

ECONOMIC GEOLOGY

The Thornburgh* quadrangle was mapped as part of the U.S. Geological Survey's program of classifying and evaluating mineral lands in the public domain. Resources of economic interest in the quadrangle include coal, oil and gas, sand and gravel, uranium and vanadium, and ground water.

Lenticular coal beds of minable thickness (4 ft or more) crop out locally in two zones within the Iles Formation; they correlate with the lower coal zone and the Black Diamond coal zone as designated by Hancock and Eby (1930) in the Meeker quadrangle, about 7 mi to the southwest. The lower coal zone (informally designated zone A), near the base of the Iles, is about 150 ft thick and has an average of 7 ft of minable coal. The Black Diamond coal zone (zone B), just below the Trout Creek Sandstone Member, is about 200 ft thick and has an average of 10 ft of minable coal. Hancock and Eby (1930) reported an average Btu/lb value of 11,335 and an average sulfur content of 0.5 percent for the coal at the Black Diamond mine in the Meeker quadrangle.

Coal beds in that part of the Williams Fork Formation exposed in the Thornburgh quadrangle cluster into three coal zones. The lower zone (zone C), at the base of the Williams Fork, is about 200 ft thick and contains approximately 11 ft of coal in minable beds. The middle zone (zone D), just below the Twentyville(?) Sandstone Member, is about 100 ft thick and contains about 10 ft of minable coal. The upper zone (zone E) extends upward about 600 ft above the top of the Twentyville(?) Sandstone Member and contains about 25 ft of minable coal. Coal beds and surrounding strata in the Williams Fork Formation are often burned and baked at the surface.

In October 1976 an exploratory hole, just west of the north-west part of the quadrangle (N-1 in the coal sections), was cored to 1,102 ft. The hole penetrated a total of five minable coal beds ranging in thickness (including partings) from 6.3 to 16.2 ft. Analyses of the coals yielded Btu/lb values ranging from 8,011 to 10,734 (as-received basis) and sulfur content ranging from 0.25 to 0.62 percent (Muller, 1976).

Oil and gas are being produced in the Thornburg field on the northeastern boundary of the quadrangle. Producing formations include Mowry Shale Member of the Mancos Shale, Dakota Sandstone, Morrison Formation, and Entrada and Glen Canyon Sandstones. Several unsuccessful test holes have been drilled on the Yellowjacket anticline; oil shows were reported from carbonates in the Eagle Valley Trough of Pennsylvanian age (Reheis, 1980), but porosity and permeability were too low to allow production. Dyni (1966) reported on the Thornburg oil and gas field in the northern half of the quadrangle.

Uranium and vanadium occur in minable amounts in the Salt Wash(?) Member of the Morrison Formation where it crops out along the Yellowjacket anticline. Major ore minerals are tyuyamutite and green vanadium clay, with a 1:5 ratio of U₃O₈ to V₂O₅; the minerals are disseminated in light-gray sandstone. Known mineralization is most intense near the crest of the anticline and decreases down the flanks. Local mines have operated sporadically since 1905; combined production, from the Thornburgh and Sawmill Mountain quadrangles as of 1955, was less than 10,000 short tons (Isachsen, 1955). Almost the entire area surrounding Uranium Peak has been claimed at one time or another. In addition to the Morrison Formation, prospects occur in the Dakota Sandstone and Entrada and Glen Canyon Sandstones. Many of the minor prospects in these nonmineralized formations are not shown on the map.

Sand and gravel are abundant in the Quaternary terrace deposits; however, there are no gravel pits. Baked mudstone is used locally for road metal, but the burned areas are relatively inaccessible in the quadrangle.

Ground water for domestic and stock use is drawn primarily from the Iles and Williams Fork Formations and from Quaternary deposits. Springs occur in the Mancos Shale, the Morrison Formation, and in the landslide areas. Other formations, such as the Dakota Sandstone and the Entrada and Glen Canyon Sandstones, might be aquifers.

REFERENCES

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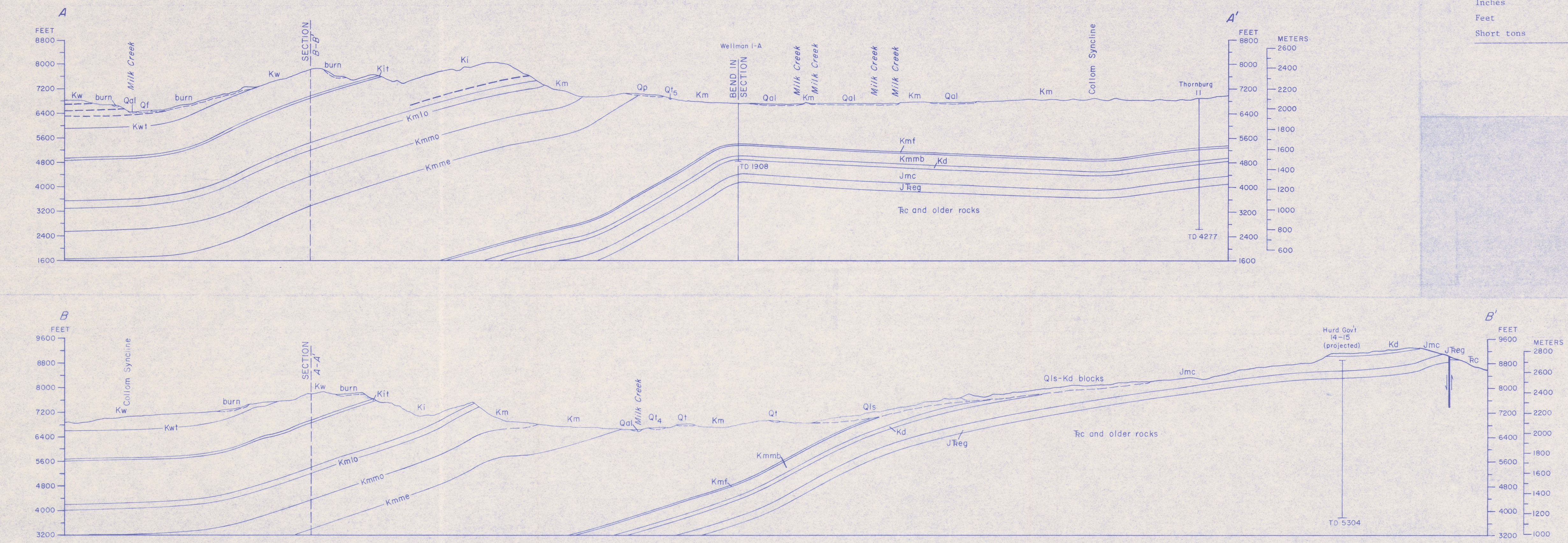
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*Spelling of quadrangle name changed from Thornburg to Thornburgh in June 1969; oil-and-gas field name retains the earlier spelling.

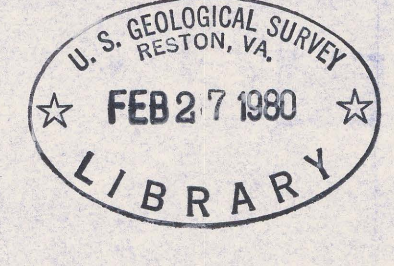
This report has not been edited for conformity with U.S. Geological Survey editorial standards.

CONVERSION TABLE		
To convert	Multiply by	To obtain
ENGLISH UNITS		METRIC UNITS
Inches	2.54	Centimeters
Feet	.3048	Meters
Short tons	.9072	Metric tons



GEOLOGIC MAP AND COAL SECTIONS OF THE THORNBURGH QUADRANGLE, MOFFAT AND RIO BLANCO COUNTIES, COLORADO

By
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1980



M(200)
R290
90-251
5x1
C1