APPENDIX G
WEATHER STATION SUMMARY AND DATA

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A semi-portable weather station was set up and used at the lower tailings pile to collect weather data. Although the data collection is ongoing, the first 7-month dataset has been collected and is analyzed and discussed in this appendix. This weather data was used to assess the effects of strong winds under dry summer conditions as a potential transport mechanism for tailings. The type of weather data obtained included wind direction and velocity, air temperature, and relative humidity. From analysis of this initial dataset, discussed below, wind erosion appears to be unlikely as a significant transport mechanism for tailings form the Upper and Lower Tailings Piles.

Weather Station Setup and Operation

During the remedial investigation at Van Stone Mine, the public expressed concern that some tailings were being transported by wind, particularly during windy periods in the dry summer months. Site-specific climate data to assess this potential concern were not available for the Site. To address the data gap, a weather station was installed up-slope of the Lower Tailings Pile to gather information on seasonal climate conditions.

The weather station was setup by Hart Crowser representatives under guidance from Michael Lilly, president of GW Scientific. To address the potential for wind transport of tailings, the weather station was set up with instrumentation to collect and/or calculate the following climate data parameters:

- Air temperature;
- Relative humidity;
- Dew point temperature;
- Wind chill temperature;
- Wind speed;
- Wind direction; and
- Wind direction standard deviation.

The installed instruments are connected to a Campbell Scientific CR1000 datalogger. The datalogger manages all of the data collection and recording.

The software was written by GW Scientific and later modified by Hart Crowser to meet site-specific data needs.

Generally, data were collected by the station at 5- or 60-second intervals (depending on the instrument and parameter) and processed to generate hourly and daily parameters which were recorded and stored for downloading by Hart Crowser field staff. The weather station's energy supply and usage was designed to provide at least 6 months of continuous operation before battery replacement was necessary.

Weather Station Data

Data from the station were downloaded by Hart Crowser staff on June 27, 2012. The data package contained over 7 months of data totaling 5,369 hourly readings per parameter.

An initial assessment of the data indicated that wind direction and velocity were the most relevant parameters for assessing the potential for wind transport of tailings. While additional data were collected, only the wind direction and velocity are presented here in the form of wind rose diagrams of the average and maximum hourly wind speed (Figures G-1 and G-2).

Wind Rose Diagrams

The average and maximum hourly wind rose diagrams summarize specific wind speed and direction during the 7 months of data collection. A review of the diagrams show a distinct pattern—most of the recorded winds blow east and west, up and down the valley—controlled by the local site topography. Figure G-1 shows that nearly a third of the average hourly wind directions are westerly (down the valley) at velocities of 0.5 to 2.1 m/s (1.1 to 4.7 mph). Additionally, another 22 percent of the recordings were calm wind readings (negligible wind speed). In total, most of the average hourly winds at the Lower Tailings Pile range from negligible or predominately easterly (blowing down-valley) at less than 5 mph.

By comparison, the maximum hourly wind rose diagram shows higher intensity, predominately westerly winds (blowing up-valley) at velocities of 3.6 to 5.7 m/s (8.1 to 12.8 mph). However, similar to the average hourly wind speeds, nearly a third of the maximum recorded wind directions are westerly (blowing down-valley) at 0.5 to 2.1 m/s (1.1 to 4.7 mph). Calms were recorded less frequently totaling only 5 percent of the record. In total, the maximum hourly wind direction is dominated by gentle, westerly winds (blowing down-valley) with the higher intensity winds predominantly blowing easterly up the valley.

It is notable that winds above 8.8 m/s (20 mph) are rare and only blow up-valley.

In conclusion, based on the 7-month climate record, the predominately mild winds recorded at the Site appear to indicate that wind transport of tailings is a low risk.

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Average Hourly Wind Rose

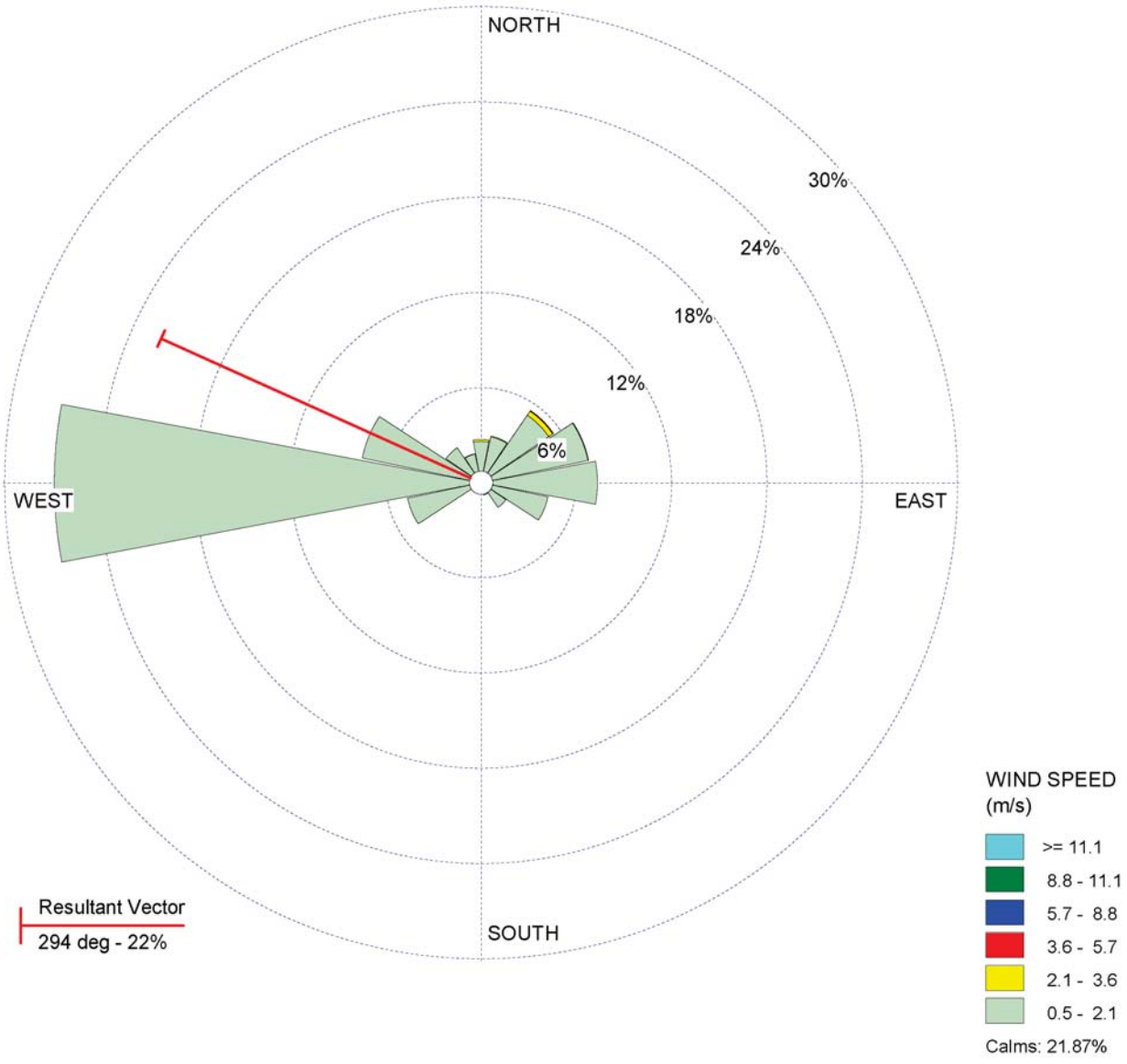

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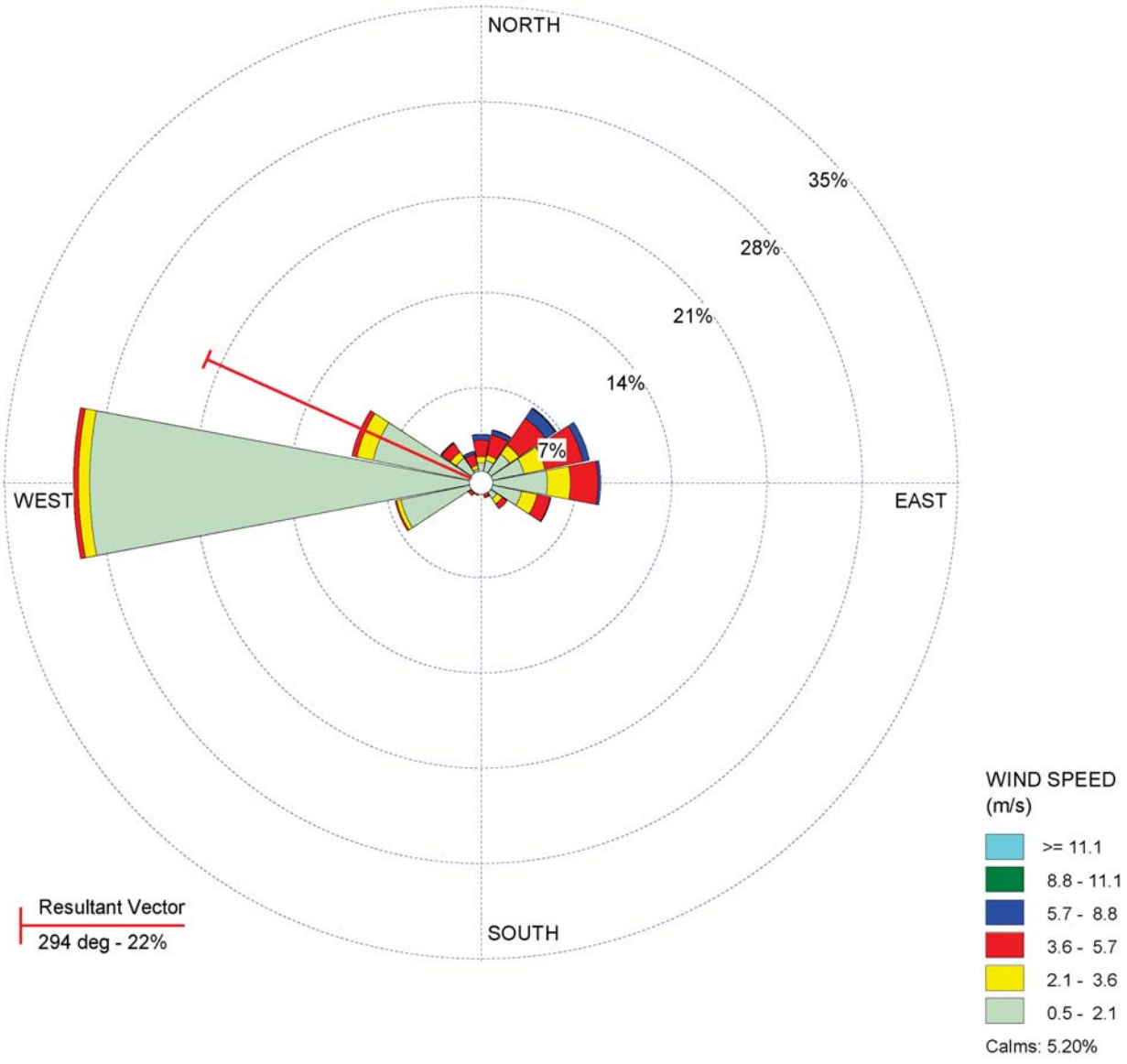
Figure G-1

Maximum Hourly Wind Rose



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17800-11 *2/13*

Figure G-2