

1AR-NAN1419 Water Licence Amendment and Renewal Application

## **Technical Meeting and Pre-hearing Conference**

**Canzinc Mines Ltd.**

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## Introduction

- Nyrstar is a global mining and metals business with market leading positions in zinc and lead. Nyrstar has mining and smelting operations located in Europe, North America and Australia and employs approximately 4,200 people.
- Nyrstar has been responsible for the Nanisivik mine since the acquisition of Breakwater Resources in 2011.
- The licensee - Canzinc Mines Ltd. - is a wholly owned subsidiary in the Nyrstar group of companies.
- Final closure and reclamation of the Nanisivik mine was completed during 2004 and 2005. Post-closure monitoring has been ongoing for approximately 14 to 15 years since substantial completion of the closure measures.
- Canzinc's application to the Nunavut Water Board concerns the renewal and amendment of water licence 1AR-NAN1419 to allow continued monitoring of completed mine reclamation works for a term of 10 years.

## Activities During the Current Licence Period

### Remediation of petroleum hydrocarbon contaminated soil at the docksite

- The remediation of petroleum hydrocarbon contaminated (PHC) soil at the docksite continued during the licence period. The remediation was completed under Abandonment and Reclamation Plans approved by the NWB and applying site-specific remedial objectives (SSRO) for hydrocarbon fraction 2 accepted by the NWB.
- The remediation works were finalised and concluded during the 2017 field season.
- An estimated 17,350 m<sup>3</sup> of PHC soil was treated during the remediation of the Nanisivik bulk fuel storage facility. Remediated soil was used to backfill excavated remediation areas, stockpiled in the area or reused for construction activities (by others).
- Liners from soil treatment cells and other inert waste from the mine were deposited in a non-hazardous waste landfill authorised through water licence 1AR-NAN1419. The landfill was operated and closed in accordance with an operations manual and closure plan accepted by the NWB.
- The soil remediation activities at the docksite have been documented in annual “Contaminated Soil Remediation Progress Reports” prepared by Canzinc’s environmental consultant, SRK. The reports have been filed with the NWB as part of the annual reports for water licence 1AR-NAN1419.

# Activities During the Current Licence Period

## Water quality monitoring

- Monitoring of water quality continued during the licence period, in accordance with the requirements specified in water licence 1AR-NAN1419.
- The results of the water quality monitoring continued to shown a high level of stability.
- Monitoring results at the 159-4 compliance station, at the outflow from the former tailing storage facility, have remained significantly below the discharge limits established in the water licence.
- [Temporal trends at station 159-4](#)
- There have been no significant detections of petroleum hydrocarbons at any time during the post-closure period, nor any significant detections of trace elements (analytical test group NAN-4).

# Activities During the Current Licence Period

## Geotechnical monitoring

- Geotechnical monitoring during the licence period generated satisfactory results, demonstrating that completed surface reclamation covers and other geotechnical installations perform in accordance with their design intents.
- In particular, geothermal monitoring data indicates that the active thaw layer is confined to the thermal covers and that underlying waste materials are maintained in a frozen state.
- Tailings retained by the West Twin Dyke have frozen back to depths below the foundation of the dyke. Remaining unfrozen tailings within the Surface Cell are not considered to pose a risk to the stability of the dyke (as they are located closer to the middle of the cell and at a depth below the foundation of the dyke).
- Annual inspections by Canzinc's geotechnical engineer (BGC Engineering) has confirmed the site to be physically stable. Maintenance has been completed in a few select areas where minor erosion was observed.

## Licence Application

- The purpose of Canzinc's application is to seek permission to continue post-closure monitoring of water quality and geotechnical stability at the reclaimed mine site. No additional closure and reclamation work is expected.
- In light of the stable conditions demonstrated during the 14-year post-closure period to date and provided that current monitoring trends continue to be observed, the following reduced monitoring frequency for water quality and geotechnical conditions is proposed:

Licence Year	Year	Proposed Monitoring Frequency
1	2020	1 monitoring event
2	2021	1 monitoring event
3	2022	1 monitoring event
4	2023	No site monitoring
5	2024	1 monitoring event
6	2025	No site monitoring
7	2026	1 monitoring event
8	2027	No site monitoring
9	2028	No site monitoring
10	2029	1 monitoring event

- The proposed geotechnical monitoring events would include a geotechnical inspection of all reclamation measures and collecting readings from functioning and active instruments.
- For the water quality monitoring, it is proposed that analytical test group NAN-4 be discontinued since there have been no findings of significance from the trace element scans. No changes to the required monitoring stations are proposed.

Canzinc proposes that the amended water licence be issued for a term of ten years.

Figure C1: Temporal trends at Station 159-4

