OPEN-FILE REPORT 0-92-12
PRELIMINARY GEOLOGIC MAP OF THE
ROCKVILLE QUADRANGLE
MALHEUR COUNTY, OREGON AND
OWYHEE COUNTY, IDAHO

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This unpublished Open-File Report has not been reviewed and
may not meet all Oregon Department of Geology and Mineral
Industries' standards.

Field work conducted in 1986/1987/1991
Map Scale: 1:24,000

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Boise sheet, eastern Oregon.
Rockville

Palagonite tuffs and breccias (Topt) and interbedded basalt and basaltic andesite flows (Tpb) make up the oldest rock units exposed in the Rockville quadrangle. A thick section of massive palagonite breccias exposed along Succor Creek is part of a large hydrovolcanic center which provided detritus to the overlying sedimentary unit (Topts). Unit Tst includes a thick section of zeolitic airfall tuff and locally contains commercial deposits of clinoptilolite.

A mineralized zone is exposed crops on the southeast flank of the hydrovolcanic center. Known as the Mahogany Prospect, it is a classic hot-springs deposit that contains an explosion breccia with sinter blocks. According to Gilbert (1986), alteration zones associated with the hot springs also led to development of zeolitic alteration in the Tst tuffs.

Bentonitic silt- and claystones of unit Tsts unconformably overlie the zeolitic tuffs. Arkosic sandstone and conglomerate lenses (Tscs) locally occur interbedded with the siltstones. The sequence is overlain by the thick rhyolite flow forming Pole Creek Top (Trjc). The rhyolite is a low-silica, plagioclase-phyric flow which has been dated at about 10.6 Ma (Barlock and Vander Meulen, 1990).

The sanidine-phyric, high-silica rhyolite (Trp) exposed in the northwest corner of the quadrangle is one of a series of small volume high-silica rhyolite domes and plugs which were emplaced along a north trending belt to the west of the quadrangle boundary. The largest of these dome complexes was emplaced on Bannock Ridge at about 12.8 Ma.
ROCKVILLE QUADRANGLE

Fluvial deposits (Holocene and Pleistocene) Mainly unconsolidated deposits of stream gravels and floodplain silts deposited along Succor and McBride creeks.

Alluvial fan and pediment gravel deposits (Holocene and Pleistocene) Mainly fan and pediment gravel deposits, of unconsolidated accumulations of partially- to well-rounded boulders and cobbles of rhyolite. Size of blocks and boulders decreases and degree of rounding increases northeastward across the quadrangle. Alluvial fans grade northward into pediment and terrace gravels exposed on benches and ridges above the modern course of Cow Creek. Clasts are well rounded and consist mainly of rhyolite and rhyolite vitrophyre but include granitic and metamorphic clasts derived from underlying sedimentary units.

Landslides (Holocene and Pleistocene?) Unstratified accumulations of rhyolite blocks along the north side of McBride Creek. Characterized by hummocky topography and occurrence of small springs.

Fluvial gravel deposits (Pleistocene? and Pliocene) Unconsolidated, poorly to moderately well-sorted deposits of rounded pebbles, cobbles, and boulders. Clasts are mostly of local rock types, mainly rhyolite and basalt, but include granitic and metamorphic clasts derived from older gravels and conglomerates.

Jump Creek Rhyolite (Late Miocene) Mainly dark purple to purplish-gray, coarsely feldspar-phryic rhyolite vitrophyre flow. Contains 10 - 15% plagioclase phenocrysts as large as 1 cm in length and minor amounts of clinopyroxene. Chemically a quartz latite. Equivalent to the easternmost exposures of the Jump Creek Rhyolite of Kittleman and others (1965). Radiometric dates range from 10.6+0.3 to 11.1+0.2 Ma (Barlock and Vander Meulen, 1991, Ekren and others, 1984a).

Arkoic sandstone and conglomerate (Middle Miocene) Mainly unconsolidated to highly indurated, cross-bedded arkose sandstone with thin conglomerate lenses. Often micaceous, with both muscovite and biotite. Clasts are mainly granitic and silicic volcanic rock fragments, but include metamorphic clasts. Strongly indurated where silica-cemented, otherwise weathers to sandy soils. Locally includes abundant wood fragments. Equivalent to unit Tcg of Macleod (1990) and Tc of Barlow and Vander Meulen (1991) and comprises part of the Sucker Creek Formation of Kittleman and others (1965).
Tuffaceous lacustrine and fluviatile sediments (Middle Miocene) Mainly white to pale yellow tuffaceous siltstones and fine-grained epiclastic sandstones. Locally includes diatomite and bentonitic claystones. Equivalent in part to unit Tsu of MacLeod (1990). Part of the Sucker Creek Formation of Kittleman and others (1965).

Tuffs and tuffaceous siltstones (Middle Miocene) Mainly white, yellow, and yellow-brown, massive to thin bedded epiclastic siltstones and airfall tuff. Includes thinly laminated, shard-rich siltstones with contorted laminae, indicative of soft-sediment deformation. Also includes discontinuous beds of blue-green chert (picture rock). Tuffaceous zones are largely altered to zeolite (clinoptilolite and laumontite) (Gilbert, 1988).

Pillow basalts and invasive flows (Middle Miocene) Columnar jointed, black, glassy aphyric basalt flows with lobate forms and palagonitized rinds.

Epiclastic volcanic sandstones (Middle Miocene) Mainly reddish-brown to yellowish-brown, well-sorted, fine- to coarse-grained volcanic sandstones comprised of altered basaltic and rhyolitic glass shards, and quartz, plagioclase, potassium feldspar, and biotite crystals. Locally includes white tuffaceous siltstone interbeds. Commonly contains leaf fossils and petrified wood. Part of the Sucker Creek Formation of Kittleman and others (1965).

Palagonite tuffs and breccias (Middle Miocene) Yellowish- and greenish-brown palagonitic lithic tuffs. Mainly massive to thin-bedded, poorly sorted lapilli tuff, tuff, and tuff-breccia of fine-grained to glassy, olivine-phyric basalt. Locally grades upward into reddish-brown lithic tuffs at vent areas. Deposits were generated by a series of hydrovolcanic eruptions, probably from maars and tuff rings. Proximal facies tuffs include thin bedded, clast-supported lapilli tuffs while vent facies tuffs include massive, matrix-supported breccias. Vent areas commonly veined by zeolite-calcite veins and intruded by small mafic dikes and sills. Part of the Sucker Creek Formation of Kittleman and others (1965) and equivalent to unit Tbh of MacLeod (1990) and Tbt of Gilbert (1988).

Porphyritic rhyolite (Middle Miocene) Yellowish- to pinkish gray spherulitic rhyolite which contains 5 - 10% plagioclase, quartz, and sanidine phenocrysts as large as 6 mm in diameter. Chemically an evolved, high-silica rhyolite (Analyses, Table 1). Equivalent to unit Trp of Vander Meulen and others (1987).
| LAB # | 1/4 1/4 Sec. T. (S.) R. (E.) Lithology | Unit | SiO2 | TiO2 | FeO2 | MnO | CaO | MgO | K2O | Na2O | P2O5 | Cr | Co | Ni | Cu | Zn | Pb | Sr | Y | Zr | Nb | Ba | Li |
|-------|---------------------------------|------|-------|------|------|-----|-----|-----|-----|------|------|----|----|----|----|----|----|----|----|-----|-----|-----|
| A2B-147 | NE   | 22 25 46  | Rhyolite | Trp | 10 | 12.9 | 0.05 | 0.70 | 2.96 | 0.56 | 9.35 | 4.16 | 1.14 | 1.10 | 0.5 | 9 | 2.4 | 101.1 | 92 | 242 | 44 | 75 | 50 | 227 | 32.1 |
| A2B-148 | SW   | 20 25 46  | Rhyolite | Trp | 76.9 | 11.7 | 0.02 | 1.30 | 0.6 | 0.2 | 0.49 | 4.67 | 2.00 | 0.04 | 0.04 | 19 | 0.5 | 0.5 | 10.5 | 80 | 0.2 | 24 | 95 | 292 | 49 | 480 | 41.8 |

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MAP SYMBOLS

--- Contact -- approximately located

--- Fault contact -- dashed where approximately located, dotted where concealed. Ball and bar on down throw side

\( \uparrow \) Strike and dip of beds

\( \times \) Location of whole rock sample analyzed in Table 1

Location of mineralized sample analyzed in Table 2