

## Section 4: Water on Rangeland

1. What is a Watershed?
2. Skills Challenge: Build Your Own Watershed
3. Uplands vs. Riparian Lands
4. Impacts of Precipitation on Rangeland—Photo Series
5. Management Options—Water Developments/Grazing Distribution

### Learning Objectives:

- Learn how to read a topographic map and create a watershed
- Describe characteristics of uplands vs. riparian areas
- Evaluate the effect of precipitation on rangelands
- Learn about watering management tools and how they can be used to increase livestock grazing distribution

### Idaho General Education Performance Standards

- ESS2-5-1, ESS2-MS-2, ESS2-MS-3, ESS2-MS-4, ESS2-MS-6, ESS3-MS-3, LS1-5-1, LS2-MS-all, ESS3-MS-1, PS1-5-2, PS1-5-3, ESS2-5-2, LS4-MS-6, LS2-5-4, ESS2-5-2, ESS3-MS-5, ESS3-5-1

### 1. What is a Watershed?

**Time:** 20-25 minutes

#### Supplies:

- “How to Read a Topographic Map” for each student

#### Background:

Land managers care for rangeland, forests, and croplands by managing the health of the watershed. A watershed is an area of land that drains water to the same endpoint. You can think of a watershed as a giant bowl. As water falls onto the bowl’s rim and sides, it flows down inside the bowl. At the bottom of the bowl are rivers and lakes that catch and store water that has landed above. Watersheds can be seen at almost any scale, as small as a single hill/pond or as large as the Mississippi river and all its tributaries (tributaries are rivers and streams that flow into a larger river or lake).

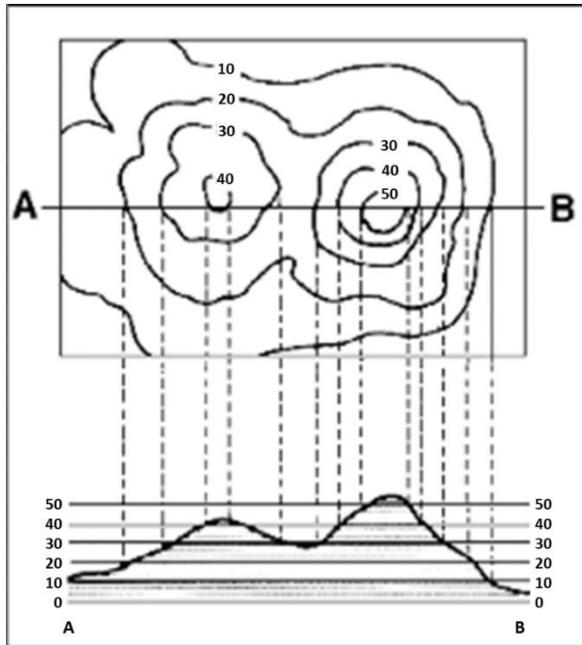
#### Delineate a Watershed

(Modified from the USGS Science for a Changing World—Lesson 4: How to Read a Topographic Map)

The highest feature on the land, like a ridgetop, form the perimeter of the watershed (like the rim on your bowl). Water travels from the top and makes it way to the lowest point.

#### Do:

- Discuss with students what watersheds are and how they can be defined at almost any scale.
- Using the “How to Read a Topographic Map” below, have students answer the questions and trace the contour lines with their finger. The lines on the map are contour lines (a contour line on a map joins points of equal height above sea level). Ask students to trace with their fingers around the 40-foot contour line on the map. Then ask them to look at the picture of the hill and draw their fingers around the 40-foot contour line. Do the same thing for the 20-foot line. Note: each contour line is 10 feet apart.



**Lesson 4—How to Read a Topographic Map**

The top of this drawing is a contour map showing the hills that are illustrated at the bottom.

On this map, the vertical distance between each contour line is 10 feet.

Learning to use a topographic map is a difficult skill. It requires us to visualize a 3-D surface from a flat piece of paper. It takes practice!

**Answer Guide: How to Read a Topographic Map**

1. Hill B
2. Hill B—Remind students that the closer the contour lines, the more steep the hill.
3. 10 feet
4. Hill A: ~42 feet, Hill B: ~54 feet

**Apply:**

1. Which is higher, hill A or hill B? \_\_\_\_\_
2. Which is steeper, hill A or hill B? \_\_\_\_\_
3. How many feet of elevation are there between contour lines? \_\_\_\_\_
4. How high is hill A? \_\_\_\_\_ Hill B? \_\_\_\_\_

**Reflect:**

- When would you use a topographic map? (e.g., creating a route for a hike)
- Why do rangeland managers need to understand watersheds?

**Find your own watershed.** Take a walk outside and look for the highest peak in your area. When it snows and rains, where does water flow?

**Do:** Using the pictures below, identify the highest points on the pictures and draw arrows indicating which way the water flows. *The pictures don't capture in the entire watershed as you can't see the full landscape but when you are outside, you can turn 360° to identify the entire watershed.*

