

## Memorandum

Date: November 20, 2006  
To: Mr. Ron Martel  
cc: Jim McDonald, Eric Coffin, KP Site Engineers  
From: Les Galbraith  
Re: November 1 Site Visit by Les Galbraith

Our Ref: VA101-1/14-A.01  
Cont.#: VA06-01588

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Ron:

The following is a brief report on my site visit on November 1 2006.

### **TAILINGS STORAGE FACILITY**

#### Tailings Pipeline

The tailings pipeline should be extended around the entire facility. Evenly discharging the tailings from around the facility optimizes the development of tailings beaches and keeps the supernatant pond clear of the embankments, thereby increasing seepage paths and limiting seepage loss from the facility. Beached tailings, when left to drain and consolidate, form the competent foundations needed for the modified centreline construction of subsequent embankment raises.

The tailings were being discharged from the Perimeter Embankment at the time of the site visit, with the construction of the sand cells along the Perimeter Embankment scheduled to start in mid-November. The current end point discharge from the single pipeline requires that the pipeline be moved from one location to another to discharge tailings from another location. An extension of the tailings pipeline and addition of inline discharge off-takes would allow for the tailings to be discharged from around the facility with minimal effort and ensure optimal tailings beach development.

#### Zone F Material

There was a shortage of Zone F material available for use in the construction of the TSF. The Zone F material is required for the foundation drain at the South Embankment and as a filter material downstream of the Zone S core zone. The shortage of Zone F material may cause unnecessary construction delays as the raising of the Zone S, F and T materials should be synchronized to reduce the amount of rework and to ensure that the differential lift thickness between adjacent zones does not exceed that outlined in section 7.2.6.f of the Technical Specifications, which states that *“The maximum difference in elevation between adjacent zones in the embankments, permitted at any time during construction, shall be equal to the larger of the two lift thicknesses for the two adjacent zones.”*

### Fill Placement

Construction of the Tailings Storage Facility is now taking place under winter/freezing conditions. The specifications for placing fill in freezing conditions are discussed in section 7.2.6.g of the Technical Specifications and are as follows:

*Construction of embankments, berms and basin liner may take place during freezing conditions. The Contractor will be permitted to place fill materials in freezing conditions only if the materials can be placed and compacted to the specified densities that would normally be achieved if freezing conditions did not prevail. Criteria for placing fill materials during freezing conditions are summarized below.*

- (i) All ice and snow and loose frozen fill materials must be removed from compacted fill surfaces or prepared foundations prior to placing any new fill materials.*
- (ii) Fill materials can be placed on previously placed and compacted frozen fill or approved frozen foundations provided that the surfaces are cleaned as per (i) above.*
- (iii) Only non-frozen fill can be placed on embankments and berms. Frozen soils must be removed from the borrow areas prior to excavation of non-frozen fill materials.*
- (iv) Fill materials must meet the specified moisture content criteria before excavation in the borrow areas and before placement on embankments or berms.*
- (v) The fill materials must be immediately spread and compacted after placement to achieve the specified density before freezing.*
- (vi) Fill placement and compaction should occur rapidly and in relatively small areas. The exposed surfaces shall be kept to a minimum so as to minimize the potential for fill materials to become frozen before they are compacted to the specified densities.*
- (vii) Any fill materials that become frozen prior to compaction to the specified densities must be removed to spoil.*
- (viii) Fill materials shall not be placed when it is snowing or when there is any accumulation of snow or ice on surfaces to be covered by the succeeding layers of fill.*

*Methods proposed by the Contractor for construction during freezing conditions shall be reviewed and approved by the Engineer prior to commencing fill placement.*

### Concrete Encasement Trench

The concrete encasement trench for the Perimeter Embankment upstream toe drain had snow and ice in the bottom of the trench, which requires removal prior to placing fill around the encasement. The trench is to be backfilled with non-frozen Zone S material from the borrow area to the same specifications as the core zone. The material excavated from the trench is not suitable as backfill material as it contains frozen soil. The acceptability of all fill material being used to construct the Tailings Storage Facility requires the approval of the Site Engineer.

This is a critical penetration and it is essential that it is constructed carefully and in strict compliance with the Engineer's directions.

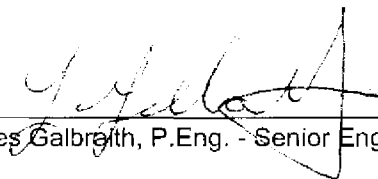
### **HEAP LEACH PAD**

The construction of the Leach Pad was progressing well, despite winter conditions, with the placement of the primary liner on the south side of the pad. Ponded water on the leach pad sump had frozen and will require removal prior to completing the primary liner in this area.

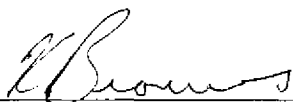
I did not get a chance to discuss the site water balance while on site but would like include a reminder to keep it current and to ensure that it is calibrated so that it is accurately tracking the tailings pond volume and elevation.

Please do not hesitate to contact me if you have any questions or require clarification.

Signed:

  
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Les Galbraith, P.Eng. - Senior Engineer

Approved by:

  
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Ken Brouwer, P.Eng. - Managing Director

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