# Understanding Drinking Water Test Results

*Disclaimer: The following is intended to assist in the interpretation of your drinking water test results. Wyoming Analytical Labs (WAL) provides this information as a courtesy to our customers. WAL accepts no responsibility for the use or misuse of this information. Though we believe this information to be accurate, no guarantee is made or implied.*

Wyoming Analytical is not permitted to pronounce your water results "good" or "bad." We can, however, provide you with information allowing you to determine for yourself if compounds found in your water are at commonly preferred (blue) or acceptable (green) levels, or if they are at levels that are considered unacceptable (yellow and red).

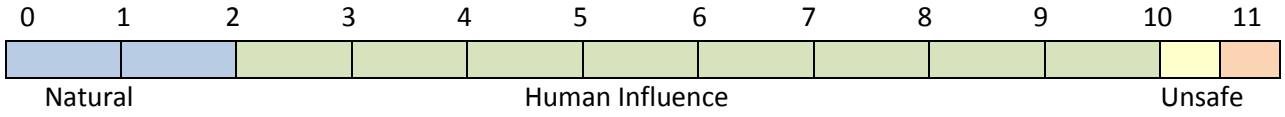
## Nitrate & Nitrite

Nitrate and Nitrite are often reported as a sum. Water is considered unsuitable for human consumption when Nitrate levels are above 10 mg/L or Nitrite levels are above 1 mg/L.

Infants of six months or less who ingest such water risk developing methemoglobinemia or "Blue Baby Syndrome." Adults taking medications that contain Nitrates should not ingest such water. High Nitrate levels may be linked to birth defects and miscarriages and may indicate the presence of other contaminants in the aquifer. High Nitrite levels may indicate damage to the well casing or plumbing system allowing hazardous contaminants to enter the water supply.

Common sources of contamination are high nitrogen fertilizers, manure, sewage, leaking septic systems, and livestock or wildlife feces and urine.

Mark on the bar below your results for Nitrate and Nitrite (added together) in mg/L.



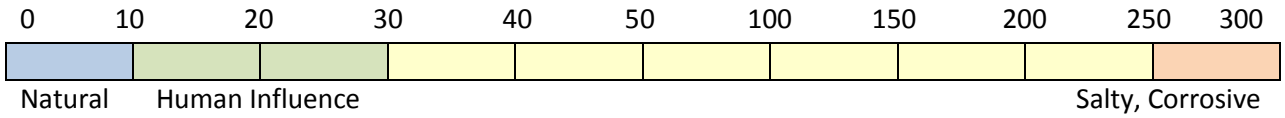

## Chloride & Sodium

Chloride and Sodium are often found in water samples at similar amounts; therefore, water with high Chloride levels may also have high Sodium levels. Though Chloride itself is not toxic at such low levels, water is considered unsuitable for human consumption when Sodium levels are above 30 mg/L.

Adults who have been instructed by their doctor to reduce salt in their diet should not ingest such water. High Chloride levels may increase the rate at which pipes and plumbing fixtures corrode. Extremely high Chloride levels (250 mg/L or more) may cause water to have a salty taste.

Common sources of contamination are road salt, water softeners, landfills, fertilizer, manure, sewage, leaking septic systems, and livestock or wildlife feces and urine.

Mark on the bar below your results for Chloride in mg/L.



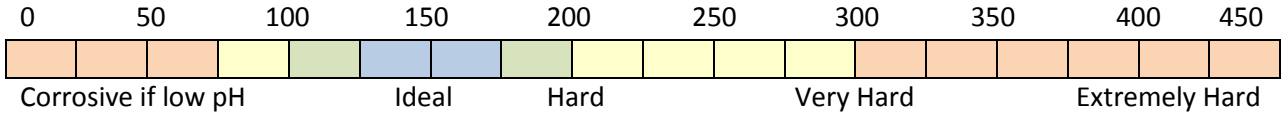
## Alkalinity (Carbonate & Bicarbonate) and Hardness

Because they form from the same minerals, alkalinity and hardness are usually nearly equal in concentration. Alkalinity is related to pH and is a measure of water's ability to neutralize acids. Hardness is a measure of dissolved Calcium and Magnesium.

Hard water can cause lime build-up in pipes, water heaters and fixtures and reacts with soap to decrease its cleaning ability, forming soap scum and greying white laundry.

Common sources of contamination are dissolved limestone or dolomite minerals from the aquifer.

Mark on the bar below your results for Alkalinity or Hardness in mg/L.



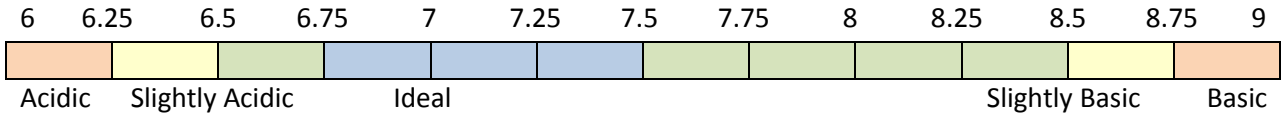

## pH

pH is a measure of acid concentration in water. It is a logarithmic scale from 1 to 14. A pH of 7 is neutral, with values above 7 being basic and those below 7 being acidic. Each change of 1 pH unit away from 7 indicates a compounding 10-fold increase in the acid or base level.

Low pH can cause corrosion of pipes and fixtures. Lead, copper and zinc from pipes and solder joints may be dissolved, causing contamination of drinking water.

A common cause of low pH is a lack of carbonate minerals from limestone and dolomite in the aquifer, or that the natural carbonate minerals have been removed by a water softener. Low pH may indicate contamination from sources such as landfills.

Mark on the bar below your results for pH in standard units.




## Total Dissolved Solids (TDS)

Total Dissolved Solids is the total number of ions in the water. The TDS value should be roughly the same number as the sum of individually measured ions (Ca, Fe, Mg, Na, K, Cl, F, Nitrate, Nitrite, Sulfate, Carbonate, Bicarbonate).

A TDS that is higher than the total measured ions can indicate that there is another contaminant in the water that has not been identified, such as leaching of pipes and solder joints by highly acidic water. High TDS may indicate contamination from sources such as dissolved limestone or dolomite minerals from the aquifer, landfills, road salt, water softeners, fertilizer, manure, sewage, leaking septic systems, and livestock or wildlife feces and urine.

Mark on the bar below your results for TDS in mg/L. (Public water is required to be less than 500 mg/L.)

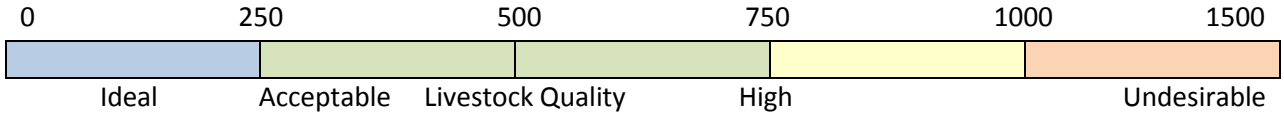
## Sulfates

Sulfate is a measure of sulfur oxides in water.

High levels of sulfates appear to have no adverse health effects other than acting as a laxative to new users. Wyoming water is commonly high in sulfates, but has been consumed by its inhabitants for many years with little or no adverse effects.

A common source of Sulfate contamination is dissolved minerals in the aquifer, especially gypsum.

Mark on the bar below your Sulfate result in mg/L. (Public water is required to be less than 250 mg/L.)




## Conductivity

Conductivity is a measure of water's ability to conduct electricity and is closely related to the amount of total dissolved solids in water.

Changes in Conductivity over time may indicate changing water quality.

## Coliform Bacteria

Coliform bacteria are microorganisms found in surface water, soil and in the feces of humans and animals. The presence of total Coliform bacteria may indicate that other disease-causing organisms commonly found in fecal waste may be present. The presence of fecal Coliform bacteria is conclusive evidence of fecal contamination and represents a much greater health risk.

Fecal contamination can cause gastrointestinal infections, hepatitis and other diseases.

Common sources of contamination include soil and bacteria on the hands of the sampler, fertilizer, manure, sewage, leaking septic systems and livestock or wildlife feces. In areas where wells are within fractured bedrock, course sand or gravel aquifers, Coliform bacteria may contaminate groundwater. The presence of Coliform bacteria may indicate defects in well construction or maintenance procedures.

Do not drink water from a well that has tested positive for fecal Coliform. Check your well for common sources of contamination such as:

- Cap or seal is not on tightly, or is on tightly but not vented
- Wiring is not in the conduit
- Well is in a pit or basement
- Casing extends less than 12 inches above grade
- Casing is cracked or rusted through
- Pitless adaptor is poorly welded
- Inadequate grout or fill around the casing

After correcting visible defects and eliminating obvious sources of contamination, disinfect the well using chlorine bleach. (See your local well drilling company or contact us for detailed instructions.) Resample and retest after the chlorine has been flushed. Disinfect and retest again if the results are still positive. One month after receiving a negative result, resample and retest once more to ensure that the contamination source has been eliminated.