Hoover Dam

A Reading A–Z Level V Leveled Book
Word Count: 1,356

LEVELED BOOK • V

Connections

Writing

Research to learn more about the Great Depression. Write a five-paragraph essay answering the following question: What impact did the Great Depression have on the United States?

Social Studies

Create a model or diagram of Hoover Dam. Use information from the book and research to find additional information.

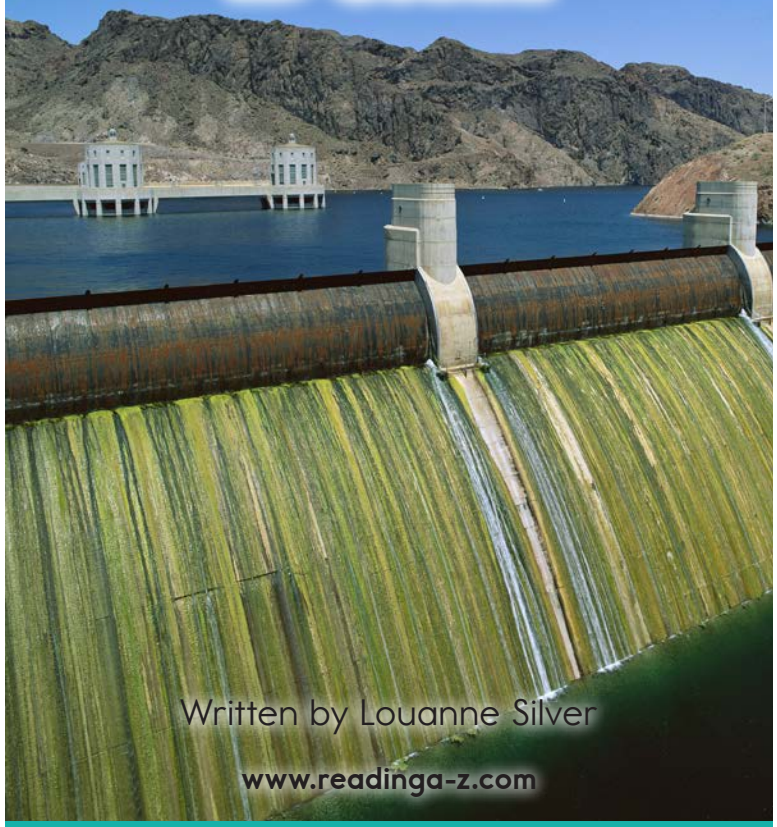
Hoover Dam

WORLD LANDMARKS

Written by Louanne Silver

www.readinga-z.com

Hoover Dam



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Focus Question

What makes Hoover Dam a significant United States landmark?

Words to Know

bedrock	impressed
compresses	irrigate
converts	parched
divert	reservoir
facilities	silt
fluctuating	transformed

Front and back cover: A view of Hoover Dam at sunset from the Mike O'Callaghan–Pat Tillman Memorial Bridge

Title page: Spillways on the upstream side of the dam prevent the dam from overflowing.

Page 3: On guided tours, visitors go inside the dam to get a behind-the-scenes look at how the dam works.

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Correlation

LEVEL V	
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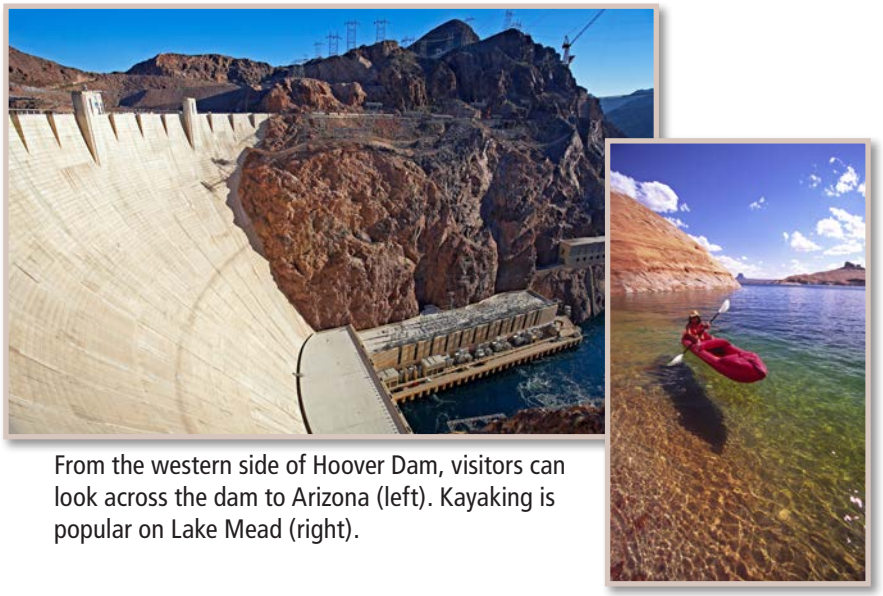


From the western side of Hoover Dam, visitors can look across the dam to Arizona (left). Kayaking is popular on Lake Mead (right).

Water in the Desert

Every summer in parts of the southwestern United States, temperatures often exceed 100°F (38°C). Much of the region receives less than 10 inches (25.4 cm) of rainfall each year.

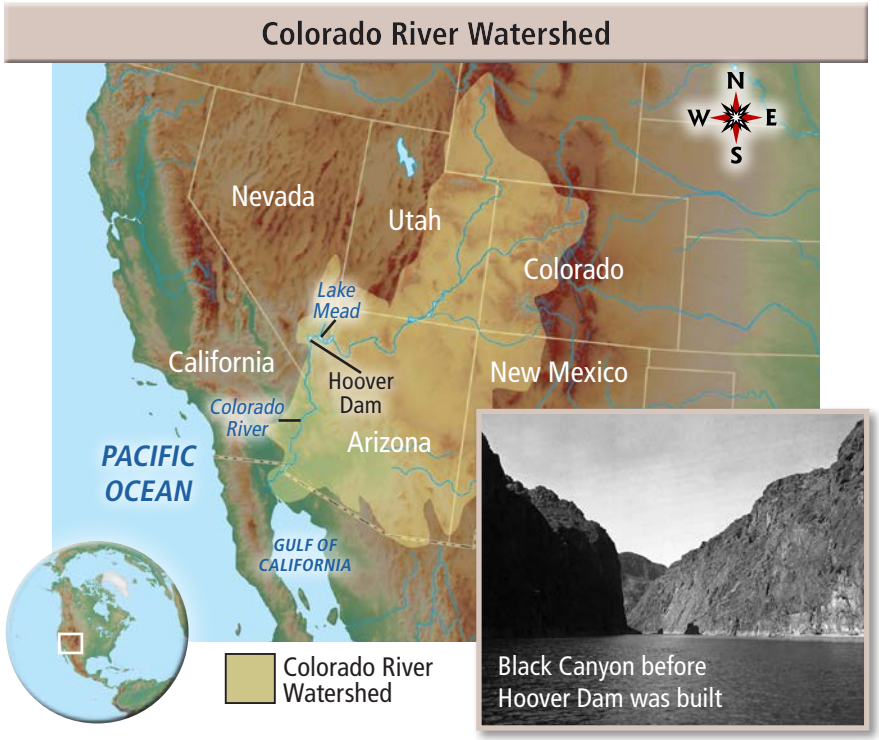
So why do millions of people visit the area every year—especially in summer? Why do they come to fish, boat, water-ski, and swim in an enormous refreshing lake? How is this possible in such a dry, sun-baked place?

The U.S. Southwest was **transformed** when Hoover Dam was built in the 1930s. Construction of this iconic landmark brought water and power to **parched** desert lands. The dam allowed cities, agriculture, and recreation to grow.

Why Build a Dam?

Hoover Dam is located on the Colorado River in the Mojave (moh-HAH-vee) Desert on the border between Arizona and Nevada. The location is about 30 miles (48 km) southeast of Las Vegas, Nevada.

The government built Hoover Dam in Black Canyon, a tall, narrow canyon chosen because its **bedrock** and walls were solid. They needed to be to support such an enormous structure. Because Hoover Dam was the first dam on the Colorado River, it had to be extremely large to control the river on its own. A very tall canyon was required.



Colorado River floodwaters filled much of Imperial Valley in 1905 and created the Salton Sea. It took two years to get the water under control.

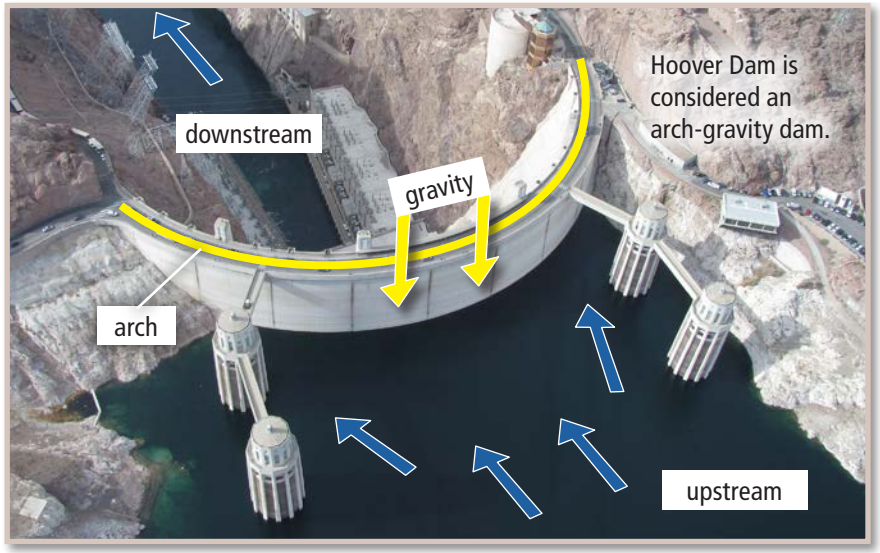
The Colorado River winds through the southwestern United States, bringing life-giving water to an otherwise dry region. People have lived along the Colorado's banks for centuries and have used its water to **irrigate** crops. However, the Colorado was a **fluctuating** source of water long ago. Each spring, the river grew with snowmelt, often to the point of flooding farmlands. Later in the year when it shrunk to a trickle, crops would die. Early settlers were discouraged by the changeable water supply, so some people sought a way to control the river.

In 1901, a private company built Alamo Canal just north of the Mexican border. The canal's purpose was to **divert** the Colorado's flow westward to provide irrigation to California's Imperial Valley. As a result, farming did very well. However, severe flooding in 1905 destroyed the canal's control gates and ruined much of Imperial Valley.

Imperial Valley residents wanted a larger canal. Arthur Powell Davis was chief engineer of the government agency that manages water in the West. He thought that constructing a dam along the river would be a better solution and would get more water to more people. After studying the Colorado, he reported his findings to Congress in 1918. Ten years later, Congress approved construction of Hoover Dam along with a canal to provide irrigation to Imperial Valley. In 1930, President Hoover authorized spending for the project.

The Great Depression began only eight months before the Hoover Dam project was approved. It was a time of great economic hardship in the United States. Millions were out of work. In total, 21,000 people flocked to southern Nevada for the construction jobs. President Hoover wanted to put as many people to work as possible. He ordered construction to begin before housing, drinking water, a hospital, or other **facilities** were in place.

At first, some workers and their families lived in camps that lacked electricity and running water. Homes were tents, and people bathed in the Colorado River.



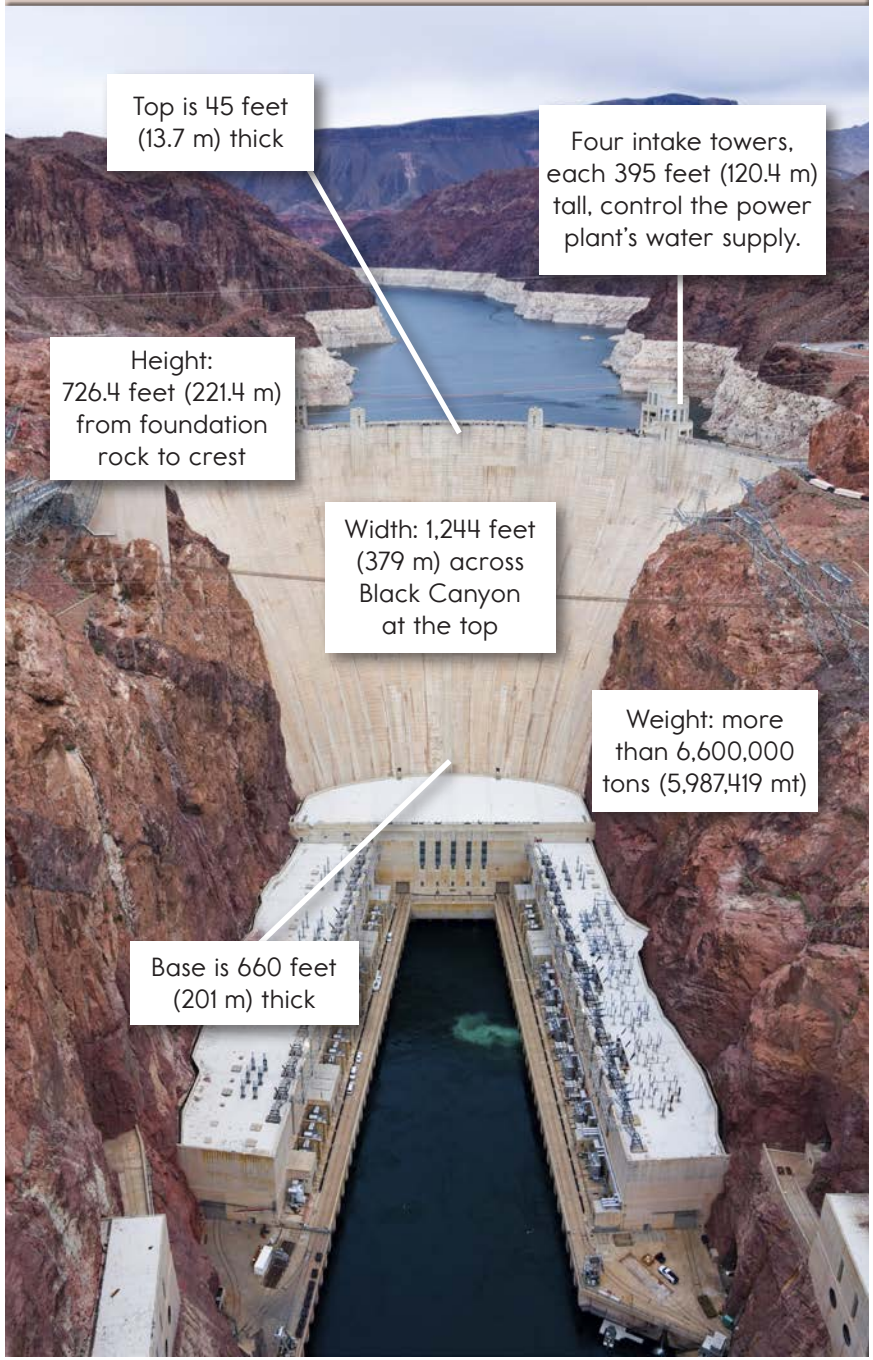
A Massive Dam

Hoover Dam was the tallest dam in the world when it was built. Constructing the dam was an amazing engineering feat that required the skills of six different companies working together.

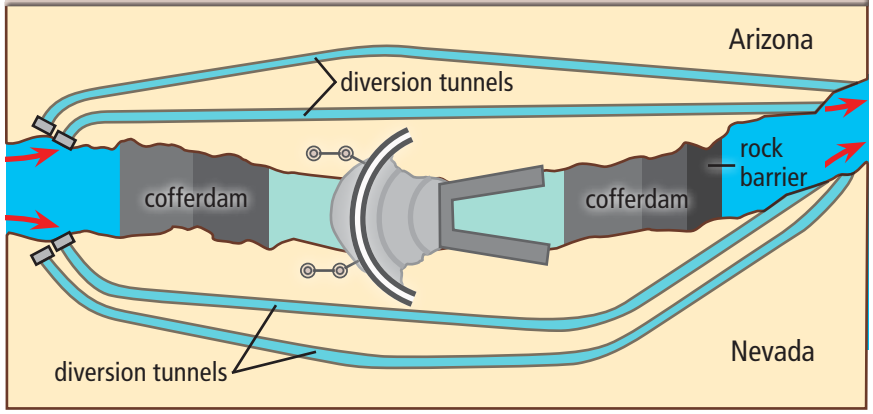
Hoover Dam combines the features of a gravity dam and an arch dam. A gravity dam relies on its own weight to resist the force of stored water. An arch dam, which curves upstream, causes most of the water to flow against the canyon walls. The flow of water squeezes the arch, which **compresses** and strengthens the dam.

Hoover Dam's power plant **converts** the energy of moving water into electricity. Lake Mead, the dam's **reservoir**, is the largest human-made lake in the United States.

Parts of Hoover Dam



Hoover Dam Diversion Map



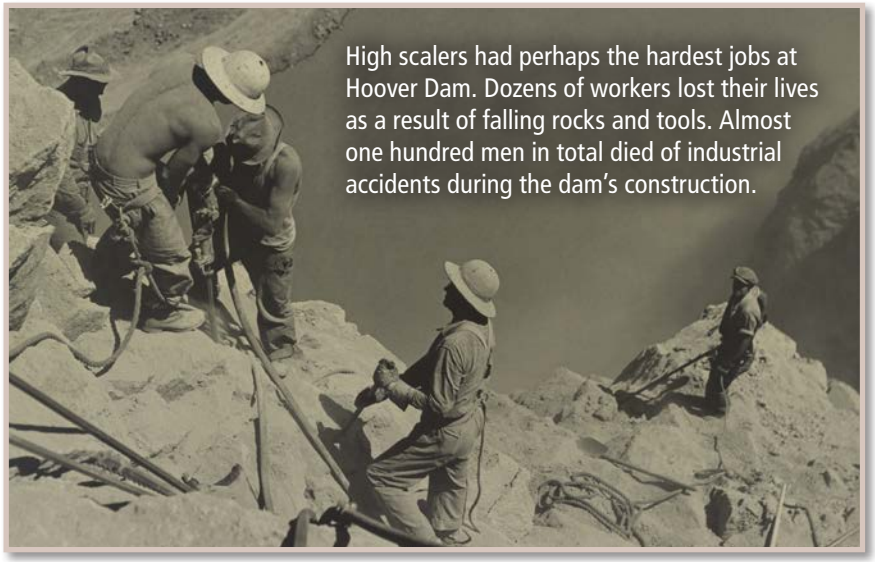
Constructing the Dam

In order to build Hoover Dam, the dam site first had to be dry. The enormous task of diverting the Colorado's water began in May 1931. Workers used dynamite to blast two tunnels on each side of the canyon to carry the Colorado's water around the site. Once the tunnels were completed, they were lined with concrete. Creating the diversion tunnels was extremely dangerous. Workers were exposed to falling rocks and fumes from the use of gasoline-powered vehicles in the tunnels.

Above the ground, other workers built watertight barriers called *cofferdams* above and below the dam site. The higher cofferdam would divert water into the tunnels, and the lower one, along with a rock barrier, would keep water from flowing back upstream and flooding the construction site.

At the same time, "high scalers" removed loose rock from canyon walls and cut grooves where the dam would attach. These workers often dangled high above the river on wooden swings in 120°F (49°C) heat while using jackhammers and dynamite.

Other projects were taking place at the same time. Boulder City was being built so workers would have homes, a hospital, and other facilities. Railroad tracks were installed near the dam site so supplies could be delivered, and a road was built between Boulder City and the dam site. In addition, workers installed a power line 222 miles (357 km) long from San Bernardino, California, to Black Canyon to provide power for the dam's construction.



High scalers had perhaps the hardest jobs at Hoover Dam. Dozens of workers lost their lives as a result of falling rocks and tools. Almost one hundred men in total died of industrial accidents during the dam's construction.

Once the diversion tunnels were finished, the site was pumped dry. The dam had to sit on solid bedrock, which was buried under 135 feet (41 m) of **silt** and stones. The last of that material was excavated on June 6, 1933—about two years after work had begun on the tunnels. Finally it was time to build the dam.

Workers lowered huge buckets of wet concrete into block-shaped molds, called *forms*. Other workers smoothed the concrete and got rid of air bubbles before the concrete hardened and more layers of concrete were added. Narrow steel pipes carried cold water through the forms to cool the concrete quickly. Once the concrete had hardened, the wooden form was taken apart and put back together on top of the finished block. After that block was finished, another one was built on top of it. When the columns of blocks reached their final height, the spaces between them were filled with grout.

Rather than being a single block of concrete, the dam was built from concrete blocks that were stacked to form columns.

After the dam was complete, workers built passages called *spillways* to carry high water around the dam in case the Colorado River ever flooded. Then they built the power plant and the four intake towers that would control water flow to the power plant.

By February 1, 1935, the work was finally completed. Workers plugged the diversion tunnels that had been allowing the Colorado's waters to bypass the dam site. Water started rising behind the dam, overflowing the cofferdam, and forming Lake Mead. By the time the project was finished, more than 21,000 men had worked on it, with an average of 3,500 each day. The project cost $165 million, which is equal to $3 billion or more today.

Wowser!

- Hoover Dam, along with its power plant and other structures, contains enough concrete to pave a highway from San Francisco to New York City.
- The construction of Hoover Dam used over 5,000,000 barrels of cement—between 7,500 and 10,800 barrels each day.

President Roosevelt dedicated the dam on September 30, 1935. He called it "the greatest dam in the world."

Visiting the Dam

Hoover Dam has welcomed visitors since 1937. Millions of people visit the dam each year, and close to a million take tours of the dam and power plant. The visitor center has displays about the region's natural history as well as the history and construction of the dam. If you go, be prepared to be **impressed**. Visitors describe their experience with words like *spectacular, amazing*, and *incredible*.

Fishing, boating, picnicking, and hiking are available year-round at Lake Mead. The area has nine wilderness areas, five hundred types of animals, and nine hundred types of plants.

From inside the visitor center, tourists get a bird's-eye view of Hoover Dam. Guided tours give behind-the-scenes details of the dam.

In 1930, Las Vegas was a railroad hub with only about 5,000 residents. After Hoover Dam was built, the city's population swelled to over 8,400 in 1940 and over 24,600 in 1950. As of 2013, Las Vegas had over 600,000 residents.

Changing the Southwest

The Colorado River is the main source of water in the southwestern United States. Hoover Dam controlled the Colorado for the first time in history and supplied farmers in Arizona, Nevada, and California with a trustworthy source of irrigation. The dam also provided drinking water and affordable electricity, which allowed Los Angeles, San Diego, Las Vegas, Phoenix, and other cities in the Southwest to grow. In addition, Hoover Dam provided jobs for thousands of men and became a symbol of hope during a very hard time.

The difficult and dangerous task of building Hoover Dam took place over seventy-five years ago, and the dam's last known construction worker died in 2014. Yet the stories live on in every ton of concrete in one of America's most remarkable landmarks.

Glossary

bedrock *(n.)* a layer of solid rock underneath the ground's surface (p. 5)

compresses *(v.)* squeezes or presses tightly together to make something smaller (p. 8)

converts *(v.)* changes the nature or form of something (p. 8)

divert *(v.)* to cause something to change direction (p. 6)

facilities *(n.)* buildings or areas with equipment that makes certain tasks easier (p. 7)

fluctuating *(adj.)* having a tendency to shift back and forth or up and down; changeable in level, rate, or intensity (p. 6)

impressed *(adj.)* strongly affected, especially in a positive or lasting way (p. 14)

irrigate *(v.)* to supply land with water, especially to help crops grow (p. 6)

parched *(adj.)* very dry or lacking moisture (p. 4)

reservoir *(n.)* a large tank or lake used for collecting and storing water for human consumption or agricultural use (p. 8)

silt *(n.)* fine-grained soil or other materials that are carried by running water and deposited elsewhere (p. 12)

transformed *(v.)* changed in form or appearance (p. 4)