LEGEND AND NOTES TO ACCOMPANY SURFICIAL GEOLOGY AND GEOMORPHOLOGY MAPS 106 I, J, K, M, N, O

Map Unit[1]	Name	Surficial Deposit: Material	Surficial Deposit: Estimated Thickness	Landform: Topography	Landform: Drainage Pattern	Landform: % Water	Ground Ice	Land Zone[2]	Soils[3]: Texture U.S.D.A.	Soils: Unified Classification	Soils: Micro-relief cm	Soils: Depth of thaw cm	Soils: Drainage (deciles)	Vegetation[4]: Stable	Vegetation: After Fire	% of Zone	Comments
fOv	Organic veneer (mapped mainly as a secondary unit with Mp, Mv)	Peat - typically woody sedge peat	20-60 cm	Shallow channels, runs and depressions; Slope 0-3° Relief to 1 m	Surface seepage in channels, depressions	0-5	Organic veneer lies mainly within the active layer; (for ice in mineral soil below, see associated map unit).	0									Similar to fO; areas with mappable fOv component (+10%) should be avoided in construction of roads, pipelines, etc.
								1	woody sedge peat over L-C mineral	Pt CL-ML	Sedge tussocks 10-50	50-120	Poorly to wet 10	Sedge-Bi-tL	Sedge-Bi	5	
								2	woody sedge peat over L-C mineral	Pt CL-ML	Sedge tussocks 10-50	50-150	Poorly to wet 10	Sedge-Bi-tL	Sedge-Bi-tL	5	
								3	woody sedge peat over L-C mineral	Pt CL-ML	Sedge tussocks 10-30	100-200	Poorly to wet 10	Sedge-Bi-tL	Sedge-Bi-tL	5	
fO	Organic (fenland)	Peat - typically woody sedge peat	2-3 m	Flat to very gently to gently sloping, in part with reticulate network of low ridges. Slope 0-2° Relief to 1 m	No organised drainage; water at surface throughout summer months	5-20	Commonly unfrozen to 2+ m (see "Depth of Thaw" for respective zones) little data available on segregated ice content at greater depths	0									Poor drainage, plus high compressibility and low strength of the material make it unsuitable for any type of construction.
								1	Mesic sedge peat	Pt	0 to tussocky	150 to un-frozen	Wet 10	Sedge-cotton-grass or Sedge-Bi-tL	Sedge cotton-grass	3	
								2	Mesic sedge peat	Pt	None Some sedge tussocks	200 to un-frozen	Wet 10	Sedge-cotton-grass or Sedge-Bi-tL	--	10	
								3	Mesic sedge peat	Pt	0	Un-frozen	Wet 10	Sedge-cotton-grass or Sedge-Bi-tL	--	10	
pO	Organic (peatland)	Peat - typically sedge and woody sedge peat overlain by sphagnum peat	2-4 m	Flat to very gently sloping, typically with numerous shallow steep-sided (2-3 m) depressions occupied by lakes, ponds and bogs.	Depressions interconnected by seepage channels	5-20	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 + (Zones 1, 2) or unfrozen (Zones 2, 3).	0	Fibric to mesic peat	Pt	Polygon trenches to 100 cm	20-30	Imperfectly 10	Lichen-Sphagnum	Sphagnum-Er	3	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.
								1	Fibric to mesic peat	Pt	Some polygon trenches to 100 cm	20-30	Imperfectly 10	Lichen-bS	Sphagnum-Er	3	
								2	Fibric to mesic peat	Pt	Some sphagnum hummocks	25-30	Imperfectly 10	Lichen-bS	Sphagnum-Er	15	
								3	Fibric to mesic peat	Pt	Some sphagnum hummocks	25-30	Imperfectly 10	Lichen-bS	Sphagnum-Er	15	
s,gAp	Alluvial floodplain of high energy streams	Sand, gravel, in part with silt veneer	1-5+ m sand and/or gravel 0-2 m silt	Flood plain and low bordering terraces scarred by braided channels. Slope 0-3° Relief to 2 m	Intermittent drainage through braided channels	0	Permafrost lacking in active unvegetated parts of floodplain; elsewhere cement ice only, except in silt veneer which commonly has up to 10% segregated ice as thin (1 mm-2 cm) seams	~~0~~						Occasionally flooded	Frequently* flooded		Subject to periodic flooding; constitutes potential reserve of gravel but extraction presents serious possibility of deleterious changes in stream course and downstream changes in stream regimen.
								0									
								1	S + G	SM-GM	0	50-200	Imp. to well	Wi-Al		<1	
								2	S + G	SM-GM	0	50-200	Imp. to well	Wi-Al		<1	
								3	S + G	SM-GM	0	100-300	Imp. to well	bPo-Al-W		<1	
Si Ap	Alluvial floodplain of low energy streams	Silt, fine-grained sand	3-5+ m	Flood plain 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	0-20	Permafrost lacking in unvegetated part of floodplain; elsewhere up to 10% segregated ice by volume as thin (1 mm - 2 cm) seams. Ice wedges in polygonal pattern (diameter of polygons 6-25 m.) common in Zone 2.	0									Subject to periodic flooding; melting of ice wedges produced polygonal network of depressions when vegetation is removed.
								1	VFSL to SiL	SM to CL-ML	0	100 to un-frozen	Imperfectly 4 Poorly 6	wS Sedge-tL	Wi-Al Sedge-Wi	<1	
								2	VFSL to SiL	SM to CL-ML	0	100 to un-frozen	Imperfectly 4 Poorly 6	wS-bS Sedge-tL	Wi-Al Sedge-Wi	<1	
								3	VFSL to SiL	SM to CL-ML	0	200 to un-frozen	Imperfectly 4 Poorly 6	wB-bPo-wS Sedge-tL	Wi-Al Sedge-Wi	1	
Si Apk	Thermokarst alluvial floodplain (associated with low energy streams only)	Silt, fine-grained sand	3-5+ m	Level floodplain, in part with meander scars, and with numerous channels and thermokarst ponds. Slopes 0-3°, short steep slopes to 45° Relief to 5 m	Seepage to ponds and lakes, to adjacent streams by connecting channels	20-50	Up to 10% segregated ice by vol. in upper 2-3 m; active expansion of thermokarst lakes and ponds suggests massive segregated ice at depth	0									Thermokarst processes active around pond margins; melting of ice wedges produces polygonal network of depressions when vegetation is removed; subject to periodic flooding; highly unsuitable as construction sites.
								1	VFSL to SiL	SM to CL-ML	Hummocks and trenches 0-40	40-200+	Mod.well 1 Imperfectly 4 Poorly 5	wS wB-bS-lichen Sedge-Wi	- - -	20	
								2	VFSL to SiL	SM to CL-ML	Hummocks 0-50	50-200+	Mod.well 2 Imperfectly 4 Poorly 4	wS	- -	<1	
								3	VFSL to SiL	SM to CL-ML	Hummocks 0-20	200 to un-frozen	Mod.well 2 Imperfectly 4 Poorly 4	wS wS-bS Sedge-tL	wB-bPo-wS bPo-Al Sedge-Wi	<1	
s,gAt	Alluvial terrace of high energy streams	Sand, gravel, in part, with silt veneer	1-5+ m sand and/or gravel 0-2 m silt	Level to gently sloping terrace, in part with shallow channels and steep scarps. Slope 0-3°, locally to 45° Relief to 5 m, greater at scarps	Surface drainage without integrated drainage system	0-5	Cement ice only except in silt veneer which commonly has up to 10% segregated ice as thin (1 mm - 2 cm) seams	0									Offer good construction sites where silt veneer is thin; potential aggregate source.
								1	FS-SiL (often over gravel)	SM to CL-ML	Hummocks 0-20	75-150	Mod.well 3 Imperfectly 5 Poorly 2	wS wS-bS-lichen Sedge-Wi	- - -	<1	
								2	FS-SiL (often overlying gravel)	SM to CL-ML	Hummocks 0-20	75-150	Mod.well 3 Imperfectly 5 Poorly 2	wS bS-lichen Sedge-Wi		<1	
								3	SL-SiL (often over gravel)	SM to CL-ML	Hummocks 0-20	100 to un-frozen	Mod.well 3 Imperfectly 5 Poorly 2	wS wS-bS Sedge-tL		<1	
Af	Alluvial fans and fan aprons	Highly variable-silt, sand, gravel, peat	50+ m	Gently to moderately sloping fans and aprons. Slopes 1-12° Relief to 50 m (from head of fan to toe)	One or more shifting streams usually present; downslope seepage in poorly defined runs	0	Highly variable; low in gravel, mod. to very high in silt (the more common case). Thin seams in upper 2-3 thick layers to 30+ cm at depth. Ice content generally lower in coarser sediments at head of fan than in finer sediments at outer margin.	0									Fans composed of sand and gravel offer well-drained building sites, but sudden and damaging shifts of streams on the fans are common; fans with high silt content are unsuitable for construction. Fans of gravel, sand (rare) are good sources of aggregate.
								1	Variable; generally SL-SiL	variable	Hummocks 0-50	50-100+	Mod.well 2 Imperfectly 6 Poorly 2	wS wS-bS-lichen Sedge-Wi	Wi-Al Wi-Al Sedge-Wi	1	
								2	Variable; generally SL-SiL	variable	Hummocks 0-50	50-100+	M.well-well 3 Imperfectly 6 Poorly 1	wS-wB bS-lichen Sedge-Wi	Wi-Al-bPo Wi-Al Sedge-Wi	<1	
								3									
Cx	Colluvial complex	Colluvium derived from entire range of surficial deposits plus bedrock detritus	1-5+ m	Steeply sloping valley walls and scarps. Slope 12 to 45° Relief to 300 m		0		0						South aspect	North aspect*		Active stream erosion, slumping, flow-slides common; irregularity of topography and slope instability present major problems for any kind of construction; see comments re map unit on which colluvium is developed.
								1	Variable	-	0	30-250	Excessively 4 Well 4 Impf. - Poorly 2	Bare Grass-wB bS-lichen	Sedge wS-lichen wS-bS-lichen	<1	
								2	Variable	-	0	30-300	Excessively 4 Well 4 Impf. - Poorly 2	Bare tA-wS-wB bS-lichen	Sedge bS-lichen bS-lichen	<1	
								3	Variable	-	0	50-300+	Excessively 4 Well 4 Impf. - Poorly 2	Grass tA-wB-wS bS-wS	Wi-Al bS-wS bS-lichen	<1	
E	Eolian deposits	Sand, mainly fine to medium grained	1-20 m	Thin veneer or dune ridges within or adjacent to areas of GP, GLp slope to 20° relief to 10 m	Mainly subsurface seepage; no organized drainage	0	No data; probably cement ice only below active layer; segregated ice highly probable in subjacent glaciolacustrine silts where eolian deposits occur within areas of GLk	0									Offers restricted well-drained sites within large areas of poorly drained units GL, GLk; subject to wind erosion when vegetation mat is removed.
								1					Well 7	wS-wB	~~wS-wB-grass~~		
								2	LS-S	SP	0	50-300	Well 7 Impf. 2 Poorly 1	wS-wB bS-wS bS-tL-sedge	wS-wB-grass wS-wB-bS Sedge-tL	<1	
								3	LS-S	SP	0	50 to un-frozen	Well 7 Impf. 2 Poorly 1	tA-wS wS-wB bS-tL-sedge	tA wB tL-Wi	<1	
Lp	Glaciolacustrine plain	Glaciolacustrine silt and clay; discontinuous organic cover	1-20 m + silt and clay	Flat to gently sloping slope 0-2° relief to 3 m	Surface seepage through fen-filled depressions	0-20	No data; should be treated as Lpk until data available	0									Detachment slides, followed by development of retrogressive flow slides, common on colluvial slopes (Cx) developed on this unit (and on lesser areas of steep slope not mapped as Cx), especially following fire or other disturbance of vegetation.
								1	SiL-SiC	CL-ML to CL	Hummocks 20-60	50-90	Imperfectly 4 Poorly 6	wS-bS-lichen tL-bS-sedge	wB-wS-Wi Sedge-Wi-Al	<1	
								2	SiL-SiC (some FS)	CL-ML to CL	Hummocks 20-75	50-100	Imperfectly 5 Poorly 5	bS-lichen bS-tL-sedge	wS-wB-Wi Sedge-Wi-tL	1	
								3	SiL-SiC	CL-ML to CL	Hummocks 10-50	50-200	Imperfectly 5 Poorly 5	bS-lichen tL-bS-sedge	bS-lichen tL-Wi-sedge	<1	
Lpk	Glaciolacustrine thermokarst plain	Glaciolacustrine silt and clay; discontinuous organic cover	1-20 m + silt and clay	Flat to gently sloping, numerous shallow thermokarst lakes and ponds slope 0-5° relief to 6 m	Seepage centripetal to ponds and lakes, intermittent seepage through fen-filled depressions between ponds and lakes	25	Commonly up to 10% segregated ice as thin (1 mm - 2 cm) seams in upper 1-3 m; segregated ice as reticulate network to 40% by volume, or thick tabular bodies of nearly pure ice at greater depth.	0									Thermokarst processes active around pond margins; detachment slides, followed by development of retrogressive flow slides, common on colluvial slopes (Cx) developed on this unit (and on lesser areas of steep slope not mapped as Cx), especially following fire or other disturbance of vegetation.
								1									
								2	SiL-SiC (some FS)	CL-ML to CL (some SM)	Hummocks 20-75	50-150+	Mod.well 2 Imperfectly 5 Poorly 3	wS-wB-bS bS-lichen bS-tL-sedge	wS-wB wS-wB-Wi Sedge-Wi-tL	5	
								3									
GLp	Glaciofluvial-lacustrine plain	Glaciolacustrine silt and clay overlain by glaciofluvial sand with minor silt, rare fine gravel. Discontinuous organic cover	1-35 + m sand, minor gravel 3-15 + m silt and clay	Flat to gently sloping slope 0-2° relief to 3 m	Drainage mainly subsurface	0-20	No data; should be treated as GLk until data available	0									Detachment slides followed by development of retrogressive flow slides common on colluvial slopes (Cx) developed on this unit (and on lesser areas of steep slope not mapped as Cx), especially following fire or other disturbance of vegetation.
								1									
								2	FSL to SiL	SM to CL-ML	Hummocks 10-30	50-150	Imperfectly 6 Poorly 4	bS-lichen bS-tL-sedge	wS-wB-Wi Sedge-Wi-tL	<1	
								3	FSL to SiL	SM to CL-ML	Hummocks 0-30	50-200	Imperfectly 6 Poorly 4	bS-lichen tL-bS-sedge	bS-wB tL-Wi-sedge	1	
GLpk	Glaciofluvial-lacustrine thermokarst plain	As GLp	1-35 + m sand, minor gravel 3-15+m silt and clay	Flat to gently sloping, numerous shallow 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	25	Commonly up to 10% segregated ice as thin (1mm-2cm) seams in upper 2-3m of sand, but massive segregated ice rare in the sand; very high ice content (to 75%+ by vol.) as reticulate network in underlying silt and clay	0									Thermokarst processes active around pond margins; detachment slides, followed by development of retrogressive flow slides, common on colluvial slopes (Cx) developed on this unit (and on lesser areas of steep slope not mapped as Cx), especially following fire or other disturbance of vegetation. Rotational slope failures common along banks of larger streams.
								1									
								2	FSL to SiL	SM to CL-ML	Hummocks 10-50	50-150+	Mod.well 2 Imperfectly 6 Poorly 2	wS-wB-bS bS-lichen bS-tL-sedge	wS-wB wS-wB-Wi Sedge-Wi-tL	<1	
								3	FSL to SiC	SM to CL-ML to CL	Hummocks 10-40	50-200+	Mod.well 2 Imperfectly 6 Poorly 2	wS-wB bS-lichen tL-bS-sedge	wS-wB-Al bS-wB tL-Wi-sedge		
Gp Gt	Glaciofluvial plain Glaciofluvial terrace	Sand, gravel, locally with veneer of eolian silt or sand	2-15+ m	Flat to gently sloping slope 0-2° relief to 5 m	Drainage mainly subsurface	0-5	Typically cement ice only, polygonal pattern on some areas of unit in Zones 0, 1 suggests possible wedge ice.	0	G+S (local silty cap)	GW-SW	-	50-150	Well 5 Impf. 4 Poorly 1	Bi Bi-Wi Sedge-sphagnum	Sedge Wi Sedge	<1	Offers good construction sites; major source of aggregate where material is gravel rather than sand.
								1	G + S (local silty cap)	GW-SW	Hummocks 0-10	75-150	Well 5 Imperfectly 4 Poorly 1	wS-lichen bS-lichen tL-Bi-sedge	wB-Wi-wS wB-bS-Wi Sedge-Bi	<1	
								2	G + S	GW-SW	Hummocks 0-10	75-150+	Well 6 Imperfectly 3 Poorly 1	wS bS-wS-lichen bS-tL-sedge	wS-wB-grass wS-wB-bS Sedge-tL	<1	
								3									
Gc	Glaciofluvial plain, channelled	Sand, gravel; silt, peat in channels		Flat to gently sloping interrupted by shallow channels and low scarps. Relief to 10 m; exceptionally to 30 m	Drainage mainly subsurface with seepage along channels	0-5	As Gp, but with locally high segregated ice within silt and below peat in channels	0									Same as Gp, Gt (above) except in channels which may contain peat and ice-rich silt. Where unit grades into units GL, GLk, the surface deposit is typically sand rather than gravel and may be underlain by ice-rich silt.
								1									
								2	G + S	GW-SW	Hummocks 0-10	75-150+	Well 7 Imperf. 2 Poorly 1	wS-wB bS-wS-lichen bS-tL-sedge	wS-wB-grass wS-wB-bS Sedge-tL	<1	
								3									
Gh Gr	Hummocky, ridged glaciofluvial deposits (includes eskers and esker complexes)	Sand, gravel		Hummocks and ridges, relief to 40 m slope 5-15°	Drainage mainly subsurface	0	Typically no segregated ice in well drained sites, but segregated ice may be present in association with silt layers beneath depressions.	0									Offers good construction sites; major source of aggregate where material is gravel rather than sand.
								1	G + S	GW-SW	0	50-150+	Well 8 Imperfectly 2	wS-wB bS-wS	wB-wS-grass wB-wS-bS	<1	
								2	G + S	GW-SW	0	150+	Well 8 Imperfectly 2	wS bS-wS-lichen	wS-wB-grass wS-wB-bS	<1	
								3									
Mp Mv Mpv	Moraine plain	Glacial till - typically clay, silt, minor sand and gravel. Locally up to 90% > 2 mm.	Mp:2-20 m Mv:0-3 m Mpv:1-20 m	Flat to gently sloping (0-3%) except as indicated by the slope superscript relief to 5 m	Downslope seepage in shallow subparallel runs	0-5	Commonly up to 10% 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 occasionally in Zones 0, 1 rare in Zone 2.	0	SICL-C (Some L-C)	ML	Hummocks 30-60	50-75	Imperf. 9 Poorly 1	Cottongrass-sedge Sedge-sphagnum		5	Potential subsidence on removal of vegetation typically less than 1 m (but note that unit may have up to 10% unmapped fO or pO, and that locally ice content at depth may be high); because of drainage by numerous subparallel runs, roads or berms normal to slope direction require numerous culverts to avoid impoundment of surface water.
								1	CL (some L and C)	CL	Hummocks 20-60	50-80	Mod.well 2 Imperf. 4 Poorly 4	wS-lichen bS-wS-lichen tL-bS-sedge	wB-wS wB-wS-Wi Sedge-Al-Wi	25	
								2	CL (some L)	CL	Hummocks 10-40	50-150	Mod.well 2 Imperf. 5 Poorly 3	bS-wS-wB bS-lichen tL-bS-sedge-Al	wS-wB-bS wS-wB-Wi Sedge-Al	50	
								3	CL (some L)	CL	Hummocks 0-30	50-200	Mod.well 2 Imperf. 5 Poorly 3	wS-bS-bPo bS-lichen tL-bS-sedge	wB-wS-Al bS tL-Wi-sedge	20	
Mp[1] Mv[1] Mpv[1] Mp[2] Mv[2] Mpv[2]	Moraine plain	Glacial till	Mp:2-20 m Mv:0-3 m Mpv:1-20 m	Slope[1] 3-8° Slope[2] 8-12°	Downslope seepage in shallow subparallel runs	0-5	As Mp	0	SICL-C (Some L-C)	ML	Hummocks 30-60	50-75	Imperf. 9 Poorly 1	Cottongrass-sedge Sedge-sphagnum		30	Potential subsidence on removal of vegetation typically less than 1 m; potential for creep of active layer, especially in slope category[2]. Because of drainage by numerous subparallel runs, roads or berms normal to slope direction require numerous culverts to avoid impoundment of surface water.
								1	CL-C	ML-CL	Hummocks 20-75	50-150	Mod.well 3 Imperf. 6 Poorly 1	wS-lichen bS-wS-lichen tL-bS-sedge	wB-wS wB-wS-Wi Sedge-Al-Wi		
								2	CL-SiC (locally some L)	ML-CL	Hummocks 20-60	50-100	Mod.well 5 Imperf. 4 Poorly 1	bS-wS-wB bS-lichen bS-tL-sedge	wS-wB-bS wS-bS-Wi Sedge-tL	1	
								3	CL	CL	Hummocks 0-30	50-200	Well 5 Imperf. 4 Poorly 1	wS-bS-wB bS-lichen tL-bS-sedge	wB-wS-Al bS tL-Wi-sedge	<1	
Md	Drumlin moraine plain	Glacial till	2-20+ m	Moraine plain with individual drumlins, to fluted moraine plain slope 2-10° relief to 20 m	Parallel seepage or streams in fluted moraine, to trellis pattern or deranged drainage in moraine plain with drumlins	0-15	As Mp	0	SiCL-C (Some L-C)	M-L	Hummocks 30-60	50-75	Impf. 9 Poorly 1	Sedge Sedge-sphagnum		5	Similar to Mp; crests of drumlins and drumlinoid ridges typically well-drained, intervening depressions poorly drained; construction of roads, etc. easier parallel to than normal to orientation of drumlins.
								1	CL-L	CL to CL-ML	Hummocks 20-60	50-90	Mod.well 2 Imperf. 4 Poorly 4	wS-lichen bS-wS-lichen tL-bS-sedge	wB-wS wB-wS-Wi Sedge-Al-Wi	<1	
								2	GL-CL	GC-CL	Hummocks 0-30	50-150	Well 3 Imperf. 4 Poorly 3	bS-wS-wB bS-lichen bS-tL-sedge	wS-wB-bS wS-wB-Wi Sedge-tL	1	
								3	L-CL	CL-ML to CL	Hummocks 0-30	50-200	Mod.well 3 Imperf. 4 Poorly 3	wS-wB-bPo bS-lichen tL-bS-sedge	wB-wS-Al bS tL-Wi-sedge	1	
Mm	Subdued hummocky moraine	Glacial till	5-30 m	Broad hummocks 10 to 30 m high, 100 to 500 m across; slopes to 10°	Deranged; centripetal to local depressions	5-30	Commonly up to 10%, locally up to 40% ice as thin (1 mm to 2 cm) irregular discontinuous seams in upper 2-3 m. Thicker (10 cm to 3 m +) ice lenses at depth common in Zones 0, 1, occasional in Zone 2.	0	SiCL-C (some L-C)	ML	Hummocks 30-60	50-75	Imperf. 8 Poorly 2	Cottongrass-sedge Sedge-sphagnum		10	Summits of broad hummocks typically well drained, similar to Mp; lower slopes and intervening depressions may have high ice content, with potential for subsidence of several metres on removal of vegetation; retrogressive flow slides occur on colluvial slopes (Cx) developed on this unit west of Peel River.
								1	CL-C	CL	Hummocks 20-75	50-150	Mod.well 3 Imperf. 5 Poorly 2	wS-lichen bS-wS-lichen tL-bS-sedge	wB-wS wB-wS-Wi Sedge-Al-Wi	10	
								2	CL-SiCL (locally some L)	CL (some CL-ML)	Hummocks 20-60	50-100	Mod.well 5 Imperf. 3 Poorly 2	bS-wS-wB bS-lichen bS-tL-sedge	wS-wB-bS wS-wB-Wi Sedge-tL	3	
								3									
Mh Mr	Hummocky moraine Ridged moraine	Glacial till, minor gravel " "	15-50+ m " "	Individual to coalescent hummocks 15 to 50+ m high; slopes to 20°, exceptionally 30° Individual and compound straight to sinuous ridges 15 to 50+m high; slopes to 20°, exceptionally 30°	Deranged, centripetal to local depressions	0-15	Highly variable depending upon topographic position; crests of of prominent ridges and hummocks well-drained and ice-free to depths of 2-5 m; lower slopes as for Mm.	0	LG-CL	GC-GM to CL	Hummocks 15-50	50-90	Mod.well 2 Imperf. 6 Poorly 2	Bi-sedge Cottongrass-sedge Sedge-sphagnum		<1	Crests of prominent ridges and hummocks offer restricted good construction sites. Ice content and potential for subsidence may be high in depressions.
								1	GL-CL (local gravel deposits)	GC-GM to CL	Hummocks 0-60	50-150	M.well well 5 Imperf. 4 Poorly 1	wS-lichen bS-wS-lichen tL-bS-sedge	wB-wS wB-wS-Wi-Al Sedge-Al-Wi	5	
								2	GL-CL (local gravel deposits)	GC-GM to CL	Hummocks 0-50	50-120	M.well well 6 Imperf. 3 Poorly 1	wS-wB-bS bS-lichen bS-tL-sedge	wS-wB wS-wB-Wi Sedge-tL	1	
								3									
Ug	Upland, glaciated	Glacial till - minor glaciofluvial sand and gravel, glaciolacustrine silt and clay, peat	1-5 m thicker in depressions	Rolling bedrock controlled topography with relief to 150 m, slopes to 15°	Downslope seepage in sub-parallel runs; permanent streams in valleys	0-5	As Mp, Mv on hilltops and gentle slopes with locally very abundant (up to 40% by vol.) segregated ice in silt and clay filled depressions	0									
								1	CL-C locally silts & gravels	CL (some CL-ML)	Hummocks 20-60	50-100	Mod.well 4 Imperf. 4 Poorly 2	wS-lichen bS-wS-lichen tL-bS-sedge	wB-Wi-wS wB-wS-Wi-Al Sedge-Al-Wi	25	
								2	CL-SiCL (Locally some L)	CL (some CL-ML)	Hummocks 20-60	50-100	Mod.well 3 Imperf. 5 Poorly 2	wS-lichen bS-wS-lichen tL-bS-sedge	wB-wS wB-wS-Wi Sedge-Al-Wi	1	
								3									
Pg	Piedmont, glaciated	Mainly glacial till; widely distributed glaciolacustrine silt and clay in valleys	1-15+ m	Broadly rolling piedmont slopes on east flank of Richardson Mtns.	Dendritic (to east) with major streams deeply incised	0	As Mp in uppermost 1-3 m; massive segregated ice common in both till and glaciolacustrine sediments at greater depth	0	SICL (some L-C)	ML-CL	Hummocks 30-60	50-75	Imperf. 8 Poorly 2	Cottongrass-sedge Sedge-sphagnum		45	Detachment slides and subsequent retrogressive flow slides common on colluvial slopes (Cx) developed on this unit.
								1									
								2									
								3									
Cv	Colluvial veneer	Rock detritus, minor glacially transported material	0-2 m	Veneer conforms to bedrock topography Hilly to mountainous Slopes to 45°	Generally freely drained	0	Probably cement ice only.	0	Variable but generally coarse	-	0-75 variety of frost forms	20-200	Well 8 Impf. 1 Poor 1	Sedge Cottongrass-sedge Sedge-sphagnum		30	Sorted polygons, stone stripes, in part active, suggest cryoturbation; solifluction lobes on high slopes (elev. 800m+) of Richardson Mountains indicate active creep of colluvial veneer.
R	Bedrock	Cretaceous sandstones, shales. Paleozoic sandstones, shales, quartzites, carbonates		Mainly prominent ridges, scarps and hills developed on resistant sandstones, quartzites and carbonates	Generally freely drained	0	No records of segregated ice, but possibility of ice in joints and in future zones.	0	Variable	-	0		Excessively 10	Bare	Bare		Carbonate rocks of Paleozoic age provide suitable material for riprap and crushed aggregate; sandstones and shales of Imperial Formation readily rippable to provide fill; shales, especially bentonitic shales, of Cretaceous age subject to massive slides.
								1	Variable	-	0		Excessively 10	Bare to scattered wB-Al-bS	Bare		
								2	Variable	-	0		Excessively 10	Bare to scattered wB-Al-bS	Scattered wB-bS		
								3									

1. MAP UNIT DESIGNATION

Texture
- f - fen
- p - peat
- c - clay
- si - silt
- s - sand
- g - gravel
- b - boulders
- t - till
- sh - shale
- ss - sandstone

Genetic Category
- O - organic
- A - alluvial
- C - colluvial
- E - eolian
- G - glaciofluvial
- M - morainal
- U - upland
- P - piedmont
- R - bedrock

Morphology
- v - veneer (<1.5m thick)
- p - plain
- t - terrace
- d - drumlinoid
- s - striated (i.e. fluted)
- m - rolling
- h - hummocky
- r - ridged
- k - kettled (glaciofluvial) or thermokarst (glaciolacustrine or alluvial)
- f - fan
- c - channelled
- x - complex

Superscripts: [1]slope (3°-8°) [2]slope (8°-12°)

The map unit designator (e.g. tMp[2]) is based on the genetic category, as interpreted from air photos. Areas are further described by morphological modifiers which indicate landforms. Prefixes describing texture and superscripts indicating slope may be applied using field or air photo information.

Mixed Units

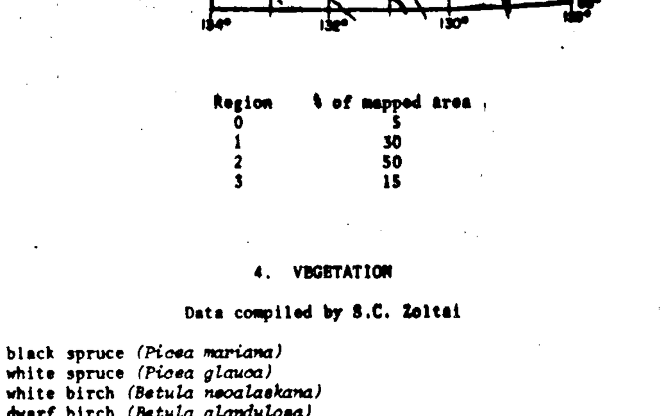
Where the areas of two or more map units are too small to be seperately delineated at the map scale, mixed units are used. A common combination is tMp and pfO; the unit comprising over 50% of the total areas is shown first; where the secondary unit comprises 49-25% the combination is shown as tMp - pfO; where the secondary unit comprises 24-10%, the combination is shown as tMp/pfO; percentages less than 5% are ignored.

MAP SYMBOLS

Geological boundary: defined; approximate; assumed or transitional
Escarpments: bedrock; unconsolidated
Meltwater channel: major; minor
Moraine ridge:
Esker:
Drumlin, drumlinoid ridge:
Flow slide:
Pingo:
Prominent hummocks: * (often gravel)

2. INDEX MAP OF LAND ZONES
(Similar vegetation and ground ice content)

Compiled by W. Pettapiece and S.C. Zoltai



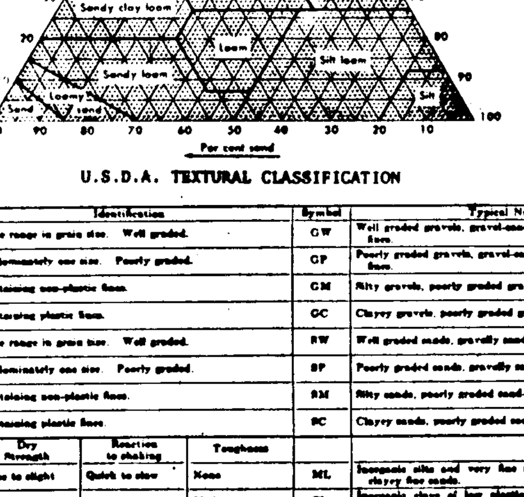
Region	% of mapped area
0	5
1	30
2	50
3	15

3. SOILS

Data compiled by W. Pettapiece

Microrelief is estimated on the mineral surfaces.

Drainage is estimated from a combination of topographical, vegetal and soil features.



U.S.D.A. TEXTURAL CLASSIFICATION

Field			Identification			Symbol	Typical Names
Coarse Grained Soils	Gravels More than 50% larger than 1 in	Clean Gravel	Wide range in grain size. Well graded.			GW	Well graded gravels, gravel-sand mixtures with few or no fines.
			Predominantly one size. Poorly graded.			GP	Poorly graded gravels, gravel-sand mixtures with few or no fines.
		Gravel with fines	Containing non-plastic fines.			GM	Silty gravels, poorly graded gravel-sand-silt mixtures.
			Containing plastic fines.			GC	Clayey gravels, poorly graded gravel-sand-clay mixtures.
	Sands More than 50% less than 1 in	Clean Sand	Wide range in grain size. Well graded.			SW	Well graded sands, gravelly sands with few or no fines.
			Predominantly one size. Poorly graded.			SP	Poorly graded sands, gravelly sands with few or no fines.
		Sand with fines	Containing non-plastic fines.			SM	Silty sands, poorly graded sand-silt mixtures.
			Containing plastic fines.			SC	Clayey sands, poorly graded sand-clay mixtures.
Fine Grained Soils			Dry Strength	Reaction to shaking	Toughness		
	Silts & Clays Liquid Limit less than 50%		None to slight	Quick to slow	None	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands.
			Medium to slight	None to slow	Medium	CL	Inorganic clays of low plasticity, gravelly clays, sandy clays, silty clays.
			Slight to medium	Slow	Slight	OL	Organic clays and organic silt-clay mixtures.
	Silts & Clays Liquid Limit greater than 50%		Slight to medium	Slow to none	Slight to medium	MH	Inorganic silts, micaceous fine sandy or silty soils, elastic silts.
			High to very high	None	High	CH	Inorganic clays of high plasticity. Fat clays.
			Medium to high	None to very slow	Slight to medium	OH	Organic clays of medium to high plasticity.
Highly organic soils			Identified by color, odor, spongy feel or fibrous texture			Pt	Peat or other highly organic soils.

UNIFIED CLASSIFICATION

4. VEGETATION

Data compiled by S.C. Zoltai

- bS - black spruce *(Picea mariana)*
- wS - white spruce *(Picea glauca)*
- wB - white birch *(Betula neoalaskana)*
- Bi - dwarf birch *(Betula glandulosa)*
- tL - tamarack *(Larix laricina)*
- Wi - willow *(Salix sp.)*
- Al - alder *(Alnus sp.)*
- tA - trembling aspen *(Populus tremuloides)*
- bPO - balsam poplar *(Populus balsamifera)*
- Sedge - *Carex* sp.
- Cottongrass - *Eriophorum* sp.
- Lichen - *Cladonia* sp., *Cetraria* sp.
- Sphagnum - *Sphagnum* sp.
- Er - *Ericaceae* (*Ledum, Chamaedaphne Kalmia* etc.)

*Stable/After fire categories replaced by Occasionally flooded/ Frequently flooded for alluvial units, and by South aspect/North aspect for colluvial unit.

Revised May 18, 1972.