

**Independent Environmental Monitoring Agency
26th Meeting of the Board of Directors
Yellowknife, Northwest Territories
December 13-15, 2001**

Summary of Discussion

Directors

Red Pedersen	Tim Byers
Peter McCart	Bill Ross
Tony Pearse	François Messier
Bob Turner	

Staff

Zabey Nevitt	Robin Staples
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December 13th, 2001

Meeting called to order by chair at 8:45 am

Directors made preparations for meetings with guests.

Agenda reviewed and accepted.

Meeting with DIAND inspector (Craig Broome)

Craig gave a summary of observations from his recent inspections:

General:

- In addition to inspecting the Ekati™ diamond mine, Craig is responsible for inspecting the Diavik diamond mine and Lupin winter road.
- Craig has inspected Ekati™ four times since taking over the file.
- The hiring of a full time inspector for Ekati™ is not expected before March 2002.

Misery:

- BHP Billiton is currently building the waste rock dam, near the Lac de Gras side of the waste rock pile to help minimize the possibility of waste rock seepage moving into Lac de Gras.
- BHP Billiton has indicated that it is planning to submit dam drawings soon for the retention dam downstream from Carrie pond. This dam will contain any seepage and/or run off from waste rock pile before it flows into Mossing Lake (downstream from Carrie and Desperation ponds). The dam location may change if the Misery mine plan changes and underground mining takes place, as quantities of waste rock would reduce, and Desperation pond may not be covered.

- The pipeline transporting mine water from the pit to King pond has been relocated to avoid future spill problems. The pipeline has been constructed with a high positive gravity point in the middle of the pipe to prevent water from staying in the pipe if a pump should fail (water would drain out the two ends).
- Misery ore is presently being processed at the process plant.
- Food handling problems at Misery have largely been addressed and BHP Billiton and its contractors should be commended for their hard work on this issue.
- Skirting of buildings at Misery has been done well, but skirting at main camp still could be improved.
- Discharge from King Pond into Cujo Lake is approaching licence limits for Ammonia (i.e. 1 mg/L).

Following Craig's update on Misery, a general discussion took place and it was expressed that winter ammonia levels in Cujo Lake may be an issue especially as the lake has low levels of dissolved oxygen. Agency Board members expressed concerns regarding how ongoing mine activities at the site differ significantly in some cases from the approved management plans (e.g. Misery Waste Rock plan).

Craig committed to compare the approved management plans with the ongoing work at the mine site in order to determine if there are any non-compliance concerns.

Action Item #1

Staff to follow-up on the Inspector's commitment to compare the approved management plans with the ongoing work at the mine site in order to determine if there are any non-compliance concerns.

Ekati & Fox:

- Discharge into Leslie Lake from Long Lake has stopped for the winter and all discharge limits were met during the past year.
- Reclamation work has been carried out on Fred's Channel by EBA consulting. The report from BHP Billiton on this reclamation work is still outstanding.
- The Mackenzie Valley Land & Water Board (MVLWB) has given dewatering and decanting approval for Fox and the road is being constructed to the tank farm. The tank farm shouldn't pose problems as spill contingencies are in place (e.g. berm and containment areas).
- Fox Lake dewatering will commence in February and will probably go for approximately 3 months.
- BHP-Billiton and DFO agree on the design for the Nero-Nema stream crossing. However formal approval for habitat destruction has not yet been issued by DFO. The MVLWB has issued the required water license amendment.
- Craig also noted that he has expressed to BHP Billiton that a formal application for changes to waste disposal practices (e.g. moving the landfill site at main camp) is required.

Sable, Pigeon & Beartooth:

- Sable, Pigeon & Beartooth permits will be one of the first land use permits required by the mine under the MVRMA. Craig will be initiating discussions with the MVLWB on appropriate and effective land use permit conditions that will best address new large scale operations such as those at Ekati™.

- Sable road construction is continuing and is now past the lease boundary.

Directors and the Inspector had a general discussion on the Sable road land use permit and specifically the wildlife conditions that were attached. It was noted that the wildlife conditions were somewhat vague and further discussions seem to be required between BHP Billiton, MVLWB and the DIAND inspector to provide clarification. Overall, Agency Directors found that wildlife concerns were not sufficiently reflected under this land use permit and it was especially weak in this regard.

Miscellaneous:

- Approval was given to use one type of dust suppressant following BHP Billiton's submission of a report on dust suppressant trials conducted at the minesite this past summer. The dust suppressant will only be applied during the summer months and follow-up monitoring for aquatic systems and wildlife observations along the road is a condition of its use.
- Due to toxicity concerns associated with flocculants and coagulants, further research, information sharing and discussions are required on the use of these products.
- The number and severity of spills at Ekati™ appears to be relatively unchanged from that observed in the past although BHP Billiton has improved its written follow-up at the request of the inspector.
- BHP Billiton's winter exploration program is still unknown at this time and the winter drill program still has yet to be submitted. Bulk sampling may take place this winter at the Lynx site, located near Misery.
- Amendments are to be added to the land farm this summer and the contents of the land farm will be turned over similar to a compost pile. To date nothing has been removed from land farm and capacity may become a concern with the addition of Sable, Pigeon & Beartooth.

Meeting with BHP Billiton (Scott Williams, John Witteman, Chris Hanks, Gerry Atatahak, Helen Butler)

Scott began with a brief update of his recent activities by noting that he has been promoted to project director of the newly formed Project Development group. This change means that Scott has relocated back to the Yellowknife office from the mine site. Currently he is managing two different project teams, but once his previous position as Manager of Environment and Engineering is filled he will be relinquished of his previous position. Although, he noted that he will still be available to aid in such things as budget negotiations. Scott expressed his appreciation over the improved relationship and level of cooperation between the Agency and BHP Billiton staff and hoped it would continue into the future.

John, Chris and Helen provided an update on the various developments and ongoing activities at the Ekati™ mine site.

General:

- The recent two day technical meetings on the AEMP & WEMP were very useful and the positive discussions that took place will be followed-up on.
- The Air quality monitoring program results will be written up shortly. A request for proposals will be sent out in January 2002.

Upcoming meetings schedule:

- The February environmental workshops will be held February 4th & 5th.
- The Acid Rock Drainage / Seepage meeting is tentatively scheduled for May 2nd, 2002.
- A dissolved oxygen (DO) course put on by Buster Welch comparing DO meters and titration values will probably take place some time in March on Kodiak Lake.

Action Item #2

Staff to acquire Buster Welch's dissolved oxygen data for Kodiak Lake from DFO or BHP Billiton.

February environmental workshops:

- BHP Billiton would like to broaden the range of topics discussed at the upcoming workshops and do not want to limit the workshops strictly to aquatic and wildlife effects monitoring.
- Habitat reclamation and research is one such topic that many have expressed interest in discussing during the workshops. The reclamation reports from the University of Alberta, Harvey Martens & Assoc, and ABR consulting should be available prior to the workshop. Vegetation monitoring results are also of interest.
- One of the focuses of the workshops this year will be on the proposed changes to the various monitoring programs.
- As the workshops have multiple audiences, ample opportunities will be provided to Elders to express their concerns. The same community representatives that visit the site will be encouraged to attend the workshops as being familiar with the project may lead to increased workshop participation.
- BHP Billiton is currently reviewing the program for community members visiting the mine site and the aim is to have consistency in those who visit the site. Community visits are going to be scheduled for late July to August.
- The need for a more community friendly synthesis of wildlife and aquatic monitoring reports appears to be required for use in the communities.

Following BHP Billiton's update on the upcoming workshops, Directors noted that community representatives from all the communities should visit the site together and it isn't always possible to have consistency in those members who attend workshop or site visits due to their busy schedules. In addition, Directors expressed an interest in hearing an update on the construction of Sable road, specifically caribou crossings, during the February workshops.

Sable haul road:

- Condition nine (9) of the permit MV2001F0032 for the Sable haul road (i.e. traffic limits) was discussed and BHP Billiton noted that their approach to ensure compliance with this condition was to set up an acoustic traffic monitor that will count the number of vehicles on the road.
- BHP Billiton views a condition of non-compliance being one where construction or intense vehicle traffic (i.e. ~200 vehicles/day) continues during a time when a number caribou are in the vicinity of the road.
- The construction period is the time of major concern due to increased activity and traffic and BHP Billiton agreed to send a report on traffic monitoring once every two months to the Agency.

- The number of caribou crossings constructed up to lease line was two (2).
- Four (4) to five (5) water crossings will be required for the Sable haul road.

Action Item #3

Zabey to discuss with John Witteman of BHP Billiton the establishment of a schedule for receiving traffic reports (from the Sable road).

Underground Mining details:

- Construction of the decline for Koala North will begin in February 2002.
- Koala North will not contain a crown pillar, but Koala south will.
- The mining of Koala South open pit will follow the underground mining of Koala North. As well, at some point in the future the underground portion of Koala North, Koala South and Panda will all be connected.
- The Misery mine plan is undergoing constant change. The decision for the time being is that the Misery pipe will be mined partially through open pit and partially underground. This change to the mine plan will result in significantly less waste rock being produced. Underground mining at Misery will not take place for approximately 3 to 4 years.
- Work is also ongoing on a groundwater report and it should be submitted in early 2002.

Agency Directors requested a 3D map or diagram of the underground Koala North development and John agreed to provide one.

Fox application & Agency annual report follow-up:

- BHP Billiton will respond in writing on these particular issues in the near future.

Copper data inconsistencies:

- In an effort to eliminate these types of inconsistencies in the future, BHP Billiton has adopted ultra-low detection limits for parameters in both the AEMP and the Surveillance Network Program (SNP).

Sable, Pigeon & Beartooth update:

- BHP Billiton had indicated to regulators that upon approval of the Sable, Pigeon & Beartooth development, it would update its Operation Environmental Management Plans (OEMP) within eight (8) months. It now appears that the MVLWB will probably not accept this schedule and will require updates on the following OEMP plans before licensing is completed: Waste Rock & Ore Storage, Waste Water & Processed Kimberlite, Interim Abandonment & Restoration, AEMP, WEMP, Air quality monitoring, Waste, and Echo Bay winter road management plans.
- The remaining OEMP plans are not expected to change from the increased development and therefore updates will not be required.
- The changes to the various OEMP plans will be redlined and submitted on CD's to reviewers. Once the changes are approved the various updated plans will be submitted both digitally and hard copy. Further discussion on this redlining process is still required to ensure that there is little confusion on what changes are being proposed.

BHP Billiton and the Directors of the Agency then discussed the ongoing problems of having updated OEMP plans approved in a timely fashion.

Misery camp wildlife issues:

- Wildlife concerns have been addressed at site by placing skirting around all buildings at the Misery camp. Electrical and sewage lines have also been protected and the incinerators are enclosed.

Re-vegetation work (cell B):

- Grasses grew very well in 2001, most likely as a result of the increased moisture that was available.
- A number of soil amendments worked well in the greenhouse and research will continue on these in the field in the upcoming year. It was noted that calcium did not work very well, but lake bottom sediments, sewage sludge and peat amendments all proved beneficial to plant growth.
- Additional cell B re-vegetation plots were added this past summer and successor plants (e.g. shrubs, willows) were planted. Further monitoring is required on these plants before any conclusions can be made.
- When large-scale reclamation of the Long Lake tailings facility takes place near the end of the project's life, the whole tailings area will not be seeded, but rather planted islands of vegetation will act as colonizers. Rocks will also be placed in some areas where soil chemistry may not allow for plant growth, or erosion issues are a concern.
- The problems with wildlife nibbling on the vegetation in the cell B plots should be less of an issue when large scale seeding takes place.

Agency Directors expressed concerns of metal uptake (e.g. cadmium, nickel) by tailings vegetation and the potential for tailings to 'pipe' when heavy rocks were placed on top. BHP Billiton staff responded to these concerns by noting that their reclamation research program is studying metal uptake by vegetation (e.g. tissue analysis) and tailings permafrost studies are ongoing and thermistors have been placed in cell B. If the permafrost layer doesn't degrade then there will be little concern for 'piping' tailings.

Liability estimate:

- Meetings are scheduled for the very near future with DIAND's and BHP Billiton's consultants to discuss their liability estimate reports and methods.
- Follow-up meetings with DIAND, BHP Billiton, GNWT and the Agency are also scheduled for mid – January to discuss the two liability estimates.

Tailing characterization study update:

- Tailings density variation and particle size distribution are being surveyed.
- Thermistors have been placed in cell B to monitor frost penetration.
- Course kimberlite rejects are also of interest and will be studied in the future.
- Phase II of the tailings characterization study will be submitted in April 2002.

Seepage results:

- Seepage from the Misery waste rock pile is of decent quality. The Misery waste rock pile is also remaining frozen, but is not yet as cold as the Panda waste rock pile.

- The Panda waste rock pile remains frozen and additional thermistors have been placed in middle of the rock pile. Toe berms are working well and no seepage has been observed on other side of the berm.

TK Studies:

- BHP Billiton has provided funding to a TK study with the North Slave Metis Alliance (NSMA). Dennis Kachkowski will be the lead on the project, Chris Johnson will be the lead on the land use portion and Colleen Young will be the lead on the socio-economic portion of the project. The project will largely have a socioeconomic focus on the Metis interaction with industry. Land use planning and mapping will also be a large part of this particular project and historical land use mapping will be the starting point. This TK project should provide valuable land use information for both BHP Billiton and the NSMA for upcoming proposals such as the winter road licence of occupation.
- Gerry Atatahak briefly discussed the Inuit TK study and noted that the report should be finished and submitted shortly. There are numerous chapters on many wildlife species. Inuit place names must be verified and a few remaining interviews are left to perform and be incorporated before the study is finished. The information from this study is being integrated into a Geographical Information Systems (GIS) database similar to that being used by other aboriginal groups. One purpose of study is to determine effective protocol for bringing TK to preliminary screening process.

Other issues:

- No time estimate of yet from the publisher for the Island copper book.
- BHP Billiton employed Peter Chapman (EVS consulting) to review the AMEC report titled “Recommendations for water quality limits for major ions related to discharges of mine water to surface water bodies to protect aquatic plants and animals at all life stages”. Overall BHP Billiton and its consultant were not very impressed with AMEC’s original report and John agreed to send their comments on the report to the Agency.

Action Item #4

Staff to follow-up with John Witteman of BHP Billiton regarding Peter Chapman’s review of Amec’s major ion report submitted to the Mackenzie Valley Land and Water Board.

Meeting on kimberlite toxicity studies (phase I & II) with Anne Wilson (Environment Canada), Simone de Rosemond and Karsten Liber (University of Saskatoon), Allison Armstrong (BHP Billiton), and Francis Jackson (DIAND Water Resources)

Following introductions Anne gave update on phase I of the kimberlite toxicity study:

- The kimberlite toxicity study involves field and lab components and is planned to run throughout the life of the Long Lake tailings facility.
- The purpose of the study is to determine the potential for the tailings facility to have detrimental environmental impacts downstream and which indicators may be useful in providing an early warning of such impacts.
- Simone was involved in Phase I of the study, which focused on water quality and the toxicity of effluent in respect to zooplankton. Phase II of the study will focus on benthos and likely phase III will study the impact of Long Lake tailings facility effluent on fish. At this time these different phases will continue on as Masters studies.

- Environment Canada will provide continuous water quality, sediment and benthic sampling throughout the life of the facility.

Simone briefly updated the Agency directors on her results during phase I of the kimberlite toxicity study and noted the following:

- Water quality and zooplankton sampling took place in July and August from 1998 – 2000.
- Significant decreases in zooplankton occurred in cells B & C, but no change in abundance or diversity were observed in cells D & E through the duration of phase I of the study.
- Water quality changes have been observed in all cells of the LLCF including cell E (Mo, ph, N, hardness etc...).
- Chlorophyll A levels have not yet been affected.
- Determined that kimberlite on its own didn't seem to be directly responsible for any toxic effect.
- Toxicity testing results appeared to indicate that unbound portions of the cationic polymer coagulant used to reduce tailing turbidity is responsible for the toxic effect.
- Concentrations of cationic polymer coagulants can't be measured in the field, but an estimated concentration of 14 mg/L was determined to be in the effluent leaving the process plant. This value is approximately three (3) orders of magnitude higher than levels that will produce a toxic effect on zooplankton and other lake biota.
- This polymer is very water-soluble and potentially may be passing through the dikes.

Action Item #5

Staff to acquire Simone Croquet de Rosemond's water quality data from the phase I tailings study (cells B, C, D, E).

Following Simone's update meeting participants briefly discussed her results and the following was noted:

- It appears that little work has been performed on how polymers naturally degrade in the aquatic ecosystem and what their residual effects may be. Proper and effective analytical methods seem to be required for each polymer, but are not available at this time. As it is still early on in the life of LLCF, time is still available to address these concerns.
- May be value in archiving some water samples from Long Lake for when an effective method is available for determining its concentration.
- The cationic polymer, as it is designed to, binds very effectively to suspended particles and is always around 99% bound. Although, less than a 1% unbound fraction can still provide a toxic response.
- It is most likely that by the time these toxic polymers reach cell E, they have been effectively 100% bound. Although, in the future, fewer dykes will be between the discharge point and cell E and a significant unbound polymer fraction may exist.
- Water quality changes are also likely going to have a significant effect on zooplankton and other biota as loadings into the LLCF continue. Determining whether these effects are from changes to water quality or unbound polymer fractions is impossible at this time.
- Increased monitoring of Leslie Lake, immediately downstream of the LLCF, seems to be required to determine if and when downstream environmental effects will occur.
- Fish are still present in cell E of Long Lake and some have been observed in cells C and D.
- It is estimated that Simone's thesis will be available in February or March 2002.

Karsten briefly updated the Agency directors on phase II of the kimberlite toxicity study and noted the following:

- Phase II is a follow up to Simone's phase I study and will primarily focus on Benthic macro-invertebrates.
- The second phase of the study will for the most part be investigating whether a lake bottom substrate of tailings (as is developing in cells B & C) will provide a suitable environment for benthic organisms both physically and chemically.
- As polymers bind to particles and settle down to bottom of the various cells of Long Lake, an increasing build up of persistent toxic constituents will result and likely be present in sediment pore water where benthic organisms live.
- The study will attempt to determine the re-colonization potential of benthic organisms by using two types of substrate trays. Regular lake bottom sediments and tailings. This summer, lake bottom sediments (taken from cell E) and tailings (from cell B) were placed in separate trays and placed back in cell E to be monitored over the next two years.
- Laboratory toxicity testing has already been started and will be another important aspect of the study.

Following Karsten's update on phase II of the kimberlite toxicity study, meeting participants had a number of questions and the following was noted:

- The tailings that were used in the substrate trays were collected in cell B after they had settled. These samples are a good representative of early stage consolidated settled tailings.
- Preliminary results from toxicity testing have shown that tailings sediment from cell B will produce a toxic response in benthic organisms. Sediment in cell E did not have this same toxic response and it initially appears that there are differences in tailings and natural sediments toxicity. At this point it cannot be determined if this toxic response is a result of kimberlite chemistry or unbound polymers.
- These kimberlite toxicity studies should provide useful information on the potential for successful reclaimed pit lakes that have processed kimberlite deposited at the bottom. If the physical nature of the tailings proves to be the problem for benthic organism survivability then this could potentially be overcome by placing a shallow layer of natural lake bottom sediments on the top.
- The depth of the samples in the study is approximately three (3) metres. At this depth the samples do not freeze solid and benthic biodiversity is the greatest.

Action Item #6

Staff to acquire Environment Canada's cell D Taiga water quality/Benthic data from Anne Wilson of Environment Canada.

Friday December 14th, 2001

Meeting called to order by chair at 8:30 am

Information Updates:

Red: Noted that he attended the caribou workshop that was hosted by the Environmental Monitoring Advisory Board (EMAB) and was fairly pleased with the workshop in general.

He mentioned that the maps on the Bathurst caribou herd distribution presented by RWED were misleading and incorrect. The boundary line appeared to be based solely on collared animals. The chair also noted that he attended a number of public meetings in Kugluktuk. It was also mentioned that his expenses for his extra time in Yellowknife was under budget.

Bill: Mentioned that he was interviewed by Steve Kennet of the Canadian Institute of Resource Law (CIRL) regarding project specific Environmental Agreements. Bill presented the Agency's views on the subject and when it was required presented his own views, but made the difference clear to the interviewer. Bill was also involved in the West Kitikmeot Slave Study (WKSS) cumulative effects questionnaire and continues work on setting up the western and northern affiliate of the International Association for Impact Assessment (IAIA), which includes a Northwest Territories region based in Yellowknife.

Tim: Attended a Cumulative Effects Assessment Management Framework (CEAMF) workshop dealing with traditional knowledge (TK) and cumulative effects and noted that many stakeholders were present (e.g. industry, community members). Some of the topics discussed at the workshop included: the reliability and accountability of TK information when it is used, capacity building in aboriginal communities, methods to identify TK-holders, and current models for incorporating TK into environmental impact assessment and monitoring (the best models are in the wildlife co-management arena).

A discussion was then initiated by Tim regarding the potential for a conflict of interest between his work as Director with the Agency and as a private consultant working on the Ekati™ file. The Directors had different views on this particular issue, but it was noted that this was a substantive issue bound to public perceptions. Although the Environmental Agreement gives little direction on this issue it was noted that it might be best for Tim to remove himself from working on the BHP-Billiton file for the Yellowknives Dene in an attempt to maintain a single voice for the Agency.

François: Attended the caribou workshop hosted by EMAB and noted that the workshop focused not only caribou monitoring around Diavik, but in the entire Lac de Gras region. During the workshop, François gave a brief presentation on what a strong wildlife monitoring program should entail and he believed the information was well received. A debriefing email was sent to all Directors on the Agency's involvement in the workshop. A number of recommendations arose out of the caribou workshop including the need for BHP Billiton and Diavik to discuss caribou monitoring data compatibility and for more structure in community site visits (i.e. all community groups go together and/or see the same things on site). François also mentioned that EMAB has contacted him as an independent wildlife ecologist (researcher) to review Diavik's wildlife monitoring program, specifically caribou monitoring.

Bob: noted that no technical committees have been established as of yet for EMAB, but they are being discussed. Bob also noted that he was pleased with how the EMAB caribou workshop went and mentioned that the recommendations arising out of the workshop are being discussed with EMAB and will be presented in the near future. EMAB is hoping to have similar workshops on fisheries, specifically compensation plans. Bob noted that he is interested in discussing the potential for a compensation fund for Diavik similar to what

was set up for Ekati™. Relating to the Agency, the NSMA reviewed the Environmental Agreement and has sent a letter with their concerns to the signatories of the agreement.

Pete: had a meeting with Jim Millard (BHP Billiton) and Deborah Muggli (Rescan) to predominantly discuss historical water quality issues (e.g. baseline data, winter data, detection limits, etc.). Inconsistencies in BHP Billiton's reporting of copper values in a number of reports were also discussed at this meeting. Pete also noted that he has been in contact with Tracy Williams of Lutsel K'e regarding the Stark Lake compensation project. He mentioned that since this lake hasn't been fished very much in the past 40 years, there is potential for collecting good baseline information. Pete noted that Dave Tyson (DFO) has agreed to assist Tracy with some data analysis. In addition, Pete has been approached by EMAB to review fisheries compensation plans for the Diavik project.

Tony: attended a meeting in November of the National Association of Communities Impacted by Mining in Peru, which has some 1200 member communities. Tony made a presentation about the BHP experience in the north with the licencing process, and the various extra tools used to regulate the company such as the environmental & socioeconomic agreements and the Independent Environmental Monitoring Agency. He told the Peruvians that the system worked fairly well in Canada and that BHP was doing a good job of environmental management at the minesite. He mentioned that the regulatory framework in Peru is completely different than Canada's, and as a result, socioeconomic and environmental impacts from mining, which provides a major portion of the country's export value, in Peru are fairly widespread and serious.

Directors made preparations for meetings with guests.

Meeting with DIAND (David Livingstone)

David Livingstone provided an update to Agency Directors on the NWT Cumulative Effects Assessment and Management Framework and Strategy (CEAMF). The following was discussed during his presentation:

- CEAMF steering committee consisted of a number of groups and organizations (aboriginal groups, government, industry, regulatory boards, etc.)
- Purpose and key principles of CEAMF (e.g. compatibility with treaty rights, land claims, and existing legislation).
- Framework components (e.g. land use planning, baseline monitoring, regulation & enforcement, information management, coordination, etc.).
- Implementation steps for strategy (e.g. develop framework, description of current situation in NWT, identification of linkages & gaps, identifying responsible parties, building linkages & integration of processes).
- Work done to date (e.g. stakeholder workshops, steering committees, TK projects, draft report on current context: Gaps and challenges, information management workshops, regional plans of action)
- Gaps and challenges in strategy (e.g. lack of land use plans in NWT, limited baseline monitoring or research, lack of a cumulative effects monitoring program on regional basis, limited cumulative effects research, accessibility with information management systems).

- What's ahead with CEAMF (e.g. further consultation & multi-stakeholder workshops, regional plans of action, implementing final framework and strategy, resource and funding allocation for implementation).

General discussion followed David's presentation and the following was noted:

- A body or organization is needed to champion CEAMF and meet the day-to-day requirements.
- Dealing with cumulative impacts requires a cumulative solution involving the active involvement of multiple stakeholders.
- A regional independent monitoring agency is required. Such an organization should potentially act as a public watchdog group, and be involved in implementation of a regional CEAMF. A regional independent monitoring agency could also possibly play a regional scale research & monitoring role that addresses research and monitoring gaps plus long-term land use planning goals.

A general discussion between David and the Directors also took place regarding the upcoming BHP Billiton Environmental Agreement review. The need for a regional independent monitoring agency was once again raised, as was the Akaitcho Treaty 8 request for an additional seat on the Agency.

Meeting with RWED (Ray Case and Anne Gunn)

Following introductions, Agency Directors and personnel from RWED discussed a variety of issues and concerns that they had in regards to:

Wildlife monitoring in the Lac de Gras region:

- The next meeting of the Bathurst Caribou planning committee will take place January 22nd to 24th in Kugluktuk. The workplan will be revisited at this meeting and an overview report tabled. A number of issue papers will be discussed at the meeting (e.g. harvest management, and wildlife monitoring).
- RWED has no legal authority in approving wildlife monitoring programs although it is an authority under the NWT Wildlife Act and are ultimately responsible for wildlife management (e.g. Caribou) in the NWT.
- Both BHP Billiton and Diavik need to better coordinate monitoring efforts at a local scale to improve the use of the data at the regional scale (e.g. collecting comparative information on foraging time).
- EMAB and RWED need to continue discussions on Diavik's monitoring programs and put forward recommendations.

Cumulative effects monitoring:

- Noted that the energetics model (specifically measuring foraging time) is still the most feasible method for quantitatively predicting cumulative effects on the Bathurst herd. No clear alternative has presented itself at this time.
- The energetics model is one of intuitive relationships and has received positive feedback from communities and is closely tied to their monitoring plans.

- Monitoring caribou movements (i.e. residency time) is an additional method that is being used, although there is a great deal of ‘noise’ in this particular data set and causal effects are very difficult to determine.
- A zone of influence (for wildlife) around the various mine sites and mine site components needs to be accurately determined. BHP Billiton’s 2001 WEMP report may attempt to establish this zone.
- Although many different government bodies and organizations are discussing cumulative effects, little actual research or monitoring seems to be taking place.

Foot rot disease of caribou:

- Bacteriological report on samples collected from dead caribou was reviewed and one sample was inconclusive.
- Community members concerns related to impacts of haul roads on caribou legs and feet. Crushed rock and gravel have the potential to get stuck in the feet of caribou.
- Surveys of lame animals did not show any conclusive results, but it was probable that ‘foot rot’ was a real effect most likely resulting from caribou feeding in wetter regions (i.e. higher chance of bacterial infection) and increased numbers of biting insects (i.e. animals running more often for relief).

Action Item # 7

Staff to acquire bacteriological report from RWED on samples collected from dead caribou.

Caribou road crossings:

- Crossings are not very effective unless they cover large sections of the road. Small ramp crossings are not biologically grounded.
- Current road crossings are designed to let caribou cross straight over the road. This design does not allow for caribou to get off the road safely at other locations if a truck surprises them. The design of the Sable haul road should be modified to allow for this type of caribou movement (i.e. caribou moving onto the road via a road crossing, moving along the road and getting off at another point).

Other:

- Noted that the MVLWB is looking for RWED & others to comment on land use permit conditions regarding wildlife. To date, little guidance has been passed onto the MVLWB from RWED personnel on wildlife land use permit conditions.

Staff Update:

Zabey: Briefly summarized the detailed staff activity report that was provided to the Directors, which described the activities of the staff since the last board meeting. Zabey went into further detail on some of the items on the report including: attended workshops (Mine reclamation, aquatic toxicity, preliminary screeners, and EMAB caribou workshop); mine site process plant visit, website update and mail out of the Agency newsletter.

Agency Directors requested that staff updates from the various attended workshops be placed in the resource center.

Directors briefly reviewed and discussed the action items arising out of the last board meeting and it was noted that the fisheries authorization for the Carrie and Desperation water bodies is still outstanding, but may not even be necessary due to the changing Misery mine plan (i.e. reduced waste rock pile). The previous board meeting minutes were also reviewed and approved.

Follow-up from pre-workshop technical sessions (WEMP / AEMP):

Overall the Directors expressed that they were pleased that BHP Billiton hosted these technical meetings and provided an opportunity to discuss issues of concern early. The Directors discussed the meetings and noted the following:

WEMP:

- François will be reviewing the draft 2001 WEMP report and providing initial comments to John Virgil of Golder Associates. Directors noted that they are pleased with BHP Billiton's increasing willingness to allow its consultants to discuss matters directly with the Agency.
- Preliminary results for 2001 and changes to the 2002 WEMP were discussed at the technical meeting and BHP Billiton agreed to meet again with concerned groups who have unresolved questions or concerns.
- Agreement by technical meeting participants, including BHP Billiton, that the wolverine monitoring program will be intensified rather than being cut back as was proposed by BHP Billiton, due to last year's wolverine problems at Misery and Diavik.

AEMP:

- Preliminary results for 2001 and changes to the 2002 AEMP were discussed at the technical meeting and BHP Billiton will write up summary of discussion.
- Air quality concerns were noted (i.e. fugitive dust and airborne contaminants) and BHP Billiton agreed to have the air quality data put in a report.

Water quality data reporting:

Agency Directors discussed differences in reporting for a select number of water quality parameters. The following issues and concerns were noted:

- Differences for reported copper values in 2000 AEMP report and in report entitled "Prediction of water quality for the LLCF". BHP Billiton has been alerted and acknowledges these differences. The differences in this particular case were a result of BHP Billiton using only partial SNP data in the AEMP report and the full data set in the report "Prediction of water quality for the LLCF". Such errors in reporting can lead to regulators questioning the data and making licencing more difficult as predictions of environmental impacts are largely based on water quality values.
- Noted that some metals (e.g. copper) had relatively high values (i.e. exceeding CCME) before March 2000, but much lower values after March 2000. BHP Billiton determined that change was largely a result of more precise detection limits.
- These significant changes to metal values from changing the detection limits make pre-March 2000 values questionable (i.e. reliability of baseline data) and no direct comparison can be made reliably. These statistical and data management issues potentially could be

resolved by testing water samples with both detection limit methods in order to establish a relationship between the pre-March 2000 and post-March 2000 data.

Action Item #8

Francois and/or Pete to draft letter to BHP Billiton regarding management of SNP water quality data and appropriate detection limit methodology.

Action Item #9

Robin to acquire the lab certificates for SNP station 1616 –30 and review copper & other metal data for this station.

The Agency Directors briefly discussed the summary minutes of the meeting between Pete McCart (Agency), Jim Millard (BHP Billiton), and Deborah Muggli (Rescan) on October 16, 2001. One important key point that was noted in the summary was that BHP Billiton and Rescan will be attempting to present an available data set in the 2001 AEMP report that establishes credible baseline information and removes unreliable data.

Sable, Pigeon & Beartooth update:

The Directors discussed the Sable haul road land use permit and the ongoing technical review for the rest of the proposed development. The following was noted:

Sable Haul road and Permit:

- An attempt was made by the MVLWB to address the Agency's recommendation on wildlife and truck traffic, but overall wildlife concerns were not adequately addressed. This concern was also discussed with the DIAND inspector and BHP Billiton environmental staff.
- Directors concerned that the proposed traffic measurement techniques will not accurately determine the number of haul and pickup trucks on the road.

Technical review:

- The MVLWB has implemented an updated workplan for licencing. It essentially consists of an information request and response loop that will proceed until all reviewers have enough information to conduct their review. A public hearing will then follow if interventions are submitted.
- Drafting of water licences and land use permits will follow the public hearing and draft forms will be submitted to reviewers for comments.
- There is no intention at this time of assembling a technical committee similar to that used for Diavik to discuss this application, but it may be implemented in the future if required.
- BHP Billiton will require additional land use permits and land leases for the Sable and Pigeon pits, but Beartooth falls under their existing lease. The land lease application process is nearing completion and they should be finalized shortly. A type 'A' water licence will also be required for the new development.
- Discussions regarding where the security will be attached (i.e. land lease, environmental agreement or land use permit) are still ongoing.

- A large number of organizations (e.g. government, aboriginal, independent boards) have submitted comments or concerns relating to Sable, Pigeon and Beartooth and Agency staff will continue to track responses to these concerns and any outstanding issues.

Action Item #10

Staff to draft information requests to the MVLWB regarding the Sable, Pigeon & Beartooth development (specifically road design around Sable & Pigeon pits and updated management plans).

Fox update:

Zabey briefed the Directors on the Fox amendment and noted the following:

- Fox dewatering plan has been submitted to the MVLWB for review. Directors potentially concerned with the impacts of dewatering such a large volume of water in the winter.
- The Agency and other organization submitted comments on the additional information provided by BHP Billiton as requested by the MVLWB (i.e. reports: “predicted water quality and preliminary environmental effects of predicted water quality from LLCF”).
- The MVLWB has presently not approved the mining phase of the Fox amendment.
- BHP Billiton is still negotiating the Nero-Nema crossing fisheries authorization with DFO. DFO has note that habitat is to be compensated at a ratio of 2:1 and habitat should be created rather than enhanced.

Cost-Variance update:

Zabey gave a brief update to the Directors on the status of the cost variance report and meeting and noted the following:

- BHP Billiton’s consultant, Komex and DIAND’s consultant, John Brodie, have submitted liability estimates using different models.
- The two estimates have large differences, specifically in the final mine closure numbers. These differences are largely a result of Komex integrating progressive reclamation work carried out on site in their model while John Brodie’s model did not.
- The present liability is fairly close for both models, most likely a result of progressive reclamation not being significant at this point in the mine life. The focus of the upcoming meetings will be on the liability estimate up to 2003.

Directors noted that perhaps when the old camp is closed, both models could be used to predict reclamation costs and determine if one model is more accurate.

Spring Seepage update:

Zabey briefed the Directors on the spring seepage survey and noted the following:

- Spring seepage survey data still not available digitally, but will be reviewed by staff once they become available.
- BHP Billiton has requested that this year they submit just one single seepage report that will consolidate all the data and analysis. This request to the MVLWB is consistent with an Agency annual report recommendation and the Directors agreed with this approach.

Treasurer's update:

François, the secretary treasurer, reported that for the financial period of April 1st to November 30th, 2001 and noted that approximately 47% of the budget has been spent. This expenditure pattern is consistent with what was predicted. The treasurer and the manager are continuing to monitor the budget carefully.

The Directors briefly discussed the budgetary impacts of the potential of having an eighth Director added to the board (e.g. extra workload for staff, travel expenses).

In addition, as noted earlier the budget allocated for the Chair of the Agency to spend more time in Yellowknife has not been exceeded.

Review of the Environmental Agreement update:

Zabey briefed the Directors on the Environmental Agreement review and noted the following:

- The NSMA and Lutsel K' First Nation have requested minor changes be made to the agreement (i.e. definition changes, additional director for Akaitcho Treaty 8).
- The changes as requested by Lutsel K'e (i.e. additional Director) would have budget implications to the Agency, but would otherwise be minor in nature. The manager if requested by those at the upcoming meeting should present the projected costs of adding another Director.

The Directors briefly discussed the potential of having the interested aboriginal groups attend the meeting with the signatories of the agreement and the Agency. Overall it was noted by the Directors that the Environmental Agreement has been effective and positive.

Action Item #11

Zabey to draft letter to society members of the Agency alerting them that the Environmental Agreement is being reviewed and that they should feel free to express any concerns they have with the agreement.

Water quality limits for major ions report:

Directors had a general discussion on the draft report entitled "Recommendations for Water Quality Limits for Major Ions Related to Discharges of Mine Water to Surface Water Bodies to Protect Aquatic Plants and Animal at all Life Stages" that was produced for the MVLWB by Amec Consulting. Comments submitted by DIAND Water Resources and Environment Canada on the report were also discussed. Overall, it appeared that the draft report, although a decent initial literature review, was lacking in a number of essential areas and that the topic required a good deal of further research before scientifically defensible guidelines could be developed.

Action Item #12

Directors and Staff to review draft report: 'recommendations for water quality limits of major ions related to discharges of mine water to surface water bodies to protect aquatic plants and animals at all life stages'.

Action Item #13

Zabey to contact John Sprague and determine the possibility of him doing a preliminary review of the above mentioned report (action item 12).

Inter-Agency cooperation issues:

Directors discussed Inter-Agency cooperation issues and noted the following:

MVLWB:

- Accessing the MVLWB's public registry is becoming increasingly expensive especially for large reports that are not submitted digitally.
- It has been previously discussed with BHP Billiton that it should directly copy the Agency when submitting documents to the MVLWB. BHP Billiton noted that it is open to the idea but would require approval by the MVLWB.

Action Item #14

Zabey to draft letter to the MVLWB regarding having BHP Billiton copy the Agency directly on all regulatory required reports & correspondence submitted to the board on Ekati.

- The lengthy review and approval period for the OEMP is resulting in BHP Billiton implementing plans that are not yet approved by the MVLWB. BHP Billiton is defending their policy by calling it adaptive management.
- DIAND inspectors often approve many of these minor changes to the OEMP while on site visits, but not all changes can be approved in this way.
- There have also been a few cases where industry implements changes to its environmental management plans without informing the MVLWB.

Action Item #15

Zabey to compare the approved management plans with the ongoing work at the mine site in order to determine if there are any non-compliance concerns.

Red noted that he would attempt to meet the executive director of the MVLWB (Bob Wooly) next time he is in town to discuss some of these concerns and issues.

EMAB:

- Agency staff have met EMAB executive director (Kirstie Simpson) and discussed the proposed changes to the boardroom. Cost estimates, impacts to the resource centre and scheduling issues were all discussed. Rent will not be affected by the change.
- The new combined boardroom will allow both EMAB and the Agency to host larger functions (e.g. workshops).

Motion: Directors approved the proposed changes to the boardroom as discussed.

Staff Review (in camera of Robin):

The board of Directors had a brief in camera session to discuss performance appraisal and remuneration package for the environmental analyst.

The Directors noted that they are very satisfied and pleased with the environmental analyst's performance.

The Directors agreed on a new remuneration package for the environmental analyst, which will be conveyed via letter from the manager.

Administration issues:

Directors approved changes to the administration policy as proposed by Zabey including the earned day off plan. Directors also approved closing the office over the Christmas holidays and awarding the staff with an extra week of holidays to be taken during Christmas.

Zabey briefed directors on the Global Mining Initiatives Conference to be held in May 2002 and noted that he was interested in attending. Directors noted that they continue to support the participation of staff in such professional development activities and that a summary or update is expected following them.

Any other business:

Tim expressed to Directors that Lutsel K'e is interested in having RWED forward wildlife incident reports from BHP Billiton to them. Noted that this request can potentially be raised to Raymond Bourget (RWED) at the next IACT meeting.

Action Item # 16

Staff to express to Raymond Bourget of RWED that Lutsel K'e is interested in having the BHP Billiton wildlife incident reports forwarded to them.

General discussion on the upcoming CEAMF workshop in late January 2002 and Agency participation at the workshop. Bill noted that he has discussed the workshop with DIAND staff and will likely attend.

Directors briefly discussed potential additions and improvements to the website.

Action Item #17

Robin to review feasibility of placing all public registry SNP data on the web.

Date of next board of directors meeting: February 3rd & 6th – 7th, 2002

Meeting adjourned at 11:00am.

Minutes Approved by
- Original Signed By -
Red Pedersen, Chair