

LAKE BILLY CHINOOK

by: Steve Fisher

OVERVIEW:

In this lesson students use historical maps, aerial photographs, personal observation, sketches and oral history to investigate the impact of the damming of the Deschutes River to create Lake Billy Chinook in Jefferson County, Oregon.

GEOGRAPHY STANDARDS:

National Standards:

#14 - How human actions modify physical environment

#1 - How to use maps and other geographic representations, tools and technologies to acquire, process and report information from a spatial perspective.

Oregon Geography Content Standards (grade 5):

- Student will explain how physical environments are affected by human activities and also how they present opportunities, constraints and hazards for people.
- Student will examine and prepare maps charts and other visual representations to locate places and interpret geographic information.

GRADE LEVEL : 4 – 6

OBJECTIVES:

The students will:

- Relate topography to the siting of a dam/reservoir
- Sketch and identify land forms and modifications present at Lake Billy Chinook
- Compare the human impact of Lake Billy Chinook to that of Windsor Dam Project as described in text, *Letting Swift River Go* .

MATERIALS NEEDED:

- *Letting Swift River Go*, by Jane Yolen illustrations by Barbara Cooney 1992
Little, Brown and Company, New York, ISBN 0-316-96860-9
- Aerial photographs and maps both before and after construction of Round Butte Dam (Sources for these include: Jefferson County planning office, Jefferson County Historical Society, and Portland General Electric).
- Chart paper, general school supplies (pencils, papers, markers, clipboards, etc.)
- Field papers (see below), and clipboards for use on field trip.
- 9" x 12" cardboard open frames
- Thermometers (one per team)

FIELD PAPER # 2

Deschutes River- downstream from dam

Discuss human and physical features/characteristics of this site. Use the field sheet to identify these characteristics.

WATER:

(How clear is the water? Does it flow swiftly or slowly? Do you see fish or evidence of wildlife? What is the water temperature? Is there evidence of human influence?)

RIPARIAN ZONE:

(Is there evidence of plant/animal life? Is there evidence of human influence?)

CANYON SIDES:

(How would you describe them rocky, grassy, smooth? Are the sides tall, short, or steep? How would you describe the distance across the canyon?)

FIELD PAPER #3
Atop Round Butte Dam

Discuss human and physical features/characteristics of this site. Use the field sheet to identify these characteristics.

WATER:

(How clear is the water? Does it flow swiftly or slowly? Do you see fish or evidence of wildlife? What is the water temperature? Is there evidence of human influence?)

RIPARIAN ZONE:

(Is there evidence of plant/animal life? Is there evidence of human influence?)

CANYON SIDES:

(How would you describe them rocky, grassy, smooth? Are the sides tall, short, or steep? How would you describe the distance across the canyon?)

FIELD PAPER #4
At Round Butte Lookout

Make a Venn diagram that compares Lake Billy Chinook to the Deschutes River. Be sure to include physical and human characteristics as well as topography.

PROCEDURE:

- Read *Letting Swift River Go* to class. Discuss and list ways that Windsor Dam affected the Swift River Valley. “Do you think this is similar to what happened with the construction of Round Butte Dam in our community?” (list responses on chart paper).
- Look at aerial photos and historical maps of Lake Billy Chinook before and after the dam construction. Discuss and record differences noted
- How have people changed the landscape?
- What was the area like before it was changed?
- How has the dam affected the plant life?
- In pairs students will use the information recorded from the above discussions and field paper #1 to answer the 3 questions on that paper.
- Re-assemble as a class and discuss what we recorded on field paper #1.
“We will investigate these questions more deeply on our field trip to Lake Billy Chinook.”

Day 2 - Field Trip to Lake Billy Chinook!

This field trip will take us to visit 3 sites near Lake Billy Chinook. The first site is 1 mile below Round Butte Dam on the Deschutes River. The second site is on the top of Round Butte Dam. The third site is the Round Butte Dam Overlook (an overlook atop the canyon’s rim just above Round Butte Dam).

1 Mile Below Round Butte Dam

Discuss the physical and human characteristics of this area. *“Is there evidence of human influence on this area? What do you observe about plant and animal life?”*

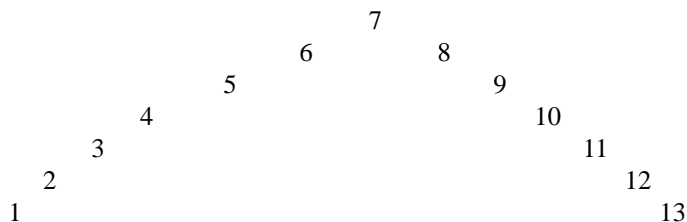
With your partner, discuss and fill in information on field paper #2.

Sketch component

Consider the information you have added to your field paper and fan out in a bow shape and look through the cardboard frame as your partner holds it and sketch what you see inside this frame. Allow at least 10 minutes for this sketch. Partners then switch and repeat. (Frame holder should **not** tell sketcher what to draw.)

Sketch should be labeled with appropriate number on the top right corner, and named.

~~~~~ ← Deschutes River



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### **Atop Round Butte Dam**

Discuss the human and physical characteristics of this area. *“How have things changed from the first site? What materials were used in the construction of this dam? How does the lake above the dam differ from the river below the dam? Why is the dam located here?”*

With your partner, complete field paper #3.

#### **Sketch component**

In pairs, students will make a sketch of this site as described above; with one exception: the teams will be arranged in a circle as a compass rose. Each pair will be assigned a compass direction to label on the top right corner of their paper and only sketch this perspective.

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### **Round Butte Lookout:**

Discuss the physical/human characteristics observed. *“Have the characteristics of this area changed in 50 years? Which characteristics are directly/indirectly related to the dam’s construction? Are there any indications that this place is changing over time? What do you think people like/dislike about this place? What conclusions can you make about this dam, lake, river?”*

With your partner, complete field paper #4.

#### **Sketch component**

Make an aerial sketch of the lake, dam and river. Label topographic and human features. Identify directions using a compass rose.

### **Back at School**

Arrange sketches upon walls of room in correct order. Review and discuss field sheets and sketches. Review questions and record observations on chart paper.

#### **Discussion questions:**

*“Have the characteristics of this area changed in 50 years? Which characteristics are directly/indirectly related to the dam’s construction? Are there any indications that this place is changing over time? What do you think people like/dislike about this place? What conclusions can you make about this dam, lake, and river? What does comparing the Deschutes River to Lake Billy Chinook show you? What have you learned about the physical/human characteristics of each location? Can you predict what this place will be like in 10, 20 or 50 years? Can you imagine what it was like prior to the dam?”*

#### **ASSESSMENT:**

Write a letter to Sally Jane (from the text) comparing her experience with the Swift River to what happened to the Deschutes River. Letter must cover some aspect of the physical and human characteristics of the area and include 2 informative sketches.

## **POSSIBLE EXTENSIONS:**

This study can lead to a large number and wide range of worthwhile extensions. Some are listed below:

- Develop questions and interview a community member or relative who remembers the dam's construction and its impact.
- Investigate how human changes and use has affected wildlife in this area by inviting a Cove Palisades State Park Ranger to speak.
- Investigate how dams have affected fish runs (Oregon Department of Fish and Wildlife).
- How has Round Butte Dam impacted local community? Guest speaker from PGE, the dam's operator.
- Research newspaper coverage of Round Butte Dam's construction.
- Compare to Entiat, Washington. A small town that was moved to build the Rocky Reach Dam on the Columbia River.
- Compare to other dams in the news, including Three Gorges Dam in China; Elkhorn Dam on the Rogue River in southern Oregon.