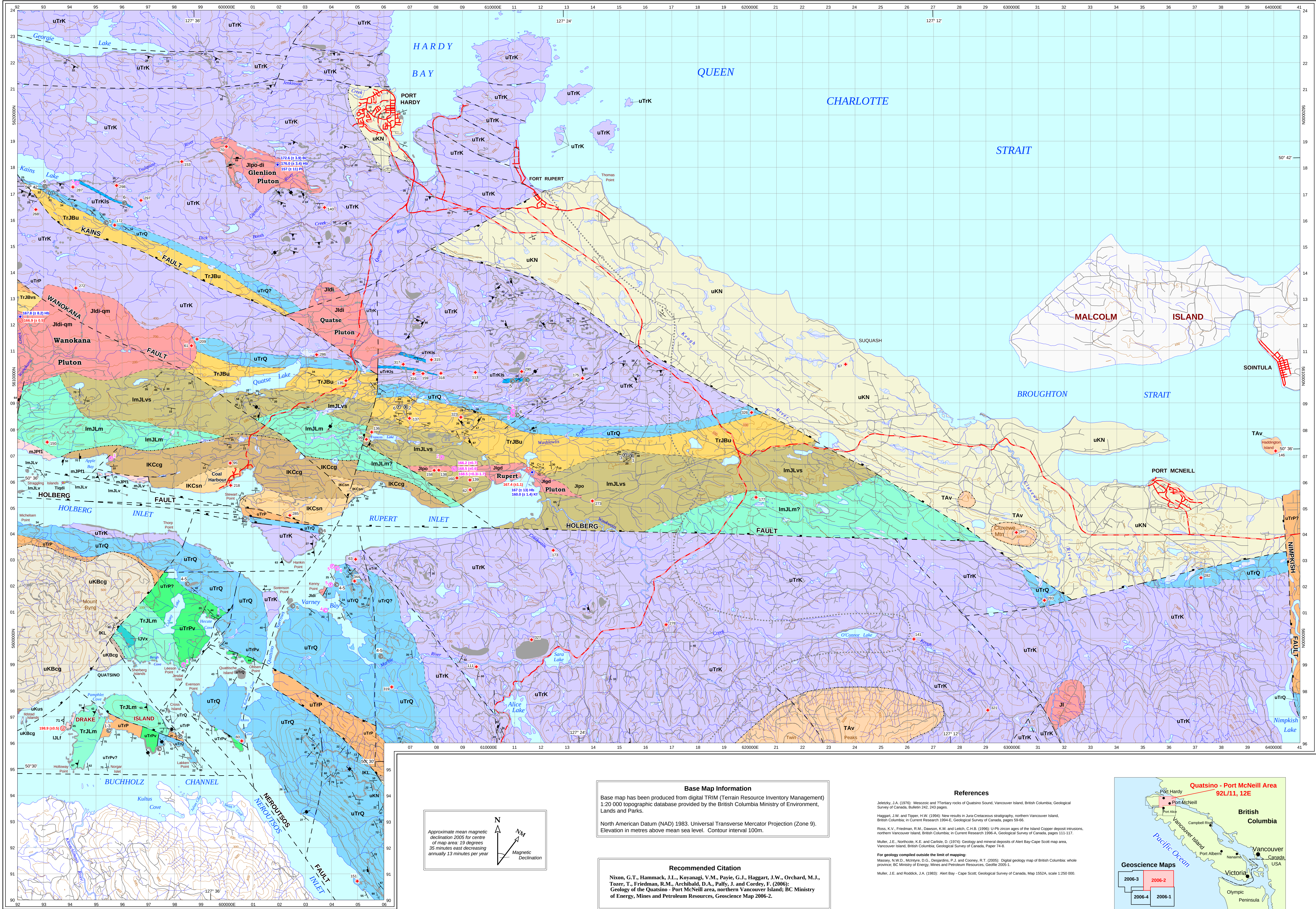


Geology of the Quatsino-Port McNeill Area, Northern Vancouver Island

NTS 92L/11, 12E
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LAYERED ROCKS

TERTIARY

Neogene

ALERT BAY VOLCANICS

TAV Basaltic to rhyolitic, aphanitic to porphyritic flows, flow domes and volcanic breccia; minor volcanic conglomerates, sandstone and debris-flow deposits.

UPPER CRETACEOUS

NANAIMO GROUP EQUIVALENTS (IN PART)

Campanian to ?Maestrichtian

uKN Medium to coarse-grained arkosic to lithic wacke, pebble to cobble conglomerate, siltstone and minor coal; locally fossiliferous.

QUEEN CHARLOTTE GROUP EQUIVALENTS (IN PART)

Cenomanian or Early Turonian to ?Santonian

BLUMBERG FORMATION

uKBSn Massive to thinly bedded lithic to arkosic wacke with minor pebble to cobble conglomerate.

uKBCg Massive conglomerate with minor lenses of coarse-grained lithic wacke.

Cenomanian to ?Turonian

SHALE UNIT

uKSn Dark grey, calcareous to non-calcareous siltstone and impure limestone interbedded with subordinate wacke and minor pebble conglomerate.

LOWER CRETACEOUS

COAL HARBOUR GROUP

?Albian

IKCSn Upper sandstone facies; through cross-laminated lithic wacke intercalated with siltstone, minor pebble conglomerate and rare coal.

IKCCg Lower conglomerate facies; massive conglomerate with minor lenses of coarse-grained lithic wacke.

Late Valanginian to Barremian

LONGARM FORMATION EQUIVALENTS

IKL Thinly bedded to massive sandstone, siltstone, mudstone, pebble conglomerate and minor coal; locally fossiliferous.

UPPER TRIASSIC (CARNIAN) TO MIDDLE JURASSIC (MID-BAJOCIAN)

BONANZA GROUP

Rhaetian or Hettangian to mid-Bajocian (Quatsino - Port McNeill Area)

LEMARE LAKE VOLCANICS (subdivided by lithotype)

Age designation: ml, Middle Jurassic; ml, Lower and/or Middle Jurassic; l, Lower Jurassic; T-L, uppermost Triassic - lowermost Jurassic.

L Undifferentiated basaltic to rhyolitic, predominantly subaerial lavas and pyroclastic rocks including ash-flow and rare airfall tuffs and reworked equivalents; minor pillow lavas, breccia, hyaloclastite and pyroclastic surge deposits, locally intercalated with marine to non-marine, volcanic conglomerate, sandstone, siltstone, mudstone, impure limestone and localized debris-flow deposits.

Lf Mainly rhyolitic or dacitic to rhyolitic lavas and/or pyroclastic rocks, including flow and pyroclastic breccias, welded to non-welded crystal-lithic lapilli tuffs and rare airfall tuffs; may include thin interbedded sedimentary deposits.

Lm Mainly basaltic to andesitic lava flows with minor intercalated volcanoclastic and sedimentary lithologies similar to Lvs; locally includes minor pillow lava and breccia.

Lv Mainly basaltic to andesitic volcanic breccia of epiclastic and pyroclastic origin, and variably reworked lithic-crystal tuff; locally fine-grained sedimentary interbeds.

Lvs Interbedded volcanoclastic and sedimentary strata, includes lithic and crystal-lithic lapilli tuffs and reworked equivalents, pyroclastic and epiclastic volcanic breccias, sandstone, siltstone, mudstone, impure limestone, and minor debris-flow and preatmagmatic deposits; may include rare lava flows.

Middle Jurassic (mid-Bajocian)

Pemberton Hills Rhyolite

mJP1 Rhyolitic lavas and ash-flow tuffs with minor intercalated epiclastic deposits (subunit 1).

Hettangian (or possibly Rhaetian to Sinemurian) (Quatsino - Port McNeill Area)

Victoria Lake Megacrystic Basalt

LDvs Plagioclase-megacrystic basaltic to andesitic lavas locally intercalated with, and laterally equivalent to, aphanitic and plagioclase-phyric flows near the base of the Lemare Lake Volcanics.

Rhaetian to Hettangian or ?Sinemurian (Quatsino - Port McNeill Area)

VOLCANICLASTIC-SEDIMENTARY UNIT

TrJBvs Interbedded volcanoclastic and lesser sedimentary strata (predominantly submarine); tuff to grey-green, thin to very thick bedded, calcareous to non-calcareous, volcanic breccia, lithic and tephritic wacke, siltstone and impure limestone; lithic-crystal tuff, lapilli tuff and reworked equivalents; and minor vitric tuff, pebbly sandstone, shale and volcanoclastic debris-flow breccia.

Early Norian to Hettangian or Sinemurian (Quatsino - Port McNeill Area)

TrJBu Undivided strata of the Parson Bay Formation and overlying volcanoclastic-sedimentary lithologies in the basal part of the Bonanza Group in areas of sparse outcrop north of Holberg Inlet and outside the limit of mapping.

(late) Early Norian to Rhaetian or ?Hettangian (Quatsino - Port McNeill Area)

PARSON BAY FORMATION

uTPv Medium grey to black, laminated to medium bedded impure limestone, calcareous to non-calcareous, mudstone, siltstone, and shale, locally intercalated with minor grey-green lithic wacke, tephritic wacke, lithic, crystal and vitric tuff and reworked equivalents and volcanoclastic breccia, and rare pebbly sandstone, conglomerate and debris-flow deposits; calcareous facies locally contain colonial coral horizons; organic-rich facies comprise carbonaceous to graphitic shales, mudstone and limestone; locally abundant fossils.

uTPv Volcanoclastic and volcanic lithologies; predominantly basaltic to andesitic epiclastic wacke and breccias and tuffs, includes lithic lapilli tuff and tuff-breccia of preatmagmatic origin; minor pillow lava and hyaloclastite; locally interbedded fine-grained volcanoclastic and sedimentary rocks.

LAYERED ROCKS (Cont'd)

UPPER TRIASSIC

VANCOUVER GROUP

Carnian to (late) Early Norian (Quatsino - Port McNeill Area)

QUATSINO FORMATION

uTQ Medium to pale grey, thinly bedded to massive micritic limestone and locally bioclastic limestone; minor silica replacements and chert nodules; rare laminated interbeds, oolitic layers and algal mats; locally fossiliferous.

Carnian

KARMUTSEN FORMATION

uTK Aphanitic to plagioclase-phyric and locally plagioclase-megacrystic basaltic lava flows, commonly amygdaloidal; predominantly subaerial flows in the upper part of the succession; may include minor pillow lava, breccia and hyaloclastite.

uTKs Trend of thin grey limestone beds and lenses intercalated with basalt near the top of the succession.

INTRUSIVE ROCKS

TERTIARY (?Neogene)

Tgd Medium grained quartz diorite possibly equivalent to Alert Bay Volcanics (known only on Skagging Islands in Holberg Inlet).

EARLY TO MIDDLE JURASSIC

ISLAND PLUTONIC SUITE

Jl Medium to coarse-grained, equigranular granitoid rocks and porphyry; includes hornblende +/- biotite-bearing diorite (ds), plagioclase +/- hornblende porphyry (po), quartz monzonite/monzodiorite (qm) and granodiorite (gr).

MAP SYMBOLS

- Geological contact, defined
- Geological contact, approximate
- Geological contact, inferred
- High-angle fault, defined (block on downthrow side if known)
- High-angle fault, approximate
- High-angle fault, inferred
- Unconformity, approximate
- Unconformity, inferred
- Limit of mapping
- Bedding, inclined
- Primary flow lamination in volcanic rocks, inclined
- Welding, inclined
- Cleavage, fault-related, inclined
- Lineation (slickensides on fault plane), horizontal
- Lineation (slickensides on fault plane), horizontal
- Plunge of minor fold axis
- Minor fold with dip of axial plane
- Dike, inclined, vertical
- Macrofossil locality (with indicated age)
- 1 Early Cretaceous
- 2 Middle Jurassic (Adenian)
- 3 Early Jurassic (Sinemurian)
- 4 Late Triassic (Late Norian)
- 5 Late Triassic (Early Norian)
- 6 Late Triassic
- GSC macrofossil locality (ages as above)
- Conodont locality (with indicated age)
- 1 Late Triassic (Rhaetian)
- 2 Late Triassic (Late Norian)
- 3 Late Triassic (Middle Norian)
- 4 Late Triassic (Early Norian)
- 5 Late Triassic (Carnian - Late Carnian)
- 6 Late Triassic
- GSC conodont locality (ages as above)
- Radialaria locality (with indicated age)
- 1 Early Jurassic (Sinemurian - Pliensbachian)
- 2 Late Jurassic (Late Carnian - Middle Norian)
- A40/A39 mineral date (Ma, 2 sigma error);
- Hb: hornblende; Kf: K-feldspar; Bt: biotite
- U-Pb zircon date (Ma, 2 sigma error);
- Ross et al. (1996)
- U-Pb zircon date (Ma, 2 sigma error)
- MINFILE locality (92L 10)
- Outcrop examined
- Outcrop too small to show at map scale
- Roads, paved
- Roads, dirt

Data Compilation

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Digital Cartography: K.A. Johnston