



Sahtu Land and Water Board

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S17L8-003 / S17X-004

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Dear Andrea,

Re: Norman Wells Land Treatment Unit Sump Water Discharge Criteria

The SLWB and the GNWT – Environment and Natural Resources have reviewed the memorandum dated December 20, 2018 and received at our offices on January 7, 2019, and the minutes of the teleconference held on January 17, 2019 to discuss the memorandum in more detail. While there was some agreement that the rationale in the memo seemed reasonable to allow discharge to the environment, we wanted additional time to complete our review of the memo and the rationale before making a final decision to authorize release of the stored water which exceeds the Licence Effluent Quality Criteria for four parameters: arsenic, aluminum, iron and manganese.

With reference to Table 2 of the memorandum, Aluminum and Iron do not exceed the reference values (background surface water values from Mackenzie River); therefore, the exceedance of water quality guidelines and licence criteria may be the result of anthropogenic activities beyond the scope of the project (i.e. S17L8-003 and S17X-004 licence/permit). We have no concerns with the Aluminum and Iron exceedance.

However, both Arsenic and Manganese levels exceeded both the water quality guidelines and the reference values (Mackenzie River Water). For Arsenic, the CCME water quality guidelines (WQG) for the protection of aquatic life (also the water licence criteria) is 0.005 mg/L (5 µg/L); the sump water is 0.1 µg above the CCME-WQG. This slightly elevated arsenic level may be tolerated if the sump water is discharged on soil that may immobilize a few micrograms of arsenic prior to it reaching a water body. Also, the lowest estimates of toxicity (critical points for freshwater and marine water) fall in the range 50-125 micrograms/L (Ref: CCME-WQG 2001 <https://www.ccme.ca/files/cegg/en/backup/143.pdf>). We would have no concerns with the arsenic exceedance, if the final concentration of As in the recipient water body is expected to be below WQG value.

The highest detection for Manganese was 1.18 mg/L in the sump water. We have concerns with respect to this level of manganese which greatly exceeds the licence criteria (0.05 mg/L) and Mackenzie River reference (maximum 0.21 mg/L). Even though manganese has no approved guidelines by CCME, there is a proposed Health Canada guideline of MAC at 0.1 mg/L and AO at 0.02 mg/L and manganese is now recognized as an element of concern.

(Ref: <http://healthycanadians.gc.ca/health-system-systeme-sante/consultations/manganese/alt/manganese-eng.pdf>)

Even though manganese occurs naturally in the environment, the high levels in the sump water could prove to be toxic if released into the environment. We have concerns with the release of the sump water with the exceedance of manganese.

We reviewed all relevant documents on the public registry and note that the response plan for any exceedance of sump water is clearly laid out as follows: “any additional standing water accumulated within the LTU during the closure process that does not meet the discharge requirements will be stored in off-site holding tanks prior to off-site treatment or disposal” (Proposed Poned Water Discharge Location and Soil Laydown Area memo July 26, 2018).

We believe there are two options available to you with respect to the sump water:

1. It may be possible to treat the water and then retest it again to see if the sump water meets licence criteria after treatment; or
2. If the sump water cannot be treated and/or continues to exceed licence criteria, then it needs to be removed to a licensed facility.

The December 20, 2018 memorandum provides an evaluation of the water licence criteria and recommends revised criteria for Arsenic, Iron, Aluminum and Manganese based on Health Canada Canadian Drinking Water Guidelines for the protection of human health and the Federal Interim Groundwater Quality Guidelines for the protection of aquatic life. The SLWB recommends that if Transport Canada would like to revise the criteria, an application for amendment to the Water Licence will be required.

In summary, the SLWB and the GNWT-ENR have reviewed the rationale for discharge of sump water that exceeds licence criteria and recommend that the sump water be removed to a licensed facility unless it can be treated to meet discharge criteria.

The full cooperation of Transport Canada is anticipated and appreciated for this Licence S17L8-003. If you have any questions or concerns please contact me at bonnie.bergsma@slwb.com or Aswathy Varghese at ash.varghese@slwb.com.

Sincerely,



Bonnie Bergsma, M.Sc.
Regulatory Specialist

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