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GEOLOGICAL SURVEY
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UNIT*	MATERIAL-GENETIC TERM	GENERAL DESCRIPTION	MATERIALS	TOPOGRAPHY**	DRAINAGE	ACTIVE PROCESSES	ACTIVE LAYER THICKNESS	GROUND ICE	RIVER BED AND BANK CHARACTERISTICS	MODERN SHORELINE	SENSITIVITY***		TRAFFICABILITY	
											Magnitude	Form	Roughness	Traction
14	s, sg, st, fp, ft, fd	Medium and coarse grained active and inactive fluvial and deltaic sediments. Only outlined if texture significantly different from adjacent units. See material-genetic unit descriptions for detail on form and origin.	Chiefly fine to medium grained sand, minor gravel or silty clay strata. Silt or gravel locally dominant. Active channel zone sediments >1 m thick over rock; inactive sediments 2 m to >10 m thick.	Channel zones and fans wide, low gradient. Bluffs within channel zone rarely >1 m high. Inactive surfaces are a minor component of unit; level to low rolling, edged on active channel side by moderate slopes to cliffs to 15 m high.	Channel zones of all but largest rivers dry at surface for much of summer, with moist to saturated zone 10 to 30 cm thick over frost table. Inactive surfaces well drained if inclined; moderately well, locally poorly drained if level.	Active channel zones, fans and deltas covered by thin water flow at peak snowmelt. Flow restricted to one or more narrower channels at lower water stages. Banks subject to lateral fluvial erosion, gullying slumping. Eolian erosion and deposition active, but no significant effect on morphology. Frost fissures probably widespread on inactive surfaces, but obscured by eolian processes.	40-100 cm.	Active and inactive surfaces where well drained; visible ice probably 0-10%, frost fissures sand filled. Where poorly drained; visible ice 5-50% in upper 2 m, frost fissures ice filled.	-	As unit 10.	Low		2	2/1
13	f, fs, fs, fp, ft, fd	Fine grained active and inactive fluvial and deltaic sediments. See material-genetic unit descriptions for detail on form and origin.	Chiefly silt and very fine sand; lesser to minor clay, platy shale and siltstone fragments, gravel, sand. Inactive deltaic surfaces have discontinuous veneer of fine sand to gravel. Bedrock of units 3 or 4 exposed in deeper cuts.	Channel zones are wide, low gradient. Bluffs within channel zone rarely >1 m high. Inactive deltaic surfaces level to low rolling, edged on active channel side by highly dissected moderate slopes to cliffs to 15 m high.	Channel zone flow greatly reduced after snowmelt. Valley flat may dry out to frost table, or may remain moist (and quick). Inactive surfaces moderately well drained if inclined; poorly drained if level.	Active channel zones and deltas covered by thin water flow at peak snowmelt. Flow restricted to one or more narrower channels at lower water stages. Banks subject to lateral fluvial erosion, slumping, much gullying, minor earthflows.	No data: 50-60 cm?	Probably 10-50% visible ice in upper 2 m. Frost fissures if present largely ice filled.	-	As unit 9.	Medium	bc	2	3/2
12	s, sf fd	Raised and modern deltaic sediments, commonly with coarser grained topsets, fine bottomsets. See material-genetic description for detail on form and origin.	Commonly 0.2-5 m of sand or stratified sand, silt, clay, with discontinuous lag gravel over 1-15 m of silt or clay marine or bottomset sediments. However, units may be dominantly fine grained, or sand strata may appear in basal fines. Sediments older than Holocene are present locally. Underlying bedrock of units 3 or 4 may be exposed at base of section.	Valley flats wide, low gradient; courses usually straight near mouth may be sinuous upstream. Inactive surfaces commonly level, edged on active channel side by moderate slopes to cliffs to 20 m high. Note that sediments may occupy older rock cut valleys, and that the upper surface of inactive sediments is commonly raised higher than laterally adjacent units.	Much of channel zone dry after snowmelt, though a moist to saturated zone 10 to 30 cm thick may exist over the frost table. Inactive surfaces well drained except locally numerous ponds in frost fissure troughs.	Active channel zones and deltas covered by thin water flow at peak snowmelt. Flow restricted to one or more narrower channels at lower water stages. Banks subject to lateral fluvial erosion, gullying, slumping, minor earthflows. Eolian processes active, without significant effect on morphology. Frost fissures widespread on inactive surfaces.	40-80 cm.	Visible ice variable 0-50% in upper 2 m. Locally strata with >50% ice. Frost fissures vary from primary sand filling to all ice.	-	As unit 10.	Medium	bc	2	2/2
11	C, C _R	Colluvium, colluvial veneer.	Material derived from upslope units and significantly different from subjacent materials. See material-genetic units for textural details; e.g., gravel from unit 7 forming colluvial veneer over shale of unit 3.	Commonly moderately inclined, locally steep of cliffed.	Poor to moderately good. Seepage in shallow runs commonly continues through the summer.	Rilling, gullying; some solifluction, earthflows, talus creep.	30-80 cm.	No data.	Bedload emphasizes coarsest fraction of colluvium.	None.	Medium	abc	3	3/2
10	s, sf, sb, W(b), +F	Thick coarser grained raised and modern nearshore and beach sediments; lesser to minor fluvial and deltaic sediments.	Dominantly fine to medium grained sand; minor silty clay strata, except locally dominant where underlying or upstream materials fine grained. Gravel may be dominant in modern or raised beach berms. Discontinuous lag gravel veneer. Thickness >2 m over units 5 or 6.	Level, to gentle seaward slope. Generally smooth surface, locally beach berms to 50 cm high (see Wb). Sand flat areas common (see Wb) (material-genetic description). Major rivers incised 2-10 m, but most courses <2 m deep.	Rivers and major streams close spaced (<0.5 km) and subparallel close to coast. Elsewhere, spacing greater and channels less organized. Generally well drained subsequent to snowmelt, though 10-30 cm zone over frost table may be moist to saturated, and dry stream beds may have seepage on frost table. No lakes or ponds, except ponds between beach ridges (Wb) on western Noice Peninsula.	Fluvial erosion by sheetwash, lateral erosion, gullying; deposition at coast and inland in close spaced fans and deltas. Eolian erosion and deposition with little modification of surface morphology. Frost fissures probably over >50% of unit, though note on active fluvial surfaces. Surface expression may be obscured by eolian processes.	40-80 cm.	Visible ice probably 0-50% in 50 cm below frost table, 0-10% at greater depths. Frost fissures generally have primary mineral filling, but locally ice filled.	Channels, fans and active deltas cover 10-50% of unit. Channel zones and fans locally >1 km wide. Bedload dominantly sand. Banks moderate to cliffed, subject to lateral erosion, minor slumping.	Emergent shoreline with low narrow beach berm typically <50 cm high, <3 m wide, composed of sand, minor gravel. Ridges locally gravel (e.g., at Malloch Dome). Berm extends across fan and delta south, broken only by main active channels - but may be continuous if channel flow minor or beach built up in summer open water. Ice push common on coasts with northerly aspect; ridges to 2 m high pushed 5-50 m inland from high water.	Low		1	2/1
10/6	s, sf W(+E) R: KTe, Kh, Ki	Coarser grained nearshore and beach sediment and eolian veneer over coarse grained bedrock; lesser to minor fluvial and deltaic sediments.	Dominantly fine to medium grained sand; minor silty clay strata, except locally dominant where upstream materials fine grained. Thickness 1-2 m, locally thicker, over planned bedrock, residual rock, of unit 6. Rock only exposed in deeper stream incisions.	Level to moderately inclined generally seaward slope. Sandflat areas common. Main drainage courses incised to 10 m.	As unit 10.	As unit 10.	As unit 10.	As unit 10.	As unit 10.	As unit 10.	Low		1	2/1
10/5	s, sf W(+E) R: Kk, Kc	Coarser grained nearshore and eolian sediment veneer over fine grained bedrock; minor fluvial sediments.	Dominantly fine or medium sand, lesser silt, minor clayey strata, discontinuous lag gravel veneer. Includes eolian sediments. Thickness 0.5-2 m over planned bedrock and residual rock of unit 5.	Level, to gently inclined low rolling terrain. Local relief rarely >10 m.	Majority of unit well drained, as in unit 10.	Fluvial and eolian. Sheetwash, rillwork; erosion and deposition with little modification of surface morphology. Frost fissures widespread but surface expression generally obscured by eolian processes.	No data: 40-80 cm?	No data: possibly as unit 10.	As unit 10, except earthflows locally in deeper stream incisions.	As unit 10.	Medium	a c	1	2/2
9	f, fs, W, W+Fd	Thick fine grained raised and modern offshore and nearshore marine sediments and deltaic sediments.	Uniform silty clay or silt and clay locally minor fine sand; commonly overlain by <1 m of fines and lesser sand. Thickness 2 to >5 m, generally overlying fine grained rock (unit 3), locally coarser rock (unit 4). Deltaic sediments dominantly fine; but may include thick sand units; thickness locally >10 m.	Overall gently inclined to level seaward slope. Streams incised 2-10 m. Microrelief locally rough due to earthflows or gullying.	Poorly drained in wet summer, poorly to moderately well drained in dry summer. Extensive seepage in shallow runs. Rivers and larger streams subparallel at 0.5 to 1 km intervals and rills, broad runs in intervening areas. Rare lakes; ponds locally, where frost fissures developed or earthflows temporarily dam stream. See unit 3 for desiccation.	Mass movement and fluvial. Rillwork, backwashing, gullying adjacent to stream courses. Mass wasting highly active; earthflows widespread even on slopes of 1°; includes wide (100 m) detachment slides and rills, broad runs in intervening areas. Rare lakes; ponds locally, where frost fissures developed or earthflows temporarily dam stream. See unit 3 for desiccation.	30-60 cm.	Total ice content in upper 2 m, 20-70%. Frost fissures where present ice filled.	Main drainage courses straight to slightly sinuous, locally sinuous. Bedload of fines, minor sandstone or siltstone rubble. Banks moderately inclined to cliffed. Cliffs may extend for whole width of coastal plain. Banks generally unstable with much slumping, earthflow, minor gullying (major where rivers deeply incised).	Emergent shoreline, gently inclined. Fine grained material, discontinuous very thin sand veneer; beach berm only developed where sand available from adjacent or inland unit. Commonly disturbed by ice push, with ridges to 2 m high pushed 2 to 20 m inland from high water.	High	abc	1	3/2
9/6	f, fs W R: KTe-u, Ki	Fine grained marine sediment veneer over coarser rock, minor deltaic sediments.	Silt, clay, fine sand, discontinuous lag gravel; over poorly to moderately well consolidated sandstone, siltstone, minor shale. Thickness generally <2 m; deltaic sediments locally much thicker.	Overall level to low rolling, in part deeply dissected by through drainage courses, locally to 20 m depth.	Poorly to moderately well drained by rills, shallow runs in intervening areas. Pending in wedge troughs locally.	On interfluvies chiefly fluvial: rilling, minor gullying; minor mass movement.	40-60 cm.	As unit 9.	Bedload fines, sand lesser sandstone and siltstone rubble. Banks moderately inclined to cliffed. Deeper incisions (>5 m) expose sandstone, siltstone, shale; rock fairly stable. Mass movement highly active in overlying fines; subject to earthflows and slumping.	As unit 9.	Medium	abc	2	3/2
9/5	f, fs W(E) R: KTe-1, Kk, Kc	Fine grained offshore and nearshore marine sediment veneer over fine grained bedrock; minor deltaic sediments.	Silt, clay, fine sand; unstructured to finely laminated; siltstone or mudstone veneer locally. Underlain by clayey silt or silty clay residual material and planned poorly lithified rock of unit 3; contact rarely discernible. Identified rock locally exposed in stream cuts. Thickness generally <2 m; locally >3 m, or may be stripped to residual rock.	Moderately inclined to level, generally smooth surface with main drainage courses incised 2-10 m.	Poorly drained in wet summer, moderately well drained locally poorly, in dry summer. KTe-1 and Kk better drained at 1-2 km intervals; drainage via rills or frost fissure troughs in intervening areas. Rare lakes; ponds locally numerous in fissure troughs on level areas. See unit 3 for desiccation.	Over KTe-1 and Kk, fluvial erosion via numerous rills, runs and gullies, and mass movement by earthflows. Few frost fissure troughs evident. Over Kc, interfluvies generally level and more stable, except for numerous wide frost fissure troughs.	40-60 cm.	In 50 cm below frost table, visible ice commonly to 50% in bands to 1 cm thick. Below, visible ice <50%.	Main courses commonly straight to slightly sinuous. Bedload fines, minor sandstone or mudstone rubble, very local sandstone or mudstone outcrop or concentration of fragments. Where headwaters on coarse unit, bedload sand and silt. Banks moderately steep to cliffed; minor slumping; earthflows less common than unit 9. Deeper incisions expose poorly lithified shale.	As unit 9.	Medium	abc	1	3/2
7b	gs si Q	Thick gravel, sand, fines; Quaternary fluvial sediments?	Sandy silty gravel. Gravel is granule to boulder size, subangular to rounded, chiefly sandstone, siltstone, minor gabbro, diabase, limestone. Height of ridge probably much greater than thickness of gravel, as gravel protects underlying fine grained bedrock.	Linear subdued ridge, to 30 m high, 500 m wide, 10 km long, though broken by several water gaps. On a minor divide 60-120 m elevation.	Well drained, but note snowbanks and extended seepage period on flanks.	Generally stable relative to underlying and adjacent materials; unit functions as a capping rock. Rilling, shallow frost fissure troughs.	No data: 80-100 cm?	No data: probably <10%, with mixed primary mineral filling and ice in frost fissures.	None.	None.	Low		2	3/1
7a	gf, fg, TQ	Thick gravel and fines; late Tertiary or Quaternary fluvial sediments?	Silty sandy gravel to gravelly fines, 2 m to >5 m thick. Gravel is granule to boulder size angular to round sandstone, siltstone; minor exotic lithologies including gabbro, limestone, granite.	Level to gently inclined plateau remnants at 90 to 220 m elevation with moderately to steeply inclined margins.	Moderately, locally poorly drained subsequent to snowmelt, which is generally later and more extended than on adjacent (chiefly lowland) areas.	Rills, shallow runs on inclined surfaces. Frost fissure troughs widespread. Unit functions as a capping rock.	40-100 cm.	No data: probably 0-50% in upper 1-2 m, <10% below. Mixed primary mineral filling and ice in fissures.	None.	None.	Low		2	2/1
6	s, sf, sf RW: KTe-u, Kh, Ki	Coarser grained lithologies (see unit 4) modified by marine processes during higher Quaternary sea levels.	Chiefly fine to coarse sand with discontinuous cover of lag quartz gravels. Scattered sandstone rubble, silt and fine sand and marine sediments. Scattered thick sand and gravel fluvial sediments particularly on Noice Peninsula. Composed of marine reworked residual material 0-2 m thick. Bedrock structure commonly visible from air. Sandy active channel zones over 10% of unit.	Subdued form of unit 4. Gentle to moderate slopes on seaward inclined plane, or low rolling terrain; relief to 30 m; few scarps or ledges.	River and major stream spacing 1 km. No lakes or ponds. Well drained with close spaced well-washed channels. Zones of subsurface seepage under many dry channel beds.	Dominantly fluvial: sheetwash, rilling, minor gullying, lateral erosion. Eolian processes active without significant effect on morphology. Scattered shallow frost fissure troughs - possibly fissures more common than surface expression.	60-80 cm.	Visible ice probably 10-50% in 50 cm below frost table, 0-10% at greater depths. Frost fissures partially ice filled; 0-100% ice in 1 m below frost table.	As unit 4.	As unit 10.	Low		2	2/1
5	f, d RW: KTe-u, Kc; sf RW: Kk	Fine grained lithologies (see unit 3) modified by marine processes during higher Quaternary sea levels.	Silt and clay, minor discrete areas of veneer of sand, platy shale or mudstone fragments. Lag cover of ironstone nodules common on Kk. Composed of marine reworked residual material 0-2 m thick. Bedrock structure locally visible from air.	Subdued form of unit 3; chiefly level or gentle slopes, seaward inclined.	As unit 3.	As unit 3.	As unit 3.	As unit 3.	As unit 3.	None	Medium	ab	2	3/2
4	s, sf, f, r, R: KTe-u, Kh, Ki	Coarser grained resistant to recessive, commonly poorly consolidated rock and residual weathered rock.	Sand, fine to coarse grained, lesser to minor silt, minor clay, intermixed or in discrete strike aligned units. Commonly 1 to 2 m thick over compacted, in part consolidated bedrock. Continuous to scattered granule to boulder size angular to round lag veneer. Minor cemented outcrop and blocky rubble. Beds vary from gently inclined to very steeply inclined in diapiric structures. See also rock formation-lithology superscript.	Gently to steeply inclined slopes. Minor cliffed segments associated with a succession of minor and major scarps, and incised drainage courses. Local relief 20-100 m. Isachsen Formation (Ki) has the most rugged terrain and highest relief; Burke Sound Formation is more subdued, though scarps still present.	Generally well drained. Long slopes, particularly where finer beds outcrop, moderately well drained. Local poor drainage near base of slopes. No lakes or ponds. Extended snowmelt and seepage under cliffed slope facies and incised river banks.	Dominantly fluvial: rilling; gullying highly active locally, sheetwash, lateral stream erosion. Disaggregation by frost shattering. Mass movement minor. Eolian processes locally significant: sand ripples, etching of consolidated rock. Frost fissures possibly widespread, but troughs rarely evident.	50-80 cm.	Visible ice 0-25% in 10-50 cm below frost table, rare at greater depths. Frost fissures commonly have primary mineral filling.	Channel zones straight to slightly sinuous, wide. Structurally controlled where rock beds steeply inclined. Bedload silt; minor clay, mudstone and sandstone fragments. Sand dominant where upstream units coarser grained. Banks gentle to cliffed; more stable than units 5 or 9, but scattered earthflows on Kc.	None.	Low	a	2-3	2/1
3	f, sf R: KTe-1, Kk, Kc	Fine grained generally soft and recessive rock and residual weathered rock.	Variable clayey silt to clay, platy shale fragments, 0.5-2 m thick over poorly lithified shale. Minor fine sand and outcrop of poorly to well lithified shale, siltstone or sandstone, particularly on KTe-1. Locally abundant mudstone and ironstone concretions from 1 cm to 5 m diameter. Discontinuous cover of lag fragments, particularly on Kk. Silty shaly cover over Kk far more permeable than dense clay or silty clay of Kc. pH highly acidic (Kk) to slightly basic (Kc). See also rock formation-lithology superscript.	Slopes gentle to moderate, minor steep or cliffed segments. Rounded terrain, commonly with broad strike aligned ridges, though Kk has two strike aligned scarps to 60 m high, to 50 km long broken only by water gaps. Kk commonly highly dissected by gullies.	Divides moderately well drained in dry summer, poorly drained in wet summer; slopes moderately to poorly drained. KTe-1 and Kk better drained than Kc. Extended seepage period where snowbanks under steep slope segments. Local areas of ponding in fissure troughs; rare enlargement into ponds up to 3 m diameter. Desiccation: when rainfall above average, active layer may remain saturated or moist until freeze-up; in normal or dry years, active layer dries downwards with a desiccated crust overlying a saturated layer.	Fluvial action on all formations, plus mass movement on Kc. Fluvial: rilling, headward erosion of rills and runs, gullying. Mass movement by frost heave on Kc on slopes of all inclinations in wet year, though not as commonly as in unit 9. Eolian erosion has produced lag veneer on Kk. Frost fissure polygons are common, ranging from wide rectangular pattern troughs on Kk, to narrow troughs on Kc.	30-60 cm.	Visible ice 5-90% in 2 m below frost table; average value probably 30-40%. Ice lenses >10 cm thick common. Frost fissures ice filled.	Channels straight to slightly sinuous, narrow to wide. Structurally controlled where rock beds steeply inclined. Bedload silt; minor clay, mudstone and sandstone fragments. Sand dominant where upstream units coarser grained. Banks gentle to cliffed; more stable than units 5 or 9, but scattered earthflows on Kc.	None.	Medium	abc	2	3/2
1	R: Pe, I	Diapiric domes including dykes and sills.	Large crystals to grains of gypsum, green and hydrite outcrop, unfriable gabbro blocks and sand silt clay residual material and colluvium; minor limestone and dolomite rubble.	Domes to 250 m high. Extremely rugged, fluted by ravines and gullies, local relief to 200 m. Crown of dome lower relief, particularly where intrusive rock is present. Microrelief of evaporites is rough.	Radial network; stream density higher on evaporites than intrusives. Rare lakes. Evaporites well drained where dissected (i.e., much of unit); moderately to poorly drained on gentle slopes. Intrusives and colluvium moderately well to poorly drained, with little organized drainage beyond first order streams.	Evaporites highly susceptible to solution pitting and gullying; lesser talus creep and rockfall; slopewash and rilling on dykes. On intrusives and colluvium long rills and runs; lesser slow mass movement, with solifluction lobes to 1 m high on coarsest material; disaggregation of outcrop and rubble.	No data.	No data.	Channel zones straight to sinuous. Bedload coarse grained; angular intrusive rubble, gravel, sand. High order streams commonly deeply incised, with banks of cliffed outcrop, or rubble at angle of repose.	Steep or cliffed to sea level, with gravel or rubble modern and raised beach berms.	Low		3	2/1

* UNIT
Discontinuity in sequence where units present on other islands not present here.

★向★ SENSITIVITY AND TRAFFICABILITY	"	"	"	"
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