July 13, 2016

Bijaya Adhikari
Science and Regulatory Coordinator
Inuvialuit Water Board
125 Mackenzie Road
Professional Building, Suite 302
P.O. Box 2531
Inuvik, NT X0E 0T0

Dear Mr. Adhikari,

Re: Northwest Territories Power Corporation
N3L8-1838
Type B Miscellaneous Water Licence
Request for Comment

The Department of Environment and Natural Resources (ENR), Government of the Northwest Territories, has reviewed the application based on its mandated responsibilities under the *Environmental Protection Act,* the *Forest Management Act*, the Waters Act, the *Forest Protection Act* and the *Wildlife Act* and provides the following comments and recommendations for the consideration of the Board.

Topic 1: Determination of Water Licence

Comment:

NTPC submitted a Schedule C Application to determine whether a water licence will be required for the remediation of soils at the NTPC Aklavik site. In ENR's opinion, while the proposed water use does not trigger the need for a licence, the ultimate disposal of waste water from an industrial use (e.g. remediation of hydrocarbon contaminated soils) does trigger the need for a Type "B" water licence under Schedule IV of the *NWT Waters Act*.

Recommendation:

ENR recommends the proposed project requires a Type "B" Water Licence.

Topic 2: Discharge criteria for Waste Water

Comment:

NTPC provided reasonable rational for the methods of wastewater treatment, including characterization of local waters. The proposed method claims that wastewater treated will result in hydrocarbon

concentrations in the effluent to be below detection limits. However, it is not clear from NTPC what the detection limits will be or range of analytical analysis (e.g. TPH fractions).

Similarly, NTPC provides a summary of inorganic analytes for the site, but does not confirm if effluent will fall within this range or below it.

Recommendations:

ENR recommends:

a) NTPC define the detection limits for the hydrocarbon analysis. Additionally, a description of the analysis to be performed (e.g. TPH and BTEX including F1, F2, F3 and F4 fractions) should be confirmed.

b) NTPC or the IWB provide a draft water licence with proposed discharge criteria for the treated waste water. ENR recommends the IWB follow the CCME Canadian Water Quality Guidelines in setting the criteria and should also include ICP-MS Metal Scan (Total) and major ions.

Topic 3: Contingency Storage

Comment:

ENR has concerns that there may not be sufficient storage capacity on site for wastewater in the case that the treated water does not meet discharge criteria. The contingency section (Section 5) of the application requires further details on the actions NTPC may utilize in this scenario. Section 3.4.1 of the application reports that after water passes through a 20 m^3 settling tank, treated water will be stored on site in a 40 m^3 tank until analytical water results meet discharge criteria. Based on the water volume information provided in the application (Section 4) it appears that there is approximately 60 m^3 of contaminated water storage on site, not including the three-state treatment system, with the use of the sump and cell as a storage facility. NTPC has designed the cell with 0.4 m of freeboard for the 16 m x 26 m cell; resulting in approximately 166 m^3 of contingency storage on the cell. NTPC has estimated that there could be an anticipated 130 to 240 m^3 of wastewater to be stored and treated each year. As this is a new method being proposed in this climate, there is the potential that NTPC may not be able to initiate the scheduled discharges (approximately six per year) if analytical water results are not meeting discharge criteria due to unforeseeable operational issues.

Recommendation:

ENR recommends NTPC provide additional information on contingency actions in the event discharge criteria are not achieved. This should include information on the proposed storage capacity, contingency storage capacity and whether offsite disposal at an approved waste disposal location has been considered, if necessary.

Topic 4: Process Description

Comment:

The proponent intends to employ bio-augmentation technology as part of the remediation component.

Recommendations:

ENR recommends that:

a) NTPC shares Material Safety Data Sheets (MSDS) information for the bio-augmentation product intended to be used as part of the remediation (Bio-Reclaim).

b) NTPC indicates how much of this product will be used, where it will be stored, and how and when it will be applied.

Topic 5: Environment and Spill Preparedness

Comment:

The proponent intends to have spill kits on site in the event that a fluid inadvertently gets released.

Recommendation:

ENR recommends NTPC submits a Spill Contingency Plan as part of the Water Licence application. The proponent should use A Guide to the Spill contingency Planning and Reporting Regulations found on the Government of the Northwest Territories Department of Environment and Natural Resources website. http://www.enr.gov.nt.ca/node/3003 .

Topic 6: Figures Submitted as Part of the Application

Comment:

The proponent submitted to the Inuvialuit Water Board a Schedule C – Water Licence Application for a Type B Miscellaneous Water Licence (N3L8-1838). The application includes a Project Description document.

Recommendation:

A higher resolution Project Description document is submitted to reviewers as the current resolution makes Figures 2 to 5 illegible.

Topic 7: Land farming operations

Comment:

Over the last decade, land farming north of 60 has entailed enhancing and promoting the remediation of contaminated soil by employing indigenous microbes and creating conditions to maximize their ability to mineralize the petroleum hydrocarbons; the rationale being that if they are already in place, it is because, though natural selection, they are best suited for the purpose; under those conditions and in that particular location.

ENR would like to learn more details about the proposed treatment program; namely:

- Did the consulting engineer characterize the soil to determine the presence of indigenous soil microorganisms?
- If so, and if there were indigenous microorganisms present, what is the rationale for inoculating the soil with non-indigenous microorganisms rather than enhancing soil conditions to promote the indigenous species?

Recommendation:

ENR recommends that the proponent analyze/conduct a microorganism census of the impacted soil before, during and after treatment to determine which species of microorganisms are dominant. In this way, more knowledge can be gained on the effectiveness of bio-augmentation in an Arctic setting. As this recommendation is being made purely in the interest of gaining more knowledge on this topic, ENR will not hold the proponent to this recommendation if it entails significantly increased project costs.

Comments and recommendations were provided by ENR technical experts in the Water Resources Division and Inuvik Region and were coordinated and collated by the Environmental Assessment and Monitoring Section, Conservation, Assessment and Monitoring Division (CAM).

Should you have any questions or concerns, please do not hesitate to contact Marcy MacDougall at (867) 767-9233 Ext: 53099 or email Marcy_MacDougall@gov.nt.ca.

Sincerely,

Patrick Clancy
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