GROUP/UNIT[1]	MATERIALS DESIGNATOR[2]	TOPOGRAPHY, LANDFORM GENESIS[3]	DRAINAGE, ACTIVE LAYER PROCESSES AND MICRORELIEF[4]	SURFICIAL MATERIALS[5]	GROUND ICE[6]	VEGETATION[7]	SENSITIVITY[8] Magnitude	Form	TRAFFICABILITY[9] Roughness	Traction
2	Mainly: ¢sg M. Locally: g,s,f Mb	Altitude: 0-750' (0-230 m) Level, to rolling with gentle slopes, locally steeper slopes or hummocky. Rolling and hummocky terrain has a relief of 5-50 m, with 10 to 0.5 cycles/km. Slopes commonly moderate to steep adjacent to incised streams. Where incised, the stream cross-profile is commonly asymmetrical. Scattered lakes in closed depressions. Seaward limit of this group is a slope of <1° to 3°, rising from modern shoreline to 50-100 m. The dominant surficial material is chiefly fine grained diamicton, >3 m thick (in places >15 m). The diamicton contains numerous shell fragments indicating either that material was dredged by glacial ice from inter-island channels or that sediments were deposited in a marine environment. On the seaward slopes, extensive flights of beach ridges have developed up to an elevation of 60 m. There is scattered evidence of washing, and even more limited deposition, between 60 m and the Holocene marine limit at ca. 150 m. Ice-wedge polygon trough networks are prominent above the marine limit. Quaternary sediments are underlain by Triassic clastics (siltstone, sandstone, shale). These rocks, reinforced by basic intrusive sills, project through the unconsolidated mantle at Cape Lockwood. Thin organic deposits are present in depressions throughout the group, from beach swales to basins 1 km or more wide.	The primary drainage pattern is a fairly low density network of linear and dendritic streams, heading both within the group and in adjacent uplands. Streamflow is maintained well beyond the normal snowmelt season within the group, by snowmelt and seepage in uplands of adjacent group 1. Drainage to streams is not generally organized. There is a discontinuous pattern of seepage lines, plus minor gullying on the (limited) moderate or steeper slopes. Elsewhere, seepage is unconfined — or directed through ice-wedge troughs. As materials are predominantly fine grained, much of the group is saturated and plastic or liquid in the snowmelt season. Surface layers (<5 cm) also become saturated in heavy or extended rain subsequent to snowmelt. Poorly-drained depressions are particularly common in unit 2.1, and in unit 2.3 SE of Iceberg Pt. Solifluction probably general, however microrelief features such as desiccation cracks, ice-wedge troughs and beach ridges are only disturbed on steeper slopes. The diamicton is potentially unstable, and slope failures are common on moderate to steep inclines. Types of failure include: detachment slides, initially confined to the active layer; retrogressive flowslides; block slides, especially 'step-faulting', on steep banks. Desiccation cracks are widespread. Hummocks, which appear to develop from desiccation polygons, are especially common on or below steeper slopes. Ice wedges in polygonal patterns are continuous above 150 m elevation, and troughs are commonly thermally enlarged in unit 2.1. Below this level, ice wedges are widespread both on diamicton and beach sediments; troughs are not generally prominent except in wet sites, where raised rim troughs are common. Palsen commonly associated with low centre troughs. Ice-push ridges occur on and adjacent to modern shoreline. Active layer depth maximum: ca. 30-45 cm over much of group; 5-20 cm in wet, peaty sites; 40-70 cm in coarse materials.	Natural exposures are rare, and stratigraphy was examined at 3 'washed' sections from 4-12 m thick, and in cores from 9 holes 1-6 m deep. Typically: strata and lenses 5 mm to 2 m thick, of silt and clay and to 25% stones, dark, but light weathering; lesser fine to medium sand; minor gravel, boulders, including sandstone, limestone, granites, igneous rocks. Sediment deposition may occasionally be definitely ascribed to fluvial processes or to glacial action. More often the origin is in doubt: e.g., are the boulders in undisturbed thinly bedded sediments glaciomarine dropstones? The material is most conveniently described as diamicton. Comminuted marine shells commonly present; occasional whole valves. Oxidation common in fine joint structure in silt-clay. Surface of diamicton: intermixed, occasionally discrete areas of, silt, clay, fine sand, minor stones and boulders, scattered thin lag stone cover. Other grain size combinations also present: e.g., sand and silty gravel on ridges 5-10 km SE of Iceberg Pt.; sand and gravel in some hummocks N of Eastwind Lake. Marine deposits on coastal slope: beach ridges of gravel and sand to gravelly silt, swales of sand to organic-rich clay. Coarsest material in lower slopes on Iceberg Pt. section of coast, and adjacent to Mt. Lockwood. Finer materials at higher elevations and on coastal section E of Mt. Lockwood. Organic (mainly peat) deposits usually <20 cm thick, rarely >50 cm, often include much silt or clay. Fluvial deposits generally confined to active stream channels, or to narrow (<20 m) floodplains. Sediments chiefly derived from coarser fraction of diamicton, i.e., gravel, boulders, sand, lesser fines. Occasional more extensive floodplains or low terraces on largest watercourses, of silt and fine sand.	Ice-wedge polygon networks continuous above 150 m; widespread below this elevation both in diamicton and marine sediments. An ice wedge was cored to >6 m. Palsen common on and adjacent to low centre troughs in wet sites. Other segregated ice observed in 3 sections and 9 cored holes. Holes, clustered at ca. 150 m elevation in Eastwind Lake area, show higher ice content than sections, which were both above and below marine limit, S of Iceberg Pt. Difference possibly due to site specific conditions (especially drainage) and varying sampling methods, rather than to a fundamental areal difference. Ice content generally highest in upper 2-3 m: e.g., average values 5-70%, with 90% below a wet site. Tendency towards reticulate and massive ice in fines; lesser ice content, chiefly lenses, in sand and gravel.	a. Well drained materials, usually beach ridges, topographic highs, adjacent to stream cuts. 1. very dry areas practically devoid of vegetation (<1% veg.) 2. Salix arctica – Sax. opp. barrens (5-20%). Lichens generally absent. Grasses: Alopecurus alpinus, Festuca sp. usually present. Herbs: Papaver radicatum, Draba sp., Cerastium sp., Stellaria sp., Saxifraga oppositifolia (2-5%), Erigeron compositus, Epilobium latifolium, Erysimum Pallasii, Taraxacum sp. Shrubs: Salix arctica 5-15% and occasional Potentilla. b. Moderately drained areas: gentle slopes & plains. Dominated by dwarf shrub & herb community. Salix arctica 20-40% (locally 60%) is the dominant vascular plant. Potentilla, Dryas & Cassiope are rare & local in occurence. Saxifraga oppositifolia is the most common associate (2-5%). Monocots: Alopecurus-alpinus, Poa sp., Festuca sp., Carex rupestris, & Herbs: Oxyria, Polygonum, Ranunculus nivalis, Cochlearia, Eutrema Edwardsii, Draba, Cerastium sp., Stellaria sp., Melandrum, Pedicularis arctica, P. sudetica Saxifraga cernua, S. caespitosa, S. flagellaris occur in this community. Lower stratum is primarily mosses – closely associated with willow. A patina cover occurs on protected slopes. c. Poorly drained materials: seepage slopes around ponds & in polygon troughs. Vegetation primarily a sedge wet meadow community. Dominated by Monocots (10-40%) primarily, Carex stans, Eriophorum triste & E. Scheuchzeri, either in mix or locally pure stands. Alopecurus alpinus, Arctagrostis and Dupontia may be found in amounts up to 5%. Emergent Pleuropogon Sabinei may occur in ponds. Salix arctica may be found up to 5% on raised moss hummocks. Herbs present include Polygonum viviparum, Ranunculus sp., Eutrema Edwardsii, Cardamine digitata, Geum Rossii, emergent Hippuris vulgaris, Saxifraga Hirculus, & S. cernua. The lower stratum is of dense moss, often Drepanocladus & Aulacomnium sp.	2-3 locally 1 on coarser materials	aBc	1 locally 2 or 3 where streams incised or where hummocky	3/2
2.1	¢sg M -p,pk	400-700' (120-210 m) Rolling, gentle slopes; local hummocks or knolls and incised stream channels, with moderate slopes. Scattered lakes, including Eastwind Lake, formed in topographical (glacial depositional) lows, enlarged by thermal processes and (lake) wave erosion. Material generally diamicton (see 1.), including coarse-grained knolls. Most of unit is above Holocene marine limit.	Moderate density dendritic drainage pattern, however many flats or topographic lows poorly drained. Surface and subsurface seepage mainly along ice-wedge troughs. Solifluction not obviously active. A few thaw flows or flowslides noted, particularly where sand or silt knolls intersected by streams. Ice-wedge polygon networks continuous, often with wide (2-4 m) deep (0.5-1 m) troughs. In poorly-drained areas, troughs further enlarged by thermal effect of standing water, into thaw ponds. Hummocks over >50% of unit.	Mainly diamicton: intermixed or inter-stratified silt, clay, sand, gravel (see 1.). Silty gravel on the surface in parts of the unit. Isolated knolls of sand and gravel. Thin (5-50 cm) organic layers in wetter areas. Older, now dissected and dry, peat beds to 2 m thick, noted.	Ice wedges over whole unit. Other excess ice present, with values from 5-95% in upper 2-3 m (see 1.).	* Moderately drained materials: (20 – 40% Salix – Sax. opp) / (10 – 30% moss) local wide seepage slopes & polygon troughs; sedge-willow, wet meadow.	2-3	aBc	1 Locally 2 or 3 where hummocky	3/2
2.2	¢sg M -p	400-750' (120-230 m) Rolling; gentle to moderate slopes, above marine limit.	Moderate density drainage: mainly north flowing streams originating in uplands to south. Surface and subsurface seepage along polygon troughs, and via seepage lines on longer slopes. Other processes: See 1. Ice-wedge polygon networks continuous; troughs usually shallow (<30 cm) though may be >2 m across.	Mainly diamicton: intermixed or inter-stratified silt, clay, sand, gravel (see 1.). Fragmented marine shells noted on and below surface.	Ice wedges over whole unit. Other excess ice present, with values 2-50% noted (see 1.).	* 5 – 20% Salix – purple Saxifraga barrens drainage lines & seepage, sedge-wet meadow local topographic highs devoid of vegetation.	2-3	aBc	1 Locally 2 or 3 where streams incised	3/2
2.3	Mainly: ¢sg M & (g Mv) / (¢sg M)	0-500' (0-150 m) Plain; level to rolling with gentle slopes; locally moderate or steep slopes adjacent to streams. Mainly fine-grained diamicton (see 1.), but surficial materials coarser locally. Some fluvial sediments, organic deposits and isolated marine deposits. There are a few lakes (<0.5 km wide), and a larger number of drained lake basins. The unit is entirely below the postglacial marine limit, and has been washed, and locally reworked by marine processes.	Moderate density drainage; some gullying on steeper stream banks. Surface and subsurface drainage largely unorganized on flats and better vegetated areas; seepage lines on steeper slopes, and particularly in unvegetated areas. See 1. for full description.	Diamicton, minor fluvial and organic deposits (see 1.). Isolated knolls and ridges of sand and gravel marine sediments, 1-5 m thick, over fines, sand, gravel diamicton on ridges 5-10 km SE of Iceberg Pt.	Discontinuous ice wedge network. Low centre polygons in wet depressions. Other excess ice, (see 1.).	* moderately drained materials: (20 – 40% Salix – Sax. opp (monocot)) / (10 – 30% moss-patina) polygon troughs pond areas; sedge-willow, wet meadow, local topographic highs – Sparse Saxifraga – herb barrens.	2-3	abc	1 Locally 2 or 3 where streams incised.	3/2
2.4	g, gs¢, gsf/f, fg Mb ¢M	0-400' (0-120 m) Rise from sea level to 30-60 m, locally higher, in zone 0.5 to 2 km wide, with seaward slope generally 1-3°. Beach ridges and swales over much of the unit, with amplitudes rarely >50 cm, wave lengths 5-15 m. Above ca. 30 m elevation, beach form and material not always evident, as degraded and obscured by development of hummocks and growth of vegetation. Main streams draining unit 2.3 cross this unit in intermittently incised channels at 1-5 km spacing. Local gullying E of Mt. Lockwood, and SW extremity of unit. Beaches formed during Holocene uplift; the highest recorded are at 135 m, on W flank of Mt. Lockwood. Recovery is near completion, and lagoons and intertidal flats are developing at the modern shore, particularly at Icebert Pt., where ice-push has assisted the build-up of sediment. Marine sediments overlie and incorporate fine-grained diamicton. The basic material in beach ridges is gravel, probably derived from resistant lithologies in adjacent group 1.	The normal downslope drainage is disrupted by beach ridges and swales. The ridges are normally well drained, swales moderately to poorly drained. Seepage lines and runnels however cross these features where amplitude is low or where intersected by ice-wedge troughs. Solifluction has been insufficiently active to destroy beach lineation on fine grained materials to ca. 60 m elevation. However hummocks obscure the form at higher elevations. Detachment slides occur on seaward slopes E of Mt. Lockwood, and flowslides are common adjacent to incised through streams. Ice-push ridges, forming currently and within the last 1-2000 years, were noted in a number of places, but particularly near Iceberg Pt. A ridge 5 m high and 100 m long was observed there at the modern shoreline.	Mainly marine deposits of gravel, silt, clay, sand; <50 cm to >2 m thick, overlying chiefly fine-grained diamicton, and occasionally shale, sandstone, siltstone. Beach ridges of gravel (sandstone, limestone, intrusive rocks) sand, minor fines. Swales of fines, sand and gravel, with a thin discontinuous organic cover. Intertidal flats of silt and fine sand at Iceberg Pt.	Ice wedges scattered. Other excess ice probably present in fine-grained material, as in diamicton (see 1.).	Increase in % cover & diversity with increasing distance from coast. coast: sparse Saxifraga oppositifolia – herb barrens. * moderately drained inland: (20 – 40% Salix Sax. opp.) / (30% moss (patina)) Seepage areas & older swales; Sedge (+willow) wet meadow, Very well drained areas may be devoid of vegetation.	2 Locally 1 on gravel beaches	ABc	1 Locally 2 where streams incised	3/2

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GROUP/UNIT[1]	MATERIALS DESIGNATOR[2]	TOPOGRAPHY, LANDFORM GENESIS[3]	DRAINAGE, ACTIVE LAYER PROCESSES AND MICRORELIEF[4]	SURFICIAL MATERIALS[5]	GROUND ICE[6]	VEGETATION[7]	SENSITIVITY[8] Magnitude	Form	TRAFFICABILITY[9] Roughness	Traction
3		0-700' (0-210 m) Low elevation, low rolling to level, predominantly gentle slopes. Gentle to moderate, locally cliffed or gullied slopes adjacent to main streams and to Slidre Fiord and Eureka Sound. Main drainage lines over most of group lead to Slidre Fiord, with catchment areas extending into adjacent higher and coarser grained groups. Local gullying. Most of the predominantly fine sand to clay size materials which form this group have been subject to marine erosion, deposition, reworking or washing during periods of the Pleistocene in which sea levels were higher than at present. The area is presently emerging from a maximum Holocene sea level of a ca. 160 m. Planed bedrock surfaces, especially at ca. 120 m, and the great thickness of marine and fluvial sediments in the Slidre River valley, indicate that high sea levels must have been maintained for extensive periods in pre-Holocene times. In this group there is little conclusive envidence of glacial deposition, none of erosion (other than Slidre Fiord itself). The small quantities of identifiably exotic rocks (e.g. granites) could conceivably have been ice-rafted. Surficial material is chiefly residual bedrock, though there is a substantial area of fluvial/marine 'Slidre River fill' (see materials legend) and local deposits of recent fluvial and marine sediments. Materials are underlain by gently to steeply inclined dominantly poorly consolidated fine to medium grained clastic sediments. The upper 1-5m of residual material as described in this group has commonly been disturbed by processes other than weathering, and may incorporate exotic materials and have a different structure from underlying partly-weathered bedrock. This particular group has been split into a large number of small units for the following reasons: 1) It has had a complex genesis, and parameters used in defining units change rapidly within small distances. 2) Many field observations have made in the area, providing more detail than over the remainder of the map-sheet.	During snowmelt, with small areal exceptions the predominantly fine grained materials are poorly drained, saturated, and thus weak. For the summer, drainage varies from good to poor, dependent chiefly on topography (see individual units). Some comments on local climate and surface moisture will be made here, which also apply (in varying degrees) to other lowland areas of W Fosheim and E Axel Heiberg. Snowmelt runoff is particularly small, due to the thin snow cover. This in turn is due to the small winter snowfall (3.8 cm water equivalent at Eureka), part of which is blown clear from the extensive level to gently sloping areas, and part of which sublimates in the generally cloud-free weather preceeding thawing temperatures. Much thaw water is absorbed into the rapidly-thickening active layer, which tends to have a low moisture content at freezeup. Due to the favourable local climate, the snowmelt season of the lowlands may be one month or more in advance of other parts of Ellesmere Island. Moderate or steeper slopes, especially with a N aspect, retain snowcover and snowbanks for a longer period than the rest of the group, and have extended seepage period. In silts and clays, the upper 10-30 cm normally thaws and dries out to form a crust within 2-4 weeks of loss of snow cover. The lower portion of the active layer, to the frost table, thaws but may remain saturated or damp, with reduced cohesive strength, for much of the summer. The whole of the active layer below thaw ponds, unfrozen peat, thaw flows etc will also remain saturated. Heavy or prolongued rainfall generally only saturates to a depth of 5 cm from the surface. Streams, even those heading in adjacent uplands, are intermitted subsequent to snowmelt. Mass wasting is only evident locally. Solifluction possibly occurs on most gently or greater slopes, however it is rarely sufficiently active to disturb ice-wedge troughs. Retrogressive thaw flowslides occur in many units. The most active melting coincides with snowmelt. By mid-summer many flows dry out, material slumping over the ice face is not removed, and the ice becomes so insulated that melting ceases. Some cuspate scarps, with high (> 5m) faces, are possibly nivation hollows rather than inactive flowslides. Eolian processes are at least locally significant near the mouth of Slidre River (see units 3.17, 3.20), and possibly are widespread on bare silt and sand. Desiccation cracks are common, especially on silts. Distribution of hummocks is variable and not related to materials. Hummocks are common on N-facing slopes, and or other slopes with extended seepage period. Ice-wedge polygon networks cover much of the group. Surface expression varies from 5 cm wide cracks to troughs 10 m wide x 2 m deep. Enlargement by ponding and thawing is common on level areas of cohesive sediments. Low centre/raised rim polygons are common on both poorly drained lowlands and well vegetated sand slopes. The rectalinear wedge pattern which occurs locally, is not simply related to dominant surface slope or to underlying bedrock structure. Active layer maximum depth ca. 35-55 cm.	Chiefly fine sand, silt and clay; either intermixed, or in discrete areas of fine sand and silt, or silt and clay. Some units homogeneous; in others, materials vary greatly both areally and vertically. Residual materials commonly homogeneous covering minor variations in underlying lithologies. However, steeply dipping beds, particularly if indurated, may give rise to narrow strike-aligned bands of differing textures at the surface. Residual material is derived from underlying generally poorly consolidated, but sometimes partly indurated, fine to medium grained clastics, chiefly of JKd, Kc, Kh, Kk and KTe Formations (see materials legend for detail). Deposits usually contain more than one textural class, may incorporate to 10% stones of residual or exotic origin, and have a 0-100% surface cover of gravel and boulders of lag, ice rafted or glacial depositional origin. Thickness over poorly consolidated fine grained rocks > 2 m to 5 m; over indurated sandstones and siltstones, may be < 1m. Underlying bedrock commonly partly weathered, but is usually identifiable from overlying 'residual' material: e.g. 'residual' JKd shale is a crumbly silty clay with excess ice; underlying partly weathered shale is also silt clay, but is dense and ice-free; this grades to poorly to consolidated platy shale. The small percentage of outcrop occurs where streams are deeply incised, or where indurated clastics (chiefly in Trh, J, Ki, Kh, KTe Formations) are included in the group. Fluvial and marine sediments commonly include a number of different inter-bedded textural classes, although on occasion only one texture may be exposed over many km². The 'Slidre River fill' of interlaminated or bedded fluvial, deltaic, estuarine and marine, sand, silt, clay and organic debris, covers 25% of the group, to depths > 40 m. Materials are described in unit 3.15, and in the materials legend. Modern fluvial sediments are commonly coarser than materials in surrounding units, with sand, gravel, and silt channel zones. Marine deposits are divided into predominantly silty clay nearshore sediments (which also commonly underly coarser delta topsets), and sand and gravel beach deposits. They are generally distributed within 1 km of the modern shoreline of Slidre Fiord and Eureka Sound. Thick silty gravel or bouldery deposits are scattered throughout the group. It is not known whether they are marine or glacial sediments, or outliers of pre-Pleistocene gravels.	Ice-wedge polygon networks are present over > 90% of the group. Wedges to 7 m deep and 5 m wide were recorded, and such dimensions are probably quite common. Wedge top commonly 50-80 cm below ground surface. Wedge ice is estimated to represent 10-20% of upper 2m of surficial material in the group. Stratigraphy between wedges was observed at > 100 holes drilled and cored to depths of 1-8m. No satisfactory relationship between ground ice and other geomorphological and geological parameters was determined. In particular, prediction of massive ice from surface observations has proved impossible, unless part of the ice mass is exposed by natural thawing in flowslides. Excess ice content (other than wedges) is commonly 25-75%, though both higher and lower values not unusual. Average values are perhaps misleading, as content highly variable in most cores. In homogeneous materials, structure tends to change from interbedded to reticulate to massive as % of ice increases.	* a) Well drained sites. 1. fine grained materials support a Salix-Alopecurus barrens – 5-20%. Salix is the dominant vascular plant. The shrubs Dryas & Potentilla sp. may be present though usually rare. Monocots include Alopecurus (1-3%), Poa sp., Festuca, Puccinellia sp., Agropyron latiglume, Luzula confusa. Cyperaceae are not usually found here. Herbs include Papaver radicatum, Cerastium sp., Draba sp., Braya sp., Oxyria digyna. A lower stratum is absent. 2. on local gravels a Salix-Saxifraga oppositifolia barrens can occur. Saxifrages occur (1-3%) with Sax. opp. most common. S. cernua, S. flagellaris, S. caespitosa & S. tricuspidata can be present. Grasses & herb species similar to above. Thamnolia sp. & Cetraria occur here 3. Some areas not vegetated. b) Moderately drained areas. Vegetation is dominated by Salix arctica (20-40%) & Alopecurus (2-5%), Dryas is rarely a significant component. Cassiope & Potentilla hyparctica is locally present. Monocots include those in a-1, plus Carex nardina. C. rupestris & Kobresia myosuroides, & Juncus biglumis. Herbs include those in a-1, plus Ranunculus sulphureus, R. nivalis, R. Sabinei, Stellaria sp., Pedicularis arctica, P. sudetica, Saxifraga triscuspidata. S. flagellaris, Erigeron sp., & Taraxacum sp. The lower stratum is composed of 20-60% moss & patina. Thamnolia & Stereocaulon sp. present. c) Poorly drained areas; mainly ice wedge troughs E. Scheuchzeri dominates vascular plants. Alopecurus Arctagrostis, & Dupontia present & locally abundant. Carex stans is rare. Salix arctica may occasionally be present. Ranunculus hyperboreus Saxifraga Hirculus & Eutrema Edwardsii occur in dense moss matrix of lower stratum. d) Eolian modified areas: generally dry. Plants usually adopt unusual tussock shape due to erosion around base. Shrubs & lichens absent. Mosses usually restricted to Polytrichum piliferum tufts. Grasses & Herbs common, with dominance variable. Cover is usually less than 20%, Dominance is variable though Alopecurus alpinus, Saxifraga cernua, Oxyria digyna and Papaver radicatum are very common. Also present may be Agropyron latiglume, Deschampsia sp., Festuca brachyphylla, Hierochloe alpina, Luzula confusa, Poa sp., Puccinellia angustata, Ranunculus sp., Arenaria sp., Cerastium sp., Braya sp., Cochlearia officinalis, Draba sp., Lesquerella arctica, Erysimum Pallasii, Armeria maritima, Epilobium latifolium, Taraxacum sp., Antennaria sp., & Erigeron compositus.	2 Almost all units except beaches and coarse fluvial sediments are susceptible at least partly to disturbance.	abc	2 Roughness variables; stream incisions and gullying are the most common problems. Traction also variable, though 3/2 the most common values.	3/2
3.1	f/¢ (R + M + M?) / (JKd R)	200-350' (60-110 m). Level; gentle slopes at perimeter of unit. Developed on horizontal to gently dipping poorly-consolidated shale (JKd) planed at ca. 100 m during a high Quaternary sea level. Fine grained sediments with residual, marine or possibly morainal origin.	Drainage imperfect. That snowmelt not absorbed in active layer (see 3.) collects in ice-wedge troughs and either evaporates through the summer, or flows or seeps via troughs towards the perimeter of the unit, where shallow gullies have developed in downslope-oriented troughs. Desiccation cracks in bare or sparsely vegetated ground. Continuum to high amplitude hummocks where vegetation denser (i.e. over much of unit). Ice-wedge polygon network over whole unit Where disturbed by stripping of active layer, or where water ponded, troughs to 6 m wide and 1.5 m deep occur.	Chiefly silt, clay, lesser fine sand. Generally intermixed with common sand/silt/clay ratio 2:4:4. Probably a combination of residual bedrock, glacial (till and ice-rafted) and marine deposited and reworked material; over residual or partly weathered shale bedrock. Upper 1 m, and upper 5 cm in particular, commonly includes 1-10% coarse material up to boulder size, chiefly sandstone, but some granites. Unconsolidated material generally 2-6 m thick, over weathered shale which commonly is a low ice content dense silty clay. Towards the perimeter 'shoulder' of the unit, shale may outcrop as blocky silty clay, with a few lithified shale fragments, and rare thin beds of sandstone. Unconsolidated material is thicker (locally > 6 m), more stratified, and coarser, in the SE part of the unit adjacent to gullied marine sediments including strata of coarse sand and gravel.	Stratigraphy observed in 35 holes cored to depths of 1-8 m, mainly clustered about the airstrips. Ice-wedge polygons over the whole unit. Wedges recorded 2-5 m broad at tops, commonly 50-80 cm below ground surface, but may be deeper where wedge is wider than trough. Wedge depths recorded to > 7 m deep, extending into shale. Wedge ice probably represents 10-20% of surficial materials. Permafrost above wedge contains 25-75% interbedded ice. High excess ice values recorded between wedges, in upper 2 m of permafrost. Values average > 50%, and some massive ice bodies cored. Low to no ice in coarser deposits in SE of unit, and in weathered though otherwise undisturbed shale.	* (20-40% Salix arctica-Alopecurus) / (50% moss-patina) shrub community local sedge wet meadow in ice wedge troughs.	3	A B	1 (wedge troughs a possible difficulty).	3/1
3.2	f/¢ (RC + M + M?) / (JKd R) local gbs P	100-700' (30-210 m). Gentle, some moderate, slopes flanking Station and Blacktop creeks and their numerous tributaries. Small level areas on interfluves. The two main streams and their major tributaries (heading in adjacent uplands) occupy braided floodplains to 100 m wide. Steep banks where incised. Unit lies on syncline axis, and topography developed on horizontal to gently dipping beds of poorly consolidated shale (JKd). Surficial material chiefly fine grained residual shale with some reworking or deposition by colluvial, glacial and marine processes. Scattered small (total area ca. 2 km²) areas of coarse-grained deposits on interfluves. Formed in low mounds, or ridges with bevelled margins. Origin uncertain. Reworked into low amplitude beach ridges below Holocene marine limit. Unit includes a single flat outlier of poorly indurated sandstone (Ki), ca. 1 km².	Drainage varies from good to imperfect, generally directed through ice-wedge troughs. Seepage lines and runnels over >50% of unit; chiefly on lower slopes to main streams, on slopes flanking coarser materials, and in headwaters of drainage basins. Local areas of thermokarst ponds in flatter areas (as in 3.1). Active layer saturated for extended period in runnels, and below the sporadic snowbanks adjacent to main streams. Solifluction only evident in strong seepage areas. Desiccation cracks over entire unit, hummocks general. Ice wedges over entire unit, except Ki outlier. Troughs very low amplitude on coarse deposits, and where seepage active, otherwise similar to 3.1. Some high centre and raised rim polygons.	Chiefly silt, clay, fine sand; intermixed. Probably a combination of residual bedrock, colluvium, glacial deposits (till and ice-rafted), and below ca. 150 m, marine reworked or deposited material. Active layer commonly includes 1-10% coarse material, to boulder size. Thickness of these unconsolidated deposits generally >2m; over weathered shale (JKd) varying from dense silty clay to fine shale fragments. Coarse-grained interfluve deposits: surface layer (<50cm thick) of gravel, boulders, some sand, <10% fines; underlain by similar material or sand with minor gravel. Pebble lithology: sandstone; minor limestone, granite, igneous rocks. Scattered incrusted shells above and below 150 m. Thickness of deposits >2m, possibly >10m. Isachsen sandstone outlier: quartzose sandstone; poorly indurated light weathering fine to medium grained, generally cross-bedded. Discontinuous surface cover of angular to subround gravel to boulder size ventifacts with distinctive patina. Thickness 10-20 m over JKd shale. Valley flat sediments mainly gravel, rubbles, some sand; discontinuous 1-20 cm thick cover of fines.	Ice-wedge polygon network over entire unit (ex. Ki). No other excess ice observations, but probably similar to 3.1.	* (20-40% Salix arctica-Alopecurus) / (50% moss-patina) on gravel deposits, Salix-Sax. opp barrens. seepage lines & troughs: sedge-grass wet meadow community.	3. 1 on coarser sediments.	ABc	2 2/1 on coarser sediments.	3/2
3.3	f/¢ (RC + M + M?) / (JKd R)	50-400' (15-120 m). Gentle to steep rectalinear to concave slopes; broad runnels create undulating surface; local gullying. Cliffs adjacent to lower courses of main streams, to 150 m high, 5 km long, fluted by gullying. Mainly fine grained residual material and colluvium, and outcrop of JKd shale. Fluvial or colluvial fans at base of those steep slopes not being actively undercut.	Drainage good to imperfect; to main creeks through locally incised streams, runnels, some gullies, ice-wedge troughs. Seepage may continue well beyond snowmelt period. Much evidence of mass wasting: low relief solifluction lobes, solifluction flow lines, but ice-wedge troughs rarely deformed or obscured (see 3.). Scattered detachment slides and retrogressive thaw flows. Talus on steeper slopes, with colluvial and fluvial fans below. Ice-wedge polygon network general except where mass wasting or erosion active (cliffs, fans, seepage lines). Form of wedge troughs and desiccation cracks similar to 3.1.	Mainly silt, clay, fine sand, with <10% coarser material. Colluvial and residual material derived from underlying shale, plus some glacial and marine sediments. Discontinuous outcrop of shale on upper slopes, as dense silty clay. Shale generally exposed in cliffs as poorly consolidated rock: silt-clay to small platy fragments. Silt and fine sand fraction dominant in fans.	Ice-wedge polygon network over most of unit that is not cliffed (i.e. ca. 75%). The few holes cored in this unit suggest excess ice content similar to 3.1	* 10-20% Salix arctica – grass barrens. seepage lines & troughs: sedge-grass wet meadow	3	ABC	2 3 where cliffed.	3/2
3.4	¢rg (J,JKd) CR, bg Ff	0-700' (0-210 m). Gentle to moderate slopes at the W base of Blacktop Ridge. Unit developed on JKd shale, with colluvial cover incorporating coarse material from upslope sources. Unit traversed at 1 km intervals by braided active channel zones or fluvial fans, to 0.5 km wide. Channels in part incised, with banks to 10 m high.	In through drainage lines from Blacktop Ridge, inactive (coarse grained) sediments well drained by subsurface seepage. Intervening colluvium has good to imperfect drainage, depending whether coarse or fine grained, moderate or gentle/flat slopes. Drainage by seepage lines, runnels minor gullies, linear streams. Mass wasting, especially solifluction, active. Ice-wedge polygon troughs only evident over 50% of unit, where masswasting or fluvial processes relatively inactive. Troughs generally low amplitude.	Colluvium and residual material; intermixed and interstratified, silt, sand, minor clay. Discontinuous thin to thick (5 cm to > 1m?) cover of rubble, mainly sandstone and intrusive rocks derived from upslope J and Th formations. Fluvial sediments chiefly gravel to boulder size sandstone.	Ice-wedge polygon troughs noted over 50% of unit. Mass wasting may obscure wedges elsewhere in colluvium. No observations of other excess ice, but content to 50% expected in colluvial materials.	* active channels devoid of vegetation rest similar to 3.1 & 3.2	2 1 on fluvial gravels	Abc	2 1/1 on fluvial gravels	3/1
3.5	f,fs,sf (JKd,J,Th) M, RM	0-300' (0-90 m) Overall gentle to moderate slopes to Slidre Fiord shoreline, or to lower courses of streams. Unit cut at 1-2 km intervals by streams draining inland units through valleys incised to 50 m, with steep or cliffed sides. Intervening areas highly dissected by fine network of gullies 1-3 m deep, locally 10 m. Material is chiefly nearshore or estuarine sediment with terraced deltas at mouths of main streams. Small areas of gravel, sand, silt, raised beach deposits included.	Generally well drained via gullies. Local areas poorly drained beyond snowmelt period, chiefly floors of nivation hollows and flowslides, thermally enlarged wedge troughs. Mass wasting active: solifluction, retrogressive thaw flows locally, nivation hollows to 20 m high, 50 m across. Desiccation cracks widespread on finer sediments; hummocks common on slopes. Ice-wedge polygons restricted to areas where mass wasting or fluvial processes not very active, mainly deltaic and fluvial terraces, raised beaches, low inclination or flat marine sediments.	Mainly nearshore or estuarine sediments of silt, clay, incorporating sand lamina or partings. Locally thicker sand lenses or beds. Discontinuous surface gravel cover. Thickness 1-5 m, exceptionally 20 m (lower Station Creek). Underlying bedrock exposed on steeper slopes or in gully floors. Mainly silty clay or shale fragments of Jkd and Kc shale, some J and Th rocks. Deltaic terraces of 0.5-2m silty gravel or sand over silt, clay, sand. Channels of silt, fine sand, gravel.	Ice-wedge polygon networks over <20% unit. Excess ice contents 5-100% found in 15 cores 1-5 m deep in nearshore sediments near Eureka. Reticulate ice 5-50% common in clay and silt. Horizontal veins to massive ice, 10-100%, where sand present. Develops at sand/fines interface. Flows slides indicate high ice content widespread.	* 10-20 Salix arctica-Alopecurus barrens. local shrub communities & sedge-grass wet meadows on moderately to poorly drained material.	3	AbC	3	3/1
3.6	s,g,¢ Mb	0-400' (0-120 m). Raised beaches and modern shoreline deposits of Slidre Fiord and Eureka Sound. Raised deposits commonly coarse grained materials over fines, in low amplitude (<50 cm) ridges and swales on overall slopes 2-5°. May be transected by steep sided valleys draining inland units. Modern shoreline commonly a narrow (3-10 m) sand or gravel beach consisting of a single storm or ice-push ridge. Deposits almost continuous along Fiord shore, only broken by active stream channels incised to 1 m, or by mass wasting sediments from adjacent fine grained materials (e.g. unit 3.5). Mean tidal range at Eureka ca. 0.1 ft.	Drainage unconfined; well drained by seepage through coarse materials. Stream channels or seepage lines from inland, cross beaches at 10-500 m intervals. Ice-push on modern beaches limited by small fetch within Fiord; few observations in Sound. Ice-wedge troughs in raised deposits.	In Slidre Fiord: raised beaches of gravel, with increasing quantities of fines (though always less than gravel) towards head of Fiord. Thickness 20 cm – 2 m over silt, clay, minor and nearshore sediments. Modern beaches of gravel and cobbles in W section of Fiord; sand, gravel, cobbles to E. On Eureka Sound, beaches of sand, sand and gravel, or gravel. Thickness 1 m + overlying either marine silt and clay, or friable sandstone and siltstone.	Ice wedges in raised deposits extending into underlying fines. No other observations of excess ice; high values possible in fines.	* 10% Salix arctica – Saxifraga oppositifolia barrens. some areas devoid of vegetation local swales & troughs – sedge-grass wet meadow.	1	b	1 2 or 3 where streams incised.	1/1
3.7	¢,fs,sf (J,JKd) RC, M	0-500' (0-150 m). Overall gentle slopes in rolling topography, level areas on divides, minor gullying. Materials mainly fine-grained residual and colluvial material, probably reworked by marine processes, local marine deposits. Underlain by a variety of marine planed K, J and Th clastics.	Drainage good to imperfect; via ice-wedge troughs, seepage lines, runnels, to main streams. Solifluction processes not prominent. Retrogressive thaw flowslides common on and adjacent to steep stream banks, and on some gentle slopes, especially below 100 m elevation. Ice-wedge polygon networks widespread. Locally enlarged by thaw ponds.	Mainly silt and fine sand, minor clay. Residual material, lesser colluvium and marine reworked material. At lower elevations (<100 m), unconsolidated material probably at least 2 m thick, and probably has higher clay content. Underlain by poorly consolidated finer grained members of Th, J, JKd and KTe formations. Scattered outcrop and rubble of sandstone, shale, coal.	Ice wedge polygons over much of unit. Numerous flowslides indicate high ice content, at least locally. A core taken 100 m behind a large flowslide showed >90% ice from 1 m depth, to base of hole at 4.7 m.	* 10-20% Salix arctica – grass barrens. seepage lines, channels & troughs: sedge-grass wet meadow.	2	aBc	1 Roughness locally 3.	3/2

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