

The Salton Sea

A Case-Study of Human-Environment
Interactions in the American West

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Lesson Overview

This lesson was written as an extend and refine lesson to a unit on Western Expansion in a sixth grade American History course. In the lesson, we examine one particular area of California, the Salton Sink, reviewing several key themes from Western Expansion and further considering human interaction with the American land.

The first day of the lesson opens with the Cahuilla Indians, who have lived in what is to become southern California for generations. But, as a result of American expansion west following the Mexican War and the discovery of Gold in California, conflict between the Cahuilla and the new settlers forces the Cahuilla onto reservations in the areas around the Salton Sink. We examine life on the reservation for the Cahuilla, and how they adapt to the land.

The second day of the lesson looks at new pressures put on the land by the burgeoning population caused by the gold rush. As boomtowns develop, settlers need more food. To grow more food, they need more water. To get water, they turn toward the Colorado River – with unintended consequences. An engineering mishap diverts the Colorado River into the Salton Sink, creating a large inland sea and flooding much of the Cahuilla reservation.

The third day looks at human adaptation to the new Salton Sea. It focuses on the idea of development in the west, as the gold pans out and the economy transitions to other endeavors (especially tourism). Finally, on the fourth day, we look at some problems caused by this development of the West. Water scarcity and pollution are problems that especially affect the Salton Sea.

Through the four lessons, the Salton Sea becomes a microcosm for the larger themes and modern implications of western expansion.

Lesson Plan

The Salton Sea: A Case Study of Human-Environment Interactions in the American West			
LP			
# of Days	4		
Prior Knowledge	Western Expansion, Human-Environment Interactions	Enrichment	Instead of a letter to the Salton Sea Authority, have students make a PowerPoint presentation.
Lesson Objective	SWBAT identify examples of human-environment interaction in the story of the Salton Sea.	Accommodations	Give students few pictures, maps, or newspaper articles to focus on during the museum walk, map analysis, or classroom jigsaw.
Lesson Assessment	SWBAT identify examples of human-environment interaction in a diary entry, brochure, and a T-Chart graphic organizer.	Anticipated Problems	Class may take longer than four days to complete the lesson. Vocabulary in some of the primary sources could be challenging.
Standards	NCSS Standards: Thematic Standard II: Time, Continuity, and Change. Thematic Standard III: People, Places, and Environments. Alabama State Standards: 6.1, 6.1.B, 6.1.C, 6.1.D	Archdiocese of Mobile Critical Vocabulary	Expansion, Manifest Destiny, Minorities, Treaty, Industrialization
Materials Needed	PowerPoint Presentation, Curtis Photographs, Diary Entry Homework, YouTube video, Salton Sea Authority Time Line, Maps, Atlas, Review Questions, Google Earth, Salton Sea State Recreation Area Brochure, Newspaper Articles, T-Chart, Letterhead, Markers and paper for brochure	Dates	

Time	Student Learning Task or Activity	METHOD	Teacher Activity
Day 1	SWBAT describe the adaptations of the Cahuilla Indians to the geography of the Torres Martinez Indian Reservation.		
5	Lvl. 1: What is a reservation? Lvl. 2: Why did the United States government create reservations as it expanded west? Lvl. 3: What type of land did the government usually set aside for reservations? Why do you think the government did that? How do you think the Indians who moved there felt?	BELLWORK	Take attendance and other clerical duties, circulate around monitoring student work.
10	Students will take notes during the presentation.	POWERPOINT PRESENTATION	Tell the story of a particular group of Native Americans, the Torres-Martinez Desert Cahuilla Indians. Their reservation was established in after conflicts over their lands resulting from migration due to the Gold Rush in California.
20	Students are allowed to wander the classroom and observe the photographs. They are to maintain museum etiquette - they may talk quietly to each other, but only about the photographs they are observing and making inferences from.	CLASSROOM MUSEUM	Tell students they are visiting the "History Museum of Southern California - Edward S. Curtis Exhibit" Have several of Curtis' photographs of the Cahuilla displayed in the classroom. Model how to look at one of Curtis' photographs for observations and inferences. Pay special attention to adaptations to the environment they were confined to by the federal government.
5	Share their observations and inferences - paying specific attention to the adaptations they had to make.	DISCUSSION	Facilitate classroom discussion.
5	Using facts from the presentation and observations and inferences from the museum displays, write a diary entry one of the Cahuilla Indians of the Torres-Martinez Reservation may have written. Include examples of how they adapted to the environment of the reservation. Start in class and finish at home for homework.	INDIVIDUAL WORK	Circulate and monitor student work.

Time	Student Learning Task or Activity	METHOD	Teacher Activity
Day 2	<i>SWBAT give examples of changes humans made to the environment of the Salton Sink.</i>		
5	Lvl. 1: How do people use water? Lvl. 2: If humans settle in a desert, what are some ways they can adapt to that environment? What are some ways they can change that environment? Lvl. 3: Why do people choose to live in the desert? What benefits are there?	BELLWORK	Take attendance and other clerical duties, circulate around monitoring student work.
2	Students will watch the movie clip.	MOVIE	Watch the first 1:50 minutes of "The Accidental Sea," a short YouTube documentary. http://www.youtube.com/watch?v=otl-U6Py4K_A
10	Students will work in groups to arrange the order of events into a causal time line: settlers needed water for irrigation. Dam the Colorado River, floods over the canals, spews water into the Salton Sink. Salton Sink becomes the Salton Sea. Railroad fixes the dam breach and returns Colorado River to its original route. Students will use the time line from the Salton Sea Authority to aid them.	GROUP WORK	List events out of order on the whiteboard. Hand out the time line from the Salton Sea Authority as an aide in completing the time line.
20	As students encounter different maps at different stations, have them add details to their own map, including the Colorado River, the Salton Sea, the Alamo and New Rivers, and the Torres-Martinez Indian Reservation. Be sure to also compare titles, keys, scales, compass roses, and locator maps (if included).	MAP ANALYSIS	Distribute maps and set up stations. Also have an atlas with physical and political maps of California. As they travel from stations, have them add details to their own copy of a map.
5	Class discussion on the changes and how they affected the modern map of California.	DISCUSSION	Facilitate classroom discussion.
3	Students answer review questions individually. Start in class and finish for homework.	REVIEW QUESTIONS	Review Questions: Why did settlers want to change their environment? How did they change their environment? What unintended consequences happened as a result of this change? How did these changes affect the people of the Torres Martinez Indian Reservation? Circulate and monitor student work.

Time	Student Learning Task or Activity	METHOD	Teacher Activity
Day 3	SWBAT explain changes and adaptations by Americans to the Salton Sea.		
5	Lvl. 1: Where did the Salton Sea come from? Lvl. 2: How did the creation of the Salton Sea change the region of California? Lvl. 3: Predict how humans will adapt to the Salton Sea.	BELLWORK	Take attendance and other clerical duties, circulate around monitoring student work.
3	Students will watch the movie clip and discuss what it shows.	MOVIE	Watch from 1:48-2:17, the commercial advertisement for the Salton Sea, from "The Accidental Sea"
10	Students will make observations about how the area around the Salton Sea changed over time.	DISCUSSION and VIEWING GOOGLE EARTH	Use Google Earth to show how development around the Salton Sea has changed over time.
12	Using the brochure from the California State Park system on the Salton Sea, make a list of changes and adaptations people have made after the creation of the Salton Sea.	BROCHURE ANALYSIS	Model a change and an adaptation from the brochure. Circulate and monitor student work.
15	Design your own brochure for the Salton Sea, listing ways in which humans can interact with the environment.	INDEPENDENT WORK	Circulate and monitor student work.

Time	Student Learning Task or Activity	METHOD	Teacher Activity
Day 4	SWBAT identify challenges of current human-environment interactions with the Salton Sea.		
5	Lvl. 1: What ways do humans interact with the Salton Sea? Lvl. 2: Predict the impact these forms of interaction will have on the area. Lvl. 3: How is the environment of the Salton Sea similar to Mobile? Different?	BELLWORK	Take attendance and other clerical duties, circulate around monitoring student work.
15	In groups, analyze one of four newspaper articles on the Salton Sea. Then, switch into different groups, and teach the new members about your article.	CURRENT EVENTS GROUP JIGSAW	Model how to analyze newspaper articles with a fifth article, looking at who, what, when, where, why, and how.
5	Students will watch the movie clip.	MOVIE	Finish the film "The Accidental Sea."
10	Fill up a T-chart graphic organizer looking at changes humans are currently making on the Salton Sea, and the impact that those changes have.	PAIR WORK	Model one change, then circulate and monitor student work.
10	Write a letter suggestion to the Salton Sea Authority what you believe needs to be done with the Salton Sea. Give reasons why, and explain how your actions will affect human-environment interactions in the region.	INDEPENDENT WORK	Circulate and monitor student work.

Day 1 Ancillary Materials

PowerPoint Presentation

Guided Note Sheet

Edward S. Curtis Photographs

Diary Entry Prompt

The Cahuilla People



- **Several Cahuilla tribes lived in the desert regions of what is now Southern California.**
- **They made their villages around springs and beside mountain streams.**

Adapting to the Environment

- **The Cahuilla gathered seeds and plants, hunted, and fished.**
- **They used palm trees and other plants to construct their shelters.**



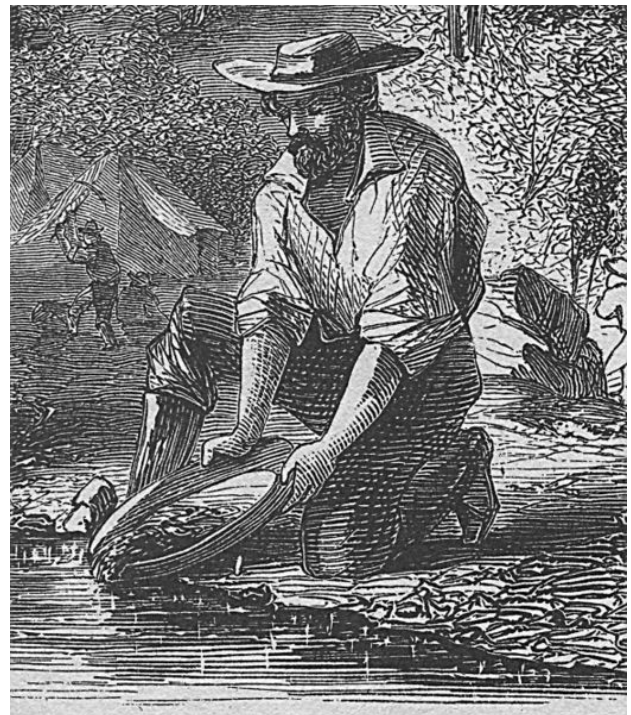
Franciscan Missionaries



- Through their contact with Franciscan missionaries, the Cahuilla learned the Spanish language and Christianity.

The Gold Rush

- In 1848, gold was found in California.
- Forty-Niners moved to California in the hopes of striking it rich.



An Influx of People



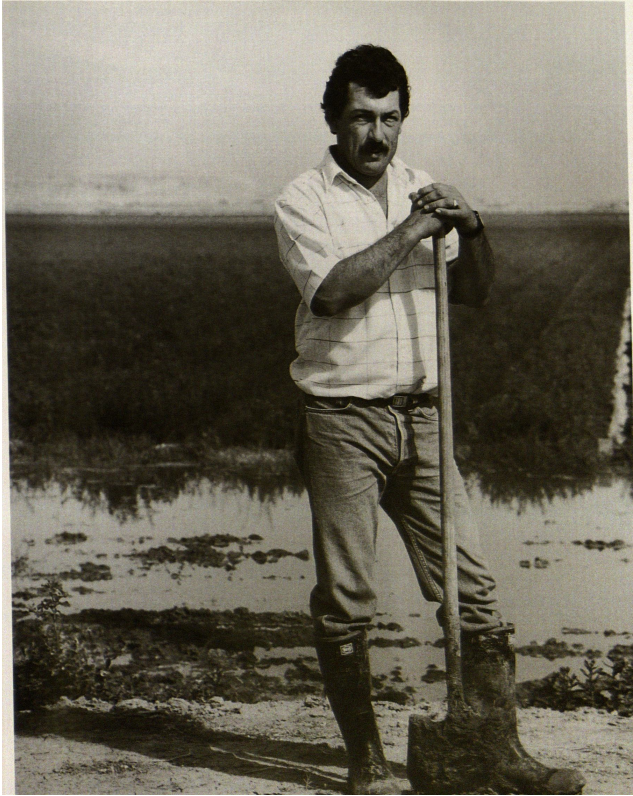
- Some 200,000 people moved to California as a result of the Gold Rush.
- These new people built roads, rails, and cities.
- They take land for farms and mines.
- California becomes a state in 1850.

Conflict with the Native Americans

- As Native Americans and new settlers competed for land, conflicts erupted.
- Native Americans led attacks on mining camps, while miners attacked Native villages.



The Reservations



- In response to the need for land and the conflicts with Native Americans, the Federal government forced the Cahuilla people onto ten small reservations.

The Torres-Martinez Reservation

- The Torres-Martinez Reservation was established by the Federal government in 1876 on 640 acres of land.
- Members of that band still live on the reservation to this day.





From Copyright Photograph 1904 by C. L. Curtis

A CAHUILLA CHILD *

Plate 520



San Yago, August 1849, N. P. H. S.

San Yago, August 1849, N. P. H. S.

CAHUILLA HOUSE IN THE DESERT



From Copyright Photograph 1924 by E. J. Currier

CAHULLA HOUSE IN THE DESERT



From Copyright Photograph © 1914 by E. P. Curtis

FIESTA CAMP—CAHUILLA *



From Copyright Photograph 1924 by C. J. Curtis

PALM FRUIT



From Copyright Photograph 1924 by E. L. Curtis

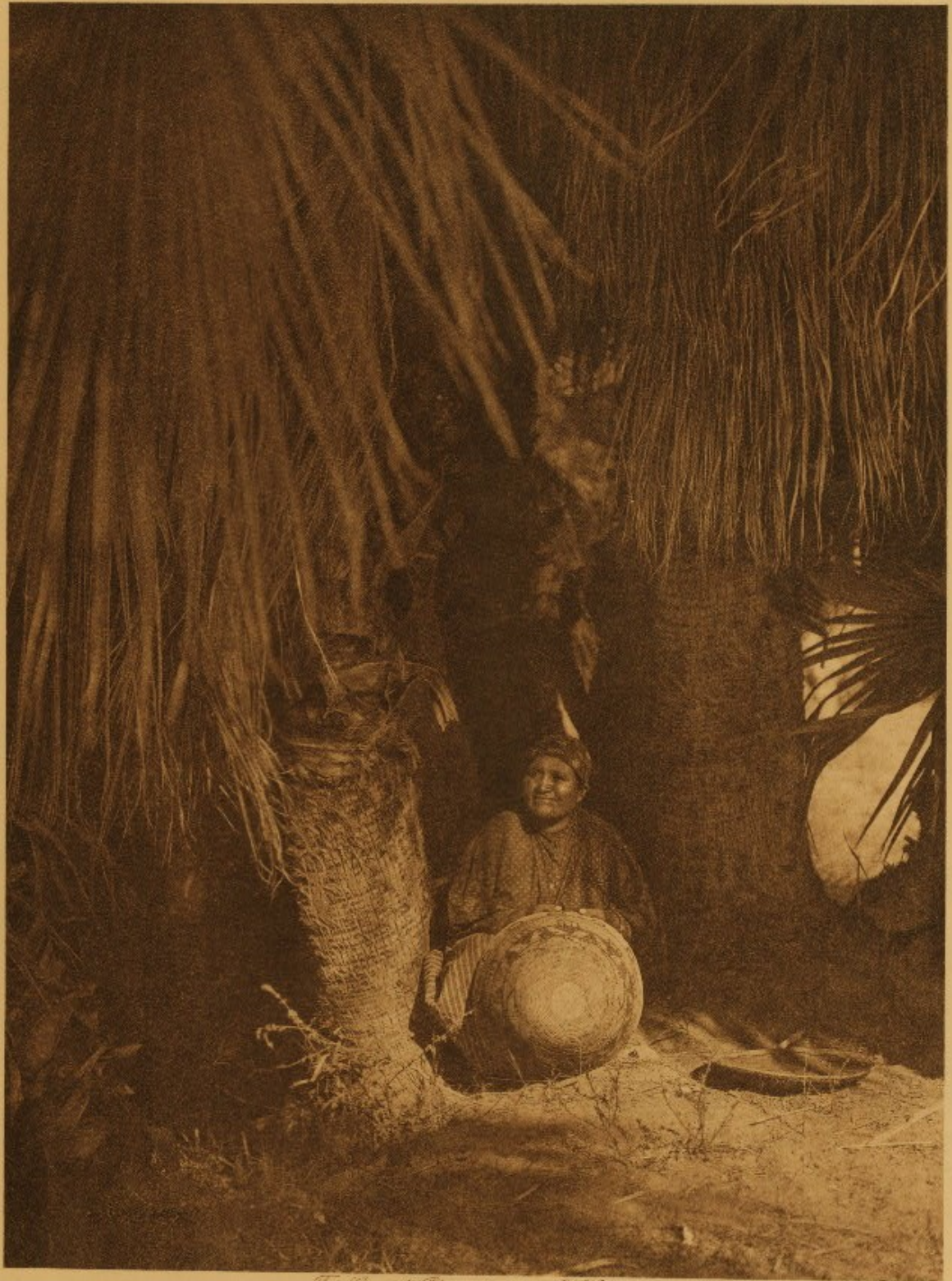
THE HARVESTER — CAHUILLA



UNDER THE PALMS - CUBA

From Havana, Cuba, by W. H. Wood

Photographed by W. H. Wood



From Copyright Photographs 1924 by E. J. Condit

UNDER THE PALMS — CAHUILLA

Name:
Date:

THE PHOTOGRAPHY OF EDWARD S. CURTIS

As you wander the art museum, record observations and inferences of the photos you see. You must record observations and inferences from at least four photos. You may do more. Remember, use your best museum behavior.

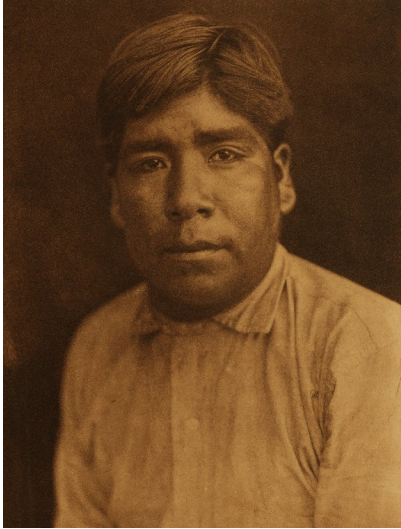
Photo Number	Observations	Inferences

Photo Number	Observations	Inferences

Name:

Date:

American History
Cahuilla Diary Entry



A Day in the Life of a Cahuilla Indian

Using facts from class and observations and inferences from the Curtis photographs, write a diary entry one of the Cahuilla Indians of the Torres Martinez Reservation may have written. Include examples of how they adapted to the environment of the reservation.

Day 2 Ancillary Materials

Salton Sea Authority Time Line

Maps

Review Worksheet

Timeline of the Salton Sea

1774: Spanish make first contact with the Cahuilla people, ancestors of present day Torres Martinez Desert Cahuilla Indians. There are 6,000 members of the tribe.

About 1825: Trappers, including Kit Carson, Jedediah Smith and William Wolfskill, make trips to the lower Colorado and the Salton Sink.

1840: Colorado River flooding recorded to the Salton Sink. New River possibly formed at this time.

1849: Oliver M. Wozencraft records a flood by the Colorado River into the Salton Sink.

1849: '49ers begin crossing Imperial Valley on their way to California gold fields, crossing the mountains via Carriso Creek and Warner's Hot Springs.

1852: More Colorado River flooding recorded to the Salton Sink.

1853: Imperial Valley recognized as potential desert "garden spot" if it can be adequately irrigated.

1859: More Colorado River flooding recorded to the Salton Sink.

1867: More Colorado River flooding recorded to the Salton Sink.

1876: U.S. Government establishes Torres Martinez Desert Cahuilla Indian Reservation with a grant of 640 acres.

1891: More Colorado River flooding recorded to the Salton Sink, forming 100,000-acre lake. Explorers discover mouth of Alamo River and connection between the sea and the Colorado River.

1891: 20,000 acres of land on the northern side of the Salton Sink are withdrawn from public use for the Torres Martinez Band of Desert Cahuilla Indians.

1892: New Liverpool Salt Company mining salt from a salt marsh centered west of the railroad in the Salton Sink.

1901: Imperial Canal brings water from the Colorado River to the Imperial Valley.

1904: Silt blocks the Imperial Canal preventing it from supplying water to the Imperial Valley.

1905: Temporary diversion of the Colorado River, constructed to replace water from the blocked canal, is breached by floodwaters. River changes course and flows into Salton Sink.

1906: Floodwaters continue to fill Salton Sea, washing away a chain of lakes along the route and

threatening Imperial Valley's fledgling agriculture industry.

1906: George Wharton James explores the flooded areas and reports seeing large concentrations of waterfowl, pelicans and other birds in the Salton Sea area.

1906: The Salton Sea is recorded at 195 feet below sea level.

1907: Floodwaters continue to fill Salton Sea until in February Southern Pacific Railroad closes the river breach.

1907: Sport fishing first promoted at Salton Sea.

1908: Joseph Grinnell surveys the refilled lake and finds breeding colonies of cormorants, white pelicans and other birds.

1909: Thinking the Salton Sea would be gone by the 1920s, the U.S. Government reserves in trust an additional 10,000 acres of land under the sea for the benefit of the Torres Martinez Band.

1911: Imperial Irrigation District formed; discussions begin promoting a new canal to supply water to the Valley.

1917-18 (about): Netting of mullet becomes profitable industry at Salton Sea during World War I.

1920 (about): Mullet Island on south end of Salton Sea and nearby mud pots become popular tourist attraction.

1924: President Coolidge issues an executive order setting aside lands under the Salton Sea as a permanent drainage reservoir.

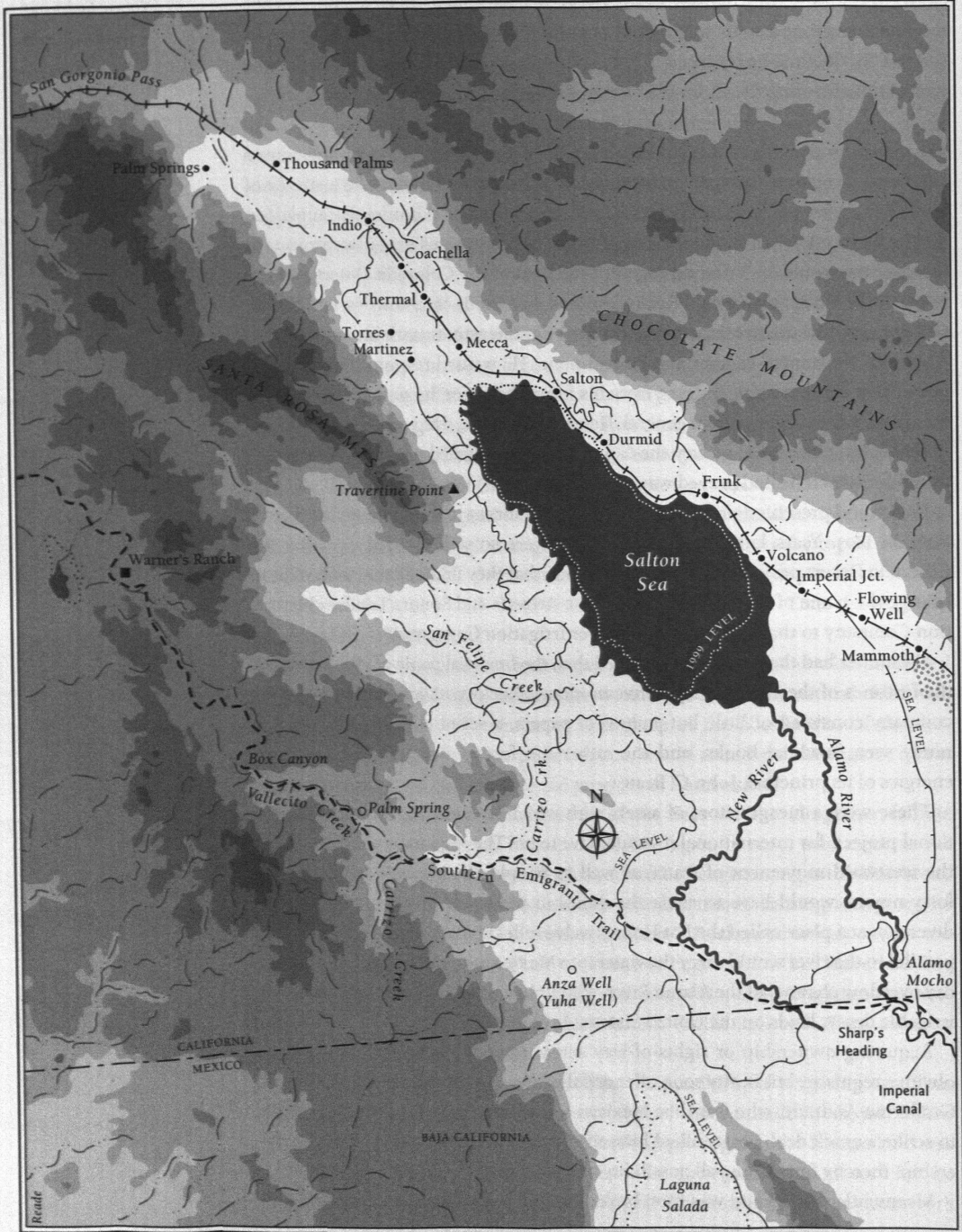
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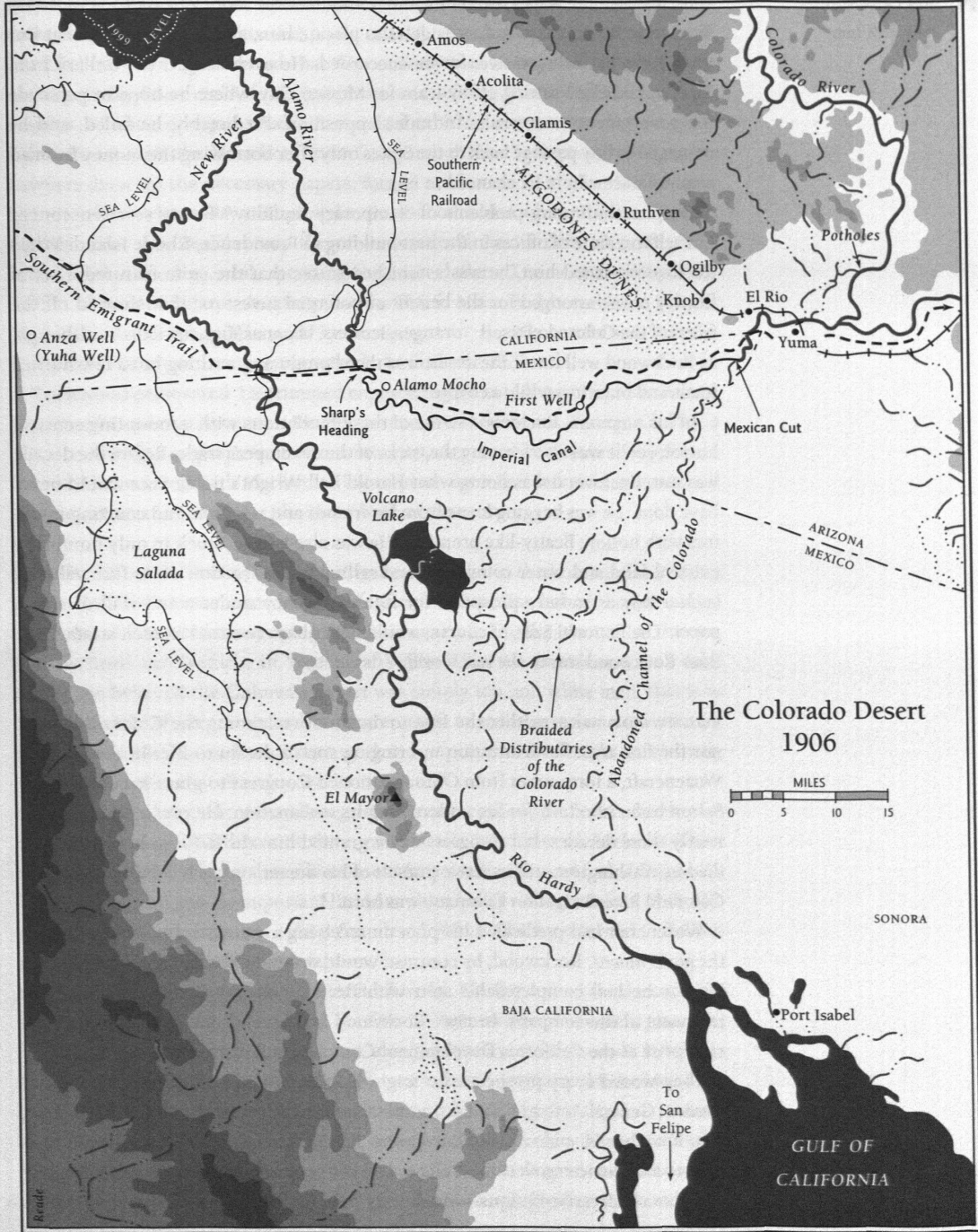
Salton Sea Authority, "History Chronology," 2011. www.saltonsea.ca.gov. Accessed July 2011.

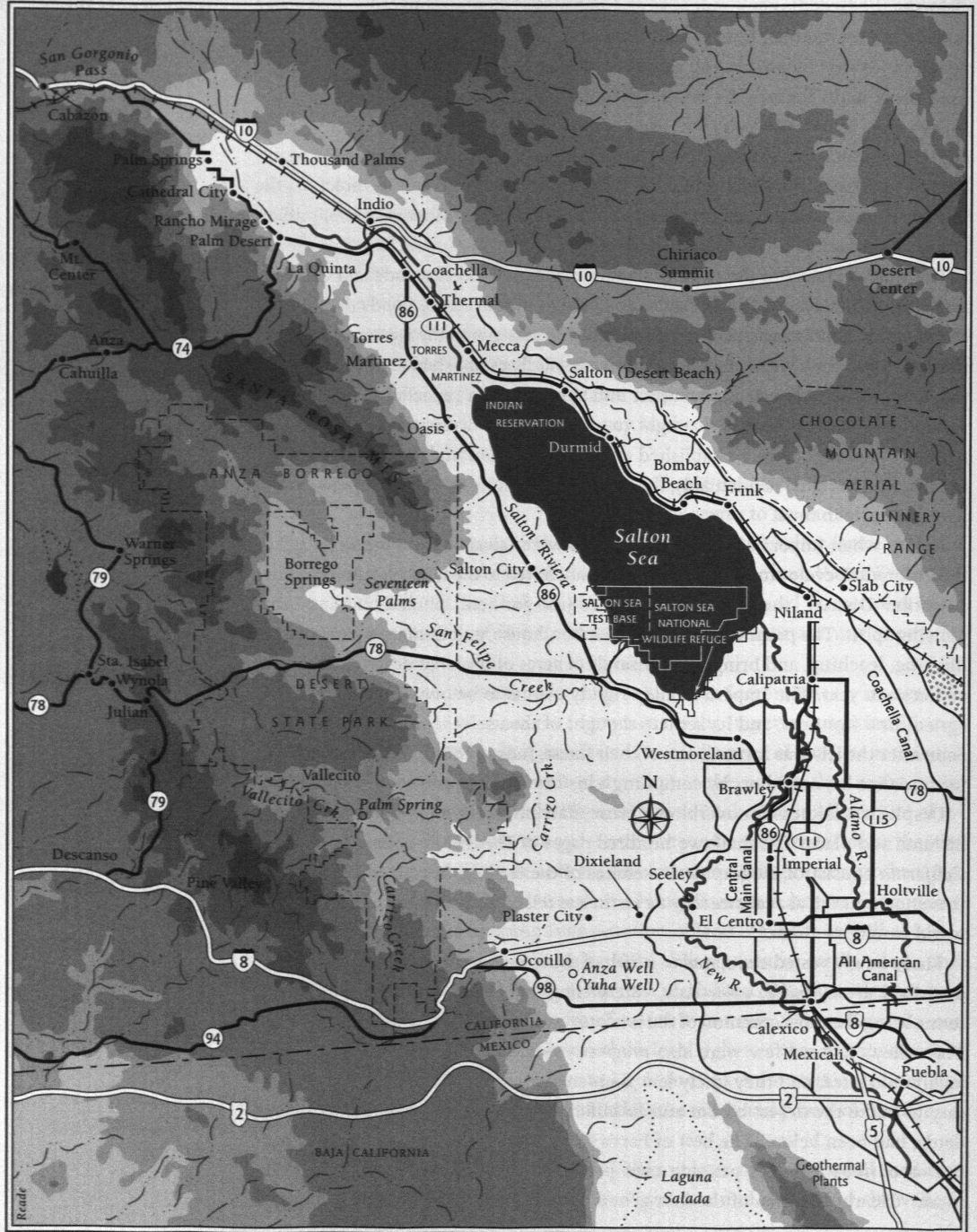
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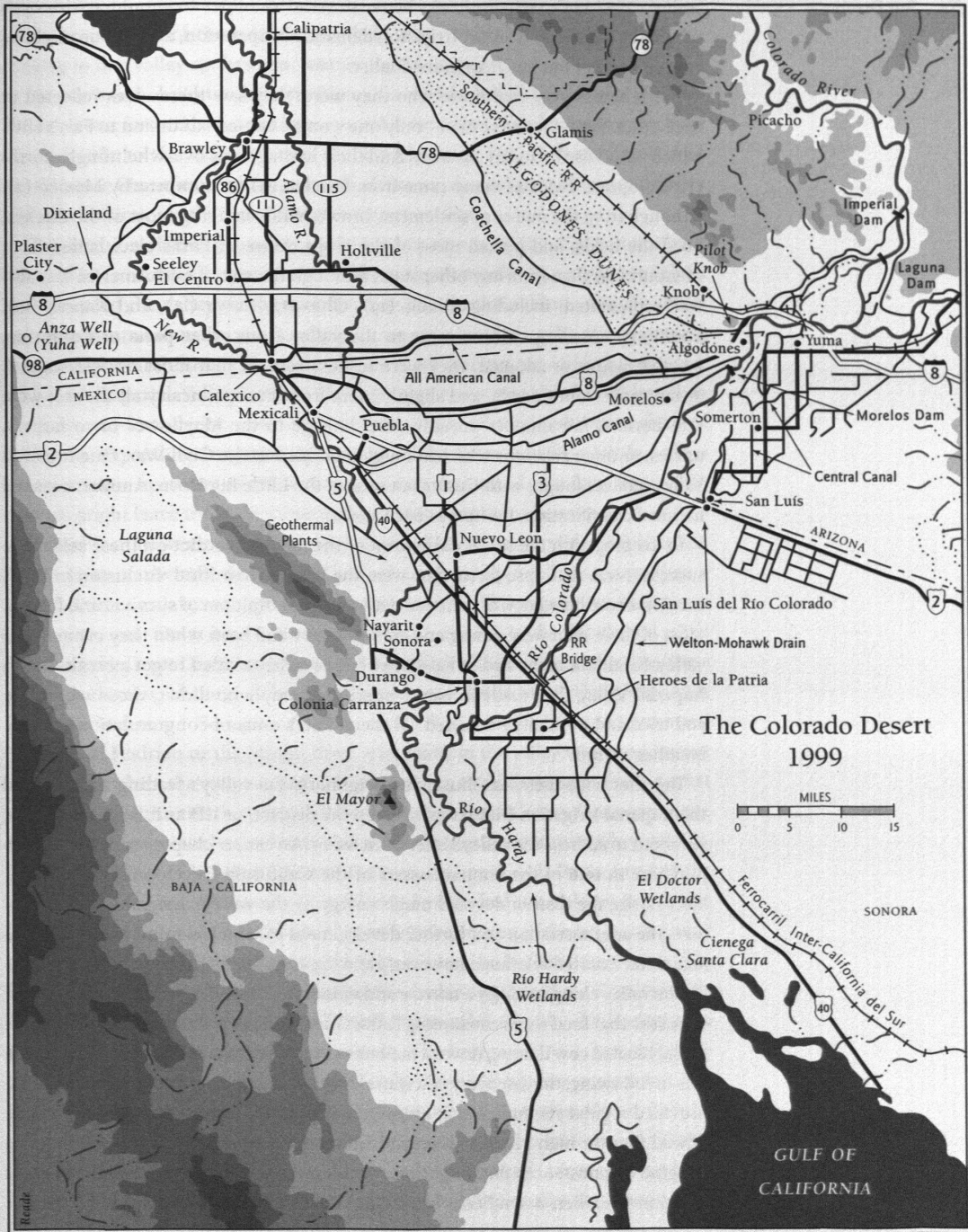
American History
Map Activity



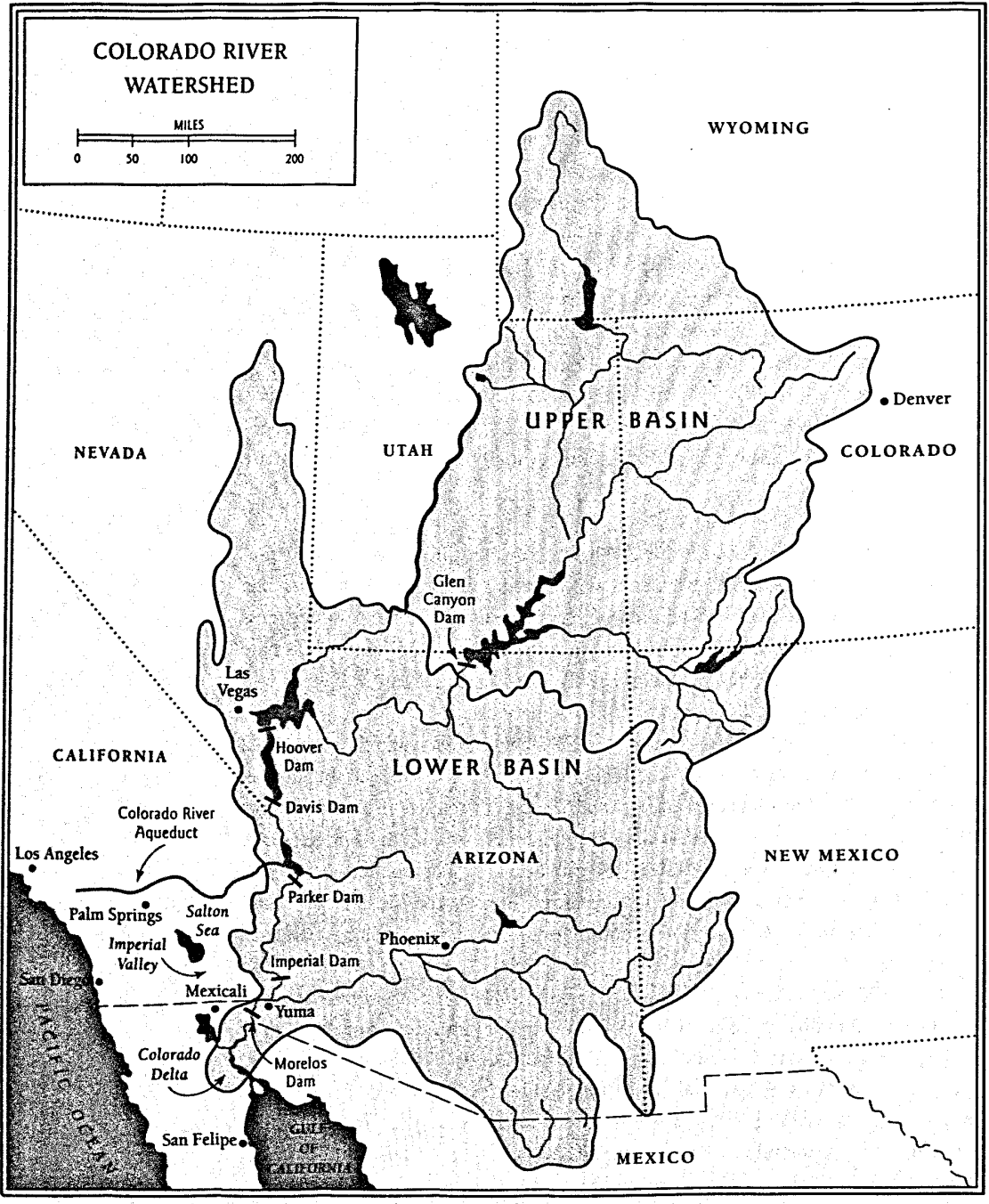












Name:
Date:

American History
Salton Sea Review

Salton Sea Review Questions

1. Why did settlers arriving in the Imperial Valley of California want to change their environment?
2. How did those settlers change their environment?
3. What were the consequences as a result of that change? Which consequences were intended, and which were unintended?
4. How did these changes affect the people of the Torres Martinez Indian Reservation?

Day 3 Ancillary Materials

Salton Sea Recreation Area Brochure