



## MEMORANDUM

**TO** Ryan Vanengen

**DATE** June 19, 2017

**CC** ECCC - Brian Asher, Melissa Pinto  
Golder - Lasha Young, Jen Range

**FROM** Cameron McNaughton

**REFERENCE No.** 1658927-Commitment 4

### ECCC AND AGNICO EAGLE MEETING: WHALE TAIL PIT AIR QUALITY MONITORING STATIONS

**WebEx Date:**

May 18, 2017; 09:00 to 09:45 (MT)

**Participants:**

Agnico Eagle: Ryan Vanengen

ECCC: Brian Asher, Melissa Pinto

Golder: Cameron McNaughton, Jen Range

**Subject:**

Review and discuss Commitment 4: *Agnico Eagle commits to work with ECCC to select a feasible location of the active sampling location for particulate matter and emissions at the Whale Tail Pit to monitor for the air quality impacts of the Project and provided in an updated Air Quality Monitoring Plan*

**Meeting Summary:**

- Agnico Eagle and Golder presented Alternative Locations (see presentation attached) for monitoring stations on-site
- None of the proposed monitoring locations are at the Amaruq Property Boundary, which is the point of compliance with respect to ambient air quality guidelines and standards
- Air quality monitoring conducted inside the Property Boundary can be used to validate air quality model predictions and to demonstrate confidence in predictions at the Property Boundary. Exceedances of ambient air quality guidelines/standards are predicted at the proposed monitoring locations. These should not be interpreted as an exceedance at the Property Boundary. This is an important distinction which ECCC (Brian Asher) understands
- Roundtable discussion of the proposed monitoring station and Alternative Locations
  - Proposed location (Communications Tower)
    - Tower & electrical utilities already in place.
    - Not a lot of traffic nearby.
    - Sits on a predicted gradient in PM concentrations; will be able to measure background concentrations.
  - Alternate Location #1 (esker south of old runway)
    - Best downwind location with respect to prevailing summer winds
    - Close to camp and generators (<500 m)



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- Approximately 1 to 2 km from the Pit
- Existing gravel road, but requires running electrical utility corridor approximately 400 to 500 m.
- Alternative Location #2 (Emulsion Plant)
  - Least desirable location with respect to PM<sub>2.5</sub> emissions from Whale Tail sources
  - Adjacent to Emulsion road so will require running at least 200 m of electrical utility corridor
  - Downwind of Waste Rock Piles (a new topographical feature)
  - Lower elevation
- Winds are predominately from North and Northwest; summer time is the focus for monitoring – winds during this time are from the North
- ECCC suggested incorporating a supplemental station with low power to monitoring PM<sub>2.5</sub> downwind of the pit
- Based on discussions and further analysis, Agnico Eagle indicated that the location presented in the Air Quality Monitoring Plan will remain unchanged as of now and the Plan will be updated in future iterations based on evaluations and investigations by Agnico, and regulatory review of annual reporting (see commitments)
- Agnico Eagle will update the PowerPoint presentation to include a slide showing PM<sub>2.5</sub> map and locations of Alternative Sites #1 and #2 (see attached)
- All parties agreed Meeting Minutes to be submitted to the NIRB to address Commitment #4 from Technical Meeting

### Future Iterations:

In future iterations of the Air Quality Monitoring Plan, Agnico Eagle will:

- 1) Evaluate adding a supplemental low powered monitoring station downwind of site; FRM/FEM distinction for the analyzer is not necessary for the supplementary site
- 2) Prior to operations, Agnico Eagle will investigate the costs of running electricity to Alternative Location #1
- 3) Assess relocating the proposed monitoring station once site infrastructure is in place

### Attachment:

Whale Tail Pit – Air Quality Monitoring Stations (presented during May 18, 2017 WebEx)

[https://capws.golder.com/sites/1658927RegulatoryAffairs/p6100TM\\_PHC/03\\_TechMtg\\_Follow-up/Commitment 04\\_AQ Monitoring Location/Commitment 4\\_Review of AQ monitoring stations\\_Meeting Minutes with ECCC.docx](https://capws.golder.com/sites/1658927RegulatoryAffairs/p6100TM_PHC/03_TechMtg_Follow-up/Commitment 04_AQ Monitoring Location/Commitment 4_Review of AQ monitoring stations_Meeting Minutes with ECCC.docx)



## Site Selection<sup>(a)</sup>

The location of a monitoring station should be selected based on an objective representation for the geographical area of interest. Points to consider included:

- Air dispersion modelling results
- Past and current monitoring results
- Site accessibility
- Power accessibility
- Topographical effects
- Local interferences
- Security

(a): Air Monitoring Guideline for Saskatchewan



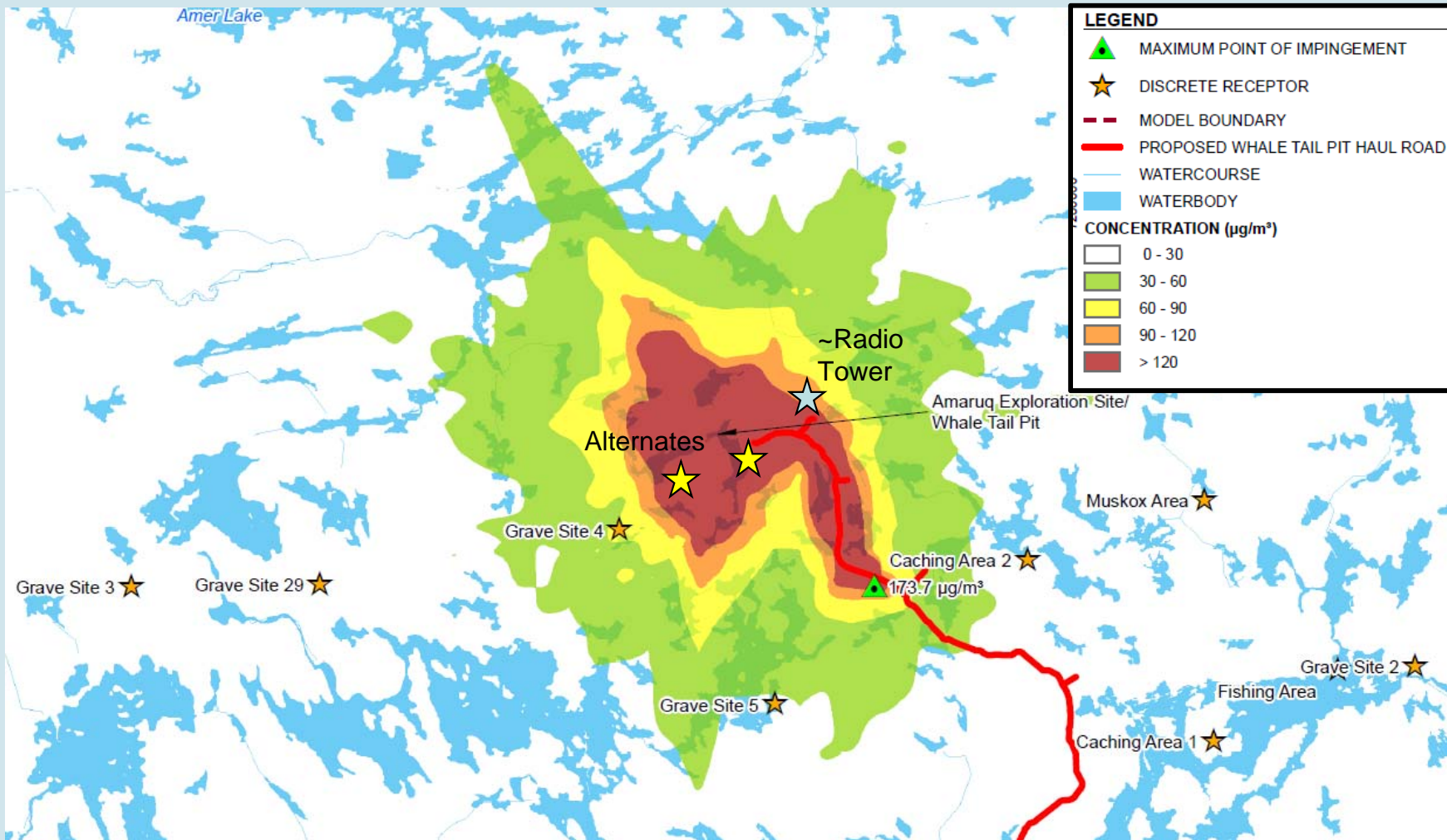
## Key Parameters for Whale Tail

The location of a monitoring station at the Whale Tail Pit is constrained by the following considerations:

- Air dispersion modelling results
- **Power accessibility** (radio tower or emulsion plant area)
- Topographical effects (waste rock piles)
- Local interferences (site  $\sim$  200 m from camp and generators)

# Dispersion Modelling Results (TSP)

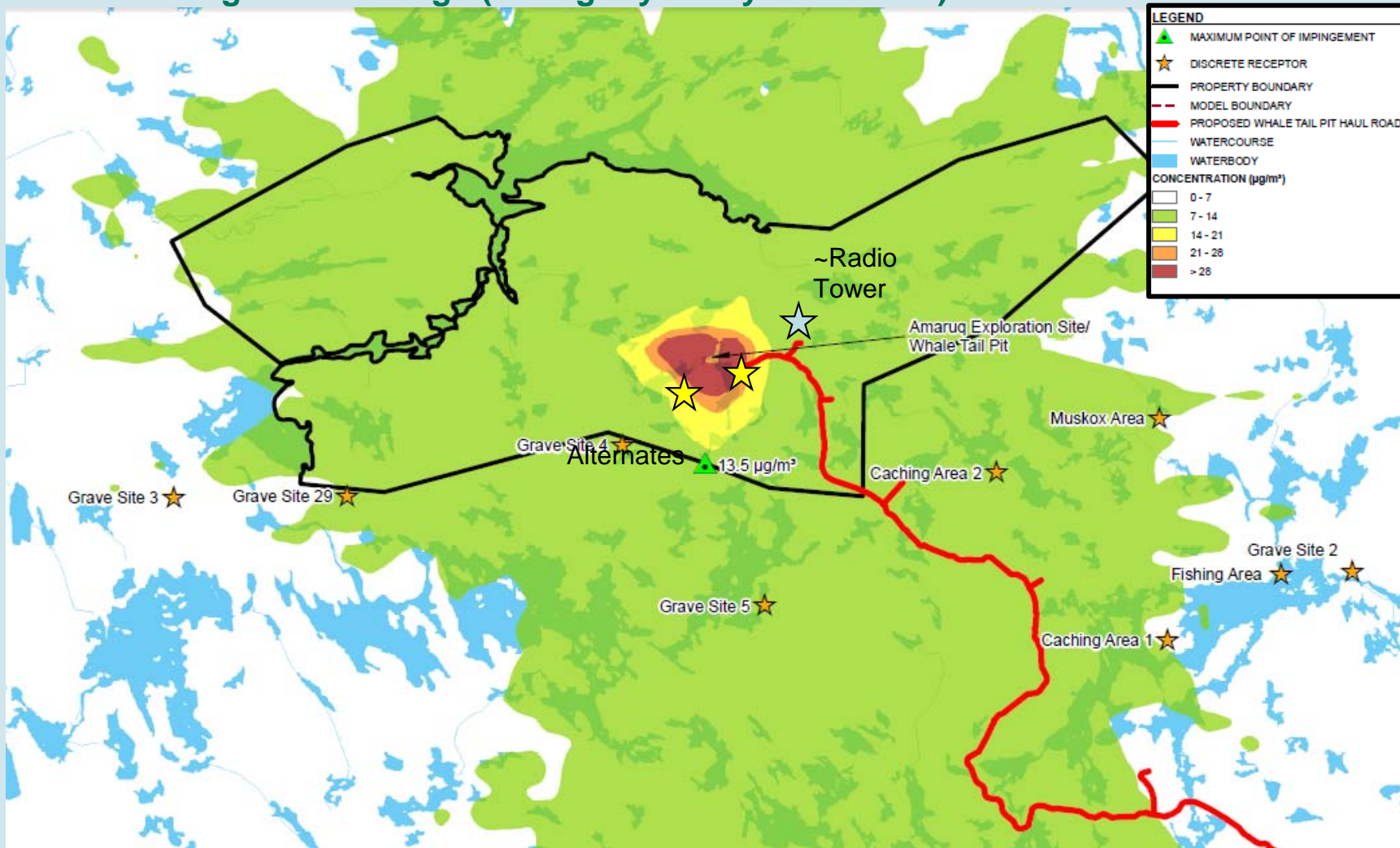
Maximum predictions allow flexible siting because background is predicted to be low ( $<10 \mu\text{g}/\text{m}^3$ ) and relative changes can be high (during dry windy conditions).





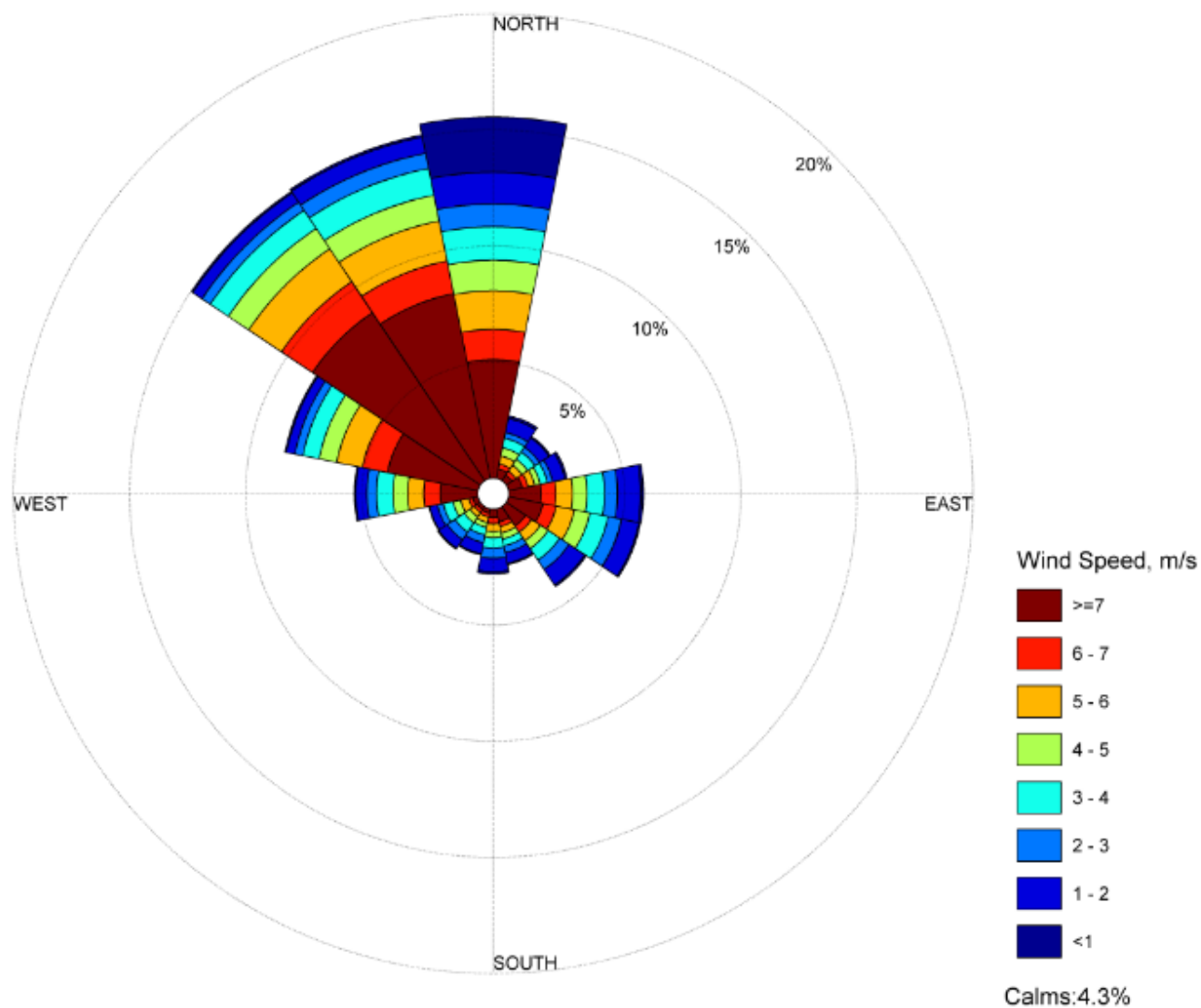
# Dispersion Modelling Results (PM<sub>2.5</sub>)

Maximum predictions allow flexible siting because background is predicted to be low (<10 µg/m<sup>3</sup>) and relative changes can be high (during dry windy conditions).



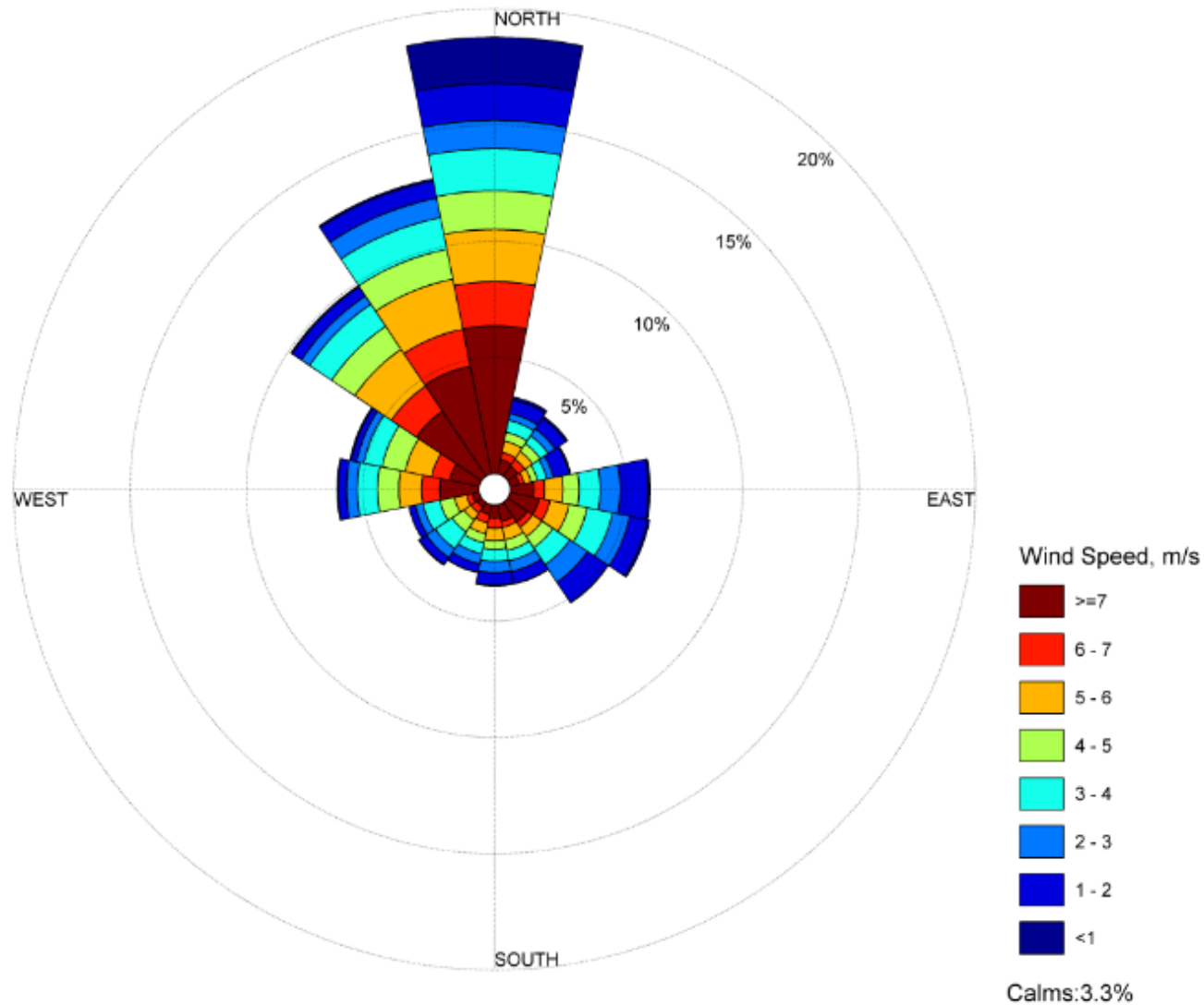


# Baker Lake A. Station Wind Rose (2013 to 2016)





# Baker Lake A. Station Wind Rose (2013 to 2016) in July, August, and September



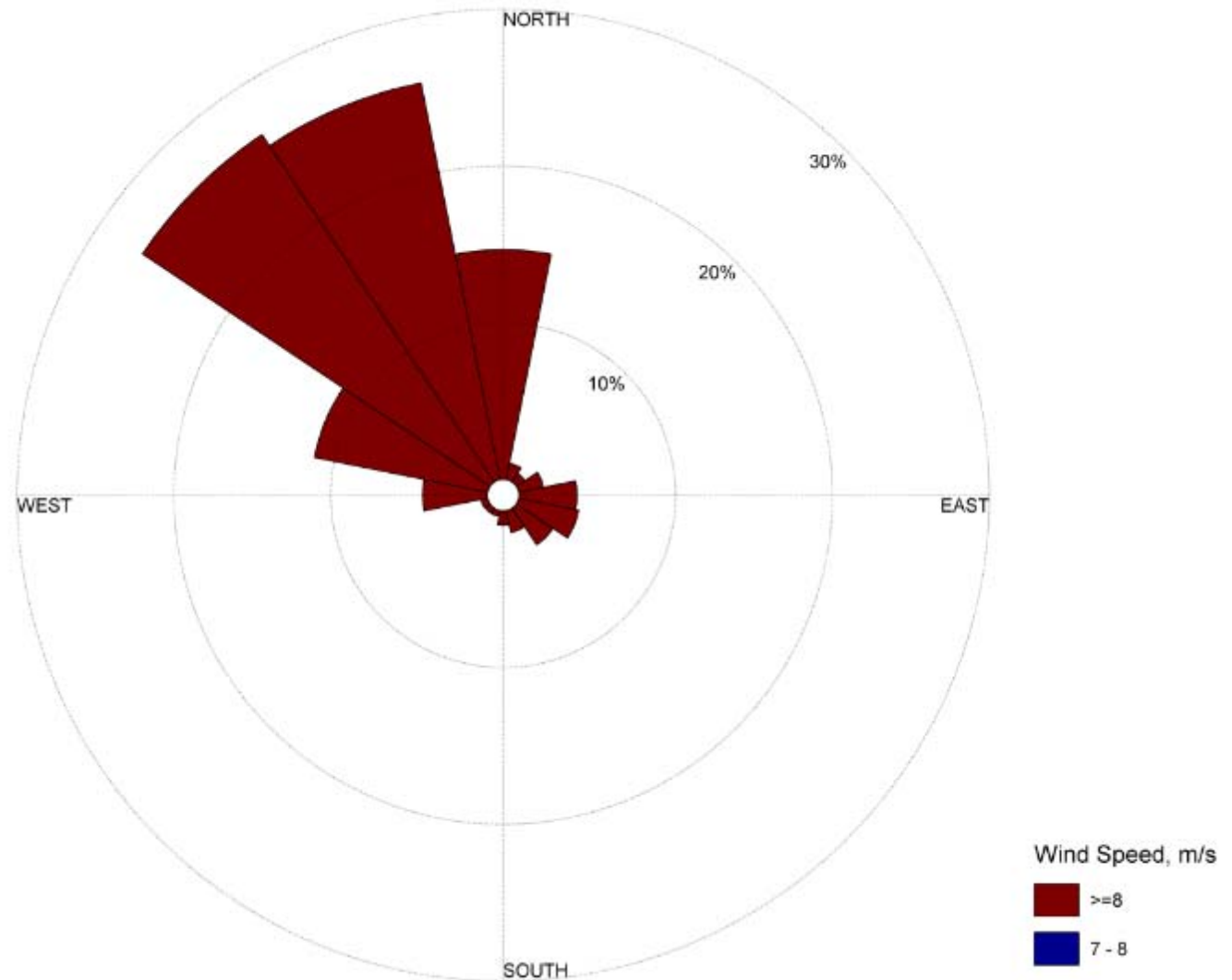




## Baker Lake A. Station Wind Rose (2013 to 2016)

Wind speed > 7.9 m/s\*

\*Threshold wind velocity for onset of wind erosion (fastest mile of wind speed at 10 m, which is estimated with threshold friction velocity of 0.54 m/s and roughness height of 0.2 cm, a conservative assumption).

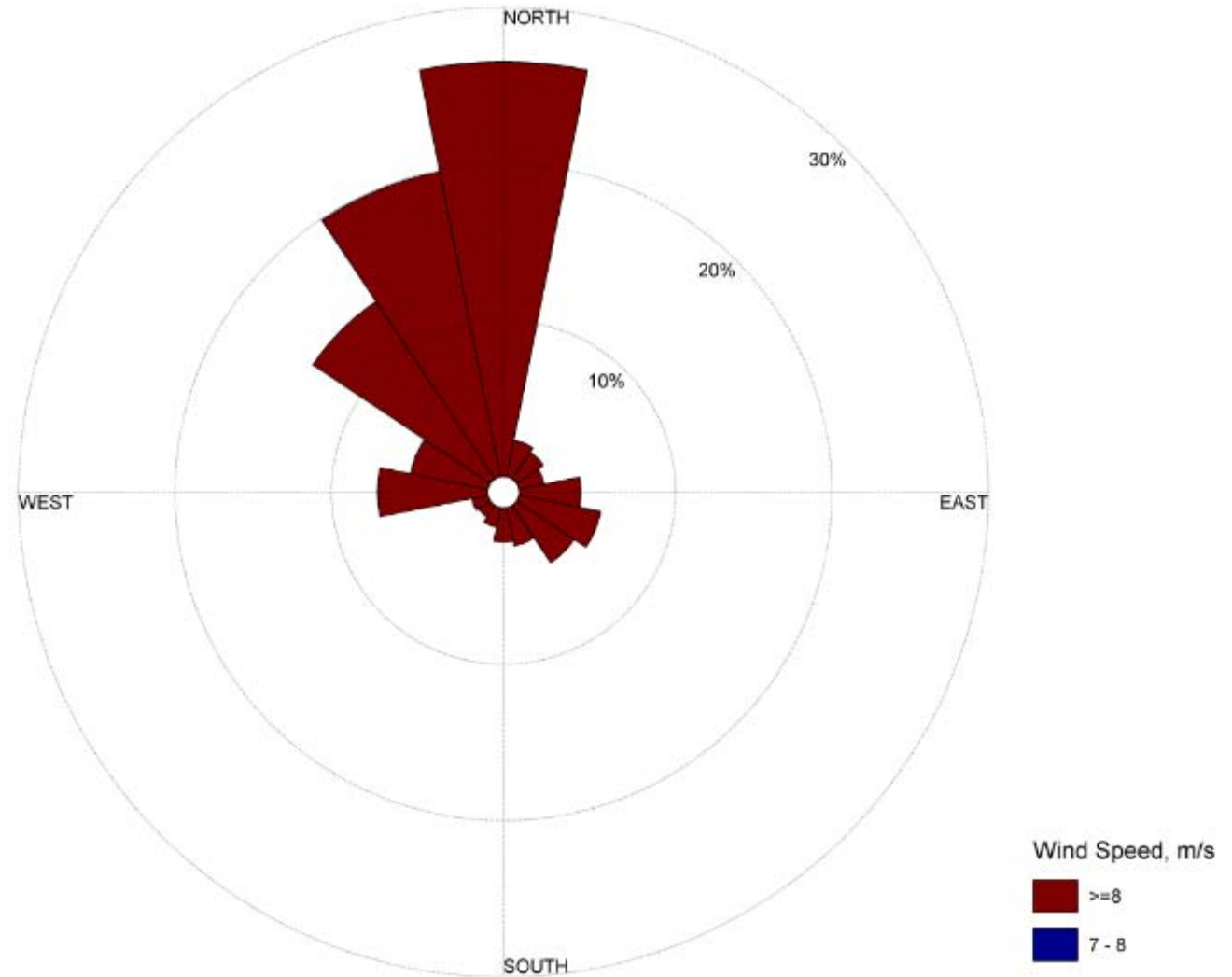




# Baker Lake A. Station Wind Rose (2013 to 2016) in July, August, and September

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# Proposed Monitoring Location(s)

