

**IMPACT ASSESSMENT OF METAL MINES  
IN BRITISH COLUMBIA:  
AN EVALUATION**

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## ABSTRACT

British Columbia metal mines are regulated by a variety of provincial and federal government agencies which are coordinated under the provincial *Mine Development Assessment Process* (MDAP). This study evaluates the regulation of 15 proposed and operating metal mines in British Columbia based on interviews with 63 government regulators, mining company executives and public interest groups. A number of changes are required to improve the effectiveness and efficiency of the current impact assessment process.

**Public consultation** is mandatory. However, a policy to ensure public concerns are fairly and consistently addressed is not in place. Also, government assessments, which are often critical to help the public form opinions about mine proposals, are not published until after approval decisions.

**Efficiency.** Coordination of governmental agencies under MDAP, regional reviews, and protocol agreements to reduce jurisdictional overlaps have increased MDAP efficiency. But problems remain. Regional boundaries of provincial ministries differ so that committee members must travel from different regional centres to participate in reviews. Also, jurisdictional overlaps among provincial and federal agencies for water quality have not been addressed, and regulatory activities are independent and often duplicative.

**Effectiveness.** Administrative procedures for verifying compliance with conditions specified in approval certificates have not been developed. Policies for regulating water quality do not require that monitoring programs are adequately designed, and regional staff lack resources to ensure that measures to protect the environment at metal mines are carried out and achieve the desired environmental objectives.

**Integrated Land Use Planning Process.** The current institutional structure does not promote fair consideration of other resource values when mines are approved. Legal rights for minerals can be too easily obtained at present and a planning process which determines the appropriate use of an area before resource development rights are allocated is not in place.

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## INTRODUCTION

The magnitude of environmental and social costs associated with metal mines is largely a reflection of the ability of provincial and federal institutions to regulate the mineral industry. In British Columbia (BC), the main regulatory tool to minimize negative consequences of metal mines is the *Mine Development Assessment Process* (MDAP). Under it, the BC government assesses environmental, social and economic impacts of proposed metal mines before allowing companies to proceed with mine proposals. The effectiveness of the BC regulatory approach to metal mines has never been independently assessed. This study evaluates the BC approach to metal mine regulation and recommends improvements where deficiencies are identified.

## METHODOLOGY

This research is part of a series of studies on the impact assessment of the BC mining industry by the School of Resource and Environmental Management at Simon Fraser University. Studies by Phipps (1987), O'Fallon (1987) and Day (1988) evaluated the effectiveness and efficiency of the regulation of coal mines under the first systematic assessment process in BC--the *Coal Guidelines Review Process*. Because a new process was developed to assess all types of mines, and because metal mines encompass a different range of environmental, social, and economic issues than coal mines, additional investigations were needed to complete the series.

Fox (in preparation) uses three detailed case studies to compare the approval processes for metal mines prior to and during the *Metal Mines Guidelines Review Process*, in place between 1979 and 1984, and its successor, the *Mine Development Review Process* (MDRP). Considering the diversity of mining projects and regions in the province, adequately assessing the existing regulatory regime required a broader study. Therefore, this project was initiated to identify major environmental and social issues associated with a larger sample of metal mines throughout BC.

This study examines 15 metal projects throughout the province (figure 1). This sample includes half of the producing mines reviewed under the MDRP between 1984 and 1990, and one quarter of the projects under review in 1990 (BC MEMPR 1990). Projects were selected to represent a range of conditions:

- large to small operations
- economic to uneconomic projects
- ownership by multinational corporations to junior exploration companies
- a variety of commodities: gold, silver, copper, garnet
- a range of environmental concerns: acid mine drainage, cyanide, wilderness, fisheries
- a variety of social concerns: community stability, aboriginal issues, employment

This study is based on modified questionnaires developed for the coal study by Day (1988). Personal interviews were conducted with 63 senior management officials of mining companies, consultants involved in preparing environmental reports for mine proposals, representatives of various mining communities and interest groups, and provincial and federal governmental officers involved in MDAP (table 1).

Study participants identified a number of issues associated with the following aspects of metal mine regulation:

- coordination of federal and provincial agencies
- adequacy of governmental personnel
- public participation
- monitoring
- follow-up
- a wildlife protection
- integrated land use planning

These issues are analyzed based on responses of participants and a review of relevant governmental documentation. This report discusses results of the analysis and makes recommendations where shortcomings are identified.

Figure 1.

Case Study Projects

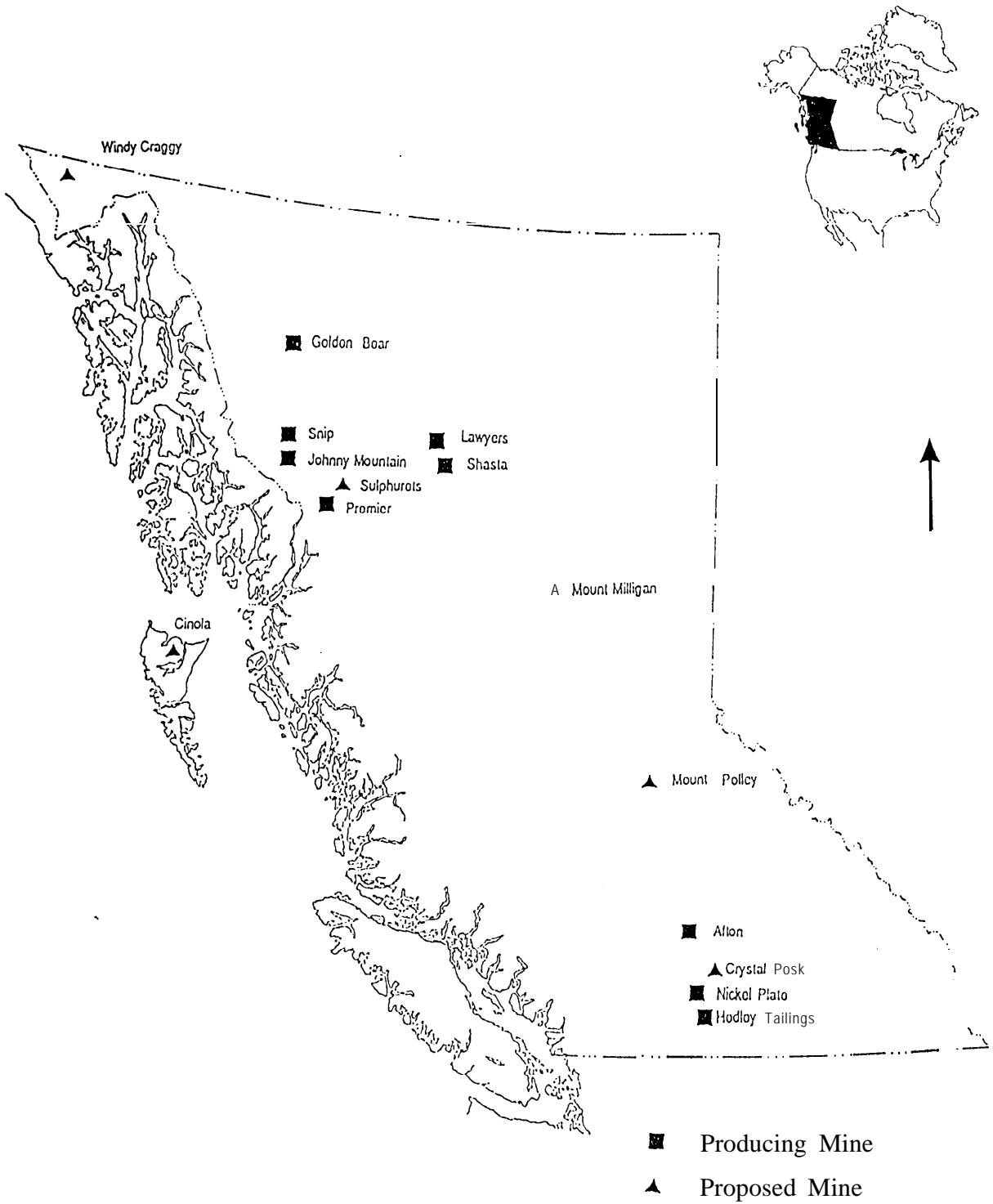




Table 1. Summary of Interviewees

Mining Industry	Number	Government	Number	Public	Number
Environmental Staff	2	Environment Lands and Parks	8	Environmental Groups	6
Mine Managers	4	Energy, Mines and Petroleum Resources	7	Aboriginal Groups	2
Company Executives	12	Transportation and Highways	2	Fish and Game Club	1
Consultants	3	Municipal Affairs, Recreation and Housing	1	Non affiliated	7
Mining Groups	2	Health	1		
		Agriculture and Fisheries	1		
		Advanced Education, Training and Technology	1		
		Tourism and Culture	1		
		Fisheries and Oceans (Federal)	1		
		Environment (Federal)	1		
Total	23	Total	24	Total	16

## **CAVEATS**

The intent of this study is to identify weaknesses and recommend improvements to the BC approach to metal mine regulation. As such, this report may not fully recognize all initiatives and efforts of conscientious professionals in the provincial and federal governments and the mineral industry. Finally, all projects in this study entered the assessment process under the *Mine Development Review Process*, before the *Mine Development Assessment Act* formalized MDAP. The legislation made few substantive changes to the process. Before presenting study results, an overview of the regulatory framework of metal mine regulation in BC is provided.

## **THE REGULATORY FRAMEWORK**

### **INTRODUCTION**

The *British North America (BNA) Act* assigned responsibility for natural resources, except fisheries, to the provinces. Therefore, mining is regulated primarily by provincial initiatives. The BC government adopted the *Mine Development Assessment Process* to assess environmental and social impacts of proposed metal mines. However, because the *BNA Act* gave the federal government control over fisheries, the Department of Fisheries and Oceans and Environment Canada also have environmental responsibilities at virtually every metal mine in BC. This section provides a history of mining regulation in BC, describes the *Mine Development Assessment Process*, and summarizes the regulatory responsibilities of the main federal and provincial environmental agencies.

### **HISTORY**

Before 1976, coordinated assessments of environmental and social impacts for new mines did not exist. However in the mid- 1970s, a rapid increase in proposals for major coal developments with potentially significant environmental and social impacts made systematic reviews necessary. In response, the Environment and Land Use Committee, now the Cabinet Committee on Sustainable Development, published its *Guidelines for Coal Development* creating the *Coal Guidelines Review Process*. This process required interagency reviews of mine proposals and provided for comprehensive environmental and social impact

assessments before allowing projects to proceed. The process also applied to metal mine proposals. However, because most metal mines operate on a much smaller scale than coal mines, and deal with a range of commodities requiring different processing techniques, a less comprehensive, more flexible, approach was needed for such projects.

To accommodate the diversity of metal mining projects, the Ministry of Energy, Mines and Petroleum Resources (MEMPR) drafted guidelines in 1979 to create the *Metal Mines Guidelines Review Process*. Although the review process for metal mines was administered separately, it operated in similar ways and involved largely the same governmental personnel as the coal process. To overcome this inefficiency and to pool the experience gained from the separate approaches, the processes were combined in 1984 to form the *Mine Development Review Process* as a working policy. Finally, in August 1991, the *Mine Development Assessment Act* formalized the process as the *Mine Development Assessment Process* under which all mine proposals are currently evaluated (BC MEMPR 1990).

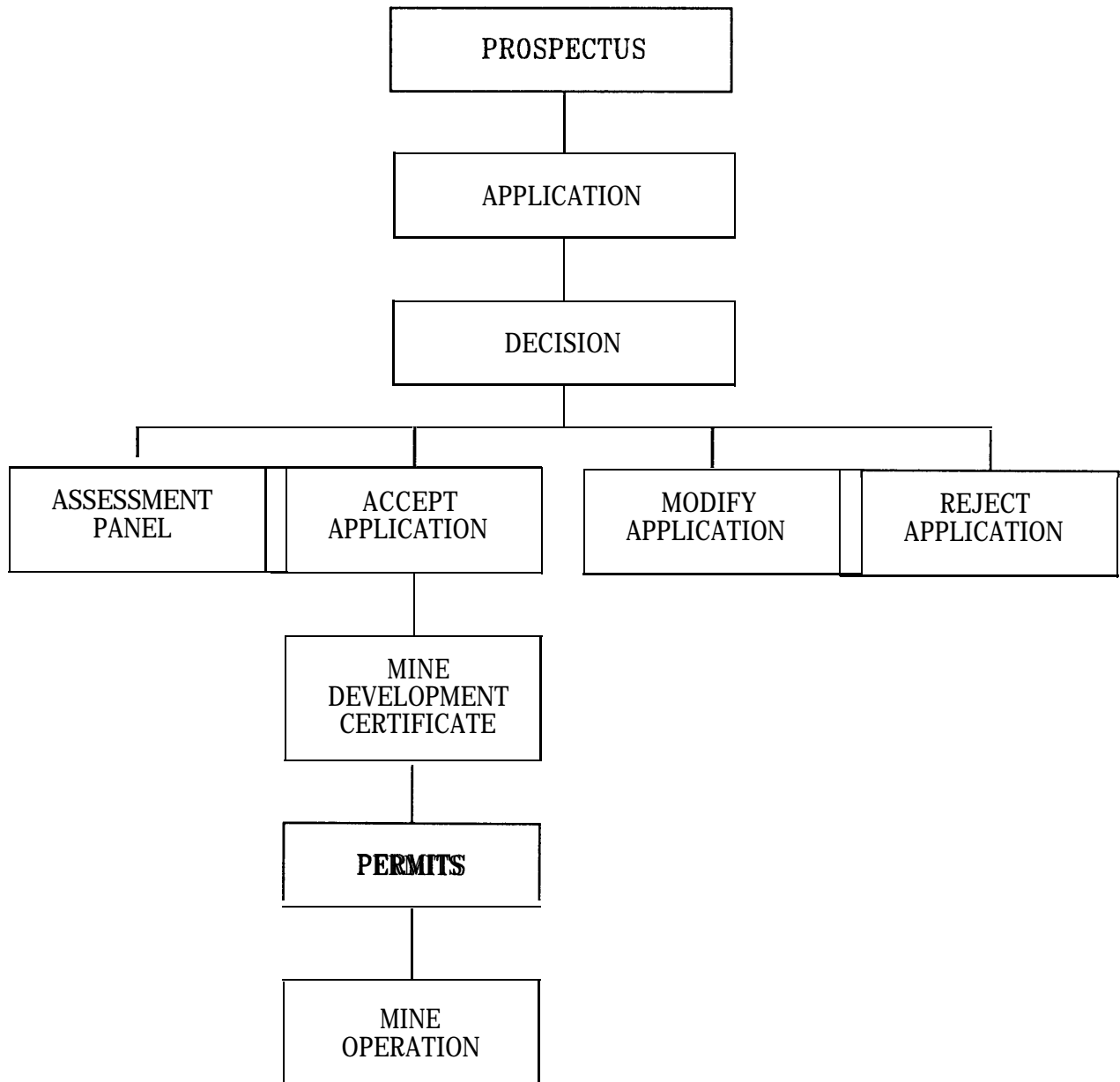
The changes in mine reviews in the past 16 years illustrate the evolutionary nature of environmental regulation. Even the recently legislated *Mine Development Assessment Process* will be short-lived as the *British Columbia Environmental Assessment Act* has recently received first reading in the legislature. The new act will coordinate all provincial environmental assessments under one process (BC Legislative Assembly 1993).

#### **THE MINE DEVELOPMENT ASSESSMENT PROCESS (MDAP)**

The goal of MDAP is “to integrate environmental management with economic development by facilitating technically-sound and environmentally-acceptable mining ventures in British Columbia” (BC MEMPR 1992). MDAP includes five components (figure 2):

- |             |   |
|-------------|---|
| Prospectus  | This describes a proposed project and identifies potential impacts. The prospectus is reviewed by relevant governmental agencies and interest groups for scoping and developing terms of reference for the application. |
| Application | This step contains project plans, detailed environmental and socioeconomic impact assessments, and proposed mitigation measures for adverse effects. An application is reviewed by a project                            |

Figure 2. Stages of the Mine Development Assessment Process



Source: BC MEMPR 1992

assessment committee and referred to relevant agencies and interest groups for comment. After review of an application, a disposition decision, described below, may be made, or terms of reference may be developed for further studies.

Disposition Decision The ministers from MEMPR and the Ministry of Environment, Lands and Parks (MELP) share final decision making authority in MDAP. A project may be:

- accepted and issued a mine development certificate
- rejected
- referred for modification
- referred to an assessment panel

Assessment Panel An independent panel may be appointed to make recommendations for controversial projects. Panels may hold public hearings, act as mediators, or engage in negotiations. Panels can also hire independent technical experts to help assess a proposal.

Mine Development Certificate A certificate represents approval to develop a mine, and is only granted when all policy issues are resolved and all technical issues can be solved by affordable means. A certificate also contain conditions for approval which companies are legally obligated to carry out.

Permitting Only after a mine development certificate is granted, are permits, licenses and approvals to construct, operate and reclaim a mine issued. Permits are obtained from individual provincial ministries and are subject to various provincial legislation.

(BC MEMPR 1992)

## **ADMINISTRATION OF MDAP**

Overall responsibility for the *Mine Development Assessment Act* lies with the MDAP Management Committee. The committee consists of senior staff from MEMPR and MELP, and makes recommendations to the ministers for the disposition of mine applications. The

Mine Development Assessment Branch, MEMPR, is responsible for administering MDAP. The branch receives prospectuses and applications for mine developments, and coordinates reviews of these by relevant governmental agencies and third parties.

In order to evaluate each company's application, the branch forms a specialized project assessment committee, which consists of technical staff from provincial and federal agencies with jurisdictional interests that could be affected by the proposed mining activities. Project assessment committees may be based in Victoria, or the regions, depending on the scope and potential for controversy of a proposal.

Findings of the project assessment committees are submitted to the Mine Development Assessment Branch, which compiles the concerns and responses from the governmental agencies and the public to the Management Committee. Finally, the Management Committee uses this information to make a recommendation to the ministers of ELP and EMPR for a final decision of an application. For controversial proposals, such as Windy Craggy, the provincial cabinet may make the final decision.

## **REGULATORY RESPONSIBILITIES**

Federal and provincial agencies are responsible for regulating environmental impacts of proposed metal mines. Metal mines must conform to a variety of environmental legislative requirements.

### **Federal Role**

The *Fisheries Act* is the main federal regulatory tool for metal mines. It act gives the Department of Fisheries and Oceans authority to manage fish habitat, and prohibits the deposition of substances harmful to fish in waters used by fish. Under the act, the *Metal Mining Liquid Effluent Regulations* established national "end of pipe" standards for the discharge of eight common mining pollutants. The regulations apply to most new metal mines and are administered by Environment Canada.

### **Provincial Role**

Waste management permits, issued by MELP under the *Waste Management Act*, are the main provincial regulatory tool to address pollution issues at metal mines. The permits specify legally binding conditions under which discharge can occur from a mine. Permit provisions are based on provincial Pollution Control Objectives and waste discharge criteria

for the mining, smelting and related industries of British Columbia (BC MELP Policy Manual, 1992) and usually incorporate federal standards (Nasser, 1992). The objectives and criteria are guidelines used by regional waste managers to negotiate discharge levels on a case-by-case basis to address project-specific conditions, and therefore may vary from the provincial objectives and federal standards.

MELP also has the mandate to protect wildlife under the *Wildlife Act*. Through MDAP, the ministry requires companies to study and mitigate potential impacts on wildlife.

## **RESULTS**

Study participants identified several issues associated with impact assessment of metal mines in BC. These issues are discussed in this section. They include coordination of federal and provincial agencies, adequacy of governmental personnel, public participation, monitoring, follow-up, wildlife protection, and integrated land use planning. Recommendations to address problems which are identified are made in the following section.

### **COORDINATION OF FEDERAL AND PROVINCIAL AGENCIES**

Over 20 federal and provincial governmental agencies have jurisdictional responsibilities over some aspects of metal mines. Therefore, coordinating concerns of the many agencies is an important aspect of metal mine regulation to ensure environmental and social impacts of proposed metal mines are adequately addressed; and also to streamline the regulatory process so it is not prohibitively costly and time-consuming for mining companies.

Perceptions by officials in the mineral industry and government about the coordination of governmental agencies varied considerably. Governmental staff were nearly unanimous in expressing satisfaction with the way agencies cooperate in reviewing mine proposals. Conversely, most mineral industry respondents considered coordination of provincial agencies inadequate. As a consequence of limited coordination in practice, half of the companies in this study bypassed assessment committee established under MDAP, and negotiated directly with regulatory agencies to save time and avoid misunderstandings associated with trying to pass information through the bureaucracy.

Because of unstable markets and the capital-intensive nature of mining, regulatory delays can be very costly for companies. Therefore, mining companies are more sensitive than governmental staff to inefficiencies in the approval process for new mines. Conversely, governmental employees have little incentive to be critical of governmental programs. This may explain the different perceptions by the two groups.

Earlier studies on the regulation of coal mines (Day 1988; O'Fallon 1987; Phipps 1987) found similar mining industry frustration with respect to inadequate coordination of governmental agencies in mine assessments. Despite continuing industry criticism, coordination clearly has improved under MDAP. Several aspects of MDAP make the regulatory process more efficient:

- reviews are coordinated by interagency project assessment committees which reduce the need for companies to separately approach individual agencies for approval
- more reviews are conducted at the regional level, directly involving the staff who will be in charge of administering permits after approval
- provincial ministries have developed protocol agreements to clarify regulatory duties where jurisdiction is shared
- provisions for joint reviews have been developed for projects which also require federal environmental assessments

Despite these initiatives, several inefficiencies were identified. These are discussed below.

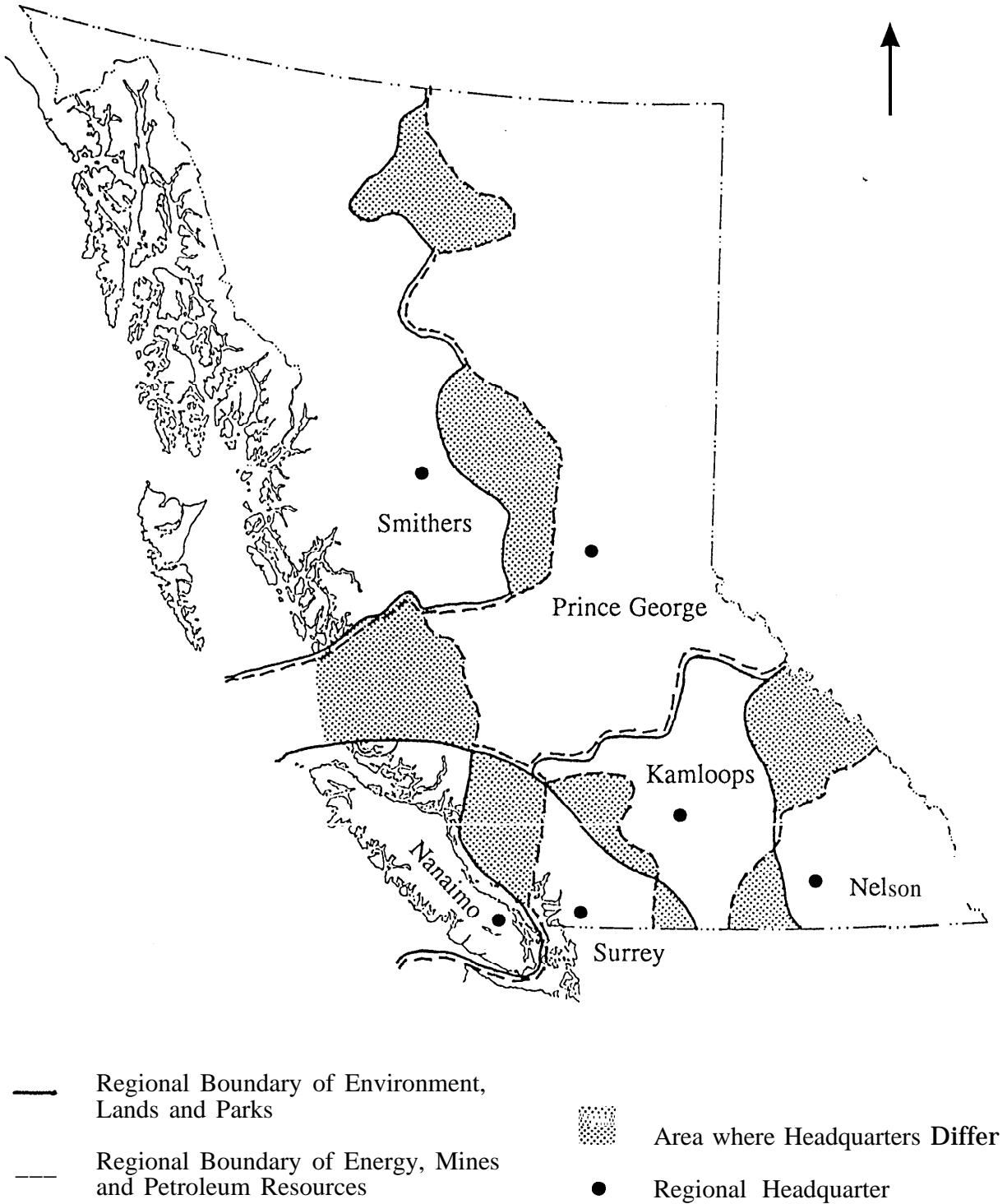
### **Regional Boundaries**

Although most ministry regional offices are located in the same centres, they are often responsible for different areas (figure 3). This means that for some projects, committee members have to travel from different regional centres to participate in reviews. Regional inter ministerial committees are required not only for mine assessments, but for a variety of other environmental assessment and land use planning processes such as the *Major Project Review Process*, *Energy Project Review Process*, *Integrated Resource Management Plans*, and *Forest Land Management Plans*. This inconsistency has created avoidable inefficiencies associated with the need for travel between regional centres when projects are administered from different headquarters.



Figure 3.

Regional Boundaries of the Ministry of Environment, Lands and Parks and the Ministry of Energy, Mines and Petroleum Resources



## **Jurisdictional Overlap**

The provincial and federal governments share jurisdiction for several aspects of metal mines. Environment Canada and MELP both have authority to regulate liquid effluent of metal mines, and in some instances, metal mines are subject to provincial and federal environmental assessments. These overlaps are discussed below.

### Federal Environmental Assessment Process

Because of recent legal challenges to the federal *Environmental Assessment and Review Process (EARP) Guidelines Order* at the Alcan, Old Man, and Rafferty Alameda diversion projects, it is unclear under which circumstances federal environmental assessment can be initiated (Robinson 1993). As a result in some instances, metal mines are subject to provincial and federal environmental assessments. Although companies expressed concern that the confusion over the federal process, to date no mining projects in BC have been subject to an EARP panel review. Furthermore, if a federal assessment were required, agreements have been reached between BC and the federal government that where possible, a single review body would be established to meet both federal and provincial requirements, as was the case for reviews of the Celgar pulp mill near Castlegar and a proposed ferrochromium smelter near Port Hardy. Joint reviews will also be accommodated by new provincial and federal environmental assessment acts (Robinson 1993). Although, uncertainty may exist over federal authority to assess proposed metal mines, existing provisions for joint reviews would not likely result in excessive additional regulatory costs for companies.

### Water Quality Regulation

Although under MDAP, federal requirements are usually incorporated in waste management permits, there are fundamental differences in how provincial and federal agencies regulate water quality. Environment Canada regulates water quality at mines under the *Metal Mining Liquid Effluent Regulations*. These set out legally binding standards with which every company must comply. The province utilizes flexible pollution control objectives and ambient water quality criteria to set allowable discharges on a site-specific basis. Though rare, effluent levels required by the province may be more lenient than federal standards. For example, glacial creeks in northern BC commonly carry suspended sediment loads in excess of federal standards. The provincial regulatory system is flexible to set criteria to reflect naturally elevated levels. However, the federal government lacks this flexibility and must require companies to meet the legislated standard.

Another difference between the federal and provincial approaches relates to the reporting of water quality data. Provincial criteria are expressed as dissolved concentrations, while the federal standards use total concentrations. This means that companies must conduct separate analyses to satisfy both governments.

Follow-up and enforcement are also carried out independently. MELP conducts inspections to ensure proponents comply with permits. Although federal requirements are normally incorporated in provincial permits, Environment Canada conducts independent inspections at all metal mines once or twice a year (Kay 1993).

## **GOVERNMENTAL PERSONNEL**

Since the regionalization of MDAP, regional governmental agencies feel particularly understaffed to effectively review and inspect proposed and operating mines. Regional staff indicated that increases in regional responsibilities were not accompanied by either additional administrative support or additional expertise for conducting mine reviews.

Because of its lead role in MDAP, MEMPR regional offices were especially affected. Staff consist mostly of mine inspectors, who now have a prominent role in regional assessment committees. As a result, less resources are available for mine inspections. Inspectors indicated that before regionalization, inspections comprised 50-90% of their duties. Now, the proportion of time spent inspecting mines has decreased by 25-90% in different regions. Regional MELP personnel also felt understaffed. Environmental Protection Branch employees indicated that they lack resources to independently monitor and audit approved projects to determine whether conditions agreed on for approval were implemented, or whether environmental objectives were realized. Fish and Wildlife Branch staff also saw a need for more biologists to study wildlife issues.

Mine reviews comprise only a portion of employees' duties, and priorities for mining issues vary in different ministries. Because of heavy workloads, some staff admitted that at times:

- mine assessments are delayed
- projects are not thoroughly reviewed
- other duties are neglected

## **PUBLIC PARTICIPATION**

The *Mine Development Assessment Act* requires that prospectuses and applications for mine development certificates are made available to the public for comment. Companies are also obligated to undertake public consultation, and the act gives the provincial government authority to initiate an independent assessment panel or require a company to undertake specific consultation methods. In addition, under MDAP all information related to the review of a mine proposal can be reviewed by the public except where specific exemptions are made by the Minister of EMPR. Although these measures have strengthened opportunities for meaningful participation, several weaknesses remain.

### **Lack of Public Consultation Policy**

The experiences of interest groups and individuals with public participation for different projects varied considerably. Some were satisfied with the ability of government to regulate mining companies and did not feel the need to become personally involved. Of those who actively became involved in MDAP, some were satisfied with how governmental agencies responded to their concerns. Others were frustrated in their attempts to obtain information on specific projects and felt their concerns were not taken seriously by governmental staff and companies.

The range of experiences by the public suggests that, although MDAP may foster effective public participation in some cases, it is unable to do so consistently. Although MDAP requires companies to consult with stakeholders, no policy has been developed by the Mine Development Assessment Branch to guide companies and governmental staff on appropriate public participation techniques for specific situations. Because no policy is in place, methods of public participation are chosen at the discretion of companies and staff in the Mine Development Assessment Branch. Given public distrust of profit-seeking mining companies and MEMPR, a ministry often seen as a promoter of mineral development, the current discretionary public participation approach may lack credibility to be effective in many situations.

### **Inadequate Access to Information**

The main opportunity for interested parties to give input on a mine proposal is by making submissions in response to a company's application. However, the reports in applications are large, technical documents, which most citizens are unable to evaluate because they lack time and expertise. Because the available information is usually complex, concerned groups

and individuals normally rely on governmental reviewers to understand the potential impacts of a proposed mine. However, technical assessments of a project by individual agencies are not compiled and made available until after a decision is made by the responsible ministers. Therefore, concerned citizens must contact individual ministries for information. However, the effectiveness of this approach is limited by the excessive time required to obtain information from individual agencies, heavy workloads of governmental staff, varying commitments to sharing information by different agencies, and the great distances to governmental offices throughout much of the province.

## **MONITORING**

Potential environmental impacts of metal mines include water pollution and destruction of fish and wildlife habitat. Of particular concern is acid drainage, which can destroy entire aquatic ecosystems. Acid drainage, the release of acidic waters from a mine site, occurs when sulfur-bearing minerals, invariably associated with metal deposits, are exposed to air and oxidized during the mining process to produce sulfuric acid. Preventing acid generation is difficult. Because acid formation processes may persist for millennia, treatment is often required in perpetuity.

A report to the joint government-industry-academia British Columbia Acid Mine Drainage Task Force concluded that acid drainage is characterized by high frequency variations and seasonal effects which are not monitored by the sampling regime under the current provincial permitting system (Robertson 1990). MELP policies and procedures do not require that monitoring programs at metal mines are scientifically designed. As a result, most permits require companies to collect samples at fixed frequencies which may not adequately assess variation in water quality. Antcliffe (1992) analyzed such a monitoring program at the Equity Silver Mine, one of the province's biggest acid generators. The study found that while the monthly samples at the mine were unable to detect a significant change in acidity, statistical analysis showed that an additional six samples a year would have resulted in earlier detection of the change.

Without an estimate of variation, it is impossible to evaluate monitoring data.. In other words, managers are unsure whether companies comply with permits, cannot determine whether significant environmental impacts are occurring, and are unable to assess cumulative impacts of multiple resource developments. Robertson (1990) indicated that many companies have informally cooperated with the provincial and federal governments to

provide more rigorous monitoring than specified in permits. Although this cooperation between industry and government is commendable, such informal arrangements are not legally enforceable and are insufficient to inspire public confidence in the regulatory approach.

## **FOLLO W-UP**

Governmental agencies inspect projects to determine if permit conditions are met. Most regional regulators felt the number of mine inspections were insufficient to ensure companies complied with permit conditions. Because of personnel shortages, staff often attempt to determine compliance from monitoring data supplied by companies.

Regional MELP staff were generally satisfied with the quality of data submitted by companies. However, the lack of stringent guidelines for collecting samples, inadequate sample design, and infrequent governmental inspections lead to the perception that companies essentially regulate themselves. Although companies may diligently carry out monitoring, there is little information available to verify that this is the case.

## **WILDLIFE PROTECTION**

In a recent discussion paper, the BC Wildlife Branch acknowledged that wildlife agencies do not have enough funding and staff to obtain adequate information on wildlife habitat and populations. As a result wildlife managers must make decisions based, not on good scientific information, but personal experience (BC Wildlife Branch 1991). In addition, the branch has not developed guidelines for the scope of information generally required to evaluate impacts of a project (Parke 1993). Because a consensus does not exist even among governmental biologists about research priorities and methodologies to address wildlife concerns, requirements for MDAP vary depending on the individual conducting a review. The lack of guidelines has led to inconsistencies in the way wildlife issues are addressed for different mine proposals as indicated by the perceptions of interest groups and mining companies.

Several individuals and interest groups felt wildlife issues were inadequately addressed at some projects. They understood that wildlife studies were one year or less in duration, too localized, and focused on single species. This approach may not adequately protect an

ecosystem because many wildlife populations have seasonal, cyclical, or other long-term fluctuations, species are interdependent, and a number of species migrate great distances.

Some companies were frustrated when the Wildlife Branch asked for regional and longer-term studies. They felt that this imposed unfair delays and costs. They also were under the impression that the scope of study required for different projects varied considerably.

## **INTEGRATED LAND USE PLANNING**

Mining is only one of many potential resource uses of crown land. To ensure that crown land is developed in the most socially acceptable and beneficial manner, an integrated land use planning process is needed to establish management criteria for specific areas. By establishing management criteria, it is made clear to development proponents and the public which resource developments are acceptable in an area. Establishing the “rules of development” enables companies to plan projects better and reassures the public that their priorities are considered. Land use planning is thus a critical precursor to impact assessment of specific development proposals.

British Columbia has not developed a land use planning process for mining. Although various integrated land use planning processes have been initiated by the Ministry of Forests, MELP, and the Commission on Resources and Environment (CORE) to address timber, water, and wildlife issues, mining issues are rarely addressed. The province has had difficulty making approval decisions for projects with land use conflicts as the following examples illustrate.

The Cinola Gold proposal, which threatened the sustenance lifestyle of Haida people in the Queen Charlotte Islands, was under consideration for ten years. Finally the company eliminated the need for a decision when it concluded that gold could not be extracted economically. Another example is the Crystal Peak proposal near Penticton. The company intends to extract garnet, an environmentally harmless mineral, in a proposed park valued for alpine recreation. Technically the project is sound (Ringstad 1993). But because of a land use conflict, no decision has been reached since 1989. Probably the best known example is the Windy Craggy project in the contentious Tatshenshini-Alsek corridor. Opposed by national and international groups in favor of preserving the wilderness character of the area, the project was in MDAP for five years. Finally, after an independent assessment by CORE (1993), Cabinet decided to reject the proposal and preserve the area as a park.

MDAP may effectively address technical issues associated with a mine proposal. However, as the above examples illustrate, the process is not conducive to considering other resource use priorities. There are two aspects to this problem: land use issues are considered too late, and the legal rights for different resource uses are not balanced.

### **Timing of Land Use Decisions**

The appropriateness of mining in a given area is not considered until studies and assessments under MDAP are complete and an application is submitted to the ministers for approval. By this time, companies have usually made significant exploration and development expenditures. As a result, pressure to approve a mine may be considerable.

### **Legal Rights for Mineral Resources**

The *Mineral Tenure Act* gives holders of mineral claims the exclusive right to explore and develop mineral resources in a given area. Obtaining a mineral claim is a routine matter which involves marking an area according to regulations in the act, registering a claim at a mineral titles office, and paying a nominal annual fee. An approval by the crown to file a claim is not required (Schwindt 1992).

Unlike for any other crown resource, obtaining mineral tenure does not require governmental approval. Moreover, few restrictions limit where claims can be staked, leaving 82% of the province open for exploration (Schwindt 1992).

Legal rights for other natural resources are granted by the provincial and federal governments. These include the decision to issue a tree farm license, a permit to cut a dead tree for fire wood, and the process for conserving an area in a park. In granting these rights, the government can consider whether the designated resource use would be in the public interest. Because a similar process is not followed for mining, it creates an imbalance of legal rights for different resource values.

Although the provincial government has authority to reject a mine application, if it does so, the company may be entitled to compensation for at least its development expenses, and possibly for potential foregone profits. Recent court cases over this issue have not clearly defined the province's legal obligation to compensate a mining company which is denied the right to develop a deposit (Schwindt 1992). However, from a fairness perspective, two provincial commissions--CORE (1993) and the Commission of Inquiry into Compensation



for the Taking of Resource Interests (Schwindt 1992)--have concluded that compensation for the restriction of mineral rights may be appropriate.

## **CONCLUSIONS AND RECOMMENDATIONS**

The goal of MDAP is to integrate environmental management with economic development by facilitating technically-sound and environmentally-acceptable mining ventures (BC MEMPR 1992). This study identifies several weaknesses in the BC impact assessment and regulatory procedures which may make it difficult to ensure that this goal is consistently realized. These can be divided into two classes: systemic weaknesses, those requiring major legislative or organizational changes; and administrative weaknesses, which can be addressed within the existing institutional structure. This section provides a synopsis of the major shortcomings and changes necessary to improve the current approach to managing the province's mineral resources.

### **ADMINISTRATIVE WEAKNESSES**

This study identifies a number of administrative weaknesses which can be addressed to improve the effectiveness and efficiency of MDAP. These relate to the coordination of federal and provincial agencies, adequacy of governmental personnel, public participation, monitoring, follow-up, and integrated land use planning.

#### **Coordination of Federal and Provincial Agencies**

Many agencies have responsibilities over some aspects of impact assessment for metal mine proposals. Although under MDAP, federal and provincial government agencies are coordinated for reviewing mine proposals, and a number of initiatives have made the process more efficient, two inefficiencies are identified. These are associated with inconsistent regional boundaries of provincial ministries, and overlapping jurisdictions between provincial and federal agencies for the regulation of water quality at metal mines.

#### **Inconsistent Regional Boundaries**

Regional boundaries of different ministries vary. This means that for some projects, committee members have to travel from different regional centres to participate in mine reviews. Regional inter ministry committees are required not only for mine assessments, but

for a variety of other resource management and land use initiatives. Therefore, having consistent regional boundaries would make these types of programs easier and less costly to administer. Restructured regional boundaries would facilitate improved communication between ministries, and would lower administrative costs by reducing the need for regional staff to travel to other regional centres. Figure 3 shows that major adjustments would not be needed.

Recommendation 1

*That the province coordinate regional boundaries of ministries involved in land and resource management planning.*

Jurisdictional Overlaps between  
Provincial and Federal Agencies

Jurisdictional overlaps between provincial and federal agencies represent added costs to taxpayers and mining companies. Mining companies must meet regulatory needs of several agencies to address the same issues. Taxpayers, in effect, make two payments for the provision of one service. This is inefficient and fiscally irresponsible. One area of overlap between federal and provincial agencies is water quality.

Informal arrangements, like federal involvement on project assessment committees in MDAP and consultation between federal and provincial officials for permitting, help to manage jurisdictional overlaps for many issues. However, the differing federal and provincial institutional approaches to water quality management, illustrated by independent inspections, separate enabling legislation, and differing analytical methods indicate coordination can be improved.

Recommendation 2

*That the federal and provincial governments develop a strategy to reduce jurisdictional overlaps for the regulation, of water quality at metal mines.*

**Adequacy of Governmental Personnel**

Regional staff at various provincial ministries admitted they lack the resources to effectively assess and inspect all proposed and producing metal mines. This was of concern to regional MEMPR staff who, because of the added responsibility of MDAP, have less time available to conduct inspections. Regional MELP regulators, because of limited resources, often rely on company data to conduct follow-ups and verify compliance with permits. And finally,

regional wildlife staff do not have enough resources to adequately evaluate impacts on wildlife.

Governments may not be able to fully fund all programs due to fiscal restraint. However, they should be responsible for evaluating the implications of budgeting decisions.

Understaffing concerns raised by several ministries, if substantiated, call into question the effectiveness of MDAP to minimize adverse environmental and social impacts of metal mines. These concerns should be further investigated.

### Recommendation 3

*That the provincial government evaluate the adequacy of ministry staff who administer MDAP.*

The Mine Development Assessment Branch, as the lead agency in MDAP, would be a logical agency to spearhead such an evaluation. An alternative would be an audit conducted by the BC Office of the Auditor General, which has authority to evaluate a ministry's management process for assessing staff needs. Specific ministries which should be investigated include:

- regional MEMPR offices
- regional Environmental Protection branches, MELP
- regional Wildlife Branches, MELP

A component of such an evaluation could be to compare staffing levels for specific programs in jurisdictions other than BC. This would be useful to administrators for making future staffing decisions. Such a comparison could be done internally, or on a contract basis.

### **Public Participation**

Although public consultation is mandatory in the BC impact assessment process for mine proposals, several problems remain. These include the lack of a governmental public consultation policy and inadequate public access to information.

#### Lack of Public Consultation Policy

The Mine Development Assessment Branch, MEMPR, can require companies to undertake specific public participation techniques. However, a policy for public consultation has not been implemented, leaving the design of public participation programs for individual

projects to the discretion of staff of the branch and project proponents. When administrative discretion is exercised in areas where conflict exists, there can be suspicion that “vested interests” have inordinately influenced a decision. Clear guidelines set out in legislation, regulations or policies for discretionary decisions are important to ensure similar circumstances are treated consistently and thus to promote public confidence. Therefore, a public consultation policy is required to make the Mine Development Assessment Branch accountable to address public concerns fairly and consistently. This is also necessary to inform companies about what is expected in public consultation programs, to specify the role and rights of the public in MDAP, and to ensure that similar projects are treated consistently.

#### Recommendation 4

*That the Mine Development Assessment Branch develop a public consultation policy for the approval of new mines.*

Such a policy should clearly state the objectives of public consultation, and give guidelines that specify under which circumstances particular techniques should be considered.

Examples of things which could be addressed include:

- procedures for participation of aboriginal people;
- circumstances when mediation is appropriate;
- guidelines for identifying stakeholders.

#### Inadequate Access to Information

Because of their technical nature, environmental aspects of metal mines may not be well understood by members of the public. Therefore, individuals often rely on expertise of governmental technical staff to understand the potential impacts of a project. Currently, technical assessments by individual regulators are not compiled and made available to the public until after approval decisions are made. Making the evaluative comments by governmental professionals available earlier could help avoid confusion and conflict, and also make the process more credible.

#### Recommendation 5

*That the Mine Development Assessment Branch make available for public comment the summary of concerns by individual ministries before submitting a proposal for a decision to the responsible ministers.*

Because this represents additional delay for an approval process which is already seen as too lengthy by many companies, mining advocates may oppose this recommendation.

Publication of ministry concerns before approval decisions may not be needed for all projects. Making the concerns available for contentious projects or on a request basis may be a reasonable alternative.

### **Wildlife Protection**

Guidelines for assessing impacts of mines on wildlife have not been developed. The lack of standard assessment methodologies and lack of guidelines have resulted in inconsistent assessment of wildlife issues at different mines.

#### Recommendation 6

*That the British Columbia Wildlife Branch develop guidelines for assessing impacts of mine developments on wildlife.*

The guidelines should specify the type of information companies must obtain to adequately assess impacts. The following items could be addressed:

- the need to map habitats
- the need to assess impacts on threatened species
- the regional scope of studies

Some companies were frustrated because in some areas the province has not completed wildlife inventories. In such circumstances, companies were asked to conduct extensive wildlife studies. Although project proponents should be responsible for addressing impacts on other resources, the Wildlife Branch has the mandate to manage the province's wildlife. This mandate includes conducting inventories. Therefore, ministry guidelines could also include provisions for sharing the cost of wildlife assessments between mine proponents and the province in previously unstudied areas.

### **Monitoring**

Provincial policies and legislation do not require companies to design monitoring programs which assess variability in ambient water quality before, during or after mine development. As a result, monitoring may be inadequate to detect and evaluate impacts on water quality. Although some companies have adopted more rigorous monitoring programs, governmental policies give few guidelines to ensure this problem is consistently addressed. The current

approach may effectively protect the environment at many mines because of efforts by conscientious governmental and company staff. However, given the information presently available, it is not possible to verify that this premise is correct for most mines.

**Recommendation 7**

*That MELP formalize the requirement to assess variability in water quality during all stages of mine development.*

This requirement should be incorporated into the ministry's guidelines for assessing predevelopment water quality as well as the ministry's policy and procedures manual for monitoring requirements in permits.

**SYSTEMIC WEAKNESSES**

British Columbia is endowed with an array of natural resources, minerals being one. A fundamental weakness in regulating metal mines in the province is that the process fails to thoroughly consider other resource values when new mines are approved. There are two major reasons for this: the provincial mineral tenure system enables companies to obtain the legal right to develop deposits before approval decisions are made; and a comprehensive provincial land use strategy not in place.

**Mineral Tenure**

The decision to allow mining of a particular deposit occurs after a company has obtained the legal right to develop a mine and has made significant, possibly compensable, expenditures. Currently, a legal interest in minerals is not allocated by the provincial government, but may be obtained by private interests with few restrictions.

**Land Use Planning**

The decision to approve a mine is also made without a process in place for proactively determining the most socially acceptable land uses in a given area. Although decision makers may consider the relative worth of other resource values when assessing a mine proposal, these become clouded by other political considerations such as potential costs of compensation for restricting a company's mineral rights.

The current regulatory approach to mineral development results in significant risks for mining firms and society at large. Mining companies face the uncertainty that their mine

proposals could be rejected, depriving them of the opportunity to make a profit, or even to recover development expenses. For society, there is a risk that regulators will fail to choose the highest and best land use when considering a mine proposal because the legal framework favours private mineral interests over other crown resource values for which legal rights are not so easily obtained. In short, the current approach neither fosters a favorable investment climate for mining companies, nor assures adequate consideration of environmental and social interests. Correcting the problems would require two major changes:

Recommendation 8

*That British Columbia implement of a land use planning process which establishes management criteria for all resource values in a given area before mineral rights are allocated, or before significant development expenditures are made.*

Recommendation 9

*That British Columbia amend mineral tenure legislation to give the province more control over the granting of mineral rights.*

Metal mine planning and management processes have improved considerably over the past twenty years. Regulatory reform needs to continue to protect the interests of both the mining industry and the public at large. This is an opportune time for the province to consider the improvements recommended here. Administrative weaknesses could be addressed by the recently tabled *British Columbia Environmental Assessment Act*. Systemic issues fall under the mandate of the recently created Commission on Resources and Environment.

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