

Rec'd via e-mail
Feb 14/03 gja

EA-SnapLake

From: Tim Byers [byerses@escape.ca]
Sent: Friday, February 14, 2003 4:16 PM
To: EA-SnapLake
Subject: YK Dene Tech Rept



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YDFN_T~2.DOC

Hi Glenda.

Please accept the attached report prepared on behalf of the Land & Environment Committee of the Yellowknives Dene First Nation. The 1st attachment is the 2-page plain language summary, the 2nd document is the full technical report.

Have a good weekend

Tim Byers
BYERS ENVIRONMENTAL STUDIES
Impacts Review Consultant to the Yellowknives Dene Land & Environment Committee

Yellowknives Dene Report on Outstanding Issues from Technical Sessions in Snap Lake Environmental Assessment

August 13, 2003

Executive Summary

- Our concerns about eutrophication (increasing the amount of nutrients and algae in the lake water) in small bays of Snap Lake will be considered by De Beers, but we have no guarantee that this possibility will be addressed in a monitoring program. If eutrophication occurs in any part of Snap Lake (the bays north and south of the mine site peninsula), will toxin-producing species of phytoplankton (blue-green algae) grow to harmful levels in those bays? This is a concern that De Beers has not addressed yet as they have concentrated on effects to the whole lake.
- De Beers has committed to but not yet supplied an information update detailing their assessment of the effect of Snap Lake water level fluctuation on the 50 m safety buffer zone between the North pile and the lake shoreline.
- The aquatics assessment is inadequate. There is no pre-development work on the zooplankton, which serves as fish food.
- The total area of Snap Lake that may become depleted of oxygen has not been determined yet. This work is needed to provide us with a true picture of the full impacts of low oxygen levels in Snap Lake as a result of the mine.
- We still don't know whether small leaks of fuel, coolants and hydraulic fluids from haul trucks and other vehicles on the winter road and mine access roads will be cleaned up before they build up on the roads to levels that could harm lakes and streams at break-up.
- De Beers has made no commitment to monitoring the effects of the winter road and mine access roads on beaver, muskrat and marten using streams and lakes over which the roads run.
- De Beers has not proposed a way to determine when a new species moving into their study area from north or south (muskox, deer or bison, for example) needs to be studied or monitored. Yellowknives Dene want to be included in any development of plans to study a new immigrant species.
- Yellowknives Dene should be included in talks on caribou and fish designed to :
 - resolve methodology disagreements on caribou studies,
 - determining what biological parameters to measure,
 - set thresholds for determining when a bad impact is starting to harm caribou,
 - determine pre-development health of fish and determine what parameters may change during mine development and operations.
- We would like to see aerial survey data for caribou be supplemented by surveys on the ground. Yellowknives Dene would be prepared to assist with identifying locations for ground-based surveys of caribou. These locations could be such places as areas we know to be important to caribou, and at historic, well-used caribou trails.

- The Yellowknives Dene Land & Environment Committee is still not comfortable with the esker excavation methods as they may affect wildlife using the esker. The Committee feels that a site visit to the esker is required to better understand the reasons for the esker excavation methods, and also to be given the opportunity to provide some advice based on their traditional knowledge of which species use eskers and how they use them.
- The Environmental Assessment for revegetation is not yet complete. Plants taking up contaminants from the ground of reclaimed areas should be monitored. Also, De Beers has not answered how they will prevent non-native vegetation from being accidentally introduced to the revegetation plots, as has happened at EKATI.
- De Beers has not presented a plan that tells us how they will know when revegetation efforts have succeeded. They need to know this before deciding when they can end the monitoring of how well the plants are growing and being used by wildlife. They say this is a matter for later, when they apply for licenses. But we think this matter is too important to keep us wondering about it until after the Review Board's decision whether to allow mining.
- We received a commitment from De Beers that they would provide a complete itemized list of what materials De Beers plans to bury in the landfill and in the underground mine at mine closure. We would like this list to be available to us before the start of the Public Hearings in March.
- We appreciate the fact that De Beers has included the Jericho Diamonds Project near Contwoyto Lake in its assessment of cumulative effects in the region. However, it has come to our attention that a new Environmental Impact Assessment Report for a larger diamond mine for Jericho has been prepared and delivered to the Nunavut Impact Review Board. That assessment report for a bigger mine at Jericho should be examined by De Beers for new predictions of impacts on caribou and carnivores (wolverine, wolves, bears). Those new predictions should be included in a revised analysis, since it could change the evaluation of cumulative impacts from all developments in the region to which Snap Lake will contribute a share.
- Cumulative social impacts of the immigration of new workers and their families from the South and from elsewhere in the N.W.T. have not been evaluated. Where will all these people (estimated in the hundreds) live? Possible negative impacts on the lands and communities of Akaicho territory from many new people is unknown. Do our communities have the ability and infrastructure needed to absorb all these people? Will such an increase in our local populations put new pressures on our land and wildlife?

Environmental Assessment Process Concerns:

Five days for Public Hearings may not be enough time to adequately cover all of the outstanding issues that all the government bodies and aboriginal groups have, in addition to any new issues brought up by intervenors and members of the public. We believe that the Board should allow enough extra time if needed to properly address everyone's concerns.

Also, we still don't have reasons from the Review Board for the Board's rejecting some of our Information Requests that were sent to the Board in May 2002 for De Beers to answer. We would appreciate knowing these reasons, so that we need not bring them up again at the Public Hearing.

Technical Report of the Yellowknives Dene First Nation Land &
Environment Committee: Statement of Unresolved Issues
Resulting from the Technical Sessions for the
De Beers Snap Lake Environmental Assessment

Prepared by

Rachel Crapeau

Chair: Land & Environment Committee

&

Tim Byers

BYERS ENVIRONMENTAL STUDIES

Feb. 14, 2003.

The Land & Environment Committee of the Yellowknives Dene First Nation has, as part of its mandate, the review of all proposed developments that have the potential for producing negative impacts to the land, waterbodies, and natural resources on Akaicho Treaty 8 lands. As such, we have been reviewing the Environmental Assessment of the Snap Lake Diamond Project. Our Committee, along with our technical advisor Mr. Tim Byers, were pleased to have had the opportunity to participate as a Directly Affected Party in the Technical Sessions for the Snap Lake EA last December.

This report details what we believe to be the outstanding issues that were raised by us but not resolved during the Technical Sessions in December, 2002. The Review Board described some of these as "likely resolved" in their 10 daily summaries of issues resolution. However, we do not agree that there was a resolution of those concerns or questions. The unresolved issues cover the following subjects:

- Impacts on aquatic organisms and water quality,
- Possible impacts from the winter roads,
- Impacts on terrestrial wildlife,
- Contribution of Traditional Knowledge to the EA,
- Reclamation,
- Cumulative impacts, and
- Socio-economic impacts.

Issues in this report are referenced from the Technical Session summary notes as sent to us by the Review Board.

Aquatics

(1.1) Concerns about localized eutrophication in small bays of Snap Lake will be considered by De Beers (*from p.16 of Day 4*), but we have no guarantee that this possibility will be addressed in a monitoring program. De Beers claims they have no ability at present to model for this. If eutrophication occurs in any part of Snap Lake (most likely to be the bays north and south of the mine site peninsula), will toxin-producing species of phytoplankton that are found in Snap Lake grow to harmful levels in those bays? If a bloom of cyanobacteria such as *Aphanizomenon flos-aquae*, which are present in Snap Lake, occur as a result of localized eutrophic conditions in a bay, then it is conceivable that waterfowl and mammals drinking the nearshore waters of the affected area could be poisoned. This is a possibility that De Beers has not addressed yet as they have concentrated only on whole-lake effects of nutrient-loading.

Recommendation:

De Beers should seriously investigate the possibility of eutrophication restricted to small areas of Snap Lake, and what possible impacts this may cause to phytoplankton community structure with specific reference to change in productivity of cyanobacteria.

(1.2) Also on the topic of plankton, there are questions as to the adequacy of the zooplankton baseline (*p.5 of Day 4*). We are presented with only an assumption of

zooplankton presence in some affected lakes and streams for assessment of a worst-case scenario. Without a minimum of two years of good baseline data on secondary producers in soon-to-be-affected water bodies, how can we track changes in this trophic level and the resulting effects of these changes on fish higher up the food chain? If there is a change in the diet of fish, as revealed in stomach content analyses, or a change in fish condition factors as the mine progresses, then without this baseline data we won't know if changes in fish diet and/or condition were caused by changes in the composition of available food taxa.

Recommendation:

The lack of adequate zooplankton baseline work in some of the water bodies to be impacted by the Snap Lake Diamonds Project should be accounted for by De Beers. They should explain how they plan to measure changes in zooplankton abundance and community structure from mine impacts, especially as these changes may affect fish.

(1.3) De Beers has committed to, but not yet supplied an information update on their assessment of the effect of Snap Lake water level fluctuation on the 50 m buffer zone between the North pile and the lake shoreline (*p.3 of Day 7*). Since this buffer zone is meant to provide a measure of safety to the lake from potential seepage or runoff from the North pile, it is necessary to show us how that buffer zone is affected by natural or mine-caused fluctuations in the water level of Snap Lake.

Recommendation:

Please provide the details to support De Beers' conclusion that there won't be any encroachment on the 50 m buffer zone between the North pile and Snap Lake shoreline, even in the highest predicted lake water level fluctuation.

(1.4) The total area of Snap Lake that may become anoxic (as defined by a dip below the CCME guideline level of 5.5 mg/L for oxygen concentration) has not been determined yet (*p.15-17 of Day 4*). This work is needed to provide us with a true picture of the full impacts of low oxygen levels in Snap Lake as a result of the mine.

Recommendation:

Please provide a description of the total area and likely locations of anoxic conditions expected in Snap Lake. This should be provided for both baseline and mine life conditions so that the difference between development and pre-development anoxic conditions can be assessed.

Winter Roads

(2.1) We are satisfied that there is a commitment to immediately contain and clean up accidental spills of goods hazardous to people and/or the environment that may occur on the winter road and all mine access roads. However, we still don't know whether small leaks of fuel, coolants and hydraulic fluids from haul trucks and other vehicles on these roads will be cleaned up. In response to this concern, De Beers has stated that there will be "a rapid response to any spill of any size" (p.4 of Day 8). However, this says nothing about smaller non-accidental, but unintentional, leaks from damaged or poorly maintained vehicles. It is encouraged that hydraulic fluids, fuel and coolants leaked onto the ice be cleaned up before they incrementally accumulate through each ice-cover season to levels that could harm lakes and streams at break-up.

Recommendation:

De Beers should clarify their position on environmental impact significance of, and existence of clean-up measures for, incremental accumulation of leaks onto the ice roads from vehicles.

(2.2) The assessment of impacts from the winter roads is incomplete. De Beers has made no commitment to monitoring the effects of the Tibbitt-Contwoyto winter road and mine access roads on furbearing mammals using streams and lakes over which the roads run. (p.15 of Day 5)

Recommendation:

De Beers should provide an assessment of what effects the Tibbitt-Contwoyto winter road and mine access roads have on furbearers that use freshwater habitats beside the winter road.

Wildlife

(3.1) During the Technical Sessions, De Beers made a commitment to undertake monitoring programs, in consultation/conjunction with government regulators & aboriginal groups, when a new species extends its range into their study area from outside the region (muskox, deer or bison, for example). However, De Beers has not proposed a way to determine when the study or monitoring of such a species should begin. De Beers needs to develop a mechanism that would trigger an initiation of monitoring any species that extend its range into the Snap Lake study area during mine life. This question has not yet been resolved to our satisfaction (p.10-12 of Day 5). Yellowknives Dene want to be included in any initiatives to develop such a trigger mechanism for the study of an immigrant species.

Recommendation:

In consultation with RWED, Environment Canada and aboriginal groups, De Beers should develop a species-specific mechanism that would trigger the initiation of monitoring of impacts on new immigrant species into the Snap Lake regional study area.

(3.2) We would like to see aerial survey data be ground-truthed to the greatest extent possible (*p. 7 of Day 6*). It is important to supplement aerial-based data of mass movements and numbers of caribou with annual monitoring of more localized movements in pre-defined, well-used areas of importance to caribou. As the mine progresses, these annual ground surveys could provide useful information of changes in caribou use of areas that become affected by mine activity. As well, ground surveys could more readily collect behavioural data. This data could supplement what science knows about caribou response to natural and industrial stressors in their environment such as predators, road traffic, mine infrastructure, noise and dust. Yellowknives Dene would be prepared to assist with identifying locations for these ground-based surveys.

Recommendation:

De Beers should make a commitment to use more ground-truthing of caribou aerial survey data.

Traditional Knowledge

(4.1) We note that there is disagreement between RWED and De Beers as to the importance and relevance of measuring caribou resilience to environmental changes that may be caused by mine development (*p. 11-12 of Day 6*). De Beers seems to have no interest in attempting to measure how successful or unsuccessful caribou might be in adapting to changes in their environment. But also noteworthy, De Beers has stated their interest in partnering with aboriginal groups in incorporating TK in studies.

Yellowknives Dene should be included in talks on caribou designed to :

- resolve methodology disagreements on caribou studies,
- determining what biological parameters to measure,
- set thresholds for determining when adverse impacts are likely.

We see a need for, and advantages to the company and RWED, in including Yellowknives Dene expertise when developing baseline and monitoring studies on caribou movement and resilience. Our TK input could help in determining what criteria to look at in evaluating caribou resilience to environmental stress. If caribou are (a) subjected to stressors from mine infrastructure and activity, or (b) deflected away from their usual migration routes, aboriginal hunters likely could assist in detecting physiological changes or abnormalities in caribou that may result. Abnormalities in anatomical features or internal organs, as well as changes in fat content at certain times of the year, will be evident to any knowledgeable Dene hunter.

The same could also be said for fish in terms of using TK to identify physiological responses to changes in their environment. Our TK might be useful in determining (a) baseline fish health, and (b) what parameters may change during mine development and operations.

Recommendation:

Yellowknives Dene should be included in future planning meetings between De Beers and government regulators designed to resolve methodological questions in the study of

caribou and fish. Our elders' knowledge can make a great contribution to developing study designs for monitoring the impacts to wildlife.

(4.2) The Yellowknives Dene Land & Environment Committee is still not comfortable with the excavation methods in the esker located due south of the mine site, as they may affect wildlife using the esker (*p.4 of Day 8*). Caribou migration & bear/wolf denning could conceivably be affected. We still do not know why material can't be taken along a narrow line running the length of the horizontal axis of the esker, rather than one big gouge of approximately 0.5 hectares taken out of it. De Beers argues that our suggestion would create a problem for wolf denning or cause erosion of the esker, and that regardless, the esker complex is very discontinuous with large gaps, making it not as attractive to migratory mammals. The Committee feels that a site visit to the esker is required to better understand the reasons for the esker excavation methods, and also to be given the opportunity to provide some advice based on our traditional knowledge of which species use eskers and how they use them.

Recommendation:

Members of the Yellowknives Dene Land & Environment Committee would like to visit the esker excavation site to get a better understanding of excavation techniques and to provide a more informed suggestion on ways to avoid or reduce impacts to wildlife that use the esker.

Reclamation

(5.1) The Environmental Assessment for revegetation is not yet complete. Contaminants uptake by vegetation in reclaimed areas should be monitored (*p.12 of Day 8*). It is understood that, unlike at EKATI, where contaminants uptake on bare kimberlite is being studied, the Snap Lake project will not revegetate directly onto exposed kimberlite. The revegetation will occur on granite caps over kimberlite. De Beers says that this makes contaminants monitoring unnecessary. However, before reaching this conclusion, they should explain what type of root systems the grasses and forbs that will colonize these areas have. Particularly, the question arises as to the likelihood of roots reaching deeper than the 0.5 meter depth of granite cover, eventually drawing nutrients (and potential contaminants) from the underlying kimberlite.

Also, De Beers has not answered the question of what measures they will use to prevent non-native vegetation from being accidentally introduced to the revegetation plots. This has happened at EKATI, where non-native grasses were introduced into revegetation plots from seeds brought into the area from Yellowknife in the soles of employees' boots (J. Witteman, pers. comm.).

Recommendation:

Please provide an assessment of the likelihood of contaminant uptake by vegetation in reclaimed areas.

Please provide a contingency plan that will prevent the introduction of non-indigenous vegetation species into the Snap Lake area.

(5.2) De Beers has not presented a plan that tells us how they will know when revegetation efforts and other aspects of reclamation have succeeded. Success criteria are currently missing from the proposed reclamation program. We are pleased that De Beers is making a commitment to design protocols for gauging the success of reclamation (*p.1 of Day 6*). But we do not want this crucial component of mine closure planning to be put off to a future regulatory process. It is important to have a reclamation program that shows stakeholders how reclamation will be monitored and success determined. This is especially important to include in this Environmental Assessment, in light of the fact that (a) potential contaminant uptake by recolonized vegetation has not been evaluated, and (b) we do not have any evidence that De Beers and regulators have the tools in place to measure the sustainability of reclaimed areas. Stakeholders need to be able to evaluate reclamation plans now, so that we can have greater confidence that the land will be restored to productive habitat after the reclamation is deemed complete.

Recommendation:

De Beers should present what success criteria they propose to use to determine when an impacted area has been successfully reclaimed to sustainably productive natural habitat.

(5.3) Discarded solid and liquid waste materials should be itemized so that communities know beyond a doubt what material is underneath the ground in the area that aboriginal people may camp and harvest on, or travel over during our land use activities after mine closure. We received a commitment from De Beers that the company would provide a complete, itemized list of what materials De Beers plans to bury in the landfill and in the underground mine at mine closure (*p.12 of Day 8*). We thank De Beers for this, and remind them that we would like this list to be available to us before the start of the Public Hearings in March.

Recommendation:

Please provide a complete, itemized list of all solid and liquid wastes that will be deposited in the landfill and in the depleted underground workings.

Cumulative Effects Assessment

(6.1) We appreciate the fact that De Beers has complied with the TOR by including Tahera's Jericho Diamonds Project near Contwoyto Lake in its assessment of cumulative effects in the region. However, it has come to our attention that a new Environmental Impact Assessment Report for an expanded diamond mine for Jericho has been prepared and delivered to the Nunavut Impact Review Board. In light of this, there seems to be a fundamental disagreement between De Beers and ourselves as to whether De Beers has an obligation to incorporate revisions to Tahera's original Jericho EIA predictions into the Snap Lake CE analysis (*p.15 of Day 6*). We believe that the new Jericho EIA for a larger mine development should be examined by De Beers for (a) revised predictions of impacts on caribou and carnivores (wolverine, wolves, bears), (b) new forecasts of dust and air pollution emissions from mine activity, and (c) new projections for future volume of haul traffic using the winter road that is needed to supply the Jericho mine. Those new predictions should be incorporated into a revised analysis of cumulative effects to which Snap Lake will contribute. A revised rating of impacts to caribou and carnivores from the Jericho Project could, by extension, change the Snap Lake Environmental Assessment Report's evaluation of regional CE impacts. Likewise, changes in the estimation of the amount of dust and air pollutants likely to be produced by Jericho could change De Beers' EA Report concerning regional air quality forecasts. Similarly, any changes in projections of total winter road traffic as a result of the new Jericho EIA could change the risk assessment of the likelihood of accidental spills on the road.

Recommendation:

De Beers should learn what the revised impact assessment is in the new Jericho EIA as it relates to Bathurst Caribou and wide-ranging carnivores, air quality, and traffic volumes on the winter road. These revisions to the initial Jericho EIS' conclusions that were used in De Beers' cumulative impact assessment should be incorporated in a revised CE assessment for the Snap Lake project.

Socio-Economics

(7.1) We note that the issue of whether the Snap Lake Diamonds Project will have an irreversible negative impact on aboriginal communities has not yet been resolved to the satisfaction of the Mackenzie Valley Environmental Impact Review Board (*p.3 of Day 9*). Yellowknives Dene do not recognize any socio-economic benefits from the construction and operation of another diamond mine in the region. Our communities' capable mine work force is presently saturated. Without timely training of the remaining unskilled people in our communities to be ready and capable to step into new jobs at Snap Lake, De Beers will have to bring in a large skilled work force from elsewhere in the N.W.T. and Canada.

We have been informed that approximately 40 trainee positions will be available (*p.5 of Day 10*). With 8 Dene communities in the affected area, this would yield an average of no more than 5 new jobs per community from the Snap Lake project. We have to question whether this is an adequate positive short-term (possible 20-25 years of employment in this mine) impact to offset the longer-term (36 years or more, according to RWED) negative socio-economic impacts to each community from this mining project.

What this situation leaves us with is the prospect of mine workers and their families, representing hundreds, possibly thousands of people, immigrating into Yellowknife and surrounding communities. Has De Beers investigated whether Akaitcho lands can absorb such an instant increase in population? Will De Beers, possibly with the assistance of expertise and data sets from the GNWT, analyze employment and local immigration impact predictions to evaluate the adverse social and economic impacts contributed by their project?

Recommendation:

Cumulative social impacts have not been adequately evaluated. Possible negative impacts on the lands and communities of Akaitcho territory, from immigration of many new people, is unknown.

De Beers should investigate

- (a) whether aboriginal communities have the ability and infrastructure needed to absorb an influx of new residents,
- (b) whether an increase in our local human populations will put new pressures on our land's renewable resources and wildlife?

Environmental Assessment Process Concerns

(8.1) This report details 15 issues of concern to Yellowknives Dene First Nation that have not yet been adequately resolved. Given the volume of outstanding unresolved issues from just our First Nation, one could suspect that there may be a huge “cumulative volume” of issues that may need airing at the Public Hearings scheduled for March 24-28. This leads us to the conclusion that the schedule for the Public Hearings may be too short. Five days for Public Hearings may not be enough time to adequately cover all of the outstanding issues that all the government bodies and aboriginal groups will likely have, in addition to any new issues brought up by intervenors and members of the public. We believe that the Board should allow enough extra time, if needed, to properly hear everyone’s concerns.

We urge the Review Board to show flexibility in allowing for the allocation of extra days for the Public Hearings to be able to adequately accommodate all stakeholders’ and public’s concerns.

(8.2) We still don’t have reasons from the Review Board for the Board’s rejecting some of our Information Requests that were sent to the Board in May 2002. A number of them were intended for De Beers to answer, and one was meant for the Review Board’s response. After a more careful perusal of the EA documents, and after the Technical Sessions, it became clear as to why the IRs in question were rejected. However, IR #1.4 (our numbering system, not the Board’s) under “Terrestrial Resources” from our Information Request submission, raised the issue that has been revisited in this report (see the 2nd issue of “Reclamation” section on page 6 above). It is still unknown why this IR had not been forwarded to the company, with the result that it had to be raised anew in the Technical Sessions.

Recommendation:

Please provide the Board’s reasons for not including some of our IRs to De Beers for their response, so that we need not bring them up again at the Public Hearing.