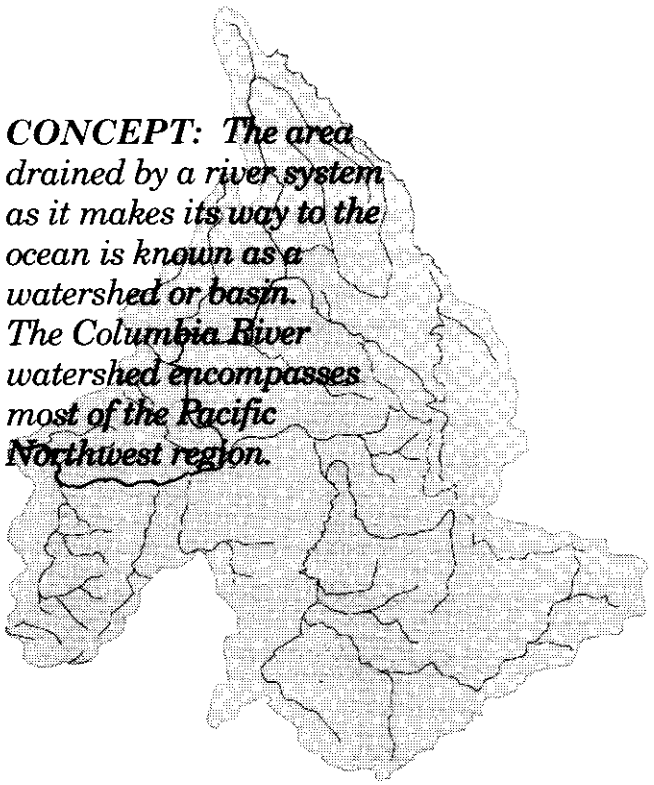
Columbia River Basin (or Watershed)



CONCEPT: The area drained by a river system as it makes its way to the ocean is known as a watershed or basin. The Columbia River watershed encompasses most of the Pacific Northwest region.

DIRECTIONS: Hand out the Columbia River watershed map. Observe how much of the land we call the Pacific Northwest is inside the watershed.

INQUIRY: How much of the Pacific Northwest, as defined by its political boundaries, is inside the watershed? Almost all. Where do the waters outside the watershed drain? Trace any of the rivers outside the boundary to their outlet to an ocean.

Where does the water in the river come from? Precipitation, both rain and snow. What percent is rain? Or snow? (Challenge students to estimate these figures.) Why is there water in the river even when it isn't raining? What quantity of water is being drained? From which areas? At what times of the year?

The challenge here is to imagine the billions of gallons of water and the ways scientists try to measure these quantities. This should lead to questions about why this information is needed. What kinds of precipitation are the source of the water and does this affect the drainage patterns? Melting snow in the mountains and the natural drainage time of soils affect the underground water system.

LAB: Have students play the Water Game in Appendix A. This game will give them a good feeling for where the precipitation falls, and where it is important for generating electricity.

LAB EXTENSIONS: If students have made a model of a watershed in the previous lesson, other activities for the model could include putting crushed ice at the top of the "mountains" to represent snow. Students could devise ways to measure the rates of water flowing into river drainages. If soil is used, this will also lead to explorations of ground water systems as some of the water disappears into the soil.

A second activity is to have students make holes in the bottoms of paper cups or reused milk cartons from the school cafeteria. Fill different cups with sand, soil, and gravel. Have the students determine which drains fastest or slowest. Could this account for water flows in the river even when there is no snow or rain? Runoff and water from snowmelt enter the different rivers at different rates depending on the soil types in the area.

CONCLUSIONS: The Columbia River watershed is one of the most significant and defining geographical features of the Pacific Northwest. Precipitation patterns and geography have a significant impact on the river system.

BUILDING WATERSHEDS FOR LESSONS 2 AND 3

1. Fill a large plastic or plastic-lined box with soil. Form the soil into ridges, valleys, or other land forms. Water the soil to simulate rain and observe water flow, erosion, etc. Put crushed ice on the mountain tops so students can evaluate the effects of snowmelt on the watershed.
2. Fill small cardboard boxes (milk containers) with soil, sand, and gravel. Place holes on the side at different levels. Add water to the top and observe and/or measure rates of water loss at various levels. If no water comes out of the top holes, what does this model in nature? Holes can also be placed only at the bottom and the rate of water penetration observed.