Yellowjacket Joint Venture
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Mr. Loren Kelly
Chair NWMDRC

Re: Yellowjacket Gold Mine Project – Geotechnical comments/questions

The following geotechnical information and/or clarification request were received by the Yellowjacket JV on May 14, 2009. The responses to the questions are highlighted in blue below the specific question.

1. TMF: Geotechnical slope stability evaluation required for cross section of TSF 2009 and TSF 2010 – 2015.

   The Yellowjacket JV is in the process of attempting to obtain the services of a qualified geotechnical engineer to complete a slope stability analysis on the side slopes of the proposed "basins" and on the proposed "natural" ground division that will exists between the two (2) Tailings Storage Facilities (TSF's) following excavation of the basins.

2. Discrepancy between Hydrogeology statements regarding Permeability Coefficient (K) between page # 33 & Page # 105 needs clarification. Section 4.4.2 Hydrogeology Page # 33 states *"The calculated K estimates represent relatively high values, but consistent with expected values for water permeating through gravels and shallow bedrock."* This statement needs clarification (please see my below email comment and table). Note that the MAPA in page # 80 referenced the hydrogeological assessment as the base/cornerstone for the design criteria/scenario for both the TMF as well as the pit walls slopes.

   The statement from Page 33 in the *Mines Act* Permit Application, April 2009, (MAPA) was incorrectly stated given that the reported calculated permeability coefficients (k) by BGC in the report entitled "Atlin Gold Project - Hydrogeological Investigation and Analyses Report – Proposed Excavation", 21 June 2006, were in the range of 10^{-6} to 10^{-8} m/s, which correlates to (fine) dirty sand, silt and clay materials rather than (coarse) gravel and clean sand as indicated in the MAPA.

   Following review of the five (5) borehole logs from the 2006 field investigation, the Yellowjacket JV does support these ranges of 10^{-6} to 10^{-8} m/s for the lower fine-grained unit (5 m to 10 m below surface). However, when the boreholes are plotted using the hole collars at metres above sea level elevations, the upper 5 to 6 metres of surficial materials observed were actually coarse gravels (10^{-3} m/s) for 0 to 1.5 metres, and (10^{-4} to 10^{-5} m/s) a mixture of clean and/or dirty sand for 1.5 to 6.0 metres.

Based on field observations during the 2007 excavation of the surficial material of the "bulk" sample pit, the surficial materials were very free draining particularly at the contact between the bedrock and the surficial material, and material delineation was more indicative of the above observations. In fact, in order to dewater (remove the water inflows) during operations, it took two (2) – 4 inch pipelines and pumps running at approximately 50 to 60% capacity to keep the inflows in check.

As for the shallow bedrock the 12 to 17 metres as defined by BGC in their report, the k values estimated by BGC were in the range 10^{-6} to 10^{-8} m/s. This is the projected depth of the pit(s); and thus makes the relative permeability a low to very low rating for the pit walls.

Given the extensive disturbances and reworking of the placer materials within the area of the project, and based on visual observations of the excavation for the diversion channel which parallels the proposed TSFs, it appears that the surficial materials are relatively homogenous in terms of thickness and composition and would likely be the same as those observed in the BGC boreholes. In the absence of any geotechnical assessments within the TSF's, but having the BGC borehole data, the physical evidence from the diversion channel and the relatively shallow projected depths of the TSF's, an assumption of a permeability rating value of medium (10^{-3} to 10^{-4} m/s) as noted in the top elevation of the BGC boreholes could be highly achievable within the top five (5) metres of the TSF. Therefore an assumption can be made that the clarified supernatant from the TSF's would exfiltrate through the surficial material (placer tailings) at a sufficient rate to meet project requirements.

However, to ensure that an acceptable TSF design could be achieved for the project, the following contingency plans have been developed:

- complete a site water balance in May 2009, prior to excavation of the 2009 TSF, to properly evaluated the projected infiltration and exfiltration rates from the TSF(s);
- complete a program of test pitting to determine actual surficial material make-up (types and depths) within the TSF's, to determine potential permeability rates;
- evaluate site topography of the 2009 TSF, to accurately determine the depths and storage capabilities for the projected 30,000 tonnes of tailings and associated process plant water;
- complete pump tests from the pit, TSF and settling pond to determine the rates and volumes of infiltration and exfiltration;
- develop a contingency pumping plan, whereby the company could pump excess clarified supernant into the 2010 -2015 TSF site and/or visa-versa as a means to increase the time required for natural exfiltration and/or locate a separate exfiltration pond within vicinity of the TSF; and
- complete additional engineering in 2009 to ascertain locations of alternative TSF sites, if required

3. Waste Dump: I do agree with the MAPA page 80 & 81 *"detailed geotechnical (rigorous stability analysis) assessment of the dumps would not be necessary at this time"*, however, simple geotechnical evaluation/analysis that conveys the overall Factor of Safety of the waste dumps is needed.

   The Yellowjacket JV is in the process of attempting to obtain the services of a qualified geotechnical engineer to complete a slope stability analysis, to determine the factor of safety for the proposed temporary waste and mineralized stockpiles and for the in-pit dumps.

4. Pit: The approximate ultimate footprint/diameter of the pit is missing (see also the graph on page79) as well as the approximate choice of location or probable alternative locations. The very preliminary pit slope geotechnical assessment is dependent on the hydrological assessment in question (see point # 2 above).

   The pit has been designed in four (4) phase with a combination of surficial stripping and then bedrock mining as follows:

   Phase 1 – Surficial Strip - 85 metres by 145 metres
   Bedrock – 45 metres by 100 metres
   Phase 2 – Surficial Strip - 90 metres by 140 metres
   Bedrock – 45 metres by 135 metres
   Phase 3 - Surficial Strip - 90 metres by 130 metres
   Bedrock – 45 metres by 110 metres
   Phase 4 - Surficial Strip - 90 metres by 110 metres
   Bedrock – 45 metres by 115 metres

   Overall - Surficial Strip - 90 metres by 525 metres
   Bedrock – 45 metres by 460 metres

The overall layout (footprint) of the design is shown Figure 5-5 Mine Progression – LOM of the Mines Act Permit Application.

For additional information on geotechnical responses please see Northwest Mine Development Review Committee (NWMDRC) Comments and Proponent Replies – Appendix V - Geotechnical Assessment @ http://www.yellowjacketgold.com.

Regards,

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Yellowjacket Joint Venture