

## PASS THE JUG

*Note: This activity was designed by Natural Resource Conservation Services in Longmont. You can make it simpler by leaving out the warm-up candy exercise when using with adults or in a shorter time period.*

### **SUMMARY:**

Students simulate and analyze different water rights policies to learn how water availability and people's proximity to the resource influence how water is allocated.

### **OBJECTIVES:**

- Describe historical and current aspects of water rights.
- Illustrate how water rights are used to allocate water.
- Evaluate water rights allocation systems.

### **MATERIALS:**

- Bags of candy
- Paper cups or glass (1 per student, plus extras)
- Water jug (i.e. gallon milk container)
- Water Users Descriptions – cut into strips
- Funnel

### **MAKING CONNECTION:**

Water is a resource needed by everyone, and people have invested considerable time, energy, and money to ensure that they have ample supplies of water. However, sometimes demands on the resource require that water be allocated. Simulate how water resources are allocated helps students appreciate the value of this shared, limited resource.

### **BACKGROUND:**

Water rights provide an organized and systematic manner for allocating water. A water right allows a person, business, community, or other group to use a specified amount of water. People receive only the right to use the water; they do not own the water.

The history of water rights is related closely to settlement and land ownership. Settlers in the East adapted water rights policy similar to what the populace used in England. The Riparian Rights or Common-Law Doctrine gives people who won land bordering a water source the right to use that water however they chose. A more recent version of the doctrine requests people to justify their uses as reasonable. They must also ensure that landowners downstream have their fair share of water.

East of Mississippi, average rainfall is more plentiful than in the West. This is apparent from a geographical view. Scarcity generates western's preoccupation with water and water rights. Western water rights were developed for the need of the 19<sup>th</sup> century settlers. They evolved from the customs and practices of miners from about 1848, who developed systems for protecting their claims to land and minerals.

In many parts of the West, the Prior Appropriate Doctrine regulates water rights. This doctrine maintains "first come, first served" or "first in time, first in right". In other words, whoever uses

the water first has the “prior” or first right to the supply of available water. If all the water in the stream is allocated, no new users are allowed.

In the last 20 years, many changes have added new dimensions to water rights and water allocation programs. Irrigated agriculture is a large consumer of water. Farmers invest millions of dollars to improve irrigations systems to provide huge water conservation savings. Cities also need water to meet all the needs. Water for recreation and for fish and wildlife is receiving growing attention. Many communities depend on water for energy production such as hydroelectric and thermoelectric generation plants. The challenge of meeting today’s growing demand for water will involve nontraditional allocation strategies.

## **EXERCISE**

### ***Warm-Up***

- Randomly pick a table to place a bag of candy
  - Ask the students how they plan to share that candy. Do they keep it all to themselves since they are the closest and if they get sick of the candy then maybe they will pass some around?
    - Explain how this is similar to Common Law Doctrine rights with water law.
- Have all the students stand up and walk to the back of the class and then randomly place the candy in common areas in the classroom, not an individual desk. Then at your cue, have the students’ lay first claim to the candy.
  - Ask the students if they plan to share that candy or since they were first to it do they have all the right?
    - Explain how this is similar to Appropriate Doctrine.

### ***The Activity***

#### **PART 1**

1. Arrange the students’ seats in a row or around a table and give each student a cup. Starting at one end, have the first student pour out as much water as he or she needs/wants and pass the jug to the next student in line. (Because of the limited amount of water in the jug, there might not be enough to go around).
2. Ask students (those who received water and those who did not) how they felt. Tell them there is sometimes not enough water available to meet everyone’s needs.
3. Ask students what they could do to make sure they all get water. Have them write it out on white board or paper. Have them repeat the activity and put their plan into action.
4. Now explain a little bit more about water rights, using the background information and how the passing of the jug relates to riparian rights.

#### **PART II**

1. After students empty their cups, inform them they will now simulate the allocation of water rights in many places in the west. Explain how the Prior Appropriation Doctrine gives people who originally moved into an area and started using water the right to use water first, whether or not their land borders the water source.

2. Have each student write down his or her birth month and day on a piece of paper and display it so everyone can see. Then distribute *Water User (Descriptions)* by handing the strips out in the order of student's birthdays (from January 1 to December 31). This represents the concept of first in time, first in right.
3. Explain that the descriptions are numbered. The student with description number one is the first person who moved into the area ("first in time"). Along with the right to use the water, each description also states how the water is used and how much is needed.
4. Pass around the jug of water in the order of the numbered cards. Have students read aloud how they use water. Each student must take the amount of water indicated on his or her card.
  - a. Some water users such as fisheries and hydroelectric power plants utilize water without reducing water quantity; they are called non-consumptive. Students who represent these water uses should pour water into their cups and then funnel it back into the jug.
5. When water runs out, have students express their opinions about this system.
  - a. Have students break out into groups (3 or 4). Have one person represent the group. Have them explain:
    - i. Benefits of the systems (example: protects investments [money, time, and energy] and the rights to first water users)
    - ii. Shortcomings of the system (examples: It restricts new or different water users' access to water)
    - iii. How or why would each group change the system?

### **Wrap Up**

Have students summarize the two general approaches to allocating water rights and how each evolved. Encourage students to be concerned about water rights given there are more people who need more water and there is never new water created. Water is a precious and finite resource.

### **OPTIONS**

- Simulate annual fluctuations in streamflow change the water in the jug. Some years have heavy streamflow, other years have less water in the jug to represent drought
- Demonstrate pollution add drops of food coloring in the water of the jug or in one of the students cups that return flows.
- Simulate snowpack by freezing colored water in layers in a plastic bottle. Different colors represent different months that the snowpack freezes. As you pass the jug of frozen snowpack, it represents how water isn't always available to us when we need it and why storage of water is beneficial to have access to water when it is held up in snow.
- Represent needs of in-stream flows for fish and wildlife by placing a fish bowl at the end of the line of students. Explain that at least one cup of water must be poured into the fish bowl to meet this requirement. Allow the students to devise a way to adjust the water allocations for this need.

**WATER USER DESCRIPTIONS – NAME THE TOWN**

<b>Number 1</b>	You are a descendant of the first homesteader that moved into the area. You own a dairy and grow corn and alfalfa.	<b>USE 2 CUPS</b>
<b>Number 2</b>	Your ancestor was heading toward California during the great gold rush, but got distracted by the flowers. While picking daisies, he found a huge deposit of copper and started a copper mining company. Your family runs a small, but lucrative operation that is still active today.	<b>USE 2 CUPS</b>
<b>Number 3</b>	You represent a small but long established ski resort in the area. The water is used to make snow early in the season.	<b>USE 1 CUPS</b>
<b>Number 4</b>	You represent a small community of families who work in the mine. You use water for daily domestic and irrigation purposes. Your water needs may increase as the town grows.	<b>USE 2 CUPS</b>
<b>Number 5</b>	Your grandparents left their farm in Iowa to start a farm here. You help meet the needs of the growing community. Your grandfather is alive and resists using modern farming practices and use flood irrigation.	<b>USE 5 CUPS</b>
<b>Number 6</b>	To avoid the competition in the big city, your father moved his coat hanger factory to this growing community. The industry provides a new means of income for community members.	<b>USE 2 CUPS</b>
<b>Number 7</b>	You represent a hydroelectric company with a dam upstream of the town. The water you use passes through the dam to generate electricity. <b>* Show this by pouring 3 cups of water back into the jug.</b> *	<b>USE 4 CUPS</b>
<b>Number 8</b>	You represent a town that grew as more people escaping the city moved to the countryside. Consequently, your town has become a city. You use water for domestic and irrigation purposes.	<b>USE 3 CUPS</b>
<b>Number 9</b>	You're a high-tech conservation farmer that has moved there to supply food for the growing community. You use drip and pivot irrigation systems.	<b>USE 2 CUPS</b>
<b>Number 10</b>	You have decided to start an industry that you think meets a growing need: fidget spinner manufacturer	<b>USE 1 CUPS</b>

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10	You have decided to start an industry that you think meets a growing need: fidget spinner manufacturer.	USE 1 CUP

