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LA REHABILITATION DES SITES MINIERES ET SON FINANCEMENT - REVUE INTERNATIONALE

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ABSTRACT

In 1990, The Coopers & Lybrand Consulting Group at the request of the Mining Association of Canada carried out a survey of reclamation regulations in selected countries and jurisdictions outside Canada. This initial study was later supplemented by data from Canadian provincial jurisdictions.

This paper presents a summary of the findings of these studies and comparisons between the various jurisdictions. There has been a progression in various Mining Acts from legislation covering the safety aspects of mining and health to much more complex environmental concerns ranging from disturbance of flora and fauna to the ultimate reclamation of the areas affected by mining. Identification of and compliance with reclamation regulations, the funding of reclamation activities, and the responsibility of operator beyond the abandonment of the property are issues which are becoming of increasing concern to mine developers and operators.

RÉSUMÉ D'AUTEUR

A la requête de l'Association minière du Canada, Le Groupe Conseil Coopers & Lybrand a effectué en 1990, un sondage sur les règlements en vigueur concernant la réhabilitation des sites miniers. Le sondage porta d'abord sur des pays et juridictions à l'extérieur du Canada, pour ensuite inclure les modalités présentement en application dans les provinces canadiennes.

Le présent article résume les résultats du sondage et compare les principaux aspects des règlements en place dans chacune des juridictions. Une évolution progressive est observée dans les lois sur les mines depuis des législations limitées aux aspects de la santé et sécurité, jusqu'à une gamme de modalités environnementales de nature complexe, allant de la protection de la flore et la faune, à la réhabilitation complète des sites affectés par les activités minières. Parmi les questions importantes préoccupant les développeurs et opérateurs miniers figurent l'identification des règlements applicables et l'obligation d'être en conformité avec ces règlements, les sommes importantes réclamées pour la réhabilitation, et les responsabilités souscrites par l'opérateur après que toute activité minière a cessé.

INTRODUCTION

Increasing environmental concern has led governments to tighten regulatory controls. Comprehensive Environmental Impact Studies, full consultation with the residents of the proposed mining sites, strict implementation of on-going monitoring programs, and upgraded reclamation standards including the funding of reclamation programmes are the effects of the public's rising concern and of the governments that they elect. The question of mine reclamation and funding is a crucial one for the mining industry, government authorities and the general public.

In the spring of 1990, at the request of the Mining Association of Canada (MAC). The Coopers & Lybrand Consulting Group performed a survey on reclamation practices in countries outside Canada. Results from this survey were presented at a MAC-sponsored Workshop on Mine Reclamation and Funding held in May, 1990. Information from this initial survey was subsequently updated for several jurisdictions, and augmented by data on reclamation practices from additional jurisdictions including Canadian jurisdictions, and forms the basis of this publication.

Reclamation regulations in 25 countries or states have been reviewed but due to the limited length available for this publication, details of these regulations are only described for one jurisdiction in each of the four countries which lead the mineral production of the western world: Ontario for Canada, Nevada for the United States, Western Australia for Australia, and South Africa.

It should be noted however, that a comparative analysis of the regulations for all 25 jurisdictions examined, is presented in the comparison section.

This publication does not attempt to provide a comprehensive review of reclamation regulations as there are some important gaps. In spite of this deficiency, the information presented is sufficient to make for some broad generalizations and to show where the current trend could lead.

WHAT IS RECLAMATION?

The average person probably thinks of reclamation as the restoration to its natural state of land affected by human activities. In the mining industry, reclamation was previously defined in terms of health and safety considerations at the project's closure such as fencing of surface openings. However in today's mining context, reclamation, also called rehabilitation, is defined to encompass not only health and safety but also environmental protection and restoration of the mined out land to an acceptable state. Under section 10.6.1 of the code of the British Columbia new Mines Act, the definition of reclamation, which might be considered typical of official wording, is:

"the duty of every owner, agent and manager to institute and, during the life of the mine, to carry out, a program of environmental protection and reclamation, and upon termination of mining:

1. to return the land and watercourses to an acceptable standard of productive use that ensures the physical stability of landforms and structures;
2. to remove all structures, equipment and scrap; and
3. to leave watercourses stable and of acceptable water quality."

Another definition is taken from Ontario's new Mining Act (Bill 71):

"rehabilitate means measures taken in accordance with the prescribed standards to treat the land or lands on which advanced exploration mining or mine production has occurred so that the use or condition of the land or lands:

- (a) is restored to its former use or condition; or
- (b) is made suitable for a use that the Director sees fit and includes taking protective measures."

Reclamation has evolved from a relatively deregulated state focusing on post-mining health and safety measures, to strict regulations subject to government discretion for performing on-going and post-mining restoration of the land disturbed.

RECLAMATION FUNDING

The funding of mine reclamation programs is a vital issue for government legislators, mining executives and environmental groups. Clearly, all parties involved in reclamation issues admit that in most cases, substantial funds must be allocated at project startup to guarantee the fulfilment of environmental obligations and to respect reclamation standards. Although financial guarantees are provided at the beginning of the project, a large portion of the reclamation costs may be incurred only after mining activities have ceased, possibly for several years following termination. These two peculiarities of reclamation funding, that is, up front funding assurance, and the important time lag between the time funds are guaranteed and when the bulk of the funds are used, have prompted important questions such as:

- What are acceptable forms of financial assurance? (e.g. bond, letter of credit, cash, trust fund, insurance policy, IOU, accounting reserves)
- What is the post-closure period that should be covered by the funds so that the reclamation program is completed satisfactorily?
- How should it be determined that there is a reasonable assurance that sufficient funds are available as required? (i.e., accounting for impact of investment policy and inflation)
- How often should funding requirements be reviewed? (i.e., to account for project expansion or downsizing, and new reclamation technology)
- How can the reasonableness of capital and operating costs for progressive and end-of-life reclamation be assessed?
- What is the appropriate tax treatment of the money invested in the reclamation fund, and of the reclamation costs?
- What happens in the case of fund deficits or surpluses?
- What funding mechanism should be put into place for financially vulnerable one-mine companies?

These questions are currently being addressed by mining associations and government representatives. At the 1990 annual

meeting of Canada's mines ministers, the provincial ministers agreed that the Canadian Income Tax Act should be amended so that mining companies can deduct their reclamation assurances as a business expense. Clearly additional progress is required before all the answers are available.

WHO NEEDS TO KNOW ABOUT RECLAMATION?

Government Agencies

Policy and rulemakers from the departments of mines, environment and occupational health and safety play a leading role in setting up, implementing and enforcing reclamation standards. This includes :

- verification that sufficient funds are available to carry out reclamation activities;
- assessment of the reasonableness of the reclamation plan;
- monitoring the progression of the reclamation program; and
- administering penalties and sometimes performing reclamation of abandoned mines.

It is imperative that government authorities keep abreast of changing regulations.

Shareholders

Annual reports and other documents distributed to shareholders of mining companies contain information with regards to reclamation standards and programmes undertaken which comply with or improve upon government regulations. Reporting practice varies widely but the amount of information provided has increased significantly over the last few years.

Financing Organizations

A rule of thumb used until recently by financial groups to perform a financial analysis of a mining project, was to equate end-of-mine-life reclamation costs with the salvage value of the surface installations and equipment. This rule no longer applies. Project financing is often conditional on the obtaining of all regulatory permits and related assurances, including the provision of a reclamation plan and the filing of a bond. The latter may significantly exceed the value of residual assets.

Regulatory Agencies

As part of the offering document for securities of mining companies, stock exchange commissions require the disclosure of legal and financial liabilities with regards to environmental matters. This encompasses the compliance with reclamation regulations and the cost associated with reclamation activities.

Management

Management of mining organizations are still adjusting to the changing reclamation regulations although some companies have taken a pro-active role and have implemented innovative and effective reclamation approaches. Environmental policies are being adopted by mining companies and industry associations. In the province of Quebec the government would prefer that the mining industry attempts to become a self-regulated industry on environmental issues. The undertaking of rehabilitation activities requires a multi-disciplinary knowledge and this has resulted in companies recruiting technical specialists and enlarging the management structure to include environmental affairs executives.

REGULATIONS SURVEY

CANADA - Ontario

Rehabilitation standards have been developed in Ontario by a government-industry regulations committee and are awaiting passage before their promulgation under Part IX of the new Mining Act Amendments - Bill 71. Those standards will be administered by the Ministry of Northern Development and Mines but are not expected to be enforced before mid-1991.

Under the new rules a detailed closure (ie., reclamation) plan with related financial assurances, is required not only for existing operations but also for some advanced exploration projects. Government approval of the plan is required before commencement of a project. Important elements to be included in the closure plan are:

- specific rehabilitation measures;
- on-going monitoring program;
- procedure for verifying attainment of reclamation objectives;
- cost estimates;
- timetable; and
- bond structure.

Upon project closure safety regulations must be respected. On-site review of the closure plan will be performed on an annual basis by the government authorities and the mine operator must submit an annual progress report on reclamation activities. Directors of Mine Rehabilitation will be appointed to regulate mine rehabilitation. If reclamation measures are not carried out, the government or an appointed agent may use the bond to do so and put a lien against the property for any government funds used.

The surrender of claims can be refused until satisfactory reclamation is performed. In the case where the Crown performs reclamation work incurred costs are charged against the land and can be recovered by the government authorities via legal action and auction of the land.

The Environmental Protection Statute Law Amendment Act - Bill 220, administered by the Ministry of the Environment was

promulgated on June 28, 1990. Reclamation implications of the Act are:

- removal of waste and reclamation of a site or in any building to a satisfactory condition may be ordered;
- environmental approval may include financial assurance;
- if the Crown performs clean-up, any person named in a control, stop or repair order may have to pay the costs; and
- higher penalties than before will be administered for non-compliance.

Rehabilitation standards of the new Mining Act will be used in conjunction with the Ministry of the Environment standards, and a memorandum of understanding between the Ministry of Northern Development and Mines and the Ministry of the Environment is being developed to avoid duplicate requirement from a single government.

UNITED STATES - Nevada

At one time, regulations in Nevada were fairly loose but this has changed substantially in the new legislation which became effective October 1, 1990. The new legislation is known as "Charter 519A-Reclamation of Land Subject to Mining Operations or Exploration Projects" and is administered by the Division of Environmental Protection of the Nevada Department of Conservation and Natural Resources. The Division intends to enter into a memorandum of understanding with both the United States Bureau of Land Management and the United States Forest Service concerning the acceptance by those agencies of reclamation plans for public land administered by a federal agency and privately owned land.

These new regulations require the approval of a reclamation plan accompanied by the filing of a bond before October 1, 1993 or before abandonment, whichever occurs first. This applies not only to operating mines but also to exploration projects. Annual reports to the land administrator must be submitted and a fee of US \$1.50 per acre of federal land disturbed, or US \$5.50 per acre of privately owned land disturbed. The new rules include provision for the creation of a reclamation program for already abandoned mine sites. Violations of the legislation will be subject to criminal and civil penalties. Lastly but probably of most importance, the State of Nevada plans to develop and administer a program providing for the pooling of bonds.

AUSTRALIA - Western Australia

Western Australia, an important mining region, is characterized by strict and comprehensive regulations (Mining Act, Soil and Land Conservation Act, Wildlife Conservation Act and Aboriginal Heritage Act). A coordinated approach is used by government departments for environmental assessment of mining prospects. Reclamation conditions are determined by the Mines Department and depend on the particular area where the mine site is situated. These conditions can be modified at any time.

In March, 1990 the Department of Mines of Western Australia proposed the introduction of unconditional performance bonds. The suggested rate for these bonds would vary from AUS \$3,000 to \$7,000 per hectare. The Chamber of Mines and Energy has proposed an alternative which would involve the establishment of a mining rehabilitation trust fund. This would be a support mechanism for financing reclamation for leaseholders who are unable to pay for the reclamation.

It is also worth noting that, in Western Australia, a new leaseholder is responsible for cleaning up environmentally unacceptable areas of previous operations.

SOUTH AFRICA - Surface Mining

The reclamation regulations for surface mining in this very important mining country are comprehensive and well defined. Procedures and enforcement policies are described in detail in several Acts: Mining Act, Soil Conservation Act, Water Act, and Environment Conservation Act.

Before opening a new mine, operating programmes (including provisions for rehabilitation), must be approved by the government Mining Engineer who has wide discretionary powers. In addition, mining activities are only undertaken after the government's consideration of an Environmental Impact Statement and authorization by the Minister of Environment Affairs. No bonding procedure exists in South Africa.

On abandonment the mine operator must, among other things, restore surface as close to its natural state as is practicable and as long as this is not unduly onerous. Non-compliance under Soil Erosion Act and Water Act, gives authorities the right to carry out appropriate measures as a charge to the mine owner or manager.

The mine owner or manager is responsible for environmental protection of the surface after abandonment until the Mines inspector issues a compliance certificate. It is interesting to note that the South African Chamber of Mines Vegetation Unit founded 30 years ago, provides a comprehensive advisory and rehabilitation contracting service to members and non-members of the Chamber. More than 4,000 hectares of disturbed land have been vegetated since 1960.

COMPARISON

A comparative analysis of the regulations from individual jurisdictions is given in summary Tables 1, 2, 3, and 4. The regulations are compared on nine points covering the aspects of legislation, procedure and enforcement:

Legislation

- Special provisions are comprehensive rules dealing with reclamation but not including the usual provisions for health

and safety: these provisions exist for almost all jurisdictions.

- Mine-specific Acts override other Acts (e.g. the Gove Peninsula Act, in the Northern Territories of Australia).
- These special Acts are only present in the Northern Territories and Papua New Guinea.
- Concurrence is the involvement of several government departments with regards to reclamation. The tables show that in less developed countries only one government body is normally involved.

Procedure

- **Ministerial discretion** signifies the presence of significant ministerial discretion; Ministerial discretion appears to be absent only in Indonesia.
- **Submission of a reclamation plan** before granting of a mining lease is essentially universal: only Papua New Guinea, Fiji and Indonesia do not require such a plan.
- **Changes during tenure** denotes the possibility of having the rules changed at any time during the project's life; this occurs in the majority of the jurisdictions surveyed.

Enforcement

- **Security or bond** is the financial assurance required for performing reclamation; note the absence of a bond for South Africa.
- **Provisions for non-compliance** are found in many jurisdictions.
- **Post-abandonment provisions** are the provisions for cleaning-up previously mined lands and the liability for successor mining operators. These provisions are absent for some important mining jurisdictions (e.g. Québec, Australia's Northern Territories and Papua New Guinea).

CONCLUSIONS

Regulations regarding reclamation vary from minimal, concentrating more on the concerns about crop disturbance and the safety aspects (fencing and filling of old pits) to comprehensive and strict.

Many jurisdictions, such as Western Australia, have a high degree of ministerial discretion, both in what needs to be done and how reclamation is funded, and in several jurisdictions other ministries may have a very direct or at least, indirect involvement in both the rehabilitation planning and the question of compliance.

South Africa does not appear to require the posting of a bond or security in contrast with most of the regulations in Canada, Australia and the United States.

In several North American and Australian jurisdictions direct reference is made to the current holder of a mining lease being responsible for rehabilitation of previous mining operations.

Government authorities in most jurisdictions appear to have significant discretionary powers on this matter. A counter example is Fiji, where the legislation specifically states that a tenement holder is not responsible for previous operators.

In only one country, South Africa, is the possibility considered that regulations may be impractical or very importantly, unduly onerous. The State of Nevada does however, contemplate rehabilitation regulations as being impractical.

Canada, United States and Australia regard rehabilitation as being an ongoing responsibility and the liability may extend well beyond abandonment or cancellation of the mining lease. This is also recognized to a certain extent in South Africa, but once the Inspector of Mines has signed off on the reclamation efforts, there appears to be no further liability. The United Kingdom also recognizes a maximum period of "after care".

In none of the Mining Acts is there an explicit recognition of the time value of money or reference to how interest on the bond is treated for taxation purposes. This may appear in regulations of other departments such as revenue and taxation outside the scope of this study.

None of the Acts or regulations make reference to the possibility of a mine being re-opened either because of the availability of new technology, a new fiscal regime, rising metal prices or with regards to the future treatment of tailings. It could be argued that the efforts of reclamation, in fact, may deprive the state or country of potential future revenues.

FUTURE TRENDS

Clearly there has been a progression in Mining Acts from a concern for the safety aspects of mining (such as fencing of old workings), and concern for crop disturbance through health considerations (e.g., clean air, clean water) to concerns for flora and fauna, restoration to original contours, historical monuments (either natural or man made) and even to the impact on the tourism industry. At least in the near and medium term it would appear unlikely that this trend will reverse.

Since each mine site is a unique occurrence it is understandable that reclamation clauses in mining leases will be the subject of negotiations not only with the Ministries of Mines but with other departments such as Environment. Nevertheless, the high degree of ministerial discretion is evident and this is expected to continue. It is also predicted that the right to modify the rehabilitation requirements during the course of the lease because of either changing scope of operations or changing technology will become the norm. Company management is no longer able to say at the start of operations "if we comply with all the rules we will have no liability" or "reclamation will cost so much in x years time". Management will have to live with a level of uncertainty.

The Environmental Impact Statement will probably be the most important reclamation document and thus there will be input from other government agencies and the general public, although it appears that Ministries of Mines departments will increasingly play a coordinating role.

Enforcement in the form of security provisions or bonding will be universal, but because of the uncertainties noted above and the potentially onerous nature of the bond, particularly on small companies, a trust fund similar to that proposed for Western Australia and Nevada may become a common mechanism.

Responsibility of the operator beyond abandonment or cancellation of a lease could become the norm but it is hoped that there will be some form of sunset clause as there is in South Africa and the United Kingdom when liability will finally cease, but mining executives should not hold their breath.

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TABLE 1
CANADA

	Northwest Territories & Yukon	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	New Brunswick	Nova Scotia
Legislation									
Specific provisions for reclamation (other than safety)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mine-specific Acts	●	●	●	●	●	●	●	●	●
Concurrence of other departments	✓	✓	✓	✓	✓	✓	✓	✓	✓
Procedure									
Ministerial discretion	✓	✓	✓	✓	?	✓	?	✓	✓
Submission of plan before granting of lease	✓	✓	✓	✓	?	✓	✓	✓	✓
Changes during lease tenure	?(✓)	✓	✓	?	?	✓	?	✓	✓
Enforcement									
Security or bond	✓	✓	✓	●	✓	✓	●(✓)	✓	✓
Provisions for non-compliance	✓	✓	✓	●	✓	✓	?(✓)	●	✓
Provisions after cancellation or abandonment	?(✓)	✓	✓	●	?	✓	●	●	✓

LEGEND () PROPOSED CHANGE TO THE CURRENT REGULATIONS

✓ PRESENT

● ABSENT

? INTERPRETATION UNCLEAR OR DATA LACKING

TABLE 2

UNITED STATES

	Federal Coal	Federal Non-Coal	California	Nevada
Legislation				
Specific provisions for reclamation (other than safety)	✓	✓	✓	✓
Mine-specific Acts	●	●	●	●
Concurrence of other departments	✓	✓	✓	✓
Procedure				
Ministerial discretion	✓	✓	✓	✓
Submission of plan before granting of lease	✓	✓	✓	✓
Changes during lease tenure	✓	✓	✓	✓
Enforcement				
Security or bond	✓	✓	●(✓)	✓
Provisions for non-compliance	✓	✓	✓	✓
Provisions after cancellation or abandonment	✓	✓	✓	✓

LEGEND () PROPOSED CHANGE TO THE CURRENT REGULATIONS

✓ PRESENT

● ABSENT

? INTERPRETATION UNCLEAR OR DATA LACKING

TABLE 3

AUSTRALIA

	New South Wales	Queensland	Victoria	Western Australia	Southern Australia	Northern Territories
Legislation						
Specific provisions for reclamation (other than safety)	✓	✓	✓	✓	✓	✓
Mine-specific Acts	●	●	●	●	●	✓
Concurrence of other departments	✓	?	?	✓	●	✓
Procedure						
Ministerial discretion	✓	✓	✓	✓	✓	✓
Submission of plan before granting of lease	✓	✓	✓	✓	✓	✓
Changes during lease tenure	✓	✓	✓	✓	?	●
Enforcement						
Security or bond	✓	✓	✓	✓	✓	●
Provisions for non-compliance	✓	✓	✓	✓	✓	✓
Provisions after cancellation or abandonment	?	✓	✓	✓	✓	●

LEGEND () PROPOSED CHANGE TO THE CURRENT REGULATIONS

✓ PRESENT

● ABSENT

? INTERPRETATION UNCLEAR OR DATA LACKING

TABLE 4
OTHER COUNTRIES

	Fiji	Indonesia	Papua New Guinea	Vanuatu	South Africa	United Kingdom
Legislation						
Specific provisions for reclamation (other than safety)	✓	•	•	✓	✓	✓
Mine-specific Acts	•	•	✓	•	•	•
Concurrence of other departments	•	•	•	✓	✓	✓
Procedure						
Ministerial discretion	✓	•	✓	✓	✓	✓
Submission of plan before granting of lease	•	•	•	✓	✓	✓
Changes during lease tenure	•	•	•	✓	•	✓
Enforcement						
Security or bond	✓	•	•	•	•	•
Provisions for non-compliance	•	•	✓	•	✓	?
Provisions after cancellation or abandonment	•	•	•	•	✓	✓

LEGEND () PROPOSED CHANGE TO THE CURRENT REGULATIONS

✓ PRESENT

• ABSENT

? INTERPRETATION UNCLEAR OR DATA LACKING

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