**KEY THEMES**

**Geographical Influences**
Oklahoma as a place is defined by its landforms, natural resources, and climate.

**Commerce and Economic Development**
Oklahoma's landforms help shape its economy.

**OBJECTIVES**
- Identify the 10 geographical regions of Oklahoma by their landforms, rainfall, and plants
- Describe how the Cross Timbers helped create an east-west division of Oklahoma
- Analyze the importance of water and water transportation in the development and economy of the state

**KEY TERMS**
- geologists
- geographers
- landforms
- precipitation
- strip mined
- gypsum
- mesas
- Cross Timbers
- contour plowing
- prehistoric
- rhyolite
- water banking
Oklahoma’s large and varied landforms include mountains, plains, mesas, and prairies and wide rivers, rocky creeks, and dozens of lakes. Pine forests in southeastern Oklahoma contrast with short grasses in Western Oklahoma’s high plains, tall grasses in the Osage Hills, and blackjack oaks in the Cross Timbers. The wind blows everywhere—in all seasons.

In 1832 a famous American author named Washington Irving wrote a vivid description of some of the most outstanding features of Oklahoma’s landscape. Stately forests in glowing autumn colors reminded him of columns in Gothic cathedrals, sunlit through stained-glass windows. To him, prairies were sublime because of their vastness and simplicity. The Cross Timbers, on the other hand, were “forests of cast iron” that could be penetrated only with “mortal toil” and “vexations of flesh and spirit.”

As Irving’s descriptions affirm, the forces that gave birth to Oklahoma endowed it with a natural environment remarkable for its beauty, richness, and variety. Geologists (scientists who study the history of the earth and its life) and geographers (scientists who study various features of the earth’s surface) divide Oklahoma into 10 geographical regions (see the map on the following page). They use factors such as landforms (surface features of the land), soil types, plants, animals, climate, and even economic activity to define these regions. This is a useful scientific activity, but the same results are apparent to anyone who takes a moment to look around at his or her surroundings.
The Land

Much of Oklahoma consists of flat, fertile plains and low hills. Oil and natural gas wells can be seen throughout many parts of the state. Oklahoma’s plains also host large herds of cattle and vast wheat fields.

On the eastern side of the state are two areas of mountains. Their peaks rise to more than 2,000 feet above their bases. Tucked away in quiet places are unique rock formations, springs, and waterfalls. Rivers, fed by 40 to 50 inches of precipitation (rain and snow) per year, are clear, full, and swift. Huge forests are filled with oak, hickory, and pine trees. Here wood pulp is processed, coal is mined, and cattle graze in valley meadows. This is the majestic landscape of the Ozark Plateau and the Ouachita Mountains. The Ozark Plateau, in the northeast, is an extension of the Missouri and Arkansas landscape. It is marked by rivers with deep valleys separated by broad, flat areas. The Ouachita Mountains are sandstone ridges in the southeast. Running east to west, they form the roughest terrain in Oklahoma. Spring-fed streams run through narrow valleys between the ridges.

West and south of the Ozark Plateau lies the region known as the Prairie Plains, in a semicircle that extends from Arkansas to Kansas. Amid these plains are low sandstone ridges known as cuestas, which have a steep incline on the east and a gentle slope on the west. High, forested ridges, called mountains locally, are also seen. In this region the main rivers run north to south through gentle prairies. The bluestem grass of these prairies can grow to seven feet tall. In this region, coal is strip-mined (mined at the surface), and oil and natural gas are pumped from under the ground. In fact, most of the state’s coal and a great deal of oil are produced here. Cattle and horses graze on the Prairie Plains, and hay is grown to feed them. Farms in the Arkansas River valley east of Muskogee produce spinach, beans, and carrots.

Bordering the Prairie Plains region in north-central Oklahoma are the Sandstone Hills. These rolling hills range from 250 to 400 feet high. Tall prairie grasses or scrub oak trees cover the hills and the sandy soil. Some of the hills are blanketed with blackjack and post oak forests. It was in this region that oil drilling began in Oklahoma, and some of the state’s famous oil fields are nearby. Heavy erosion due to poor farming practices is evident. In this region, towns are small to midsized.

The Arbuckle Mountains area consists of about 1,000 square miles in south-central Oklahoma. These low mountains rise about 600 to 700 feet above the plains. Unusual rock formations have been created by erosion in the mountains. The area is used for cattle grazing. Another region of mountains, the Wichita Mountains, is found in southwestern Oklahoma.

Along the Texas border in southeastern Oklahoma is the rolling prairie of the Red River Plains. Elevations are lower, soils are sandier, and growing seasons are longer.
than in the rest of the state. Although the terrain is fairly level, some forested hills are found in the area. Pine trees are abundant, and cypress trees are common. Cotton, soybeans, peanuts, and vegetables are grown in the sandy, fertile soil. Also seen here are pastures filled with livestock, meadows of hay, and evidence of old plantations that were once worked by slave labor.

To the west of the Sandstone Hills are the Red Bed Plains. The largest land region in Oklahoma, the Red Bed Plains stretch from the Kansas border in the north,
southward through the center of the state. This rolling prairie has a few low ridges, and slopes upward from east to west. In the east are some forested areas. In the west the region is covered with grass, including tall blue-stem and short buffalo grasses. Flowing west to east, the main rivers are wide, and post oak and blackjack oak trees grow along them. The soils and rocks are reddish. Winter wheat and cotton are the main crops, and cattle and horses are raised. Oil and natural gas pumps, tanks, pipelines, and processing units are seen throughout the region. The area gets about 32 inches of rain each year and has many more sunny days than cloudy ones. Snow falls here occasionally.

The Gypsum Hills lie west of the Red Bed Plains and extend north to the High Plains in the northwest. These low hills (150 to 200 feet high) are capped with layers of gypsum (a white mineral used to make plasters and cements) 15 to 20 feet thick. Because the gypsum sparkles in the sunlight, these blood-colored mesas (flat-topped hills with cliff-like sides) are sometimes called the Glass Hills. The region is similar to the Red Bed Plains in its size, economy, vegetation (plant life), and terrain. But the Gypsum Hills area has sandier soils, higher and lower temperatures, six inches less rain per year, and shallower rivers in deeper channels.

The High Plains, in northwestern Oklahoma, are level grasslands. These plains are about 2,000 feet above sea level in the east and rise to 4,973 feet above sea level at Black Mesa in the west. The elevation is higher and the climate is drier in this region than anywhere else in Oklahoma. The straight line of distant horizons is interrupted only along the edges, or “breaks,” of the rivers. The elevated lands extending beyond the rivers are covered with short buffalo grass, while the mesas are cloaked in juniper and piñon trees. Winter wheat, cattle, petroleum, and natural gas anchor the economy—a mix that gives the area the highest income per person in the state. This region includes the Oklahoma Panhandle, a strip of land between Colorado and Kansas in the north and Texas in the south. The Panhandle is 166 miles long and only 34 miles wide.

The Cross Timbers

Geographical features, as defined by scholars and by common sense, are important to history because they influence the region over time. That is true for all 10 regions of Oklahoma, but it is more obvious in some
regions, such as the Cross Timbers. This unique vegetation zone cuts across several of Oklahoma's geographical regions, including the Sandstone Hills. The “cross timbers” are post oak and blackjack oak trees that grow so close together that they form a natural barrier between the western plains and the eastern prairies and mountains.

Like Washington Irving, early travelers and settlers found the Cross Timbers hard to penetrate. Plains Indians like the Comanches and the Cheyennes almost always stayed west of them. So did Texas cowboys who drove cattle north to Kansas markets. The first railroads built their lines either east or west of the Cross Timbers, and the routes of modern interstate highways generally avoided them. The largest cities in Oklahoma lie outside their borders.

The first farmers could cultivate only the scattered small meadows in the Cross Timbers. The sandy soil was fertile, but it quickly eroded after it was plowed. In less than a generation, most farms were unproductive, and most farmers lived in poverty. This heritage of broken dreams partly explains why many of Oklahoma’s radical political and religious groups started in the Cross Timbers. This area once gave the state many socialist sympathizers like Woody Guthrie, and later produced many faith-healing evangelists, like Oral Roberts.

The physical traits that define geographical regions have also led to economic and political rivalries and different lifestyles. The treeless highlands and rich soils of the western plains promoted large-scale farming, ranching, and a cowboy culture. The “cast-iron” forests and eroded soils of the Cross Timbers limited farmers to small tracts of land, to crops of cotton and corn, and to the small-farm lifestyle common in the South. Since statehood, the two areas have fought each other for political power. Today this east-west rivalry is seen from high school football fields to the floor of the state legislature.

**Tornado Alley**

Few natural features of the state affect Oklahomans more than the weather. All radio and television stations broadcast long reports several times a day on current conditions and forecasts. In the spring, neighbors spend many evenings watching large clouds rolling in from the west. If they spot a twister, they are ready to run to their storm cellar. Storm watching, someone has said, is Oklahoma’s largest spectator sport. Sometimes it becomes a participant sport when twisters touch down.

Why all the interest in the weather? For one thing, Oklahoma’s weather is variable. A norther can turn a warm spring day into a bone-chilling blizzard. On the other hand, temperatures can sometimes rise above 90°F in late fall or early winter. Hot, dry daytime winds in the summer are followed by gentle evening breezes. Thunderstorms hold such power that they can produce baseball-size hail, dazzling displays of lightning, and sheets of rain. Nothing, however, is as awesome as the funnel-shaped tornado that dips out of the sky and devastates all that it touches.

Since 1950, Oklahoma has experienced an average of 53 tornadoes annually. In 1999 alone, 146 were reported, with 73 occurring during a 24-hour period starting on the afternoon of May 3. These storms annually do...
millions of dollars’ worth of damage and kill an average of five people. No wonder that Oklahoma is often called Tornado Alley and is featured in movies like *Twister* (1996). These statistics also explain why the federal government operates the National Severe Storms Laboratory in Norman.

What accounts for the variety in Oklahoma’s weather? The answer is that the state is located where three climatic regions—humid, subhumid, and semiarid—meet. There are only two other states where that happens (Kansas and Texas). Yet, overall, the mixing of cool dry air from Canada and warm moist air from the Gulf of Mexico produces very pleasant weather in Oklahoma. There are almost as many days of clear sunshine as there are days with cloudy or partly cloudy skies. The average annual temperature is about 60°F. But usually the temperature exceeds 100°F several days each summer and falls below 0°F several days each winter. The growing season—the length of time between killing frosts—averages 207 days. It varies greatly across the state, ranging from 180 days in the Panhandle to 340 days in far southeastern Oklahoma.

The distribution of precipitation across the state varies even more than the temperature. The Panhandle’s Black Mesa receives only 15 inches of rain a year on average. The Ouachita Mountains in the southeast are drenched with more than 52 inches annually. In the Panhandle, that moisture comes mostly in the summer and spring; in other parts of the state, it is rather evenly spread out during the year, but spring is the wettest season. In general, western Oklahoma gets less moisture than it needs, because water evaporates faster there, and the eastern part of the state gets more than it requires.

**Fertile Soils**

The soils in Oklahoma are among the world’s most fertile. The soils in eastern Oklahoma are the least productive, mainly because heavier precipitation there leaches, or drains, them of nutrients. The reddish prairie soils elsewhere are naturally fertile, and with the right amount of moisture they can be very productive. The problem is that moisture is generally scanty on the western plains. Successful agriculture there depends on additional supplies of surface water or groundwater.

Climate and soils have greatly affected Oklahoma’s history. For example, rich soils, adequate rain, and a long growing season combined to make agriculture the state’s main economic activity until just recently. Today many more Oklahomans work in nonfarm jobs than in farm jobs, but field crops, horse breeding, and cattle raising are still important in the economy. Some observers say that the climate and the soils have also helped shape the personality of individual Oklahomans. Some Oklahomans, they say, have become both resigned and persistent after facing the power of a tornado, the hardship of a drought, or the destruction of a flood.

**Riches of the Forest**

A natural resource often overlooked by those in and outside Oklahoma is the forest that covers one-fifth of the state’s land. More than 130 species of trees are native to Oklahoma. Some that may be familiar are the redbud (the state tree), the pecan, the dogwood, the walnut, the elm, and the cottonwood. Hardwoods (like oak and hickory) and softwoods (like cypress trees and shortleaf and loblolly pines) once grew dense on the eastern side of the state. Because of occasional fires and the lack of sunlight, few plants grew on the forest floor.

After the Civil War, Oklahoma residents began to harvest the forests for commercial purposes. This harvesting sped up as railroads came to Oklahoma and opened markets for wood products. Within 50 years, loggers had cut down nearly all of the virgin stands of hardwoods, pines, and cypress on the Ozark Plateau, in the Ouachita Mountains, and on the Red River Plains. This “cut out and get out” method of harvesting threatened the future of Oklahoma’s timber industry. Fortunately, a conservation movement that began in the 1920s saved it. Planting fast-growing types of pine trees and using contour plowing (cultivation that goes around hills instead of up and down them) helped restore the forests.

The Talimena Scenic Byway weaves through one of the prettiest areas of the state where forests are large.
Modern foresters, knowing the value of a diverse ecosystem, now harvest timber by selective methods rather than by clear-cutting. The result is a thriving lumber industry that pumps half a billion dollars into the state economy each year from 5 million acres of land.

**Salt Plains and Tallgrass Prairies**

The history of Oklahoma has also been shaped by its natural wonders, many of which have been known for centuries. Consider, for example, the Great Salt Plains in Alfalfa County, which cover 120 square miles. One early explorer described this area as a “lake of white water.” But it is not very much like a lake. It consists of deposits of pure salt that are several feet thick in some places and only a few inches in others. These deposits form when freshwater flows through thick beds of rock salt deep in the earth and comes to the surface as brine (salt water). When the surface is dry, it appears crystal white to the eye. When it is wet with rain, it looks like any other piece of barren ground.

For untold centuries the Great Salt Plains were an important source of salt for both people and animals. Migrating birds used the surrounding marshlands on their journeys. To preserve the area’s natural state, the federal government secured the property in 1930 and created the Salt Plains National Wildlife Refuge. Eleven years later a dam was built on the nearby Salt Fork River to control flooding. The reservoir that was created behind the dam covered much of the plains and formed wetlands that now attract thousands of ducks and geese each year. Along with eight similar reserves in Oklahoma (Optima, Washita, Wichita Mountains, Tishomingo, Little River, Sequoyah, Deep Fork, and Ozark Plateau), the refuge is managed by the Fish and Wildlife Service of the U.S. Department of the Interior. Other notable salt springs and flats exist near Freedom, in Woods County; close to Erick, in Beckham County; and southeast of Southard, in Blaine County.

Another natural wonder is the tallgrass prairie, which Washington Irving once described as “an immense extent of grassy, undulating . . . country with here and there a clump of trees, dimly seen in the distance like a ship at sea.” Prairies occur where soils are dark and deep and the climate is warm and somewhat wet. Early on, grasses grew as tall as a person and were mixed with flowers, including the black-eyed Susan. The tallgrass prairie of North America once covered a triangular area bounded by Oklahoma, Illinois, and the Canadian province of
Alberta. Today only the small part in Oklahoma—in Osage County—still has its natural grasses. Its existence is partly due to luck. The land’s Indian and white owners happened to use it for ranching rather than farming. In the late 1980s a part of the area was placed in the Tallgrass Prairie Preserve. It is managed by the Nature Conservancy, a private organization that seeks to protect our natural heritage. The U.S. Department of Agriculture’s Forest Service manages another preserve in far western Oklahoma—the Black Kettle National Grassland. Excessive plowing and grazing had destroyed grasses in the area, contributing to the Dust Bowl of the 1930s. The preserve was established at that time to restore these vital grasses.

Mesas and Mountains

Oklahoma’s mesas and hills also qualify as unique natural wonders. They were formed as water and wind slowly eroded the surface of sandstone, shale, and clay uplifts. Several of these formations are especially important in the state’s history. Black Mesa, in the northwest corner of the Oklahoma Panhandle, is the highest point in the state, almost 5,000 feet above sea level. Covered by a thick lava cap, the mesa has been a major landmark for centuries. Nearby, scientists have found skeletons of dinosaurs and humans from prehistoric times (before written history). Near the mesa are wagon ruts left by the thousands of travelers who crossed from Missouri to New Mexico on the Santa Fe Trail between 1822 and 1875. Along those ruts are the ruins of Fort Nichols, built in 1865 to guard the trail.

The Antelope Hills in northern Roger Mills County are six gypsum peaks that tower several hundred feet above the surface. Vegetation is sparse, even though the South Canadian River winds around the northern slope of the hills. From the earliest times, Plains Indians used the Antelope Hills as a camp and council ground. The hills also marked the Canadian River route that many migrants followed to the California goldfields in the 1830s.

Rainy Mountain, southwest of Mountain View in Kiowa County, guards the northern approach to the Wichita Mountain chain, which includes Mount Scott. These mountains consist of granite (hard rock made of quartz) and rhyolite (the lava form of granite). Looming large on the landscape, Mount Scott is sacred to the Kiowa people. They found refuge on the surrounding plains from their northern enemies in the early nineteenth century. Between 1896 and 1922 the federal government had a school there for Kiowa children. N. Scott Momaday, an award-winning Kiowa author, has explained the special meaning of the area to his people in a book titled *The Way to Rainy Mountain*. The Kiowa tribe maintains the property today.

Sugar Loaf Mountain near Poteau is one of the highest peaks in the Ouachita Mountain chain. With a sandstone cap and a shale base, it towers 2,100 feet above the valley floor. Geologists tell us that the scenic Ouachitas are a western extension of the Appalachian Mountains, which run from the Canadian province of Newfoundland to Alabama. Sugar Loaf marked the way for the earliest Indian residents and European explorers in the area. When the U.S. government moved the Choctaws from Mississippi to Oklahoma in the 1830s, many of them settled near Sugar Loaf.

Wildlife

Just as mesas and mountains have helped shape Oklahoma’s development over time, so too has wildlife. Zoologists tell us that the number of native animal species in Oklahoma is probably larger than that in any equal area in the United States. These
scientists explain that fact by the wide variety of unique habitats that exist because the prairies, plains, and Rocky Mountains meet in the state. At least 400 species of birds have been identified, for example. These range from songbirds like scissor-tailed flycatchers (the state bird), robins, and mockingbirds to game birds like wild turkeys, bobwhite quail, and the extinct passenger pigeons. Game birds were important because they furnished so much food for Oklahoma’s Indian and Euro-American pioneer settlers.

Early explorers in Oklahoma always commented on the abundance of game animals that were important to both the diet and the spiritual life of American Indians. This game included buffalo, white-tailed deer, elk, black bear, antelope, beaver, and even alligators. Buffalo, or American bison, were by far the most significant. Twenty million of them once roamed the Great Plains, including all parts of Oklahoma. But by the end of the nineteenth century, they were almost extinct because hunters had killed so many in the 1870s. To preserve the species, the federal government established the Wichita Mountains Wildlife Refuge northwest of Lawton in 1901 and stocked it with 15 buffalo from a New York City zoo four years later. They prospered in the protected, natural habitat of the refuge, and later helped found other herds across the nation.

**Springs and Waterfalls**

Water has always been precious in Oklahoma. Where it bubbles to the surface from some hidden source in small or great amounts, it is a certified natural wonder. Some of Oklahoma’s more notable springs are at Sulphur, in Murray County near the Arbuckle Mountains. Because they contain minerals—sulfur, iron, and bromide—that are believed to have health benefits, the springs have long been used by people who hoped to restore or retain good health by drinking or bathing in them. To protect the springs and to make them more widely available, the federal government bought the area from the Chickasaw Indians in 1902 and established Platt National Park. After the discovery of antibiotics, fewer people used the springs to improve their health. In 1976 this small park was grouped with other nearby lands and renamed the Chickasaw National Recreation Area. Today the National Parks Service of the U.S. Department of the Interior manages it.

Just north of Watonga in Blaine County are other renowned springs. Located in a canyon in the Gypsum Hills, they produce 800 gallons of water per minute. These springs were a favorite camping site for Cheyenne Indians, who named them Springs of Everlasting Water. Cheyenne chief Henry Roman Nose, who had taken part in the Battle of Washita (1868), built his home just above them. Now the springs are a part of the state park named for him. This property is among the 56 parks and resorts managed by the Oklahoma Tourism and Recreation Department to preserve natural resources, protect wildlife, and provide recreation.

The state’s most noted waterfall is Turner Falls, near Davis in Murray County. Honey Creek, which arises in the Arbuckle Mountains, falls 77 feet at this point before
Incredibly, a single flock of passenger pigeons, or wild pigeons, that was roosting near Frankfurt, Kentucky, in 1832 was estimated to include more than 2 billion birds. Eighty-two years later the species became extinct, when the final two birds died at the Cincinnati Zoo.

One of the last sanctuaries for the passenger pigeon was eastern Oklahoma, then known as Indian Territory. There, according to reports in the 1870s and 1880s, “millions . . . flock by night.” Why were such large flocks seen there when the birds were declining elsewhere? The main reason was that Oklahoma was somewhat isolated from the rest of the United States, and its hunters killed pigeons only for their own food or for sport.

The coming of the railroad in 1876 changed all of that. The railroad brought Anglo-Americans to Oklahoma who hunted for profit, and it connected the territory with eastern poultry markets. The new hunters either caught and crated the pigeons or killed them and packed them in barrels. The perishable merchandise was then shipped quickly by railroad to consumers in St. Louis or Chicago.

“Harvesting” the pigeons was not difficult. They flew low at speeds up to 60 miles per hour and in flocks of millions. They were heard before they were seen. Rather than shoot them, hunters generally caught them with nets. Upright nets trapped birds that flew into them, or nets were placed on the ground, baited with grain, and pulled shut by ropes or springs when the birds moved onto them. To lure the flock onto the net, hunters used a “stool pigeon”—a tamed pigeon tied to the end of a long pole. In this way they could capture thousands of birds a day.

Another successful method was to rob the roosts where the birds nested after feeding during the day. Some of these roosts were several miles wide and at least 40 miles long. At night, hunters threw rocks or clubs at the birds or knocked them from their perches with long poles. By doing this, they also destroyed the nests and their contents: eggs and baby birds.

Documents are unclear as to how many pigeons were killed after the railroad came to Indian Territory. Yet the number had to be staggering. Near Muskogee in 1879, one journalist noticed “upon a waroom floor four thousand pigeons, which were being packed for freightage” to eastern markets. On a bet, two teams of hunters killed 2,005 birds in a single day. Early Oklahomans believed that the pigeons were so numerous that “they would exist for an indefinite period of the future.” They were wrong.


Passenger pigeons (from a painting by Jens Van Sivers)
it enters the Washita River. In the 1800s, the site was a favorite camping and recreational area for Wichita and Comanche Indians. The falls were named for Mazeppa Turner, a Chickasaw citizen who built his cabin there in the 1870s. Today the property is owned by the city of Davis and maintained as a park.

**Rivers and Waterways**

Oklahoma is drained by two major river systems. Of these the Arkansas River is the larger, carrying two-thirds of all the water that flows in the various rivers of the state. Its tributaries from the north include the Verdigris, Illinois, and Grand rivers. Entering from the west are the Salt Fork; the Cimarron, or Red Fork; and the Canadian. The North Canadian, known as Beaver River in the Panhandle, enters the Canadian River at historic North Fork Town (now Eufaula).

The Red River is Oklahoma’s other drainage system. Forming the southern boundary of the state, it is fed mainly by the North Fork (once considered the Red itself), Washita, Blue, Boggy, and Kiamichi rivers.

Oklahoma’s waterways in both drainage systems have always been important channels of commerce. In the eighteenth century, dugouts and canoes carrying valuable furs and hides or European-made goods passed along these streams. So too did flatboats and keelboats in the nineteenth century, loaded with buffalo hides, deerskins, cotton, grain, and manufactured products. In 1828 the first steamboat struggled up the Arkansas River to Fort Gibson. Soon these paddle-wheel steamers, with smoke billowing from their stacks and whistles screeching from their decks, became the preferred means of river transport.

The direction of travel determined the type of cargo. Steamers heading downstream usually carried beef hides, buffalo robes, deerskins, and pecans. Those heading upstream carried cloth, canned goods, and other manufactured items for local merchants, as well as supplies for military posts and the Indian agencies. Passengers went both ways, as did gamblers and prostitutes from New Orleans.

Although the advantages of riverboat travel were obvious, it could be hazardous too. Low water prevented navigation between July and December. Vessels often sank after smashing into tree stumps and submerged rocks. Steam boilers under too much pressure could explode, ripping boats apart. There were more obstacles to navigate on Oklahoma rivers than on the other streams flowing into the Mississippi River from the west.

Steamboat navigation on the Red River was delayed by the “Great Raft.” This natural accumulation of tightly packed trees and stumps stretched 150 miles and prevented even keelboat travel below Fort Towson. In the 1800s, the U.S. Army Corps of Engineers, commanded by Captain Henry Miller Shreve, removed this massive
obstruction. From then on, paddle wheelers made their way up the Red River as far as the Washita (to present-day Lake Texoma).

In the twentieth century, the federal government spent nearly $2 billion to ensure that Oklahoma’s rivers could be navigated. A bit more than half of that amount went to build the McClellan-Kerr Arkansas River Navigation System. Authorized by the U.S. Congress in 1946, the project linked the Port of Catoosa, near Tulsa, with the Mississippi River. In Oklahoma alone, the system includes a 448-mile channel—398 miles along the Arkansas River, and 50 on the Verdigris. Also part of the system in Oklahoma are five locks and dams (W. D. Mayo, Robert S. Kerr, Webbers Falls, Chouteau, and Newt Graham) and three lakes (Eufaula, Keystone, and Oologah). As a result of this project, huge barges pushed by stout tugboats have replaced the romantic steamboats on the state’s navigable waters.

Oklahoma’s rivers generally flow from west to east, because the western part of the state is at least 1,500 feet higher than the eastern part. The difference in elevation also explains why enough water to cover the state 10 inches deep runs right on through it to Arkansas and

Locks and channels on the McClellan-Kerr Navigation System help barge traffic navigate this important route for Oklahoma commerce and industry.
Louisiana annually. That runoff is likely to be greatest after spring rains. At those times, flooding and erosion often cause millions of dollars’ worth of crop and property damage. Erosion is a problem even in normal times, however, as an image from historian Angie Debo suggests. She wrote that Oklahoma’s rivers run “blood-red to the sea.”

**Water Conservation**

Because rivers carry more water out of the state than they bring into it, Oklahomans have long favored water banking. The objective is to catch and store water where it will do the most good, saving it for drought years. There are about 1,800 man-made lakes in Oklahoma that have more than 10 acres of surface area, plus 34 major federal reservoirs. Of these, Lake Eufaula on the Canadian River is the largest, with a surface area of 105,000 acres. Red River’s Lake Texoma is the second largest, covering 88,000 acres. These two lakes and the federal reservoirs were constructed by the U.S. Army Corps of Engineers, the U.S. Bureau of Reclamation, and the Grand River Dam Authority. Together they cover more than 900 square miles, and their combined shorelines are longer than the combined coastlines of the Atlantic Ocean and the Gulf of Mexico.

Although there are a lot of big dams in the state, Oklahomans have long argued that water is best banked where it first falls: behind terraces in fields and behind small dams in creeks. For that reason, in 1953 the state constructed the first upstream flood-control structures in the nation—on the Sandstone Creek watershed northwest of Elk City. Since then, Oklahoma has remained very active in this kind of program. Well over 1,500 such structures have been built by local conservation districts, with the help of the U.S. Department of Agriculture’s Soil Conservation Service (now called the Natural Resources Conservation Service).

**Why Is This Part of the Story Important?**

Clearly, much history is associated with the natural environment in Oklahoma. In fact, the state’s physical features have influenced—and sometimes determined—the course of history. But because history is a study of change in a place over time, the natural environment (or place) is just the beginning of Oklahoma’s story. The other elements in the history “equation”—change and time—will make up the rest of our story.