Name: _____ Surface Processes

Date: _____ Period: _____ Earth Science

Lab Activity: Running Water

INTRODUCTION:

Running water is the most powerful agent shaping our planet. The constant flow of water has worn down mountains into small pieces and carried them off to be deposited elsewhere. The constant flow of water continuously shapes our landscapes and erode our surface.

Water flows downhill due to the pull of gravity. Its velocity and ability to abrade the stream channel is dependent on other factors such as gradient, channel shape, discharge and supply of rock fragment.

OBJECTIVE:

You will determine the relationship between stream velocity, volume, and slope to its ability to transport sediment.

VOCABULARY:

Clinometer -

Discharge -

Meandering Stream -

V-Shape Valley -

Tributary -

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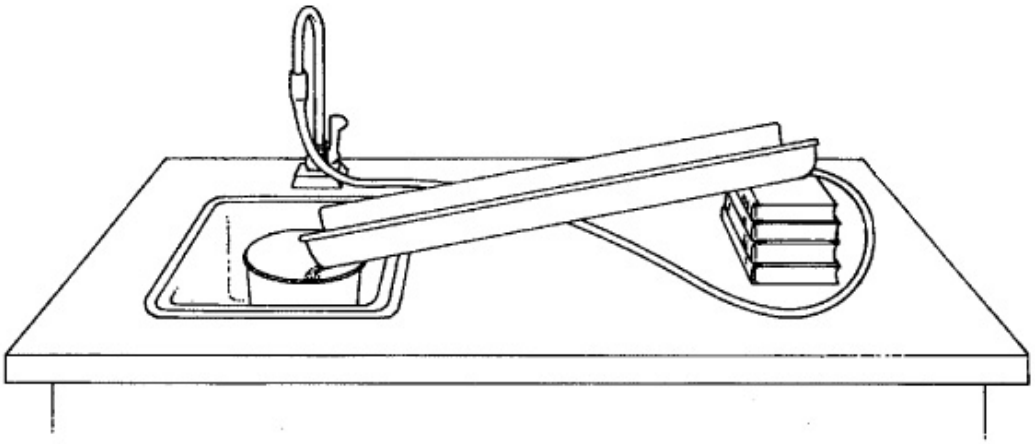
PROCEDURE:

1. Place a streamflow trough on the lab table so that one end hangs over the sink. Using the clinometer, measure the angle between the through and the table until you have a 5º angle.
2. Measure 10 cm from the end of the through and mark it with a line. Measure 80 cm from that line and draw another line indicating the source.
3. Attach one end of the rubber tube to the faucet and the other to the source of the trough. Slowly turn the water velocity to low.
4. Using a hole punch, time how long it takes to travel the length of the trough.
5. Using a small amount of silt, time how long it takes the majority to travel the length of the trough.
6. Using a small pebble, time how long it takes to travel the length of the trough.
7. Repeat steps 4, 5 , and 6 at low velocity, but increase the angle to 10º.
8. Finally repeat steps 4, 5, and 6 one more time, but increase the angle to 20º.
9. At this point turn the faucet up to increase the water velocity and repeat the entire exercise at the 5º, 10º, and 20º intervals for the hole punch, silt, and sand. Record your data on the data chart.
10. After completing the procedure calculate the velocity for the hole punch and record the answer in the data table. Graph your data on the Velocity vs. Slope Graph.

LAB ACTIVITY SETUP



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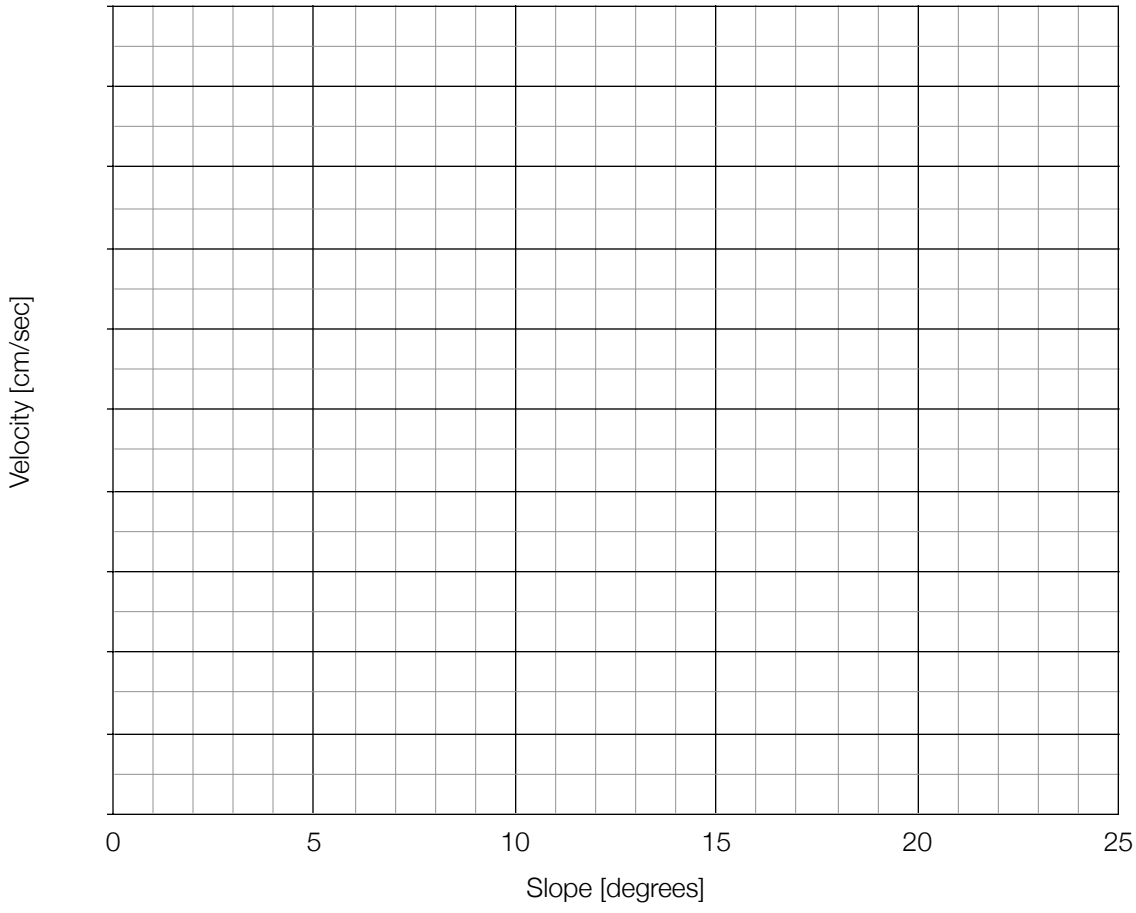
DATA CHART

Slope	Faucet Setting	Travel Time [sec]	Velocity [cm/sec]	Erosion Time [sec]	
				Silt	Sand
5°	LOW				
	HIGH				
10°	LOW				
	HIGH				
20°	LOW				
	HIGH				

VELOCITY VS. SLOPE GRAPH



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DISCUSSION QUESTIONS:

1. How did you increase the discharge in this experiment?

2. At a 5º slope, what happened to the velocity as you increased the flow?

3. As slope increases, what happens to the rate of stream erosion?

4. As volume of flow increases, what happens to the rate of stream erosion?

5. Explain why stream velocity may change from season to season?

CONCLUSION: What effects do slope and discharge of a stream have on its ability to transport sediment?