Name _____ Date _____

# Soil: The natural water filter

**Part 1: Characterize your soils**

Why is it important to have permeable surfaces? During this lab experiment, you will find out why. Read pages 1-2 & 4 from 'Estimating Soil Texture' handout that your teacher gives you. Then identify your three known soils 'by feel,' following the procedures on pages 4-5 of the handout. Record your results in the diagram on the back of this page.

**Part 2: Create a natural water filter**

1) Following your teacher's instructions, create simple water filters using each of the provided soil types.

2) Fill the top of each large cup with 1.5 inches of one of the three soils.

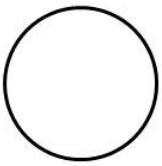
3) Add 1/4 cup of the pollutant mix to each of the cups with soil in it.

4) Compare the color and pH of the pollutant before and after it has gone through each of the different kinds of soil. Record your results below. Color in bubbles with the colored pencils provided.

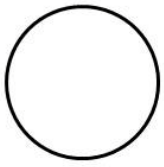
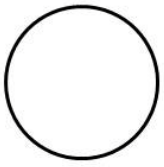
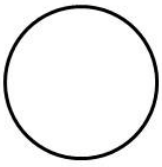
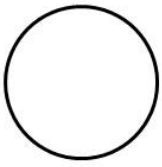
5) Make a prediction about how well your unknown soil will filter out the 'pollutant mix,' based on your observations of the other three soils and what you determined about the unknown soil's texture.

What color and pH do you expect the filtrate from your unknown soil to be? _____

5) Fill your fourth large cup with 1.5 inches of your unknown soil. Pour 1/4 C of the pollutant mix into it and record your results.

Pollutant color before filtration: 

pH before filtration: _____

| | Filter 1 | Filter 2 | Filter 3 | Filter 4 |
|---|---|---|---|---|
| Soil texture: | _____ | _____ | _____ | _____ |
| Pollutant color after filtration: |  |  |  |  |
| pH after filtration: | _____ | _____ | _____ | _____ |

Answer the following questions:

Which soil sample buffered the acid best (yielded the most neutral pH)? _____

Which soil sample produced the clearest filtrate? _____

Through which soil sample did the water move the fastest? _____

**Part 3: Create the best natural filter!**

Decide how you want to create a filter. Will you use one type of soil or mix the different soil types? Layer them? Will you amend your soil with salt, gravel, or baking soda? Draw and label a picture of your set-up below.

Answer the following questions:

1. What substances can soil filter? _____

2. Why did you decide to design your filter the way you did? How would you do it differently next time?

_____

_____

3. How can permeable surfaces in urban areas contribute to improved water quality? _____

_____

_____

4. Based on what you've learned in this activity, describe why 'spring water' is often considered 'pure.'

_____

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