



GAHCHO KUÉ

MVLWB Public Hearings

May 6 to 8, 2014

DE BEERS
GROUP OF COMPANIES

Agenda

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 - Aquatic Effects Monitoring Program
 - Waste Management Plans
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3. Summary

Project Overview

Construction



Project Overview (continued)

Construction



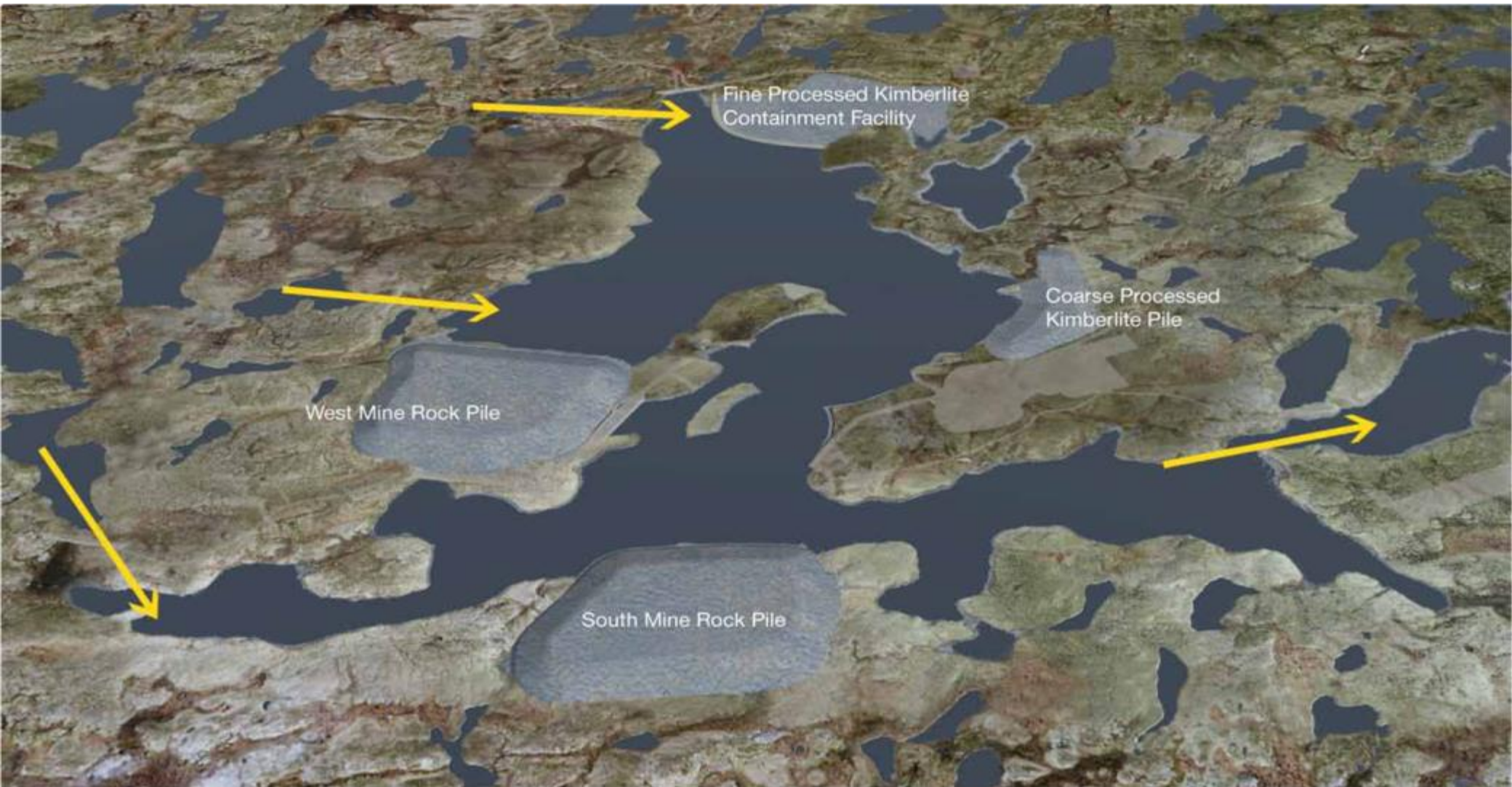
Project Overview (continued)

Operations



Project Overview (continued)

Closure





Summary of Key Intervention Responses

Gahcho Kué Project

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Water Licence Recommendations

General Conditions

- Restricted water discharge period during operations to three years (DKFN_15 and ENR_24)
 - De Beers disagrees for a restriction of operational discharge for 3 Years in WL but does agree that operational discharge will need to meet all EQCs and established WQOs
- Installation of a water treatment plant at the proposed Gahcho Kué mine site (NSMA_3)
 - De Beers does not support this recommendation
 - The water management plan does not require a water treatment plant to achieve its objectives
 - Water treatment was considered during the EIR process and the Panel report concluded that a water management contingency plan be completed that includes “contingent water treatment, in the event that water quality is not suitable for discharge during the operations and closure phase”
 - De Beers has included the option for active water treatment as a defined contingency in the Water Management Plan
- Ni Hadi Yati inclusion in the WL (DKFN_3 and DKFN_5)
 - Ni Hadi Yati is a binding Agreement between De Beers and six Aboriginal Parties. De Beers is awaiting final stages of ratification process. De Beers does not agree that this should be a condition of the WL
- Timelines for submission of annual report (DKFN_8, DKFN_28, and DKFN_29)
 - May 1st.

Adaptive Management/Response Framework and Action Levels

Adaptive Management Plan (ENR_33, ENR_35, EC_3.3)

- The AdMP describes the Monitoring Program Framework and an Adaptive Management Response Framework, which identify linkages between other management plans and monitoring programs
- The AdMP was not developed to be a standalone document that would incorporate Action Levels and Response Plans from other management plans and monitoring programs
 - these details are provided in their applicable management plans and monitoring programs

Action Levels and Response Framework (DKFN_2 and DKFN_8)

- Action Levels and the Response Framework are not just applied to the AEMP
- They will be incorporated into applicable Monitoring Programs and Management Plans, including:
 - the Processed Kimberlite and Mine Rock Management Plan, the Water Management Plan, the Erosion and Sediment Management Plan, the Groundwater Monitoring Plan, and the Incinerator Management Plan
- Provision in the Annual WL Report for Response Framework (DKFN_9)
 - within Schedule 1 of the WL, there will be requirements for reporting of any action level exceedances under applicable Management Plans and Activities and a description of response actions undertaken to address any action level exceedances

Dyke Construction and Management Plan/Water Management Plans/Erosion and Sediment Management Plan

De Beers agrees to :

- Submit a Dyke Construction and Management Plan 60 days prior to construction (**ENR_1 and DKFN_19**)
 - Dyke A has been submitted and should be considered as part of this approval process
- Submit Project-phased separate Construction, Operations and Closure Water Management Plans (**ENR 2, 3, 4 and 5**) and Sediment and Erosions Plans (**ENR_6,ENR_7, ENR_8, and DKFN_16**)
 - Construction Plans will be submitted sixty (60) days after issuance of the Water Licence. The previously submitted plans will be effective until the updated plan is submitted and approved
 - Operational Plans will be submitted sixty (60) days prior to Year 1 of Operations
 - Closure Plans will be submitted sixty (60) days prior to mine closure and refilling of Kennady Lake
- Submit annual reports on Sediment and Erosion that defines field methods, measurements, SOPs (**ENR_10, ENR_11, ENR_13, and DKFN_16**)

Site Specific Water Quality Objectives

- Use of MVEIRB narrative statements (**ENR_17**)
 - De Beers acknowledges the statements provided by MVEIRB in the RfD report
 - They are consistent with statements developed by De Beers and were used in determining significance of the Project on the receiving environment and development of WQOs
- Lake-specific baseline WQ (**ENR_18**)
 - Baseline WQ represented by the WQ dataset of the Kirk Lake watershed
 - This data used because of the larger dataset that captures the potential local scale variability, compared to Lake N11 or Area 8 alone
- SSWQO for mercury (**ENR_19**)
 - De Beers have referenced the local scale data set for the setting of a mercury SSWQO
- Hardness as an ETMF (**ENR_20**)
 - Consistent with CCME 2007, SSWQOs have been derived based on ETMFs, such as hardness and pH
 - Increased water hardness will reduce the possibility of toxic effects from inorganic substances such as metals

Effluent Quality Criteria

- Minimizing change to the receiving environment (**ENR_21 and YKDFN_3**)
 - The basic tenet of De Beers water management plan is to minimize impacts to the receiving environment during all phases of the mine
 - The mine footprint is small; planned discharges are limited, and the controlled area will contain mine water for 8+ years
 - EQCs have been developed such that significant adverse effects in the receiving environment will be avoided
- Additional EQCs (**ENR_22 and EC_3.1**)
 - De Beers does not consider any additional EQC water quality parameters are necessary
 - A comprehensive screening process identified water quality parameters that would require regulatory limits.
 - The draft EQC Report Version 2 includes:
 - For Lake N11: NO₃, NH₃, TP, Al, TSS, pH, and TPH
 - For Area 8: TDS; NH₃, TSS, pH, and TPH
- Total Petroleum Hydrocarbons as an EQC parameter (**ENR_22, EC_3.1 ,and YKDFN 5**)
 - De Beers will include TPH as an EQC for discharge to Lake N11 and Area 8
 - De Beers propose a maximum daily limit of 5 mg/L

Effluent Quality Criteria

- Dilution factor of 5 for EQC development (**ENR_23**)
 - De Beers completed a thorough assessment to derive the mixing ratios
 - An appropriate model framework and conservative assumptions were used in that assessment and transferred to the EQC derivation process
 - De Beers stands by the process used to develop dilution factors and EQCs for Lake N11 and Area 8
 - EQCs have been developed such that significant adverse effects in the receiving environment will be avoided
- Toxicity testing (**ENR_25, EC_3.2, and YKDFN_4**)
 - Given that samples are not expected to be toxic undertaking both toxicity tests is unnecessary
 - De Beers has proposed to undertake the Early Life Stage Rainbow Trout test in the SNP monitoring
- Requirement for measuring pH (**DKFN_27**)
 - De Beers will include pH measurements as part of the SNP and AEMP monitoring
- EQCs for Area 8 should be similar to the baseline (**YKDFN_6**)
 - De Beers developed EQCs for discharge to Area 8 during operational discharge in Year 1

Aquatic Effects Monitoring Program

- **AEMP Guidelines and Approval (ENR_26)**
 - AANDC's guideline document was reviewed and incorporated into the development of the Conceptual AEMP Design Plan
 - De Beers proposes that the initial plan be approved by the Board with the Water Licence
- **AEMP Working Group (ENR_28)**
 - De Beers is committed to an AEMP working group on the AEMP, which may be a group under Ni Hadi Yati
- **AEMP Action Levels (ENR_26, ENR_29, EC_3.3, and EC_3.4)**
 - The design plan, the conceptual site model, the stressors, pathways, and receptors were developed based on the EIS and subsequent documents.
 - Action Levels and Response Framework designed to respond to environmental change based on the three impact hypotheses identified in the EIS
 - toxicological impairment
 - nutrient enrichment
 - physical habitat alteration

Aquatic Effects Monitoring Program

- **AEMP Redesign to a BACI framework (ENR_30)**
 - The initial proposed study design was a simplified BACI design
 - De Beers has modified the design to be an asymmetric before-after control-impact (BACI) design
 - De Beers proposes to use the design in the 1st year of monitoring and then re-evaluate
- **Plankton baseline data (ENR_31)**
 - De Beers proposes to conduct baseline plankton sampling for June, July, and August to support the proposed study design
 - De Beers does not propose to conduct weekly or biweekly baseline plankton sampling. Ten years of data from Snap Lake mine can be used to characterize seasonal plankton community dynamics
- **AEMP Plankton Sampling Effort (ENR_32)**
 - Plankton sampling in June, July, and August is consistent with the plankton sampling for Snap Lake mine, which has been shown to be sufficient in characterizing the seasonal variability in the plankton communities
- **Mercury monitoring in Lakes D2/D3 (EC_3.5)**
 - De Beers will undertake Hg monitoring and tracking in water and sediment

Waste Management Plans

- The Waste Management Plan and Incineration Management Plan to be submitted a minimum of 60 days prior to any changes in operations for approval by the Board (**ENR_14**)
 - De Beers agrees to update the Waste Management Plans, including the Incinerator Management Plan, to reflect commitments made during the regulatory process.
- A requirement for incinerator stack testing to ensure that its operation is compliant with the CCME CWS standards for dioxins, furans and mercury emissions. ENR notes that the Board authorizes the WMP, thus the board is authorizing the incineration of waste in the NWT. Thus compliance testing should be incorporated into the licence as a regulatory tool at an established frequency (**ENR_15**)
 - De Beers agreed to stack testing and will update the plans to provide definitive timelines. De Beers believes this does not require a separate condition but can be captured in the Monitoring Plan and associated schedules.
- A requirement for waste oil and residual ash testing, including analytical criteria, in the proponents water licence for the appropriate management of potentially hazardous waste (**ENR_16**)
 - De Beers agrees to undertake routine testing of waste oil and residual ash in consistent with the Waste Management Plans but does not agree that this needs to be a WL condition.

Other Management Plans

Geochemical Characterization Plan (EC_3.10)

- Total sulphur analyses is considered an appropriate method for classification of PAG or Non-PAG material when used in conjunction with periodic additional testing to confirm material characteristics
 - TS is used routinely on other mine sites for the very same purpose of operational classification of mine rock (e.g., Diavik)
 - can be used on-site, or off-site with rapid turnaround times

Incinerator Management Plan (EC_4.1)

- De Beers commits to commitment to not incinerate sewage or sewage sludge
- De Beers will conduct stack emission testing for all incinerators to ensure achievement of the CWS for Dioxins and Furans and the CWS for Mercury.

Provision of mitigation, monitoring, and follow-up actions for management plans in WL (DKFN_17, DKFN_18, and DKFN_20)

- These sections are included in the Explosives MP, the Processed Kimberlite and Mine Rock MP, and the Water Management Plan, and others

Wildlife and Wildlife Habitat Protection Plan

The primary mechanisms for managing the Panel Measures and Suggestions are the WWHPP and the WEMP (DKFN_10, NSMA 1, NSMA_4, and YKDFN_1)

- Measure 1:
 - WWHPP and WEMP, concordance tables, and CPP
- Measure 2:
 - winter access road, behavioural monitoring, and contribution to regional caribou monitoring
- Measure 3:
 - vegetation and soil monitoring, winter access road, behavioural monitoring, and contribution to regional caribou monitoring
- Suggested Follow-up Programs:
 - ZOI, contributes to regional cumulative effects monitoring
 - noise, winter access monitoring, behavioural monitoring, action levels and management responses, TK inclusion

- Development of the WEMP, WWHPP, and CPP has been and will continue to be collaborative (ENR MOU, Ni Hadi Yati)

Reclamation Commitments

De Beers agrees to:

- Participate in a Closure Working Group (**ENR_39, NSMA_5 , YKDFN_7 and YKDFN_8**)
 - may form part of Ni Hadi Yati to better refine closure goals, objectives and methods
- Identify and develop methods to reduce the period of time for recovery of the WMP and the refilled Kennady Lake at closure (**ENR_38 and EC_3.9**)
 - Investigation, monitoring and research will be undertaken through the life of mine on mechanisms to enhance meromixis in the Tuzo Pit during the refilling of Kennady Lake.
 - Periodic updates on these initiatives will be submitted to MVLWB
- Develop reclamation research plan (**YKDFN_7**)
- Develop an Interim Closure Plan 3 years after WL issuance, which will allow adequate time to engage parties in the planning process as well as to advance engineering and site based information (**ENR 39**)
 - will better inform the closure plan

Reclamation and Closure – Securities (ENR 40)

Reclamation/Security Bond Estimate

- Recommendations GNWT (formerly AANDC) and De Beers
 - Prior to Construction \$19,043,323 (De Beers agrees. Suggests a simple 50/50 split 2014 (within 30 days of license) and one year later in 2015) Amount incorporates/retires the current LUP bonds
 - Year 1 Operations \$37,594,133* (\$26,431,414 De Beers excluding the optional items)
 - Year 4 Operations \$79,690,301* (\$48,308,406 De Beers excluding optional items)
 - Year 11 Operations LOM \$84,471,700* (\$50,403,545 De Beers LOM estimate excludes optional items and includes benefit of progressive reclamation carried out during operations – DB estimate is \$80.8M on when including these items)

*GNWT estimates include reclamation options e.g., OB storage and re-placement upon closure re-vegetation, PAG stockpile and re-handling process, and accompanying higher indirect costs, etc.

- De Beers did not split between land and water, but agrees with the proportional split recommended by GMWT

Reclamation and Closure – Securities (ENR 40)

- De Beers does not agree with the total amount of liability. ENR estimated total LOM liability at \$84.4M. De Beers estimated at \$50.4M however the differences is largely attributable to the exclusion of optional items (\$26.6M) and credit for progressive reclamation items fully completed during LOM (\$3.4M)
- De Beers worked with ENR (formerly AANDC) and their consultants and is in general agreement with the method and estimating processes, with some relatively minor differences. De Beers used the RECLAIM model format. Only minor differences exist in the common scope items.
- ENR estimate includes over \$25M of liability estimates for 'optional items' not included in the proposed development plans. These optional items costs include:
 - the placement of 0.5 m of overburden material on all disturbed areas and revegetation;
 - alternative PAG material strategy (stockpiling and re-handling *in lieu* of encapsulation within mine rock piles);
 - the associated overheads and contingencies related to these items.

Summary

- De Beers agrees with 2/3rd of the recommendations suggested by Parties
- De Beers will update the Monitoring and Management Plans based on outcomes and commitments from the regulatory process
- De Beers commits to adhere to the draft Monitoring and Management Plans as submitted until revised Plans are submitted and approved by the Board
- Construction Plans will be submitted sixty (60) days after issuance of the Water Licence. The previously submitted plans will be effective until the updated plan is submitted and approved.
- De Beers would like to thank the Interveners for their the time and consideration in developing their recommendations
- De Beers would like to thank the MVLWB for time to present on the Gahcho Kué Project