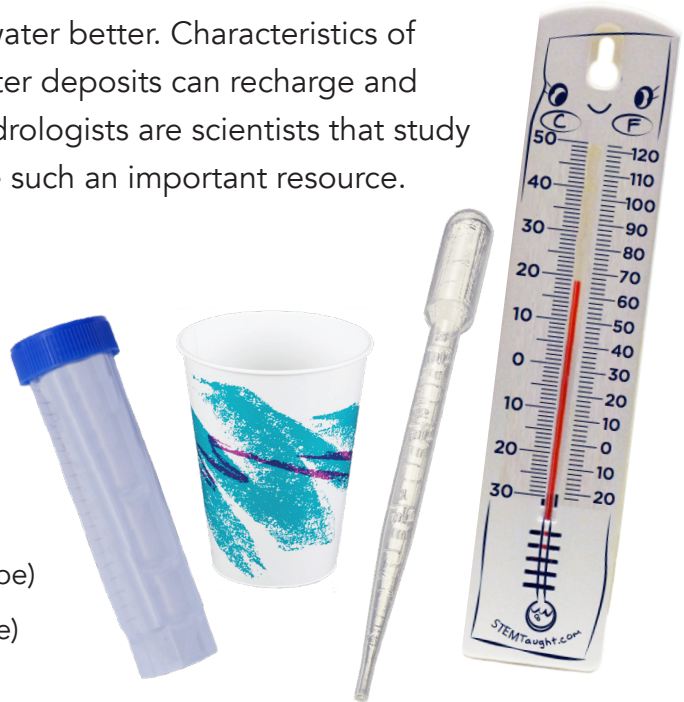


# Investigate the soil outside

The ground is made up of many layers of soil sand and rock. You can investigate soil to understand groundwater better. Characteristics of the soil determine how well groundwater deposits can recharge and how much water the soil can store. Hydrologists are scientists that study groundwater systems because they are such an important resource.

## What you'll need:

- a spoon to dig with
- a cup to put dirt in
- some dirt
- some water
- a liquid measuring device (Tedros test tube)
- something to transfer water (Pippi pipette)
- a thermometer

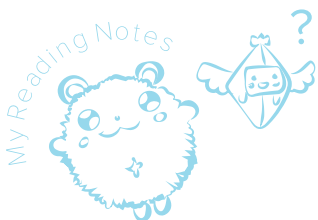


## What you'll do:

1. Work with a partner to choose an area where you will investigate the soil outside.
2. Clear a small area so the soil is exposed.
3. Carry out your investigation of soil temperature, soil moisture, soil consistency, and soil color.



*This student clears an area to collect and test her dirt.*

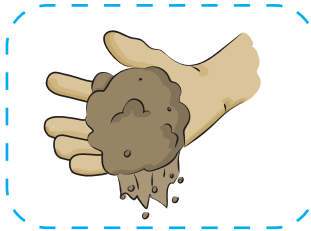


*Students investigate to better understand groundwater.*

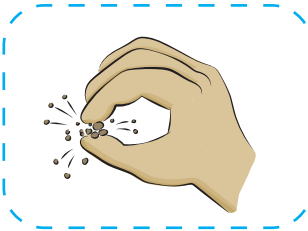


## Describe your soil's consistency

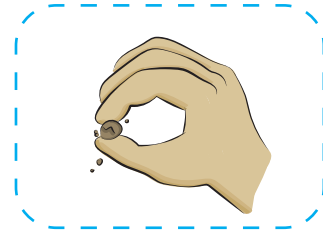
Water moves through loose soil easily. It can be difficult for water to move through hard, dry soil. Pinch your soil to see if it is loose or firm.



**Loose:** Unbroken soil can be easily dug with your fingers.



**Medium firmness:** Can be broken apart with effort.



**Firm:** Soil is difficult to dig in. Soil chunks are hard.

Describe the consistency of your soil sample.

Answers will vary.

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## Describe your soil's color and moistness

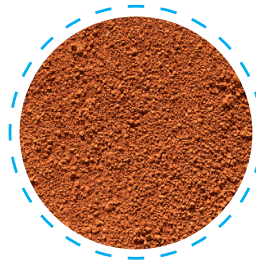
Soil with lots of organic (living) material in it is often black in color and feels light. Dark brown soils often have some organic material. Dry soils are often lighter in color. Red soil is iron rich. Which photo is most similar to your soil sample?



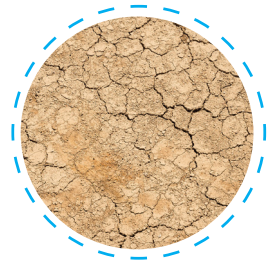
**Black:** Lots of organic material



**Brown:** Some organic material and moisture



**Red:** Contains iron



**Tan/gray:** Dryer soil

Describe the color of your soil. Describe how moist your soil sample is.

Answers will vary.

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## How much water can your dirt sample hold?

Dirt is made up of small particles such as gravel, sand, and clay. These particles have small spaces between them that fill with water. Sand and gravel allow water to easily drain from the soil and can be a great place for groundwater to collect. Small clay particles do not drain easily.

### What you'll do:

Measure how much water your dirt sample can hold as groundwater.



1. Fill your cup with dirt as you measure the volume of the dirt using Tedros test tube.



2. Fill your test tube to 50 ml. Use this measurement to calculate how much water fits in your dirt.



3. Drip water into your dirt-filled cup to determine how much groundwater it can hold.

How much dirt fits in your cup?

Students measure the volume of dirt that fits in their cup in milliliters using Tedros test tube.

How much water fits in your dirt?

Students calculate how much water fits in their dirt.

Starting amount of water - Water left over = Groundwater in dirt

Do you think your soil would make an effective place for groundwater? Why or why not?

Answers will vary. Example: Yes, I think my soil would be a good place

for groundwater because a lot of water fit in my soil compared to the

amount of soil that I had.

Students measure the volume of their water and dirt to describe how much groundwater can be stored in the pores of their dirt.