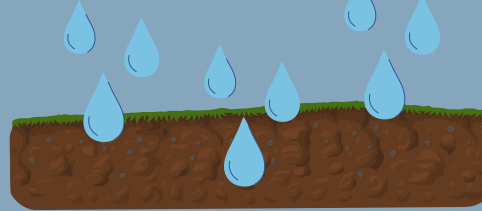


Infiltration Experiment



Name :

Today you are going to explore the infiltration rates of different soils in the arroyo.

Materials:

- Measuring cup
- Water
- Can, with both ends cut off
- Timer or stopwatch

Guiding Question: How do different types of soils change infiltration rates?

Hypothesis: I think that the _____ soil will infiltrate the fastest because_____.

I think that the _____ soil will infiltrate the second fastest because_____.

I think that the _____ soil will infiltrate the slowest because_____.

Process:

1. Explore the arroyo and choose three places to test the soil. Each site should have a different soil texture.
2. Describe each soil sample below.
3. Add your hypothesis above.
4. Test each soil's infiltration rate by:
 - a. Press the can about $\frac{1}{2}$ inch into the soil you are testing. Have one person hold the can in place.
 - b. Measure out a cup of water. Have the time keeper get ready to start the clock.
 - c. Pour the water and start the timer at the same time.
 - d. Time how long it takes for the water to completely soak into the soil, so no puddle is visible.
 - e. Record the time it took to soak in.
 - f. Repeat these steps with each soil sample type.

Data:

Soil Sample 1 Description:_____

Sample 1 Infiltration Rate: _____cup(s) per _____seconds.

Soil Sample 2 Description:_____

Sample 2 Infiltration Rate: _____cup(s) per _____seconds.

Soil Sample 3 Description:_____

Sample 3 Infiltration Rate: _____cup(s) per _____seconds.

Reflection: What were your findings?

Look back at your hypothesis. Was it correct? Why or why not?

Imagine there was a rainstorm, how would different soils impact runoff?

Imagine that there were impermeable surfaces upstream from your arroyo, how would this affect the water flowing through your arroyo?

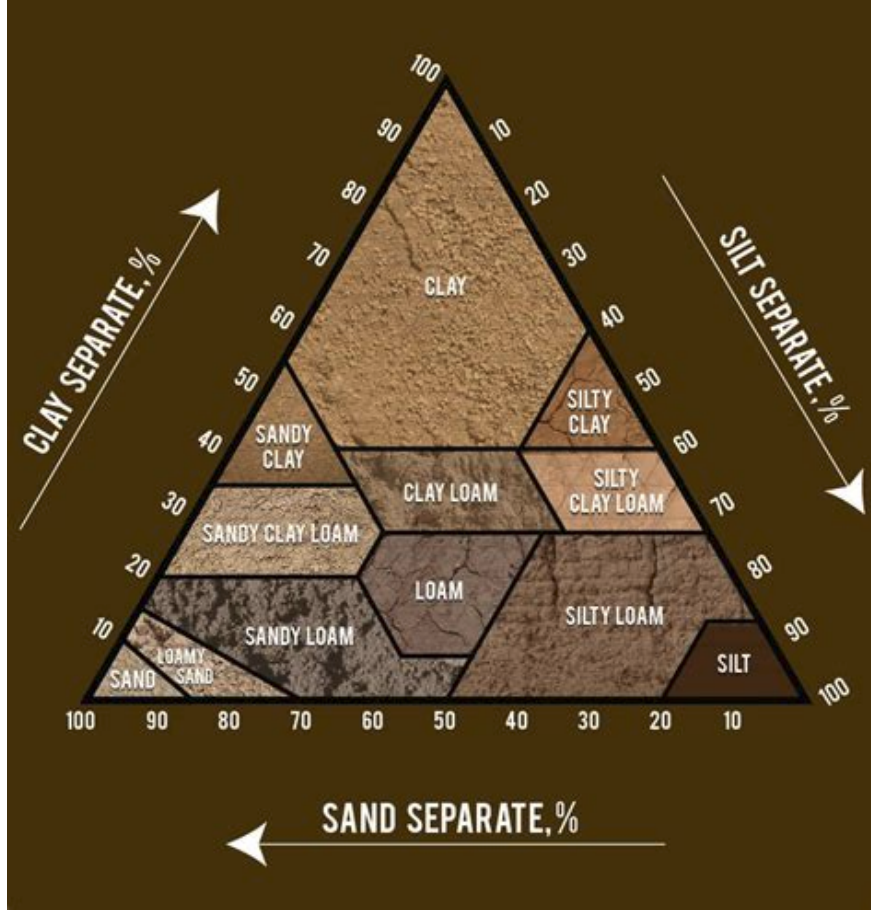
Runoff that collects and starts to flow during a rainstorm or precipitation event is called stormwater. How might stormwater change your arroyo?

As people have paved over roads and parking lots there has been an increase in the number of impermeable surfaces around Santa Fe. How do you think that this has changed the size of arroyos?

What would you suggest to increase the infiltration of rain and storm water?



Soil Triangle



SOIL TYPES

Soil is a combination of broken down rocks, minerals and organic matter, all mixed together by worms and bugs. It forms at the surface of land and provides plants with an anchor for roots and enough nutrients for growth.

Clay soil

- Lumpy and sticky to touch when wet but rock-hard and smooth when dry
- Slow draining soil, therefore holds more nutrients
- Rich in plant food for better growth
- Slow to warm in spring
- Heavy to cultivate, especially when it gets dry

Sandy soil

- Dry and gritty to touch
- Unable to retain moisture due to particle size
- Water drains rapidly, therefore plants are unable to make full use of nutrients contained within the soil
- Warms up quickly in spring
- Tends to dry out in summer

Silty soil

- Smooth to touch and when moist, has a soapy like consistency
- Retains moisture longer than sandy soil therefore is richer in nutrients and more fertile
- Easier to cultivate than clay
- Due to moisture retention, this soil type is cold and drains rather poorly
- Soil structure is easily compacted
- A good soil if well managed

Peaty soil

- Dark in colour and soft to touch
- Rich in organic matter but low in nutrients
- Warms up quickly in spring
- Highly water retentive and may require drainage if the water collects near the surface
- Main benefit is ability to hold water in dry months and protect roots during wet months
- Good for plant growth

Chalky soil

- Gritty and dry to touch
- Alkaline, stony and free draining
- Often overlies chalk or limestone bedrock
- Minerals, such as manganese and iron, will quickly drain from the soil, causing poor growth and yellowing of leaves
- This can be remedied by adding fertilisers

Loamy soil

- Soft, dry and crumbly to touch
- The perfect, well balanced soil
- Made from a mix of clay, sand and silt
- Retains moisture but drains well
- Full of nutrients
- Easy to cultivate
- Air moves freely between soil particles and down to roots
- Warms up quickly in spring and doesn't dry out in summer