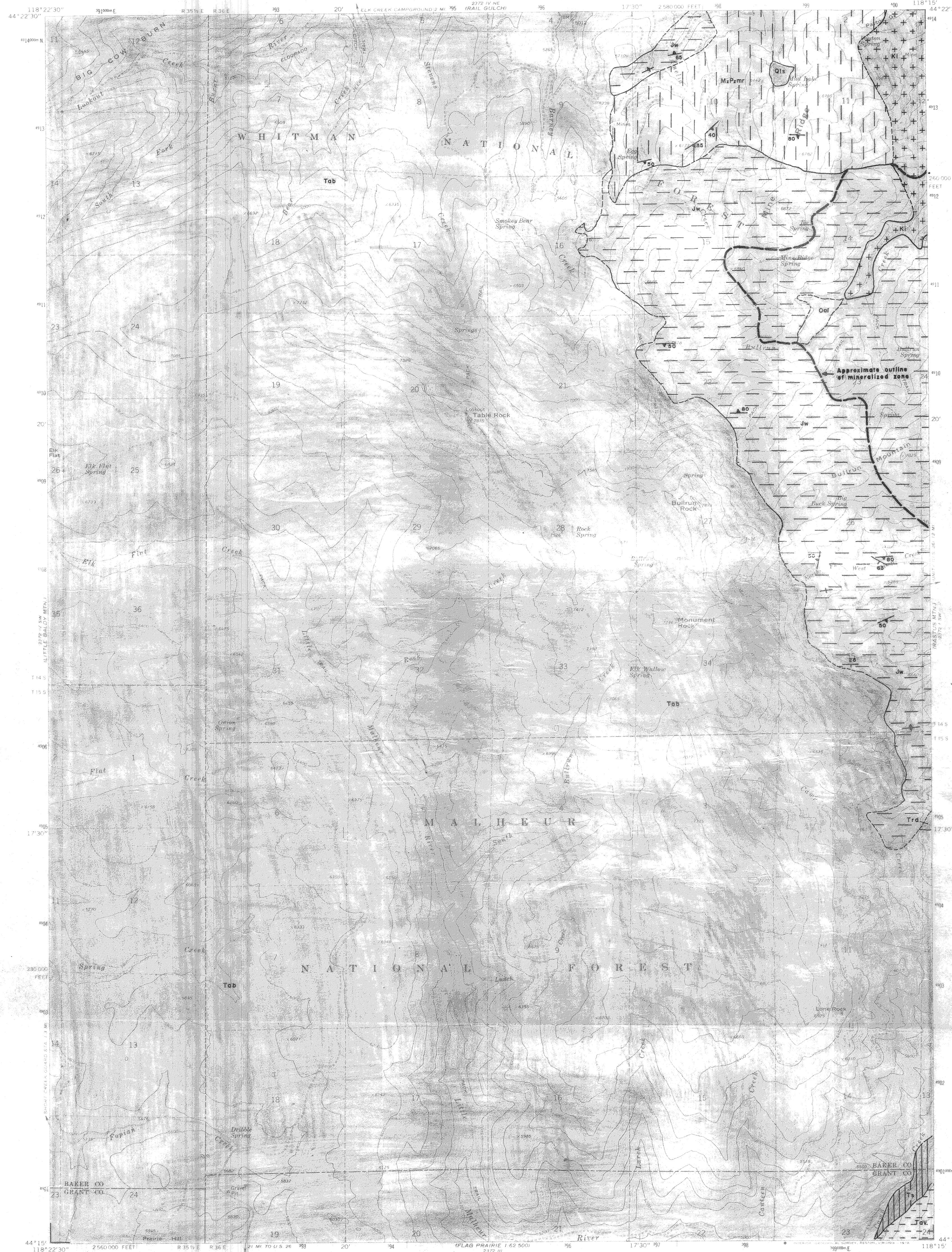


# GEOLOGIC MAP OF THE BULL RUN ROCK QUADRANGLE OREGON

O-79-6

STATE OF OREGON  
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES  
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BULL RUN ROCK QUADRANGLE  
OREGON  
7.5 MINUTE SERIES (TOPOGRAPHIC)



### CORRELATION OF MAP UNITS

|           |            |   |     |          |     |     |         |     |
|-----------|------------|---|-----|----------|-----|-----|---------|-----|
| CENOZOIC  | QUATERNARY | Qal   | Qls |          |     |     |         |     |
|           | TERTIARY   | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">PLIOCENE</td> <td style="text-align: center;">Tev</td> <td style="text-align: center;">Tob</td> </tr> <tr> <td style="text-align: center;">MIOCENE</td> <td style="text-align: center;">Trd</td> <td style="text-align: center;">Jw</td> </tr> </table> |     | PLIOCENE | Tev | Tob | MIOCENE | Trd |
| PLIOCENE  | Tev        | Tob   |     |          |     |     |         |     |
| MIOCENE   | Trd        | Jw  |     |          |     |     |         |     |
| MESOZOIC  | CRETACEOUS | Kl  |     |          |     |     |         |     |
|           | JURASSIC   | Jw  |     |          |     |     |         |     |
|           | TRIASSIC   | MaPumr  |     |          |     |     |         |     |
| PALEOZOIC |            | MaPumr  |     |          |     |     |         |     |

### EXPLANATION

- Qal** Alluvium: Unconsolidated fluvial deposits consisting of clay, silt, sand, and gravel
  - Qls** Landslide debris
  - Tev** **Andesite vitrophyre:** Dominantly grayish-green, vitrophyric, porphyritic, and nonporphyritic andesite and basalt flows with minor amounts of partly welded, gray and pink lithic tuff and gray porphyritic andesite
  - Tob** **Andesite and basalt:** Gray to dark-gray, locally red to brown, nonporphyritic and porphyritic andesite and basalt flows and flow breccia; locally includes olivine basalt, dark-colored silicic flows and flow breccia and minor andesitic and basaltic tuff and tuff breccia. Light-colored, silicic volcanic rocks and tuffaceous sedimentary rocks make up part of the section in a few places. Platy flow structure is a common feature of the andesite and basalt flows, and many of the flows have vesicular tops. Age assignment is based on lithologic and stratigraphic correlations with the Strawberry Volcanics (Brown and Thayer, 1966)
  - Trd** **Silicic volcanic rocks:** Dominantly grayish-green, porphyritic biotite rhyodacite and fine-grained hornblende dacite with some light-gray, iron-stained and partially silicified and kaolinized rhyolite or dacite, biotite-bearing air-fall tuff and poorly sorted tuffaceous sandstone and conglomerate
  - Kl** **Intrusive rocks:** Mainly porphyritic hornblende diorite and quartz diorite. Only the larger intrusive complexes have been mapped separately. Hundreds of dikes and sills of similar composition cut the Weatherly Formation and older rocks elsewhere in the map area. The mapped exposure in the northwestern part of the quadrangle includes some equigranular quartz diorite. Small roof pendants of silicified breccia and sedimentary rocks of the Weatherly Formation are present in the central body. Most of the rocks are strongly altered by hydrothermal solutions (see paragraph on mineralization below). Relatively unaltered hornblende-biotite rhyodacite and hornblende quartz diorite dikes and sills cut the altered intrusive rocks locally. The age of the intrusions is uncertain. The rocks postdate the Weatherly Formation of Early and Middle Jurassic age and predate volcanic rocks of Miocene age. Dikes of similar composition cut the Tureman Ranch Diorite which has been dated at  $120 \pm 6$  m.y. (Thayer and Brown, 1964)
  - Jw** **Weatherly Formation:** Mostly wacke and siltstone; minor conglomerate, tuff, and arkosic sandstone. Limestone lenses are rare. Typical colors are light gray, tan, and gray-green, with minor amounts of dark gray and black. Pervasive shear cleavage generally strikes northeasterly and dips steeply, obscuring bedding features in most outcrops. Near the edges of the intrusive bodies (Kl), the rocks have been altered hydrothermally (see paragraph on mineralization below). The Weatherly Formation is of Early and Middle Jurassic (early Sinemurian to early Callovian) age. Ammonites of Bajocian age have been reported from the map area (Lowry, 1968, p. 22). This unit was informally named the Rastus Series by Lowry for exposures on Rastus Mountain
  - MaPumr** **Mixed rock terrane:** This unit is composed of small, tectonically juxtaposed blocks of foliated metamorphic rocks (albite-epidote-amphibole schist, quartz-mica schist, hornblende-epidote-garnet gneiss), ultramafic rocks (serpentinized peridotite, pyroxenite), metabasalt, contorted black chert, green argillite, and greenstone in a disrupted matrix of serpentine and argillite. The Mine Ridge Schist (Lowry, 1968) is included within this unit. Age of the unit is uncertain; the rocks of the terrane were juxtaposed prior to the deposition of the Weatherly Formation
- Mineralization:** Within the area outlined on the map, most of the intrusive rocks (Kl) and sedimentary rocks (Jw) have been hydrothermally altered and mineralized. In the porphyritic intrusive rocks, the alteration is characterized by the replacement of hornblende by epidote, chlorite, and pyrite, and the silicification or saussurization of both groundmass and feldspars. Locally these rocks contain small amounts of copper and molybdenum sulfides. The sedimentary rocks were bleached, silicified, and pyritized by the hydrothermal solutions. The pyrite generally occurs as minute disseminated crystals and as crystal aggregates along small fractures. Locally within the mineralized zone there are large areas of siliceous pyritized breccia

### REFERENCES

Brown, C.E., and Thayer, T.P., 1966, Geologic map of the Canyon City quadrangle, northeastern Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-447.

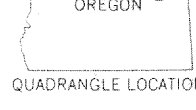
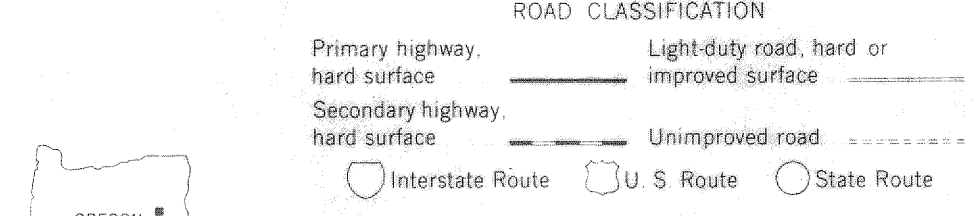
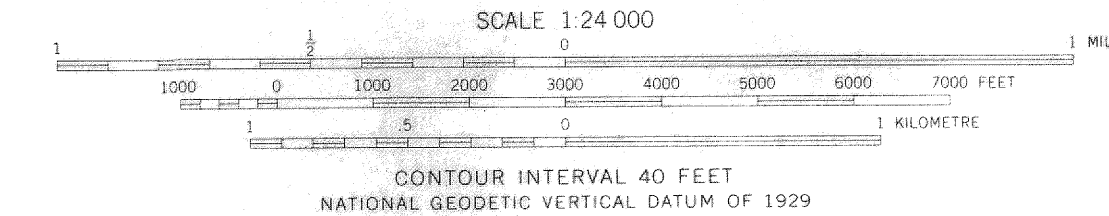
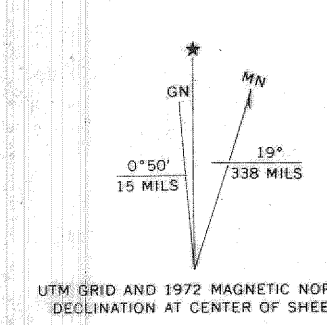
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Control by USGS and NOS/NOAA  
Topography by photogrammetric methods from aerial photographs taken 1971. Field checked 1972.  
Projection: Oregon coordinate system, north zone (Lambert conformal conic)  
10,000-foot grid ticks based on Oregon coordinate system, north and south zones  
3000 metre Universal Transverse Mercator grid ticks, zone 11.



- #### GEOLOGIC SYMBOLS
- Contacts, dashed where approximately located
  - Faults, dashed where approximately located
  - Strike and dip of bedding
  - Strike and dip of cleavage or foliation

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