ECHO BAY MINES LTD.

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February 26, 1997

Kitikmeot Inuit Association
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Department of Indian Affairs
and Northern Development
PO Box 370
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Nunavut Impact Review
Board
PO Box 2264
Cambridge Bay, NT
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Dear Sir:

The following volumes comprise the environmental assessment assembled to support permit and licence applications for the construction of a winter access road (referred to as the 'winter haul road' in the assessment) from the Ulu site to the Lupin minesite. Gold bearing ore from the Ulu site will be transported over this haul road to Lupin for processing.

Results of the studies undertaken for the assessment indicate that environmental impacts associated with the project are negligible or mitigable with known technology. Echo Bay's Environmental Policy is included for reference. Echo Bay Mines Ltd. is committed to bringing the excellent environmental stewardship, evident at Lupin, to the Ulu Project.

Socio-economic impacts of the Ulu Project will be positive with Inuit training and employment both directly with Echo Bay Mines Ltd. and indirectly through the contracting of services and supplies from northern-based companies. Issues related to training, employment and contracting are addressed in the Inuit Impact and Benefits Agreement signed with the Kitikmeot Inuit Association on September 17, 1996.

We look forward to receiving your comments regarding the Ulu Project. If questions arise or if clarification on any points are required, please contact me by telephone at 403-890-7000 or Rod Cooper, Ulu Project Manager by telephone at 403-890-8777, by fax at 403-890-8766 or by e-mail at rcooper@lupin.echobay.com.

Yours truly,
Echo Bay Mines Ltd.

Ian Berzins
General Manager, Lupin

ECHO BAY MINES

ENVIRONMENTAL POLICY

February 15, 1996

Echo Bay Mines participated in the development of and subscribes to the environmental principles adopted by the Mining Association of Canada and The Gold Institute (USA), but it believes that it should also state clearly its own principles and practices, which are:

- Seek to be environmental leaders in the mining community by integrating responsible environmental management as an essential component of all business decisions.
- Assign accountability and responsibility for implementation of the environmental policy and make environmental performance an important factor in the management review process.
- Provide adequate resources, personnel and training so that all employees are aware of and able to carry out their environmental responsibilities in accordance with the environmental policy.
- Communicate openly with employees, the regulatory community and the public on environmental issues, and address concerns pertaining to potential hazards and impacts.
- Design, construct, operate and reclaim all projects in compliance with applicable national and local regulations. In situations where environmental regulations are absent, or less than Echo Bay's standards, apply best management practices to achieve environmental protection.
- Conduct operations in an environmentally sound manner, incorporating the efficient use of energy and materials, and minimizing the use and production of hazardous substances.
- Assess environmental risks and impacts from all activities. Evaluate the regulatory requirements for each project and schedule their implementation as components of the initial project planning process. Establish and maintain appropriate emergency response plans for all activities and facilities.
- Maintain a self-monitoring program at each facility to ensure compliance.
- Conduct periodic environmental assessments of all Echo Bay facilities and develop and implement action plans to correct potential deficiencies in a timely manner.
- Promote company involvement in environmental enhancement projects and encourage employee participation in such projects.
- Support research to develop more effective measures for compliance with environmental regulations and to increase the protection of the environment from mining related impacts.
- Work in cooperation with industry, the public and government toward the development of environmental policies, laws and regulations which are cost effective and scientifically sound.

Richard C. Kraus

Richard C. Kraus
President and Chief Executive Officer

NUNAMOT MALIGAT

FEBYUALI 15, 1996

ECHO BAY OYAGAKHIOKTIT ELA VAKTOT ELIOGAIKATAOVLOTIK PILIOKPAKHOTIKLO NUNAMOT KAYAGIJUTIKHANOT OYAGAKHIOKTIT ELAGIIT KANATAMI OVALO OVANI GOLD MANILIKIONI (USA) KIHIME EHOMAYUT EMA OKAOHIKATIAKTOT EMIGOT ATOGAKHAMINGNIK:

* EVAKHIALOTIK NUNANOT MONAGITIAKNIKMIK OYAGAKHIOGIAMI NUNAT KAYAGILOGIT OYAGAKHIOKPAKNIATOT HAVAKNAHOAKPAKLOTIK OYAKIKIYAMINGNI.

* KINANOT MONAGITIAKOIVAKNIAKTOT TAOTOKLOTIK ELIOGAINIAKTOT NUNANOT MONAGIJUTINIK EMA NUNA KAYAGILOGO OYAKIKINAHOAKPAKNIAKTOT NUNAT MONAGIYAOTIALOGIT.

* HONANIK NAONAIKHIMANIAK TOT HAVAKTINOT ELIHAILOTIK NUNAMOT MONAGINIKNIK HAVAKTIMINGNOT EMA HAVALOKAKLOTIK EMA MALIGAT ATUTTIAKLOGIT.

* OKAOTIGIVAKLOGIT INUKNOT HAVAKTINOT MALIGAT ATOKTOKHAT NUNANI INUITLO EHOMAGIYAIT NUNAT HALUMMAIKONGITAIT AHIGOILONILO EHOIGIYAONAHOKOKNAKMAT INUKNIT.

* EHOAKTOKOT HANNALOTIK HAVAKPAKNIAKTOT PINIKHAFFAKLOGIT NUNAT KANATAMI MALIGAT NUNANILO. HONANI MALIGAKAKMATA PIKANGITKOMIKLUNIIT, ECHO BAY MALIGAITLO EMA ATUTTIAGOTIKHANIK OKOA PIHIMANAHOAKNIAKTOT NUNAMOT.

* HAVATTIAKLOTIK OYAKIKIOT NUNAT KAYAGIVAKLOGIT EMA EHOAKTOMIK MANILIOKLOTIK TAMAYALIKILOTIKLO EMA AHIGOKTIKTAILIVAKNIAKTOT HAVAKLOTIK NUNAMI

* EHIVGIOKPAKLOGIT NUNAT AHIGOKTOT NALIAK PILOKIOT OYAKININIKMIT. EHIVGIOKLOGIT MALIGALIOKHIMAYUT OYAKIKIVIKHANOT EMA HOKOT ATOKNIAKTOT OYAKIKILIGOMIK NUNAT KAYAGILOGIT. ELIOGAILOTIK PIHIMALOTIK KILAMIK HALUMMAKHITIKHANIK OYAKIKIVIKMI.

* PIHIMANIAKTAIT TAOTUTIT OYAKIKIVIKMINGNOT EMA ATUTTIAKPAGONAKAIT MALIGAT.

* KAKOGOGAIKPAT EHIVGIOKHIVAKNIAKTOT NUNA KANOGILITPA ECHO BAY OYAKIKIVIINI IGLOKPAKNI OVALO ELIOGAINIAKTOT EHOAKHAOTIKHANIK ENIKNAGIKPAKTOKHANIK.

* HAVAKVITIK PITTIAKOVAKLOGIT NUNAMOT AHIGOKTIGIHIMAITOMIK HAVAKPAKLOTIK OVALO HAVAKTITIK PITTIAKOVALOGITLO NUNA KAYAGITKOVAKLOGO OYAKIKIVIKMI.

* EKAYUKPAKLOGIT EHIVGIOKTIT HOKOT MALIGIAMI ATUTTIAGIAMI NUNANIK MALIGAKKOT PIVAKTOKHAOKMATA OYAKIKIOT NUNA PITTIAKLOGO HAVAKTOKHAOKMATA OYAKIKIOT

* HAVAKATIGITTIAKLOGIT EKAYUKLOGIT OYAGAKHIOKTIKOGIIT KAVAMATLO ELIOGAIYAMI MALIGANIK ATOKLOTIK OVALO MALIGALIOKHIMAYUNIK EHOAKTOT OYAKIKOTAOYAMI

RICHARD C. KRAUS
ATANIK OVALO ATANIVIALOAT HAVAKTIT

Ulu Project Environmental Assessment White Paper

At Echo Bay Mines' Ulu Project, gold-bearing ore will be mined at the Ulu site and transported over the winter haul road to the existing Lupin minesite for processing. The company has conducted an environmental assessment of the Ulu Project which supports permit applications required for developing the underground gold mine and a winter haul road.

Overall results of the studies indicate that Ulu's environmental impacts are negligible or can be mitigated with existing technology. The project is expected to have positive socio-economic impacts by providing additional skills training and increased Inuit employment. In addition, there will be positive indirect impacts through the contracting of services and supplies with northern-based companies.

The studies show that disturbance of 163.9 hectares will be the only incremental change to the terrestrial environment that will result from the project. Wildlife that may potentially be affected by the project include grizzly bears, caribou and raptors. Any potential impacts should, however, be negligible because the overall capacity of the ecosystem that sustains these wildlife populations will not be significantly impaired. Moreover, good industrial practise will be applied where there are direct linkages between the project and wildlife in the region. For example, programs to manage garbage have been developed for all present and future Ulu Project camps to reduce the risk of luring bears into the camps.

The length and severity of the winter appears to limit the distribution of fish in the project area. During the winter, ice can reach depths of 2.4 to 2.7 metres, therefore lakes must have water depths in excess of 3 metres for fish populations to survive. Ice of this thickness not only prevents self-sustaining populations of fish from becoming established in the small creeks and streams traversed by the winter haul road but also forms barriers to the upstream passage of fish to these crossing areas.

Ongoing observation of selected species will be conducted, allowing for evaluation and refinement of mitigation measures. When the winter haul road is constructed and in operation, raptor nests near the road will be monitored in early April to determine pre-nesting and nesting tolerance thresholds and responses. Seasonal distribution of caribou in the project area will also be monitored. Any substantial impact on caribou migration and movement will be mitigated by avoiding interaction between the caribou and project personnel or vehicles.

Archaeological investigations found no heritage resources in the impact zones of the Ulu site and ancillary facilities. While studying potential winter haul road routes, 21 new archaeological sites were recorded, resulting in a total of 31 known sites in the Contwoyto Lake/Hood River region. Projected impact by the winter haul road is considered to be negligible since the selected route avoids all the known archaeological sites.

Production ore stockpiling is scheduled to begin in the 3rd quarter of 1997 with initial ore deliveries to Lupin early in 1999. Mining will continue through 2003 with ore delivery completed in 2004. Reclamation will begin during the final phases of mining. If possible, removal of unnecessary equipment and buildings may occur earlier. The last reclamation activity will be to reclaim the portage sections of the winter haul road as the equipment retreats toward Lupin. Reclamation is expected to be complete in 2005.

ECHO BAY MINES LTD.

ENVIRONMENTAL ASSESSMENT

ULU PROJECT

JANUARY 1997

ULU PROJECT ENVIRONMENTAL ASSESSMENT
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EXECUTIVE SUMMARY

Echo Bay Mines Ltd. (EBM) has undertaken an environmental assessment of the **Ulu Project** to support permit applications for the development of an underground gold mine and a winter haul road with upgraded portages. Gold-bearing ore will be mined at the Ulu site and transported over the winter haul road to the Lupin minesite for processing. The **Ulu Project** is situated in the Northwest Territories with the Ulu site at longitude 100° 58' W and latitude 66° 54' N, and the winter haul road running from the Ulu site to the Lupin minesite (longitude 111° 14' W and latitude 65° 46' N).

At present, EBM is in the process of a two-year underground exploration development program at Ulu which will be completed in mid 1998. To support this program, a camp, airstrip and associated facilities have been constructed. A winter supply and access road was opened during the winter of 95/96 (Land Use Permits: KIA #I95C078, DIAND #N95E473). A similar road will be opened during the winter of 96/97 (Land Use Permits: KIA permit is pending, DIAND #N96E639).

Since the early 1990's various studies have been undertaken to evaluate the **Ulu Project**; its feasibility and effects on the environment and the people inherent to the region. To update and expand the studies done by the previous lease owner (BHP), EBM, who purchased the Ulu lease in late 1995, initiated another series of studies in the spring of 1996. These studies included investigations into archaeological resources, fisheries, wildlife and vegetation, terrain analysis and the potential for acid rock drainage at the Ulu site. The studies concentrated on the Ulu site and four potential winter haul road alignments between Lupin and the Ulu site.

Total land disturbance due to the **Ulu Project** is expected to be 163.9 hectares: 42.66 hectares at the Ulu site and airstrip and 121.25 hectares for the winter haul road. Due to the traffic type (45 tonne payload trucks with a B-train configuration), the portage sections of the winter haul road will require upgrading in the form of an aggregate layer to smooth the ground surface. The total length of the winter haul road will be 171.85 kilometres with 97.25 kilometres being overland (portages). The Ulu site and the northern portion of the winter road, 52.5 kilometres, is situated on Inuit Owned Land. The southern portion, 119.35 kilometres, will be on Crown Land.

Figure ES-1 shows generally the alternative winter haul road alignments investigated during the various studies undertaken in 1996 (more accurate and complete mapping is shown in the report sections describing the individual studies). Selection of the preferred route was based on various engineering and environmental considerations, most of which were identified in the studies. The preferred route, shown in Figure ES-1, minimizes disturbance to animal denning and nesting sites, streams and known

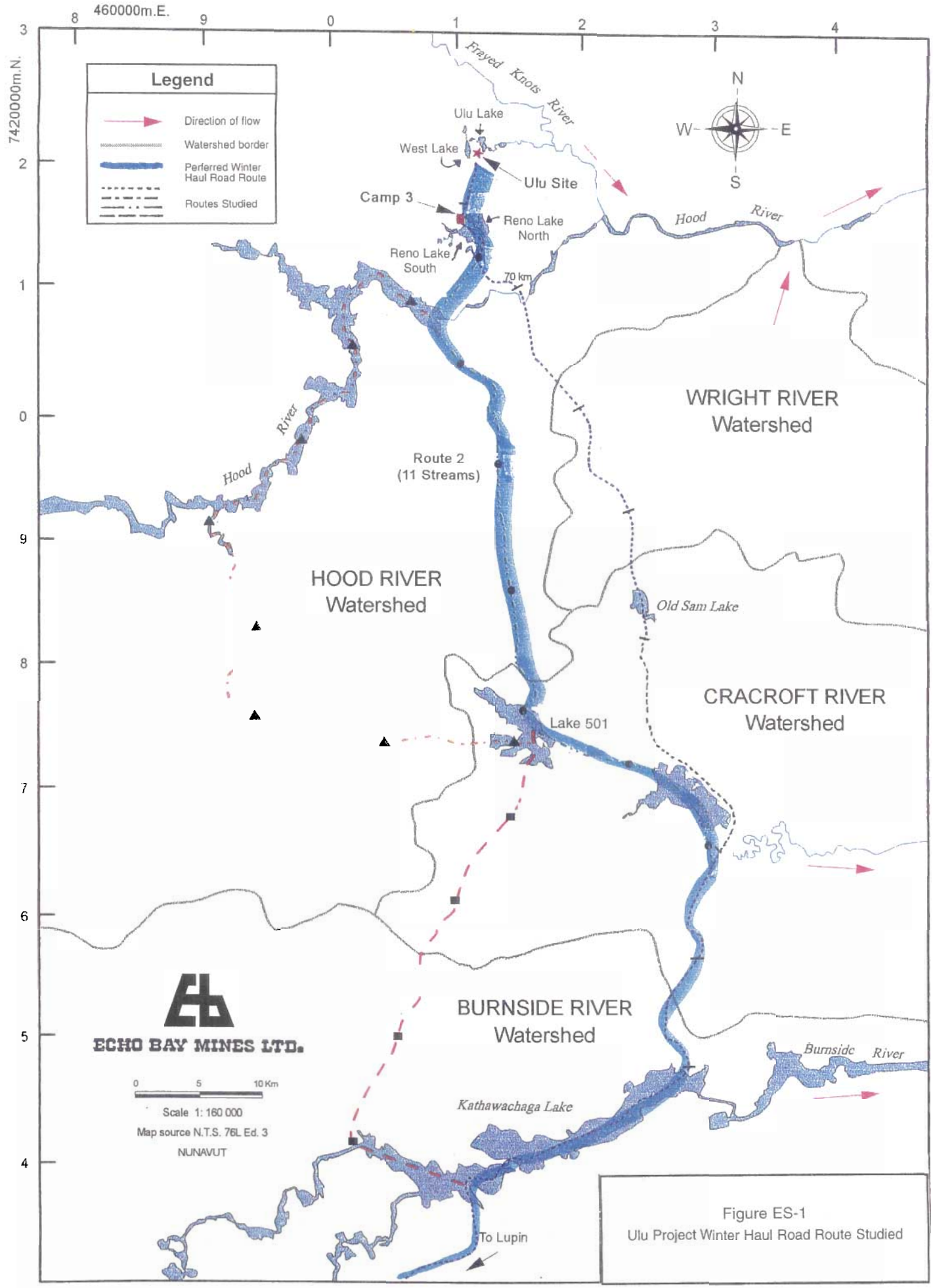

Figure ES-1
Ulu Project Winter Haul Road Route Studied

archaeological sites. As much as possible, it avoids rough uneven bedrock topography thereby minimizing the amount of esker material required to upgrade the portage sections of the road. There will be a minimum of 250 metres between nesting and denning sites and the road alignment. Where possible, stream crossings will be at least 150 metres upstream of any lake which is greater than 3 metres in depth. Gravel extraction from eskers will not be undertaken within 250 metres of known archaeological sites and will generally occur at lower elevations on the eskers to minimize the risk of disturbing unidentified sites which, typically, are located on the tops of eskers.

Results of the various studies indicate that the environmental impacts associated with the **Ulu Project** are negligible or mitigable with known technology. It was determined by the environmental evaluation that the disturbance of 163.9 hectares will be the only incremental change to the terrestrial environment as a direct result of the project.

Wildlife identified as being potentially impacted are: grizzly bears, caribou and raptors (golden eagle, rough-legged hawk, peregrine falcon and gyrfalcon). The impacts to the wildlife population will be negligible because the overall capacity of the ecosystem to sustain natural wildlife populations will not be significantly impaired. Also, the direct linkages between the project and wildlife in the region are such that measures necessary to mitigate impacts are complementary to good industrial practice.

Continuing surveillance of selected species will enable evaluation of mitigation measures and assist in their refinement. Raptor nests will be monitored in April near the winter haul road (once constructed and in operation) and in July near the Ulu site. This will assist in determining pre-nesting and nesting tolerance thresholds and responses.

The project has the potential to interact with caribou. Caribou management is recognized as a concern; seasonal distribution of caribou in the project area will be monitored and any substantial impact on caribou migration and movement will be mitigated by avoiding interactions between caribou and project personnel or vehicles.

Programs for garbage management have been implemented at all **Ulu Project** camps; incineration of wastes reduces the risk of luring bears to the camp. All quarry sites will be assessed for dens and denning activities.

A total of 75 streams and portions of the Hood River were assessed during the June and August 1996 surveys. Fish were captured or observed in only 14 (18%) of the streams. Catch per unit effort was very low ranging from 0 to 1.73 fish per minute of electrofishing.

Overwintering habitat appears to limit the distribution of fish in the study area. As most streams and many lakes freeze to the bottom, deep water refugias are critical habitat features. During the winter ice can reach thicknesses of 2.4 to 2.7 metres, therefore lakes must have water depths in excess of 3 metres for fish to overwinter. Ice of this thickness not only prevents self-sustaining populations from becoming established, but also forms barriers to the upstream passage of fish.

The archaeological assessment for the **Ulu Project** was undertaken in two phases. The first phase examined the impact zones for the Ulu site and ancillary facilities. No heritage resources were found in this area. Potential haul road routes between the Hood River and the Ulu site were also investigated during the first phase. Two archaeological sites were recorded on the Hood River at the upper rapids, about 7 kilometres west of the preferred winter haul road route.

Phase II of the project entailed examination of several route options for the winter haul road between Lupin and the Hood River. Twenty-one new archaeological sites were recorded, resulting in a total of thirty-one known archaeological sites in the Contwoyto Lake/Hood River region. The majority of these sites occur on the Burnside River/Kathawachaga Lake system or on the major esker north of Kathawachaga Lake. Projected impact by any of the route options studied is considered to be minimal as all routes bypass most archaeological sites by a wide margin. Given that a large percentage of the winter haul road will be on lake or river ice, the projected land impact is minimal, particularity as most land/ice interfaces are in areas which contain no archaeological resources. Gravel extraction activities can occur at most esker locations with no potential impact upon archaeological resources, providing the extraction occurs on the lower lateral ridges rather than the crests and upper plateaus which contain the majority of the major archaeological occupation sites.

The **Ulu Project** is a satellite of the Lupin Operation and so uses existing infrastructure to the greatest extent possible. The camp and transportation infrastructure developed by the Ulu Project is expected to facilitate little or no other industrial or tourism activity during the years (1997 to 2004) it is expected to be operating. A portion of the 1996/97 winter road, on the ice of Contwoyto Lake, will be used for winter access between Lupin and Lytton's Jericho project. The Jericho site is approximately 3 kilometres west of the north end of Contwoyto Lake, about 30 kilometres northwest of Lupin. Some consideration was given to routing the winter haul road near the Jericho site, but this was rejected due to higher impacts on wildlife; several denning sites are located north of the Jericho site.

The development of satellite ore bodies such as Ulu is crucial to extending the life of the Lupin mining/milling operation. As ore tonnage at the Lupin mine decreases

toward the end of its economic life, satellite ore bodies will make up the extra tons required to allow continued feasible operation of the Lupin mine. Present plans are for ore to start arriving at Lupin from the Ulu site during the winter of 1998/1999. To accomplish this, permits for land use and quarrying must be in place to allow construction of the upgraded portage sections of the winter haul road to start early in 1998. Permits to allow the mining of ore from Ulu and its surface stockpiling at Ulu and Lupin must also be in place.

On the present schedule for mining of the Ulu ore body, production ore stockpiling will begin in 1997 with initial ore deliveries to Lupin scheduled for early 1999. Mining will continue through the year 2003 with ore delivery being completed in 2004.

Reclamation of the Ulu site will begin on cessation of mining (2003), though, if feasible, removal of unnecessary equipment and buildings will occur earlier. The last reclamation activity will be the reclaim of the portage sections of the winter haul road as the reclamation equipment retreats toward Lupin. Reclamation is expected to be complete in 2005.