

B.C. COMMISSION ON RESOURCES AND ENVIRONMENT

TATSHENSHINI RIVER - WINDY CRAGGY - GEDDES  
RESOURCES REVIEWS DEVELOPMENT ALTERNATIVES

On July 20, 1992, the B.C. Government directed the Commission of Resources and Environment to develop a process for planning land use and resource allocation for the Tatshenshini/ Alsek area in the northwest corner of B.C. The study was designed to provide data to settle a conflict between the development of a major copper mine or preserving the area as a wilderness. Aboriginal peoples have laid claim to a large portion of the lands in question. An interim report has now been published by the Commission which describes the various available options and a possible processes to a decision.

The Tatshenshini/Alsek area of B.C. is a wilderness of high mountains, glaciers and rivers wedged between the Yukon to the north and the Alaska Panhandle to the west and south. About 12,000 square km in size, the area is referred to as the Haines Triangle, after the Alaskan town of Haines, the closest settlement. SEE MAP ON P.3

The area's major river was used until the early part of the 20th century by the Tlingit and Tutchone aboriginal peoples as a trading route between settlements on the coast and upriver communities. The Champagne-Aishihik First Nation, who now live in the Yukon, are descendents of these peoples and regard the area as their traditional territory and have registered a land claim to a large portion of it. Today, however, except for summer river rafters, prospecting activities and hunters, the area has no human activity. There is a wide diversity of fauna and flora. The area is home to grizzly bears, the rare glacier blue bear, Dall's sheep, mountain goats, moose and 180 species of birds. The salmon run of the Chilkat River in Alaska, south of the Haines Highway, supports the largest concentration of bald eagles in the world in an area designated as the Chilkat Eagle Preserve. The Alsek River is one of three major salmon-bearing rivers on the north Pacific coast. The Alsek River fish spawn in the Tatshenshini River watershed.

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In 1958, prospectors working for Falconbridge discovered the copper deposit on Windy Craggy Mountain. Geddes Resources Ltd. optioned the property in 1981. Since then, extensive exploration, diamond drilling and underground drilling, has provided an estimated ore reserves which would produce 297,000,000 tonnes of ore over 20 years, grading 1.4% copper with a recovery of 90%, thus yielding a predicted annual production of about 130,000 tonnes of copper metal. The deposits also contain 3.62 grams silver/tonne and 0.18 grams gold/tonne. The grade of the copper ore is substantially higher than average levels being mined elsewhere in B.C. Based on these figures, if the project were developed, Windy Craggy would produce more than 30% of the highest single-year province-wide copper production since 1980, making it one of the world's largest mining projects. Preliminary estimates indicate Windy Craggy has the highest gross value of reserves of all deposits in B.C. to date. Geological surveys suggest the area could host other major deposits of an equivalent or larger size. Taking into account recovery factors, Geddes estimates the gross recoverable metal value to be \$8,500,000,000.

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CONTINUED FROM PAGE ONE - Construction of mine facilities during a pre-production period of three years would require a work-force of 500. The workforce needed to operate the mine would also be about 500 persons. The Ministry of Energy, Mines and Petroleum Resources estimates each direct job would create 1.4 indirect jobs.

As far as copper markets are concerned, it is expected copper will sell for about US \$1.00 per pound for the next 10 years. World copper demand is projected to grow between 2 and 2.5% annually over the next 10 years, particularly in China and Japan. Windy Craggy copper concentrates would be shipped to Japanese smelters. Demand for copper is expected to rise significantly in areas which are becoming more industrialized which need the metal for wiring in computers, electronic components, refrigeration, automobiles, etc. A typical car uses 50 pounds of copper. With the projected rate of growth in demand, it is suggested an annual demand increase of around 140,000 tonnes of the metal.

In undiscounted terms, Geddes estimates gross direct taxes paid by the company during the life of the mine to both levels of government would total \$1,256,000,000. The estimate by the Ministry was higher at \$1,590,400,000.

Basically, concerns about the Windy Craggy mining operation centre on potential environmental problems. To obtain an overview of environmental risks, the Commission engaged Rescan Consultants Inc. to conduct a qualitative risk assessment study. The team's assessment of risk associated with the road and pipeline were based on very limited information. An 11-km road and two pipelines would be constructed on Tats Glacier to connect the mine with a flotation and regrind and dewatering plant in the Tats Valley. The road would be used to transport acid-generating waste rock from the underground mine portal to the tailings and waste rock impoundment. The road would also haul fuel, supplies and personnel up to the minesite. The pipeline would carry slurry (ore concentrate mixed with water) to the mill. In addition, two 4,000-meter pipelines would run from the tailings impoundment to the grinding plant at the mill to supply make-up water for grinding and slurry transport, and to carry tailings to the impoundment. The pipelines would be designed to accommodate glacier movement and would have spill-detection, spill collection, and clean-up mechanisms. The Rescan team assigned a low risk to impact of a rupture of the ore pipeline if prompt recovery action were taken. Low likelihood and consequence ratings were assigned, also with low and medium confidence respectively, regarding a rupture of the tailings and water reclaim pipelines between the mill and tailings impoundment. The most significant risk identified regarding the presence of the mill was the potential loss of wildlife habitat over an area of 2.5 square km. The limestone quarry operation (limestone would be used to neutralize acid waste rock) would have a moderate local impact on wildlife. The tailings and waste rock impoundment would be designed to store 124,000,000 tonnes of tailings and 100,000,000 tonnes of acid waste rock under four meters of water. The impoundment would be created by the construction of two embankments: a major one at the confluence of the Tats and Upper Tats Creek and a smaller one at the saddle marking the watershed divide into Noisy Valley. Constructed on rock fill designed to withstand earthquakes, the impoundment would be about five km long and one km wide, and would be raised gradually to a maximum height of 110 meters along the major embankment. A water treatment plant would be installed to treat all discharge water from the impoundment and the mine. On closure of the mine, steps would be taken to ensure long-term stability of the impoundment by way of annual

inspection, rebuilding and maintenance procedures. Construction of the impoundment would eliminate about eight square km of fish and wildlife habitat. The project site would be linked to the Haines Highway by a 104-km access road, together with a fuel oil pipeline and concentrate slurry pipeline. The six-inch slurry pipeline would carry 1,500 tonnes a day of copper concentrate to Haines. The Rescan team identified 86 potential sources of environmental risk, of which 12 were associated with a potential breach of the tailing dam. It is important to note that the 86 potential events, as stated in the Rescan report, none of the events should be considered fatal flaws, but rather key areas of concentration if the project enters into detailed engineering design. Rescan stated "although there may be little likelihood of the embankments being breached by earthquakes, floods or glacial advance, the cumulative probability increases over the period following mine abandonment". For that reason, design of tailings embankments must ensure long-term integrity.

It is difficult to put a dollar value on wilderness. Summer rafting down the Tatshenshini and lower Aisek Rivers from Dalton Post is considered one of the best wilderness trips available. However, it should be noted that as one rafting departure per day has been used as the benchmark for maximum allowable use on the Tatshenshini, the river's carrying capacity has already been reached. In summer 1991, about 1,000 people descended the rivers by raft. Recreational use of the area is very limited. For example, the Aisek River above the confluence with the Tatshenshini is limited by the fact that Turnback Canyon is unnavigable except by experts at certain water levels. The mountain ranges have potential for climbing and ski mountaineering, however, such use has been limited by their remoteness. Hunting is limited to 25 hunters a year, mainly non-residents, who shoot grizzly bear, sheep and goats. There are no communities or tourism facilities, even on the Haines Highway. Tourists are generally drawn to the parks surrounding the Tatshenshini/Aisek area, namely Klunene National Park in the Yukon, Glacier Bay and Wrangell-St. Elias National Parks, the Tongass National Forest and the Russell Flord Wilderness.

The Commission noted although an ideal solution would allow the various land use objectives to be satisfied, this is not possible as the interests are competing. As a solution that fully meets all interests is not available, difficult land use choices will have to be made. Complicating the situation is the fact that the area of interest has cross-border effects because of the potential impact on air, water, wildlife and recreational interests in the United States. The project itself is a cross-border operation with the road, slurry pipeline and port facilities in the U.S. As a result, all three levels of government in the U.S. will have regulatory roles. The Boundary Waters Treaty of 1909 obliges Canada and the U.S. to prevent pollution of transboundary waters. If the mining project is approved, it will have to pass through a complex maze of regulatory approvals in both countries, plus settlement of the aboriginal land claim issue. To date, over 50 conservation organizations in the U.S. and Canada, united under the umbrella of Tatshenshini International, have opposed mine development. In addition, there are strong U.S. Government objections to mine development, particularly from Vice President Al Gore.

British Columbia has traditionally relied on its resource industry to provide tax revenues and employment. However, as reserves at B.C.'s copper mines are depleted, both tax revenues and jobs will be lost. Products of B.C.'s mining industry accounts for 25% of all Canada's trade with Japan. A 1991 Price Waterhouse study reported the \$375,000,000 in total annual payments to governments will decline to about \$280,000,000 by 2003.

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CONTINUED FROM PAGE TWO - Net mining revenues for 1991 decreased to \$2,214,000,000 from 1990 net revenues of \$2,623,000,000. Finding more mines is not easy, especially in light of the fact that exploration expenditures have fallen from \$226,500,000 in 1990 to \$137,400,000 in 1991. Total salaries and benefits for 1991 were \$756,000,000, a decrease of \$65,000,000 from 1990. The average salary and benefits per employee rose to \$60,100 from \$57,200 in 1990.

Authorities will have to balance the equivalent cash flow of \$23,000,000 per year for 30 years, at a 6% interest rate, and significant northern employment opportunities with the values associated with the Tatshenshini/Alsek region wilderness. If the wilderness option is chosen, Geddes Resources must be fairly compensated by B.C. taxpayers as the company has already spent \$45,000,000 of its shareholders' money to take the

project this far. While the company is awaiting the outcome, for the three months ended September 30, 1992, the Windy Craggy project and its administrative expenses totalled \$442,361.

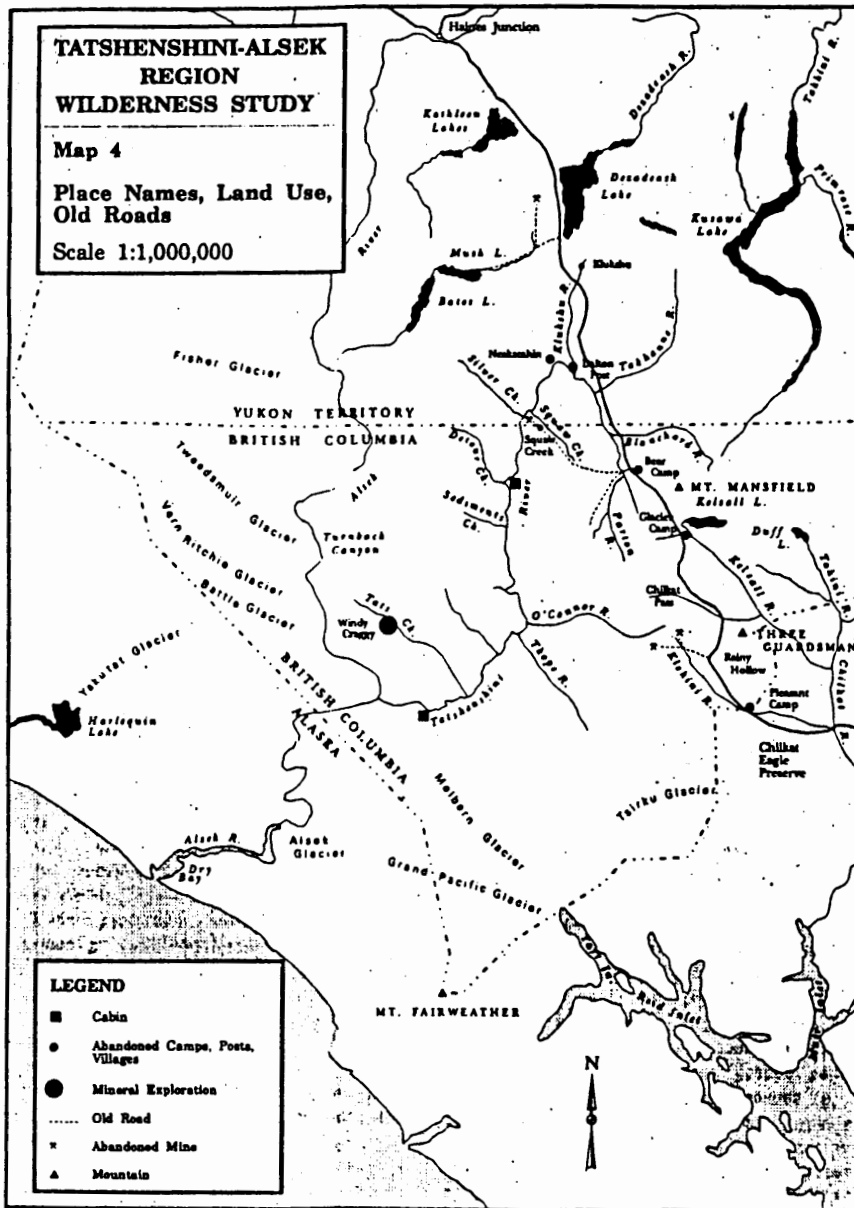
More information is needed regarding managing potential impacts on environmental interests in the U.S., including Glacier Bay National Park and Reserve, which has been designated as a World Heritage Site. Under the World Heritage Convention, Canada as a signatory country is obliged "not to take deliberate measures which might damage the cultural and natural heritage situated on the territory of other states".

The Commission has recommended government provide further opportunity to receive comments from interested parties on the issues raised in the report over the next six months. Copies of the report are available for reference at the B.C. and Yukon Chamber of mines, the Mining Association of B.C., the U.B.C. and Simon Fraser Libraries and the Vancouver Public Library.

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