

Independent Environmental Monitoring Agency
68th Meeting of the Board of Directors
Yellowknife, NWT
January 19-21, 2010
Summary of Discussion

Revised: March 9, 2010

Directors

Tim Byers
Audrey Enge
Laura Johnston (phone Jan. 20-21)
Jaida Ohokannoak
Tony Pearse
Kim Poole
Bill Ross

Guests

Jason Brennan, INAC Inspector
Eric Denholm, BHP Billiton
Martha Guy, Environment Canada (phone Jan. 21)
Bruce Hanna, Department of Fisheries and Oceans
John McCullum, EMAB
Anne Wilson, Environment Canada
Dave White, SLEMA

Staff

Kevin O'Reilly, Manager

AGENCY BUSINESS

Information Updates

Bill—Attended the December 16 Environmental Impact Report (EIR) 2009 meeting and the January 18, 2010 Environmental Agreement implementation meeting.

Kim—Involved in the ongoing review of the diamond mine wildlife effects monitoring programs.

Tim— Participated in the January 18, 2010 Environmental Agreement implementation meeting and reviewed the 2008 Panda Diversion Channel report.

Audrey—Kept up with regular Agency business.

Jaida—Reviewed financial reports for this Board meeting and coordinated a performance evaluation of the Manager.

Kevin—Participated in the EIR 2009 and Environmental Agreement implementation meetings. Summary notes for the December Board meeting and Annual General Meeting were completed. A letter on the MVLWB waste management guidelines was submitted a couple of days in advance of the deadline. A performance evaluation of the Environmental Analyst was carried out and his subsequent resignation was followed up. The materials necessary to keep the Agency in good standing as a registered non-profit society were filed with the GNWT registrar.

Financial Report

It was noted that the discussion of financial matters at the January 18, 2010 Environmental Agreement meeting discussed the over-expenditure by the Agency of expenses related to the Separate Fund. No objections were raised at the meeting for the Agency to use its other core funds to cover these expenses.

Several ideas were raised with regard to spending by the Agency to year end including approval for a new laptop computer, a site licence for Windows 7, and new coffee-maker.

Action Item #1 The Manager was authorized to purchase a new laptop computer and to explore some other items for purchase during 2009-10.
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Recruitment of New Staff

The Directors decide to revise the old Environmental Analyst job description to better reflect the responsibilities related to communications and Board support. This was also determined to be consistent with the recommendation from the SENES external review of the Agency where improvements were suggested with regard to communications and outreach.

It was suggested that the revised job description should be advertised in local newspapers and on the Environmental Careers Organization and JobsNorth websites. A closing date in late February should allow for recruitment in time for the Agency's Annual Report writing exercise beginning in May 2010. It was further decided to increase the salary range for the position.

Action Item #2 Kevin to revise the job description of the other office position and to advertize the position.
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It was decided to decline the offer from the previous Environmental Analyst to return to work as the job description was likely to change significantly.

Action Item #3 Kevin to contact the former Environmental Analyst and decline the offer to return to work with the Agency.

Agency Communications and Consultation

As a follow-up to the SENES external review of the Agency and the discussion of the recommendations at the December 2009 Agency Annual General Meeting, the Directors discussed communications and consultation. By revising the job description of the second Agency staff person and making an interim allocation in the Agency's forthcoming budget and work plan, the Directors agreed that this would better address the needs of the Society members. The new staff person should develop a communications plan for the Agency that may include resources in Aboriginal languages and other new products.

Action Item #4 Kevin to make an interim allocation in the Agency's budget and work plan for 2010-12 for communications purposes.

Action Item #5 Kevin to post information of upcoming Board meetings on the Agency's website and by e-mail to Society members.

Manager Performance Evaluation

An in-camera session was held to complete the regular annual performance evaluation of the Agency Manager.

FOLLOW-UP ITEMS

BHPB Judicial Review

An in-camera discussion took place regarding the BHPB judicial review. A draft of the Agency submission due on January 21 was reviewed.

Aquatic Effects Monitoring Program (AEMP) Review

BHPB is required to review the AEMP under its water licence and a technical session has been scheduled for February 11 and 12, 2010 in Yellowknife. The Agency has been invited to send up to three representatives.

Action Item #6 Laura, Tim and Kevin to represent the Agency at the AEMP Review technical session on February 10-11, 2010.

Cell E Fish Study

Tim reviewed the Cell E fish study and highlighted that BHPB is of the view that the fish are being exposed to hydrocarbons from aerial emissions, although the exact source is not clear. BHPB has proposed to better link its Air Quality Monitoring Program to the AEMP to try to determine the sources and pathways. Tim noted that molybdenum and selenium levels in sculpin downstream of the LLCF are elevated compared to fish from control lakes.

Environmental Impact Report (EIR) 2009

The December 16, 2009 EIR meeting attended by Bill and Kevin was reviewed. There should be a discussion on the purpose of the EIR before the company goes about preparing the report. The Directors agreed that the Agency should develop a discussion paper with its views on the purpose of the EIR for September 2010. The discussion paper and any responses could be covered in the Agency's environmental workshop to be held in the fall of 2010 in conjunction with the Annual General Meeting (assuming that BHPB

will not host a similar event). It was agreed to further discuss this matter at the next Board meeting in March 2010.

Action Item #7 A possible discussion paper on the Environmental Impact Report purpose will be discussed at the upcoming March 2010 Agency Board meeting.

On the current EIR, the Agency will await BHPB's response to the recommendations made at the December 2009 meeting. DIAND will coordinate a response process as a Minister's Report has now been issued.

Action Item #8 Bill, Tony and Kevin to review the BHPB submission arising from the December 2009 EIR meeting.

Air Quality Monitoring Program (AQMP) 2008 Report

The Agency has yet to receive the 2008 AQMP report. When it is received, an outside review by Den Hrbenyk, SENES Consultants, will be considered.

Action Item #9 Jaida and Kim to review the 2008 AQMP with a view as to whether the Agency might retain SENES for a peer review.

Panda Channel Diversion Channel

The Agency has yet to receive the ten-year review of the Panda Diversion Channel monitoring by BHPB.

Action Item #10 Tim to review the ten-year PDC review with a view as to whether the Agency might retain Bill Tonn for a peer review.

MEETING WITH BRUCE HANNA, FISHERIES AND OCEANS

It is the understanding of Department of Fisheries and Oceans (DFO) that BHPB will continue to carry out the fish box monitoring on the Panda Diversion Channel in the summer of 2010. There has been no formal consultation to date on the future of the program as BHPB is conducting a ten-year review of the monitoring program. Chris Katopodis of DFO will be reviewing the report. DFO has the discretion to order BHPB to do more or different monitoring if necessary. It was mentioned to Bruce that the Agency is considering whether to have Bill Tonn at University of Alberta review the ten-year report and it was agreed that an outside review would be helpful.

Bruce mentioned that there is approximately \$674k remaining in the habitat compensation fund from the Ekati mine. DFO is looking for more projects to enhance fisheries habitat. Some initial work is being done on Frame Lake in Yellowknife to measure dissolved oxygen to see if the lake could support fish. The Directors agreed that this might be a viable option and also suggested that the Colomac Zone 2 lake be investigated as potential new fisheries habitat.

DFO has not formally reviewed the Cell E fish study. Bruce mentioned that sculpin have been found to be a good indicator of water quality at Diavik and that this might be helpful during the upcoming review of the Ekati AEMP.

Bruce provided an update on the toxicity testing being undertaken on northern fish species. Some difficulty was encountered in securing round whitefish eggs but the testing on char and grayling has been completed. Bruce offered to send further details in a follow-up e-mail.

MEETING WITH DAVE WHITE, SLEMA AND JOHN McCULLUM, EMAB

Dave White provided an update on the DeBeers Snap Lake diamond mine. The December 2009 shutdown was cancelled. The mill is at 40% capacity due to the low diamond prices internationally. A new ammonium nitrate storage facility was recently commissioned that is state of the art with a concrete base and walls. The company wants to expand the processed kimberlite storage area. SLEMA and DIAND are concerned as it is proposed to be located within 50 m of Snap Lake. SLEMA has requested further information on the proposal.

There have been 22 spills at Snap Lake over the last several months but none of any consequence. SLEMA is holding a Traditional Knowledge workshop in May 2010. Barry Zajdlik is reviewing the Snap Lake AEMP for SLEMA. A wildlife monitoring meeting is scheduled for April with Anne Gunn present for SLEMA. The Agency would be welcome to send a representative. SLEMA has recommended dust fall monitoring with at least three sites with two about 7 km away from the mine site. A TK camp is to be set up at the south end of Mackay Lake in late August and early September to watch for the caribou during the fall migration. Dave offered to send the proposal for the TK camp and caribou monitoring to the Agency.

The Total Dissolved Solids (TDS) in Snap Lake appear to be high but in line with project predictions. The levels have dropped from 120 mg/L to 100 mg/L due to better water management practices. The trigger for the requirement to develop a plan for TDS is 350 mg/L. Elevated levels of some other parameters are being detected around the diffuser in Snap Lake.

John mentioned that Diavik had recently completed a study on the effects of pit blasting on fish in Lac de Gras. The next EMAB meeting is February 2-3, 2010 at which time the Agency Manager is welcome to provide an update. EMAB has not received anything in writing from Diavik on revising the WEMP. Diavik apparently proposes some grizzly bear snagging tripods in the spring and possibly the summer but the scale of the work is not clear. Diavik has indicated that it will undertake the spring wolverine hair snagging in April 2010 in conjunction with the other mines.

Diavik submitted a revised Interim Closure and Reclamation Plan (ICRP) in December 2009 with comments due on February 11, 2010. EMAB has contracted SENES to review

the ICRP. There is a TK research plan as part of the Diavik ICRP. Diavik indicated in the ICRP that it is considering underwater mining of the A21 pipe, which would represent a change in the original project.

The WLWB conducted a thorough review of Diavik's AEMP and accepted the 2008 report with recommendations for next year's monitoring program. These include a requirement for improved dust monitoring to verify its effectiveness. Mercury was found in sculpins and lake trout but the baseline is not rigorous due to the small sample size and so the importance of this discovery is uncertain. Nutrient enrichment of Lac de Gras has become a major issue as it is happening faster than predicted and may be a contributor to higher mercury levels in fish. Further studies were recommended by EMAB and the WLWB has directed Diavik to do this work. A three-year review of the Diavik AEMP is scheduled for 2011.

John mentioned that there has not been any further direction from the WLWB on the adaptive management plans since June 2008. EMAB and Diavik are both going to request an update from the WLWB. It was suggested that the Agency might consider doing the same.

There was significant seepage from the tailings area at Diavik up until 2009 when the collection system was improved and the liner was fixed. There was less ice damming in 2009 and the collection ponds were repaired during the summer shutdown. The IANC inspector is now satisfied with the seepage control system.

The TK monitoring proposal developed by EMAB was approved by its Board and circulated. Funding partners are being sought even though Diavik has rejected it.

The funding dispute over EMAB's budget continues. Numerous meetings have been held but the formal dispute resolution process has yet to be initiated. A joint letter from the governments and Diavik proposed discussing the issue but was not in accord with the Environmental Agreement. Further small group meetings have been held. EMAB has also put out a request for proposals for a review of the implementation of the Diavik Environmental Agreement and this may provide some assistance in resolving the dispute.

MEETING WITH JASON BRENNAN, DIAND INSPECTOR

Jason discussed his most recent inspection, earlier in the week, of the underground operation at Ekati. The Panda underground mining is set to end in May or June 2010. There is some stability at the bottom two levels that will be allowed to freeze and flood in the upcoming months. Jason was interested in seeing what was still in place in terms of infrastructure, equipment and supplies. There was very little left in place. No hydrocarbons or chemicals as BHPB had already removed most materials. Some minor plastic and wood could be removed to prevent this material from resurfacing in the pit water at some point. BHPB indicated that it was open to a close-out inspection for this part of the mine if necessary. An inventory has been requested of the remaining items

with a schedule for their removal. All of the waste stations and refuelling facilities underground were found to be in good shape.

Jason also visited the Pigeon area where a bulk sample will be taken this winter. A new road has been built from the existing Sable road. This work is being done under a land use permit and will be closely monitored. Biotite schist is found at Pigeon and will require careful management. A road berm was built along the new road but will be removed if no production takes place.

The work at the north end of Cell B is now completed. Heat tracing has been added to the culvert through dyke B to prevent future blockages. The ammonium nitrate storage building patches seem to be working.

Follow-up sampling will be done of the Fay Lake spill as the previous samples show high levels of aluminum and iron. The follow-up report from BHPB on the spill has not yet been received and this will be sent to the Agency when it is available.

MEETING WITH ENVIRONMENT CANADA STAFF (Anne Wilson, Dave Fox and Martha Guy)

Dave Fox began with a presentation on a technical guidance document prepared by Environment Canada for incineration for small camps. There is sufficient atmospheric chlorine to form dioxins and furans if there is improper burning. The Canada Wide Standards for dioxins and furans require a 'determined efforts' approach, which means either stack testing or batch control. Stack testing is expensive and difficult at best at remote locations so the focus has been on best practices for batch control.

Environment Canada commissioned Trent University to conduct modelling of incineration emissions. If not done well, emissions from incineration can be many orders of magnitude above the Canada Wide Standards and result in potential for significant adverse effects on the environment.

A six-step process has been developed by Environment Canada for proper incineration that involves the following:

1. Know the waste stream;
2. Selection of an appropriate size incinerator;
3. Proper installation of the incinerator;
4. Proper incineration operation;
5. Proper disposal of any residues; and
6. Maintain proper records.

Environment Canada has now released the technical guidance document and suggested at several water licence proceedings that incineration provisions should be place in water licences. The licences for at least a couple of mines in Nunavut and the draft licence for the Tundra mine clean-up contain such provisions.

Anne Wilson made a presentation on the preliminary results of a sediment sampling study conducted at the Ekati mine in April 2009. Two sampling sites in Kodiak Lake were used, the deepest part of the lake and at its outlet, and a control site at Counts Lake. Some freeze deformation occurred in the top most layers of sediment. The results indicate that there is a ten times higher level of dioxins and furans in the Kodiak Lake samples vs. the samples from Counts Lake. The likely source is the incinerator operations at the main camp, which is adjacent to Kodiak Lake.

Anne has not yet reviewed the Cell E fish study. Fish testing for dioxins and furans could be done but is expensive and requires tight quality assurance and control measures.

The Agency invited Environment Canada staff to explain the Ideal Performance Standard (IPS) for nitrate as this has been adopted by BHPB for discharges from the LLCF in lieu of any limits in the water licence and in the absence of an approved adaptive management plan. In the recent EIR 2009 meeting, BHPB also distributed a comment table that indicated that the IPS for nitrate had been “accepted” by the Agency and others as “generally updating the current interim CCME guideline value”. While noting that the Agency has not formally “accepted” the use of the nitrate IPS, Directors wanted to find out more about how it was derived and its applicability to the Ekati mine.

Martha Guy provided a PowerPoint presentation and was available on a teleconference to explain the IPS for nitrate report she prepared for Environment Canada. The 2003 nitrate CCME guideline was set at 2.9 mg/L based on the pre-2007 protocol that used existing studies on exposure and a safety factor. The National Agri-Environmental Standards Initiative looked into a nitrate guideline given the extensive use of chemical fertilizers in farming. It was decided to develop an ideal performance standard designed to provide protection to the aquatic environment rather than an achievable standard that relies on best available technology.

The 2007 CCME protocol was used to develop a Type A guideline using a species sensitivity distribution approach that considers long-term (chronic toxicity) and short-term (acute toxicity) effects. Using the new protocol, the IPS for nitrate to provide long-term protection of freshwater environments is 4.7 mg/L. It was noted that even at this level, nitrates may cause loss of lake trout biomass as this species is more sensitive with lowest observable effects down to 2.955 mg/L nitrate. BHPB currently uses the nitrate IPS of 4.7 mg/L for discharge from the LLCF and the new water licence adopted an effluent discharge criterion for nitrate into Horseshoe Lake at 20 mg/L average maximum and 40 mg/L grab sample maximum.

MEETING WITH ERIC DENHOLM, BHP BILLITON

Eric provided a general update on BHP Billiton and the Ekati mine. Paul Harvey is the new President of BHPB Canada. He supervised the underground development at Ekati in 2009. As of January 1, 2010 BHPB Diamonds changed its name to BHPB Canada to reflect the recent acquisition of a large potash mine near Jansen, Saskatchewan.

Blasting at the Fox pit has been reduced substantially through the use of the Wirtgen surface strippers. Panda underground operations will end in 2010 and may have provided an alternative to Beartooth for mine water storage. With active mining in the adjacent Koala pipe, mine water storage in the Panda underground was not deemed a safe alternative.

A bulk sample will be taken from Pigeon pipe this winter. Up to 20 m of glacial till overburden will be removed before reaching kimberlite. Advance planning of Misery deep open pit mining is under way. The open pit option looks to be preferred because it would use less fuel and involve a lower risk of breaching the permafrost zone and entering the unfrozen ground below compared to an underground operation at Misery. If the push back option is pursued for the Misery pit, new haul trucks will be required and moved up the winter road in 2011.

Eric discussed energy conservation measures in place at the mine including the winter closure of H-wing in the accommodation complex, and improved crusher operations as a result of the Wirtgen surface strippers. He noted that there would likely be an increase in Ekati's greenhouse gas emissions over the next while due to stripping operations at Pigeon and possibly Misery.

On reclamation planning, BHPB is considering further work at the Phase I processed kimberlite containment facility before ultimate approval of the current version of the ICRP, and progressive reclamation of some other areas including the Panda underground and Panda Diversion Channel canyon.

BHPB intends to distribute the AEMP Review submission to the WLWB shortly. Comments before and after the February 11-12 technical workshop were welcomed. The mine water pipeline to Beartooth is now operational and water is pumped over the edge at the southern end of the pit. The pumped water will be sampled monthly and the water at the bottom of the Beartooth pit will be sampled annually if safety allows. An updated Wastewater and Processed Kimberlite Management Plan is now due January 31, 2010.

A Rescan report on the nitrate studies and management in Cell E should be distributed in a couple of weeks. Eric mentioned that BHPB is willing to put mine water back into the LLCF if water quality is acceptable in Cell D. An updated LLCF water quality model using 2009 data is in preparation and will be distributed later in 2010. Aeration of Kodiak Lake is no longer needed but aeration will likely take place again this winter at Cujo Lake for the third year in a row.

Bill mentioned that the Agency had a presentation earlier in the Board meeting on the nitrate IPS and noted that chronic effects in lake trout had been observed at the levels that BHPB is now using for LLCF discharges. The Agency has not yet taken a position on the matter but wanted BHPB to know of this potential concern. Eric indicated that he would look into the matter.

Kim raised the issue of the lack of progress on the diamond mine wildlife monitoring program review. We observed that BHPB and Diavik were quick to drop the aerial surveys for caribou but have not made any commitments to do other caribou work. Eric acknowledged that there is a need to resolve some matters in time for the upcoming field season. He understands that BHPB has met with GNWT on the wolverine hair snagging program for April 2010 and everything is ready to go. Eric committed to raising the matter at the next staff meeting scheduled for early the following week.

BHPB intends to distribute the 2009 WEMP report by the end of March 2010, and the 2009 AEMP report by the end of April 2010. The 2008 Air Quality Monitoring Program report should be out next week. The 2009 EIR follow-up materials arising from the Minister's Report should be submitted by the end of February 2010. The Panda Diversion Channel ten-year review should be out in a couple of weeks. The 2009 monitoring found only a few fin-clipped grayling as the fish are just starting to reach maturity. The 2010 monitoring program will continue with the fish box captures and some other aquatic monitoring.

Eric was asked to clarify the status of the Pit Lakes Studies. He said that this work had been put aside with the continuing review and judicial action concerning the ICRP. He undertook to check to see whether it might be possible to expedite the release of the background report but more work is required on some of the reports. Eric also agreed to get back to the Agency with BHPB's preferences for communications with the Agency. This includes BHPB's preferred recipients of communications on various matters and whether the company is prepared to again share wildlife incident, spill reports and correspondence with the DIAND inspector.

FUTURE BOARD MEETINGS

The dates of the future Agency Board meetings were reviewed and approved as follows:

March 30-31, 2009 (with departures to ensure travel home for the Easter weekend)
May 11-13, 2009 (Agency Annual Report writing session, Canmore, Alberta)

A site visit might be possible in either June or September with further scheduling and checking with BHPB on whether it has a preference.

Action Item #11 Kevin to check with Directors for a Board meeting date following the May session and whether BHPB has any preference for a site visit date.

MEETING TERMINATED at 3:00 pm

Summary of Discussion Approved by
Jaida Ohokannoak, Secretary Treasurer.