

QUATERNARY POSTGLACIAL SALISH SEDIMENTS

Bog, swamp, and shallow lake deposits: SAb, low.and peat, organic silt loam, and SAb-e silty clay loam 0.3 to 10+m thick overlying Fraser River Sediments (Fc, d, g, h) or Salish lacustrine deposits (SAq, r); SAc, similar to SAb except that the organic sediments are overlain by up to 1 m of silt loam, silt, and sand (Fraser River overbank deposits); SAd, lowland organic sandy loam to clay loam 15 to 45 cm thick overlying Fraser River Sediments (Fd); SAe, upland peat up to 8+m thick

LEGEND

Stream deposits, includes channel fill, floodplain, and overbank sediments: SAh, lowland stream channel fill and overbank sandy loam, and clay loam; in places contains disseminated organic material; up to 8 m thick; SAi, floodplain gravel and sand deposited by Chilliwack River in Sumas Valley; grades from gravel through sand into silt at the outer edges of a fan-shaped area; in part intermixed with Fraser River Sediments (Fg,h) and with Salish lacustrine deposits (SAq, r), maximum thickness 15 m; SAj, mountain stream channel gravel and minor sand, up to 10 m thick; SAk, lowland stream channel fill sand and gravel, minor silt, and clayey silt, up to 5 m thick

lope deposits, colluvial sediments deposited by mass wasting processes: SAm, slopewash sand,up to 4m thick, resting on Fc,d and Sa,j; SAn, slopewash clayey silt and silty clay up to 2 m thick, overlying Sa; SAo , fan and landslide gravel, sand and rubble, up to 15+m thick, overlying Fraser River Sediments (Fg,h) and Salish lacustrine deposits (SAq,r); SAp, landslide and fan gravel and rubble, up to 10 m thick, overlying Sumas Drift (Sa,c,f) and Fort Langley Sediments An unmapped mantle of gravelly colluvium, 0.5 to 2.0 m thick is widespread throughout the mountainous parts of the map area, especially above 250 m elevation. In many places it is intermixed with glacial ablation till and other glacial sediments. Consequently the areas mapped as bedrock

(T and PT) normally do not exhibit rock at the surface in more than 5 per

cent of the area indicated acustrine deposits: SAq, silt to clay, normally less than 5 m thick, in places erlying SAr or Fraser River Sediments (probably Fe); SAr, sand to sandy loam, up to 5 m thick, also overlying Fe?; SAs, fine sand up to 8 m thick forming North of Vedder Canal both SAq and SAr are intermixed with SAi and Fg;

> the most abundant unit is the one mapped lian deposits: SAt, windblown sand, silt, and silt loam, 1 to 8 m thick Eolian deposits have been mapped as a separate unit where they are more than 1 m thick. In addition most pre-Salish Sediments exposed east of 122°25'W are mantled by windblown sand and silt 5 cm to 1 m thick. Included are areas mapped as T and PT up to at least 1000 m elevation

Channel fill and floodplain deposits, overlying and cutting estuarine sediments (Fe) and commonly overlain by overbank sediments: Fa, channel deposits, sand, and gravel occurring along present day Fraser River channels; normally overlie older channel deposits (Ff), and combined thickness may vary from 10 to 60 m; Fc, overbank silty to silty clay loam and minor sand up to 2 m thick overlying Fd; Fd, channel fill, clayey silt, and silty clay up to 10 m thick overlying Ff; Fe*, estuarine fine sand to clayey silt, in places fossiliferous; probably underlies extensive areas in Sumas and Matsqui valleys; thickness may vary from 10 to 150 m; Ff*, channel and floodplain sand and gravel, up to 60 m thick, underlying Fd,g,h; may be in part Sumas outwash (Sa,j); Fg, channelled deposits (expressed at surface by ridges and swales), silty clay loam, silt loam, silty clay, and minor organic sediments, up to 10 m thick, overlie Ff and Fe; Fh, channelled deposits similar to Fg but coarser textured, sandy loam and loamy sand

SUMAS DRIFT Recessional glaciofluvial deposits: Sa, recessional channel and floodplain deposits laid down by proglacial streams; gravel and sand up to 40 m thick, normal range of thickness 5-25 m; Se, proglacial deltaic gravel and sand up to 10 m thick; Si, similar to Sa except that it is pitted outwash

Recessional ice-contact deposits: Sb, ice-contact gravel and sand containing Sb.c Sd till lenses and clasts of Fort Langley glaciomarine sediments (FLc), 2 to 5 m thick, overlying FLc; Sc, ice-contact gravel and sand containing till lenses and clasts of Fort Langley glaciomarine sediments (FLc), 2 to 5 m thick, overlying FLb,e; Sd, ice-contact gravel and sand containing till lenses and clasts of Fort Langley glaciomarine sediments (FLc), 5 to 25 m thick, in the form of kames

Glaciolacustrine deposits: Sh, silt, clayey silt, silty clay, and sand, minor gravel, 5 to 35 m thick

thick; Sg, sandy till and substratified drift 0.5 to 2 m thick, in most places overlying Fort Langley glaciomarine sediments (FLc) Advance glaciofluvial deposits: Sj, gravel and sand up to 40 m thick, proglacial channel fill, floodplain, and deltaic sediments probably all included here

> FORT LANGLEY FORMATION Glaciomarine deposits, marine sediments, and minor till; FLa, lodgment till and flow till with sandy loam matrix; may contain clasts of and interbedded with FLc and FLd; FLc, glaciomarine stony silt to loamy clay, 8 to 100 m thick; FLd, silty clay to sandy loam up to 30 m thick, generally intimately intermixed with FLc and shown as a separate unit only where it occurs in mappable exposures

Lodgment and minor flow till: Sf, sandy till and substratified drift, 2 to 10 m

Glaciofluvial sediments: FLb, channel fill, floodplain, and ice-contact FLb,e gravel and sand, in places containing clasts of till and glaciomarine ediments, 5 to 20 m thick, interbedded with FLa,c,d; FLe, proglacial deltaic gravel and sand, up to 60 m thick, in places interbedded with

VASHON DRIFT Till and glaciofluvial deposits: Va, lodgment till with sandy loam matrix, up to 10 m thick, overlain in many places by gravelly ablation till up to

3 m thick. Vashon Till exposed in the northwest part of the map area is drumlinized. Vb, glaciofluvial sandy gravel and gravelly sand, mainly proglacial advance deltaic deposits, up to 25 m thick UNDIVIDED PRE-VASHON DRIFT

ill, glaciofluvial, glaciolacustrine, fluvial, and organic sediments

Tertiary bedrock, basalt, sandstone, siltstone, shale, and conglomerate, mantled in 90 to 95 per cent of the area by 1 to 5+m of glacial drift (S and V), colluvium (see note SAm,p) and eolian deposits (see note SAt)

Mesozoic and Upper Paleozoic bedrock; includes sedimentary, volcanic, granitic, and metamorphic rocks, mantled in 90 per cent of the area by deposits, 1 to 5 m thick, of glacial (S and V), colluvial (SAm,p), and eolian (SAt) sediments

* Unit used only in cross-section

probably widespread at depth

Geological boundary (mainly gradational).

Trend of drumlinoid feature, (direction of ice known)...

NOTES

1. Where it was not feasible to separate lithologic units (units intimately intermixed or occurring in near vertical exposures) multiple units have been used, eg., Sa,f,j and FLa,b,c,d

2. Mixed units consisting of more than one stratigraphic unit are shown as multiple units, eg. - FLc and Sg north of Hatzic Lake

3. None of the Pre-Vashon lithostratigraphic units shown in the table of Quaternary Stratigraphy are exposed at the surface in the Mission map area; however, drillhole data indicate Pre-Vashon formations are

4. The boundaries between Sumas Drift and Vashon Drift in the northwest from nondrumlinized drift (Sumas). The upper limit on the Sumas Drift is not known

5. All the steep slopes are subject to landslides; Fraser and Sumas valleys are subject to flooding

Geology by J.E. Armstrong 1953-55, 1974-76

Additional information (especially drillhole logs) from

E.C. Halstead 1954-76 and Province of British Columbia Soils Survey 1956-65

Geological cartography by H. Kovachic, Geological Survey of Canada

Any revisions or additional geological information known to the

user would be welcomed by the Geological Survey of Canada

Base-map at the same scale published by Surveys and Mapping Branch in 1976

Copies of the topographical edition of this map may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa

> Approximate magnetic declination 1978, 22°17' East decreasing 4.3' annually

> > Elevation in feet above mean sea level