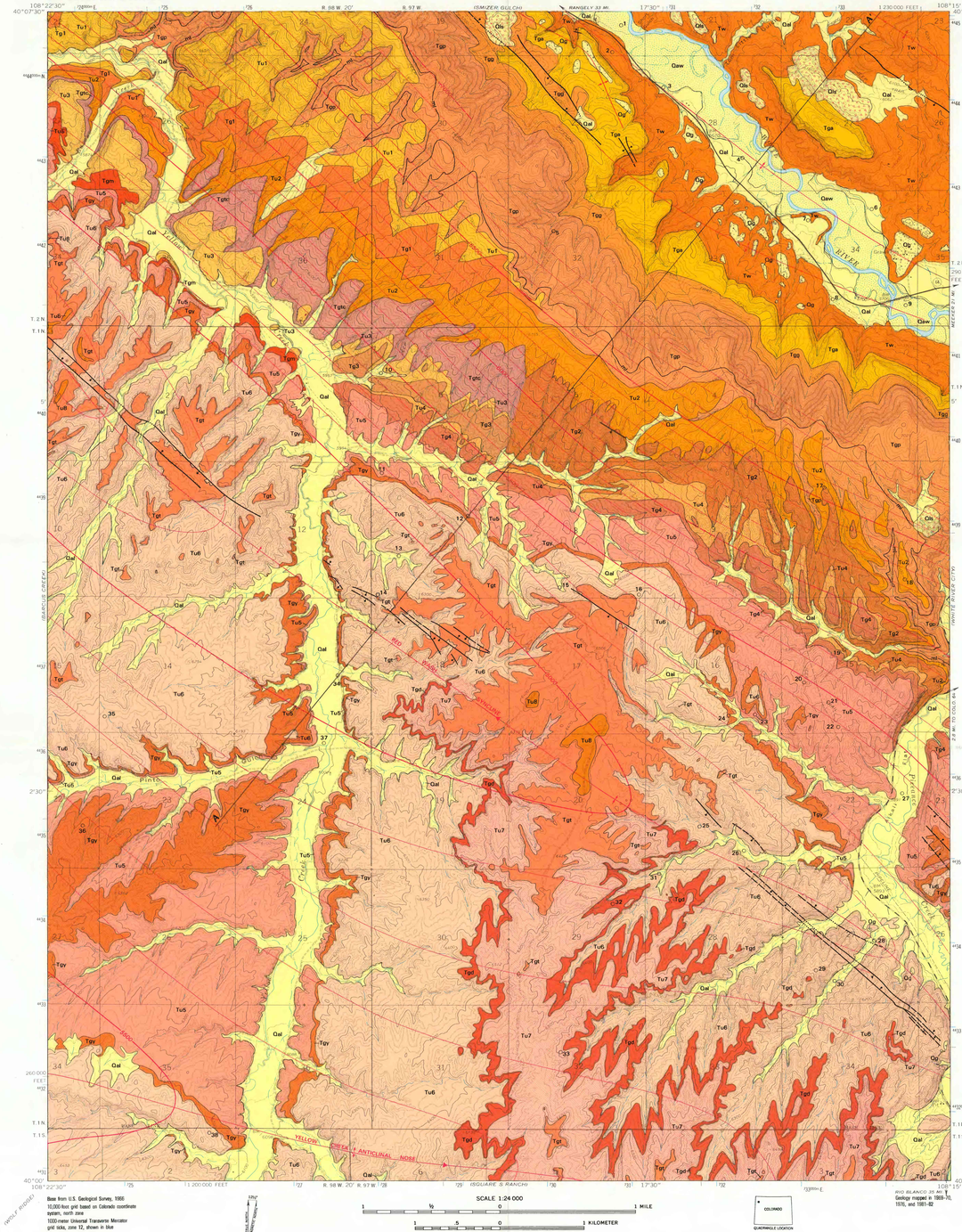
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

GEOLOGIC QUADRANGLE MAP
BARCUS CREEK SE QUADRANGLE, COLORADO
GQ-1613



CORRELATION OF MAP UNITS

DESCRIPTION OF MAP UNITS

Surficial deposits (Holocene and Pleistocene)

Qal — **Alluvium**—Mud, silt, sand, and gravel. Mostly confined to stream valleys, but does not include alluvium (Qaw) in valley of White River. Mostly derived from nearby sources. May also include some slope wash from adjacent valley walls. Includes alluvial fan deposits from tributaries of the White River

Qaw — **Alluvium in valley of White River**—A mixture of rounded gravel from distant sources to the east and mud, silt, sand, and gravel from nearby sources

Qls — **Landslide deposits**—Coherent to chaotic rock masses from local bedrock

Qg — **Terrace gravel deposits**—Gravel patches at various levels above White River and Piceance Creek. Along White River, rounded pebbles and larger clasts are mostly silicified sandstone or siltstone and quartzite, abundant basalt or other dark volcanic rock, and sparse granite and other crystalline or metamorphic rocks. Along Piceance Creek, clasts are mostly silicified sandstone and siltstone and minor limestone. Maximum clast size about 1 ft (0.3 m). Clasts are locally cemented by calcite and form a resistant conglomerate. Locally terrace deposits are partly obscured by hillwash and colluvial material. Maximum thickness about 20 ft (6 m)

Uinta Formation (Eocene)—Mostly clastic sediments of a prograding deltaic complex that ultimately filled the Eocene lake in which the sediments of the Green River Formation were deposited. Generally southward-thinning wedges composed chiefly of sandstone and siltstone that interfinger with marlstones of the Green River Formation

Tu8 — **Unnamed tongue 8**—Sandstone, conglomeratic sandstone, and conglomerate; mostly fluvial channel deposits. Some variably silty marlstone locally present in upper part. Sandstone is fine grained, light gray where quartzose, to greenish gray and brown where impure. Conglomeratic beds contain rounded chert pebbles and grit-sized clasts of chert and silicified sandstone and siltstone. Top not present in this quadrangle. Equivalent to map unit Tug in the Barcus Creek quadrangle to the west (Hail, 1984). Maximum remaining thickness about 20 ft (6 m)

Tu7 — **Unnamed tongue 7**—Mostly sandstone, siltstone, and claystone; lesser marlstone; minor limestone. Sandstone beds are light to medium brown, are fine to coarse grained, and contain considerable amount of clay and rock and nonquartz mineral fragments. Some of the sandstone beds are alluvial channel deposits and contain sparse clay pebbles and concretions. Most of the sandstone beds are poorly cemented and nonresistant, but locally form resistant ledges where cemented by lime. Siltstone is medium brown to greenish brown and mostly argillaceous. Sandstone and siltstone become increasingly mafic in southern part of quadrangle. Claystone beds, which predominate in upper part of unit, are commonly greenish brown or grayish green, variably silty, and locally are commonly greenish brown or grayish green, variably silty, and locally are nonmarine. Claystone is light grayish green; present at or near top of tongue where overlain by the Thirteenmile Creek Tongue of the Green River Formation. Tongue 6 is equivalent to map unit Tue in the Barcus Creek quadrangle to the west (Hail, 1984). Thickness ranges from about 200 to 350 ft (61 to 107 m)

Tu6 — **Unnamed tongue 6**— Sandstone and lesser amounts of siltstone, marlstone, claystone, and sparse limestone. Sandstone is light grayish brown, fine to medium grained, locally coarse grained, and massive or even bedded to crossbedded. Channel sandstone deposits form resistant cliffs locally and contain soft-rock fragments in lower part. Siltstone is light to medium brown and brownish gray, probably tuffaceous, variably marly, and locally argillaceous. Tongue contains several marlstone beds which are light gray to brownish gray and variably silty. Claystone is light grayish green; present at or near top of tongue where overlain by the Thirteenmile Creek Tongue of the Green River Formation. Tongue 6 is equivalent to map unit Tue in the Barcus Creek quadrangle to the west (Hail, 1984). Thickness ranges from about 200 to 350 ft (61 to 107 m)

Tu5 — **Unnamed tongue 5**—Light- to dark-brown fine- to medium-grained sandstone and siltstone. Contains several marlstone beds. Sandstone and siltstone are variably tuffaceous, marly, and massive to even bedded. Contains sparse channel deposits. Forms conspicuous brown-weathering cliffs along Piceance Creek. Equivalent to map unit Tud in the Barcus Creek quadrangle to the west (Hail, 1984). Thickness ranges from about 80 ft (24 m) near Barcus Creek in the northwest to about 450 ft (137 m) near Piceance Creek in the southeast

Tu4 — **Unnamed tongue 4**—Light- to medium-brown, fine- to coarse-grained sandstone and several conglomeratic channel deposits in western two-thirds of outcrop area. Contains mostly silty marlstone and very fine grained tuffaceous sandstone and siltstone in vicinity of Piceance Creek. Thickness ranges from 0 to about 120 ft (0 to 37 m)

Tu3 — **Unnamed tongue 3**—Sandstone, siltstone, and marlstone. Sandstone is light to medium brown or light gray and very fine to medium grained. Includes several channel deposits. Siltstone is light brown, variably marly, and tuffaceous. Marlstone is light gray to light brown and locally silty. Equivalent to map unit Tuc in the Barcus Creek quadrangle to the west (Hail, 1984). Thickness ranges from 0 to about 180 ft (0 to 55 m)

Tu2 — **Unnamed tongue 2**—Mostly light- to medium-brown, very fine to medium-grained sandstone and lesser siltstone. Sandstone is massive or even bedded to crossbedded. Contains several channel deposits and is locally conglomeratic near base. Commonly forms resistant ledges and cliffs. Equivalent to map unit Tub in the Barcus Creek quadrangle to the west (Hail, 1984). Thickness ranges from about 40 ft (12 m) near Piceance Creek to about 300 ft (91 m) in north-central part of quadrangle

Tu1 — **Unnamed tongue 1**—Mostly light- to dark-brown fine- to medium-grained sandstone. Some light-gray to light-brown marly siltstone and light-gray marlstone. Sandstone is mostly massive or even bedded to crossbedded and is locally limonitic, blottitic, and concretionary. Very strongly cemented by quartz, and is hard and resistant near mouth of Barcus Creek. Contains several channel deposits that have sharp disconformable basal contacts and basal conglomeratic beds containing soft-pebble clasts. Equivalent to map unit Tua in Barcus Creek quadrangle to the west (Hail, 1984). Thickness ranges from 0 to about 240 ft (0 to 73 m) near mouth of Barcus Creek

Green River Formation (Eocene)—Sediments deposited in a variety of lacustrine environments

Tgt — **Thirteenmile Creek Tongue**—Mostly very light gray carbonate rocks including marlstone and limestone, and lesser gray to greenish-gray variably calcareous or dolomitic claystone. Minor sandstone and siltstone. Limestone includes granular, oolitic, ostracodal, or algal beds; variably argillaceous. Marlstone and limestone beds are mostly hard and resistant and form stripped surfaces, especially in western part of quadrangle. Maximum thickness about 80 ft (24 m)

Tgd — **Dry Fork Tongue**—Mostly light-gray to light-brown marlstone. Locally contains one or two sandstone beds. Marlstone is variably silty to argillaceous in upper part. Unit thins northeastward and wedges out in south-central part of quadrangle, contains a 1-ft (0.3-m-) thick bed of very lean oil shale. Thickness ranges from about 10 to 70 ft (3 to 21 m)

Tgv — **Yellow Creek Tongue**—Light-gray to light-brown marlstone; lesser marly siltstone; some granular sparsely ostracodal limestone; minor sandstone. In northwestern part of quadrangle, contains a 1-ft (0.3-m-) thick bed of very lean oil shale. Thickness ranges from about 10 to 70 ft (3 to 21 m)

Tg4 — **Unnamed tongue 4**—Light-brown marlstone that weathers to light gray. Contains a few thin, very low grade oil-shale beds in eastern part of quadrangle. Sparse very thin tuff beds. Thickness ranges from about 45 to 150 ft (14 to 46 m)

Tgm — **Marlstone at Mare Canyon**—Mostly light-gray to light-grayish-brown marlstone, variably silty. Some marly siltstone and minor calcareous sandstone. Thickness ranges from about 10 to 60 ft (3 to 18 m)

Tg3 — **Unnamed tongue 3**—Mostly light-gray silty marlstone and several beds of light-brown sandstone including a few channel deposits. Thickness ranges from about 60 to 90 ft (18 to 27 m)

Tg2 — **Unnamed tongue 2**—Light-gray to light-brown, variably silty, locally platy-weathering marlstone. Some thin light-gray sandstone beds. Contains at least one penecontemporaneous sandstone slump block. Unit contains several beds of very low grade oil shale and several very thin tuff beds near Piceance Creek. Thickness ranges from about 150 to 350 ft (46 to 107 m)

Tgtc — **Marlstone tongue at Trail Canyon**—Light-brown to light-gray, variably silty, platy-weathering marlstone. Some light-brown mally siltstone. Minor very fine to fine-grained light-gray to light-brown sandstone. Thickness ranges from about 60 to 200 ft (18 to 61 m)

Tg1 — **Unnamed tongue 1**—Mostly marlstone, very light gray to light-brownish gray, variably silty, locally platy weathering. Minor siltstone and a few thin sandstone beds. Includes a 3-ft (1-m-) thick bed of resistant granular limestone near top of tongue west of Yellow Creek. Merges with Parachute Creek Member in north-central part of quadrangle. Equivalent to map unit Tgua in the Barcus Creek quadrangle to the west (Hail, 1984). Thickness ranges from about 40 to 200 ft (12 to 61 m)

Tgp, mt — **Parachute Creek Member**—Dolomitic marlstone, oil shale, and some clay shale in lower part. Also contains several beds of marly siltstone, sparse sandstone, and numerous very thin beds of analcimized tuff. Marlstone is gray to light grayish brown. Oil shale is medium to dark brown. Both marlstone and oil shale weather light gray. Clay shale is brown to brownish gray. Member contains several zones of rich oil shale (see fig. 1, table 1, and separate section on oil shale). Member also includes potentially valuable deposits of nahcolite and dawsonite (Fitz and Dyni, 1967). A detailed study in Piceance Creek area (Brobst and Tucker, 1973, p. 28–32) shows that the marlstone and oil shale are dominantly dolomite in a mineral mixture of quartz, feldspar, calcite, analcime, and clay in varying proportions. Oil-shale values decrease markedly from the center of the quadrangle northward, and the top of the Mahogany ledge oil-shale zone, shown on map as mt, is only tentatively identified north of the T. 1 N.-T. 2 N. line. Base of member is approximately the base of the R-2 rich oil-shale zone (see fig. 1). Marlstone and oil shale are relatively resistant and form cliffs of basin rim. Thickness ranges from about 1,000 to 1,700 ft (300 to 520 m)

Tgg — **Garden Gulch Member**—Mostly thin-bedded, fissile to papery-weathering brown clay shale; locally dolomitic. Contains clay-rich oil shale in upper part (R-1 rich oil-shale zone). Weathers light brown to light gray. Contains a few thin beds of light-gray ostracodal limestone near base. Also contains several very thin beds of analcimized tuff. Nonresistent; forms slopes. Thickness ranges from about 160 to 490 ft (49 to 149 m)

Tge — **Anvil Points Member**—Mostly brown-weathering, locally ostracodal sandstone; several beds of light-brown-weathering ostracodal or oolitic limestone. Sandstone is fine to medium grained, massive to even bedded. Some brown to gray siltstone and variably silty claystone and shale. Shale is locally fissile. Sandstone and limestone beds are commonly resistant and form benches and cliffs. Thickness ranges from about 180 to 400 ft (55 to 122 m). Thins toward west on outcrop. Tongues out toward southwest in subsurface

Tw — **Wasatch Formation (Eocene)**—Mostly grayish-yellow, purple, and red claystone and some mudstone. Also contains light-gray to brown, fine-to coarse-grained, locally conglomeratic, massive to crossbedded, channel sandstone; largely of fluvial origin. Also includes brown to gray, locally ostracodal clay shale, some brown carbonaceous shale, and several beds of ostracodal or oolitic limestone; largely of paludal and lacustrine origin. Lowermost beds of the Wasatch Formation, which are Paleocene in age elsewhere, are not exposed in this quadrangle. Thickness about 1,830–2,000 ft (550–610 m). Maximum thickness of exposed rocks about 500 ft (152 m)

Contact—Approximately located where obscured by soil cover or vegetation

Fault—Dashed where approximately located; dotted where concealed. Bar and ball on downthrown side

6000 — **Structure contours**—Drawn on top of Mahogany oil-shale zone. Elevations shown in feet above mean sea level. Contour interval 100 ft (about 30 m). Dashed where datum is absent owing to erosion

Folds—Showing crestline or troughline and direction of plunge where known

Anticline

Syncline

Drill hole—Number keyed to table 2

OIL SHALE AND ASSOCIATED MINERALS

Rich oil-shale deposits underlie most of the quadrangle. Oil shale is present in the Parachute Creek and Garden Gulch Members of the Green River Formation, and all the named oil-shale zones (fig. 1) are exposed. The Garden Gulch Member includes the rich R-1 zone and lean L-1 zone, as well as some oil shale below R-1. The Parachute Creek Member includes all oil-shale zones above L-1. Figure 1 shows Fischer assay oil yields and oil-shale zones for four core holes, three of which are in the Barcus Creek SE quadrangle. Fischer assays shown in this figure were made by the U.S. Bureau of Mines at Laramie, Wyo.

The information in table 1 is based on published maps by Pitman (1979) and Pitman and Johnson (1978) and on unpublished maps by Pitman (written commun., 1984). In general, oil-shale values and thicknesses for all the oil-shale zones decrease northeastward from the central or southwestern part of the quadrangle to the outcrop area along the basin rim. Table 1 shows resource figures for all the named oil-shale zones and the Mahogany zone. Resources for oil-shale beds above the Mahogany zone, the B groove, and below the R-1 zone (see fig. 1) are not included in table 1. Oil-shale resources above the Mahogany zone are probably insignificant in this quadrangle, although Pitman and Donnell (1973) have shown that large resources are present farther south in the Piceance Creek basin. Oil-shale-bearing beds above the Mahogany are generally low grade and lie within the intertonguing Uinta-Green River sequence in this quadrangle.

Closely associated with the oil shale in the quadrangle are potentially valuable deposits of the sodium minerals nahcolite and dawsonite. These minerals presumably would be produced commercially only as byproducts of oil-shale production. Nahcolite ($NaHCO_3$) is a potential source of industrial soda ash and a gas scrubbing agent. Dawsonite ($NaAl(OH)_2CO_3$) is a potential source of aluminum. Both minerals occur in the saline facies of the Parachute Creek Member of the Green River Formation (Fitz and Dyni, 1967; Dyni, 1974; Beard and others, 1974). The saline facies occupies the deeper parts of the northern Piceance Creek Basin. Most of the Parachute Creek Member in the Barcus Creek SE quadrangle lies within the saline facies. Stratigraphically, the nahcolite and most of the dawsonite lie below the base of a widespread leached zone (approximately the L-5 or R-5 oil-shale zone level), from which the readily soluble nahcolite has been dissolved and removed, and above approximately the L-2 or R-2 oil-shale zone (Trudell and others, 1970; Beard and others, 1974; Dyni, 1974). Resource maps by Beard and others (1974) show that nahcolite resources range from about 300 million tons per square mile in the southwest corner of the quadrangle to zero in the north and east; dawsonite resources range from about 120 million tons per square mile at the southwest corner of the quadrangle to less than 60 million tons in the north and east. The maps by Beard and others (1974) show the total nahcolite resources in the quadrangle to be about 6.4 billion tons and the total dawsonite resources to be about 3.8 billion tons.

REFERENCES CITED

Beard, T. N., Tait, D. B., and Smith, J. W., 1974, Nahcolite and dawsonite resources in the Green River Formation, Piceance Creek basin, Colorado, *in* Murray, D. K., ed., Guidebook to the energy resources of the Piceance Creek basin, Colorado: Rocky Mountain Association of Geologists, 25th Annual Field Conference, 1974, p. 101–109.

Brobst, D. A., and Tucker, J. D., 1973, X-ray mineralogy of the Parachute Creek Member, Green River Formation, in the northern Piceance Creek basin, Colorado: U.S. Geological Survey Professional Paper 803, 53 p.

Dyni, J. R., 1974, Stratigraphy and nahcolite resources of the saline facies of the Green River Formation in northwest Colorado, *in* Murray, D. K., ed., Guidebook to the energy resources of the Piceance Creek basin, Colorado: Rocky Mountain Association of Geologists, 25th Annual Field Conference, 1974, p. 111–121.

Hail, W. J., Jr., 1984, Geologic map of the Barcus Creek quadrangle, Rio Blanco County, Colorado: U.S. Geological Survey Geologic Quadrangle Map GQ–1578, scale 1:24,000.

Hite, R. J., and Dyni, J. R., 1967, Potential resources of dawsonite and nahcolite in the Piceance Creek basin, northwest Colorado in Fourth Symposium on oil shale: Colorado School of Mines Quarterly, v. 62, no. 3, p. 25–38.

Pitman, J. K., 1979, Isopach, structure contour, and resource maps of the R-6 oil-shale zone, Green River Formation, Piceance Creek basin, Colorado: U.S. Geological Survey Miscellaneous Field Studies Map MF–1069, scale 1:126,720.

Pitman, J. K., and Donnell, J. R., 1973, Potential shale-oil resources of a stratigraphic sequence above the Mahogany zone, Green River Formation, Piceance Creek basin, Colorado: U.S. Geological Survey Journal of Research, v. 1, no. 4, p. 467–473.

Pitman, J. K., and Johnson, R. C., 1978, Isopach, structure contour, and resource maps of the Mahogany oil-shale zone, Green River Formation, Piceance Creek basin, Colorado: U.S. Geological Survey Miscellaneous Field Studies Map MF–958, scale 1:126,720.

Trudell, L. G., Beard, T. N., and Smith, J. W., 1970, Green River Formation lithology and oil-shale correlations in the Piceance Creek basin, Colorado: U.S. Bureau of Mines Report of Investigations RI–7357, 14 p.

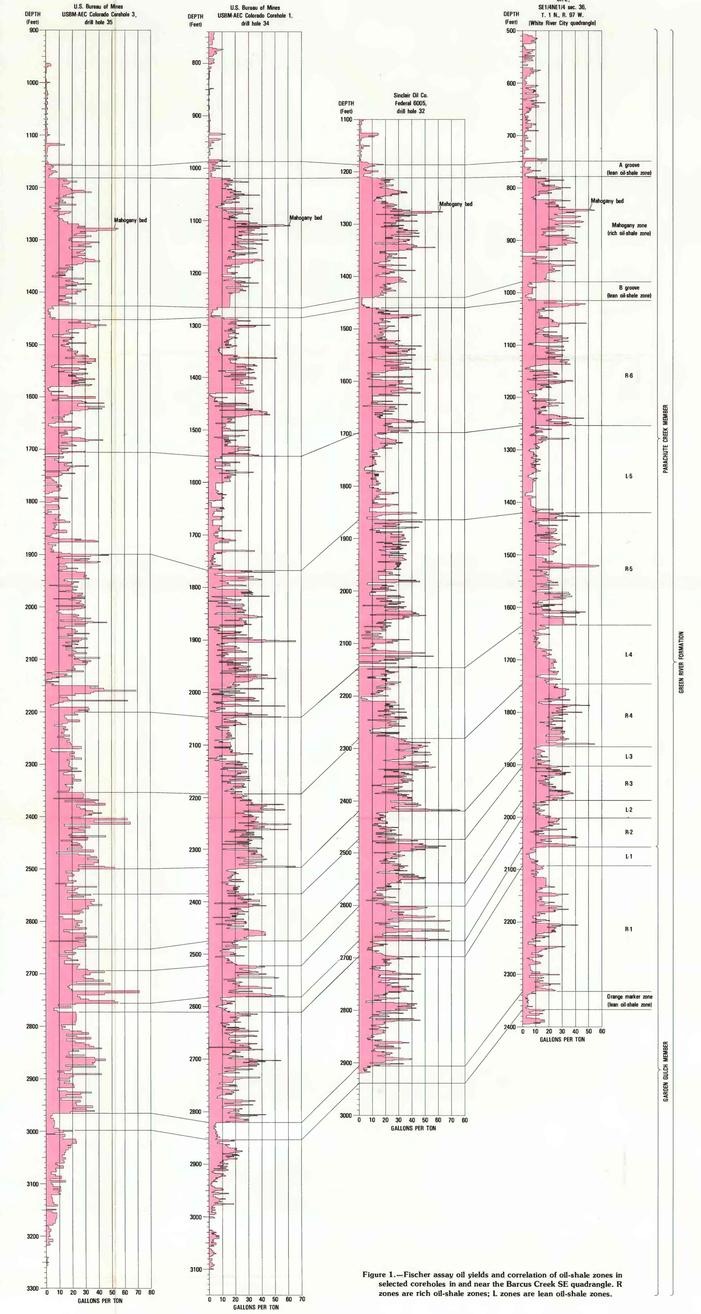


Figure 1.—Fischer assay oil yields and correlation of oil-shale zones in selected coreholes in and near the Barcus Creek SE quadrangle. R zones are rich oil-shale zones; L zones are lean oil-shale zones.

Table 1.—*Oil-shale resources in the Barcus Creek SE quadrangle*

Oil-shale zone	Thickness in feet. Approximate range	Gallons per ton. Approximate range	Barrels per acre. Approx mate range	Approximate total resource in billions of barrels
Mahogany	180–240	10–26	50,000–400,000	8.6
R-6	<200– >260	<5–23	<50,000– >260,000	8.1
L-5	<100–195	<5–15	<25,000–185,000	3.1
R-5	140–310	<15–28	<100,000–535,000	10.0
L-4	<80–180	<10–22	<50,000–240,000	4.2
R-4	65–150	<20–37	<100,000–365,000	6.6
L-3	25–40	<10–20	<25,000–70,000	1.3
R-3	<40–115	<20–32	<90,000–225,000	4.0
L-2	20–55	10–21	<10,000–21,000	0.5
R-2	45–70	15–37	<60,000–150,000	3.4
L-1	35–40	5–14	9,000–35,000	0.6
R-1[1]	135–220	15–38	<200,000–315,000	5.3

[1]Figures are for south half of quadrangle only because no subsurface information is available for the north half.

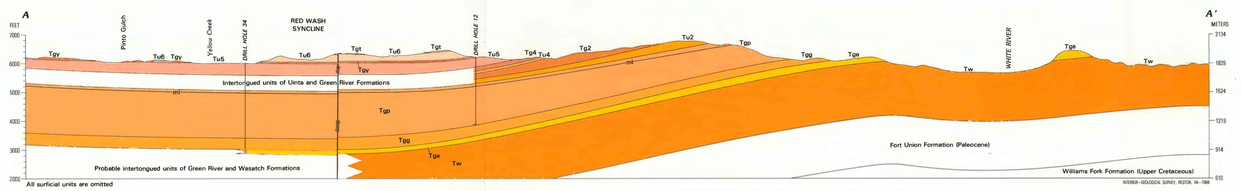
Measurement conversions: U.S. customary units to SI metric units

Feet × 0.305 = meters	Miles² × 2.590 = kilometers²
Gallons × 3.785 = liters	Gallons per ton × 4.171 = liters per metric ton
Barrels × 0.159 = metars³	Barrels per acre × 0.383 = meters³ per hectometer²
Tons × 0.907 = metric tons	Tons per mile² × 0.350 = metric tons per kilometer²
Acres × 0.405 = hectometers²	

Table 2.—*List of drill holes in the Barcus Creek SE quadrangle*

Map no.	Name	Location	Comments
1	American Resources 1-30 Caldwell	SE¼S sec. 30, T. 2 N., R. 97 W.	Gas well; TD[1] 3,076 ft (937 m)
2	Trend Exploration 1A-29 Parker	SE¼S sec. 29, T. 2 N., R. 97 W.	Oil test; dry hole TD 11,843 ft (3,609 m)
3	American Resources 2-28 Dilliard	NW¼S sec. 28, T. 2 N., R. 97 W.	Gas well; TD 3,939 ft (1200 m)
4	American Resources 1 Dilliard-Fristoe	SE¼N sec. 20, T. 2 N., R. 97 W.	Gas well; TD 3,100 ft (945 m)
5	U.S. Geological Survey Corehole 76-5	NW¼N sec. 22, T. 2 N., R. 97 W.	Oil-shale evaluation TD 322 ft (98 m)
6	American Resources 1 Ivory-Fristoe	NE¼E sec. 34, T. 2 N., R. 97 W.	Gas well, abandoned TD 3,040 ft (927 m)
7	American Resources 1 Government	NW¼N sec. 24, T. 2 N., R. 97 W.	Gas well TD 1,273 ft (388 m)
8	American Resources 2-34 Government	SW¼N sec. 34, T. 2 N., R. 97 W.	Gas well TD 3,001 ft (915 m)
9	American Resources 1 Ivory	SE¼S sec. 34, T. 2 N., R. 97 W.	Gas well TD 3,751 ft (1,139 m)
10	Superior Oil Co. No. 10	NW¼N sec. 6, T. 1 N., R. 97 W.	Proprietary
11	Superior Oil Co. No. 32	NW¼N sec. 7, T. 1 N., R. 97 W.	Proprietary
12	Superior Oil Co. No. 19	NE¼E sec. 1, T. 1 N., R. 97 W.	Proprietary
13	Superior Oil Co. No. 2	SW¼N sec. 7, T. 1 N., R. 97 W.	Proprietary
14	Superior Oil Co. No. 18	SW¼N sec. 7, T. 1 N., R. 97 W.	Proprietary
15	Superior Oil Co. No. 24	SW¼N sec. 8, T. 1 N., R. 97 W.	Proprietary
16	Superior Oil Co. No. 31	SE¼N sec. 8, T. 1 N., R. 97 W.	Proprietary
17	Superior Oil Co. No. 5	NW¼N sec. 10, T. 1 N., R. 97 W.	Proprietary
18	Superior Oil Co. No. 3	SW¼N sec. 10, T. 1 N., R. 97 W.	Proprietary
19	Superior Oil Co. No. 1	NW¼N sec. 15, T. 1 N., R. 97 W.	Proprietary
20	Superior Oil Co. No. 22	SW¼N sec. 15, T. 1 N., R. 97 W.	Proprietary
21	Superior Oil Co. No. 29	SW¼N sec. 15, T. 1 N., R. 97 W.	Proprietary
22	Superior Oil Co. No. 13	SW¼N sec. 15, T. 1 N., R. 97 W.	Proprietary
23	Superior Oil Co. No. 21	SE¼N sec. 16, T. 1 N., R. 97 W.	Proprietary
24	Superior Oil Co. No. 4	SE¼N sec. 16, T. 1 N., R. 97 W.	Proprietary
25	Superior Oil Co. No. 11	SW¼N sec. 21, T. 1 N., R. 97 W.	Proprietary
26	Superior Oil Co. No. 20	SE¼N sec. 21, T. 1 N., R. 97 W.	Proprietary
27	Superior Oil Co. No. 16	NE¼N sec. 22, T. 1 N., R. 97 W.	Proprietary
28	Superior Oil Co. No. 14	SE¼N sec. 27, T. 1 N., R. 97 W.	Proprietary
29	Superior Oil Co. No. 28	SW¼N sec. 27, T. 1 N., R. 97 W.	Proprietary
30	Superior Oil Co. No. 12	SW¼N sec. 27, T. 1 N., R. 97 W.	Proprietary
31	Superior Oil Co. No. 30	NE¼N sec. 28, T. 1 N., R. 97 W.	Proprietary
32	Sinclair Oil Co. Federal 8005	NW¼N sec. 33, T. 1 N., R. 97 W.	Oil-shale evaluation; see fig. 1 TD 2,538 ft (856 m)
33	Superior Oil Co. No. 9	NW¼N sec. 32, T. 1 N., R. 97 W.	Proprietary
34	U.S. Bureau of Mines USBM-AEC Colorado Corehole 1	SE¼N sec. 13, T. 1 N., R. 98 W.	Oil-shale evaluation; see fig. 1 TD 3,338 ft (956 m)
35	U.S. Bureau of Mines USBM-AEC Colorado Corehole 3	SW¼N sec. 14, T. 1 N., R. 98 W.	Oil-shale evaluation; see fig. 1 TD 3,797 ft (1,157 m)
36	J.G. Henderson 1 Warren Government	SE¼N sec. 22, T. 1 N., R. 98 W.	Oil test TD 100 ft (55 m)
37	Teton Energy Co. Colorado Middle 24-1	NE¼N sec. 24, T. 1 N., R. 98 W.	Oil test TD 3,122 ft (2,774 m)
38	Humble Oil Co. Yellow Creek 1	NE¼N sec. 2, T. 1 S., R. 98 W.	Oil-shale evaluation; TD 2,825 ft (861 m)

[1]TD, total depth



GEOLOGIC MAP OF THE BARCUS CREEK SE QUADRANGLE, RIO BLANCO COUNTY, COLORADO

By
William J. Hail, Jr.

1988

For sale by U.S. Geological Survey, Map Distribution, Box 25286, Federal Center, Denver, CO 80225.