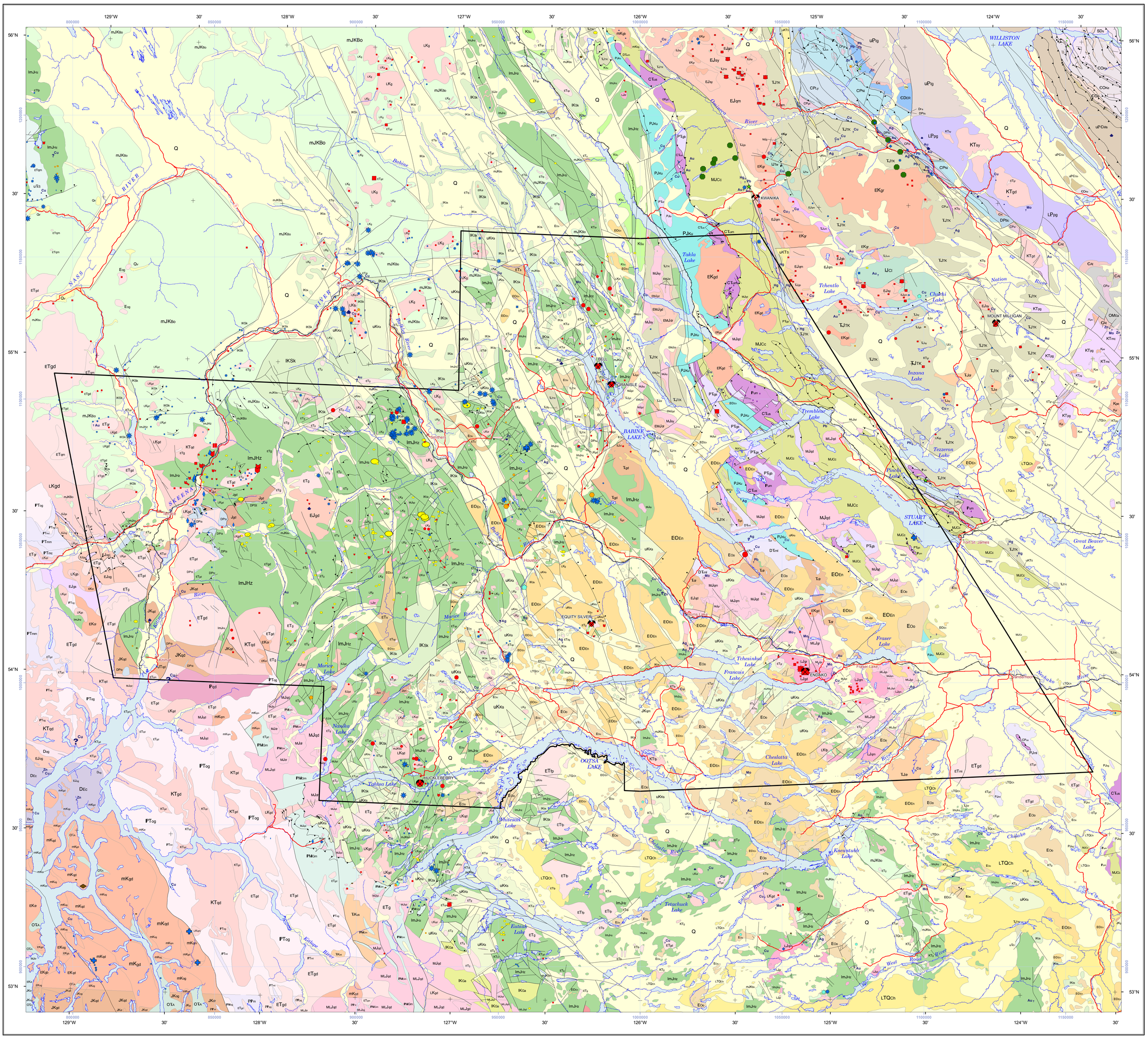
**Disclaimer:** While every effort has been taken to ensure the accuracy of the information in this map, the data are provided on an 'as-is' basis, without any warranty, guarantee or representation of any kind, whether expressed or implied. It is the responsibility of the user to check the facts before entering any financial or other commitment based upon this information.

1:500 000 MINERAL DEPOSITS

Geoscience BC

# QUEST-WEST PROJECT

NTS SHEETS 93E,F,K,L,M,N
PART OF NTS SHEETS 93B,C,D,G,J,O; 94B,C,D; 103A,H,I,P; 104A




## SEDIMENTARY AND VOLCANIC ROCKS

CENOZOIC

Neogene to Quaternary

- **Q** — *Quaternary cover: Alluvium, glaciofluvial gravels and sand, till. (Note: the extensive Quaternary deposits of the Rocky Mountain foothills and the Peace River area have been omitted.)*
- **Qv** — *Quaternary volcanics including Blue Lake Volcanics, Lambly Creek Basalt, Lake Island and Big Raven Formations: Basalt, olivine basalt, unconsolidated ash, scoria, agglomerate and breccia.*
- **ꞟTQCh** — *Chilcotin Group: Vesicular, columnar jointed basalt, olivine basalt; minor andesite, rhyolite breccia, obsidian, tuff, breccia, conglomerate, sandstone, siltstone, shale and diatomite.*

Oligocene to Pliocene

- **OPFr** — *Poorly consolidated Tertiary sediments (includes the Fraser Bend and Australian Creek Formations): Poorly consolidated to unconsolidated conglomerate, sandstone and mudstone; minor diatomite, lignite, basalt.*

Paleogene

- **ETs** — *Paleogene sediments including Chuckanut, Kitsilano, Slatechuck, Tanzilla Canyon, Kishehn and Sophie Mountain Formations: Conglomerate, sandstone, siltstone, shale, marl, minor coal; minor tuffs and tuffaceous siltstone; basalt.*
- **EOEn** — *Endako Group: Andesite, basalt, minor dacite; flows, breccia and tuff, vesicular, amygdaloidal, locally hyaloclastic, minor picritic basalt and rhyolite; conglomerate, sandstone, shale, lignite.*
- **Eoo** — *Ootsa Lake Group (including Newman Formation) and unnamed equivalents: Rhyolite, dacite, trachyte flows; related tuff and breccia; andesite and basalt; minor conglomerate, grit, greywacke and tuffaceous shale.*

MESOZOIC

Cretaceous to Tertiary

- **uKTS** — *Sifton and Usilika Formations. Bowron River Coal Beds and Reynolds Creek Succession: Pebble to boulder conglomerate, sandstone, siltstone, shale, minor coal.*
- **KSu** — *Sustut Group and unnamed equivalents: Sandstone, siltstone, mudstone, chert and quartz-pebble conglomerate, felsic ash-tuff, minor coal.*

Jurassic to Cretaceous

- **mJKBo** — *Bowser Lake Group: Heterolithic conglomerate, sandstone, siltstone, mudstone, shale, feldspathic wacke, minor coal; minor basalt and andesite flows, breccia and tuff, dacitic lava flows, lapilli tuff.*

Upper Cretaceous

- **uKKs** — *Kasalka Group unnamed equivalents: Hornblende-feldspar porphyritic andesite to basalt flows and related pyroclastics, breccias and epiclastic beds, lesser dacite, rhyodacite, basaltic andesite, quartz porphyry; sandstone, conglomerate.*

Lower Cretaceous

- **lKGa** — *Gambier Group; Monarch Volcanics, Ottarasko Formation; and equivalents including the Cerulean Lake Unit: Conglomerate, sandstone, shale, argillite, minor limestone; basaltic andesite to rhyolite flows, crystal and lapilli tuff, tuffaceous sandstone, volcanic conglomerate and breccia; schist, graphitic schist.*
- **lKsk** — *Skeena Group: Feldspathic and volcanic sandstone, siltstone, shale, mudstone, chert-pebble conglomerate, minor coal; augite-plagioclase phyric alkaline basalt to basaltic andesite, plagioclase phyric andesite to dacite; aphyric basalt, green to maroon mafic lapilli tuff, volcanic breccia, rhyolite to dacite flows.*

Lower to Middle Jurassic

- **lmJHz** — *Hazelton Group; Griffith Creek and Hotnarko Volcanics: Calcalkaline basalt to rhyolite pyroclastics and flows, derived volaniclastic conglomerate, breccia, sandstone, siltstone, shale, minor limestone and marl.*

Lower Jurassic

- **lJCl** — *Chuchi Lake Succession: Pebbly grit, polymictic conglomerate containing abundant volcanic clasts, sandstone, siltstone, dark grey shale, lesser cherty dust tuff; maroon and green, porphyritic latite, trachyte and andesite, augite, olivine basalt flows and breccia, lapilli tuff.*
- **lJTw** — *Twin Creek Succession and equivalents: Heterolithic lapilli tuff, plagioclase-augite and plagioclase, quartz porphyritic flows and agglomerate/tuff breccia; arkose, greywacke, sandstone, siltstone, minor conglomerate and coal.*

Triassic to Jurassic

- **TJTK** — *Takla Group (may include deformed Asitka Group): Tezzaron Sequence; and unnamed equivalents: Augite-phyric and aphyric basalt breccia, agglomerate, tuff, pillowed and massive flows; mafic to felsic tuff, ash tuff, lapilli tuff, breccia and conglomerate; tuffaceous argillite and siltite, greywacke, conglomerate, sandstone, siltstone and chert; phyllite, phyllitic schist; limestone, minor skarn.*

Triassic

- **TJS** — *Spray River Group; Halfway, Liard, Charlie Lake, Baldonnel, Pardonet, Ludington, Toad and Grayling Formations; unnamed equivalents: Limestone, dolomite, carbonaceous - argillaceous limestone, calcareous and dolomitic siltstone, calcareous sandstone; shale, sandstone, orthoquartzite and minor gypsum.*

Upper Triassic

- **uꞟS** — *Stuhini Group; Mosley and Mount Moore Formations; and unnamed equivalents; Mafic to intermediate lapilli tuff, ash, breccia and tuffite; massive aphyric to plagioclase and augite-phyric flows and sills; felsic tuff; tuffaceous siltstone, wacke, argillite, polymict conglomerate, limestone, shale; graphitic shale, rare black chert, ribbon chert.*

PALEOZOIC TO MESOZOIC

- **PMGm** — *Gamsby Complex: Schistose and mylonitic felsic and mafic flows, tuff, volcanogenic sediments, amphibolite, leucogneiss, tonalitic to granodioritic orthogneiss, minor marble and skarn.*

Permian to Jurassic

- **PJKu** — *Kutcho Formation, Sitlika Assemblage and possible equivalents: Basaltic to rhyolitic schist, greenstone, pillowed metabasalt, heterolithic breccia; slate, phyllite; banded siltstone, sandstone and conglomerate; minor limestone, marble, chert and green chloritic phyllite.*

Mississippian to Jurassic

- **MJCc** — *Cache Creek Complex and equivalents: Greenstone, amphibolite, mafic pillow lavas, volcanic breccia, agglomerate, tuff, rare felsic flows and tuff; phyllite, siliceous phyllite, metachert, ribbon chert, chlorite schist, sandstone; micritic to clastic limestone, argillite, marble, dolomite; minor serpentinite and mafic intrusions.*

Ordovician to Triassic

- **OꞟA** — *Unnamed Ordovician to Triassic volcanic and sedimentary rocks (Alexander Terrane) within the Coast Complex: Siltstone, mudstone, shale, limestone, marble, mafic and felsic volcanics, quartzite and conglomerate; often metamorphosed to slate, phyllite, schist, marble, gneiss, amphibolite and greenstone.*

PALEOZOIC

Devonian to Permian

- **DPAs** — *Asitka Group: Massive, grey, bioclastic limestone; argillaceous, thin bedded, recrystallized limestone with chert nodules; slate, slaty siltstone and chert; sericite and chlorite phyllite and schist; metagabbro, basalt, rhyolite, tuff; minor serpentinite and listwanite.*
- **DPBc** — *Big Creek Group: Basalt breccia, tuff and pillows; dacitic and rhyolite tuff; shale, argillite, slate, calcareous argillite, limestone, tuffaceous argillite, sandstone, wacke.*
- **DPst** — *Stikine Assemblage: Maroon and green tuff, lapilli tuff, volcanic conglomerate, wacke; pyroxene-phyric agglomerate, breccia, pillowed and massive basalt flows, andesite, minor rhyolite and gabbro; siltstone, sandstone and lesser chert; limestone, bioclastic limestone, calcarenite; foliated metamorphosed equivalents.*

Carboniferous to Permian

- **CPNi** — *Nina Creek Group: Cherty argillite, chert, argillite, massive and pillowed basalt, volcanic breccia, gabbro, siltstone, wacke, dacite.*
- **CPLy** — *Lay Range Assemblage, Evans Creek Limestone: Massive and pillowed basalt, chert, fine to medium-grained gabbro and rare serpentinite; crystal and lapilli tuff, siliceous tuff, volcanic sandstone, minor agglomerate, siltstone, siliceous argillite, limestone, quartz sandstone, minor conglomerate.*

Devonian to Mississippian

- **OMEa** — *Earn Group: Argillite, slate, shale, locally carbonaceous and pyritic; chert, cherty mudstone; chert arenite and pebble conglomerate, polymictic conglomerate; limestone; nodular and bedded barite +/- sulphides.*
- **DMB** — *Besa River Formation: Black, siliceous shale, calcareous siltstone, minor dolomite, limestone, sandstone and pebble conglomerate, barite.*

Cambrian to Devonian

- **ЄDER** — *Razorback and Echo Lake Groups: Thinly layered and interbedded argillaceous limestone and dolomite, shale and slate; dolomite, sandy dolomite, sandstone to quartzite, massive to poorly bedded limestone and dolomite; equivalent to the Kechika and Road River Groups and the Tapioca Sandstone of the Sandpile Group.*

Silurian to Devonian

- **SDs** — *Silurian to Devonian strata of the Rockies including Cedared, Burnais, Harrogate, Mount Forster, Muncho-McConnell, Wokkpash, Stone, Dunedin, Nonda, Pine Point Formations and Tapioca Sandstone: Dolomite, limestone, silty limestone and dolostone, sandstone, quartzite, argillite, shale, siltstone, chert, greenstone, minor gypsum.*

Devonian

- **DFa** — *Fairholme Group, Flume, Mount Hawk, Palliser, Pendrix Formations and unnamed equivalents: Argillaceous limestone, nodular limestone, calcareous shale, dolomite; shale, siltstone, orthoquartzite.*
- **DEc** — *Unnamed sediments and volcanics of the Ecstall Belt: Quartzite, with lesser biotite hornblende gneiss, mica schist, black phyllite to metaargillite, semi- pelitic to pelitic schist, well foliated: mafic and intermediate metavolcanics, locally pyritic, strongly foliated, fine grained amphibolite +/- chlorite schist.*

Cambrian to Ordovician

- **ЄOKe** — *Kechika Group; may include some undifferentiated Road River Group, Skoki Formation or Gog Group: Limestone, argillaceous limestone, pale calcareous slate, phyllitic limestone, calcareous phyllite, pyritic and carbonaceous slate and shale; minor conglomerate, sandstone, greenstone and green tuff.*
- **ЄOOs** — *Cambrian to Ordovician strata of the Rockies: includes McKay Group, Monkman Quartzite, Active, Chushina, Mount Wilson, Skoki, Tipperary, Glenogle, Survey Peak, Beaverfoot, Arctomys, Waterfowl, Cathedral, Tangiefoot, Eiko, Gordon, Chancellor, Eldon, Flathead, Gull Lake, Jubilee, Lyell, Sullivan, Lynx, Mistaya, Bison Creek, Nelway, Ottertail, Pika, Snake, Indian, Stephen, Mount White and Tsar Creek Formations, Kinbasket unit and several unnamed units: Limestone, dolomite, shale, calcareous shale, slate, sandstone, red beds, quartzite, minor conglomerate and chert.*

Cambrian

- **ЄAt** — *Atan Group: Orthoquartzite, siltstone, shale, sandstone; limestone; minor dolostone, phyllite and conglomerate.*

PROTEROZOIC TO PALEOZOIC

Upper Proterozoic to Cambrian

- **uPЄMs** — *Misinchinka Group (may include some undifferentiated Miette Group): Phyllite, siltite, slate, diamictite, quartzite, feldspathic quartzite, minor iron formation; limestone, dolomite, sandy limestone and dolomite, minor argillite; quartz chlorite schist, chloritic phyllite, garnet-mica schist, calcareous sericite schist, amphibolite.*
- **uPЄGo** — *Gog and Boulder Creek Groups; Badshot (may include some undifferentiated Index Formation), Hota, Mohican, Marsh Adams and Mount Garnier Formations, and unnamed equivalents: Limestone, siltstone, dolomite; quartzite, pebble conglomerate; alkalic to calc-alkalic basalt, andesite and dacite; mica schist, marble amphibolite.*

PROTEROZOIC

Upper Proterozoic

- **uPIg** — *Ingenika Group: Quartzite, micaceous quartzite, pebble conglomerate, limestone, dolomite, oolitic and pisolitic limestone, shale, sandstone, wacke, sandy limestone, phyllite, schist, gneiss, chlorite-muscovite schist, slate, argillite, micaceous crystalline limestone, marble, calcsilicate rock, amphibolite.*

## INTRUSIVE ROCKS

CENOZOIC

- **LT** — *Late Tertiary: granite (gr).*
- **ET** — *Early Tertiary: diorite (dr), monzodiorite (dg), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), quartz porphyry (qp), feldspar porphyry (fp), migmatite (mi) and undifferentiated intrusive rocks (g).*

MESOZOIC

- **KT** — *Cretaceous to Tertiary: diorite (dr), granodiorite (gd), granite (gr), quartz diorite (qd), syenite (sy), feldspar porphyry (fp) and undifferentiated intrusive rocks (g).*
- **LK** — *Late Cretaceous: diorite (dr), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), quartz porphyry (qp), tonalite (to), feldspar porphyry (fp) and undifferentiated intrusive rocks (g).*
- **mK** — *Middle Cretaceous: diorite (dr), monzodiorite (dg), gabbro (gb), granodiorite (gd), quartz diorite (qd), quartz monzonite (qm), quartz porphyry (qp) and orthogneiss (og).*
- **EK** — *Early Cretaceous: diorite (dr), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm) and orthogneiss (og).*
- **K** — *Cretaceous: granite (gr) and pegmatite (pe).*
- **JT** — *Jurassic to Tertiary: quartz diorite (qd)*
- **JK** — *Jurassic to Cretaceous: diorite (dr), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), quartz porphyry (qp), orthogneiss (og) and undifferentiated intrusive rocks (g).*
- **J** — *Jurassic: granodiorite (gd) and quartz monzonite (qm).*
- **LJ** — *Late Jurassic: diorite (dr), granodiorite (gd), granite (gr), quartz diorite (qd) and quartz monzonite (qm).*
- **MJ** — *Middle Jurassic: diorite (dr), granodiorite (gd), granite (gr), quartz diorite (qd), quartz monzonite (qm), syenite (sy), quartz porphyry (qp), feldspar porphyry (fp) and undifferentiated intrusive rocks (g).*
- **MLJ** — *Middle to Late Jurassic: diorite (dr), gabbro (gb), granodiorite (gd), granite (gr), quartz diorite (qd) and orthogneiss (og).*
- **EMJ** — *Early to Middle Jurassic: diorite (dr), granodiorite (gd) and diabase (db).*
- **EJ** — *Early Jurassic: diorite (dr), monzodiorite (dg), gabbro (gb), granodiorite (gd), quartz diorite (qd), quartz monzonite (qm), syenite (sy) and orthogneiss (og).*
- **ꞟK** — *Triassic to Cretaceous: gabbro (gb).*
- **ꞟJ** — *Triassic to Jurassic: diorite (dr), gabbro (gb), granodiorite (gd), syenite (sy), feldspar porphyry (fp) and undifferentiated intrusive rocks (g).*
- **Ꞟ** — *Triassic: diorite (dr), gabbro (gb) and granodiorite (gd).*
- *Mesozoic: ultramafics (um) and serpentinites (us);* ꞟum, ꞟus, ꞟJum and ꞟJus.

PALEOZOIC

- **PJ** — *Permian to Jurassic: tonalite (to) and orthogneiss (og).*
- **Pꞟ** — *Permian to Triassic: diorite (dr), gabbro (gb), tonalite (to) and diabase (db).*
- **P** — *Permian: gabbro (gb).*
- **CP** — *Carboniferous to Permian: diorite (dr) and gabbro (gb).*
- **M** — *Mississippian: diorite (dr).*
- **D** — *Devonian: orthogneiss (og).*
- *Paleozoic: diorite (qd).*
- *Paleozoic: ultramafics (um) and serpentinites (us);* CPus, Cꞟum, Cꞟus, Cus, Dꞟum and PPum.

AGE UNKNOWN

- *Age unknown or poorly constrained: granite (gr) and orthogneiss (og).*

## METAMORPHIC ROCKS

MESOZOIC

- *Mesozoic (includes KT): greenschist to mid-amphibolite facies rocks (gs, ml, mm), calcsilicates (mc) and paragneiss (pg);* Jgs, KTmc and KTpg.

PALEOZOIC

- *Paleozoic (includes PJ): greenschist to lower-amphibolite facies rocks (ml) and undifferentiated metamorphic rocks (m);* Dꞟml, PJml and PPm.

PROTEROZOIC

- *Proterozoic: Paragneiss (pg);* LPpg.

## Legend

- QUEST-West airborne geophysical survey area
- Geological contact
- Fault
  - normal
  - thrust (teeth on upper plate)
  - extension
  - unknown
- Railroad (unclassified)
- Road (unclassified)
- Mineral deposit (selected)
- Populated place (unclassified)

* The mineral deposit data on this map has been cartographically prepared by Geoscience BC as part of a suite of maps for the QUEST-West Project.

**Mineral Deposit Data**

MINFILE (2010): MINFILE B.C. mineral deposits database; B.C. Ministry of Energy, Mines and Petroleum Resources, URL <http://minfile.ca> [September 2010].

**Geology and Topographic Data**

Massey, N.W.D, MacIntyre, D.G., Desjardins, P.J. and Cooney, R.T. (2005): Digital Geology Map of British Columbia: Whole Province; B.C. Ministry of Energy and Mines, Geofile 2005-1, URL <http://www.empr.gov.bc.ca/Mining/Geoscience/PublicationsCatalogue/GeoFiles/Pages/2005-1.aspx> [November 2007].

**Acknowledgments**

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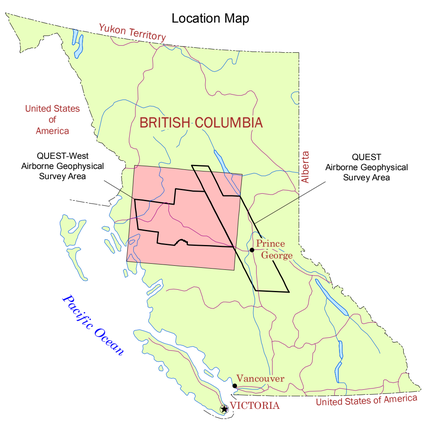
QUEST-West is funded in partnership with the Northern Development Initiative Trust - www.nditrust.ca and the Regional District of Bulkley-Nechako - www.rdbn.bc.ca

Northern Development Initiative Trust

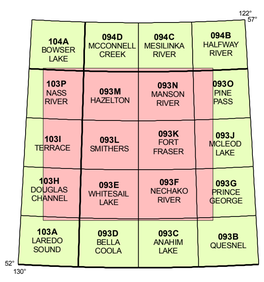
| DEPOSIT GROUP | Producer | Past Producer | Developed Prospect | Prospect | Showing |
|---|---|---|---|---|---|
| **Porphyry** | | | | | |
| Subvolcanic Cu-Ag-Au (As-Sb) | | 4 | 3 | 9 | 46 |
| Alkalic porphyry Cu-Au | | | 8 | 21 | 81 |
| Porphyry Cu +/- Mo +/- Au | 1 | 3 | 13 | 15 | 103 |
| Porphyry Mo (Low F- type) | 1 | 1 | 5 | 5 | 68 |
| **Vein, breccia and stockwork** | | | | | |
| Au-quartz veins | | 6 | | 6 | 26 |
| Intrusion-related Au | | 7 | 5 | 7 | 45 |
| Polymetallic veins Ag-Pb-Zn+/-Au | | 46 | 15 | 48 | 224 |
| Cu +/- Ag quartz veins | | | | 3 | 8 |
| **Epithermal** | | | | | |
| Epithermal Au-Ag +/- Cu | | 1 | 3 | 8 | 17 |
| **Skarn** | | | | | |
| Cu skarn | | 1 | | 3 | 25 |
| **Continental sediments and volcanics** | | | | | |
| Volcanic redbed Cu | | 7 | 5 | 7 | 117 |
| **Sediment-hosted** | | | | | |
| Almaden Hg | | 2 | | | 14 |
| Mississippi Valley-type Pb-Zn | | | | 1 | 5 |
| **Volcanic massive sulphides** | | 3 | 1 | 4 | 27 |
| **Ultramafic and mafic** | | | | | |
| Podiform chromite | | | | 4 | 16 |
| **Placer** | | | | | |
| Paleoplacer U-Au-PGE-Sn-Ti-diam-mag-gar-zir | | 12 | | | |
| **Other, unsubdivided** | | 1 | 5 | 5 | 23 |
| **Unknown** | | 2 | | 7 | 136 |

Note:
For unsubdivided and unknown deposit types, select primary commodities (Au - Gold, Ag - Silver, Cu - Copper, Mo - Molybdenum, Pb - Lead, Zn - Zinc and Hg - Mercury) are labelled.

Location Map




National Topographic Sheet Index




Geoscience BC

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MAP 2010-12-2

MINERAL DEPOSITS

# QUEST-WEST PROJECT

NTS SHEETS 93E,F,K,L,M,N
PART OF NTS SHEETS 93B,C,D,G,J,O; 94B,C,D; 103A,H,I,P; 104A

1:500,000

0 5 10 15 20 25 50 kms

Albers Projection, Central Meridian 126° W, Latitude of origin 45° N, First standard parallel 50° N, Second standard parallel 58.5° N, False easting 1,000,000; North American Datum 1983

Mean magnetic declination 2010, 19°46'E, decreasing 15.7' annually. Readings vary from 18°45' E in the southeast corner to 20°36' E in the northwest corner of the map.

December 2010

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# GEOSCIENCE BC - QUEST-WEST - MINERAL DEPOSITS*