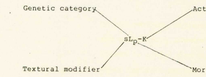
LEGEND

This map subdivides the terrain of the Tay River map area according to the genesis of the earth materials that directly underlie the surface, the morphology of these materials, and the ongoing geomorphic processes that are actively modifying them.

The map unit notation system is built around a genetic designator as illustrated below:



This notation indicates a plain composed of lacustrine sediments which are undergoing thermokarsting.

Compound units Areas where two or more map units cannot be mapped separately due to resolution limitations posed by the map scale and/or the gradational nature of the units are designated by separating the constituent units with a / . For example:

Cv/My

This unit consists of a thin covering of colluvium and till.

Stratigraphically stacked units Where the stratigraphy is known, the map unit is designated as follows:

Mb
Gf

This unit consists of a continuous cover of till over glaciofluvial gravels.

Genetic Category

A- Alluvial deposits: Sand and gravel with local silt, clay, and organic sediments. Alluvial fans may contain significant deposits of debris flow diamictons.

C- Colluvium: Unsorted sediments ranging from clay to boulders derived by the physical and chemical weathering processes and gravitational reworking from bedrock and glacial sediments.

M- Till: Stony diamicton formed by direct deposition from ice. Much of the till in the map area has undergone redeposition by gravitational processes immediately following initial deposition.

G- Glaciofluvial deposits: Sand and gravel with minor amounts of silt and clay deposited by water flowing on, along the margins of, beneath, and away from glacial ice.

L- Lacustrine and glaciolacustrine deposits: Sand, silt, and clay with local deposits of gravel.

E- Eolian deposits: Wind blown accumulations of fine sand and silt.

O- Accumulations of peat and organic silts and clays.

I- Glacial ice

R- Bedrock: Highly folded and faulted rocks of several autochthonous and allocthonous terranes including Precambrian to Mesozoic clastics and carbonates, schists and gneisses locally intruded by Mesozoic felsic plutons. Eocene flows and tuff-breccias of olivine basalt occur locally north of Tintina Trench.

Textural Modifers

s - sandy
s - silty
c - clayey
b - bouldery

Morphologic Modifiers

a - apron
b - blanket (continuous covering greater than 1m in thickness assumed to overlie bedrock).
c - channelled
d - delta
f - fan
h - hummocky
k - pitted
m - undulating
r - streamlined by ice flow
p - floodplain, plain
s - areas of vertical or near vertical slopes (used only with R)
r - ridge or ridged
v - veneer (discontinuous covering generally less than 1m in thickness assumed to overlie bedrock).
t - terrace(s)

Activity Modifiers

A - Avalanching
S - Soliflucted
K - Thermokarsting
V - Gulleying

Symbols

Geological boundary (defined, approximate, gradational).

Streamlined landform (former ice flow direction unknown.

Streamlined landform (arrowhead indicates the direction of former ice flow).

Esker (former water flow direction established, not established; may form a map unit boundary).

Lateral or end moraines of McConnell (m) and neoglacial (n) ages.

Meltwater channel (large, small; may form a map unit boundary).

Landslide: major, minor (arrows indicate the direction of movement; serrated pattern indicates the head of the landslide scarp).

Rock glacier

Cirque

Arete

Upper limit of McConnell ice (based upon breaks in slope, contrasts between glaciated and unglaciated topography, and the absence of ice-marginal meltwater channels.

Cryoplanation terraces on nunataks.

Open system pingo (collapsed).

Geology by L.E. Jackson, Jr., 1985, 1986

Notes

The Tay River map area was intensely glaciated during the McConnell glaciation. With the notable exception of nunataks within and immediately north of the Anvil Range, the entire map area was covered by the Selwyn lobe of the Cordilleran ice sheet or local ice caps. Examples of the latter include former ice caps on Pelly Mountains, parts of the Anvil Range, and the Mt. Selous Massif. The former nunataks are easily recognized by one or more of the following: nunatak-marginal moraines, cryoplanation terraces, a lack of ice-marginal meltwater channels, and topographic contrast between unglaciated and glacially eroded topography. These nunataks and others to the west in the Glenlyon map area have permitted a generalized reconstruction of the Selwyn lobe (Duk-Rodkin et al. 1986). The surface of the Selwyn Lobe reached 1676m north of the Anvil Range and 1645m to the south of it. Except around nunataks, the surface of the Selwyn lobe within the map area was almost horizontal (estimated average slope 0°03'). Ice thickness exceeded 1000m over Tintina Trench, the lowest topographic feature in the map area. Flow within the ice sheet was confined predominantly to ice streams. Two major ice streams followed Tintina Trench and the South Macmillan River valley. Secondary ice streams followed reticulate valleys and broad uplands between mountain ranges. Flow was likely sluggish over hills or mountains.

Deglaciation was marked by widespread stagnation and downwasting of the Selwyn Lobe. This process is documented by flights of ice-marginal glaciofluvial channels and terraces along mountain flanks and extensive complexes of glaciofluvial deposits along valley bottoms. A glacial lake with a maximum length of 18 km was ponded in parts of the Anvil Creek and Tay River valleys in the east central portion of the map area beween stagnant ice occuppying Tintina Trench and stagnant ice occupping valleys in the west central portion of the map area. Similar but less extensive lacustrine sediments can be found in mountain valleys up to 1370m.

Discontinuous permafrost is found throughout the map area. Related processes such as solifluction and thermokarsting are widespread. They are identified as modifying process only where topographic features related to them are well developed. One retrogressive thaw-slide along the South MacMillan River is in excess of 3 km². Similar but less extensive landslides are common in that area. Snow and rock avalanches present the chief geologic hazard in mountainous parts of the map area while cliff and bank erosion are local problems where the major streams of the area course through thick deposits of glaciofluvial and glaciolacustrine sediments.

REFERENCES

Dud-Rodkin, A, Jackson, L.E. Jr., Rodkin, O. 1986: A composite profile of the Cordilleran Ice Sheet during McConnell Glaciation, Glenlyon and Tay River map areas, Yukon Territory; in Current Research, part B, Geological Survey of Canada, paper 86-1B, p. 257-262.

TERRAIN INVENTORY

TAY RIVER

YUKON TERRITORY

Scale 1:125 000

Kilometres 2 0 2 4 6 8 10 Kilometres

Universal Transverse Mercator Projection

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DOSSIER PUBLIC
1380
GEOLOGICAL SURVEY OF CANADA
COMMISSION GEOLOGIQUE DU CANADA
OTTAWA
1986