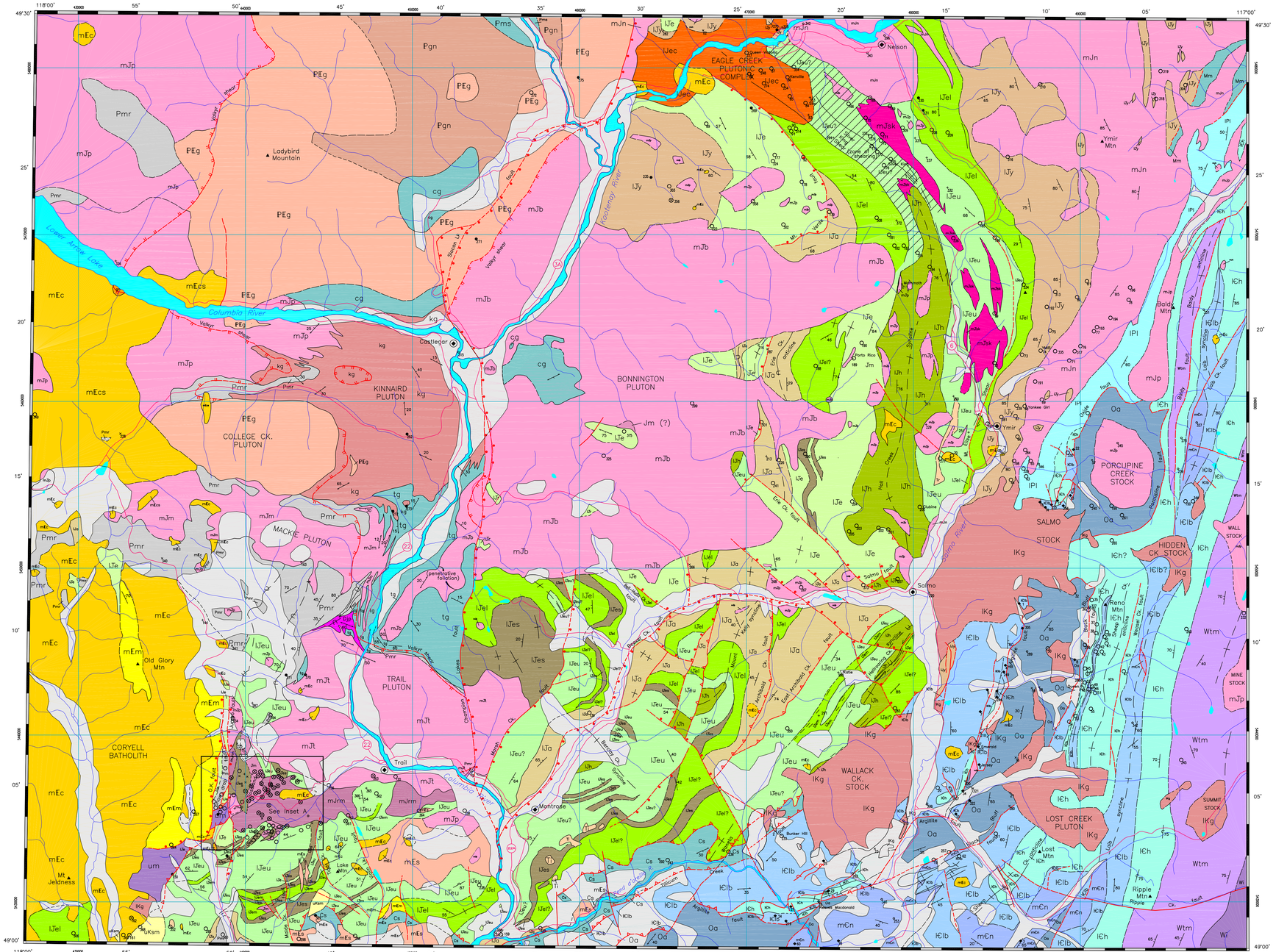

BRITISH COLUMBIA
Ministry of Energy and Mines
Energy and Minerals Division
Geological Survey Branch

Geoscience Map 1998-1

GEOLOGICAL COMPILATION OF THE TRAIL MAP-AREA SOUTHEASTERN BRITISH COLUMBIA

082F/3,4,5,6

Compiled by:
Höy, T. and Dunne, K.P.E.

SCALE 1:100,000

0 10km

REFERENCE MAP

LEGEND

CENOZOIC

TERTIARY

- Tr — rhyolite dikes
- Ti — hornblende–feldspar and hornblende porphyries

MIDDLE EOCENE

- mEc — CORYELL INTRUSIONS: biotite monzonite, biotite – augite monzonite; mEcs–syenite; mEcg–"granitic"; gn–gneissic
- mEs — SHEPPARD INTRUSIONS: granite, rhyolite dikes
- mEm — MARRON FORMATION: andesite flows; minor lapilli tuff, tuffaceous sandstone and tuffaceous conglomerate

EOCENE – PALEOCENE

- PEg — leucocratic biotite quartz monzonite, granite

PALEOCENE

- Pgn — K–feldspar megacrystic biotite–hornblende quartz monzonite

MESOZOIC

LATE CRETACEOUS

- uKsm — SOPHIE MTN FORMATION: coarse conglomerate with quartzite and/or siltstone clasts, minor argillite

EARLY CRETACEOUS

- lKg — granite, quartz porphyry, granitic gneiss; kg–kinnaird pluton; Kinnaird gneiss

MIDDLE TO EARLY JURASSIC

- mJp — NELSON INTRUSIONS: includes Nelson, Bonnington (mJb), Trail (mJt), and Mackie (mJm) plutons: porphyritic granite, granodiorite, quartz monzonite, tonalite; minor diorite, porphyry and breccia

EARLY TO MIDDLE JURASSIC

- mJrm — ROSSLAND MONZONITE: biotite/biotite–augite monzonite, monzodiorite
- mJsk — SILVER KING INTRUSIONS: plagioclase porphyry (leucodiorite)
- Jec — EAGLE CREEK PLUTONIC COMPLEX: diorite, gabbro, meta–diorite, pyroxenite, monzonite
- Jm — monzogabbro; monzonite, diorite

EARLY JURASSIC

- lJr — ROSSLAND GROUP: mafic to intermediate flows and tuffs, tuffites, argillaceous siltstone, turbidite siltstone and wacke, minor pebble conglomerate and subvolcanic intrusions
- lJh — HALL FORMATION: argillite, carbonaceous siltstone; minor pebble conglomerate and carbonate
- lJe — ELISE FORMATION: mafic flows, pyroclastic breccia; mafic to intermediate tuffs, tuffites
- lJes — Elise sedimentary rock: argillaceous siltstone
- lJeu — Upper Elise Formation: basaltic to andesitic lapilli, crystal and fine tuff, mafic flows, tuffaceous siltstone and conglomerate; Uem–mafic flows
- lJel — Lower Elise Formation: basaltic flows and flow breccias, basaltic pyroclastic breccia, minor basaltic to andesitic crystal and fine tuff
- lJa — ARCHIBALD FORMATION: argillite, turbidite siltstone, conglomerate and minor maroon siltstone

EARLY JURASSIC AND LATE TRIASSIC (?)

- lJy — YMIR GROUP: argillite, siltstone, grit, impure limestone; minor chert, wacke; generally rusty–weathering

DEVONIAN TO EOCENE (?)

- tg — TRAIL GNEISS: amphibolite and biotite gneiss, hornblende gneiss, minor schist, pegmatite and aplite

PENNSYLVANIAN (?)

- cg — CASTLEGAR GNEISS COMPLEX: heterogeneous hornblende ±biotite quartz–feldspar paragneiss, amphibolite, calc–silicate gneiss, orthogneiss

DEVONIAN

- DJp — JOHNSON CREEK PLUTON: trondhjemite

PALEOZOIC

- um — ULTRAMAFIC ROCKS: serpentinite, minor dunite

PENNSYLVANIAN TO PERMIAN

- Pmr — MOUNT ROBERTS FORMATION: siliceous siltstone, argillite, silty chert; minor sandstone and limestone or dolomite

LATE MISSISSIPPIAN TO LOWER PERMIAN

- Mm — MILFORD GROUP: siliceous argillite and phyllite, grey limestone; chert

CARBONIFEROUS

- Cs — argillite, silty argillite, siltstone; minor limestone (probably equivalent to Pms)

EARLY PALEOZOIC

- lPl — LARDEAU GROUP: quartzite, schist, argillite, slate, limestone; minor igneous members; may include lKh

EARLY AND (?) MIDDLE ORDOVICIAN

- Oa — ACTIVE FORMATION: black argillite, slate, quartzite

MIDDLE CAMBRIAN

- mCn — NELWAY FORMATION: black limestone, calcareous argillite, slate, and phyllite

EARLY CAMBRIAN

- lCb — LAIB FORMATION: phyllite, argillite, schist, micaceous quartzite; Reeves (Badshot) limestone member

EARLY CAMBRIAN TO NEOPROTEROZOIC

- lCh — HAMILL GROUP: argillite, micaceous schist, quartzite, argillaceous quartzite; Reno and Quartzite Range Formations

PRECAMBRIAN

NEOPROTEROZOIC

WINDERMERE SUPERGROUP

- Wtm — grit and quartzite, minor schist, limestone, argillite and phyllite; minor conglomerate; Three Sisters and Monk Formations
- Wi — IRENE FORMATION: greenstone, minor argillite, limestone

SOURCES OF DATA

Andrew, K.P.E., Höy, T. and Drobe, J. (1990): Stratigraphy and Tectonic Setting of the Archibald and Elise Formations, Rossland Group, Beaver Creek Area, southeastern British Columbia; B.C. Ministry of Energy, Mines and Petroleum Resources, Open File 1990–9.

Andrew, K.P.E., Höy, T. and Simony, P.S. (1991): Geology of the Trail Map Area, southeastern British Columbia; B.C. Ministry of Energy, Mines and Petroleum Resources, Open File 1991–16.

Carr, S.D. (1986): The Valkyr shear zone and the Slocan Lake fault zone: Eocene structures that bound the Valhalla gneiss complex, southeastern British Columbia, M.Sc. thesis.

Einersen, J.M. (1994): Structural geology of the Pend d'Oreille area and tectonic evolution of the Southern Kootenay Arc; unpublished Ph.D. thesis, The University of Calgary.

Fyles, J.T. (1984): Geological Setting of the Rossland Mining Camp; B.C. Ministry of Energy, Mines and Petroleum Resources, Bulletin 74.

Fyles, J.T. and Hewlett, C.G. (1959): Stratigraphy and structure of the Salmo Lead–Zinc Area; British Columbia Department of Mines, Bulletin 41.

Höy, T. and Andrew, K.P.E. (1989): Geology of the Rossland Group, Nelson Map Area, southeastern British Columbia; B.C. Ministry of Energy, Mines and Petroleum Resources, Open File 1989–1.

Höy, T. and Andrew, K.P.E. (1990): Geology of the Mount Kelly–Hellroaring Creek Map Area, Southeastern British Columbia; B.C. Ministry of Energy, Mines and Petroleum Resources, Open File 1990–8.

Höy, T. and Andrew, K.P.E. (1991): Geology of the Rossland–Trail Map Area Southeastern Columbia; B.C. Ministry of Energy, Mines and Petroleum Resources, Open File 1991–2.

Höy, T. and Dunne, K.P.E. (1997): Early Jurassic Rossland Group, Southern British Columbia; Part 1: Stratigraphy and Tectonics; B.C. Ministry of Employment and Investment, Bulletin 102.

Little, H.W. (1960): Nelson Map Area, West–Half, British Columbia, Geological Survey of Canada, Memoir 308.

Little, H.W. (1964): Geology, Ymir Map Area, British Columbia, Geological Survey of Canada, Map 1144A.

Little, H.W. (1965): Geology, Salmo Map Area, British Columbia, Geological Survey of Canada, Map 1145A.

Little, H.W. (1982a): Geology, Bonnington Map Area, British Columbia Geological Survey of Canada, Map 1571A.

Little, H.W. (1982b): Geology, Rossland–Trail Map Area, British Columbia, Geological Survey of Canada, Paper 79–26.

Reesor, J.E. and Leclair, A.E. (1983): Nelson East–Half Map Area; Geological Survey of Canada, Open File 929.

Simony, P.S. and Carr, S.D. (1997): Large lateral ramps in the Eocene Valkyr shear zone: extensional ductile faulting controlled by plutonism in southern British Columbia; Journal of Structural Geology, v. 19.

ACKNOWLEDGEMENTS:
– cartography by A.R. Pettipas, V.M. Koyanagi;
– discussions with B. Doyle, J.T. Fyles, W. Howard, P.S. Simony, and J. Vogl;
– mineral occurrence data from MINFILE.
– digital map production by Glenn Letham, Axys Environmental Consulting, Ltd.

SYMBOLS

- limit of exposures
- geological contact (defined, approximate, assumed)
- fault (defined, approximate, assumed)
- river/stream/creek
- highway/major road
- fault; thrust,overturned,normal:early/late
- shear; zone, upper limit of shear strain
- Sense of motion
- anticline; upright, overturned
- syncline; upright, overturned
- bedding (inclined, vertical, overturned, tops unknown)
- cleavage, foliation

carbonate replacement	◆	skarn	×
massive sulphide	▲	porphyry	+
vein	○	unknown	●
vein: Au–Cu	⊘	industrial mineral	⋄

Rossland Area