Social Studies

Who Owns Water?

Overview

Students will:
- Learn the different types of water rights and debate the profit-making aspect of selling and leasing water rights.
- Allocate water on a make-believe river to explore the problems of drought, degraded water quality, and wastefulness.

Terrain Article: "From Source to Sink," page 36.

Recommended Resources

PBS Cadillac Desert Video Series
Water Education Foundation: brief, readable, well-illustrated booklets on a variety of water topics.
"California Water Curricula" by Tim Stroshane. Social Studies Review, page 33, Volume 39, No. 1
www.spillwaynews.net

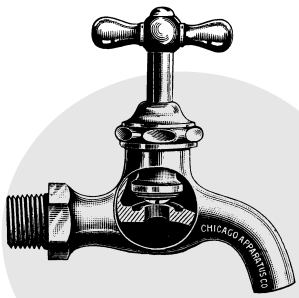
Pre-lesson Discussion Questions

Who owns water? Does the city agency that pipes water to your home actually own it? Can you legally pump water right out of a river? Who owns the rain that runs off your roof? Who sets the price for water? Should water be owned by a person, group, or business? How do all the other species dependent on water figure into the picture?

Introduction

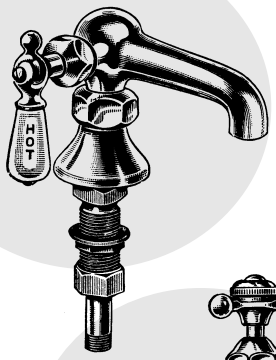
California would not be the state that it is – with vast stretches of farmland and an ever-growing population – had enormous quantities of fresh water not been transported hundreds of miles to irrigate the desert and serve the booming cities.

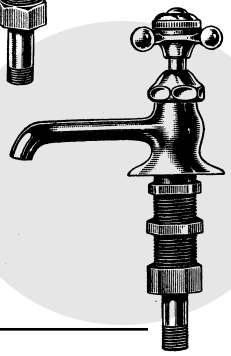
Some of the earliest projects to bring water to the drier parts of California were begun in the late 1800s. They were local projects funded by irrigation districts such as the Turlock or the Merced Irrigation District. In 1902, Congress created the Bureau of Reclamation, a federal agency whose goal it was to "reclaim" the west by building dams and diverting rivers. The bureau was responsible for the huge Central Valley Project, which controlled flooding, stored water, and transported water from wet Northern California to dry Southern California. Since then, many other water projects funded by the state or districts have been constructed to obtain more water for cities, industries, and farms.



Today, as demand for water in California outstrips supply, a number of things are occurring:

- **Conflicts are arising between people, districts, states, and nations over who gets to use the water in particular basins, and how much they get to use.**
- **A market is developing around the scarce resource. Water rights are being bought, sold, and leased. Some view the water market as a money-making opportunity.**
- **Watershed groups and government water agencies are working collaboratively to restore ecosystems that have been damaged by past and present water diversions.**
- **People are questioning how we currently use water and what our water priorities should be.**





CA HISTORY/SOCIAL SCIENCE STANDARDS, GRADE 11: U.S. History and Geography: Continuity and Change in the 20th Century 11.8.6. Discuss the diverse environmental regions of North America, their relationship to local economies, and the origins and prospects of environmental problems in those regions. 11.11. Students analyze the major domestic policy issues in contemporary American society. 11.11.5. Trace the impact of, need for, and controversies associated with environmental conservation and the development of environmental protection laws. GRADE 12: Principles of Economics 12.1.4. Evaluate the role of private property as an incentive in conserving and improving scarce resources, including renewable and nonrenewable natural resources. 12.2.4. Explain how prices reflect the relative scarcity of goods and services and perform the allocative function in a market economy.

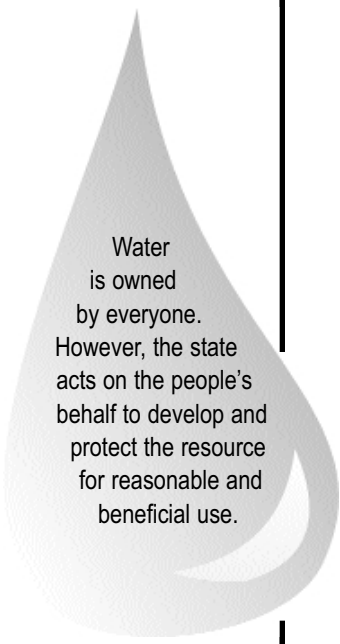
Water Rights

Fundamental to understanding California's water conflicts is the concept of **water rights.** Water is owned by the people of California, and the state is entrusted to protect it and allocate it on the people's behalf. To **allocate** means to distribute or assign shares. Federal and state agencies determine who gets the right to use water and how much of it they get to use. The state allocates rights to the use of water, but water cannot be "owned" by private individuals. In the eastern U.S., which is a much more humid region of the country, surface water is allocated mainly under a system of **riparian rights**. In the 13 western states where annual precipitation is much lower, water is allocated under a system of **prior appropriation**. California recognizes both systems in the **California doctrine**.

■ **Riparian rights** are based on English common law, which California adopted when it became a state. These rights belong to landowners whose land sits next to a body of water. The right to the water is not separated from the land, and the water is to be used on the adjacent land. Holders of riparian rights are required to return the water to the stream undiminished in quantity and quality. Shortages and surpluses are shared by all. When persons owning land beside a stream sell their land, they will sell the riparian right along with it.

■ **Appropriative rights** allow a person to divert water out of a stream to be used elsewhere. These rights resulted from the doctrine of **prior appropriation**, which evolved out of the California Gold rush, when miners needed water to process their ore. The miners did not own the land they mined; therefore, they could not assert riparian rights. These rights belong to individuals in the order in which they apply for them. The first person to divert water from a river acquires the most senior right: "First in time, first in right." In times of water shortage, those with more senior rights can use the full amount of water allotted to them, while those with more junior rights must make do with less or nothing.

■ **The California Doctrine** recognizes both appropriative and riparian rights. In 1886, the State Supreme Court ruled that the needs of riparian users took priority over appropriative users. Whatever water is left in a basin after riparian users have claimed their allocation is considered "**surplus**," to be divided up and allocated to appropriative users. In 1928, voters approved an amendment that required all water right holders to use water "reasonably and beneficially." "Reasonable" refers to how much is used and "beneficial" refers to what the water is used for. Over the years, these terms have been interpreted in many different ways.



Water Markets

Water rights are bought, sold, and leased, although there isn't a central place or market where this trading occurs. However, any time a water right changes hands, the trade must be approved by the **State Water Resources Control Board (SWRCB).** The SWRCB is also the agency that resolves conflicts. To learn more about the agency's role, visit www.waterrights.ca.gov/html/wr_process.htm.

"Water flows uphill – towards money" is a common saying in the western U.S. Although water belongs to all citizens, the right to use it is increasingly bought, sold, and leased for a profit. The person holding the water right gets to set the price and transfer it to the highest bidder.

There's a special provision to water rights doctrine referred to as "**use it or lose it.**" If you don't use the water allocated to you by your water right, someone else might use it. If that person uses your water allocation for five years without you noticing, suing, or otherwise forcing them to quit, they may acquire **prescriptive rights** to the water. For this reason, water rights holders often arrange temporary **transfers**. Basically, transfering a water right is similar to leasing it: you still own it, but for a designated length of time, someone else will pay you for the privilege of using it.

Questions for Debate:

1. Should people be allowed to profit from selling their right to use something (water) that belongs to everyone?

2. Should people who hold water rights be allowed to set their own price when transfering the right to another?

3. Do you think the "use it or lose it" principle leads to greater water conservation or increased water usage?

4. Do you think the "reasonable and beneficial use" clause in the California Constitution leads to greater water conservation or increased water usage? (If a water use is challenged and deemed unreasonable, the water is returned to the basin, creating more "surplus," and therefore more users...)

Water Agencies

Water agencies are formed so that people can buy water collectively and fund the infrastructure necessary to store and deliver water.

Irrigation districts were formed when towns and farms banded together to bring water to farmland and nearby towns. Dams, canals, etc. are paid for by a tax on land. Irrigation districts are politically powerful and control a large portion of water rights in western states.

L.A. aqueduct flowing above Owens Valley, 1992. Photo by Robert Dawson

Water districts are similar to irrigation districts, but there are a couple of key differences: Irrigation districts are based on the democratic principle of one person, one vote, whereas water districts are based on the principle of one acre owned, one vote. Those who have more money (and therefore more land) have more say over the affairs of the water district. Irrigation districts have historically developed their own projects, whereas water districts typically have contracts that enable them to receive water cheaply from the Central Valley Project (CVP) or the California State Water Project (SWP), two giant projects which California taxpayers or U.S. taxpayers paid for and continue to pay for.

A **municipal water district** functions similarly to an irrigation district, except its purposes include providing water for drinking and other domestic uses to towns and cities. These districts use state, federal, and local tax money to finance reservoirs, pipes, pumps, wastewater treatment plants, and other facilities. They obtain water rights in a variety of ways: by owning land in a watershed, contracting for water from the state or federal governments, or purchasing water from other rights holders. Cities are often buying water rights from farmers at elevated prices. When your landlord or the billpayer in your household pays the water bill, they are paying the municipal water district to deliver the water to your house through their network of dams, reservoirs, and pipes, and to treat the wastewater that goes down the drain. Cities and towns purchasing water for their residents account for 68% of all water trades.

The Downstream Blues:
Conflicts over Quality and Quantity

Most of the state's water goes toward agriculture. As cities continue to grow, water is needed for homes, lawns, swimming pools, parks, businesses, power plants, etc. Between the powerful interests of cities, industries, and agribusiness, little water is left for all the other species who depend on clean, fresh water. More water could be imported from farther and farther away, but it would then impact the habitats and people who live there. Plus, the farther water is transported, the more expensive it is.

Environmentalists, Indian tribes, fishing groups, and watershed conservancies all seek to preserve enough water in rivers and lakes to save dwindling native fisheries and the ecosystems that support many other species. These groups and others also fight to protect water quality, which is important to people, fisheries, farms, wildlife, and recreational interests.

When irrigated fields, mining operations, power plants, industries, or cities use water, it usually drains back into the waterways degraded in quality, greatly affecting ecosystems and usage downstream. This occurs in spite of the fact that the law requires that the water returned to the river basin must be of a quality equal to or better than its quality when it was drawn from the river. Water that drains back from farms often contains pesticides, fertilizer, and extra salts; water from mining and other industries often contains toxic chemicals and heavy metals; and water from cities and ranches often contains nutrient pollutants from human and animal waste that decrease the dissolved oxygen in water. All these pollutants can render water unfit for fish, wildlife, crops, and drinking.

Yet because these polluting substances cannot be traced to a single source point, like a dripping pipe, they are not regulated. Many farmers, cities, and industries resist "non-point source" pollution regulation, although it may be a key aspect of future water quality protection.

Drought Year

The amount of water in a river changes from season to season and from year to year depending on rainfall, snowmelt, etc. So what happens when there is too little water in the river to fulfill the water rights of everyone that holds them? Those with more **senior rights** (obtained at earlier dates) get to use their allocations while those whose rights are more **junior** (obtained at later dates) may have to cut back on their consumption. However, a junior user can argue before the State Water Resources Control Board that a senior user is using water wastefully or unreasonably.

The Great Water Grab

Activity

In this exercise, students, representing holders of water rights, will take their allocations from a fictional river. Four circumstances will be explored, including drought, water quality degradation, and beneficial use.

Materials Needed

Masking tape
Clean bucket or large bowl
Measuring cup (2 cups)
8 bowls
Salt
Pepper
Parsley

Procedure

1. Write the following water interests on 8 scraps of paper:
   City – 15 maf
   Mine – 10 maf
   Ranch – 15 maf
   Power Plant – 10 maf
   Lettuce Farm – 20 maf
   Environmental Trust – 5 maf
   Battery Manufacturer – 15 maf
   New Housing Development – 10 maf

   (Note: Environmental trusts purchase water rights for the purpose of keeping water in its basin, for the benefit of fish and wildlife. "Maf" is short for millions of acre-feet per year, one of the ways in which water rights are measured.)

2. Place a piece of masking tape on the floor appx. 8 ft long. The tape signifies a fictitious river. Eight students will position themselves along the tape.
3. Each of the 8 students will draw one folded scrap of paper from a hat. The paper they choose will specify who they represent and how many million acre-feet (maf) of water they have been allocated from the river.
4. Refill the hat with 8 new scraps of paper, numbered 1-8. Students will each draw a number from the hat. The numbers dictate seniority of water rights, with one being the most senior right and eight being the most junior.

Trial Run A: Allocations

5. The river, designated by the tape, is flowing at 100 million acre-feet per year. Place 10 cups of water in the bucket. One cup of water = 10 maf.
6. Water bucket is given to student with the most senior water right. Using a measuring cup, he/she takes from the bucket the number of acre-feet their water right gives them and puts it in their bowl.
7. The student then hands the bucket to the person holding the second most senior water right, who draws from it the amount allocated to them by their water right. This procedure continues until all 8 students have withdrawn their water allocation from the bucket.

Trial Run B: Drought Year

8. Repeat steps 2 – 7 with a new set of volunteers. This trial run represents a drought year. Only 75 million acre-feet of water flows through the river that year, so begin the exercise with only 7.5 cups of water in the bucket.
9. Who did not receive their allocation? Should their use of the water take priority over someone else's use? Why?

Trial Run C: Water Quality

10. This trial run deals with water quality. Repeat steps 2,3, and 5. Pass the bucket from one end of the tape to the other. Each student will take their allocation, but return part of it to the bucket mixed with salt if their usage results in increased salt levels, pepper if their usage leads to increased heavy metal levels, and parsley if their usage results in oxygen depravation. (Note: water from power plants and some industries is returned to the basin heated, which leads to decreased levels of dissolved oxygen.)
11. Have each student discuss how the quality of the water they receive might affect their usage of it. Is the water they return to the bowl degraded in quality? How do downstream users feel about the upstream users?

Trial Run D: Beneficial Use

12. Repeat steps 2 – 7 with a new set of students. Each time a student draws their water allocation from the bucket, they must drink once from their cup and return whatever is left to the bucket. They must then answer the question, "Are you wasting water by not consuming all of it?"