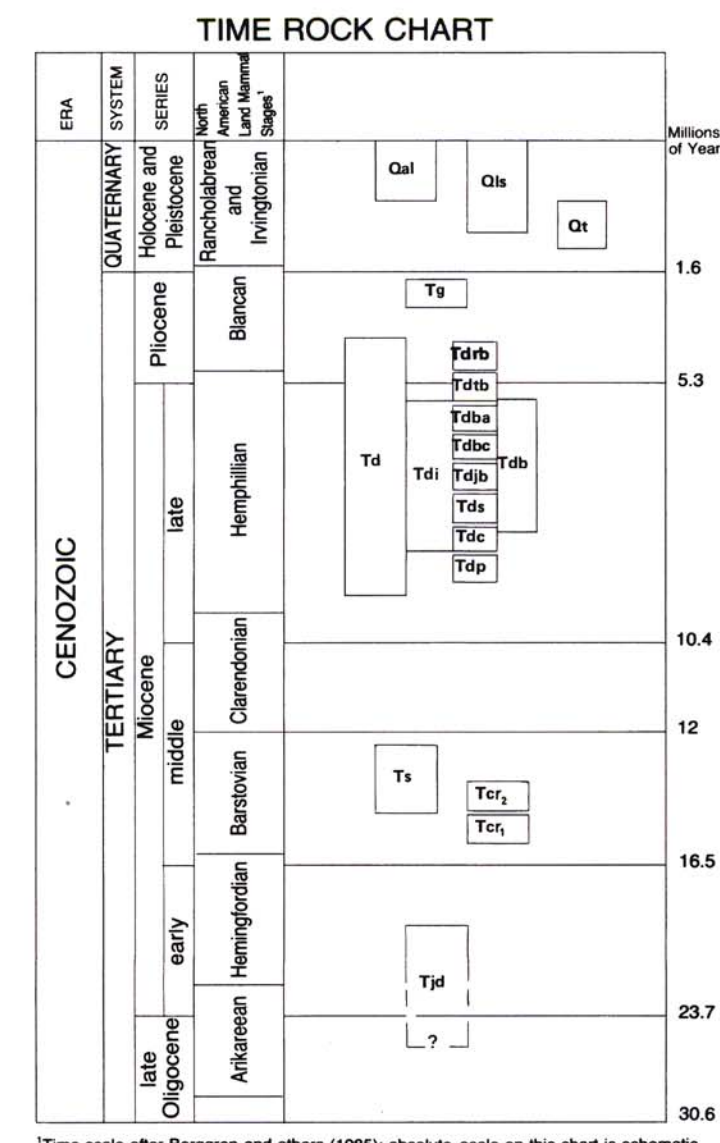


STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
DONALD A. HULL, STATE GEOLOGIST

GEOLOGIC MAP OF THE MADRAS WEST AND MADRAS EAST QUADRANGLES, JEFFERSON COUNTY, OREGON 1987



GMS-45
Geologic Map of the Madras West and Madras East Quadrangles,
Jefferson County, Oregon
By Gary A. Smith



EXPLANATION

Unconsolidated Deposits
Quaternary alluvium (Holocene) — Silt, sand, and gravel along and in major rivers and streams.
Landslide debris (Holocene and Pleistocene) — Rotated and slumped blocks dip surface developed within and/or near top of Simnatus and John Day Formations.
Quaternary terrace deposits (Pleistocene) — Gravelly along Deschutes River. Deposits occur at 20 m and 50 m above present river level. Upper terrace contains a hydrothermally crystalline flow deposit 1 km north of Polson Dam.
Unconsolidated gravel (upper Pleistocene) — Gravelly capping pediment surfaces on Simnatus and Deschutes Formations; age uncertain but probably Pleistocene.

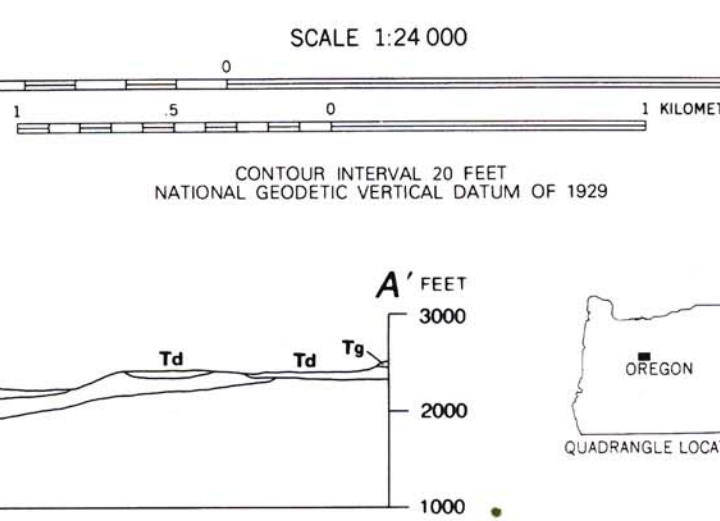
Rock Units
Deschutes Formation (upper Miocene and lower Pliocene) — Coarse-grained volcanic sandstones, conglomerates, and debris-flow breccias interbedded with siliceous ignimbrites (Tdb). Air-fall lapillites, and basalt (Tdb) and basaltic andesite (Tdba) lava flows. Volcanic units are mapped separately where exposed. No stratigraphic data are shown on this map, although all units are gently inclined toward the basin axis as a reflection of primary dip (the slight dip of a bedded deposit assumed at its moment of deposition, slight subsequent deformation, or both). For detailed description of Deschutes Formation in the map area, see Jay (1987) and Smith (1986b).
Round Butte member (lower Pliocene) — At least four flows of gray, porphyritic olivine basalt were erupted at Round Butte, south of the map area. Dated at 3.97 ± 0.05 m.y. B.P.; reversed magnetic polarity.
Tetherow Butte member, Agency Plains basalt flow (upper Miocene or lower Pliocene) — Black, fine-grained basalt with phenocrysts and glomerophenocrysts of plagioclase and augite. One of two flows erupted from Tetherow Butte, 35 km south of map area, and dated at 5.21 ± 0.05 m.y. B.P.; normal magnetic polarity.
Big Canyon basalt member (upper Miocene) — Several flows of dike-tectonic olivine basalt. Can be traced 15 km southwest of the map area and was probably erupted in the High Cascades. Reversed magnetic polarity.
Jackson Butte ignimbrite member (upper Miocene) — Light-gray dykeitic ignimbrite, typically oxidized pink or orange by ferruginous alteration. Welding restricted to central portion of thick exposure at the mouth of Willow Creek where crude columnar jointing is prominent. Reversed magnetic polarity.
Seabequa basalt member (upper Miocene) — Coarse-grained basalt with phenocrysts and glomerophenocrysts of plagioclase and olivine commonly exceeding 1 cm in length. Columnar jointing and aprachite characteristic most outcrops; normal magnetic polarity.
Chinook ignimbrite member (upper Miocene) — Pink-gray, unweathered, dykeitic ignimbrite with white pumice lapilli rarely exceeding 1 cm in diameter. Normal magnetic polarity.
Polson basalt member (upper Miocene) — Dike-tectonic olivine basalt to four to eight flow units separated by thin sedimentary interbeds and weathered cones. Lowest volcanic unit in the Deschutes Formation. Dated at 7.42 ± 0.22 m.y. B.P.; normal magnetic polarity.
Simnatus Formation (middle Miocene) — Light-colored tuff, massive volcanic sandstones, cross-bedded sandstones, and minor pebble conglomerates. Large debris-flow breccias crop out in Old Maid Canyon. Conformable upon and interbedded with the Columbia River Basalt Group (Smith, 1986a). Contains Barrovian (middle Miocene) vertebrate fauna north of map area (Owen, 1960).
Columbia River Basalt Group, Prineville chemical type (middle Miocene) — Two flows of sparsely phryic to aphyric basaltic basalt locally separated by Simnatus Formation sedimentary interbeds. Unit Tcr is dark gray to black with thin upper and lower columnar and thick, glassy interbeds. Unit Tcr is medium gray to black, weathered brown, blocky jointed, and locally invasive into underlying Simnatus Formation interbeds. Both flows are notable for large P_2O_5 (1.15 to 1.40 percent) and Ba (1.750 to 2.300 ppm) contents. Unit Tcr contains more SiO_2 (54.2 percent vs. 51 percent) and alkalis (e.g., 3.3 percent vs. 2.1 percent K_2O) and less iron, magnesium, and calcium than unit Tcr. Both flows are correlative to Prineville chemical-type flows in the Grande Ronde Basalt, N. chn, north of map area (Smith, 1986b).
John Day Formation (upper Oligocene? and lower Miocene) — Light-colored tuff, lapillites, fine-grained volcanic sandstones, and sandstones. Most, if not all, of the formation in the map area belongs to member 1 of Robinson and others (1984), with paleontologic and isotope data indicating an early Miocene age, but base of unit probably of Oligocene age.

MAP SYMBOLS
Contact — Dashed where approximately located.
Syncline axis — Showing direction of plunge.
High-angle fault — Dashed where approximately located, D on downthrown side, U on upthrown side.
Thrust fault — Dashed where approximately located; teeth on upper plate.
Strike and dip of bedding.
Prominent exposure of Pleistocene air-fall pumice-lapilli deposit from eruptions of Mount Jefferson.

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Field work conducted from 1983 to 1985.
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Field work supported by the Department of Geology at Oregon State University, Oregon Department of Geology and Mineral Industries, and Geological Society of America. Isotope dates by L.W. Snee, Oregon State University.
Map prepared with support from the Northwest College and University Association for Science (University of Washington) and Rockwell Hanford Operations, Basalt Waste Isolation Project, under contracts with the U.S. Department of Energy.



GEOLOGIC CROSS SECTION

