



# December 2013 Environmental Update for SLEMA Board

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# Outline

1. Mine Update
2. Inspection Update
3. Regulators' Update
4. Aboriginal Update
5. Stakeholders' Update
6. Agency's Activities
7. SLEMA Reviews
8. Follow-up to TK Workshop on December 6, 2013



# Acronyms

- AANDC – Aboriginal Affairs and Northern Development Canada (previous INAC – India and Northern Affairs Canada)
- AEMP – Aquatic Effects Monitoring Program
- ARD – Acid Rock Drainage
- DFO – Fisheries and Oceans Canada
- EC – Environment Canada
- ENR – Department of Environment and Natural Resources, GNWT
- GNWT – Government of the Northwest Territories
- MVLWB – Mackenzie Valley Land and Water Board
- PK – Processed Kimberlite
- SLEMA – Snap Lake Environmental Monitoring Agency
- SNP – Surveillance Network Program
- TDS – Total Dissolved Solids
- WEMP – Wildlife Effects Monitoring Program
- WTP – Water Treatment Plant
- WMP – Water Management Pond



# 1.1 Mine Update – November 2013

- Production rate: 100.9 % of its capacity (95,349 tonnes of kimberlite processed)
- 3,575 m<sup>3</sup> of water withdrawn from Snap Lake
- 1,197,907 m<sup>3</sup> of treated water discharged into Snap Lake
- 80,370 tonnes of coarse reject and 62,617 m<sup>3</sup> of slimes deposited in the North Pile; 3,834 m<sup>3</sup> of paste deposited underground
- 2 spills (0 reportable)
  - 164 hydrocarbon spills in the underground mine (6,439 liters)
- Water sampled in 7 monitoring stations
  - The monthly average for all parameters met compliance except
    - SNP 02-16i: an elevated faecal coliform on November 1



## 1.2 Spill Reporting in December 2013

- No spill reports received in December 2013



# 1.3 Spill Contingency Plan

- Submitted on December 2, 2013
  - Updated from the previously approved June 2009 Spill Contingency Plan
- Further submission on December 5
  - Table of Revisions



# 1.4 Notification of Permanent Winter Road Access Construction

## ➤ Date December 4, 2013

- De Beers will construct a permanent winter road access with solidified shotcrete from the tote road to the winter equipment staging area from December 11, 2013 to January 31, 2014
  - To prevent further damage to the liner and overall structural integrity of Perimeter Sump 3



# 1.5 2012 Environmental Agreement Annual Report

- Letter addressed to AANDC dated December 4, 2013
  - Informed AANDC the submission of 2012 EAAR
    - Draft one on September 1
    - Official one on November 21



# 1.6 Water Management Plan

- Re-submitted on December 5, 2013
  - The revisions to the water balance and corresponding schematic have been included



# 1.7 Responses to SLEMA Request on Ceriodaphnia Testing in October 2013 (I)

## ➤ E-mail dated December 13, 2013

- *There are adverse effect on both survival and reproduction in the Ceriodaphnia test*
- *The results are within the range of what we have seen for treated effluent over the years*
- *There is more of an effect on survival this time, but this has occurred at least once before. The decreased survival was really only an issue in the 100% (v/v) treated effluent concentration*



# 1.7 Responses to SLEMA Request on Ceriodaphnia Testing in October 2013 (II)

- E-mail dated December 13, 2013
  - *It was predicted that we would see adverse sublethal effects in treated effluent, although they don't always occur. In contrast, the September 2013 treated effluent sample did not show adverse effects on Ceriodaphnia survival or reproduction, so this result for the October sample is not an indication of a persistent or worsening pattern*



# 1.8 Vegetation Monitoring Plan

- SLEMA requested on October 25, 2013 that the updated VMP is expected
- De Beers responded on December 19 that *“the changes are still ongoing to the plan, so there won’t be a final to review” in the near future*
- *De Beers plans to initiate the plan next summer*



# 1.9 Amendment Application for Changing EQCs

- Submitted on December 16, 2013
  - Attached Mining Questionnaire, Amendment Concordance Table, Community Engagement Report, 5 modeling reports, TDS Response Plan, Nitrogen Response Plan, Effluent Quality Criteria (EQCs) Report, and Strontium Response Plan
  - Requested significant changes to EQCs



## 2. Inspection Update

- AANDC Inspector – Patrick Kramers
- No inspection reports received in December 2013



## 3. 1 Regulators' Update – AANDC (I)

- Responded, on December 18, 2013, to the MVLWB's request on the appropriate next steps with regards to the ability of the MVLWB to amend the TDS limit that was established as a binding measure in the Environmental Assessment process for the Snap Lake Diamond Mine
  - *AANDC's position is that Water Licence MV2011 L2-0004 must maintain TDS limits of 350mg/L until such a time that the measure might be amended (or maintained) through a decision made by the Minister under s. 130 of the MVRMA following a report of Environmental Assessment completed by the MVEIRB*



## 3.1 Regulators' Update – AANDC (II)

- *AANDC also notes that s.126 of the MVRMA provides for MVEIRB to conduct an environmental assessment on referral following a preliminary screening by the MVLWB, or on its own motion*
- *AANDC is of the opinion that the MVEIRB could expeditiously assess this item in a narrowly scoped Environmental Assessment, specific to the potential for significant adverse impacts caused by the proposed increase in allowable TDS in Snap Lake*



## 3.2 Regulators' Update – MVLWB (I)

- Responded on November 28, 2013 to De Beers' November 20 request regarding clarification on how the Average Monthly Limit (AML) should be interpreted and applied to reporting
- Approved AEMP Chapters 6 and 7 conditionally on the commitments made by De Beers, along with the outstanding items from the review, on November 29



## 3.2 Regulators' Update – MVLWB (II)

- Requested AANDC for clarification on the MVLWB's ability to amend the TDS limit set during the Environmental Assessment (EA) process, on December 4, 2013
  - *“The Board is requesting AANDC clarify, in their opinion, what the appropriate regulatory process is for the consideration of an amendment of a water licence condition that is based on a measure from a report of Environmental Assessment?”*
  - AANDC to respond by December 17
  - Reviewers to comment by December 30
  - De Beers to respond by January 6, 2014



## 3.2 Regulators' Update – MVLWB (III)

- Invited reviewers to submit comments on Spill Contingency Plan, on December 9, 2013
  - Due on December 23
- Invited reviewers to submit comments on Water Management Plan, on December 11,
  - Due on January 23, 2014
- Requested, on December 13, that De Beers clarify the items of ARD Plan, such as drainage chemistry, rock classification, placement, and procedures, mass load, and maps/figures



## 3.2 Regulators' Update – MVLWB (IV)

- Invited reviewers to submit comments on Clarification regarding the De Beers' Submission on the ability to amend the TDS limit set during the Environmental Assessment (EA) process, on December 18, 2013
- Distributed De Beers Amendment Application on December 23
  - *“This amendment will be processed following the decision on the TDS legal issue currently undergoing review”*



## 3.2.1 Clarification regarding the Interpretation and Implementation of the Monthly Average Limit

### ➤ Dated November 28, 2013

- *“The Water License definition for AML is ‘the concentration that cannot be exceeded, which is determined by averaging the analytical results of 6 (six) consecutive samples collected at 6 (six) day intervals over a 30 (thirty) day period.’ This is meant to be implemented as a rolling average, so every sample (6 days) a new average is calculated using the previous 5 samples plus the new result. It will not necessarily be associate with a particular calendar month”*
- *“SNP report will need to clearly identify what the AML was and whether or not there have been any non-compliances”*



## 3.2.2 Clarification for the ARD and Geochemical Characterization Plan (I)

- The following items to be clarified
  - Drainage Chemistry: Please clarify what the drainage chemistry will be for the various rock types, and how the drainage chemistry may change over time. Include predictions for alkaline and neutral drainage, and any long term kinetic testing on site to predict lag time and long term ARD/metal leaching predictions



## 3.2.2 Clarification for the ARD and Geochemical Characterization Plan (II)

- Please clarify the rock classification criteria and process for segregating PAG and Non-PAG rock. Specifically:
  - a. Does the 0.17% sulphide-S cut-off criterion for Non-PAG rock apply to *all rock types*? *Clearly specify what rock types/mixtures will be treated as Non-PAG if the %sulphide-S criterion is met.*
  - b. What other data supports the %sulphide-S cut-off criterion from the NAG-pH test results? How are the limitations of the NAG-pH test, such as the lack of consideration of elevated contaminants in non-acidic drainage or the ambient rates of metal leaching/acid generation/acid neutralization, addressed?



## 3.2.2 Clarification for the ARD and Geochemical Characterization Plan (III)

- c. Clarify the process described in Figure 6-1 and the text throughout the Plan that describe this process. Include classification techniques (visual or geochemical tests), final placement locations for various rock types/mixtures, stockpile locations and duration materials will be stockpiled before placement, and the verification process (including time lag to compare test results with visual assessments and corrective actions that would be taken if required to support the weight-of-evidence approach).
- d. How do field testing results (eg. seepage survey results, or overall site water quality) support the methodologies proposed in the Plan?



## 3.2.2 Clarification for the ARD and Geochemical Characterization Plan (IV)

- Mass Load: Please indicate when the site modelling data is expected and how the results may impact the Plan
- Maps/Figures: Please include maps that better depict sampling locations and stockpile sites. Also include any updates or additional figures to support the rock classification, placement, and procedures request



# 4. Aboriginal Update

- NSMA commented Spill Contingency Plan on December 20, 2013



# 4.1 NSMA Comments on Spill Contingency Plan (I)

- It is stated in the key steps that individuals entering the site are required to participate in a site orientation session where spill plans and spill kit information is provided and the spill plan is reviewed
  - Please clarify if this orientation is for all site staff and does it occur for every mine arrival?



# 4.1 NSMA Comments on Spill Contingency Plan (II)

- It is stated that "[a]ll members of the designated Emergency/Spill Response Team (ERT) have current Spill Response Training. Annual training is provided by recognized training personnel."
  - Please elaborate on what is meant by "recognized training personnel" and explain who administers annual spill response training



# 4.1 NSMA Comments on Spill Contingency Plan (III)

- It is stated that "[a]ll personnel and contractors at the Mine site are familiar with spill reporting requirements and are encouraged to constantly check for leaks and spills."
  - As spill response is critical to limiting harm to the environment the NSMA recommends stronger wording in this statement to demonstrate the required nature of reporting and that leak and spill checks are formalized rather than on an "encouraged" basis. Additionally, please explain how De Beers encourages employees to abide by spill reporting and response requirements, and if there are there any incentive or penalty systems in place. As managing the human side of spill response is the most important component following prevention it would be useful to recognize how this challenge is addressed, either in this section or Section 4



# 4.1 NSMA Comments on Spill Contingency Plan (IV)

- It is stated in Section 3.0 that a land farm was (but is no longer) in commission on site, originally intended for the purpose of handling large volumes of bio-degradable contaminated soils
  - Please clarify 1) why this landfarm was decommissioned, 2) what constitutes bio-degradable contaminated soils, and 3) whether this means that any large volume (define large volume) bio-degradable contaminated soils these are now managed through the Hazardous Waste Management Cell/ off site treatment and disposal



# 5. Stakeholders' Update

- Comments on Spill Contingency Plan on December 23, 2013 by
  - AANDC and Environment Canada (EC)



# 5.1 AANDC Comments on Spill Contingency Plan (I)

- AANDC recommends that the SCP be updated to include aspects of recent spills (such as process water spills from Jan-May 2012) and associated actions plans, mitigations and strategies to eliminate and reduce the likelihood of reoccurrence
- AANDC recommends that a flowchart with names and contact information for Emergency/Spill Response be made easily available and accessible by all staff on-site



# 5.1 AANDC Comments on Spill Contingency Plan (II)

- AANDC recommends that an on-site alternate to the On-Scene Coordinator be established and identified within the SCP for each shift
- AANDC recommends that a worst case scenario, specific to Snap Lake operations (e.g. North Pile, underground, etc.), be provided within the SCP as well as the proposed response procedures and actions



# 5.1 AANDC Comments on Spill Contingency Plan (III)

- AANDC encourages De Beers - Snap Lake to take advantage of the On-Scene Coordinator assessment to identify deficiencies and improve spill response procedures and level of response in the event of a spill during typical site operations
- AANDC recommends that all hazardous materials be stored appropriately. All types of hazardous material storage areas/containers should have secondary containment. A map illustrating the locations of all permanent tanks should be provided



## 5.2 EC Comments on Spill Contingency Plan

- Environment Canada (EC) contact information is no longer current
- Since environmental emergencies or occurrences are often local in nature and in order to reduce notification burden, the Canadian environmental notification system uses the NWT/NU 24-hour Spill Line as the first point of contact. In turn, these authorities inform EC of the notifications
- For information relating to environmental enforcement and reporting requirements under the Canadian Environmental Protection Act 1999 and the Fisheries Act please contact EC Environmental Enforcement at 867-669-4730 or 867-669-4729 to reach a 24 hour duty officer



## 6. Agency's Activities

- SLEMA Core Group Meeting held on December 5 and 6, 2013
- SLEMA Annual General Meeting held on December 5
- SLEMA Traditional Knowledge Panel Meeting held on December 6
- SLEMA staff attended the Cumulative Impacts Monitoring Program (CIMP) Results Workshop from December 10

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# 7. SLEMA Reviews

- Spill Contingency Plan
- Water Management Plan



# 7.1 Spill Contingency Plan

## ➤ Dated November 2013

- The plan covers spill contingency for the mine site and includes in the appendices:
  - The Tibbitt to Contwoyto Winter Road Joint Venture Spill Contingency Plan
  - Tli Cho Logistics / Ventures West Transport Inc. Emergency Preparedness Plan
  - The Emergency Response Plan for the transportation of potentially hazardous materials along public roads
- This Plan is not intended to address fires, explosions, accidents, injuries or fatalities. These aspects are provided in the De Beers Emergency Response Plan (De Beers 2005)



# Comments from the Environmental Analyst

- The Plan is acceptable
  - No concerns are raised



# 7.2 Water Management Plan

- Comments sent to De Beers via e-mail on December 9, 2013



# Comments from the Environmental Analyst

- Inland Lake 6 should be added into Table 2-1 (page 12)
- Figure 2-2 Wastewater Management: no figure in page 22
- Table 2-4 Summary of SNP Sampling Stations: no in-house testing for nitrate, chloride as promised for SNP 02-17 (page 40)?
- Table 2-4 Summary of SNP Sampling Stations: SNP 02-18 is also an important station and should be incorporated into Table 2-4, even if it is the summary of the AEMP monitoring results



## 8. Follow-up to TK Workshop on December 6, 2013

### ➤ TK Workshop on December 6, 2013

- Albert Boucher' concerns
  - Animal attraction near the incinerators
  - Monitoring dustfall, vegetation, and wildlife beyond the mine footprint
- Wayne Langenham's concern
  - Leaking from parked trailers along winter road
- Board Members' concern (James Marlowe and Rachel Crapeau)
  - Vegetation during reclamation

### ➤ The concerns were communicated with AANDC Inspector and De Beers staff immediately after the Workshop

- AANDC Inspector and De Beers replied on December 9, 2013



# 8.1 Animal attraction near the incinerators

## ➤ De Beers responses

- *“For the incinerator, we currently have procedures in place to prevent wildlife interaction with food including using sealed barrels, sole accountability for loading and storage of incinerator ash. Should these procedures no longer be sufficient we will investigate the possibility of fencing in that area”*



## 8.2 Monitoring dustfall, vegetation, and wildlife beyond the mine footprint

### ➤ De Beers responded

- *“For dust fall monitoring and vegetation work currently data is collected 0 m, 50 m, 150 m, 500 m, 1 km, 5 km, 10 km, 15 km and 20 km from site to evaluate dust fall. For wildlife monitoring we do caribou monitoring within the ZOI (approximately 31 km radius from site) as identified in the project EA. Grizzly and wolverine monitoring are done jointly between the mines with a very large regional study area split between the 4 sites”*



## 8.3 Leaking from parked trailers along winter road

### ➤ AANDC Inspector responses

- *“I have zero objection at looking at anything on site for you however I have to ask for some clarification on your request. When you mention "haul trucks" are you referring to the semi tractor trailers? If so, this is a matter that could apply to all mine sites along the Tibbit to Contwoyto Winter Road and you may want to also involve the Joint Venture who maintains and operates the road. As far as Snap Lake is concerned, their spur road is quite small and I don't remember seeing trucks stopped along its stretch. I will definitely keep an eye on my part of the pie (Snap and Kennady Lakes) for this concern. As you know, our inspections regularly inspect under site vehicles parked along the road for leaks on hydraulic oil and diesel but these parked vehicles are usually maintenance based (snow cats/loaders) and not the transport trailers”*



# 8.4 Vegetation during reclamation

## ➤ De Beers responses

- *“Vegetation research is currently in the feasibility stage to determine the best methods for ensuring the virility of the soil harvested in grubbed areas. Additional work is focused on literature reviews as the mine site is quite compact with no available areas for progressive reclamation. Results of the Passive regeneration plots will be reported on in the 2013 Vegetation Plan as per the design plan”*
- *“I would love to participate in the elders workshop and can prepare the results of the vegetation work for discussion. It is entered in the calendar but can also please send a reminder in May?”*

