Greenwood
824806

Summary:

Tertiary volcaniclastic and flow rxs

Mesozoic volcanic + sed rxs

Mesozoic Plutons

pre-Tertiary stratiform rxs in series of 5, N-dipping thrust slices with bounding faults which at many places are marked by layers and lenses of deformed serpentinite.

Thrusts lie above high-grade metamorphic complexes

Mesozoic Rxs

Brooklyn Fm

clastic sed rxs, limestone, largely submarine pyroclastic breccias + related dioritic intrusions.

disrupted parts of an extensive ophiolitic sequence

Attwood Gp

dk gry arg, limestone, minor volcanic rxs

Knob Hill Gp

chert, greenstone, related diorite + serpentinite

Tertiary Rxs

- distribution controlled by complicated array of extension faults
- 3 sets recognized:
  1. gently E-dipping at or near base of Tertiary
  2. W dipping listric normal faults (caused rotation → Tert. strata dip to E at moderate angles).
  3. N to NE trending, steeply dipping, strongly hinged, influenced by the earlier faults

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Knob Hill Gp

Pkv - greenstones
- pillow lavas, bx, agglomerates
- aphanitic
- calcareous bslts + ands grade to massive Fg diorites, white-weathering feldspathic vnlts + lenses criss-cross

Pkc - gry, buff or creamy white cherts
- some arg, occasional lmst.
- chert mainly mixed with greenstone
- arg - grey to black, rarely show bedding

PkbX - cream-coloured + gry cht bx + pebble cong
[Little (1983) → Brooklyn Fm
Church (1986) → Attwood Gp]

Pkm - schists, quartzites, gneisses, amphibolite, marble, dolomite, calcsilicate gneiss, mylonite

Age:
Carboniferous or Permian
established by Little (1983, p. 12) from a single fossil locality

Old Diorite - narrow belt above Lind Creek fault.
- cg hbld dior with many criss-crossing light coloured veins of felsic rxs.
- grades to fg diorite which grades to ~~fg~~ greenstone
- closely associated with serpentinite
- age (K-Ar) 258 ± 10 Ma
- fragments found in Brooklyn Fm conglomerates.

Serpentinite - occurs in irregular lenticular bodies in relatively undeformed parts of the Knob Hill Gp and as fairly continuous sheets along faults

- either blocky or schistose antigorite serpentinite or brown-weathered altered serpentinite, referred to as listwanite

antigorite serpentinite - dark green to black with a greasy or rough surface which weathers blue-grey, dark green or brown

listwanite - yellow-brown weathering, hard, aphanitic, grey to light grey rx with vnlts of qz, Fe-carb + flecks of dark minerals and locally of bright green mica.

serpentinite - most continuous layers along Lind Creek

- layers are sinuous, generally dip northward at low to moderate angles ~// to foliation and attitudes of adjacent rxs
- range in size from small lenses to prominent masses estimated to be as much as 700m thick.
- internally, either blocky + massive or foliated; foliated serpentinites have irregular weaving planes of schistosity

commonly surrounding boudins of blocky serpentinite and locally of the wallrocks

- some areas, foliations outline local folds
- interpreted to be tectonically emplaced along structures as they developed at various times during the Mesozoic and Tertiary
- part of, with Old Diorite + greenstones of the Knob Hill Gp, a disrupted ophiolite suite
- Carboniferous or Permian

Attwood Gp

- mainly: dark grey to black argillite
  siliceous argillite
  phyllite and slate
  light and dark grey limestone
  (minor) chert- + argillite-chip conglomerate
  (minor) greenstone

- stratigraphic relationship with Knob Hill Gp is unknown
- rocks are tightly folded; internal stratigraphy has not been worked out.
- forms a sliver between the serpentinite + old diorite on the LIND CK FAULT to the north and serpentinite along the Mount Wright fault to the south.
- volcanic rxs within this belt occur only at

the head of Lind creek + along upper valley of Skeff Ck immediately south of and under the LIND CK FAULT

- Carboniferous or Permian

Brooklyn Fm

- unconformably overlies the Knob Hill and Attwood groups.
- exposed in erosional and faulted segments throughout the map area.
- 3 main lithological components:
  1. chert breccia (commonly referred to as sharpstone conglomerate)
  2. limestone
  3. volcanic rxs, including greenstone, green pyroclastic bx, subvolcanic microdiorite

all components are highly lenticular, and change rapidly through lateral and vertical transition zones containing sst, slst, calcareous sst + slst, cong + various volcaniclastic rxs.

Chert Breccia

- repeated at intervals throughout the section
- in places, higher fans coalesce with the basal fan.
- minor rhyolitic tuff and green tuffaceous

sandstone lenses suggest that the sharpstone may have originated through explosive volcanism or related to growth faults (though none have been recognized)

Limestone

- mid Triassic (Ladinian) age → from Conodonts.
- vary in lithology: grey and white limestone, dark grey flaggy argillaceous limestone, heterogeneous limestone breccias

Microdiorite

- appear to be feeders for greenstone and pyroclastic breccia
- K-Ar date 206 ± 8 Ma on amphibole (suggesting a younger age for the microdiorite)

Maroon Limestone-Cobble Conglomerate

- lies disconformably above the basal sharpstone
- cobbles of limestone up to 25cm across, supported by a matrix of tuffaceous maroon siltstone and sandstone
- changes facies rapidly into finer grained locally calcareous volcaniclastic rocks

[this unit with overlying Brooklyn limestones and clastic rxs. to the north, are disconformably overlain by a thick member of fragmental greenstone

Black Siltstones (3 places: 2 ~1km SE of Phoenix, other W of Granby River)

- mapped as members of the Brooklyn Formation (at three places in the map area).
- ~100m thick
- underlain by massive, buff-weathering chert breccia ~250m thick. (dip at low angles to the NW)
- overlain and grades upward and laterally into the lower sharpstone conglomerate.
- the underlying chert bx is in turn underlain by ~30m of black siltstone which is also underlain by more chert breccia. (members dip at low angles to the NW, graded bedding + channeling show they are right-side-up, no indication of tight folding)

Limestone and Chert Breccia (3-4km W of midway)

- limestone - thick grey and white, massive or thick bedded, crystalline
- chert breccia - massive, fine to coarse grained
- chert breccia lies above and grades into the limestone, but stratigraphic top is not known.
- altered and intruded by many Tertiary dikes + other irregular bodies of QFP and GRDR

Lexington Quartz Feldspar Porphyry

- light coloured, medium-grained porphyry with medium to coarse phenocrysts of quartz and feldspar
- tapers eastward and becomes finer grained and highly sheared in the No. 7 fault zone and sheared serpentinites in Goosmus Creek
- these sheared porphyries host pyritic gold deposits on nearby mineral claims (ie Lexington, City of Paris)
- similar felsic plutons to the west are variable, generally grey, equigranular or porphyritic, and range from diorite to quartz monzonite.

Nelson Intrusions

- mainly granodiorite but include quartz diorite and diorite
- zones of hornfels and skarns of various widths occur adjacent to the plutons.

hornfelsing + skarns:

- SW area, grey siltstone becomes rusty weathering blocky hornfels within 300m of grdr contact
- N + NE area, hornfels and skarn occur in all pre Tertiary rxs of appropriate composition within 3 or 4 km of Wallace Creek batholith.:

gry slst + chrts → rusty (po) + purplish (biot)

grnstn → amphibolite, lower grades-epidote

slst, calcareous → epid, biot hornfels, locally andalusite, zoisite, pyroxene

Skarns with pyrite, pyrrhotite, hematite, magnetite, chalcopyrite, locally bornite, chalcocite + Cu° constitutes ore which has been produced from:

Copper Camp
Mother Lode-Deadwood Camp
Phoenix
Summit Camp

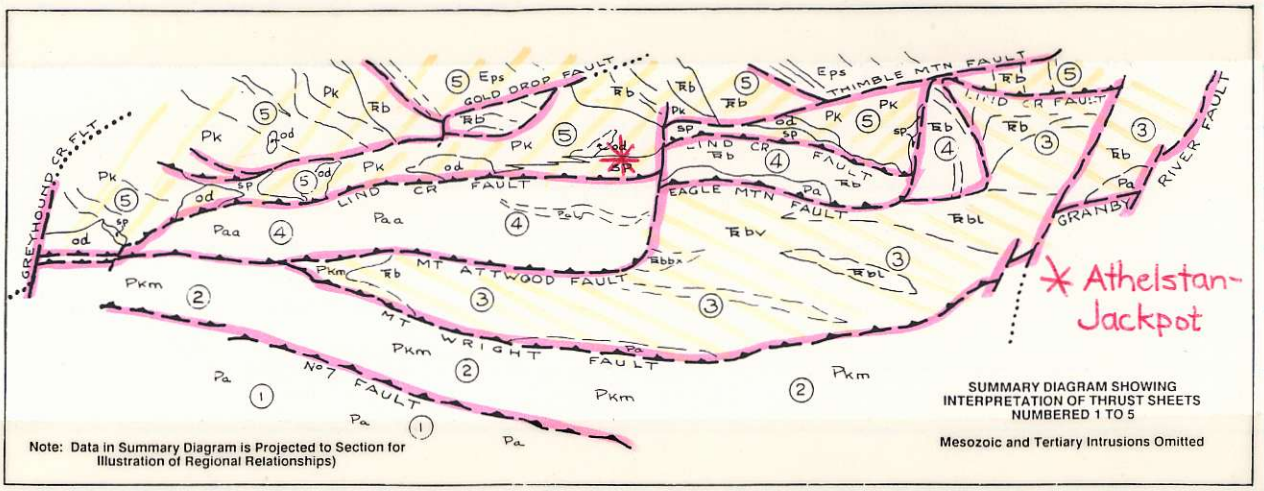
Tertiary

Penticton Group

- Tertiary
- sedimentary and volcaniclastic rxs, dikes, sills + irregular small plutons of alkalic rx
- Kettle River Fm, Marron Fm

Structure

- Five northward-dipping thrust sheets
- extensional fault regime



PreTertiary Structures

the main elements:

- thrust faults commonly marked by layers and lenses of serpentinite
- fold and fault structures within each fault slice, differ from one slice to another.
- large + small-scale folds with axes plunging to the north, and steeply dipping axial planes present in fault slices ∴ probably Mesozoic
- regional Northward dip of strata and thrust faults probably caused by development of gneiss domes before deposition of Penticton Gp + after emplacement of the Nelson plutons

Fifth Thrust Sheet

LIND CREEK FAULT forms footwall dips to north beneath the serpentinite and Old Diorite and the lower parts of the Knob Hill Group.