DESCRIPTION OF MAP UNITS FOR UNCONSOLIDATED MATERIALS

MAP UNIT (NOTE 1)	NAME	SURFICIAL DEPOSIT: MATERIAL	SURFICIAL DEPOSIT: ESTIMATED THICKNESS	LANDFORM: TOPOGRAPHY	LANDFORM: DRAINAGE PATTERN	GROUND ICE (NOTE 2)	UNIFIED SOIL CLASSIFICATION (NOTE 5)	SOILS (NOTES 2 and 3): PREDOMINANT SOIL*	ZONE (deciles) 6S	6N	5	4	3	2	DOMINANT VEGETATION (NOTE 4): STABLE	AFTER FIRE	COMMENTS
fO	Organic (fen)	Dominantly moderately decomposed fen peat derived from sedge, tamarack, and mosses	2-3 m	Flat to very gently sloping, some with reticulate network of low (<1 m) ridges (patterned fen)	No organized drainage; water at surface throughout summer months	Unfrozen to at least 3 m	Pt	Typic Mesisol (P-VP)	10	10	10	10	10	-	Sedge-Bi or Sedge-Bi-tL in all zones	Same, probably would not burn	Poor drainage, plus high compressibility and low strength of the material make it unsuitable for any type of construction
pO	Organic (bog)	Dominantly moderately decomposed forest and/or undecomposed sphagnum peat derived from black spruce, cladonia, feather - mosses, ericaceous and/or sphagnum vegetation	1.5-7 m	Flat to gently sloping areas with scattered mounds (average relief 1 m, rarely to 6 m); numerous steep-sided depressions and trenches	Depressions interconnected by seepage channels	Frozen at 0.3-0.5 m. Segregated ice content commonly 60-80% in peat; typically 10-100 cm thick. Segregated ice in mineral soil below. Peat in wet depressions commonly thawed to at least 1 m. Ice-wedge polygons present in zone 3	Pt	Mesic Organic Cryosol (W-I) Fibric Organic Cryosol (W-I)	5	7	7	7	10	10	bS-Fm-Er in zones 6S and 6N; bS-lichen-Er in zones 4 and 5; lichen-bS-Er in zones 2 and 3	Sphagnum, Er	Alternation of permanently frozen peat mounds and thawed depressions and water bodies presents serious problems in construction of roads, pipelines, etc.; material highly compressible when thawed
								Typic Fibrisol (P) Typic Mesisol (P)	5	3	3	3	-	-	Sphagnum or sphagnum-bS in zones 4, 5, 6S, and 6N	Sphagnum, Er	
pOk	Organic (bog) thermokarst	Dominantly moderately decomposed forest and/or undecomposed sphagnum peat derived from black spruce, cladonia, feather - mosses, ericaceous and/or sphagnum vegetation	1.5-7 m	Flat to gently sloping areas with mounds (average relief 1 m, rarely to 6 m); numerous exposed peat scarps, depressions, and trenches	Depressions interconnected by seepage channels; drainage continually being modified	Frozen at 0.3-0.5 m. Segregated ice content commonly 60-80% in peat; typically 10-100 cm thick. Segregated ice in mineral soil below. Peat in wet depressions, and scarps commonly thawed to at least 1 m	Pt	Mesic Organic Cryosol (W-I) Fibric Organic Cryosol (W-I)	-	7	-	7	-	10	bS-Fm-Er in zones 6S and 6N; bS-lichen-Er in zones 2 and 3	Er, Fm, bS	Alternation of permanently frozen peat mounds, some actively degrading, and thawed depressions and water bodies presents serious problems in construction of roads, pipelines, etc.; material highly compressible when thawed
								Typic Fibrisol (P) Typic Mesisol (P)	-	3	-	3	-	-	Sphagnum or sphagnum-bS in zones 4, 5, 6S, and 6N	Sphagnum	
g,s,siAp	Alluvial floodplain	Gravel, sand, and silt; textures vary with the dominant material indicated first	1-8 m	Floodplain and low bordering terraces; floodplains within mountains commonly scarred by braided channels; floodplains within plains region commonly with meander scars	In braided areas intermittent drainage through channels; in meander scar areas no integrated drainage system, impeded by meander scroll ridges	Ground ice in gravel, sand, and silt of low terraces in zone 2; Not observed elsewhere. Permafrost and segregated ice also present in areas where bog is more than 1.5 m thick	SM-GM	Cumulic Regosol (W)	4	-	4	4	-	-	wS-wB, bPo-wS-Eq, wS-bPo in zones 4, 5 and 6S	Wi, Al, bPo	Subject to periodic flooding; floodplains within the mountains are potential sources of aggregate; extraction of aggregate may cause deleterious changes in stream course and downstream changes in stream regimen
								Gleyed Cumulic Regosol (I)	3	-	3	3	-	-			
								Rego Gleysol (P)	3	-	-	-	-	-	Wi, Wi-Al, bPo-Al in zones 4, 5, and 6S	Wi, Al, bPo	
								Gleysolic Turbic Cryosol (P)		-	3	3	-				
g,s,siAt	Alluvial terrace	Gravel, sand, and silt; textures vary with the dominant material indicated first	1-30 m	Terraces with relief intermediate between terraces associated with Ap and Gp or Gt; level to slightly sloping surfaces; some interrupted by shallow channels and low terraces	Surface drainage without integrated drainage system	Frozen groundwater in gravel, sand, and silt of terraces, up to 30 m thick, in zone 2. Not observed elsewhere	SM-GM to ML	Eluviated Eutric Brunisol (W) Orthic Eutric Brunisol (W)	6	6	6	6	-	-	wS-wB, wS-bPo, tA-wB, bPo, tA in zones 4, 5, 6N, and 6S; wS-wB, bS-bPo, tA-bS in zone 2	wB, tA, bPo	Good construction sites and aggregate source where material is coarse
								Brunisolic Turbic Cryosol (W)	-	-	-	-	-	6			
								Gleyed Eutric Brunisol (I)	1	1	1	1	-	-	bPo-wS, wS-bPo, Wi, tA-wS in zones 4, 5, 6N, and 6S; bS-bPo, wS-bPo in zone 2	wB, Wi, tA, bPo	
								Brunisolic Turbic Cryosol (I)	-	-	-	-	-	1			
								Rego Gleysol (P)	3	-	-	-	-	-	bS-Fm, bS-Fm-Er, bS-sphagnum in zones 4, 5, 6N, and 6S; bS-Lichen-Er in zone 2	Wi	
								Gleysolic Turbic Cryosol (P)		3	3	3	-	3			
gAf	Alluvial fan	Mostly gravel, some sand	3-25 m	Gently to moderately sloping (1°-8°) fans and coalescent fans	One or more shifting streams commonly present; downslope seepage in poorly defined runs	None observed	Variable	Cumulic Regosol (W)	-	-	6	6	-	6	Mainly wB, tA, Wi, and Al in zones 2, 3, 4, 5, 6N, and 6S	Wi, Al, wB	Generally offer well drained building sites, but sudden channel shifting may cause damage; good source of aggregate
								Gleyed Cumulic Regosol (I)	-	-	2	2	-	2			
								Rego Gleysol (P)	-	-	2	2	-	2			
								Gleysolic Turbic Cryosol (P)	-	-	2	2	-	2			
Cx	Colluvial complex	Colluvium derived from entire range of surficial deposits. Colluvium over bedrock (see note 6 for lithology) is shown as a fractionated symbol, e.g., Cx/Si, Sh; dominant lithology indicated first	1-6 m; Variable	Gently to steeply sloping irregular surfaces; Cx^1 <5°, Cx^2 5°-20°		Silty clayey colluvium contains disseminated ice crystals to seams 1 m thick in zones 2 and 6N	GC-GP to ML-CL	Orthic Regosol (W) Orthic Eutric Brunisol (W)	-	-	5	-	5	5	tA, wS, wB at low elevations and stunted Alpine fir or wS, Er, lichen at high elevations in zone 5; bS, wB at low elevations and Er, lichen at high elevations; cryoturbated surfaces are unvegetated in zones 2 and 3	tA, wB at low elevations	Irregularity of topography and slope instability present major problems for any type of construction; texture prefix included in map unit if known
								Gleyed Regosol (I) Gleyed Eutric Brunisol (W)	-	-	2	-	2	2			
								Rego Gleysol (P)	-	-	3	-	3	3	Sphagnum, bS-sphagnum-Er in zones 2, 3, and 5	Sphagnum, Er	
								Gleysolic Turbic Cryosol (P)									
sEr sEh	Aeolian deposits	Sand, mainly fine to mdeium grained	1-20 m	sEr, dune ridges, usually parallel to subparallel; sEh, irregularly shaped dunes, no apparent pattern	Mainly subsurface seepage	None observed, probably no ice present	SP-SW	Eluviated Eutric Brunisol (W)	5	-	5	-	-	-	P, tA-wB in zones 5 and 6S	P, tA	Subject to wind erosion when vegetation mat is removed
								Gleyed Eluviated Eutric Brunisol (I)	2	-	2	-	-	-	tA-bS-Wi in zones 5 and 6S	P, W	
								Rego Gleysol (P)	3	-	3	-	-	-	bS-Fm, bS-sphagnum-Er in zones 5 and 6S	Wi	
								Gleysolic Turbic Cryosol (P)			-	-	-	-			
si,sLp si,sLpv	Glaciolacustrine plain	Mainly silt and fine sand; locally includes gravel (g) and clay (c); dominant material indicated first	si,sLp 1.5-50 m si,sLpv 0.5-1.5 m	Flat to gently sloping	Surface seepage through organic-filled depressions and downslope seepage in shallow subparallel runs	Commonly 10-50% segregated ice as thin (1 mm - 2 cm) seams parallel with bedding, segregated ice in a reticulate network up to 60% by volume, and thick tabular bodies in zones 2 and 6N; discontinuous zones of segregated ice as seams, reticulated networks, and tabular bodies (up to 3 m thick) in northern part of zone 6S; no ice recorded in southern part of zone 6S except below pO	CL-ML to SM	Brunisolic Grey Luvisol (W)	3	-	3	-	-	-	wS, wS-tA in zones 5 and 6S; wS-tA, bS-wB-tA in zone 6N	tA	Failure common along scarps; generally unsuitable for location of structures because of poor bearing capacity and drainage characteristics
								Orthic Grey Luvisol (W)	-	2	-	-	-	-			
								Gleyed Grey Luvisol (I)	2	-	2	-	-	-	bS-wB-tA, bS-Wi-Al in zones 5, 6S, and 6N	Wi, Al, wB	
								Luvisolic Turbic Cryosol (I)	-	2	-	-	-	-			
								Rego Gleysol (P)	5	-	-	-	-	-	bS-Fm-Er, bS-tL-wB in zones 5, 6S, and 6N	Wi	
								Gleysolic Turbic Cryosol (P)		6	5	-	-	-			
si,sLh	Hummocky glaciolacustrine deposits	Mainly silt and fine sand	2-5 m	Low hummocks up to 2 m; individual hummocks up to 5 m relief; slopes to 20°	Deranged	None observed	CL-ML	Brunisolic Grey Luvisol (W)	3	-	3	-	-	-	wS, wS-tA in zones 5 and 6S; wS-tA, bS-wB-tA in zone 6N	tA	Failure common along scarps; generally unsuitable for location of structures because of poor bearing capacity and drainage characteristics
								Orthic Grey Luvisol (W)	-	2	-	-	-	-		tA, wB	
								Gleyed Grey Luvisol (I)	2	-	2	-	-	-	bS-wB-tA, bS-Wi-Al in zones 5, 6S, and 6N	Wi, Al, wB	
								Luvisolic Turbic Cryosol (I)	-	2	-	-	-	-			
								Rego Gleysol (P)	5	-	-	-	-	-	bS-Fm-Er, bS-tL-wB in zones 5, 6S, and 6N	Wi	
								Gleysolic Turbic Cryosol (P)		6	5	-	-	-			
g,sLpbx g,sLpbxv g,sLpbv	Glaciolacustrine beaches	Mainly gravel with minor sand; locally include silt(si); dominant material indicated first	g,sLpbx 1.5-2 m g,sLpbxv 0.5-1.5 m g,sLpbv 0.5-1.5 m	g,sLpbx and g,sLpbxv, parallel to subparallel beach ridges arranged in belts; up to 6° slopes; g,sLpbv, beach material without distinct ridges forming belts up to 6+ km wide	Drainage mainly subsurface	None observed	SP-GP	Eluviated Eutric Brunisol (W) Orthic Eutric Brunisol (W)	5	-	-	-	-	-	P, P-wB-tA	P, tA, wB	Good construction sites and aggregate source where material is coarse; beaches at 800 -900 foot (240-275 m) elevations offer the best potential
								Gleyed Eutric Brunisol (I)	2	-	-	-	-	-	P-wB-Wi, bS-wB-Wi, tA-bS-Wi	P, tA, Wi, wB	
								Rego Gleysol (P)	3	-	-	-	-	-	bS-Fm-Er	Wi	
g,s,siGp g,s,siGpv g,s,siGt gGpc	Glaciofluvial plain; Glaciofluvial terrace	Gravel, sand and silt; textures vary with the dominant material indicated first	g,s,siGp 1-30+ m g,s,siGpv 0.5-1.5 m g,s,siGt 1-30+ m	Flat to gently sloping	Drainage mainly subsurface	Frozen groundwater in gravel, sand, and silt in zone 2. Not observed elsewhere. Where overlying bog is more than 1.5 m thick permafrost may be present below	GP-GW to SP-SW	Eluviated Eutric Brunisol (W) Orthic Eutric Brunisol (W)	5	5	-	-	-	-	p-wB-tA, P in zones 6S and 6N	P, tA	Good construction sites and aggregate source where material is coarse
								Gleyed Eutric Brunisol (I)	2	2	-	-	-	-	bS-wB-Wi, P-wB-Wi, tA-bS-Wi in zones 6S and 6N	P, tA, Wi, wB	
								Rego Gleysol (P)	3	-	-	-	-	-	bS-Fm-Er in zones 6S and 6N	Wi	
								Gleysolic Turbic Cryosol (P)	-	3	-	-	-	-			
g,sGh g,sGr	Hummocky glaciofluvial deposits; Ridged glaciofluvial deposits; includes eskers and esker complexes	Mainly gravel with sand	1-10 m; 1-30 m	Hummocks with local relief up to 10 m; Long, sinuous esker ridges, up to 30 m high	Drainage mainly subsurface	No segregated ice in well drained sites, but segregated ice may be present in association with silt layers beneath depressions in zones 2, 3, and 6N	GP-GW to SP-SW	Eluviated Eutric Brunisol (W) Orthic Eutric Brunisol (W)	-	-	-	5	-	-	tA-bS-wB, P, wS-tA-wB	P, tA, wB	Good construction sites and aggregate
								Gleyed Eutric Brunisol (I)	-	-	-	2	-	-	bS-tA-wB	tA, wB	
								Gleysolic Turbic Cryosol (P)	-	-	-	3	-	-	bS-Fm-Er, bS-lichen-Er	Wi	
tMp tMpc tMv	Moraine plain	Moderately to strongly calcareous glacial till, typically clay, silt, and minor sand with 5% pebbles and boulders; prefixes g, s, si, or c, indicate lenses of gravel, sand, silt, or clay within the till. If till is thin (tMv), the nature of the underlying bedrock is shown by a fractionated symbol (Note 6 gives bedrock lithology); dominant lithology indicated first	tMp 1.5-50 m; tMpc 1.5-50 m; tMv <1.5 m	Flat to uniformly sloping; tMp^1, tMv^1: slope 2°- 5° tMp^2, tMv^2: slope 5°-15°; map symbol may be suffixed by one or more r, m, s, d, or h (see below) indicating the mapped area in part consists of one or more of these landform units	Downslope seepage in subparallel runs; Downslope seepage in shallow channels; (tMv) Downslope seepage in subparallel runs	Locally 5-40% segregated ice as thin (1 mm-2 cm) horizontal layers or in a reticulated network in zones 2, 3, and 6N; presence controlled by exposure, elevation, drainage, and/or organic cover	CL	Brunisolic Grey Luvisol (W)	4	-	3	-	-	-	wS-tA-wB, tA-P-wB in zones 4, 5, 6S, and 6N; wS-wB, bS-wB in zones 2 and 3	tA, P, wB	Failure common along scarps; poor source of aggregate; up to 10% unmapped pO and/or fO; because of drainage by numerous subparallel runs, roads, or berms normal to slope direction, numerous culverts required to avoid impoundment of surface water; slopes susceptible to soil creep and channelling
								Orthic Grey Luvisol (W)		3		3	-	-		wB, tA	
								Brunisolic Turbic Cryosol (W)	-		-	-	4	5			
								Gleyed Grey Luvisol (I)	2	-	3	2	-	-	wS-tA-wB, wS-tA-Wi in zones 4, 5, 6S, and 6N; bS-Wi-Al, bS-wB in zones 2 and 3	tA, wB, Wi, Al	
								Gleyed Brunisolic Grey Luvisol (I)		-		-	-	-			
								Brunisolic Turbic Cryosol (I)	-	2	-	-	1	1			
								Rego Gleysol (P)	4	-	-	-	-	-	bS-Fm-Er in zone 6S; bS-Fm-lichen-Er in zones 4, 5, and 6N; bS-lichen-Er in zones 2 and 3	Wi, Al	
								Gleysolic Turbic Cryosol (P)		5	4	5	5	4			
tMd tMsd tMds tMs	Drumlins Flutings and drumlins Flutings	Moderately to strongly calcareous glacial till; prefixes g, s indicate lenses of gravel or sand within the till	2-30 m	Area consisting largely of parallel drumlins and/or flutings	Trellis pattern or deranged drainage in drumlin areas to parallel seepage or streams in fluted areas	Segregated ice may be present in some drumlins and flutings in zones 2, 3, and 6N, although none has been observed; intervening depressions in the same zones likely contain segregated ice; presence controlled by exposure, elevation, drainage, and/or organic cover	CL	Brunisolic Grey Luvisol (W)	4	-	4	-	-	-	P-tA, tA-P-wB, wS-tA-wB in zones 4, 5, and 6S; wS-wB, bS-wB-Wi in zones 2 and 3	tA, P, wB	Poor source of aggregate except where gravel is present; some drumlins and most flutings are bedrock cored; crests of drumlins and flutings typically well drained; intervening depressions poorly drained
								Orthic Grey Luvisol (W)		-		3	-	-		Wi, wB, tA	
								Brunisolic Turbic Cryosol (W)	-		-	-	4	4			
								Gleyed Grey Luvisol (I)	2	-	2	2	-	-	wS-tA-wB, wS-tA-wB in zones 4, 5, and 6S; bS-Wi-Al, bS-wB in zones 2 and 3	tA, wB, Wi, Al	
								Gleyed Brunic Grey Luvisol (I)		-		-	-	-			
								Brunisolic Turbic Cryosol (I)	-		-	-	2	2			
								Rego Gleysol (P)	4	-	-	-	-	-	bS-Fm-Er in zone 6S; bS-Fm-lichen-Er in zones 4 and 5; bS-lichen-Er in zones 2 and 3	Wi, Al	
								Gleysolic Turbic Cryosol (P)		-	4	5	4	4			
t,g,sMr	Crevasse fillings or ridge moraine	Moderately to strongly calcareous glacial till, gravel, and sand; textures vary with the dominant material indicated first	1-10 m	Individual, parallel to subparallel, straight to sinuous ridges within a moraine plain; 0.5-5 m relief; slopes 5°-30°	Integrated, weakly developed drainage controlled by ridge pattern	None observed, probably no ice present	CL	Brunisolic Grey Luvisol (W)	6	-	6	-	-	-	P-tA, tA-P-wB, wS-tA-wB in zones 4, 5, and 6S; wS-wB in zones 2 and 3	P, tA, wB	Crests of prominent ridges offer restricted but good construction sites
								Orthic Grey Luvisol (W)		-		6	-	-		wB, tA	
								Brunisolic Turbic Cryosol (W)	-		-	-	6	6			
							CL to GP-SP	Rego Gleysol (P)	4	-	-	-	-	-	bS-Fm-Er in zone 6S; bS-Fm-lichen-Er in zones 4 and 5; bS-lichen-Er in zones 2 and 3	Wi, Al	
								Gleysolic Turbic Cryosol (P)		-	4	4	4	4			
t,g,sMh	Hummocky moraine	Moderately to strongly calcareous glacial till, gravel, and sand; textures vary with the dominant material indicated first	1-20 m	Individual to coalescent hummocks; slopes to 20°	Deranged	Crests of prominent hummocks well drained and ice free; lower slopes and depressions commonly have 5-40% segregated ice as thin (1 mm-2 cm) horizontal layers or in a recticulated network in zones 2, 3, and 6N; presence controlled by exposure, elevation, drainage, and/or organic cover	CL	Brunisolic Grey Luvisol (W)	6	-	6	-	-	-	P-tA, tA-P-wB, wS-tA-wB in zones 4, 5, and 6S; wS-wB, bS-wB in zones 2 and 3	tA, P, wB	Crests of prominent hummocks offer restricted but good construction sites
								Orthic Grey Luvisol (W)		-		6	-	-			
								Brunisolic Turbic Cryosol (W)	-		-	-	6	6			
							CL to GP-SP	Rego Gleysol (P)	4	-	-	-	-	-	bS-Fm-Er in zone 6S; bS-Fm-lichen-Er in zones 4 and 5; bS-lichen-Er in zones 2 and 3	Wi, Al	
								Gleysolic Turbic Cryosol (P)		-	4	4	4	4			
tMm	Subdued hummocky and rolling moraine	Moderately to strongly calcareous glacial till	5-30 m	Subdued hummocks and rolling terrain; slopes 5°-30°	Deranged	Well drained sites ice free; lower slopes and depressions commonly have 5-40% segregated ice as thin (1 mm-2 cm) horizontal layers or in a reticulate network in zones 2, 3, and 6N; presence controlled by exposure, elevation, drainage, and/or organic cover	CL	Brunisolic Grey Luvisol (W)	6	-	6	-	-	-	P-tA, tA-P-wB, wS-tA-wB in zones 4, 5, and 6S; wS-wB, bS-wB in zones 2 and 3	tA, P, wB	Summits of broad hummocks typically well drained and offer restricted but good construction sites
								Orthic Grey Luvisol (W)		-		6	-	-			
								Brunisolic Turbic Cryosol (W)	-		-	-	6	6			
								Rego Gleysol (P)	4	-	-	-	-	-	bS-Fm-Er in zone 6S; bS-Fm-lichen-Er in zones 4 and 5; bS-lichen-Er in zones 2 and 3	Wi, Al	
								Gleysolic Turbic Cryosol (P)		-	4	4	4	4			
t,g,s,S, t,g,s,Sx, s,siS, s,siSx, rS, rSx	Debris avalanche; earthflow, mudflow, flowslide, & slump deposits	Material derived mainly from glaciolacustrine silts and clays, till. Material derived mainly from shale bedrock	Variable	Debris avalanches commonly occur as thin narrow tongues; earthflows and mudflows as bulbous masses; and slump deposits as blocks		Fine grained material may contain segregated ice in zones 2, 3, 6N, and northern part of 6S; presence controlled by exposure, elevation, drainage, and/or organic cover	Variable	Cumulic Regosol (W)	-	-	4	-	4	4	bS-wB-Wi-fireweed or unvegetated in zones 2, 3, and 5	Firewood, Wi	Shale bedrock commonly fails as debris avalanches in mountainous regions; large-scale failures are common along major river scarps in fine textured glacial deposits and in shale bedrock
								Gleyed Cumulic Regosol (I)	-	-	2	-	1	1			
								Rego Gleysol (P)	-	-	4	-	5	5			
								Gleysolic Turbic Cryosol (P)	-	-	-	-			Wi, bS-Wi in zones 2, 3, and 5	Wi	

DESCRIPTION OF MAP UNITS FOR BEDROCK AND MOUNTAIN TERRAIN

MAP SYMBOL	NAME	TOPOGRAPHY	PRINCIPAL BEDROCK UNITS**		SURFICIAL DEPOSITS	UNIFIED CODE	MICRORELIEF	SOILS AND VEGETATION***	ENGINEERING COMMENTS
L* D L,D D,L L,Sh M	Mountains developed in carbonate rocks -limestone and dolomite with minor shale	Mountains up to 1500 m with sharp ridge crests and steep slopes. Ram Plateau area forms a level surface, dissected by deep canyons	L; D; L,D; D,L; L,Sh	L: includes Headless, Landry, and Nahanni formations in Mackenzie Mountains and Flett Formation, in Silent Hills and Liard Range; D: includes Arnica, Manetoe, and Sombre formations in Mackenzie Mountains; L,D: includes Whittaker and Sunblood formations in Mackenzie Mountains; D,L: includes Delorme Formation in Mackenzie Mountains and Camsell Formation in Camsell Range; L,Sh: includes Funeral Formation in Mackenzie Mountains	Bare rock with discontinuous patches of limestone and dolomite rubble, bedrock colluvium with a matrix of fines and sand and/or reworked till on crests and steep slopes; variable thicknesses of bedrock rubble and colluvium and/or reworked till at base of slopes; discontinuous veneer of till on plateau areas	GP-GC	Well developed stone polygons, stripes, and nets on flat to sloping ground. Numerous small solifluction lobes in McConnell Range of Franklin Mountains	Steep slopes: no soil development; lichen on bare surfaces. Base of slopes: Orthic Eutric Brunisol or Brunisolic Turbic Cryosol; above timberline Brunisolic Turbic Cryosol; lichen, ericaceous plants above timberline; white spruce, trembling aspen below timberline. Ram Plateau: Orthic Eutric Brunisol, Brunisolic Turbic Cryosol, or Orthic Regosol; lichen, ericaceous plants, some white spruce	Steep slopes and high relief present serious difficulties to engineering activities such as road, pipeline, and related construction; limestone and dolomite are highly resistant and could be used for construction material; coarse deposits of rubble make suitable construction sites and sources of aggregate
S S,Sh S,Si,Sh M	Mountains developed on sandstone with shale, siltstone, or limestone combinations	Mountains up to 1600 m with rounded summits, long moderately steep slopes, and extensive debris mantles	S; S,Sh; S,Si,Sh	S: includes Mount Clark Formation in Franklin Range and an unnamed Proterozoic sandstone in Moose Prairie area; S,Sh: Mattson Formation; S,Si,Sh: includes Trout River and Redknife formations on Mackenzie Plain	Bare rock with discontinuous patches of sandstone, and limestone rubble, bedrock colluvium with a matrix of fines and sand and/or reworked till on crests and steep slopes; variable thicknesses of bedrock rubble and colluvium and/or reworked till at base of slopes	GP-GC	Stone polygons, stripes, and nets developed on flat to sloping ground	Steep slopes: no soil development; lichen on bare surfaces. Base of slopes: Orthic Eutric Brunisol, Brunisolic or Regosolic Turbic Cryosol, Orthic Regosol; above timberline Brunisolic Turbic Cryosol; lichen, ericaceous plants above timberline, white spruce, trembling aspen below timberline	Steep slopes and high relief present serious difficulties to engineering activities such as road, pipeline, and related construction; sandstone and limestone are stable and resistant and could be used for construction materials; shale is unstable and is subject to mass wasting; detachment slides and rotational slumping commonly occur when organic cover and/or vegetation are removed or altered; fine grained colluvium contains ice
S,Sh H	High hills developed on sandstone and shale with minor limestone member	Rounded summits and moderately steep slopes off the lower areas of the main mountain ranges	S,Sh; S,Si,Sh	S,Sh: Mattson Formation; S,Si,Sh: includes Trout River and Redknife formations on Mackenzie Plain	Discontinuous patches of clayey, silty, sandy colluvium, sandstone and limestone rubble, reworked till, and/or bare rock on slopes and summit areas; variable thicknesses of bedrock rubble and colluvium and/or reworked till at base of slopes	GC-GP	Stone polygons on flat surfaces. Terracettes and poorly developed stripes on slopes	Orthic Eutric Brunisol, Brunisolic or Regosolic Turbic Cryosol; trembling aspen, white birch, white spruce	Shale is highly unstable and is subject to mass wasting; detachment slides and rotational slumping commonly occur when organic cover and/or vegetation are removed or altered; fine grained colluvium contains ice; sandstone and limestone rubble could be source of aggregate
Sh,SSi,S Sh Sh,SS Sh,SS,Cg Sh,LL,Si HI	High hills developed on shale with limestone and siltstone members	Well rounded summits with moderate slopes, forming much of the lower areas between Franklin Mountains and Front Ranges of Mackenzie Mountains to the west	Sh,Si,S; Sh; Sh,S; Sh,S,Cg; Sh,L,Si	Sh,Si,S: Fort Simpson Formation; Sh: includes Horn River and Klassen formations; Sh,S: Fort St. John Formation and Cretaceous shale and siltstone of the Interior Plains; Sh,S,Cg: Buckinghorse Formation; Sh,L,Si: Upper Devonian shale, limestone, and siltstone of the Interior Plains	Discontinuous patches of clayey, silty, sandy colluvium, sandstone, and limestone rubble, reworked till and/or bare rock on slopes of summit areas; variable thicknesses of bedrock rubble and colluvium, and/or reworked till at base of slopes	CL-ML	Stone polygons on flat surfaces. Terracettes and poorly developed stripes on slopes	Brunisolic or Regosolic Turbic Cryosol; trembling aspen, white birch, white spruce	Shale is highly unstable and is subject to mass wasting; detachment slides and rotational slumping commonly occur when organic cover and/or vegetation are removed or altered; fine grained colluvium probably contains ice; sandstone and limestone rubble could be source of aggregate
S,Sii,Sh L	Low hills developed on sandstone and shale with a small area of limestone	Moderate to gentle slopes and rounded summits containing little or no glacial drift indicate bedrock control of topography in formerly glaciated areas	S,Si,Sh	includes Trout River Formation	Veneer of clayey, silty, sandy colluvium; some with till and/or rubble	GC-GP to ML		Orthic Eutric Brunisol, Brunisolic or Regosolic Cryosol, Orthic Regosol; trembling aspen, white birch, white spruce	Shale is highly unstable and is subject to mass wasting; detachment slides and rotational slumping commonly occur when organic cover and/or vegetation are removed or altered; fine grained colluvium may contain ice in northern areas or at higher elevation

* Litthologic information from G.S.C. Papers 58-11, 59-11, 60-19, 61-13, and Bulletin 63

** Even though principal bedrock formations are listed, other bedrock units with the same lithologies may occur within these areas. Also describes complex units too small to be mapped separately

*** In poorly drained areas Cryic Rego Gleysols with ericaceous plants and black spruce are present below timberline, and ericaceous plants and lichen are present above timberline

LEGEND

Note: Some map units and symbols shown in the legend may not appear on this map
Symbols are printed in red on the face of the map and may form geological boundaries

Rock outcrop
Geological boundary (defined or approximate, assumed or transitional)
End or lateral moraine
Crevasse fillings, moraine ridges
Drumlinoid ridges, striae, flutings (direction of ice movement known, unknown)
Ice gouge
Esker (direction of flow known, unknown)
Beach ridge (depositional, erosional)
Meltwater channel (large, small)
Landslide scar
Escarpment
Sinkhole
Area of potential slumping
Patterned ground
Rock glacier (R.G.)

NOTE 1

MAP UNIT DESIGNATION

A combination of letters is used to designate each map unit or component of a compound map unit, e.g. gAf. The upper case letter indicates the broad genetic class; the lower case letter (s) that follows indicates morphology; the lower case letter (s) in front of the genetic classification describes texture. A number superscript is used to indicate class of slope, e.g. tMp^1 is used for ground moraine with slope 2°-5°

Textural Modifier (placed in front of genetic category)	Genetic Classification	Morphologic Modifier (placed after genetic category)	
r - rock and rubble	O - organic	p - plain	d - drumlinoid
t - till	A - alluvial	b - beach	c - channelled
g - gravel	C - colluvial	r - ridged	h - hummocky
s - sand	E - eolian	m - rolling	k - thermokarst
si - silt	L - lacustrine	t - terraced	e - eroded
c - clay	G - glaciofluvial	x - complex	f - fan
p - bog	M - morainal	s - striated (i.e., flutings)	v - veneer (<1.5m thick)
f - fen	S - slump		

Number Superscript

1 - gentle slope (2°-5°); 2 - steep slope (5°-15°)
- slope is up to 20° in Cx units

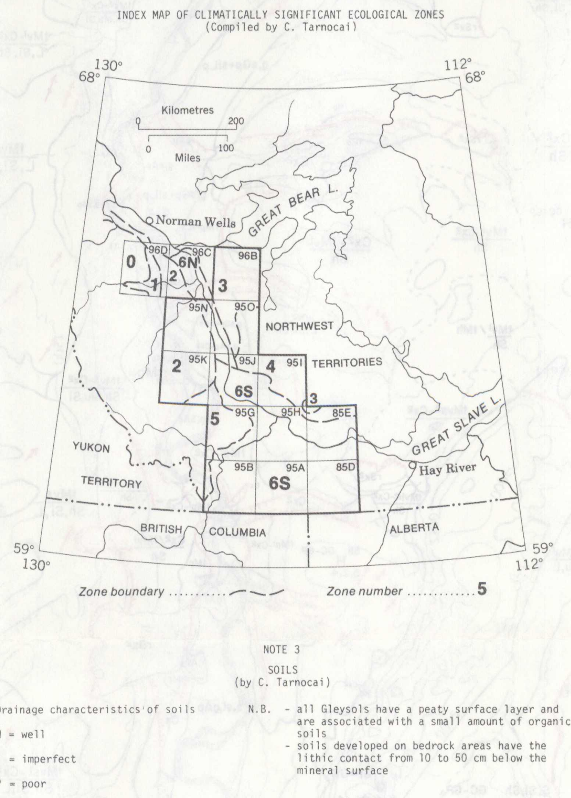
Complex Units

- a dash (-) means "with 16-49%" of the following unit (e.g., tMp-pO, pO constitutes 16-49% of the area)
- a slash (/) signifies that the following unit comprises 5-15% of the total area within the boundaries of that complex unit
- a plus (+) indicates the presence of an unknown percentage of a second unit; less than 5% of a second unit is ignored
- fractionated units indicate a veneer of one unit over a thicker zone of another unit: (e.g., s,siLpv/tM a flat-surfaced veneer of sandy, silty lacustrine material over till)
- brackets () separate groups of units (e.g., (pO-fO)-tMp means pO containing 16-49% fO, and 16-49% of the total area is tMp

N.B. - one textural modifier signifies the dominant material
- commas used between textural modifiers for distinct lithologies: e.g., g,s,siAp - floodplain consisting predominantly of gravel and sand with minor silt

NOTE 2

INDEX MAP OF CLIMATICALLY SIGNIFICANT ECOLOGICAL ZONES
(Compiled by C. Tarnocai)



Zone boundary .... Zone number 5

NOTE 3

SOILS
(by C. Tarnocai)

*Drainage characteristics of soils
W = well
I = imperfect
P = poor
VP = very poor

N.B. - all Gleysols have a peaty surface layer and are associated with a small amount of organic soils
- soils developed on bedrock areas have the lithic contact from 10 to 50 cm below the mineral surface

Example of Soil Classification

Soils developed on si,sLh
In climatic zone 6S, 50% of soil cover is either Rego Gleysol or Cryic Rego Gleysol, 20% Gleyed Grey Luvisol, and 30% Brunisolic Grey Luvisol
In climatic zones 4, 3, and 2, there are either no exposures of si,sLh, or not enough mappable exposures to warrant generalisations about the soil type

NOTE 4

VEGETATION
(by C. Tarnocai)

Vegetation: species abbreviation

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.)
Fm - feathermosses
P - pine (*Pinus banksiana* and *Pinus contorta* var. *latifolia*)
Fireweed - *Epilobium Angustifolium*
Eq - horsetails (*Equisetum* sp.)

NOTE 5

UNIFIED SOIL CLASSIFICATION

Major divisions			Group Symbol		Typical Names	Classification criteria for coarse grained soils	
Coarse grained soils (more than half of material is larger than No.200 sieve size)	Gravels (more than half of coarse fraction is larger than No.4 sieve size)	Gravels with fines (appreciable amount of fines)	GW		Well graded gravels, gravel-sand mixtures, little or no fines	$C_u = D_{60}/D_{10} > 4$; $C_r = 1 < D^2_{30}/D_{10} \times D_{60} < 3$	
			GP		Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW	
		Clean gravels (little or no fines)	GM	d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below A line or $I_p<4$	Above A line with $4<I_p<7$ are borderline cases requiring use of dual symbols
			GC		Clayey gravels, gravel-sand-silt mixtures	Atterberg limits above A line with $I_p>7$	
	Sands (more than half of coarse fraction is smaller than No.4 sieve size)	Clean sands (little or no fines)	SW		Well graded sands, gravelly sands, little or no fines	$C_u = D_{60}/D_{10} > 6$; $C_r = 1 < D^2_{30}/D_{10} \times D_{60} < 3$	
			SP		Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW	
		Sands with fines (appreciable amount of fines)	SM	d / u	Silty sands, sand-silt mixtures	Atterberg limits below A line or $I_p<4$	Limits plotting in hatched zone with $4<I_p<7$ are borderline cases requiring use of dual symbols
			SC		Clayey sands, sand-clay mixtures	Atterberg limits above A line with $I_p>7$	
Fine grained soils (more than half of material is smaller than No.200 sieve size)	Silts and clays (liquid limit <50)		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity		
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
			OL		Organic silts and organic silty clays of low plasticity		
	Silts and clays (liquid limit >50)		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts		
			CH		Inorganic clays of high plasticity, fat clays		
			OH		Organic clays of medium to high plasticity, organic silts		

Depending on percentages of fines (fraction smaller than No. 200 sieve size), coarse grained soils are classified as follows: Less than 5% - GW, GP, SW, SP; More than 12% - GM, GC, SM, SC; 5 to 12% - Borderline cases requiring dual symbols

NOTE 6

BEDROCK AND MOUNTAIN TERRAIN MAP SYMBOL DESIGNATION

TOPOGRAPHIC SYMBOL
M Mountain: local relief greater than 450 m
H High Hill: local relief 150-450 m
L Low Hill: local relief 30-150 m

BEDROCK
D Dolomite
L Limestone
S Sandstone
Si Siltstone
Mu Mudstone
Sh Shale
Ch Chert
Cg Conglomerate

SLOPE ANGLE
1 <5°
① Plateau surface
2 5-15°
3 15-35°
4 >35°

MORPHOLOGIC MODIFIER
d dissected

Texture - see NOTE 5

EXAMPLE

(Bedrock) D, L — (Texture - surficial) GC-GP — M — 3,4,2 (Slope angle in order of abundance) — d

This describes a dissected area of mountainous relief where the dolomite and limestone bedrock is covered by a discontinuous residual or colluvial veneer of clayey gravels, gravel-sand-silt mixtures, and poorly graded gravels, with slopes generally 15°-35°, in places >35°, but locally 5°-15°

LEGEND AND NOTES TO ACCOMPANY SURFICIAL GEOLOGY AND GEOMORPHOLOGY MAPS, SOUTHERN MACKENZIE VALLEY, NORTHWEST TERRITORIES

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