



August, September & October  
2019

Environmental Update  
for SLEMA Board

November 1, 2019

# Outline

1. Mine Update
2. SNP Reports
3. Inspection Reports
4. MVLWB Update
5. Water Licence and Land Use Permit Review Process for Snap Lake Mine Closure Update
6. Aboriginal Update
7. SLEMA's Activities
8. New EQC proposed for SL



# Acronyms

- AEMP – Aquatic Effects Monitoring Program
- ARD – Acid Rock Drainage
- DFO – Fisheries and Oceans Canada
- ECCC – Environment and Climate Change Canada
- ECM – Extended Care and Maintenance
- ENR – Department of Environment and Natural Resources, GNWT
- EQC – Effluent Quality Criterion
- GNWT – Government of the Northwest Territories
- INAC – Indigenous and Northern Affairs Canada (formerly Aboriginal Affairs and Northern Development Canada [AANDC])
- MVEIRB – Mackenzie Valley Environmental Impact Review Board
- MVLWB – Mackenzie Valley Land and Water Board
- PK – Processed Kimberlite
- SLEMA – Snap Lake Environmental Monitoring Agency
- SNP – Surveillance Network Program
- SSWQO – Site-Specific Water Quality Objective
- TDS – Total Dissolved Solids
- WEMP – Wildlife Effects Monitoring Program
- WTP – Water Treatment Plant
- WMP – Water Management Pond



# 1. Mine Update

- The Snap Lake Mine is currently under Extended Care and Maintenance (suspended operations);
- All personnel left the site on September 5th, 2019;
- The Snap Lake Mine will be remotely monitored through the winter months for the 2019-2020 season;



## 2. SNP Reports

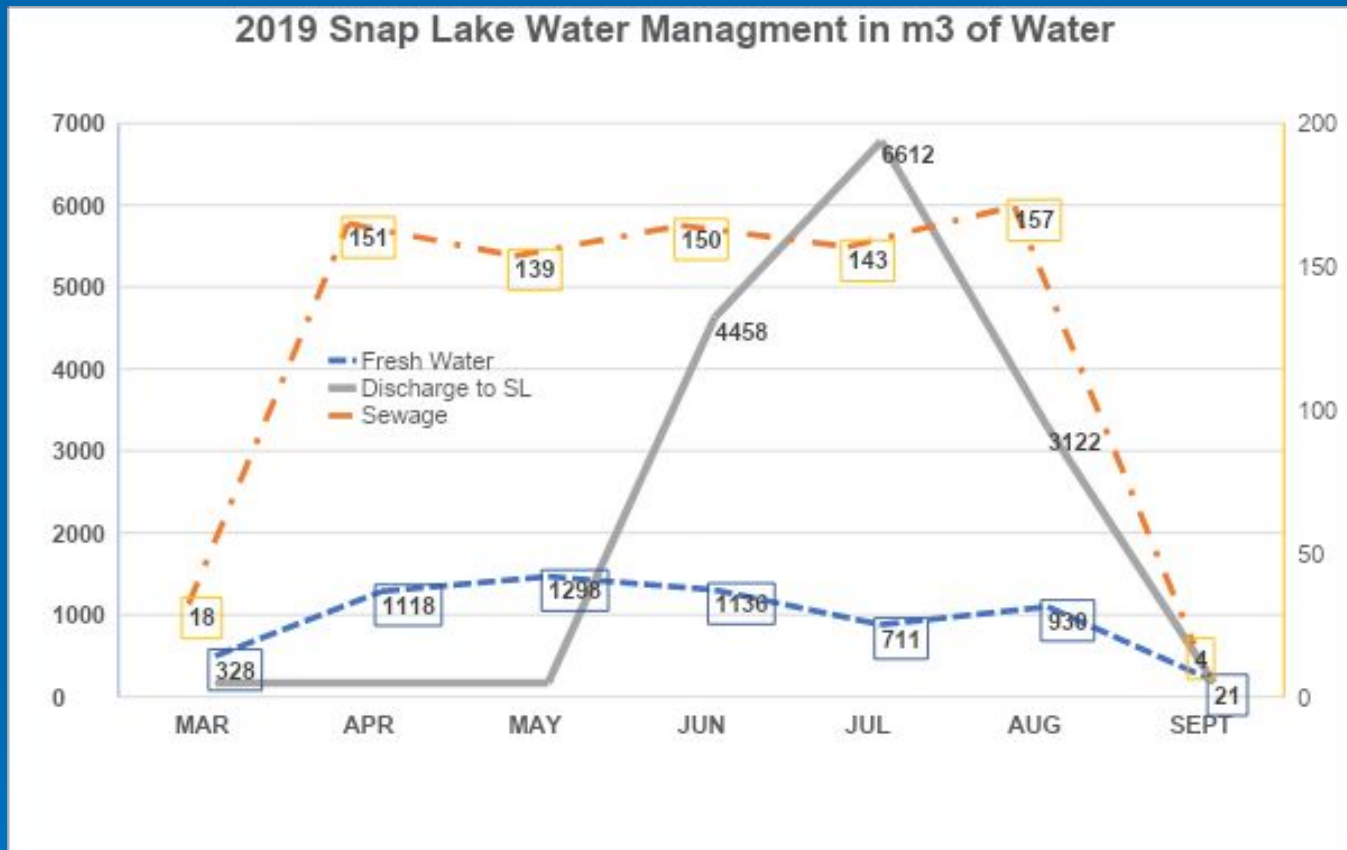


Chart 1: Volumes of Fresh Water Pumped, Sewage Disposed and Effluent Discharged into Snap Lake in 2019



## 2. SNP Reports

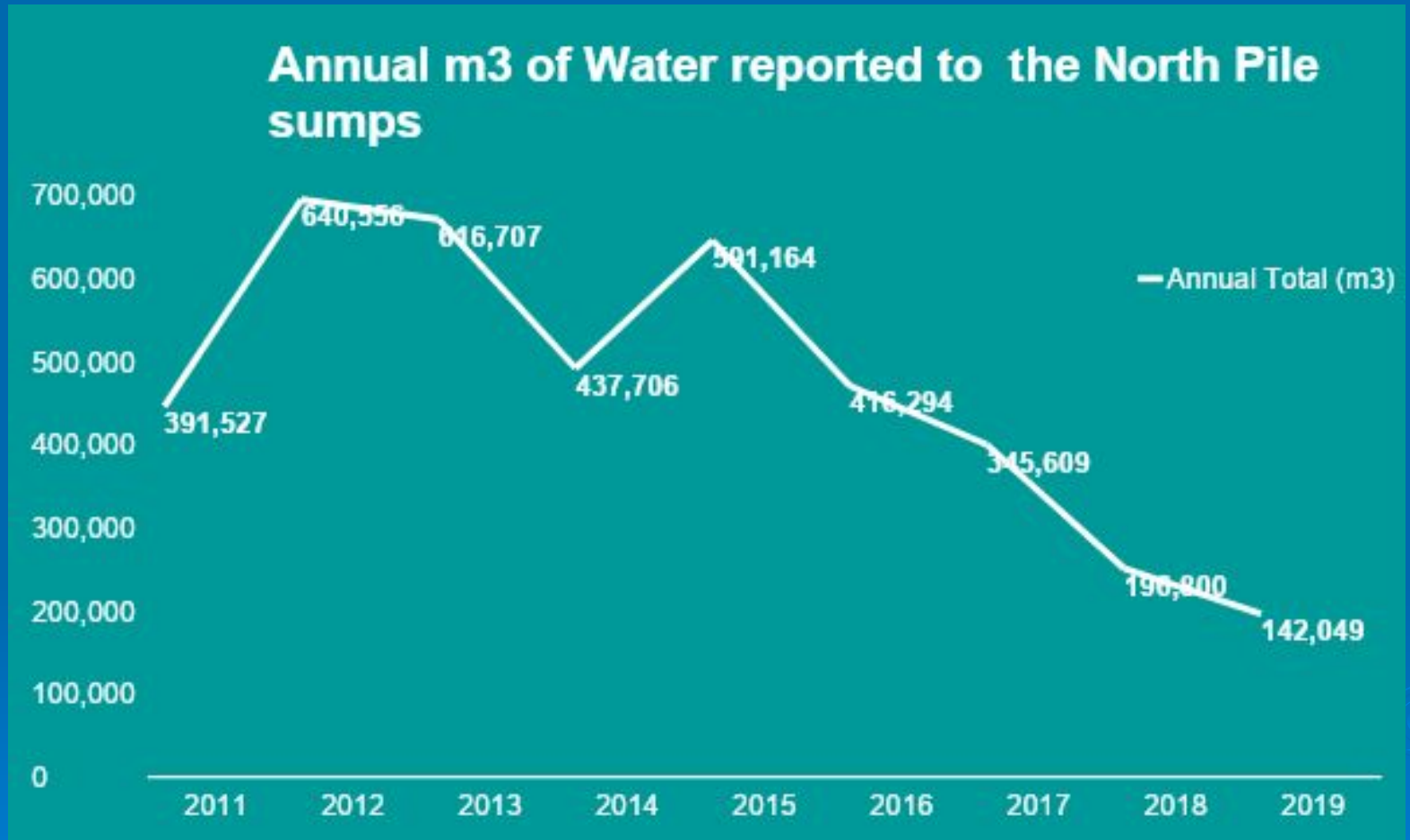


Chart #2: Annual Volume of Water Measured at North Pile Sumps from 2011 to 2019



## 2. SNP Reports

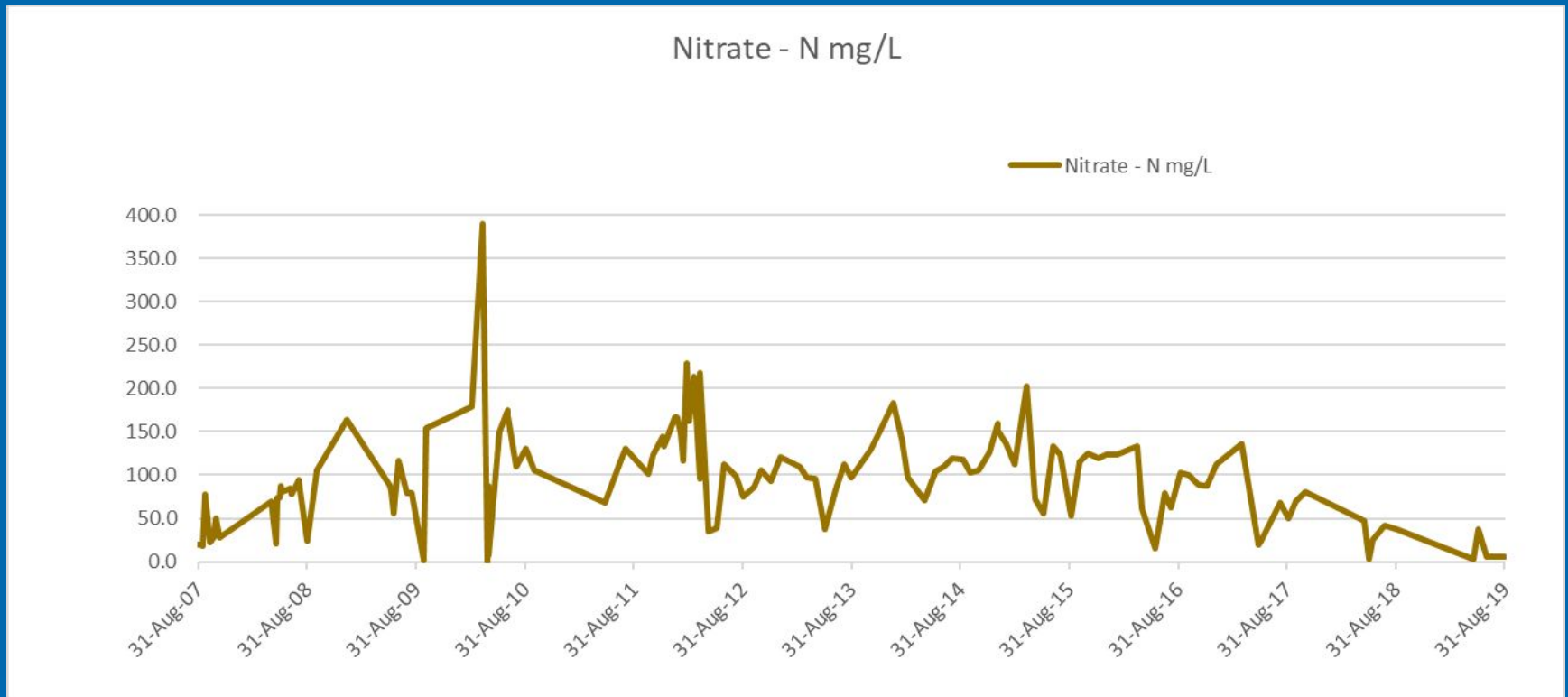


Chart #3: Nitrate Concentration as Reported at North Pile Collection Ditch SNP 2-2, from 2007 to 2019



## 2. SNP Reports

Regulatory monitoring of Snap Lake Mine included the following:

- Air quality monitoring;
- SNP monitoring;
- Visual fuel tank inspections;
- North Pile, ditch and perimeter sump visual inspection;
- Building visual inspection;



## 2. SNP Reports

Regulatory monitoring of Snap Lake Mine included the following:

- North Pile thermistor and piezometer monitoring;
- Meteorological data downloads;
- Dam and Water Management Pond visual monitoring;
- North Pile ditch and sump visual monitoring;
- Wildlife surveillance.



### 3. Inspection Report

An inspection was carried out at site by Inspector Joe Heron on September 5;

Some observations are:

- Tanks still containing diesel fuel: One of the 12-million L fuel storage tanks and eight of the 300,000 L tanks;
- Tanks out of service: the 10-million L tank, six 500,000 L tanks and four tanks of 300,000 L

No concerns were noted by the Inspector regarding fuel or waste management at the mine.



# 3. Inspection Report

Pic. #1



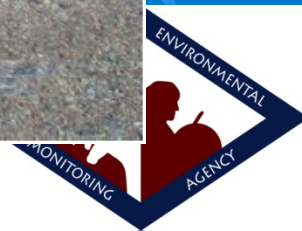
The 300,000 L tank farm & fuel transfer station. The decommissioned 500,000 L tanks can be seen in the background on the left.

# 3. Inspection Report

Pic #2



Looking north at the Snap Lake Mine WMP.



# 3. Inspection Report

Pic #3



# 3. Inspection Report

Pic #4



Site buildings were being sealed for the season and fuel needed for startup operations was staged in containment.



## 4. MVLWB's Update

- On September 3, the Board required De Beers resubmit the 2018 AEMP Annual Report in accordance with comments made during this review, specially SLEMA review comment by September 26, 2019. The revised plan is to be considered for Board's approval.



## 5. Snap Lake Mine Closure: Water Licence and Land Use Permit Review Process Update

- Documents submitted by DeBeers during the Regulatory Process in this period:
  - Map displaying SNP stations at site during closure (August 9);
  - Water Balance Prediction from 2020 to 2050 (August 9);
  - Security Estimate wetland and no wetland scenario (August 9);



## 5. Snap Lake Mine Closure: Water Licence and Land Use Permit Review Process Update

- Documents submitted by DeBeers during the Regulatory Process in this period:
  - Effluent Quality Criteria for Closure and Post Closure V.2, August 21;
  - Downstream Lake Water Quality Model Report;
  - Snap Lake Hydrodynamic and Water Quality Report (August 21)



## 5. Snap Lake Mine Closure: Water Licence and Land Use Permit Review Process Update

### □ MVLWB Request for Outstanding Information

Following review of De Beers' response to Information Request , received August 21, Board staff determined that further clarification was required before the Board continue with the regulatory process. Responses were required by September 12.



## 5. Snap Lake Mine Closure: Water Licence and Land Use Permit Review Process Update

### □ De Beers Submission of Outstanding Information

Following MVLWB request of outstanding information, De Beers' response was submitted on September 12.



## 5. MVLWB's Water Licence and Land Use Permit Review Process for Snap Lake Mine Closure Update

### □ Effluent Quality Criteria Technical Workshop on September 19

On September 19, the MVLWB held a Workshop to allow an open discussion based on:

New proposed Effluent Quality Criteria  
Water Quality Model Report

Daily and Predicted Results of Sulphate

Outstanding Information Request from Board staff to De Beers, and

The responses received from De Beers.



## 5. MVLWB's Water Licence and Land Use Permit Review Process for Snap Lake Mine Closure Update

### □ DeBeers Submission of Response to Questions from Effluent Quality Criteria Workshop

On September 26, DeBeers submitted its response to EQC Technical Workshop follow –up questions



## 5. MVLWB's Water Licence and Land Use Permit Review Process for Snap Lake Mine Closure Update

### □ Submission of Interventions and Comments from parties

On October 7 the following parties submitted interventions and comments on De Beers submission:

- Environment and Climate Change Canada;
- Government of the Northwest Territory;
- Snap Lake Environmental Monitoring Agency (commented as member of public)



## 5. MVLWB's Water Licence and Land Use Permit Review Process for Snap Lake Mine Closure Update

### □ MVLWB Pre-Hearing Conference

On October 15, the Board held a Pre-Hearing Conference for the De Beers Canada April 2019 Renewal Application for Water Licence MV2019L2-0004 and the May 2019 Amendment Application for Land Use Permit MV2017D0032.



## 5. MVLWB's Water Licence and Land Use Permit Review Process for Snap Lake Mine Closure Update

### □ Submission of DeBeers Response to Interventions and Comments

On October 22 De Beers responded to parties' interventions and comments.



## 6. Aboriginal Update: No Update



## 7. SLEMA UPDATE

- SLEMA Participation on the Regulatory Process for De Beers WL amendment – Renewal and LUP amendment:
- SLEMA Environmental Analyst and Executive Director attended the MVLWB Workshop to discuss De Beers New Proposed EQC, on September 19;
- Following MVLWB invitation, SLEMA commented on the draft De Beers submission of the Final Closure Reclamation Plan, October 7;



# 7. SLEMA UPDATE

- SLEMA Participation on the Regulatory Process for De Beers WL amendment – Renewal and LUP amendment:
- SLEMA staff and Director attended MVLWB Pre-Hearing Conference for the De Beers Canada Renewal Application for Water Licence MV2019L2-0004 and the Amendment Application for Land Use Permit MV2017D0032, on October 24.



# 7. SLEMA UPDATE

- Following GNWT - Department of Environment and Natural Resources (ENR) invitation, SLEMA commented on De Beers 2018 Environmental Agreement Annual Report on October 24.



# 7. SLEMA UPDATE

- ❑ SLEMA 2019 Annual General Meeting (AGM) was held on October 9, 2019, from 9:30 AM to noon at the De Beers Boardroom in YK;
- ❑ Followed by a Core Group Meeting the same day in the afternoon;
- ❑ Representatives from De Beers, as well as from the GNWT departments of ENR and Lands, attended and presented agencies activity updates during the afternoon's Core Group meeting



## 8. De Beers New Proposed EQC



## 8. De Beers New Proposed EQC

During the review process, in one of the submissions, De Beers proposed a new EQC.

EQC #2 differs from EQC #1 (proposed in the original application) on the following

- 1) EQC is the same for Closure and Post Closure
- 2) Nitrate EQC in EQC#2 is higher



## 8. De Beers New Proposed EQC

Parameter	Maximum Average Concentration	Maximum Grab Concentration
Nitrate, as N	60 mg/L	80 mg/L
Total suspended solids	15 mg/L	25 mg/L
Faecal coliforms	10 CFU/100 mL	20 CFU/100 mL
pH	6 to 9	6 to 9



## 8. De Beers New Proposed EQC

- According to De Beers, if EQC #2 is approved, wetland treatment will not be necessary.
- During the review process parties unanimously agreed in dispute the proposed value;



## 8. De Beers New Proposed EQC

- ECC recommended:
- To retain the current EQC as it is in the Water Licence during the closure phase;
- *Retention of EQC would address potential uncertainty as the mine proceeds through closure; while monitoring validates that water quality is behaving according to predictions*



## 8. De Beers New Proposed EQC

- ENR – GNWT Recommended:
  - To retain the current EQC as it is in the Water Licence during the Closure and Post Closure Phase



## 8. De Beers New Proposed EQC

- SLEMA Recommended to retain the current EQC as it is in the Water Licence until the following is thoroughly discussed and evaluated how they affect the EQC
  - The assumed relationship between hardness and nitrate toxicity;
  - The North Pile cover and its effects on the North Pile drainage chemistry;

