



Water Resources Division
Resource Management Directorate
Nunavut Regional Office
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June 16, 2016

Ida Porter
Licensing Administrator
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0

Your file - Votre référence
2AM-DOH1323

Our file - Notre référence
CIDM#1072479

Re: 2AM-DOH1323 – Review of Domestic Wastewater Treatment Management Plan submitted by TMAC Resources Inc. – Doris North Gold Mine Project

Dear Ms. Porter,

Thank you for your May 16, 2016 invitation for written representations on the above referenced management plan.

The Water Resources Division of Indigenous and Northern Affairs Canada (INAC) has conducted a review of the Domestic Wastewater Treatment Management Plan submitted by TMAC Resources Inc. and the results of our review are presented in the attached memorandum for the Nunavut Water Board's consideration.

Comments have been provided pursuant to INAC's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*.

INAC appreciates the opportunity to participate in this review. If there are any questions or concerns, please contact me at (867) 975-3876 or by e-mail at sarah.forte@aandc-aadnc.gc.ca.

Sincerely,

Sarah Forté
Water Management Coordinator

cc. Ian Parsons, Acting Manager, Water Resources Division, INAC
Erik Allain, Manager of Field Operations, INAC

Technical Review Memorandum

To: Ida Porter, Licensing Administrator, Nunavut Water Board

From: Amjad Tariq, Regulatory and Science Advisor, Water Resources Division, INAC
Sarah Forté, Water Management Coordinator, Water Resources Division, INAC

Date: June 16, 2016

Re: Review of Domestic Wastewater Treatment Management Plan for Type A Water
Licence 2AM-DOH1323

Applicant: TMAC Resources Inc.
Projects: Doris North Gold Mine
Region: Kitikmeot

A. BACKGROUND

On May 16, 2016, the Nunavut Water Board (NWB or Board) provided notification of TMAC Resources Inc.'s (TMAC or the licensee) submission of a revised *Domestic Wastewater Treatment Management Plan*, dated April 2016. This submission by TMAC is to fulfill requirements of Part G, Item 4 of water licence 2AM-DOH1323.

The NWB requested interested parties review the revised plan and make representations by June 16, 2016.

B. RESULTS OF REVIEW

On behalf of Indigenous and Northern Affairs Canada (INAC) Water Resources, the following comments and recommendations are provided for the Board's consideration:

1. Sewage sludge management

Reference:

- Domestic Wastewater Treatment Management Plan – Doris Project, Nunavut, prepared by TMAC Resources Inc., April 2016, Sections 2.4.1 & A2.2.2

Comment:

Three options are presented in the plan for the disposal of sewage cake/sludge:

"Sewage sludge is incinerated in accordance with the Incinerator Management Plan, or buried in the overburden pile or beneath tailings in the

Tailings Impoundment Area when it is constructed. Sewage sludge that will be stored for disposal in the overburden stockpile or in the Tailings Impoundment Area will be placed in biodegradable bags and stored securely at the waste management facility in a manner that will prevent wildlife from accessing the sludge until such time that it can be disposed of in these locations.”

The plan provides no details as to timelines for the use of the different options. Nor does the plan mention what measures will be taken to contain nutrients or pathogens that might leach from the cake if it is to be buried in the overburden stockpile. It is also not clear what water containment measures are present around the overburden stockpile.

Recommendation:

INAC recommends that the licensee be required to notify the NWB which disposal method will be used or timelines for the use of different methods if they will be changed. The chosen disposal method would subsequently be included in an updated wastewater treatment management plan that would be submitted to the NWB for approval, including the location of sludge burial if that was the option chosen, and a description of measures taken to contain leachate will be necessary if sewage cake is being buried in overburden.

2. Discharge from membrane biological reactor

Reference:

- Domestic Wastewater Treatment Management Plan – Doris Project, Nunavut, prepared by TMAC Resources Inc., April 2016, Section A2.1.4, figure A1

Comment:

There appears to be an inconsistency in the text with regards to the discharge out of the membrane biological reactor (MBR). The permeate pump is the last component of the MBR and the text states: *“The effluent removed by the permeate pump is discharged (to the tundra), while overflow from the MBR tank is recycled back to the anoxic tank.”*

However, the following sentence adds *“After the MBR, the treated effluent is pumped through the UV disinfection modules”*, which also appears to be the case in figure A1.

Recommendation:

INAC recommends that the text be modified so that it is clear if the MBR discharge is routed through a UV disinfection module before being discharged to the tundra.

3. Effluent discharge location

Reference:

- Domestic Wastewater Treatment Management Plan – Doris Project, Nunavut, prepared by TMAC Resources Inc., April 2016, Section A2.2.1

Comment:

The management plan states:

“Prior to entering operations the effluent discharge from the WTP occurs from the effluent discharge trailer through a pipeline to a discharge point located on a rock outcrop (UTM 432125E 7559324N) approximately 1 km northwest of the Doris Camp (Figure A2).”

Figure A2 showing disposal location of treated wastewater is not available in the plan.

Recommendation:

INAC recommends that the licensee include Figure A2 in the plan to identify the disposal location of the treated wastewater.

4. Location of water body closest to effluent discharge location

Reference:

- Domestic Wastewater Treatment Management Plan – Doris Project, Nunavut, prepared by TMAC Resources Inc., April 2016, Section A2.2.1

Comment:

The closest water body to the wastewater treatment plant primary and secondary discharge locations is described as Glenn Lake, located over 1 km away. According to the site map there is a body located at UTM 432187E 7559000N, which is much closer than Glenn Lake.

If Glenn Lake is the nearest water body in the downstream direction of the discharge location, this should be clarified, if not the closer water body should be referenced.

Recommendation:

INAC recommends that the licensee clarify statements about the water body closest to the wastewater treatment plant discharge locations. Including a figure, such as suggested in comment #3, could help illustrate the position of the water bodies relative to the discharge locations.

5. Typos

Reference:

- Domestic Wastewater Treatment Management Plan – Doris Project, Nunavut, prepared by TMAC Resources Inc., April 2016

Comment:

What appear to be typos were noticed in the following two locations:

- i. Section 1.2, Table 1 : Domestic is repeated in the last entry of the table.
- ii. Section A2.2.1 : A digit missing in the northing of the UTM coordinates in the third paragraph of this section.