Crown-Indigenous Relations and Northern Affairs Canada
Relations Couronne-Autochtones et Affaires du Nord Canada

Water Resources Division
Resource Management Directorate
Nunavut Regional Office
P.O. Box 100
Iqaluit, NU, X0A 0H0

Your file - Votre référence
2AM-DOH1323

August 15, 2019

Our file - Notre référence
CIDM#1258116

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

sent via email: licensing@nwb-oen.ca

Re: Crown-Indigenous Relations and Northern Affairs Canada Comments on TMAC Resources Inc. 2018 Annual Report for Water Licence 2AM-DOH1335 – Amendment No. 2, Doris-Madrid (Hope Bay) Gold Mine Project.

Dear Ms. Porter,

Thank you for your May 14, 2019 invitation to comment on the above referenced 2018 Annual Report. The Water Resources Division of Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the report and the results of our review are provided in the enclosed attachment for the Nunavut Water Board's consideration.

Comments have been provided pursuant to CIRNAC's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*. If there are any questions or concerns, please contact me at (867) 975-4282 or by e-mail at bridget.campbell@canada.ca, or Godwin Okonkwo at (867) 975-4550 or godwin.okonkwo@canada.ca.

Sincerely,

Bridget Campbell
Water Resources Coordinator

CC: Derek Donald, Nunavut Water Board
Oliver Curran; Adam Grzegorczyk; Shelley Potter; Ashley Mathai, TMAC Resources Inc.

Canada

Attachment A: Review Comments

A. BACKGROUND

On May 14, 2019, the Nunavut Water Board (NWB) requested comments on TMAC Resources Inc.'s (TMAC) 2018 Annual Report for their Type A Water Licence 2AM-DOH1335 – Amendment No. 2. It is entitled *Hope Bay Belt Project 2018 Nunavut Water Board Annual Report*, and is dated March 2019.

The Hope Bay Belt Project includes four gold mines with activities covered under TMAC Type A Water Licences 2AM-DOH1323 (Doris, Madrid North, and Madrid South) and 2AM-BOS1835 (Boston), two advanced exploration sites covered under Type B Water Licences 2BB-MAE1727 (Madrid) and 2BB-BOS1727 (Boston), and surface exploration covered under the Type B Water Licence 2BE-HOP1222 for 2018 (Hope Bay Region). The 2018 Annual Report covers the activities under all licences with the exception of 2AM-BOS1835, which was not issued until December, 2018. The 2018 Annual Report was submitted in conjunction with the Doris Project 2018 Aquatic Effects Monitoring Program (AEMP) Report, the 2018 Construction Monitoring Report, and the following six updated management plans:

1. Spill Contingency Plan;
2. Quality Assurance and Quality Control Plan;
3. Emergency Response Plan;
4. Doris-Madrid Water Management Plan;
5. Hazardous Waste Management Plan; and
6. Aircraft De-icing Management Plan.

The 2018 Annual Report, the AEMP Report, the Construction Summary Report, and the modified management plans have all been reviewed. The review of the 2018 Annual Report, the AEMP Report, and the Construction Summary Report are provided in Section B. The review of the updated management plans is provided in Section C.

B. RESULTS OF REVIEW

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) appreciates the work TMAC put in to the 2018 Annual Report. Our general comment is that requirements are covered and the information provided is clear. The following comments and recommendations are provided for the Nunavut Water Board's consideration.

1. Crown Pillar Recovery Trench Capping Rock

Reference

- Hope Bay Belt Project 2018 Nunavut Water Board Annual Report, TMAC Resources Inc., March 2019:
  - Section 8.1.1.2;
  - Appendix.
- 2018 Waste Rock, Quarry and Tailings Monitoring Report, SRK Consulting Ltd., March 2019.
- Hope Bay Project, Waste Rock, Ore and Mine Backfill Management Plan, TMAC Resources Ltd., December 2017.

Comment:
Section 8.1.1.2 of the 2018 Annual Report describes the quality of leachate from crown pillar recovery trench (CPRT) waste rock that is stockpiled on the western extent of Pad T and will be used as capping rock for the CPRT. The rock is classified as non-PAG with higher than the screening criteria for arsenic, gold and sulphur. Shake flask extraction test leachate for two samples had ammonia concentrations (1.5 & 1.97 mg/L) above the screening criteria for ammonia (0.55 mg/L), which was set at 10 times the CCME guideline for the protection of aquatic life.

The Waste Rock Management Plan does not include provisions for using waste rock as a capping material. The CPRT is close to Doris Lake and it may be necessary to create positive topography to the fill so that water does not pond where the trench was. This may generate run-off rich in ammonia that reaches the lake.

Recommendation:
CIRNAC recommends that TMAC manage their waste rock according to their approved Waste Rock, Ore and Mine Backfill Management Plan, and cap the CPRT with rock that will not potentially generate ammonia rich run-off.

2. Geochemical Seepage Surveys

References:

- Hope Bay Belt Project 2018 Nunavut Water Board Annual Report, TMAC Resources Inc., March 2019:
  - Chapter 9: Geochemical Seepage Surveys;
  - Appendix E. Doris Mine Annual Water and Load Balance Assessment – 2018 Calendar Year;
  - Appendix F. 2018 Waste Rock, Quarry and Tailings Monitoring Report, Doris Mine, Hope Bay Project;
  - Appendix G. 2018 Waste Rock and Ore Monitoring Report, Boston Camp, Hope Bay Project;
- 2AM-DOH1335 HB TL-7 Supplementary Memo.

Comment:
At the Boston site, ore was used to resurface areas of the camp pad and airstrip. Four seepage samples were collected in 2018 and arsenic concentrations in certain samples were elevated (i.e., up to 0.71 mg/L), exceeding the pre-determined screening limit as well as the Metal and Diamond Mining Effluent Regulations (MDMER) criterion (i.e., 0.2 mg/L for grab sample). The results of two samples taken from the same location a week apart seemed to indicate that dilution was a factor in the observed concentrations. However, CIRNAC notes that no estimation of the quantities or volumes of the seepage were provided. CIRNAC also notes that no discussion on potential impacts and mitigation measures were provided when the quality of seepage did not meet the screening or MDMER criteria.

Recommendation:
CIRNAC recommends that TMAC continue monitoring the quality and quantity of seepage, and implementing appropriate mitigation measures if the quality of the seepage does not meet the MDMER criteria.

3. Follow-Up from 2017 Annual Report Review: Inspector Contact Number

Reference:

- TMAC Resources Inc., Hope Bay Project Spill Contingency Plan, March 2019.
- TMAC Resources Inc., TMAC Response to 2017 NWB Annual Report Comments, October 9, 2018.

Comment:
In reviewing the 2017 Annual Report, CIRNAC commented that a table of key government contacts was presented in the Hope Bay Project Spill Contingency Plan which required an update. This contact information has not been updated to the recommended phone number in the 2019 revision.

Recommendation:
CIRNAC recommends that the contact numbers for the inspector be updated. Candice Peterson is now responsible for this file. She is based out of Cambridge Bay, her phone number is 867-983-5115, and her fax number is 867-982-4307.

4. Aquatic Effects Monitoring Program Report

Reference

- Doris Project 2018 Aquatics Effects Monitoring Program Report, ERM Consultants Canada Ltd., March 2019.

Comment:
The aquatic effects monitoring program report clearly presents data collected in 2018 and analyses described in the program. Details of the analyses are unambiguously explained. CIRNAC agrees with the conclusion of the report, no project related adverse effects were detected. As noted in the report, molybdenum concentrations have increased over time, and though they are well below guideline concentrations, it will be relevant to follow their evolution.

Recommendation:
CIRNAC recommends that TMAC monitor the evolution of molybdenum concentrations through the Aquatics Effects Monitoring Program to ensure concentrations remain within guidelines.

5. Annual Reporting for 2AM-BOS1835

Reference:

- Hope Bay Belt Project 2018 Nunavut Water Board Annual Report, TMAC Resources Inc., March 2019

Comment:
The introduction of the 2018 Annual Report states that the licences covered by this report include only 2AM-DOH1323, 2BB-MAE1727, 2BB-BOS1727, and 2BE-HOP1222. Activities under 2AM-BOS1835 are not included in the report because the licence was issued in December, 2018. However, the 2018 Annual Report also states that “Annual reporting for 2AM-DOH1335 and 2AM-BOS1835 will be included in the 2019 annual report to the NWB.”

Recommendation:
CIRNAC supports the approach of annual reporting being inclusive of both Type A licences 2AM-DOH1335 and 2AM-BOS1835 to cover related activities over the same project and recommends that all further reports are inclusive of all sites at the Hope Bay project site.

6. Tranches for Posting Security at Boston Site

Reference:

- Hope Bay Belt Project 2018 Nunavut Water Board Annual Report, TMAC Resources Inc., March 2019.
- Nunavut Water Board Type A Water Licence 2AM-BOS1835, TMAC Resources Inc., Boston Project, Signed December 7, 2018.

Comment:
Under Section 13.2.3 of the Hope Bay Belt Project 2018 Nunavut Water Board Annual Report, it is stated that security will be posted for Boston "… across nine (6) installments or tranches based on distinct project components" (pg. 59 or 13-4). From the licence it is clear that the security is to be installed in six (6) tranches for the following stages: Earthworks, Buildings, Commercial Mining, Boston TMA Phase 1, Boston TMA Phase 2, and Boston TMA Phase 3.

Recommendation:
CIRNAC recommends that TMAC provide consistent and accurate information on the security installment tranches for Water Licence 2AM-BOS1835.

7. Compaction tests during construction

Reference:

- TMAC Resources Inc., Hope Bay Belt Project 2018 Nunavut Water Board Annual Report, March 2019:
  - Appendix A – Doris 2018 Construction Summary Report
  - Appendix B – Phase 1 South Dam As-Built Report DRAFT

Comment:
The Construction Summary Report was well prepared and addressed most of the requirements found in Schedule D of the water licence. One aspect on which we were not able find information was compaction tests. Compaction tests and sieve analysis should have had bee executed during the construction as per the Technical Specifications Earthworks and Geotechnical Engineering Report.

The South Dam Report made reference to non-standard compaction methods and tests in sections 3.9, 5.5 and 6.4.2. Explanations were generally provided why industry best practises could not be followed, but they should be applied whenever possible.

Recommendation:
CIRNAC recommends that future construction reports mention if compaction tests and sieve analysis are done during construction.

C. RESULTS OF MANAGEMENT PLAN REVIEW

8. SNP Stations

Reference:

- TMAC Resources Inc., Hope Bay Quality Assurance and Quality Control Plan, March 2019.

Comment:

Figures A1 and B1 in the Hope Bay Quality Assurance and Quality Control (QA/QC) Plan, Module A, are aerial photographs which demonstrate the locations of the SNP Stations. However, all sampling stations are not shown in these photo-maps. Also, in Module B, Table B1 has SNP Stations, some of which have an asterisk symbol (*) next to them. An asterisk is usually used to indicate an omission or call attention to a footnote, however there is no footnote by the table to explain what these asterisks indicate.

Recommendation:

CIRNAC recommends that the photo-maps be updated to include all new sampling points, and that a footnote be written under table B1 that explains the significance of the asterisk, for clarity.

9. Flow Monitoring

Reference:

- TMAC Resources Inc., Hope Bay Project Doris-Madrid Water Management Plan, March 2019.

Comment:

The 2017 version of the Hope Bay Project Doris-Madrid Water Management Plan includes the following quote under Section 3.2.4 (pg. 20): “Water level in the pond should be measured weekly during the open water season, and more frequently during intensive rainfall or snowmelt periods. The pumps should have in-line flow meters to quantify total discharge.”

It is not clear why this information has been removed in the 2019 revision.

Recommendation:

CIRNAC recommends that TMAC provide justification for the removal of in-line flow meters to quantify discharge in the pumps from the 2019 revision of the Hope Bay Project Doris-Madrid Water Management Plan.

10. Glycol Contaminated Snow and Sump Water

Reference:

- TMAC Resources Inc., Hope Bay Project Aircraft De-icing Management Plan, March 2019.
- TMAC Resources Inc., Hope Bay Spill Contingency Plan, March 2019.

Comment:

In Module A of the Hope Bay Project Aircraft De-icing Management Plan, TMAC states the following (pg 15):

> All glycol contaminated snow and sump water will be transported to the TIA in accordance with the below:
>
> • All glycol must be discharged to the TIA pond at least 300 m away from any dams and as far from the shoreline as practical.
>
> • The maximum discharge of propylene glycol is 30m3 per 6 months.
>
> • All product disposal into the TIA must be recorded with the product details, disposal volume, location of discharge and date.

The Spill Contingency Plan, however, does not specify the procedure for disposal of glycol contaminated snow and sump water.

Recommendation:

CIRNAC recommends that TMAC provide information regarding the procedure for disposal of glycol contaminated snow and sump water in the Spill Contingency Plan.