

(200)

R295

No. 75-588

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY

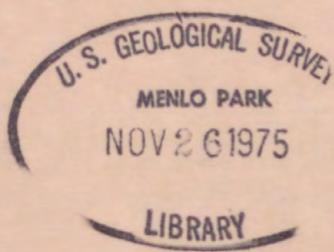
[Reports - Open file series] 75-588.

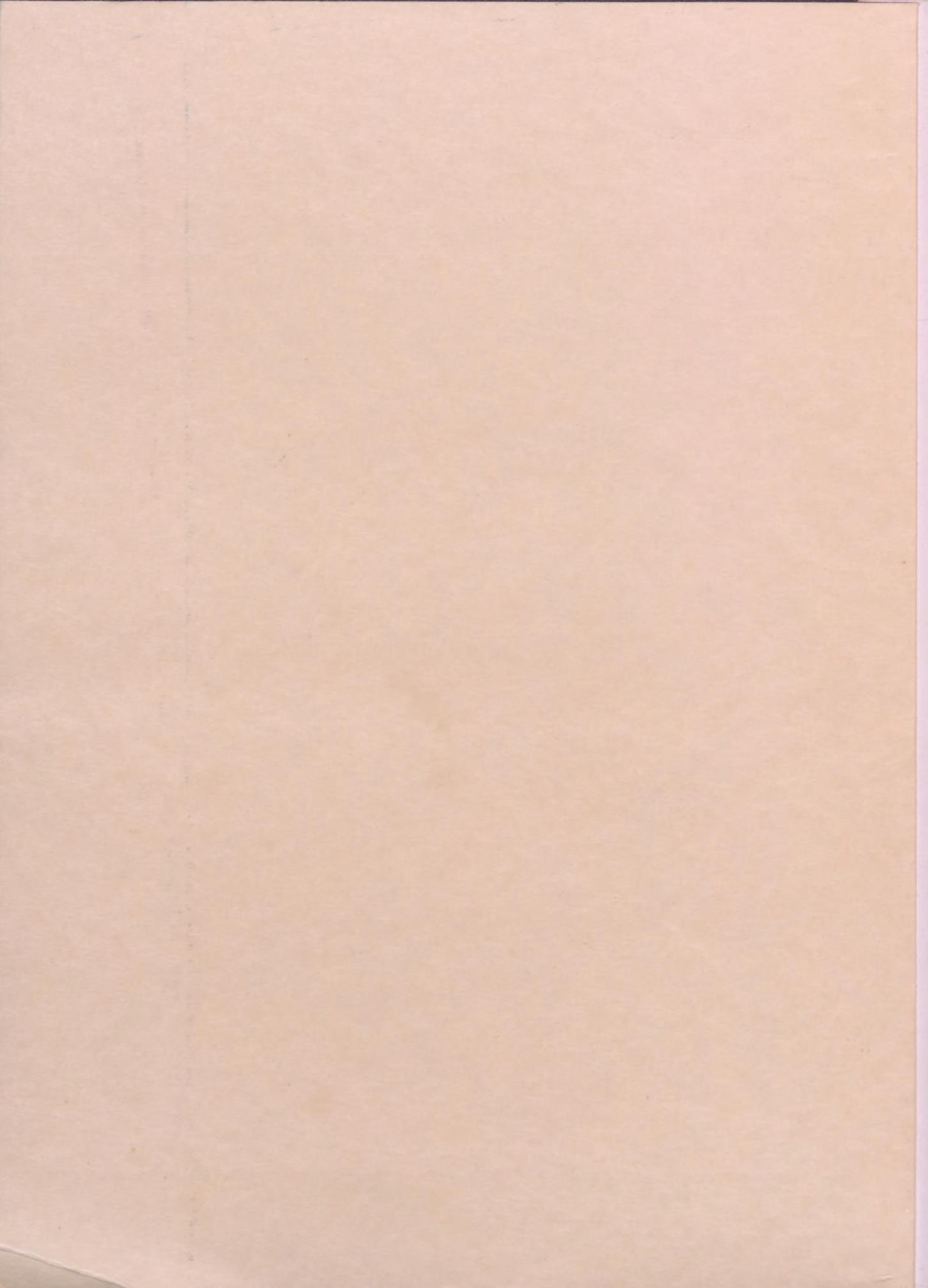
EXPLANATION AND SOURCES OF DATA FOR  
PRELIMINARY GEOLOGIC MAP OF EAST  
HALF OF VERNAL  $1^{\circ}$  X  $2^{\circ}$  QUADRANGLE,  
COLORADO

by

Ogden Tweto

1975





UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

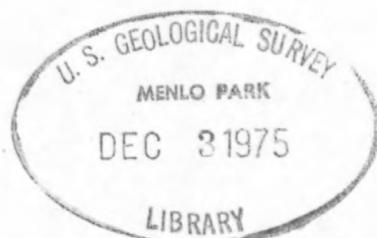
(200)

RG90

W.M. 588

Explanation and Sources of Data for  
Preliminary Geologic Map of East  
Half of Vernal 1°x2° Quadrangle,  
Colorado

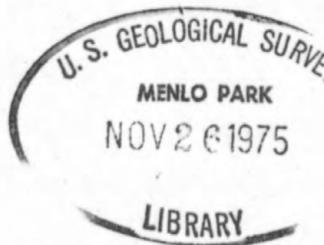
By  
Ogden Tweto



[Reports - <sup>Series</sup> Open-file Report 75-588  
= 1975

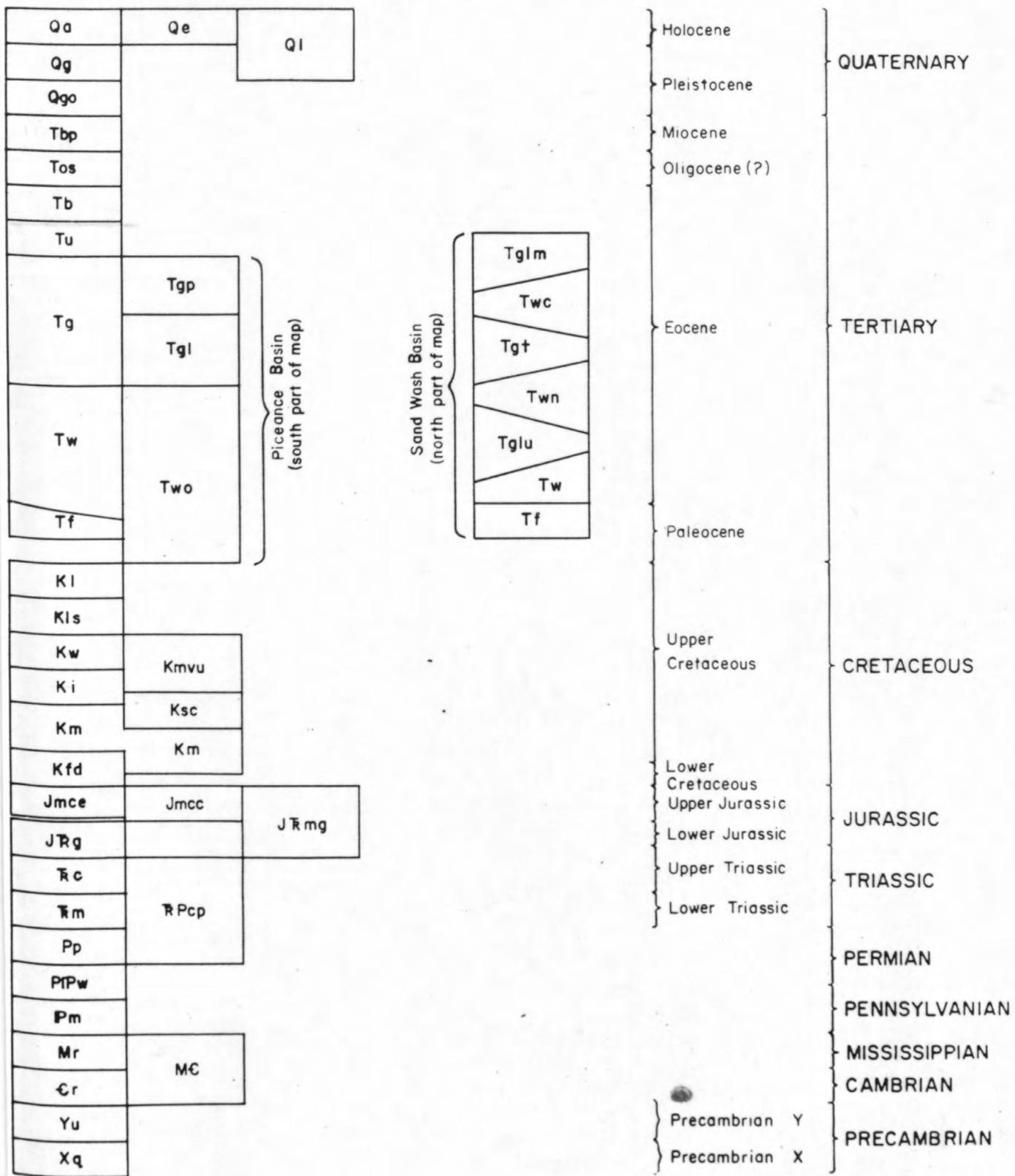
Released: 11/75

This report is preliminary and has not been  
edited or reviewed for conformity with U.S.  
Geological Survey standards and nomenclature.





# CORRELATION OF MAP UNITS



#### DESCRIPTION OF MAP UNITS

(Formations for which no symbols are shown are grouped with other stratigraphic units to form map units)

#### UNCONSOLIDATED HOLOCENE DEPOSITS

Qa Alluvium--Gravel, sand, and silt in stream valleys  
Qe Eolian deposits--Windblown sand and silt  
Ql LANDSLIDE DEPOSITS (HOLOCENE AND PLEISTOCENE)--Mixtures  
derived from various bedrock and surficial units

#### UNCONSOLIDATED PLEISTOCENE DEPOSITS

Qg Young gravels (Bull Lake and younger)--Terrace gravels  
Qgo Old gravels and alluviums (pre-Bull Lake)--High-level  
terrace and pediment gravels  
Tbp BROWNS PARK FORMATION (MIOCENE)--Loosely consolidated  
sandstone, siltstone, and volcanic ash  
Tos OLIGOCENE(?) SEDIMENTARY ROCKS--Includes Bishop Conglomerate  
and Duchesne River Formation (sandstone and shale)  
Tb BRIDGER FORMATION (EOCENE)--Sandstone and claystone;  
conglomerate at base  
Tu UNTIA FORMATION (EOCENE)--Sandstone and claystone  
Tg GREEN RIVER FORMATION (EOCENE)  
Green River units distinguished only in south part of  
map (Piceance Basin)  
Tgp Parachute Creek Member--Marlstone and oil shale  
Tg1 Lower part--Shale, siltstone, and sandstone  
Green River units distinguished in north part of map  
(Sand Wash Basin):  
Tglm Laney Member--Claystone, oil shale, and sandstone  
Tgt Tipton Tongue--Claystone, oil shale, and sandstone.  
Includes wedge of overlying Wilkins Peak Member in  
northwest corner of map  
Tglu Luman Tongue--Siltstone, sandstone, and oil shale

Tw WASATCH FORMATION (EOCENE IN SAND WASH BASIN; EOCENE AND PALEOCENE IN PICEANCE BASIN)--Shale, mudstone, sandstone, and conglomerate

Twc Cathedral Bluffs Tongue

Twn Niland Tongue

Tf FORT UNION FORMATION (PALEOCENE)--Shale, sandstone, and coal  
OHIO CREEK FORMATION (PALEOCENE)--Sandstone and conglomerate

Two Wasatch Formation (including a thin Fort Union equivalent at base) and Ohio Creek Formation

K1 LANCE FORMATION (UPPER CRETACEOUS)--Shale and sandstone; minor coal

K1s LEWIS SHALE (UPPER CRETACEOUS)--Marine shale and minor sandstone  
MESAVERDE GROUP (UPPER CRETACEOUS)  
Kw Williams Fork Formation--Sandstone, shale, and coal

Ki Iles Formation--Sandstone and minor shale and coal.  
Trout Creek Sandstone Member at top

Kmvu Upper part--Sandstone, shale, and coal lying above Sego Sandstone  
Sego Sandstone--Marine sandstone  
Castlegate Sandstone--Marine sandstone separated from Sego Sandstone by Buck Tongue of Mancos Shale

Ksc Sego Sandstone, Buck Tongue of Mancos Shale, and Castlegate Sandstone

Km MANCOS SHALE (UPPER AND LOWER CRETACEOUS)--Marine shale and minor siltstone and sandstone  
Buck Tongue--Shale tongue in upper part of Mancos separated from main body by Castlegate Sandstone. Merges with main body near eastern edge of map. Contains Loyd Sandstone Bed  
Frontier Sandstone Member (Upper Cretaceous)--Calcareous sandstone in lower part of Mancos  
Mowry Shale Member (Lower Cretaceous)--Siliceous shale at base of Mancos Shale

DAKOTA SANDSTONE (LOWER CRETACEOUS)--Sandstone and minor shale and conglomerate. Near U.S. Highway 40 at west edge of map, includes rocks of Lower Cretaceous Cedar Mountain Formation

Kfd Frontier and Mowry Members of Mancos Shale and Dakota Sandstone

MORRISON FORMATION (UPPER JURASSIC)--Shale, mudstone, sandstone, and minor limestone

CURTIS FORMATION (UPPER JURASSIC)--Glauconitic sandstone, shale, and limestone

ENTRADA SANDSTONE (UPPER JURASSIC)--Crossbedded sandstone

CARMEL FORMATION (UPPER JURASSIC)--Siltstone, shale, and minor limestone. Present only near west edge of map

Jmce Morrison, Curtis, and Entrada Formations

Jmcc Morrison, Curtis, Entrada, and Carmel Formations

JT<sub>R</sub> g GLEN CANYON CANYON SANDSTONE (LOWER JURASSIC AND UPPER TRIASSIC)--Crossbedded sandstone separated from Entrada Sandstone by subtle unconformity marked by chert granules. Unit is called Navajo or Nugget by some geologists

JT<sub>R</sub> mg Morrison, Curtis, Entrada, and Glen Canyon Formations

TR c CHINLE FORMATION (UPPER TRIASSIC)--Mudstone, siltstone, and sandstone

TR m MOENKOPI FORMATION (LOWER TRIASSIC)--Shale and mudstone

Pp PARK CITY FORMATION (PERMIAN)--Shale, mudstone, and sandstone

TR Pcp Chinle, Moenkopi, and Park City Formations

PIP w WEBER SANDSTONE (PERMIAN AND PENNSYLVANIAN)--Crossbedded sandstone

PI m MORGAN FORMATION (PENNSYLVANIAN)--Limestone, shale and sandstone

Mr MISSISSIPPIAN ROCKS--Limestone referable either to Madison or Leadville Limestone

Cr CAMBRIAN ROCKS--Quartzite and minor shale referable either to Lodore Formation or Sawatch Quartzite

Mc Mississippian and Cambrian rocks

Yu      UNTA MOUNTAIN GROUP (PRECAMBRIAN Y)--Sandstone or quartzite;  
            minor siltstone and conglomerate

Xq      PRECAMBRIAN X QUARTZITE--Quartzite, amphibolite, and mica  
            schist of Red Creek Quartzite

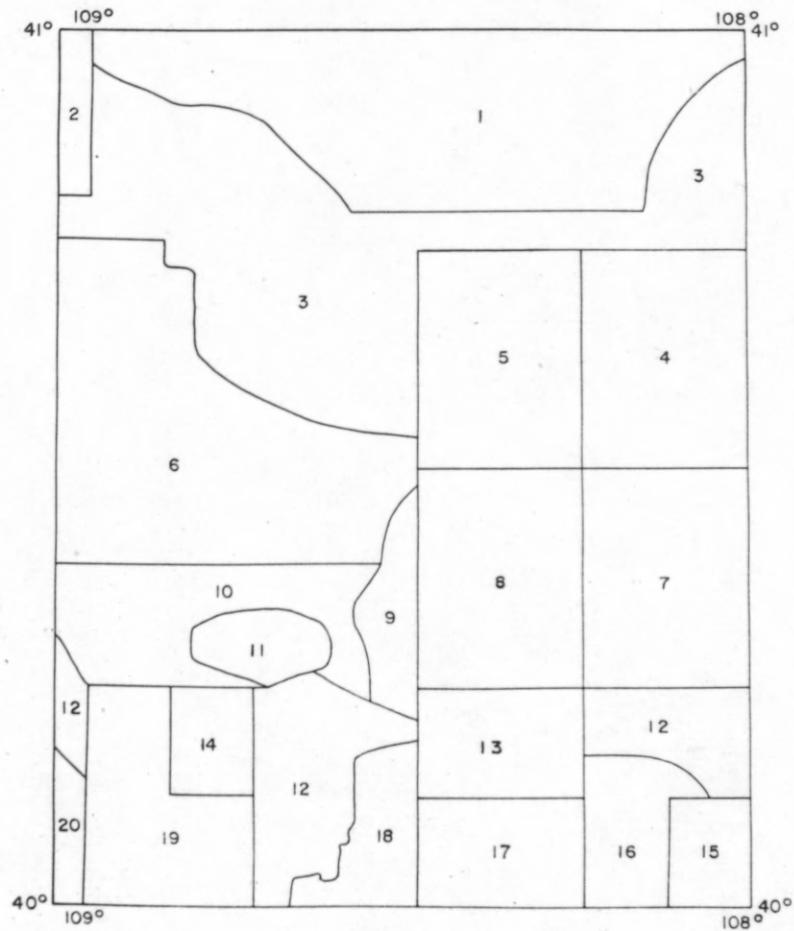
— Contact

— Fault--Dotted where concealed. Bar and ball on downthrown  
    side

—↑— Crest of anticline

—\*— Trough of syncline

--▲-- Concealed monocline



INDEX SHOWING SOURCES OF  
GEOLOGIC INFORMATION

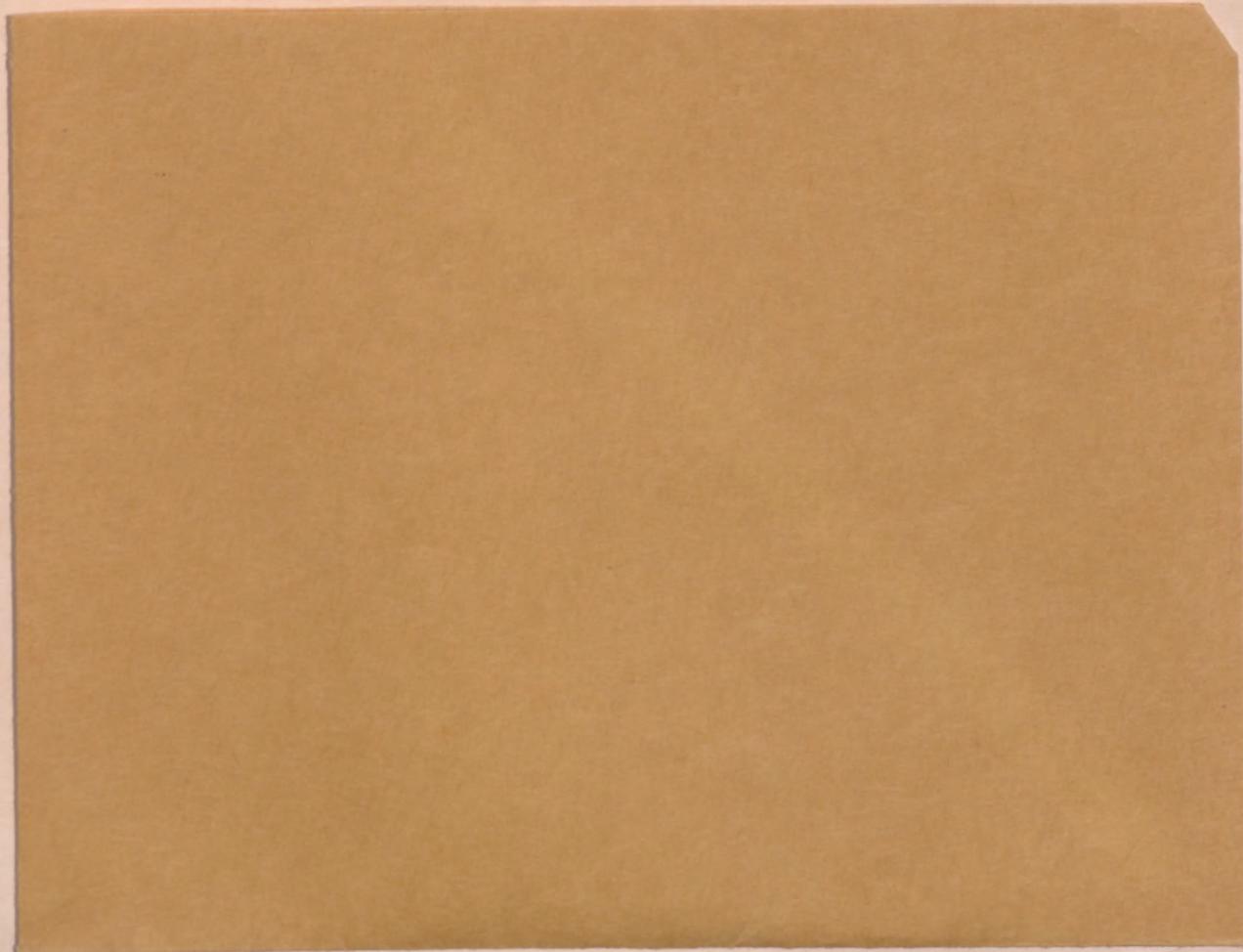
SOURCES OF GEOLOGIC INFORMATION

1. Bradley, W. H., 1964, Geology of Green River Formation and associated Eocene rocks in southwestern Wyoming and adjacent parts of Colorado and Utah: U.S. Geol. Survey Prof. Paper 496-A, 86 p.
2. Hansen, W. R., 1965, Geology of the Flaming Gorge area, Utah-Colorado-Wyoming: U.S. Geol. Survey Prof. Paper 490, 196 p.
3. Sears, J. D., 1924, Geology and oil and gas prospects of part of Moffat County, Colorado, and southern Sweetwater County, Wyoming: U.S. Geol. Survey Bull. 751-G, p. 269-319.  
Hansen, W. R., Kinney, D. M., and Good, J. M., 1960, Distribution and physiographic significance of the Browns Park Formation, Flaming Gorge and Red Canyon areas, Utah-Colorado: U.S. Geol. Survey Prof. Paper 400-B, p. 257-259. (Contacts of Browns Park Formation in western area.)
4. McKay, E. J., and Bergin, M. J., 1974, Geologic map of the Maybell quadrangle, Moffat County, Colorado: U.S. Geol. Survey Geol. Quad. Map GQ-1145.
5. McKay, E. J., 1974, Geologic map of the Lone Mountain quadrangle, Moffat County, Colorado: U.S. Geol. Survey Geol. Quad. Map GQ-1144.
6. Untermann, G. E., and Untermann, B. R., 1965, Geologic map of the Dinosaur National Monument, Colorado-Utah: Vernal, Utah, Dinosaur Nature Association.
7. Izett, G. A., U.S. Geol. Survey unpub. map.  
Gale, H. S., 1910 (item 12).  
Sears, J. D., 1924 (item 3).
8. Dyni, J. R., 1968, Geologic map of the Elk Springs quadrangle, Moffat County, Colorado: U.S. Geol. Survey Geol. Quad. Map GQ-702.
9. Dyni, J. R., U.S. Geol. Survey annotated aerial photographs.
10. Tweto, Ogden, U.S. Geol. Survey unpub. recon. maps



11. Cadigan, R. A., 1972, Geochemical anomalies and alteration in the Moenkopi Formation, Skull Creek, Moffat County, Colorado: U.S. Geol. Survey Prof. Paper 761, 21 p.
12. Gale, H. S., 1910, Coal fields of northwestern Colorado and northeastern Utah: U.S. Geol. Survey Bull. 415, 265 p.
13. Hail, W. J., Jr., U.S. Geol. Survey Geol. Quad. Maps: 1973, Smizer Gulch, GQ-1131; 1974, Rough Gulch, GQ-1195, Rio Blanco and Moffat Counties, Colorado.
14. Cullins, H. L., U.S. Geol. Survey unpub. map.
15. Pipiringos, G. N., 1975, Preliminary geologic map of the Buckskin Point quadrangle, Rio Blanco County, Colorado: U.S. Geol. Survey Misc. Field Studies Map MF-651.
16. Pipiringos, G. N., U.S. Geol. Survey unpub. maps.
17. Hail, W. J., Jr., U.S. Geol. Survey Misc. Field Studies Maps: 1972, Barcus Creek SE, MF-347; 1974, Barcus Creek, MF-619, Rio Blanco County, Colorado.
18. Donnell, J. R., 1961, Tertiary geology and oil-shale resources of the Piceance Creek basin between the Colorado and White Rivers, northwestern Colorado: U.S. Geol. Survey Bull. 1082-L, p. 835-891.
19. Cullins, H. R., U.S. Geol. Survey Geol. Quad. Maps: 1968, Banty Point, GQ-703; 1969, Mellen Hill, GQ-835; 1971, Rangely, GQ-903, Rio Blanco County, Colorado.
20. Cashion, W. B., 1967, Geology and fuel resources of the Green River Formation, southeastern Uinta basin, Utah and Colorado: U.S. Geol. Survey Prof. Paper 548, 48 p.





USGS LIBRARY - MENLO PARK



3 1820 00115561 7