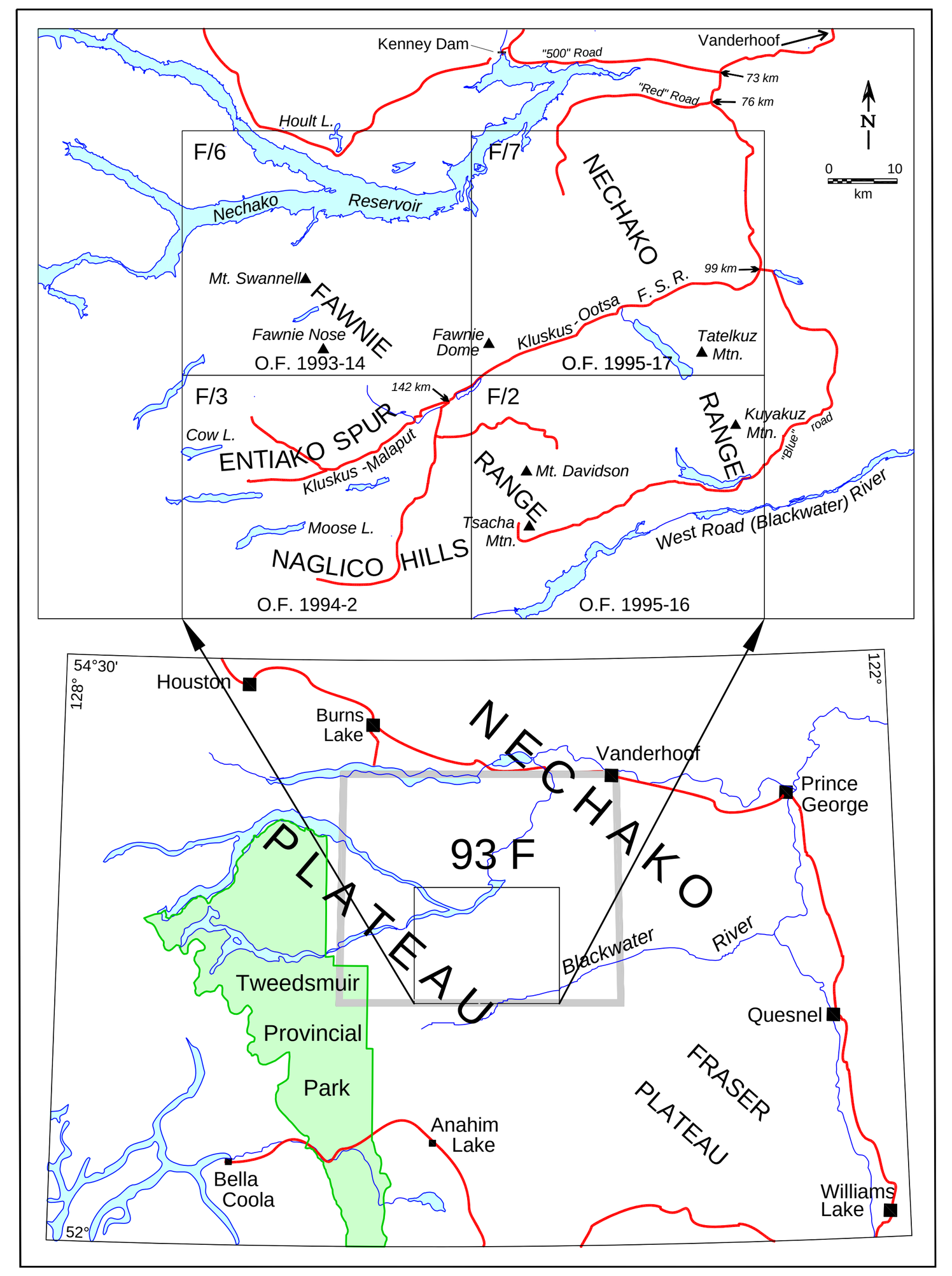
LOCATION



Approximate mean magnetic declination (1986) for centre of map is 25°48' or 459 mils decreasing 14.4' per year.
Universal Transverse Mercator Grid Zone 10

Symbols

- Stratigraphic contact (approximate)
- Intrusive contact (approximate)
- High angle fault (assumed)
- Thrust fault (assumed)
- Bedding, flow layering
- Foliation
- Fossil locality [macrofossil (F), palynology (Fp); GSC location number] — Ⓕ C143834
- Age determination site [method Ar-Ar (A), K-Ar (K), U-Pb (U); age in m.y. (Ma)] — Ⓐ K 174Ma
- subscripts (separate analyzed): b-biotite, h-hornblende, t-titanite, wr- whole rock, z-zircon
- Ice flow direction
- Fluting
- Till geochemistry site
- Lake sediment geochemistry site
- MINFILE occurrence — 039
- Major all weather logging road, secondary road, trail

Mapping and Analyses

Surficial Mapping (1993 and 1994):

NTS 93F/3: V.M. Levson and T.R. Giles

NTS 93F/2 and 7: V.M. Levson, T.R. Giles, G.F.Weary and E.K. O'Brien

Bedrock Mapping (1992 to 1994):

NTS 93F/6: L.J. Diakow, K. Green, J.A. Whittles and A. Perry
NTS 93F/3: L.J. Diakow, I.C.L. Webster, H. Jennings and J. Riddell
NTS 93F/2, 7: L.J. Diakow, T.A. Richards, J.A. Whittles and I.C.L. Webster

Fossil Identifications:

Terry P. Poulton, Howard W. Tipper and Jim W. Haggart of the Geological Survey of Canada.

Age Determinations:

Uranium-lead geochronology by Richard M. Friedman and potassium-argon determinations by Joe Harakal at The University of British Columbia; argon-argon dating by Peter Reynolds at Dalhousie University.

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Andrew, K.P.E. (1988): Geology and Genesis of the Wolf Precious Metal Epithermal Prospect and the Capoose Base and Precious Metal Porphyry-style Prospect, Capoose Lake Area, Central British Columbia; unpublished M.Sc. thesis, The University of British Columbia, 334 pages.

Cook, S.J. (1997): Regional and Property-scale Application of Lake Sediment Geochemistry in the Search for Buried Mineral Deposits in the Southern Nechako Plateau Area, British Columbia (93C,E,F,K,L); in Interior Plateau Geoscience Project: Summary of Geological, Geochemical and Geophysical Studies, Newell, J.M. and Diakow, L.J., Editors, B.C. Ministry of Employment and Investment, Paper 1997-2, pages 175-204.

Diakow, L.J., Webster, I.C.L., Richards, T.A. and Tipper, H.W. (1997): Geology of the Fawnie and Nechako Ranges, Southern Nechako Plateau, Central British Columbia (93F/2,3,6,7); in Interior Plateau Geoscience Project: Summary of Geological, Geochemical and Geophysical Studies, Newell, J.M. and Diakow, L.J., Editors, B.C. Ministry of Employment and Investment, Paper 1997-2, pages 7-30.

Lane, R. A. and Schroeter, T.G.(1997): A Review of Metallic Mineralization in the Interior Plateau, Central British Columbia (Parts of 93B, C and F); in Interior Plateau Geoscience Project: Summary of Geological, Geochemical and Geophysical Studies, Newell, J.M. and Diakow, L.J., Editors, B.C. Ministry of Employment and Investment, Paper 1997-2, pages 237-246.

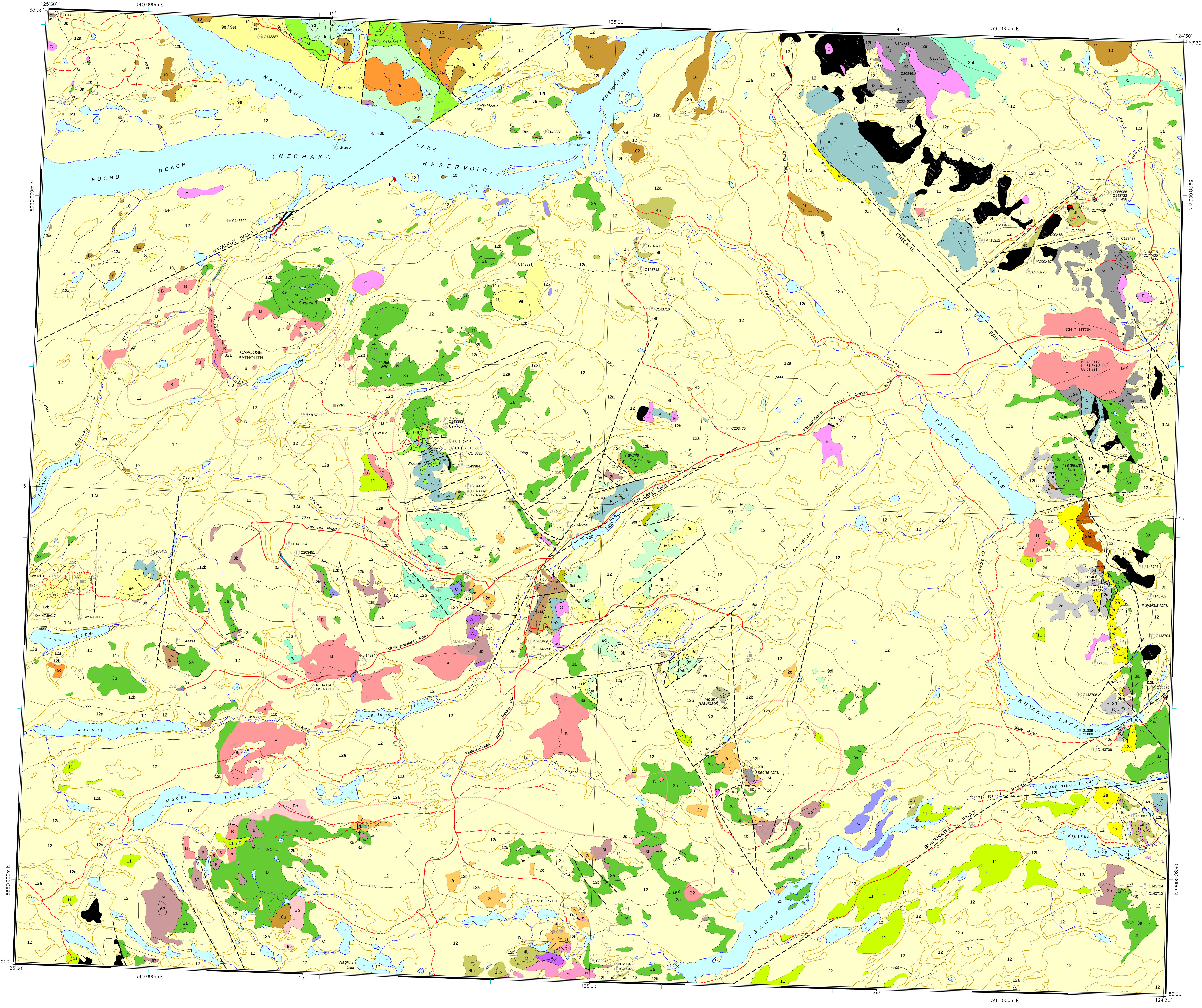
Levson, V.M. and Giles, T.R. (1997): Quaternary Geology and Till Geochemistry Studies in the Nechako and Fraser Plateaus, Central British Columbia (93C/1,8,9,10; F/2,3,7; L/16; M/1); in Interior Plateau Geoscience Project: Summary of Geological, Geochemical and Geophysical Studies, Newell, J.M. and Diakow, L.J., Editors, B.C. Ministry of Employment and Investment, Paper 1997-2, pages 123-146.

Tipper, H.W. (1963): Nechako River Map-area, British Columbia; Geological Survey of Canada, Memoir 324, 59 pages.

Recommended Citation:

Diakow, L.J. and Levson, V.M. (1997): Bedrock and Surficial Geology of the Southern Nechako Plateau, Central British Columbia, Ministry of Employment and Investment, Geoscience Map 1997-2, 1:100 000 scale.

Cartography mainly by John Armitage.
Reviewed by W.J. McMillan.



British Columbia
Ministry of Employment and Investment
Energy and Minerals Division
Geological Survey Branch

Canada British Columbia Mineral Development Agreement

GEOLOGICAL SURVEY BRANCH
GEOSCIENCE MAP 1997-2

BEDROCK AND SURFICIAL GEOLOGY OF THE SOUTHERN NECHAKO PLATEAU, CENTRAL BRITISH COLUMBIA

NTS 93F/ 2, 3, 6, & 7

By L.J. Diakow and V.M. Levson

Scale 1:100 000

0 2 4 6 8 10
Kilometres

LEGEND

VOLCANIC AND SEDIMENTARY ROCKS

LATE QUATERNARY

Fluvial/glaciofluvial sand and gravel, lacustrine/glaciolacustrine sediments, and organic deposits: geochemical signature generally regional and difficult to trace to source; includes floodplain, terrace, delta, alluvial fan, outwash, esker, kame, peat bog, swamp and marsh deposits. *Note*: *See 1:50 000 scale Open File maps for internal subdivisions of this unit.*

12 Morainal diamicton: dominantly basal tills; some glacially-derived debris flow deposits; geochemical signature generally local and traceable; diamicton massive or crudely stratified, dense, unsorted to very poorly sorted; matrix sandy to silty clay; clasts up to boulder size; flutings and crag-and-tail features common; deposits thin (<1 m thick) on steep upper slopes and thicker on lower slopes.

12a Resedimented glacial debris: sandy diamicton, gravel and sand; dominantly glacial debris flow deposits with interbedded and/or overlying sands and gravels; common along meltwater channels and within areas of hummocky topography.

12b Thin till and colluvial deposits: unsorted or very poorly sorted diamicton with abundant angular clasts of local bedrock; occurs mainly as veneers less than 1 metre thick over bedrock in upland areas; locally includes thicker colluvial fan and talus deposits at the base of steep slopes.

NEOGENE - MIOCENE TO PLIOCENE

CHILCOTIN GROUP

11 Olivine basalt lava flows: weather brown, crudely layered and columnar jointed, massive to vesicular, typically aphanitic or olivine phyric.

11a Rare friable black mudstone and sandstone; may contain plant debris.

PALEOGENE - UPPER EOCENE

ENDAKO GROUP

10 Basaltic andesite and andesitic lava flows: weather buff grey-green, fresh surface lustrous black, aphanitic to sparsely porphyritic, contain plagioclase and microscopic augite and hypersthene, rarely amygdaloidal with scarce amygdules infilled with opalescent silica; minor hematized interflow breccia.

10a Rare andisitic flow member characterized by plagioclase megacrysts up to 1 cm.

MIDDLE EOCENE

OOTSA LAKE GROUP

9a Andesitic lava flows and volcaniclastic rocks: dark green to maroon, coarsely porphyritic flows and tuff breccia; minor interbedded ash-tuff; rare block tuff and laminated black siltstone on the summit of Mount Davidson.

9b Rhyolitic ash-flow tuff: grey green, unwelded to weakly welded, crystal fragments (25-30%) characterized by resorbed and prismatic quartz (5-15%, avg. 2mm diameter), plagioclase, potassium feldspar (2-7%) and rare sericitized biotite, lithic fragments (5-20%) typically of lapilli size consist of cognate quartz phyric rhyolite, flow banded and aphanitic rhyolite, and porphyritic andesite; the groundmass when stained indicates weak to moderate potassium feldspar; minor block-lapilli tuff; rare bedded sections of quartz-bearing sandstone derived from the underlying ashflows.

9c Dacitic lava flows: light grey, flaggy weathering, sparse plagioclase, quartz and biotite phenocrysts.

9d Andesitic lava flows: maroon and dark green, typically porphyritic with 20-30% slender plagioclase up to 5 millimetres and sparse pyroxene phenocrysts, minor amygdaloidal flows with quartz, epidote and chlorite amygdules; Subunit 9di is a local andesitic flow member that contains plagioclase laths up to 1.2 cm, resembling Unit 10a.

9e Rhyolitic lava flows (ca. 49.2 ± 1 to 49.9 ± 1.7 Ma): mauve, cream, light green or grey, aphanitic to sparsely porphyritic, flow laminated textures predominate but are commonly overprinted by solitary and coalescing spherulites, porphyritic flows contain plagioclase, up to 5% quartz and traces of rare sericitized biotite; autobrecciated flows. Basal conglomerate, dominated by hornblende-biotite quartz monzonite cobbles and boulders; occurs in a creek exposure at the Wolf mineral prospect, east of Entiako Lake.

9et Fine ash to lapilli tuff dominated by rhyolitic fragments, locally up to 15% quartz phenocrysts; well bedded, minor lacustrine tuffaceous sandstone and siltstone interbeds may contain plant fragments.

UPPER CRETACEOUS

8 Andesitic lapilli tuff and tuff breccia (ca. 64.5 ± 1.8 and 70.3 ± 3 Ma): grey-green or purple, monolithic hornblende phyric fragments; white aphanitic rhyolite lava flows (ca. 71.9+2.0/-0.2 Ma) that are possibly cogenetic with nearby Late Cretaceous garnet-bearing rhyolite dikes and sills in the immediate vicinity of the Capoose prospect (MINFILE 040).

LOWER CRETACEOUS

Black mudstone and sandstone with thin carbonaceous layers containing Albian palynomorphs, minor conglomerate: sporadic exposures found only along the shoreline at the mouth of the Entiako River.

UPPER JURASSIC TO LOWER CRETACEOUS

6 Dacitic lava flows containing sparse biotite (ca. 144 ± 4 Ma), lapilli tuff containing aphanitic off-white rhyolitic fragments, laminated ash tuff, minor welded tuff.

MIDDLE AND UPPER JURASSIC

BOWSER LAKE GROUP

NECHAKO VOLCANICS

5 Pyroxene phyric basaltic flows and andesitic to rhyolitic tuffs: dark green, a rare hornblende phyric andesite flow is dated near the base of the succession in the northern Nechako Range (ca. 152 ± 2 Ma); tentatively correlative stratigraphy in the northern Fawnie Range has a dacitic flow near the top of the succession (ca. 157.6+5.2/-0.3 Ma), underlying strata consist mainly of pyroxene phyric basalt flows, variegated green and maroon andesitic ash tuff with scarce interbeds of accretionary lapilli, thin rhyolitic ash-flow tuff at the base conformably overlies units 4a and 4b. Immediately to the north of Top Lake, pyroxene phyric basalt flows contain rare interbeds of accretionary lapilli tuff. Feldspathic sandstone locally interlayered with the volcanic rocks may contain bivalves.

ASHMAN FORMATION (EARLY CALLOVIAN TO OXFORDIAN)

Conglomerate, sandstone, siltstone and minor mudstone: planar bedded conglomerate, which is dominant in the northern Nechako Range, is characterized by off white to light grey chert and lesser black argillite pebbles and cobbles, interlayered grey or light green siltstone and sandstone, lesser dark green and black mudstone.

4b Similar to Unit 4a except conglomeratic layers are minor or absent. In the central and southern Nechako Range, the proportion of conglomerate decreases and sandstones interlayered with black siltstone and mudstone increases. The chert-bearing succession thins dramatically to the west across the Chedakuz Creek valley towards the northern Fawnie Range, where conglomeratic layers comprise discontinuous thin interbeds within drab olive green sandstones and siltstones that contain abundant plagioclase and lesser pyroxene grains. Mudstones may contain recessive limy concretions. Bivalves and ammonites are moderately abundant.

4c Minor lapilli tuff and reworked crystal and ash tuffs: green; subangular lapilli and blocks up to 8 cm, fragments are composed mainly of andesite; laminated and graded ash tuff, and interbeds rich in feldspars are possibly derived by reworking these tuffs.

LOWER AND MIDDLE JURASSIC

HAZELTON GROUP

NAGLICO FORMATION (BAJOCIAN)

3a Basalt and andesitic lava flows: dark green and maroon, characterized by vitreous pyroxene phenocrysts (trace to 15%), textural varieties include dense aphanitic flows, crowded plagioclase (~30-40% equant subhedral plagioclase ≤3 mm in diameter) to coarse grained porphyries (plagioclase to 6 mm), and amygdaloidal porphyry; minor flow breccia; rare hyaloclastite. Epidote, quartz, calcite and hematite are widespread as clots and in veinlets. This unit is lithologically similar, to, and therefore easily confused with pyroxene-phyric rocks of Unit 5.

LOWER AND MIDDLE JURASSIC (continued)

HAZELTON GROUP (continued)

NAGLICO FORMATION

3al Limestone: white and grey; recrystallized; fossiliferous; 3 metre thick exposure along the van Tine road.

3as Sandstone, siltstone, mudstone and subordinate granule-pebble conglomerate as recessive intervals between Unit 3a flows: green, angular feldspar and volcanic lithic clasts are the major detrital components, the clasts are generally off white and composed of aphanitic rhyolite; rare conglomerate composed of clasts up to 30 cm that are derived locally from Units 2c and 3a. Abundant bivalves and rare ammonites.

3at Mainly lapilli tuff and lesser breccia dominated by fragments of Unit 3a.

3b Lapilli tuff, ash tuff and crystal-ash tuff, rare accretionary lapilli tuff: maroon and light green; minute (generally ≤1.5 mm) broken quartz grains are diagnostic but scarce (1-2%); faint to distinctly layered fine grained interbeds, local internal grading; similar bedded tuffs recur upsection in Unit 5 in the northern Fawnie Range.

3c Dacitic porphyry flows: maroon, local faint flow laminae.

ENTIAKO FORMATION (EARLY TOARCIAN TO AALENIAN (?))

2a Rhyolitic lapilli tuff and rare accretionary lapilli tuff: light pink or off white, characterized by up to 5% angular quartz, and potassium-bearing lithic fragments. Exposed best in the vicinity of Kuyakuz Mountain.

2as Sandstone and siltstone composed mainly of angular plagioclase and subordinate quartz grains: gradational above and laterally with tuffs of Unit 2a.

2b Waterlain mafic ash and lapilli tuff: well bedded, dominated by finely vesicular and amygdaloidal basaltic lapilli. Locally underlies units 2a and 2as at Kuyakuz Mountain.

2c Rhyolite ash-flow tuff, lapilli tuff: off-white, grey and pink, well indurated, weakly to moderately welded, diagnostic subrounded to elliptical resorbed quartz phenocrysts up to 3 mm (1-7%), lithic pyroclasts include flow-laminated rhyolite, porphyritic andesite and rare granodiorite. Scarce rhyolitic lava flows with white or black flow laminae. Subaerial volcanic facies confined mainly to the central and southern Fawnie Range. May be comagmatic with Unit 2a.

2cs Quartz-rich sandstones and siltstones minor cobble conglomerate, lesser interlayered lapilli tuff and ash tuff: maroon or grey green, well bedded, graded and cross laminated; quartz grains and quartz-bearing clasts are apparently derived from Unit 2c.

2d Feldspathic siltstones, sandstones and volcanic-lithic pebble conglomerate: dominated by plagioclase grains and angular off-white aphanitic rhyolitic fragments, minor black mudstone and lesser reworked felsic tuff interbeds; locally contains Toarcian ammonites. Difficult to distinguish from Unit 3as with certainty. Mapped mainly along the west side of the southern Nechako Range and interpreted as a shallow marine facies.

2e Black mudstone, locally with discrete white ash-tuff laminae and minor disseminated pyrite; limy siltstone containing scarce grey and brownish impure limestone layers and concretions, minor feldspathic siltstone and sandstone. Locally contains Toarcian ammonites (*Kanense* zone) and the small delicate bivalve, *Bositra.* Recessive unit mapped intermittantly along the eastern flank of the Nechako Range and interpreted as a relatively deep marine facies.

UPPER TRIASSIC

Siltstone and mudstone: black and tan brown, laminated, contains the bivalve, *Halobia*. Solitary exposure along the Red Road, just outside of the map area in mapsheet 93F/10.

INTRUSIVE ROCKS

TERTIARY - PROBABLY EOCENE

J Gabbroic dikes or small plugs: grey to dark green, fine to medium grained, plagioclase, clinopyroxene and olivine phyric.

I Biotite-feldspar porphyry dikes or small plugs: most are too narrow to represent at the current map scale. Phenocrysts include ≤20% subhedral plagioclase (2-7mm in diameter) and up to 7% vitreous and chloritized biotite in a light grey groundmass. They cut rhyolitic ash-flow tuffs of Unit 9b.

H Granodiorite and granite stocks (ca. 51.8 ± 1 Ma): Undeformed granodiorite in the central Nechako is off white, coarse grained and equigranular with up to 25% combined, fresh biotite and lesser hornblende. Granite south of Tatelkuz Lake is distinguished by its relative absence of mafic minerals, which consist of between trace and 3% vitreous biotite. These plutons cut penetratively cleaved country rocks in the Nechako Range.

G Quartz-feldspar porphyry plugs and dikes: light grey, pink and cream colored, quartz phenocrysts (5-15%), locally 5% combined hornblende and lesser biotite phenocrysts; miariolitic cavities in some plutons.

F Rhyolite subvolcanic dome: bone white, aphanitic to sparsely plagioclase phyric, massive with up to 20% disseminated pyrite. Small body located at the mouth of the Entiako River.

POSSIBLY LATE CRETACEOUS

E Dioritic plugs, sills and dikes: mottled green and off white, medium-grained equigranular texture; mapped throughout the Nechako Range where they are undeformed and cut penetratively cleaved country rocks, similar plutons are also mapped in the Chedakuz River valley where they apparently intrude and alter Middle Jurassic rocks of Units 4 and 5. Two bodies adjacent to the Kluskus-Ootsa road have unmapped minor pegmatitic monzonite and pyroxene-rich intrusive phases.

LATE CRETACEOUS

Rhyolite sills (ca. 70 Ma): *too narrow to represent at the current map scale.* Off-white, aphanitic or contain sparse brownish garnet phenocrysts. Exposed near the Capoose prospect in the northern Fawnie Range, where they are lithologically indistinguishable from older, Early Cretaceous garnet-bearing rhyolitic sills.

D Felsite sills (ca. 73.8+2.9/-0.1 Ma): greyish green, fine grained and equigranular, contain sparse plagioclase phenocrysts up to 4 millimetres long and up to 5% fine grained biotite flakes, weather to distinctive clinkery, conchoidal fractured fragments. Small widely scattered exposures in the vicinity of the Tsacha prospect where they locally cut mineralized quartz veins.

LATE JURASSIC TO EARLY CRETACEOUS

Garnetiferous rhyolite sills (ca. 142 ± 0.6 Ma): *too narrow to represent at the current map scale.* Off white, aphanitic sucrosic texture, locally flow laminated, up to 3% brownish garnet and trace to 2% disseminated pyrite. Exposed immediately to the south of the Capoose prospect in the northern Fawnie Range.

C Quartz diorite plugs: grey-green, medium-grained equigranular texture, hornblende dominant (≤20%) over biotite (≤3%); locally contains xenoliths of augite porphyry or fine grained diorite. Small bodies mapped near the margin, and locally intruded by Unit B.

B Quartz monzonite and granodiorite (ca. 148.1 ± 0.6 Ma): Capoose batholith; pink, medium to coarse grained and equigranular; up to 15% combined fresh biotite and hornblende; numerous fine-grained grey dioritic xenoliths. South of Capoose Lake a probable unmapped granodiorite or quartz monzonite pluton, separate from the Capoose batholith, yields a potassium-argon age of 67.1 ± 2.3 Ma.

Bp Porphyritic granodiorite and monzonite found locally along the border of the Capoose batholith in the Naglico Hills.

MIDDLE JURASSIC

A Augite porphyry plugs: dark green, ≤20% augite phenocrysts (2-6mm) and randomly oriented plagioclase averaging 1-2 mm; rare laths up to 1 cm. Probable subvolcanic feeders to Unit 3a.