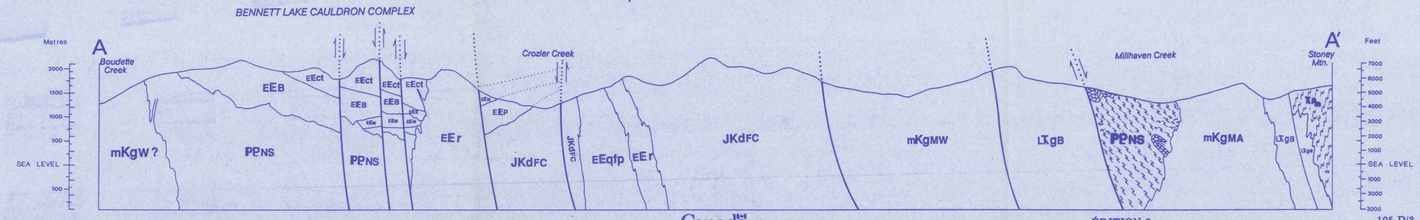
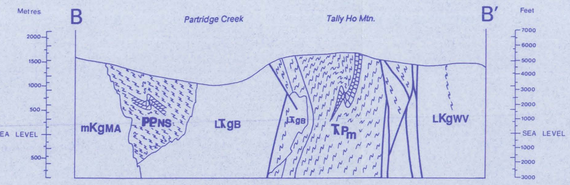
Canada

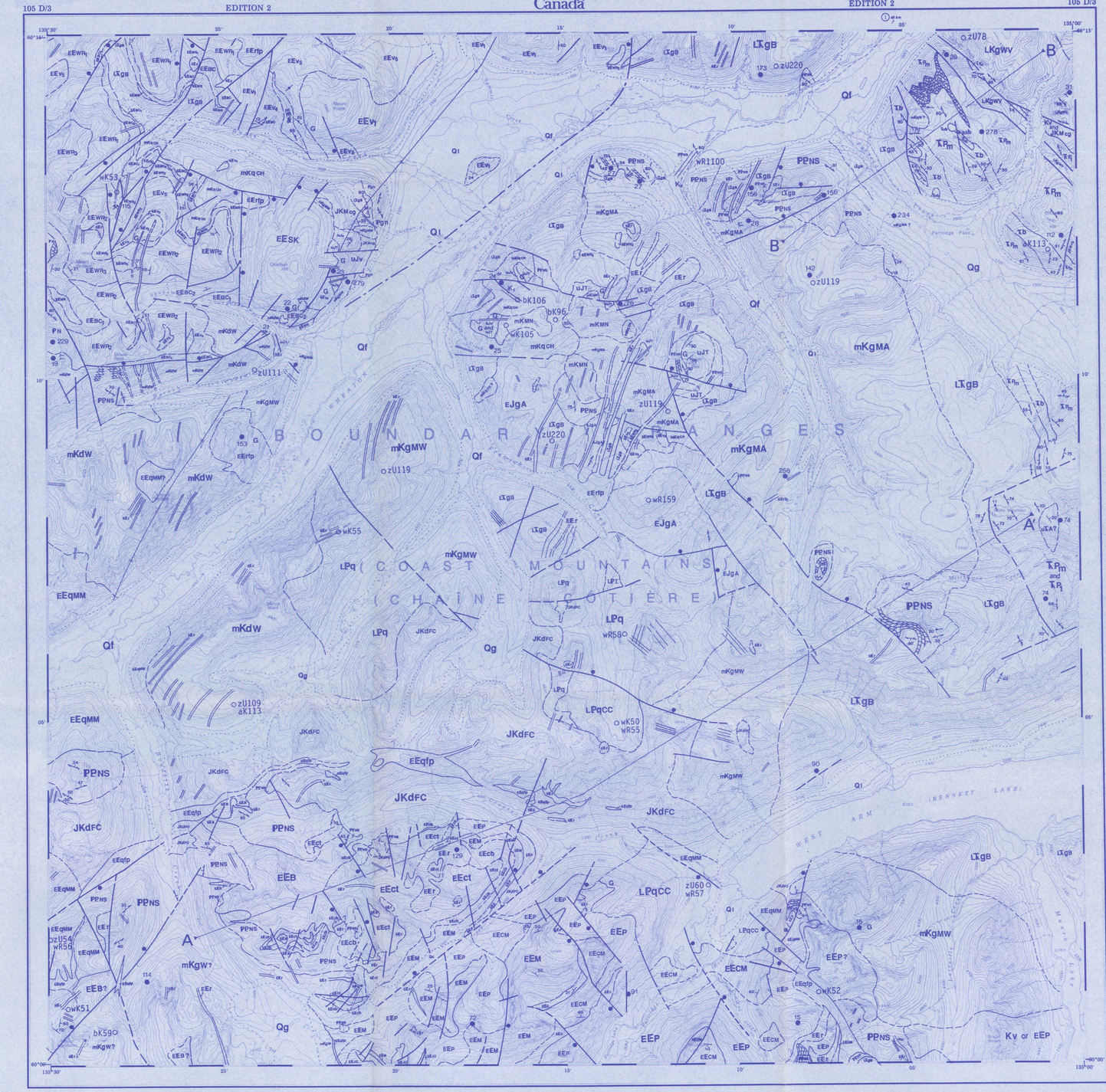
canada/yukon economic development agreement

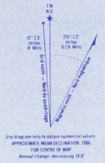
Yukon





105 D/3 EDITION 2 — Canada — ÉDITION 2 105 D/3





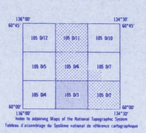
FENWICK CREEK
YUKON TERRITORY TERRITOIRE DU YUKON

Scale 1:50 000 Échelle

Miles 1 0 1 2 3 Miles
Metres 1000 0 1000 2000 3000 4000 Metres

CONVERSION SCALE FOR ELEVATIONS ÉCHELLE DE CONVERSION DES ALTITUDES
Metres 300 250 200 150 100 50 0 300 Metres
Feet 1000 900 800 700 600 500 400 300 200 100 0 1000 Feuds

CONTOUR INTERVAL 100 FEET
Elevations in Feet above Mean Sea Level
North American Datum 1927
Transverse Mercator Projection



Index to adjoining Maps of the National Topographic System
Tableau d'assemblage du Système national de référence cartographique

LEGEND

QUATERNARY

- **Qf** — Unconsolidated gravel, sand and silt of fluvial or glaciofluvial origin
- **Ql** — Unconsolidated gravel, sand, silt and varved clay of lacustrine or glaciolacustrine origin
- **Qg** — Unconsolidated glacial moraine, kame, esker and drift material
- **Qc** — Unconsolidated, locally derived colluvium and felsenmeer

TERTIARY
EARLY EOCENE

SKUKUM GROUP

- **EEqfp** — Pale to rusty orange weathering,coarse grained quartz-feldspar rhyolite porphyry with accessory fluorite; occurs as small plugs and ring dykes (Bennett Lake Complex); may be equivalent to Nisling Range Alaskite (51 Ma K-Ar)[2]

BENNETT LAKE CAULDERA COMPLEX
BOUDETTE CREEK FORMATION

- **EEBc** — Ignimbrite, tuff, boulder conglomerate

JONES CREEK FORMATION

- **EEJc** — Basalt, rhyolite, and tuff
- **EECt** — **Crozier Tuff and Lava:** tuff, ignimbrite, and rhyolite lava

LEMIEUX CREEK FORMATION

- **EELc** — Granitic boulder conglomerate and breccia
- **EECb** — **Crozier Breccia:** Volcanic breccia and conglomerate

MACCAULEY CREEK FORMATION

- **EEM** — Ignimbrite

GAULT FORMATION

- **EEG** — Granite boulder conglomerate

CLEFT MOUNTAIN FORMATION

- **EECM** — Ignimbrite, dacite, and andesite lava

PARTRIDGE LAKE FORMATION

- **EEP** — Ignimbrite

MOUNT SKUKUM VOLCANIC COMPLEX

- **EErfp** — Buff weathering domes, plugs and laccoliths of coarse-grained rhyolite feldspar porphyry; may be equivalent to Nisling Range Alaskite (53 Ma Rb-Sr)[3]
- **EEr** — Flaggy, orange, rusty orange, to white orange, mauve or tan, fine-grained rhyolite dykes, dyke swarms, and flow domes; composite dykes are common
- **EESK** — Undifferentiated Skukum Group volcanic rocks

UPPER VESUVIUS FORMATION

- **EEV$_5$** — Light tan-brown, well-bedded airfall tuff, epiclastic sandstone and siltstone
- **EEV$_4$** — Flaggy, dark red, purple to grey, white to pale green flow banded, auto-brecciated and spherulitic rhyolite flows
- **EEV$_3$** — Well-bedded, purple and grey rhyolite tuff and lithic tuff; probably equivalent to EE$_{V2}$ or EE$_{V5}$
- **EEV$_2$** — Intra-caudera collapse breccia, composed of very large blocks of flow banded rhyolite (EE$_{V5}$)

LOWER VESUVIUS FORMATION

- **EEV$_1$** — Dark reddish brown, columnar jointed densely welded tuff; includes unwelded tuff on Vesuvius Hill

WATSON RIVER FORMATION

- **EEWR$_2$** — Massive to well-bedded, pastel coloured, slighlty altered rhyolite to intermediate tuff, lithic tuff and welded tuff
- **EEWR$_1$** — Massive to poorly-bedded, dark brown and purple to pale green, commonly columnar-jointed andesite and andesite porphyry flows and associated tuff; exposures on Carbon Hill are lithologically similar and assumed to be equivalent

BUTTE CREEK FORMATION

- **EEBC** — Pale green dacitic to andesitic lithic tuff, commonly densely welded
- **EEBC$_2$** — Undivided tuff and epiclastic rocks
- **EEBC$_1$** — Interlayered epiclastic sediments, bedded tuff, and lithic tuff

MOUNT REID FORMATION

- **EEMR** — Moderately well-bedded, pastel coloured felsic and altered felsic pyroclastic rocks, commonly interbedded with associated grey, green, and purple epiclastic rocks

EARLY EOCENE TO LATE PALEOCENE

NISLING RANGE PLUTONIC SUITE

- **EEqMM** — Massive, hematitic, clast-supported, cobble and boulder conglomerate, contains locally derived basement fragments
- **LPqCC** — **Mt. McAuley Granite:** orange brown, crumbly weathering, medium- to coarse-grained smokey quartz eye, quartz-rich granite with secondary fluorite (54 Ma U-Pb)[1]
- **LPq** — **Crozier Creek Granite:** pale pink to orange brown weathering, medium- to coarse-grained leucocratic, biotite granite (60 Ma U-Pb)[1]
- **LPI** — **Leucogranite:** white weathering, medium-grained, saccharoidal textured, mafic-poor biotite granite (59 Ma Rb-Sr)[1]

IBEX FORMATION

Dark, vitreous flow-banded rhyo-dacite flows with sparse feldspar phenocrysts and welded tuff, commonly contains granitic fragments; older than Ibex Alaskite and unconformably (?) below Butte Creek Formation; may be part of Skukum Group

CRETACEOUS
LATE CRETACEOUS

- **LKgWV** — **Wheaton Valley Granodiorite:** dark grey weathering light grey, medium-grained, hornblende diorite, quartz diorite and lesser granodiorite; locally foliated (78 Ma U-Pb)[1]

CARMACKS (?) GROUP

- **Kv** — **Wheaton River Volcanics:** dark grey to green and maroon, aphanitic and porphyritic andesite to dacite flows, heterolithic breccia, agglomerate and associated epiclastic rocks (62-78 Ma K-Ar)[1]
- **Kvs** — **Intercalated Epiclastic Rocks:** Light grey and buff weathering, well-bedded tuff and epiclastic greywacke with minor sandy tuff and limestone

MID-CRETACEOUS

MT. MCINTYRE PLUTONIC SUITE

- **mKgMW** — **Mount Ward Granite:** light rusty orange weathering, medium-grained, quartz-rich, leucocratic biotite granite with euhedral plagioclase and aggregates of pink alkali feldpar (119 Ma U-Pb)[1]
- **mKqCH** — **Carbon Hill Plug:** Recessive, orange, granular weathering, red to pink and grey biotite quartz monzonite and granite; extensive chlorite and sericite alteration (97 Ma, K-Ar)[1]
- **K$_r$** — Pale to rusty orange and pale green saccharoidal rhyolite and aplite plugs and dykes with common pink K-feldspar and quartz eyes; more siliceous and fractures more conchoidal than Er (106 Ma K-Ar)[1]

WHITEHORSE PLUTONIC SUITE

- **mKgW** — **Whitehorse Pluton:** dark grey weathering, medium-grained biotite-hornblende granodiorite, tonalite, and diorite with common mafic xenoliths and local weak foliation (116 Ma K-Ar)[1]
- **mKqW** — **Leucocratic phase:** similar to and assumed to be equivalent with Whitehorse Pluton but with few mafic minerals
- **mKgMA** — **Mt. Anderson Pluton:** Euhedral biotite and porphyritic hornblende granodiorite; local white crumbly weathering areas indicative of argillic alteration (119 Ma U-Pb)[2]
- **mKdW** — **Mt. McNeil Pluton:** medium-grained, inhomogeneous granodiorite, characterized by local melanocratic accumulations of large, black hornblende phenocrysts

MOUNT NANSEN GROUP

- **mKMN** — Undifferentiated intermediate volcanic rocks, mostly andesite flows and breccia, assumed to belong the Mt. Nansen Group

JURASSIC OR CRETACEOUS

- **JKdFC** — **Fenwick Creek Diorite:** fine- to medium-grained acicular hornblende diorite, quartz diorite, and tonalite; phase of oligoclase olivine diorite, with mafic xenoliths
- **JKMcg** — **Millhaven Conglomerate:** Polymictic, clast-supported conglomerate composed of sub-angular clasts of quartz, quartzite, schits, granite, chert and intermediate volcanics; minor sandstone, greywacke, and shale

JURASSIC
UPPER JURASSIC

- **uJT** — TANTALUS FORMATION (OXFORDIAN-KIMMERIDGIAN) Massive to thickly bedded chert pebble conglomerate with recessive, poorly indurated, gritty sandstone and quartz sandstone with interbedded dark grey shale
- **uJv** — Rusty weathering, blue-grey andesite porphyry flows and breccia

EARLY JURASSIC

Alligator Quartz Monzonite: foliated hornblende quartz monzonite to granodiorite; white K-feldspar makes it appear like a quartz diorite (190 Ma U-Pb)[1]

LATE TRIASSIC

- **LTgB** — **Bennett Granite:** pink, potassium feldspar megacrystic, hornblende granite to granodiorite; associated easterly trending mafic dyke swarms (220 Ma U-Pb)[2]
- **TUb** — **Ultramafic rocks:** red-brown and dark green to black weathering pyroxenite and dunite, variably serpentinized and foliated
- **TD** — **Tally Ho Leucogabbro:** dark green-black and white, coarse-grained, penetratively foliated, gabbroic hornblende orthogneiss

UPPER TRIASSIC

LEWES RIVER GROUP (CARNIAN TO SINEMURIAN)
POVOAS FORMATION (CARNIAN AND OLDER?)

- **TP** — Resistant, massive light to dark green weathering, dark green to black, augite phyric basalt and basaltic andesite flows and breccia; minor well-indurated dark grey greywacke, agglomerate, tuff, and associated epiclastic rocks with thin carbonate beds.
- **TP$_1$** — Resistant, massive dark green to black, variably altered, coarse-grained augite porphyritic basalt and breccia, commonly with coeval (?) hornblendite
- **TP$_m$** — **Metamorphosed equivalent:** Foliated to massive pale to dark green plagioclase-hornblende amphibolite; laminated pale green quartzofeldspathic gneiss and massive amphibolite with relict augite phenocrysts; marble and rare quartzite

PALEOZOIC AND OLDER?

- **Pgn** — Undifferentiated, dark weathering, medium-grained, feldspar-hornblende orthogneiss

NASINA ASSEMBLAGE

- **PN** — Fissile, carbonaceous, quartz-rich garnet-mica schists; minor marble

NISLING ASSEMBLAGE

- **PPNS** — Resistant, slightly rusty weathering biotite-muscovite-quartz-feldspar schist, quartzite and micaceous quartzite; felsic chlorite-biotite orthogneiss and rare mafic amphibolite bands; white to dark-grey, granular marble

REFERENCES

[1] ARMSTRONG, R.L., 1990. Written communications.

[2] DOHERTY, R.A. and HART, C.J.R., 1988. Preliminary geology of Fenwick Creek (105D/3) and Alligator Lake (105D/6) map areas; Indian and Northern Affairs Canada: Yukon Region, Open File 1988-2.

[3] MORRISON, G.W., GODWIN, C.I., ARMSTRONG, R.L., 1979. Interpretation of isotopic ages and $^{87}Sr/^{86}Sr$ initial ratios for plutonic rocks in the Whitehorse map area, Yukon; Can. Jour. Earth Sci., Vol. 16, p. 1988-1997.

[4] PRIDE, M.J. and CLARK, G.S. 1985. An Eocene Rb-Sr isochron for rhyolite plugs, Skukum area, Yukon Territory; Can. Jour. Earth Sci., Vol. 22, p. 1747-1753.

SYMBOLS

- Limit of outcrop
- Geological boundary (defined, approximate, assumed)
- Bedding (top known, tops unknown)
- Primary igneous flow banding
- Dyke (inclined, vertical)
- Schistosity (metamorphic foliation and gneissosity)
- Mineral lineation
- Shear band
- Fault (defined, approximate, covered; ball on down dropped side)
- Fault (transcurrent)
- Mafic dike swarm
- Adit, caved
- Locality of isotopic age determination — wK81
  - Igneous, metamorphic, sedimentary rock
  - Material: amphibole, biotite, zircon, whole rock — a,b,z,w
  - Method: U-Pb, K-Ar, Rb-Sr — U,K,R
- Cross section line — A A'
- Mine or past producer (Numbers refer to INAC Yukon Exploration volume) — 115
- Mineral occcurrence (Numbers refer to INAC Yukon Exploration volume) — 129
- Lineament
- Gossan — G
- Breccia

COMPILATION SOURCES

CAIRNES, D.D., 1912. Wheaton River District, Yukon Territory. Geol. Surv. Can., Memoir 31, 153 p.

COCKFIELD, W.E. and BELL, A.H., 1944. Whitehorse District, Yukon. Geol. Surv. Can., Paper 44-14

DOHERTY, R.A. and HART, C.J.R., 1988. Preliminary geology of Fenwick Creek (105 D/3) and Alligator Lake (105 D/6) map areas. Indian and Northern Affairs Canada: Yukon Region, Open File 1988-2.

LAMBERT, M.B., 1974. The Bennett Lake Cauldron subsidence complex, British Columbia and Yukon Territory. Geol. Surv. Can., Bulletin 227, 213 p.

LOVE, D. A., 1989. Geology of the epithermal Mount Skukum gold deposit, Yukon Territory. Geol. Surv. Can., Open File 2123, 51 p.

PRIDE, M.J., 1985. Preliminary geological map of the Mount Skukum Volcanic Complex, 105 D/2, 3, 4, 5. Exploration and Geological Services Division, Yukon, Open File 1985.

WHEELER, J.O., 1961. Whitehorse map-area, Yukon Territory, 105 D. Geol. Surv. Can. Memoir 312 (Includes Map 1093), 156 p.

MINERAL OCCURRENCES

YEX Number	NAME	Commodity
15	LATREILLE	Cu,Mo
19	CHARLESTON	Au,Ag,Pb,Zn,As
21	MT. REID	Au,Ag,As,Pb,Zn,Sb,Cu
22	RACA	Cu,Ag,Au,Sb
23	MORNING	Sb,Zn,As
24	GODDELL	Sb,Zn,As
25	PORTER	Sb,Ag,Pb,Zn,Au
26	BECKER-COCHRAN	Sb,Ag,Pb,Zn,Au
27	FLEMING	Cu,Fe
28	MT. ANDERSON	Pb,Ag,Au
29	TALLY-HO	Ag,Au,Pb
31	BUFFALO	Au,Ag
72	SHAW	Cu,Pb,Zn,Ag,Au
74	OPULENCE	Sb,Ba
90	WEST	U
91	PART	Au,Ag,Pb
112	ODD	Cu,Ag
114	NAIAD	Pb,Ag
115	MT. SKUKUM MINE	Au,Ag
129	GLENLIVET	Au,Ag,Pb
142	TYCON	Au,Ag
153	SCAR	Au,Ag,Pb,Zn
155	ROB	Au,Ag
173	WAL(MR)	Au,Ag
229	EARL	Au,Ag,Pb,Zn,As
234	FOXMO	Mo
258	CRAIG	Ag,Sb,Pb,Zn,Cu
278	SILVER QUEEN	Au
279	OCEAN	Ag,Au,Sb,Zn

Indian and Northern Affairs Canada
Exploration and Geological Services Division
Yukon Region

GEOLOGICAL MAP OF FENWICK CREEK (105D/ 3) MAP AREA

Geology by C.J.R. Hart, R.A. Doherty, J.K. Radloff, J.A. Hunt, M.P. Fingland, and J. Wegenast

to accompany

OPEN FILE REPORT 1990-4

Geology of Whitehorse, Alligator Lake, Fenwick Creek, Carcross and part of Robinson map areas (105D/11,6,3,2,7); C.J.R. Hart and J.K. Radloff, Aurum Geological Consultants, Inc.

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