Exploration Models

Deposit models useful for silver exploration in the Yukon include:

1) Polymetallic (Ag, Pb, Zn, Sn) veins, replacement deposits and greisen associated with mid-Cretaceous to early Tertiary intrusive and volcanic suites and associated faults (e.g., Keno Hill district/McQuesten River area, Wheaton River/Montana Mountain area, the Rancheria district, and the Ketza River/Seagull district).

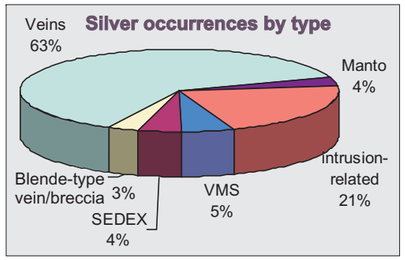
2) Epithermal and mesothermal Au-Ag-Cu veins associated with mid-Cretaceous to early Tertiary intrusive and volcanic complexes (e.g., Mount Skukum, Skukum Creek, Grew Creek and Mount Nansen).

3) Silver-rich VMS deposits in Devonian-Mississippian felsic volcanic and sedimentary rocks of the Finlayson Lake district in Yukon-Tanana Terrane (e.g., Wolverine, Kudz Ze Kayah), and in the Selwyn Basin and Cassiar Platform (e.g., Marg, Wolf).

4) Silver-rich carbonate-hosted veins/breccias in Proterozoic dolostone (e.g., Blende).

5) Silver-bearing SEDEX deposits hosted by Cambrian-Ordovician rocks of the Selwyn Basin (e.g., Faro deposits) or Devonian-Mississippian rocks of the Selwyn Basin and Cassiar Platform (e.g., Tom, Jason, Clear Lake).

The Skukum Creek Au-Ag deposit



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For more information, check the Yukon Geological Survey at:

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SILVER

Yukon Silver Potential

YGS Brochure 2006-4

- There are four main silver districts in Yukon with outstanding exploration potential: Keno Hill/McQuesten River area, Rancheria, Wheaton River/Montana Mountain, Ketza River/Seagull.
- Keno Hill is the second largest silver district in Canada. Even after 75 years of production, potential for expansion of known deposits and the discovery of new deposits remains high.
- Volcanogenic massive sulphide deposits in the Finlayson Lake district are unusually rich in silver. For example, the 6.2-million-tonne Wolverine deposit contains 370.9 g/t Ag or 81.6 million ounces of silver.

www.geology.gov.yk.ca

Introduction

The Yukon has a resource of approximately 350 million ounces (9900 tonnes) of contained silver, and a large number of showings and geochemical anomalies (see map to the right) that highlight the potential for future discoveries. Much of the known silver occurs in veins associated with Cretaceous to Tertiary plutonic and volcanic complexes and accompanying fault systems. The remainder is in silver-rich volcanogenic massive sulphide (VMS), carbonate-hosted vein/breccia, and sedimentary-exhalative (SEDEX) type deposits.

Geology of Silver Occurrences

Silver occurs in numerous vein-, stockwork- and greisen-style deposits related to Mesozoic and Cenozoic intrusive rocks and volcanic complexes and associated fault systems:

1) **Ag-rich polymetallic vein** deposits are mainly associated with mid-Cretaceous to early Tertiary intrusions of the Whitehorse, Selwyn, Cassiar and Tombstone suites, the mid-Cretaceous Mount Nansen volcanic complex and the Late Cretaceous Prospector Mountain suite. These include the Keno Hill district/McQuesten River area, the Ketza River/Seagull area, the Rancheria district and the Wheaton River/Montana Mountain area.

2) **Epithermal Au-Ag-Cu veins and mesothermal Au-quartz veins** are associated with mid-Cretaceous and early Tertiary volcanic complexes (e.g., Mount Skukum, Skukum Creek, Mt. Nansen, Grew Creek).

Considerable silver also occurs in Devono-Mississippian VMS deposits of the Yukon-Tanana Terrane (e.g., Wolverine), and in Selwyn Basin and Cassiar Platforms (e.g., Wolf, Marg). Silver-rich carbonate-hosted vein/breccia deposits occur in Proterozoic dolostone in the North American Platform (e.g., Blende). Early and middle Paleozoic strata host silver-bearing SEDEX deposits in Selwyn Basin (e.g., Faro, Clear Lake, Tom, Jason).

Regional Geochemistry

In the map to the right, regional silt geochemical (RGS) data for silver are overlain on the Yukon terrane map. A reasonable correlation is evident between Ag values in the RGS and some silver districts, e.g., Ketza River/Seagull, Wheaton River/Montana Mountain, Dawson Range, and the Finlayson Lake district. Silver values from silt samples around the Keno Hill district, however, are not anomalous.

Silt samples from areas underlain by Paleozoic clastic and carbonate strata in the North American Platform and Richardson Trough are enriched in silver (up to 5 ppm and 1.4 ppm, respectively) but are not associated with known prospects. These areas are potential new exploration targets.

Cover: left - polymetallic Ag-Pb-Zn from the Vera deposit; centre - view of the Mt. Skukum epithermal Au-Ag deposit; right - Ag-rich quartz-carbonate veins from the Plata deposit.

Yukon Silver Districts

Keno Hill District/McQuesten River area

The Keno Hill district has produced over 200 million ounces (6000 tonnes) of silver and is the 2nd largest historical producer of silver in Canada. At least 65 Ag-Pb-rich, polymetallic, fault-related, quartz-carbonate veins and breccia zones up to 30 m wide occur within Mississippian Keno Hill Quartzite (e.g., Bellekeno, Silver King). The average grade of veins mined was ~40 oz/t (1400 g/t). The age of veins (*ca.* 90 Ma) is similar to granites on the periphery of the Keno Hill district, and the two may be genetically related. Similar veins to the east such as Plata (Yukon MINFILE# 105N 003) are associated with intrusions. In the McQuesten River area to the west are a number of Sn-Ag vein/breccia and greisen occurrences including the Oliver Creek and Zeta (115P 020, 116A 042) that are above, or hosted in Cretaceous plutons.

Ketza River/Seagull

Silver-lead ± gold bearing carbonate rocks (mantos), quartz veins and breccias occur in Cambrian to Mississippian strata of the Cassiar Platform on the perimeter of the Ketza/Seagull uplift, a domed feature underlain at depth by a mid-Cretaceous pluton(s). Sulphide minerals replace carbonate units adjacent to veins and breccia. Examples: Stump, Kibb, Groundhog (Yukon MINFILE# 105F 029); similar geological setting occurs at the nearby Tintina Deposit (105G 006).

Wheaton River/Montana Mountain

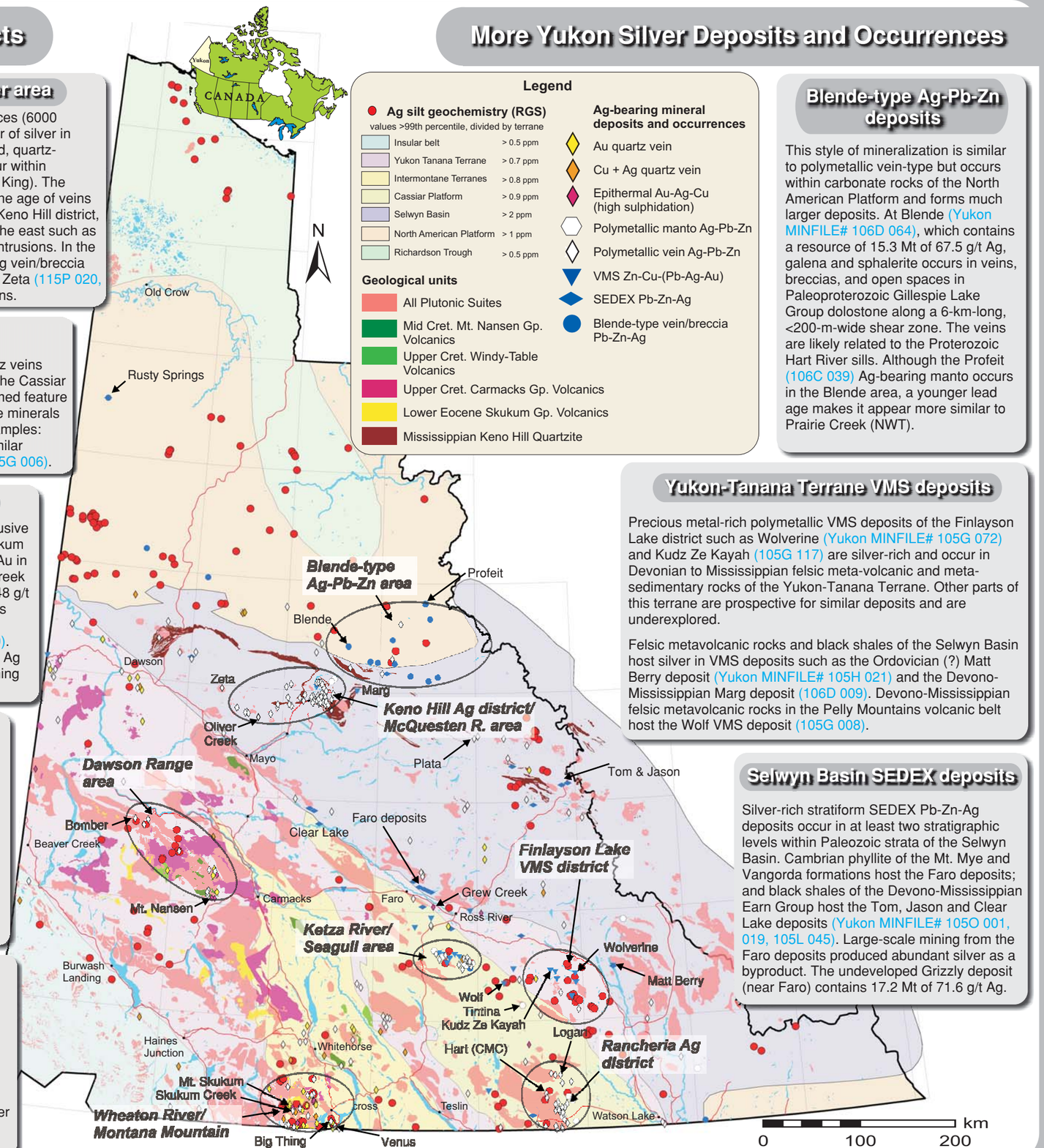
Eocene Skukum Group volcanic and Late Cretaceous intrusive rocks host epithermal Au-Ag-Cu veins such as Mount Skukum (Yukon MINFILE# 105D 158), which produced 29 tonnes Au in the 1980s, and mesothermal veins such as the Skukum Creek deposit (105D 022) which contains ~800 000 tonnes at 248 g/t Ag & 6.78 g/t Au. On Montana Mountain, a mid-Cretaceous intrusive-volcanic complex hosts Ag-Au-rich fissure vein systems such as Venus and Big Thing (105D 005 and 009). Venus produced 60 000 tonnes of 5.8 g/t Au and 181.7 g/t Ag in the 1970s; a resource of 70 000 tonnes remains containing 240.0 g/t Ag and 9.3 g/t Ag.

Rancheria District

Silver-bearing polymetallic veins and replacements occur in an area of mid-Cretaceous intrusions of the Cassiar Suite, and an extensive Late Cretaceous to early Tertiary system of dykes and faults. The Logan deposit (Yukon MINFILE# 105B 099) contains a resource of 13.08 Mt of 5.1% Zn and 23.7 g/t Ag; it occurs in quartz-carbonate veins, stockwork and breccia within a fault zone that cuts pegmatitic phases of the mid-Cretaceous Marker Lake batholith. High-grade veins, e.g., Hart (105B 021) containing up to 1200 g/t Ag, are associated with lower-grade replacements throughout the district. Select samples elsewhere assay up to 9252 g/t Ag.

Dawson Range

The mid-Cretaceous Mount Nansen porphyry complex hosts epithermal Au & Ag in vein and breccia systems, including the Brown-McDade, Weber (Yukon MINFILE# 115I 065 and 065) and Flex zones. The pre-production resource in the Brown-McDade zone was 617 000 tonnes of 53 g/t Ag and 6.02 g/t Au. In this area the mid-Cretaceous Dawson Range batholith hosts Late Cretaceous Ag-bearing quartz-barite veins such as Bomber (115J 027) from which a 371 tonne ore shipment graded 3689 g/t Ag.



More Yukon Silver Deposits and Occurrences

Legend

Ag silt geochemistry (RGS)
values >99th percentile, divided by terrane

Insular belt	> 0.5 ppm
Yukon Tanana Terrane	> 0.7 ppm
Intermontane Terranes	> 0.8 ppm
Cassiar Platform	> 0.9 ppm
Selwyn Basin	> 2 ppm
North American Platform	> 1 ppm
Richardson Trough	> 0.5 ppm

Geological units
- All Plutonic Suites
- Mid Cret. Mt. Nansen Gp. Volcanics
- Upper Cret. Windy-Table Volcanics
- Upper Cret. Carmacks Gp. Volcanics
- Lower Eocene Skukum Gp. Volcanics
- Mississippian Keno Hill Quartzite

Ag-bearing mineral deposits and occurrences
- Au quartz vein
- Cu + Ag quartz vein
- Epithermal Au-Ag-Cu (high sulphidation)
- Polymetallic manto Ag-Pb-Zn
- Polymetallic vein Ag-Pb-Zn
- VMS Zn-Cu-(Pb-Ag-Au)
- SEDEX Pb-Zn-Ag
- Blende-type vein/breccia Pb-Zn-Ag

Blende-type Ag-Pb-Zn deposits

This style of mineralization is similar to polymetallic vein-type but occurs within carbonate rocks of the North American Platform and forms much larger deposits. At Blende (Yukon MINFILE# 106D 064), which contains a resource of 15.3 Mt of 67.5 g/t Ag, galena and sphalerite occurs in veins, breccias, and open spaces in Paleoproterozoic Gillespie Lake Group dolostone along a 6-km-long, <200-m-wide shear zone. The veins are likely related to the Proterozoic Hart River sills. Although the Profeit (106C 039) Ag-bearing manto occurs in the Blende area, a younger lead age makes it appear more similar to Prairie Creek (NWT).

Yukon-Tanana Terrane VMS deposits

Precious metal-rich polymetallic VMS deposits of the Finlayson Lake district such as Wolverine (Yukon MINFILE# 105G 072) and Kudz Ze Kayah (105G 117) are silver-rich and occur in Devonian to Mississippian felsic meta-volcanic and meta-sedimentary rocks of the Yukon-Tanana Terrane. Other parts of this terrane are prospective for similar deposits and are underexplored.

Felsic metavolcanic rocks and black shales of the Selwyn Basin host silver in VMS deposits such as the Ordovician (?) Matt Berry deposit (Yukon MINFILE# 105H 021) and the Devono-Mississippian Marg deposit (106D 009). Devono-Mississippian felsic metavolcanic rocks in the Pelly Mountains volcanic belt host the Wolf VMS deposit (105G 008).

Selwyn Basin SEDEX deposits

Silver-rich stratiform SEDEX Pb-Zn-Ag deposits occur in at least two stratigraphic levels within Paleozoic strata of the Selwyn Basin. Cambrian phyllite of the Mt. Mye and Vangorda formations host the Faro deposits; and black shales of the Devono-Mississippian Earn Group host the Tom, Jason and Clear Lake deposits (Yukon MINFILE# 105O 001, 019, 105L 045). Large-scale mining from the Faro deposits produced abundant silver as a byproduct. The undeveloped Grizzly deposit (near Faro) contains 17.2 Mt of 71.6 g/t Ag.