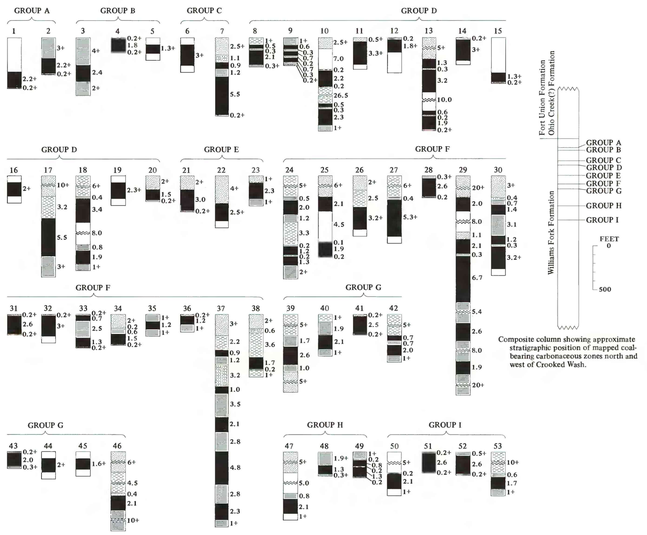
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

GEOLOGIC QUADRANGLE MAP
SMIZER GULCH QUADRANGLE, COLORADO
GQ–1131

MEASURED COAL SECTIONS NORTH AND WEST OF CROOKED WASH

NOTE

Groups of measured coal sections are arranged in stratigraphic order (A is highest), and in numerical sequence approximately northwest to southeast. No correlation of coal beds within group is implied.

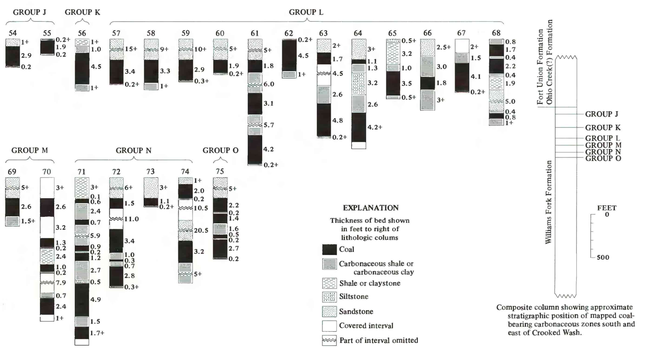


Composite column showing approximate stratigraphic position of mapped coal-bearing carbonaceous zones north and west of Crooked Wash.

MEASURED COAL SECTIONS SOUTH AND EAST OF CROOKED WASH

NOTE

Groups of measured coal sections are arranged in stratigraphic order (J is highest), and in numerical sequence approximately northeast to southwest. No correlation of coal beds within group is implied.

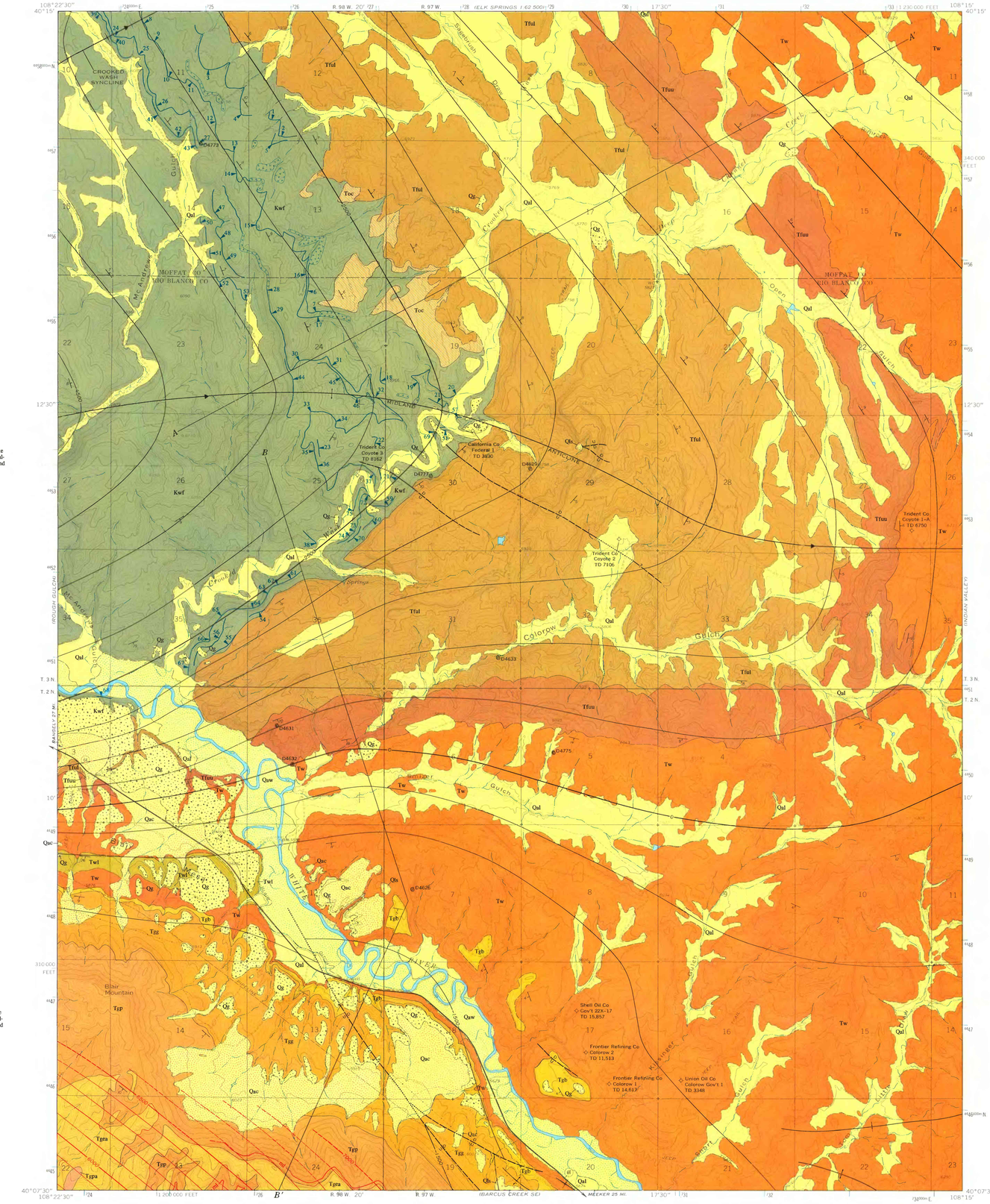


EXPLANATION

Thickness of bed shown in feet to right of lithologic column

- Coal
- Carbonaceous shale or carbonaceous clay
- Shale or claystone
- Siltstone
- Sandstone
- Covered interval
- Part of interval omitted

Composite column showing approximate stratigraphic position of mapped coal-bearing carbonaceous zones south and east of Crooked Wash.



Base from U.S. Geological Survey, 1966
10,000-foot grid based on Colorado coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

SCALE 1:24 000
1 0 1 MILE
1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

COLORADO
QUADRANGLE LOCATION

Geology mapped in 1970–71

CORRELATION OF MAP UNITS

Qal, Qaw, Qac, Qls, Qg	Holocene and Pleistocene	QUATERNARY
Tgea	Eocene	TERTIARY
Tgpa		
Tgp		
Tgg		
Tgb		
Twl		
Tw		
Tfuu		
Tful	Paleocene	
Unconformity(?)		
Toc		
Unconformity		
Kwf	Upper Cretaceous	CRETACEOUS

DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS (HOLOCENE AND PLEISTOCENE)

Qal Alluvium – Mostly confined to stream valleys, but does not include alluvium in valley of White River (Qaw); mostly of local origin; includes some slope wash along adjacent valley walls and alluvial fans at mouths of branch streams along White River

Qaw Alluvium in valley of White River – Includes resistant rounded gravel derived from distant sources to the east, and nonresistant clay, silt, and sand of nearby source

Qac Alluvial and colluvial deposits undifferentiated

Qls Landslide deposits

Qg TERRACE GRAVELS (HOLOCENE AND PLEISTOCENE) – Patches of gravel at various levels along White River, Crooked Wash, and Deep Channel Creek. Mostly silicified sandstone or siltstone, and quartzite; abundant basalt or other dark volcanic flow-rocks; sparse granite and other crystalline or metamorphic rocks; maximum clast size about 1 foot; locally calcite cemented forming a resistant conglomerate; maximum thickness about 20 feet. The large patches of gravel between Colorado highway 64 and the White River are largely covered by a thin veneer of younger colluvial and alluvial deposits

GREEN RIVER FORMATION (EOCENE)

Tgpa Tongue of Parachute Creek Member – Mostly light-gray marlstone. Maximum thickness about 40 feet

Tgea Tongue of Evacuation Creek Member – Brown-weathering massive to crossbedded locally conglomeratic sandstone, tuffaceous siltstone, and minor marlstone. Maximum thickness about 220 feet

Tgp (ml) Parachute Creek Member, main body – Mostly light-gray weathering, massive to platy marlstone including several oil shale zones. Oil shale values decrease abruptly from southeast to northwest along outcrop so that at Blair Mountain the member is largely barren of oil shale. Unit also contains silty marlstone, siltstone, and very fine grained sandstone beds which generally increase in thickness in a northwesterly direction; several very thin tuff beds are also present; contains at least one lenticular cliff-forming bed of coarse to conglomeratic calcarenite. The top of the Mahogany ledge (ml) is about 50 to 120 feet below the top of the member; the Mahogany ledge cannot be recognized on Blair Mountain. Maximum thickness of main body of Parachute Creek Member on outcrop about 1,050 feet

Tgg Garden Gulch Member – Mostly dark-gray to brown fissile clay shale; contains a ledge of marly shale, including some oil shale, in upper part; contains a few thin ostracodal limestone and sandstone beds like those in the basal sandstone member, in lower part. Maximum thickness on outcrop about 670 feet

Tgb Basal sandstone member – Mostly brown-weathering sandstone; lesser siltstone, sandy claystone, and shale; contains several thin ostracodal limestone and sandstone beds. Maximum thickness on outcrop about 120 feet; thins to about 40 feet at west edge of quadrangle

WASATCH FORMATION (EOCENE AND PALEOCENE) – Maximum outcrop thickness of Wasatch including Twl unit about 1,550 feet

Tw Main body – Tan yellowish-gray, and red claystone, shale, and mudstone; brown to gray massive to crossbedded sandstone, mostly lenticular; minor carbonaceous shale. Fossil pollen locality D4626, about 200 feet below top of formation: age Eocene. Fossil pollen locality D4775, about 80 feet above base of formation: age latest Paleocene

Twl Unit containing some probable lacustrine beds– Lacustrine beds include several thin, persistent ostracodal sandstone beds and some brown, possibly carbonaceous, shale. Nonlacustrine beds predominate and are similar in lithology to main body of Wasatch. Thin lacustrine beds are present east of the White River, but unit is not mapped separately in that area. Thickness about 340 feet, and lies about 200 feet below top of Wasatch

FORT UNION FORMATION (PALEOCENE)

Tfuu Upper member – Brown to gray shale, carbonaceous shale, and minor coal shale; thin relatively persistent sandstone beds; lesser claystone and siltstone. Fossil pollen locality D4632, about 50 feet below top of member: age late Paleocene. Fossil pollen locality D4631, about 70 feet above base of member: age late Paleocene. Thickness near White River about 525 feet

Tful Lower member – Olive-green to gray claystone; light-brown to light-gray lenticular sandstone, mostly crossbedded to massive; sparse clay-pebble conglomerate; minor siltstone and mudstone; very sparse limestone and carbonaceous shale. May locally include equivalent of Ohio Creek(?) Formation at base, where not mapped separately elsewhere. Fossil pollen locality D4633; about 320 feet below top of member: age middle to late Paleocene. Fossil pollen locality D4629, about 350 feet above base of member: age early to middle Paleocene. Thickness near White River about 1,150 feet

Toc OHIO CREEK(?) FORMATION (PALEOCENE) – Light-brown to white sandstone, locally quartzitic; locally contains very sparse concentrations of small chert pebbles. Maximum known thickness about 50 feet

Kwf WILLIAMS FORK FORMATION OF MESAVERDE GROUP (UPPER CRETACEOUS) – Interbedded light-gray to brown, mostly fine-grained nonpersistent sandstone, and gray, greenish-gray, and light-brown shale and claystone; considerable brown carbonaceous shale and several lenticular coal beds in zones of carbonaceous shale in upper part of formation. Fossil pollen locality D4777, about 80 feet below top of formation: age Late Cretaceous. Fossil pollen locality D4773, about 520 feet below top of formation: age Late Cretaceous. Base of formation is not exposed in quadrangle. Maximum thickness about 2,650 feet; maximum thickness of exposed rocks about 2,200 feet

- CONTACT – Dashed where approximately located; queried in section where doubtful
- FAULT – Dashed where approximately located; dotted where concealed; queried where doubtful. U, upthrown side; D, downthrown side
- ANTICLINE – Approximately located. Showing crestline and direction of plunge
- SYNCLINE – Approximately located. Showing troughline and direction of plunge
- STRIKE AND DIP OF BEDS
- 6500 STRUCTURE CONTOURS – Drawn on top of Mahogany ledge or zone (or probable stratigraphic equivalent where Mahogany is not recognized). Approximately located; short dashed where datum is above land surface. Contour interval 100 feet
- 2500 STRUCTURE CONTOURS – Drawn on top of the Buck Tongue of Mancos Shale. Approximately located. Contour interval 500 feet
- COAL BED – Line represents outcrop of uppermost coal bed in a carbonaceous zone that may contain several coal beds. Arrow indicates locality of measured coal section and number refers to section shown graphically. Coal beds less than 1.2 feet thick generally were not mapped
- CLINKERED ROCKS
- FOSSIL POLLEN LOCALITY – Showing Denver USGS Paleobotanical locality number. Collections were identified and age assignments made by Robert H. Tschudy
- DRY HOLE DRILLED FOR OIL OR GAS – Showing operator, lease name, and total depth, in feet

ECONOMIC GEOLOGY

COAL

Coal beds in the upper part of the Williams Fork Formation are present in the northwest part of the quadrangle. Graphic measured sections of these beds are shown. The coal beds occur in discontinuous carbonaceous shale zones, and most beds are thin and lenticular. These coals lie at the extreme southeastern edge of the lower White River coal field, described by Gale (1910, p. 179-197). They continue northward into the Elk Springs 15-minute quadrangle where they constitute the upper coal zone as mapped by Dyni (1968). No analyses are available for coals in the area. Gale (1910, p. 250) reported analyses of three coal samples collected from probably correlative strata in the Rangely area, about 25 miles west of the Smizer Gulch quadrangle. The samples range from 11,040 to 11,490 Btu per pound, and contain 0.40 to 0.75 percent sulfur.

OIL AND GAS

Eight unsuccessful drill holes have tested oil and gas possibilities in the quadrangle. The Shell Oil Co., Government 22X-17 drill hole in sec. 17, T. 2 N., R. 97 W., encountered noncommercial shows of oil in the Weber Sandstone (Pennsylvanian and Permian age) at a depth of about 15,000 feet. Just south of the quadrangle in the valley of the White River, gas is produced from shallow reservoirs of lenticular sandstone in the Wasatch and Fort Union Formations. The White River dome, a few miles southeast of the quadrangle, also yields gas from lenticular Tertiary and Upper Cretaceous sandstones.

OIL SHALE

The Parachute Creek Member of the Green River Formation crops out in the southwestern part of the quadrangle and forms a part of the northern rim of the Piceance Creek basin. South of the mapped area in the Piceance Creek basin the Parachute Creek Member contains thick zones of rich oil shale that grade north and northwestward into barren marlstone in the mapped area. Very thin beds of oil shale mark the Mahogany ledge near the top of the main body of the Parachute Creek, but even these cannot be recognized at Blair Mountain.

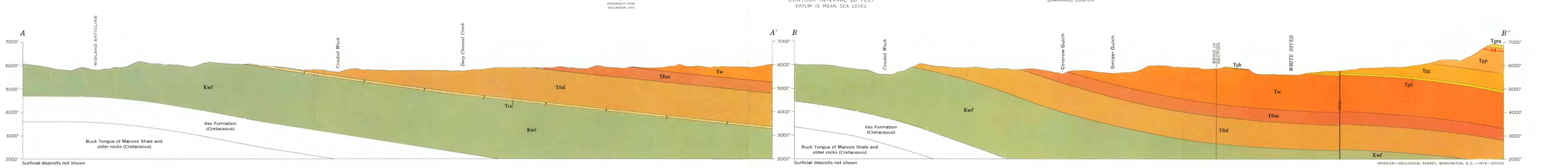
GRAVEL

Gravel is readily available from terrace deposits along the White River (map unit Qg). Gravel has been produced from the large pits in secs. 2, 11, and 13, T. 2 N., R. 98 W. for local road construction and maintenance. Terrace gravel probably underlies part of the alluvial and colluvial deposits (map unit Qac) in this area. All these deposits are traversed by or are close to Colorado State Highway 64.

REFERENCES

Dyni, J. R., 1968, Geologic map of the Elk Springs quadrangle, Moffat County, Colorado: U.S. Geol. Survey Geol. Quad. Map GQ-702.

Gale, H. S., 1910, Coal fields of northwestern Colorado and northeastern Utah: U.S. Geol. Survey Bull. 415, 265 p.



GEOLOGIC MAP OF THE SMIZER GULCH QUADRANGLE, RIO BLANCO AND MOFFAT COUNTIES, COLORADO

By

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1973

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