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**OVERVIEW OF RECLAMATION AND CLOSURE
REQUIREMENTS FOR CANADIAN MINES**

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OVERVIEW OF RECLAMATION AND CLOSURE REQUIREMENTS FOR CANADIAN MINES

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Abstract

Reclamation activity in the mining industry has increased across Canada as more mines reach the end of their life, and progressive rehabilitation becomes part of day-to-day operations. Reclamation planning often starts even earlier, during the prefeasibility and feasibility stages of a project when conceptual plans are developed and design alternatives reviewed. Kilborn conducted this review of reclamation and closure requirements in order to assist property managers with a preliminary assessment of their reclamation planning responsibilities.

In general, planning and implementation of reclamation at Canadian mine sites is under the authority of provincial or territorial agencies. Most of the provinces have already developed, or are currently preparing, reclamation guidelines, enabling legislation, and overall requirements for closure. Reclamation requirements are generally formalized through the mine planning or permitting process prior to development, although existing mines are also required to comply according to a negotiated or set schedule.

On completion of the planning process, an agreed upon level of financial assurance or security is often required to support final reclamation should the owner either physically or financially abandon the site, and the environmental liability revert to the Crown. This requirement is often significant, and must be assessed when determining the feasibility of a new project, or in the review of environmental liabilities associated with the sale and transfer of an existing operation.

Introduction

Mining may alter considerably the physical and chemical characteristics of a site. Canada and other countries around the world have developed reclamation policies in order to ensure that environmental standards are met during operation and at final reclamation, and that an acceptable end-use can be obtained. For a new operation closure planning is generally considered at the same time as project design; usually during the prefeasibility and feasibility stages of a project. A key element of the planning process in Canada is the development of a reclamation or closure plan that describes actions to be taken during operation and at closure to return the site to an approved end-use. This use is determined by the proponent in consultation with the lead agency on review of site conditions.

This paper provides an overview of current reclamation plan requirements for metal mines in each of the provinces and territories. For provinces where reclamation is addressed primarily within the Environmental Assessment process, only a limited discussion is presented. Other types of mining such as coal, potash and industrial minerals have generally not been addressed since there appears to be limited consistency in their treatment across Canada.

Readers should refer to documents listed by province or territory at the end of the paper, and enabling legislation or applicable regulations for further details. Since reclamation related legislation and regulations are being continuously updated, current information should be sought from the lead ministry listed in Table 1.

British Columbia

Reclamation planning is an integral part of all stages of the Mine Development Assessment process in British Columbia, but is of particular interest during the final permitting stage. All operators must apply for and receive a Reclamation Permit prior to the initiation of mine work from the Chief Inspector of Energy, Mines and Petroleum Resources.

The application for a Mine Development Certificate must include a detailed conceptual reclamation and mine closure plan describing:

- existing environmental conditions;
- proposed mining program;
- proposed reclamation and research program for first five years of mine life;
- conceptual closure plan;
- monitoring program during closure; and,
- estimate of reclamation costs.

Reclamation Permits are generally issued for a period of five years, at which time the permit and proposed reclamation activities are reviewed. The closure plan should address in detail the first five year period of mining and reclamation programs. Annual reports are required in order that concurrence with the plan and the success of the on-going programs can be evaluated.

A financial security deposit is required in an amount based on the costs and risks associated with the development for the taxpayers of the province. The security is set to reflect the total projected costs for any reclamation, treatment and monitoring costs, and is based on the cost estimate provided by the proponent in the reclamation plan.

Alberta

The focus for reclamation in Alberta has been placed on coal mines and tar sands operations, since metallic minerals are generally not mined. Prior to any surface disturbance the proponent must obtain a Development and Reclamation Approval. A reclamation plan is required which outlines the means by which the company will fulfill Alberta's reclamation requirements (return of equivalent land capability). A security deposit is required which will address the estimated cost for reclamation.

Saskatchewan

All new metal mines must be reviewed through the Saskatchewan Environmental Assessment process. The Environmental Assessment process is currently under review and may be changed to include specific regulations. Reclamation planning is an important component of the Environmental Impact Statement, which forms the basis for environmental approval for the project. Reclamation must be addressed at a conceptual level within the Project Proposal, and in greater detail within the Environmental Impact Statement if deemed to be required.

Manitoba

Under the 1992 *Mines and Minerals Act*, all new mines are required to develop a closure plan and provide financial security in accordance with the applicable regulations. Although required by the Act, guiding Regulations are not available, and as a result, reclamation planning at this time is addressed solely within the Environmental Assessment process. Mine reclamation regulations are currently being drafted and are expected to be approved in 1996. The Environmental Assessment process currently used does not have a means of requiring a financial security for reclamation.

Ontario

Ontario is generally considered to have one of the most comprehensive closure planning process in Canada. All new projects, existing mines (operating and non-operating), selected advanced exploration projects and other operations designated by the Director of Mine Rehabilitation, are required to prepare a closure plan. After the regulations came into force (1991), existing mines were provided with a schedule for submission of their plan, while new operations were not allowed to begin mining without having an approved closure plan in place. Several existing operations are in this intervening stage and have yet to submit a closure plan to the government.

A guide is available to assist proponents in closure plan organization and content. For new mines, the plan must address:

- pre-development environmental conditions;
- proposed undertaking;
- proposed reclamation measures;
- impacts the project will have on the environment after completion of all reclamation activity;
- detailed reclamation schedule;
- proposed monitoring and management programs; and,
- detailed cost evaluation.

The cost evaluation may be submitted under a separate cover since it forms the basis for the financial assurance. Financial assurances are generally in the form of: cash; letter of credit from a Bank (as per Schedule A of the *Bank Act*); a bond of a guarantee company approved under the *Guarantee Companies Securities Act*; although on approval of the Director other forms may be accepted. The evaluation must address on-going reclamation costs, final reclamation, and costs associated with annual reporting and monitoring of reclamation activities.

Quebec

New provisions were added to the *Mining Act* on March 9, 1995 which require all holders of mining rights and mining operators to restore affected areas to an approved state. As part of these provisions, reclamation plans are required by the Ministère des Ressources Naturelles (MRN) for all new and existing mines in the province. Existing mines must submit reclamation plans prior to March 9, 1996.

The reclamation plan must include descriptions of the following information:

- site characteristics;
- reclamation activities to be completed on cessation of mining;
- progressive rehabilitation to be undertaken during mining;

- reclamation schedule for all phases;
- assessment of costs for all reclamation work; and,
- the form of financial guarantee.

Updating of the plan is required every five years, or more often if so designated. This allows the plan to be revisited to reflect new technologies or changing site conditions.

A guarantee must be provided in an amount of 70% of the estimated reclamation costs for all impacted areas for most mines. If mining will be completed prior to March 9 1997, a guarantee of only 15% of the estimated cost is required. If the mine life is expected to be five years or less, an initial payment is required within 15 days of approval.

The guarantee may in the following forms:

- a cheque;
- government bonds;
- guaranteed investment certificate;
- letter of credit;
- security or guarantee policy issued on behalf of the government;
- immovable hypothec provided by a third party; or,
- a trust.

The amount of financial guarantee required may be reassessed during operation on successful completion of progressive reclamation work, or if more economical methods of reclamation are developed. Otherwise, the guarantee is held until a Certificate of Release is issued. The amount guaranteeing the rehabilitation of mining sites are tax deductible.

New Brunswick

Reclamation planning is an important part of the New Brunswick mine approval process for all new mines, and must be addressed within the feasibility study which supports the mining lease application. A reclamation plan must be approved and financial assurance received prior to issuing of a mining lease.

The reclamation plan should describe the existing environment and the potential for environmental impacts and proposed mining and milling operations. The proponent is guided through reclamation plan development by a technical committee representing the agencies which will eventually review and approve the program. While New Brunswick has required reclamation plans since the Regulations were approved in 1986, like other provinces with older legislation, the level of detail required by the technical committee in the plans has increased substantially.

The reclamation plan is supported by a requirement for financial security. The amount of security may be determined according to the following schedule: \$10,000 plus an additional, \$1,500/ha of Crown Lands disturbed; and \$3,000/ha of disturbed private lands. Area disturbed is determined by the Minister based on the reclamation plan. These funds are recognized as being insufficient to reclaim an acid generating mine site. Additional amounts of security may be required by the Minister if deemed necessary to support reclamation.

The security can be in the form of: money, a negotiable bond, irrevocable documentary credit, or a bond of an insurance company. This security is maintained until deemed to be no longer required.

Nova Scotia

As in New Brunswick, reclamation is considered at the mine permitting stage in Nova Scotia. A general reclamation plan is required in the application for a mining permit outlining the general objectives of reclamation and means by which they will be achieved. A description of the post-operation environmental monitoring program is also required.

No reclamation guidelines or standards are available to proponents from the Province of Nova Scotia. Reference is generally made to Tables 5.1 to 5.8 in *Mine Reclamation in the Northwest Territories and Yukon* (Indian and Northern Affairs Canada, 1992).

A reclamation security deposit is required in an amount dependant on the maximum disturbed area during the mine life, and should represent the real cost of reclamation to the extent possible. Proponents have the option of either independently preparing a reclamation cost estimate and having it approved by the Province, or allowing the Ministry of Natural Resources to assess the amount of financial security required. The bond may be in cash, a letter of credit, assurity bond, or some other negotiated form. The amount of the bond may be adjusted every two years by the Director of Mines to address increased environmental liability or completion of progressive rehabilitation.

Newfoundland

Newfoundland does not have specific reclamation legislation, however, reclamation planning is an important component of the Environmental Assessment process. Reclamation must be addressed in the registration document and the Environmental Impact Statement, should it be required. Once the project is approved, the Province has the option of attaching site-specific reclamation requirements to the mining lease. Reclamation standards are generally flexible and are negotiated by representatives of applicable Provincial and Federal agencies with the proponent.

There is no vehicle currently available to affix a financial assurance for reclamation to the approval of a new mine. Should reclamation activities be deemed unsatisfactory, the Province has the option of refusing to cancel the lease on the property on cessation of activity. Liability for the property would remain with the proponent until such time as reclamation has been completed to a satisfactory level.

Northwest Territories and Yukon Territories

Neither territory has specific reclamation guidelines for new or existing mines, although several documents are available outlining mine reclamation practices and standards for northern sites as outlined at the end of this paper. The Yukon Territory is currently developing reclamation guidelines which are expected to be completed before the end of 1995. A Proposal for Discussion titled, 'The Regulation of Mine Site Reclamation for Quartz Mining in Yukon' was published in 1993.

Two primary means are available by which reclamation planning is conducted in the territories: within the Environmental Assessment process as required by the *Canadian Environmental*

Assessment Act; and as part of the application for a Water Licence in the mine permitting process. Reclamation is addressed on a conceptual level within the Environmental Assessment. The water licence application requires a description of the reclamation methods and standards proposed, and acts as the reclamation plan for the property.

As a condition of the Water Licence, a proponent may be required to post financial assurance in an amount equivalent to the cost of proposed reclamation activities.

Conclusions

A comparison of some of the requirements by province or territory is contained in Table 1. Several of the provinces have reclamation guidelines in preparation, and as a result additional changes over the next several years are expected. While no two provinces or territories address mine reclamation planning the same way, all agencies contacted are cognizant of the importance of early reclamation planning, whether during the prefeasibility, feasibility or permitting stage of the project. An assessment of reclamation requirements near the end of mine life is no longer acceptable, and progressive reclamation is preferred wherever possible.

It is expected that the requirement for detailed reclamation planning and documentation will increase over the next few years, including a requirement for annual reclamation reports. Updating of the reclamation security deposit at set intervals is anticipated to become more prevalent. The main reclamation issue which has not been clearly addressed is the tax treatment of financial security deposits.

Table 1: Reclamation Planning Requirements for Metal Mines in Canada

	British Columbia	Saskatchewan	Manitoba	Ontario	Quebec
Reclamation Plan Document	required	not required	not required	required	required
Reclamation Planning	-	in EA process	in EA process	-	-
Enabling Legislation	Mines Act	Environmental Assessment Act	Environment Act	Mining Act	Loi sur les mines
Lead Agency	Ministry of Energy, Mines and Petroleum Resources	Environment and Resource Management	Ministry of Environment	Ministry of Northern Development and Mines	Ministère des Ressources Naturelles
Guidelines or Standards	available	available	not available	available	available
Evaluation of Costs	required - developed by proponent	not required	not required	required - developed by proponent	required - developed by proponent
Financial Assurance	required	not required	not required	required	required

	New Brunswick	Nova Scotia	Newfoundland	Northwest Territories	Yukon Territory
Reclamation Plan Document	required	not required	not required	not required	not required
Reclamation Planning	-	required	required	required	required
Enabling Legislation	Mining Act	Environmental Assessment Act	Environmental Assessment Act	Canadian Environmental Assessment Act	Canadian Environmental Assessment Act
Lead Agency	Ministry of Natural Resources	Ministry of Natural Resources	Ministry of Environment	NWT Waterboard	Yukon Waterboard
Guidelines or Standards	not available	not available, NWT used	not available	available	available
Evaluation of Costs	required - developed by proponent	required - developed by proponent or by agencies	not required	may be required	may be required
Financial Assurance	required	required	not required	not strictly required	not strictly required

SELECTED REFERENCES:

British Columbia

1. Ministry of Energy, Mines and Petroleum Resources. September 1991. Mine Reclamation in British Columbia; Policy Overview.
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3. Ministry of Energy, Mines and Petroleum Resources. January 1992. Guidelines for Mineral Exploration: Environmental, Reclamation and Approval Requirements.
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6. Saskatchewan Environment and Resource Management. June 1993. The Saskatchewan Environmental Assessment and Review Process.
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12. Québec. 1995. Guide et modalités de préparation du plan de restauration.
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14. Province of New Brunswick. June 1986. New Brunswick Regulation 86-98 under the Mining Act (O.C. 86-515)

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