

1745-40/MTPO

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<b>SENDER:</b> Ken Embree	<b>APPROVED:</b> <i>KJB</i>	

MP00116

<b>TO:</b> Mount Polley Mining Corporation	<b>FAX:</b> 250-790-2268
<b>ATTN:</b> Don Parsons	
<b>Cc:</b> George Headley, MEM Victoria (250 952-0481) Ed Beswick, MEM Prince George (250 565-6015) Brian Kynoch / Peter Campbell, Imperial Metals (687-4030) Eric LeNeve, Mount Polley Site	
<b>SUBJECT:</b> Meeting Minutes – January 26 Meeting	

Don,

The minutes from the January 26 meeting on Stage 3 Cycloned Sand construction are attached. Two other items were identified as deliverables, including the following:

- The construction schedule. A draft has been completed and is currently being reviewed. It will be forwarded as soon as it is finalized.
- The letter addressing stability during localized cycloned sand deposition is being prepared. It will be forwarded as soon as it is finalized.

Regards,



Ken Embree

Attachments:

- January 26, 200 Meeting Minutes

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**TABLE 1**

**MOUNT POLLEY MINING CORPORATION**

**MOUNT POLLEY MINE**

**TAILINGS STORAGE FACILITY**

**MEETING MINUTES - STAGE 3 CYCLONE SAND CONSTRUCTION**

<p><b>3.0 Construction Methodology</b></p>	<ul style="list-style-type: none"> <li>Underflow will be piped from the crest to the bottom to avoid eroding the existing downstream face.</li> <li>Stockpiles will be established at the Main Embankment abutments to start. The current schedule assumes that these will be allowed to drain for 6 weeks, if necessary.</li> <li>Cells will be developed and, if required, will be allowed to drain for at least three weeks before placing the next lift.</li> <li>Perimeter Embankment construction will start at the end of June with either local borrow or mechanically placed sand. (to be confirmed)</li> <li>DP noted that it would be best to start construction at the Perimeter Embankment early. 5,000 m<sup>3</sup>/day (double shift) has been used in the schedule.</li> <li>Coarse cycloned material would be beneficial near the end of construction as it would drain more quickly and allow the 6 week waiting period for stockpiles to be reduced.</li> <li>GH asked if fine material placed in initial lifts would adversely affect vertical drainage in future raises. KJB commented that cycloned sand would be placed for periods of short duration, possibly resulting in a short saturation "pulse" migrating through the underlying partially saturated cycloned sand. The underlying material is partially saturated, so elevated pore water pressure would not be sustained.</li> <li>Stratification and segregation of cycloned sand will occur to some extent, with coarse material deposited near the discharge point and fine material collecting at the toe of each cell.</li> <li>The maximum lift height is 10 m at the Main Embankment (for the first lift). The maximum lift height in the trial berm was 5 m.</li> <li>Segregation will be controlled through the use of a discharge pipe and more efficient operations.</li> <li>The revised plan does not require the cyclones to be moved as often as the original plan.</li> <li>Expedient construction: Engineering concerns will not be overlooked because of production requirements. KPL will be involved in on-going review of progress and scheduling.</li> </ul>		
<p><b>4.0 Design</b></p>	<ul style="list-style-type: none"> <li>The underdrain consists of select shot rock, but does not have a perfect filter relationship with the cycloned sand. The redundancy of the drains will allow drainage to continue if a section is blinded off by sand. Outflows from the trial berm were monitored and fines migration was not observed.</li> <li>The only source of water is from hydraulically placed sand. There is no sustained phreatic surface due to the low permeability core zone and higher permeability sands.</li> <li>GH noted that sinkholes formed near one drain at Gibraltar. These were caused by cyclone drainage water only.</li> <li>Zone T was scarified before sand placement in the trial berm. Filter fabric was used in the rockfill toe berm. Slimes blinded of the filter fabric, resulting in ponding on the upstream side of the toe berm.</li> <li>Ponded water will have to be pumped or piped out.</li> <li>GH suggested using transition material in the rock toe berms. KDE noted that Zone T material is probably acceptable but segregation can occur during fill placement. Transition will be included if filter criteria are not satisfied.</li> <li>Longitudinal drain flow capacity is excellent and drains are greatly oversized due to the size of the equipment involved. The total drainage flows are expected to be less than 20 l/s. KPL to confirm data and verify capacity.</li> <li>Additional toe berms will be added for further expansions.</li> <li>No contingency measures are required to provide vertical drainage. Cells are allowed 3 weeks to drain before the next lift is placed.</li> <li>There will not be enough water draining from the active cells to cause a large scale piping failure. Also, the longitudinal drains are placed at 20 m spacing and facilitate efficient drainage of the entire length of the downstream toe. This precludes the development of a phreatic surface in the sand. The finger drains provide an additional drainage capacity and help to route flows into the sediment control ponds.</li> <li>The upstream toe drain is already installed at the Main Embankment. It includes concrete encased pipe and seepage collars at the core zone penetrations. This provides operational contingency.</li> </ul>	<p>KPL</p>	<p>26-Jan-00</p>

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**MOUNT POLLEY MINING CORPORATION**

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**TAILINGS STORAGE FACILITY**

**MEETING MINUTES - STAGE 3 CYCLONE SAND CONSTRUCTION**

	<ul style="list-style-type: none"> <li>• GH thought SEEP/W model shows chimney drain extending into sand. This is not the case in reality but has no effect on the model, as both the chimney drain and cycloned sand have permeability orders of magnitude higher than the fill core.</li> <li>• Drainage water will be directed to ponds via ditches. Hydraulically placed sand can "spill" into adjacent cells due to the slope of the ground. The lowest cell can overflow into the pond. Ditching and the road provide ultimate containment at the Main Embankment.</li> </ul>		
<p><b>5.0 Stability Assessment</b></p>	<ul style="list-style-type: none"> <li>• Stability analysis assumed all downstream sand was drained. GH asked if analysis had been done for locally saturated sand during cycloning operations. These results will be updated and provided by KPL.</li> <li>• Piping prevented by close spacing of longitudinal drains.</li> <li>• Liquefaction can only occur if sand is saturated, therefore it can only occur during operations. Even if it could occur, it would be localized. It is also difficult to re-saturate material with surface recharge.</li> <li>• Equipment traffic will be beneficial, as saturated material will be densified.</li> <li>• Loss of freeboard stability is not an issue, as sand will be placed mechanically adjacent to the core zone. This material must be unsaturated in order to be placed and is therefore non-liquefiable.</li> </ul>	<p>KPL</p>	<p>26-Jan-00</p>
<p><b>6.0 Risk Assessment</b></p>	<ul style="list-style-type: none"> <li>• GH concerned with phreatic surface and piping failure.</li> <li>• To minimize risk, skilled and experienced operators are required to monitor the operation 24 hours a day. Supervision of operators is also required.</li> <li>• GH concerned that uncontrolled erosion could expose an undrained area and subsequent sloughing could occur if saturated sands are exposed in the area of active deposition.</li> <li>• Partial saturation causes suction, which will cause upper layers to drain faster.</li> <li>• The mill will have to notify the tailings operators in the event of a shutdown and flushing of the line. It takes approximately 15 minutes for tailings/water to reach the tailings facility.</li> <li>• Trigger levels will be set for piezometers. A monitoring schedule will be determined, with a higher frequency of readings than for embankment piezometers during initial operations.</li> <li>• Standpipe piezometers may be used in addition to vibrating wire piezometers. KP to evaluate</li> </ul>	<p>KPL</p>	<p>26-Jan-00</p>
<p><b>7.0 Monitoring and Operational Controls:</b></p>	<ul style="list-style-type: none"> <li>• OM&amp;S Manual discussed.</li> <li>• QA/QC Testing discussed.</li> <li>• MPMC to construct drainage system and toe berms. KPL would inspect after work is completed and confirm suitability to Ministry of Mines.</li> </ul>		
<p><b>8.0 Requirements:</b></p>	<ul style="list-style-type: none"> <li>• Meeting minutes, comments on stability, schedule (28-Jan-00)</li> <li>• OM&amp;S Manual. <i>Preferred before starting stockpile. Focus on water management. (1-Apr-00)</i></li> <li>• Excavate test pits in existing toe berm for particle size analysis and filter relationship calculations.</li> <li>• GH requested discussion of cell drainage for future raises/lifts. Review possible methods and provide letter report. <i>Not required immediately.</i></li> <li>• C.C. minutes to Ed Beswick in Prince George</li> </ul>	<p>KPL KPL/MPMC KPL KPL</p>	<p>26-Jan-00 26-Jan-00 26-Jan-00 26-Jan-00</p>