

**Pre-hearing Conference for  
De Beers Snap Lake Environmental Assessment Project**

**Date:** March 26 and 27, 2003  
**Start time:** 9:00 am  
**Location:** Explorer Hotel, Katimavik B

**PHC Day 1: March 26**

- 9:00 – 9:15 - *Coffee/Tea, Juice/Water, Muffins available* -
- 9:15 – 9:30 Opening Remarks by MVEIRB Executive Director, Vern Christensen
- 9:30 – 9:45 Facilitator Opening, John Donihee
- 9:45 – 10:00 Overview of Process, Glenda Fratton
- 10:00 – 10:45 Hydrogeology Issue Synopsis, Neil Hutchinson  
Discussion, All facilitated by John Donihee
- 10:45 – 11:00 - *Coffee Break* -
- 11:00 – 12:00 Surface Water Quality and Fisheries Issue Synopsis, Neil Hutchinson  
Discussion, All facilitated by John Donihee
- 12:00 – 1:15 - *Lunch Break* -
- 1:15 – 2:00 Geotechnical Issue Synopsis, Mark Watson  
Discussion, All facilitated by John Donihee
- 2:00 – 2:45 Wildlife/Habitat/Vegetation  
Discussion, All facilitated by John Donihee
- 2:45 – 3:00 - *Coffee Break* -
- 3:00 – 3:45 Social/Cultural/Economics, Richard Roberts and Roy Ellis  
Discussion, All facilitated by John Donihee
- 3:45 – 4:15 Cumulative Effects\*, Heidi Klein  
Discussion, All facilitated by John Donihee
- 4:15 – 5:00 Meeting Wrap-up / Review

**Notes:**

- *\*discipline specific cumulative effects issues will also be discussed under the appropriate topic*

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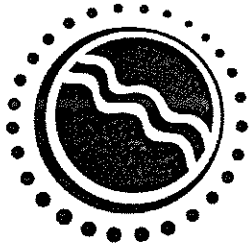
### **PHC Day 2: March 27**

*- Coffee/Tea, Juice/Water, Muffins available -*

- 9:00 – 9:15 Day 1 Review and Day 2 Objectives, John Donihee
- 9:15 – 9:45 Geotechnical/Hydrogeology Issues: Hearing Time Allotment
- 9:45 – 10:15 Surface Water/Fisheries Issues: Hearing Time Allotment
- 10:15 – 10:30 *- Coffee Break -*
- 10:30 – 11:00 Wildlife/Habitat/Vegetation Issues: Hearing Time Allotment
- 11:00 – 11:30 Social/Cultural/Economics Issues: Hearing Time Allotment
- 11:30 – 11:45 Wrap-up
- 11:45 – 12:00 Closing Remarks by MVEIRB Executive Director, Vern Christensen

#### **Notes:**

- *Cumulative effects issues will be allocated time under the appropriate discipline topic*
- *If needed, discussions may extend into the afternoon*



# **Mackenzie Valley** Environmental Impact Review Board

## **Proposed Public Hearing Agenda – Rough Outline**

Day	Date*	Topic
1	April 28	<ul style="list-style-type: none"> <li>Chair's opening remarks (15 min)</li> <li>1 hour Project Overview by Proponent</li> <li>Geotechnical</li> <li>Hydrogeology</li> </ul>
2	April 29	<ul style="list-style-type: none"> <li>Surface Water and Fish</li> </ul>
3	April 30	<ul style="list-style-type: none"> <li>Wildlife/Habitat</li> </ul>
4	May 1	<ul style="list-style-type: none"> <li>Social/Cultural/Economic</li> </ul>
5	May 2	<ul style="list-style-type: none"> <li>Other Issues (e.g. waste, air)</li> <li>Closing Statements               <ol style="list-style-type: none"> <li>Parties to EA (15 minutes each)</li> <li>Proponent (15 minutes)</li> <li>Chairman</li> </ol> </li> </ul>

*\*Each day will run from 9 am to 12 pm and 1:30 pm to 5 pm,  
with an additional evening session on Thursday May 1 from 6:30 to 10 pm.*

### **Example of Daily Hearing Process**

1. **Proponent Presentation on Geotechnical/Engineering**
2. **Questions by:**
  - a) Parties to EA
  - b) Public
  - c) Board
3. **Party Presentations on Geotechnical/Engineering**
4. **Questions by:**
  - a) Proponent
  - b) Other parties/interveners
  - c) Public
  - d) Board

**Order of parties to present at the Hearing will be based on their submission of their intention to participate at the hearing according to Rule #68, of the Rules of Procedures**

## Draft Public Hearing Agenda: DeBeers Canada

April 28, 2003	Opening remarks 1. Chair 2. Proponent 3. Other parties as registered and confirmed
April 28, 2003	Hydrogeology: - Groundwater quality and quantity - Treatment or Management - Physical / Chemical response of Snap Lake - Other
April 29	Surface Water and Fish - Biological response in Snap Lake - Cumulative effects - Other
April 29	Geotechnical - -
April 30	Wildlife, Wildlife Habitat and Vegetation - Appropriate VECs and emphasis - Baseline data
April 30	Wildlife and Wildlife Habitat Themes - Mitigation Planning - Environmental assessment methods and conclusions - Cumulative effects assessment - Monitoring
May 1	Social/ Cultural/ Economic Themes - Employment targets - Labour force - Cultural and traditional resource use - Community focussed issues (support and development)
May 1	Social/ Cultural/ Economic Themes - Minesite issues (fly-in; power gen., health and safety) - Consultation (MMAC) - Cumulative effects assessment
May 1	Evening Session
May 2	Air Themes - cumulative effects -- particular matter from BHP and Diavik
May 2	Other - -

**Parties will be requested to indicate by end of day April 7<sup>th</sup> if they intend to make a presentation and for which topic(s).**

- WORKING DRAFT -

ISSUE SYNOPSIS: HYDROGEOLOGY

Issue ID	Summary of Outstanding Issue	Summary of Potential Impact on the Environment	Type of Issue (Design, Baseline, Impact Assessment, Mitigation, or Monitoring)	Who raised the Issue?								Do De Beers' tech. memos speak to this issue (Y or N)	Issue Status according to Parties (Resolved, Unresolved, In Progress, or Unknown)	Issue Status according to Experts to the Board (Resolved, Unresolved, In Progress, or Unknown)	Rationale of Issue Status
				INAC	GNWT	NRCan	EC	DFO	Dogrib	NSMA	YDFN				
Dogrib 1.1	Groundwater - are predicted mine groundwater inflow quantities valid?	Affects: size and cost of water treatment plant; mine pumping systems; economic viability of mine; and potential water quality impacts on Snap Lake	Impact Assessment						x			Y	Unresolved	Resolved - subject to refined inflow predictions during the water license and continuing during the life of the mine.	There is always uncertainty in groundwater flow predictions. However, De Beers has provided a sophisticated analysis which is typical or better than the standard industry practice. Input data from the AEP is fairly comprehensive although the regional hydrogeological data is sparse. The model accurately predicted inflow from the AEP. De Beers risks the entire economic viability of the mine if the predictions are not conservative. There are contingency measures (e.g. grouting) for reducing higher than expected inflows.
Dogrib 1.2	Groundwater Quality - are the groundwater quality values (chloride phosphorus and TDS) used in the impact assessment sufficiently conservative	Affects the required efficiency of the water treatment plant and potentially water quality in Snap Lake	Impact Assessment						x			Y	Unresolved	Resolved	...but there remains uncertainty in the predictions that needs to be addressed by ongoing monitoring and realistic, economically feasible contingency measures perhaps during the water license stage.
Dogrib 2.4 (I)	Chloride in groundwater (not chlorine) - confirmation of predictions, need to monitor	Changes to aquatic community of Snap Lake	Monitoring	X		X	X	X	X	X		Y-February 28, 2003	Unresolved	Resolved	DeBeers have provided additional data and rationale for their predictions and predictions appear conservative. They have not yet committed to additional monitoring but this can be made a condition of approval or of Water Licence
Dogrib 2.4 (II)	Chloride in Snap Lake (not chlorine) - conservative analysis	Changes to aquatic community of Snap Lake	Impact Assessment	X			X	X	X	X		Y-February 7, 2003	Unresolved	Resolved	DeBeers have provided the assessment and addressed the IR - therefore IR is resolved. Parties may disagree on conclusions and significance but we have sufficient info. to proceed.
Dogrib 2.6	Water Quality - Effluent Discharge and total loadings - accuracy of groundwater model	TDS and metal levels in Snap Lake - effect on aquatic community	Impact assessment	X			X	X	X	X		Y - Feb. 28, 2003	Unresolved	Resolved	DeBeers have provided additional analysis of groundwater quantity and quality which are quantitative, based on measured values and have used conservative values in their model. Issue is resolved sufficient to assess impacts of groundwater loadings.
	Water Quality - Effluent Discharge and total loadings - accuracy of groundwater model - mine face interactions	TDS and metal levels in Snap Lake - effect on aquatic community	Impact assessment						X			N - addressed in EA	Unresolved	Resolved	Concerns regarding groundwater interaction with working mine face are addressed in EA via mine water contribution to water quality.
	Water Quality - Effluent Discharge and total loadings - reduction of impact	TDS and metal levels in Snap Lake - effect on aquatic community	Mitigation				X		X			Y - Feb. 10 Tech. Memo	Unresolved	In progress	DeBeers have provided material on removal of TDS from effluent
NSMA 3.1	Hydrogeology - Limited Data - Regional Groundwater Model and impact prediction models for quality and quantity	Inadequate baseline to support predictions of effects	Baseline & Assessment	X			X	X	X	X		Y - 2 reports on Feb. 28	In progress	In progress	Differences in water levels and interpretations of regional flow, groundwater velocity, fractures and faults, mine water inflow, geochemistry via paste backfill, NSMA provide many specific requirements.
INAC 2.2	Hydrogeology - Quality of Connate groundwater inflow	Vast majority of mine water impact to Snap Lake derived from connate groundwater inflow to mine. Concentrations will be "substantially higher" than indicated in connate water, mine discharge water and hence in Snap Lake and so EA underestimates effects	Baseline & Assessment	X			X	X	X	X		Y - February 28, 2003	In progress	In progress	DeBeers provided detailed response to increase information. Board experts conclude that groundwater assessment is appropriately (but not excessively) conservative. Further discussion and resolution required based on arguments presented by INAC and others.
	Hydrogeology - Impaired Mixing of discharge water in Snap Lake in winter. No baseline under ice current data and assumptions on vertical mixing	Increased TDS concentrations in lake water which flows into the mine results in positive feedback so that mine water concentrations increase.	Assessment	X			X	X				N	Unresolved	Unresolved	Need to resolve under-ice mixing and density layers in Snap Lake
	Hydrogeology - Water Quality in Snap Lake - underestimation of in lake concentrations by 2-4 fold	EA underestimates effects to aquatic life	Assessment	X			X	X	X			covered in 2 points above	In progress	In progress	DeBeers have provided additional info. on connate groundwater but not on dispersion models. Requires technical debate to resolve

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NRCan B-1	Mine Inflow - Model Calibration : DCMI have simulated hydraulic heads to develop the mine inflow model but have not provided suitable hydraulic head data to calibrate the mine inflow and claim that the in-situ head measurements requested by NRCan are not suitable	Inaccurate estimates of mine water inflow may result in higher discharges to Snap Lake and resultant effects to aquatic life.	Baseline + assessment	X		X	X	X	X	X		Y	"Largely unresolved"	In progress	DeBeers have provided a revised mine water inflow model but it is not known if this addresses NRCan concerns.
NRCan B-2	Derivation of field hydraulic data and elaboration of methods for their use in hydraulic model	Inaccurate estimates of mine water inflow may result in higher discharges to Snap Lake and resultant effects to aquatic life.	Assessment	X		X	X	X	X	X		n/a	Resolved	Resolved	NRCan received a verbal reply from the proponent at the evening hydrogeology breakout session on Day 2 of the November 2002 technical sessions.
NRCan B-3	Groundwater inflow model needs to explicitly consider active hydraulic features with high hydraulic conductivities such as the Snap fault.	Inaccurate estimates of mine water inflow may result in higher discharges to Snap Lake and resultant effects to aquatic life.	Assessment	X		X	X	X	X	X		Y	In progress	In progress	DeBeers have submitted revised groundwater model. Full review and discussion required.
NRCan B-4	Unrealistically low estimates of variance in groundwater inflow.	Inaccurate estimates of mine water inflow may result in higher discharges to Snap Lake and resultant effects to aquatic life.	Assessment	X		X	X	X	X	X		Y	In progress	In progress	Concern is "minor but unresolved". DeBeers have submitted revised groundwater model. Full review and discussion required.
NRCan B-5	Unrealistic and unsubstantiated formulas for calculating leakage factors for groundwater model - no basis in physical measurements	Inaccurate estimates of mine water inflow may result in higher discharges to Snap Lake and resultant effects to aquatic life.	Assessment	X		X	X	X	X	X		Y	In progress	In progress	Concern is "partially resolved". DeBeers have submitted revised groundwater model. Full review and discussion required.
NRCan B-6	DCMI provided 2 estimates of groundwater flow to N and NE lakes and accepted lowest. Better rationale is required and physical evidence of groundwater salinity to substantiate mixing. Flow of saline groundwater may accumulate in lake troughs and invalidate mass balance method.	Inaccurate estimates of groundwater flow may invalidate prediction of potential effects to North and NE lakes.	Assessment	X		X	X	X	X	X		Y	Unresolved	In progress	NRCan not satisfied by verbal response received. DeBeers have submitted revised groundwater model. Full review and discussion required.
NRCan B-7	Discrepancy between inflow to NE lake and outflow from source at North Lake.	None - uncertainty in baseline conditions	Baseline			X						N	Resolved	In progress	NRCan received a verbal acknowledgement that there was an error in Table 5-1 of North Lake report. (What is the right answer and has it been corrected?)
NRCan B-8	DeBeers have not conclusively shown a downward gradient in groundwater flux. Groundwater contaminants may diffuse to Snap Lake post closure instead of moving away from Snap Lake by advective-dispersive transport.	Movement of contaminants to Snap Lake may impair water quality and aquatic life post closure.	Assessment	X		X						Y	Unresolved	In progress	DeBeers have submitted revised groundwater model. Full review and discussion required.
EC2	Attenuation of groundwater contaminants prior to discharge to N and NE lakes post closure. Modelling of groundwater movement between mine (post closure) and N and NE lake.	Water quality impairment in N and NE lakes post closure and resultant effects on aquatic life	Assessment	X		X	X	X	X	X		Y	Resolved	In progress	Further review of revised groundwater models is required to substantiate basis of EC conclusions.
EC5	EA may have underestimated water quality effects on Snap Lake from groundwater released via mine water discharge due to : uncertainty in connate groundwater quality, upwelling of saline groundwater, "Recycling" of high TDS water from Snap Lake back to mine inflow and reduced mixing of dense discharge water under the ice in Snap Lake.	EA underestimates TDS concentrations in lake and underestimates impact of project on aquatic communities.	Assessment	X			X	X	X			Y	In progress	In progress	DeBeers have submitted revised assessments of groundwater quality but not a 3D model of mixing under ice. The revised assessment suggests that worst case connate water inflow concentrations may be higher than indicated in the original EA prediction. Assessment also depends on resolution of effects of TDS on aquatic life.

NOTES INAC - Indian and Northern Affairs Canada  
DFO - Fisheries and Oceans Canada

GNWT - Government of Northwest Territories  
EC - Environment Canada

NRCan - Natural Resources Canada  
Dogrib - Dogrib Treaty 11 Council

NSMA - North Slave Metis Alliance  
YDFN - Yellowknives Dene First Nation

n/a - not applicable

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ISSUE SYNOPSIS: GEOTECHNICAL

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INAC 2.1.1 Dognib 5.0	<b>Geochemistry of North Pile</b> Issue: From the information provided by DCMi, INAC concludes "that contaminant loads potentially generated from the North Pile remain underestimated due to the slower freezing rates and warm [ground] temperatures, and that the potential increase in loads for specific chemicals of potential concern have not been identified." Dognib concurs. -- INAC is uncertain if there is a reason why this influence could not be mitigated.	<b>Potential Impact: Influence on Aquatic Life in Snap Lake</b> INAC consider that DCMi should estimate "maximum additional increases for other contaminants (from the North Pile) so that potential receiving impacts can be evaluated".	Impact Assessment												Re: INAC March 14, 2003, "INAC concludes that the issue of appropriate estimates of contaminant loads is unresolved, but that the uncertainty may be within tolerable ranges, particularly given the proposed commitment to collect seepage and runoff, monitor early trends, and modify mitigation measures on the basis of field observations."
INAC 2.1.2	<b>Geochemistry of Kimberlite</b> Issue: INAC is not certain that the "conceptual-contingency planning" is adequate to address unexpected acid seeps from [processed] kimberlite.	<b>Potential Impact: Influence on Aquatic Life in Snap Lake</b> Concern for possible long term "dissolved contaminant loads" in drainage from [processed] kimberlite	Impact Assessment	X					X			Y	Unresolved	In Progress	Re: INAC March 14, 2003, "INAC concurs that the Starter Cell provides some time to assess the accuracy of predictions and that the collection ditch design has been improved. There is still some uncertainty in the potential of these proposed actions to address poor quality kimberlite drainage should it occur over the longer term, as the Water Treatment Plant currently addresses total suspended solids loads and would not be capable of reducing dissolved contaminant loads should they arise from the North Pile."
INAC 2.1.3	<b>NEW ISSUE- PAG [Existing] Stockpile -</b> Issue: An existing stockpile of PAG was discussed by DCMi during a Break-Out Session on December 3rd was not specifically mentioned in original EA.	<b>Potential Impact: Influence on Aquatic Life in Snap Lake</b> INAC would like clarification of how the "loads from the existing stockpile have been accounted for in the "impact assessments for operational and/ long term time frames.	Impact Assessment	X								Y	Unresolved	In Progress	Re: INAC March 14, 2003 "DCMi's contingency plans to place the material underground appear to be appropriate. As noted earlier, logistics may not allow encapsulation. INAC notes that the proposed placement underground appears to be triggered only if the material becomes acidic. Even if the material does not become acidic, the material has the potential to act as an source of contaminants in the both short and long term. INAC has not confirmed whether the potential loads from this stockpile have been included in the impact assessments for operational and/or long term time frames, but this is likely a minor issue."
INAC 2.1.4	<b>Quality Control for Construction Material -</b> Issue (Regulatory): Acid rock drainage, metal leaching and geochemistry criteria for identifying "potentially problematic" [construction] materials [in particular, suitable rock] have not been fully responded to by De Beers	<b>Potential Impact: Influence on Aquatic Life in Snap Lake</b> Implied, [Without prescribed quality control measures to prevent the use of deleterious materials there could be potential acid rock drainage, metal leaching and geochemistry loads from the construction materials used for roads and other earthworks construction]	Impact Assessment	X								Y	New Issue	Unresolved	Re: INAC March 14, 2003 "During discussions, INAC agreed that suitable clean construction rock was likely available, and that a more detailed justification for criteria that would identify material suitable for construction, based on site and rock specific kinetic test results, could be submitted as part of the regulatory review."
INAC 2.3 Dognib 5.0	<b>Geotechnical Issues [Thermal/Geochemistry Predictions for North Pile] -</b> Issue: "it may not be possible [at this stage, for DCMi] to significantly improve on the current thermal model predictions [rules of freezing, distribution and proportions of frozen and unfrozen water in the pile ]	<b>Potential Impact: Influence on Aquatic Life in Snap Lake</b> higher than expected "cryo-concentration and sub-zero degree metal leaching [from the North Pile] may occur with "higher than anticipated rates of release from the north arm of Snap Lake.	Impact Assessment	X								Y	Regulatory	Regulatory	Re: INAC March 14, 2003 "This issue is not fully resolved due to the uncertainties in the testing and modeling. The work to date suggests that the risk of adverse impacts is low. A key aspect of the current design is the allowance for contingencies."
INAC 2.4.1 Dognib 5.0	<b>General [Permafrost and Thermal] Considerations Regarding the North Pile -</b> Individual issues are discussed separately below	N/A	N/A	X					X			Y	Unresolved	Unresolved	
INAC 2.4.2	<b>North Pile Geothermal Modelling</b> See individual issues below	N/A	N/A	X								Y	N/A		
INAC 2.4.3 NRCAN A-1	<b>Geothermal Flux - Issue Resolved:</b> In the February 2002 EA, DCMi used a Geothermal Flux value in their geothermal model that was lower than would be estimated from ground temperature data in holes TH02-01 and TH02-02	<b>Potential Impact: Influence on Aquatic Life in Snap Lake</b> -potential differences in predictions and interpretations of geothermal, geotechnical, geochemistry, hydrogeology and hydrology for North Pile behaviour.	Impact Assessment	X		X			X			Y	INAC-Resolved NRCAN-Resolved Dognib-Unresolved	In Progress	

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INAC 2.4.4 NRCan A-1	N-Factors - Issue Resolved for INAC Issue: The geothermal-model-N-Factors used in the original EA by DCMI were not considered by the intervenors to be conservative enough for predicting freezing rates in the North Pile.	Potential Impact: Influence on Aquatic Life in Snap Lake Concern was expressed for potential differences in predictions and interpretations of geothermal, geochemical, hydrogeology and hydrology related to North Pile.	Impact Assessment	X		X						Y	INAC-Resolved NRCan-Unresolved	In Progress	Re: NRCan March 14, 2003, "... One of the following alternative approaches is recommended to resolve remaining issues:  1) A more conservative approach regarding the upper boundary condition of the North Pile to consider the impact of a deeper snow cover (~40-50 cm as the developer indicates is representative of site conditions) is required. A warming trend for surface temperature should be used to adequately determine the active layer thickness and thermal condition of the pile throughout the life of the project, at closure and beyond. This more conservative approach will allow identification of potential problems related to pile stability, seepage and water quality. ..."
INAC 2.4.5 NRCan A-1	Thermal Properties - Issue Resolved for INAC In the February 2002 EA geothermal analyses, no sensitivity analyses were provided to show the influence on thermal (freeze-back) predictions for the North Pile, resulting from changes in thermal properties of soils analyzed.	Potential Impact: Influence on Aquatic Life in Snap Lake Concern for potential differences in predictions and interpretations of geothermal, geochemical, hydrogeology and hydrology related to North Pile.	Impact Assessment	X		X						Y	INAC-Resolved NRCan-Unresolved	In Progress	
INAC 2.4.6 Dogrib 5.0	Cryoconcentrations Issue: "... one, unreplicated laboratory (frost heave) test" has not completely resolved the uncertainties with respect to the potential for "porewater expulsion during freezeback of the [North] pile."	Potential Impact: Influence on Aquatic Life in Snap Lake Concern is for potential differences in predictions of geochemistry of discharge water from the North Pile.	Impact Assessment	X					X			Y	Unresolved	In Progress	Re: INAC March 14, 2003, "INAC does not consider that the permafrost and geothermal issues raised at the Technical Hearing have been resolved, but recognizes that DCMI has made considerable progress to this end."
INAC 2.4.7	North Pile Ground Ice - Issue Resolved February 2002 EA had not clearly indicated plans by DCMI to try to delineate and address the possibility of ice-filled fractures in the bedrock beneath and in the path of drainage downstream of the North Pile.	Potential Impact: Influence on Aquatic Life in Snap Lake Concern was that ice-filled discontinuities (referred to by INAC as ice wedges) in the bedrock may exist, that could become paths of preferred flow of seepage from the North Pile to Snap Lake. This would be a particularly strong concern if thaw degradation of the ice in the discontinuities/"ice wedges" were to occur.	Baseline & Impact Assessment	X								Y	Resolved	Resolved	
INAC 2.5.3 Dogrib 5.0 NRCan A-1	North Pile Seepage - Issue Conditionally Resolved with INAC: February 2002 EA proposed partial interception of seepage from the North Pile by a perimeter ditch system and made predictions of the North Pile seepage volumes that would bypass the ditches and report direct to the north arm of Snap Lake. A revised ditch and drainage interception proposal has been made.	Potential Impact: Influence on Aquatic Life and Drinking Water in Snap Lake Concern was that higher than expected volumes of impacted seepage from the North Pile would by pass the ditch and report to Snap Lake.	Design & Impact Assessment	X		X			X			Y	INAC-Regulatory NRCan-Unresolved Dogrib-Unresolved	In Progress	Re: INAC March 14, 2003 "A commitment has been made to monitor ditch performance and to make any necessary modifications. It will be important to include this particular monitoring as a condition of any EA approval and regulatory permits."  Re: NRCan March 14, 2003, "... One of the following alternative approaches is recommended to resolve remaining issues: 1) A more conservative approach regarding the upper boundary condition of the North Pile to consider the impact of a deeper snow cover (~40-50 cm as the developer indicates is representative of site conditions) is required...This more conservative approach will allow identification of potential problems related to pile stability, seepage and water quality. 2) A conservative estimate of 50 to 75% of the pile remaining unfrozen, as suggested by INAC, be adopted to determine appropriate mitigation/contingency measures related to seepage and pile stability."  Re: Dogrib, February 14, 2003 "There is a concern that long term climate warming effects will adversely affect conditions in the pile and yield high rates of seepage during post closure times." ...



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NRCan A-2	Climate Impacts on Tibbit to Contwoyo Lake Winter Road - Issue Resolved: The question raised was: In view of climate warming trends, is the assumed annual operating window for the winter road adequate for the proposed Snap Lake Mine life?	Potential Impact: Site Degradation along Winter Road Corridor As a result of the Snap Lake Diamond Mine more traffic will develop on the winter road system therefore, concern was expressed for the operating window of the road over the design life of the proposed mine.	Impact Assessment			X						Y	Resolved	Resolved	
NRCan A-3	Impacts of aggregate use- terrain disturbance associated with ground ice thaw - Issue Resolved (Regulatory): A contingency plan for identifying and mitigating potential thaw degradation of massive ice in the esker borrow source was requested from DCM.	Potential Impact: Influence on Wildlife Habitat Concern for site degradation caused by uncontrolled thaw of massive ice that is exposed or thermally disturbed by excavation during extraction of borrow materials from the esker. Eskers are important to sustain wildlife.	Impact Assessment			X						Y	Resolved	Resolved	
NRCan A-4a	Impacts of underground mine on ground thermal regime - Issue Resolved: Concern was expressed for additional seepage to the underground mine at frozen/unfrozen interfaces. Thaw degradation at these interfaces would be influenced by heat from the underground mine activities and from the resulting convective heat introduced by water infiltration at these interfaces.	Potential Impact: Influence on Aquatic Life in Snap Lake Concern was for additional seepage volumes to the underground mine. All water from the underground mine is treated as described in the EA and returned to Snap Lake. Therefore the Water Treatment Facilities must have adequate capacity to treat all water and, any additional loads to Snap Lake introduced by the treated water must be included in the EA.	Impact Assessment			X						Y	Resolved	Resolved	
NRCan A-4b	Impacts of roads, airstrip, mill and ancillary facilities etc. on ground thermal regime- Issue Resolved: Concern was expressed for additional and altered subsurface drainage paths resulting from changes in the active layer thickness in areas disturbed by development. These concerns were compounded by potential climate change effects. DCM responded by confirming that they have considered these effects in their water balance and seepage analyses.	Potential Impact: Influence on Aquatic Life in Snap Lake Degradation of the permafrost will potentially alter subsurface drainage patterns.	Impact Assessment			X						Y	Resolved	Resolved	
NRCan A-4c	Impacts of Water Management Pond - Issues Resolved: Questions answered were: 1) whether or not the integrity of dam at the Water Management Pond is in any way altered by permafrost degradation and, 2) have seepage losses from the Water Management Pond been included in DCM water quality model and water management plan?	Potential Impact: Influence on Aquatic Life in Snap Lake NRCan report that DCM have included seepage losses in their water management plan that are due to seepage increases from Water Management Pond due to thaw degradation.	Design & Impact Assessment			X						Y	Resolved	Resolved	
NRCan A-5	Permafrost and Taliks - Issue Resolved: Question answered was: Does DCM have enough information with respect to permafrost distribution and specifically taliks? Concern was for level of confidence in predicting locations and growth of taliks due to development and climate change.	Potential Impact: Influence on Aquatic Life in Snap Lake and Surrounding Lakes Potential implications were raised for interaction (mixing) between surface water and groundwater at Taliks.	Baseline & Impact Assessment			X						Y	Resolved	Resolved	

NOTES INAC - Indian and Northern Affairs Canada  
DFO - Fisheries and Oceans Canada

GNWT - Government of Northwest Territories  
EC - Environment Canada

NRCan - Natural Resources Canada  
Dogrib - Dogrib Treaty 11 Council

NSMA - North Slave Metis Alliance  
YDFN - Yellowknives Dene First Nation

n/a - not applicable

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ISSUE SYNOPSIS: SURFACE WATER and FISHERIES

Issue ID	Summary of Outstanding Issue	Summary of Potential Impact on the Environment	Type of Issue (Design, Baseline, Impact Assessment, Mitigation, or Monitoring)	Who raised the Issue?								Do De Beers' tech. memos speak to this issue (Y or N)	Issue Status according to Parties (Resolved, Unresolved, In Progress, or Unknown)	Issue Status according to Experts to the Board (Resolved, Unresolved, In Progress, or Unknown)	Rationale of Issue Status
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YDFN 1.1	Eutrophication assessment does not consider small bays or cyanotoxins. This has not been modelled or specifically addressed in a monitoring program	Localized nutrient enrichment, production of toxins by cyanobacteria and impacts of toxins on waterfowl and mammals	Impact Assessment + Monitoring							X	X	N	Unresolved	Unresolved	DeBeers have submitted a model of whole lake response and have not submitted an assessment or opinion on responses of smaller portions of the lake or comparisons of predicted enrichment to that in lakes experiencing toxic cyanobacteria blooms
YDFN 1.2	Lack of baseline data on zooplankton communities in smaller lakes which may be influenced by project. DeBeers collected fish data only and "assumed" zooplankton community. Have provided no details on impact assessment for zooplankton	No baseline information prevents assessment of response of smaller lakes in event of "worst case" scenario. No data to assess changes in fish diet.	Baseline								X	N	Unresolved	Unresolved	The YDFN have not been satisfied that their concerns have been addressed. DeBeers have not committed to defining the baseline nor have they offered a rationale for why the data are not necessary.
YDFN 1.3	Information request on water level fluctuations near the North Pile to demonstrate no encroachment of water level on 50m buffer zone between North Pile and Snap Lake.	Buffers < 50m may not provide adequate protection of Snap Lake from seepage	Baseline								X	N	Unresolved	In progress	DeBeers Committed to provide this information on Day 7 of Technical sessions. Note that Feb. 27 Tech. Memo on North Pile Seepage shows barriers and ditches to collect seepage from North Pile.
YDFN 1.4	Area of Snap Lake predicted to fall below CCME Dissolved Oxygen Guideline of 5.5 mg/L in baseline and mine life.	Oxygen depletion may reduce overwintering habitat for lake trout	Impact Assessment	X				X	X		X	Y - Feb. 27, 2003	Unresolved	In progress	DeBeers Tech. Memo of Feb. 27, 2003 shows under ice measurements at 50 sites and estimate that 10% of lake area shows depleted oxygen in baseline. They have not provided an assessment of how low oxygen areas will change with lake enrichment.
YDFN 2.1	Incremental accumulation of smaller non-accidental, but unintentional, leaks of fuel, coolants and hydraulic fluids from damaged or poorly maintained haul trucks and other vehicles over each ice-cover season.	Potential to harm lakes and streams at break-up	Mitigation								X	N	Unresolved	Unresolved	De Beers did not address this issue
Dognb 2.1	Accuracy of phosphorus model for Snap Lake: accuracy of phosphorus inputs from mine water	eutrophication, changes in algal community and dissolved oxygen	Impact Assessment	X			X	X	X			Y - Feb. 28, 2003	In progress	In progress	DeBeers have submitted documentation but review is ongoing
	Accuracy of phosphorus model for Snap Lake: adequacy of baseline data on phosphorus forms in Snap Lake	eutrophication, changes in algal community and dissolved oxygen	Baseline						X			N	Unresolved	Resolved	Difference of Opinion. Baseline data are not ideal but are adequate to support EA predictions
	Accuracy of phosphorus model for Snap Lake: evaluation of phosphorus release from settled organic matter	eutrophication, changes in algal community and dissolved oxygen	Impact Assessment						X			Y - Feb. 28, 2003	In progress	Resolved	DeBeers considered benthic P source in original model and varied it in Tech. Memo. Review is Ongoing
Dognb 2.2	Area and volume of Snap Lake predicted to fall below CCME Guideline of 5.5 mg/L during mine life and timing of periods of low oxygen.	Oxygen depletion may reduce overwintering habitat for lake trout and other aquatic life. Cumulative effects with other stressors.	Impact Assessment	X				X	X		X	Y - Feb. 27, 2003	Unresolved	In progress	DeBeers Tech. Memo of Feb. 27, 2003 shows under ice measurements at 50 sites and estimate that 10% of lake area shows depleted oxygen in baseline. They have not indicated which areas will be affected. They have not provided an assessment of how low oxygen areas will change with lake enrichment or of any species response besides lake trout.
Dognb 2.3	Effects of Total Dissolved Solids on Aquatic Community - No assessment of spatial change	Changes to aquatic community of Snap Lake	Impact Assessment						X			N	Unresolved	Unresolved	Maps of spatial and depth variation of TDS in Snap Lake are required to verify mixing and TDS levels in sensitive areas
	Effects of Total Dissolved Solids on Aquatic Community - No assessment of temporal change	Changes to aquatic community of Snap Lake	Impact Assessment						X			Y	Unresolved	Resolved	DeBeers have provided the assessment and addressed the IR - therefore IR is resolved. Parties may disagree on conclusions and significance but we have sufficient info. to proceed.
	Effects of Total Dissolved Solids on Aquatic Community - Incomplete assessment of effects to lake trout	Changes to aquatic community of Snap Lake	Impact Assessment					X	X			Y-February 7, 2003	Unresolved	Resolved	DeBeers have provided the assessment and addressed the IR - therefore IR is resolved. Parties may disagree on conclusions and significance but we have sufficient info. to proceed.

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ISSUE SYNOPSIS: SURFACE WATER and FISHERIES

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	Effects of Total Dissolved Solids on Aquatic Community - No assessment of effects on aquatic community	Changes to aquatic community of Snap Lake	Impact Assessment				X	X	X			Y-February 7, 2003	Unresolved	Resolved	DeBeers have provided the assessment and addressed the IR - therefore IR is resolved. Parties may disagree on conclusions and significance but we have sufficient info. to proceed.
Dogrib 2.5	Nutrients in Snap Lake - Attractiveness of Mixing Zone Temperature and nutrient conditions in mixing zone may attract fish	Impact to fish health during operations and after closure	Impact assessment						X			N	Unresolved	Unresolved	Needs a specific response from DeBeers
	Nutrients in Snap Lake - No quantitative assessment of responses to nutrient addition	Nutrient enrichment and changes to aquatic community	Impact assessment	X			X	X	X			Y - February 7, 2003	Unresolved	In progress	DeBeers have provided detailed responses, significance and interpretation not yet resolved.
	Nutrients in Snap Lake - accuracy of phosphorus model for benthic nutrient release	Nutrient enrichment and changes to aquatic community	Impact assessment						X			Y	Unresolved	Resolved	Original model included this term and February workshop and follow-up addressed the issue in the model. This particular concern is resolved, but whole model accuracy is not.
Dogrib 2.7	Water Quality - Plume in Snap Lake - RMA Under Ice Model provides uncertainty in under ice concentrations	TDS and metal levels in Snap Lake - effect on aquatic community	Assessment						X			N	Unresolved	Unresolved	DeBeers provided an under ice model in original assessment but Dogrib do not agree with it.
	Water Quality - Plume in Snap Lake - Spatial differences in water quality predictions - North Arm	TDS and metal levels in Snap Lake - effect on aquatic community	Assessment						X			N	Unresolved	Unresolved	DeBeers provided an assessment of spatial differences in water quality but Dogrib do not agree with it.
	Water Quality - Plume in Snap Lake - Temporal - DeBeers do not assess chronic or interactive effects on organisms	TDS and metal levels in Snap Lake - effect on aquatic community	Assessment						X			Y - Feb. 7 and 28, 2003	Unresolved	In Progress	DeBeers have provided additional assessments which provide the information required to evaluate effects. Parties are likely to disagree with conclusions.
Dogrib 3.1	Aquatics Baseline - Zooplankton : Lack of baseline data on zooplankton communities in smaller lakes which may be influenced by project. DeBeers collected fish data only and "assumed" zooplankton community. Have provided no details on impact assessment for zooplankton	No baseline information prevents assessment of response of smaller lakes in event of "worst case" scenario. No data to assess changes in fish diet.	Baseline	X					X		X	N	Resolved	Resolved	Dogrib state that baseline data can still be collected, although are concerned that project activities may already be evident. Project activities not likely to have affected water bodies of concern. EA and Water Licence to address monitoring requirement.
Dogrib 3.2	Aquatics Impacts - Need for discrete spatial analysis of effects	EA underestimates effects to aquatic community by averaging over lake and depths	Assessment						X			N	Unresolved	In progress	An interpretive issue between parties.
	Aquatics Impacts - Choice of 20% effect in 1% of lake area	EA underestimates effects to aquatic life	Assessment	X					X			N	Unresolved	In progress	An interpretive issue between parties.
Dogrib 3.3	Aquatic Effects - Toxicant interaction. Failure to assess multiple stressors	EA underestimates effects to aquatic life	Assessment	X				X	X			Y-February 28, 2003	Unresolved	In progress	DeBeers have provided a specific analysis of stressor interaction but Dogrib have not responded. There will be differences in interpretation.
	Aquatic Effects - Impact of mine closure on aquatic community which is "dependent" on mine conditions	EA does not assess all impacts to aquatic life.	Assessment									N	Unresolved	Unresolved	
NSMA 2.1	Water Quality - Nutrient inputs. Evaluation of ecological response (productivity and cyanobacteria) in absence of guidelines	EA does not assess all impacts to aquatic life.	Assessment	X			X	X	X	X	X	Y - February 7, 2003	Unresolved	In Progress	DeBeers have predicted changes to Snap Lake and have modified their predictive model and provided further assessment. There will be debate about degree of impact and significance
NSMA 2.2	Water Quality - Development of Monitoring Programs	Potential failure to assess response of Snap Lake to project activities	Monitoring							X		N	In progress	Resolved	DeBeers have made the necessary commitment to monitoring and this will be enforced as a condition of EA approval and Water Licence. NSMA concern relates to when program should be developed.
NSMA 2.3	Summary of Recommendations	see NSMA - 2.1 and 2.2	see NSMA - 2.1 and 2.2							X		see NSMA - 2.1 and 2.2	see NSMA - 2.1 and 2.2	see NSMA - 2.1 and 2.2	see NSMA - 2.1 and 2.2
INAC 2.5.1	Water Treatment Plant and Waste Management Pond	Insufficient storage volume in WMP to address high natural inputs or down time at WTP.	Design and Mitigation	X			X					N	Unresolved	Unresolved	Need more detailed water budget or commitment to raise dam height by 1m.
INAC 2.5.2	WTP Effluent Mixing : Insufficient detail on density gradients and wind effects, no baseline information to validate.	EA underestimates TDS concentrations in lake by overestimating mixing	Baseline and Assessment	X			X	X	X			N	Unresolved	Unresolved	Two issues : baseline status and assessment. INAC recommend better modelling to overcome uncertainty in currents.

- WORKING DRAFT -

ISSUE SYNOPSIS: SURFACE WATER and FISHERIES

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INAC 2.6.1	Water Quality Benchmarks - Use of EPA vs CCME benchmarks underestimates impacts to lake from mine discharge	EA underestimates aquatic effects to Snap Lake by use of inappropriate toxicity criteria	Assessment	X				X				Y-uncertain	Unresolved	Unresolved	DeBeers committed to mapping of impacts as concentration distributions in lake to allow independent effects assessment. Requires resolution of appropriate benchmark and implications.
INAC 2.6.2	Zooplankton Assessment Methods: Use of criterion of effect to 20% of species ignores keystone groups such as zooplankton which are among most sensitive. Loss of zooplankton may represent < 20% of species and not be considered significant, but functional importance to community may be > 20%.	EA Underestimates impacts to aquatic community by ignoring keystone species.	Assessment	X				X				N	Unresolved	Unresolved	Keystone species approach is new but worthy of elaboration. We note that several species of zooplankton may serve as keystone. DeBeers should provide response.
INAC 2.7.1	Water/Sediment/Biological data Baseline: Sufficient data to evaluate project but not to evaluate effects. DCM to do statistical Power Analysis	None - allows identification of impacts and verification of EA predictions in Aquatic Effects Monitoring Program	Baseline + Monitoring	X								N	Unresolved	Unresolved	No response from DeBeers. Open ended question from INAC - how much power is sufficient - what level of confidence is desired?
INAC 2.7.2	Underestimation of TDS and associated COPCs in waste water discharge and Snap Lake due to a) underestimation of groundwater and b) incomplete analysis of mixing in the lake. See also INAC 2.2.2 and 2.5.2	EA underestimates TDS concentrations in lake and underestimates impact of project on aquatic communities.	Assessment	X			X	X	X	X		Y - February 28, 2003	Unresolved	In Progress	DeBeers have provided additional info. on connate groundwater but not on dispersion models. Requires technical debate to resolve
INAC 2.7.3	Potential impacts of TDS are Underestimated because a) EA underestimates likely concentrations in Snap Lake (INAC 2.2.2, 2.5.2, 2.7.2) b) effects analysis does not consider relative changes in abundance within the aquatic community and c) effects analysis does not consider food web interactions	EA underestimates TDS effects on aquatic communities.	Assessment	X			X	X	X	X		Y - February 7, 2003	Unresolved	In Progress	DeBeers have provided additional info. Requires technical debate to resolve. INAC have given hypothesis - is there any documentation of the effects they describe? What does Ekati data they discuss show?
INAC 2.7.4	Nutrient Modelling underestimates loading of plant nutrients to Snap Lake such that project effects on productivity are underestimated	Enrichment of Snap Lake beyond EA predictions. Increased plant growth and decreased oxygen.	Assessment	X			X	X	X	X	X	Y	Unresolved	In progress	DeBeers have submitted additional documentation of loadings, modelling scenarios which were agreed upon at Tech. Meeting on Feb. 3 and have submitted more documentation of potential effects. Requires review and debate to resolve.
INAC 2.7.5	Secondary effects of eutrophication - dissolved oxygen. The EA underestimates phosphorus loading to Snap Lake and, as a result, also underestimates the reductions in dissolved oxygen that will occur in response to increased lake productivity.	EA underestimates losses to aquatic habitat (particularly lake trout) and potential interactions of low dissolved oxygen with other toxicants in the lake.	Assessment	X				X	X		X	N	Unresolved	In progress	DeBeers have submitted revised phosphorus modelling but have not changed conclusions and not revised dissolved oxygen estimates. Requires review and debate to resolve.
INAC 2.8	Cumulative Effects Issues - Water: Assessment of cumulative effects is inadequate because a) EA underestimates impacts of project activities (TDS, metals, nutrients), b) interaction of project stressors is not evaluated and c) EA does not consider interactions within Lockhart Basin (i.e. fishing) or long range atmospheric transport and climate change	EA underestimates effects of project on aquatic life in Snap Lake and in Lockhart Basin	Assessment	X				X	X			Y - partially - February 28, 2003	Unresolved	In progress	DeBeers have submitted tech. Memo on toxicant interactions. Some confusion between EA Guidelines and what is actually required. Need to discuss.
INAC 3.0	Summary of Recommendations - no new issues	Provides assessment requirements to address INAC concerns	Assessment	X								Y - partially	Unresolved	In progress	see above
INAC 4.0	Conclusion - DCM have underestimated project effects on the environment. EA is incomplete	Greater than predicted	Assessment	X								Y - partially	Unresolved	In progress	see above
DFO 2.1.1	Fish Habitat Assessments - No Net Loss: DeBeers did not include fish habitat assessments of all lakes likely to be impacted in their EA and did not consider all components of fish habitat (i.e. seasonal)	Loss of fish habitat by failure to consider all potential habitat and account for it in NNL evaluation.	Baseline and Assessment					X				Y	In Progress	In progress	DFO appeared satisfied with baseline information but no habitat gains have been identified to offset identified losses.
DFO 2.2.1	No baseline benthic data for areas of Snap Lake > 8m deep prevents analysis of project effects (low dissolved oxygen and increased TDS) on lake community	Project could affect benthic community, fish community and ecological interactions and	Baseline and Assessment	X				X	X		X	N	Unresolved	Unresolved	DeBeers maintain that they have undertaken a thorough baseline study.

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DFO 2.3.1	Inadequate assessment Spawning Habitat : DeBeers did not identify potential lake trout spawning habitat in vicinity of mine water discharge and North Pile seepage and did not evaluate spawning habitat for burbot or round whitefish.	Project may impair fish spawning through discharge of mine water and seepage from North Pile	Baseline					X				N	Unresolved	Unresolved	DeBeers maintain that they have undertaken a thorough baseline study and impact assessment.
DFO 2.4.1	Metals in Discharge will exceed regulatory limits and impair 1-10% of Snap Lake. DeBeers rely on dilution and not on treatment, have not considered toxicant interactions and toxicity tests may not reflect actual mine operations.	Toxicity of metals to aquatic life is unacceptable and will be greater than predicted.	Assessment + Design	X			X	X				Y	Unresolved	In progress	DeBeers have submitted tech. Memos on mine water treatment and on toxicant interaction. Requires discussion to resolve.
DFO 2.5.1	TDS Mixing in Snap Lake : Effluent will not mix under ice as predicted because of density gradients and will settle to bottom.	EA underestimates TDS concentrations in lake and underestimates impact of project on aquatic communities.	Assessment	X			X	X	X			N	Unresolved	Unresolved	Need a 3-D lake mixing model and better understanding of under ice conditions. Also need to resolve TDS effects to see if increased concentrations are important.
DFO 2.6	Effects of TDS on aquatic life are underestimated and do not include the aquatic community	EA underestimates impact of project on aquatic communities.	Assessment	X				X				Y	Unresolved	In progress	DeBeers have submitted tech. Memo on TDS effects but has not yet been reviewed or discussed/resolved.
DFO 2.7	Bioaccumulation of Metals : need more detailed analysis of Cd biomagnification, more paste backfill test results and proposals to reduce metals in mine water.	Cd may accumulate in the aquatic food chain	Assessment					X				Y	In progress	Likely resolved	DFO have resolved some concerns and DeBeers have submitted paste backfill results. DFO wish to "clarify the understanding"
DFO 2.8	Nutrients and Fish Habitat : EA does not adequately consider effects of enhanced supply of available phosphorus on zooplankton, benthos or dissolved oxygen at depth.	Enhanced supply of available phosphorus will alter zooplankton and benthic communities and reduce dissolved oxygen concentrations in the lake.	Assessment	X			X	X	X			Y	Unresolved	In progress	DCAI have submitted technical memo on phosphorus effects but have not addressed implications new phosphorus modelling and have not yet provided requested analysis of areas of lake affected by low dissolved oxygen. More analysis and discussion required.
DFO 2.9.1	Seepage of acid drainage from North Rock Pile may impair near-shore fish habitat - only 90% of seepage from PAG is captured and DeBeers have not quantified fish habitat in potential receptor area.	Seepage of acid drainage from North Rock Pile may impair near-shore fish habitat	Baseline - Assessment					X				N	Unresolved	Unresolved	Need to establish if there is fish habitat in seepage area and determine need for and methods of mitigation
EC1	Maintenance of excess storage capacity to accommodate greater than expected minewater inflows or runoff	Discharge of waste water to Snap Lake - impaired water quality and threats to aquatic life	Mitigation	X			X					n/a	Resolved	Resolved	DeBeers have committed to maintaining 35000 m3 of excess treatment capacity, to maximizing storage capacity and letting the mine flood, if necessary, to prevent loss of untreated water to Snap Lake. Note that these mitigations must be assured in EA conditions and Water Licence.
EC3	EC requests that DeBeers demonstrate that they reviewed available options and selected the Best Available Technology for treatment of mine waters, sufficient to demonstrate that dilution in Snap Lake was not substituting for treatment.	Discharge of poorly treated water and effects on water quality and aquatic life in Snap Lake	Assessment				X	X				Y	Resolved	Resolved	DeBeers have submitted necessary technology review. EC recommend periodic re-assessment and refinement over mine life to minimize effects.
EC4	Phosphorus model did not account for all forms of potentially available phosphorus and may have underestimated response of Snap Lake to inputs of phosphorus from mine water.	Increased enrichment of Snap Lake may stimulate undesirable forms of algae and increased productivity may alter aquatic community and decrease dissolved oxygen at depth.	Assessment	X			X	X	X	X		Y	In progress	In progress	DeBeers have refined model and incorporated requirements of reviewers. More review and assessment required before resolution.
EC6	Effects of TDS on aquatic life may be underestimated - EC accepts effects predicted at predicted TDS levels in lake. If TDS predictions are too low, then thresholds of aquatic effect may be reached.	EA underestimates TDS concentrations in lake and may underestimate impact of project on aquatic communities.	Assessment	X			X	X	X			Y	Resolved	Resolved	DeBeers have submitted revised assessments of groundwater quality and in their March 14 Addendum to their Feb 14 Technical Report, Environment Canada concluded that the issue has been resolved
EC8	TDS Density Plume	Effluent will have a higher density than Snap Lake water and will sink to the lake bottom as it moves outside the mixing zone. This may result in areas of meromixis on a seasonal basis.	Assessment				X					Y	Unresolved	In progress	Small areas of higher-density water in deep areas of the lake may affect dissolved oxygen levels in these pockets as well as producing relatively steep chemical gradients.

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DFO - Fisheries and Oceans Canada EC - Environment Canada Dogrib - Dogrib Treaty 11 Council YDFN - Yellowknives Dene First Nation

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ISSUE SYNOPSIS: WILDLIFE

Issue ID	Summary of Outstanding Issue	Summary of Potential Impact on the Environment	Type of Issue (Design, Baseline, Impact Assessment, Mitigation, or Monitoring)	Who raised the Issue?								Do De Beers' tech. memos speak to this issue (Y or N)	Issue Status according to Parties (Resolved, Unresolved, In Progress, or Unknown)	Issue Status according to Experts to the Board (Resolved, Unresolved, In Progress, or Unknown)	Rationale of Issue Status
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YDFN 2.2	YDFN were concerned that there had not been adequate assessment or proposed monitoring of potential impacts on furbearers from the Tibbitt-Contwoyo winter road.	Potential negative impact on furbearer populations through influence on movement patterns and habitat use.	Impact Assessment, Monitoring								X	N	Unresolved	Unresolved	Do Beers indicated that they did not address the issue of impacts from the road on furbearers.
YDFN 3.1	YDFN was concerned that there had not been a formal protocol developed for determining when an immigrant species would be monitored and/or studied. They wanted to be included in consultation concerning the development of such trigger mechanisms.		Monitoring								X	N	Unresolved	Unknown	Do Beers indicated that the EA didn't go to that extent; however, they suggested that they will respond to community concerns and interests and that their monitoring programs would reflect priority concerns.
YDFN 3.2 Dogrib 4.0 GNWT E10 NSMA 4.5	The Parties were concerned that there had not been sufficient detail provided concerning follow-up monitoring programs aimed at improving our ecological understanding of impacts on grizzly bears, wolverine, and caribou from diamond mining operations on the central barrens. It was suggested that a detailed monitoring program be put in place prior to the beginning of construction. YDFN suggested that the monitoring program should include ground-based caribou surveys to collect behavioural and movement information in important areas that may be affected by mine activity. The monitoring program should be coordinated with the other mines to ensure that there is a consistent approach and a better reflection of the trends in the wildlife populations.	Impacts of mine activity on grizzly bears, wolverines, and caribou may go undetected and uncorrected if a proper monitoring program is not in place.	Monitoring		X				X	X	X	N	Unresolved	In Progress	The technical memorandum (Overview of Project Milestones and Monitoring and Management Programs) submitted by Do Beers on February 28, 2003 identified general methods for monitoring wildlife habitat, wildlife movement and behaviour, and wildlife abundance; however, details of these monitoring plans have not yet been provided.
NSMA 4.4 YDFN 4.1	The Parties were concerned that there had not been sufficient collection and use of traditional knowledge to support and augment scientific knowledge. The Parties suggested that further use of TK could be used to fill in gaps in the baseline information and improve accuracy of predictions.	A failure to use all available information may lead to underestimating potential impacts on species like caribou, grizzly bears, and wolverines.	Baseline							X	X	N	In Progress	In Progress	Discussions are underway to design a TK study, but details have not yet been released.
YDFN 4.2	YDFN is concerned with methods proposed by Do Beers for excavation of the esker south of the mine site. Requests site visit to better understand reasons for proposed excavation methods and to be given opportunity to provide TK re. which species use eskers and how they use them.	Proposed excavation methods may affect wildlife, e.g. caribou migration and bear/wolf denning.	Design, Impact Assessment								X	Y - somewhat	Unresolved	Unknown	See comment above.
GNWT E12 YDFN 6.1 NSMA 4.6 Dogrib 4.0	The Parties expressed concern that not all appropriate information was included in an assessment of cumulative effects on wildlife. There was general concern that inadequate baseline information had been used to make predictions concerning cumulative effects. GNWT and NSMA also suggested that not all sources of human-induced grizzly bear and wolverine mortality were incorporated into the assessments for those species. YDFN suggested that the Snap Lake cumulative effects assessment should be revised to include the proposed expansion to the Jericho mine.	Preparation of cumulative effects assessments without inclusion of adequate baseline and impact information may lead to uncertainty over accuracy of the predictions.	Impact Assessment		X				X	X	X	N	Unresolved	Unresolved	During the technical sessions, Do Beers stated that they did not do a cumulative impacts study for wolverine. The question of adequacy of baseline information for grizzly bears remains, drawing into question the ability to conduct a valid cumulative effects assessment.

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ISSUE SYNOPSIS: WILDLIFE

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GNWT E12 NSMA 4.6	See previous. The GNWT expressed concern that DB would have benefited, in their cumulative effects analysis, from a regional perspective by including the "lessons-learned" from BHP and Diavik. Therefore, they recommend that a regional cumulative effects monitoring program for bears and wolverines be established and that this be included in the any Environmental Agreement.  The NSMA expressed concern about the consistent application of the zone(s) of influence (ZOI). They note that populations can be impacted whether the home ranges of individuals overlap with several projects or not. They stressed that where population size and dynamics are unknown, then habitat loss is a possible surrogate only if habitat units are calculated and not just total area lost. They conclude that all available information should be used in CEA analysis.	The cumulative effects analysis undertaken for this process lacks in considering trends or changes that have taken place since the inception of BHP. The analysis in effect is an elaboration on direct effects and poorly captures potential cumulative effects. Further, poor technique and baseline data can skew outcomes.	Baseline, Impact assessment		X							N	Unknown	Unresolved	GNWT, in its Feb. 5, indicates that this issue is resolved. It is unclear because the technical report is not so explicit.  There is no indication that the NSMA issue has been addressed.
YDFN 7.1	YDFN was concerned that there had not been an adequate study of what an increase in local human populations could mean to wildlife populations.	An increased human population in the region could increase pressure on wildlife resources.	Impact Assessment								X	N	Unresolved	Unresolved	De Beers has not provided a response to this issue.
Dognib 4.0 GNWT E5/E6 NSMA 4.1 YDFN 3.2	The Parties expressed concern that there had been insufficient baseline data collected for caribou and that the data that was available had not been fully utilized in impact assessments. GNWT suggested that caribou abundance should be rated as "relatively abundant", rather than "relatively low". They also felt that the confidence ratings should be downgraded. NSMA felt that conclusions concerning impacts could not be supported as they were based on poor measurability of benchmarks and that adequate baseline information was not available to make conclusions based on natural range of variability.	Inadequate baseline data and impact modeling could result in inaccurate predictions for impacts on caribou.	Baseline, Impact Assessment		X				X	X	X	Y	Unresolved	Unresolved	Although De Beers has continued to collect survey data for caribou, there has been no indication that they plan to revisit their impact assessments using this or other additional data.
GNWT E7	GNWT felt that ratings for residual impacts on caribou should be changed from "low" to "moderate" as the impact analysis was inadequate and details of mitigation were not provided.	Impacts on caribou may be greater than predicted by De Beers.	Impact Assessment		X							N	Unresolved	Unresolved	De Beers did not provide a response to this issue.
GNWT E8 Dognib 4.0 NSMA 4.1	The Parties expressed concern that there were not sufficient baseline data and analyses to reach the conclusions that impacts to grizzly bears and wolverines would be "low". GNWT suggested that impact ratings and uncertainty levels should be increased. The Dognib Council suggested that De Beers take a more proactive approach to ensuring that their impact models were robust and utilized the best possible data.	Impacts on grizzly bears and wolverines may be greater than predicted by De Beers.	Baseline, Impact Assessment		X				X	X		Y	Unresolved	Unresolved	Although De Beers has continued to collect survey data for grizzly bears and wolverines, there has been no indication that they plan to revisit their impact assessments using this or other additional data.
GNWT E9	GNWT expressed concern that the waste management plan did not yet exist and that it was not part of the environmental assessment report. They suggested that without details of the mitigation plan, there was uncertainty as to whether wildlife impacts from the mine would be as low as predicted.	Impacts on species attracted to the mine may be greater than predicted.	Mitigation, Impact Assessment		X							N	Unresolved	Unresolved	In their Feb 28 technical memorandum (Overview of Project Milestones and Monitoring...), De Beers indicated that they plan to monitor the effectiveness of their waste management plan; however, details of the plan have not yet been released.

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ISSUE SYNOPSIS: WILDLIFE

Issue ID	Summary of Outstanding Issue	Summary of Potential Impact on the Environment	Type of Issue (Design, Baseline, Impact Assessment, Mitigation, or Monitoring)	Who raised the Issue?								Do De Beers' tech. memos speak to this issue (Y or N)	Issue Status according to Parties (Resolved, Unresolved, In Progress, or Unknown)	Issue Status according to Experts to the Board (Resolved, Unresolved, In Progress, or Unknown)	Rationale of Issue Status
				INAC	GNWT	NRCan	EC	DFO	Dogrib	NSMA	YDFN				
GNWT E10 NSMA 4.1	De Beers has conducted annual surveys to provide an index of relative grizzly bear abundance within the RSA; however, GNWT was uncertain as to whether this approach was sensitive enough to distinguish between residual impacts and natural variation in habitat use. NSMA also expressed concern that the natural range of variability was not known.	Impacts on grizzly bears may be greater than predicted by De Beers and survey methodology may not allow for adequate monitoring of effects.	Impact Assessment, Monitoring		X					X		N	Unresolved	Unresolved	De Beers did not provide a response to this issue
GNWT E11 NSMA 4.2	Sensory disturbance from mine noise, truck and aircraft traffic, and other human disturbances has the potential to effect grizzly bear and wolverine movements and behaviour. GNWT felt that De Beers had not adequately considered how those potential impacts may affect indirect habitat loss for these species. NSMA felt that because data on movement patterns for species other than caribou had not been collected, Key Question W2 (What impacts will the Snap Lake Diamond Project have on wildlife movement and behaviour?) remained unanswered.	Impacts on grizzly bears and wolverines may be greater than predicted by De Beers	Impact Assessment		X					X		N	Unresolved	Unresolved	De Beers did not provide a response to this issue
GNWT E13	Under the Terms of Reference, De Beers was asked to give special consideration to species of Special Concern. GNWT felt that De Beers provided little evidence that additional baseline research, analysis, or effort was dedicated to grizzly bears or wolverines. A regional assessment of impacts on grizzly bear, etc. needs to be undertaken to account for all human impacts not just the mines and the road.	Impacts on grizzly bear and wolverine populations may be greater than predicted by De Beers	Baseline, Impact Assessment		X							N	Unresolved	Unresolved	De Beers did not provide a response to this issue
NSMA 4.3	NSMA disagreed with the conclusions of the Environmental Assessment Report for impact ratings on migratory birds within the LSA and RSA. NSMA suggested that De Beers should make more realistic predictions concerning environmental consequence.	Impacts on migratory birds may be higher than suggested by De Beers.	Impact Assessment							X		N	Unresolved	Unresolved	De Beers did not provide a response to this issue

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Dogrib - Dogrib Treaty 11 Council

NSMA - North Slave Metis Alliance  
YDFN - Yellowknives Dene First Nation

n/a - not applicable



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ISSUE SYNOPSIS: VEGETATION/RECLAMATION

Issue ID	Summary of Outstanding Issue	Summary of Potential Impact on the Environment	Type of Issue (Design, Baseline, Impact Assessment, Mitigation, or Monitoring)	Who raised the Issue?								Do De Beers' tech. memos speak to this Issue (Y or N)	Issue Status according to Parties  (Resolved, Unresolved, In Progress, or Unknown)	Issue Status according to Experts to the Board  (Resolved, Unresolved, In Progress, or Unknown)	Rationale of Issue Status
				INAC	GNWT	NRCan	EC	DFO	Dogrib	NSMA	YDFN				
YDFN 5.1	Contaminant uptake by vegetation has not been fully considered. The likelihood of roots reaching deeper than the depth of granite cover (eventually drawing nutrients and potential contaminants) from the underlying kimberlite is not known	(Contamination of vegetation, and potential the wildlife that may ingest the vegetation in the future)	Impact Assessment								X	N	Unresolved	Unresolved	De Beers has not addressed this issue
	De Beers has not answered the question of what measures they will use to prevent non-native vegetation from being accidentally introduced.	(Potential change in plant species composition)	Mitigation								X	Y	Unresolved	Resolved	In their Technical Memo, Preliminary Mine Closure and Reclamation Plan (Feb 2003), De Beers outlines a section on weed control (Appendix C, Section 4), to avoid and minimize the spread of non-native and invasive species into the project area.  The issue is resolved in the sense that De Beers responded to the question that YDFN. YDFN did not submit a formal addenda to say whether or not they are satisfied with the response.
YDFN 5.2	Success criteria have not been developed to determine when an impacted area has been successfully reclaimed to sustainably productive natural habitat. De Beers' commitment (at the Tech Sessions, Day 6, p 1) to design protocols for gauging the success of reclamation is recognized	(Restoration of productive habitat may be hindered)	Monitoring		X						X	Not directly	Unresolved	In Progress	The licensing process requires that De Beers submit a Mine Closure and Reclamation Plan for the project, in which a specific revegetation plan would be developed. In their Preliminary Mine Closure and Reclamation Plan (Feb 2003), De Beers' commits to establishing "a reclamation monitoring program to assess the success and suitability of reclamation activities". To assess success, criteria will need to be developed for the program.
GNWT E4	GNWT does not support the position that details for the Abandonment and Restoration of the Project be delayed until the regulatory phase		Mitigation		X						X	Not directly	Unresolved	Unresolved	De Beers recently submitted a Feb 2003 Preliminary Mine Closure and Reclamation Plan to the public registry. In the absence of an addenda from the GNWT, it is assumed that the issue is still unresolved
GNWT E15	Uncertainty about the ecological capability of reclaimed landscape units since there is only a 'moderate' level of confidence that disturbed ELC units will be re-established in the long-term	(Potential changes to composition of ELC units and wildlife habitat)	Impact Assessment		X						X	Not directly	Unresolved	In Progress	De Beers recently submitted a Feb 2003 Preliminary Mine Closure and Reclamation Plan to the public registry. In the absence of an addenda from the GNWT, it is assumed that the issue is still unresolved

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n/a - not applicable

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ISSUE SYNOPSIS: SOCIO-ECONOMIC

Issue ID	Summary of Outstanding Issue	Summary of Potential Impact on the Environment	Type of Issue  (Design, Baseline, Impact Assessment, Mitigation, or Monitoring)	Who raised the Issue?								Do De Beers' tech. memos speak to this issue (Y or N)	Issue Status according to Parties  (Resolved, Unresolved, In Progress, or Unknown)	Issue Status according to Experts to the Board  (Resolved, Unresolved, In Progress, or Unknown)	Rationale of Issue Status
				INAC	GNWT	NRCAn	EC	DFO	Dogrib	NSMA	YDFN				
YDFN 4.1	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...the same could also be said for fish." Need for inclusion of YDFN TK in development of baseline and monitoring studies related to caribou and fish.	TK could help to determine criteria to use to evaluate and monitor changes and could assist in detecting changes in evaluation criteria (e.g. health).	Baseline, Monitoring								X	Y - somewhat	Unresolved	Unresolved	A Technical Memo issued by De Beers ("Overview of Project Milestones and Monitoring and Mgt Programs) alludes to incorporation of TK in wildlife monitoring programs. However, YDFN's Technical Report is the most recent information available regarding the views of the YDFN. In the absence of an Addendum to this report, it appears that the issue is still unresolved.
YDFN 4.2	YDFN is concerned with methods proposed by De Beers for excavation of the esker south of the mine site. Requests site visit to better understand reasons for proposed excavation methods and to be given opportunity to provide TK re. which species use eskers and how they use them	Proposed excavation methods may affect wildlife, e.g. caribou migration and bear/woolf denning.	Design, Impact Assessment								X	Y - somewhat	Unresolved	Unresolved	See comment above.
YDFN 7.1	Limited training and high labour demand from existing projects mean that little labour at the De Beers mine will be local resulting in substantial in-migration	Local employment/benefits will be minimal and new residents will place demands on local infrastructure and on renewable resources and wildlife.	Impact Assessment								X	N	Unresolved	Unresolved	The Technical Report is the most recent information available regarding the views of the YDFN. In the absence of an Addendum to this report, and without any tech. Memos from De Beers addressing this topic, it appears that the issue is still unresolved.
NSMA 1	The NSMA contends that a commitment by De Beers, made on Nov. 8/02, to re-analyse artifacts found at the site to determine if they contribute to knowledge about Metis heritage in the NWT has not been fulfilled.	Without this information, it is impossible to assess impacts on the NSMA's cultural resources.	Impact Assessment								X	N	Unresolved	Unresolved	The Technical Report is the most recent information available regarding the views of the NSMA. In the absence of an Addendum to this report, and without any tech. Memos from De Beers addressing this topic, it appears that the issue is still unresolved.
NSMA 2	The NSMA contends that a commitment by De Beers, made on Nov. 8/02, to the establishment and funding of a Traditional Knowledge program with the NSMA has not been fulfilled.	Absence of this program has prevented the NSMA from contributing TK to the project design, and will prevent the NSMA from making TK contributions to ongoing environmental predictions and monitoring.	Design, Impact Assessment, Monitoring								X	N	Unresolved	Unresolved	See comment above.
NSMA 3	Absence and/or inadequate analysis of baseline data regarding traditional land use	Lack of understanding of basis for and extent of TLU necessary for accurate prediction of economic and social impacts (including cultural survival, individual health, and stresses on wage economy and social cohesion) and for effective mitigation and monitoring of these impacts.	Baseline, Impact Assessment, Monitoring								X	N	Unresolved	Unresolved	See comment above.
NSMA 4	(a) Absence of baseline data regarding existing employment, skills, education, and barriers to employment of the NSMA. (b) De Beers has not explained how it will determine factors of job satisfaction	(a) Baseline data is necessary for: (1) development of recruitment program specific to NSMA (2) development of training and education programs (3) monitoring. (b) If jobs are not satisfying, skilled aboriginals will leave the north.	Baseline, Mitigation, Monitoring								X	N	Unresolved	Unresolved	Details of socioeconomic monitoring are being negotiated under a Socio-economic Agreement and were not addressed in Technical Memos. NSMA's Technical Report is the most recent information available regarding the views of the NSMA. In the absence of an Addendum to this report, and without any tech. Memos from De Beers addressing this topic, it appears that the issue is still unresolved.
NSMA 5	Absence of baseline data re. existing housing in the NSMA community	Makes predictions about impacts on housing and related individual and community health, and monitoring, impossible	Baseline, Impact Assessment, Monitoring								X	N	Unresolved	Unresolved	The Technical Report is the most recent information available regarding the views of the NSMA. In the absence of an Addendum to this report, and without any tech. Memos from De Beers addressing this topic, it appears that the issue is still unresolved.
NSMA 6	No description of "existing infrastructure environment" of the NSMA. Apparent lack of recognition by De Beers that NSMA receives no core funding from government.	"Existing infrastructure environment" may affect community's ability to adapt to change	Impact Assessment, Mitigation								X	N	Unresolved	Unresolved	See comment above.

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ISSUE SYNOPSIS: SOCIO-ECONOMIC

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				INAC	GNWT	NRCan	EC	DFO	Dognb	NSMA	YDFN					
NSMA 8	Changes to production rate may have impacts on mine life, socio-economics of the project and the proposed mine site facilities. NSMA wants the Board to impose a condition on approval that the 3000 tpd not be exceeded.	Changes to the mine production rates has the potential to jeopardize predictions and mitigation measures outlined in the EAR	Design								X		N	Unresolved	Unresolved	De Beers feels that the production rate is appropriate based on the type of deposit and dimension, and states that they would make necessary applications to the MVLWB if the production rate were to significantly increase (Day 9 Technical Sessions)
NSMA 7	Lack of analysis of project impacts on NSMA's use of indigenous language	Without this analysis, it is not possible to determine adverse impacts of the project on the use of indigenous language or to mitigate those impacts.	Impact Assessment, Mitigation								X		N	Unresolved	Unresolved	See comment above.
NSMA 10	Spatial boundaries for the analysis of impacts on resource use was too limited. Regional Study Area (RSA) should be broader.	If RSA is made broader, the project may be found to have impacts on Metis fisheries and associated economy, cultural, spirituality, community health, and rights	Impact Assessment, Mitigation								X		N	Unresolved	Unresolved	See comment above.
NSMA 4.4	Insufficient use of Traditional Knowledge in collecting baseline data. Unclear how TK will be integrated into the development of monitoring programs.	Affects assessment of effectiveness of monitoring programs.	Monitoring								X		Y - somewhat	Unresolved	Unresolved	A Technical Memo issued by De Beers ("Overview of Project Milestones and Monitoring and Mgt Programs") alludes to incorporation of TK in wildlife monitoring programs. However, NSMA's Technical Report is the most recent information available regarding the views of the NSMA. In the absence of an Addendum to this report, it appears that the issue is still unresolved.
NSMA 4.7	Lack of baseline data re. wildlife abundance and movement in the study area and no clear information on current and future trapping and hunting that might be affected by the project.	Lack of baseline data means that an analysis of lost opportunities will not be possible and that compensation for those lost opportunities can not be determined.	Baseline, Impact Assessment, Mitigation, Monitoring								X		N	Unresolved	Unresolved	There is no documentation indicating that this issue has been resolved and, in fact, a Tech1 Memo from De Beers (Overview of Project Milestones and Monitoring and Mgt. Programs) indicates that monitoring of Traditional Land Use is not "identified".
NSMA 4.9	Not analysed - NSMA's item 4.9 is not an issue but rather, a summary of recommendations related to all previous wildlife issues.															
GNWT S1	Provision of medical services at mine site by "physician assistants"	Physician assistants are not recognized in NWT health legislation	Mitigation		X								N	Unresolved	Unresolved	The Technical Report is the most recent information available regarding the views of the GNWT. In the absence of an Addendum to this report, and without any tech. Memos from De Beers addressing this topic, it appears that the issue is still unresolved.
GNWT S2	(a) De Beers has provided insufficient detail re. proposed Employee and Family Assistance Program (EFAP). (b) GNWT is concerned re. De Beers' proposal that contractors and subcontractors would be responsible for their own EFAPs.	(a) Without specifics, it is impossible to assess the proposed EFAP as a mitigating measure. Also, De Beers' EFAP may duplicate existing programs. (b) There is no guarantee that contractors and subcontractors will provide the EFAPs that their employees will require. They may not have the resources to do so.	Mitigation		X								N	Unresolved	Unresolved	See comment above.
GNWT S3	Impact management measures described under the headings of "sustainable social development", "substance abuse prevention and treatment", and "family support services" are proposed as partnerships but details are not provided re. De Beers' contributions (dollars, people, facilities) or the expected contributions by partners.	Without details regarding proposed partnership programs, GNWT can not assess whether these programs will provide sufficient mitigation to offset negative impacts.	Mitigation		X								N	Unresolved	Unresolved	See comment above.
GNWT S4	De Beers has failed to properly assess cumulative impacts on health and social service infrastructure.	In the absence of estimates regarding increased use of health and social services, impacts on infrastructure can not be assessed.	Impact Assessment		X								N	Unresolved	Unresolved	See comment above.

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				INAC	GNWT	NRCan	EC	DFO	Dogrib	NSMA	YDFN					
GNWT S5	GNWT feels that De Beers' choice of spatial boundaries for the SEIA is inappropriate given De Beers' goal to hire as many Northern residents as possible and given the current, limited, availability of labour in the SEIA study area as currently defined.	As currently defined, the SEIA study area limits the extent to which northerners will benefit from the mine. Also, without expanding the area, communities that might be affected by the mine may be excluded from mitigation measures proposed by De Beers for the Primary communities.	Impact Assessment, Mitigation		X							N	Unresolved	Unresolved	See comment above.	
GNWT S6	Direct flights to and from the mine site should be provided from all NWT communities, not just primary and catchment communities as currently defined. Also, flights transporting employees from the south should not go directly to the mine but should be required to stop in the NWT first to pick up northerners.	Not providing flights for NWT residents outside the primary and catchment communities will limit northern socio-economic benefits. Also, without this, and without other mitigation measures to offset the cost of living in the north, northerners could choose to move to a southern location reducing northern benefits.	Impact Assessment		X							N	Unresolved	Unresolved	See comment above.	
GNWT S7	The GNWT disagrees with the proposed composition of the Mine Management Advisory Committee - of De Beers reps and one rep from each of the primary communities. The MMAC should also include representation from the GNWT.	The composition of the MMAC proposed by De Beers will not fully represent the people of the NWT.	Mitigation		X							N	Unresolved	Unresolved	See comment above.	
GNWT S9	The GNWT disagrees with the conclusion by De Beers that diesel fuel is the most appropriate energy for power generation at the mine. De Beers has done little or no analysis of using hydroelectric power instead.	"The lack of support for hydroelectric energy and transmission capacity has significant socio-economic impacts on future energy supplies of NWT communities and impacts NWT obligations under the Kyoto Accord." It could also hinder future development of mineral resources in the NWT.	Design		X							N	Unresolved	Unresolved	See comment above.	
GNWT S12	The GNWT is concerned that, although De Beers is negotiating with Primary Communities and with the GNWT with respect to Impact Benefit Agreements and a Socio-Economic Agreement respectively, the company has not made a firm commitment to the successful completion of these agreements.	In the absence of regulatory instruments, IBAs and an SEA provide legal instruments for the planning, monitoring and mitigating of socio-economic impacts of the project.	Mitigation, Monitoring		X							Y	Unresolved (as per GNWT Technical Document)	Resolved in principle although components of SEA may not be	Technical Memo from De Beers (Overview of Project Milestones and Monitoring and Mgt. Programs) notes projected completion dates for SEA and IBA's (of June/03) implying commitment to these agreements.	
MVEIRB	DeBeers cumulative impact analysis of the socio-economic effects concentrated on the predictions of effects from the BHP and Diavik projects. Chapter 5 of the EA report summarizes community data and approach followed. A supplemental after the technical sessions provides additional information. This information is provided in response to an MVEIRB IR on the cumulative effects approach. While consideration of previous projects to predict impacts is an acceptable approach, this project would have benefited from consideration of the monitoring data from the BHP and Diavik projects as a means of confirming the earlier predictions in their EA reports and grounding the analysis for this project. Further, the most recent baseline data appears to be from 1999 and possibly no more recent than the BHP and Diavik environmental assessments.	Recognizing that there will always be a time lag between data collection and reporting, it is still difficult to determine if there will be cumulative impacts when trends are not considered in the analysis and if the analysis completed did not benefit from the monitoring for change and socio-economic effects from the other diamond projects. A similar issue was raised for wildlife impacts as well. The potential exists that the proposed mitigation will not be appropriate to the impacts identified.	Impact Assessment, Mitigation									Y	Unknown	In progress	Clarification to approach has been provided. With that clarification, it is now possible to consider the efficacy of the mitigation measures. A regional cumulative effects analysis program will likely be recommended.	
MVEIRB	Need for more flexible work schedule than 2 weeks in/2 weeks out OR need evidence from existing mines that this is not an issue	Flexibility of work rotation could affect traditional culture.	Impact Assessment, Mitigation									N	n/a	Unresolved	This is an issue that may be addressed through IBAs. There is no documentation indicating that it has yet been resolved.	
MVEIRB	Concern re. potential cumulative effects including effects on physical infrastructure; effects associated with several mines closing within a few years of each other; "nibbling" residual effects that may warrant a collaborative mitigation approach with other companies and government.	Lack of sufficient analysis hinders assessment of impacts.	Impact Assessment, Mitigation							X		N	Unresolved	Unresolved	There is no documentation indicating that these issues have been resolved.	
MVEIRB	Concern that MMAC may not be able to remain independent and, as necessary, critical of mine management.	Affects effectiveness of continued consultation and mitigation programs.	Mitigation									N	n/a	Unresolved	There is no documentation indicating that this issue has been resolved.	

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ISSUE SYNOPSIS: SOCIO-ECONOMIC

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				INAC	GNWT	NRCan	EC	DFO	Dogrib	NSMA	YDFN				
MVEIRB	The sustainability/preservation of aboriginal languages and culture is a concern. Are there thresholds beyond which traditions/lifestyles change irreversibly in the primary, and possibly catchment, communities?	Affects assessment of community impacts.	Impact Assessment									N	n/a	Unresolved	There is no documentation indicating that this issue has been resolved.
MVEIRB	Compensation should be provided for lost opportunities with respect to hunting and fishing as a result of the mine.	Affects assessment of community impacts.	Impact Assessment, Mitigation								X	N	Unknown	Unresolved	This is an issue that may be addressed through IBA's. There is no documentation indicating that it has yet been resolved and, in fact, a Tech1 Memo from De Beers (Overview of Project Milestones and Monitoring and Mgt. Programs) indicates that monitoring of Traditional Land Use is not "identified".
MVEIRB	Incomplete planning w.r.t.: accommodation at mine site during construction and operations; control of communicable disease; measures to address gender equity; community participation and responsibilities w.r.t. monitoring; public reporting; and implementation of the Human Resources Development plan.	Affects assessment of socio-economic impacts and/or effectiveness of mitigation measures.	Impact Assessment, Mitigation									N	n/a	Unresolved	There is no documentation indicating that these issues have been resolved.

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n/a - not applicable

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ISSUE SYNOPSIS: ECONOMIC

Issue ID	Summary of Outstanding Issue	Summary of Potential Impact on the Environment	Type of Issue (Design, Baseline, Impact Assessment, Mitigation, or Monitoring)	Who raised the Issue?								Do De Beers' tech. memos speak to this issue (Y or N)	Issue Status according to Parties (Resolved, Unresolved, In Progress, or Unknown)	Issue Status according to Experts to the Board (Resolved, Unresolved, In Progress, or Unknown)	Rationale of Issue Status
				INAC	GNWT	NRCn	EC	DFO	Dogrib	NSMA	YDFN				
GNWT S9	The GNWT objects that DeBeers has not made commitments to specific targets for the employment of Aboriginal and other northerners. The GNWT states that if DeBeers had done a complete labour market analysis they would have been able to set specific quantitative targets.	As De Beers has not set quantitative targets, it is not possible to understand the extent of the impact that the Snap Lake Mine will have on the North.	Impact Assessment, Mitigation		X							N	Unresolved	Unresolved	This issue was raised by the MVEIRB at the Technical Sessions where DeBeers stated that they would not set quantitative targets but they did reaffirm their commitment to hire the maximum number of northerners possible.
GNWT S10	The GNWT has identified both the supply and cost of housing as an issue in most NWT communities. The GNWT thinks that the proposed project would only worsen this problem. The GNWT has identified cooperative housing as a potential solution and has recommended that DeBeers seek an association to develop a business plan for an employee cooperative housing development in the NWT.	The GNWT states that currently there is a significant lack of housing in most communities in the NWT. If the DeBeers project proceeds it will only add to the problem.	Impact Assessment, Mitigation		X							N	Unresolved	Unresolved	Although DeBeers in the EA did review the issue of housing it did not undertake any quantitative analysis on the impact of the proposed project on the housing market.
GNWT S11	The GNWT wants De Beers to sign a Memorandum of Understanding (MOU) with the GNWT on the supply of rough from the Snap Lake mine. The MOU would be based on DeBeers' statements during the Technical Sessions that this commitment would form part of a Socio-Economic Agreement with the GNWT.	DeBeers' commitment to provide a supply of rough would help promote the expansion of the cutting and polishing industry in the NWT and help provide more benefits to the NWT.	Impact Assessment, Mitigation		X							N	Unresolved	Unresolved	DeBeers addressed this issue in its MVEIRB Conformity Response and at the Technical Sessions. The GNWT is attempting to formalize DeBeers commitment by including it in a SEA.
MVEIRB	The estimates provided by the Proponent for federal and territorial corporate taxes do not appear to be consistent with the proponent's estimate of the value of the project and the effective tax rates used in the analysis.	One of the major beneficial impacts of the proposed project will be tax revenues and it is important to have the best estimate available.	Impact Assessment									N	n/a	Unresolved	DeBeers at the Technical Sessions made a commitment to provide a revised estimate of taxes and place it on the public record. It has yet to do so.
MVEIRB	The Proponent has not committed to "hiring targets" for Aboriginals or Northerners nor has it provided "spending targets" for the purchase of goods and services in the NWT.	One of the primary benefits to the NWT will be the economic benefits of the mine through employment and the provision of goods and services to the project. Without "targets" based on the Proponent's analysis there is in effect no estimate of the benefit of the project to the NWT.	Impact Assessment, Mitigation									N	n/a	Unresolved	De Beers at the Technical Sessions did not agree to commit to specific targets but did reiterate its commitment to hiring and spending in the north to the greatest degree possible.
MVEIRB	The Proponent did not provide an estimate of "other operating surplus" in its estimate of direct GDP. This results in an incomplete measure of the impact of the proposed project on territorial and Canadian GDP.	A complete estimate of the impact on the territorial or Canadian GDP will provide a more complete picture of the economic impact of the project and also provide the basis for the estimation of corporate taxes and royalties.	Impact Assessment, Mitigation									N	n/a	Unresolved	De Beers at the Technical Sessions did not agree to provide a complete estimate of Gross Domestic Product (GDP) as it would have the result of making its profits public.
MVEIRB	The amount of labour income and the number of persons employed for the induced impacts of the proposed project on the NWT economy do not appear to be consistent.	It will improve the analysis of the economic impact of the mine and the resulting socio-economic impacts.	Impact Assessment									N	n/a	Unresolved	De Beers and Ellis Consulting Services agreed to undertake further work to attempt to resolve this issue.
MVEIRB	There is no quantitative analysis presented in the cumulative effects section of the EA with respect to employment predictions. The Proponent has presented a list of projects and labour requirements but has not undertaken any analysis of the impact on the aggregate level of labour demand on the NWT labour market.	It will provide more evidence of the reasonableness of the expected employment and other economic impacts of the proposed project on the NWT economy. It will also provide the basis for more detailed immigration estimates and quantitative employment predictions.	Cumulative Effects									Y?	n/a	Unresolved	De Beers indicated that they think that this level of detailed quantitative analysis was beyond the scope of the work required in the EA.

NOTES  
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GNWT - Government of Northwest Territories  
EC - Environment Canada

NRCn - Natural Resources Canada  
Dogrib - Dogrib Treaty 11 Council

NSMA - North Slave Metis Alliance  
YDFN - Yellowknives Dene First Nation  
n/a - not applicable

- WORKING DRAFT -

ISSUE SYNOPSIS: WASTE and AIR QUALITY

Issue ID	Summary of Outstanding Issue	Summary of Potential Impact on the Environment	Type of Issue (Design, Baseline, Impact Assessment, Mitigation, or Monitoring)	Who raised the Issue?								Do De Beers' tech. memos speak to this Issue (Y or N)	Issue Status according to Parties (Resolved, Unresolved, In Progress, or Unknown)	Issue Status according to Experts to the Board (Resolved, Unresolved, In Progress, or Unknown)	Rationale of Issue Status
				INAC	GNWT	NRCan	EC	DFO	Dogrib	NSMA	YDFN				
YDFN 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 use after mine closure. A list of those wastes that will be deposited in the landfill and in the depleted underground workings was requested	Possible impacts on future traditional land use	Monitoring								X	Y	Unknown	In progress	De Beers' Feb 6, 2003 Technical Memo outlines typical materials proposed for burial in the north pile upon closure and reclamation of the project. The memo states that all hazardous materials, non-combustible waste and contaminated materials (not outlined in the memo), will be shipped off site for disposal or recycling. De Beers has responded to the issue, but it is unclear whether YDFN are satisfied with the response
GNWT E1	A single dedicated landfill site in a developed area such as a quarry should be utilized rather than a number of "temporary" or "mobile" locations within the North Pile.	Exposure of wildlife to hazards and potential for contaminated leachate	Design		X							Y	Unresolved	In Progress	De Beers has provided a rationale for locating the landfill at a number of temporary sites within the North Pile, has pointed out that one of the quarry locations proposed by GNWT is within the North Pile area and has also pointed out that sorting of recyclables from landfill materials will take place in the fenced compound near the plant site; however, DeBeers has not provided a commitment to an inventorying method or to a frequency of covering to minimize wildlife exposures. GNWT has not demonstrated a clear rationale for proposing a single dedicated location in the context of potential environmental impacts or negation of potential environmental effects.
GNWT E2	A storage facility for hydrocarbon contaminated soils should be utilized rather than a number of "temporary" or "mobile" landfarm sites within the North Pile.	Unproven landfarming technology creates risk of contaminated leachate and location within the North Pile creates uncertainty regarding the available treatment timeframe	Design		X							Y	Unresolved	Unresolved	DeBeers has not provided a clear indication of why landfarming at the Snap Lake site would be expected to be more effective than recent experience at other regional arctic locations. While DeBeers indicates that each proposed landfarm location in the North Pile will be in place for approximately 3 years, GNWT quotes recent regional experience that shows that landfarming has not been successful even over a 5-year timeframe.
GNWT E3	"... De Beers remains vague regarding commitments to adequately track emissions and conduct ambient air quality monitoring. This is a cause for concern". Recommendation for an air quality management plan	Emissions impact on air quality	Monitoring		X							N	Unresolved	Unresolved	
EC7	Inclusion of PM10 and PM2.5 in regional air quality monitoring.	Cumulative deposition of particulates from Diavik and Ekati projects should be assessed by monitoring program	Monitoring				X					N	In progress	In progress	DeBeers have committed to operating within standards and to considering the EC recommendation. No commitment has been made. This can be achieved through EA conditions.

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