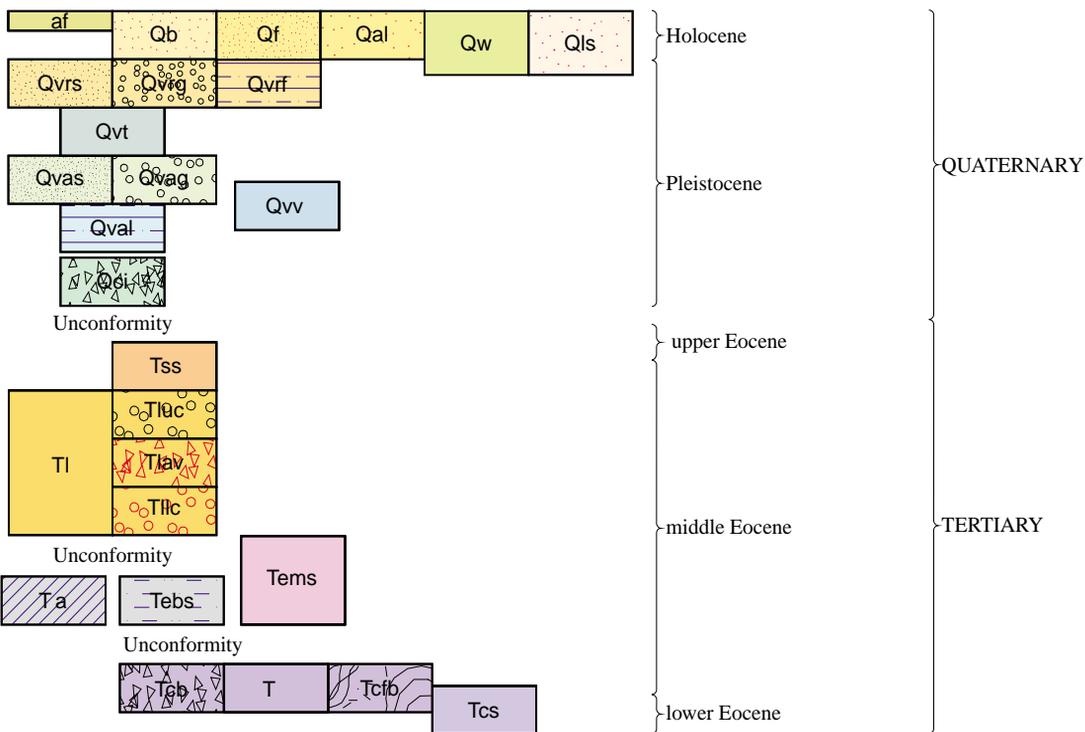


CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Nonglacial deposits

- | | |
|-----|--|
| af | Artificial fill (Holocene) —Mud, sand, and gravel of varying proportions, possibly including foreign debris such as concrete, logs, timbers, or brick. Used for highway roadbeds and other construction. Thickness generally greater than 2 m. Mapped where fill substantially obscures or has altered original geologic deposit. |
| Qb | Beach deposits (Holocene) —Soft sand, silt, and mud deposited or reworked by wave or tidal action at head of Port Discovery. Contains logs and timbers at or above high tide. Deposits lie within 2 m of high tide. |
| Qf | Alluvial fan deposits (Holocene) —Boulders, cobbles, and soft sand deposited in lobate form where streams emerge from confining valleys and reduced gradients cause sediment loads to be deposited. |
| Qal | Alluvium (Holocene) —Moderately sorted soft deposits of cobble gravel, pebbly sand, and sandy silt along the floodplain of Snow and Salmon Creeks south of Port Discovery, and along Snow Creek in the northwest corner of the map. Gradational with and including sediment equivalent to unit Qb |
| Qw | Wetland deposits (Holocene and late Pleistocene) —Peat, marsh, and bog deposits, with some intermixed sand, silt, and clay. Unit is very soft, water saturated, and occupies shallow depressions in till (Qvt) or low-lying areas of recessional outwash sands (Qvrs). |
| Qls | Landslide deposits (Holocene and late Pleistocene) —Diamicton of angular clasts of bedrock and surficial deposits derived from upslope and commonly includes trees. Includes areas of irregular, hummocky topography. Poorly consolidated. Landslide four kilometers south of Port Discovery consists of house-sized blocks of Lyre Formation conglomerate. |

DEPOSITS OF VASHON STAGE OF FRASER GLACIATION OF ARMSTRONG AND OTHERS (1965)
(PLEISTOCENE)—Consists of:

- | | |
|------|---|
| Qvrs | Sand-dominated recessional outwash deposits (late Pleistocene) —Stratified unconsolidated sand-dominated sand and gravel deposits. Occupies lower parts of lower Snow Creek-Crocker Lake-Leland Lake valley. May include interbeds of gravel-dominated recessional outwash deposits (Qvrg) |
| Qvrg | Gravel-dominated recessional outwash deposits (late Pleistocene) —Stratified unconsolidated gravel-dominated sand and gravel deposits. Occupies lower margins of lower Snow Creek-Crocker Lake-Leland Lake valley, but lies higher than sand-dominated recessional outwash deposits (Qvrs). May include interbeds of sand-dominated recessional outwash deposits (Qvrs) |
| Qvrf | Fine-grained recessional glaciomarine or glaciolacustrine deposits (late Pleistocene) —Stratified firm fine silt with rounded dropstones of pebbles and cobbles along Highway 20, southeast of Port Discovery. Coarse silt and sand are interbedded. Beds are greater than 3-10 cm thick. Some contacts between beds are convoluted, and sand dikes and blobs are present and cross bedding. Overlies probable till |
| Qvt | Till (late Pleistocene) —Compact and firm light to dark gray non-stratified diamict containing subangular to well-rounded clasts, glacially transported and deposited. Clasts are commonly granitic and were derived from the Cascade Range or Canada. Often overlies advance outwash deposits (units Qval, Qvas, Qvag) in the eastern part of the quadrangle and bedrock in the western part of the quadrangle. Generally forms an undulating surface a few meters to a few tens of meters thick. However, west of Crocker Lake more than 75 m of till is exposed |
| Qvv | Valley-fill glacial and glaciofluvial deposits (late Pleistocene) —Bedded sandy-matrix clast-rich compact diamict with angular clasts and a few large boulders, interbedded with firm fine to coarse sand and silt, and clast-poor clayey matrix diamict, which we consider as till. Clasts are commonly basaltic with probable local provenance. Occupies the headwaters of the Little Quilcene River drainage in the southwestern part of the map area |
| Qvas | Sand-dominated advance outwash deposits (late Pleistocene) —Well-bedded, sand-dominated compact sand and gravel deposits. May have interbeds of silt or clay. Deposited by streams and rivers issuing from front of advancing ice sheet |
| Qvag | Gravel-dominated advance outwash deposits (late Pleistocene) —Well-bedded gravel-dominated compact sand and gravel deposits. Almost devoid of silt or clay, except near base as discontinuous beds. Deposited by streams and rivers issuing from front of advancing ice sheet |
| Qval | Advance outwash lake deposits (late Pleistocene) —Laminated to massive silt, clayey silt, and silty clay deposited in a lowland lake south of Port Discovery. Sediment is firm. Inferred to be proglacial because it is overlain by sand-dominated advance outwash sediments |
| Qcl | Indurated colluvium (Pleistocene?) —Indurated unsorted iron-stained angular colluvium on flanks of the Olympic Mountains in the southwestern part of map area. Inferred to predate Vashon stage, because sediment is indurated and lying on bedrock |

Bedrock

- | | |
|------|---|
| Tems | Micaceous sediments (Eocene?) —Massive buff brown micaceous siltstone and fine sandstone on the north side of Big Skidder Hill. Bedding commonly indistinct or not present. May be correlative to Scow Bay sandstone or the upper Eocene and lower Oligocene Makah Formation, the upper Oligocene Pysht Formation, and the Miocene Clallam Formations at northwestern tip of Olympic Peninsula, where these formations are described as micaceous by Snavely and others (1993) and Garver and Brandon (1994) |
| Tss | Sandstone of Snow Creek —Sandstone and silty sandstone turbidites. Beds 5 cm to 1 m thick. Contains channelized interbeds of pebble and granule conglomerate and siltstone up to 1 m thick. Clasts are dominantly quartz and chert. Foraminifera indicate an upper Narizian age (Spencer, 1984) |

LYRE FORMATION (MIDDLE EOCENE) divided into:



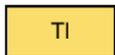
Upper conglomerate member—Pebble and cobble conglomerate in a matrix of medium to coarse granule sand. Contains some sandstone interbeds. Dominantly chert, basalt, and conglomerate clasts in decreasing order of abundance (Spencer, 1984). Clasts to 1 m



Andesite tuff and breccia—Andesite and hornblende andesite tuff and breccia, white to light gray. Locally contains rare leaves and coalified wood. Commonly massive, but some tuffs are thin bedded



Lower conglomerate member—West of Cedar Flat unit is predominantly thick bedded to massive conglomerate; to the south thin to thick bedded sandstone with minor conglomerate is most common. Conglomerates are composed of well rounded pebbles and cobbles of chert with lesser amounts of metasedimentary and igneous rocks, quartz, and graywacke. Lower part of unit south of Snow Creek locally includes some angular to rounded basalt clasts. Sandstones are fine to coarse-grained and commonly contain scattered pebbles. Siltstone is sandy and thinly to faintly bedded. Hornblende separates from an andesite boulder in this unit collected just west of the quadrangle boundary, near Mount Zion, yield K-Ar ages of 35.5 and 41.0 Ma (Yount and Gower, 1991). However, Spencer's (1984) biostratigraphic work indicates member is middle Eocene in age, and therefore it is likely there was some argon loss in the samples analyzed



Lyre Formation, undifferentiated—Pebble and cobble conglomerate in a matrix of medium to coarse granule sand. Contains some sandstone interbeds. Dominantly chert, basalt, and conglomerate clasts in decreasing order of abundance. Clasts to 1 m. (data from Spencer, 1984). No direct fossil control on age, but because it lies between the Narizian Aldwell Fm. and the upper Narizian sandstone of Snow Creek, it is probably lower Narizian (Spencer, 1984)



Aldwell Formation (middle Eocene)—Massive to bedded slope mudstone and turbidite sandstone, basaltic conglomerate, lithic sandstone, and siltstone. No fossils have been dated from within the quadrangle, but along strike on the east side of Quilcene Bay foraminifera indicate an early Narizian age (Spencer, 1984), where the section is almost 300-m thick. Coeval with Eocene basaltic sediments (TebS)



Basaltic sediments (middle Eocene)—Basaltic conglomerate and breccia, fine- to medium-grained, dark gray to black massive sandstone, with thin local interbeds of dark siltstone. Lowermost few meters is gray-green argillaceous limestone pods and basaltic sedimentary breccia. Total thickness is approximately 230 m along Salmon Creek; benthic foraminifera and molluscs indicate age of section ranges from upper Ulatisian to lower Narizian (Spencer, 1984)

CRESCENT FORMATION (LOWER AND MIDDLE EOCENE) divided into:

Tcf

Basalt flows—Massive basaltic lava flows. May contain calcite or zeolite-filled amygdules. Lava may contain pyroxene phenocrysts. Tops of flows may have red oxidized zones indicating subaerial eruption. May contain minor basaltic breccia (Tcb)

Tcb

Basalt breccia—Rubbly, reddish weathering angular basaltic breccia. No silty or sandy matrix, indicating subaerial eruption of lava. May contain minor basalt flows (Tcf)

Tcfb

Basalt flows and breccia—Rubbly, reddish weathering angular basaltic breccia, and massive basaltic lava flows in roughly equal proportions. Breccia contains no silty or sandy matrix and lava flows may have red oxidized zones

Tcs

Basaltic submarine deposits—Pillow lava and pillow and lapilli breccia, amygdular lava flows, dark gray calcareous mudstone, basaltic siltstone and sandstone. Intruded by basaltic sills. At head of Quilcene River sandstone makes up approximately half of section. East of quadrangle at Olele Point, Crescent Formation contains marine siltstone and sandstone with Ulatsian foraminifera (Yount and Gower, 1991). At Bon Jon Pass, 1 km west of the southwest corner of the quadrangle, calcareous nannoplankton from the top of this unit are referred to the CP 11 zone, or early Eocene (D. Bukry, written communication, 1998)

EXPLANATION

——— ····· Contact — Dashed where approximately located; dotted where concealed

——— ····· Fault — Sense of offset uncertain; dashed where approximately located; dotted where concealed

——— $\frac{D}{U}$ ····· Fault — U, upthrown side; D, downthrown side

— ▽ — ▽ — ▽ Reverse fault — Dashed where approximately located; dotted where concealed

——— $\left\{ \begin{array}{l} \rightarrow \\ \leftarrow \end{array} \right.$ ····· Fault — Showing relative horizontal movement; dashed where approximately located; dotted where concealed

——— * ····· Syncline — Dashed where approximately located, dotted where covered

——— \updownarrow ····· Anticline — Dashed where approximately located