Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Soil Permeability

**Purpose**

The permeability of soils affects the way groundwater moves. Some soils are highly permeable, while others are not. The purpose of this lab is to determine the permeability of various soils, and draw conclusions about their effect on the movement of water underground. [[1]](#endnote-1)

**Procedure**

**Materials**

1. 100mL graduated cylinder
2. Beaker
3. Small funnel
4. 3 pieces of cotton
5. Samples of coarse sand, fine sand, and soil
6. Clock or watch with a second hand

**Sequence of Steps**

1. Place a small, clean piece of cotton in the neck of the funnel.
2. Fill the funnel above the cotton with coarse sand. Fill the funnel about 2/3rds of the way.
3. C:\Users\Angela\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DRP2N1IJ\MCj04242300000[1].wmfPour water into the graduated cylinder until it reaches the 50mL mark.
4. In the data table, keep track of the time from the second you start to pour the water into the funnel. Measure the amount of time it takes the water to drain through the funnel filled with coarse sand. Using the graduated cylinder, measure the amount of water recovered in the beaker.
5. C:\Users\Angela\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DRP2N1IJ\MCj04242300000[1].wmfWith the bottom of the funnel over the beaker, pour the water from the graduated cylinder slowly into the sand in the funnel.
6. Record in the data table the time it takes for the water to drain through the sand.
7. Empty and clean the measuring cylinder, funnel, and beaker.
8. Repeat steps 1-7 first using fine sand and then using soil.

**C:\Users\Angela\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DRP2N1IJ\MCj04242300000[1].wmf Observations**

Data Table

|  |  |  |
| --- | --- | --- |
|  | Time Needed for Water to Drain Through Funnel | Water Collected in Beaker (mL) |
| Coarse Sand |  |  |
| Fine Sand |  |  |
| Soil |  |  |

1. Of the three materials you tested, which has the greatest permeability? The least permeability?
2. Why were different amounts of water recovered in the beaker for each material tested?
3. What effect would the differences you observed in this lab have on the movement of groundwater through different soils?
4. What factors might affect the accuracy of your results in this experiment? How would repeating each test several times affect your measurements?

1. Tarbuck, E, & Lutgens, F (2009). *Earth Science*. Boston, MA: Prentice Hall. [↑](#endnote-ref-1)