



LESSON PLAN

Living with Less Water



RELATED FILM

When a Town Runs Dry

BY JORIS DEBEIJ



Key Idea

The Western United States has been suffering from a drought for approximately 15 years, which has particularly impacted California’s groundwater and reservoirs. Communities and farmers in California are facing a future with less water.

Background

The Western United States has been facing a long-term, “mega-drought” for approximately 15 years. Some farmers in the California’s Central Valley, the country’s most productive agricultural region, have responded by selling land or cutting back on farmed acreage, while others dig deeper wells to maintain crop yields. Groundwater in the area has significantly diminished due to over-use. According to *National Geographic*, scientists warn that this drought will likely worsen in time, transitioning to a “35-year or longer” mega-drought impacting much of the West.

The last mega-drought to hit the United States began in 1934 and lasted ten years. Now referred to as “the dust bowl,” that drought impacted three-quarters of the Western United States. Caused by weather patterns, its impacts were exacerbated by farmers who removed the native grasses, which are known for their long and thick roots, to plant crops that were not drought resistant.* These thinly rooted crops failed with the lack of rainfall, leaving dusty fields behind. According to the National Oceanic and Atmospheric Administration (NOAA), approximately 50,000,000 acres of land were affected by that drought. The human and socio-political impacts were significant, creating the largest migration event in U.S. history, as people fled the area. By 1940, 2.5 million people had left the plains states, 200,000 of those went to California.**

The short film, *When a Town Runs Dry*, by Joris Debeij, explores the current drought through the eyes of three residents—a farmer, shopkeeper, and a high school football coach—living in the small farming town of Stratford, California. All three men lament the loss of a way of life dependent on a consistent supply of water, and prepare for an uncertain future.

*“[Legacy](#)” from “The Dust Bowl,” a film by Ken Burns.” PBS.org.

**“[Mass Exodus from the Plains.](#)” PBS.org.



Film: 8 minutes

Class: 60 minutes

SUBJECT AREAS

HIGH SCHOOL

- English Language Arts
- Environmental Science
- Modern World Studies

COLLEGE

- English
- Environmental Studies
- Geography

THEMES

- Effects of climate change
- Effects of environmental change
- Connection to home
- Sustainability

MATERIALS

- Online access to the film
- Equipment for showing the film

PREPARATION

- None



Connections to National Standards

Common Core English Language Arts. SL.11-12.1.c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.

College, Career, and Civic Life (C3) Framework for Social Studies Standards. D2.Geo.9-12. Evaluate the influence of long-term climate variability on human migration and settlement patterns, resource use, and land uses at local-to-global scales.

Next Generation Science Standards. HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

Lesson

SETTING THE STAGE

Tell students that much of the Western United States has been impacted by drought in the last fifteen years, with California being hit the hardest since 2011. According to *National Geographic*, “a drought is an extended period of unusually dry weather, when there is not enough rain.”

Droughts can impact every aspect of the natural and human environment, from killing plants and animals to forcing human migration due to water scarcity. In California’s Central Valley, the most productive agricultural region in the U.S., the drought is threatening the land, farmers, and nearby towns.

Explain to students that droughts can be naturally occurring and can also be exacerbated by human activities, such as over-use of groundwater and changes in precipitation due to climate change. The current drought in California is caused largely by natural weather cycles, according to NOAA.

Ask students to think about their own home, neighborhood, or town. What changes have students noticed locally? Have they noticed less rain and drought conditions, like many Western states, or more rain and increased storms? In what ways have these environmental changes impacted students, their families, and their communities?



ENGAGING WITH THE STORY

Direct students to watch the short film while taking notes about life in Stratford, California, as depicted in the film. Ask students to pay attention to the main impacts of the drought and the three residents featured in the film who are facing changes. What have the residents lost? Has anything been gained?

Delving Deeper

1. After viewing the film, lead a discussion around Grassroot Soccer's core principles, asking such questions as:
 - Describe the community of Stratford. What does the town look like? What are residents' occupations? What are their ethnicities? (Answers include: Stratford is a small town that appears to be comprised mostly of flat farmland. Cotton is at least one crop grown here. The film depicts a farmer, a football coach, and a shopkeeper. Ethnicities include Hispanic and Anglo Americans, and immigrants, including a Yemeni shopkeeper.)
 - One of the main subjects of the film is a Yemeni shopkeeper who moved to Stratford. What are some of the changes he has witnessed since moving to Stratford? What role has he taken in relationship to his community and the impacts of the drought? What might motivate his actions?
 - In the film, the farmer said, "Without food production, there's no jobs out in the rural communities." Food production provides jobs for residents of Stratford and surrounding areas, such as seasonal workers who harvest crops, people who repair farm equipment, and grocers and restaurant owners who provide food for local workers. Based on the film, what might happen to these people and professions if the drought continues?
 - The football coach in the film explains that as a child, he could "spend all day at the canal" swimming, and fishing, but without water in the canals, children today cannot have this experience. What is he suggesting the children, and the community, have lost as the water has disappeared?



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- “The water’s one thing. But you take a step back and you look at what’s going on in the community, its heartbreaking,” said the football coach in the film. Explain what he means by this statement. Why might it be heartbreaking for him?
- The farmer declares, “All we can do is sell more land, and that’s like selling a part of yourself.” What might make this land so special to the farmer? Is there something in your own life that you are so close to that selling or giving it away would feel like losing a part of yourself? If so, what makes it so meaningful?

Reflecting and Projecting

Give students one of the following reflective writing prompts to demonstrate their understanding of the story. (Note for teachers: Just as quotes from a book or text are used to prove an analytical thought, students use the film to justify their reasoning.)

1. In the film, the high school football coach says, “Any time someone puts a little more effort in the community, the community stands stronger.” What do you think he means by this? Include some examples from the film. Describe a situation in your life where a community you are part of (family, school, town, etc.) has grown stronger due to a group effort. In a paragraph, describe the situation, the efforts that were taken, and the outcome. (CCSS.ELA.SL.11-12.1.c)
2. According to *The New York Times*, every American consumes more than 300 gallons of California water annually due to eating foods that are grown in the state. Just one third of an egg takes 6 gallons of water to produce. The article provides a list of popular foods, as well as the amounts of California water needed to grow, in the article, “Your Contribution to the California Drought.” Some foods include avocados, lettuce, almonds, rice, and oranges. The NYT suggests that every American contributes to the drought in California and that, “To fundamentally alter how much water the state uses, all Americans may have to give something up.” Based on this information, would you refrain from consuming one of the foods identified above? If so, which ones and why? If not, why not? (C3.D2.Geo.9.9-12)



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3. The average American family of four uses 400 gallons of water per day, says the Environmental Protection Agency (EPA), and 30 percent is for outdoor use, such as watering lawns and gardens, washing cars, maintaining swimming pools, and cleaning driveways and sidewalks. The remaining 70% for indoor use is broken down this way:*
- Toilet Flushing 26.7%
 - Bath and Shower 16.8%
 - Laundry 21.7%
 - Faucet 15.7%
 - Leaks 13.7 %
 - Other 5.3%

[Visit the EPA's website](#) and pick two actions that are listed to conserve water and lesson the impacts of a drought. Identify why you have chosen these actions. Do you think you and your family could commit to these two actions for one week? Why or why not? What might be some challenges? (NGSS.HS-LS2-7)

*Water Sense, "[Water Use Today](#)" Environmental Protection Agency.

Resources

Larry Buchanan, Josh Keller, And Haeyoun Park, "[Your Contribution to the California Drought](#)," *The New York Times*.

Water Sense: Kids, "[Simple Ways to Save Water](#)." Environmental Protection Agency.

Brian Clark Howard, "[Worst Drought in 1,000 Years Predicted for American West](#)." *National Geographic*, February 12, 2015.

Laura Geggel, "[Another Dust Bowl? California Drought Resembles Worst in Millennium](#)." *Live Science*, October 15, 2014.

"[Encyclopedic Entry: Drought](#)." *National Geographic*.

Water Sense, "[Water Use Today](#)" Environmental Protection Agency.