Quaternary:

Qls	Landslides.
Qal	Pleistocene and Recent alluvium

Tertiary to Quaternary:

QTg	Late Miocene to early Pleistocene gravels and sands.

Angular Unconformity

Tertiary:

TKf	Late Miocene Keating Formation: Tuffaceous lacustrine and fluvial sediments; diatomite, tuff, and siltstone. Equivalent to the Chalk Butte Formation in the area of Vale, Oregon. Fossils include diatoms, leaves (Keating flora), fish, gastropods, rhinos (*Aphelops*), and mastodont. Ar/Ar ash date: 8.7 ± 0.1 Ma (Prater Creek Tuff?)

Disconformity:

Powder River Volcanic Group:

Tab	Middle Miocene alkali-rich basalts, basanite, and basaltic trachyandesites.
Ta	Middle Miocene andesite (Ta) and dacite (Td) flows and domes. Age ~13 Ma.
Td	
Tob	Middle Miocene olivine basalt flows at base of the Powder River Volcanic Group. Age ~14.5-13.5 Ma.

Dooley Mountain Volcanic Group:

	Middle Miocene rhyolite flows and associated pyroclastics related to the Dooley Mountain volcanic center. Age ~15.0-14.5 Ma.
Tdv	Middle Miocene ash flow deposits, lahars, and associated pyroclastics related to the Dooley Mountain volcanic center.
Twt	Middle Miocene welded tuff and associated pyroclastics at the base of the Dooley Mountain Volcanic Group.

Columbia River Basalt Group:

Tcr	Middle Miocene Columbia River Basalt Group flows; undivided. Primarily Imnaha and Grande Ronde Basalts.

Nonconformity

Mesozoic:

KJi	Upper Jurassic to Lower Cretaceous plutons; medium-grained hornlende and biotite quartz diorite and granodiorite.
JTrh	Upper Triassic to lower Jurassic Hurwal Formation; greywacke sandstone and laminated siltstone; minor chert, thin-bedded limestone, and conglomerate.

Paleozoic to Mesozoic:

PPv	Permian to Triassic volcanic and sedimentary rocks. Lava flows, flow breccia, and agglomerate; pyroclastic rocks; subordinate conglomerate, sandstone, and argillite; minor chert and limestone. Volcanic rocks include spilite and keratophyre. Includes Clover Creek Greenstone of Gilluly (1937).

Sparta Complex:

PPqd	Permian to Triassic quartz diorite and "albite" granite.
PPgb	Permian to Triassic gabbro and altered gabbro with minor peridotite, pyroxenite, and serpentinite.
MzPza	Sedimentary and volcanic rocks: Argillite, chert and tuff; subordinate lava flows, conglomerate and limestone. Includes Elkhorn Ridge Argillite of Gilluly (1937).

GEOLOGIC SYMBOLS

- Contact (dashed where inferred)
- Fault showing downthrown side (dashed where inferred)
- 30 — Strike and dip of beds or flows.
- 15 — Strike and dip of fault plane.

Based on mapping by Gilluly (1937), Brooks, McIntyre, and Walker (1976), Whitson (1988), and Bailey (1990), plus fieldwork in 2007-