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Rock and Sediment Properties and Water Flow

The purpose of this experiment was to see if different types of geological material found in an aquifer affects the flow of water through an aquifer. Water moves with gravity through spaces in rock until it cannot penetrate any longer.

The procedures that were used: First, cut the top off the bottles. Second, cut a hole in each bottle big enough for a tube, at different heights. Label the bottles A, B, and C. Fill bottle A with one of the sample materials. Measure the height of the bottle from the bottom to the hole and then from the bottom to the top. Put the tubing in the hole. Pour water into the top of the bottle, saturating the material until water is flowing through the tube. Catch the water in an overflow bucket. Once a flow is established, shift the tube to a second bucket, timing the flow for 20 seconds. Measure the captured water in a graduated cylinder. Multiple the amounts by 3 to obtain the flow rate in millimeters/minute. Record the data and any other observations. Repeat flow experiment two more times.

From fastest to slowest, this was the result on the flow rates for the samples: lava rock, aquarium rock, pea gravel, sand, soil, clay-soil, and clay. This experiment demonstrated the importance of knowing what type of sediment exists when digging a well for water to determine flow rate. This makes it easier to retrieve groundwater from wells.