Indigenous and Northern Affairs Canada | Affaires autochtones et du Nord Canada

Your file - Votre référence
2AM-MEA1525

May 25, 2016

Our file - Notre référence
IQALUIT-#1068314

Licensing Department
Nunavut Water Board
GJOA HAVEN, NU X0E 1J0

Sent via email: licensing@nwb-oen.ca

Re: February 18, 2016 Agnico Eagle Mines Limited Notice of Modification to Nunavut Water Board Water Licence No. 2AM-MEA1525, Vault Pit and Ancillary Works

To Whom It May Concern,

Thank you for the Nunavut Water Board's April 25, 2016 distribution of the above mentioned Agnico Eagle Mines Limited notice of modification to the Meadowbank Gold Mine's type A water licence, No. 2AM-MEA1525. A memorandum is provided for the Nunavut Water Board's consideration. Comments and recommendations have been provided pursuant to Indigenous and Northern Affairs Canada's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*.

Please do not hesitate to contact me by telephone at 867-975-4555 or email at David.Abernethy@aandc-aadnc.gc.ca for further information.

Sincerely,

David Abernethy
Regional Coordinator
Water Resources Division
Resource Management Directorate
Indigenous and Northern Affairs Canada
IQALUIT, NU X0A 0H0

Encl.

Cc. Stéphane Robert, Agnico Eagle Mines Limited
Ryan Vanengen, Agnico Eagle Mines Limited

Canada

Memorandum

To: Licensing Department, Nunavut Water Board

From: Amjad Tariq, Regulatory and Science Advisor, Water Resources Division, Indigenous and Northern Affairs Canada
David Abernethy, Regional Coordinator, Water Resources Division, Indigenous and Northern Affairs Canada

Cc: Stéphane Robert, Agnico Eagle Mines Limited
Ryan Vanengen, Agnico Eagle Mines Limited

Date: May 25, 2016

Re: February 18, 2016 Agnico Eagle Mines Limited Notice of Modification to Nunavut Water Board Water Licence No. 2AM-MEA1525, Vault Pit and Ancillary Works

Licensee: Agnico Eagle Mines Limited
Project: Meadowbank Gold Mine
Region: Kivalliq

A. Background

On April 25, 2016, the Nunavut Water Board (NWB) invited interested parties to review Agnico Eagle Mines Limited's (the Licensee) February 18, 2016 notice of modification to its type A water licence (2AM-MEA1525) for the Meadowbank Gold Mine regarding the Vault Pit and ancillary works.

Comments and recommendations are provided on three plans that the Licensee submitted to the NWB on April 22, 2016 with its 2015 Annual Report (Water Management Report and Plan; Mine Waste Rock and Tailings Management Report and Plan; and Water Quality and Flow Monitoring Plan); proposed sampling locations at the new Phaser and BB Phaser Pits; and closure considerations associated with the planned modification.

Interested parties were asked to provide comments on the submitted application by May 25, 2016.

B. Results of review

On behalf of Indigenous and Northern Affairs Canada's Water Resources Division, the following comments and recommendations are provided:

I. WATER MANAGEMENT PLAN AND REPORT, MARCH 2016

1. Water Quality Analytical Test Results for Monitoring Stations ST10, ST-23, and ST-25 (Final Effluent to Wally Lake, Vault Pit Sump, and Vault Attenuation Pond)

References

Agnico Eagle Mines Limited. *2015 Water Management Report and Plan*. Section 3.1.9.3: Vault Treatment Plant, p. 37 (pdf 38/324). March 2016

SNC Lavalin, Mines & Metallurgy. *Technical Note – Meadowbank Water Quality Forecasting Update for the 2015 Water Management Plan*. March 23, 2016.

- Section 1.2: Study Objectives, p. 1 (pdf 96/324);
- Section 2.1.3: Vault Pit, p. 10 (pdf 169/324) ;
- Section 5.0: Vault Water Quality Forecasting, p. 50 (pdf 145/324);
- Section 5.1: Review of Vault Water Quality Data, p. 50 (pdf 145/324); and
- Table 5-1: Average Concentrations of Water Quality Samples Taken in the Vault Area, p. 51 (pdf 146/324)

Comment

Table 5-1 of the March 23, 2016 SNC Lavalin Technical Note, *Meadowbank Water Quality Forecasting Update for the 2015 Water Management Plan*, compares the average concentration of certain parameters sampled from the Vault Pit Sump (ST-23), Vault Attenuation Pond (ST-25) and Vault Attenuation Pond prior to discharge through the Wally Lake Outfall Diffuser (ST-10) with Canadian Council of Ministers of the Environment (CCME) Guidelines for Protection of Aquatic Life. The table confirms that in 2014 and 2015, Arsenic (As), Copper (Cu), iron (Fe), Molybdenum (Mo), Lead (Pb), Selenium (Se), Ammonia (NH3), Fluoride (F), Nitrate (NO_3) exceeded the CCME guidelines. Although in 2014 and 2015, the concentrations of these parameters were below Metal Mining Effluent Regulations and water licence criteria, it is possible that exceedances may occur in the future.

Depending on future concentrations of the above referenced and other parameters in water, additional treatment may be required in the future. The current water treatment plant (Actiflo) is capable of removing total suspended solids (TSS) only.

Section 1.2 of the SNC Lavalin Technical Note states that,

> "For the Vault pit, no treatment is expected when re-flooding the pit. This is largely due to the fact that there is no tailings disposal facility at the Vault site. The Vault Attenuation Pond only receives mine pit and freshet water. This will be confirmed through regular monitoring required by the Type A Water License from 2014 -2018. The first values of this monitoring campaign were analyzed and are presented in section 5.0."

Section 2.1.3 of the *2015 Water Management Report and Plan* states that,

> "Discharge from the Vault attenuation pond to Wally Lake may require treatment at the Vault Water Treatment Plant if the water quality does not meet discharge criteria. The Actiflo treatment plant is designed to remove total suspended solids."

Section 3.1.9.3 of the Technical Note states that,

> "In 2015, the Vault Water Treatment Plant (WTP) was not required to remove TSS as the water met discharge criteria stated in the Water License as well as MMER criteria."

Section 5.0 of the Technical Note states that,

> "A review of the chemical analysis for water samples collected in the Vault area was undertaken by SLI in order to identify contaminants that were currently either above the discharge criteria or present in significant concentration. The discharge criteria applied to mining effluents discharged to the environment in this case is the Water License (Nunavut Water Board License, 2008). The CCME guidelines were also used as a guide to identify potential parameters that may become a problem, should they be discharged to the environment without appropriate treatment and dispersion in the receiving environment."

Section 5.1.1 of the Technical Note to Table 5-1 and states that, "The yellow cells represent the concentrations not meeting CCME guidelines for Protection of Aquatic Life."

Recommendations

The Licensee should provide analytical test results (reports) prepared by an accredited laboratory for water samples collected from the Vault Pit Sump (ST-23), Vault Attenuation Pond (ST-25) and Vault Attenuation Pond prior to discharge through the Wally Lake Outfall Diffuser (ST-10).

Depending on analytical test results, a treatment plan may be required for the discharge of water from the Vault Attenuation Pond to Wally Lake. This treatment plan should include details on contaminant removal efficiency of the system(s) and equipment(s) to be provided.

2. SNC Lavalin Techical Note – Meadowbank Water Quality Forecasting Update for the 2015 Water Management Plan – Professional Signature and Stamp

References

SNC Lavalin, Mines & Metallurgy. *Technical Note – Meadowbank Water Quality Forecasting Update for the 2015 Water Management Plan*. Page i (pdf 91/324). March 23, 2016.

Rationale

The Licensee has provided the report entitled "Meadowbank Water Quality Forecasting Update for the 2015 Water Management Plan" prepared by SNC Lavalin." The report has not been signed and stamped by a qualified professional.

Recommendation

The Licensee should provide the consultant's report approved by a qualified professional.

3. Flooding of Vault and Phaser Areas

References

Agnico Eagle Mines Limited. *2015 Water Management Report and Plan*. Section 3.23: Vault Pit Flooding, p. 50 (pdf 51/324). March 2016

Comment

The Licensee must ensure that the transferring of water from basin to basin within the Vault and Phaser areas during reflooding activities (at closure) will not impact the environment because exceedances to Canadian Council of Ministers of the Environment guidelines for Protection of Aquatic Life have already been noted in 2014 and 2015 (see INAC Comment No. 1 above).

The Licensee states that,

> "The Vault pit area is composed of many basins in the former lake and different pit elevations that are all linked together. The flooding of Vault and Phaser (once approved) is more complex and requires water transfers from basin to basin … The final elevation of the re-flooding will be 139.9 masl for Phaser and Vault Lake. At this point the Vault dike will be breached provided the water meets CCME criteria and/or site specific criteria for parameters not included in the CCME Guidelines."

Recommendation

The Licensee should provide details on what measures will be taken to prevent the release of water that may exceed discharge criteria (depending on accredited laboratory test results) to surrounding water sources (e.g., Wally Lake) during transfers. If certain parameters exceed discharge criteria, a water treatment plan/strategy should be submitted to the NWB for review and approval.

4. Vault Pit Nitrate Sample

References

SNC Lavalin, Mines & Metallurgy. *Technical Note – Meadowbank Water Quality Forecasting Update for the 2015 Water Management Plan*. Section 5.2.4: Forecasting Results, p. 55 (pdf 150/324). March 23, 2016.

Comment

Section 5.2.4 of the SNC Lavalin March 23, 2016, *Meadowbank Water Quality Forecasting Update for the 2015 Water Management Plan*, states that, "Only one water sample was analyzed for nitrate in the Vault Pit."

Recommendations

The Licensee should provide analytical test results (report), prepared by an accredited laboratory, for water samples.

In its 2016 Annual Report submission, the Licensee should provide an update on Vault Pit nitrate concentrations based on water quality samples collected in 2016.

5. Ammonia Discharge to Wally Lake

References:

SNC Lavalin Inc. *Subject: Ammonia Memorandum – WQFU 2015*. Memorandum from SNC Lavalin Inc. to Agnico Eagle Mines Limited. Reference No. 635053-0000-40ER-0002. March 21, 2016.

- Section 2.2: Vault Area of Meadowbank, p. 2 (pdf 238/324);
- Section 5: Conclusion, p. 4 (pdf 240/324)

Comments

Section 2.2 of the March 21, 2016 SNC Lavalin Inc. memorandum to the Licensee regarding ammonia loadings in the Portage and Vault areas states that,

> "Water from the pits and ponds in the mining infrastructure at Vault are currently collected in the Vault Attenuation Pond, directed to the water treatment plant (WTP) and then discharged to Wally Lake. The water treatment plant is designed to reduce only the concentration of total suspended solids. Therefore, it is assumed that the WTP will not reduce significantly the concentration of ammonia in the water pumped from the Vault Attenuation pond. Water discharge to Wally Lake (and treatment if required) is performed each summer from 2013 until 2018."

Section 5.0 of this memorandum states that,

> "The updated model for the Water Quality Forecasting Update 2015 estimates that approximately 12,300 kg as N of ammonia (15,300 kg as NH_3) will be discharged to Wally Lake during the life of mine of the Vault area, while approximately 1,200 kg as N of ammonia (1,450 kg as NH_3) will remain in the Vault Attenuation Pond."

Recommendation

The Licensee should provide an ammonia management strategy to ensure that discharges from the Vault Attenuation Pond to Wally Lake, and the eventual reflooding of the Vault and Phaser Pits, will not impact water quality. Details on what treatment methodology will be followed for the removal of ammonia in terms of contaminant removal efficiency may be required.

II. MINE WASTE ROCK AND TAILINGS MANAGEMENT REPORT AND PLAN, MARCH 2016

6. Waste Rock Geochemical Test Results

References

Agnico Eagle Mines Limited. *Updated Mine Waste Rock and Tailings Management Report & Plan - 2016*. March 2016

- Executive Summary, p. i (pdf 3/136)
- Section 6.1: Waste Rock Properties, Table 6.1, p. 50 (pdf 61/136)

Comments

The March 2016 *Updated Mine Waste Rock and Tailings Management Report and Plan* Executive Summary states that,

> "Waste rock from the vault pit mining operations is stored in the Vault Waste Rock Storage Facility (VRSF)… To date, through the Acid Rock Drainage testing program it has been determined that approximately 87% of the waste rock generated is NPAG."

Table 6.1 of this Management Report and Plan states that,

> "Vault Rock Storage Facility contains 95% Non-Acid Generating (NAG) waste rock and 5% Potentially Acid Generating (PAG) waste rock."

Recommendation

The Licensee should provide waste rock geochemical test results (report) signed and stamped by a qualified professional to confirm that:

a) 87% of the waste rock generated is Non Potentially Acid Generating (NPAG), and
b) 95% material at Vault Rock Storage facility is Non-Acid Generating (NAG).

III. WATER QUALITY AND FLOW MONITORING PLAN, MARCH 2016

7. Water Quality Monitoring

Reference

Agnico Eagle Mines Limited. *Water Quality and Flow Monitoring Plan*. Version 5. March 2016.
- Table 3-1, p. 13 (pdf 18/40)

Nunvut Water Board. *Water Licence No. 2AM-MEA1525*. Schedule I: Conditions Applying to General and Aquatic Effects Monitoring. July 23, 2015.

Comment

The Licensee is proposing water quality and flow monitoring at three new monitoring stations: ST-27 (Phaser Pit Sump); ST-28 (BB Phaser Pit Sump); and ST-29 (Phaser Pit Lake). Provided below is a summary of the proposed monitoring program for the new monitoring stations that is presented in Table 3-1 of the March 2016 *Water Quality and Flow Monitoring Program*.

Station	Description	Phase	Monitoring Parameters	Frequency
ST-27	Phaser Pit Sump	Late operations	Group 1	Monthly during open water
ST-28	BB Phaser Pit Sump	Late operations	Group 1	Monthly during open water
ST-29	Phaser Pit Lake	Closure	Group 2	Bi-annually during open water

For comparison purposes, the licensed monitoring program for similar monitoring stations associated with the Vault Pit are as follows:

Station	Description	Phase	Monitoring Parameters	Frequency
ST-23	Vault Pit Sump	Late operations	Group 2	Monthly during open water
			Volume (m^3)	Daily during periods of discharge
ST-26	Vault Pit Lake	Closure	Group 2	Bi-annually during open water

In order to ascertain the technical adequacy of the proposed monitoring stations, details concerning the choice of selected parameters and frequency of sample collection should be provided. The proposed monitoring program for the Phaser and BB Phaser Pit Sumps (ST-27 and ST-29) is different from the monitoring program required for the Vault Pit Sump (ST-23) in terms of the group of monitored parameters and the lack of reporting effluent discharge volumes.

Recommendation

The Licensee should explain why it is not implementing the same monitoring program requirements for the Phaser, BB Phaser, and Vault Pit Sumps.

Large scale and more detailed plans showing elevations should also be provided to support the selection of the monitoring station locations.

IV. CLOSURE AND RECLAMATION PLANNING

8. Closure and Reclamation Activities Associated with Phaser Pit and BB Phaser Pit Development

References

Golder Associates. *Meadowbank Gold Project – Interim Closure and Reclamation Plan*. Prepared for Agnico Eagle Mines Limited. Report Number 13-1151-0131. January 7, 2014

Golder Associates. *Technical Memorandum: Meadowbank Gold Project – Update to 2014 Interim Closure and Reclamation Plan Cost Estimate Using Reclaim 7.0.* From Ms. R. L. Gould of Golder Associates to Mr. R. Van Engen of Agnico Eagle Mines Limited. Project No. 1411866. December 2, 2014.

Comment

The Licensee's February 18, 2016 notice of modification does not provide details on how the planned modification to the Vault Pit and ancillary works (Phaser Pit and BB Phaser Pit) will result in changes to the Meadowbank Gold Mine's 2014 *Interim Closure and Reclamation Plan* and 2014 *Reclamation Cost Estimat*e. Anticipated closure activities include pit reflooding, water quality monitoring, ground contouring, and scarifying disturbed areas.

Recommendation

The Licensee should explain what changes will be required to its 2014 *Interim Closure and Reclamation Plan* and 2014 *Reclamation Cost Estimat*e as a result of the planned modification to the Vault Pit and ancillary works.