

Earth Science B
Permeability and Porosity Inquiry Lab

Name _____

Date _____

Learning Objectives: Students will further understand how groundwater is stored in the ground as a result of porosity and permeability of a sediment.

State standards:

Groundwater

»E4.1 B Explain the features and processes of groundwater systems and how the sustainability of North American aquifers has changed in recent history (e.g., the past 100 years) qualitatively using the concepts of recharge, residence time, inputs, and outputs.

»E4.1 C Explain how water quality in both groundwater and surface systems is impacted by land use decisions.

Scientific Inquiry

»B1.1 A Generate new questions that can be investigated in the laboratory or field

»B1.1 C Conduct scientific investigations using appropriate tools and techniques

»B1.1 D Identify patterns in data and relate them to theoretical models

»B1.2 D Evaluate scientific explanations in a peer review process or discussion format

Pre-lab:

1. Group discussion- What happens to water when it rains? Where does it go?

2. Define porosity and permeability below:

3. Students: Observe sediment samples provided by instructor with a hand lens and write your observations below

Cut out and place steps in the correct order

Next, Pour water into the graduated cylinder until it reaches the 50mL mark

In a data table developed by your group, keep track of the time from the second you start to pour the water into the funnel. Measure the time it takes the water to drain through the funnel filled with course sand

First, Place a small, clean piece of cotton in the neck of the funnel (don't jam in). Fill the funnel above the cotton with coarse sand. Fill the funnel about $\frac{2}{3}$ of the way

Record the amount of time it takes for the water to drain through the sand in the data table

repeat steps 1 through 7, first using the fine sand, and then the soil

Empty and clean the graduated cylinder, beaker, and funnel

With the funnel over the beaker, pour the water from the graduated cylinder slowly into the sand in the funnel