



CORRELATION OF MAP UNITS

Qa	Qs	Pleistocene or Pliocene	QUATERNARY
QTs	QTb		QUATERNARY AND TERTIARY
Tsl	Tw	Pliocene and Miocene	QUATERNARY OR TERTIARY
Jt	Jt		TERTIARY
Tr	Tr	Eocene	JURASSIC
Td	Td		TRIASSIC
Ppr	Ppm	Middle Jurassic	PERMIAN
PPw	PPw		PERMIAN AND PENNSYLVANIAN
Mc	Mc	Lower Triassic	MISSISSIPPIAN
Mm	Mm		

DESCRIPTION OF MAP UNITS

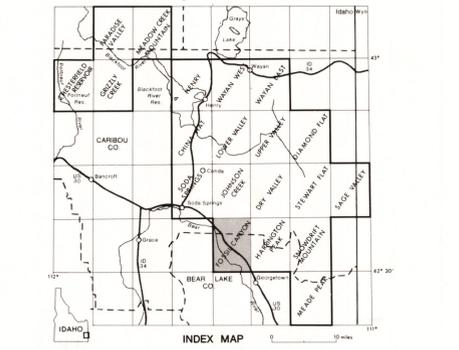
- Qa** ALLUVIUM (QUATERNARY) - Unconsolidated sedimentary deposits along stream valleys; may include colluvium in Fossil Canyon quadrangle and alluvial fans in Dry Valley quadrangle
- Qs** SURFICIAL DEPOSITS (QUATERNARY) - Includes colluvium, older alluvium, hillwash, talus, alluvial-fan, landslide, mud-flow, and boulder deposits
- QTs** SEDIMENTARY DEPOSITS (QUATERNARY AND TERTIARY) - Undivided surficial deposits and Salt Lake Formation
- QTb** BASALT (PLEISTOCENE OR PLIOCENE) - Olivine and augite-olivine basalt
- Tsl** SALT LAKE FORMATION (PLIOCENE AND MIOCENE) - Limestone, sandstone, and chert conglomerate and rhyolitic tuff
- Tw** WASATCH FORMATION (LOWER EOCENE) - Red conglomerate and sandstone
- Jt** TWIN CREEK LIMESTONE (MIDDLE JURASSIC) - Limestone, siltstone, and sandstone
- Tr** THAYNES LIMESTONE (LOWER TRIASSIC) - Sandstone, limestone, siltstone, and shale. As mapped, may include the Lanes Tongue of the Ankereth Formation
- Td** DINWOODY FORMATION (LOWER TRIASSIC) - Siltstone, shale, and limestone. As mapped, may include tongue of the Woodside Shale. Approximately 1,400 to 2,600 ft thick
- Ppr** PHOSPHORIA FORMATION (PERMIAN) - Includes: Rex Chert Member (Lower Permian) - Chert. As mapped, may include cherty shale member of the Phosphoria Formation and lentils of the Franson Member of the Park City Formation. Approximately 200 to 300 ft thick
- Ppm** Meade Peak Phosphatic Shale Member (Lower Permian) - Phosphorite and mudstone. Approximately 100 to 200 ft thick
- PPw** WELLS FORMATION (PERMIAN AND PENNSYLVANIAN) - Sandstone and limestone. As mapped, may include the Grandeur Tongue of the Park City Formation. Approximately 1,500 to 2,200 ft thick
- Mc** CHESTERFIELD RANGE GROUP (UPPER AND LOWER MISSISSIPPIAN) - Limestone, sandstone, and siltstone. Approximately 1,000 to 2,000 ft thick
- Mm** MADISON LIMESTONE (UPPER AND LOWER MISSISSIPPIAN) - Limestone

- CONTACT - Dashed where approximately located, gradational, indefinite or inferred; dotted where concealed; queried where doubtful
- U D --- FAULT - Dashed where approximately located or inferred; dotted where concealed; queried where doubtful. U, upthrown side; D, downthrown side; arrows show relative horizontal movement
- ▲ --- THRUST FAULT - Saulteeth on upper plate. Dashed where approximately located or inferred; dotted where concealed; queried where doubtful
- ↑ --- ANTICLINE - Showing crestline. Dashed where approximately located or inferred; dotted where concealed; queried where doubtful
- ∩ --- SYNCLINE - Showing troughline. Dashed where approximately located or inferred; dotted where concealed; queried where doubtful
- * ∩ --- OVERTURNED ANTICLINE - Showing direction of dip of limbs. Dashed where approximately located or inferred; dotted where concealed; queried where doubtful
- * ∩ --- OVERTURNED SYNCLINE - Showing direction of dip of limbs. Dashed where approximately located or inferred; dotted where concealed; queried where doubtful
- STRIKE AND DIP OF BEDS - Inclined; overturned; vertical; horizontal
- * O --- PHOSPHATE DRILL HOLE - For computing resource tonnages
- PHOSPHATE TRENCH
- PHOSPHATE MINE PIT BOUNDARY - As of September 1979

The geology shown includes: 1) the trace of the top and bottom contacts of the Phosphoria Formation and where data are available the top and bottom contacts of the Meade Peak Phosphatic Shale Member of the Phosphoria Formation; 2) appropriate structural data required for construction of structure contours, overburden isopachs, and resource blocks; and 3) other structural data necessary for understanding the regional geologic picture.

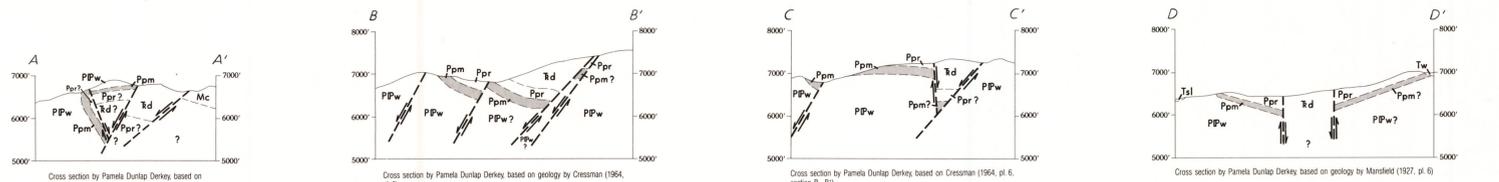
- * --- FAULT SEPARATION - No calculated resource
- * --- FAULT OVERLAP - Twice calculated resources if covered by 1500 ft. or less of overburden
- FAULT TRACE AT DEPTH
- STRUCTURE CONTOURS - On the top of the Meade Peak Phosphatic Shale Member of the Phosphoria Formation. Contour interval 200 feet. Dashed lines where control is poor and interpretation of structure is uncertain
- Intermediate Contour

* - Map units and symbols shown with an asterisk are not on this map.



Base from U.S. Geological Survey 1970
SCALE 1:24,000
CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20 FOOT CONTOURS
NATIONAL GEODESIC VERTICAL DATUM OF 1929

Geology compiled by Pamela Palmer from Armstrong and Cressman (1963, pl. 2), Cressman (1964, pl. 6), Mansfield (1927, pl. 6), and Alumet; geologic interpretation by Pamela Dunlap Derkey and Susan Miller; structure contours and oil boundaries by Pamela Dunlap Derkey; trench log analyzed by Alexandra Zemanek; assisted by Warren Barrash and Marge Lane; cartography by David Taylor and Gabe C. Johnson



**STRUCTURE CONTOURS ON THE TOP OF THE MEADE PEAK PHOSPHATIC SHALE MEMBER
MAPS SHOWING SELECTED GEOLOGY AND PHOSPHATE RESOURCES OF THE FOSSIL CANYON QUADRANGLE,
BEAR LAKE AND CARIBOU COUNTIES, IDAHO**

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For sale by Branch of Distribution, U.S. Geological Survey, Box 25286, Federal Center, Denver, CO 80225
Explanatory pamphlet accompanies map