UNIT	NAME	MATERIAL	THICKNESS	TOPOGRAPHY	DRAINAGE PATTERN	GROUND ICE	COMMENTS
fO	Organic fenland	Peat, typically woody sedge peat	2-3 m	Flat to gently sloping, in part with reticulate network of low ridges (50 cm high). Slope: 0-2°	No organized drainage; water at surface throughout summer months	Commonly unfrozen to 2+m; little data available on segregated ice content at greater depths	Poor drainage, plus high compressibility and low strength of the material make it unsuitable for any type of construction
pO, pO-k	Organic peatland	Peat, typically sedge and woody sedge overlain by sphagnum peat; commonly treeless or with scattered black spruce; lichens commonly constitute 50% or more of surface vegetation, resulting in high albedo	2-4 m	Flat to very gently sloping, typically with numerous shallow steep-sided (2-3 m) depressions occupied by lakes, ponds, and bogs (pO-k)	Depressions interconnected by seepage channels	Commonly up to 20%, locally up to 60%, segregated ice within peat; typically 30-100 cm, locally up to 3 m total thickness segregated ice in mineral soil immediately below peat. Peat in wet depressions commonly thawed to 1+m	Subsidence of up to 1 m common and subsidence up to 3 m possible when vegetation is removed; alteration of permanently frozen peat plateaus and thawed depressions and water bodies presents serious problems in construction of roads, pipelines, etc.; material highly compressible when thawed
Ap	Alluvial plain	Medium coarse sand, locally gravel of point bar deposits, overlain by silt and fine grained sand of overbank deposits. Streams in mountainous areas commonly have a braided channel system and lack overbank deposits	2-5 m	Floodplain and low bordering terraces, commonly with meander scrolls. Floodplain of mountainous areas interrupted by shallow braided channels. Slope 0-3° Relief to 1 m	No integrated drainage system; impeded by meander scroll ridges where present	Permafrost absent in unvegetated part of floodplain; elsewhere 10-25% segregated ice by volume as thin (1 mm-2 cm) seams. Cement ice only in coarse sand and gravel	Subject to periodic flooding; silt and sand of overbank deposits may be underlain by gravel, but extraction of the gravel may produce serious deleterious changes in the stream course or downstream changes in stream regimen
Ap-k	Thermokarst alluvial floodplain	Fine grained sand and silt	3-5 m	Floodplain, in part with meander scars and numerous channels and thermokarst ponds. Relief to 5 m	Seepage to ponds and lakes then by connecting channels to trunk streams	20-50% or more segregated ice by volume	Thermokarst processes active around pond margins; widespread occurrence of ice wedges, which upon removal of vegetation will melt and produce a polygonal network of depressions. Occurs mainly adjacent to Mackenzie River
At	Alluvial terrace	Sand and silt; may be underlain by gravel	2-5 m	Flat to gently sloping, in part with meander scrolls, channels, and thermokarst ponds	No integrated drainage system; poorly to moderately well drained	No data; ice content probably low to moderate	Mapped only along the Mackenzie and Hume rivers. Constitutes a potential source of aggregate
Atv	Alluvial veneer	Sand and silt; may be underlain by gravel	1-2 m	Flat to gently sloping, accordant with subjacent till or bedrock	Surface drainage without integrated drainage system; poorly to moderately well drained	No data; ice content probably low to moderate	Mapped only along Mackenzie River. Offers fairly good construction sites
Af	Alluvial fans and fan aprons	Within Mackenzie Mountains mainly gravel, locally within lenses of mudflow deposits; in remaining area, mainly silt and fine grained sand, commonly with organic layers, but some fans consist mainly of gravel		Discrete simple fans or fan aprons; gravelly fans in mountainous areas have slopes to 10°; fine grained fans typically have slopes of 1-4°	One or more shifting streams usually present; downslope seepage in poorly defined runnels	No data. Ice content probably medium to high in fine grained fans; cement ice only in gravelly fans or permafrost may be absent	Fans subject to sudden and damaging shifts of streams; generally unsuitable for construction. Gravelly fans in mountainous areas constitute readily available source of aggregate
Ax	Alluvial complex; includes Ap and Af undivided	Same as Ap and Af		Same as Ap and Af	Same as Ap and Af	Same as Ap and Af	Same as Ap and Af
Cv	Colluvial veneer	Rock detritus and surficial deposits transported by gravity	0-2 m	Veneer conforms to bedrock topography; occurs mainly along valley walls and scarps. Slopes 15-42°	Generally freely drained. No organized drainage; generally moderately well drained	No data	Active transportation of material by rock fall, creep, and slumping; active layer detachment slides common, especially following forest fires
Cb	Colluvial blanket	Rock detritus and surficial deposits transported by gravity	>3 m	Blanket conforms generally to bedrock topography. Slope 1-30°. Relief to 50 m	Generally freely drained. No organized drainage; generally well drained	In other map areas the unit is known to have large irregular ice bodies	Potential slope instability limits any kind of construction
Ca	Sheetwash deposits	Mostly organic silt and sand	1-2 m	Occurs as veneer or blanket on gently sloping (5-10°) scarps and valley sides developed on glacial lacustrine sediments or soft bedrock. Slope 1-30°. Relief to 90 m	No integrated drainage system; poorly to moderately well drained	No data; material suggests that moderate to high ice content is likely	The probability of high ice content makes this unit unreliable for construction
Cz	Slide, slump	Most commonly developed on shale, sandstone, and dolomite of Proterozoic Tsezotene Formation, shale of Paleozoic Hare Indian Formation, and glacial lacustrine sediments (see comments for bedrock)		Commonly stepped rotational slumps, spoon-shaped slump walls; highly irregular in the case of rockslides; undulated in the case of gentle mass movement	No organized drainage; poorly to moderately well drained	No data, but because of poor drainage, high ice content likely	Slumping occurs as retrogressive-thaw flow slides in glacial lacustrine sediments and as rotational slumping in glacial lacustrine silt and clay overlain by glaciofluvial gravel; in shale, sandstone, and dolomite of Proterozoic Tsezotene Formation; and shale of Paleozoic Hare Indian Formation
Ct	Cryoplanation terrace	Colluvium derived from mass wasting of local bedrock	1-3 m	Terraces up to 750 m long and 450 m wide, typically occurring as steps on mountain slopes; "treads" have slopes of 1-5°; intervening risers have slopes of 20-30°	Downslope seepage in shallow subparallel runnels	Ice content probably low to medium; subjacent bedrock typically free of segregated ice	Restricted to high elevations in unglaciated Mackenzie Mountains. (Individual cryoplanation terraces shown by symbols)
Cx	Slope complex (Cv, Cb, Ca, and Af; may include two or more units undivided)	Deposits derived from entire range of surficial material plus bedrock detritus transported by gravity, sheetwash, and intermittent or permanent streams	0-5 m	Occurs as veneer or blanket on gently to steeply sloping scarps and valley sides. Slope 1-30°. Relief to 90 m	No organized drainage; poorly to moderately well drained	No data; ice content probably highly variable depending on texture and thickness of material forming the unit	Potential slope instability presents major problems for any kind of construction
Lp	Glacial lacustrine plain	Glacial lacustrine silt and clay, minor sand; discontinuous organic cover	2-15+m	Flat to gently sloping. Relief to 3 m	Subsurface seepage through fen-filled depressions; poorly drained	Commonly 10 to 25% segregated ice as thin (1 mm-2 cm) seams in upper 1-3 m; segregated ice as reticulate network to 50% by volume, or thick tabular bodies of nearly pure ice at greater depth	Active layer detachment slides followed by development of retrogressive-thaw flow slides common on slopes developed on this unit, especially following fire or other disturbance of vegetation. Highly susceptible to gulling even on gentle slopes, following removal of vegetation
Lp-k	Glacial lacustrine thermokarst plain	Glacial lacustrine silt and clay minor sand; discontinuous organic cover	2-15+m	Flat to gently sloping, numerous thermokarst lakes and ponds. Slope 0-5°. Relief to 6 m	Seepage centripetal to ponds and lakes, intermittent seepage along fen-filled depressions between ponds and lakes; poorly drained	Commonly 10 to 25% segregated ice as thin (1 mm-2 cm) seams in upper 1-3 m; segregated ice as reticulate network to 50% by volume, or thick tabular bodies of nearly pure ice at greater depth	Thermokarst processes active around pond margin; active layer detachment slides, followed by development of retrogressive-thaw flow slides (Cz) common on slopes developed on this unit especially following fire or other disturbance of vegetation
Lb	Glacial lacustrine blanket	Glacial lacustrine silt and clay, minor sand; discontinuous organic cover	2-8 m	Flat to moderately sloping conforming to subjacent deposits, typically Mb, Mv, Mm	No integrated drainage system; poorly drained	Commonly 10 to 25% segregated ice as thin (1 mm-2 cm) seams in upper 1-3 m; segregated ice as reticulate network to 50% by volume, or thick tabular bodies of nearly pure ice at greater depth	Active layer detachment slides followed by development of retrogressive-thaw flow slides common on slopes developed on this unit, especially following fire or other disturbance of vegetation. Highly susceptible to gulling even on gentle slopes, following removal of vegetation
Lv	Glacial lacustrine veneer	Glacial lacustrine silt and clay, minor sand; discontinuous organic cover	0-2 m	Flat to moderately sloping conforming to subjacent deposits, typically Mb, Mv, and Mm	No integrated drainage system; poorly drained	Commonly 10 to 25% segregated ice as thin (1 mm-2 cm) seams	Active layer detachment slides followed by development of retrogressive-thaw flow slides common on slopes developed on this unit, especially following fire or other disturbance of vegetation. Highly susceptible to gulling even on gentle slopes, following removal of vegetation
Lx	Glaciofluvial-lacustrine complex	Sand and silt; may overlie glacial lacustrine silt and clay	3-20 m	Gently irregular topography. Slope 0-5°	Generally moderately well drained	Low to medium ice content; higher ice content (as for Lp, Lp-k) in underlying glacial lacustrine silt and clay, if present	Active layer detachment slides followed by development of retrogressive-thaw flow slides common on slopes developed on this unit, especially following fire or other disturbance of vegetation. Highly susceptible to gulling even on gentle slopes, following removal of vegetation
Lx-k	Thermokarst glaciofluvial-lacustrine complex	Sand and silt; may overlie glacial lacustrine silt and clay	3-20 m	Flat to gently sloping. Numerous shallow thermokarst lakes and ponds. Slope 0-5°	Drainage by seepage along channels connnecting thermokarst ponds	Low to medium ice content; higher ice content (as for Lp, Lp-k) in underlying glacial lacustrine silt and clay, if present	Active layer detachment slides followed by development of retrogressive-thaw flow slides common on slopes developed on this unit, especially following fire or other disturbance of vegetation. Highly susceptible to gulling even on gentle slopes, following removal of vegetation
Gp, Gt, Gd, Gf	Glaciofluvial plain, terrace, delta	Gravel, sand locally with veneer of eolian silt or sand; silt and/or peat may occur as filling in channels (Gp-c)	2-30 m	Flat to gently sloping. Commonly retains shallow braided channels in case of Gp-c. Slope 0-2°	Drainage mainly subsurface, locally with seepage along channels; well drained except for channels	Very low ice content, but when ice present consists of cement ice only	Offers good construction sites; major source of aggregate where the material is gravel rather than sand. Where the unit grades into units Lx, Lx-k, the surface deposit is typically sand rather than gravel and may be underlain by ice-rich silt
Gh, Gr	Hummocky, ridged glaciofluvial deposits (includes esker complexes)	Gravel, sand	2-20 m	Hummocks and ridges. Slope 5-15°. Relief to 25 m	Drainage mainly subsurface. Hummocks and ridges well drained; intervening depressions may be poorly drained	Very low ice content	Major source of aggregate where the material is gravel rather than sand
Gx	Glaciofluvial complex (Gh, Gr, and Gp, undivided)	Gravel and sand	2-20 m	Flat to highly irregular. Slope 0-15°. Relief to 25 m	Same as Gh, Gr, Gp	Very low ice content	Major source of aggregate where the material is gravel rather than sand
Mp	Moraine plain	Till: diamicton with a silty clay matrix containing minor sand	3-20 m	Flat to gently sloping. Slope 0-5°	Downslope seepage in shallow subparallel runnels. Generally poorly to moderately well drained	Commonly 10-25% segregated ice as thin (1 mm-2 cm) irregular discontinuous seams in upper 2-3 m; thicker (10 cm to 3+m) ice lenses may occur at depth	Potential subsidence on removal of vegetation typically less than 1 m. Possible high ice content in organic deposits within the unit. Because drainage is by numerous runnels, roads or berms normal to slope direction require numerous culverts to avoid impoundment of surface water
Mpv	Moraine plain, thin till cover	Till: diamicton with a silty clay matrix containing minor sand	1-3 m	Flat to gently sloping following shape of underlying bedrock topography. Slope 0-5°	Downslope seepage in subparallel runnels; poorly to moderately well drained, but locally well drained where subjacent bedrock is sandstone or limestone	Commonly 10-25% segregated ice as thin (1 mm-2 cm) irregular discontinuous seams. Subjacent bedrock typically free of visible ice	Offers fairly good to good construction sites; subjacent shale and siltstone bedrock is suitable for common fill in highway, airstrip or pad construction
Mv	Moraine veneer	Till: diamicton with a silty clay matrix and minor sand in plains and plateau areas but stonier and with a silty sand matrix in mountains	0-2 m	Gently to steeply sloping veneer conforms to the underlying bedrock topography. Slope 8-15°	Downslope seepage in subparallel runnels; poorly to moderately well drained, but locally well drained where subjacent bedrock is sandstone or limestone	Commonly 10-25% segregated ice as thin (1 mm-2 cm) irregular discontinuous seams. Subjacent bedrock typically free of visible ice	Offers fairly good to good construction sites where slope is not limiting; subjacent shale and siltstone bedrock is suitable for common fill in highway, airstrip or pad construction
Mb	Moraine blanket	Till: diamicton with a silty clay matrix and minor sand in plains and plateau areas but stonier and with a silty sand matrix in mountains	3-6 m	Gentle to steeper slopes. Slope 5-15°	Downslope seepage in shallow subparallel runnels; generally poorly to moderately well drained	Commonly 10-25% segregated ice as thin (1 mm-2 cm) irregular discontinuous seams in upper 2-3 m. Thicker (10 cm to 3+m) ice lenses may occur at depth	Potential subsidence on removal of vegetation typically less than 1m; potential for creep of active layer. Because drainage is by runnels, roads and berms normal to the slope direction require numerous culverts to avoid impoundment of surficial water
Md	Drumlinoid till plain	Till: diamicton with a silty clay matrix containing minor sand	2-30 m	Moraine plain with individual drumlins, to fluted moraine plain. Slope 2-15°	Parallel seepage or streams in fluted moraine to trellis pattern or deranged drainage in moraine plain with drumlins	Commonly 10-25% segregated ice as thin (1 mm-2 cm) irregular discontinuous seams in upper 2-3 m; thicker (10 cm to 3+m) ice lenses at depth	Construction (e.g., roads) easier parallel to rather than normal to orientation of drumlins
Mvd	Drumlinoid moraine veneer	Thin till over glacially eroded drumlinoid bedrock ridges	1-3 m	Moraine plain with individual drumlins, to fluted moraine plain. Slope 2-15°	Drumlinoid ridges well drained; intervening depressions commonly poorly drained	Low ice content in till on drumlinoid ridges, higher in till of intervening ridges; subjacent bedrock typically free of visible ice	Offers good construction sites restricted to drumlins ridges; construction (e.g., roads) easier parallel to rather than normal to orientation of drumlins
Mr	Ridged moraine	Glacial till with 20-50% (locally 60%) pebble size and larger in clayey silt to silty sand matrix in plains; typically bouldery till in mountains	15 to 50+m	Individual and compound straight to sinuous ridges; relief 15 to 60 m. Slope 0-20°	Hummocks well drained; intervening depressions may be poorly drained	Few data; ice content probably low	Crests of prominent ridges are commonly well drained and offer restricted good construction sites
Mm	Rolling moraine	Glacial till, typically with 5-20% pebble size and larger in a silty clay or clayey silt matrix in plains; typically bouldery till in mountains	Up to 20 m	Broad hummocks 10-20 m high. Slope 0-10°	Drainage centripetal to local depressions; elevated areas moderately well drained; intervening depressions generally poorly drained	Commonly 10-25% segregated ice as thin (1 mm-2 cm) irregular discontinuous seams in upper 2-3 m; irregularly distributed large masses of segregated ice common at greater depth	Summits of broad hummocks typically well drained; removal of vegetation may cause differential subsidence up to 3 m due to thawing of segregated ice masses
R	Bedrock	Cretaceous shale in plains, Cretaceous sandstone in Peel Plateau; rocks in mountainous area range from Upper Devonian shale of Imperial Formation, Lower Devonian dolomite of Bear Rock Formation to relatively weak shale, sandstone, and dolomite of Proterozoic Tsezotene Formation to mostly resistant quartzite of the Proterozoic Katherine Group		Mainly prominent ridges, scarps, and hills developed on shale, sandstone, dolomite, and quartzite	Generally freely drained but with some poorly drained depressions	No data	As a dominant unit R occurs only in areas underlain by Devonian Bear Rock Formation. Karst sinkholes are abundant where Bear Rock Formation is near the surface. Shale and sandstone of plains area and Peel Plateau can be rip-rapped to produce common fill but are unsuitable for road metal. Carbonate rocks and quartzites in the mountainous areas can be quarried to produce large blocks suitable for rip-rap or can be crushed to produce aggregate. For reference see GSC Memoir 388, 1982
Rt	Bedrock terrace	Cretaceous sandstone		Subhorizontal bedrock surfaces at the bottom or at the margins of abandoned meltwater channels	Well drained	No data	Rt occurs only adjacent to meltwater channels where Cretaceous sandstone is subhorizontal. For reference see GSC Memoir 388, 1982