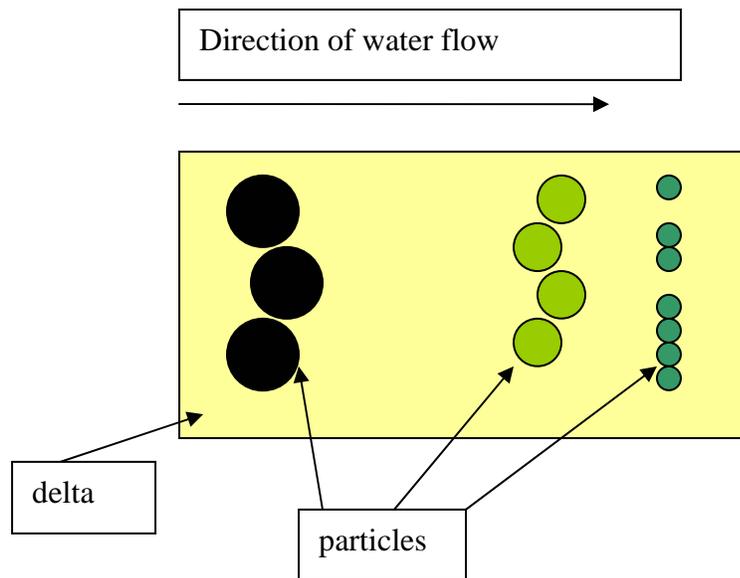


Activity 3. Stream Velocity and Deposition

Objectives:

- To measure how far different particle sizes will travel by increasing or decreasing the stream's velocity.
- To observe sorted deposition.
- To learn how to conduct an experiment.

Background: The size of a particle will determine if it will be able to be carried by a stream. The greater the velocity of a stream, the larger the particles it will be able to transport. When a stream hits the delta, the sediments will be deposited and sorted based on their size, if shape and density are relatively the same. The larger particles will settle out first, followed by smaller and smaller sediments. This is called horizontal sorting and looks like this:



List of materials:

- Stream table with running pump that can pump at least 2 different speeds
- Stopwatch
- Pencil
- A defined stream – a plastic tray placed on top of the sand works best for this activity (same size and shape for each trial – Why?!)
- Different particle sizes with the same shape, same type of material, such as beads or bean seeds – Why?!
- A ruler (optional)

Procedure:

1. Examine the **Question** found below and develop a hypothesis from it.
2. Under **Methods**, design an experiment that could test your hypothesis. Your design should include at least the following:
 - Conduct at least two trials with the same stream shape each time with a slow and fast speed.
 - Conduct each trial for the same amount of time. (Why?!)
 - Use at least 3 different particle sizes and at least 5 particles for each size.
 - Start with the particles lined up at the head of the stream for each trial, without placing any in front of any others.
 - Draw an illustration of what happens during each trial.
 - Take distance measurements (optional).
3. Construct your defined stream on the stream table (a plastic tray works well).
4. Assign the needed roles in your group (these should stay the same through the whole experiment to keep data collection consistent):
 - Pump operator
 - Time keepers
 - Distance measurer (optional)
 - Data recorder (everyone should draw their own sketch)
 - Engineer to maintain the stream and to line up the sediments for each trial
5. Carry out the Experiment that you designed under the **Methods** section.
6. Determine if your hypothesis was correct.
7. Answer follow-up questions.

Question: How does the velocity of a stream affect the distance particles of different sizes can travel?

What is your **hypothesis**?

Methods: Explain how you will test your hypothesis.

What are your **independent and dependent variables**?

What will you be keeping **constant** in your experiment?

Observations: Record what happens. Provide an illustration.

Results/Conclusion:

Was your **hypothesis** correct? Explain.

Follow-up questions

- 1) How would the distance traveled by dissolved substances like the chemicals found in a leaking oil storage tank compare to how far pebbles would travel in a stream? What does that tell you about how far pollution can travel in a stream?

- 2) Streams typically cause sorted deposition. Glaciers, another form of erosion, cause unsorted deposition. Draw an illustration of what unsorted deposition might look like.