DESCRIPTION OF STUDY AREA

Topography

Topography in the study area ranges from gently sloping valleys to rugged mountains and vertical cliffs. The form of the land surface is greatly affected by the lithologic and structural setting of the local area. For example, Twentymile Park is underlain by easily eroded shales that overlie the axis of a syncline (pl. 1). As a result, the area is characterized by low-relief, gently rolling terrain (fig. 2). The regional surface slopes gently toward the east and from the valley margins to the center of the park, where altitudes are about 6,800 ft.

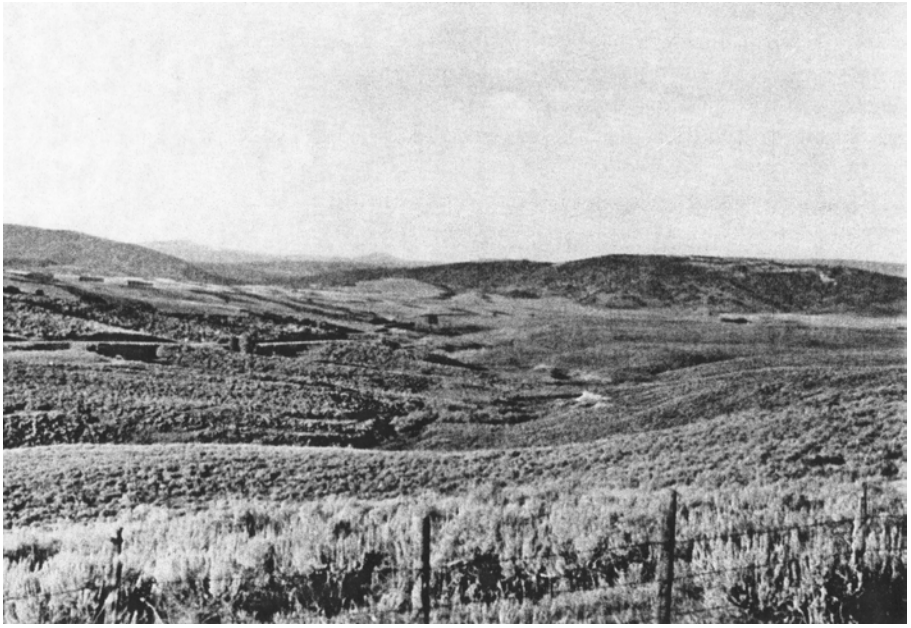

Figure 2.--Rolling topography of Twentymile Park.

A second topographic form occurs in the part of the study area southeast of Trout Creek and in Eckman Park. In these two locations, gently dipping beds form cuestas, which are cut by subparallel subsequent streams. The topography of the dip slopes of the cuestas is smooth and has low to moderate relief between streams that drain the slopes. In both locations, the dip slopes have regional surface gradients toward the northwest and have altitudes in excess of 8,000 ft. The eroded back slopes of the cuestas have much steeper gradients and shorter streams. To the north of Foidel Creek, the resistant Twentymile Sandstone Member and overlying members of the Williams Fork Formation are exposed in massive sandstone cliffs that exceed 300 ft in height (fig. 3).

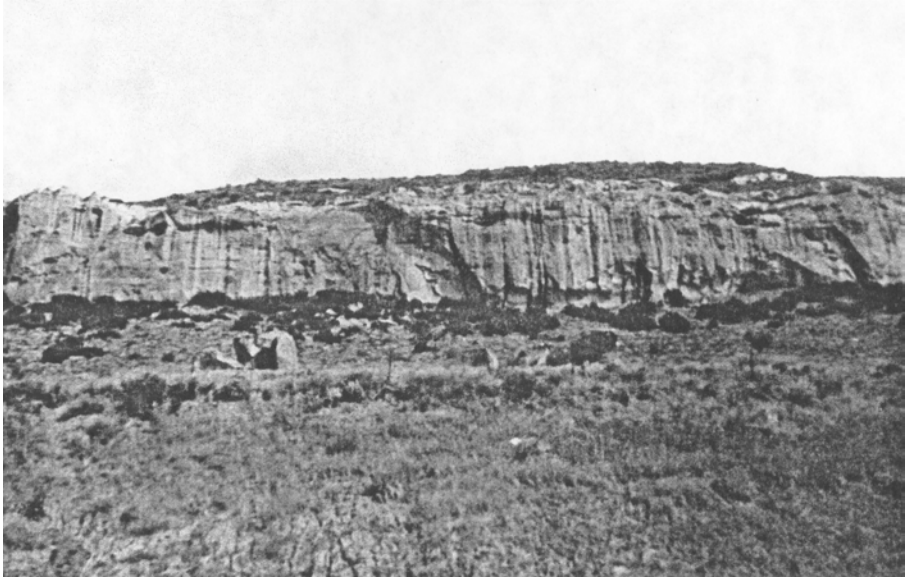

Figure 3.--Outcrop of Twentymile Sandstone Member of the Williams Fork Formation north of Foidel Creek.

A third topographic form in the eastern part of the area results from the erosion of the surficial parts of several anticlines. The topography is characterized by deeply incised slopes and cliffs, which produce a rough, high-relief terrain. No regional topographic gradient is present; instead, the local gradient depends on the location of underlying folds. The roughest terrain of this type occurs on the eastern limbs of the Sage Creek, Fish Creek, and Tow Creek anticlines (pl.1; fig. 4).

Topographic configurations west of Dry Creek result from erosion of regional cuestas. The cuestas are surficial configurations of the regional Sand Wash Basin structure. The topography is characterized by flat, low-gradient ridges separated by narrow steep-sided alluvial valleys. Relief increases toward the south where gradients are steepest in cuesta escarpment areas along the southwestern margin of the study area. Here, southward-flowing streams have cut several thousand feet into the cuesta, producing steep, narrow, valleys surrounded by cliffs. The regional gradient of the entire western dip slope area is to the northeast. The cuesta escarpment area trends toward the southwest, from the approximately 8,000-ft divide of the Williams Fork Mountains.

Population Distribution and Land Use

The study area is sparsely populated and relatively remote. The only towns near the area are Craig, Hayden, Milner, and Steamboat Springs, which are located along the Yampa River to the north of the area, and Oak Creek, which is located to the southeast of the area. These towns had

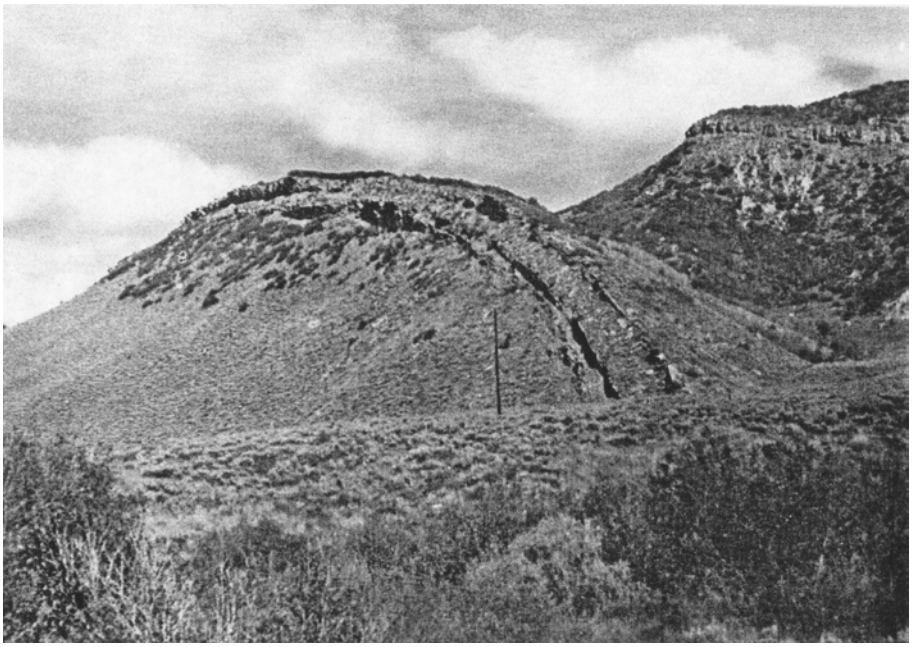

Figure 4.--Rugged topography and steeply dipping beds near the axis of the Sage Creek anticline.

a combined population of 15,880 in 1980 (U.S. Bureau of the Census, 1981). Within the area, population is limited to scattered ranches and farms; 82 percent of the land in the study area is privately owned. Only one paved county road traverses the area. Most transportation is by means of a sparse network of improved and unimproved dirt roads.

Vegetation type and density varies with altitude, topography, and slope aspect. In areas of lower altitude and minimal topographic relief, vegetation consists of sagebrush and meadow grasses. On higher, steeper slopes, sagebrush is replaced by mountain shrubs such as Gambel Oak, serviceberry, and snowberry. At still higher altitudes, and on the lower north-facing slopes, sparse to dense groves of aspen and conifers are present.

Much of the area is used for grazing of cattle and sheep; dryland farming is limited to part of the lower altitude grassland areas. Several large open-pit mines are operating in the study area. Numerous small open-pit or underground mines have been active in the past. Mining has produced about 7,000 acres of mine spoils and disturbed land in the eastern part of the study area. Spoils are regraded and revegetated at operating mines (fig. 5), but unaltered spoils still are present at a few long-abandoned mines. No organized recreational facilities occur in the area; however, big game hunting is popular during the fall, and several professional outfitters lease large tracts of ranchland for commercial deer and elk hunting.

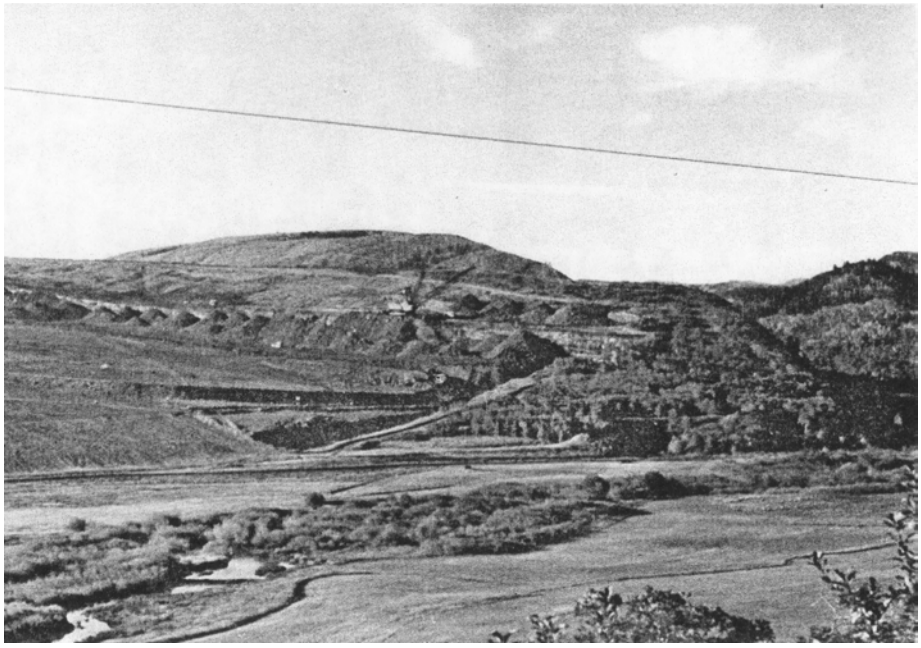

Figure 5.--Spoil piles and regraded spoil at the Edna Mine south of Trout Creek.

Mineral and Energy Resources

Primary mineral and energy resources include oil, gas, and coal; coal is the dominant resource. The existence of these resources is the main reason for the many geological investigations undertaken in the area.

Oil and gas occur in the Tow Creek and Buck Peak Fields. The Buck Peak Field, first developed in 1956, is on the axis of the Buck Peak anticline, T. 6 N, R. 90 W. The southern part of the Tow Creek Field, in T. 6 N, R. 87 W, is within the study area. The Tow Creek Field, located on the Tow Creek anticline axis, was first developed in 1924 and has not been as productive as the Buck Peak Field (Donaldson and MacMillan, 1980).

Routt County contains the largest strippable and underground coal reserves in Colorado, estimated at 413 million and 3,826 million tons, respectively (Green and others, 1980). Coal was first mined in Routt County in the late 1880's, and production increased by several orders of magnitude after completion of the railroad into the area in 1906. Production remained relatively constant until the late 1940's when it began to decrease until the late 1950's (fig. 6). Marked recovery began in the early 1960's and continued through 1980 (Martin, 1980).

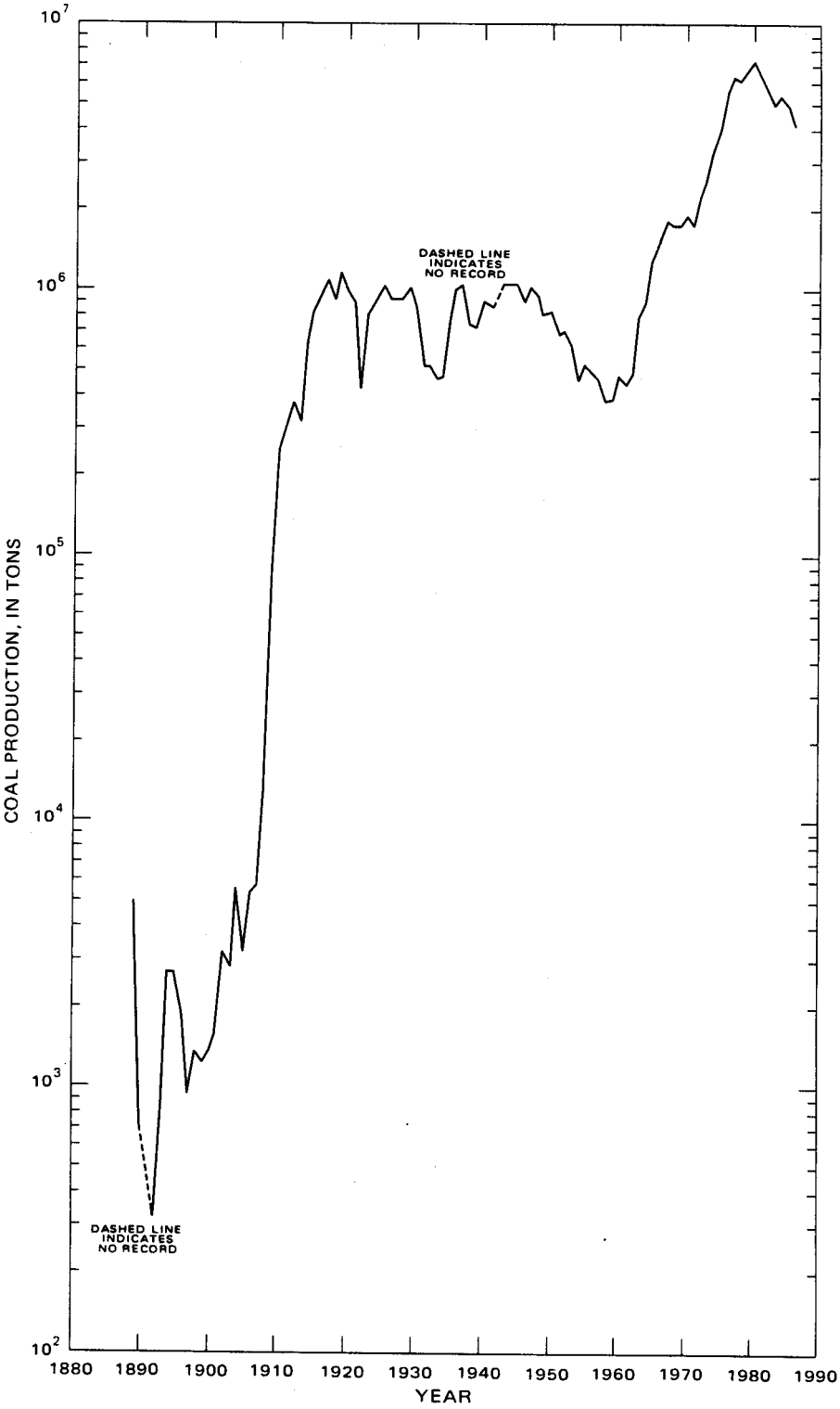

Figure 6.--Coal production in Routt County, 1889–1987.