

GAHCHO KUÉ MINE UPDATE

Ni Hadi Xa

November 28 & 29 2017



CONSTRUCTION UPDATE

Dykes

- Dyke B – ROM shells initiated
- Dyke D – North ROM shell completed
- Dyke K - Liner and armouring completed
- Dyke L - constructed to 422.5 masl
- Hearne Berme – till core completed

Pits

- 5034 Pit is at 340 masl (~80m deep)
- Hearne Pit - pre-stripping initiated

Piles

- South Mine Rock Pile in use

Infrastructure

- 3rd tank is constructed
- AN Building is 75% constructed



SPILL SUMMARY - 2017

Date	Type	Volume	Details
January 10	Greywater	4000 L	At kitchen broken pipe
January 16	Hydraulic Oil	150 L	Hydraulic leak from shovel in pit
January 22	Diesel Fuel	350 L	In lined containment berm at fuel station
July 6	Diesel Fuel	250 L	Haul truck at CPK sank, damaged tank
November 9	Hydraulic Oil	200 L	Excavator in pit contacted pit wall – damaged boom

WILDLIFE

- No caribou seen yet this winter
- Total of 1227 observations up to Nov.2,2017
 - Most were birds (319)
 - Most frequently seen mammal = red fox (298)
 - Collected 12 individual red-backed voles during small mammal program
 - Annual wildlife report will be submitted March 31 2018
- Applied for our annual research permit to ENR
 - Thanks to NSMA for recommendation form
 - Others to submit?



Willow Ptarmigan

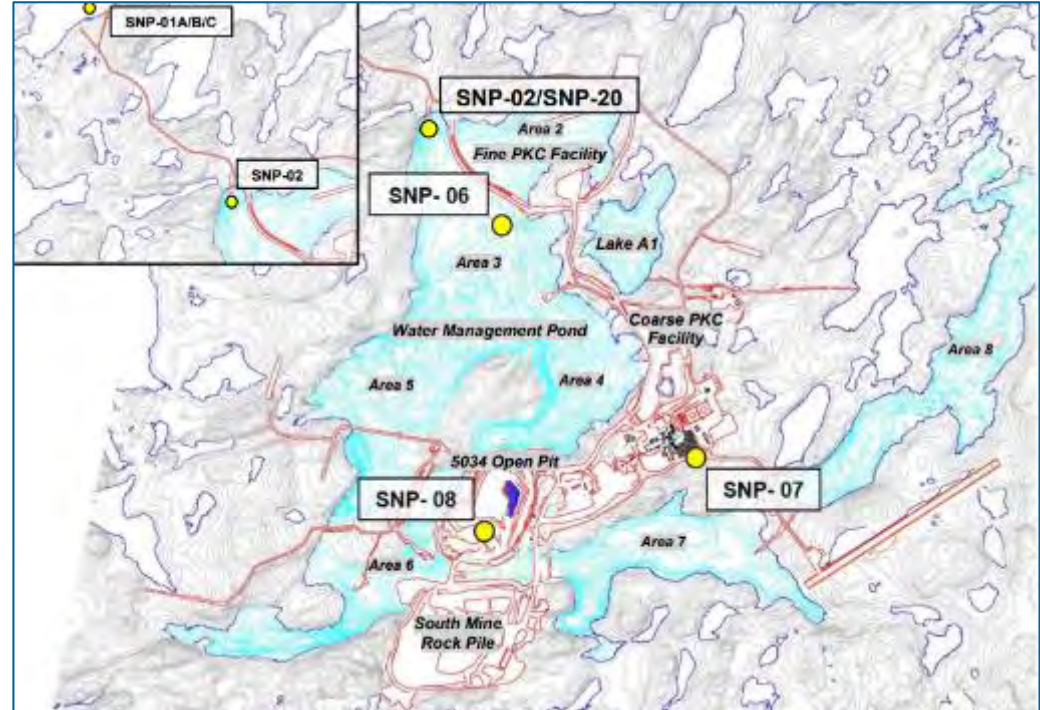
DEWATERING AND ANNUAL DISCHARGE

Summary of Discharges from Water Management Pond

Source	Receiver	Type	Start Date	End Date	Total Volume (m3)	
Area 7	Area 8	Dewatering	20-Dec-14	02-Jan-15	778,742	De-watering
Area 7	Area 8	Dewatering	19-May-15	07-Sep-15	5,189,548	
Area 3	Lake N11	Dewatering	01-Feb-15	05-Oct-15	12,664,617	
Sub Total					18,632,907	
Area 3	Lake N11	Op Discharge	20-Mar-16	31-May-16	3,441,795	Year 1
Area 3	Lake N11	Op Discharge	29-Oct-16	17-Jan-17	2,794,686	Year 2
Area 3	Lake N11	Op Discharge	04-Sep-17	24-Sep-17	632,802	½ of Year 3
Area 3	Lake N11	Op Discharge	24-Sep-17	13-Nov-17	1,727,482	
Sub Total					8,596,765	
Total					27,229,672	

WATER QUALITY MONITORING

- Water quality is monitored at SNP stations
- Recently active SNP Stations include:
 - SNP -01 Mixing Zone in N11
 - SNP-02 Area 3-Lake N11
 - SNP-06 Area3 Fine PK Facility
 - SNP-07 Sewage treatment plant
 - SNP-08 5034 Pit
- Water quality is monitored downstream through the AEMP – results analysed and reported in April



SNP-02/SNP-20

- Annual Discharge is monitored at SNP-02/SNP-20:
Intake from A3 to Lake N11
 - Before and after discharge (SNP-20)
 - Acute Toxicology Testing - Chronic toxicity, Sub-lethal toxicity, Acute toxicity
 - Total and faecal coliforms, *Escherichia coli*
 - Weekly (SNP-02)
 - Water elevations, Physical parameters, major ions, nutrients, total metals, extractable petroleum hydrocarbons, BTEX, Water elevation in lake N11
 - Continuously
 - Flow and volume



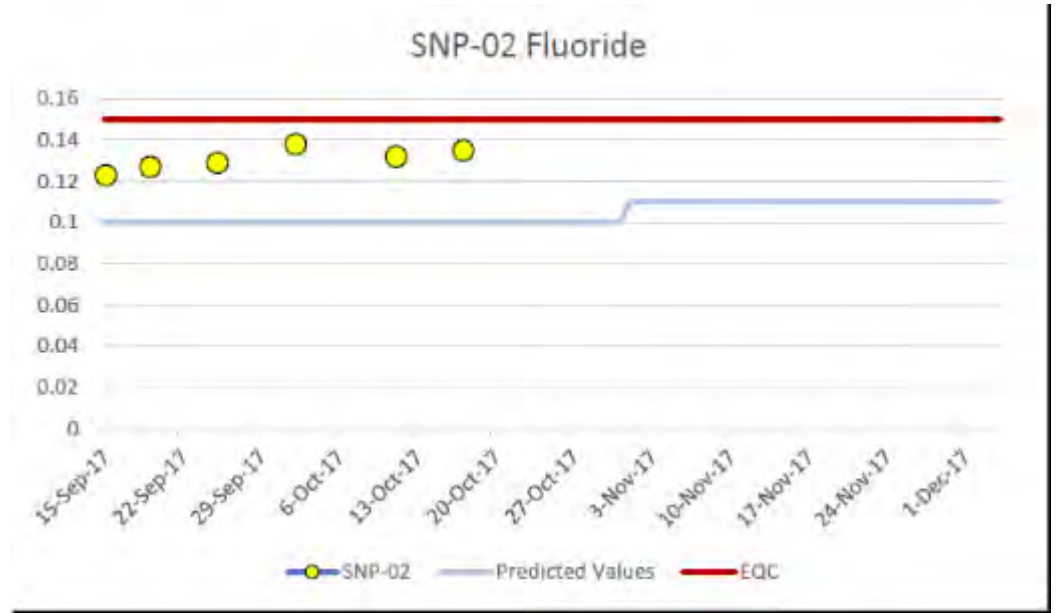
ACUTE TOXICITY TESTING –PRELIMINARY RESULTS

- De Beers received approval to start discharge on August 29, 2017
- A “new” discharge period started following the license anniversary (Sept 24)
- Toxicity samples were collected on October 2nd :
 - an alga (*P. subcapitata*),
 - two water fleas (*C. dubia* and *D. Magna*) and
 - two types of fish (Fathead Minnow, Rainbow Trout)
- All samples results were acceptable except for Fathead minnow which does not live in N11
- Several surviving species are more sensitive than Fathead minnow leading to suspicion that results are not representative
- Water Quality was within the license criteria for SNP 02
- Discussions with the lab show that the impact is likely caused by a naturally occurring fungus in the sample
- November 13 preliminary results show a similar effect
- Lab is currently verifying the results and will re-test available sample water with a copper amendment that will eliminate fungus issue
- GNWT, EC and MVLWB have been informed



FLUORIDE

- Weekly SNP-02 indicate fluoride is tracking high
- W.L. max average = 0.15 mg/L
- W.L. max grab = 0.3 mg/L)
- Max average to date = 0.133mg/L
- Max grab to date = 0.138mg/L
- We may need to request a new EQC for fluoride
- The w.l. limits were considered technically achievable, but were beyond what was required for water quality protection (see Appendix 1 of the reasons for decision)



REGULATORY SUBMISSIONS

- ICRP Criteria (submitted)
 - Adjustments made to meet review comments
 - Criteria Workshop – ICRP December 14th
- Area 8 Jetty (approved)
 - To facilitate water intake for camp
- Annual Geotechnical Inspections (submitted)
- QA/QC V.2 (approved)
 - Updated field methods and added field data validation to the plan
- Waste Management Plan V5.2 (approved)
 - Updated locations of deposit of inert waste
 - Land farm Management Plan updated
- Waste Management Plan V5.3 (submitted)
 - Compost Management Plan



UPCOMING SUBMISSIONS – W.L. AMENDMENT APPLICATION

- Water Licence Amendment (preparation)
 - West Mine Rock Pile expansion
 - Possible adjustment to EQC
 - Minor increase in volume of water to take from A8
 - Discharge from A7 to A8
 - A2 North Perimeter Berm
- Mine Rock Workshop
 - Tree of Peace, 8:30-4:30, December 13
 - Scope of proposed changes
 - Discussion of each environmental aspect
 - Input into design



