Wildlife Monitoring

BHPB has been monitoring wildlife at Ekati for nine years. Caribou, grizzly bear, wolverine, wolf, birds and falcons are the species found in the study area that BHPB monitors most closely.

Wildlife Incidents

No large animals at the mine site were killed in 2005 by trucks, although some smaller animals such as a fox were killed in accidents. Two grizzly bears, both in poor condition, were destroyed after threatening BHPB workers. A wolverine that became a problem at the site was also killed and four other wolverines were captured and taken far away from Ekati. A caribou caught its antlers in support wires for a tower but, with advice and assistance from Aboriginal workers on site, was released unharmed. As with other years, there were some caribou killed by predators at Ekati.

Caribou from Bathurst Herd

Caribou Monitoring

BHPB has a number of research programs that are trying to find out if the mine is affecting caribou. The location of caribou with satellite collars show that numbers of caribou within 150 km of the mine have decreased. In 2005 BHPB had new studies to look at how caribou behave near the mine roads and distributed a Traditional Knowledge report called "Caribou and Roads: Implementing Traditional Knowledge in Wildlife Monitoring at the Ekati Diamond Mine Inc., NWT" that has a lot of Elders' observations and recommendations.

One study showed that caribou like to use the mine roads for travelling on but not resting. The other showed that caribou seem to cross roads without a lot of problems. The studies also note that caribou react more strongly to blasting and to people compared to light truck traffic and that caribou with calves are the most sensitive.

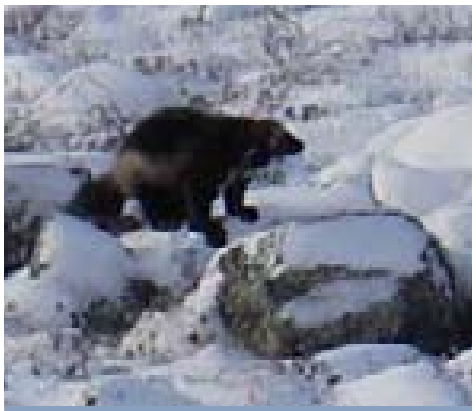
Wolverine Monitoring

Four wolverines were trapped and moved far away from the mine and one had to be killed after it became aggressive when found under a building. BHPB has worked hard to avoid problems with wolverine but in late winter there were many sightings and some contact with these animals. BHPB put up better skirting on its buildings and trained its employees in how to make the mine less attractive for wolverines.

In 2005 BHPB participated in a new joint regional study that snags hair from all of the wolverine in the area and then scientists look at the DNA on the hair to find out more about the wolverines in the area. We will hopefully know more about that study next year.

Agency Assessment

The BHPB wildlife monitoring program is a good one and the company has been willing to make changes to improve it based on comments from reviewers. We think the new studies on caribou should provide some information on how the mine can cause the least amount of problems for caribou, the most important wildlife issue today. We feel that some changes to caribou monitoring could be made. One would be to use unmanned video cameras to look at how caribou behave near the mine and roads when there are no people around. Another would be to review the design of caribou surveys done from airplanes so that a larger area is covered, particularly in the fall when the caribou have travel with their calves. We need to be more certain that the survey is providing the level of detailed information that will convince us that the results are true and not just based on observations that have no clear conclusion. ■



Wolverine

Wolf

Falcon

Mine Wastes

Mining for diamonds at Ekati produces different kinds of waste that must be taken care of by the company. Below is a description of the different types of waste produced at Ekati:

Waste Rock – Waste rock is the material taken from the pit and underground that does not contain any or enough diamonds to allow it to be processed. The biggest source of waste is rock mined from the open pits. To find the *kimberlite* rock far below the surface that contains the diamonds, a large amount of waste rock is blasted and hauled out of the pits in trucks. This rock is piled near the pits and can be up to 50 meters (or about 160 feet) tall.

Some kinds of waste rock can produce toxic drainage after being exposed to the air and water that could cause harm to the environment and in particular to lakes containing fish. BHPB expects that freezing of the waste rock piles will be permanent and that this freezing will stop any harmful water from forming in the piles and leaking out onto the land. Surveys of the rock piles show that they appear to be freezing as planned. However, there are small seeps of water from the rock piles in the summer but so far the drainage from waste rock at Ekati has been acceptable for the environment. There is some uncertainty about the rock piles in terms of staying frozen over the long term and other concerns related to chemicals in the rock. We have asked BHPB to tell us how it is using the information from its waste rock seepage tests to deal with some of our concerns. So far the company has not responded to us and we have advised the WLWB that BHPB's 2005 report on seepage from the waste rock piles needs correcting before it can be approved.

The Panda-Koala waste rock pile

Tailings and Wastewater - *Tailings* are what is left over when the diamonds are removed and are also

Processed kimberlite deposition into the Long Lake Containment Facility

called '*processed kimberlite*'. These *tailings* are a fine sand that is mixed with water and pumped to the Long Lake Containment Facility to settle. Before the mine was built, the *tailings* pond was a few long and narrow lakes. The lakes have been connected into one large *tailings* pond and then were divided by dykes into smaller cells. There are now five cells and the three uppermost cells have been used to store the *tailings* but none of them are full. Treated sewage from the camp is also pumped into the *tailings* pond.

Some changes are being made to how the *tailings* pond works and how the diamonds are removed from the *kimberlite*. BHPB came up with a new way of collecting more of the small diamonds in the *kimberlite* and plans to begin adding a substance like salt (called calcium chloride) to the *kimberlite* to make it settle out better once it is pumped into the *tailings* pond. BHPB applied to the WLWB to be allowed to carry out these new activities and would like to build more roads around the *tailings* pond so it can have more places to pump out the *tailings* to better fill Long Lake.

We are concerned because we do not know what the water quality coming out of the *tailings* pond will be like and how much chloride could be found in that water. We do not see any plans being made about how to reclaim and close the *tailings* pond and we think that should have been submitted along with BHPB's plan on how to make the *tailings* pond work better. We want BHPB to give us some details about how it will contain the silty portion of the *tailings* that is hard to settle and what to do with the soft beach areas where the *tailings* meet the edge of the water. We also want BHPB to avoid filling the two lower cells of the *tailings* pond so that the water in it has more time to settle before being pumped downstream

Panda Pit

into lakes containing fish and other aquatic life. Lastly, we would like one of the cells to be filled completely as soon as possible. Once it is full, BHPB can test different ways of reclaiming the *tailings* beaches to see what will work best for *reclamation* of the rest of the *tailings* pond.

In our view, the *tailings* pond has been in operation too long without BHPB providing a good plan for how it can be reclaimed. This issue should have been taken care of when the mine was approved for construction, not after it has been operating for years. We will be advising the WLWB not to approve the *tailings* plan BHPB submitted until more of our questions are answered.

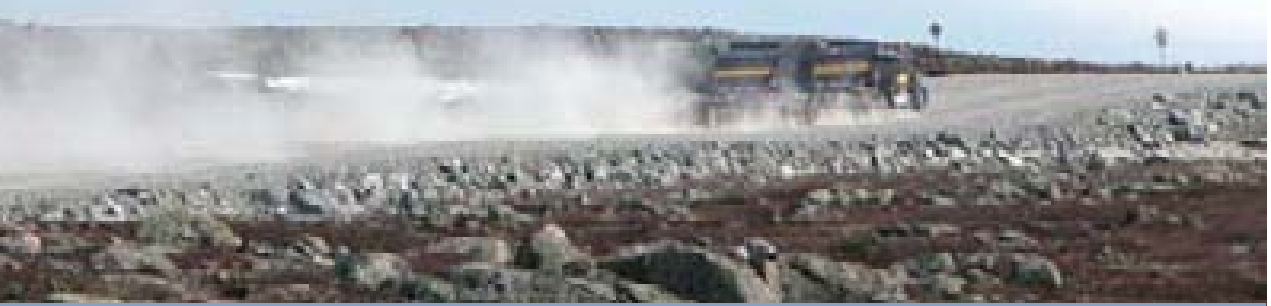
Air Quality and Dust – At Ekati, sources of contaminants in the air

and dust include the diesel power plant, incinerator, blasting in pits, road traffic, waste rock and *tailings* dust from the *tailings* pond. This dust could have an effect on plants and the water quality of lakes that the animals use.

Some progress in air quality monitoring was made in 2005 such as the development of a new model that can predict where most of the dust would land on the ground. BHPB then sampled the snow and vegetation near the mine. The results may not be that reliable because the samples can be easily measured the wrong way and BHPB did not use the same field methods as a nearby GNWT air monitoring station. We have encouraged BHPB to work more closely with Environment Canada and GNWT air quality officials in designing and implementing a better air quality monitoring program. We think there could be a role for Traditional Knowledge to be used to help in understanding the possible harmful effect on caribou of eating dust-covered lichen.

BHPB has committed to the installation of a new, more efficient incinerator that has the potential to significantly reduce air pollution. We would like to see BHPB make sure its new incinerator is operating properly, the staff are trained well, and waste products are separated properly to prevent the burning of plastics in the incinerator which can release a lot of toxic chemicals into the air.

BHPB's final air quality report is not available to us yet so we have not been able to study it. We think that BHPB could update its Waste Management Plan to be a bit more detailed about what material gets burned at the new incinerator as emissions can be harmful if BHPB is not careful.



Truck on Misery Road

Other Types of Garbage

Ekati houses a large number of workers and much of the waste produced from the kitchen is burned to avoid attracting wildlife to the landfills. BHPB has also done a good job in managing garbage on site to avoid attracting wildlife. Some materials are easily recycled and these are shipped south in the winter. Other scrap that has little salvage value is sent to the landfill and eventually covered with waste rock. Leftover oil is used to heat buildings and snow or dirt that has fuel or other chemicals spilled on it is stored in lined basins so that meltwater can be cleaned. ■

Closing the Mine

As part of its new water licence received last fall, BHPB is required to develop a new closure and *reclamation* plan. This must be submitted to the Wek'èezhìi Land and Water Board (WLWB) in 2007. A working group made of the government regulators, our Aboriginal Society Members and the Agency has been set up to review this plan. BHPB also has its own community consultation process to present information and receive community feedback on *reclamation* issues. We sent some ideas in to BHPB on how to improve its consultation process (see Figure 3).

Many questions remain outstanding about how to best close the pits, waste rock piles, *tailings* and roads. To help us develop some ideas on these mine components, we brought in four experts to join us in a workshop. We also shared our time with these experts with representatives from our Aboriginal Society Members. A summary of our workshop recommendations are found on page 22 (see Figure 4).

Figure 3: Closure and Reclamation Plan Consultation Process Proposed by the Agency

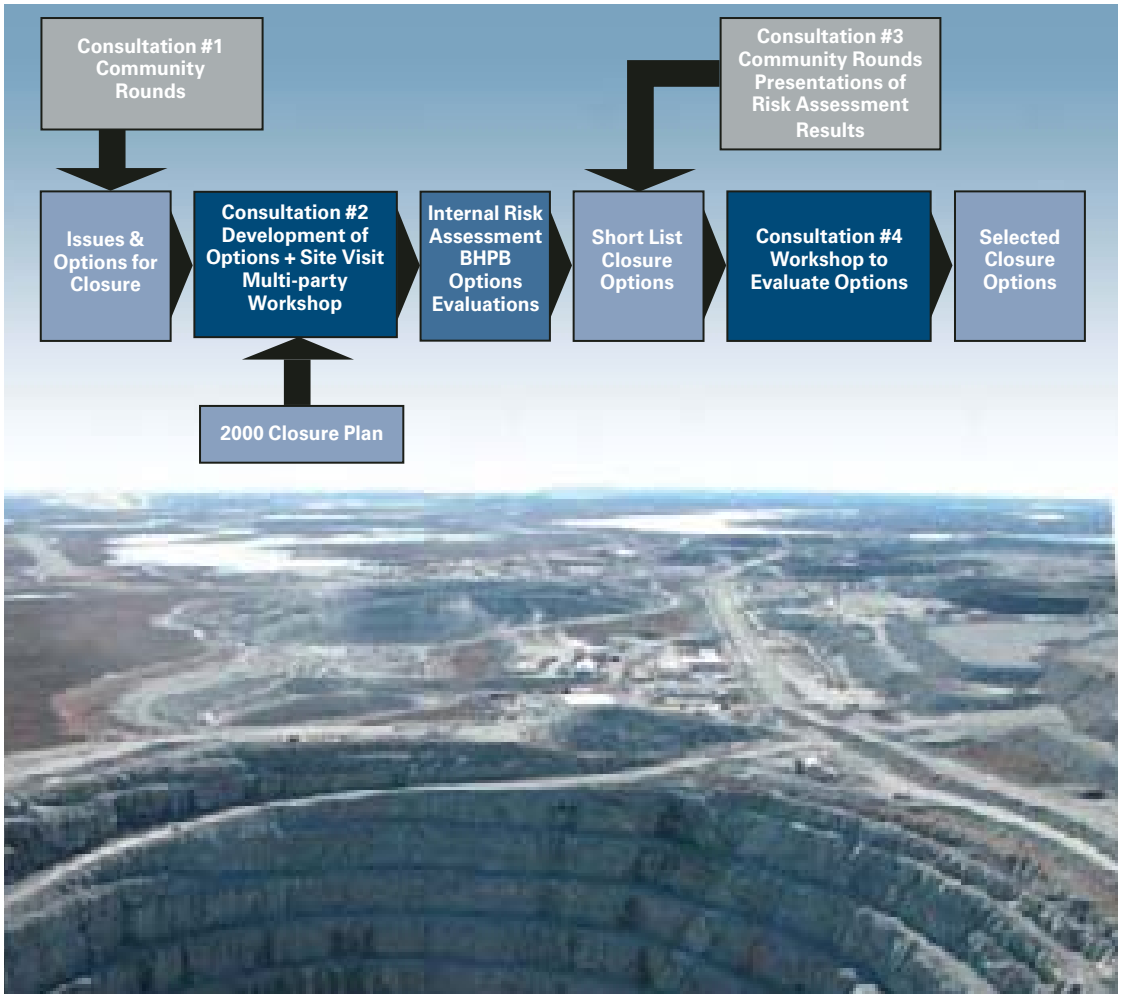


Figure 4:

Agency Recommendations to BHPB on Reclamation of Ekati:

- Consultation with Aboriginal Society Members to develop the closure plan
- When assessing risk make sure all opinions about risk are heard
- Each part of the mine should have a clear closure objective as to what it should look and act like after mining is finished
- Reclaimed roads, pits and rock piles should be 'caribou friendly'
- Significant research needs to be done
- Pits could be used to store water from the *tailings* that takes a long time to settle
- Climate change could increase travel costs due to a shorter ice road season and reduce the effectiveness of freezing of the rock piles to prevent water from seeping out
- Open pits should allow movement of fish if they become lakes after mining is done

We are concerned that *progressive reclamation* has not been happening at Ekati. We would like to see BHPB begin to operate the mine in a way that better reflects how that part of the mine will eventually be closed. We call this 'design for closure' and it is a new way of mining that should make *reclamation* work much better.

One part of Ekati that especially needs improvement in this manner, is the *tailings* pond. There is an enormous volume of *tailings* left over when the diamonds are removed and this is a potential long-term problem for *reclamation*. *Tailings* can easily be eroded by wind or water and we would like to make sure *tailings* or contaminated water do not start to move downstream into the nearby lakes and streams. We would like BHPB to address our concerns before it receives approval to change the plan about how it manages the Long Lake Containment Facility where the *tailings* are deposited.

A lot of research also needs to be done about the open pits. Will they be filled back in with water and/or rock and become lakes? If so what will the water be like and how will the fish that live in the area adapt to the large man made lakes? These are some of the questions we are asking BHPB to answer.

Reclamation of Ekati has been agreed upon by all of the Agency directors as the most important task for us to focus on. While we will not do the clean up work ourselves (that is BHPB's job) we will do our best to make sure the closure plan for Ekati is a good one. We also urge our Aboriginal Society Members to discuss the closure plan with BHPB. A lot of the values that inform the closure objectives for Ekati should come from the Aboriginal Peoples. ■

Reclamation monitoring site

Tailings in Long Lake

Recommendations from the 2005-2006 Technical Annual Report

Tailings and Wastewater Management

1. BHPB's new Wastewater and Processed Kimberlite Management Plan (WPKMP) should:
   a. Contain a commitment to complete deposition into the north end of cell B by 2009 to allow pilot scale *reclamation* to begin.
   b. Omit use of cell D for deposition.

Reclamation and Closure

2. BHPB should develop closure objectives, options and criteria and assess risk collaboratively with all interested parties in accordance with the advice offered by the Agency and the Interim Closure and Reclamation Plan (ICRP) working group members.

Aquatic Effects Monitoring

3. BHPB should, through monitoring and additional analyses of data already collected, obtain the necessary information to explain changes in *zooplankton* community structure in relation to water chemistry changes.

Monitoring fish

Communications and Consultation

4. BHPB consultation and communications activities should adopt the principles suggested by the Agency and our Aboriginal Society Members.

Assessment of BHPB

5. BHPB should provide adequate resources to its Environment Department to ensure it can meet the obligations of its *Environmental Agreement*, water licences and other authorizations.

Glossary

Cumulative Effects The environmental changes that occur from a project or activity combined with effects from other human activities.

Environmental Agreement A written document where promises about monitoring programs and management plans and similar matters are set out and agreed to.

Kimberlite A rare rock that can contain diamonds, that comes from deep underground. Diamonds are usually found in pipes or carrot-shaped structures.

Processed Kimberlite or Tailings The waste material and water mixture that is left over after the valuable minerals are removed (i.e. diamonds).

Progressive Reclamation Reclamation that occurs while the mine is still operating. As mine activities are completed and no longer required, roads are reclaimed, buildings and equipment are removed, areas are revegetated and landfills and dumps are reclaimed.

Reclamation The recovery of areas of land and water-bodies that have been disturbed during mining.

Watershed An area of land drained by a river.

Wastewater Water that contains wastes from the mining process including sewage and chemicals from explosives.

Zooplankton The small, almost microscopic animals that live suspended in freshwater (and ocean) environments. Zooplankton feed on small particles in the water.

MAP: BHP BILLITON DIAMONDS INC.

A PUBLIC WATCHDOG FOR ENVIRONMENTAL MANAGEMENT AT EKATI DIAMOND MINE™

Independent Environmental Monitoring Agency

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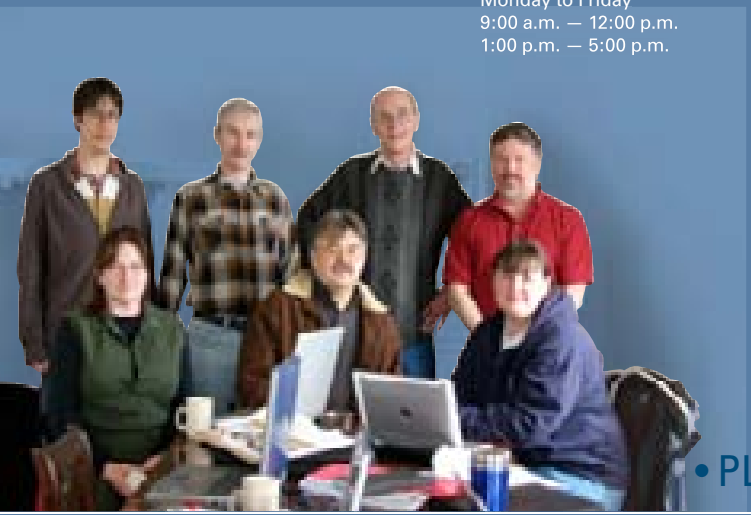

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• PLAIN LANGUAGE ANNUAL REPORT •

2005-2006