



Water Resources Division
Resource Management Directorate
Nunavut Regional Office
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Your file - Votre référence
2AM-DOH1323
Our file - Notre référence
GCdocs # 95512542

June 25, 2021

Mr. Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
sent via e-mail: licensing@nwb-oen.ca

**Re: Crown-Indigenous Relations and Northern Affairs Canada Comments on
TMAC Resources Inc. 2020 Annual Report for Type A Water Licences 2AM-
DOH1335 and 2AM-BOS1835, and TYPE B Water Licences 2BB-MAE1727,
2BB-BOS1727, and 2BE-HOP1222, for the Hope Bay Project**

Dear Mr. Dwyer,

Thank you for your April 7, 2021 invitation to review the referenced 2020 Annual Report for the Hope Bay Project.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the Report and its attachments pursuant to its mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act*. Please find CIRNAC comments and recommendations in the attached Technical Memorandum for the Nunavut Water Board's (NWB) consideration.

If there are any questions or concerns, please contact me at (867) 975-4738 or by e-mail at vincent.okonkwo@canada.ca or Bridget Campbell at (867) 975-4282 or by e-mail at bridget.campbell@canada.ca

Sincerely,

Vincent Okonkwo
Environmental Assessment Coordinator



Technical Review Memorandum

Date: June 25, 2021

To: Richard Dwyer, Manager of Licensing, Nunavut Water Board

From: Vincent Okonkwo, Environmental Assessment Coordinator, CIRNAC

Subject: Crown-Indigenous Relations and Northern Affairs Canada Comments on TMAC Resources Inc. 2020 Annual Report for Type A Water Licences 2AM- DOH1335 and 2AM-BOS1835, and TYPE B Water Licences 2BB-MAE1727, 2BB-BOS1727, and 2BE-HOP1222, for the Hope Bay Project

Region: ☒ Kitikmeot ☐ Kivalliq ☐ Qikiqtani

A. BACKGROUND

Hope Bay gold mine project is located on a property approximately 20km x 80km along the south shore of Melville Sound in the Kitikmeot region of Nunavut, and continued to be operated by TMAC Resources Inc. (TMAC) in 2020. TMAC was purchased by Agnico Eagles Mines (AEM) on February 2, 2021 but TMAC continued to exist as a legal entity and is now a wholly owned subsidiary of AEM. All rights, obligations, liabilities of TMAC continue to reside with TMAC until or if an amalgamation with Agnico occurs later in 2021.

The 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 2020 Annual Report covers the activities under all water licences. The 2020 Annual Report was submitted in conjunction with a number of Monitoring Reports and updated management plans. These documents are listed in Table 2 under Section B. A summary of CIRNAC recommendations can be found in Table 1. Review comments for the 2020 Annual Report are provided in Section C and References are in Section D.



Table 1: Summary of Recommendations

Recommendation Number	Subject
R-01	Management of Cyanide Concentrations
R-02	Quantity of Detoxified Tailings Filtrate
R-03	Hydrocarbon Contaminated Material Generated at Boston under Type B Water Licence 2BB-BOS1727
R-04	Water Volume Transferred from Sediment Control Pond to TIA
R-05	Phosphorus Concentration in the TIA
R-06	The Flow (m ³ /day) at Monitoring Station TL-2
R-07	Estimate of Current Volume of Waste Rock and Ore Stockpiled at Boston Site Under Type B Water Licence 2BB-BOS1727
R-08	Management Plans Updated in 2021

B. DOCUMENTS REVIEWED

The following table (Table 2) provides a summary of the documents reviewed under the submission.

Table 2: Documents Reviewed

Document Title	Author, File No., Rev., Date
Hope Bay Project 2020 Nunavut Water Board Annual Report	Agnico Eagle, March, 2021
Appendix A: Concordance Table	Agnico Eagle, March, 2021
Appendix B: NWB Forms	Agnico Eagle, March, 2021
Appendix C: Site Layouts	SRK Consulting (Canada) Inc. & Agnico Eagle, March 2021
Appendix D: Water Licence(s) Monitoring Data	Agnico Eagle, March 2021
Appendix E: Doris Mine Annual Water and Load Balance Assessment – 2020 Calendar Year	SRK Consulting (Canada) Inc. March 30, 2021
Appendix F: 2020 Waste Rock, Quarry and Tailings Monitoring Report, Doris and Madrid Mines, Hope Bay Project	SRK Consulting (Canada) Inc., March, 2020
Appendix G: 2020 Waste Rock and Ore Monitoring Report, Boston Camp, Hope Bay Project	SRK Consulting (Canada) Inc., March, 2020
Appendix H: Hope Bay Project Spill Contingency Plan (TMAC, March 2020)	Agnico Eagle, March, 2021
Hope Bay Emergency Response Plan	Agnico Eagle February 2021
Hope Bay Project Doris and Madrid Water Management Plan	TMAC Resources Inc., March, 2021
Quality Assurance and Quality Control Plan	Agnico Eagle March, 2021



C. RESULTS OF REVIEW

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) commends the work TMAC put in to the 2020 Annual Report. CIRNAC 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. Management of Cyanide Concentrations

Comment

In the 2019 Annual Report Review comments, CIRNAC noted in comment (R-02) that:

TMAC is actively taking steps to manage two of the four parameters identified as being of concern: total suspended solids and unionized ammonia. A third parameter, copper, will be monitored throughout 2020. No specific actions are included for the fourth parameter of concern, cyanide.

Section 5.2, Table 13 of Appendix E of the 2020 Annual Report states that:

Measured cyanide concentrations have demonstrated that cyanide readily undergoes degradation in the Doris TIA (tailings impoundment area) during the open water season. TMAC will not discharge water that is above total cyanide limits.

CIRNAC recommended that TMAC clarify how they plan to manage cyanide concentrations which have been identified as a parameter of concern regarding Metal and Diamond Mining Effluent Regulations (MDMER) limits applied to mine discharges, if the plan includes holding water in the Doris TIA until Cyanide degrades.

TMAC in its response, discussed TIA capacity but did not clarify if holding water in the Doris TIA until cyanide degrades is part of their cyanide management plans.

Recommendation

(R-01) CIRNAC recommends that TMAC clarify if holding water in the Doris TIA until cyanide degrades is part of their cyanide management plans.



2. Quantity of Detoxified Tailing Filtrate

Comment

In the 2019 Annual Report Review Comments, CIRNAC noted in comment (R-05) that the quantity of the detoxified tailings filtrate produced in 2019 at station TL-7b was not provided. CIRNAC recommended that TMAC clarify the quantity of detoxified tailings filtrate that was placed in the TIA in 2019.

TMAC, in its response to 2019 NWB Annual Report Section 38.4, stated that:

“Approximately 8,800 m3 of detoxified tailings filtrate was sent to the TIA in 2019”.

CIRNAC was unable to find the quantity of detoxified tailings filtrate that was placed in the TIA in the 2020 Annual Report.

Recommendation:

(R-02) CIRNAC recommends that TMAC clarify the quantity of detoxified tailings filtrate that was placed in the TIA in 2020.

3. Hydrocarbon Contaminated Materials Generated at Boston Under Type B Water Licence 2BB-BOS1727

Comment:

In section 6.2 of the 2020 Annual Report, TMAC stated that:

“In March 2019, TMAC backhauled contaminated soil from the LTA to Doris Camp via a winter track and disposed of this material underground in the Doris Mine as approved in the Hope Bay Project Hazardous Waste Management Plan. The Boston LTA was decommissioned in 2019 and no additional materials will be placed in this facility. Hydrocarbon contaminated materials generated from future activities conducted at Boston will be packaged for backhaul to Doris until a new LTA facility is constructed”.

TMAC mentioned that the Landfarm Treatment Area (LTA) at Boston was decommissioned in 2019 and no additional materials will be placed in the facility. The 2020 Annual Report appears not to provide adequate information on whether contaminated materials was generated at Boston in 2020 and transported to Doris.

CIRNAC is of the view that TMAC should provide more information with regards to contaminated soil generation and transport at the Boston in 2020 as per the terms and condition Part B, Item 9 (f) of the Type B Water Licence 2BB-BOS1727.



Recommendations:

(R-03) CIRNAC recommends that TMAC clarify:

- If hydrocarbon contaminated materials was generated at the Boston site in 2020; and
- The quantity of the hydrocarbon materials transported to the Doris site for disposal or remediation if it was generated in 2020 activities.

4. Water Volume Transferred from Sediment Control Pond (ST1) to Tailings Impoundment Area (TIA)

Comment:

In the 2019 Annual Report Review comments, CIRNAC noted in comment R-03 the reported volume of water transferred from the sediment control pond (ST-1) to the TIA differs between the Water Licence(s) Monitoring Data (Appendix D) and the Doris Mine Annual and Load Balance Assessment (Appendix E).

- Table D1-2 of Appendix D states a cumulative volume of 205,486 m³; and
- Table 3 of Appendix E states a total of 120,000 m³ for 2019.

CIRNAC recommended that TMAC clarify the volume of water transferred from the sediment control pond to the TIA and if it has been adequately incorporated into the Water and Load Balance Assessment.

TMAC, in its response to 2019 NWB Annual Report Section 36.4, stated that:

“The cumulative volume reported in Appendix D was misreported and should be in agreement with the cumulative volume reported in Appendix E being 120,000 m³. The correct volume has been incorporated in the Water and Load Balance Assessment”.

In the 2020 Annual Report, the volume of water transferred from the sediment control pond (ST-1) to the TIA again differs between the Water Licences(s) Monitoring Data (Appendix D) and the Doris Mine Annual and Load Balance Assessment (Appendix E).

- Table D1-2 of Appendix D states a cumulative volume of 39,551 m³; and
- Table 3 of Appendix E reports a total of 28,000 m³ for 2020.

CIRNAC reiterates its concern that increase in volume could potentially change the findings of the Water and Load Balance Assessment depending on the pond water chemistry. Since the site contact water from ST1 will be contributing to the chemistry of the water in the TIA, using a volume for the Water and Load Balance that is 70% less than the transferred amount according to the 2020 Annual Report could impact the model results.



Recommendation:

(R-04) CIRNAC recommends that TMAC clarify:

- The discrepancy in water volumes for the two documents; and
- The effect the lower site contact water volume used for the Water and Load Balance has on its results.

5. Phosphorous concentrations in the TIA

Comment:

Attachment 2 of the Water and Load Balance Report has plots showing predicted and measured concentrations for many parameters. The total phosphorous and dissolved phosphorous plots show measured TL-1 data above modelled concentrations. However, in Table 6 of the report, phosphorous was screened as a conservative parameter with measured values below model predictions.

Phosphorous is an element that can contribute to algal blooms, during which TIA discharge to Roberts Bay is proactively shut off not to exceed MDMER discharge limits. A good understanding of phosphorous terms in the Water and Load Balance model is therefore important because high concentrations could affect water management on site because of algal blooms.

Recommendation:

(R-05) CIRNAC recommends that TMAC clarify how they concluded phosphorous is a conservative parameter when measured concentrations plot above modelled ones.

6. The Flow (m³/day) at Monitoring Station TL-2

Comment:

In Table D1-21 of Appendix D.1, TMAC reported the daily flow rate in cubic meters per second (m³/s) at monitoring Station TL-2 Doris Creek.

Item 6 (a), Schedule B of the Type A Water Licence No. 2AM-DOH1335 requires that the flows be measured and presented in cubic meters per day (m³/day).

It will be helpful if TMAC presents the flows in cubic meters per day (m³/day) as per the Type A water Licence as it will provide clarity to the daily flows at Doris Creek.



Recommendation:

(R-06) CIRNAC recommends that TMAC presents the daily flow summary at Doris Creek station TL-2 in cubic meter per day (m³/day) in the next year annual report.

7. Estimate of Current Volume of Waste Rock and Ore Stockpiled at Boston Site Under Type B Water Licence 2BB-BOS1727

Comment:

In the Introductory part of Appendix G – 2020 Waste Rock and Ore Monitoring Report, TMAC stated that:

“At the Boston site, ore and waste rock were generated as part of a 1996-1997 BHP Billiton underground exploration program. The ore was placed in several stockpiles on the camp pad and the waste rock was used to construct a camp pad, roads, and an airstrip at Boston. Since then, the site has been primarily in care and maintenance, with periodic use of the camp and airstrip in support of exploration activities”.

It is not clear if additional waste rock was generated from 2020 activities at the Boston site and TMAC did not provide the estimate of the current volume of Waste Rock and Ore stockpiled at the Boston site in the 2020 Annual Report.

CIRNAC is of the view that TMAC clarify whether additional volume of waste rock was generated during 2020 activities, and the current estimated volume of the waste rock and ore stockpiled at the Boston site as per the terms and condition Part B, Item 9 (o) of the Type B Water 2BB-BOS1727.

Recommendations:

(R-07) CIRNAC recommends that TMAC clarify:

- If additional volume of waste rock was generated at Boston site from 2020 activities; and
- The current estimated volume of waste rock and ore stockpiled at Boston site in 2020.

8. Management Plans Updated in 2021

Comment

In Section 12 of the Hope Bay 2020 Annual Report main document, TMAC

stated that the following management plans have been updated in February and March 2021:



- Hope Bay Project Emergency Response Plan
- Hope Bay Project Spill Contingency Plan
- Hope Bay Project Quality Assurance and Quality Control (QA/QC) Plan
- Hope Bay Project Doris-Madrid Water Management Plan

The three updated plans except Spill Contingency Plan was neither attached to the 2020 Annual Report nor could be found on the NWB public registry.

CIRNAC contacted the board and learnt the missing plans were not initially provided by TMAC. It will be help if all updated plans are submitted in timely fashion alongside the annual report to enable efficient and effective intervention process.

CIRNAC reviewed these plans and has no concerns with the content of the plans.

Recommendation

(R-08) CIRNAC recommends that TMAC attach updated management plans to the Annual Report document or provide links to the updated management plans in their subsequent submissions.

D. REFERENCES

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) Letter to the Nunavut Water Board Re: Crown-Indigenous Relations and Northern Affairs Canada Comments on TMAC Resources Inc. 2019 Annual Report for Type A Water Licences 2AMDOH1335 and 2AM-BOS1835, and Type B Water Licences 2BB-MAE1727, 2BB-BOS1727, and 2BE-HOP1222, for the Hope Bay Project. June 30, 2020

Department of Crown-Indigenous Relations and Northern Affairs Act (2020)

ERM Consultants Canada Ltd. on behalf of TMAC Resources Inc. *Hope Bay Project 2020 Aquatic Effects Monitoring Program Report*. March 2021.

Metal and Diamond Mining Effluent Regulations, SOR/2002-222.

Nunavut Waters and Nunavut Surface Rights Tribunal Act (2016)

Nunavut Water Board, February 2020: Amended and Renewed Type A Water Licence Nos: 2AM-DOH1335 and 2AM-BOS1835, Type B Water Licence 2BE-HOP1222