



Giant Mine Environmental Assessment

IR Response

Round One: Information Request - Alternatives North #16

May 31, 2011

INFORMATION REQUEST RESPONSE

EA No: 0809-001

Information Request No: Alternatives North #16

Date Received:

February 28, 2011

Linkage to Other IRs:

Date of this Response:

May 31, 2011

Request

Preamble:

The DAR describes the existing environment at the Giant Mine Site including ambient air quality. High-volume air samplers have been installed and operated at the site since 2004. Air quality predictions for several contaminants of potential interest were also modeled during the construction phase.

Question:

1. Figure 7.3.6 shows the location of the hi-vol samplers at the Giant Mine site. None of these appears to be downwind when compared to the windrose from the Yellowknife airport shown in Figure 7.3.1. Please explain the rationale for the sampler locations and whether the monitoring results are a good indication of ambient air quality at the site.
2. Please correlate the air quality exceedances shown in Table 7.3.3 with the recorded wind data (speed and direction) from the Yellowknife airport on those dates and the length of time from the last application of soil cement on the tailings at the site. This may provide some insights into the cause of these exceedances and possible mitigation to avoid similar occurrences.
3. Figures 8.6.1 to 8.6.4 show predictions for air contaminants (arsenic, particulates, NOx, and SOx). The predicted areas above various guidelines extend outside the surface lease area and sometimes encompass a stretch of the Ingraham Trail highway. This public road is open to the public, including pedestrians and cyclists. Please explain how INAC has concluded that there will be no adverse effects from changes to air quality caused by the Development. What triggers and thresholds will be used to guide mitigative actions up to and including shutting down site construction activities?

Reference to DAR (relevant DAR Sections):

S. 7.3.3 Ambient Air Quality

S.8.6.2 Air Quality





Giant Mine Environmental Assessment

IR Response

Round One: Information Request - Alternatives North #16

May 31, 2011

Reference to the EA Terms of Reference

S.3.2.3 (11) Description of Existing Environment

S.3.4.2 Human Health and Safety

Response 1 Summary

The locations for ambient air quality monitors were selected based on a variety of factors, only one of which was the prevailing wind direction. Of equal or greater importance was the location of potential receptors relative to sources of air quality contaminants. Overall, the monitored sites are considered to be representative of ambient air quality conditions.

Response 1

For clarity, “mini-vol” samplers are operated at all locations except the former Giant townsite where a “high-vol” sampler is situated.

As indicated in the windrose (Figure 7.3.1 – reproduced below), wind sources are relatively evenly distributed, the only notable exception being calms from the southwest. In this regard, the direction of prevailing winds was only one factor to consider during selection of the sampling stations. A second, and more critical factor, was the relative location of potential human receptors. For example, the townsite high-vol and south tailings mini-vol were situated to address potential concerns associated with receptors in N’dilo. Similarly, the mini-vols established at the roaster complex and immediately adjacent to the northwest tailings pond are used to identify any potential concerns of on-site exposures where human use could occur on a regular basis (e.g., on Highway 4). Priority was not placed on establishing sampling stations at locations where human activity is anticipated to be minimal (e.g., the northeast corner of the northwest tailings pond).

An added factor in determining the location of the high-vol sampler was the availability of an AC power supply at the townsite. Mini-vol samplers were used at the remaining sites due to the absence of an AC power supply (i.e., mini-vol samplers are powered by batteries).

Taking into consideration the objectives of monitoring that has been conducted to date the selected locations are considered to be good indicators of ambient air quality at the site.

Response 2 Summary

Potential correlations between air quality monitoring data and site activities/conditions are evaluated and presented in annual Air Quality Monitoring Reports. Visual observations of suspended particulates also play an important role in determining the timing and nature of any efforts to mitigate suspended particulates (e.g., when to apply soil cement, application of water on site roads, etc.). The Giant Mine Remediation Project (Remediation Project) has been designed to reduce potential sources of air quality contaminants.





Giant Mine Environmental Assessment

IR Response

Round One: Information Request - Alternatives North #16

May 31, 2011

Response 2

As part of annual air quality monitoring conducted at the site, any elevated results that are observed in the monitoring data are correlated to environmental conditions (e.g., wind speed and dry conditions) and site activities that occurred during the sampling period (e.g., earth moving). To illustrate, the following observations were presented in Section 4 of the document titled “Air Quality Monitoring at Giant Mine Site, Yellowknife: A Baseline Study (Volume 4 – 2007)”, as presented in Appendix C of the DAR:

Activities that may have contributed to elevated concentrations of TSP and PM₁₀ in 2007 include the re-vegetation of the Baker Creek realignment as well as construction on the Ingraham Trail (Highway 4). The re-vegetation of Baker Creek realignment took place August 4th to September 1st, and may have influenced the particulate concentrations at the B3 Pit location and Mill locations. Construction on the Ingraham Trail started early July and continued throughout the summer, this could have contributed to the elevated particulate matter at the B3 Pit location, Mill location and Northwest Pond location. The month of June was very dry. Application of calcium chloride and soil cement on tailings ponds started the week of July 6th and was on-going until August 4th. Site road grading took place the weeks of August 4th, 24th, and September 8th which may also have contributed to increased particulate matter.

In addition to correlating monitoring results with site activities, Giant Mine Project Team (Project Team) relies heavily on visual observations of suspended particulates during wind events to determine the timing and nature of any efforts to mitigate suspended particulates (e.g., when to apply soil cement, application of water on site roads, etc.).

Without diminishing the importance of the question in terms of the current management of the site, the issue will be addressed through the implementation of the Remediation Project. Specifically, several of the project activities (e.g., capping and re-vegetation of tailings) will limit the need for on-going application of soil cement and other forms of mitigation to address suspended particulates.

Response 3 Summary

Based on the air quality monitoring presented in the Developer’s Assessment Report (DAR), concentrations of relevant air quality parameters are predicted to remain below applicable criteria at the selected off-site receptor locations. Although TSP concentrations may exceed the air quality criteria in the near vicinity of the site and/or along the Ingraham Trail, it is considered very unlikely that such situations would result in elevated exposures to people. Taking into consideration the fundamental conservatism of the air quality assessment and mitigation measures that will be put in place, adverse effects to people are not anticipated. Last, but importantly, any minor residual effects that might occur will be required to achieve the net-positive objectives of the Remediation Project.





Giant Mine Environmental Assessment

IR Response

Round One: Information Request - Alternatives North #16

May 31, 2011

Response 3

As described in Section 8.6 of the DAR, five potentially sensitive receptors were selected to assist in determining if the Remediation Project could result in adverse air quality effects. The potentially sensitive receptors were selected based on the assumption that individuals can reasonably be expected to be present for the applicable exposure duration (i.e., one and/or 24 hours) to the potential contaminants of concern. There were no situations where applicable criteria were exceeded at the potentially sensitive receptors.

However, as noted in the information request, there are situations in which guidelines have been exceeded in areas adjacent to the surface lease and/or along the Ingraham Trail. For perspective, the Project Team draws attention to the following assumptions and conclusions associated with the air quality assessment:

- The exceedances would occur only during periods where the highest emissions coincide with the worst meteorological conditions. This is a very conservative assumption.
- Due to the limited land use at locations outside of the surface lease where exceedances might occur, there is a low probability that individuals will be present when concentrations are elevated.
- With regard to individuals driving through the site on the Ingraham Trail, exposure periods are anticipated to be relatively brief. Although there may be recreational users on the Ingraham Trail, it is improbable that they would remain in areas with elevated concentrations for extended periods. In particular, the likelihood of individuals being exposed to elevated concentrations of arsenic (the primary contaminant of concern) for the relevant exposure period (i.e., 24 hours) is extremely low.
- Notwithstanding the conservative assumptions noted above, all appropriate measures will be put in place to mitigate situations in which exceedances of applicable air quality criteria might occur. These measures are described in Section 8.6.2.4
- Last, but importantly, any minor residual effects that might occur will be short term in duration and cannot be entirely avoided to achieve the net-positive objectives of the Remediation Project.

Although the air quality monitoring program will be an effective tool for verifying past performance and modifying overall site practices, other short-term mitigation measures such as shutting down site construction activities will be selected based on meteorological conditions/forecasts (e.g., for wind) and visual evidence of potential concerns including: blowing dust and the presence of individuals along the Ingraham Trail in the vicinity of the site for extended periods. Furthermore, whenever possible, construction activities with the potential to cause air quality effects will be scheduled only for periods when there are favourable meteorological conditions.



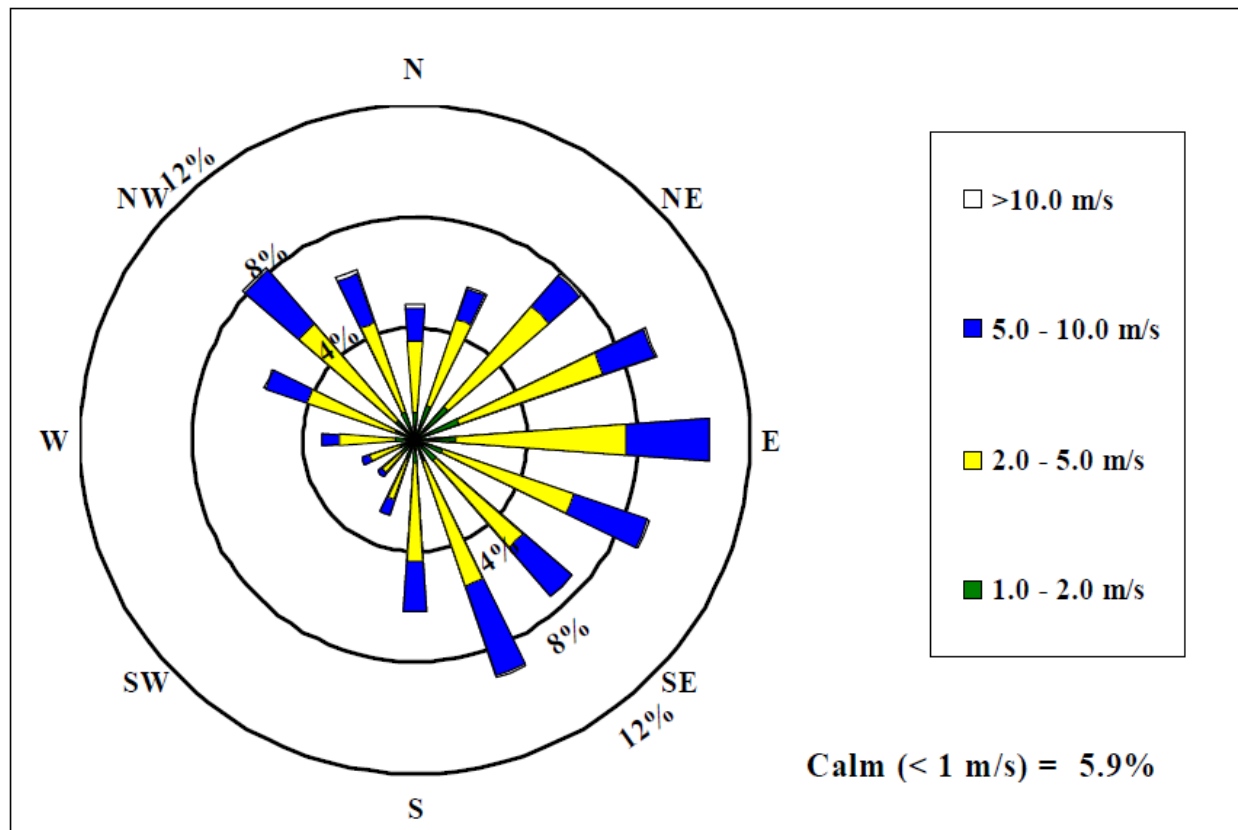


Giant Mine Environmental Assessment IR Response

Round One: Information Request - Alternatives North #16

May 31, 2011

Figure 7.3.1 Windrose for Yellowknife Airport



Note: Arrows denote the direction wind blows from.