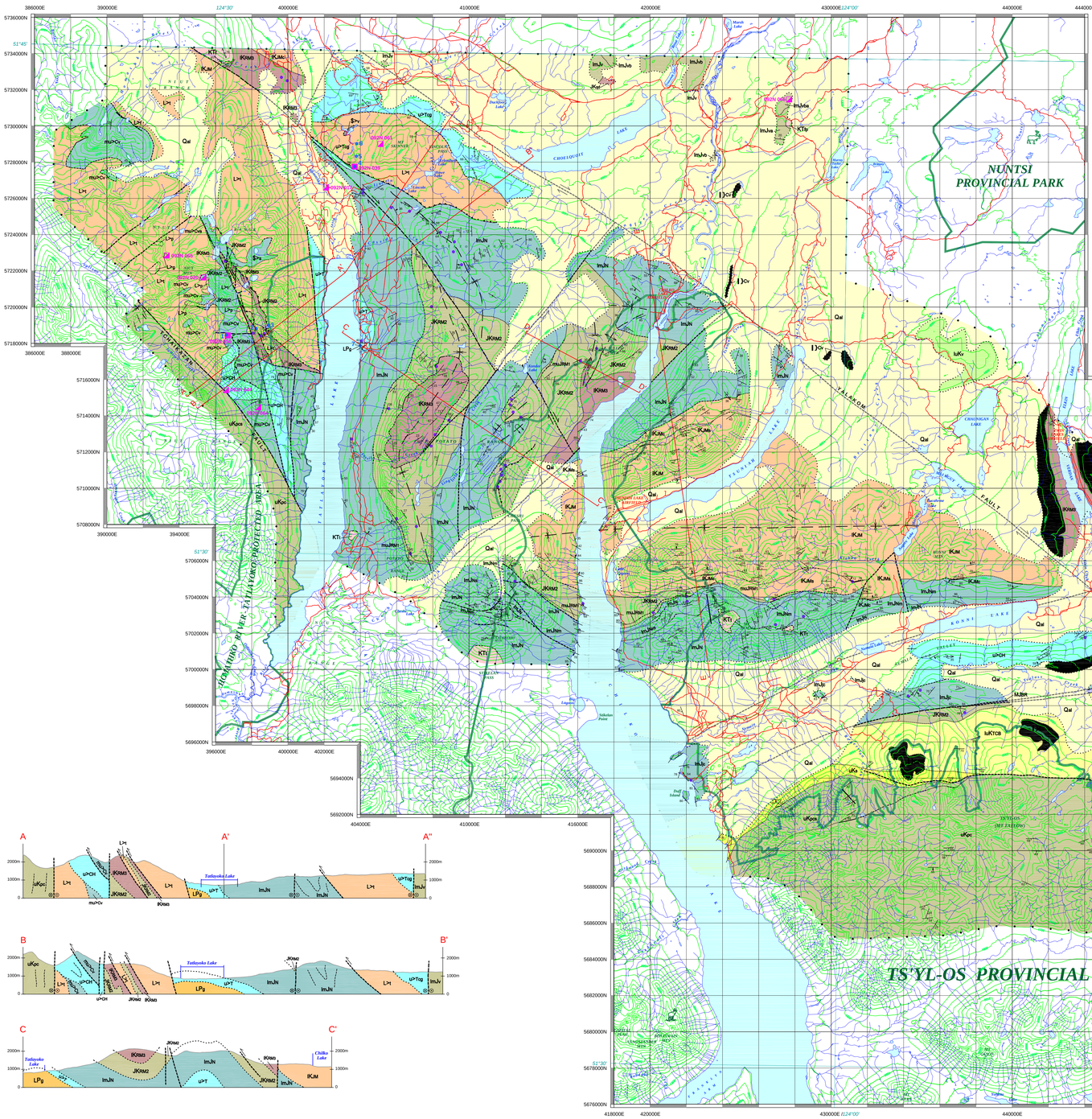


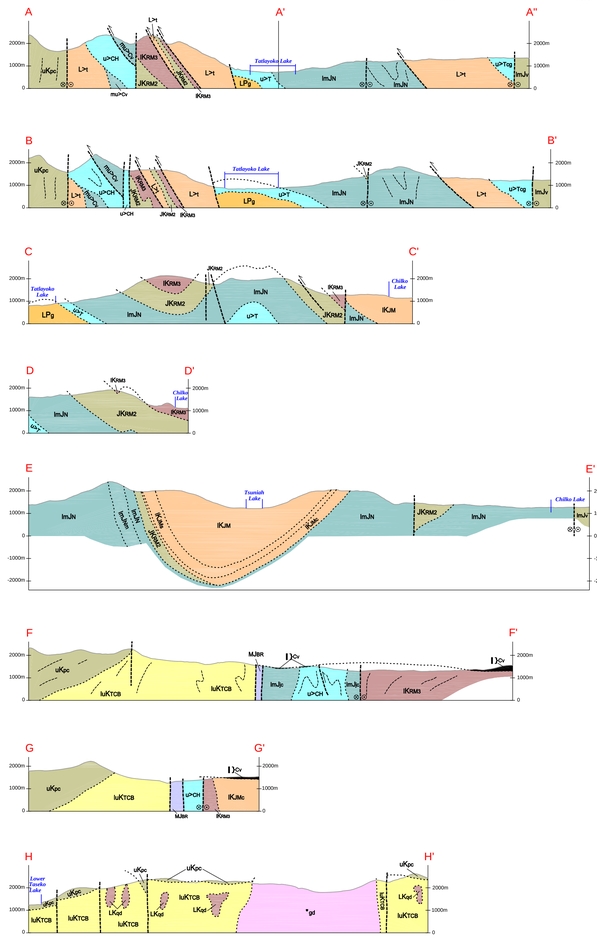


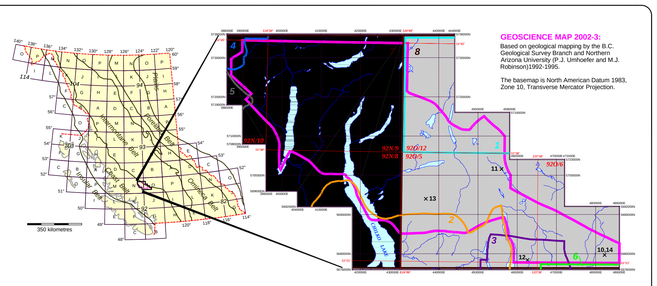


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**Table 1: Mineral Occurrences**

| MINFILE No. | Name | Easting | Northing | Commodities | Description |
|---|---|---|---|---|---|
| 092N 017 | Tab | 402100 | 5726600 | Cu | Sparse chalcopyrite is disseminated in shale |
| 092N 020 | Nut Mountain | 395333 | 5721638 | Au, Cu | A gossanous zone within pyritized Triassic volcanic rocks locally contains chalcopyrite, malachite and traces of gold |
| 092N 039 | Skinner | 403685 | 5727754 | Au, Ag | Northeast-striking gold-quartz veins, of Eocene age, occur within Triassic quartz diorite. A 172 tonne bulk sample extracted from the Victoria vein in 1992 and 1993 produced over 11 000 grams of gold and 8 000 grams of silver |
| 092N 044 | Rusty | 396577 | 5715418 | Cu | Disseminated chalcopyrite occurs in Triassic sedimentary rocks near the Tchaikazan fault |
| 092N 056 | Fly | 396678 | 5718433 | Cu | Disseminated pyrite, chalcopyrite, malachite and azurite occur within quartz-epidote-carbonate veins and fracture fillings hosted in Triassic quartz diorite and an associated body of hornblende feldspar porphyry |
| 092N 061 | Big Slide | 405110 | 5729005 | Au | Gold and copper mineralization occurs within northwest-striking sheeted quartz veins hosted in Triassic quartz diorite |
| 092N 064 | Anthony | 398360 | 5714469 | Cu, Zn, Ag | Malachite, pyrite, chalcopyrite and sphalerite occur in quartz veins and silicified Triassic basalt |
| 092N 065 | Clipboard | 393301 | 5722847 | Cu | Disseminated malachite occurs in a granite porphyry plug hosted by Triassic quartz diorite |
| 092N 066 | Kay | 427682 | 5731463 | Cu | Malachite and azurite occur in calcite veinlets within carbonate-altered volcanic breccia |
| 092O 002 | Knight | 482286 | 5679673 | Au, Ag | Epithermal-style Au-Ag mineralization occurs within pyrite-silica altered Cretaceous sedimentary rocks cut by dikes and plugs of Late Cretaceous diorite and hornblende-feldspar porphyry |
| 092O 027 | Vick | 454580 | 5691500 | Au, Cu, Ag | Pyrite, chalcopyrite, malachite and azurite occur within quartz veins that follow a NE-striking shear zone cutting Upper Cretaceous volcanic rocks |
| 092O 041 | Fish Lake | 456000 | 5701580 | Cu, Au, Ag, Mo, Zn | Porphyry Cu-Au mineralization occurs within and adjacent to a Late Cretaceous quartz diorite stock and associated quartz-feldspar porphyry dikes, which intrude Lower Cretaceous volcanic and sedimentary rocks. Caira et al. (1995) report a geological reserve of 1.148 million tonnes grading 0.22 %Cu and 0.41 g/t Au |
| 092O 049 | Chita | 462620 | 5678400 | Cu, Mo | Chalcopyrite and molybdenite occur within quartz veins and silicified breccia cutting carbonate-pyrite-silica-altered porphyritic diorite and adjacent Cretaceous sedimentary rocks |
| 092O-131 | Task | 454300 | 5704370 | Cu, Au, Ag | Pyrite and chalcopyrite occur in quartz veins and as disseminations within quartz diorite and adjacent Lower Cretaceous volcanic and sedimentary rocks |

**Table 2: Isotopic Dates**

| Number | Sample | Easting | Northing | Unit | Method | Mineral | Age | Geochronologist | Lab |
|---|---|---|---|---|---|---|---|---|---|
| 1 | DME94-5-19-2 | 396602 | 5718466 | **LH**; Nut Mountain pluton | U-Pb | zircon | 219.2 ±0.5 Ma | Richard Friedman | UBC |
| 2 | PSC95-4-1 | 398249 | 5718826 | **LH** | U-Pb | zircon | 217.3 ±0.4 Ma | Richard Friedman | UBC |
| 3 | PSC95-4-2 | 398927 | 5718994 | **LH**; Crazy Creek pluton | U-Pb | zircon | 220.3 ±0.5 Ma | Richard Friedman | UBC |
| 4 | PSC94-34-3-3 | 403685 | 5727754 | Victoria gold-quartz vein (092N 039) | K-Ar | muscovite | 51.9 ±1.3 Ma | Janet Gabites | UBC |
| 5 | JRI94-22-1 | 403782 | 5728329 | **LH**; Mount Skinner pluton | U-Pb | zircon | 231.1 ±1.6 Ma | Richard Friedman | UBC |
| 6 | JRI94-22-2 | 403807 | 5729020 | **LH**; Mount Skinner pluton | U-Pb | zircon | 226.7 ±0.5 Ma | Richard Friedman | UBC |
| 7 | PSC95-13-1 | 403993 | 5717875 | **LPg** | U-Pb | zircon | 253.8 ±1.4 Ma | Richard Friedman | UBC |
| 8 | PSC95-10-2-1 | 452099 | 5701251 | **lKJMr**; dacite | U-Pb | zircon | 100.5 +7.2/-0.6 Ma | Richard Friedman | UBC |
| 9 | 92JRI-39-8 | 456000 | 5701580 | **LKp**; Fish Lake stock (drill core) | U-Pb | zircon | ca. 90 Ma | Janet Gabites | UBC |
| 10 | TL-87-20 | 471267 | 5678019 | ***gd**; Beece Creek pluton | Ar-Ar | biotite | 43.9 ±0.6 Ma | Doug Archibald | Queen's U |
| 11 | PSC92-26-4 | 476371 | 5685143 | **LKgd**; Anvil Mountain pluton | U-Pb | zircon | 93.4 ±0.1 Ma | Jim Mortensen | UBC |


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## Symbols

- Geological contact (defined, approximate, inferred, projected under Qal)
- Fault (defined, approximate, inferred, projected under Qal); arrows indicate relative sense of known or inferred movement
- Thrust fault (defined, approximate, inferred); teeth on upthrust block
- Axial trace of anticline (upright, overturned)
- Axial trace of syncline (upright, overturned)
- Bedding, tops known (inclined, overturned) ..... 40 / 60
- Bedding, tops unknown (inclined, vertical) ..... 40 / 90
- Slaty cleavage or schistosity (inclined, vertical) ..... 40 / 90
- Axis of mesoscopic fold
- Fossil locality (including macrofossil, conodont, radiolarian, plant) ..... •
- Location of isotopically dated sample (Table 2) ..... 1 •
- Mineral occurrence with MINFILE number (Table 1):
  - Advanced Prospect ..... 092O 041
  - Prospect ..... 092O 049
  - Showing ..... 092N 066
- Limit of extensive Quaternary cover
- Limit of mapping
- Cross-section line ..... D — D'
- Movement indicator on cross-section:
  - Block moved away from viewer ..... ⊗
  - Block moved towards viewer ..... ⊙
- Topographic contour (100-metre interval)
- Road
- Park Boundary


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

GEOLOGICAL SURVEY BRANCH

GEOSCIENCE MAP 2002-3


# GEOLOGY OF THE BEECE CREEK - NIUT MOUNTAIN AREA, BRITISH COLUMBIA

NTS 92N/8, 9, 10; 92O/5, 6, 12


GEOLOGY
by
P. Schiarizza, J. Riddell, R.G. Gaba, D.M. Melville, P.J. Umhoefer, M.J. Robinson, B.K. Jennings and D. Hick

Macrofossil identifications: J.W. Haggart, T.P. Poulton and H.W. Tipper;
Conodont identifications: M.J. Orchard; Radiolarian identifications: F. Cordey;
Plant fossil identifications: E. McIver
Radiometric dates: R. Friedman, D.A. Archibald, J. Gabites and J. Mortensen
*Digital cartography: V. Vilkos*


SCALE 1:100 000

0 2 4 6 8 10 Kilometres

### PLEISTOCENE and RECENT

- **Qal** — *Unconsolidated glacial, fluvial and alluvial deposits; locally may include small bedrock exposures not examined during the present study*

### MIOCENE and PLIOCENE

CHILCOTIN GROUP

- *Olivine basalt flows; local sedimentary rocks and debris flows*

### MIDDLE EOCENE

- ***gd** — Beece Creek pluton: *granodiorite, granite*

### CRETACEOUS and/or TERTIARY

- **KTqp** — *Quartz porphyry*
- **KTfp** — *Feldspar porphyry*
- **KTf** — *Felsite*
- **KTt** — *Tonalite, granodiorite*

### LATE CRETACEOUS

- **LKp** — Cone Hill-Fish Lake suite: *hornblende-quartz-feldspar porphyry*
- **LKgd** — Anvil Mountain suite: *quartz diorite, diorite, hornblende-feldspar porphyry*

### JURASSIC or CRETACEOUS (?)

- **JKgd** — *Quartz diorite*

### TYAUGHTON - METHOW BASIN

**UPPER CRETACEOUS**

- **uKpc** — Powell Creek formation: *purple, green and grey andesitic volcanic breccia, lapilli tuff and ash tuff; laharic breccia; mafic to intermediate volcanic flows; volcanic conglomerate and sandstone;* **ukpcs** *- well stratified volcanic breccia and conglomerate with intercalations of volcanic sandstone and siltstone*
- **uKs** — *Lithic sandstone, shale, arkosic sandstone, chert-pebble conglomerate*

**LOWER and UPPER CRETACEOUS**

TAYLOR CREEK GROUP
Albian - Cenomanian

- **luKTcB** — Beece Creek succession: *shale, siltstone, lithic sandstone, chert-pebble conglomerate, polymictic conglomerate; lesser amounts of arkosic sandstone and tuff*

**LOWER and/or UPPER CRETACEOUS**

- **luKv** — Chauvigan Lake unit: *andesitic to dacitic breccias, tuffs and flows; may correlate with Albian volcanic rocks of unit* **lKJMf** *and/or with Upper Cretaceous volcanic rocks of unit* **uKpc**

**LOWER CRETACEOUS**

JACKASS MOUNTAIN GROUP
Albian

- **lKJM** — *Green to blush-green, light brown to brownish-grey weathering lithic arkosic sandstone and gritty sandstone; lesser amounts of siltstone, shale and granule to pebble conglomerate;* **lKJMs**- *mainly dark grey siltstone and shale;* **lKJMc**- *mainly pebble to cobble conglomerate containing volcanic, plutonic and metamorphic clasts*
- **lKJMf** — *Sandstone, shale, conglomerate, tuffaceous sandstone, andesite, dacite*

**MIDDLE JURASSIC to LOWER CRETACEOUS**

RELAY MOUNTAIN GROUP
Hauterivian and Barremian

- **lKRM3** — *Brown, green and grey lithic and arkosic sandstone; dark grey to brown siltstone and shale; granule to pebble conglomerate containing volcanic and plutonic clasts*

Oxfordian to Valanginian

- **JKRM2** — *Brown, green and grey lithic and arkosic sandstone; brown to grey siltstone and mudstone; lesser amounts of polymictic pebble to cobble conglomerate and Buchia coquina*

Callovian and(?) Lower Oxfordian

- **muJRM1** — *Dark grey shale*

### CADWALLADER - METHOW TERRANE

**LOWER TO MIDDLE JURASSIC**

Pliensbachian to Bajocian

- **lmJN** — Nemaia formation: *dark grey, thin-bedded, laminated to crosslaminated siltstone, shale, argillite and fine-grained sandstone; medium to very thick-bedded, coarse-grained volcanic-lithic sandstone and gritty sandstone; lesser amounts of granule to cobble conglomerate containing volcanic clasts and local limestone clasts; minor amounts of laminated to crosslaminated silty limestone and micrite; locally includes andesitic tuff, volcanic breccia and rare intermediate flows or sills; may locally include shales of unit* **muJRM1**; **lmJNs** *-well stratified siltstone, shale and sandstone that may include Callovian rocks of unit* **muJRM1**
- **lmJNm** — *Massive sandstone and gritty sandstone intercalated with lesser amounts of shale, sandstone, pebble conglomerate and volcanic breccia; mainly or entirely Bajocian*
- **lmJjc** — Junction Creek unit: *dark grey to black, thin-bedded siliceous siltstone, cherty argillite and argillite; local thin interbeds of micritic limestone and crosslaminated silty limestone; local thin to medium beds of fine to medium-grained sandstone; minor amounts of polymictic conglomerate; probably a finer-grained facies equivalent of the Nemaia formation*

**UPPER TRIASSIC**

- **u>T** — Tyaughton Formation: *lithic sandstone, calcarenite, pebbly calcarenite and coquina; lesser amounts of siltstone, micritic limestone, arkosic sandstone and pebble conglomerate;* **u>Tsg**- *mainly maroon, locally green, pebble to cobble conglomerate containing clasts of intermediate to felsic volcanic rock and less common granitoid rock, limestone and clastic sedimentary rock; also includes sandstone, siltstone, argillite and minor amounts of micritic limestone*

**MIDDLE and UPPER TRIASSIC**

CADWALLADER GROUP
Carnian(?) and Norian

- **u>CH** — Hurley Formation: *thin-bedded, light and dark grey laminated siltstone and shale; thin to thick-bedded, fine to coarse-grained sandstone; calcareous sandstone and pebbly calcarenite; lesser amounts of limestone and limestone-bearing polymictic conglomerate*

Ladinian and Carnian

- **mu>Cv** — *Green, brownish-weathered basalt, pillowed basalt, andesite and associated breccias and tuffs; commonly pyroxene-feldspar or hornblende-feldspar phyric; minor amounts of felsic tuff, agglomerate, welded tuff, chert, sandstone and shale;* **mu>Cva** - *silica-epidote-altered rock that may have been derived from this unit*

**LATE TRIASSIC**

- **L>g** — *Granite*
- **L>p** — *Hornblende-feldspar porphyry*
- **L>t** — *Tonalite, quartz diorite and diorite; commonly intruded by dikes of basalt, diabase, hornblende feldspar porphyry, quartz feldspar porphyry and aplite; locally includes masses of fine grained greenstone that may be dike swarms and/or screens of older volcanic rock*

**LATE PERMIAN**

- **LPg** — *Quartz-pyrite-altered granitoid rock*

**PALEOZOIC or TRIASSIC**

- **$>s** — *Hornfelsed sandstone and siltstone*
- **$>v** — *Purple tuff and welded tuff*

### BRIDGE RIVER TERRANE

**MISSISSIPPIAN to MIDDLE JURASSIC**

BRIDGE RIVER COMPLEX

- **MJBR** — *Bedded chert, amygdaloidal greenstone, argillite, sandstone, conglomerate, serpentinite*

### STIKINE TERRANE (?)

**LOWER to MIDDLE JURASSIC (?)**

HAZELTON GROUP(?)

- **lmJv** — *Medium to dark green andesite; locally includes diorite and gabbro; minor amounts of volcanic breccia, sandstone and siltstone;* **lmJva**- *characterized by secondary brecciation and quartz-epidote-calcite veining*
- **lmJvb** — *Green, purple and grey volcanic breccia and tuff; lesser amounts of volcanic conglomerate and sandstone;* **lmJva** - *characterized by secondary brecciation and quartz-epidote-calcite veining*