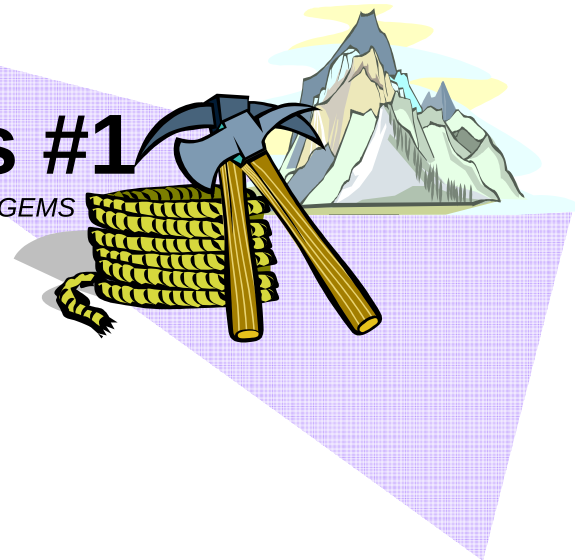
ES – Activity #19



River Cutters #1

Adapted from River Cutters published by GEMS

QUESTION: What land features are created by water erosion?

MATERIALS:

- drip bottle
- River Guide sheet
- river model
- water supply
- wood blocks

PROCEDURE:

1. Set up the model river as instructed.
2. Allow your water source to run for 5 minutes. After 5 minutes turn off your water source. In the box labeled ***The River after 5 Minutes,*** draw a detailed diagram that shows what your river looks like after 5 minutes***.***
3. Repeat Step 2 for another 5 minutes. Turn off your water source. In the box labeled ***The River after 10 Minutes***, draw a diagram of how the river looks after 10 minutes**.** Look carefully at your river and identify the following features: alluvial fan, canyon, channel, delta, flood plain, fork, gully, meander. Use the River Guide sheet provided.
4. Repeat step 2 for a third time. In the box labeled ***The River after 15 Minutes***, draw a diagram of how the river looks after 15 minutes.
5. Repeat Step 2 for a fourth time. In the box labeled ***The River after 20 Minutes***, draw a diagram of how the river looks after 15 minutes.

DATA: See next page

QUESTIONS:

1. What could have been done to speed up the erosion of this river?

2. What could have been done to slow down the erosion of this river?

3. How does the river at the end of 10 minutes compare to the river after 5 minutes?

4. In your model, what happened to the diatomaceous earth that was pushed out of the way when the water cut a river?

5. What other process happens as a river erodes a channel?

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Data Table

RIVER AFTER 5 MINUTES	RIVER AFTER 10 MINUTES
RIVER AFTER 15 MINUTES	**RIVER AFTER 20 MINUTES**

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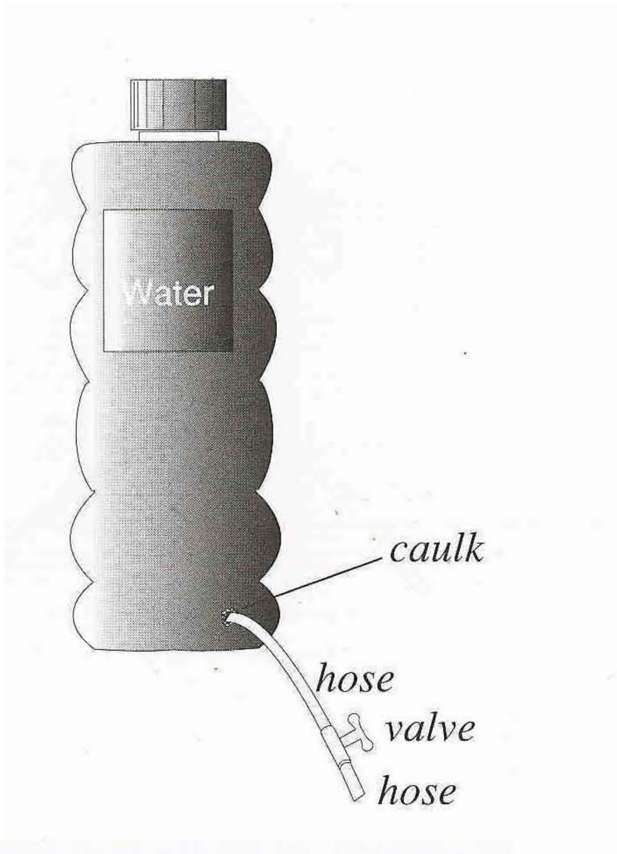
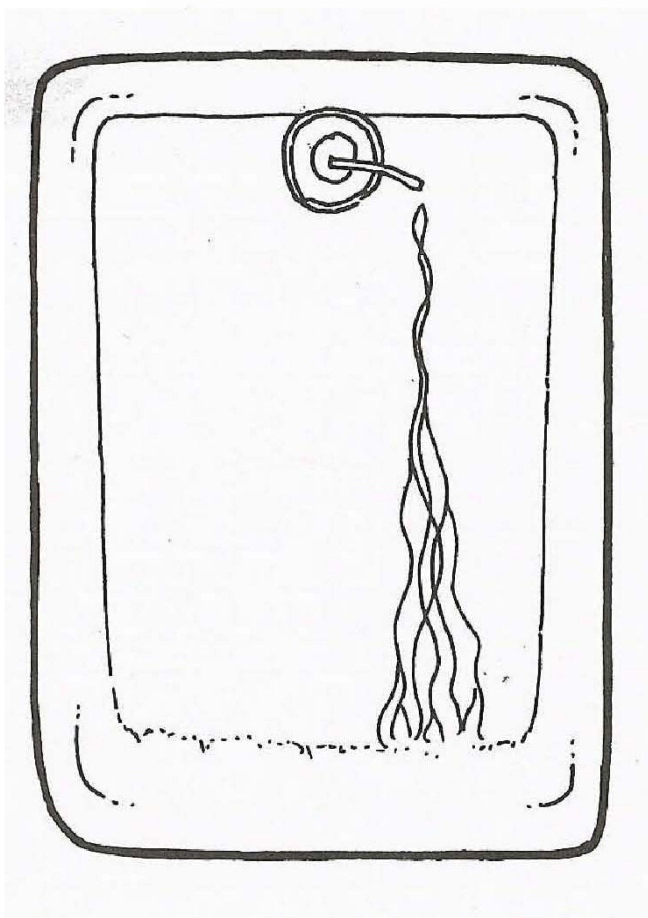
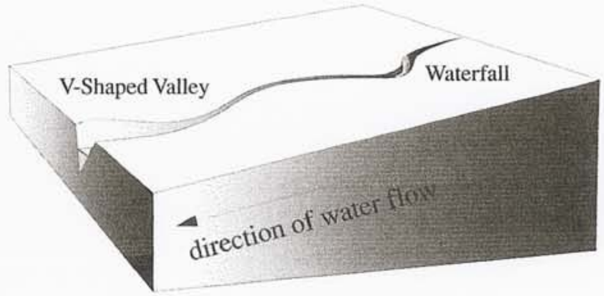




Geological Features

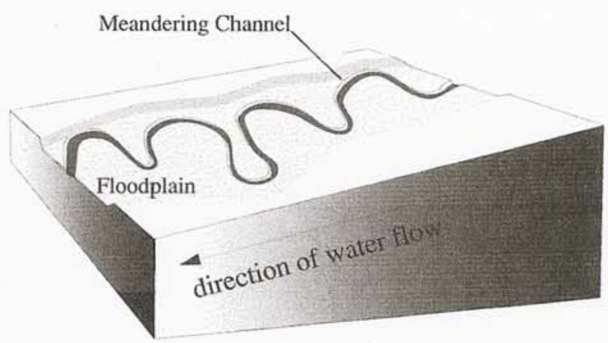
The river in the photo above has formed a ***valley with a V-shaped profile.*** Many rivers in V-shaped valleys have rapids and waterfalls.



Above is a diagram of a ***V-shaped valley.*** The arrow shows which way the water is flowing.

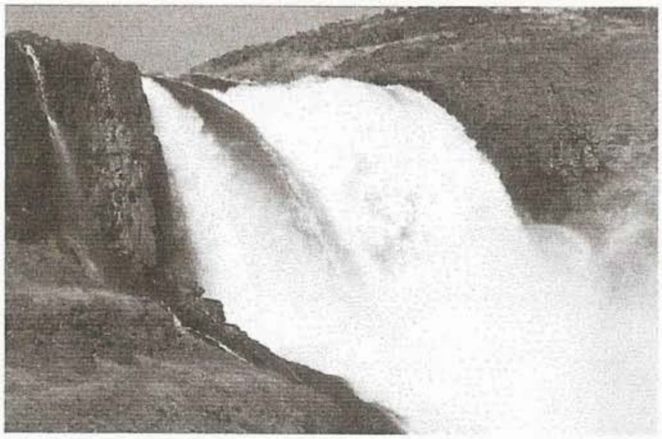
The river in the photo at left flows through narrow ***channels*** in a shallow valley. The ***floodplain*** is the flat area that borders the river, which is covered with water in times of flooding. Sediment deposited on the floodplain probably comes from the mountains in the distance that show erosion ***gullies*** and ***canyons.***

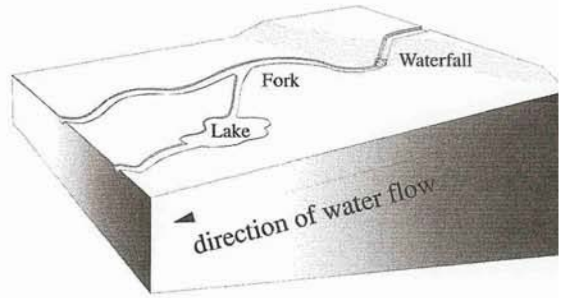
A rounded, or "S"-shaped bend or loop is called a ***meander.*** The river in the photo above flows in a meandering channel within a very wide, shallow valley. The valley floor is a large floodplain which is now rich farm land.



Above is a diagram of a wide, shallow valley. A ***meandering channel*** winds through the floodplain.

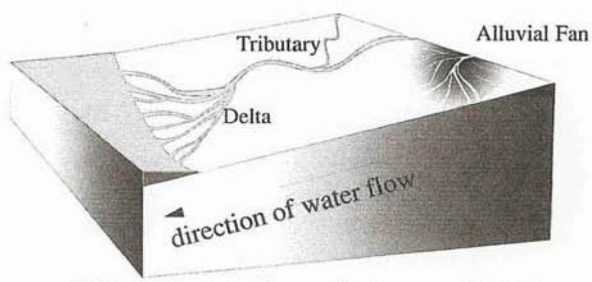
Geological Features (continued)



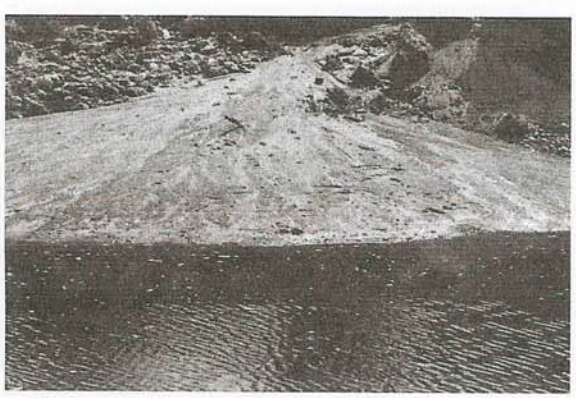


Waterfalls, like the one in the above photo, occur where the land through which a river flows drops rapidly. Some rivers, like the one shown in the diagram above and to the right, start out flowing rapidly in mountainous areas, then gradually slow when they reach shallower slopes, finally forming deltas when they reach the ocean. (The photo and diagram at the bottom of this page show deltas.)

An ***alluvial fan*** is a deposit of sediment that forms where a fast-flowing stream reaches more level land, spreads out, and is absorbed or evaporates. The small alluvial fans pictured to the left were deposited on sand dunes.



This diagram above shows an alluvial fan, a delta, and a ***tributary***, which is a river that joins a larger river.



A ***delta*** is a deposit of sediment that occurs where a river or stream flows into a larger body of water. Deltas can be small, like the one pictured to the left, or large enough for entire cities to be built on them.