

Water Quality Parameters Analyzed in the McKenzie Watershed

As mentioned in last month's column, the focus of this series is on some of the water quality parameters analyzed in the McKenzie River Watershed.

Alkalinity

Alkalinity is a measure of the capacity of water or any solution to neutralize acids. Low alkalinity can result in rapid pH changes because the water is poorly buffered and has little capability to neutralize acids or bases.

Alkalinity should not be confused with pH. pH is a measure of the intensity of the acidic or basic character of a solution at a given temperature.

The most important compounds in water that determine its alkalinity include the carbonate (CO_3^{2-}) and bicarbonate ions (HCO_3^-). Carbonate ions are able to react with and neutralize hydrogen ions (H_+) and the bicarbonate ions are able to neutralize hydroxide ions (OH^-) present in the water. This ability to neutralize acids is called buffering.

Because of this buffering capacity it protects them, alkalinity is important to aquatic organisms. It protects them against rapid changes in pH and is especially important in areas where acid rain is a problem.

Causes:

- Low pH's mean that all the neutralizing power or buffering capacity of the water is used up.
- Very high pH's result in the rapid decomposition of organic matter with release of carbon dioxide.