Progress and future plans for pit - Selbaie

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Selbaie Pit Lake evolution



July 10 2002, elev 157



July 29 2004, elev 232

November 14th 2006

elev 249



Pit lake – Progress and current status

- Water volume of 26.5 Mm3 is currently stored in the pit (70% of capacity)
- Pit water meets MMER, provincial discharge criteria and lethality tests
- Since batch treatment completed in 2005, the pH is at 8.5 8.7 and the Zn level increased by an average of 0.12 mg/L
- The top of the stored materials (peat, oxidized waste rock and topsoil) remains exposed but should be submerged by summer 2007
- Surface run-off from the industrial site (zinc <10 mg/L) is treated by a new lime addition point and diverted into the pit
- Lime Plant treated water pH has been increased to 10 10.5 and flows to the pit by gravity

MMER - Metal Mining Effluent Regulation



Pit Lake – Progress and current status

Diversion of the industrial site run-off directly into the pit

New lime addition point



Site water management – Current situation 2006



Site water management - expected conditions in 2009



Pit lake : Potential issues in the future

- Pit wall stability
 - Slopes subject to erosion particularly with the rising water level into the overburden material
- Total Suspended Solids into the future pit lake discharge
 - With the accumulation of sludge into the pit and the slope erosion, the TSS could eventually increase and exceed the discharge criteria
- Pit water Quality
 - Gradual increase in zinc caused by dissolved zinc inputs from submerged mine waste, surface run-off or groundwater sources. (Added lime addition point to treat industrial site run-off in 2006.)



Pit wall stability

- Bedrock slopes
 - According to 2D stability analyses, the bedrock slopes (varying from 50m to 200m high) are not expected to be subject to deep-seated instability
 - The factor of safety should progressively increase with the filling of the pit with water and sludge to reach a value between 3.0 to 4.0
 - Potential for some minor bench instability and / or rockfalls
- Overburden slopes
 - The overburden slopes largely comprised of mixed-grained glacial till and prone to erosion particularly as the water level rises to full capacity
 - Monitoring and regular visual inspection will identify areas that may need further stabilization



Pit wall stability – overburden erosion protection Geotextile and rip rap to control erosion











Pit Lake – Future Plans Contingencies to control zinc in the pit discharge layer

- Pit water control level to operate in batch mode
- Liming surface layer
- Fertilization (polishing application)
- Recirculation of pit water into the lime plant to raise whole lake pH



Pit Lake Potential Mitigation measures to control pit water quality



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Questions ?

