Pass, to east of area) strata. In the Late Devonian, turbiditic quartz-chert sandstone, and chert-pebble conglomerate were deposited in submarine fan complexes as shale deposition transgressed far northeastward onto the ancestral margin (units DME, MC, DMP, and DP). The coarse clastic units, perhaps 1200 m in aggregate thickness, were derived from elevated fault blocks of Selwyn Basin strata to the north and west, including latest Proterozoic gritty quartzose clastic rocks and Ordovician-Silurian chert. An extensional or transtensional event is indicated by an absence of compressional deformation, local felsic volcanism (unit Mv), and widespread stratiform barite (± lead-zinc) occurrences (e.g. Tom, Jason to east of area). A regional unconformity occurs beneath upper Upper Devonian strata (unit DMP). Succeeding Lower Mississippian and Triassic carbonate and siliciclastic sedimentary rocks separated by Carboniferous to Permian chert and shale (units MT, CPMC, and TJ) (total 1700 m) were likely deposited on a silty to muddy, at times euxinic, shallow-marine shelf. A regional unconformity occurs beneath Middle to Upper Triassic (unit TJ), and possibly beneath Upper Mississippian strata (unit

Rare Lower Cretaceous chert-bearing clastic rocks (unit KBT) (more than 120 m), the first signal of

Jura-Cretaceous orogenic uplift to the west, disconformably overlie Upper Triassic strata. Ancestral margin strata southwest of Tintina Fault comprise two distinct successions separated by the northwest-trending St. Cyr Fault. On the southwest, the Pelly Mountains assemblage (3500 m) consists of relatively deep-water, late Proterozoic to Silurian fine clastic and carbonate strata (units PCp, COsl, OSI) succeeded by shallow-water, Siluro-Devonian carbonate and clastic rocks (units Sst, SDdg; Cassiar Platform), in turn overlain by Devono-Mississippian shale and chert-bearing sandstone (unit DMs). The Devono-Mississippian strata are analogous in tectonic affinity to the Earn Group (unit DME) northeast of Tintina Fault. To the south of Tay River map area the succession includes felsic volcanic rocks that host volcanogenic massive-sulphide occurrences (e.g. Wolf). Unconformities occur at the base of the Lower Silurian (unit Sst) and upper Upper Devonian (unit DMs). In the narrow belt between St. Cyr and Tintina faults, the St. Cyr assemblage (more than 1600 m) differs from the Pelly Mountains assemblage in the lack of Paleozoic shallow-water clastic or carbonate strata, as well as in the presence of a unique and enigmatic unit of Late Devonian limestone-phyllite (unit DMcsl). Cambro-Ordovician to Devonian strata consist chiefly of fine-grained pelitic (unit ODsI) and carbonate (unit EOc) rocks of probable deep-water origin. Scattered remnants of Carboniferous to Triassic strata include chert (unit Mt), siltstone, carbonate, and shale (units DMs, Csl, uTsc) that resemble equivalent strata in adjacent regions southwest of St. Cyr Fault. In the Early Cretaceous, northeast-southwest compression led to northwest-trending, regional scale folds, and extensive, shallow-dipping thrust faults. Incompetent Ordovician to Devonian shale and chert are complexly deformed above a regional, flat-lying, buried detachment (see cross-sections, sheet 3). Shortening in Cambro-Ordovician to Devonian strata is at least 50%, indicating that the paleogeographic width of the Selwyn Basin was twice as much as is currently represented. Folds and faults ultimately root in a basal detachment that extends beneath the region and across the entire

deformed belt. Upper Paleozoic oceanic rocks of the Slide Mountain terrane (unit CPs), and

metasedimentary rocks of the Yukon-Tanana terrane (unit CTY), were emplaced as thrust sheets during

this deformation. Deformation is bracketed as younger than affected Early Cretaceous strata (unit KBT),

and older than intrusion of the mid-Cretaceous Selwyn Plutonic Suite (unit Ks) and eruption of dacitic

pyroclastic rocks of the coeval South Fork volcanics (unit KSF). The plutons are regionally associated with

ungsten-copper skarn (e.g. Mactung) and base-metal vein occurrences. The volcanic rocks are notably

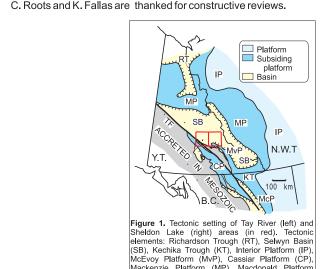
area, amounted to at least 430 km. Pull-apart basins along the fault zone accumulated fluvial clastic rocks

(unit Ts) and bimodal volcanic rocks (unit Tv) that host epithermal precious-metal veins (e.g. Grew

Cretaceous-Tertiary dextral slip along Tintina fault zone, which transects the southwest part of the

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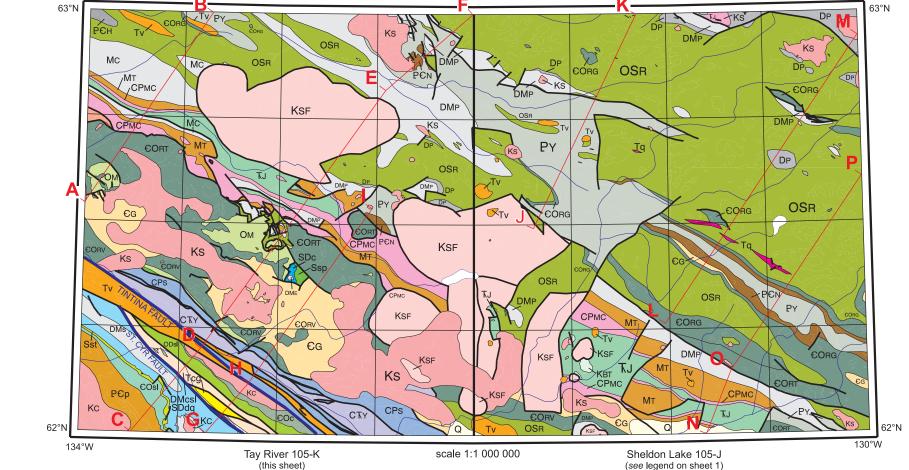


Figure 2. Index map of geology, Tay River–Sheldon Lake area.

132°00′

MID-CRETACEOUS CASSIAR PLUTONIC SUITE: resistant, grey-weathering, locally foliated, biotite±hornblende diorite, granodiorite, and granite.

DEPOSIT TYPE Polymetallic veins Ag-Pb-Zn± Cu±Ag quartz veins inogenic massive sulphide-type not determ Unknown Epithermal Au-Ag-Cu: high sulphidation Epithermal Au-Ag: low sulphidation Pb, Ag, Zn Polymetallic veins Ag-Pb-Zn±Au Pb, Ag, Zn Pb-Zn skarn Unknown Unknown Showing 22 Bobcat Drilled prospect Epithermal Au-Ag-Cu: high sulphida Gabbroid Cu-Ni-PGE 26 Sock Drilled prospect Unknown Spur I Drilled prospect Unknown Laurel Drilled prospect Unknown Sedimentary exhalative Zn-Pb-Ag (Sedex) Drilled prospect Sedimentary exhalative Zn-Pb-Ag (Sedex) Drilled prospect Unknown Polymetallic veins Ag-Pb-Zn±Au Drilled prospect 40 Nasty Drilled prospect Abraham Drilled prospect Polymetallic veins Ag-Pb-Zn±Au 42 Sea Drilled prospect Sedimentary exhalative Zn-Pb-Ag (Sedex) SB Drilled prospect Sedimentary exhalative Zn-Pb-Ag (Sedex) 44 Blackwood Drilled prospect Pb-Zn skarn Bea Drilled prospect Sedimentary exhalative Zn-Pb-Ag (Sedex) Polymetallic veins Ag-Pb-Zn±Au Sedimentary exhalative Zn-Pb-Ag (Sedex) Unknown O'Connor Drilled prospect Drilled prospect Polymetallic veins Ag-Pb-Zn±Au Au, Pg, Ag Mye Prospect Polymetallic veins Ag-Pb-Zn±Au Au, Ag Drilled prospect Polymetallic veins Ag-Pb-Zn±Au Pb, Ag, Zn 54 Shrimp Drilled prospect Sedimentary exhalative Zn-Pb-Ag (Sedex) Vangorda Open pit past producer Sedimentary exhalative Zn-Pb-Ag (Sedex) Pb. Zn 56 Grum Open pit past producer Sedimentary exhalative Zn-Pb-Ag (Sedex) Kulan Drilled prospect Sedimentary exhalative Zn-Pb-Ag (Sedex) Pb, Ag, Zn 58 Kim Prospect LO Drilled prospect 60 Tay Unknown Unknown Faro Open pit past producer Pb, Zn Sedimentary exhalative Zn-Pb-Ag (Sedex Drilled prospect Drilled prospect Plutonic related Au Pb, Ag, Zn Jacola Crown Drilled prospect Unknown Unknown Drilled prospect Sedimentary exhalative Zn-Pb-Ag (Sedex) Reserve Drilled prospect Cu skarn Unknown Mary Drilled prospect Unknown Cu±Ag quartz veins Anomaly Plutonic related Au Twopete Drilled prospect Unknown Colt Drilled prospect Sedimentary exhalative Zn-Pb-Ag (Sedex) Unknown Pb-Zn skarn Anomaly Polymetallic veins Ag-Pb-Zn±Au Pb, Ag, Zn Owl Drilled prospect Plutonic related Au Drilled prospect Plutonic related Au Cu, Pb, Zn Ivan Drilled prospect Drilled prospect Unknown Cu. Pb. Zn Kangaroo Drilled prospect Unknown 86 Marks Showing Polymetallic manto Ag-Pb-Zn Volcanogenic massive sulphide-type not determined Drilled prospect 88 Sirola Drilled prospect Andrew Drilled prospect Polymetallic veins Ag-Pb-Zn±Au Pb, Ag, Zn Polymetallic veins Ag-Pb-Zn±Au Sb, Pb, Ag Showing Epithermal Au-Ag: low sulphidation Showing Polymetallic veins Ag-Pb-Zn±Au 92 Galway Epithermal Au-Ag-Cu: high sulphidation Drilled prospect 95 Bunbury Unknown Chaplin Drilled prospect Volcanogenic massive sulphide-type not determined 99 O'Neill Unknown Deposit Sedimentary exhalative Zn-Pb-Ag (Sedex) Pb, Ag, Zn Anomaly Sedimentary exhalative Zn-Pb-Ag (Sedex) Pb, Zn Drilled prospect Sir John A. Sedimentary exhalative Zn-Pb-Ag (Sedex) Drilled prospect Wedekind Unknown Epithermal Au-Ag-Cu: high sulphidation 108 Lady Di Drilled prospect Plutonic related Au Pb, Ag, Zn Anomaly 109 Prince Charles 110 Mt. Menzie Showing Sediment-hosted barite W skarn Cu, Ag, Zn Drilled prospect Cu±Ag quartz veins

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134°00′

(UTM ZONE 8)

For full MINFILE number, add prefix "105K" or "105K0", or "105K00" as appropriate, e.g. MINFILE 15 = "105K015" Deklerk, R. and Traynor, S. (compilers), 2005. Yukon MINFILE 2005 - A database of mineral occurrences. Yukon Geological survey, CD-ROM. (updated March, 2008 from Yukon Minfile online at http://www.geology.gov.yk.ca) - = no known commodities. **Table 1.** Mineral prospects (from Yukon MINFILE², 2010).

Epithermal Au-Ag-Cu: high sulphidation

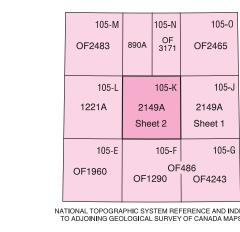
GEOLOGY **SELWYN BASIN** (SHELDON LAKE AND TAY RIVER)

Scale 1:250 000/Échelle 1/250 000 Projection transverse universelle de Mercator Universal Transverse Mercator Projection North American Datum 1983 Système de référence géodésique nord-américain, 1983

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MAP 2149A

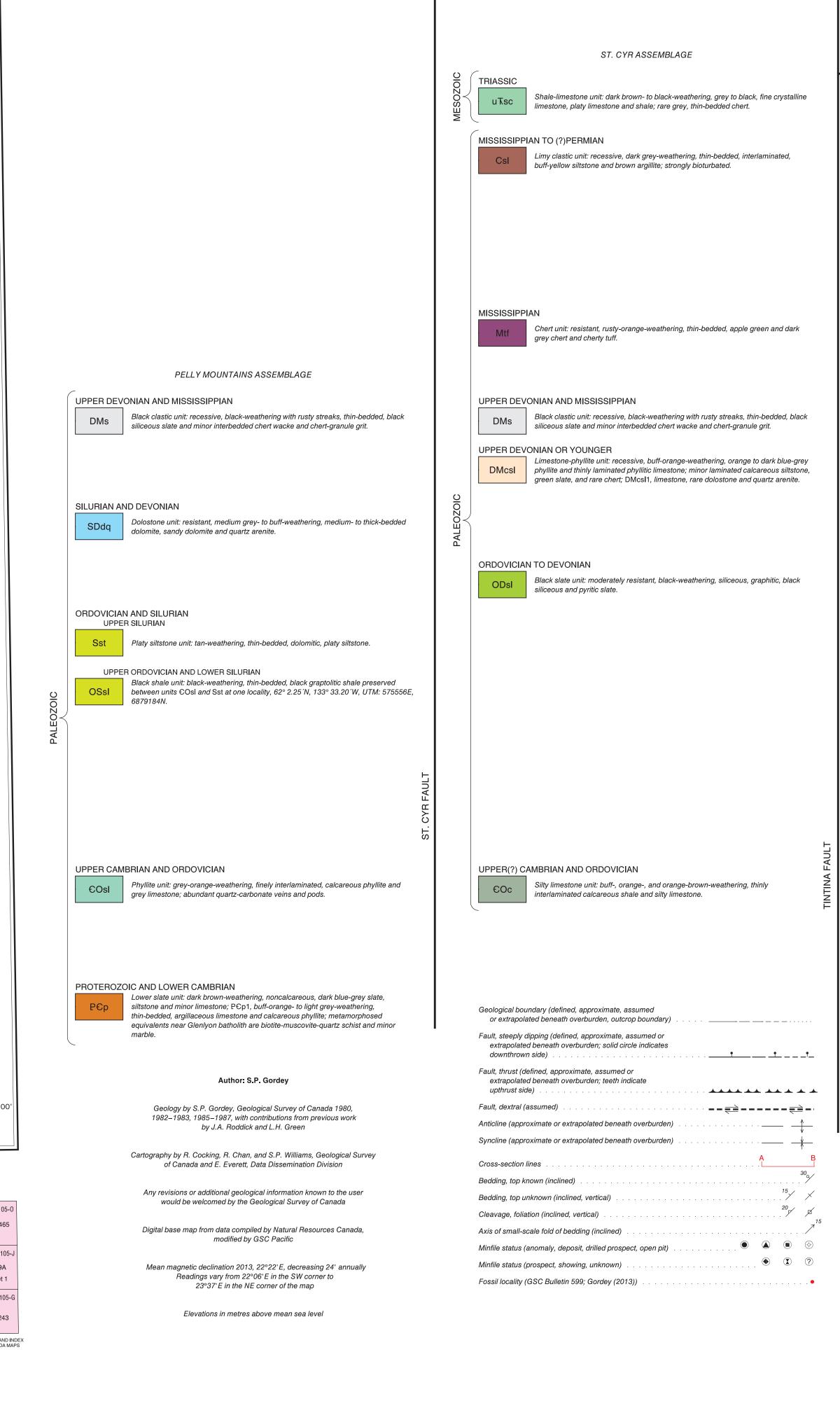


(UTM ZONE 8)

132°00'

CALDERA

BLIND LAKES



SOUTHWEST NOTE: Rock units on legend arranged to reflect their geographical distribution (ie. from northeast to southwest) and time equivalence. Units projected beneath unit Q appear in parentheses e.g. (CPMC); (?) indicates projection of units uncertain.

> Limestone conglomerate unit: resistant, grey-orange-weathering, massive, limestone MID-CRETACEOUS

PLEISTOCENE AND RECENT

and shale.

LEGEND

CASSIAR PLUTONIC SUITE: resistant, grey-weathering, locally foliated, biotite±hornblende diorite, granodiorite, and granite.

Unconsolidated glacial and alluvial deposits.

grey-green basalt necks and flows.

Bimodal volcanic unit: Tv, undivided; Tv1, small stocks and necks of

Alluvial clastic unit: recessive, thick-bedded to massive, pebble to boulder

white-weathering, flow-banded, rhyolitic, quartz-sanidine porphyry; Tv2, laminated

rhyolitic ash-flow tuffs and flows;Tv3, dark grey-weathering, locally amygdaloidal, dark

chert-quartz conglomerate, chert sandstone and thin-bedded, dark brown sandstone

CPS weathering, dark grey-green basalt, tuff, and breccia; CPst, chert unit: thin-bedded, grey-green, jasper-red, and apple-green chert and siliceous tuff; CPsI, limestone unit: light grey-weathering, massive, fine crystalline, dark grey limestone; CPsub, ultramafic unit: recessive, green-weathering serpentinite. CARBONIFEROUS TO TRIASSIC

YUKON-TANANA TERRANE: CTY, undivided; CTYm, schist unit: grey-weathering, CTY muscovitic, quartz blastomylonite; recessive, muscovitic quartzite and quartz-muscovite-biotite±glaucophane schist with local pods of eclogite; CTYcg, conglomerate unit: resistant, massive, poorly sorted, conglomerate with pebble- to cobble-size clasts of basalt, chert, mylonite, and limestone; CTYcg1, thin-bedded, grey, calcareous slate, locally with interbedded argillaceous limestone.

Bimodal volcanic unit: Tv, undivided; Tv1, small stocks and necks of

Alluvial clastic unit: recessive, thick-bedded to massive, pebble to boulder

SOUTH FORK VOLCANICS: dark brown-weathering, locally columnar jointed,

SELWYN PLUTONIC SUITE: Ks, undivided; grey-weathering, resistant, medium- to

KSF massive, densely welded, biotite-quartz-hornblende-feldspar crystal- and crystal-lithic

KS coarse-grained, locally megacrystic (K-feldspar), biotite±hornblende±muscovite

ALLOCHTHONOUS

granite, quartz monzonite, and granodiorite; Ks1, plutons without hornblende; Ks2. plutons with hornblende; Ks3, porphyritic biotite-hornblende granite characterized by

large smoky grey quartz phenocrysts and locally K-feldspar phenocrysts; KS4,

SLIDE MOUNTAIN TERRANE: CPs, undivided; CPsv, volcanic unit: resistant, dark

Ts chert-quartz conglomerate, chert sandstone, and thin-bedded, dark brown sandstone

grey-green basalt necks and flows.

and shale.

mafic-free granite.

PENNSYLVANIAN AND PERMIAN

MID-CRETACEOUS

white-weathering, flow-banded, rhyolitic, quartz-sanidine porphyry; Tv2, laminated

rhyolitic ash-flow tuffs and flows; Tv3, dark grey-weathering, locally amygdaloidal, dark

ALLOCHTHONOUS TERRANES (CPS, CTY) EMPLACED DURING JURA-CRETACEOUS JONES LAKE FORMATION: brown-weathering, medium- to thick-bedded,

calcareous siltstone, sandstone, and shale; abundant ripple crosslamination.

CARBONIFEROUS TO PERMIAN MOUNT CHRISTIE FORMATION: resistant, orange- to buff-weathering, thin- to medium-bedded, light grey-green to black chert.

TAY FORMATION: recessive, dark brown-weathering, thin- to medium-bedded, of fine crystalline, dark grey limestone; MT1, light grey-weathering, thick-bedded to massive, dark grey limestone (on sheet 1 only); MT2, resistant, coarse-grained quartz DEVONIAN AND MISSISSIPPIAN EARN GROUP (DP, DMP, MC, and Mv)

DME EARN GROUP: undivided, mostly MC, and DMP, minor DP. LOWER MISSISSIPPIAN

Felsic volcanic unit: orange-weathering, massive, aphanitic, altered felsic volcanic and/or subvolcanic. CRYSTAL PEAK FORMATION: resistant, dark grey-weathering, massive MC chert-pebble conglomerate and chert-quartz sandstone; minor brown-weathering, dark blue-grey shale.

UPPER DEVONIAN TO MISSISSIPPIAN PREVOST FORMATION: recessive, brown-weathering, thin-bedded, laminated, dark DMP blue-grey to black slate with thin to thick interbeds of fine- to medium-grained chert-quartz arenite and wacke, and chert-pebble conglomerate; DMP1, recessive, dark grey to black limestone and shale (105-K/16). LOWER DEVONIAN TO UPPER DEVONIAN

PORTRAIT LAKE FORMATION: black-, blue-black- or silvery white-weathering, thin-bedded, siliceous, black siltstone, slate, and chert.

SILURIAN AND DEVONIAN UPPER SILURIAN(?) TO MIDDLE DEVONIAN Carbonate-sandstone unit: SDc, undivided (105-K); SDc1, massive, medium-grained Dc quartz arenite; (105-K) SDc2, light grey-weathering, massive- to thick-bedded, fine crystalline limestone and dolostone, locally cherty (105-J). SILURIAN AND (?)EARLY DEVONIAN

Siltstone unit: tan-weathering, thin-bedded, dolomitic, platy siltstone (105-K/7). ORDOVICIAN AND SILURIAN ROAD RIVER GROUP: undivided Duo Lake and Steel formations (may include infolds of €OR and DP); STEEL FORMATION (Upper Silurian): orange-weathering, thin-bedded, burrowed, dolomitic, grey-green mudstone, siltstone, and chert; thin-bedded, black chert; rare black graptolitic shale: DUO LAKE FORMATION (Lower Ordovician to Lower Silurian): resistant,

blue-black-weathering, black graptolitic shale.

CAMBRIAN AND ORDOVICIAN UPPER CAMBRIAN AND LOWER ORDOVICIAN MENZIE CREEK FORMATION: resistant, dark grey- to orange-grey-weathering, massive, locally pillowed, dark grey-green andesite to basalt, tuff, and breccia. RABBITKETTLE FORMATION (COR) Gold Creek facies: grey-buff-weathering, laminated to thin-bedded, locally nodular

grey-weathering, thin- to medium-bedded, green, grey, and black chert; recessive,

limestone and shaly limestone; limestone conglomerate; light grey-weathering, dark grey, thin-bedded limestone separating members of dark brown-weathering, black shale; medium green-weathering, green shale. Twopete facies: resistant, dark grey-weathering, massive to laminated, blocky, white ORT to light grey quartzose siltstone and chert, and rare black slate; strikingly laminated, very fine-grained, tuffaceous siltstone and chert; minor grey phyllitic limestone, calcareous phyllite, and greenstone.

> angorda facies: silver-grey-weathering, laminated to thin-bedded, dark grey, shaly limestone to calcareous phyllite. LOWER AND (?)MIDDLE CAMBRIAN GULL LAKE FORMATION: recessive, brown-weathering, noncalcareous, dark grey

€G to black slate and siltstone; metamorphosed equivalents near Anvil and Orchay

batholiths include quartz-muscovite-biotite schist (±garnet±sillimanite±staurolite±andalusite) and minor marble; €G1, grey-white-weathering, laminated, medium crystalline marble with minor lenses and pods of mica schist. HYLAND GROUP (PY, PEN) PROTEROZOIC AND LOWER CAMBRIAN

P€H HYLAND GROUP: undivided Yusezyu and Narchilla formations. NARCHILLA FORMATION: recessive, maroon-weathering, interbedded maroon and apple-green slate; rare grey-brown-weathering, medium- to thick-bedded quartz sandstone and quartz-pebble conglomerate.

YUSEZYU FORMATION: grey brown-weathering, thin- to thick-bedded, interbedded, PY quartz sandstone, local quartz-pebble conglomerate, and grey-green to dark grey slate; PY1, grey-weathering, dark grey, fine crystalline limestone.

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Gordey S.P., 2013. Geology, central Tay River, Yukon; Geological Survey of Canada, Map 2150A, scale 1:250 000. doi:10.4095/288983 Gordey, S.P., 2013. Geology, Selwyn Basin, Yukon; Geological Survey of Canada, Bulletin 599.

> Sheet 2 of 3: Geology, Tay River Recommended citation Gordey, S.P., 2013. Geology, Selwyn Basin (Sheldon Lake and Tay River), Yukon, Geological Survey of Canada, Map 2149A, 2 map sheets, scale 1:250 000 and 1 sheet of cross-sections, scale 1:100 000. doi:10.4095/288980

Drilled prospect