Water Quality Testing Guidelines

The most commonly used unit of measure for water testing is milligrams per liter (mg/l). Generally speaking, this is equal to one part per million (ppm)—one part contaminant to one million parts water. Some toxins are reported in even smaller units, such as parts per billion (ppb). (For a little perspective, one ppm would be approximately equal to one or two grains of sugar dissolved in a bath tub full of water)

HARDNESS: comes from elevated levels of calcium, magnesium and other similar substances found in the soil around a well.

RELATIVE HARDNESS	PPM AS $CaCO_3$
Soft	0-75
Moderate hardness	75-150
Hard	150-300
Very hard	>300

Hard water will tend to deposit calcium carbonate (limestone) scale in plumbing systems, particularly on hot water or boiler heating elements. Soft water tends to be corrosive, dissolving metal pipes and fittings. There is no toxicity associated with hardness and no health standard has been established by environmental regulatory agencies.

SALINITY: is the concentration of all soluble salts in water or in the soil. In water, salinity is usually measured by its electrical conductivity (EC), which is a measure of the concentration of ions in water or in the soil solution. Salinity meters measure the amount of salt in a solution by recording the resistance to an electrical current between two electrodes. The international standard for measuring salinity is decisiemens per metre (dS/m), however; µS/cm is still widely used. In general, levels below 1,500 µS/cm are considered to have minimal short-term effect on aquatic biota.

PH: or concentration of H+, is a measurement of the acidity of the water. A low pH value (range 0-6) is very acidic whereas a high pH (range 8-14) is very alkaline. A neutral pH value is 7.00. The lowest acceptable pH level for fish species in the creek system is 4.5 to 5.5 (*6-8.5 is an acceptable range*).

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AMMONIA: is a measurement of the concentration of ammonia nitrogen compounds produced by the denitrification. Excess presence of ammonia can lead to algal bloom and a consequent depletion of the oxygen supply to the fish. The highest acceptable level of ammonia concentration in the creek system is 0.2mg/L (ppm).

DISSOLVED OXYGEN: is a measurement of oxygen in the water. We test this because a good amount of oxygen in our water is a sign that's its healthy or clean. A lack of oxygen is a sign of severe pollution, and can lead to less aquatic life.

CONDITION	LEVEL
Bad	Less than 4 mg/L
Good	4-10 mg/L
Excellent	More than 20 mg/L

TOTAL DISSOLVED SOLIDS: are dissolved solids plus suspended and settled solids in water. In stream water, dissolved solids consist of calcium, chlorides, nitrate, phosphorus, iron, sulfur, and other ions particles. Total solids also affect water clarity. Higher solids decrease the passage of light through water, thereby slowing photosynthesis by aquatic plants. Water will heat up more rapidly and hold more heat; this, in turn, might adversely affect aquatic life that has adapted to a lower temperature regime.

ALKALINITY: is a measure of the capacity of water to neutralize acids (see pH description). Alkaline compounds in the water such as bicarbonates (baking soda is one type), carbonates, and hydroxides remove H+ ions and lower the acidity of the water (increases pH). Measuring alkalinity is important in determining a stream's ability to neutralize acidic pollution from rainfall or wastewater.

QUICK CHART:

PARAMETER	UNITS	GUIDELINE RANGE OR VALUE
Dissolved oxygen	Percentage saturation (%)	91-99
Conductivity	Microsiemens/cm	88-482
Turbidity	NTU	10
pH	pH	6.6-7.8
Temperature	˚F	43.52-66.2
Alkalinity	ppm	100-200
Total dissolved solids	ppm	50-150