

DESCRIPTION OF MAP UNITS

[Note: Descriptions of the surficial deposits of the Hawxhurst Creek quadrangle are included in a detailed report on the Quaternary geology of the Grand and Battlement Mesas, Colorado, by Yeend (1969)]

1 **Alluvium (Holocene)**—Med, silt, sand, and gravel forming
valley floor of Plateau, Buzzard, and Kinball
Creeks. Clasts are basalt and local sedimentary
rocks. Lenses of reddish-brown sandy silt are
common

2 **Alluvial sand and silt (Holocene)**—Yellowish-brown silt
and sand, reddish-brown sand, and generally light sorted,
and gray clay. Derived mostly from local
sedimentary rocks. Locally occupies depresses and
young valleys. Mapped only where moderately
extensive. Maximum thickness about 172 m

3 **Talus deposits (Holocene)**—Boulders and cobbles of
basalt, commonly 1-4 ft (0.3-1.2 m) in diameter,
some as much as 20 ft (6 m) in diameter. Often
covered; boulders have accumulated at base of basalt
cliffs

4 **Slump, earthflow, and landslide deposits (Holocene)**—Two
small slumps in southern part of quadrangle
developed in Tertiary claystone. May be presently
active

5 **Slump blocks and soilification deposits (Holocene and
Pleistocene)**—Basalt blocks and boulders, and
unconsolidated material and down gravel.
Slump blocks form ridges of basalt rubble
mantling much of the high surface of Battement
 mesa. Unbroken blocks of basalt up to 46 m
long and locally as much as 500 ft (152 m) thick.
Most deposits are of Pleistocene age but some
movement continues

6 **Grand Mesa Formation (Pleistocene—Probably time of
Pinedale(?) glaciation)**

7 **Alfalfa gravelly—cottonwood terrace, valley fill, and
fan gravels.** Glacial outwash present between
Buzzard and Plateau Creeks where gravel interfingers
with glacial till (Qgc). Mostly nonclastic in
drainage of Kinball Creek. Composed of
rounded pebbles, cobbles, and boulders of basalt
and variable amounts of sedimentary rocks in a sandy
matrix

8 **Till**—Abundant angular to subangular pebbles, cobbles,
and boulders in a matrix of grayish-brown sand,
silt, and clay. Pebbles and cobbles may be as
90 percent or more basalt. A few basalt boulders
and cobbles are striated but many are sorted and
frosted. Large boulders are covered with a
little weathering. Mostly forms till plain along
Buzzard and Plateau Creeks, but also includes
several isolated patches of later glacial
deposits. Maximum thickness about 150 ft (46 m)

GRP Pediment gravel--Pebbles, cobbles, and boulders of locally derived granitic andesite, siltstone, claystone, and marlstone, in a matrix of poorly sorted, unconsolidated siltstone and claystone-silty sand. Basalt detritus scarce. Probably includes some colluvial material. Commonly mantled with reddish-brown eolian silt. Thicknesses 5-40 ft (1.5-12 m)

GRB Basalt (Miocene)--Erosional remnant of basalt flow that covered the Haystack Mountain and another nearby high area near the northern edge of the quadrangle

GRD Unit--Formation (Recent)--Thin, gray very fine to medium-grained sandstone and medium-grained light-gray marlstone and siltstone; contains gastropods, gastropod fragments, and remains of fossil vertebrates. Upper part eroded. Only isolated outcrops of lower part of formation exposed in quadrangle because of being covered by soil/sulfation deposits (Qs1). Maximum thickness of

exposed Rocks about 900 ft (274 m)
Green River Formation (Eocene)

Tgp Parachute Creek Member—Gray-weathering black, brown, and gray marlstone, including oil shale, that locally forms cliffs; contains minor amounts of light-gray siltstone, light-gray and brown fine- to medium-grained sandstone, and numerous very thin persistent analcite and tuff beds. Maximum

Mahogany oil-shale bed—Outcrop of richest oil-shale bed 80–120 ft (24–37 m) above base of Parachute Creek Member (Typ) in the Mahogany zone. In USGS corehole C-279, Mahogany bed yields as much as 70 gallons of oil/ton (292 L/t). Entire Mahogany zone (ledge) in this hole is 63 ft (19 m) thick and averages 22.1 gallons of oil/ton (92.2 L/t).

Tgg Garden Gulch Member—Light-gray marlstone, dark-brown to black locally fissile shale some of which is oil shale; a few beds of light-gray algal limestone, and some massive brown fine- to medium-grained

Tga **Anvil Points Member**—Brown and buff massive fine- to coarse-grained sandstone that forms conspicuous ledges, minor amounts of light gray siltstone and marlstone and few thin tan low-grade oil-shale beds. Grades westward into the Garden Gulch Member (Tgg), with a decrease in number and thickness of sandstone beds. Facies boundary between Anvil Points and Garden Gulch Members is arbitrarily placed along drainage divide capped by Parachute Creek Member (Tgp) in western part of quadrangle.

Shire Member of Wasatch Formation (Eocene)--Variegated purple, lavender, red, gray, and brown claystone; some locally lenticular fine- to coarse-grained sandstone. Thickens west to east. Maximum thickness of exposed beds about 1,000 ft (305 m)

———— **Contact**--Approximately located where obscured by soil
cover or vegetation

 ⁵ Gas well--Number keyed to table 1

6
Dry hole--Oil and gas test. Number keyed to table 1

C-279
O Oil-shale corehole--Number keyed to table 1

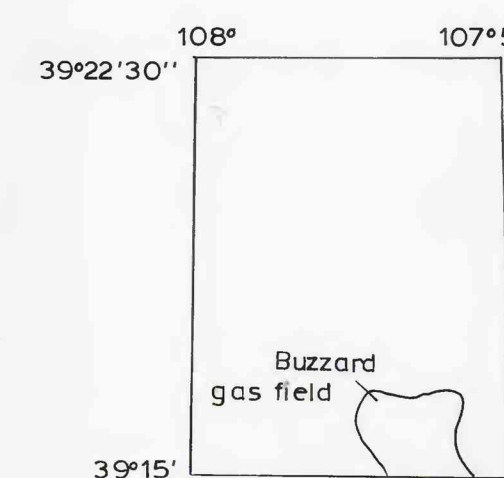
8200— **Structure contour**--Drawn on top of the Mahogany oil-shale bed. Contour interval 100 ft (30.5 m)

REFERENCE

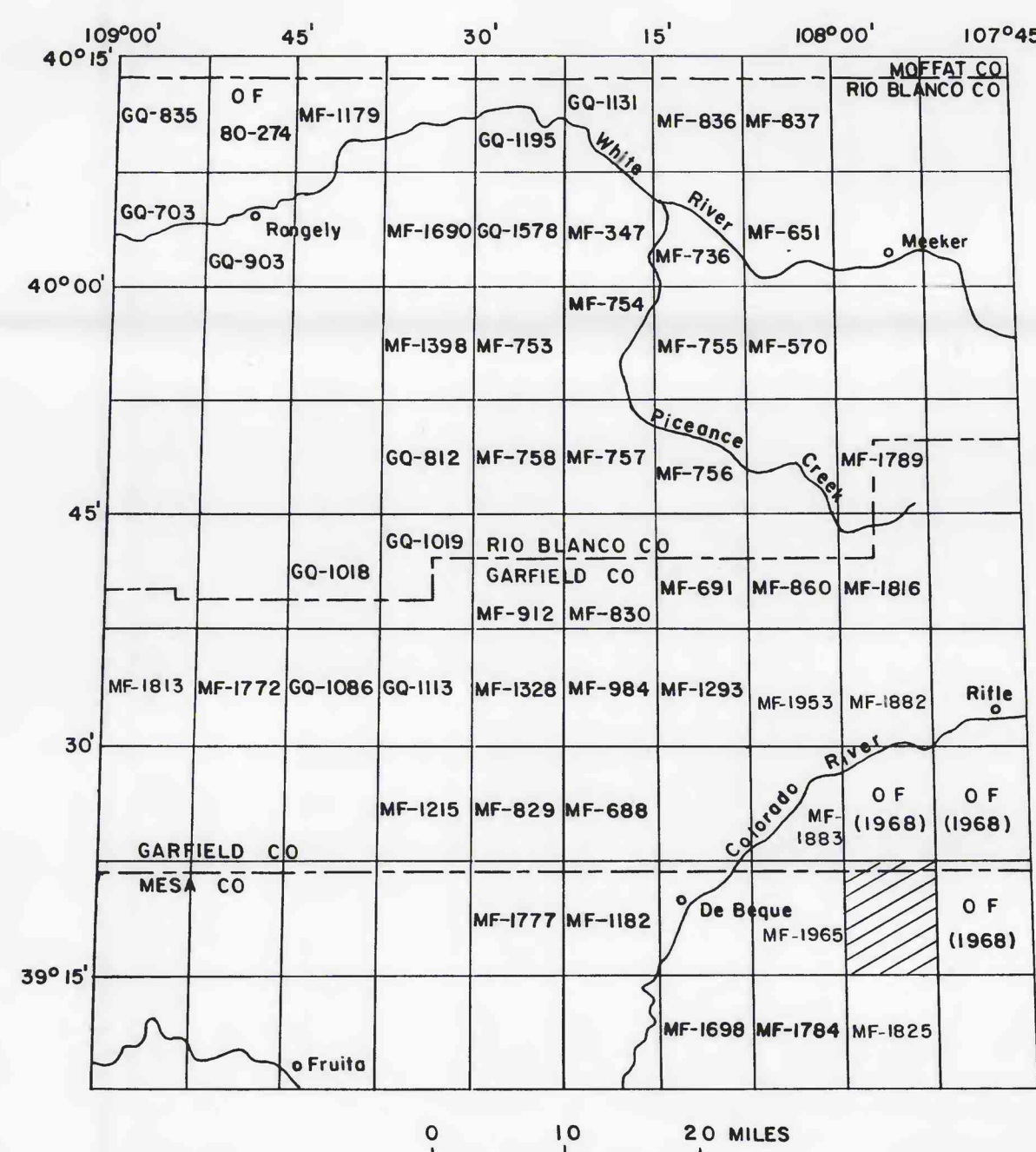
Yeend, W. E., 1969, Quaternary geology of the Grand and Battlement Mesas area, Colorado: U.S. Geological Survey Professional Paper 617, 50 p.

Table 1.--Drill-hole data, Hawxhurst Creek quadrangle, Colorado
[All drill holes are gas exploration wells except for C-279, which is an
oil-shale core hole]

Drill hole No. (on map)	Section	Company and Name	Total depth Feet	Feet
		T. 8 S., R. 94 W.		
1	33	Fred W. Pool, Janice #1	7,715	2,352
		T. 8 S., R. 95 W.		
C-279	10	Gulf Oil Corp., #1A	491	150
		T. 8 S., R. 94 W.		
2	17	Pan American Petroleum, Lumbar #1	6,593	2,010
3	18	Fred W. Pool, Donald #1	6,687	2,038
4	19	Fred W. Pool, Hudson #1	6,357	1,938
5	20	Fred W. Pool, Moss #1	6,619	2,017
		T. 9 S., R. 95 W.		
6	11	Exxon Co., Dan Kenney Estate #1	7,400	2,256
7	13	Fred W. Pool, McGarry #1	6,757	2,060
8	24	Fred W. Pool, Donner #1	5,630	1,716



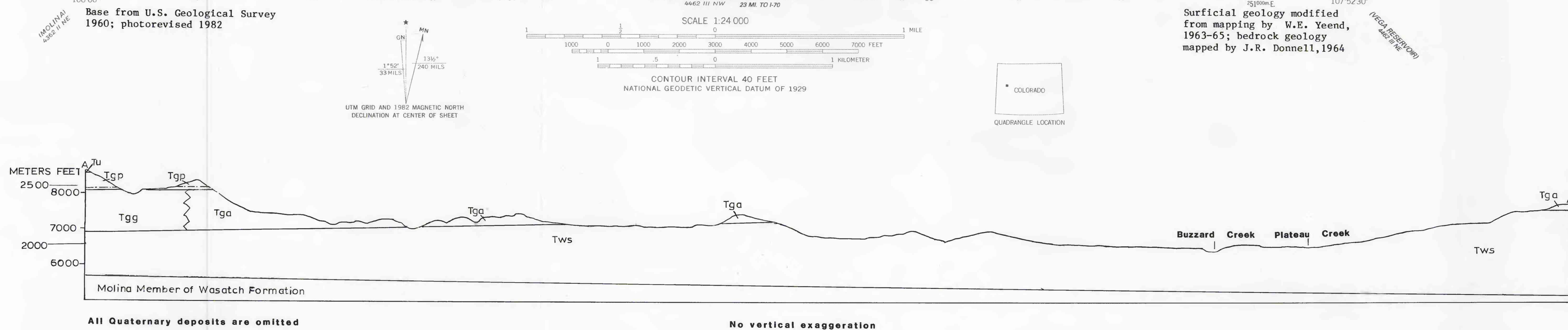
Index to gas fields in the
Hawxhurst Creek quadrangle,
Colorado



INDEX MAP SHOWING LOCATION OF THIS QUADRANGLE (PATTERNED) AND OTHER PUBLISHED U.S. GEOLOGICAL SURVEY 7½-MINUTE GEOLOGIC MAPS IN THE PICEANCE CREEK BASIN AREA, NORTHWESTERN COLORADO. PUBLISHED USGS MAPS INCLUDE GEOLOGIC QUADRANGLE MAPS (CQ), MISCELLANEOUS FIELD STUDIES MAPS (MF), AND OPEN-FILE REPORTS (OF).

GEOLOGIC MAP OF THE HAWXHURST CREEK QUADRANGLE, GARFIELD AND MESA COUNTIES, COLORADO

By
J. R. Donnell, W. E. Yeend, and M. C. Smith
1988



Surficial geology modified
from mapping by W.E. Yeend,
1963-65; bedrock geology
mapped by J.R. Donnell, 1964