AURORA RESEARCH INSTITUTE
AURORA COLLEGE

Tuktoyaktuk Wind Monitoring Study

Figure 1: Northward view of Tuktoyaktuk with the wind monitoring station (lower part of the tower visible) in the foreground.

Overview of Wind Study

- The Aurora Research Institute (ARI) has been monitoring wind speed near the community of Tuktoyaktuk since 2006.
- In 2007 the ARI moved the wind monitoring station closer to the Hamlet by a gravel quarry (Figure 1).
- This station measured winds from 10 to 30 metres above the ground using wind speed sensors called anemometers (see Figure 2 and Figure 3).
- This site was monitored with the help of Rick McIntyre who collected wind speed data every month during the study.
- The wind data collected at the site was analysed and correlated with the airport's long-term wind speed measurements.
- A computer model was then used to estimate the long term wind speed for other sites in the Tuktoyaktuk area.

Wind Monitoring Results

- The long-term annual average wind speed at the ARI wind monitoring station is 5.35 meters per second (m/s; or 19.3 km/h) at a height of 37 metres above ground level (AGL).

- The dominant winds in the area come from the east and from the west-northwest.
- Seasonally the winds are faster in the summer at 5.5 m/s (at 37 m AGL) and slower in the winter at around 4.8 m/s.

Figure 2: An anemometer (shown here in the foreground) is a piece of scientific equipment that measures wind speed. These are placed on the wind monitoring tower shown in Figure 3.

Wind Estimates at the Proposed Wind Development Site

- The image in the following pages (Figure 4) shows the area that is being considered for a wind development.
- The area was chosen because of its close proximity to powerlines, land availability, and its long distance from residences.
- The computer model used in this study estimates that the long-term average wind speeds at the proposed wind park location range from 5.3 to 5.4 m/s at 37 metres AGL.
- This estimate will be used in the ongoing investigations of the wind project for Tuktoyaktuk.

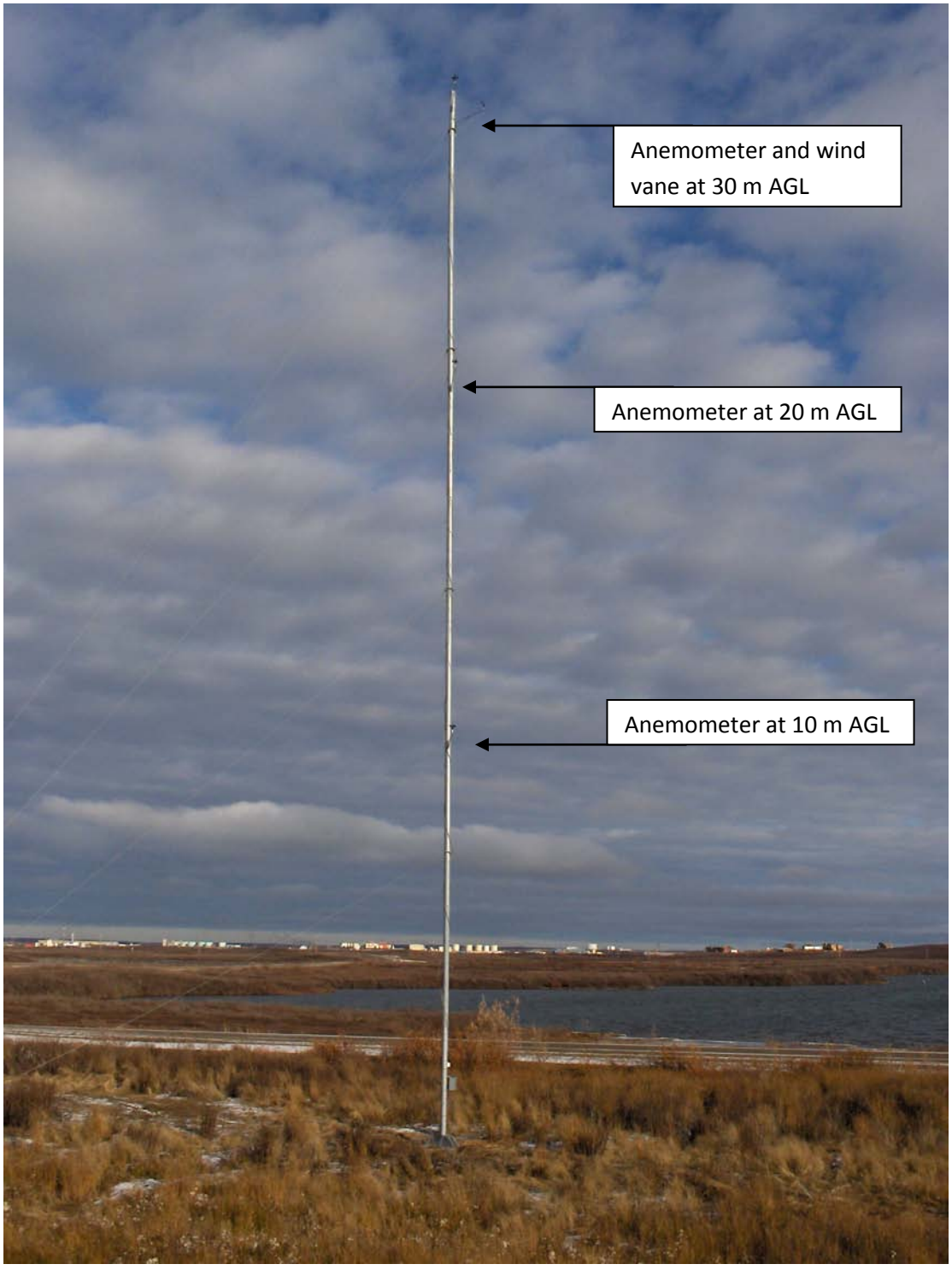

Figure 2: The wind monitoring tower south of Tuktoyaktuk by a gravel quarry. It has three anemometers at 10, 20, and 30 metres above the ground level (marked as AGL on image) to measure wind speeds.

Figure 3: Tuktoyaktuk area showing the location of the wind measurements and the possible wind developments. The wind speeds shown are long-term averages in metres per second (m/s) at 37 metres above ground. Image is from Google Earth.

The full report is at:

http://www.nwtresearch.com/resources/publications/wind.aspx

191 Mackenzie Road
P.O. Box 1450
Inuvik, NT CANADA
X0E 0T0
Phone: (867) 777-3298
Fax: (867) 777-4264

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