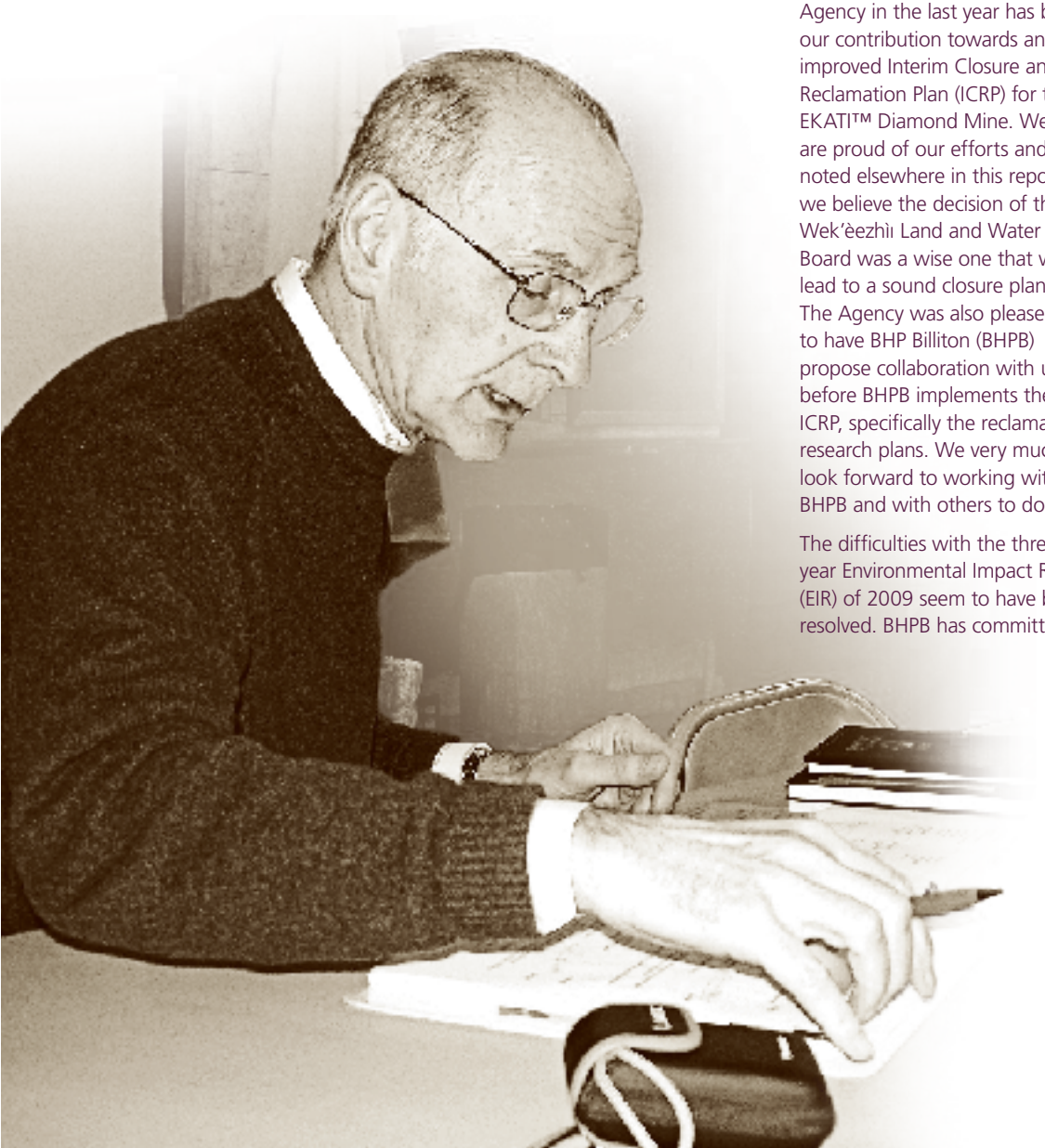
TECHNICAL

INDEPENDENT
ENVIRONMENTAL
MONITORING AGENCY

A PUBLIC WATCHDOG FOR ENVIRONMENTAL MANAGEMENT AT EKATI DIAMOND MINE™

ANNUAL REPORT 2010-11

Message from the Chair 2011



The major activity of the Agency in the last year has been our contribution towards an improved Interim Closure and Reclamation Plan (ICRP) for the EKATI™ Diamond Mine. We are proud of our efforts and, as noted elsewhere in this report, we believe the decision of the Wek'èezhìı Land and Water Board was a wise one that will lead to a sound closure plan. The Agency was also pleased to have BHP Billiton (BHPB) propose collaboration with us before BHPB implements the ICRP, specifically the reclamation research plans. We very much look forward to working with BHPB and with others to do so.

The difficulties with the three-year Environmental Impact Report (EIR) of 2009 seem to have been resolved. BHPB has committed to holding a workshop on this subject in the fall of 2011, and we have distributed a discussion paper with suggestions for good practice related to the EIR. We look forward to a successful workshop that will clarify the purpose and focus of future EIRs and in particular assist with BHPB's preparation of the 2012 EIR.

The Agency is somewhat disappointed in the outcome of the Diamond Mine Wildlife Monitoring Program Review. The process was suitably collaborative but the results seem unsatisfactory in that the resulting monitoring program for Ekati does not, in our view, meet the objectives set for it. For these and other reasons, we have made suggestions to improve the Ekati wildlife monitoring program for next year and beyond. In addition, we have added our support to the new Northwest Territories *Wildlife Act* that will make for more rigorous wildlife monitoring programs.

The Air Quality Monitoring Program has continued to improve because of efforts by BHPB staff. We still see some opportunities for further improvements and we are pursuing these. Most importantly, following a successful environmental workshop last fall that was focused on air quality, we have followed the advice of our Society Members and recommended that BHPB make its new incinerator operational as soon as possible.

The other major development has been Agency activities related to more effective communication. Following advice obtained both from our annual general meetings and through the SENES Consultants report (2009) on Agency performance, we have made major improvements to our website and launched our Ekati Timeline Project - a web-based, visual, interactive overview and summary of key events in the history of the Ekati Mine. We are also providing short summaries of our Board meetings and distributing summary brochures after our community visits.

As always, we welcome input and suggestions and will make our best efforts to address any questions or concerns. ■

William A. Ross, Chairperson
March 31st, 2011

Ekati Diamond Mine

1. Long Lake Containment Facility (Cells A – E)
2. Pigeon Pipe
3. Waste Rock Piles
4. Beartooth Pit
5. Panda Pit
6. Koala and Koala North Pit
7. Panda Diversion Channel
8. Main Camp
9. Haul Roads
10. Airstrip
11. Fox Pit
12. Misery Pit

SATELLITE IMAGE 2010/BHP BILLITON DIAMONDS INC.

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Agency Recommendations for 2010-11

Recommendation 1:

The Agency recommends that, before the end of 2011, BHPB make its new site incinerator operational.

BHPB Response: BHP Billiton plans to commission a new solid waste incinerator at the Ekati main camp that provides the most up to date technology for waste incineration and reduction of emissions. BHP Billiton has discussed this with technical staff from Environment Canada and the Government of the Northwest Territories. The incinerator is in place at Ekati. However BHP Billiton has encountered a number of frustrating operational issues that have prevented it from being put into use. Necessary physical modifications to the incinerator are underway and the facility will be commissioned as soon as it is ready.

GNWT Response: The GNWT fully supports IEMA's recommendation. Appropriate technology and operation are vital for responsible incineration waste management, especially at a facility the size of Ekati. The GNWT understands that BHP has been in possession of the noted incineration units since 2006, therefore, bringing them into operation by the end of 2011 is a welcome conclusion to the installation phase.

Recommendation 2:

The Agency recommends that BHPB implement in 2012 a monitoring program with the objective to determine the influence of mine related activities on the relative abundance and distribution of grizzly bears.

BHPB Response: BHP Billiton plans to conduct this program in 2012. Additionally, BHP Billiton is conducting a preliminary program in 2011. The 2011 program will utilize a smaller number of hair-snagging posts (12 posts in 2011 and an estimated 30 posts in 2012) to test the methodology and to collect preliminary data. The post locations will be selected with community input when possible and will be moved at least 3 times to assess the best locations. BHP Billiton is looking forward to working with communities, the Government of the Northwest Territories and others on this program and will report the results of its 2011 program to provide experience and important lessons learned.

GNWT Response: The GNWT supports the continued monitoring of the influence of the Ekati Mine on the relative abundance and distribution of grizzly bears. The GNWT will continue to engage with BHPB and other mines on the preferred methods for this monitoring program. GNWT recommends that hair collected from the posts be identified to species and sex to confirm that the survey design is effective for monitoring grizzly bears. GNWT is prepared to provide some support for the analysis of hair samples pending a proposal and budget from BHPB.

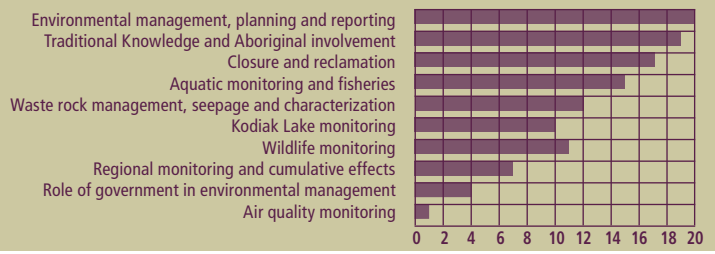
Recommendation 3:

The Agency recommends that BHPB and GNWT-ENR agree to a regular (we suggest every three years) formal review of wildlife monitoring and management at the Ekati Mine.

BHPB Response: BHP Billiton views the recent joint review of wildlife monitoring programs for the diamond mines as a progressive and positive experience that has set the stage for implementation of improved programs. This was a new approach that included community input and the timing allowed for the beneficial use of lessons-learned. BHP Billiton cautions that this level of in-depth review and change should not be undertaken too frequently because this could interrupt important continuity of data collected over successive years. BHP Billiton would be interested in working with communities, the Government of the Northwest Territories and others to develop a process and timeframe for future reviews of the Ekati wildlife monitoring program.

GNWT Response: The GNWT remains committed to reviewing wildlife monitoring programs for Ekati Mine as frequently as needed based on the implications of monitoring results. While a schedule may not be possible, a full review of the adequacy of wildlife monitoring should be possible after each three-year environmental impact review.

Agency Recommendation Themes 1997-2011



Recommendation Recipient	Frequency of Recommendations
BHPB	86
Government (GNWT, GN, Government of Canada)	14
Water Boards (NWT Water Board, MVLWB, WLWB)	8
Environmental Agreement signatories	3
Aboriginal Society Members and BHPB	3
Aboriginal Society Members	1
All Agency Society Members	1
Total	116

- *Intervention at WLWB public hearing on Interim Closure and Reclamation Plan.*
- *Participation in the Diamond Mine Wildlife Monitoring Program Review.*
- *Environmental workshop on air quality.*
- *Discussion paper on Environmental Impact Report.*
- *Three board meetings and AGM in Yellowknife.*
- *Community visit and open house in Kugluktuk.*
- *Improvements in Agency communications and launch of new Ekati Timeline website.*

2010 Agency annual general meeting.

Agency Activities and Assessing the Agency

Activities 2010-11

Three board meetings were held in Yellowknife this year, as well as our annual general meeting in November 2010. We also conducted a site visit to the Ekati Mine in September 2010.

We visited the community of Kugluktuk in March 2011 for a board meeting, community open house, and presentations to the elementary and high schools. We also met with Kitikmeot Inuit Association staff and the Government of Nunavut regional biologist. Our open house was well attended and residents discussed their concerns over what environmental changes have been detected to date, pit *reclamation*, and what happens to wildlife involved in accidents at Ekati.

The Agency met in July and August 2010 with BHP Billiton (BHPB) and its consultants (Rescan Environmental Services) to discuss the Agency's review of the 2008 Air Quality Monitoring Program (AQMP) report. In November 2010, the Agency hosted an environmental workshop in Yellowknife focused on air quality. The AQMP at Ekati was reviewed, including progress to date on improving methods and analysis. The Agency also met with BHPB staff and Government of the Northwest Territories (GNWT) in December 2010 to further discuss snow sampling methods and analysis.

In September 2010, the Agency intervened at the Wek'èezhìı Land and Water Board (WLWB) public hearing on BHPB's Interim Closure and Reclamation Plan (ICRP) which focused largely on the issue of pit lake *reclamation*. There was also discussion about the level of detail that should be required in the *reclamation* research plans.

The Agency participated in the ongoing Diamond Mine Wildlife Monitoring Program Review, including a technical workshop in June 2010 and a community and Traditional Knowledge workshop in October 2010. In August

Agency presentation at Kugluktuk Elementary School.

Streets of Kugluktuk.

2010 in Behchokǫ̀, Agency staff observed a Wek'èezhìı Renewable Resources Board public hearing dealing with the revised Joint Proposal from the GNWT and Tłı̨chǫ Government for the management of the Bathurst and other caribou herds.

Three meetings were held by the Inter-Agency Coordinating Team (IACT) in May and December 2010 and March 2011, as well as a visit to the Ekati Mine site in July 2010. IACT is focused on the Ekati Mine and consists of the Agency and a group of government regulators, including Indian and Northern Affairs Canada (INAC), the Department of Fisheries and Oceans (DFO), Environment Canada (EC) and the GNWT.

Biannual meetings are held between the Agency and the *Environmental Agreement* signatories (BHPB, GNWT and the Government of Canada). These meetings (held this year in June 2010 and January 2011) improve coordination and communication, and provide opportunities for the Agency and signatories to provide an update on activities. The Agency also reports on financial expenditures and future plans and signatories are offered an opportunity to respond to formal Agency recommendations.

(See Table 1 for details on these activities, as well as specific chapters in this report.)

Agency Consultation and Communication

The key means of communication for the Agency include the production of our annual report in both plain language and technical versions, as well as a summary brochure sent to each household in our Society Member communities. We host an annual general meeting (AGM) and maintain a website and library of Ekati-related material. We hold an annual environmental workshop to discuss aspects of BHPB monitoring programs, except every third year when BHPB holds workshops and meetings in conjunction with preparation of its Environmental Impact Report (EIR).

We prepare and distribute a summary of discussion from each Board of Directors meeting and IACT meeting, as well as from the AGM and environmental workshop. The full summaries are posted on our website along with any presentations, and brief versions of the summaries are distributed by e-mail to Society Member representatives. After each community visit, we also produce and distribute a brochure that presents photos, summarizes the Agency mandate and topics of discussion, and provides contact information.

Throughout the year, we have incoming and outgoing correspondence on various Ekati-related issues (summarized in Tables 2 and 3). The staff also responds to requests from students and the public for information on and photographs of Ekati.

In 2010-11 we renewed production and distribution of an Agency newsletter (the "Ekati Monitor"), which is printed and sent to Society Member communities twice per year. Newsletters are also e-mailed to a broader distribution list, posted on our website, and available in the office. We completed major updates and improvements to the main Agency website (www.monitoringagency.net). We also launched the Ekati Timeline Project (http://timeline.monitoringagency.net), a web-based historical description of events for the Ekati Mine including operational, regulatory and environmental information. We are currently finalizing a communications plan, as well as organizing our resource library and extensive photo collection.

Director *consultation* visits in the communities are another method of Agency communications. We attempt to send a director or staff member to any community that requests information about Ekati,

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Table 1: Key Agency Activities *(continues on next page)*

Date and Location	Purpose	Main Issues
May 3, 2010 Yellowknife	Inter-Agency Coordinating Team (IACT) Meeting	• Updates provided by BHPB, Agency and regulators. • Pigeon bulk sample and Misery pushback discussed.
June 2, 2010 Yellowknife	Environmental Agreement Implementation Meeting	• Agency and BHPB gave presentations on communications. • Agency presented an overview of 2009-10 Annual Report with recommendations. • Status and progress of the Diamond Mine Wildlife Monitoring Program Review, Environmental Impact Report, and use of Traditional Knowledge at Ekati discussed.
June 28, 2010 Yellowknife	Diamond Mine Wildlife Monitoring Program Review Technical Workshop	• General agreement on changes to wildlife monitoring program objectives. • Discussion of monitoring methods for caribou and grizzly bears to better meet objectives. • Next steps including a September workshop that would include communities.
July 9, 2010 Yellowknife	Wek'èezhìı Land and Water Board (WLWB) Interim Closure and Reclamation Plan (ICRP) Pre-Hearing Conference	• ICRP public hearing is a rare opportunity to address the WLWB directly. • A focus on the big issues with a mind to potential rulings was suggested. • Discussion of whether the new information filed by BHPB might require a separate process before or at the hearing (later proved to be unnecessary).
July 21, 2010 Yellowknife	Air Quality Monitoring Program (AQMP) Meeting	• Meeting to discuss comments made by Agency consultants on 2008 AQMP report.
July 22, 2010 Ekati Mine Site	IACT Site Visit	• Beartooth Pit, Panda Diversion Channel slump area, Fay Bay spill, cell D of the Long Lake Containment Facility and other features visited.
August 5, 2010 Behchokǫ̀	Wek'èezhìı Renewable Resources Board Public Hearing on Caribou Management	• Discussion of the revised Joint Proposal from the GNWT and Tłı̨chǫ Government for the management of the Bathurst and other caribou herds. • A more collaborative approach was developed but there were many questions about how it would be implemented and monitored.
September 15-16, 2010 Ekati Mine Site	Agency Visit to the Mine Site	• Agency Directors and staff visited the Fay Bay spill, Pigeon test pit, Beartooth Pit, Panda Diversion Channel slump, revegetation plots, and the bottom of the Fox Pit. • BHPB staff presented options for expansion of the Misery waste rock pile.

Table 1: Key Agency Activities *(continued from previous page)*

Date and Location	Purpose	Main Issues
October 5-6, 2010 Yellowknife	Diamond Mine Wildlife Monitoring Program Review Communities Workshop	• Company-by-company presentation of monitoring program methods by animal species. Little discussion of monitoring program objectives. • Presentations by some TK researchers suggesting a separate approach to monitoring rather than integration into existing programs.
November 18, 2010 Yellowknife	Air Quality Monitoring Workshop	• Air quality monitoring at Ekati reviewed, including progress to date on improving methods and analysis. • Recommendations to consider more monitoring sites around cell B and the airstrip, a plan and timeline for operation of the new incinerator, better integration of air quality monitoring with water and wildlife programs, and coordination of air monitoring with Diavik.
November 19, 2010 Yellowknife	Agency Annual General Meeting	• Agency presentation of annual report for 2009-10 and progress to date on improving Agency communications including the newsletter, website updates and the timeline project. • Air quality issues and pit reclamation raised by Society Members.
December 6, 2010 Yellowknife	IACT Meeting	• Operational update provided by BHPB. Highlights included Panda Diversion Channel widening, Misery Pit pushback, and revised Life of Mine Plan.
December 14, 2010 Yellowknife	Snow Sampling Meeting	• BHPB staff met with Agency and GNWT to discuss snow sampling methods and analysis. • Further information needed on sampling and analysis protocols around whether samples should be allowed to melt and what is analyzed.
January 21, 2011 Yellowknife	Environmental Agreement Implementation Meeting	• Agency presentation on recommendations and findings, and work plan and budgets. • BHPB presentation on operations for 2011-12.
March 15-17, 2011 Kugluktuk	Community Visit by the Agency	• Agency held an open house at the Kugluktuk public school. A presentation was made, followed by questions and answers. • Residents raised concerns over what changes have been detected to date, pit reclamation, and what happens to wildlife involved in accidents at the site. • Agency also met with Kitikmeot Inuit Association staff, the Government of Nunavut biologist, and made presentations in the elementary and high schools.
March 31, 2011 Yellowknife	IACT Meeting	• Updates from BHPB on widening of the Panda Diversion Channel, water licence renewal, managing processed kimberlite, revisions to the closure plan, Misery pushback and monitoring programs for 2011.

Table 2: Agency Incoming Correspondence 2010-11

Sender	# of Pieces
WLWB	51
INAC	24
BHPB	15
DDMI	8
DFO	8
Environmental Agreement Signatories	6
GNWT	2
Total	114

Subject	# of Pieces
Aquatics including SNP Monitoring, Draft Guidelines and Policies, 3-Year AEMP Review, Nero-Nema and Fay Bay Monitoring Programs, Fish Toxicity Testing, 10-Yr PDC Report	26
Land Use Permits and Water License Inspections and Approvals	23
Wildlife Monitoring including WEMP, Diamond Mine Wildlife Monitoring Program Review	15
Interim Closure and Reclamation Plan (ICRP) including Revegetation Plans/ Reports	15
Environmental Agreement and Water Licence Annual Report	9
Wastewater and Processed Kimberlite Management Plan (WPKMP) including Pumping Summaries	7
Waste Rock including Misery WRSA Modification Request, Seepage Reports	5
Air Quality Monitoring Program (AQMP)	4
Environmental Impact Report	3
Long Lake Containment Facility (LLCF)	2
Panda Diversion Channel Slope Enhancement Project	2
Community Capacity and Participant Funding	2
Administration	1
Total	114

Table 3: Agency Outgoing Correspondence 2010-11

Recipient	# of Pieces
BHPB	7
WLWB	4
Distribution	3
Agency Society Members	2
BHPB, GNWT and INAC	1
BHPB, GNWT, INAC and WLWB	1
GNWT	1
INAC	1
Total	20

Subject	# of Pieces
Air Quality including AQMP Review and Environmental Workshop	4
Aquatics including AEMP, Draft Guidelines, Fay Bay and PDC Monitoring Programs	3
Administration	3
Wildlife including WEMP and Diamond Mine Wildlife Monitoring Program Review	2
Agency Annual General Meeting	1
Interim Closure and Reclamation Plan (ICRP)	1
Environmental Agreement and Water Licence Annual Report	1
Misery Waste Rock Storage Area	1
Community Capacity and Participant Funding	1
Environmental Impact Report	1
Wastewater and Processed Kimberlite Management Plan (WPKMP)	1
Long Lake Containment Facility	1
Total	20

Agency meeting with Kitikmeot Inuit Association.

Agency presentation at Kugluktuk High School.

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and in March 2011 we visited Kugluktuk.

We released a discussion paper on the three-year Environmental Impact Report in January 2011 (see following page).

We continue to hear comments from our Society Members that they are satisfied the Agency is performing its role in providing oversight of monitoring activities and reviewing environmental reports produced by BHPB. The Agency heard other positive feedback and suggestions for improvement in communications from Aboriginal Society Members at our 2010 annual general meeting and during our visit to the community of Kugluktuk.

The Executive Director gave a presentation about the Agency in December 2010 to BHPB staff in Yellowknife. We hosted a Christmas Open House jointly with the environmental monitoring agencies for the other two diamond mines.

Assessing the Agency

The Agency is proud of its contribution to the ICRP. The process resulted in a vastly improved closure plan. The review process of the ICRP took almost four years and BHPB still has substantive revisions to complete as part of the WLWB decision and direction following the public hearing. We are particularly pleased that BHPB and the WLWB adopted several key recommendations from the Agency including a mine component specific approach for presentation of closure objectives and criteria, more detailed *reclamation* research plans, and pit *reclamation* that will see these areas rejoined to the surrounding ecosystems including safe passage for fish. These are significant improvements. It was important to settle these issues now as there will likely be only one more iteration of the ICRP before the final version at closure in less than ten years.

We made a significant contribution to the Diamond Mine Wildlife Monitoring Program Review, and believe that the collaborative process was useful although the results were less than expected. We had hoped for an evaluation of monitoring program objectives and the development of new hypotheses to demonstrate that there is learning from monitoring—an *adaptive management* approach. We also pushed for better caribou monitoring so we can begin to understand the causes of the zone of influence and thus apply better mitigation to reduce the footprint of the mine. The Agency will continue to offer assistance to BHPB in improving its wildlife monitoring.

With a full staff complement, we have successfully implemented several new communications measures that help us better fulfill our mandate. Improvements are ongoing, with further updates and new initiatives planned for the upcoming year. This work is in response to suggestions and recommendations made to the Agency during the external review that took place in 2009. ■

Environmental Impact Report (EIR) Discussion Paper

The *Environmental Agreement* requires BHPB to produce an EIR every three years. The purpose is to report on the longer term effects of the Ekati Mine and the results of the environmental monitoring programs, to compare the actual environmental performance of the mine against what was predicted in the 1995 Environmental Impact Statement, and to evaluate how BHPB's adaptive environmental management has performed to the date of each report. The Agency views the EIRs as a very important management tool for the Ekati Mine where periodic review and evaluation of trends, impacts, mitigation and management responses can be discussed and improved.

As described in our 2009-10 annual report, the Agency had concluded that the 2009 EIR was unsatisfactory, resulting in a Minister's Report under the *Environmental Agreement*. Most of our concerns were addressed in BHPB's subsequent EIR Close-Out Report and Technical Addendum, but we committed to prepare a discussion paper and recommended that BHPB host a pre-2012 EIR workshop. In January 2011, the Agency released a discussion paper entitled 'Building Consensus: Towards a Shared Understanding of the Ekati Environmental Impact Report'.

We hope that our discussion paper will help build a common understanding on the process and substance of future EIRs, and in particular guide the work for the 2012 EIR. To date there has been a limited response to the paper, but BHPB has indicated it will hold a collaborative workshop in August or September 2011 and we look forward to this.

Agency Recommendations from the EIR Discussion Paper

1. BHPB should consult with the INAC, GNWT, Aboriginal governments and the Agency in advance of detailed preparation and distribution of each EIR to discuss focus and preliminary findings.
2. BHPB should turn its focus of the EIR from actual versus predicted effects to the longer term effects and its *adaptive management* systems, particularly as the mine moves closer to closure and *reclamation*.
3. BHPB is encouraged to make a clear distinction between *adaptive management* and implementation of best practices. *Adaptive management* examples should be based on monitoring programs attempting to fill information gaps and hence leading to suitable management adaptations.
4. An evaluation of BHPB's *adaptive management* should move beyond presenting examples to a more systematic approach that included details and highlights of its own internal environmental audits.
5. Effects significance ratings should be supported by clear definitions and a methodology that is sound and focuses on what is important. There is a need to better document and present the limitations of ratings, areas and ranges of uncertainty, and where further research or monitoring is underway to provide greater clarity whether by BHPB or others.
6. Effects should be considered as the change from the baseline conditions that can be attributed to the Mine, with a view to trends into the future without further mitigation or management.
7. BHPB needs to submit its EIR on time and with the plain language summary. The plain language summary should reflect what is in the full EIR.
8. INAC, BHPB, GNWT and the Agency should systematically track EIR comments, responses and Minister's decisions.
9. INAC needs to have a consistent process for soliciting comments on the EIR and making decisions on its adequacy, all within the timeframes set out in the *Environmental Agreement*.

HIGHLIGHTS:

- *BHPB is conducting an alternatives assessment for management of the LLCF.*
- *Agency identified concerns with WLWB conformity check for Wastewater and Processed Kimberlite Management Plan.*
- *Changes to design of Misery Waste Rock Storage Area approved by WLWB.*

Revegetation at Fay Bay spill site (western lobe).

Processed Kimberlite and Waste Rock Management

Beartooth Pit filling with water.

Activities 2010-11

During the past year BHP Billiton (BHPB) continued to deposit *processed kimberlite* (PK) *effluent* into the Long Lake Containment Facility (LLCF). Two modifications to the operation of the LLCF were made during the 2010 field season. Dyke C was raised to increase the storage capacity of cell C, and a jetty was constructed in cell B to assist in better distribution of PK.

BHPB has indicated to the Agency it is conducting an alternatives assessment for PK management. Cell B of the LLCF is nearing its final capacity, and alternatives are being considered from operational, water quality and *reclamation* standpoints and with the objective of avoiding or delaying the use of cell D for PK deposition to maintain its purpose as an additional buffer. BHPB has also noted that in conjunction with this assessment, it will conduct further investigations of the behaviour of *extra-fine processed kimberlite* (EFPK) in cell C, evaluate results of the *nitrate* reduction experiments in cell D, and develop a site-specific water quality objective for molybdenum.

BHPB continued to monitor the area affected by the spill of PK from cell B into Fay Bay in May 2008. The annual monitoring report is in progress, and will include any future plans for monitoring using existing monitoring stations. The area remains stable with no additional erosion and natural revegetation is well underway.

BHPB conducted routine monitoring of waste rock seepage as part of the ongoing program required under the water licence. In the 2010 waste rock seepage survey, BHPB reported that freshet and fall sampling results were comparable to previous years. Additional (bi-weekly) monitoring was performed during the ice-free season at two areas of interest: one near the northeast corner of the Panda/Koala Waste Rock Storage Area (WRSA) (results within the range of previous years) and the other near the northwest side of Misery WRSA (sulphate, manganese and cadmium continued to decrease). A third area of interest was identified for additional monitoring in 2011 near the southwest of Fox Waste *Kimberlite* Storage Area (new seeps observed flowing during the 2010 surveys). Sampling at the Sable Lake reference area was discontinued as sufficient background data (10 years) have been collected. Large portions of the Fox waste rock pile continue to remain unfrozen with temperatures up to +7°C. An active layer ranging in thickness from 3 to 4 m has temperatures from +15 to -8°C. The toe berms around the edge of this waste rock pile are frozen.

BHPB submitted an updated Wastewater and *Processed Kimberlite* Management Plan (WPKMP) in early 2010. As noted

in last year's annual report, the Agency submitted comments to the Wek'èezhìı Land and Water Board (WLWB) identifying a number of deficiencies. In particular, we noted there was reduced detail and explanation of issues and actions taken compared to earlier versions of the Plan. For example, there was much less information concerning the storage of EFPK in the LLCF. Information previously supplied in the WPKMP related to the management challenges posed by this material had been deleted, and reformulated as proposed research in the Reclamation Research Plans. In addition, the review of both operational and closure critical issues provided to BHPB by its geotechnical consultants in 2004 was essentially unacknowledged in the updated WPKMP. The WLWB conditionally approved the plan in June 2010 subject to revisions, including some which addressed concerns raised by the Agency. BHPB submitted the revised plan in August 2010, and it was given final approval following an internal conformity check by WLWB staff.

In December 2010, in preparation for resumption of mining at the Misery pipe, BHPB submitted a request to the WLWB for a modification to the design of the Misery waste rock pile. This involves changes to both the footprint and height of the pile to accommodate the estimated volume of waste rock, eliminate the southern lobe of the pile that wraps around Carrie Pond, and preserve a portion of Desperation Pond as a contingency seepage water collection area (vs. the previously approved design which completely covered Desperation Pond with waste rock).

Agency Assessment

Long Lake Containment Facility

The Agency had no major concerns about the operation of the LLCF during the past year. We have noted to BHPB that the last comprehensive review of LLCF management in 2004-05 was a very interactive process, with all stakeholders involved in evaluating options. The company has responded that options are limited at this stage in mine life, so the planning process will be mostly internal although more technical and engineering information will be circulated to interested parties. The option chosen will be filed with the WLWB as a revision to the WPKMP, and the Agency will submit comments at that time.

We are encouraged to hear that additional investigations are being undertaken on EFPK behaviour as we have been concerned about the potential problems this material poses for effective closure and *reclamation* of the LLCF.

Waste Rock and Waste Rock Storage Area Seepage Survey Report

The Agency reviewed the 2010 report and has no major concerns with the results.

Wastewater and Processed Kimberlite Management Plan

In November 2011, the Agency met with WLWB staff to express concerns with the conformity check conducted prior to final approval of the WPKMP. In our review of the final document, we found a number of instances where there was a significant gap between what the WLWB requested and what BHPB provided, and for about half of the items BHPB did not provide the information requested. We followed up with a letter to the Board in January 2011, and it is our understanding that the Board will review its requirements for future management plans and provide clearer directions for any revisions that are required of a licence holder. Further updates to the WPKMP will also be submitted by BHPB following the completion of the LLCF alternatives analysis.

Misery Waste Rock Storage Area Modification Request

The Agency supported the changes to the Misery WRSA proposed by BHPB, particularly the preservation of Desperation Pond as a contingency settling pond and the reduced environmental risk to Carrie Pond through elimination of the southern lobe of waste rock. This narrow lobe would have been difficult to control during dumping of the rock and also was to be located in the Carrie Pond catchment area. However, we noted to the WLWB that details about the impending resumption of mining at Misery were lacking. There was also a need to consolidate and update the waste rock management plan from the currently approved 2001 version. In February 2011, the WLWB approved the modification request but directed BHPB to submit a fully updated plan within three months. ■

Minewater outfall into Beartooth Pit.

HIGHLIGHTS:

- *WLWB issues conditional approval of 2008 ICRP including directive to facilitate fish habitat and passage in the pit lakes.*
- *Further work required on reclamation research plans.*
- *BHPB will submit an annual progress report on its implementation of the closure plan.*

Fox portal revegetation plots.

Closure and Reclamation

Activities 2010-11

In last year's annual report, we provided details on BHP Billiton's (BHPB) legal motion for a judicial review to determine the jurisdiction of the Wek'èezhìı Land and Water Board (WLWB) over fish and fish habitat at closure. In March 2010, the Northwest Territories Supreme Court ruled that the application was premature and the WLWB proceeded to hold a public hearing on BHPB's 2008 Interim Closure and Reclamation Plan (ICRP). The Agency intervened at the hearing in September 2010 in Behchokǫ̀, maintaining our original position that BHPB ought to restore fish use in the pit lakes at mine closure and that the Board had the jurisdiction to compel the company to do this.

Revegetation area on waste rock pile.

BHPB maintained its opposition and presented three arguments to the WLWB in support of its view that the Board could not force the company to provide for fish use and habitat in the flooded pits:

1. The 1996 Fish Habitat Compensation Agreement with Department of Fisheries and Oceans took precedence over the WLWB's jurisdiction.
2. Requiring *reclamation* of fish habitat would be unfair and unreasonable.
3. There was no evidence to show that restoring fish habitat in the pit lakes would be successful.

In December 2010, the WLWB issued a conditional approval of the 2008 ICRP, pending further revisions to be submitted by BHPB (see the summary on the following page). In its Reasons for Decision, the Board detailed why it did not accept each of the company's arguments and directed BHPB to provide for fish use and fish habitat in the pit lakes *reclamation*. The Board also resolved several other issues of disagreement between the parties related to *reclamation* research plans, remediation standards, and closure objectives for specific mine components. See Table 4 for a summary of the Agency's position on various ICRP topics and the resulting WLWB decision.

BHPB has met with WLWB staff to discuss the details of the decision, and is now proceeding to revise the ICRP and follow the WLWB directions. We have been advised by BHPB that we can expect the revised version in August 2011.

Agency Assessment

The Agency is pleased with the WLWB's decision on the ICRP and feels that it addresses the majority of issues we raised throughout this very lengthy process. We now have a closure plan that, once finalized according to the WLWB's conditions, should see the site effectively reclaimed in a responsible way. Most significantly, the WLWB's directive that BHPB must plan for the re-establishment of fish habitat and passage at closure means that the Ekati Mine will not simply be left in a condition that does not adversely impact the environment. Instead the area will be restored to a level where it can become a functioning, productive part of the local ecosystem once again for plants, wildlife, fish and people.

In March 2011, BHPB approached us to discuss how the Agency and the company can work together on ensuring successful completion of the *reclamation* research plans. It was agreed that we would collaborate on this, and we will continue to make every effort to work with the company to help it to effectively implement the ICRP. ■

WLWB Directive and Reasons for Decision

The WLWB conditionally approved BHPB's 2008 ICRP in December 2010, provided that the company complete the following tasks:

Closure Objectives and Criteria

Open Pits: Include the closure objective of facilitating the establishment of a self-sustaining aquatic ecosystem in the pit lakes.

Fish Passage: Include the closure objective of making the pit lakes and cell E safe for fish passage. Fish barriers may be necessary but if installed, will be removed by BHPB following agreement by all parties that conditions are safe for fish passage.

Hydrocarbon Remediation Standards: Revise the ICRP to reflect an 'agricultural standard' for the remediation of hydrocarbon contaminated soils.

Wildlife: Set component-specific wildlife closure objectives and closure criteria as a top priority. The company is expected to demonstrate progress on this issue and report on it in the first annual Closure and Reclamation Plan Progress Report.

Reclamation Research Plans (RRP)

RRP # 2 – Water Withdrawal from Source Lakes: Update Table 1 to reflect current timelines, and incorporate fish habitat assessment report for Upper Exeter and Ursula Lakes.

RRP # 13 – Permafrost Growth in Long Lake Containment Facility (LLCF): Include collection of deep pore-water samples in the LLCF and any additional studies necessary to strengthen model predictions.

RRP # 14 – Stabilization of Extra-Fine Processed Kimberlite (EFPK) in the LLCF: Conduct further field investigations on stabilization measures, investigate other storage options, provide details on how containment of EFPK post-closure will be confirmed, and update proposed timelines to ensure all tasks are completed and results analyzed prior to a decision regarding pumping PK into cell D.

RRP # 16 – Establishment of Self-Sustaining Plant Communities in the LLCF: Determine closure objectives and criteria that can be used to indicate that plant communities in the LLCF have reached a satisfactory level of resilience to natural and manmade disturbances, with the goal of stable and self-sustaining plant communities. Research plant community characteristics which indicate stability and how they can be assessed using trend analysis. Provide sufficient details on how these tasks will be carried out and inform the closure planning process.

Other Requirements: Conduct additional research on facilitating establishment of a self-sustaining aquatic ecosystem in the pit lakes, inclusion of emergent and submergent vegetation in littoral zones of pit lakes and habitat within connector streams, and identification of appropriate wildlife closure objectives and criteria. Refine engineering studies to accommodate potential need for temporary fish barriers. Provide a plan for progressive *reclamation* of the Panda Diversion Channel.

Reclamation Security

Initiate discussions with appropriate parties immediately to develop and submit an updated estimate for the Ekati Mine *reclamation* liability.

Annual Closure and Reclamation Plan Progress Report

Submit an Annual Closure and Reclamation Plan Progress Report to be circulated for review. Each report must include an updated estimate of current mine *reclamation* liability, progressive *reclamation* completed and planned, research tasks completed and results, proposed changes to plans, and any other information that will achieve the goal of keeping parties aware of the closure planning process and ensuring that closure and *reclamation* at Ekati is on track.

Other Items

- Incorporate the list of commitments from the April 2009 response to the Board's Information Request.
- Incorporate all eight tasks from the approved Terms of Reference for the Sable, Pigeon and Beartooth Pit Lake Studies.
- Update all dates and timelines throughout the ICRP and especially within the RRPs to reflect current expectations of deadlines and completion dates.
- Incorporate any additional direction included in the comment table (Appendix 1 of the Reasons for Decision).

Next Update

The next ICRP update is to be submitted three years from the date of final approval of the current plan.

For the full Reasons for Decision, see:

http://www.mvlwb.ca/WLWB/Registry/BHP/W2009L2-0001/W2009L2-0001%20-%20ICRP%20-%20RFD%20-%20Board%20Directive%20-%20Email%20Dist%20-%20Dec%2010_10.pdf

Agency director and legal counsel at Wek'èezhìı Land and Water Board hearing on Interim Closure and Reclamation Plan.

Table 4: WLWB Public Hearing on ICRP – Agency Input and Outcome

ICRP Subject	Agency Position	WLWB Decision
Pit Lakes and Fish Habitat *	Pit lakes should be reclaimed to allow for a functioning aquatic ecosystem including fish passage and use.	BHPB must include the closure objective of facilitating the establishment of a self-sustaining aquatic ecosystem in the pit lakes, as well as an objective for safe pit passage by fish.
Reclamation Research Plans*	Research should address uncertainties in objectives, criteria and methods in a timely manner to ensure safe closure. Timing and content of these plans is important. Reclamation research plans should be revised with the assistance of the ICRP working group. Agency also suggested specific improvements to the revegetation and EFPK research plans.	The Board does not believe that additional working group meetings will give a different result than all of the previous meetings. The Board is more concerned that the research gets done in the appropriate way in an appropriate timeframe. The Board will ensure that the work is being done through a requirement for an Annual Progress Report. This will allow the Board and stakeholders to review the results of research annually. The Board also dealt with several specific examples of deficiencies in the research plans.
Wildlife Objectives	There is a need for specific wildlife closure objectives for each part of the mine.	BHPB must add a new Reclamation Research Plan to identify appropriate wildlife closure objectives and closure criteria for the Ekati site.
Soil Remediation Standard	The ICRP should be revised to reflect an agricultural remediation standard, rather than the industrial standard initially proposed by BHPB.	BHPB must revise the ICRP to reflect an 'agricultural standard' for the remediation of hydrocarbon contaminated soils, including appropriate closure criteria where necessary.
Next Revision of the ICRP	The next version of the ICRP should provide details on reconnecting the pit lakes and on contingencies.	All parties including the Board believe that the reclamation objective to release water from the pit lakes into the natural environment without further treatment is still valid and worth pursuing. The Board notes that BHPB is, appropriately, continuing to work towards this objective by doing the research needed to reduce uncertainties. If at some point in the future, research shows us that the water quality will not be as good as expected, the objective and related closure criteria may be changed and contingencies implemented.
Timing of Revisions	The ICRP should be revised within six months following the hearing based on BHPB commitments and further direction from the WLWB. The next revision of the ICRP should be provided no later than three years from approval of this version.	The Board anticipates that after final confirmation that the revised ICRP has been approved, the next iteration of the ICRP would be submitted in approximately three years time. BHPB has subsequently agreed to provide the revised ICRP to the WLWB in August 2011.

* Indicates this was one of the Agency's major concerns at the WLWB public hearing (September 2010).

- *Land and Water Boards of the Mackenzie Valley released final Water and Effluent Quality Management Policy and Guidelines for Developing a Waste Management Plan.*
- *WLWB distributed a draft Response Framework for Aquatic Effects Monitoring.*
- *BHPB is managing nitrate in the LLCF but concentrations of some metals remain high.*
- *Changes to 2010 AEMP were made as a result of the three-year review under the water licence.*
- *BHPB committed to widening the PDC to avoid further slumping and help with closure.*

Seep near Bearclaw Lake.

Aquatic Effects

Each year BHP Billiton (BHPB) carries out a number of programs and studies to determine if changes in the aquatic environment downstream from its operations are occurring as a result of mining activities. There are two separate watersheds (Koala and King-Cujo) into which regulated mine *effluent* is released, and these as well as reference sites are sampled. The Aquatic Effects Monitoring Program (AEMP) collects information on trends in water quality, sediment quality, benthic macroinvertebrate communities, *zooplankton* and *phytoplankton*, as well as fish populations and fish tissue. Four special studies were also undertaken as part of the AEMP and an additional five were undertaken as part of the Special Effects Monitoring Programs and Studies.

Activities 2010-11

Processed kimberlite, treated sewage and *pit water* were discharged into the Long Lake Containment Facility (LLCF) and comprise the main sources of potential contaminants in the downstream environment. *Effluent* was released from the LLCF in July to November, entering the receiving environment of the Koala watershed through Leslie Lake, flowing downstream through Moose Lake, and eventually entering Lac de Gras (see Figure 1).

A second source of potential contamination is *effluent* discharge from the Misery site. Minewater from the Waste Rock Dam and Desperation Pond was discharged into King Pond, mainly from July through September. *Effluent* was released from King Pond to Cujo Lake and eventually into Lac du Sauvage. Minewater continued to be pumped into Beartooth Pit.

Changes to the 2010 AEMP

Every three years BHPB's AEMP is re-evaluated. As required by its water licence, BHPB submitted a revised AEMP design in January 2010, making 33 recommendations for changes. The Wek'èezhìı Land and Water Board (WLWB) considered the recommendations made by BHPB and other parties, then directed the company to incorporate a number of changes. These included:

Changes to Field Methods

- July and September lake water quality sampling was removed - open water lake sampling conducted in August only.

Changes to Laboratory Methods

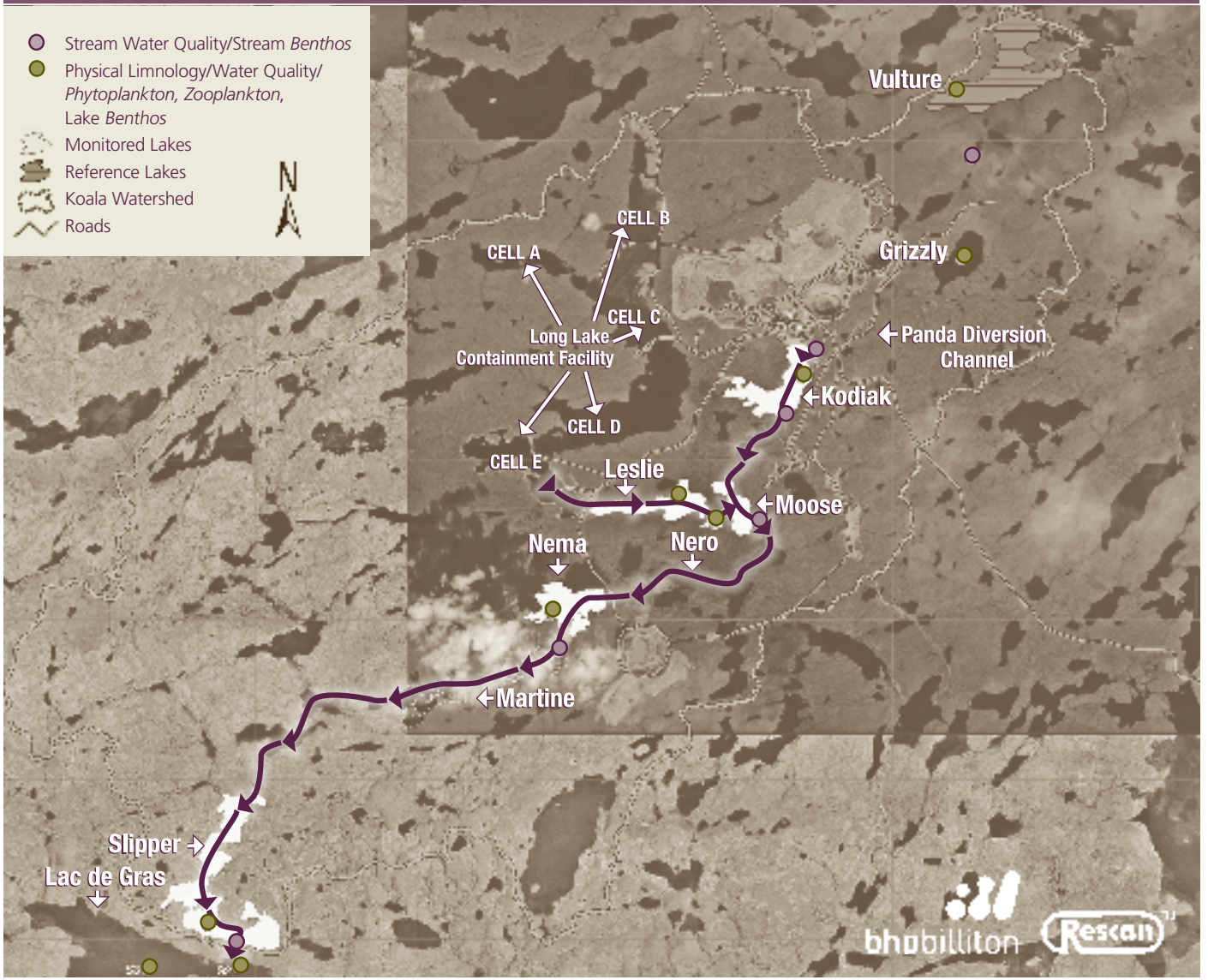
- New methods will be used for arsenic and selenium analyses.

Changes to Evaluation of Effects

- Seven new water quality variables were added as evaluated variables: total alkalinity, hardness, antimony, iron, strontium, uranium and total organic carbon (Cujo Lake only).
- Grizzly Lake was added to the lakes requiring statistical evaluation of effects on water quality.
- For biological variables, two standard deviations from the reference conditions or baseline means will be considered the threshold for indicating potential for negative environmental effects.
- Monthly stream water quality data are presented as graphs and discussed in comparison to site-specific water quality objectives, Canadian Council of Ministers of the Environment (CCME) guidelines and August lake water quality.
- April lake water quality is evaluated annually.
- Phytoplankton species particularly susceptible or tolerant to *effluent* will be identified annually, as well as changes in the proportion of edible and inedible algae.

Grizzly Lake potable water source.

Figure 1: AEMP Reference Lakes and Outflow Streams



Monitoring Results

Each year BHPB reports the results of its AEMP to the WLWB and provides the highlights in its *Environmental Agreement* and Water Licence Annual Report. Our review of the 2010 report indicates that the company is generally doing a good job of protecting the aquatic environment at the mine site, although there are still a few challenges.

This is the 13th year of monitoring for the Koala – Lac de Gras system and the 10th year for the King-Cujo system. The AEMP reference lakes and outflow streams are shown in Figure 1. The mining effects on water quality in the Koala and King-Cujo watersheds are shown as parameters elevated for each watershed (Figure 2). This table is taken from the AEMP report with additions resulting from the Agency's own review of the monitoring results.

In last year's report, one of the emerging issues was the rising concentrations of *nitrate* (a contaminant with no discharge limits specified in the water licence) in LLCF water. In 2007, *nitrate* levels in Leslie and Moose lakes rose above the Canadian Council of Ministers of the Environment (CCME) Guideline for the Protection of Aquatic

Life. In 2008, BHPB took steps to address these elevated levels by holding water within cell E until *nitrate* concentrations had declined below the interim CCME guideline of 2.9 mg/L. In 2009, the timing of *effluent* discharge was changed to begin in mid-summer rather than spring. This approach helped reduce the amount of *nitrate* released by taking advantage of summer stratification in cell E. While these mitigative measures seem to have helped, the Agency notes that *nitrate* levels in Leslie and Moose Lakes were still above 2.9 mg/L.

BHPB has experimented with removing *nitrate* by adding phosphate within cell D of the LLCF to stimulate photosynthesis. Experiments have been ongoing since 2008. In summer 2010, fertilization of cell D waters was resumed but there was no statistically significant reduction in the calculated *nitrate* load over the 2010 open-water season. *Nitrate* concentrations measured in 2010 were lower than concentrations measured in late summer 2009, suggesting that concentrations decreased between 2009 and 2010.

Panda Diversion Channel slump area.

Figure 2: Mining effects on water quality flowing through the Koala and King-Cujo Watersheds

	Parameters elevated in Koala watershed							Parameters elevated in King-Cujo watershed			
	Long Lake Containment Facility ➡ Lac de Gras							King Pond ➡ Lac du Sauvage			
Parameters monitored	Leslie	Moose	Nema	Nema-Martine	Slipper	Slipper-Lac de Gras *	Lac de Gras	Cujo	Cujo Outflow	Christine-Lac du Savage	Lac du Sauvage *
pH	●	●	●	●	●	●	●	●	●	●	
Sulphate	●	●	●	●	●	●	●	●	●	●	
Potassium	●	●	●	●	●	●	●	●	●	●	
Total Dissolved Solids	●	●	●	●	●	●	●	●	●	●	
Chloride	●	●	●	●	●	●	●	●	●		
Total Ammonia	●	●	●	●	●	●		●			
Nitrate	○	○	●	●							
Nitrite	●	●	●	●							
Total Phosphate											
Aluminum								●	●		
Antimony	●	●	●	●	●	●					
Arsenic	●							●			
Copper	●										
Molybdenum	○	○	●	●	●	●	●	●	●		
Nickel	●	●	●	●							
Selenium	○	○	○								
Strontium	●	●	●	●	●	●	●	●	●	●	
Uranium	●	●	●	●							

➡ *Flow from effluent source to ultimate receiving lake in watershed*
● *Levels elevated above baseline*
○ *Levels elevated to or above CCME guidelines for the protection of aquatic life*
* *Two sites with same results*

Drainage sump near Beartooth.

When evaluating *nitrate* values, it should be noted that BHPB has adopted Environment Canada's Ideal Performance Standard (IPS) of 4.7 mg/L as a receiving water quality objective for *nitrate*. While some sites continue to have concentrations greater than this new value, the number of sites above this level has been greatly decreased.

Molybdenum levels continued to decline or remained stable since their peak in 2008 downstream of the LLCF, but continued at or above the CCME guideline, especially under ice. Molybdenum affects trout *fry* development at high concentrations. Recently approved plans to restart open pit mining at Misery Pit are a concern in this regard since it appears that the Misery ore is the source of the elevated molybdenum concentrations.

Other changes in dissolved metal concentrations of note:

- Copper concentrations in the Panda Diversion Channel (PDC) and Kodiak Lake were declining, but they have started to rise and remain at or above the CCME guideline.
- Arsenic levels were elevated under ice in Leslie and Moose lakes.
- In August, chromium levels were elevated above CCME guidelines in Slipper Lake and in one of the reference lakes (Vulture).
- Iron levels were elevated under ice in Kodiak and Cujo lakes and above CCME guidelines in the lower PDC and King Pond.
- Selenium was elevated above CCME guidelines under ice in Leslie, Moose and Nema lakes.

Additional monitoring of dissolved oxygen (DO) levels under ice in Cujo Lake indicated that concentrations decreased through the winter to a minimum on April 5 when approximately half the water column had concentrations less than 6.5 mg/L. DO concentrations increased modestly after April 5, likely due to snow clearing March 28 resulting in improved light conditions in the water column and photosynthetic activity. The Agency anticipates that the situation will continue to be monitored and mitigated when necessary.

Specialized Studies under the AEMP

BHPB conducted four specialized studies on sampling and analytical methods as part of the 2010 AEMP, in response to concerns raised during the three year AEMP review. BHPB's findings with regard to these studies are summarized as follows:

- Comparison of mesh size for lake *benthos* samplers to determine if a smaller mesh size is required. Current sampling protocols will be retained to maintain consistency with the historical dataset.
- Comparison of sediment collection methods (coring device vs. Ekman dredge). In 2011, AEMP lake sediment samples will be collected using both methods with a view to collecting future samples using only the coring device.
- Analysis of *hydrocarbons* in sediment to investigate the source of *hydrocarbons* that could be linked to the hydrocarbon metabolites found in fish bile during the 2007 AEMP and Cell E Fish Study. Results of this work have not yet been received.
- Assess analysis techniques used in benthic diversity calculations to determine if mine activities have affected these invertebrates. Diversity within lakes was highly variable among years but within the range of two standard deviations (2 SD) of the baseline mean.

Special Effects Monitoring Program and Studies

In 2010, five studies were undertaken as part of the Special Effects Monitoring Programs and Studies:

- Panda Diversion Channel Monitoring Program;
- Nero-Nema Stream Monitoring Program;
- Fay Bay Monitoring Program;
- Predictive Model for LLCF Water Quality; and

- LLCF *Nitrate* in-situ Treatment (described in the Monitoring Results section).

Panda Diversion Channel Monitoring Program

The Panda Diversion Channel (PDC) was built in 1997. A ten year monitoring program was conducted from 1999 to 2008. Following the ten year program, BHPB reduced the program to focus on Arctic grayling spawners and their use of the PDC.

In 2010, a number of physical and biological variables were monitored, including the biological characteristics of fish that migrated in and out of the PDC. In addition, visual counts were made of Arctic grayling spawners in two natural reference streams. Seven fish species were sampled from the PDC and 1,564 Arctic grayling of all size classes were counted moving through the fish boxes.

Only one confirmed and three other "potential" fin-clipped mature grayling were counted out of 11 seven-year-olds. The result is that no conclusion about *fry* and juvenile survival in Kodiak Lake can be made.

In 2010, the Agency commissioned an expert to conduct a review of the ten year summary of PDC monitoring results. The main finding was that it was difficult to prove the long term sustainability of the PDC based on the results collected to date. The report was provided to the company and we are awaiting a response.

A recently published research paper found length, weight, and body lipid (triglycerides) and protein content were all significantly lower in PDC grayling *fry* sampled in 2003 than those in two reference streams. This may mean that the young of the year grayling are less able to survive beyond the first year and less likely to be recruited into the local grayling population. Studies on the survival or physiological fitness of these fish over winter could contribute to development of criterion of success for habitat compensation measures, through understanding what proportion of individual *fry* have the vitality to enable recruitment to the Kodiak Lake grayling population.

In light of the Agency-commissioned review and the research paper noted above, we believe BHPB should conduct further monitoring of the PDC. The focus of this monitoring should be survival of PDC grayling *fry* to sexual maturity, relative to reference grayling streams. This should prove whether or not the PDC has been effective as replacement stream habitat for fish.

Cell D nitrate removal experiment.

Nero-Nema Stream Monitoring Program

During the winter of 2002 to 2003, an open span bridge for the Fox Access Road was built over Nero-Nema Stream. To compensate for the loss of fish habitat caused by construction, eight gravel spawning beds were built upstream and downstream of the bridge. The main objective of the monitoring program was to evaluate the effectiveness and success of these new spawning beds as compensatory habitat. The current report provides data that demonstrates that the compensation habitat is functioning physically and ecologically as designed. The Agency agrees.

Fay Bay Monitoring Program

BHPB has provided a good review of the aquatic and terrestrial effects of the May 2008 *processed kimberlite* spill and its remediation. However, potential impacts on fish and fish habitat were not evaluated. Four fish species (round whitefish, lake trout, ninespine stickleback, and lake cisco) reside in Fay Bay. It is possible that lake cisco eggs and/or alevins could have been exposed to the spill that could smother them in a worst-case scenario. We raised this issue with BHPB and await a response.

Predictive Model for Long Lake Containment Facility (LLCF) Water Quality

A new predictive model was developed to assess water quality coming out of the LLCF by incorporating performance in individual cells. This model allows the company to internally review what options are available to improve water quality or

prevent impending water quality problems. The Agency has not yet seen this model or its long-range predictions.

Agency Assessment

The AEMP continues to be comprehensive in scope and has the ability to detect very small changes in the sampled parameters that can alert managers to any emerging problems with waterborne contaminants from mining activities. We commend BHPB in dealing with elevated *nitrate* levels released from the LLCF, although we still have concerns with some metals that continue to increase in concentration and are close to or above the CCME guidelines, especially molybdenum and copper.

With regard to *nitrate*, the Agency remains concerned about the adoption by BHPB of Environment Canada's updated IPS guideline for *nitrate* of 4.7 mg/L on a site-wide basis. We are particularly concerned that lake trout downstream from the LLCF may be subjected to chronic effects of *nitrate* discharges. Since this concern was originally raised, the CCME has published a draft update to the Canadian Water Quality Guideline (CWQG) for *nitrate*. Discussions regarding the appropriate limits for *nitrate* discharges from the LLCF will hopefully be concluded prior to any further discharges which might exceed the IPS and/or the CCME CWQG.

Panda Diversion Channel widening, April 2011.

Biota

In the Agency's view, *zooplankton* diversity results provided strong biological evidence of deterioration in water quality downstream of the LLCF. According to BHPB's consultant (Rescan), *zooplankton* diversity was the lowest ever recorded in Leslie and Moose lakes, with Moose showing diversity more than 2 SD below the baseline and both lakes showing a historical declining trend. Rescan attributes this to effects of the mine.

The *Cladocera* populations in Moose and Nema lakes continued to be depressed to very low numbers and as a relative proportion of total *zooplankton* community in each lake. Since total biomass has not been affected, this suggested that a contaminant (likely *chloride*) was causing more sensitive contaminant-intolerant species to die off or be outcompeted and displaced by contaminant-tolerant species.

It is not yet known whether these changes in *zooplankton* communities have had any impacts to organisms (i.e. fish) farther up the food chain.

Water and Effluent Quality Management Policy

In our 2008-09 annual report, the Agency recommended that:

> "DIAND [Department of Indian Affairs and Northern Development] and WLWB, along with other related bodies, should work together with Aboriginal governments and other interested parties to develop scientifically defensible Water Quality Standards for the Northwest Territories. As this work could contribute towards the review of *Effluent* Quality Criteria in the water licence for the Ekati Diamond Mine, it needs to be completed well before 2013".

A draft 'Water and Effluent Quality Management Policy' was prepared by a working group of the Land and Water Boards of the Mackenzie Valley and circulated for comment in April 2010. The revised Policy took effect March 31, 2011 along with the newly developed 'Guidelines for Developing a Waste Management Plan'.

The Agency commends the boards for finalizing the Policy. The process set forth in Appendix A will hopefully result in useful guidance for both proponents and intervenors in the Land and Water Boards' processes. The Agency recommends that the responsible parties move forward as quickly as possible to develop the supporting documentation.

Response Framework for Aquatic Effects Monitoring

The WLWB also prepared draft guidelines for a 'Response Framework for Aquatic Effects Monitoring'. The Agency supports the concepts and processes detailed in the draft document and is anxious to see the work completed. The Agency outlined concerns with some of the proposed terminology and suggested five areas which required some elaboration.

The Agency urges the WLWB to complete this valuable document as soon as possible so that the work can be applied to the Ekati Mine in light of the downstream aquatic changes noted in the company's AEMP. ■

- *Agency hosted Air Quality Workshop.*
- *Improvements made to AQMP but still outstanding issues with snow sampling methodology and analysis.*
- *BHPB purchased a new incinerator in 2006 yet it is still not operational.*

Inside Continuous Air Quality Monitoring Building.

Air Quality

Activities 2010-11

Air quality monitoring is required under the *Environmental Agreement* (Article VII). BHP Billiton (BHPB)'s Air Quality Monitoring Program (AQMP) was initiated in 1998 and is reported on every three years, with the last report in 2008. BHPB currently conducts the following monitoring activities to keep track of changing air quality:

- Air emissions and greenhouse gas calculations;
- Ambient air quality monitoring;
  - Continuous air monitoring;
  - High volume air sampling;
- Dustfall monitoring (initiated in 2006);
- Snow chemistry monitoring; and
- Lichen tissue monitoring.

Emissions calculations and ambient air quality monitoring are conducted on an annual basis while snow and lichen sampling are conducted every three years with the next sampling in 2011.

In 2010 the Agency commissioned a qualified consulting firm (SENES) to review the 2008 AQMP report which found that there were some outstanding issues and areas in the AQMP that need improvement. It was noted that throughout the report there was a general lack of explanation of the sampling and monitoring methodology used for data collection. There were some problems with sample analysis and how the results were presented and interpreted. Also, BHPB needs to include a brief description of the quality assurance/quality control measures for each of the monitoring programs in its report. Over the past year there have been productive meetings amongst the regulators, BHPB and the Agency to resolve most of these issues and improve the AQMP. Three technical sessions were held in July, August and December 2010. BHPB has also committed to re-writing the 2008 report. However, the Agency has not received the report as of May 2011.

Dustfall samplers near airstrip.

Inside Continuous Air Quality Monitoring Building.

Dustfall Monitoring: BHPB's dustfall sampling program will continue as per the 2006-2008 AQMP. The company will be reviewing the dustfall sample collection methodology before the 2011 field season to address concerns of contamination of samples by rotor blast as the sites are visited by helicopter.

High Volume (HiVol) Air Sampling: As per recommendations by the Agency and others, BHPB is attempting winter HiVol sampling for 2010-11. This will ensure annual air quality data are accurate and can be compared to the ambient air quality standards. BHPB has also changed sample preparation methodology, including a "clean" regimen for the laboratory and having trained staff prepare samples, which has increased the quality of results. The company is also investigating alternative technologies to replace the HiVols for total suspended particulates measurements.

Continuous Air Monitoring (CAM): BHPB is investigating technologies for real time monitoring of CAM data, and daily review by an air quality consultant. It will also review the maintenance contract to correct gaps in data due to maintenance issues. Additionally the company is looking into integrating a weather monitoring station with the CAM.

Snow and Lichen Sampling: During the last review of the 2008 AQMP the Agency examined the snow sampling program. We were concerned with the sampling methodology, in particular that the samples were allowed to melt at site which may cause loss of *nitrates* or sulphates or reactions of contaminants. The Agency posed a number of questions to BHPB including:

- Should the samples be kept frozen until just prior to analysis? Specifically, does the current procedure represent best practice for sample preparations and preservation?
- Are the sample preparation and storage procedures acceptable? What holding times are specified?
- Are the field sampling procedures appropriate? In particular, what cleaning procedures are used for the field equipment and is the use of tie wraps acceptable?
- Is there a preference to use metal or plastic corers? How will using different corers influence the parameters of interest?

BHPB has indicated that it has reviewed the sampling procedures which are being updated including:

- Addition of initial cleaning of the snow corer in the laboratory.
- Addition of a step to take a blank snow core that will be discarded in order to minimize possible sources of cross contamination prior to sampling at each site.
- Assurance that every effort is made during sample preparation and storage to meet holding times for all samples. Sampling is scheduled to allow for the quickest transit to the laboratory and preservatives are added as required.

In 2011, BHPB also conducted a study to investigate the possible effects of melting snow samples prior to laboratory analysis. BHPB has told us that the preliminary results did not indicate that the samples had degraded when sent to the lab in a liquid state. The investigation will be continued in 2011.

Air Quality Workshop: In November 2010 the Agency hosted an Air Quality Environmental Workshop to review the improvements in BHPB's AQMP and provide an opportunity for participants to provide further feedback on the program. BHPB, the Agency and Environment Canada gave presentations. BHPB gave an overview of the results of the 2008 AQMP including future directions and improvements to the program. The Agency presented an overview of their review of the 2008 AQMP report, including the SENES report commissioned by the Agency, highlighting the outstanding issues with the program. Environment Canada (EC) gave an overview of incineration effects

and best practice guidelines. EC also presented the results of sediment sampling done at the Ekati Mine in 2008.

In April 2008 EC, in co-operation with BHPB, undertook a study to determine if there was a link between air quality emissions from incineration and environmental concentrations of contaminants (*dioxins and furans*) in lakebed sediments. Sediment samples were taken from Kodiak Lake as well as Counts Lake, a reference site located 15 km from the mine. Results showed that the total *dioxins and furans* were several times higher in Kodiak Lake than in Counts Lake and samples in Kodiak Lake exceeded Canadian Council of Ministers of the Environment (CCME) Interim Sediment Quality Guidelines. These results clearly demonstrate a link between air emissions (from incineration) and deposition of *dioxins and furans* in water and sediment.

Agency Assessment

The Agency has been very pleased by BHPB's increased focus and commitment to improving the air quality monitoring program over the past few years. We commend BHPB for constructively engaging technical experts retained by the Agency as well as the staff of EC and the Government of the Northwest Territories.

The Agency is extremely concerned that BHPB has not yet installed the new incinerator it purchased in 2006. Ekati has been in production since 1998 and has used a single chamber incinerator on the shore of Kodiak Lake. The 2008 EC sediment sampling study results clearly demonstrate that air emissions and incineration are not solely an air quality issue. Incineration byproducts (namely *dioxins and furans*, proven cancer causing contaminants) are ending up in nearby waters and in the sediments. These contaminants can be found in the water column, vegetation and soil, which in turn can be taken up by benthic organisms, fish and other animals.

EC has recommended that proper incineration with a dual chamber system can be an effective and environmentally sound method of waste disposal. BHPB's new and more efficient incinerator has the potential to significantly reduce air emissions including *dioxins and furans*, yet it is still not operational. BHPB also needs to have an incineration management plan including a waste recycling and segregation program, waste audit (quantities and types of waste to be incinerated), operational and maintenance records, operator training, emissions measurements, incinerator ash disposal, and an annual report that documents these matters.

Recommendation 1:

The Agency recommends that, before the end of 2011, BHPB make its new site incinerator operational.

At the Air Quality Workshop the Agency heard from Society Members that there is a strong concern about contaminants from incineration showing up on the land and in the water. Society Members stressed the urgency of getting the incinerator up and running and the Agency agrees that BHPB needs to make this a priority.

Air quality remains a regulatory gap in the North. Water quality and general operations of mining developments are regulated under land and water licences. Adding waste incineration measures, including compliance with the Canada-Wide Standards for *dioxins and furans*, to a water licence may be one tool to help protect the surrounding environment from these contaminants.

Grizzly Lake air monitoring station.

The Agency would like to see the AQMP improved further. In many of our past annual reports the Agency has highlighted the importance of understanding the linkages between different monitoring programs. BHPB should compare and integrate results amongst programs within the AQMP such as the snow sampling (winter deposition), dustfall sampling (summer deposition) and vegetation monitoring (lichen sampling). The company should also investigate linkages between the AQMP and other monitoring programs for aquatics and wildlife. For example:

a) The linkages among ambient air quality, dust deposition on lichens and other vegetation, and potential effects on wildlife (particularly caribou). Is there a relationship between dust deposition and the zone of influence for caribou avoidance around the mine site?
b) The linkages among air quality, contaminants in water bodies, and potential impacts to fish and aquatic life. In particular, since *dioxins and furans* are present in lake sediments as a result of incineration, the next logical step would be sampling fish species such as sculpins or benthic invertebrates for the presence of these compounds.

To improve the AQMP, the Agency and other participants at the Air Quality workshop suggest that BHPB should install additional dustfall sampling sites on the west side of cell B of the Long Lake Containment Facility (LLCF) prior to the revegetation *reclamation* of the LLCF. Once cell B is full there will be greater potential for dust as the area starts to dry out. These sites would assist in evaluating the effectiveness and success of revegetation and rock covers in preventing additional dust.

Based on the Kodiak Lake sediments studies, the Agency suggests that BHPB conduct snow core sampling and set up dustfall monitoring sites on Kodiak Lake to evaluate the potential effects on water quality from airstrip dust. Dustfall samples should also be analysed for *nitrates*, sulphates, and total metals as they have the potential to be harmful to the terrestrial and aquatic environments. The results might also indicate the effectiveness of dust mitigation at the airstrip.

The Agency understands that Diavik has been given direction through a Minister's Report to improve its AQMP. This presents a good opportunity for BHPB to coordinate methods and analysis with Diavik to better examine the overall picture in the region, save resources and ensure compatibility of methods and results, as the influences of dust and dust deposition extend beyond individual mineral claims boundaries. We also continue to recommend that BHPB needs to involve Aboriginal Peoples with Traditional Knowledge expertise as well as those people with scientific expertise in designing its AQMP and interpreting the results. ■

Continuous Air Quality Monitoring Building at new site.

- *Technical and Traditional Knowledge workshops held as part of the Diamond Mine Wildlife Monitoring Program Review.*
- *Progress on an effective grizzly bear monitoring program is frustratingly slow.*
- *BHPB and GNWT-ENR should agree to a three year formal review of wildlife monitoring and management.*

Wolf at mine site.

Wildlife

Activities 2010-11

BHP Billiton (BHPB)'s Wildlife Effects Monitoring Program (WEMP) documents wildlife impacts resulting from mining activities, and assesses the effectiveness of wildlife mitigation and management efforts. The WEMP at Ekati is in its 14th year, and covers the period October 1, 2009 to September 30, 2010. As in previous years, the 2010 WEMP focused on wildlife habitat and wildlife species of greatest interest: caribou, grizzly bear, wolverine, wolf, fox and falcons. Monitoring techniques included compilation of incident reports and visual observations, ground-based surveys, behaviour observations, and testing of new monitoring techniques.

Ekati Mine Footprint

The mine footprint increased by only 5 ha during 2010. The total footprint of the mine site now covers 2,998 ha (30 km^2).

Wildlife Incidents

BHPB continues good environmental efforts to improve its waste management practices and reduce attractants at landfills, to reduce wildlife incidents, and to exclude wildlife from areas of danger (e.g. airstrip, high traffic areas). Adherence by employees to proper waste disposal practices is an ongoing challenge for the company. Some observations:

- Six vehicle-related animal mortalities (two Arctic hares, one Arctic ground squirrel, one red fox, and two ptarmigan) were reported at Ekati in 2010, none of which were Valued Ecosystem Component species.
- Eighteen non-vehicle related wildlife mortalities were observed on site, involving seven caribou (primarily predation), three fox, and eight birds.
- Incidental observations of grizzly bears (46), wolves (25), wolverines (18) and foxes (174) were documented during 2010, with deterrents used for 18 bear, one wolverine and 49 fox incidents.
- Six muskoxen were observed near Fay Bay in June 2010.

One caribou mortality occurred in 2010 as a result of entanglement with airport fencing (in addition to four caribou mortalities from 2009). As a result, the company replaced the multi-strand electric fence in 2010 with a bright orange plastic barrier fence that should largely eliminate entanglement.

Caribou Monitoring

In the past, BHPB has documented caribou abundance, distribution, incidental observations, and behaviour relative to the mine using aerial and ground-based surveys. Based on recommendations from technical reviews (see Diamond Mine Wildlife Monitoring Program Review), no aerial surveys were conducted in 2010. In 2010, 11,571 caribou were incidentally observed within the Ekati study

New fencing at airstrip.

Wek'èezhìi Renewable Resources Board caribou hearing.

area, with peak numbers during October/early November (one group of more than 3,000 animals) and to a lesser extent during July. On two occasions traffic on the Misery Road was halted to allow large groups of animals to pass. Snow track surveys and road monitoring continue to suggest that higher snow banks decrease the chance that caribou will cross a road.

During 2010, nine behavioural observations were collected. No analyses were conducted, but a comprehensive analysis conducted by Diavik of the combined Ekati-Diavik behaviour data from 1998 to 2010 suggested a significant reduction in the proportion of time spent feeding or resting by nursery groups of caribou less than 5 km from mine footprints, similar to results from previous analyses. No difference in these activities in relation to distance from mine footprints was observed for non-nursery groups.

Caribou continue to be of paramount concern for northerners. The summer 2009 census of the Bathurst herd estimated approximately 32,000 animals, a 90% decline over the past two decades and a 75% decline since 2006. A number of causes have been suggested including natural cycles, climate change, habitat change, predation, harvest levels, and disturbance from mineral exploration and developments. Community members have singled out the diamond mines for impacting caribou distribution, and causing injuries as a result of road development. A 14 to 20 km zone of influence around mining infrastructure has been determined from a number of studies within which caribou densities are roughly 75% lower.

Grizzly Bear Monitoring

Grizzly bears are a top carnivore and Valued Ecosystem Component species that occur at low densities within the barrens. There was no formal monitoring program to assess the potential mine-related effects on barren-ground grizzly bear presence and movements within the Ekati study area during 2010. Acknowledging that the former grizzly bear sign survey was unable to determine level of impact, the company stated that monitoring will be conducted with a DNA hair snagging study. A pilot study that tested hair snagging structures, lure and logistics was conducted in September 2010. Four sites were visited by grizzly bears during three sessions with eight snagging structures per session. Further pilot studies are proposed for 2011, with full scale studies for grizzly bear monitoring anticipated to resume in summer 2012.

Wolf and Fox Monitoring

Annual surveys of den sites are the main monitoring program used to assess the potential mine-related effects on wolf

movements and presence within the Ekati study area. Of 19 historic dens surveyed in collaboration with Government of the Northwest Territories – Environment and Natural Resources (ENR) in 2010, two were occupied in late May/early June, but no pups were observed in August. Only one den has been successful since 2007, likely reflective of lower Bathurst caribou numbers. Only red foxes were observed from the nearly 200 fox sightings in 2010. During the mid-1990s, Arctic foxes were more commonly reported than red foxes.

Wolverine Monitoring

The wolverine DNA study was reinstated in April 2010, with concurrent studies conducted at Diavik and Daring Lake. In 2010, 13 males and 11 females were identified. Altogether over the 2005 and 2006 and 2010 studies, 51 individuals (28 males and 23 females) have been identified in the Ekati study area. DNA hair snagging was also conducted in April 2011, with analysis of the results to follow.

Bird Monitoring

Tundra breeding bird monitoring is no longer conducted at Ekati, although the North American Breeding Bird Survey was conducted for the eighth year. Raptors continue to successfully nest on most pit walls at Ekati. Regional raptor surveys, conducted in conjunction with ENR and Diavik, found continued high use by peregrine falcons (14 sites occupied; chicks at five sites), with only one site occupied by gyrfalcons (successful).

Diamond Mine Wildlife Monitoring Program Review

During 2010, the Agency participated in technical (June) and community and Traditional Knowledge (October) workshops, the continuation of a two year process focused on revision of the wildlife monitoring programs for the three operating NWT diamond mines. The June meeting provided specific recommendations to incorporate into the objectives, design, and methods for the current monitoring programs. The October workshop provided an opportunity for community representatives and Traditional Knowledge holders to have input on proposed changes before the mines began preparing their 2011 wildlife monitoring permit applications. BHPB responded to the recommendations from these workshop in March 2011, after it had filed for its annual wildlife monitoring program research permit.

Proposed changes to the 2011 Ekati WEMP and for the future were to:

- Focus on behavioural studies on caribou (shared study with Diavik) and test remote techniques for monitoring;
- BHPB appears reluctant to commit to reinstate aerial caribou surveys in 2012, as recommended in the technical workshop;
- Continue to conduct pilot studies examining use of barbed wire-wrapped structures to collect hair from grizzly bears for DNA analysis. Full scale grizzly bear monitoring is anticipated to resume in summer 2012, but is contingent on agreement amongst the mines and ENR regarding study design, and
- Conduct the wolverine DNA study in spring 2011.

NWT *Wildlife Act* Presentation

In early 2011, ENR released a draft of the new *Wildlife Act*. At our November 2010 Board meeting, ENR made a presentation on the new legislation. Most of the changes are designed to make the legislation consistent with land claims agreements and modern wildlife management best practices.

Arctic fox, caribou and grizzly bear.

Recommendation 2:

The Agency recommends that BHPB implement in 2012 a monitoring program with the objective to determine the influence of mine related activities on the relative abundance and distribution of grizzly bears.

New fencing at airstrip.

Barren-Ground Caribou Management Strategy

In February 2011 ENR released a draft of 'A Barren-Ground Caribou Management Strategy for the Northwest Territories 2011-2015' for public input. One of the 12 strategies provided was to:

> "Assess cumulative impacts of land use activities and natural factors on caribou habitat and develop best management practices to mitigate and minimize these impacts in the NWT".

We encourage ENR to become more active and engaged in these activities, especially as they relate to *cumulative effects* assessment. BHPB should work with ENR in development of best management practices.

Agency Assessment

Review of the 2010 WEMP Report

The WEMP report was generally well written, and covered existing programs conducted at the Ekati Mine. The updated presentations of caribou seasonal movements and ranges were a welcome improvement. We suggest that the discussion portion of each section should have provided more details on long-term trends and the importance of results, rather than simple reiteration of results. The Agency would like to see the next WEMP include more information on the big picture of what is happening to wildlife at Ekati and a more thorough assessment of the efficacy of mitigation measures.

Diamond Mine Wildlife Monitoring Program Review

The Agency believes in the principle that a coordinated and collaborative process to the review of wildlife monitoring at Ekati and the other diamond mines is sound. However, we were disappointed with the slow progress of the Review, and question whether the benefits promised by the Review have been attained. ENR should have taken a stronger leadership role in the review process. Major programs have been removed from the BHPB WEMP over the past three years (e.g., aerial surveys for caribou distribution and abundance, grizzly bear sign surveys, tundra breeding bird and regional raptor monitoring). New studies to address caribou and grizzly bear monitoring programs, needed programs because of legitimate concerns, have been extremely slow to evolve. For example, no attempt at meaningful monitoring of

potential effects on grizzly bears has occurred since 2008. In 2009, no formal grizzly bear monitoring program was conducted in order to give BHPB time to update its program. Pilot studies on hair snagging/DNA analyses were conducted in 2010 to test hair snagging methods, but were not instituted until September, late in the season for effective evaluation. Still more pilot testing is being conducted in 2011. Because the methods being tested are already proven, it is time to move on and implement a full program that will meet the stated objective to determine if mine related activities influence the relative abundance and distribution of grizzly bears over time.

We believe that BHPB should make greater efforts to determine the mechanism behind changes in caribou distribution around the Ekati Mine. We also urge BHPB to give greater consideration to their responsibility to understand and minimize impacts on the caribou herd at large. We believe that meaningful examination of the effects of the mine on caribou has been slow to progress, and that the Review has not resulted in significant progress. The Agency supports testing of remote camera surveys and video surveillance using helicopters flying at higher altitude; however, we do caution that these are unverified methods.

BHPB states that it is in agreement with the main objective for the caribou program (to determine whether the zone of influence changes in relation to mine activity). However, the company appears to be hinting that re-initiation of weekly aerial surveys in 2012, or at another fixed date, or at a significant change in mining activity, is unlikely. Stated reasons are 1) potential disturbance to caribou, 2) ensuring that data obtained align with monitoring objectives, and 3) difficulties with planning and budgeting of monitoring programs, and agreement on what constitutes a significant shift in mining activity. We believe:

1. BHPB's proposal to use hi-resolution camera footage from helicopters flown at higher altitude may provide useful data, as might video from remote aircraft, but the technologies and analyses are untested; higher quality data would not necessarily be guaranteed.
2. Thus far, most would agree that the aerial surveys have provided the best, most conclusive data to address monitoring program objectives for caribou, especially in relation to establishing a zone of influence.
3. If uncertainty in planning of aerial surveys causes budgeting problems, a simple solution is to set a firm re-start date. Bathurst caribou numbers may be bottoming out, and we are entering a phase of possibly increasing caribou numbers. There will also be a shift to greater use of the Misery Road by BHPB, which will likely increase effects on caribou. We suggest these reasons would justify re-initiation of aerial surveys in 2012.

Recommendation 3:

The Agency recommends that BHPB and GNWT-ENR agree to a regular (we suggest every three years) formal review of wildlife monitoring and management at the Ekati Mine.

Dust has been implicated by both western science and the communities as a possible factor affecting caribou distribution around the mines. The Agency is not aware of any further action by BHPB to revise the WEMP objectives to identify mechanisms (possibly dust deposition) that may be influencing the distribution of caribou relative to the mine footprint. Therefore, we suggest that BHPB, in collaboration with ENR and other mines if required, design and carry out a study to test this hypothesis.

To enhance the WEMP review process, we suggest that BHPB and GNWT-ENR agree to a regular (we suggest every three years) formal review of wildlife monitoring and management, just as there is of the Aquatic Effects Monitoring Program (AEMP) pursuant to the water licence. This approach would be consistent with s. 6.3 (b) of the *Environmental Agreement* where the company is required to develop and update its Operating Environmental Management Plan, including wildlife management plans.

Our latest copy of the wildlife management plan is from 2000, and an update is greatly required. Note that the Agency has used the terms "monitoring and management" as it is important to not just monitor wildlife, but to apply mitigation and then measure its success.

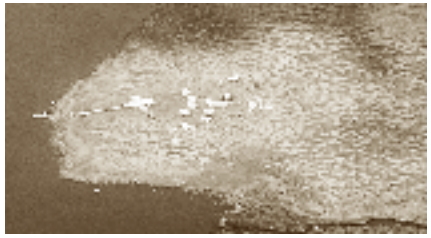
NWT *Wildlife Act*

The Agency expressed support for several aspects of the proposed *Act*:

- We are pleased to see that there is a mandatory requirement that the knowledge and expertise of departmental officials is used in review of regulatory applications, including future work at the Ekati Mine.
- The authority to regulate wildlife monitoring and management as found in the *Act* would, in our view, have facilitated a more effective wildlife monitoring program, one that would be approved and enforceable by ENR, just as the AEMP is approved and enforceable today.

The new *Act* and its regulations should, in the view of the Agency, be set up to capture existing developments, such as Ekati, to improve the regulation of wildlife monitoring and management. ■

HIGHLIGHTS:



- *Report on cumulative effects in the Bathurst herd summer range not yet released.*
- *WRRB approved revised joint management proposal for Bathurst caribou herd.*
- *CIMP program hired new staff and funded community-based projects.*

Exploration camp on Lac de Gras.

Regional Monitoring and Cumulative Effects

Activities 2010-11

In this section, we review new developments with regard to regional monitoring and *cumulative effects*.

The work by Government of the Northwest Territories (GNWT), Department of Environment and Natural Resources (ENR) on a pilot project in the Bathurst caribou herd summer range that was to be released in spring 2009, has yet to be completed. The Agency and others have received assurances in writing that there is funding in the departmental budget for 2011-12 to conclude the work. This project should provide useful information on how best to revise wildlife monitoring programs related to caribou. The project could contribute to a better understanding of the drivers for the existing zone of influence and could lead to appropriate mitigation where possible.

The Wek'èezhìı Renewable Resources Board (WRRB) concluded its review of caribou management. It asked for a revised joint proposal on caribou management actions for the Bathurst herd from the Tłı̨chǫ and Northwest Territories governments. This was provided to the Board in May 2010 and the final arguments on that plan were heard in August 2010. The proposal contains the following:

- No commercial meat, outfitting or resident hunter harvests.
- Bull harvest target by Aboriginal hunters of 300 +/- 10% with 20% as cows, allocation to be worked out amongst the communities.
- Double the wolf harvest through incentives and other assistance.
- An *adaptive management* cycle using a variety of monitoring measures including caribou density and breeding cow counts on calving grounds, cow/calf ratios in late winter, full sex ratios composition surveys, cow productivity surveys, harvest surveys and additional Traditional Knowledge (TK) work.
- A technical review group of Tłı̨chǫ and GNWT representatives to review the monitoring results.
- A caribou committee to be established in each Tłı̨chǫ community to undertake TK research, share information and conduct further planning.

On October 8, 2010 the WRRB released its decision, largely accepting the joint proposal as submitted. The WRRB concluded that a conservation concern exists for the Bathurst caribou herd and management actions are vital for herd recovery. The WRRB recommended a harvest target (as outlined above) until 2012-13. The WRRB made additional caribou management and monitoring recommendations to ENR and the Tłı̨chǫ Government, including the implementation of detailed scientific and TK monitoring actions and programs, a suggested approach to information flow for an adaptive co-management framework, and development and implementation of a Bathurst caribou management plan.

Winter road portages.

The WRRB also recommended that Indian and Northern Affairs Canada (INAC) and ENR collaboratively develop best practices for mitigating effects on caribou during calving and post-calving. These would include consideration of mobile caribou protection measures and monitoring landscape changes, including fires and industrial exploration and development, to assess potential impacts to caribou habitat. Despite the WRRB providing its recommendations to INAC in October 2010 and a follow-up letter in January 2011, there is still no response. We look forward to detailed proposals to carry out this work, especially as they may relate to the Ekati Mine and its environmental effects on caribou.

There has been some progress on the Cumulative Impact Monitoring Program (CIMP) under the *Mackenzie Valley Resource Management Act*. The new federal funding announced in 2010 allowed for three new staff and a number of community-based monitoring projects. A web-based information portal for environmental data in the NWT will be launched later in 2011. This new funding should assist with better monitoring and management of *cumulative effects* in the Slave Geological Province and on the Bathurst caribou herd range. ■

- *BHPB created a new staff position, Environment Advisor – Traditional Knowledge.*
- *Community and TK workshop, part of the Diamond Mine Wildlife Monitoring Program Review was not as successful as hoped.*

Tłı̨chǫ Government Office in Behchokǫ̀.

Traditional Knowledge

Activities 2010-11

In its 2010 Environmental Agreement and Water Licence Annual Report, BHP Billiton (BHPB) reported the following Traditional Knowledge (TK) projects and community cultural initiatives were undertaken in 2010:

- Technical workshop, site visit, and the community and TK workshop as part of the Diamond Mine Wildlife Monitoring Program Review;
- Review of proposal from Łutsel K'e Dene First Nation for TK Archive Project (under discussion at year-end);
- Attendance by BHPB environment staff at 13th North American Caribou Workshop (October 2010);
- Formal completion of the Naonayaotit Traditional Knowledge Project (NTKP) with Kitikmeot Inuit Association (KIA), initiated in 1996, and updating of GIS software to a more current version;
- Frequent community visits;
- Two cultural workshops at the Ekati Mine, including production of documentary films: Dene Drum Making with the Tłı̨chǫ and Seal Skin Mitt Making with Inuit of Kugluktuk;
- Funding for community development programs such as Breakfast for Learning and Jobmatics Career Focusing for Youth; and
- Funding support for various community events including a cultural program in N'dilo, education programs in Dettah, the Tłı̨chǫ Annual Gathering, the Łutsel K'e Annual Spiritual Gathering, and the Kugluktuk Annual Fishing Derby.

Environment Advisor – Traditional Knowledge

BHPB also reported the creation of a new staff position, Environment Advisor - TK. Responsibilities of this position include:

- Overseeing the Diamond Mine TK strategy;
- Consulting with communities, TK stakeholders, and local community governments to plan and implement community-based TK projects; and
- Help plan site-based projects advancing the use of TK in environmental monitoring programs and in the culture at the Ekati Mine.

The Agency has met with the new BHPB TK advisor, who is working with Aboriginal communities to help them develop and implement their own TK projects. As well,

Kugluktuk open house.

Tłı̨chǫ Elders.

October 2011 wildlife workshop.

the TK advisor is coordinating site visits to encourage community involvement in various monitoring programs including wildlife and water sampling. Additional goals include more interactions between the communities and the company, and improved company follow-up after site visits. BHPB is also discussing TK work with the other diamond mines, including potential co-funding of community projects.

Community and TK Workshop

Agency directors and staff participated in the community and TK workshop (October 2010), held as part of the Diamond Mine Wildlife Monitoring Program Review.

The final report prepared by the facilitators stated there were two main objectives for the workshop:

- To discuss the use of TK in monitoring wildlife and determine how it can be incorporated into the wildlife monitoring programs currently used.
- To get ideas on how the mines can conduct and improve their wildlife monitoring programs using input from TK holders to incorporate community perspectives.

The report concludes that "the overall purpose of determining how to incorporate TK monitoring into effects monitoring for the mines was not achieved". The Agency agrees.

Agency Assessment

In a letter to BHPB in early 2011, the Agency expressed its frustration with the lengthy process and lack of meaningful results for the Diamond Mine Wildlife Monitoring Program Review. In particular, the Agency was disappointed that the community and TK workshop did not achieve its objectives.

The Agency continues to be concerned about the lack of documentation of BHPB's historical use of TK in its environmental management at the mine, and we are disappointed that BHPB did not act on the recommendation we made in this regard in our 2008-09 annual report and repeated again in the 2009-10 annual report.

However, the Agency is pleased that BHPB has hired a staff member dedicated to TK issues. BHPB has stated that in 2011, the TK advisor will

> "work directly with community representatives and organizations to continue with past TK projects, to identify new community and mine based TK projects, and to review and continue the dialogue on how Ekati, in concert with other partners, can support community based TK projects and implement site based TK projects".

We expect that this position will advance the use of TK in environmental monitoring and management at Ekati. We look forward to working with the new initiatives and reviewing the results, and we continue to offer our assistance in this area. ■

- *INAC continues to conduct thorough inspections but could have been stronger intervenors at the ICRP hearing.*
- *DFO participated effectively in the ICRP hearing and provided helpful technical information.*
- *GNWT provided good advice on air quality but a stronger leadership role should have been taken during the review of wildlife monitoring programs.*
- *EC provided good advice on air quality but technical input could be more extensive.*
- *WLWB performed well throughout the ICRP process, but more work is needed on the development of guidelines and expectations for management plans.*

Inter-Agency Coordinating Team site visit July 2010.

Assessment of the Regulators

The Regulators and Our Mandate

As the public watchdog for environmental management at Ekati, we monitor not only the performance of BHP Billiton (BHPB) but also the federal and territorial government agencies that regulate the mine.

Agency's Overall Assessment

As in previous years, the regulators remain effective in ensuring that BHPB operates an environmentally sound mine. Over the course of 2010-11, we identified some instances where we felt regulators performed well and some instances where involvement could have been improved. We were pleased to observe the willingness among all regulators to collaborate and share resources.

Indian and Northern Affairs Canada (INAC)

The Agency continues to be impressed with the thorough and effective inspections carried out by INAC. The inspector shows initiative and consistently produces high quality reports. The Agency particularly appreciates the effort to ensure that the Panda underground was closed in accordance with regulatory requirements and best practices.

INAC was a key participant in the Wek'èezhìı Land and Water Board's (WLWB's) public hearing on BHPB's Interim Closure and Reclamation Plan (ICRP) for the Ekati Mine. The Agency believes its performance could have been more effective if senior and experienced staff with a background on the Ekati Mine had been present.

Department of Fisheries and Oceans (DFO)

DFO was also a key participant in the WLWB public hearing on the ICRP. Staff gave a strong performance, particularly during questioning by BHPB legal counsel. The Agency appreciates DFO's willingness to work with BHPB on pit *reclamation*.

On other matters related to the Ekati Mine, DFO staff continue to be helpful to the Agency and others. We look forward to the results of toxicity testing on northern fish species, which will yield some helpful information in setting more appropriate water quality objectives and contaminant discharge limits.

Government of the Northwest Territories, Department of Environment and Natural Resources (GNWT-ENR)

GNWT has provided helpful advice on air quality monitoring, particularly during BHPB's review of snow sampling methodologies. The proposed new *Wildlife Act* appears to be a major improvement over the existing *Act*, for the reasons indicated in the Wildlife section of this report.

The Agency believes GNWT should be more involved in a technical capacity with reviewing BHPB submissions. We were disappointed in GNWT's lack of participation in the ICRP proceedings, and feel that a stronger leadership role should have been taken throughout the Diamond Mine Wildlife Monitoring Program Review.

Environment Canada (EC)

EC continues to provide sound advice to BHPB and the Agency on air quality monitoring, and we appreciated its participation in our November 2010 air quality workshop. EC's study on the links between waste incineration and lake sediment quality (described in last year's annual report) was published in the *Journal of Integrated Environmental Assessment and Management*. EC technical input on other matters (e.g. ICRP, Misery waste rock storage area modification request, and EIR) is not as extensive as in the past.

Wek'èezhìı Land and Water Board (WLWB)

The Agency continues to have a good working relationship with WLWB staff. We are tremendously encouraged by the Board's decision on the ICRP, and were impressed with their work throughout the process.

We are pleased that the development of guidelines appears to be getting back on track but time is of the essence. The Water and *Effluent* Quality Management Policy was finalized (effective March 31, 2011), and the Agency encourages further development of supporting documentation as laid out in Appendix A of the Policy. The Agency is also anxious to see completion of the draft Response Framework for Aquatic Effects Monitoring. This work will be especially important as we approach the water licence renewal for Ekati in 2013, likely the last licence it will require to complete the mining operations.

The Agency feels that the WLWB's expectations for BHPB management plans should be clarified, and we sent a letter expressing some concerns with the conformity check for the Wastewater and *Processed Kimberlite* Management Plan. ■

HIGHLIGHTS:

- *BHPB continues to operate Ekati in an environmentally sound manner.*
- *BHPB should make the new incinerator operational as quickly as possible.*
- *Improvements to wildlife monitoring are needed.*
- *BHPB has committed to a collaborative approach on its reclamation research plans.*

Surface miner in Fox Pit.

Assessment of BHP Billiton

In the view of the Agency, BHP Billiton (BHPB) continues to operate Ekati in an environmentally sound manner, as it has for many years. There are no significant adverse effects that arose this year, largely due to BHPB's good environmental management. Making this good performance continue through the life of mine and through the closure process is the goal of both BHPB and the Agency.

Interior of refubished ammonium nitrate storage building.

We continue to enjoy a good working relationship with the company and the Environment Department staff. Any disagreements are handled professionally. In addition, BHPB staff worked helpfully with the Agency to enable us to transfer office and equipment leases directly to the Agency and worked to help us eliminate a working capital deficit. We thank the company for this assistance.

As noted in the air quality section, there has been continued willingness by BHPB staff to improve air quality monitoring practices, a feature for which we commend the company. At the same time, BHPB has had a new incinerator at site since 2006 but has not yet managed to make it operational. It is past time and we have recommended it be quickly made operational.

The Diamond Mine Wildlife Monitoring Program Review was an initiative we supported fully because it was to be carried out collaboratively with all interested parties. In the end, however, we were not satisfied with the outcome for reasons identified in the wildlife section of this report. We believe more work is needed, as is documented in our recommendations.

The Agency has noted that several management plans are in need of updating (e.g. Wildlife Management Plan, Air Quality Management Plan). We encourage BHPB to take care of updating these plans so that regulators and others can be reassured all management plans used at the mine site are current. Indeed, it would be most helpful if BHPB could provide an up-to-date list of all environmental management plans, when each was last updated and a schedule for regular review.

As for the last several years, the top priority of the Agency remains the development and implementation of a high quality Interim Closure and Reclamation Plan (ICRP). We are pleased to see that this goal has been met with the conditional approval of the ICRP and to note that BHPB is working to meet the conditions of approval and to implement the plan. Moreover, in late March, the company initiated discussions on how the Agency and BHPB can work together on ensuring successful completion of *reclamation* research plans. We agreed and, once the conditions on the licence are met (around August 2011), we will cooperate on this ICRP matter. This is a promising development on which we will continue to report in future years. We believe this kind of approach (collaborative efforts involving the Agency, BHPB and others) can help to produce better results leading to an improved closure plan and to sound environmental management at the mine. ■

Financial Statements

Management's Responsibility Statement

The management of Independent Environmental Monitoring Agency is responsible for preparing the financial statements, the notes to the financial statements and other explanatory information.

Management prepares the financial statements in accordance with Canadian generally accepted accounting principles. The financial statements are considered by management to present fairly the management's financial position and results of operations.

The Agency, in fulfilling its responsibilities, has developed and maintains a system of internal accounting controls designed to provide reasonable assurance that management assets are safeguarded from loss or unauthorized use, and that the records are reliable for preparing the financial statements.

The financial statements have been reported on by MacKay LLP, Chartered Accountants, the Agency's auditors. Their report outlines the scope of their examination and their opinion on the financial statements.

Jaida Ohokannoak, Secretary–Treasurer
June 20, 2011

Independent Auditor's Report

To the Directors of Independent Environmental Monitoring Agency

We have audited the accompanying financial statements of Independent Environmental Monitoring Agency, which comprise the statement of financial position as at March 31, 2011, and the statements of operations, changes in net assets and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements
Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian generally accepted accounting principles, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility
Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Agency's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Agency's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion
In our opinion, the financial statements present fairly, in all material respects, the financial position of Independent Environmental Monitoring Agency as at March 31, 2011, and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

MacKay LLP

Chartered Accountants
Yellowknife, Canada
June 20, 2011

STATEMENT OF OPERATIONS

For the year ended March 31

REVENUE	2011	2010
Revenue	$ 618,776	$ 624,494
One–time funding	15,120	-
Interest income	1,119	3,727
	635,015	628,221
EXPENSES		
Auditing and accounting fees	15,250	18,505
Advertising and website	2,633	5,492
Amortization	4,897	2,825
Board support		
– honoraria	105,073	150,759
– travel, meals and accommodation	43,830	61,989
Community consultation		
– annual general meeting	16,624	20,192
– annual report	52,001	47,398
– community visits	37,169	29,073
– environmental workshop	15,383	1,160
Consultants	17,275	4,764
Equipment lease	928	812
Insurance	5,736	2,844
Office rent and maintenance	33,833	33,725
Office supplies	7,478	5,112
Postage and courier	1,067	686
Professional development	1,950	1,480
Separate fund		
– honoraria	13,320	10,032
– professional fees	33,672	56,969
– travel, meals and accommodations	2,082	2,931
Staff recruitment	5,000	12,000
Staff travel	4,558	1,714
Telephone and fax	5,742	4,972
Wages and benefits	194,335	153,253
	619,836	628,687
Excess (deficiency) of revenues over expenses before other items	15,179	(466)
Other		
Gain on sale of capital assets	-	(647)
Transfer to contribution repayable	(59)	(7,569)
	(59)	(8,216)
Excess (deficiency) of revenues over expenses	$ 15,120	$ (8,682)

STATEMENT OF CHANGES IN NET ASSETS

For the year ended March 31

	2011	2010
General operating fund, beginning of year	**$ (2,435)**	$ 6,247
Excess (deficiency) of revenues over expenses	**15,120**	(8,682)
General operating fund, end of year	**$ 12,685**	$ (2,435)

STATEMENT OF FINANCIAL POSITION

March 31

	2011	2010
ASSETS		
Current		
Cash	**$ -**	$ 67,243
Short–term investments (note 4)	**150,523**	250,404
Prepaid expenses	**4,905**	5,049
	155,428	322,696
Capital assets (note 5)	**16,439**	21,336
	$ 171,867	$ 344,032
LIABILITIES		
Current		
Accounts payable and accrued liabilities	**$ 113,817**	$ 44,644
Bank indebtedness (note 6)	**45,306**	-
Contributions repayable (note 7)	**59**	5,799
Deferred revenue	**-**	296,024
	159,182	346,467
FUND BALANCES		
General operating fund	**12,685**	(2,435)
	$ 171,867	$ 344,032

Commitment (note 8)

Approved by the board:

William A. Ross, Director

Jaida Ohokannoak,Director

STATEMENT OF CASH FLOWS

For the year ended March 31

OPERATING ACTIVITIES	2011	2010
Funding received – current year	**$ 331,387**	$ 281,647
Funding received 2010/2011 advance	**-**	296,024
Interest income	**1,119**	3,727
Paid to suppliers	**(235,248)**	(366,879)
Paid to employees	**(184,560)**	(153,253)
Paid to directors	**(125,128)**	(158,430)
	(212,430)	(97,164)
Investing activity		
Purchase of capital assets	**-**	(1,910)
Decrease in cash and cash equivalents	**(212,430)**	(99,074)
Cash and cash equivalents, beginning of year	**317,647**	416,721
Cash and cash equivalents, end of year	**$ 105,217**	$ 317,647
Cash and cash equivalents consists of:		
Cash	**$ -**	$ 67,243
Short–term investments	**150,523**	250,404
Bank indebtedness	**(45,306)**	-
	$ 105,217	$ 317,647

NOTES TO THE FINANCIAL STATEMENTS

March 31, 2011

1. Nature of operations

The Independent Environmental Monitoring Agency ("the Agency") is a not–for–profit organization incorporated under the *Societies Act* of the Northwest Territories. It is exempt from income tax under Section 149(1)(l) of the *Income Tax Act*.

The mission of the Agency is to oversee environmental management at the Ekati mine site in the Northwest Territories.

2. Significant accounting policies

The following is a summary of the significant accounting policies used by management in the preparation of these financial statements.

(a) Cash equivalents

The Agency's policy is to disclose bank balances under cash and cash equivalents, including bank overdrafts with balances that fluctuate frequently from being positive to overdrawn and short–term investments because they can be converted to cash in a reasonably short period of time.

(b) Capital assets

Capital assets are recorded at historical cost less accumulated amortization. Amortization is calculated by the declining balance method at the annual rates set out in note 5.

(c) Deferred revenue

Contributions received in advance are deferred. The amounts will be taken into income as services and goods are acquired.

(d) Fund accounting

The general operating fund accounts for programs and general operations.

(e) Revenue recognition

The Agency follows the deferral method of accounting for contributions.

Restricted contributions are recognized as revenue in the year in which the related expenses are incurred. Unrestricted contributions are recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and its collection is reasonably assured.

Revenue received and not spent is reflected as a repayable contribution.

Interest income is recorded when earned.

(f) Financial instruments – Recognition and Measurement

Section 3855 requires that all financial assets and financial liabilities be measured at fair value on initial recognition except for certain related party transactions. Measurement in subsequent periods depends on whether the financial asset or liability has been classified as held–for–trading, available–for–sale, held–to–maturity, loans and receivables or other liabilities.

Financial instruments classified as held–for–trading are subsequently measured at fair value and unrealized gains and losses are included in net income in the period in which they arise. The Agency has classified cash and short–term investments as held for trading.

Available–for–sale assets are those non–derivative financial assets that are designated as available–for–sale or are not classified as held–for–trading, held–to–maturity, or loans and receivables. Available–for–sale assets are subsequently measured at fair value with unrealized gains and losses recorded directly to changes in net assets until realized, at which time they will be recognized in net income.The Agency does not have any financial instruments classified as available for sale.

Held to maturity assets are those non–derivative financial assets with fixed or determinable payments and fixed maturity that the company has an intention and ability to hold until maturity, excluding those assets that have been classified as held–for–trading, available–for–sale, or loans and receivables. They are subsequently measured at amortized cost using the effective interest method. The Agency has classified no accounts as held to maturity.

Financial instruments classified as loans and receivables are non–derivative financial assets resulting from the delivery of cash or other assets by a lender to a borrower in return for a promise to repay on a specified date or dates, or on demand, usually with interest. These assets do not include debt securities or assets classified as held–for–trading. They are subsequently measured at amortized cost using the effective interest method.

All other financial liabilities that are not classified as held–for–trading are subsequently measured at cost or amortized cost. The Agency has classified accounts payable and accrued liabilities and contributions repayable as other financial liabilities.

(g) Use of estimates

The preparation of financial statements in conformity with Canadian generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the balance sheet date and the reported amounts of revenues and expenses during the year. Actual results could differ from those estimates.

3. Future changes to significant accounting policies

Adoption of accounting standards for not–for–profit organizations in Canada

In December 2010, the CICA Accounting Standards Board released Part III of the CICA Handbook which summarizes accounting standards for not–for–profit organizations in Canada. Implementation of these standards for not–for–profit organizations that choose not to adopt international financial reporting standards is mandatory for fiscal years beginning on or after January 1, 2012, but earlier adoption is permitted. The organization has elected to adopt accounting standards for not–for–profit organizations in Canada, but the effective date of implementation has not yet been decided. The impact of the transition to these accounting standards has not yet been determined.

4. Short–term investments

Short–term investments consist of guaranteed investment certificates maturing October 2011 and earning interest at 0.60% per year. The certificates are transferable on demand to the Agency's bank account.

5. Capital assets

	Rate	Cost	Accumulated amortization	2011 Net book value	2010 Net book value
Office equipment	20%	$ 12,180	$ 10,195	$ 1,985	$ 2,481
Computer equipment	30–55%	11,956	10,354	1,602	3,735
Computer software	100%	2,543	2,543	-	-
Website	30%	15,120	2,268	12,852	15,120
		$ 41,799	$ 25,360	$ 16,439	$ 21,336

6. Bank indebtedness

The Agency has an overdraft limit of $5,000 bearing interest at the bank's prime rate plus 3.25%. Bank indebtedness as at March 31, 2011 represents overdraft of $2,351 and outstanding cheques for $42,955. On April 6, 2011 the Agency transferred $50,000 of its short–term investments to replenish the bank account to ensure coverage of the cheques issued.

7. Contributions repayable

BHP Billiton Diamonds Inc.	2011	2010
2008–2009 fiscal year	$ -	$ (1,770)
2009–2010 fiscal year	-	7,569
2010–2011 fiscal year	59	-
	$ 59	$ 5,799

Contributions repayable arising from one fiscal year are normally deducted from contributions provided by BHP Billiton Diamonds Inc. in the following fiscal year.

8. Commitment

As at March 31, 2011, the Agency has an operating lease for office space expiring December 31, 2013. The annual payment for the next three years are as follows:

2012	$ 31,500
2013	31,500
2014	23,625
	$ 86,625

9. Economic dependence

The Agency receives 99% (2010 –99%) of its contribution funding from BHP Billiton Diamonds Inc. Management is of the opinion that operations would be significantly affected if the funding was substantially curtailed or ceased.

10. Financial instruments

The Agency is exposed to the following risks in respect of certain of the financial instruments held:

Financial risk management objectives and policies

Residual risk is rated using a ranking system that involves subjective judgments of the severity of the risk, the exposure of the Agency to that risk or threat, and the probability of the risk or threat actually happening. It is important to note that the Board of Directors and staff collectively make the evaluation of risk and that this evaluation is reviewed at least on an annual basis.

Source of Risk

This refers to Agency's fixed assets (e.g. computers, furniture, administrative records, and the overall office), human resources (e.g. the Agency's staff or Directors), activities (actions of the Agency's staff or Directors), or issues that may arise that would affect the Agency's status and credibility.

Threat or Risk

This refers to potential physical threats or risks that may affect the function, efficiency, or credibility of the Agency. Threats and risks are identified for the purposes of planning and scenario building.

Mitigation and Management Action

Measures already in place for the Agency and its staff, to reduce the probability and impacts of any perceived threats or risks.

(a) Fair value

The Agency's financial instruments include cash, short–term investments, accounts receivable, bank indebtedness and accounts payable and accrued liabilities. The carrying value of these instruments approximates their fair value due to their short–term maturities.

(b) Credit risk

Credit risk is the risk that one party to a financial instrument will fail to discharge an obligation and cause the other party to incur a financial loss. The Agency is exposed to a concentration of credit risk as the majority of the contributions receivable are due from one source. This risk is managed as BHP Billiton Diamonds Inc. is required by the Environmental Agreement with the Governments of Canada and the Northwest Territories to remit payments to the Agency.

11. Capital disclosure

The Agency's objectives when managing capital are:

a) To safeguard the Agency's ability to continue to fulfill its mandate under the Environmental Agreement.

b) To provide an adequate return on investment capital by pricing services commensurately with the level of risk.

The Agency manages the capital structure in the light of changes in economic conditions and the risk characteristics of the underlying assets. The Agency monitors capital on the basis of the working capital which is calculated as current assets minus current liabilities as follows:

	2011	2010
Current assets	**$ 155,428**	$ 322,696
Current liabilities	**159,182**	346,467
	$ (3,754)	$ (23,771)

12. Comparative amounts

The financial statements have been reclassified, where applicable, to conform to the presentation used in the current year. The changes do not affect prior year earnings.

Agency open house in Kugluktuk.

Directors at Nero-Nema bridge.

Agency site visit September 2010.

Summary of Work Plan and Core Budget 2011-12 and 2012-13

The work plan is based upon the direction and feedback received from our Society Members at our annual general meeting in November 2010 and the Agency's own initiatives.

With the Resolution Agreement from January 2006, the Agency's core budget is now fixed at $560,000 per year as of April 1, 2005 with automatic increases tied to the Consumer Price Index (CPI) for Canada. For 2011-12 BHP Billiton (BHPB) will contribute approximately $630k to the Agency and in 2012-13 approximately $646k (assuming a 2.5% increase in CPI).

The second year of the work plan will be refined and modified based on direction received during next year's annual general meeting of Society Members, and any changes or modifications to the project.

Major Activities

Board Meetings, Conference Calls

The major means of fulfilling our mandate is through board meetings that are held approximately every three months. Board meetings provide an opportunity for Directors to discuss, review and make recommendations on recent, ongoing and anticipated initiatives. Guests are invited to meetings to provide updates and receive input on their specific activities. BHPB, Wek'èezhìı Land and Water Board (WLWB) staff and the Indian and Northern Affairs Canada (INAC) inspector are regular guests.

Proposed Activities: Annually, three board meetings (not including one in a community) and two conference calls.

Review of Reports, Plans and Programs, and Implementation of the Environmental Agreement

Directors review and make recommendations on the major reports, programs, studies and plans required under the *Environmental Agreement*, water licences and other regulatory approvals.

Proposed Activities: The Agency expects to deal with the following in 2011-12:

- The regular environmental monitoring reports for 2010 if received in time (Aquatic Effects Monitoring Program, Wildlife Effects Monitoring Program, and Panda Diversion Channel);

Agency 2010 annual general meeting.

Table 5: Core Budgets 2011-12 and 2012-13

Activity	Forecasted 2010-2011	Proposed 2011-2012	Proposed 2012-2013
Board Meetings	72,384	106,250	108,906
Review of Documents	34,929	31,250	32,031
Separate Fund	49,074	40,000	40,000
Communications	174,399	169,750	158,619
Outside Contracts	13,000	10,000	10,000
Mgmt and Admin	274,816	272,000	278,800
TOTAL	618,602	629,250	628,356
(approved)	624,400	629,914	645,622

- Various management plans including the Waste Rock and Ore Storage Management Plan, Wastewater and *Processed Kimberlite* Management Plan, and the Wildlife Management Plan;
- Final revisions to the 2008 version of the Interim Closure and Reclamation Plan;
- A workshop on the 2012 Environmental Impact Report; and
- BHPB's Ekati Annual Environmental Report.

There are also now two meetings a year with BHPB, Government of the Northwest Territories (GNWT), INAC and the Agency to better coordinate implementation of the *Environmental Agreement*.

The same workload is expected in 2012-13, although the focus may shift with more work on the next Environmental Impact Report.

Separate Fund Activities

As a result of the most recent mediation, the March 2008 Resolution Agreement sets out that the Agency is entitled to allocate expenses up to $40,000 per year for matters where a public hearing is reasonably assured as indicated in approved work plans or budgets, or as confirmed by a regulatory body.

Proposed Activities:
For 2011-12, the Agency expects the following:

- Review of the water licence renewal application and participation in BHPB *consultation* on same.

For 2012-13, the Agency expects the following:

- Public hearing on the water licence renewal.

Independent Environmental Monitoring Agency directors and staff.

Consultation and Communication

Consultation and communications with northern communities and the general public is an important part of the Agency's mandate.

Proposed Activities: The Agency will maintain its visits to communities, and host one board meeting and open house a year in a community. The Agency will continue to attend workshops and meetings relevant to its mandate. The Agency will maintain its website (including the new timeline project covering development of the mine, regulatory events and environmental issues) and public registry. The Agency will host an environmental workshop in 2011-12 as the company is not preparing an Environmental Impact Report. The Agency will continue to produce two annual reports, one in plain language and one technical.

The same activities (except the environmental workshop) are anticipated in 2012-13 although a communications plan may result in some additional initiatives.

Outside Contracts

On occasion, the Agency turns to other experts to help analyze reports, studies and plans.

Proposed Activities: It is difficult to predict what, if any, outside expertise the Agency may commission but aspects of closure and *reclamation* may require some outside expertise.

Management and Administration

The Agency provides the majority of its management and administrative services through its Yellowknife office and staff of one executive director and one communications and environmental specialist.

Proposed Activities: Maintain current staff and benefit levels. ■

Director Biographies

Bill Ross APPOINTED APRIL 1997

Appointed by BHP Billiton, Government of the Northwest Territories and Government of Canada (in consultation with the Aboriginal governments).

Bill Ross has studied and participated in the professional practice of impact assessment for 35 years with a focus on cumulative effects assessment and follow up studies. He has served as a director of the Agency since its inception and as its Chair since 2003. His goal for the Agency is that, when the Ekati Mine closes, BHP Billiton will be recognized as having operated the best environmentally-managed mine in Canada's North.

Tim Byers APPOINTED MAY 2001

Appointed by Akaitcho Treaty 8 (Łutsel K'e Dene First Nation and Yellowknives Dene First Nation).

Tim Byers is an independent consultant living in Manitoba who has been working on projects in the Canadian arctic all his professional life, specializing in studies of arctic seabirds, fish and marine invertebrates. He has also assisted Aboriginal communities in documenting their indigenous environmental knowledge. Tim is keenly interested in seeing more Aboriginal youth become engaged in the environmental sciences, as well as Traditional Environmental Knowledge (TEK) being more frequently used in environmental monitoring and research.

Jaida Ohokannoak APPOINTED DECEMBER 2003

Appointed by the Kitikmeot Inuit Association.

Jaida Ohokannoak has served as the secretary-treasurer since 2004. She has resided in northern Canada for over 16 years, currently in Cambridge Bay, and has experience in environmental assessment, renewable resource management, research and monitoring studies. She believes that mining can be conducted in an environmentally responsible manner that will benefit both industry and local people without long-term impacts to the environment.

Audrey Enge APPOINTED MARCH 2009

Appointed by the North Slave Métis Alliance.

Audrey Enge is a Certified Human Resource Professional with experience in both the public and private sectors. Audrey is an indigenous Aboriginal, born and raised in the Northwest Territories. Audrey brings a diverse knowledge of the North and is currently working on a Masters degree in Business Administration. Her area of interest is in Traditional Environmental Knowledge and Archaeology.

Laura Johnston APPOINTED DECEMBER 2006

Appointed by BHP Billiton, Government of the Northwest Territories and Government of Canada (in consultation with the Aboriginal governments).

Laura Johnston retired from Environment Canada after 30 years of service, the last 15 in environmental protection in the NWT and Nunavut. Her expertise is in the fields of chemistry and geology with a focus on water related issues, especially groundwater quality.

Tony Pearse APPOINTED MARCH 1997

Appointed by the Tłı̨chǫ Government.

Tony Pearse is a resource planner specializing in planning and policy development for First Nations in areas related to treaty negotiation and land use.

Kim Poole APPOINTED DECEMBER 2006

Appointed by BHP Billiton, Government of the Northwest Territories and Government of Canada (in consultation with the Aboriginal governments).

Kim Poole is a professional, independent wildlife biologist with over 25 years experience in the NWT, Nunavut and BC in the areas of wildlife research and assessment of impacts due to forestry, mining and tourism.

Acronyms and Glossary

Acronyms

AEMP Aquatic Effects Monitoring Program

AQMP Air Quality Monitoring Program

BHPB BHP Billiton

CPI Consumer Price Index

CCME Canadian Council of Ministers of the Environment

CIMP Cumulative Impact Monitoring Program

CWQG Canadian Water Quality Guideline

DDMI Diavik Diamond Mines Inc.

DFO Department of Fisheries and Oceans

DIAND Department of Indian Affairs and Northern Development (also known as Indian and Northern Affairs Canada or INAC)

DNA Deoxyribonucleic Acid

DO Dissolved Oxygen

EC Environment Canada

EFPK Extra-fine Processed Kimberlite

EIR Environmental Impact Report

EIS Environmental Impact Statement

ENR GNWT's Department of Environment and Natural Resources (previously known as RWED or Resources, Wildlife and Economic Development)

GHG Greenhouse Gases

GN Government of Nunavut

GNWT Government of the Northwest Territories

IACT Inter-Agency Coordinating Team

ICRP Interim Closure and Reclamation Plan

IEMA Independent Environmental Monitoring Agency ("the Agency")

INAC See DIAND

IPS Ideal Performance Standard

LLCF Long Lake Containment Facility

MVLWB Mackenzie Valley Land and Water Board

MVRMA *Mackenzie Valley Resource Management Act*

NWT Northwest Territories

PDC Panda Diversion Channel

PK Processed Kimberlite

QA/QC Quality Assurance/Quality Control

SNP Surveillance Network Program

SPB Sable, Pigeon and Beartooth

TK Traditional Knowledge

TSP Total Suspended Particulates

VEC Valued Ecosystem Component

WEMP Wildlife Effects Monitoring Program

WLWB Wek'èezhìı Land and Water Board

WPKMP Wastewater and Processed Kimberlite Management Plan

WROMP Waste Rock and Ore Storage Management Plan

WRSA Waste Rock Storage Area

WRRB Wek'èezhìı Renewable Resources Board

Glossary

(A listing of italicized words used in this report.)

Adaptive Management - Continual monitoring so that if initial mitigation measures are ineffective, additional or alternative mitigation is applied to keep the impact within acceptable levels.

Benthos - The bottom of rivers, lakes and ponds that can contain living organisms (e.g. benthic invertebrates). Benthic invertebrates like black fly larvae are an important food source for small fish.

Chlorides - Salts resulting from the combination of the gas chlorine with a metal. Small amounts of chlorides are required for normal cell functions in plant and animal life, but fish and aquatic communities cannot survive in high levels.

Cladocera - A type of zooplankton.

Consultation - (i) The provision, to the party to be consulted, of notice of a matter to be decided in sufficient form and detail to allow that party to prepare its views on the matter;

(ii) the provision of a reasonable period of time in which the party to be consulted may prepare its views on the matter, and provision of an opportunity to present such views to the party obliged to consult; and

(iii) full and fair consideration by the party obliged to consult of any views presented.

Cumulative Effects - The environmental changes that occur from a project or activity combined with effects from other human activities in the past, present and future.

Dioxins and Furans - Toxic substances released into the atmosphere primarily from waste incineration. They are extremely persistent and can accumulate in biological tissues.

Effluent - Wastewater that flows into a receiving body of water.

Environmental Agreement - Created as a legally binding instrument to provide monitoring and input into management practices not covered by other authorizations. Parties to the Ekati Environmental Agreement include BHP Billiton, the federal and territorial governments (Akaitcho Treaty 8, Kitikmeot Inuit Association, North Slave Métis Alliance and Tłı̨chǫ Government were involved in the negotiations).

Extra-fine Processed Kimberlite - This material comprises approximately 12% by mass but 35% by volume of the processed kimberlite tailings deposited into the LLCF.

Fry - Early life stage of fish following absorption of yolk sac (alevin) stage.

Hydrocarbons - Organic compounds which contain only hydrogen and carbon. This includes fossil fuels (coal, petroleum and natural gas) as well as their derivatives such as plastics, solvents and oils.

Kimberlite - A rare, potentially diamond bearing iron and magnesium rich rock from deep in the Earth's mantle. Kimberlites are generally found as vertical pipe-like structures.

Nitrate - A nutrient, like a fertilizer, derived from nitrogen.

Phytoplankton - Microscopic plants, such as algae, found in freshwater and ocean environments. They are an important food source for zooplankton.

Pit Water - Water found within the pit.

Processed Kimberlite - The waste material and water mixture that is left over after the mill removes the diamonds from the ore. Also referred to as "tailings".

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

Zooplankton - The small, mostly microscopic animals that live suspended in freshwater (and ocean) environments. Zooplankton feed on phytoplankton and small particles in the water. They are an important food source for small fish.

TECHNICAL

INDEPENDENT ENVIRONMENTAL MONITORING AGENCY

A PUBLIC WATCHDOG FOR ENVIRONMENTAL MANAGEMENT AT EKATI DIAMOND MINE™

ANNUAL REPORT 2010-11

All photos by the Agency unless otherwise noted.

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