

## **Part 2 - Other Issues**

*The Review Board identified a number of areas where additional information would be helpful in assessing the likelihood of significant impacts on the environment. The Developer should provide any additional information that is available on the items listed below. The remainder of this section provides the relevant sections of the terms of reference and the Review Board's questions in relation to those sections.*

### **IR Number: 1-2-4**

**Source:** Mackenzie Valley Review Board  
**To:** Tyhee  
**Issue:** Existing Permafrost

#### **Terms of Reference - 3.2.1 Existing Environment and Baseline**

**Conditions 8.** Local permafrost distribution and stability (Concordance reference 2.6.3).

#### **Request**

1. Tyhee identifies the presence of semi--continuous permafrost distribution around the minesite. Later Tyhee points to permafrost acting as an aquitard [a barrier to underground water flow] that might prevent pit inflows. If Tyhee is to depend on permafrost as an aquitard to pit inflows, please indicate if sufficient permafrost is present to adequately prevent such inflows.

#### **Tyhee NWT Corp Response**

1) Tyhee NWT Corp can confirm that as indicated in Sections 2.6.3 and 2.10.7 of the DAR, the YGP is located within the discontinuous permafrost zone. As reported by Klohn Leonoff (1992), the permafrost extends to about the 38-metre level in the historic Discovery Mine and minimal water was observed flowing into the mine.

Tyhee NWT Corp is not depending on permafrost acting as an aquitard below the depth of permafrost in the area of interest. Section 4.13.1 (Water Balance) discusses the anticipated rate of dewatering that will be required from the open pit during full build-out. Table 4.13-1 presented below indicated the computed dewatering rates for an average year, 10-year wet and 10-year dry condition assuming an average observed hydraulic conductivity. These dewatering rates were incorporated into the water balance assumptions and outputs. The dewatering rates assumed a combination of groundwater and surface runoff.

**TABLE 4.13-1: ORMSBY OPEN PIT FINAL BUILD-OUT MAXIMUM DEWATER RATE**

<b>Dewater Rate (m<sup>3</sup>/month)</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
Average Year	31,000	28,000	31,000	30,000	58,486	45,738	17,229	15,434	33,289	31,000	30,000	31,000
10-Year Wet	31,000	28,000	31,000	30,000	70,406	64,756	25,041	18,424	37,295	31,000	30,000	31,000
10-Year Dry	31,000	28,000	31,000	30,000	48,204	29,335	10,491	12,855	29,833	31,000	30,000	31,000