

RECLAMATION OF MINERAL EXPLORATION AREAS

Paper Presented
by

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INTRODUCTION

Reclamation of mineral exploration areas has been largely neglected by past reclamation symposia. To my best recollection we have never had a paper describing reclamation of mineral exploration areas.

CURRENT EXPLORATION ACTIVITY

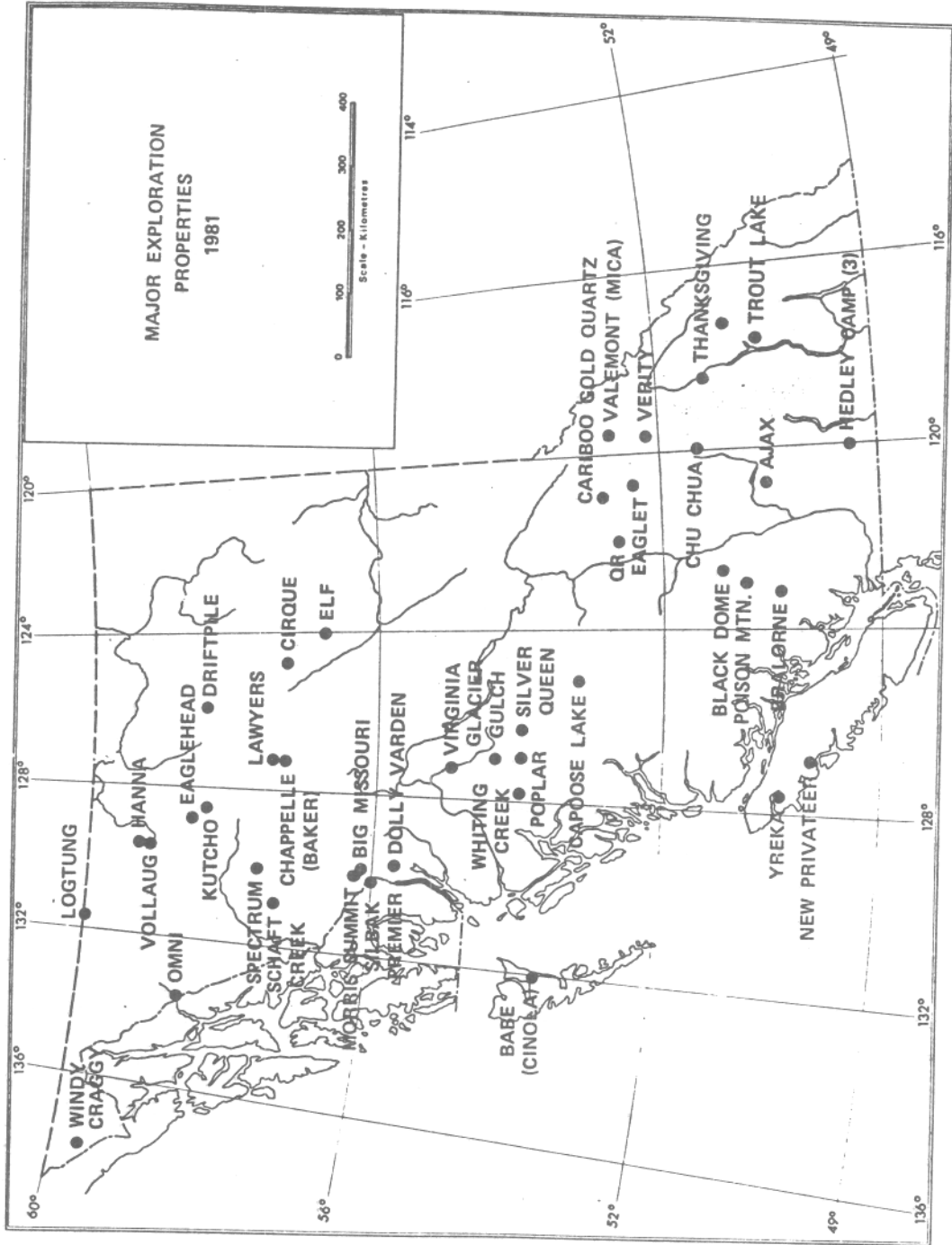
During 1981 exploration for minerals remained at a high level of activity. An estimated \$113 million was spent on mineral exploration. Mineral claim staking remained at a very high level with 71,666 units recorded, a slight decline from 1980. The number of claim units recorded has risen steadily since 1975. Another indication of a high level of activity is in the number of free miners certificates issued which remained above 15,000. Of these, it is estimated that at least 1,000 actively explore for minerals.

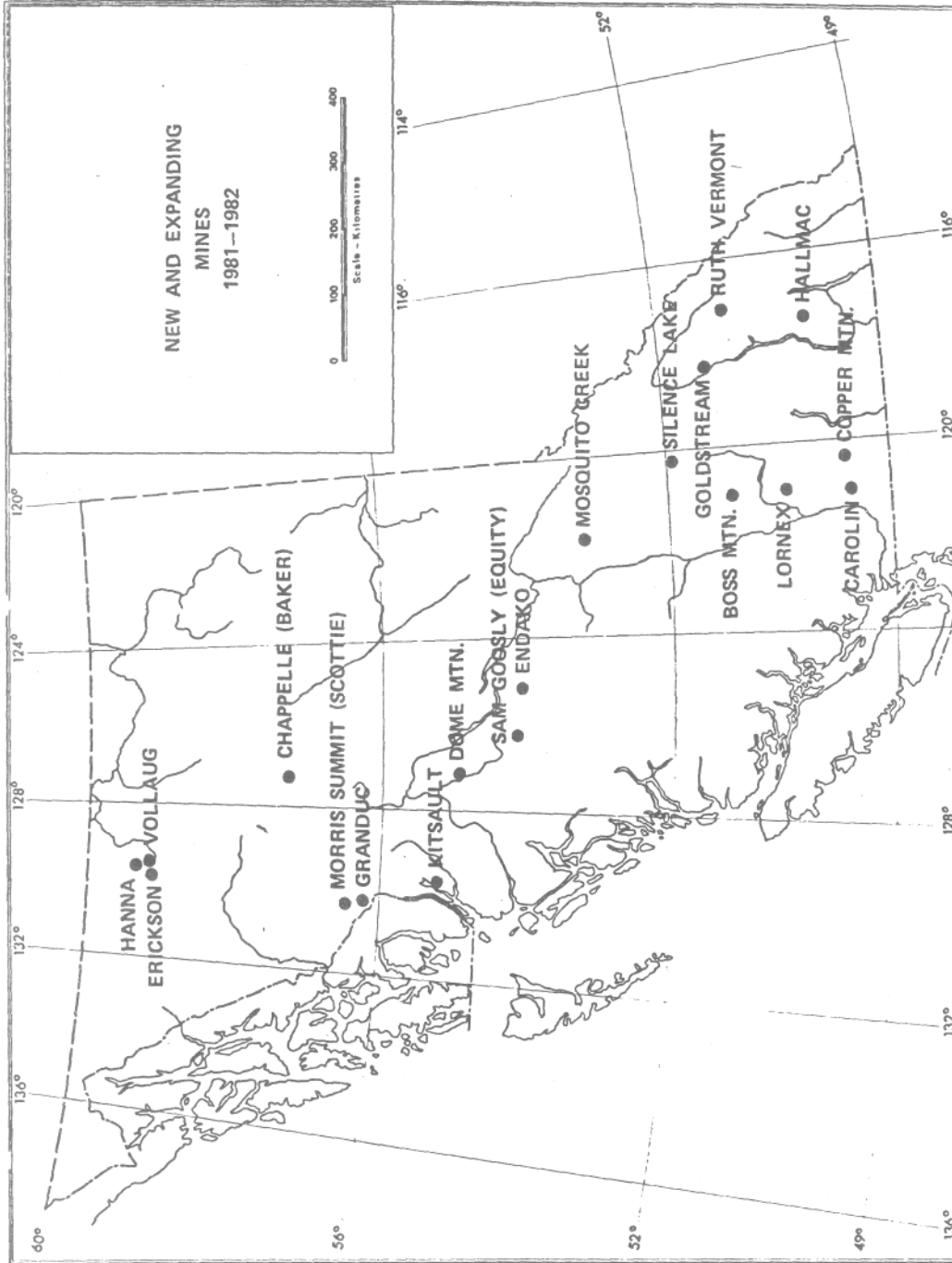
Approximately 2,000 Notices of Work on a Mineral Property were received in Ministry of Energy, Mines and Petroleum Resources' offices during 1981, and approximately 300 reclamation permits were in existence in this year.

Prior to the recent turnaround in metal prices, 1981 was a year of major expansion in the mining industry in British Columbia. Twelve mines commenced production during the year and five increased their production capacity (Figure 1).

Some of the most active exploration areas in the province are (Figure 2):

- Toodoggone River: Centered on Lawyers and Chappelle gold-silver deposit.
- Akie River: Centered on Cirque lead-zinc-silver-barite deposit.
- Cassiar.
- Hedley.





- Queen Charlotte Islands: Centered on Consolidated Cinola's Babe gold deposit.
- Stewart area: Gold-silver.
- Revelstoke area: Tungsten and molybdenum.

LEGISLATION

There are several acts and statutes which may govern mineral exploration. The approvals required by the Ministry of Energy, Mines and Petroleum Resources (MEMPR) under the Mines Act¹ are initiated by an operator completing a Notice of Work on a Mineral Property and a Reclamation Program and submitting them to the Inspector of Mines and Resident Engineer. Depending upon the nature of the exploration program, up to two months may be required before all permits and approvals will be issued.

REQUIREMENT TO GIVE NOTICE (Section 6[1], Mines Act)

The Notice of Work on a Mineral Property must be received by the Inspector of Mines and Resident Engineer at least seven days before commencing exploratory work and at least seven days before ceasing work.

APPROVAL OF UNDERGROUND WORK (Section 6, Mines Act)

Under Section 6(2) of the Mines Act, the owner, agent or manager of the mine must have the written approval of the Chief Inspector of Mines before working underground.

APPROVAL OF RECLAMATION PROGRAM (Sections 7-11, Mines Act)

A reclamation permit must be obtained before commencing an exploration program involving surface disturbance. The procedure for obtaining this permit is outlined below and involves an application, a review by other resource agencies, establishment of special terms and conditions on the permit and placing of a performance bond. Four factors enter into

¹The Mines Act is not yet law but will supercede the Mining Regulation Act upon proclamation.

consideration in determining the total size of the reclamation bond: the amount of land disturbed; ease of reclamation; environmental sensitivity; and the companies' past performance. The advantages to a company maintaining a progressive reclamation program are obvious. The maximum bond is \$2,500.00 per hectare of disturbance. The minimum bond is \$500.00 per hectare.

Procedure for Obtaining a Reclamation Permit

Applicant: Sixty days before commencing work on a mineral property, the applicant contacts Ministry of Forests and completes and submit a Notice of Work on a Mineral Property and a Reclamation Program to the Inspector of Mines and Resident Engineer.

MEMPR: Inspector of Mines and Resident Engineer circulates Reclamation Program to other resource agencies.

At the end of 30 days, comments are received, bonding and recommendations are forwarded to the Senior Reclamation Inspector in Victoria. If any resource agencies have statutory responsibilities, and the applicant has not taken steps to fulfill these then the applicant will be notified at this time. Chief Inspector of Mines approves program (within 60 days of the time that the application is first received).

Senior Reclamation Inspector notifies applicant of the amount of bonding.

Applicant: Arranges for bonding at bank and sends Receipt and Agreement form to Senior Reclamation Inspector.

MEMPR: Once the completed Receipt and Agreement form has been received, the Reclamation Permit is issued to the operator.

Operator: Upon completion of Reclamation Program, the operator can either request return of bonding or maintain the permit in good standing.

MEMPR: If the operator requests a return of bonding then the Reclamation Inspector-Technician inspects the property and, providing all terms and conditions of the permit have been met, bonding is returned.

Procedure For Maintaining A Reclamation Permit

Existing permits can be amended by annually submitting a Notice of Work on a Mineral Property and Reclamation Program at least 60 days prior to commencement of work. The existing permit will be either amended to approve this work without an increase in security or the permittee will be asked to post an additional security. Upon receipt of this security the permit will be amended approving the proposed reclamation program.

General Reclamation Permits

General Reclamation Permits can be issued, upon application by letter to the Chief Inspector of Mines, to those companies which maintain a number of projects in the Province of British Columbia. This permit covers all the company's projects, thereby greatly simplifying the bonding procedure. The company is still required to submit to the Inspector of Mines and Resident Engineer, for each property, a Notice of Work on a Mineral Property and a Reclamation Program annually and these are circulated to other resource agencies. Bonding and terms and conditions of a general reclamation permit may be revised at any time depending upon the extent of exploration activity, comments from review agencies, and on the operator's performance record.

To terminate a general permit, the operator must apply for release of the bond. The Senior Reclamation Inspector, upon a satisfactory inspection of all properties, will arrange for release of bond.

FOREST ACT

On Crown land administered by the Ministry of Forests a free miner may be required to obtain the following when necessary.

Free Use Permit: To cut and use timber for mining purposes on mineral claims.

Licence to Cut: To cut timber for camp sites, roads, drill sites, adit sites.

Right of Way: For roads through forest reserve land, but does not include work on mineral claims.

LAND ACT

Ministry of Lands, Parks and Housing has jurisdiction over Crown land other than that land administered by the Ministry of Forests.

Right of Way: For access roads to a mineral property but does not include roads on a mineral property.

WATER ACT

The Ministry of Environment, Water Management Branch issues water licences for water use from creeks, rivers, or lakes.

FISH AND WILDLIFE, MINISTRY OF ENVIRONMENT

There is no act governing the protection of wildlife habitats other than the Federal Fisheries Act. The Regional Fish and Wildlife Branch receives copies of Notice of Work on a Mineral Property from the Inspector of Mines and Resident Engineer. Any concerns are taken into consideration and any conflicts are usually resolved at the regional level. The company doing the exploration work may be instructed to avoid or minimize impacts on habitats or fisheries.

POLLUTION CONTROL ACT

Depending on the size of the exploration camp, sewage and garbage disposal are covered under the Public Health Act or Pollution Control Act.

GUIDELINES FOR MINERAL EXPLORATION

WORK GUIDELINES

These guidelines described below will replace the existing guidelines for coal and mineral exploration and are expected to be published shortly. In summary, these guidelines emphasize:

Planning by

- designing roads to avoid sensitive areas
- locating roads to fit the topography
- supplying sufficient culverts

- ordering sufficient seed and fertilizer before commencing work

Minimizing disturbance by

- helicopter access drilling in some sensitive areas
- using existing roads
- building the narrowest road possible
- confine the use of tracked vehicles in alpine to selected routes
- endhauling material on steep slopes

Construction Procedures

- flagging routes in advance of construction
- clear minimum area
- winter construction guidelines

Drainage Control

- considered very important
- culvert design and construction techniques
- ditches
- water bars

Stream Crossings

- general guidelines
- simple bridge design
- use of culverts only recommended for structures which do not support fish populations
- fords may be used on some channels but require permission of the Fish & wildlife Branch
- debris bridges are not permitted

Drilling

- not within 50 m of a water course
- topsoil to be removed and stockpiled
- close circuit for drilling mud

Trenching

- only on slopes less than 26°
- hand and backhoe trenching is encouraged
- bulldozer trenching not permitted except with permission of an Inspector

Underground Work

- guidelines developed to ensure associated surface disturbances are reclaimed and stable

Reclamation Requirements

- reclamation requirements follow

RECLAMATION OF EXPLORATION AREAS

Objectives

The objectives in reclamation of exploration disturbances are usually for the purpose of erosion control or aesthetics and the majority of reclamation programs are instituted for these reasons.

The secondary reclamation objectives to limit access and restore wildlife habitat, grazing, forestry and recreation all apply in certain instances.

Reclamation Guidelines

The following guidelines are minimum requirements and, depending upon the nature of the exploration activity and the environmental sensitivity of the area, increased standards may be required as a condition of the permit.

Campsites: Campsites which are to be abandoned shall be dismantled at the end of operations. All refuse shall be burned, buried, or removed. Pits shall be backfilled. The site shall be ripped, if necessary, to break surface compaction and revegetated.

Campsites which are to be left for reuse shall be cleaned up. All refuse shall be burned, buried, or removed. Pits shall be filled.

Trenches, Drill Sites, and Major Excavations: All trenches, drillsites and major excavations shall be backfilled and recontoured as nearly as possible to the previously existing slope. Stockpiled topsoil shall be spread over the site and the entire site shall be revegetated. Overland drainage shall be conducted around disturbances. Where this is not possible, erodible material must be protected by rip-rapping or other measures.

Roads: It is important to identify those roads which can be abandoned and those roads which are necessary for future exploration. Roads that will not be used the following field season should be treated as abandoned. Some portions of the road system may be required by the Ministry of Forests for permanent fire access. It is in the operator's interest to contact the Ministry of Forests in this regard.

Permanent Roads: Roads that are to be retained for permanent access shall be maintained annually.

Cut banks and fill slopes shall be revegetated.

Abandoned Roads: All abandoned roads should have a system of permanent erosion control. All culverts shall be removed and suitable permanent drainage structures installed. Erosion bars shall be placed at frequent intervals to ensure stability.

The requirement for recontouring roads will vary according to its location and the environmental sensitivity.

- Roads on environmentally sensitive areas will require complete recontouring.
- Roads in alpine and high subalpine areas will require the pulling back of topsoil material.
- Other roads will require ditching at their junction with permanent roads and ripping of compacted surfaces.

All abandoned roads shall be revegetated.

CONCLUSION

In a recent address to students at the University of Victoria, the Hon. R.H. McClelland, Minister of Energy, Mines and Petroleum Resources, stated that "there are currently 98 proposals to restrict exploration activity in the province. These proposals would limit and possibly exclude exploration, on a minimum of 4.4 million hectares of land in addition to the current 9.2 million hectares which are currently contained within Parks, Ecological Reserves and Agricultural Land Reserves." I believe that these figures were challenged and upon a

re-evaluation the 98 proposals rose to 114, and the 4.4 million hectares doubled to almost 9 million hectares.

Conflicts currently exist between parks and areas of high mineral potential, the most notable being, Tweedsmuir Park, Wells Gray Park and Kwadacha Park. The establishment of Kwadacha Park was very unfortunate in that it was created without a thorough review of its mineral potential. The mineralization was obvious, existing on the edge of the park and could have been accommodated with a small alteration of the park boundary.

In conclusion, it is up to the exploration industry to show that it can explore for mineral in an environmentally prudent manner. It is up to Government to show that it can control exploration by considering other interests and minimizing the impact of exploration. Without this effort, the mining industry and, in turn, the province of B.C. will suffer.