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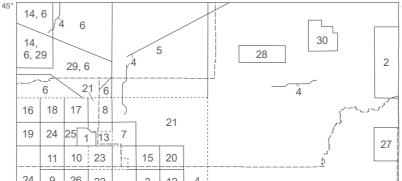
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INDEX MAP OF NUMBERED REFERENCES

Rhyolite (Eocene and Paleocene) - Leucocratic, tan, white, pinkish-white to light-gray stocks and small laccoliths of rhyolite that weather to light-tan, gray, to yellowish-brown. Contains phenocrysts of oligoclase, quartz, and biotite in a finely crystalline to aphanitic potassium feldspar and minor quartz groundmass

apatite, zircon, and pyroxene. Flow sheeting prevalent, locally weathering to thin

- **Trachyte** (Eocene and Paleocene) Gray, tan, to reddish-brown, iron-stained stocks, laccoliths, sills, and dikes of trachyte, quartz trachyte, and alkali rhyolite. Aphanitic to porphyritic, having a potassium feldspar groundmass with minor quartz. Contains phenocrysts of sanidine, orthoclase, anorthoclase, aegirineaugite, and biotite in a fine-grained orthoclase-quartz-biotite groundmass
- Latite (Eocene and Paleocene) Dark-gray, light-gray, to greenish-gray, can have an orange iron-oxide staining where weathered. Laccoliths and sills of latite, latitic andesite, and quartz latite. Contains phenocrysts of andesine, oligoclase, biotite, hornblende, and sphene in an aphanitic andesine-biotite-quartz groundmass
- Nonconformity Ludlow Formation (Paleocene) - White, tan, yellow, and gray, crossbedded, locally rippled, fine to medium-grained, silty quartz sandstone that forms ledges, especially near the middle of the formation, and interbedded, locally bentonitic, gray siltstone, claystone, and sandy or silty claystone and shale. Characterized by numerous coal and uranium-bearing lignite beds with associated peat-claystone, carbonaceous shale, clinker, and gypsum crystals. Exposed thickness approximately 100 ft (30.5 m)
- Hell Creek Formation (Upper Cretaceous) Tan to brown and light- to dark-gray, "somber beds" of shale. Interbedded with brown to red carbonaceous shale, gray and brown bentonitic silty shale, and gray, brown, and yellow siltstone sandstone and claystone-pebble condomerate. Resistant sandstone heds occur near the base. Calcareous and ferromanganese concretions locally abundant. Approximate thickness 300-375 ft (91.4-114.3 m)

CRETACEOUS

- members. Thickness 0-80 ft (0-24.4 m) Disconformity
- Deadwood Formation (Lower Ordovician and Middle Cambrian) -Variegated, yellow to red, brown, gray, and green. Local basal conglomerate dominantly of quartz pebbles overlain by laminated to thick-bedded, very fine- to coarse-grained, glauconitic sandstone, shale, limestone, and intraformational limestone pebble conglomerate. Skolithos sp. burrows occur at the top of the formation. Thickness 200-650 ft (61-198 m)

Nonconformity **PRECAMBRIAN**

- Metamorphosed shale (Lower Proterozoic) Siliceous biotite slate, phyllite, and schist. Locally garnetiferous. Gray, dark-gray, to black. Includes the Grizzly Formation, Swede Gulch Formation, and part of the Oreville Formation. Thickness estimated to be at least 6,562 ft (2,000 m)
- Metagabbro (Lower Proterozoic) Grayish-green, dark-green, to greenishblack dikes and sills of amphibolite, chloritic amphibolite schist, actinolite schist, greenstone, and serpentine. Medium crystalline except where sheared or well foliated and schistose. Composed of plagioclase, hornblende, biotite, and calcite. Thickness of sills vary. Bodies may represent more than one age.
- Metagraywacke (Lower Proterozoic) Quartz-mica schist, phyllite, and quartzose schist. Tan, gray to brownish- and reddish-gray. Fine- to very-fine grained, thin- to thick-bedded. May be equivalent in part to Xgw1, Xgw2, and Xgw3. Protolith is distal to proximal turbidite deposits. Thickness could be as much as 7218 ft (2200 m)
- Metagraywacke unit 3 (Lower Proterozoic) Tan to dark-gray, thick- to thin-bedded, quartzose schist and phyllite. Calcareous and calc-silicate concretions occur locally in quartz-rich Bouma A beds. Protolith is proximal graywacke with minor shale interbeds

- Iron-formation (Upper Archean and Lower Proterozoic) Includes multiple
- Poverty Gulch Slate (Lower Proterozoic) Slate, phyllite, and interbedded graphitic slate and schist. Dark brown to black. Laminated, with alternate laminae vpically containing abundant small garnets (Bayley, 1972a). Gradational into the Flag Rock Formation (Xf). Protolith is shale, siltstone, tuffaceous volcaniclastic sediments carbonate- and silicate-facies iron-formation, and chert beds. Includes
- Tenderfoot Formation (Lower Proterozoic) Micaceous phyllite and schist, accessory magnetite and ilmenite, and locally with malachite-stained muscoviterich schist, and thin spessartine-bearing beds. Laterally equivalent to the Poverty Gulch Slate (Xps). Protolith is alimina-rich seafloor weathered alkalic volcanic tuff
- massive metachert and banded siderite-metachert or cummingtonite rich beds. Metamorphosed black shale (Lower Proterozoic) - Phyllite, and biotite to garnet schist, thin-bedded, dark-gray to black. Locally carbonaceous. Contains
- Metaconglomerate, quartzite, and metapelite (Lower Proterozoic) -
- Northwestern Formation (Lower Proterozoic) Phyllite, slate, and biotite-
- Ellison Formation (Lower Proterozoic) Sericite— and biotite-quartz phyllite,
- Moonshine Gulch Quartzite (Lower Proterozoic) Metagraywacke and rounded, medium- to coarse-grained, moderately to poorly sorted quartz grains gray and black layered carbonate, and sericitic to micaceous and graphitic slate and phyllite. Pyrite occurs as disseminated grains. Protolith is proximal turbidite
- Gingrass Draw Slate (Lower Proterozoic) Slate and phyllite, olive-drab to tan, thin-bedded. Upper portion contains thin quartzite and metasilt beds that
- Estes Formation (Lower Proterozoic) Interbedded quartzite, chloritic and paraconglomerate. Brown, reddish-brown, tan, to gray. Protolith is heterogeneous
- ntertonguing marine fan deposits deposited west of the Estes Growth Fault in a
- of a mafic lower cumulate zone altered to serpentine, an interior of hornblendite and amphibolite that is transitional to diorite, and an uppermost discontinuous Boxelder Creek Quartzite (Lower Proterozoic) - Includes the Greenwood, Novak, and Tomahawk tongues that are gradational into overlying quartzite. Age

located; dotted where concealed Dashed where approximately located; dotted where concealed

 Arrow indicates direction of plunge. Monocline, synclinal bend Dashed where approximately located. Shorter arrow on steeper limb Monocline, anticlinal bend ______ Dashed where approximately located.

Shorter arrow on steeper limb ----Dotted where concealed

FAULTS Dashed where approximately located; dotted where concealed. Bar and ball on downthrown side. Arrows indicate lateral movement

Mine

OTHER FEATURES