Mineral Resource Assessment Process

1. INTRODUCTION

In the Yukon Protected Areas Strategy, the Yukon Government committed to avoid areas of high mineral potential and development activity where options exist; carry out Mineral Resource Assessment at a reasonable level of detail, and within a prudent time frame; and to carry out Mineral Resource Assessments at regional (YPAS step 1) and detailed (YPAS steps 3 and 5) scales.

2. REGIONAL MINERAL POTENTIAL MAPS

Yukon Government Mineral Resources Branch carries out Mineral Resource Assessment at two scales: regional and detailed (or site-specific).

Regional mineral resource assessments are carried out in support of YPAS step 1 (identifying areas of interest). The **methodology** used by YTG to produce regional mineral potential maps was developed by the U.S. Geological Survey (Drew and others, 1986), and refined by BCGS (Kilby, 1995) to best fit the geology and mineral deposit types of the Canadian Cordillera. The original USGS and improved BCGS methods were used extensively for land use planning in Alaska and British Columbia, which have similar geological environment as Yukon.

The production of regional mineral potential maps involves the following **5 steps**: digital compilation of all existing public data in GIS format (4 months); sub-division of the area into large tracts of approximately equal areas (2 weeks); mineral assessment workshop (3 to 6 days); computer statistical simulation (1 month); digital and hard-copy map and report production (1 month).

The **mineral assessment workshop** consists of a three- to six-day estimation workshop. Three to five reputable members of the mineral exploration industry, government, or academia, considered to have the greatest experience in the area under consideration are invited to attend the workshop. The panelists examine all maps and data, one tract at a time. For each tract, panelists record their estimations of potential for undiscovered metallic mineral deposits, and evaluations of their peer estimators' experience, and of their confidence in the existing data. To reduce personal biases, no comparisons are made with other tracts. Regional geochemical surveys (RGS), and mineral occurrences database (MINFILE) are the most critical data for regional assessments. Consequently, the evaluation of tracts lacking RGS data results in their ranking in a low mineral potential category strictly due to lack of data.

The data recorded by the panelists is entered into a Monte Carlo statistical simulator that was customized by the U.S. Geological Survey for mineral deposit simulations. The **statistical simulator** compares the evaluations recorded by the expert panelists against world-wide grade and tonnage curves of existing mineral deposits located in similar geological environments to those of the Yukon. The final product of the simulation is a **relative rank** for the tracts, from highest to lowest potential.

Figure 1 shows completed and outstanding regional mineral potential maps of the Yukon.

The **basic requirements** to produce regional mineral potential maps are: an appropriate time-frame (minimum 6 winter months); ability to convene a three- to six-day panel with the most experience members of industry, government, or academia (approximate cost: $16,000 to $30,000); appropriate GIS capability for the data compilation and map production.

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Comments

geochemical

Step #3 (Identify a Study Area)
...The geochemical data has already been collected for approximately 75% of the Yukon. *Outstanding areas lack road access.* Some of the outstanding areas are not suitable for this type of analysis. *Till sampling surveys would be appropriate for those areas, but currently we consider it not feasible due to the time required for the collection of a representative suite of samples.* We have a map identifying those areas where we feel RGS geochemical information will not yield suitable data.

Step # 5 (Complete the Protected Area Proposal)
...The collection of resource assessment information at this stage will depend on data gaps *identified from geochemical survey results* and questions that have been identified ...