GG 455 Laboratory

Experiment 3: Capillary Rise

A tube will be filled with dry sand and immersed in dyed water. The rate of capillary rise and the final capillary head in the sand will then be studied.

Procedure:

Immerse the bottom of the tube to about 1 inch into the beaker of dyed water. Measure the height of capillary fringe in the tube above water level in the beaker at the end of 1, 2, 5, 10, 20, and 60 minutes. If the capillary fringe is still rising after 60 minutes continue to take measurements until it stabilizes. The capillary fringe may be irregular so record the highest and the lowest points and use the average of the two values in your calculations. Be careful to account for any drop in the water level in the beaker when taking your measurements.

Report will include:

1. Data sheet.
2. Graph of capillary rise vs. time for the sand.
3. According to theory, capillary head should be related to throat radius r by the approximate equation, \( h_c = 0.15/r \), where \( h_c \) is capillary head. Both \( h_c \) and r are in cm. Estimate the average grain radius.

Due in one week