

**MINERAL RESOURCE ASSESSMENTS**  
**FOR**  
**PROPOSED TERRITORIAL PARKS:**  
**METHODOLOGY**

by

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## 1.0 INTRODUCTION AND BACKGROUND

Section 6(1) of the Parks Act (1979) states that "the Commissioner in Executive Council may establish a system of parks to protect unique natural and historic features and provide for comprehensive outdoor recreation opportunities".

In September 1991 the Yukon government approved a Parks and Outdoor Recreation Policy. This policy provided for a shift in focus from "protecting unique natural and historic features" to "protecting portions of the land that are representative of the ecological diversity of the Yukon". The policy also provided that industrial activity such as mining would not be permitted in territorial parks. The Parks policy has since been revised, and each candidate park will be evaluated on a case-by-case basis with a view to considering multiple use.

In June 1992 the Yukon government approved a Parks System Plan. The objective set out in this plan is "to complete the establishment of a Yukon Parks System by the year 2000. At a minimum the system will include one Natural Environment Park in each of the eight Park Landscapes and one representative designation in each ecoregion". The plan also makes a commitment that mineral resource assessments will be carried out prior to any land being set aside for territorial parks.

In the Coast Ranges and North Yukon, Kluane National Park Reserve, Ivvavik National Park and Herschel Island Territorial Park have been chosen by the Parks and Outdoor Recreation Branch as being representative of their respective ecoregions. The Porcupine/Peel Landscape was chosen in 1992 as the first of the remaining six park landscapes for inventory using Park System Plan criteria. A report completed in March 1993 summarizes park values in the area and recommends seven areas of interest for further consideration. Assessment work is currently underway in the Eagle Plains Ecoregion portion of Landscape 7. The three areas of interest recommended for this ecoregion will be evaluated from the perspectives of ecological representation, traditional use, tourism and recreation potential and mineral potential.

Late in 1992, the Parks branch began discussions with the Yukon Chamber of Mines and with the Energy & Mines Branch regarding a methodology for conducting mineral assessments of candidate parks. These discussions centred around how mineral assessments should best be conducted, who should conduct them, and how the results of such assessments should be used in the park selection and planning process.

In January 1994 a three-member mineral assessment steering committee (comprising representatives from Parks, Energy & Mines and the Chamber of Mines) was set up to develop a process for conducting mineral assessments. A representative of DIAND was subsequently added to the steering committee.

Representatives of Parks, Energy & Mines, the Chamber and DIAND attended a workshop hosted by the B.C. Ministry of Energy, Mines & Petroleum Resources in Victoria, March 15-18, 1994. The purpose of the workshop was to bring together interested parties from the federal, provincial and territorial governments to discuss methods for conducting mineral resource assessments.

In August 1994, representatives from the Yukon Chamber of Mines, Yukon Prospectors' Association, Yukon Conservation Society, Canadian Parks and Wilderness Society, Yukon Economic Development, Yukon Renewable Resources and DIAND attended a workshop hosted by the Mineral Assessment Steering Committee in Whitehorse. A representative from the Council for Yukon Indians was also invited. The purpose of the workshop was to discuss the methodology of assessing mineral potential for park planning in Yukon. The focus of the proceedings was the first draft of a Discussion Paper on Mineral Resource Assessments for Proposed Territorial Parks produced by the Steering Committee.

The issue of mineral resources and their potential for mining development is an aspect of park planning which requires rigorous and complete technical review. The mineral assessment steering committee has developed the following outline of a proposed methodology for conducting mineral resource assessments. This outline incorporates the input received from the stakeholders who attended the Whitehorse workshop.

**2.0 PROPOSED METHODOLOGY**

**2.1 Overview of Park Selection Process**

The park selection process being developed by Yukon Renewable Resources is comprised of two phases to provide the latitude for the assessment process being discussed in this paper. The objective of the first phase is to identify alternative areas of park interest that adequately represent each ecoregion and provide for benefits to sectors such as tourism without unnecessarily conflicting with areas of high mineral potential, and hence select a preferred park candidate. The purpose of the second phase is to finalize the boundary of the chosen candidate and commence park management planning.

The proposed methodology for mineral assessments is also divided into two phases and will be facilitated by one full time employee, the mineral assessment geologist, with assistance from a Mineral Assessment Panel consisting of professional geoscientists from industry with Yukon experience in grassroots mineral exploration.

It is assumed that the Phase 1 and 2 methodology outlined below would be used for metallic minerals, industrial minerals, placer deposits and coal. Assessment of oil and gas deposits would be done separately.

**2.2 Phase 1 - Data Compilation, Fieldwork, Ranking of Areas for Mineral Potential**

Phase 1 would be initiated when Yukon Renewable Resources present areas of park interest for a particular ecoregion to the Department of Economic Development. Ideally this would occur during the fall or winter preceding the summer field season. The Phase 1 assessment of each region would require a budget of about \$150,000 and about 12-15 months to complete, and would proceed using the following steps:

*STEP 1 - LITERATURE SEARCH AND DATA COMPILATION*

The mineral assessment geologist will review all of the available geoscience information for the region containing the areas of park interest, including: Geological Survey of Canada and DIAND geology maps; regional stream sediment geochemistry surveys; regional geophysical surveys; exploration industry assessment reports; Yukon MINFILE mineral deposits database; articles in scientific journals; university theses. Utilizing all of the above sources of information, a new 1:250,000 geological map of the region with overlays showing geochemical, geophysical and mineral deposits data, together with a summary report, will be prepared. Estimated time-frame for this step is about three months during late winter or early spring.

*STEP 2 - FIELD AND LABORATORY STUDIES*

After consultation with other geogists familiar with the region under study, the mineral assessment geologist will identify critical data gaps which need to be filled in order to conduct a mineral assessment of the region, and develop a program and budget for field and laboratory studies aimed at collecting the necessary data. Proposed studies would be

tailored to the region under study, and would likely include some or all of the following work: selected geological mapping of critical areas in order to fill data gaps, clarify uncertainties and provide ground-truthing of interpretations made in the office; collection of representative rock, soil and silt samples for geochemical analysis; selected geophysical surveys; age-dating studies. After approval of the proposed program and budget by the park planning committee, the mineral assessment geologist will carry out the necessary field and laboratory studies, and compile all the results into a revised 1:250,000 geological compilation with accompanying report.

It is estimated that each project would require a two-person mapping crew working for one three-month field season, followed by approximately three months of data compilation and interpretation in the office on the part of the project geologist.

### **STEP 3 - MINERAL ASSESSMENT**

The Mineral Assessment Panel is convened. The Panel reviews the revised geological compilation, and then conducts an assessment of the mineral potential of each of the areas of park interest. The assessments will be based upon the consideration of those mineral deposit models occurring in (or which are potentially feasible within) each area. (It is expected that the mineral deposit models and criteria for mineral potential assessment used by British Columbia would be available for modification and use). The Panel then provides a ranking of each area of park interest in terms of highest to lowest mineral potential.

In order to provide a ranking of different areas, a scheme for rating the areas would be developed, possibly using the "circle method" used by British Columbia as a starting point. Further work is required to adopt a ranking methodology which would be suitable for Yukon's planning needs.

The specifics of how the Panel would operate also still have to be worked out. For example, in British Columbia the Geological Services branch provides the data and training for volunteer experts to carry out mineral potential assessments. The volunteers are paid an honorarium, and are expected to devote a significant effort in the assessment process. The USGS has used consulting panels of experts to conduct mineral assessments. The panels are made up of 4-6 consultants who represent a range of pertinent expertise or experience selected for the requirements of each specific assessment.

Phase 1 concludes when the mineral assessment geologist prepares a final report with accompanying maps, which are then used by the park planning committee in selecting one candidate park from among the alternative areas of interest.

### **2.3 Phase 2 - Additional Assessment to Refine Park Candidate Boundaries**

In areas of potential resource use conflict, or where there are disagreements among the stakeholders concerning the boundaries of the candidate park, further study may be required. Such Phase 2 studies may necessitate more detailed (1:50,000-scale) work. Depending upon the geological complexity of the area, this would likely require a second field season of geological mapping, sampling and analytical work, followed by a further period of report writing and mineral assessment.

### **3.0 PROCESS MANAGEMENT**

There are several issues related to the process of managing mineral assessments in the larger context of parks selection that have not been dealt with in this discussion paper. Many such issues were identified during the Whitehorse workshop, including for example, the level and scope of public involvement in the overall selection process, the weighting of mineral versus aesthetic values, the possibility (and desirability) of land withdrawal from staking during assessment, and, the level of federal government involvement in the assessment. The probable economic viability of mineral potential and other potential resource values is also an issue to be examined.

It would not appear feasible to apply to DIAND for an order withdrawing all the areas of park interest from disposition. The work done by the assessment geologist may well identify areas of significant mineral potential, but the integrity of the proposed park areas might be compromised if this information is published and claims are staked in the area as a result. Consequently, it is proposed that the initial 1:250,000-scale geological compilation which is prepared as the basis for the mineral potential assessment would be kept confidential. However the final Phase 1 mineral potential map and report which form the basis of the selection of one candidate park from among the areas of interest will be published once an order withdrawing the candidate park from disposition is granted. Similar compilations prepared for a more detailed Phase 2 assessment would also be published prior to the finalization of park boundaries.

### **4.0 BIBLIOGRAPHY/REFERENCES**

The following reports and papers are available for review at the Energy and Mines Branch, Department of Economic Development:

McLaren, Graeme, 1990. A Mineral Resource Assessment of the Chilko Lake Planning Area, Ministry of Energy, Mines and Petroleum Resources, Bulletin 81.

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- a) Participants Notes to Accompany Resource Science Inc. presentations.
- b) Participants Notes to Accompany BCMEMPR presentations.

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