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-DOH1335
Our file - Notre référence
CIDM#1244308

March 14, 2019

Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
E-mail: licensing@nwb-oen.ca

Re: Crown-Indigenous Relations and Northern Affairs Canada Review of the Updated Waste Rock, Ore & Mine Backfill Management Plan for the Hope Bay Project, Water Licence No. 2AM-DOH1335 Amendment 2, Water Licence No. 2AM-BOS1835, and Water Licence No. 2BB-MAE1727 Amendment 2

Dear Mr. Dwyer,

Thank you for your March 8, 2019 invitation for Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) to comment on the updated version of the Waste Rock, Ore & Mine Backfill Management Plan for TMAC Resources Inc.'s (TMAC's) Hope Bay Project. Amendment No. 2 to the Doris North Water Licence, No. 2AM-DOH1335, was issued in December 2018 and an updated Waste Rock, Ore & Mine Backfill Management Plan (Version 6) was submitted by TMAC on January 17, 2019. The submission of Version 6 is also intended to meet requirements under Water Licence No. 2AM-BOS1835 and Water Licence No. 2BB-MAE1727 Amendment 2, for the Hope Bay Project. CIRNAC submitted comments on this plan to the Nunavut Water Board on February 25, 2019. TMAC responded to these comments on March 5, 2019 and CIRNAC considers the responses acceptable.

Another, slightly updated version of this plan was submitted by TMAC on January 25, 2019. This updated version of the plan included updates to Appendix A and section 3.2 and 3.2.1, with criteria to guide the determination of potentially acid generating (PAG) and non-potentially acid generating (NPAG) material. CIRNAC examined the updated submission. Comments are 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*.

Canada

1. Process for Determining Suitability of Waste Rock for Construction

References:

- Hope Bay Project, Waste Rock, Ore and Mine Backfill Management Plan, Version 6, Appendix A, TMAC Resources Inc., January 25, 2019.
- William A. Price for the MEND Program, Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials, Version 0 – Dec. 2009.

The process for determining suitability of waste rock as a construction material is found in Appendix A. In Step 2 of this process, a volume of waste rock is to be classified as NPAG if the sample contains less than 0.1% sulphur. A percent sulphur (% S) cut-off criterion is not appropriate without sufficient data to determine the neutralization potential (NP) of the material. MEND (2009, pg. 14-13) states, "It is important to note that a % S cut-off should not be used as the only means of assessing ARD potential unless the minimum NP value is known. Even low levels of sulphide can lead to ARD if the NP is insufficient to neutralize the resulting acid."

Alternatively, a sample with a total inorganic carbon/acid generation potential ratio or a neutralization potential/acid generation potential ratio (TIC/AP or NP/AP ratio) greater than 3 with a total sulphur content of less than 0.5% will be considered to be NPAG material. This second criterion on its own is sufficient for determination of suitability.

Recommendation:

CIRNAC recommends that the criterion of a 0.1% S cut-off be used in conjunction with a TIC/AP or NP/AP ratio greater than 2, or that the criterion of “TIC/AP or NP/AP ratios greater than 3 (as defined by Table 2) and total sulphur content of less than 0.5%” be used to assess potential for acid generation.

If there are any questions or concerns surrounding the above comments, please contact me at (867) 975-4282 or bridget.campbell@canada.ca or David Zhong at (867) 975-4555 or email david.zhong@canada.ca.

Sincerely,

Bridget Campbell,
Water Resource Coordinator

CC: Oliver Curran, Adam Grzegorczyk, Shelly Potter, TMAC Resources Inc.
Derek Donald, Nunavut Water Board