

# Soil Analysis Worksheet

## Data Tables

### Part 1. General Observations and Sketches

### Part 2. Soil Moisture

Mass of empty aluminum dish \_\_\_\_\_ g

Mass of dish plus soil sample before heating \_\_\_\_\_ g

Mass of dish and soil sample after heating \_\_\_\_\_ g

Mass loss due to heating \_\_\_\_\_ g

Percent mass loss \_\_\_\_\_ %

### Part 3. Permeability

#### Dry Soil Drainage

Sample	Drainage Time (s)	Drainage Rate (mL/s)
Soil		
Sand		

#### Wet Soil Drainage

Sample	Drainage Time (s)	Drainage Rate (mL/s)
Soil		
Sand		

**Part 4. Porosity**

Sample	Time (s)	Amount of Water Remaining in Graduated Cylinder (mL)	Pore Space Volume (mL)	Water Drained from Tube (mL)	Water Retained (mL)
Soil					
Sand					

**Post-Lab Questions** (Use a separate sheet of paper to answer the following questions.)

- Describe, in detail, the composition of the local soil sample using the observations from Part 1. Classify the materials found as abiotic or biotic. What size particles are most prevalent in your sample?
- Why is it important to have organic material in soil?
- Compare the soil moisture results obtained by other students in the class. Is there a correlation between the soil texture and/or particle size of the soil and the amount of moisture it retains? Explain.
- What is the benefit of soil with high moisture levels? What about possible drawbacks?
- Using the results from Part 3, compare and contrast the drainage rate of dry versus wet soils.
- How would the drainage rate of the soil change if the given soil were more compacted?
- What other factors may affect the drainage rate of soil?
- Compare the contrast in the drainage rates for the local soil sample and the given sand sample. Given the results, would areas composed of your local soil sample or sandy areas be more prone to flooding?
- Calculate the permeability of your local soil sample and the given sand sample using the following equation: *Permeability = 1/Initial time for water to reach the bottom of tube.*
- What is the relationship between the *permeability* and the particle size of each soil sample?
- Using the results from Part 4 and Equation 1 from the *Background* section, calculate the percent porosity of your local soil sample and the given sand sample.
- What is the relationship between soil particle size and porosity?