

EXPLANATION OF THE TERRAIN INVENTORY LEGEND SCHEME

The terrain inventory legend scheme used in this study is derived and modified from the terrain mapping scheme of Fulton et al. (1974). Terrain mapping in northern environments in Canada's Northlands - Proceeding of a technical workshop to develop an integrated approach to base data inventories for Canada's Northlands - Environment Canada, Land Structures. Table I defines a series of the genetic groupings and the morphologic expression of the deposits. This matrix forms the core of the designators for the terrain inventory legend scheme. The genetic groupings and morphologic expressions are explained and described below the matrix.

Tables II and III describe textural, physical, and morphologic modifiers to be used to expand the designators in the terrain inventory legend. The designators and modifiers are combined into map symbols following the form shown below.

Genetic Designators

Activity modifier ("a" indicates the process to be active. No symbol indicates process inactive)

Textural modifier (D, G, IS, AF)

Process modifier (always separated by a bracket)

Morphologic modifier

The example indicates a gravelly glaciofluvial plain being actively modified by fluvial erosion and deposition.

Slopes Three types of slopes are recognized for the purposes of mapping and are depicted in Figure 1. An S₁ slope terminates at the crest with an exposed face of bedrock with a steepness of 30° or more. Such slopes are subject to erosion and burial by rapid mass wasting processes such as snow and rock avalanches and debris flows as well as acceleration of fluvial erosion and creep. The S₂ slope ranges from 15° to 30° or more and is marked by a rounded crest covered by a residual mantle of weathered material and little to no exposed bedrock. Erosive and depositional processes are restricted to fluvial erosion and creep. The last type of slope has an inclination of less than 15° and is not noted by a symbol. Erosive and depositional processes are similar to the S₂ slope.

Component units Where component terrain units are present, i.e. where terrain units vary between two or more deposits over a small enough area that they cannot be distinguished at the scale of mapping, the conventions of Fulton et al. (1974) are followed. Where two or more single elements of equal abundance are combined they are written together without a hyphen. e.g. M₁ or M₂ would be used to designate an area consisting of approximately equal parts of moraine veneer and colluvial veneer.

Three categories of relative abundance are used where the landform does not consist of roughly equal parts of two or more elements. The first category is for the dominant element or the elements of the landform unit and account for 60 per cent or more of the unit area. The second category accounts for between 20 per cent and 40 per cent of the unit area and the third for from 5 per cent to 20 per cent. M₁ for example would designate a landform consisting of at least 60 per cent of moraine veneer and of between 20 per cent and 40 per cent hummocky glaciofluvial gravel. M₂ or M₃ would indicate a landform made up of more than 40 per cent moraine veneer, 20 per cent to 40 per cent hummocky glaciofluvial gravel and from 5 per cent to 20 per cent colluvial veneer. M₃ would be used for an area consisting of more than 40 per cent of moraine blanket and from 5 per cent to 20 per cent moraine veneer.

If it is necessary to show that one type of landform unit overlies another, the one term is written above the other. For example would indicate a gravel alluvial plain overlain by a veneer of silty alluvium (overbank deposit). M₁ would designate an area consisting more than 60 per cent of till veneered over undifferentiated rock forming on S₂ slope and from 5 per cent to 20 per cent glacio-lacustrine plain(s). M₁ would be used to indicate an S₂ slope of undifferentiated rock overlain by approximately equal parts moraine veneer and colluvial veneer.

REFERENCES

Fulton, R.J., Royall, A.N., Barnett, D.M., Hodgson, D.A., and Sapping, V.B. 1974. Terrain mapping in northern environments: from Canada's Northlands on proceedings of a technical workshop to develop an integrated approach to base data inventories for Canada's Northlands. Environment Canada Land Structures, Toronto, Canada.

TABLE I
Terrain Designator Core Matrix

Morphologic expression	Genetic Groupings					
	M ₁ - moraine	A ₁ - alluvial	G ₁ - glaciofluvial	L ₁ - lacustrine	O ₁ - organic	R ₁ - bedrock (indicated)
p - plain	M ₁ - moraine plain	A ₁ - alluvial plain	G ₁ - glaciofluvial plain	L ₁ - lacustrine plain	O ₁ - organic plain	R ₁ - bedrock plain
w - rolling plain	M ₁ - moraine rolling plain	A ₁ - alluvial rolling plain	G ₁ - glaciofluvial rolling plain	L ₁ - lacustrine rolling plain	O ₁ - organic rolling plain	R ₁ - bedrock rolling plain
h - hummocky	M ₁ - moraine hummocky	A ₁ - alluvial hummocky	G ₁ - glaciofluvial hummocky	L ₁ - lacustrine hummocky	O ₁ - organic hummocky	R ₁ - bedrock hummocky
r - ridged	M ₁ - moraine ridged	A ₁ - alluvial ridged	G ₁ - glaciofluvial ridged	L ₁ - lacustrine ridged	O ₁ - organic ridged	R ₁ - bedrock ridged
d - drumlinoid	M ₁ - moraine drumlinoid	A ₁ - alluvial drumlinoid	G ₁ - glaciofluvial drumlinoid	L ₁ - lacustrine drumlinoid	O ₁ - organic drumlinoid	R ₁ - bedrock drumlinoid
t - terraced	M ₁ - moraine terraced	A ₁ - alluvial terraced	G ₁ - glaciofluvial terraced	L ₁ - lacustrine terraced	O ₁ - organic terraced	R ₁ - bedrock terraced
f - fan	M ₁ - moraine fan	A ₁ - alluvial fan	G ₁ - glaciofluvial fan	L ₁ - lacustrine fan	O ₁ - organic fan	R ₁ - bedrock fan
a - apron	M ₁ - moraine apron	A ₁ - alluvial apron	G ₁ - glaciofluvial apron	L ₁ - lacustrine apron	O ₁ - organic apron	R ₁ - bedrock apron
v - veneer	M ₁ - moraine veneer	A ₁ - alluvial veneer	G ₁ - glaciofluvial veneer	L ₁ - lacustrine veneer	O ₁ - organic veneer	R ₁ - bedrock veneer
b - blanket	M ₁ - moraine blanket	A ₁ - alluvial blanket	G ₁ - glaciofluvial blanket	L ₁ - lacustrine blanket	O ₁ - organic blanket	R ₁ - bedrock blanket
W ₁ - rapidly washing slope						
W ₂ - slowly washing slope						

Genetic Groupings

Moraine	- dominantly unsorted (well graded) and unstratified mixture of boulders, gravel, sand, silt, and clay deposited directly by glacial ice.
Alluvial	- stratified sand, gravel, silt, and silt and clay material deposited by flowing water.
Glaciofluvial	- poorly sorted (moderately well graded) poorly stratified, unconsolidated bedded, or masswally bedded deposits of boulders, gravel, sand and silt deposited by flowing water on, under, adjacent to or downstream of glacial ice.
Lacustrine	- fine grain (organic) sediments (dominantly silt and clay) deposited in standing water.
Glacio-lacustrine	- fine grain (organic) sediments of sand, silt and clay deposited in standing water ponded by glacial ice and usually overlain by glacial bedrock.
Colluvial	- a variable mixture which may range between boulder and clay sizes formed by the in-place weathering of bedrock and transported by dominantly gravitational mass wasting processes.
Organic	- peat and moss deposited in low lying areas with the water table at or near the surface.
Eolian	- sand and silt deposited by the wind.
Glacial ice	- deposits of ice, formed largely through the accumulation of snow, which in most cases are of sufficient thickness to slowly flow in a down hill direction.
Lepidolite	- a mass of bedrock and/or unconsolidated overburden which has silt, slumped, flowed, or cascaded into its present position.
Artificial fill	- engineered walls, construction rubble and minor organic debris.

Table II
Textural Modifiers
(Modified from Fulton, 1974)

r	- bedrock rubble - deposit predominantly composed of angular blocks of bedrock usually several m in longest dimension
cb	- coarse bouldery - abundant clasts coarser than 1 m
b	- bouldery - abundance of material in the 1 m - 250 mm
g	- gravelly - gravel and pebble-size grains (4-256 mm)
s	- sandy - granule and sand-size grains (4.0-0.063 mm)
sl	- silty - silt-size grains (0.063 to 0.002 mm)
c	- clayey - mineral particles less than 0.002 mm

Textural modifiers are used to assign ranges in texture or to describe outstanding or important features of texture such as debilitation by a certain size range e.g. g₁₀ indicates a moraine deposit with its texture dominantly found within gravel to clay size ranges. It indicates a moraine deposit almost completely composed of bedrock rubble with only minor constituents in other size ranges.

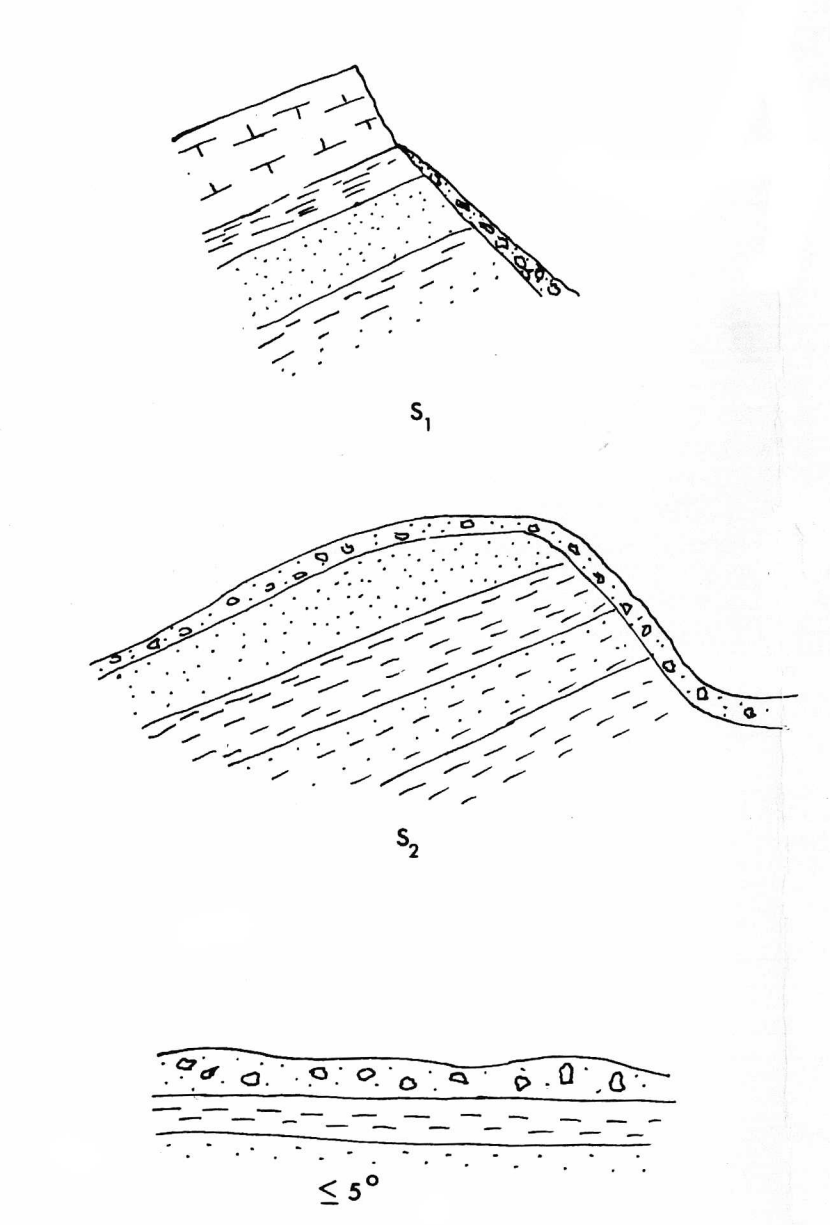
Table III
Process Modifiers

W	- Washed - modified by flowing water
E	- Eroded - gullied and channelled by flowing water
A	- Avalanche modified - eroded or buried by snow or rock avalanches or debris flows
f	- Channelled - incised by anastomosing meltwater channels
l	- Ice modified - modified by permafrost related processes or cored by continuous ice masses

Morphologic Expression
(Modified from Fulton, 1974)

Plain	- flat; underlying deposits thick enough to mask irregularities in subjacent topography.
Rolling plain	- undulating underlying deposit thick enough to mask irregularities in subjacent topography.
Blanket	- nearly continuous covering of deposit which generally conforms to underlying topography.
Hummocky	- small but rounded hills and isolated basins with relief measured in several to tens of m. Deposit is thick enough to mask underlying topography.
Ridged	- small but steep sided linear hills or ridges and parallel intervening low with relief measured in metres to tens of metres. Deposits usually thick enough to mask underlying topography.
Drumlinoid	- small aligned, teardrop-shaped hills with relief up to tens of metres or more. May consist of veneers of moraine over bedrock or thickness sufficient to mask underlying relief.
Terraced	- flat surfaced feature terminated by abrupt changes in slope at one or more sides. Usually occur in groups in step-like fashion. Relief from one terrace to the next may be measured in less than 1 m to tens of metres. Deposits usually thick enough to mask underlying topography.
Fan	- fan like slope with slope from apex to fan toe. Deposits thick enough to mask underlying topography.
Veneer	- a thin discontinuous caping of one deposit over another deposit or bedrock.

Figure 1
Slope designations used to subdivide slopes for Terrain Inventory mapping



GEOLOGY BY L.E. JACKSON JR. 1974 - 1976
TERRAIN INVENTORY
KANANASKIS LAKES 82-J
(ALBERTA PORTION)

Scale 1:250,000
Universal Transverse Mercator Projection
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