

LESSON 2

Teacher Guide



THE CALIFORNIA FOREST
FOUNDATION

Water: The Forest's Most Valuable Resource (90 Minute Lesson Plan)

This lesson can be completed in the classroom, or at home using teleconferencing (such as Zoom, Skype, Google Meet, Facetime, etc.) and/or shared documents (such as Google Docs) during group activities such as discussions and group projects. Sections requiring use of one of these remote-access tools have been marked (). Before beginning this lesson, explain to your students how you would like them to participate in these group activities if your class will be completing the lesson at home.*

Today's Topic: Water from the Forest

NGSS 5-ESS2-2: Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

Introduction to Water in California (5 minutes)*

Have students watch the video, [Water: The Forest's Most Valuable Resource](#), to start their exploration of the water supplies in California. As students watch, instruct them to pay attention to where California gets its water. Then, ask students what a watershed is and if they think they are living in one.

Read and Respond

Read (10 minutes)

Students should read each of the four sections (Water: Where it is Found, California's Water Resources, California's Watersheds, and Managing Water Sources in California) to learn about water, how it is used, where water is found in California, California's watersheds, and how to manage fresh water supplies. Students can read independently, as a whole class, or in small groups.

Student Response (5 minutes)*

Have students participate in short discussions about what they learned. These can be small groups or the whole class, depending on your class size and needs. If completing this lesson in the classroom, you could also have the students break into short discussions after each section rather than waiting until all readings are complete.

Possible discussion questions:

Water: Where Is It Found?

- What is the water cycle and what forms does water take?
- What are the main places where water is located?
- Why is water essential for life on Earth?

California's Water Resources

- What are the main sources of California's water?
- What is runoff and how is it related to forests?

California's Watersheds

- What is a watershed and why is it important?
- How does a watershed fill with water?

Managing Water Sources in California

- What are some things that can be done to protect California's water supply?
- How does drought impact groundwater?

Research

Who Owns and Manages California's Forest? (10 minutes)

Direct students to appropriate websites or texts to determine current percentages of California forest ownership, or provide this data for students to use to complete this section.

One such resource is [Forest Research and Outreach](#) from the University of California. This page is static, but is a good starting point to find additional information about the percentages of ownership. Another appropriate website could be the [USDA](#).

Students should then complete the short reading on California's forest ownerships to learn more about how California's forests are owned by different groups of people with different needs.

Find Your Watershed (10 minutes)

Have students visit the website [Science in Your Watershed](#) to learn about the watershed area in which they live. Once they have found their particular area, have them research how large it is, what the sources of water are, and other interesting facts about it.

Next, direct students to perform online research at the following websites to learn about watersheds and how they impact California's water supply:

- [Science in Your Watershed](#)
- [Watershed Management](#)
- [California's Watersheds](#)
- [California Forest Foundation](#)

Build Your Own Watershed

Making Models (15 minutes)

Students will make a model of a watershed to better understand how water flows in these areas. You may consider showing students pictures of different watersheds before starting the activity. Point out how rivers and streams are all connected in a watershed.

Ask Students:

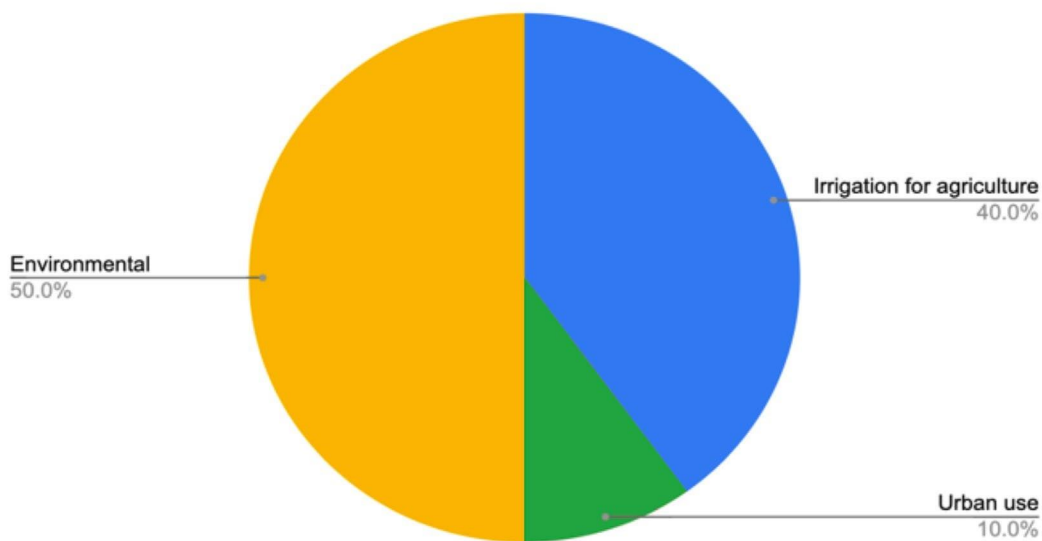
How does your model simulate water-flow in a real watershed area? What land features do you notice in areas where water collects in pools instead of traveling downstream?

How California Uses Fresh Water

Create a Chart (10 minutes)

Have students use the provided data to make a pie chart that shows how freshwater supplies are used in California. Once they have completed their pie chart they should go back to the diagram at the beginning of the lesson to make a claim about how much fresh water is available on Earth compared to how it is used. Students should support their claim with evidence from their pie chart and what they have learned so far.

How Freshwater is Used in California



What Did You Learn?

Assessment Questions (5 minutes)

Have students complete the following assessment questions to allow students to apply what they have learned. Note: correct answers are in bold; questions that are not multiple choice provide an example student response.

1. Which statement explains how forests support water supplies in California?
 - a. Forests provide an additional source of water to add to the groundwater.
 - ✓ b. **Forests clean the runoff by filtering the water through soil.**

- c. Forests prevent flooding by absorbing all precipitation.
- d. Forests keep surface water levels constant by adding more over time.

2. Match each freshwater source with how much is found on Earth.

<u> </u> B Atmosphere	a. 0.49%
<u> </u> D Lakes	b. 3.0%
<u> </u> A Rivers	c. 3.8%
<u> </u> C Soil moisture	d. 20.9%

3. Through what process do trees and plants release water vapor into the atmosphere?

- a. Precipitation
- b. Condensation
- ✓ c. **Transpiration**
- d. Evaporation

4. California gets most of its fresh water from forests in the northern part of the state.

5. Why is collaborative water planning and conservation important in California?

Student responses will vary but should include reference to the competing uses for water in the state and the importance of properly managing water resources.

Apply to the Real World

Group Activity (20 minutes)*

Have students complete the group activity to promote the sharing of opinions and working together.

Before letting students start their activity, review the concepts of watersheds and culverts. Then break students into groups, or allow them to work alone for the investigation parts.

Discussion 1

Your city/town is considering “surfacing” streams that are currently in culverts. List the benefits that such a project could provide the community.