

STEWART RIVER PLACER PROJECT

RESOURCE APPRAISAL MAP FOR PLACER GOLD IN THE STEWART RIVER (115 N/O) AND PART OF THE DAWSON (116 B/C) MAP AREAS, YUKON

(1: 250 000 Scale)

BASEMAP FEATURES:

- Seaplane Base
- Heritage Cross
- Seaplane Base
- Tower
- Building
- Built-Up Area
- Campground
- UTM Grid Marks (10 km Spacing)
- Highway
- 2 Wheel Drive
- 4 Wheel Drive
- Trail
- Winter Trail
- Other
- Territorial Boundary
- Mining District Boundary
- Tombstone Territorial Park Boundary

Topographic base provided by Natural Resources Canada in conjunction with Yukon Land Information Management System (LIMS). Roads and trails were modified by Department of Renewable Resources, Yukon Government.

RESOURCE APPRAISAL

This map presents the results of a geologic appraisal for undiscovered placer gold resources in the Stewart River and part of the Dawson map areas. The procedure used in the appraisal is based on Harrison et al. (1986). The appraisal begins by describing an 'occurrence model' for placer gold deposits, from which 'diagnostic characteristics' (i.e., alluvial geology, stream sediment geochemistry, lode mineral occurrences, and placer mineral occurrences) are identified. The diagnostic characteristics are assigned a 'favourability score', and areas within the map are evaluated using diagnostic characteristics. This results in a 'sum' of the favourability scores for each area evaluated. The sum of the favourability scores and the number of kinds of diagnostic data can be plotted on a matrix (referred to as a confidence-favourability diagram) that shows increasing levels of confidence (i.e., the diagnostic characteristics) and favourability (i.e., the sum of favourability scores). From this diagram a measure of probability of occurrence of placer gold can be established. The geologic probability for occurrence of placer gold deposits is typically reported as ranging from unfavourable, to suggestive, to diagnostic.

OCURRENCE MODEL FOR PLACER GOLD REGIONAL SETTING

The Tintina Fault (Tintina Trench on map) is a major right-lateral strike slip fault along which approximately 450 km of displacement occurred since the mid-Cretaceous (Gabrielse, 1985). This fault transects the northeast corner of the map area, dividing it into two distinct physiographic and geologic regions. The area southwest of Tintina Fault is characterized by the relatively low rounded hills of the Klondike Plateau. Paleozoic metasedimentary (i.e., Klondike Assemblage and Nasina Assemblage) and meta-igneous rocks belonging to Yukon-Tanana Terrane predominate in this area along with minor amounts of altered ultramafic rocks that are assigned to Slide Mountain Terrane (Mortensen, 1990, 1996). Northeast of the fault the area is characterized by the relatively high, steep rugged peaks of the Ogilvie Mountains, which are primarily made up of Paleozoic sedimentary rocks ancestral to North America. Most of the map area is thought to have been a mature, subdued landscape by Miocene time, which underwent a period of uplift and erosion in Late Miocene - Pliocene time (Templeman-Kluit, 1980). There are over 50 occurrences and prospects of lode gold throughout the map area (Yukon MINFILE, 1997). Gold has been produced from Early Cretaceous mesothermal quartz veins southwest of Tintina Fault (i.e., Lone Star Mine) and from mid-Cretaceous epithermally altered quartz monzonite northeast of Tintina Fault (i.e., Brewery Creek Mine).

BEDROCK GEOLOGY - TERRANE UNIT

POST-TERRANE AMALGAMATION/ACCRETION UNITS: PLUTONIC:

- Pp - Paleogene post-accretion plutons
- Lkp - Late Cretaceous and Early Tertiary post-accretion plutons
- mKp - mid-Cretaceous post-accretion plutons
- Eljp - post-amalgamation plutons characteristic of Stikinia but also intruding Yukon-Tanana Terrane; coeval and compositionally similar plutons characteristic of Quesnellia also intruding Yukon-Tanana Terrane

SEDIMENTARY/VOLCANIC:

- Qs - Quaternary cover beneath which terrane boundaries cannot be extended with confidence
- TQv - largely basalt (Tertiary?) and Quaternary
- Tvs - Tertiary felsic to mafic volcanic rocks and interbedded terrestrial sedimentary rocks
- ukv - Upper Cretaceous mafic and lesser felsic volcanic rocks, mostly Carmacks Group
- Jks - Jurassic and Lower Cretaceous sedimentary rocks overlying Wrangellia and Alexander Terranes (Dezadeash); minor contemporaneous fluvial sedimentary rocks above Stikinia (Tantulus)

CRATON MARGIN:

- NA - ANCESTRAL NORTH AMERICA: Lower Proterozoic to Carboniferous passive and offshelf continental margin sedimentary rocks. Devonian to Carboniferous clastic wedges and Pennsylvanian to Jurassic-Cretaceous continental margin prism

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Any revisions or additional information known to the user would be welcome by the Yukon Geology Program.

DATA SOURCES

Lode mineral occurrences from 1:250 000 scale Yukon MINFILE 2001 maps; gold bearing streams reported on Gilbert's (1979) 'treasure map', and the Indian and Northern Affairs Canada Yukon Placer Database.

EXPLANATION FOR RESOURCE APPRAISAL

- Lode deposit from which gold has been produced
- Prospect or occurrence of lode gold

PLACERS

- Producer
- Prospect
- No Gold

GEOCHEM

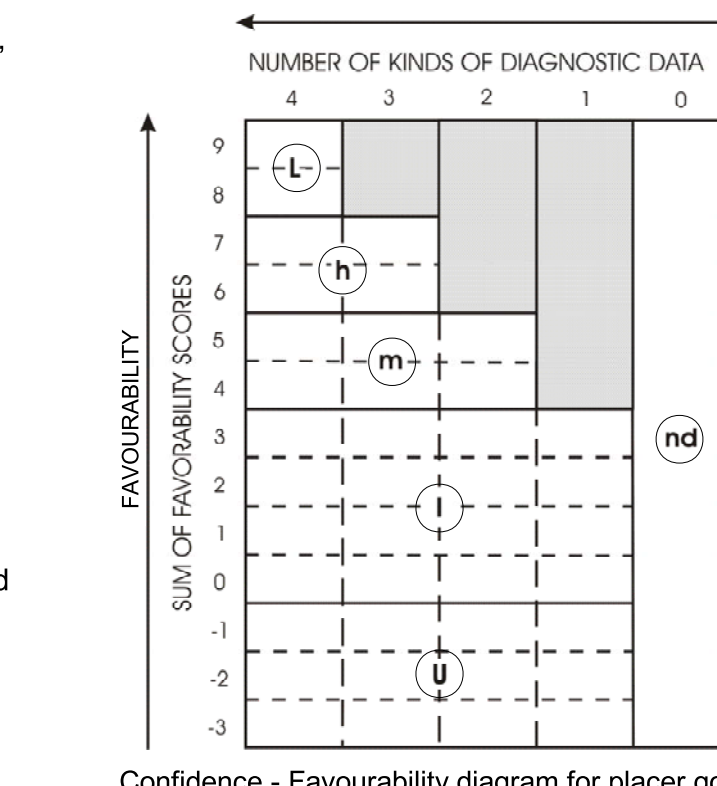
- 11 - 1326 Stream Sediment Gold concentration (ppb)
- 14 - 20 Regional Geochemical reconnaissance map (100 - 1998)

PROBABILITY OF OCCURRENCE OF PLACER GOLD

- (L) Slightly diagnostic
- (h) Highly suggestive
- (m) Moderately suggestive
- (I) Slightly suggestive
- (U) Unfavourable - including bedrock geology

NOTE: The majority of streams are unranked because no data was available; hence, the probability of occurrence of placer gold is unknown (i.e., nd, no diagnostic characteristics available).

CONFIDENCE



Confidence - Favourability diagram for placer gold.

RATING SCALE

ALLUVIAL GEOLOGY

- +3 Pleistocene - Holocene gravely fluvial deposits commonly forming narrow zones within stream valleys
- +2 Pleistocene White Channel Gravel commonly forming mid- to high-level terraces
- +1 Pleistocene (?) gravely fluvial deposits other than the White Channel Gravel deposits
- 0 Pleistocene-Holocene gravely deposits forming alluvial fans, pediments, etc.
- 1 Pleistocene-Holocene deposits consisting primarily of sand, mud, and/or coal
- 2 Pleistocene-Pleistocene glaciofluvial, glacioclastic and till deposits (including Klondike gravel)
- 3 Bedrock outcrops (including thin colluvial blanket and veneer), and mass wasting deposits

GEOCHEMICAL ANOMALIES

- +2 Gold greater than or equal to 21 ppb in stream sediment samples
- +1 Gold less than 21 ppb in stream sediment samples
- 0 No gold detected in stream sediment samples

PLACER MINERAL OCCURRENCES

- +2 Gold produced from one or more placers in the drainage system (i.e., placer gold mine)
- +1 One or more gold placer prospects or occurrences in the drainage system
- 0 No gold placer deposits known in the drainage system

LODE GOLD MINERAL OCCURRENCES

- +2 Gold produced from one or more lodes in the drainage system (i.e., lode gold mine)
- +1 One or more lode gold prospects, or occurrences in the drainage system
- 0 No gold-bearing veins known in the drainage system

SCALE VALUES

None of the characteristics is considered either highly diagnostic ('H') or moderately diagnostic ('M') for the occurrence of placer gold in the area. The highest appraisal given to any area is slightly diagnostic ('L') (see Confidence-Favourability diagram), which is itself a strong indication for the occurrence of placer gold in a drainage so classified.

DISCUSSION

The streams with the highest placer gold potential (i.e., slightly diagnostic or 'L', with favourability scores of 8-9) have already been extensively mined (e.g., Bonanza, Sulphur and the upper part of Dominion creeks, the lower part of the Indian River, and the upper part of the Sixtymile River). Other streams with potential are those ranking 'highly suggestive' (i.e., 'h', with favourability scores of 5-7). This also includes streams that have been extensively mined (i.e., Hunter and Gold Run creeks, the lower part of the Klondike River, Algod Creek, the upper part of the Indian River, the lower part of Morana Creek, tributaries to the upper part of the Sixtymile River, the Fortymile River, Massey May, Thistle, Kirkman, and Ten Mile creeks, and the Moose Horn Range area), and streams that have not been mined (i.e., Fifty Mile, Rosebud, Rosebush, and Eighteen Mile creeks, and the upper part of the North Ladue River and tributaries). The remaining streams ranked in the study area range from moderately suggestive (i.e., 'm', with favourability scores of 4-5) to slightly suggestive (i.e., 'I', with favourability scores of 0-3, or 'U'). Several of these streams have also been extensively mined (i.e., the lower part of Dominion, Blackhills, Scoggin and the upper part of Mason creeks).

TERRANES:

PERICRATONIC: rocks possess elements of passive margin sedimentation but differ in stratigraphic or structural characteristics from the ancestral North American margin

- YTNA - NASINA SUBTERRANE: Metamorphosed early(?) to mid-Paleozoic continental margin with superposed Late Devonian and Early Mississippian arc volcanic (=Nasina assemblage) and (YTn) plutonic rocks
- YTKS - KLONDIKE SCHIST SUBTERRANE: Metamorphosed upper Paleozoic arc(?) volcanic (=Klondike Schist assemblage) and plutonic (YTp) rocks
- YT-a - AMPHIBOLITE SUBTERRANE: Amphibolite of uncertain subterranean affinity; may include Slide Mountain Terrane
- YT-p - Plutonic rocks superposed on Nasina and Klondike Schist Subterranean

ACCRETED, INTERMONTANE SUPERTERRANE:

- SM - SLIDE MOUNTAIN: Oceanic and/or marginal basin volcanic and sedimentary rocks of Devonian to Late Triassic age including chert, argillite, sandstone, conglomerate, mafic intrusions, basalt, alpine-type ultramafic rocks, carbonate rocks and local blueschist and eclogite

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