

Title : Judging The Quality of An Aquifer

Scientific Investigation

Name (s) _____

Question

What do you want to find out?

How does rock particle size affect permeability?

Background Information

Define permeability and describe the factors that affect permeability.

Hypothesis

What do you think will happen?

“If rock particle size increase, then permeability will increase.”

Independent variable is “rock particle size”.

Dependent variable is permeability.

Controls are amount of water and amount of rock particle material.

Procedure

Design a test for your hypothesis. Write and number the steps for your test in the space below.

1. Gather 3 samples of rock particles of varying size.
2. Label each sample to identify. i.e. A, B, C,
3. Measure 70 ml of a sample of rock particles (Sample A) This approximately one scoop from the sample bucket.
4. Measure size of rock particle. Average of 10 measures
5. Place sample in the filter with funnel.
6. Place funnel in the plastic cup
7. Pour 100 ml of water through the sample.
8. Time the flow of water through the sample. Unit of measure is seconds
9. Measure water in the plastic cup.
10. Calculate permeability using this formula

$$\frac{\text{number of ml of water in plastic cup}}{\text{Flow time in seconds}} = \text{_____ ml/sec}$$

11. Repeat steps 3-11 for Samples B, and C,

Materials and Equipment Needed

- 70 ml of rock particles of varying size (at least four different sizes)
- 500 ml of water
- Funnel
- 4 Filters
- Plastic cup
- Stop Watch
- Graduate cylinder
- Measuring cup with milliliter scale

Safety Rules

What safety rules do you need to follow during your investigation?

Data

Create a table, and graph to record your data. Graph data using a line graph on graph paper.

Analysis

What did you find out? Explain how the independent and dependent variable relate. What are the controls of this test? Cite specific data that supports how independent and dependent variable relate.

Conclusion

Did your results of testing support your hypothesis? Are your results reliable? Explain

