

## **ESKAY CREEK ACCESS ROAD**

### **A CASE STUDY**

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#### **ABSTRACT**

The Eskay Creek mine is located approximately 130 km north of Stewart BC. The construction of the Iskut Road and Eskay Creek Spur road was a critical component of mine development and allowed the mine to begin production on schedule in January 1995.

In 1990, after an extensive exploration program, a decision was made to develop the property. Although there had been a number of studies investigating road access to the area along the Iskut River Valley, property access was controlled by helicopter support. The initial Iskut road study was completed by the B.C. government. In 1991 a study was co-sponsored by Cominco and Corona Corporation (now Homestake Canada Inc. and Prime Resources Group - Eskay Creek) and the Ministry of Energy Mines and Petroleum Resources. This paper describes the two stage construction of the 60 km road with respect to environmental design considerations, progressive reclamation activity, First Nations participation and the evolution of the permitting process. A description of the role of Environmental Supervisor and the development of Mitigation Plans is highlighted.

Finally, the paper will describe the necessity of mining roads for mineral development and the positive aspects of road development and construction. The implications of regulatory initiatives, such as the Forestry Practices Code, federal and provincial involvement and binding road development with environmental assessment processes will be discussed.

#### **INTRODUCTION**

The Eskay Creek mine is located approximately 130 km north of Stewart, or 59 km southwest of the Bob Quinn junction on Highway 37. It is a relatively small underground mine (approximately 300 tonnes/day) producing ore high in gold and silver. This product is transported by truck to either Stewart or Kitwanda for delivery to smelters in Japan or Quebec.

The mine is located within the Boundary Range of the Coast Mountains at an elevation between 780 metres (lower portal and camp site) and 920 metres (upper portal). This is very close to tree line and in an area of high snowfall and rainfall due to the penetration of maritime air. The mean annual temperature at the mine site is 1.5 degrees C. The snowfall can total approximately 15m to 20m at the upper portal for the year. Thus there is a very short construction window from late May to October with heavy rain storms possible during this time.

This short construction window made the road access a requirement to meet the construction schedule. Preparation of the site required heavy equipment and the location also required a camp for the construction employees. The remote area and limited access during adverse weather compounded the construction schedule. Fuel, food, construction material would have to be delivered to the site in a timely manner.

In 1990, a decision was made to develop the property. The Mine Development Certificate process was started. The initial Iskut Road study was completed by the B.C. Government. In 1991 a study was co-sponsored by Cominco (Snip Mine) and Corona Corporation (now Homestake Canada Inc - Eskay Creek) and the Ministry of Energy Mines and Petroleum Resources. MEMPR was the lead agency. The Iskut Road project team, consisting of Klohn Leonoff, Yellowhead Engineering, Beak Associates and Areas Consulting Archaeologists, prepared the design, engineering and environmental studies for the road. The Mitigation Plan was prepared by Hallam Knight and Piesold Ltd.

The construction of a 37 km road along the Iskut River was started in 1991. The government viewed this section of the road as a potential multi-resource road; therefore construction was allowed. The 22 km Eskay Creek Spur Road, from the end of the Iskut Road to the Eskay Creek minesite, was considered to be used solely for the mine, and therefore its construction was linked to the issuance of the Mine Development Certificate (MDC).

## ISKUT VALLEY ROAD

An Agreement in Principle for the development of the Iskut Valley Road was announced on April 10, 1991. The Iskut Valley road is classified as a Category C Resource Development

Road, single-lane, 5 m wide, gravel road with a nominal design speed of 60 km per hour. It runs from Highway 37, just south of Bob Quinn, for 37 kilometres west to Volcano Creek.

Construction of the Iskut Road was completed by Ledcor using the Tahltan Nation Development Corporation as a subcontractor for the majority of the earth moving work.

This section of the road was started in May, 1991 and continued until December 1991. In October the Company applied to the Ministry of Energy Mines and Petroleum Resources for permission to construct a tote road to the proposed mine site. This would include the removal of trees and building temporary bridge crossings. The Ministry denied this request. There was some attempt by other participating regulatory agencies to link the construction of the tote road to the approval of the Mine Development Certificate. The rationale was that a road should not be constructed unless there was greater certainty that the project would be developed. (Dangling roads to non-developed properties are considered an undesirable impact).

" A decision on constructing the section of road from Volcano Creek to the Eskay Creek Mine was deferred pending a review of key elements of Prime's anticipated Eskay Creek application for a mine development certificate under the Mine Development Assessment Process. The rationale for this decision was that this section is an access road to a single mine and some level of confidence is required to ensure that the mine project can meet environmental requirements prior to and road development taking place." (MEMPR.1991)

#### ESKAY CREEK SPUR ROAD

As the detailed planning of the mine project neared completion, road construction became crucial. In this region the construction season is short, because of high winter snow loads coupled with a short summer that could experience heavy rains, leading into snow by September/October. Thus, it became imperative to at least have a tote road to the construction site so that site preparation could begin as early as possible.

In August 1993 the Company submitted a Draft MDC Application. In September a meeting was held with the regulatory authorities to identify and resolve any significant strategic issues or fatal flaws with the project design and development. Upon a satisfactory conclusion to this meeting and a sufficient security bond, the regulatory authorities agreed to allow the tote road construction at the Company's risk. This phase of the tote road was to be only the logging and clearing of the timbered area, and temporary stream crossings. The Company would be at full risk for the reclamation of the road if the MDC application was rejected and the mine did not proceed. The establishment of an appropriate reclamation bond of \$200,000 was put in place to cover the phase I construction of clearing and grubbing. This was additional to the \$600,000 reclamation bond on the Iskut Road.

In September 1993, Wild Stone Resources of Penticton completed the Mitigation Plan for the Eskay Creek Spur Road. The Eskay Creek Spur Road is a 22 kilometre Class 5 Resource Development Road. It is a single-lane, 5 meter wide, gravel road with a nominal design speed of 50 km per hour.

The Eskay Creek Spur Road leaves the lava flats at the mouth of Volcano Creek and climbs out into the Volcano Creek Valley through a switchback cut into strong, blocky lava rock. The first segment of road within the Volcano Creek valley, a V-notched valley with steep high slopes and numerous avalanche tracks, passes along the valley floor over flood plains gravels. Farther up the valley, the road climbs up the east valley wall at constant steep grades to reach the alpine terrain beyond. The final segment of the Eskay Creek Spur Road, through Volcano Pass and into the Unuk River drainage, crosses open and patchy forested alpine terrain. Bedrock is exposed at or just below the ground surface for nearly 50% of the distance, with peat bogs occupying the hollows.

The area encompasses habitat for grizzly bears, black bears, moose, and a number of furbearers. Various wetland bird species, raptors, and songbirds exist within the area, but nesting habitat is considered to be poor. Additional wildlife mapping was carried out in the fall of 1993.

As with the Iskut portion of the road, water crossings were considered of utmost importance and were given the greatest attention. The Eskay Creek Spur Road had four (4) bridge

crossings which consisted of two single span bridges over Volcano Creek, a single span bridge over Alpine Creek, and a single span over McKay. In addition there are 13 major culvert crossings. The temporary bridges were designed for a 100 year flood return period. The permanent culverts were designed for the same, while the permanent bridges were designed for a 200 year flood.

Two integral parts of the construction plan worth review are the hiring of an "Environmental Supervisor", and preparation of detailed mitigation plans. Both these items were tied to the completion of the Federal EARP process and identified as major issues by the provincial agencies.

### Environmental Supervisor

The Terms of Reference (TOR) for an Environmental Supervisor were originally developed by MEMPR, MELP, DFO, and the Company.

The Environmental Supervisor provided liaison between Prime Resources Group Inc (PRG), the Project Manager, and the government agencies. The purpose of an Environmental Supervisor was to minimize detrimental impacts to the environment. A key role of this position was to facilitate the expeditious review of all permitting requirements related to the construction of the roads (Iskut and Eskay Creek Spur).

### Functions

The following table summarizes the functions of the Environmental Supervisor from the Ministry's and from the Company's perspective.

Table 1 Functions of Environmental Supervisor

	Ministry's Perspective	PRG's Perspective
a	to detect and prevent environmental impacts from occurring.	to monitor compliance with regulatory requirements.
b	to ensure compliance with regulations, permits, licences and approval conditions.	to provide guidance and advice on environmental matters and to work with the Project Manager to ensure compliance with regulatory requirements.
c	to advise B. C. Environment of any unanticipated environmental situations that require modification to construction plans or procedures.	to be in a position of authority to stop construction activities or change construction procedures, if necessary, to avoid unacceptable environmental impacts.
d	to advise B. C. Environment of regulatory or enforcement actions necessary.	

The Environmental Supervisor also had the authority to:

1. order specific works or construction activity to prevent environmental impacts from occurring;
2. stop construction activities that are causing an environmental impact; and
3. order equipment and manpower mobilization if required.

This authority was only to be used if the Project Manager was not available or was unwilling to act.

#### Reporting

Also from the Terms of Reference is the following description:

*The Environmental Supervisor will report to both B C Environment and PRG. Within B C Environment, a contact monitor will be designated to whom the environmental supervisor will report, the salary and other expenses of the Environmental Supervisor will be paid for by PRG.*

*The schedule of reporting will be as follows:*

Table 2 Reporting Schedule

<b>Schedule</b>	
<b>a</b>	The supervisor shall report serious environmental conditions as soon as they occur to the contact monitor
<b>b</b>	The supervisor shall provide a weekly briefing to the contact monitor and/or any agencies or contacts specified by the contact monitor
<b>c</b>	The supervisor shall provide biweekly written reports to the contact monitor and/or agencies specified by the contact monitor. This should include written documentation of the recommendations made by the supervisor and response by PRG, PRG contractors, and government agencies.

*The Environmental Supervisor will report to the Project Manager for PRG to recommend changes in construction procedures or stoppage of work, as necessary; other matters relating to board and lodging and transportation (these items are being provided by PRG); and matters relating to the administration of the contract for the environmental supervisor, eg. time sheets. "*

#### Role of Environmental Supervisor in the Field

The role of the Environmental Supervisor expedited the road construction process. For example, modifications to the mitigation plan, as well as approval and construction verification for stream crossings, were made in the field. The Environmental Supervisor's presence also ensured prudent environmental practices were followed, which prevented spills and other incidents. Through the use of a dual reporting role the regulatory agencies felt confident that

environmental protection was assured and therefore, there was little need to impede the road construction. (Indeed in 1991, it was upon the advise of the Environmental Supervisor that the tote road was to have been constructed in the late fall).

### Mitigation Plans

A detailed mitigation plan, for both stages of road construction, was used to direct construction activities, procedures, and schedules to avoid or reduce environmental impacts. In addition, the plan was used to support applications for approvals and permits for road construction and thereby expedite processing of approvals and permits.

As mentioned in the Spur Road section, water crossings were of the utmost environmental concern and required careful design and installation attention. In addition to the 4 Spur Road crossings, the major crossings on the Iskut portion of the road included a three span bridge over the Ningunsaw River and two single span bridges over Bill and Volcano Creeks. A total of 29 major culvert crossings were installed. The evaluation of sites was an on-going process during construction, and much of the responsibility for development of crossings rested with the Environmental Supervisor and the construction crew.

Environmental impacts have also been mitigated by the reclamation of the road side and borrow areas as soon as possible after each disturbance. Re-contouring the sides of the road disturbance was completed to allow the natural drainage as much as possible, and seeding with a seed mixture suited for the northern area immediately after the re-contouring resulted in a vegetation cover that prevented erosion. The seed mix utilized consisted of: Creeping Red Fescue (40 % by weight), Timothy (40 % by weight), and Alsike Clover - Red Top (20 % by weight). The fertilizer application target was approximately 300 kg/ha of 18-18-18. Application was with summer students and hand cyclone seeders.

### ROAD USE

While the road use has largely been the ore haul from the Eskay Creek Mine, there has been a steady summer demand for use by various exploration companies. For safety reasons, the road use is controlled by a locked gate. Road use must be approved in advance and requires



the use of a radio to monitor other traffic and to announce a vehicle's location and direction at each kilometre post. No public use is allowed, and no firearms or hunting are allowed. In addition to exploration, there has been use by a company (doing cleanup on other old exploration sites). The Ministry of Forests has issued timber licences along the road route which will increase vehicle traffic. When logging begins, a manned gate will be required to control and limit access to those approved to use the road.

## ACTUAL IMPACTS

The majority of the environmental impacts have been positive, with the clean up of old exploration sites and the establishment of grazing areas along the road. Numerous visual sightings have been made of moose, black bears and grizzly bears. The no-hunting policy has ensured that these animals are basically unaffected by the presences of human activity.

## CONCLUSION

Approval of resource roads can be linked to the environmental assessment of the project, if the road is solely built for that project. If it is a multi-resource road than the option of linkage to the current project should be optional. If the road is not linked to the current project, a separate environmental assessment for the road should be allowed.

The Iskut Road and the Eskay Creek Spur Road construction was an essential component of the schedule which allowed the Eskay Creek mine to begin production in January 1995.

Listed below are some of the outstanding issues identified during the road development:

- Air support for exploration work is expensive! Environmental impacts associated with road construction and with project development are separate areas and should not be linked. If a Company wishes to construct a road and provides appropriate reclamation security and mitigation plans, then road construction should be approved.
- Mining roads seem to attract a number of vested and peripheral regulatory and government agencies. Road construction meetings could easily attract a dozen

government departments each with two or more representatives. Streamlining the regulatory process and identifying a key agency is required. There should be a prominent role for MEMPR in the administration of public lands when mining roads are contemplated.

- There is a strong reluctance by some government representatives to even consider the development of resource roads. Not to appear too nostalgic, however, we need to reframe our policy along the "road to resources" campaign slogan of some thirty years ago. By mitigating impacts, employing prudent institutional controls and reclaiming disturbances on an ongoing basis, at the end of the day road development is beneficial and environmentally acceptable.

The project also highlighted some positive aspects of road development and construction. The Environmental Studies, the Mitigation Plans, the Environmental Supervisors, and the liaison and cooperation between the regulatory authorities and the company ensured the competition of a project while minimizing environmental impact.

Finally, the Iskut Road and the Eskay Creek Spur Road construction is a good example of cooperation between the First Nations community and industry. This cooperation resulted in the First Nation company developing expertise and confidence, and allowed their Company to advance from the position of a subcontractor to the main contractor.

## REFERENCES

Anand R. 1995. Personal conversation.

Fast R. 1995. Personal conversation.

Hallam Knight Piesold Ltd. 1991. A Mitigation Plan For the Iskut Road.

Hallam Knight Piesold Ltd & Homestake Canada Ltd. 1993. Prime Resources Inc. Stikine Resources Ltd. Eskay Creek Project Application Report. Volume I Project Description.

Klohn Leonoff Consulting Engineers *et al.* 1991. Iskut Road Study, Volume I & III Environmental Studies.

MEMPR. 1991. Eskay Creek Gold Project - Response to letter from PRGI re: Preparation of right of way for the first leg of the Eskay Creek Road dated October 9, 1991. October 30, 1991.

Minister Responsible for Northern Development. 1991. Iskut Valley Road Proceeds. News Release. April 10, 1991.

Mine Development Assessment Process, Eskay Creek Project, Ministry of Energy, Mines, and Petroleum Resources, and the Ministry of Environment, Lands and Parks.

Wildstone Resources. 1993. Mitigation Plan for Eskay Creek Road.