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Geologic mapping of the Wenatchee area

by

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LEGEND

Geology by Randell Gresens, 1975

Qrud — Quaternary-Recent, undifferentiated.

QRs — Quaternary-Recent, landslide. Block pattern on erosional cut through old landslide.

Qt — Quaternary, terrace deposit. Predominantly thinly laminated, unconsolidated clay and silt. Bedding commonly is ¼-2 inches thick. Occassional fine crossbedding is confined within thin laminae. Ripple-marking may occur between laminae, but more commonly bedding planes are remarkably flat and smooth, often accentuated by concordant mica flakes. The clay-silt sequence is clearly a lake deposit.

The upper 20 feet or so of the terrace contains clays and silts with less regular bedding. Sandy layers, with or without crossbedding, may be present. Sand, silt, or clay layers may be stained with limonite.

Pebbly, poorly sorted, unstratified alluvium may form the upper terrace near the borders of the terrace with bedrock, and it may make up most of the exposed terrace in the extreme up-canyon extensions of the terrace. Cobbles and pebbles are generally plutonic and metamorphic rocks foreign to the immediate area.

Tb — Tertiary, Columbia River Basalt. Probably Yakima Basalt.

Unconformity

Ta — Tertiary, zones of hydrothermal alteration. Silicification and/or hematization of predominantly sedimentary rocks.

Ti — Tertiary, intrusive rocks. Predominantly andesite, but ranging from diabase to rhyolite.

Twp, Twdg, Twsu, Twsl, Twsb — Tertiary, Wenatchee Formation.

Twp, Pitcher Member. White arkosic pebble conglomerate. Contains clasts of (1) silicic volcanic rocks ranging from porphyritic andesite to rhyolite (flow-banded rhyolite and pumice occur locally); (2) vein quartz and black chert; and (3) metamorphic rocks, including fine-grained metasiltstone(?), quartzite. Poorly sorted; poorly cemented.

Twdg, Dry Gulch Member. Light gray to light brown, yellow-weathering, thinly laminated, slightly arkosic, fine-grained sandstone to siltstone. Minor crossbedding occurs locally. Top and bottom usually gradational into a 5 to 20 feet thick, reddish brown, fissile shale.

Small percentages of dark, fine-grained lithic fragments generally are present in sandstone. Muscovite flakes may occur in sandstone, but not in the associated shale. Small blebs of limonite are common in the sandstone, and hematite concretions, often with white interiors, may occur locally. The sandstone forms bold outcrops.

Leaf fossils are present locally. The unit is probably lake sediment.

Twsu, Squilchuck Member, upper sandstone. Predominantly a grayish-white, coarse quartzose sandstone. Locally it is a quartz pebble conglomerate. Muscovite is almost always present is small amounts; lithic fragments are rare or lacking. Locally it may resemble the finer-grained sandstones of Twsl. Commonly includes interbeds of blue-gray shale or siltstone similar to Twsl. The upper sandstone unit may be absent from the Squilchuck Member.

Twsl, Squilchuck Member, lower shale. Predominantly a blue-gray shale to siltstone. Muscovite flakes almost always present in amounts up to two percent. Locally oxidized to a red color, parallel to bedding, giving rise to variegated shlaes. Buff-colored, quartzose sandstone interbeds, 1 to 10 feet thick, are common. Sandstone and quartz pebble conglomerate resembling Twsu may occur as channel fillings in shale, and shale chips are common in sandstone interbeds. Sandstone interbeds commonly exhibit fluviatile crossbedding. The interbeds form lenses that vary greatly in abundance in thickness. At Dry Gulch, thick sandstone interlayers resembling Twsu are mined for quartz sand. The shale locally appears to have a tuffaceous component, and white volcanic ash layers up to six inches thick occur as interbeds.

At the contact with the overlying Twsu, there usually is a prominant 3 to 5 feet thick zone of strongly oxidized shale, giving rise to a distinct deep red color. Where sandstone interbeds are abundant in Twsl (as at Dry Gulch), the oxidized zone may be a guide to choosing the contact between Twsu and Twsl.

Twsb, Squilchuck Member, basal sandstone. A buff-colored, medium-grained, quartzose sandstone, similar to the interbeds in Twsl, that commonly is at the base of the Wenatchee Formation. May have a thin basal conglomerate, with clasts ranging from Swauk Formation to silicic volcanic rocks derived from the Camas Formation. Usually has impressive fluviatile crossbedding. Varies greatly in thickness, from absent to 80 feet thick.

Generally, the units of the Wenatchee Formation do not contain biotite or calcite. However, either may be present in Twsb, especially in the basal conglomerate.

Unconformity

Tc — Tertiary, Camas Formation. Generally a grayish-white to yellowish-white, biotite-bearing, calcite-cemented, medium-grained, arkosic sandstone. Thin pebble conglomerate layers contain clasts of predominantly quartz and silicic volcanic rocks ranging from porphyritic andesite to rhyolite; occasional clasts of chert, metamorphic rocks, or mudstone(?) may be present. Clasts of plutonic granite and/or granitic gneiss may locally be abundant, but appear to be more weathered than other types of clasts. Coarse conglomerate beds, with clasts of quartz and silicic volcanic rocks up to 6 inches in diameter, are known.

Sandstone occurs in massive 20 to 60 feet thick beds in which fluviatile crossbedding is common. Dark brown, poorly consolidated shales in 1 to 30 feet thick beds do not crop out well. Locally the sandstone may be coarse-grained and quartzose, resembling sandstone in the Wenatchee Formation. The presence of abundant biotite and/or occasional clasts of silicic volcanic rocks usually serves to distinguish quartzose Camas sandstone from sandstone of the Wenatchee Formation, but these criteria may be lacking. Quartzose sandstone may become the dominant rock type covering several square miles.

The stippled pattern indicates a zone of deep residual soil developed on the weathered formation, but containing recognizable relict bedding.

Unconformity

Ts — Tertiary, Swauk Formation. Generally a light- to dark-gray, calcite-cemented, medium- to coarse-grained, arkosic sandstone. Massive conglomerate beds, with clasts up to 3 feet in diameter are common. The clasts are almost exclusively plutonic granite (some pegmatitic), granite gneiss, and quartz. Some dark, fine-grained metamorphic rocks and quartzite clasts may occur. Volcanic clasts are absent.

The beds typically range from 2 to 6 feet thick, and sometimes exhibit a crude graded bedding. Crossbedding is rare and is restricted to small crossbeds in minor siltstones that may occur at the tops of graded beds. Individual beds are usually poorly sorted. Fragmental, breccia-like units containing weathered, angular rock fragments in a matrix of high clay content are probably mud-flows.

The rock is tough and well-indurated in fresh outcrop, although it generally weathers readily and does not crop out well. Calcite veining is ubiquitous.

The stippled pattern indicates a soil profile developed on the formation under the unconformity with the Wenatchee Formation.

Color Legend

Qrud

QRs

Qt

Tb

Ta

Ti (?)

Twp

Twdc

Twsu

Twsl

Twsb

Tc

Ts

Note — Twp & Ts are not the same colors as show on Greesen with apologies for Ts

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Part 1