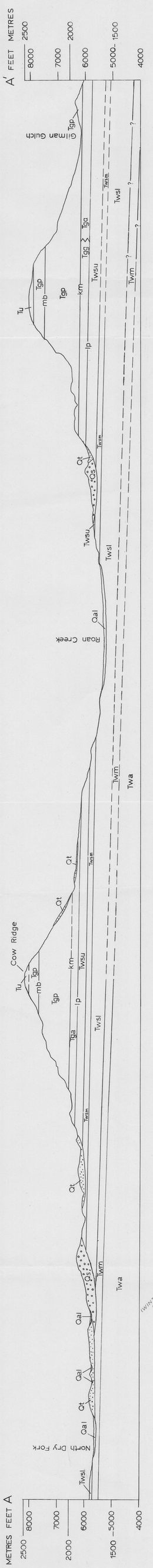
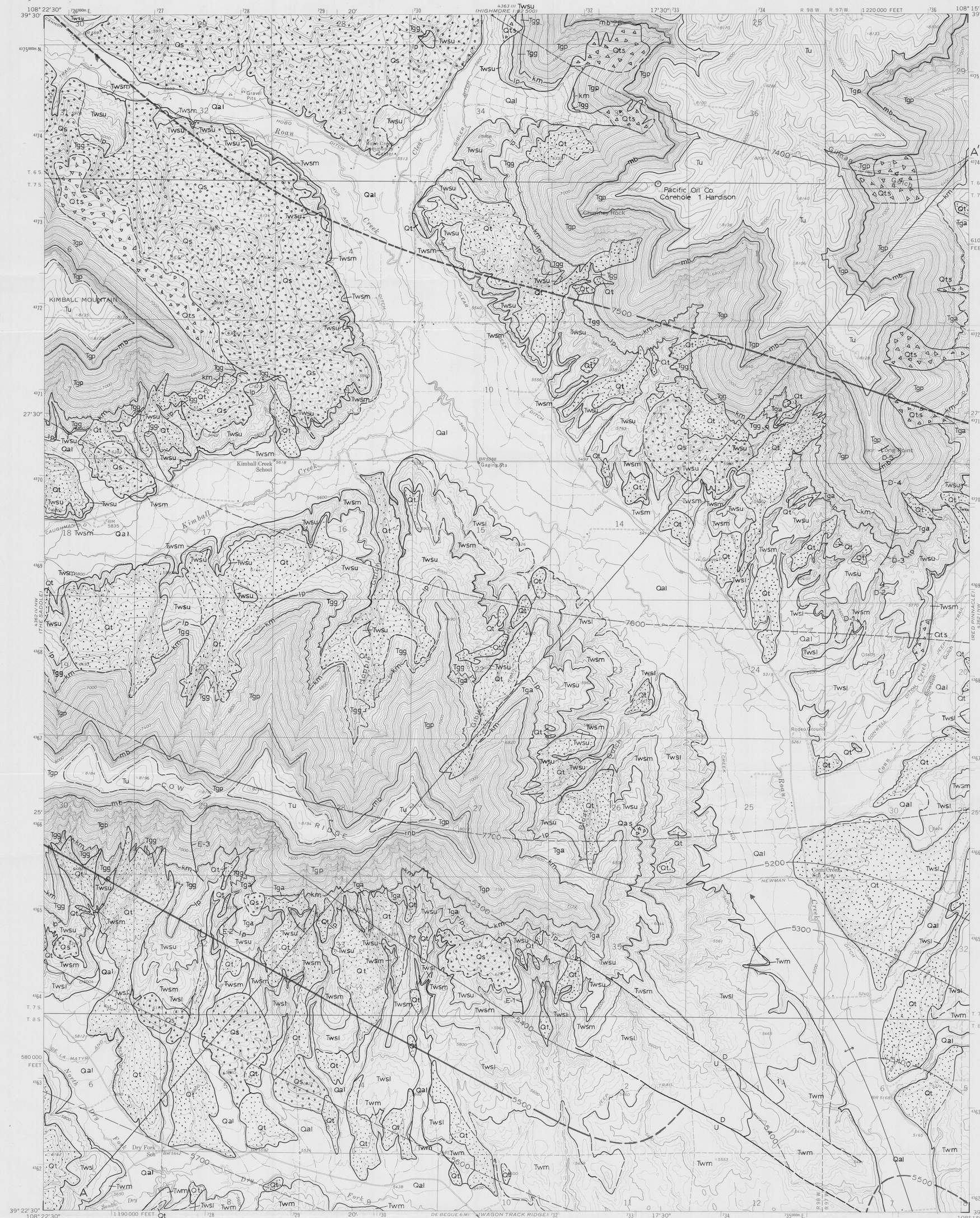
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-688
SHEET 1 OF 2



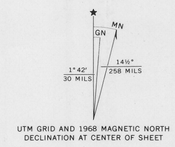


Base from U.S. Geological Survey, 1968

SCALE 1:24 000

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 5 0 1 KILOMETER

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL



UTM GRID AND 1968 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

Geology mapped in 1974

CORRELATION OF MAP UNITS

Qal, Qts, Qt	Holocene	QUATERNARY
Qt, Qs	Pleistocene	QUATERNARY
UNCONFORMITY		
Tu		
Tgp		
mb		
Tgp		
Tgg, km, Tga	Eocene	TERTIARY
lp		
Twsu		
Twsm		
Twsl		
Twm		
Twa	Eocene(?) and Paleocene	

CONTACT--Dashed where approximately located; queried where inferred (in section only)

FAULT--U, upthrown side; D, downthrown side

ANTICLINE--Showing crestline and direction of plunge. Approximately located

STRIKE AND DIP OF BEDS

5500 STRUCTURE CONTOURS--Drawn on top of Mahogany bed of the Green River Formation in the northern part of quadrangle, and on top of the Molina Member of the Wasatch Formation in the southern part of the quadrangle. Dashed where datum is removed. Contour interval 100 feet (30.5 m)

CORE HOLE

DESCRIPTION OF MAP UNITS

Qal ALLUVIUM DEPOSITS (HOLOCENE)--Mostly alluvial fan deposits

Qts TALUS AND SLOPEWASH DEPOSITS (HOLOCENE)--On steep slopes; grades laterally into alluvial deposits

Qt TERRACE GRAVELS (HOLOCENE AND PLEISTOCENE)--Old alluvial fan, talus, and slopewash deposits. Form a single dissected surface which rises rapidly toward the mesas. The deposits were derived locally

Qs SLUMP DEPOSITS (HOLOCENE AND PLEISTOCENE)--Single block as large as 0.3 mi^2 (0.8 km^2). Most show moderate to extreme back rotation. Several slumps south of Cow Ridge are partially buried in terrace gravels as far as 1.5 mi (2.5 km) from the present-day cliff face. Slumps in other parts of the quadrangle also appear to be partially buried by terrace gravels. This suggests a Pleistocene age for at least some of the slumping

Tu UINTA FORMATION (EOCENE)--Mostly brown and gray poorly bedded or massive calcareous sandstone and siltstone; some silty limestone and sandy limestone units. Only the lower 500 ft (150 m) is exposed

GREEN RIVER FORMATION (EOCENE)

Tgp Parachute Creek Member--Mostly carbonate-rich rocks such as oil shale (kerogen-rich dolomitic limestone), silty dolomitic limestone, and dolomitic calcareous siltstone; some siltstone, sandstone, calcareous claystone, and claystone. Includes numerous thin rusty-weathering analcitized tuff beds and zones of algal stromatolite structures. Silty dolomitic limestone and calcareous dolomitic siltstone is thin bedded to medium bedded, forms steep slopes or ledges, weathers buff, and is buff to olive brown when fresh. Oil shale is usually laminated, forms ledges, weathers buff or light blue, and is brown to black when fresh. The top of the Parachute Creek Member is the top of the uppermost oil-shale bed and is 25-50 ft (7.5-15 m) above the top of the Porcupine tuff bed, an informal term. The base is the base of the tuff bed at Kimball Mountain (km), which is approximately at the base of the carbonate-rich beds characterizing the Parachute Creek Member. Thickness 1500-1800 ft (460-550 m); thickens to north

--mb-- Mahogany oil-shale bed--The most oil-rich bed of the Mahogany zone. Thickness about 8 ft (2.5m)

--km-- Tuff bed at Kimball Mountain--Brown weathering, analcitized, about 2 in. (5 cm) thick; crops out in the middle of a 6 ft (2 m) thick section of lean oil shale or silty limestone. Above this 6 ft (2 m) thick section is a conspicuous 15 ft (5 m) thick white silty limestone

Tgg Garden Gulch Member--mostly papery fissile kerogen-rich shale, silty claystone, and siltstone; some thin oil-shale and sandstone units. The papery fissile shale is olive brown, both fresh and weathered; silty claystone and siltstone is olive brown where fresh and olive brown to gray where weathered. Clastic content increases to the east and southeast. The Garden Gulch Member is only in the northwest half of the quadrangle and is the lateral equivalent of the Anvil Points Member (Tga). The lower contact is at the base of the sandstone bed at Long Point (lp). Thickness 180-325 ft (55-100 m); thickens to the east and southeast

Tga Anvil Points Member--Mostly sandstone, siltstone, and silty claystone; some papery fissile kerogen-rich shale. Sandstone is fine grained to medium grained, medium bedded to massive, and locally crossbedded. Clastic content increases to the east and southeast. The member is only in the southeast half of the quadrangle. The contact between the Garden Gulch Member and the Anvil Points Member is mapped at the first appearance of conspicuous sandstone ledges. Thickness 250-350 ft (75-105 m); thickens to east and southeast

--lp-- Sandstone bed at Long Point--Lowermost persistent lacustrine bed; consists of varying amounts of quartz sand, ostracodes, and oolites, with locally abundant *Goniobasis* and *Vivaparus* gastropods. Papery fissile organic shale partings are also developed locally. Thickness 3-15 ft (1-4.5 m)

WASATCH FORMATION

Shire Member (Eocene)

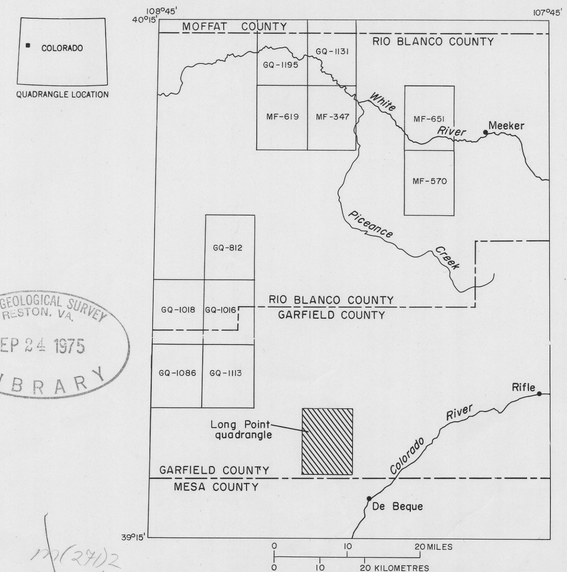
Twsu Upper part--Mostly gray and maroon variegated claystones and silty claystones; some flat-bedded and crossbedded sandstones. Flat-bedded sandstones are medium grained, fine to medium bedded; crossbedded sandstones are medium grained to coarse grained, poorly sorted, and occur both as lenticular channels and as fairly persistent units. Thickness 280-480 ft (85-145 m); thickens irregularly to northeast

Twsm Middle part--Mostly carbonaceous shale, silty claystone, siltstone, and sandstone; some thin coal and limestone beds. Most of the unit contains a significant amount of carbonate. Coal beds are usually less than 4 in. (10 cm) thick and make up less than 2 percent of the unit. The unit weathers light gray in contrast to the variegated gray and maroon slopes above and below. A variegated slope is within the unit in the southeastern one-third of the quadrangle. The upper and lower contacts are the uppermost and lowermost siltstone or claystone beds which contain significant carbonate. Thickness 175-225 ft (55-70 m)

Twsl Lower part--Mostly gray and maroon variegated claystones and silty claystone; some flat-bedded and crossbedded sandstones. Similar to the upper part (Twsu). Thickness 400-800 ft (120-240 m); thickens to northeast

Twm Molina Member (Eocene)--Mostly thick units of ledge-forming sandstone separated by slope-forming gray siltstone and claystone. Sandstone is medium grained to coarse grained, poorly bedded to massive, and makes up about 40 percent of the member. Only the upper part of the member is exposed in Long Point quadrangle; the base is exposed along Roan Creek just south of the quadrangle boundary. Upper contact is at the top of the uppermost sandstone ledge. Thickness about 250-300 ft (75-90 m)

Twa Atwell Gulch Member (Eocene? and Paleocene)--Gray claystone and siltstone; some lenticular brown sandstone, carbonaceous shale, and coal. Shown in section only. Thickness probably 1600-1800 ft (490-550 m)



Index of recently published U.S. Geological Survey geologic maps in the Piceance Creek basin area.

PRELIMINARY GEOLOGIC MAP, OIL SHALE YIELD HISTOGRAMS AND STRATIGRAPHIC SECTIONS, LONG POINT QUADRANGLE GARFIELD COUNTY, COLORADO

By

Ronald C. Johnson

1975

For sale by U.S. Geological Survey, pr ☆U.S. GOVERNMENT PRINTING