Lesson Six

(Surface Water Only)

TURBIDITY & CLARITY

Turbidity

The more particles visible in water the less clear it becomes. This is known as turbidity. Colloid sized particles are very small particles that remain suspended in the water. They may not be ions or "charged." They may be bound up with other ions so that they are electrically neutral and won't show up in a measurement of conductivity.

Suspended particles scatter light and make water look cloudy. The greater the number of particles the more light is scattered. This will decrease clarity of water. In surface waters it can cut out light to plants and they will die.

When comparing your groundwater studies to surface water bodies in the same watershed this parameter should be included.

VOCABULARY

Turbidity- Having sediment or foreign particles stirred up or suspended; muddy: *turbid water*.
Colloid- a substance consisting of particles that are dispersed throughout another substance and are too small for resolution with an ordinary light microscope but are incapable of passing through a semi-permeable membrane
(particle size range from 1-100 nm)
Clarity- all thing that effect the ability to see into water: turbidity, particles, and plants.
Conductivity- the ability/power to conduct or transmit heat, electricity, or sound.
Ion- An atom or a group of atoms that has acquired a net electric charge by gaining or losing one or more electrons.
Cation- An ion or group of ions having a positive charge
Anion- A negatively charged ion

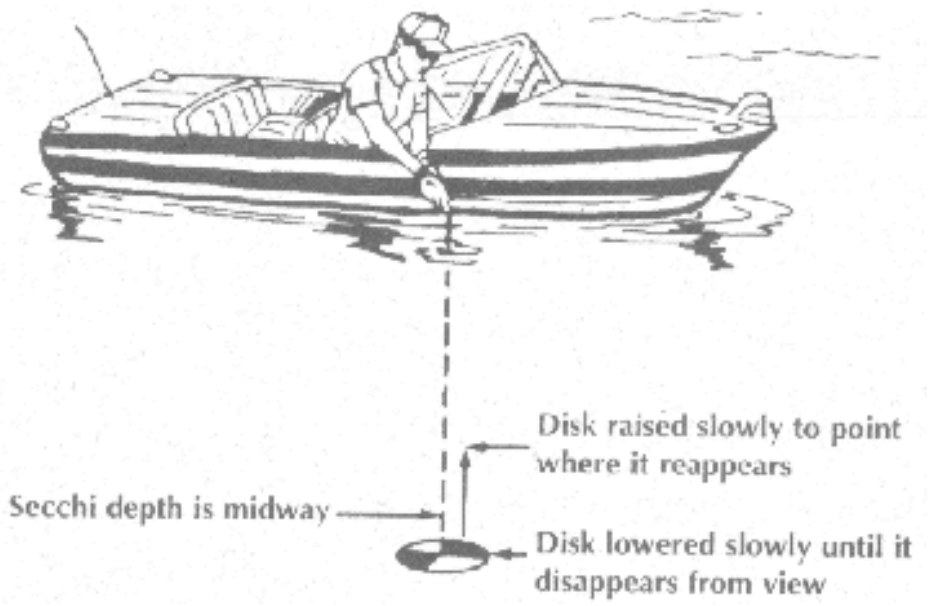
ACTIVITY

Plastic milk bottle	Permanent black marker
Fishing weight	String
Scissors	Lid for tracing
Ruler	Measuring tape

Using the lid trace a circle on the plastic milk bottle. Cut out the circle. Using the ruler and the marker, draw a line straight through the center of the circle. Turn the circle 90° and repeat the process. It should look as if you have 4 even pieces of "pie" on the circle. Color in the two triangular pieces of your "pie" opposite each other. You should have blank, black, blank, black as you turn the circle. Punch a hole through the center of the circle. Thread the center with a string 2 meters long. Tie the fishing weight to the bottom of the string underneath your "pie" with the marked side up. Measure out and mark decimeters on your string. There should be 20 marks on your string with the first mark

closest to the circle. You have now made a Secchi Disk. This is used by professionals to measure turbidity in water.

Go to a nearby body of water and lower the Secchi Disk. The fishing weight should help keep it from floating. Lower the disk into the water until you can no longer see it with the naked eye. Once it disappears from view, raise it slowly to the point it reappears. Locate this
depth measurement on your string. This will give you depth of visibility in the water and tell you how turbid your water is.



Secchi Disk measurement from a boat (can be done from dock).

http://www.mlswa.org/secchi.htm

HOMEWORK

Repeat this experiment at home! Ask your parents to walk you to the nearest body of water and see if you can measure its turbidity!