



September – October 2020 Environmental Update for SLEMA Board

November 5, 2020

Outline

1. Mine Update
2. SNP Reports
3. Water Monitoring
4. Inspections
5. SLEMA's Activities



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
- MVEIRB – Mackenzie Valley Environmental Impact Review Board
- MVLWB – Mackenzie Valley Land and Water Board
- PK – Processed Kimberlite
- SNP – Surveillance Network Program
- 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 in Extended Care and Maintenance (ECM);
- Activities at the mine site finalized on August 25, 2020 when all personnel left the site and the Mine entered into Zero Occupancy until next year, 2021



2. SNP Reports

- In the period of September 1st to October 31th, DeBeers submitted the following SNP Reports:
 - August 2020 SNP Report (submitted on September 30);
 - September 2020 SNP Report (submitted on October 31th)
- SNP Reports describe care activities at the mine as well as report some monitoring results



2. SNP Reports

August 2020 SNP Report

- In August care activities and monitoring at site included:
 - Active fuel tank inspections
 - Air Quality
 - SNP monitoring
 - ARD Bog Sampling
 - Particulate Matter Air Quality machine by the Communication Tower was re-installed on August 13, 2020



2. SNP Reports

Care activities and monitoring at site in August included (cont.):

- Meteorological data downloads
- Wildlife Surveillance Audits
- Building Inspection
- Dam and Water Management Pond monitoring
- North Pile ditch and sump monitoring
- Main Camp Building Inspection
- Collection of data from on-site Piezometers and Thermistors



2. SNP Reports

Activities and monitoring at site in August included (cont.):

- Drinking water extraction from Snap Lake
- Operation of the wastewater treatment plant
- Operation of the water treatment plant
- Management of solid waste
- Effluent discharge to Snap Lake



2.SNP REPORTS

- Table 1: Some Water Management Data at the Mine Site for the month of August

MONTH	Freshwater Pumped (m3)	Sewage (m3)	Treated Effluent Discharged to SL (m3)
August	799	142	126,540



2. SNP Reports

- Solid Waste Management at Site:
 - There is an approved operational procedure in place for waste handling;
 - Glass jars, tin cans, and most food related plastic containers are washed and stored until they can be shipped off site;
 - Waste wood products and cardboard are burned in the authorized pit as per the Land Use Permit MV2017D0032.



2. SNP Reports

Zero Occupancy

- In September there was not personnel at site;
 - Monitoring involved the use of cameras performing remote monitoring of;
 - Perimeter Sumps, Water Management Pond and Fuel Tank Farm;
- and also included;
- Compilation of site specific weather data;
 - North Pile thermistor and piezometer monitoring & data collection



2. SNP Reports

Zero Occupancy

The September Monthly Campaigns occurred on September 8, 22 and 29; the following tasks were performed at site:

- Elevation Surveys taken on Perimeter Sumps and Water Management Pond on each campaign in September;
- Perimeter Sump 1 and Sump 2 pumped to the Water Management Pond on September 8 2020.



2. SNP Reports

Zero Occupancy (Cont.)

The following tasks were performed at site during September visits:

- An October contingency plan made to pump Perimeter Sump 2 in October before freeze-up. All other sumps and Water Management Pond in Yellow response category;
- No snow clearance required at this time;



2. SNP Reports

Zero Occupancy (Cont.)

















The following tasks were performed at site during September visits:

- Inspections completed on the North Pile, Perimeter Sumps and Dam 1 & 2;
- Landfill inspected to ensure it was covered and no wildlife inhabiting the area.
- **WILDLIFE:** Arctic Hare and a Moose spotted on site during the September campaigns



2. SNP Reports













September –Remote Monitoring Photos

Water Control Structure	Remote Camera Photos			
	Week 1 (September 01-08)	Week 2 (September 09-15)	Week 3 (September 16-22)	Week 4 (September 23-30)
Perimeter Sump 1				
Perimeter Sump 2				
Perimeter Sump 3				
Perimeter Sump 4				



2. SNP Reports

September –Remote Monitoring Photos

Water Control Structure	Remote Camera Photos			
	Week 1 (September 01-08)	Week 2 (September 09-15)	Week 3 (September 16-22)	Week 4 (September 23-30)
Perimeter Sump 5				
Water Managemnet Pond				
Fuel Tank				

3. Water Monitoring



Fig 1: SNP Sampling Stations



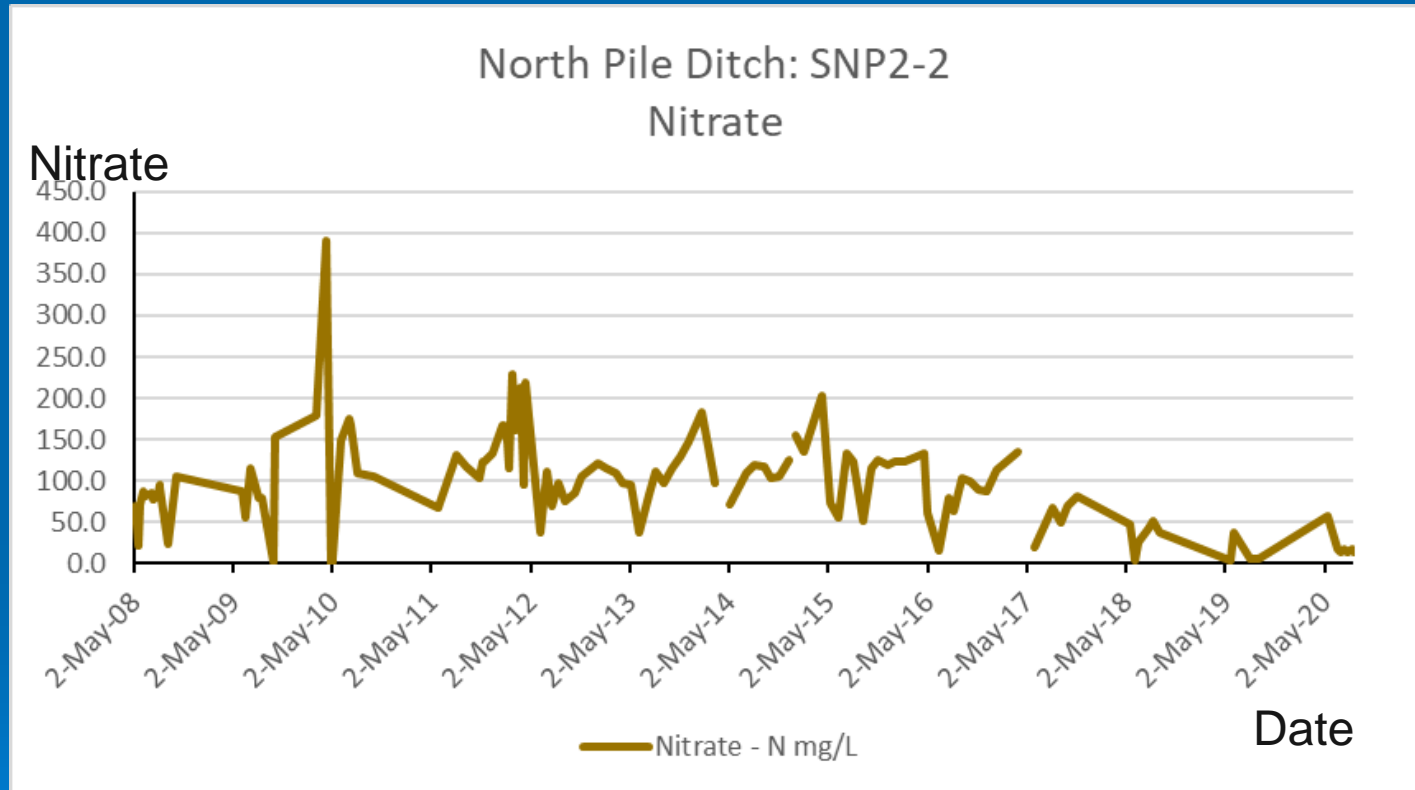
3. Water Monitoring

- Graph 2 displays nitrate values for water in North Pile Collection Ditch
- Graph 3 displays ammonium values for water in North Pile Collection Ditch
- Data show the evolution of nitrate & ammonium values from 2008 to 2020;
- Nitrate has been ruled out by the Board as the main contaminant of concern
- Effluent from the North Pile is the main source of nitrate & ammonium at the site, due mainly to the use of explosives



3. Water Monitoring

- Graph 2: Nitrate in North Pile Collection Ditch

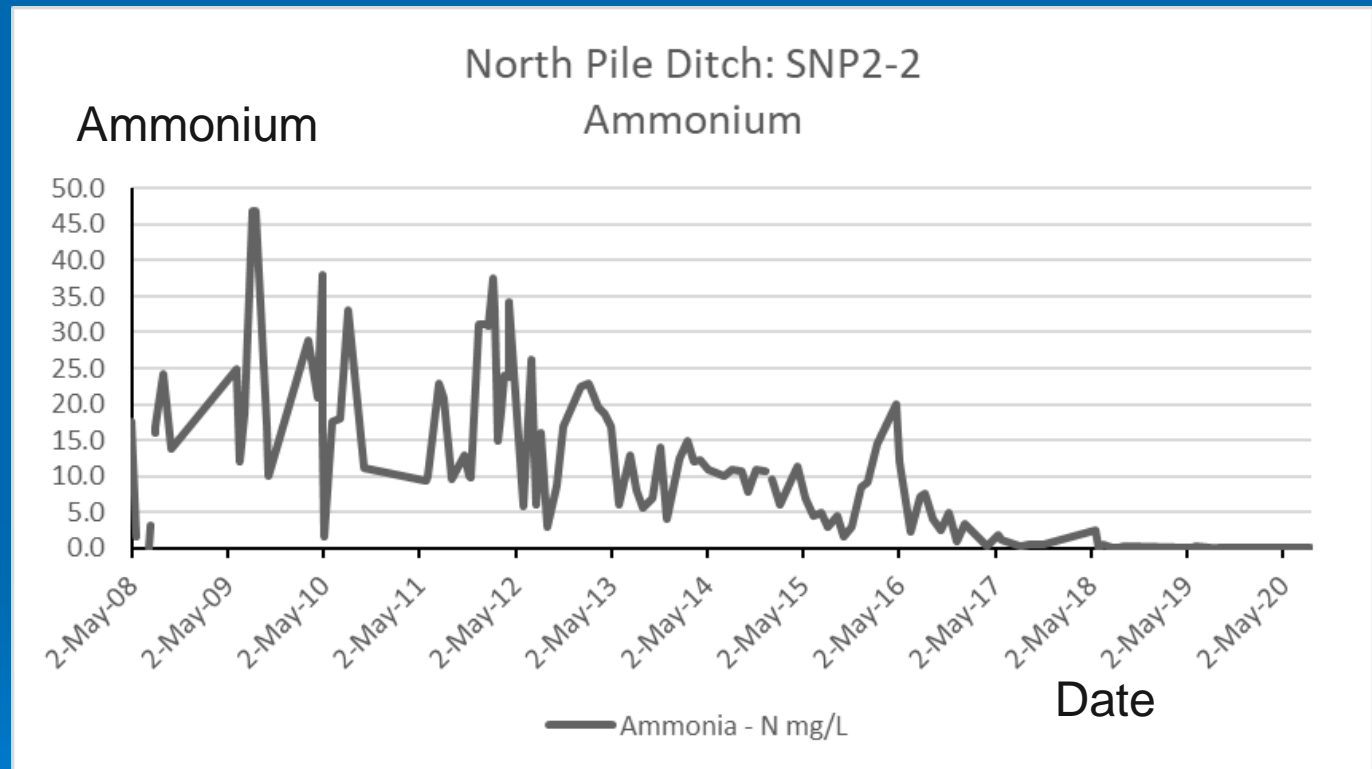


Data 2008-2020 from SNP Reports



3. Water Monitoring

- Graph 3: Ammonium in North Pile Collection Ditch



Data 2008-2020 from SNP Reports



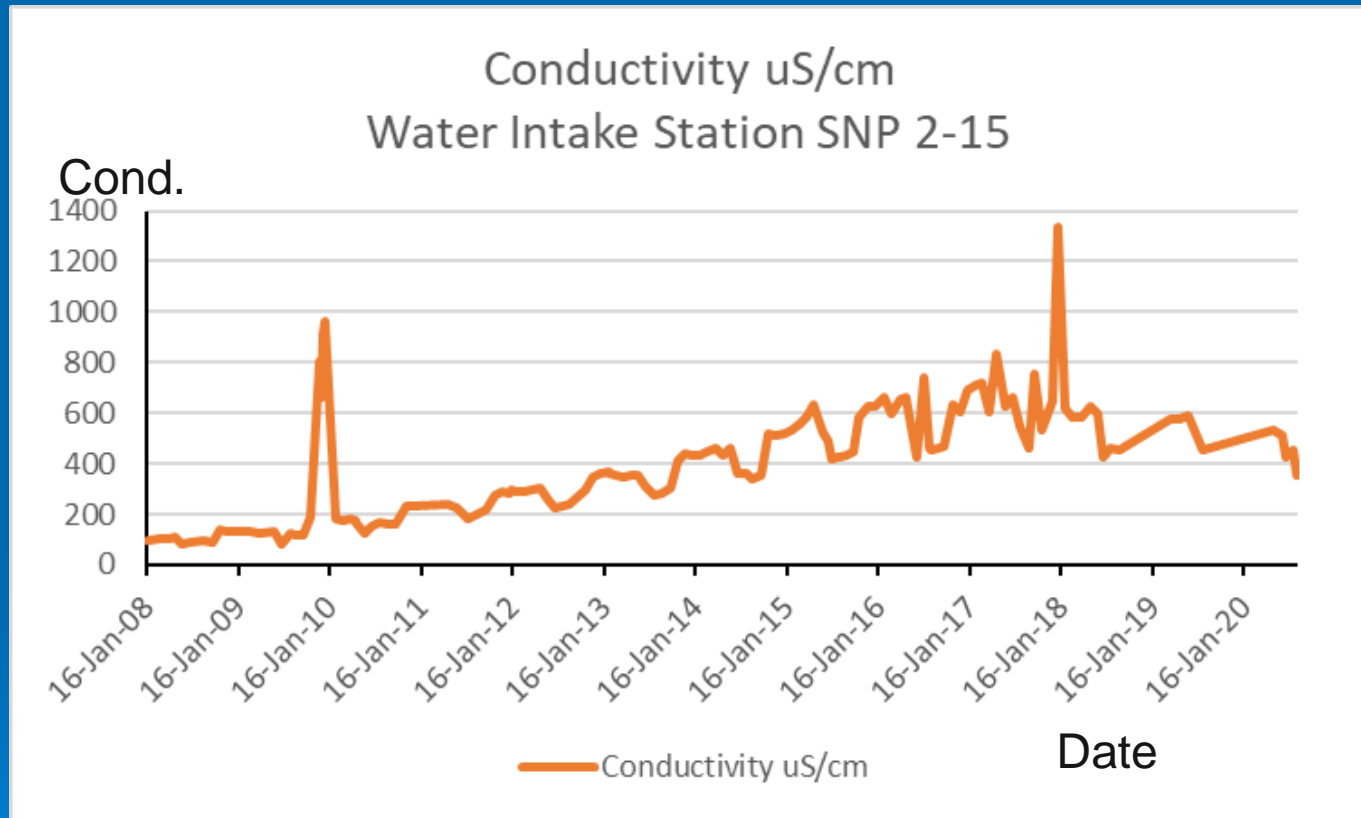
3. Water Monitoring

- Graph 4 displays Conductivity values for drinking water extracted at the Snap Lake Water Intake
 - Data shows the evolution of Conductivity values from 2008 to 2020;
 - Conductivity is related to any minerals, salts, metals dissolved in water. It comprises mainly inorganic salts that are dissolved in water;
 - High conductivity implies high salt content



3. Water Monitoring

- Graph 4: Conductivity at Snap Lake Water Intake



Data 2008 to 2020 from SNP Reports



4. Site Inspection

- A GNWT Inspection was completed on August 18:

No major concerns were reported by the Inspector regarding the inspected facilities



5. SLEMA ACTIVITIES

➤ SLEMA reviews:

Review of the SNP monthly reports (August and September)

SLEMA reviewed monthly SNP reports submitted by DeBeers and found them sound and according to the regulatory requirements with no major issues.

