UNIT	NAME	MATERIAL	THICKNESS m	TOPOGRAPHY	DRAINAGE PATTERN	GROUND ICE	COMMENTS
fO	Organic fenland	Peat, typically woody sedge peat	2-3	Flat to very gently sloping, in part with reticulate network of low ridges (50 cm high). Slope 0-2°	No integrated drainage system; 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 makes 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	Flat to very gently sloping, typically with numerous shallow steep-sided (2-3 m) depressions occupied by lakes, ponds and bogs (pO-k)	Drainage via poorly defined seepage channels; poorly drained	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; alternation 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 to coarse sand or gravel of point bar deposits, overlain by silt and fine grained sand of overbank deposits	3-5	Floodplain and low bordering terraces, commonly with meander scars. Slope 0-3° Relief to 1 m	No integrated drainage system; impeded by meander scroll ridges where present. Poorly to moderately well drained	Permafrost lacking 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; ice wedges in polygonal pattern (diameter of polygons 6-25 m) common	Subject to periodic flooding; along secondary streams, 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 plain	Fine grained sand and silt	3-5	Floodplain, in part with meander scars and numerous channels and thermokarst ponds. Slope 0-3° Relief to 5 m	Seepage to ponds and lakes, then by connecting channels to trunk stream. Poorly to moderately well drained	20 to 50% or more segregated ice by volume; ice wedges in polygonal pattern (diameter of polygons 6-25m) common	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	Flat to gently sloping, in part with meander scars and channels	No integrated drainage system. Poorly to moderately well	No data; ice content probably low to moderate; in adjacent areas 10-25% segregated ice by volume as thin (1 mm- 2 cm) seams. Cement ice only in subjacent gravel	A potential source of aggregate
Af	Alluvial fans and fan aprons	Highly variable, mainly silt, sand, minor gravel; discontinuous layers of woody peat	30 +	Gently to moderately sloping fans and fan aprons. Slope 1-6°	One or more shifting streams usually present; downslope seepage in poorly defined runnels	No data; ice contents probably medium to high	Fans subject to sudden and damaging shifts of streams; generally unsuitable for construction
Ax	Alluvial complex; includes Ap, At, Af	As for Ap, At, Af		As for Ap, At, Af	As for Ap, At, Af	As for Ap, At, Af	As for Ap, At, Af
Cb	Colluvial blanket	Rock detritus and surficial deposits transported by gavity	2-30	Blanket conforms generally to bedrock topography; occurs mainly in unglaciated Richardson Mountains in combination with colluvial veneer and bedrock. Slope to 20°	Generally freely drained. No organized drainage; generally moderately well drained	No data, but because this unit generally overlies impermeable bedrock, high ice contents are likely, particularly in foot slope positions	Potential slope instability limits any kind of construction
Cv	Colluvial veneer	Rock detritus and surficial deposits transported by gavity	0-2	Veneer conforms to bedrock topography. Occurs extensively in Richardson Mountains in combination with bedrock and colluvial blanket. Occurs locally along valley walls. Slopes to 30°	Generally freely drained. No organized drainage; generally moderately well drained	No data, but because this unit generally overlies impermeable bedrock, high ice contents are likely, particularly in foot slope positions	Occurs extensively in unglaciated Richardson Mountains in combination with bedrock and colluvial blanket; potential slope instability limits any kind of construction
Ca	Sheetwash deposits	Mostly organic silt and sand	1-2	Occurs as veneer or blanket on gently sloping (5-10°) scarps and valley sides developed on glaciolacustrine sediments or soft bedrock	No integrated drainage system; poorly to moderately well drained	No data; material suggests that moderate to high ice content likely	Moderate to high potential for subsidence following removal of vegetation. The probability of high ice content makes this unit generally unsuitable for construction
Cz	Slide, slump	Of two mapped occurences, one on the east flank of Aklavik Range involves sandstone and shale of Martin Creek Formation; the other, in the headwaters of Vittrekwa River, is a retrogressive-thaw flow slide in glacial till		The very large slide on the east flank of Aklavik Range has roughly concentric curvilinear ridges and intervening depressions characteristic of large failures in soft rocks	No integrated drainage system. Poorly to moderately well drained	No data, but because of poor drainage, high ice contents likely	Potential slope instability limits any kind of construction. See symbol for retrogressive thaw flows in areas of Lb, Lv, Mb, Mv, Mm
Ct	Cryoplanation terrace	Colluvium derived from mass wasting of local bedrock	1-3	Terraces up to 750 m long and 450 m wide, typically occurring as steps on mountain slopes. The "treads" have slopes of 1-5°; intervening risers have slopes of 20-35°	Downslope seepage in shallow subparallel runnels	No data. Ice content probably low to medium; subjacent bedrock typically free of segregated ice	Restricted to high elevations in unglaciated Richardson Mountains. See symbol for cryoplanation terraces
Cy	Pediment	Typically 1-2 m of silty gravel or colluvium derived from local bedrock, overlain by up to 1 m of silt	2-3	Gently sloping surface (0-6°) extending from valley axis to base of steep mountain slope in valleys within unglaciated Richardson Mountains	Subparallel runnels; moderately well drained	Commonly 10-25% segregated ice as thin (1 mm-2 cm) seams in silt cover; cement ice only in silty gravel; subjacent bedrock is typically free of segregated ice	Low to moderate potential for subsidence following removal of vegetation. Because of drainage by numerous runnels, roads or berms normal to slope require numerous culverts or berm breaks to present ponding of surface water or concentration of drainage
Cx	Slope complex (Cv, Cb, Ca, Cz, Af, undivided)	Deposits derived from entire range of surficial material plus bedrock detritus transported by gravity, sheetwash and intermittent or permanent streams	0-30	Occurs as veneer or blanket on gently to steeply sloping (3-30°) scarps and valley sides, especially where streams are deeply incised into relatively weak Cretaceous rocks of Peel Plateau Slope 1-30° Relief to 250 m	No integrated drainage system. Poorly to moderately well drained	No data; ice content probably highly variable depending on texture and thickness of material forming the unit	Slope instability presents major problems for any kind of construction; occurs mainly along valley walls of Peel River and major tributaries
Lp	Glaciolacustrine plain	Glaciolacustrine silt and clay, minor sand; discontinuous organic cover	3-15 +	Flat to gently sloping (0-5°). Relief to 3 m	Surface seepage through fen-filled depressions. Poorly drained, except where overlain by sand	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 gullying, even on gentle slopes, following removal of vegetation
Lp-k	Glaciolacustrine thermokarst plain	Glaciolacustrine silt and clay, minor sand; discontinuous organic cover	3-15 +	Flat to gently sloping, with 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 Lv	Glaciolacustrine blanket Glaciolacustrine veneer	Glaciolacustrine silt and clay, minor sand; discontinuous organic cover	3-15 + 0-2	Flat to moderately sloping, conforming to subjacent deposits, typically Mb, Mv, Mm	Diffuse subparallel runnels; 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	As for Lp, occurs along upper slopes of Peel Plateau and in valleys of the eastern part of Richardson Mountains, where glacial lakes and ponds were impounded along the margin of the Laurentide Ice Sheet during glacial retreat
Gp Gt	Glaciofluvial plain Glaciofluvial terrace	Sand, gravel locally with veneer of eolian silt or sand; silt and/or peat may occur as filling in channels	2-30	Flat to gently sloping, commonly retains shallow braided channel system. Slope 0-2°	Drainage mainly subsurface, locally with seepage along channels. Well drained except for seepage along channels	Very low ice content, but where ice present consists of cement ice only	Offers good construction sites; major source of aggregate where the material is gravel rather than sand. Small unmapped deposits may occur in association with meltwater channels
Gx	Glaciofluvial complex, Gp, Gt with abundant kettles, or in association with hummocky or ridged glaciofluvial deposits	Gravel, sand	2-20	Hummocky-kettled topography connected with short flat surfaces. Slope 0-15° Relief to 25 m	No integrated drainage system. Well drained except for possible depression	Very low ice content, but where ice present consists of cement ice only	Major source of aggregate where the material is gravel rather than sand. Small unmapped deposits may occur in association with meltwater channels
Mp	Moraine plain	Glacial till, typically with 5-20% granule size and larger in a silty clay or clayey silt matrix	3-20	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-2cm) irregular discontinuous seams in upper 2-3 m. Thicker (10 cm-3 + m) ice lenses at depth, but uncommon	Potential subsidence upon removal of vegetation typically less than 1 m. Possible high ice content in organic deposits within the unit. Because of drainage by numerous runnels, roads, or berms normal to slope direction, requires numerous culverts to avoid impoundment of surface water
Mpv	Moraine plain (veneer)	Glacial till, typically with 5-20% granule size and larger in a silty clay or clayey silt matrix	0-3	Flat to gently sloping (0-5°); thin till overlies shale and siltstone of Devonian Imperial Formation or Cretaceous Mount Goodenough, Rat River or Arctic Red formations	Downslope seepage in shallow subparallel runnels. Generally poorly to moderately well drained	Commonly 10-25% segregated ice as thin (1 mm-2 cm) seams in till; subjacent bedrock is typically free of segregated ice	As for Mp; typically thin till cover permits access to subjacent bedrock, which is typically free of segregated ice and can be ripped to obtain common fill
Mb	Moraine blanket	Glacial till, typically with 5-20% granule size and larger in a silty clay or clayey silt matrix	3-6	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-3 + m) ice lenses at depth, but uncommon	Potential subsidence upon removal of vegetation typically less than 1 m; potential for creep of active layer. Because of drainage by numerous runnels, roads, and berms normal to slope direction, requires numerous culverts to avoid impoundment of surface water
Mv	Moraine veneer	Glacial till, typically with 5-20% granule size and larger in a silty clay or clayey silt matrix	0-3	Occurs as thin till cover conforming to bedrock hills and ridges on the upper slopes of Peel Plateau and in the glaciated eastern part of Richardson Mountains. Slopes 8-15°	Typically moderately well drained	Commonly 10-25% segregated ice as thin (1mm-2 cm) seams in till; subjacent bedrock free of segregated ice	Typically thin till cover permits access to subjacent bedrock, which is typically free of segregated ice and can be used as common fill. Potential subsidence on removal of vegetation less than 1 m
Md	Drumlinoid till plain	Glacial till, typically with 5-20% granule size and larger in a silty clay or clayey silt matrix	3-30	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-3 + m) ice lenses at depth. Subjacent bedrock typically free of visible ice	Crests of drumlins and drumlinoid ridges typically well drained, intervening depressions poorly drained; construction of roads, etc. easier parallel to rather than normal to orientation of drumlins
Mvd	Drumlinoid moraine veneer	Thin till over drumlinoid bedrock ridges	1-2	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	Crests of drumlins and drumlinoid ridges typically well drained, intervening depressions poorly drained; construction of roads, etc. easier parallel to rather than normal to orientation of drumlins
Mm	Rolling moraine	Glacial till, typically with 5-20% granule size and larger in a silty clay or clayey silt matrix. Locally includes small areas of gravel	up to 20	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 shaped and 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. It is an extensive unit, covering about 50% of the map area
Mh	Hummocky moraine	Glacial till with 20-50% (locally 60%) pebble size and larger in clayey silt to silty sand matrix; locally includes small areas of gravel	up to 20	Individual or coalescent hummocks. Slope 0-20° exceptionally 30° Relief 15-50 m	Hummocks well drained; intervening depressions may be poorly drained	Few data; ice content probably low	Crests of prominent hummocks are commonly well drained offering restricted good construction sites; ice content and potential for subsidence may be high in depressions
Mr	Ridged moraine	Glacial till with 20-50% (locally 60%) pebble size and larger in clayey silt to silty sand matrix; locally includes small areas of gravel		Individual and compound straight to sinuous ridges 15 to 60 m high. Relief to 60 m	Ridges 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
Mx	Moraine complex (Mh, Mr, Mm, undivided)	Glacial till as in Mh, Mr, Mm	up to 20	As for Mh, Mr, Mm	As for Mh, Mr, Mm	As for Mh, Mr, Mm	As for Mh, Mr, Mm
R	Bedrock	Sandstone, siltstone, and shale		Occurs widely in mountainous terrain along the western margin of the map area, and locally near Peel River	Generally well drained but with some poorly drained depressions	Typically free of segregated ice	Bedrock suitable for production of rip-rap or crushed products is generally lacking in Mackenzie Plain and Peel Plateau, but the rocks can be ripped to provide common fill. In Richardson Mountains, a Lower Cambrian limestone unit, conglomerate of Turtle Formation, and sandstone (quartzite) of Aklavik Formation and Bug Creek Group are potential sources of rip-rap and crushed products, although crushed quartzite of Aklavik Formation and Bug Creek Group may be too angular and sharp to be used as road metal. Limestone of some subunits of Road River Formation may also be suitable for crushing where shale interbeds are minimal (see Geological Survey of Canada, Map 1520A, 1981, by D.K. Norris)