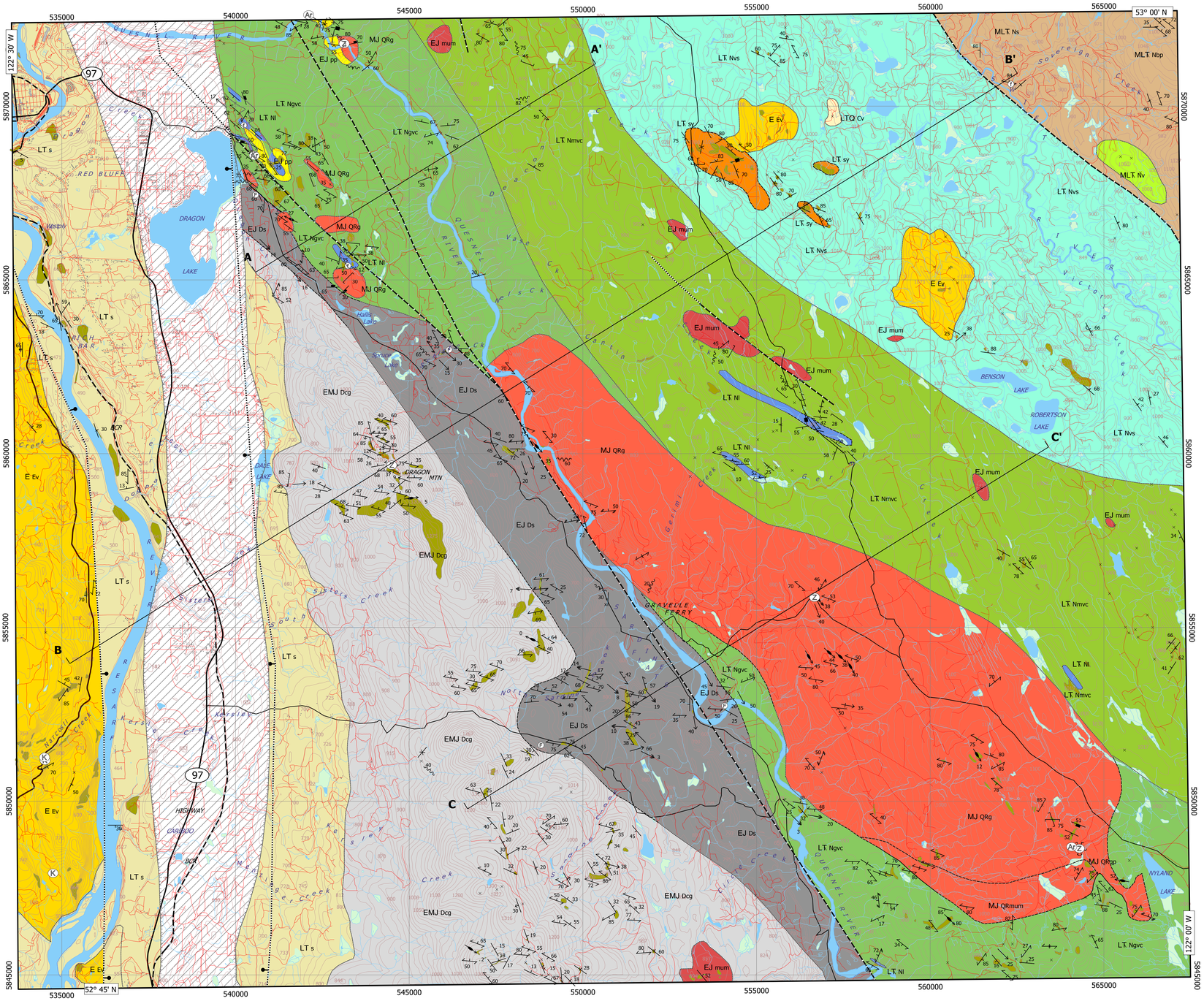

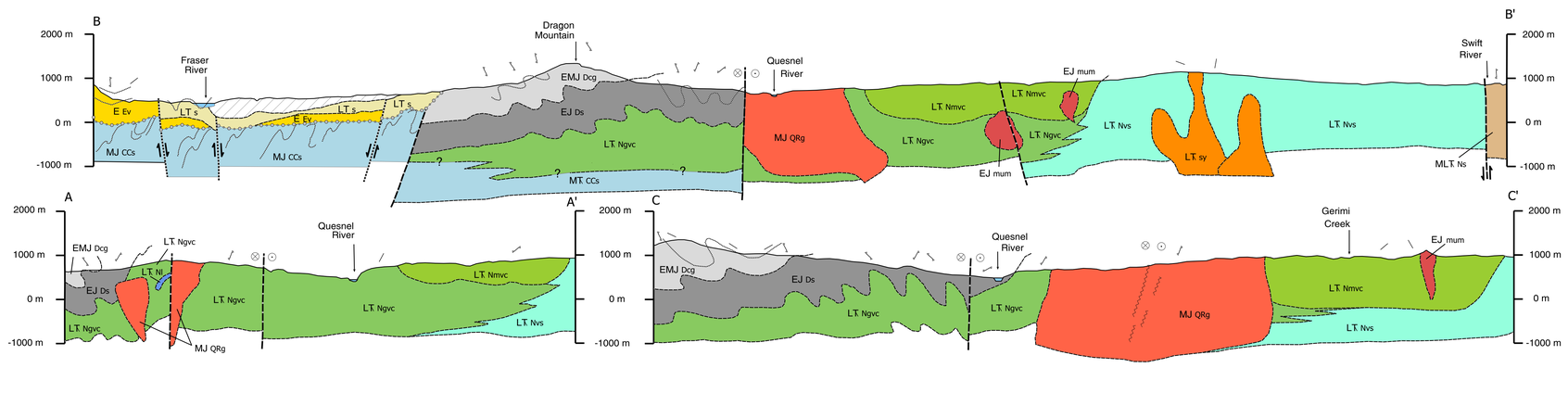

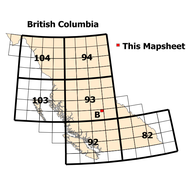

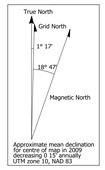

BRITISH COLUMBIA
Canada's Pacific Gateway

Ministry of Energy, Mines and Petroleum Resources

British Columbia Geological Survey

Open File 2009-10

Geology of the Quesnel River area, central British Columbia

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

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

1 0 1 2 3 4
Kilometers

Scale 1:50,000

Legend

INTRUSIVE ROCKS

Quesnel River pluton

Middle Jurassic

MJ QRqp — Quartz-feldspar porphyry felsite, medium-grained sucrosic to aphanitic groundmass, minor biotite, magnetite and commonly 1-2% disseminated pyrite

MJ QRg / MJ QRmum — Potassium feldspar megacrystic biotite-hornblende granite, equigranular quartz monzonite; marginal phases include coarse-grained pyroxenite (mum), mesocratic granite with coarse plates of biotite crystal aggregates, pegmatites and aplite

Early Jurassic

Mafic-Ultramafic intrusive complexes

EJ mum — Co-mingling coarse-grained pyroxenite, equigranular pyroxene-biotite diorite, hornblende-pyroxene monzodiorite, porphyritic potassium feldspar megacrystic hornblende ± biotite monzonite to quartz syenite

EJ pp — Plagioclase porphyritic monzonite, stubby white plagioclase phenocrysts, acicular hornblende, biotite books and rounded quartz grains in an aphanitic green groundmass, probably extrusive in part

Late Triassic to Early Jurassic (?)

LT sy — Coarse, potassium feldspar megacrystic syenite, characteristically crowded (>70% orthoclase) trachytic phenocrysts in a fine-grained hornblende and feldspar matrix

LAYERED ROCKS

Quaternary

Q al — Unconsolidated glacial lacustrine, fluvial and alluvial deposits

Sediment-filled Pleistocene valley

Late Miocene to Quaternary

Chilcotin Group

LTQ Cv — Plateau basalt, columnar jointed flows and breccia units

Oligocene to Miocene

Australian Creek, Fraser Bend and Crownite formations

LT s — Poorly consolidated conglomerate, sandstone, mudstone, lignite and diatomite

Eocene

Ootsa Lake and Endako groups

E Ev — Red, brown and tan weathering black or grey andesite and dacitic breccia and flow units, aphyric to porphyritic feldspar, amphibole and/or pyroxene phenocrysts

Jurassic

Dragon Mountain succession

EMJ Dcg — Thick bedded, chaotic or weakly graded polymictic granule to cobble volcanic conglomerate, interlayered with grey or green siltstone and gritty sandstone, white and grey limestone and quartz dominated grit. Commonly pale green due to pervasive epidote ± pyrite overprint or replacement of volcanic clasts rare, green pyroxene porphyritic basalt

EJ Ds — Thin laminated black argillite, phyllite and brownish-grey siltstone, characteristically dark with graphitic, pyritic and minor calcareous intervals

Late Triassic

Nicola Group - Western volcaniclastic succession

Maroon volcaniclastic succession

LT Nmvc — Maroon, massive or thick-bedded, pyroxene- and feldspar-porphyry basalt-clast dominated polymictic conglomerate, limestone, crystal-lithic sandstone and siltstone, maroon and green vesicular basalt flows and hyaloclastite

Green volcaniclastic succession

LT Ngvc — Green, massive or foliated pyroxene-porphyry metavolcaniclastic flow units, conglomerate, limestone, calcareous tuff and tuffaceous siltstone

LT Nl — Bioclastic limestone, argillaceous limestone, dark banded calcareous shale and tuffaceous siltstone

LT Nvb — Pyroxene porphyry trachytic basalt flows and breccia, hyaloclastite and tuffaceous sandstone

Nicola Group - Eastern Sedimentary succession

Cottonwood River succession

LT Nvs — Thin, parallel & low angle wavy laminated grey, green, buff and black cherty argillite, volcanic siltstone, argillite and rare limestone horizon. Cleaved parallel to bedding into 50 mm thick domains separated by 2 mm phyllite partings

Middle to Late Triassic

Black Pelite succession

MLT Ns — Thin interbedded grey and black, phyllite, graphitic ± pyritic argillite, buff and grey siltstone and fine sandstone with detrital muscovite and quartz. Polylithic conglomerate horizons. Nbp= Black Phyllite Unit

MLT Nv — Green pyroxene-porphyritic volcaniclastic rocks and flow breccia units

Mississippian to Jurassic

Cache Creek Group

MJ CCs — Thin bedded, siliceous siltstone, ribbon chert and phyllite, massive recrystallized limestone interlayered with greenstone and basalt

Geological Symbols

- Geological contact (defined, approximate, assumed)
- Unconformity (assumed)
- Bedding (inclined, vertical, tops known)
- Dominant foliation (inclined, vertical)
- Crenulation cleavage (inclined, vertical)
- Brittle shear (inclined, vertical)
- Dike (inclined, vertical)
- Vein (inclined, vertical)
- Joint (inclined, vertical)
- Early crenulation lineation (plunge indicated)
- Fold axis
- Axis of late, open folds
- Mineral or stretching lineation (plunge indicated)
- Fault; downthrown side indicated (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
- Outcrop (area, isolated)

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MINFILE Occurrences

		(STATUS)	EAST	NORTH		
Surficial Placers						
093B 018	Quesnel Canyon	(developed prospect)	543330	5871755	Au	Raised bench of Tertiary glacial fluvial deposits consisting of coarse cobble gravels unconformably overlying Nicola Group basement. Test pits and bulk samples have established indicated reserves of 61,785 m3 grading 0.48 g/m3 Au (Dolphin, 1988).
093B 022	Ainsworth, Sardine Flats,	(past producer)	552675	5854326	Au	Most of the gold production from the Quesnel River has come from dredging operations, but a significant amount of gold has been won from Tertiary benches adjacent to the present river level.
Sediment Hosted Cu						
093B 025	Lynda, BI, Phantom	(showing)	556604	5860736	Cu, Ag	Late Triassic Nicola stratigraphic package comprising maroon volcaniclastic rocks and basalt, dolomitic limestone and green polylithic volcaniclastic unit intruded by alkalic trachytic dikes. The limestone is brecciated and mineralized with disseminated pyrite and tetrahedrite; malachite and azurite coat weathered surfaces. Stratigraphically lower maroon basalt and volcaniclastic rocks contain native Cu filling vesicles and fractures suggestive of red-bed Cu style mineralization.
Au-quartz veins						
093B 064	Cantin Creek, Deacon	(showing)	555633	5863970	Au	Propylitic, Fe-carbonate and silica alteration of intermediate to mafic pyroxene-phyric volcanic flow and clastic volcanic rocks intruded by mafic-ultramafic intrusive complex. Best intersection of 2.64 g/t Au over 1.6 m (Miller-Tait, 2004).
093B 053	Nyland Lake	(showing)	566632	5847792	Au	Nicola Group metavolcaniclastic rocks are hornfelsed and skarned adjacent to the contact with granite and diorite of the Quesnel River pluton. Garnet, diopside, epidote, pyrite and biotite alteration assemblages and dike swarms of pegmatite, aplite and quartz characterize the contact zone, which contains anomalous Au values. In addition, anomalous Au values in heavy mineral pan separates are reported from creeks draining the area (Troup and Freeze, 1985).
Porphyry Cu, Mo, Au						
093B 021	Kate	(showing)	542770	5871781	Cu, Mo, Au	Pyroxene phyric flows, volcaniclastic and tuffaceous argillite-sandstone are intruded by stocks and dikes of Middle Jurassic biotite-feldspar porphyry and quartz porphyry. Pyrite-silica and ankeritic alteration is closely associated with fracture-controlled chalcopyrite mineralization.
093B 057	TARN, AND, ALSO	(showing)	558007	5848206	Cu, Ag, Au, Mo	Mineralization consists of Cu, Mo, Ag and Au in silicified, skarned and hornfelsed country rock within the contact aureole of the Quesnel River diorite. Pyrite > pyrrhotite with minor chalcopyrite, chalcocite and rosettes of molybdenite are disseminated or occupy fractures in both the country rock and the dioritic intrusion.
Polymetallic veins						
093B 027	AB, ANO, XL	(showing)	558875	5863537	Pb, Ag	The showing is underlain by cherty argillite, siltstone and fine-grained tuffaceous rocks of the Cottonwood River succession adjacent to its contact with volcanic and volcaniclastic rocks of the Western Volcaniclastic succession. The area is intruded by a small composite diorite to monzonite intrusive complex. Ubiquitous pyrite and minor galena and tetrahedrite were reported (Holland, 1968).
093B 029	COUSIN JACK	(showing)	544456	5860764	Pb, Ag, Au	Mineralization consists of galena and pyrite in quartz stringers within an oxidized sheared zone cutting sedimentary and volcanic rocks located on the east side of Dragon Mountain. The zone, about 6 m wide and 150 m long, strikes 068 degrees. A grab sample of vein material assayed 1.24 g/t Au, 130.6 g/t Ag and 9% Pb (Lay, 1935). Location uncertain.
093B 046	MANDY, BLACK BEAR	(showing)	562654	5845297	Ag, Cu, Au, Sb, Zn	East-trending quartz-ankerite veins up to 1.4 m wide occupy shears cutting Nicola metavolcanic rocks. The main vein, explored by a 6 m decline, follows a 90 cm wide east-trending shear zone and contains 5 to 10% patchy tetrahedrite with chalcopyrite. A 1.5 m chip sample of quartz-ankerite vein yielded 3.3 % Cu, 0.02 % Pb, 0.45 % Zn, 435 g/t Ag and 0.65 g/t Au (Durfeld, 1986).
Coal						
093B 036	Quesnel Coal	(developed prospect)	536527	5849079	Cl	A number of coal zones containing sub-bituminous "B" and "C" rank coal are present in the lower portion of the Fraser River Member of Early Oligocene age.

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