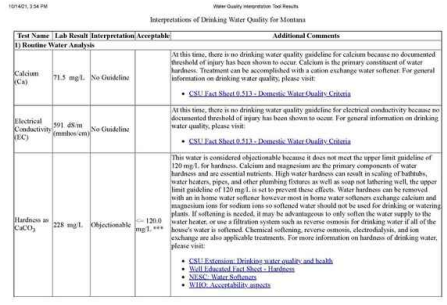


Test Name	Lab Result	Interpretation	Acceptable	Additional Comments
Fluoride (F)	.1 mg/L	Acceptable	<= 4.0 mg/L *	This water is acceptable because it meets the MCL of 4.0 mg/L for fluoride. Fluoride is added to drinking water to promote strong teeth, it can also enter drinking water by erosion of natural deposits or discharge from factories. Some people who drink water containing fluoride above the SMCL over a long period of time have an increased risk of bone fractures or bone pain and tenderness. Fluoride can also cause mottled teeth in children. Children who drink water containing fluoride above the SMCL of 2.0 mg/L before tooth eruption may experience tooth discoloration. Distillation and reverse osmosis are effective methods of removing fluoride from drinking water. For more information about fluoride in drinking water please visit: • EPA: Basic Information about Fluoride in Drinking Water • EPA: Secondary Drinking Water Regulations • CDC: Community Water Fluoridation • WHO: Chemical fact sheets
Lead (Pb)	.001 mg/L	Acceptable	<= 0.015 mg/L *	This water is considered acceptable because it meets the primary standard of 0.015 mg/L for lead. Some health effects of lead include a decrease in function of the nervous system, weakness in fingers, wrists or ankles, small increases in blood pressure, anemia, and decreased sperm production in men. Exposure to high lead levels can cause severe damage to the brain and kidneys. Small and unborn children are particularly susceptible to lead poisoning. Prenatal exposure to lead is on particular concern. Some harmful effect include: premature birth, smaller birth size, decreased mental ability, learning difficulties, and slowed growth. Lead based plumbing was common in the US until it was banned in 1986, however some modern plumbing materials contain trace amounts of lead, this is a primary source of contamination. Treatment of water with high lead concentrations include: raising the pH of treated water to reduce corrosivity, replace old plumbing fixtures and pipes (especially if lead based pipes or solder are in use), use only cold water for drinking and cooking, and run the faucet until it becomes cold before collecting water for drinking, cooking and making baby formula. For more information on lead in drinking water, please visit: • EPA: Basic Information about Lead in Drinking Water • Well Educated Fact Sheet - Lead • ATSDR: Toxic Substances Portal - Lead • WHO: Chemical fact sheets



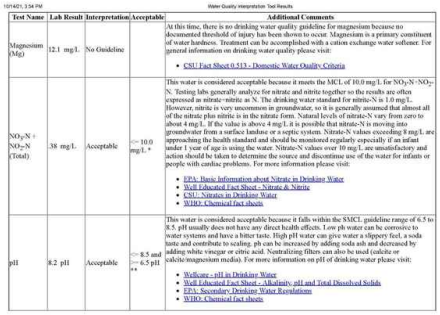
Test Name	Lab Result	Interpretation	Acceptable	Additional Comments
Selenium (Se)	.001 mg/L	Acceptable	<= 0.05 mg/L *	This water is considered acceptable because it meets the MCL of 0.05 mg/L for selenium. Although selenium is an essential nutrient at low levels, it is toxic at high levels (such as in the case of accidental exposure). The effects of selenium in water and food depend on the amount ingested and the length of exposure. Some people who consume selenium in excess of 0.05 mg/L for extended periods of time experience hair or fingernail loss, numbness in fingers or toes, and/or circulation problems. Selenium can be treated with coagulation, reverse osmosis, activated alumina, lime softening, electrodialysis, and/or distillation. For more information on selenium in drinking water please visit: • EPA: Basic Information about Selenium in Drinking Water • Well Educated Fact Sheet - Cadmium and Selenium • WHO: Chemical fact sheets
6) Radionuclides				
Uranium (U)	.012 mg/L	Acceptable	<= 30.0 mg/L *	This water is considered acceptable because it meets the MCL of 30 ug/L for uranium. Uranium is a radioactive atom that will very slowly decay into Radium and subsequently several other radioactive isotopes. During each decay alpha and/or beta particles are emitted. These radioactive particles can cause damage to cells and molecules in the body such as DNA. Prolonged exposure to radiation may increase the risk of cancer and consumption of water containing uranium in excess of 30 ug/L may be toxic to the kidneys. Effective treatments for uranium are ion exchange, reverse osmosis, lime softening, and coagulation/filtration. For more information on uranium and other Radionuclides in drinking water please visit: • EPA: Basic Information about Radionuclides in Drinking Water • WHO: Chemical fact sheets

* MCL (Primary Standard)
** SMCL (Secondary Standard)
*** Upper Limit Guideline

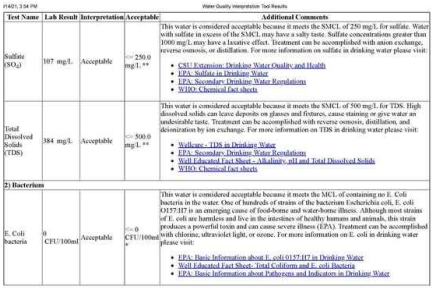


Interpretations of Drinking Water Quality for Montana

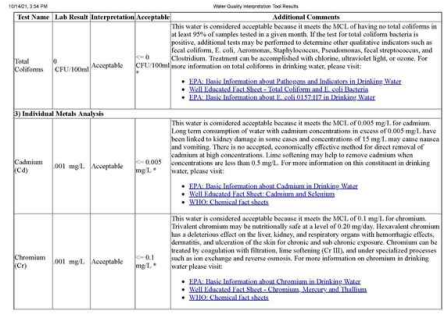
Test Name	Lab Result	Interpretation	Acceptable	Additional Comments
1) Routine Water Analysis				
Calcium (Ca)	71.5 mg/L	No Guideline		At this time, there is no drinking water quality guideline for calcium because no documented threshold of injury has been shown to occur. Calcium is the primary constituent of water hardness. Treatment can be accomplished with a cation exchange water softener. For general information on drinking water quality, please visit: • CSU Fact Sheet 0.513 - Domestic Water Quality Criteria
Electrical Conductivity (EC)	591 dS/m (mmhos/cm)	No Guideline		At this time, there is no drinking water quality guideline for electrical conductivity because no documented threshold of injury has been shown to occur. For general information on drinking water quality, please visit: • CSU Fact Sheet 0.513 - Domestic Water Quality Criteria
Hardness as $CaCO_3$	228 mg/L	Objectionable	<= 120.0 mg/L ***	This water is considered objectionable because it does not meet the upper limit guideline of 120 mg/L for hardness. Calcium and magnesium are the primary components of water hardness and are essential nutrients. High water hardness can result in scaling of bathtubs, water heaters, pipes, and other plumbing fixtures as well as soap not lathering well, the upper limit guideline of 120 mg/L is set to prevent these effects. Water hardness can be removed with an in home water softener however most in home water softeners exchange calcium and magnesium ions for sodium ions so softened water should not be used for drinking or watering plants. If softening is needed, it may be advantageous to only soften the water supply to the water heater, or use a filtration system such as reverse osmosis for drinking water if all of the house's water is softened. Chemical softening, reverse osmosis, electrodialysis, and ion exchange are also applicable treatments. For more information on hardness of drinking water, please visit: • CSU Extension: Drinking water quality and health • Well Educated Fact Sheet - Hardness • NESC: Water Softeners • WHO: Acceptability aspects



Test Name	Lab Result	Interpretation	Acceptable	Additional Comments
Magnesium (Mg)	12.1 mg/L	No Guideline		At this time, there is no drinking water quality guideline for magnesium because no documented threshold of injury has been shown to occur. Magnesium is a primary constituent of water hardness. Treatment can be accomplished with a cation exchange water softener. For general information on drinking water quality please visit: • CSU Fact Sheet 0.513 - Domestic Water Quality Criteria
NO_3-N + NO_2-N (Total)	.38 mg/L	Acceptable	<= 10.0 mg/L *	This water is considered acceptable because it meets the MCL of 10.0 mg/L for NO_3-N+NO_2-N. Testing labs generally analyze for nitrate and nitrite together so the results are often expressed as nitrate-nitrite as N. The drinking water standard for nitrite-N is 1.0 mg/L. However, nitrite is very uncommon in groundwater, so it is generally assumed that almost all of the nitrate plus nitrite is in the nitrate form. Natural levels of nitrate-N vary from zero to about 4 mg/L. If the value is above 4 mg/L it is possible that nitrate-N is moving into groundwater from a surface landuse or a septic system. Nitrate-N values exceeding 8 mg/L are approaching the health standard and should be monitored regularly especially if an infant under 1 year of age is using the water. Nitrate-N values over 10 mg/L are unsatisfactory and action should be taken to determine the source and discontinue use of the water for infants or people with cardiac problems. For more information please visit: • EPA: Basic Information about Nitrate in Drinking Water • Well Educated Fact Sheet - Nitrate & Nitrite • CSU - Nitrates in Drinking Water • WHO: Chemical fact sheets
pH	8.2 pH	Acceptable	<= 8.5 and >= 6.5 pH **	This water is considered acceptable because it falls within the SMCL guideline range of 6.5 to 8.5. pH usually does not have any direct health effects. Low ph water can be corrosive to water systems and have a bitter taste. High pH water can give water a slippery feel, a soda taste and contribute to scaling. ph can be increased by adding soda ash and decreased by adding white vinegar or citric acid. Neutralizing filters can also be used (calcite or calcite/magnesium media). For more information on pH of drinking water please visit: • Wellcare - pH in Drinking Water • Well Educated Fact Sheet - Alkalinity, pH and Total Dissolved Solids • EPA: Secondary Drinking Water Regulations • WHO: Chemical fact sheets



Test Name	Lab Result	Interpretation	Acceptable	Additional Comments
Sulfate (SO_4)	107 mg/L	Acceptable	<= 250.0 mg/L **	This water is considered acceptable because it meets the SMCL of 250 mg/L for sulfate. Water with sulfate in excess of the SMCL may have a salty taste. Sulfate concentrations greater than 1000 mg/L may have a laxative effect. Treatment can be accomplished with anion exchange, reverse osmosis, or distillation. For more information on sulfate in drinking water please visit: • CSU Extension: Drinking Water Quality and Health • EPA: Sulfate in Drinking Water • EPA: Secondary Drinking Water Regulations • WHO: Chemical fact sheets
Total Dissolved Solids (TDS)	384 mg/L	Acceptable	<= 500.0 mg/L **	This water is considered acceptable because it meets the SMCL of 500 mg/L for TDS. High dissolved solids can leave deposits on glasses and fixtures, cause staining or give water an undesirable taste. Treatment can be accomplished with reverse osmosis, distillation, and deionization by ion exchange. For more information on TDS in drinking water please visit: • Wellcare - TDS in Drinking Water • EPA: Secondary Drinking Water Regulations • Well Educated Fact Sheet - Alkalinity, pH and Total Dissolved Solids • WHO: Chemical fact sheets
2) Bacterium				
E. Coli bacteria	0 CFU/100ml	Acceptable	<= 0 CFU/100ml *	This water is considered acceptable because it meets the MCL of containing no E. Coli bacteria in the water. One of hundreds of strains of the bacterium Escherichia coli, E. coli O157:H7 is an emerging cause of food-borne and water-borne illness. Although most strains of E. coli are harmless and live in the intestines of healthy humans and animals, this strain produces a powerful toxin and can cause severe illness (EPA). Treatment can be accomplished with chlorine, ultraviolet light, or ozone. For more information on E. coli in drinking water please visit: • EPA: Basic Information about E. coli O157:H7 in Drinking Water • Well Educated Fact Sheet- Total Coliforms and E. coli Bacteria • EPA: Basic Information about Pathogens and Indicators in Drinking Water



Test Name	Lab Result	Interpretation	Acceptable	Additional Comments
Total Coliforms	0 CFU/100ml	Acceptable	<= 0 CFU/100ml *	This water is considered acceptable because it meets the MCL of having no total coliforms in at least 90% of samples tested in a given month. If the test for total coliform bacteria is positive, additional tests may be performed to determine other qualitative indicators such as fecal coliforms, E. coli, Aeromonas, Staphylococcus, Pseudomonas, fecal streptococcus, and Clostridium. Treatment can be accomplished with chlorine, ultraviolet light, or ozone. For more information on total coliforms in drinking water, please visit: • EPA: Basic Information about Pathogens and Indicators in Drinking Water • Well Educated Fact Sheet - Total Coliform and E. coli Bacteria • EPA: Basic Information about E. coli O157:H7 in Drinking Water
3) Individual Metals Analysis				
Cadmium (Cd)	.001 mg/L	Acceptable	<= 0.005 mg/L *	This water is considered acceptable because it meets the MCL of 0.005 mg/L for cadmium. Long term consumption of water with cadmium concentrations in excess of 0.005 mg/L have been linked to kidney damage in some cases and concentrations of 15 mg/L may cause nausea and vomiting. There is no accepted, economically effective method for direct removal of cadmium at high concentrations. Lime softening may help to remove cadmium when concentrations are less than 0.5 mg/L. For more information on this constituent in drinking water, please visit: • EPA: Basic Information about Cadmium in Drinking Water • Well Educated Fact Sheet: Cadmium and Selenium • WHO: Chemical fact sheets
Chromium (Cr)	.001 mg/L	Acceptable	<= 0.1 mg/L *	This water is considered acceptable because it meets the MCL of 0.1 mg/L for chromium. Trivalent chromium may be nutritionally safe at a level of 0.20 mg/day. Hexavalent chromium has a deleterious effect on the liver, kidney, and respiratory organs with hemorrhagic effects, dermatitis, and ulceration of the skin for chronic and sub chronic exposure. Chromium can be treated by coagulation with filtration, lime softening (Cr III), and under specialized processes such as ion exchange and reverse osmosis. For more information on chromium in drinking water please visit: • EPA: Basic Information about Chromium in Drinking Water • Well Educated Fact Sheet - Chromium, Mercury and Thallium • WHO: Chemical fact sheets

Bacteria-Negative

Water samples were found negative for coliform & E-coli. No additional actions required.

Attached are additional reports from the lab for your review and records.

Lead-Acceptable Level

Lead levels found within an acceptable range. The attached lab report indicates acceptable levels, with a recommend threshold of 15ppb. The link below has additional information regarding lead levels.

https://www.epa.gov/wqs-tech/water-quality-standards-regulations-ohio

Nitrate/Nitrite (No2&No3) Acceptable

The nitrogen found in the water sample is acceptable with a recommended limit of 10mg/L. No additional actions recommended at this time. Lab reports will be supplied as separate documents for your records.

Arsenic Objectionable

This water is considered objectionable because it does not meet the MCL of 0.01 mg/L. Arsenic is poisonous in humans at 100 mg or more and has proven lethal at 130 mg. Studies have linked long-term exposure to arsenic in drinking water to cancer of the bladder, lungs, skin, kidney, nasal passages, liver, and prostate. Non-carcinogenic effects of arsenic include cardiovascular, pulmonary, immunological, neurological, and endocrine effects. Short-term exposure to high doses of arsenic can cause other detrimental health effects, but are unlikely to occur from public water supplies in compliance with the existing arsenic standard of 0.01 mg/L. Accumulation in the body is expected to rise progressively in humans with low intake of arsenic. By using activated alumina, reverse osmosis, ion exchange, or electro dialysis, the concentration of arsenic can be significantly lowered. For more information about arsenic in drinking water please visit:

- EPA: Basic Information about Arsenic in Drinking Water
- Well Educated Fact Sheet- Arsenic
- Butte-Silver Bow Water Environmental Health

2: SAMPLING PROTOCOL

Information

How I Sampled Your Well

I follow the US EPA Quick Guide to Drinking Water Sample Collection. Follow the link here:
https://www.epa.gov/sites/default/files/2015-11/documents/drinking_water_sample_collection.pdf