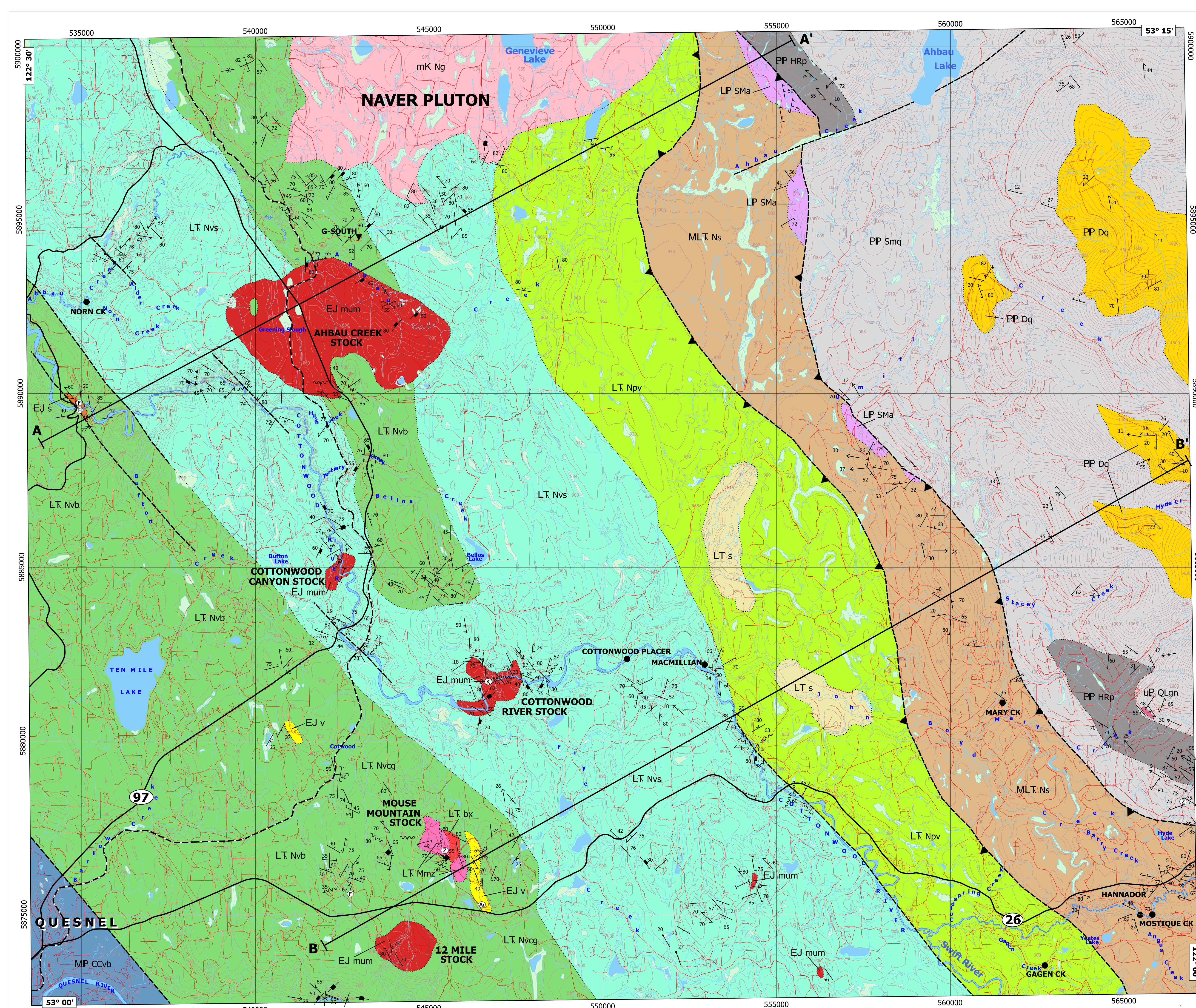




British Columbia Geological Survey
Open File 2008-6

Geology of the Cottonwood area, central British Columbia

NTS 93G/01

Mapping and compilation by J. M. Logan, G. Leroux and L. Able, MEMPR

Geochronology by T. D. Ullrich and R. Friedman, The University of British Columbia

Digital Cartography by J. M. Logan and C.-Y. M. Lin, MEMPR

Scale 1:50,000

British Columbia
This Mapsheet

True North
Grid North
Magnetic North

Approximate mean declination
December 1980 (approx. 2007)
UTM zone 11, NAD 83

Legend

INTRUSIVE ROCKS

Eocene
Ed Biotite lamprophyre dikes

mid-Cretaceous
NAVER PLUTON
mK Ng Potassium feldspar megacrystic biotite ± hornblende granite, equigranular quartz monzonite, aplite dikes
mJ qp Quartz-feldspar porphyry felsite dikes, medium-grained sucroic to aphanitic groundmass, minor biotite, magnetite and commonly 1-2% disseminated iron sulphides

Middle Jurassic (?)
Early Jurassic
EJ mum Coarse-grained pyroxenite, equigranular pyroxene-biotite diorite, hornblende-pyroxene monzodiorite, porphyritic potassium feldspar megacrystic, hornblende ± biotite monzonite to quartz syenite
LT bx Matrix to clast-supported, polyolithic intrusive-dominated pipe

Late Triassic
Mouse Mountain Stock
LT Mmz Pink, equigranular to microporphyritic pyroxene ± biotite monzonite, monzodiorite and crossite, characteristically trachytic potassium feldspar megacrystic syeno-monzonite

Late Devonian to Early Mississippian
Quesnel Lake Orthogneiss
uP QLgn Grey and pink, equigranular to foliated potassium feldspar megacrystic granite, equigranular pyroxene granodiorite

LAYERED ROCKS

Cache Creek Terrane
Mississippian to Late Triassic
MP CCvb Mafic volcanic breccia and flows; minor limestone, argillite and chert

Quesnel Terrane
Tertiary
Fraser Bend, Australian Creek and Crowntine Formations
LT s Poorly consolidated conglomerate, sandstone, mudstone, minor diatomite, lignite

Jurassic
EJ v Grey to white plagioclase-hornblende porphyritic ignimbrite, andesite and subvolcanic intrusions
EJ s Brown-grey siltstone, sandstone and volcanic conglomerate

Triassic
Nicola Group
LT Nvcg Maroon pyroxene and feldspar porphyry basalt clast-dominated breccia/conglomerate, crystal-litic sandstone and fine-grained heterolithic volcanics. Massive to thick bedded and well-sorted. Interbedded with chaotic matrix-supported mélange of volcanic and sedimentary units, rare bedded sections of graded volcanic siltstone and very fine sandstone
LT Nvb Pyroxene porphyry trachytic basalt flows and breccia, hyaloclastite
LT Nvs Thin, parallel & low angle wavy laminated grey, green, buff and black cherty argillite, volcanic siltstone, argillite and rare limestone horizons. Cleaved parallel to bedding into 50 mm thick domains separated by 2 mm phyllite partings
LT Npv Pyroxene porphyry basalt flows, blocky matrix-supported breccias and hyaloclastite
MLT Ns Thin interbedded grey and black, phyllite, graphitic ± pyritic argillite, buff and grey siltstone and fine sandstone with detrital muscovite and quartz. Polyolithic conglomerate horizons

Slide Mountain Terrane
Mississippian to Permian
LT v Coarse grained amphibolite, massive to weakly foliated serpentinite and sheared iron carbonate and talc-altered ultramafic rock

Barkerville Terrane
Proterozoic and Paleozoic
Snowshoe Group
EP Smq Grey and green, foliated micaceous quartzite, garnet-biotite-muscovite schist, phyllite, micaceous quartz gnt, calcareous schist and amphibolite
Harveys Ridge Succession
EP HRp Rusty-weathering, black siliceous phyllite, thin laminated graphitic siltite, micaceous quartzite and marble
Downey Succession
EP Dq Buff to pink orthoquartzite, weakly foliated micaceous layers, micaceous quartzite

Geological Symbols

Geological contact (defined, approximate, assumed).....

Bedding (inclined, vertical, tops known).....

Compositional layering (inclined).....

Igneous foliation (inclined, vertical).....

Dominant foliation (inclined, vertical).....

First crenulation cleavage (inclined, vertical).....

Brittle shear (inclined, vertical).....

Dike (inclined, vertical).....

Vein (inclined, vertical).....

Joint (inclined, vertical).....

Dextral shear bend (inclined, vertical).....

First crenulation lineation (plunge indicated).....

Fold axis

Axis of late, open folds.....

Slickenside lineation on fault (inclined, vertical).....

Mineral or stretching lineation (plunge indicated).....

Extension fault; downthrown side indicated (defined, approximate, assumed).....

Thrust fault; teeth indicated upthrust side (defined, approximate, assumed).....

Macrofossil.....

Microfossil.....

40/39 Argon isotopic age determination site.....

Potassium-Argon isotopic age determination site.....

Uranium/Lead isotopic age determination site.....

Railroad.....

Highway.....

Track.....

Lake.....

Marsh.....

Reference

Bailey, D.G. (1990): Geology of the Swift River map area; BC Ministry of Energy, Mines and Petroleum Resources, Open File 1989-20, 1:50 000 map.

Carson, J.M., Dumont, R., Pavin, J., Shives, R.B.K., Harvey, B.J.A. and Buckle, J.L. (2006): Geophysical series – NTS 93G/1, 93G/8 and 93B/16 – Cottonwood, British Columbia; Geological Survey of Canada, Open File 5289, 10 maps.

Friedman, R.M. and Mortensen, J.K. (2002): U-Pb zircon and titanite dating in support of British Columbia Geological Survey regional mapping studies; in Geological Fieldwork 2001, BC Ministry of Energy and Mines, Paper 2002-1, pages 135–149.

Jonnes, S. and Logan, J.M. (2007): Bedrock geology and mineral potential of Mouse Mountain (NTS 93G/01), central British Columbia; in Geological Fieldwork 2006, BC Ministry of Energy, Mines and Petroleum Resources, Paper 2007-1 and Geoscience BC, Report 2007-1, pages 55–66.

Logan, J.M. (2008): Geology and mineral occurrences of the Quesnel terrane, Cottonwood map sheet, central British Columbia, (NTS 93G/01); in Geological Fieldwork 2007, BC Ministry of Energy, Mines and Petroleum Resources, Paper 2008-1, pages 69–86.

Newell, J.M. and Podolsky, G. (1971): Geological, geochemical and geophysical report on the Thunder and Kim claim group and Rain 1-20 mineral claims; submitted by Texasgulf, BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 3385.

Panteleyev, A., Bailey, D.G., Bloodgood, M.A. and Hancock, K.D. (1996): Geology and mineral deposits of the Quesnel River – Horsefly map area, central Quesnel trough, British Columbia; BC Ministry of Energy, Mines and Petroleum Resources, Bulletin 97, 156 pages.

Struk, L.C., Fuller, E.A. and Lynch, T.E. (1990): Geology of Prince George (east half) map area (93G/E); Geological Survey of Canada, Open File 2172.

Struk, L.C., Parrish, R.R. and Grassmoff, M.D. (1992): Geology and age of the Naver and Ste Marie plutons, central British Columbia; in Radiogenic age and isotopic studies: Report 5; Geological Survey of Canada, Paper 91-2, pages 155–162.

Isopotic Data

Method	Age	Geolunit	Source
U/Pb Zircon	1858.2 ± 3	Detrital zircon, Snowshoe Group, Downie succession	Friedman and Mortensen, 2002
U/Pb Zircon	1835.6 ± 3.9	Detrital zircon, Snowshoe Group, Downie succession	Friedman and Mortensen, 2002
U/Pb Zircon	2534.9 ± 2.4	Detrital zircon, Snowshoe Group, Downie succession	Friedman and Mortensen, 2002
U/Pb Zircon	2026.7 ± 2.6	Detrital zircon, Snowshoe Group, Downie succession	Friedman and Mortensen, 2002
K/Ar Hornblende	187 ± 14	Cooling age pyroxene hornblende gabbro	Panteleyev et al., 1996
U/Pb Zircon	207.4 ± 0.58	Crystallization age Mouse Mountain porphyry mnzn	Logan, 2008
Ar/Ar Hornblende	192 ± 1.3	Cooling age hornblende plagioclase porphyritic andesite	Logan, 2008

MINFILE Occurrences

MINFILE NUMBER	NAME (STATUS)	EAST	NORTH	COMMODITY	DESCRIPTION
● Surficial Placers					
093G 009	Hannador (past producer)	552929	5882203	Au	Located on Lightning Creek at the junction of Angus Creek it is one of several past placer gold producers on creeks draining the Omineca Belt. Gold occurs in late Tertiary (Miocene) gravels.
093G 022	MacMillan (past producer)	550695	5882365	Au	The MacMillan produced alluvial gold.
093G 025	Cottonwood Placer (past producer)	560751	5880164	Au, Pt	Cottonwood workings produced alluvial platinum and gold.
093G 026	Mary Creek (past producer)	562718	5873544	Au	Gold from the Mary Creek placer deposit produced from pay gravels a few centimetres to a few metres thick. The roundness of the gold particles suggest both proximal and distal sources.
093G 059	Gagen Creek (past producer)	562718	5873544	Au	Well-worn, fairly coarse placer gold in bench-type deposits.
093G 060	Mostique Creek (past producer)	565811	5875007	Au	At the mouth of Mostique Creek coarse placer gold occurs in a buried channel deposit, and fine gold originated mainly from post-glacial gravels overlying the deposit.
▼ Polymetallic veins					
093G 007	G-South (developed prospect)	542976	5894496	Au, Cu, Zn, Pb, Ag	Auriferous sulphide mineralization occurs disseminated in country rocks, stockworks and breccia infillings with quartz, calcite and epidote; massive pyrite, arsenopyrite and sphalerite and occasionally chalcocite and galena occurs within gouge zones to 1.9 metres wide at or near the intersection of north and southeasterly fault structures.
◆ Porphyry Cu-Au; alkalic					
093G 003	Mouse Mountain (past producer)	545508	5878048	Cu, Ag, Au	Mineralization is mainly chalcocite, with bornite and minor tetrahedrite as fracture fillings within felsic to intermediate breccias and disseminations within the feldspar porphyry stock. Alteration is mainly argillic and propylitic in the volcanic rocks with potassic alteration of the stock and a late iron carbonate overprint.
093G 005	M (showing)	543824	5876796	Cu	Chalcocite mineralization is reported to occur within gabbro bodies.

