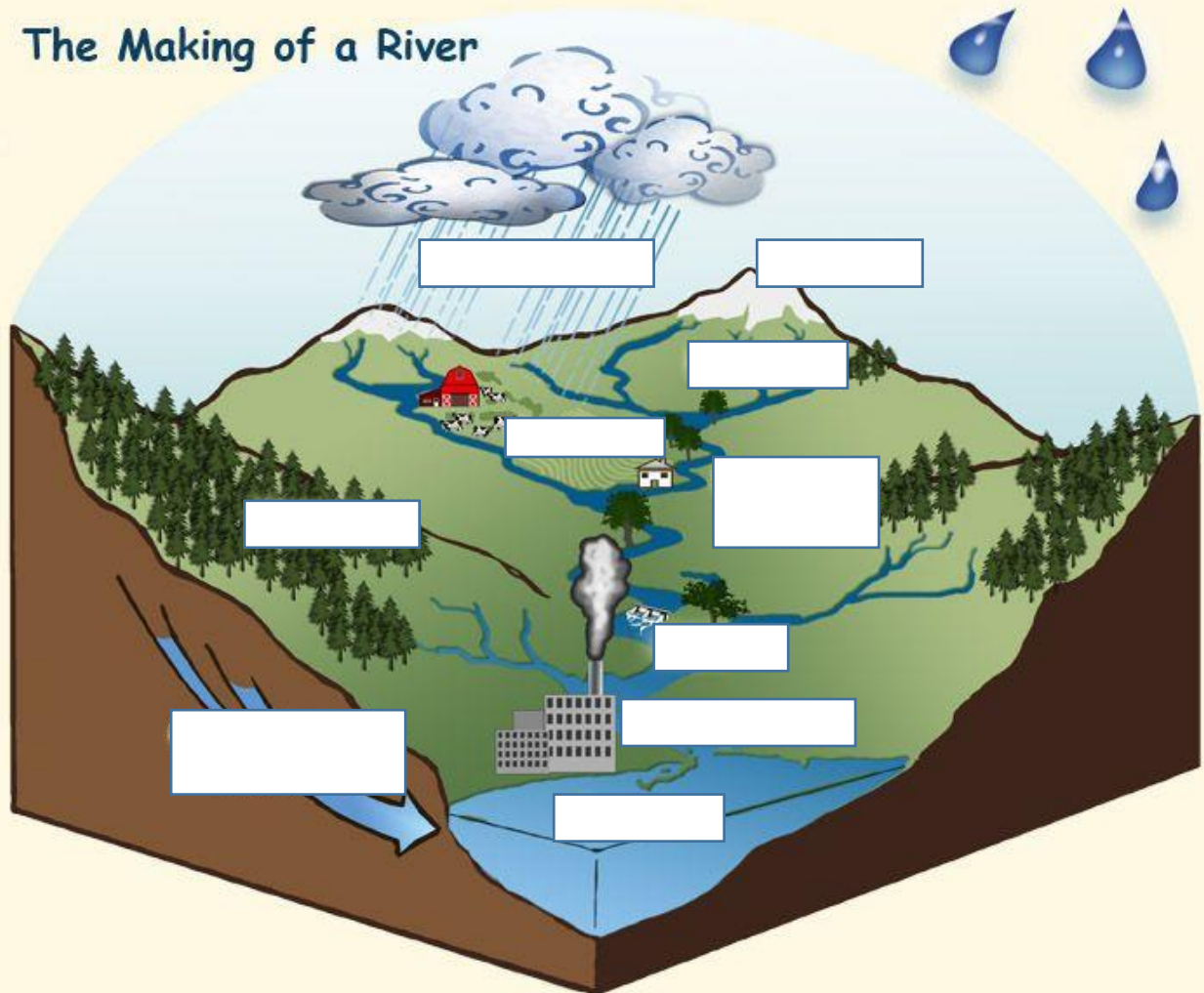


## Pre-Work for Rolling Rivers:

# WHAT IS A WATERSHED?

## The Making of a River



### Word bank:

- Precipitation
- Snowpack
- Farmland
- Runoff
- Homes & Roads
- Dams
- Factory Plants
- Ocean
- Groundwater Flow
- Forest

# WHAT IS A WATERSHED?

## The Making of a River



<https://www.fs.fed.us/rm/boise/research/techtrans/projects/scienceforkids/watersheds.shtml>

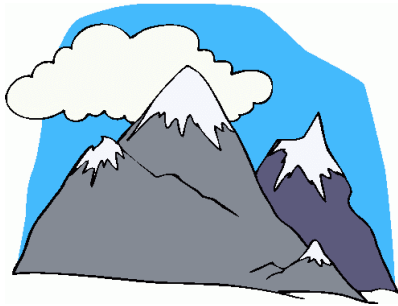
A Watershed is an area of land where all of the water that is under it, or drains off of it collects into the same place (e.g. The River). Most of the watersheds in Washington are part of the Columbia River Basin Watershed, which drains into the Pacific Ocean!

## Rolling Rivers Background Knowledge

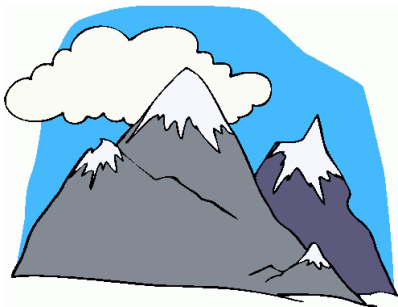
**Description:** Rolling Rivers is a hands-on interactive watershed model with focus on watershed processes and function, land-uses with Best Management Practices (BMPs), and in conjunction with human and salmonid coexistence.

**Goal:** Properly functioning fish habitat consisting of healthy riparian areas, land-use with Best Management Practices (BMPs), clean water and unimpeded travel. Students implement various land uses by implanting BMPs that conserve fish and wildlife habitat, healthy riparian areas, water quality, and ensure unimpeded travel.

Circle which landform separates watersheds



Circle which landform brings watersheds together

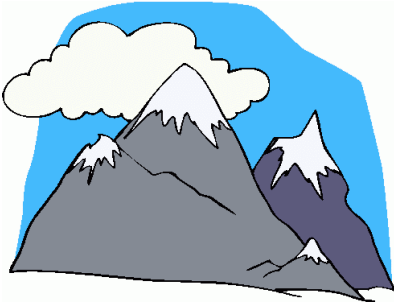


## Teacher Key

Circle which landform separates watersheds



Circle which landform brings watersheds together



## Vocabulary Matching

---

Anything that does not belong in the land, air, or water.

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The movement of soil by water or wind. An example is when the riverbank collapses, falls into the river and is carried downstream.

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An area of land that water drains into.

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The water from rain or snow that runs across land and then into streams and rivers.

---

The place where something lives and its surroundings, both living and non-living.

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Metal pipe that allows water to flow under a road.

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The area of vegetation along a river, streambank or lake.

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A nest for egg deposition which the female salmon digs in the gravel on the river bottom using her tail.

## Vocabulary Matching

(Teacher Key)

Pollution

Anything that does not belong in the land, air, or water.

Erosion

The movement of soil by water or wind. An example is when the riverbank collapses, falls into the river and is carried downstream.

Watershed

An area of land that water drains into.

Run-off

The water from rain or snow that runs across land and then into streams and rivers.

Habitat

The place where something lives and its surroundings, both living and non-living.

Culvert

Metal pipe that allows water to flow under a road.

Riparian

The area of vegetation along a river, streambank or lake.

Redds

A nest for egg deposition which the female salmon digs in the gravel on the river bottom using her tail.

Draw a Healthy Salmon Habitat using these pictures as a guide



## Short Answer Questions

Provide some examples of what salmon would want in their habitat and explain why.

Provide some examples of what salmon would not want in their habitat and explain why.

How could humans affect salmon habitat?

Possible answers:

### Shade

Examples

- Riparian area (trees, shrubs, vegetation)

Importance

- Salmon live in cold water
- Protection from predators

### Shelter

Examples

- Riparian vegetation
- Large rocks
- Large woody debris

Importance

- Protection from predators
- Can provide lower water velocity
- Create pools for rest
- Provides area for redds

### Food

- Insects, smaller fish  
- found in sediment, in water, on trees and shrubs

### Water Quality

Examples

- Exclusion fence for livestock
- Riparian vegetation

Importance

- Cleaner water without cows/horses
- Less sediment disturbance for redds
- Prevents erosion from streambank



## Travel

### Examples

- Travel barriers (dams)
- Inadequate water flow due to diversion channels

### Importance

- Ability for salmon to return up river to spawn
- Reduce barriers using culverts, bridges, and side channels

## *Salmon Stream Design (adapted from Salmon in the Classroom)*

**Objectives** • Students will be able to draw a stream with the vegetation, animals, and water quality parameters that are necessary for salmon survival.

**Materials** • Rite in the Rain paper—Prior to class, make photocopies of two curved lines on Rite in the Rain paper (to represent a river). Make one copy for each pair of students. Introduction (10 minutes)  
This lesson will help students learn about freshwater salmon habitat

**Activity (30 minutes)** • Group students in pairs. • Briefly discuss the parameters that are necessary for salmon survival. After each topic, allow the pairs to add that parameter to their drawings. Make sure students understand the role each parameter plays in supporting or inhibiting salmon survival. An example of a finished stream design follows this lesson plan.

### **Parameters to cover:**

- What is habitat? Where something lives, home
- Shade: Temperature (salmon like cold water), dissolved oxygen (more in cold water), trees/riparian areas provide shade and help cool water
- Shelter: debris, boulders, trees, etc., stream flow (faster water is harder for salmon needing a break or to lay eggs – nest is called a Redd), young salmon need to hide from predators
- Food: insects – found on trees, in water, and on riparian vegetation, smaller fish
- Water Quality: turbidity/sedimentation, livestock (should be excluded from river access), riparian vegetation filters water from the land and keeps soil/sediment from entering water
- Travel: barriers include dams (need fish ladder), culverts (build bridge instead), not enough water (drought/diverted for agriculture), need clean clear cold water for long travel

Example of completed stream design below:

