

MEMORANDUM

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| To | David Abernethy, INAC Sarah Forte, INAC | File no | TV154011 |
| From | Jane Doucette, Amec Foster Wheeler | Copy | Chris Milley, Amec Foster Wheeler |
| Email | | | |
| Date | June 21, 2016 | | |
| Subject | Application for Amendment No. 1 to Nunavut Water Board Licence No. 2AM-DOH1323 and Nunavut Impact Review Board Project Certificate No. 003 Technical Review and Evaluation of <u>Tailings Management Plan</u> Submission – Option 3 Doris North Project Hope Bay, Nunavut | | |

1.0 INTRODUCTION

Amec Foster Wheeler Environment & Infrastructure, a Division of Amec Foster Wheeler Americas Limited (Amec Foster Wheeler) was retained by Indigenous and Northern Affairs Canada (INAC) to carry out a technical review and evaluation of the Doris North Project Tailings Management Plan, submitted as part of the Application for Amendment No. 1 to the Nunavut Water Board (NWB) Licence No. 2AM-DOH1323 and the Nunavut Impact Review Board (NIRB) Project Certificate No. 003.

This work was carried out under Standing Offer Agreement 46-0000-1035, Call-up No. 1, Option 3. The scope of work is in accordance with the Statement of Work received from INAC (dated May 26, and Amec Foster Wheeler's quote dated May 30, 2016).

2.0 Background

The Doris North Project is owned by TMAC Resources Inc (TMAC). TMAC is applying to amend its NWB Type A Water Licence 2AM-DOH1323 and the NIRB Project Certificate 003. The amendment application will allow increased production rates, an increased mine size, changes to the management of tailings, the discharge of effluent reporting from the tailings impoundment area to the marine environment rather than to an approved creek, and other associated project changes.

Earlier phases in the amendment review process have included:

Completeness Review submission, September 9, 2015

This preliminary phase was carried out to determine if additional information would be required to carry out the Technical Review phase of the application. Amec Foster Wheeler technical experts

reviewed the water licence amendment application and relevant documents, and generated Information Requests (IR's) that were considered necessary to complete sufficient analysis.

Technical Review submission, December 8, 2015

The Technical Review phase of the review process involved an assessment of information presented in the water licence amendment application and the Information Request (IR) responses submitted by TMAC was carried out. Amec Foster Wheeler technical experts carried out the assessment to determine whether the measures proposed would be sufficient to protect the quality and quantity of freshwater from the mining project activities.

Technical Meeting, January 28-29, 2016

Amec Foster Wheeler participated in a technical meeting to discuss outstanding issues with INAC, TMAC and other stakeholders. During the meeting, a list of commitments to resolve remaining issues were made, and which would be carried forward to the Final Hearing.

3.0 Scope of Work

Together with other deliverables, the overall goal of Option 3 work is to provide support to INAC's review of the Proponent's water licence amendment application, and:

- Determine if activities identified in the application include mitigation measures that will protect the quality and quantity of surrounding freshwater sources;
- Determine if commitments made by the Proponent during the application review process to date are sufficient for the protection of surrounding freshwater sources; and
- Identify any outstanding issues pertaining to water management that need to be addressed.

The scope of work for this portion of the assignment was to carry out a review of the Tailings Management Plan for the Doris North Project, which was submitted to INAC On June 02, 2016. The documents provided for this review are:

- 160601 2AM-DOH1323 Doris Amendment TIAOMS Manual 2 of 2-IAAE;
- 160601 2AM-DOH1323 Doris Amendment TIAOMS Manual 2 of 2-IAAE; and
- 160613 2AM-DOH1323 Amendment TIAOMS Manual Appendix A-IAAE.

This review included Amec Foster Wheelers' participation in a workshop (via teleconference) on June 6-8, 2016. The purpose of the workshop was to provide TMAC with an opportunity to present the Tailings Management Plan, and to be available to address questions or issues first hand.

Other tasks that were included in the work are:

- A review of the Groundwater Management Plan and related documents;
- A review of the Aquatic Effects Monitoring Framework, Freshwater Component and related documents;
- A review of the Interim Dike filter design trade-off study and detailed design of selected filtering method; and

- Preparation of a revised Reclamation Cost Estimate prepared by Amec Foster Wheeler Environment & Infrastructure in 2015.

Separate memos are being prepared for the other tasks.

4.0 Review of Tailings Management Plan (TMP)

4.1 General Comment

The document submitted by TMAC and presented in the workshop, is entitled the Tailings Impoundment Area Operations, Maintenance and Surveillance (OMS) Manual. It is understood that this document will also function as the Tailings Management Plan (TMP), which is required under the water licence. Its purpose is to outline the procedures that TMAC and their contractors will use for the safe construction, operation, maintenance and surveillance and closure of the Tailings Impoundment Area (TIA).

This document, together with the other studies and management plans submitted for the design, construction, and closure of the Project, form the Tailings Management Framework for the Doris North Project.

4.2 Review of Content

The document provides information in accordance with the guidance given in the Canadian Dam Association (CDA 2013) and the Mining Association of Canada (MAC 2011) for the development of an OMS Manual.

It is noted that TMAC has only provided a high level document. For example, a detailed description of the construction of the North Dam is not included, since there is a library of “as-built documentation” available. Furthermore, individual roles and responsibilities are defined only at the Vice President, Manager and Superintendent levels, with the intent that more detailed information about other staff member roles and responsibilities is contained in the mine site Standard Operating Procedures. It has also noted that the Emergency Preparedness and Response Plan for the TIA will be included in the Surface Emergency Response Plan, which is currently being prepared by TMAC.

While the use of multiple documents to support a high level OMS manual is acceptable, it is recommended that at the end of each section of the OMS include a reference to where detailed information can be found.

4.3 Review for Outstanding Issues

The tailings management design system was evaluated during earlier phases of the water licence amendment application review (the completeness review and technical review). During the earlier review phases, information requests (IR's) and technical comments (TC's) were generated. The IR's and TC's, and the submittals made in response to them, have been tracked throughout the review process.

The tracking table had been reviewed prior to the workshop to determine if there were any outstanding responses to IR's or TC's. The status of INAC TC11 required an update to the TMP to include details regarding the use of environmentally suitable chemical dust suppressants.

As part of the updated TMP, TMAc submitted Appendix A - Summary of Currently Available Dust Control Products. Each of the three dust control suppressants presented in the Appendix are considered environmentally safe. Details on application rates will depend on material-specific testing (of the tailings).

Based on the updated TMA submission this issue is considered to be resolved.

5.0 Summary

Amec Foster Wheeler has reviewed the Tailings Management Plan, and offers the following:

- The activities identified in the application include acceptable mitigation measures that will protect the quality and quantity of surrounding freshwater sources;
- Information should be provided within each section of the OMS providing cross-reference to where detailed information can be found in other related TMAc documents;
- Reasonable commitments have been made by the Proponent during the application review process to date, and these are sufficient for the protection of surrounding freshwater sources; and
- Amec Foster Wheeler has not identified any further outstanding issues pertaining to the Tailings Management Plan that should be addressed at this time.

