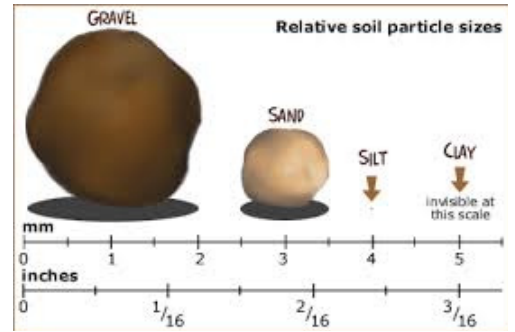


## Raingarden Site Analysis: Soil Type and Infiltration Rate

**Overview:** Determining the soil type for your proposed rain garden is an important factor for calculating its size. The type of soil influences the size and depth of the garden area. If the soil is sandy, rain gardens can be smaller and deeper because water drains quickly. If the soil has more clay, the garden will need to be larger and shallower because water drains more slowly. It is important to allow water to drain quickly so that mosquitoes will not complete their life cycle from egg to insect. Determining soil type, drainage area and slope will ensure that water will soak into the garden within 24-48 hours. There are several methods to identify the type of soil in your proposed rain garden. It is not necessary to use expensive equipment to analyze your soil type; simply feeling the soil with your hands is adequate.



### Benchmarks:

- 5.4.2.1.1** Describe a natural system in Minnesota, such as a wetland, prairie, or garden, in terms of the relationships among its living and nonliving parts, as well as inputs and outputs. For example: Design and construct a habitat for a living organism that meets its need for food, air and water.
- 5.4.4.1.1** Give examples of beneficial and harmful human interaction with natural systems. For example: Recreation, pollution, wildlife management.

### Objectives:

1. Students will be able to explain the relationship between soil particle size and water movement through soils. (Inputs and outputs in a system)
2. Students will be able to design and create a habitat for plants and animals in the form of a raingarden.
3. Students will be able to manipulate and feel soil to classify by texture using a key.

### Materials Needed:

- Soil samples from possible raingarden sites
- Spray bottle to wet soil samples
- You could get samples of all three types of soils to show students
- Shovels or Garden Trowels

### How to Start:

1. Teach PowerPoint lesson on soil types.
2. Conduct the Soil Analysis Experiment from the K-8 Stormwater and Raingarden website. The experiment should be conducted on potential raingarden sites. Find out what kind of soil the proposed raingarden site will have. Knowledge of soil type is important in deciding how deep and how big your raingarden needs to be.
3. Conduct the Infiltration Rate Experiment to see how different soil types can influence infiltration rate of water. This activity works as a demonstration or as a classroom lab activity.
4. Then complete the Conducting a Percolation Test activity to determine how fast the water infiltrates into the ground. The rate of infiltration is important and is related to the soil type and will help determine the next step: figuring out the size of the raingarden.

### Teacher Resource:

This YouTube video shows the infiltration rate experiment: <http://www.youtube.com/watch?v=GUXYNd86DM8>

