BC Geological Survey

Open File 2009-11

Saltspring Island Geology

adjoining quadrants of NTS 92B/11, 12, 13 &14

Hugh J. Greenwood with Mitchell G. Mihalynuk

Scale 1:25 000

0 kilometres 2.5

LEGEND

LAYERED ROCKS

CRETACEOUS

Nanaimo Group

KS — Spray Formation
Recessive-weathering sandstone-mudstone turbidite and massive mudstone. Platy habit and Bouma sequence bed forms are typical. Inoceramid bivalve fossils are present, but commonly broken.

KGs — Geoffrey Formation
Thick-bedded sandstone: bed forms indicate deposition from turbidity currents.

KGc — Conglomerate: central interbed within Geoffrey Formation sandstone.

KN — Northumberland Formation
Recessive-weathering mudstone and fine-grained sandstone. "Ribbed" couplets of sandstone and mudstone display turbidite features.

KD — DeCourcy Formation
Thick-bedded sandstones and arkosic arenite with minor pebbly conglomerate.

KCd — Cedar District Formation
Interbedded sandstone and mudstone with soft-sediment deformation features. Sandstone-mudstone couples are interpreted as deposited from turbidity currents. Ammonites are locally common.

KP — Protection Formation
Thick-bedded medium-grained sandstone displaying cross-bedding, sole-marks and burrows. Thin-bedded siltstone marks a transition to the underlying unit.

KG — Ganges (Pender) Formation
Thin-bedded mudstone, siltstone and fine-grained sandstone with excellent turbidite structures.

KEs — Extension Formation
Pebble and cobble conglomerate (KEc) with coarse-grained sandstone facies (KEs) at both top and bottom of the unit. Coal debris is common.

KEc — Conglomerate with clasts dominated by mafic volcanic rocks, chert, and granite.

KH — Haslam Formation
Massive concretionary fossiliferous black shale and mudstone. Locally contains coal fragments.

KC — Comox Formation
Fine to medium-grained sandstone with trace fossil borings near Arnell Park. Where the Benson is absent, Comox sandstone rests directly on Paleozoic rocks.

KB — Benson Formation
Coarse boulder conglomerate with clasts including granite, greenstone, chert, quartzite, and granodiorite. Variable thickness due to its deposition on an irregular paleotopography consisting of Paleozoic granitic, volcanic, and sedimentary rocks.

CARBONIFEROUS TO PERMIAN

Buttle Lake Group

CPFa — Fourth Lake Formation
Black slaty argillite, massive and uniform with calcareous siltstone components. Minor light-coloured cherty tuff (CPFt).

CPFt — Light-coloured cherty tuff.

Sicker Group

DMp — McLaughlin Ridge Formation
Well-bedded volcaniclastic sediments gradationally overlying the Nitinat Formation. Pyroclastic breccia with ovoid vesicular clasts 1- to 15 cm floating in a matrix of ash-sized fragments.

DMt — Thin-bedded light-coloured felsic tuff. In many places very fine-grained and cherty in appearance.

DMg — Volcanic-rich greywacke with tuffaceous components.

DN — Nitinat Formation
Pyroxene-phyric mafic agglomerate, pyroxene bearing tuffs, lapilli tuffs and flows. Individual sub units and flows are difficult to trace confidently. Pyroxene crystals are commonly altered to actinolite.

DNm — Massive greenstone unit may in large part be intrusive rocks of dioritic composition.

INTRUSIVE ROCKS

Mount Hall Gabbro Sills

TrMg — Gabbroic sills intrusive into Paleozoic strata. Tholeiitic basalt with conspicuous glomeroporphyritic texture ("Flower Gabbro") especially along upper contacts. Similar textures have been observed in Karmutsen volcanic rocks. Local pockets of coarse grained hornblende pegmatite.

Saltspring Intrusions

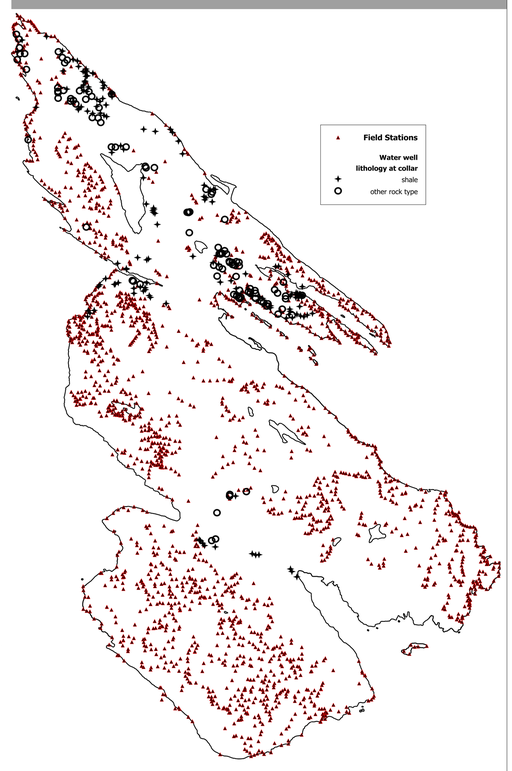
Dg — Granite and granodiorite, undivided (Dg) commonly protomylonitic with conspicuous quartz 'eyes'. Produces a hornfels texture in Nitinat Formation country rocks.

Dgl — Leucocratic granite (Dgl) occurs near Yeo Point with no clear contact relations.

SYMBOLS

Geological contact; defined, approximate, inferred
Form lines
Unconformity; defined, approximate, inferred
Fault; defined, approximate, inferred
Thrust fault; defined, approximate, inferred
Axial trace of regional fold; antiform, anticline, synform, syncline
Bedding: tops indicated, overturned, inclined, vertical
Fabric: Jointing; slaty cleavage or schistosity (inclined, vertical, second phase)
Fold axis, axial cleavage
Lineation: inclined, horizontal
Contact, Brittle shear, Slickenside, Reverse shear band
Glacial striae
Isotopic age date sample site: U-Pb zircon, K-Ar, Apatite fission track (see Sluggett, 2003) ..
Water well location and lithology: collared in shale or non-shale lithology
Flower porphyry
Cross section lines — A — A'
Towns — GANGES
Topographic contour (20 metre intervals) — 1200
Transportation routes: road (undivided), ferry
Lakes; Wetlands (swamps and marshes)
Outcrop (darker shade)

RELIABILITY DIAGRAM



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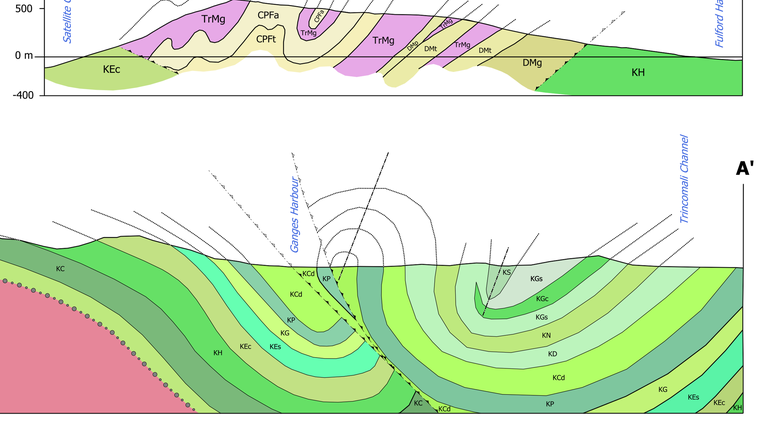
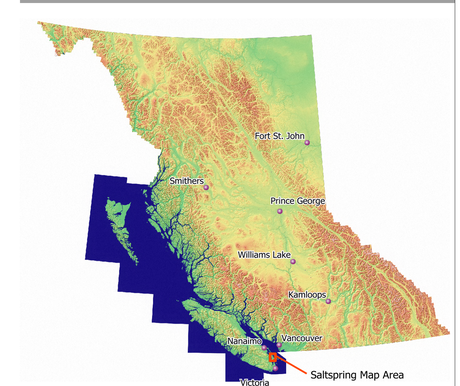
INTERPRETIVE CROSS SECTIONS



LOCATION



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