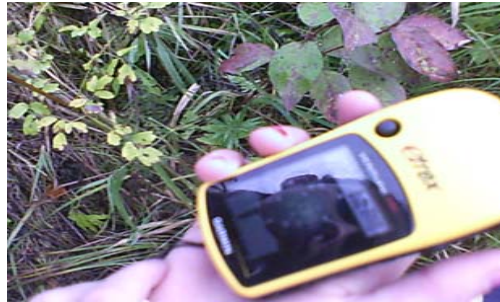


Temperature- The temperature of a body of water influences its overall quality. If the water temperature changes by even a few degrees over a one-mile stretch of the stream it could indicate a source of thermal pollution. A shallow stream is more susceptible to changes in temperature than a deep river would be.



Global positioning system

Global positioning system receives data directly from overhead satellites. It tells you the latitude, longitude, and altitude of your position. For instance the coordinates of the quarry are 46.35260N and 86.47529W. How do global positioning system work? There are a series of satellites that your hand held device registers and tells you your coordinates. There are 28 global positioning system satellites. It only takes 12 hours for a satellite to complete a orbit around the planet.

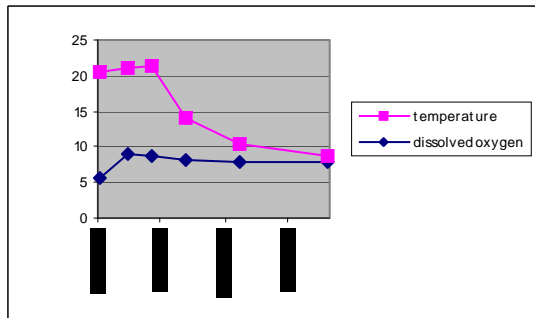


Conclusion

18 weeks ago our class started testing water quality. We will continue to monitor our local watershed. The following are the test we have performed:

- benthic macroinvertebrates
- nitrates
- phosphates
- alkalinity
- pH
- turbidity
- dissolved oxygen
- temperature
- conductivity

All of our data proves that our quarry pond has great water quality. Thank you for reading.



Water Quality Study for the Superior Central Quarry Pond

Created by the 2008/09 7th hour science class.

Benthic Macroinvertebrates

Benthic: Bottom dwelling.

Macroinvertebrates: refers to those invertebrates seen with the unaided eye.



They are great indicators of water quality.

- 1.Many are sensitive to physical & chemical changes in their habitat.
- 2.Many live in the water over a year.
- 3.They can't easily escape pollution as some fish can.
- 4.They are easily collected in many rivers & streams.

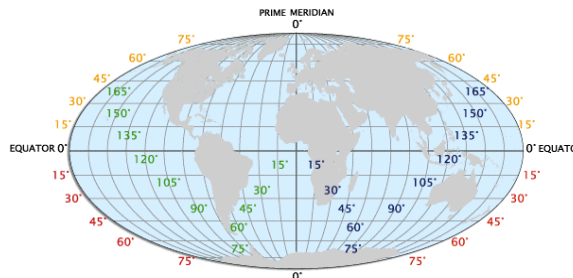
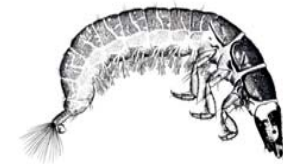
Benthic Macroinvertebrates often go unnoticed because of their size & habitat, but they are an extremely important part of river ecosystems. There are 4 different groups of benthic macroinvertebrates. The categories are: Excellent, Good, Poor, & Bad. For example: our water quality is excellent

Excellent: Caddis flies and Mayflies.

Good: Dragonflies and the clam

Poor: Leeches and the Black fly.

Bad: Maggots and Blood Midges.



pH & Alkalinity

Alkalinity

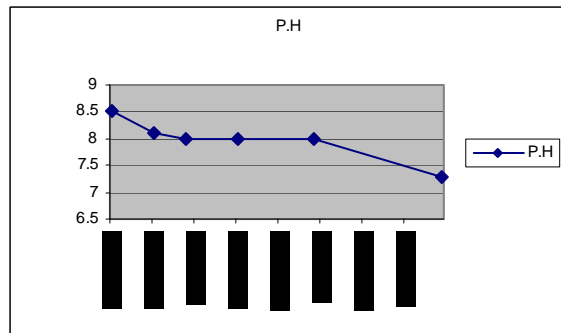
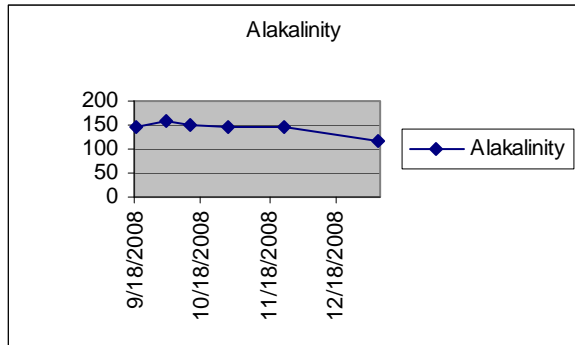
The Alkalinity of water is a measure of how much acid it can neutralize. Alkalinity Buffers water against sudden changes in pH. Alkalinity also protects aquatic organisms from sudden changes in pH

Sources of Alkalinity

- Leached from rock (lime stone)
- Leached from minerals (dolomite calcite)
- Leached from soil

Factors that affect pH levels

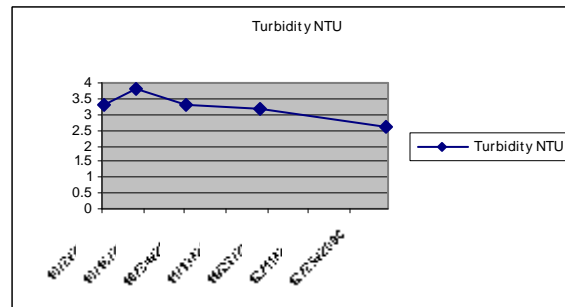
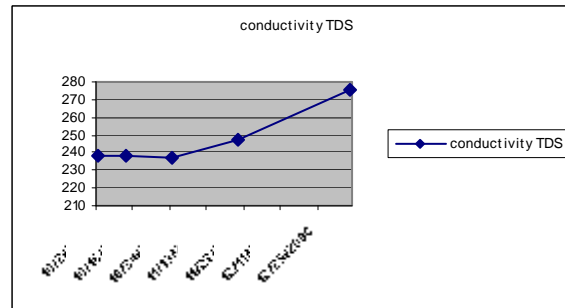
- Acidic rainfall
- Algal blooms
- Level of hard water
- Releases from industrial processes
- Carbonic acid from respiration or decomposition
- Oxidation of sulfides in sediments



Conductivity & Turbidity

Turbidity- It measures how clear the water is. The light reflecting off the particles in the water creates the cloudiness. More particles create higher turbidity. Turbidity is measured using a Vernier Turbidity Sensor. A vial of sample water is place in the turbidity sensor and an infrared light is shot through the vial. The amount of scattered light indicates how cloudy the water is. Suspended sediments, animals stirring up the bottom, and particles rising through the water can all cause the cloudiness.

Conductivity (TDS)- conductivity is a measurement of Total Dissolved Solids (TDS) in the water. There are two ways to measure TDS. One you can filter water then evaporate it and measure the contents left in the container in the mg/L. The other way to measure this is with a probe witch sends an electrical current through the water and is digitally converted to mg/L. Usually the TDS in the water the higher the conductivity will be.



Phosphates

Phosphates are essential for aquatic plants and animals. Only a small amount is needed and when there is a high amount of phosphorus the water can become uninhabitable. Sources that cause phosphorus include human and animal wastes, industrial wastes and agricultural run-off.



Nitrates

Nitrates are an important source of nitrogen necessary for plants and animals to synthesize amino acids and proteins. Nitrate pollution of surface and groundwater has become a major ecological problem in some agricultural areas. Sources that cause nitrates include- agricultural runoff, urban runoff, barnyards, cars and factories.

