Sugarite Canyon State Park

Virginia T. McLemore

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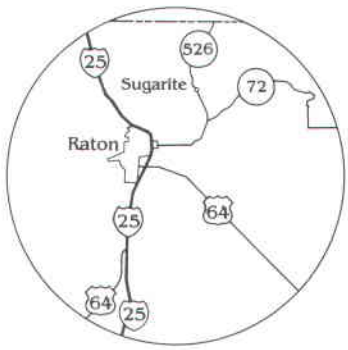

Sugarite Canyon State Park, once the site of a thriving coal-mining camp, is one of the newest parks in the New Mexico State Park and Recreation Division. It was established as a state park in 1985, but the canyon has been a recreational attraction in northeastern New Mexico for decades. Sugarite Canyon State Park is located about 5 miles northeast of Raton via NM–72 and NM–526 (paved). The elevation in the park ranges from about 6,900 ft to 8,400 ft. This heavily wooded mountain park has something for everyone year round. More than 55,000 visitors in 1988 enjoyed activities ranging from hiking, camping, picnicking, and fishing to cross-country skiing. This is one of the few state parks in New Mexico that allows seasonal bow hunting. At the visitor's center, which is located in the old U.S.Post Office, many historical displays are under construction,including a mockup of a coal mine. Trails are maintained through the ruins of the settlement and past coal dumps and mines.

Facilities

Most of the visitors to Sugarite Canyon State Park are fishermen. Two lakes in the state park, Lake Alice and Lake Maloya, are stocked periodically with cutthroat and rainbow trout by the New Mexico Game and Fish Department. A third lake across the border in Colorado, Lake Dorothy, is open for fishing as well. Boats are allowed on Lake Maloya, the largest of the lakes where a boat ramp is available; however, gasoline-powered boats are prohibited.

Other facilities in the park include numerous hiking trails, interpretative trails through the ruins of the old settlement of Sugarite, two campgrounds with restrooms and RV hookups, a group shelter, and the visitor's center. The visitor's center is the newly restored Post Office of old Sugarite (Fig. 1). A short distance north of the post office is a stone barn and a house, now utilized by the State Park and Recreation Division as a shop and warehouse and the park manager's residence. The 40-stall barn once housed mules that were used in the coal mines. In the winter, many of the trails are open for cross-country skiing. Other winter activities include tubing, ice skating, and ice fishing. In Colorado, an additional 5,400-acre tract has been set aside for recreational use lies just north of the park. About 2 miles north of the border, Sugarite (formerly Raton) Ski Basin and lodge offer beginner and advanced downhill skiing.

Wildlife abounds in Sugarite Canyon State Park. Visitors frequently see elk, mule deer,

Quaternary

- Q Talus
- Qf Artificial fill (coal waste piles)

Tertiary and Cretaceous

- Tb Basalt
- Tpc Poison Canyon Formation
- Raton Formation
  - Tru Tru—upper unit (Tertiary)
  - Krl Krl—lower unit (Cretaceous)
- Kt Trinidad Sandstone
- Kp Pierre Shale

- Mesa top
- River
- Road
- Ruins or buildings of Sugarite
- Mine
- Adit

FIGURE 1—Restored Post Office, now the park visitor's center. The coal mines and ruins of the town of Sugarite lie behind the building.

FIGURE 2—View near Soda Pocket campground looking to the south down Sugarite Canyon.

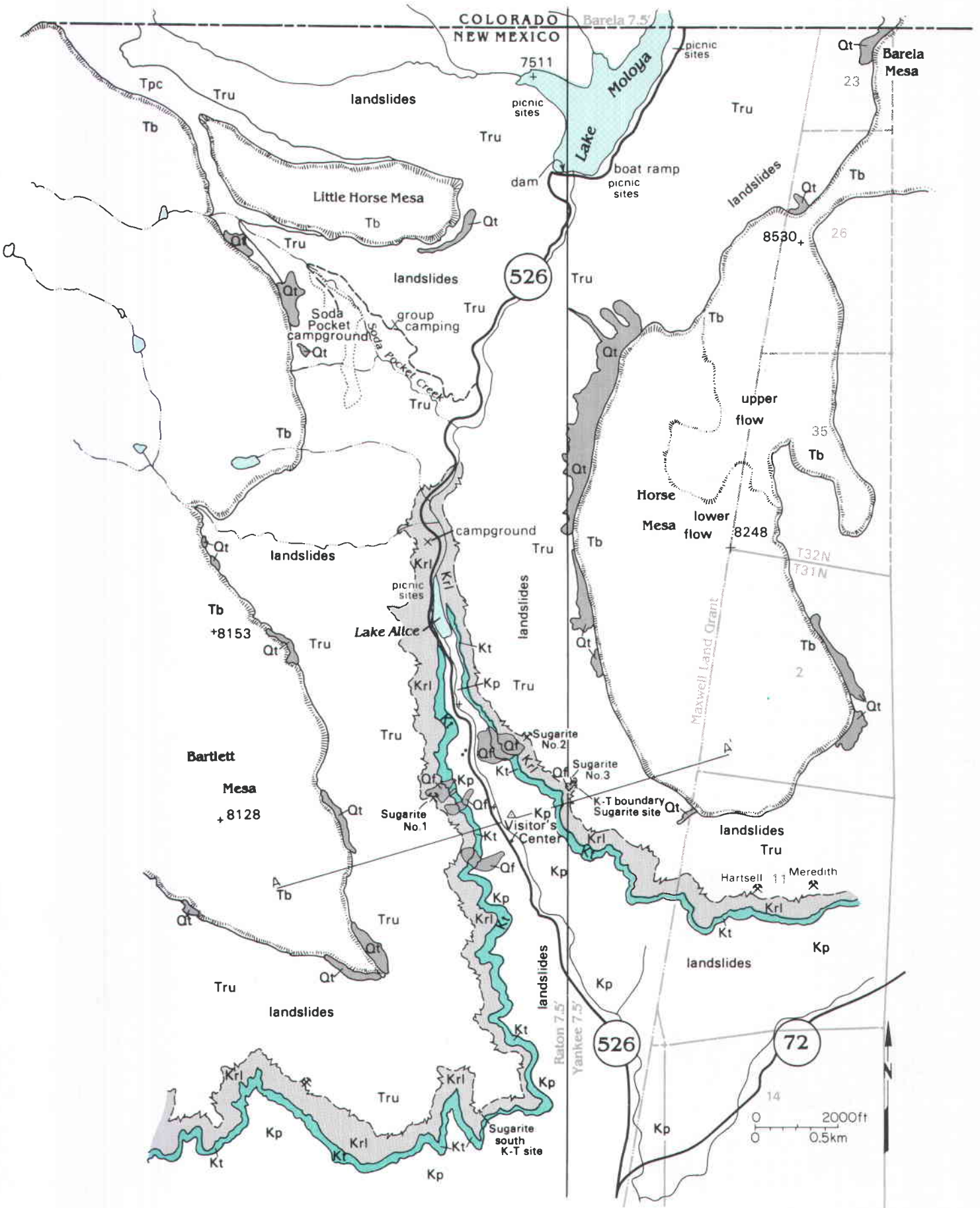

FIGURE 3—Geologic map of Sugarite Canyon State Park (by C. H. Pillmore from Scott and Pillmore, 1989).

coyote, raccoon, squirrel, chipmunk, and small rodents. Mammals such as the gray fox, black bear, mountain lion, bobcat, mink, badger, and beaver also live in the park. Numerous amphibians and reptiles are found in Sugarite. The visitor should be especially careful of rattlesnakes and scorpions in the ruins. Numerous species of birds including the golden eagle and wild turkey also can be seen.

Grassland meadows occur in places throughout the canyon, on top of the mesas, and on benches that formed on top of landslides similar to the one on the east side of Bartlett Mesa where Soda Pocket campground is located. The benches and slopes in Sugarite Canyon are covered with Gambel oak, ponderosa pine, New Mexico locust, juniper and piñon pine (Fig. 2). A mixed conifer forest is found in the wetter sites along north-facing slopes of the canyon and higher mesas. Douglas fir, white fir, ponderosa pine, juniper and various shrubs grow in these areas where snow tends to remain longer. Riparian vegetation is confined to the watercourses and includes cottonwood, willow, New Mexico locust, chokecherry and other shrubs, and cattails.

Sugarite is believed to be the anglicized version of Chicarica, the original name of the canyon and adjacent mesa. Chicarica is derived from either the Spanish name, chicory, for the wild endive plant growing in the canyon or from the Comanche or Ute name for a species of spotted bird which lived in the canyon (Pearce, 1965; Keleher, 1984).

History

Folsom man and various Indian groups, including the Jicarilla Apaches, Moache Utes, and Comanches, occupied and/or traveled through Chicarica Canyon, now known as Sugarite Canyon. Later, Spanish explorers, mountain men, trappers, and traders traveled through the canyon using this route through the rugged mountains separating the Rio Grande, Canadian, and Arkansas Rivers as an alternative to Raton Pass. However, settlement was slow in coming to Sugarite Canyon and the surrounding area because of Indian conflicts and land-ownership disputes between settlers and the owners of the Maxwell Land Grant. Extreme winter conditions and the rugged mountain terrain discouraged the first settlers. By the 1870's, most of the Indians were restricted to reservations, and newcomers began to settle in the Sugarite area.

Sugarite Canyon was once part of the Maxwell Land Grant (Fig. 3; Keleher, 1984), which was a grant of land to Guadalupe Miranda and Charles Hipolite Trotier de Beaubien from the Mexican government and was established in 1841. The eastern boundary was on Chicarica Mesa (Keleher, 1984), now known as Horse Mesa (Fig. 3), and the western boundary was at the present Colfax–Taos County Line. It became known as the Maxwell Land Grant after Lucien Maxwell inherited part of the original grant and purchased the rest. He added acreage until the Maxwell Land Grant consisted of about 2,680 mi^2 by 1866 (Keleher, 1984; Pearson, 1961). Maxwell sold the grant to an English syndicate in 1870, and the Maxwell Land Grant and Railway Company was formed (Laurie, 1976). Anti-grant sentiment was based on land-ownership disputes between settlers and the company. In 1880, the company went bankrupt and reorganized under a group of Dutch investors. Ownership disputes increased, erupting into the Colfax County War. Finally, in 1887, the U.S. Supreme Court ruled in favor of the company. The settlers, about 600 people with about 65,000 head of cattle, 3,600 horses, 16,000 sheep, and 2,000 goats (Pearson, 1961), either left or purchased land from the company.

Meanwhile, the town of Raton, established in 1879, continued to grow. One of the major concerns of the townspeople was a reliable water supply. The Santa Fe Railroad, at that time the largest user of water, built the first waterworks on Bartlett Mesa west of Sugarite Canyon and piped water into town. By 1891, additional water was required by both the town and the railroad, so Sugarite Canyon was selected for water development. Lake Alice and later Lake Maloya and Lake Dorothy were added as reservoirs for Raton's water supply. The lakes also supplied the town with ice in the winter. The Raton waterworks project was one of the first systems built in the territory of New Mexico and is still in operation today, supplying much of Raton's water.

One of the main reasons for the presence of the railroad in the Raton area was the discovery of vast quantities of coal. The Hartsell mine (Fig. 3) was worked from 1894 to 1899. The Meredith mine was also worked prior to 1900. The Raton Fuel Company opened the Sugarite No. 1 and 2 mines in 1901 and 1902. Production was low during the first few years. The Chicarica Coal Company began production in 1910 or 1911. The St. Louis and Rocky Mountain Coal Company took over operations in 1912. A railroad line, initially constructed in 1905 to Lake Alice, was cut back to the town of Sugarite in 1911 (Scott, 1986) and used to transport coal to Raton for domestic heat and to drive the train engines. In 1912, the mine on the east side of the canyon was opened.

The Sugarite coal camp was established in 1908 and was one of the last areas in the Raton coal field to be developed. Immigrants from Europe and Japan settled in Sugarite, which became known as one of the more pleasant coal camps in the area with its mountain setting and running stream. However, the population never exceeded 1,000 people. The camp (Fig. 4) included a mercantile store, schoolhouse, post office, and community center. Only the Post Office and the mule barn still remain intact at the site. After the coal mines closed in 1942, the buildings were either abandoned or moved to Raton. The railroad was abandoned in 1944 (Scott, 1986), marking the end of another mining town in northern New Mexico.

The City of Raton established a municipal park in Sugarite Canyon, including the 5,400 acres in Colorado, in order to protect the watershed. Only the 3,600-acre tract in New Mexico (Fig. 3) makes up the state park; the Colorado tract, including Lake Dorothy, is currently part of the Lake Dorothy State Wildlife Area administered by the State of Colorado. Sugarite Ski Basin (formerly Raton Ski Basin), at a base elevation of about 8,000 ft, lies about 2 mi northeast of the border and is owned and operated by descendants

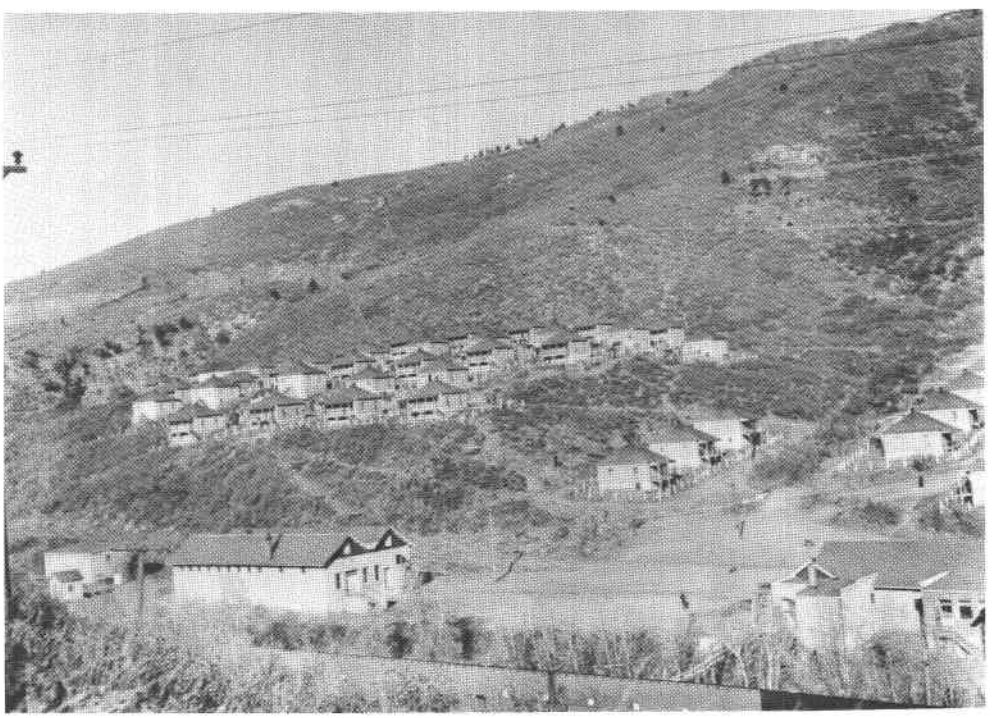

FIGURE 4—Sugarite camp and store in the early 1900's (courtesy of the Raton Museum and the State Park and Recreation Division, Energy, Minerals, and Natural Resources Dept.).

of Robert and Ruth Walton, homesteaders at the site in 1903.

Geology

Sugarite Canyon State Park is part of the Raton Basin, a structural basin that extends from Cimarron, New Mexico, northeastward to Huerfano Park, Colorado, about 100 mi long and as much as 60 mi wide (Woodward, 1987). The basin formed during the Laramide as the San Luis highland rose to the west. Erosion of the highlands during and after uplift provided sediment that filled the basin (Pillmore and Flores, 1987).

The oldest rocks exposed in Sugarite Canyon formed from mud deposited in the Cretaceous sea and belong to the Late Cretaceous Pierre Shale (Figs. 3, 5). The Pierre Shale is overlain by the white sandstones of the Trinidad Sandstone that were deposited in delta-front and barrier environments along the coast of the Cretaceous sea (Fig. 6; Pillmore and Flores, 1987).

As the Cretaceous seas receded eastward away from New Mexico, the coastal margin also migrated eastward. Sand, which later solidified into sandstone, was deposited by meandering rivers and streams, whereas mud, which became shale, was deposited in the adjacent floodplains. Peat, which became coal, was deposited in poorly drained swamps (Fig. 6). The floodplain and alluvial-plain deposits, known as the Raton Formation, were deposited unconformably on top of the Trinidad Sandstone. The Raton Formation is of Late Cretaceous (about 66 m.y.) to Paleocene (about 57 m.y.) age and consists of about 1,100 ft of sandstone, siltstone, mudstone, coal, conglomerate, and carbonaceous shale. Ferns, leaf imprints, and other plant material can be found in this unit. The Raton Formation is divided into three zones: the lower coal zone, the barren series, and the upper coal zone (Pillmore and Flores, 1987). The Sugarite coal bed is at the top of the 100-ft-thick lower coal zone. This unit consists of a basal conglomerate (not present in the park) and sandstone overlain by interfingering sandstone, shale, mudstone, and coal. The Sugarite coal is the lowest economic grade of coal in the Raton Formation. In other areas of the Raton Basin the coals in the lower zone are not of economic thickness or quality.

The coal is bituminous and almost 6 ft thick at the Sugarite mines. It is noncoking but has a high heating value and burns freely without much clinker (Lee, 1924; Pillmore, 1976). The Sugarite mines were adits, tunnels driven into the hillside along the coal seams. Mules were used in the mines to move coal cars to the surface where a tram was built to haul the coal down the steep slopes to the bottom of the canyon (Lee, 1924). Railway cars transported the coal to Raton where it was used as domestic fuel and as fuel to power the locomotives. Total coal production from Sugarite amounted to 562,497 tons or less than 1% of the total coal production from Colfax County (New Mexico State Mine Inspector's reports).

The lower coal zone contains Cretaceous-age rocks with the Cretaceous–Tertiary boundary at or near the top of the zone (Pillmore and Flores, 1987). At Sugarite, this boundary is indicated by 1–2-inch-thick kaolinite-rich clay near the top of the Sugarite coal (Fig. 7). This clay bed contains is characterized by anomalously high concentrations of iridium and other platinum-group metals, along with the absence of certain pollen species and the presence of shock-metamorphosed quartz and feldspar grains (Pillmore et al., 1984; Pillmore and Flores, 1987). Iridium occurs in very low concentrations in rocks of the Earth's crust but is more concentrated in meteorites and rocks from deeper in the crust. This clay bed has been found throughout the Raton Basin and in a narrow belt that extends from New Mexico to Alberta, Canada. The Cretaceous–Tertiary boundary is known throughout the world for the mass extinction of numerous animal and plant species, including dinosaurs.

Interpretations of the Cretaceous–Tertiary boundary are controversial. Many scientists believe the mass extinctions at that time were a result of a catastrophic event, such as the impact of a large meteor or asteroid that produced the shock-metamorphosed mineral grains (Pillmore and Flores, 1987; Alvarez et al., 1980; Orth et al., 1987). Other scientists believe the mass extinctions were a result of a series of intense volcanic eruptions (Officer and Drake, 1985). The impact theory and the volcanic-eruption theory further suggest that a large amount of dust was ejected into the atmosphere, blocking sunlight and resulting in the decline of plant life and subsequently animal life that depended on plants for food. This material settled and formed the boundary layer we now see in both marine and nonmarine sedimentary rocks throughout the world. Other scientists believe the mass-extinction event has been exaggerated; instead they suggest extinction occurred over a period of several million years. Sedimentary rocks deposited at that time may have been eroded, so the problem may be simply miss- ☞

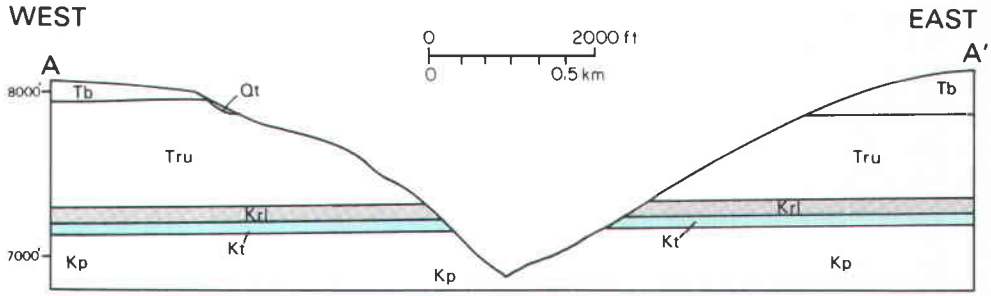

FIGURE 5—Cross section across Sugarite Canyon. Vertical scale twice horizontal scale.

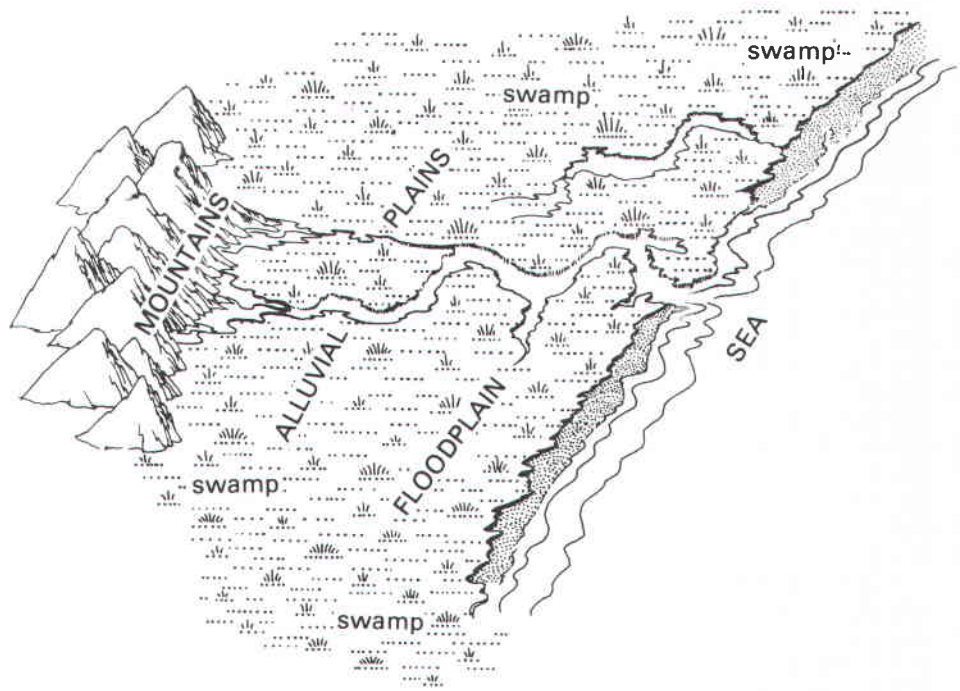

FIGURE 6—Generalized drawing of depositional environments of the Pierre Shale and Raton Formations (modified after Flores, 1987, and Flores and Pillmore, 1987).

ing rocks, not mass extinctions (Archibald and Clemons, 1982; Rigby and Fassett, 1989). Additional work is needed to resolve this controversy.

Most of the barren series and upper coal zone in Sugarite Canyon are covered by vegetation, landslide debris, and debris from the basaltic mesa caprocks (Fig. 2). The barren series consists of about 500 ft of cliff-forming channel sandstone with minor slope-forming siltstone, shale, mudstone, and a few very thin coal seams. These rocks were deposited by meandering streams and in adjacent floodplain and alluvial-plain environments (Flores and Pillmore, 1987; Pillmore and Flores, 1987).

The upper coal zone, above the barren series, consists of about 500 ft of floodplain sandstone, mudstone, siltstone, and shale interbedded with coal and carbonaceous shale that were deposited in swamps. Exposures of the upper coal zone can be seen near the dam at Lake Maloya (Fig. 8).

Tertiary basalt flows overlie sedimentary rocks and cap the mesas bordering Sugarite Canyon State Park. They were erupted as broad flow sheets ranging in thickness from 10 to 100 ft. The basalt is fine to coarse grained and consists of olivine and plagiclase phenocrysts (Stormer, 1972a); it has been dated in places at about 3 to 8 m.y. old (Stormer, 1972b). Hiking trails at Little Horse Mesa and Horse Mesa allow the visitor to examine the basalt up close.

After eruption of the basalt, the Sugarite–Raton area continued to be uplifted. Streams and rivers cut into the basalt-capped mesas and slowly eroded valleys such as Sugarite Canyon. Even today, this erosion is continuing.

Landslides and talus slopes are common along the base of the basalt flows. This material was displaced after Sugarite Canyon was formed. Rain and snow melt seep into cracks of the exposed rock surfaces. When the water freezes, it expands the cracks and eventually causes the rock to break into angular boulders, which slowly move downhill forming a talus slope of broken rubble.

Summary

Sugarite Canyon State Park is an enjoyable visit for almost everyone, anytime of the year. Geologic processes formed the rugged landscape offering picturesque views and a variety of vegetation and wildlife. One of the first waterworks systems in New Mexico is still in operation in Sugarite Canyon. Sugarite was once a booming coal-mining town; now only foundations, a few restored buildings, and the coal dumps are left. Above all, Sugarite offers varied numerous recreational activities available year round.

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—Virginia T. McLemore

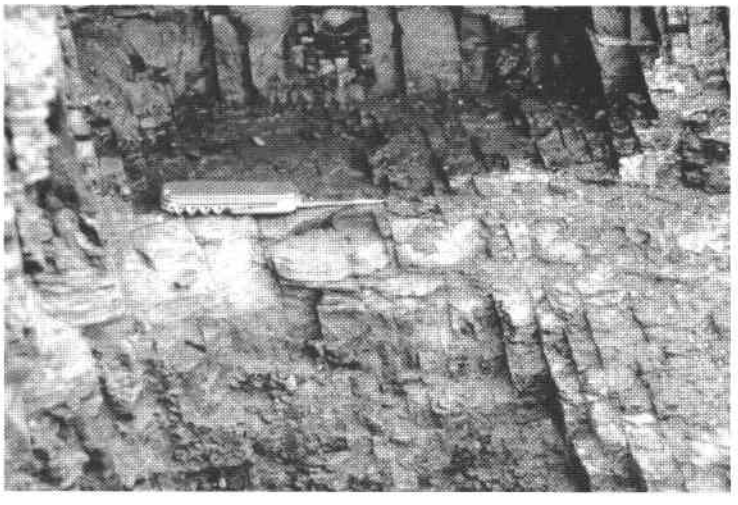

FIGURE 7—The Cretaceous–Tertiary boundary in the Sugarite coal marked by thin, white clay under the knife. Courtesy of C. L. Pillmore.

FIGURE 8—Carbonaceous shale and coal seams near dam spillway at Lake Maloya, looking east. Cut is about 30 ft high.