



Day 4 (Aug 17)
NECHALACHO, THOR LAKE
Air Quality



Air Quality

- Contaminants that were assessed:
 - Nitrogen Dioxide (NO₂)
 - Sulphur Dioxide (SO₂)
 - Carbon Monoxide (CO)
 - Total Suspended Particulate (TSP)
 - Particulate Matter with diameter less than 2.5 microns (PM_{2.5})
 - Dustfall (deposition of TSP)
- Assessment included estimating emissions and predicting ground-level concentrations using two 20 km x 20 km study areas
- Also assessed Greenhouse Gas emissions



Air Quality

- Sources included in modelling at Thor Lake Mine site:
 - Ventilation raises (largest source of SO_2)
 - Mine air heater
 - Diesel generators (largest source of NO_x , CO and $\text{PM}_{2.5}$)
 - Transfer and handling (largest source of TSP)
- Sources included in modelling at Hydrometallurgical Plant:
 - Sulphuric Acid Plant (SO_2)
- Also estimated vehicle emissions and road dust in response to an information request



Air Quality

- For DAR, no exceedances predicted but omitted receptors inside the fence line, which is standard practice in BC, AB and ON
- When remodelled including receptors inside the fenceline and including generators operating at 100% load:
 - Predicted exceedances inside the fence line at Thor Lake site of 1-hr and 24-hr SO₂ up to 1% and 3% of the time, respectively, and 24-hr TSP up to 17% of the time
 - Predicted exceedances inside the fence line at Hydrometallurgical Plant of 1-hr SO₂ up to 0.5% of the time



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NECHALACHO, THOR LAKE

Archaeology



Archaeological Studies

Thor Lake Area

- 1988 - studies focused on areas proposed for construction and previously disturbed areas
- 2011 - pedestrian survey of proposed mine site (plant site, TMF, airstrip, dock, laydown areas, roads)
- 2012 - field reconnaissance of moderate to high potential portions of proposed mine site (processing plant/accommodation complex, TMF, dock, laydown areas, roads)

Pine Point Area

- 2012 - marshaling yard and dock



Archaeological Study Results

1988

- 3 sites were documented,
- Reg site (KaPb-4) - prehistoric and recent material found at the dock area and adjacent road
- Lori site (KaPb-3) prehistoric lithic debitage scatter on the crest of the high ridge south of Den Lake and east of mine site
- Strathcona site (KaPb-2) - disused diamond drilling exploration camp at the west end of Thor Lake
- 4 artifacts collected from Reg site - 3 white quartz bi-face fragments and 1 bone hide flesher





Archaeological Study Results

2011

- Revisited previously discovered sites (KaPb-2, KaPb-3, and KaPb-4). Recommended additional work at KaPb-4 to evaluate potential effects from mine development
- 6 new sites were recorded, along the north sides of two small lakes associated with the proposed TMF
- Sites are small, comprising 1 or 2 stone circles, possible hearths, and one site is a rock structure used as a marten trap.
- 2 sites may be avoidable, but 4 appear to be within the footprint of the proposed TMF
- Recommended mitigation is to complete detailed plan mapping, careful surface inspection and some subsurface testing.



Archaeological Study Results

2012

- Full Assessment of Nechalacho site and Pine Point barging area completed
- All remaining survey gaps were resolved from 2011 survey
- All 6 Tailings sites identified in 2011 were subjected to systematic data recovery resulting in no artifacts recovered and these sites considered fully mitigated
- No new discoveries at barging area
- Recommended to have qualified archaeologist on standby if work extends along the GSL in the barge area
- Crews be educated on identification of potential features and artifacts



Mitigation Measures

- Avalon has conducted archaeological impact assessments at both sites, to ensure that archaeological resources are not disturbed.
- Archaeological resources are protected through various federal, territorial and Inuvialuit legislation and regulations.
- An Archaeological Site(s) Protection Plan will be prepared that will facilitate the continued protection and management of archaeological resources during the construction phase of the Project.
- Mitigation measures will be designed on an individual basis, and require prior approval by the Prince of Wales Northern Heritage Centre. Mitigation measures may include avoidance (the preferred mitigation), temporary site protection, or systematic data recovery.



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