

Dissolved Oxygen

Oxygen gas dissolved in water is vital to the existence of most aquatic organisms. Oxygen is a key component in cellular respiration for both aquatic and terrestrial, some organisms such as trout, caddisfly and mayfly larva require high concentrates of dissolved oxygen.

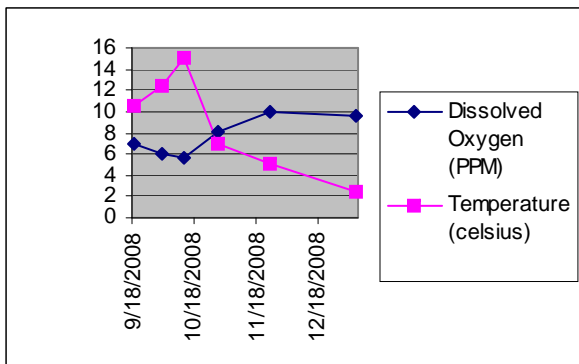
Water tumbling over rocks, wave action, and the photosynthesis of aquatic plants can increase dissolved oxygen.



Temperature

The temperature of a body of water influences its overall quality. Water temperatures outside “normal” range for a stream or river can cause harm to the aquatic organisms that live there. Thermal pollution caused by human activities is one factor that can affect water temperature.

Colder water dissolves gases more easily than warmer water so as temperatures decrease an increase in dissolved oxygen typically occurs.



GPS and Conclusion

GPS stands for Global Positioning System. It picks up latitude and longitude coordinates from satellites overhead.



The GPS was designed for military use but is now used primarily in civilian applications. The sampling area of the Slapneck Creek coordinates are 46.35447 degrees north and 086.97709 degrees west.

In Conclusion

Based on our data we have come to the conclusion that the Slapneck Creek has excellent water quality. We have been out a total of six times and have done a total of nine tests each time. These tests are phosphates, nitrates, turbidity, conductivity, dissolved oxygen, benthic macroinvertebrates, pH, temperature, and alkalinity.



Water Quality Study for the South Branch of the Slapneck River

Created by the Superior Central 2008/09
3rd hour science class.

Benthic Macroinvertebrates

Different types of macroinvertebrates found in a pond or river can indicate the pollution level of that water source.

- Maggots-tolerant
- Leeches-moderately tolerant
- Dragonfly larvae-moderately intolerant
- Mayfly larvae- very intolerant

The dominance of caddisfly larva and other pollution intolerant benthic macroinvertebrates in our river indicate that our water quality is excellent.



Prodding for Macroinvertebrates.



Caddisfly larva

Benthic Macroinvertebrates are bottom dwelling invertebrates such as aquatic insects.

pH and Alkalinity

pH

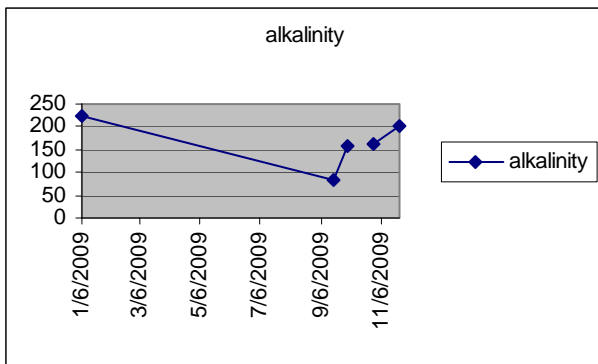
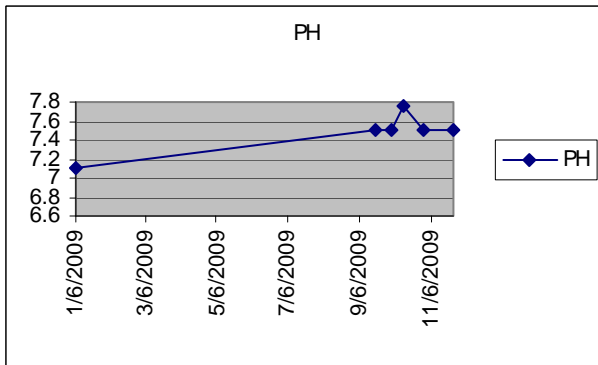
Water contains both hydrogen ions, which creates an acid, and hydroxide ions, which creates a base. pH determines the amount of acid concentration in water. If the pH level is 1 it is very acidic, if it is 7 it is neutral, and if 14 it is very basic.

A couple of the things that affect the pH level are, acidic rainfall, level of hard-water minerals, and the oxidation of sulfides in sediments.

Alkalinity

Is the measurement of how much acid water can neutralize. Low alkalinity = the pH level is below seven and some aquatic life dies or cannot reproduce. High alkalinity = pH level is between 7 and 8 most aquatic life thrives. Alkalinity is not pH;

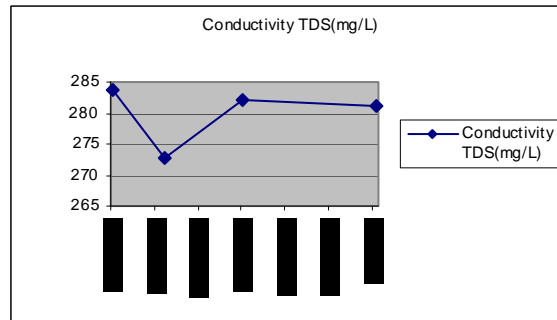
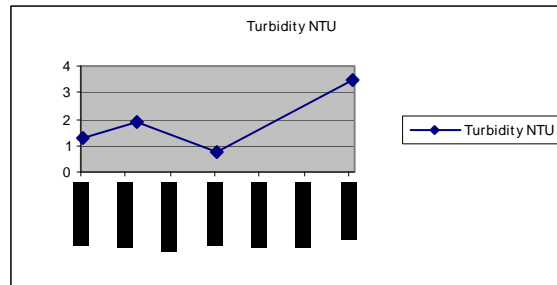
alkalinity is the water's ability to neutralize acid.



Turbidity and Conductivity

Turbidity is measurement of the clearness of water. If turbidity is high, the water is cloudier. If the turbidity is low, the water is clearer. Several man-made factors, such as gasoline or oil from roads and sewage treatment, and natural factors, such as soil erosion and decaying animals, can contribute to water's turbidity.

Conductivity is measurement of how well an electric current travels through water. Conductivity can be affected by particles in the water, called Total Dissolved Solids (TDS). TDS' can be dissolved or suspended. TDS' are caused by both man-made and environmental factors, such as water runoff from urban environments, and acidic rain.



Phosphates and Nitrates

Nitrates are expressed in units of mg/L NG3. That means nitrogen in the form of nitrates. Nitrates are an important source of nitrogen, necessary for both plants and animals.

The level of nitrates in freshwater is usually less than 1 mg/L. Man-made sources of nitrates however may elevate the levels to above 3 mg/L.

Phosphates are necessary for plant life, but if you have too much it can become unhealthy for your water. Once you have too much, the phosphates begin to stimulate unnatural rates of plant growth. Phosphorus is used excessively in many fertilizers and other chemicals. Often you will see a rise in phosphorus levels in waters near human activity. Healthy phosphate levels should never exceed 1.0 mg/L. We are happy to say that our phosphate levels were very healthy.

