

### Skills in Soils Labs:

1. Know how to determine the soil texture of a soil and classify it according to the field test method. Know how to determine the soil texture of a soil using sieves to separate the particles and then determine the % composition of each, then use the pyramid to determine the name of the soil.

### Soils Formulas:

1. Be able to calculate the specific surface area in the clay fraction of a 100g soil sample containing various % of clay. (See Lab Book, Table 2.1)  
Sand has a typical specific surface area of 30 cm<sup>2</sup>/g; silt = 1,500 cm<sup>2</sup>/g;  
Clay = 3,000,000 cm<sup>2</sup>/g.

2. Bulk Density =  $P_B = \frac{\text{oven dry soil mass}}{\text{soil volume}}$

Know how to determine the bulk density of a soil using a microwave, scale, volumetric cylinder or beaker.

In addition, know how to determine the volume of a container that is not pre-measured. Volume =  $3.14 (\text{radius})^2 h$

3. Calculating Pore Space %

$$\text{Bulk density} = \frac{\text{dry soil weight}}{\text{soil volume}} \quad \text{Standard particle density} = 2.65 \text{ g/cm}^3$$

$$\% \text{ pore space} = 100\% - \frac{\text{bulk density}}{\text{particle density}} (100)$$

- 4.

Know how to interpret Table 2.5

Electron Acceptors in Soil and Their Reduced Forms

Redox potential (Eh) describes the tendency for chemicals in the soil or water to be oxidized. High Eh values indicate an oxidized environment. Low or negative values indicate a reduced environment.

5. Stoke's law is used to determine the time it takes for particles to settle.

Note: Text book gives the value of  $8711 D^2 \text{ cm/sec}$

Lab book gives the value of  $11241 D^2 \text{ cm/sec}$

## Chapter 4 Soil Chemical Properties

6. Review Calculation 4-1 Calculating Exchangeable Cations on page 115
7. Review Calculation 4-2 Estimating Cation Exchange Capacities on page 118