

## Activity 3 – Analysis of Turbidity and Depth

High levels of turbidity over long periods of time can greatly diminish the health and productivity of the aquatic ecosystem. Turbid waters decrease light penetration into the water, thus reducing the area available for submerged aquatic plants to grow. Water that is clear has a high transparency. Transparency usually decreases in the summer when plankton, silt and organic matter are more likely to be prevalent.

The Secchi Disk is a black and white circular plastic plate, 20 cm in diameter that is used to determine the turbidity or degree of visibility in water. The Secchi Disk provides a very simple means of making transparency determinations in natural waters.

**For information about how to construct and use a Secchi Disk visit:**

<http://dipin.kent.edu/secchi.htm> Click on “Considerations in Secchi Disk Design

### **How to Measure Transparency:**

Make sure that Secchi disk measurements are made in the shade with the sun to your back to make an accurate and reproducible reading. If there is no shade available, use an umbrella or a large piece of cardboard to shade the particular area where the measurement is being made.

Different individuals may see the Secchi disk disappear at different water depths. For this reason, whenever possible, more than one student should make the transparency observation.

### **Procedure:**

1. Lower the Secchi disk straight down into the water until the disk just disappears from sight. Mark the rope at the water level with a clothespin.
2. Slowly raise the disk up until it reappears. Mark the rope at the water level with your fingers or with the other clothespin.
3. To find the Secchi depth, grasp both clothespins in one hand and find the center of the loop of rope. Move one clothespin to that point and remove the other. This point is one-half the distance between the point of disappearance of the disk and the point where it re-appeared. Measure the distance from this point to the surface using a ruler or metre stick.
4. Record the Secchi depth on your data sheet to the nearest cm.
5. (If the two depths differ by more than 10 cm, repeat the measurement.)

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#### Secchi Depth:

|        | A.<br>Water Depth at<br>which the Secchi<br>Disk disappears. | B.<br>Water Depth at<br>which the Secchi<br>disk reappears | Subtract: A-B | Divide by 2 =<br>Secchi Depth |
|--------|--|--|---------------|-------------------------------|
| Test 1 | _____ cm   | _____ cm   | _____ cm      | _____ cm                      |
| Test 2 | _____ cm   | _____ cm   | _____ cm      | _____ cm                      |
| Test 3 | _____ cm   | _____ cm   | _____ cm      | _____ cm                      |

**Note:** If the Secchi Disk reaches the bottom of your study site and you can still see it, simply record the depth to the bottom by referring to the point where the rope is at the water surface and put a greater than (>) symbol in front of the measurement on your data work sheet.

#### Cloud Cover:

Cloud cover has an impact on the visibility of a Secchi Disk.

\_\_\_\_\_ Clear (Sky is cloudless or clouds cover less than one-tenth of the sky)

\_\_\_\_\_ Scattered Clouds (Clouds cover one-tenth through one-half of the sky.)

\_\_\_\_\_ Broken clouds (Clouds cover greater than five-tenths to nine-tenths of the sky.)

\_\_\_\_\_ Overcast (Clouds cover more than nine-tenths of the sky.)