April 16, 2018

Christine Wilson
Water Resources Officer
Field Operations Unit- Kivalliq Region Office
Indigenous and Northern Affairs Canada
Ikingutigiit Center Suite 1, PO Box 129
Rankin Inlet, NU
X0C 0G0

Re: Agnico Eagle Mines – Meliadine Division Update on Elevated Levels of TDS in CP1

Dear Ms. Wilson,

In response to your request in the Water License Inspection Report, dated October 18, 2017, Agnico Eagle is providing a summary of the events that occurred during August 2017, leading to the decision not to discharge water from CP1 into Meliadine Lake, and outlines mitigation measures planned for 2018 in order to treat elevated TDS in surface waters for environmental discharge.

Background Information

As per the water management plan, CP1 and CP5 collect fresh surface runoff water from the project footprint. Due to limited capacity of CP5, the water management strategy includes periodic pumping of CP5 water to CP1. Water from CP1 is treated at the Effluent Water Treatment Plant (EWTP), where TSS is removed prior to discharge into Meliadine Lake via the diffuser.

During 2017 open water season, water quality samples were collected weekly at CP1 and CP5, among other surface containment ponds, and analyzed for several parameters, including TDS (see Table 1 below). Levels at CP1 were below the permitted discharge levels throughout all of June and July 2017. On August 9th, Agnico detected a large increase in TDS concentration in CP1, which persisted until freeze (October 2017). Because the EWTP and the effluent pipeline were not completed until September 2017, no water was discharged from CP1 into the environment in 2017. As a result, larger than previously planned volumes of water were contained within both CP5 and CP1.

Table 1: TDS in CP1 and CP5

Date	TDS license limit at MEL-14	TDS at CP1 (mg/L)	TDS at CP5 (mg/L)
June 7, 2017	1400	822	1930
June 14, 2017	1400	1080	2270
June 20, 2017	1400	1190	2720
June 24, 2017	1400	-	2220
June 28, 2017	1400	1160	2900
July 5, 2017	1400	1230	3710
July 12, 2017	1400	908	3550
July 18, 2017	1400	1040	4210
July 26, 2017	1400	1030	5400
August 6, 2017	1400	-	6390
August 9, 2017	1400	1600	-
August 27, 2017	1400	1760	-
August 29, 2017	1400	-	8990
September 6, 2017	1400	1680	-
September 11, 2017	1400	1720	-
September 12, 2017	1400	-	9230
September 17, 2017	1400	1880	-
September 25, 2017	1400	1490	-
September 27, 2017	1400	-	7660

Suspected root cause of elevated TDS in CP1

Groundwater at Meliadine is naturally saline with concentrations of approximately 60,000 mg/L (6%) TDS. Up until November 2017, calcium chloride was added during drilling activities bringing the TDS concentration up to levels as high as 18 %.

No single root cause was identified as being the source for elevated levels of TDS in surface fresh water ponds; rather it is attributed to multiple factors, namely:

- Seepage of saline underground water contained within the Run of Mine (ROM or Waste Rock) when brought to surface;
- The use of ROM in construction on the project infrastructure;

- Connection between the P-area (surface ponds containing underground saline water) and CP1 through the active layer;
- Evaporator plume spreading beyond the extent of the P-area.

Tests were completed during 2017 to evaluate the impact of using fresh ROM in construction on site. The results showed that two flushing events (freshet plus summer average/wet precipitation) were sufficient to rinse the salt water contained within the waste rock. This implies that the ROM used in 2017 construction was rinsed and some of its salt content was transferred to CP1 throughout freshet and summer precipitation. Therefore in 2018 the impact on water quality by this ROM should be reduced due to this rock now being already rinsed and weathered.

Treatment Plans for freshet 2018

The site water balance model indicated that sufficient capacity remained in CP5 and CP1 to manage current water inventories, however that this capacity could be exceeded at freshet 2018. Based on these findings, it was decided to focus on establishing a treatment plan ahead of freshet 2018.

The treatment strategy consists of TDS removal at CP5 followed by transferring the treated CP5 water to the CP1 effluent pipeline prior to environmental discharge. The intent of this approach is to ensure that the discharged effluent meets the License A Mel-14 effluent criteria.

The water quality at CP1 during freshet 2018 is expected to be near the 1400 mg/L discharge limit due to significant inflows of fresh non-saline impacted waters. In addition, the ROM used in construction within the CP1 catchment area has largely been flushed during 2017 and should result in seepage waters having a low TDS.

Treatment Technology

Elevated TDS levels can be successfully reduced using membrane treatment technologies. During December 2017, Agnico Eagle met with three different suppliers to discuss treatment options. All three proposed the same treatment technology: reverse osmosis (RO) membrane. Following these meetings, Agnico Eagle entered the tendering process and issued a Request for Proposals to eleven water treatment companies. Due to the tight timeframe, complexity and remoteness of the project, four suppliers submitted their bids.

During the tendering process, Agnico Eagle also shipped CP5 and CP1 bulk water samples to two water treatment suppliers (Linkan and GE/Suez) to complete pilot testing to ensure the treatment efficiencies could be proven on actual site water.

Agnico Eagle selected Linkan who would be supplying a turn-key system complete with Pall membranes. Although it was the most expensive bid Agnico Eagle received, it offered the most robust and flexible technology, which showed (proven by pilot tests) high water recovery (90%) and a low brine production rate (10%).

Brine Management

The by-product of an RO treatment system is a concentrate stream (also known as the brine), which will require storage and management. The current management strategy is to transfer the brine into the P-area where three evaporators are in place to manage this volume. In addition, two additional evaporators have been purchased and will be installed in the P-area to assist in managing this extra load.

The evapo-concentrated water at the P-area will then be treated through the Salt Water Treatment Plant (SWTP) during 2019.

Project Timeline and other Deliverables

The water treatment system is expected to arrive to Meliadine on May 1st, 2018. The treatment system will be constructed and commissioned by May 15th, 2018. The system will be on stand-by until thaw occurs and water from CP5 can be pumped. Once thawing occurs, to avoid overtopping D-CP5, it will be critical to treat the water immediately due to the high volume in CP5.

The Design Report and Operations and Maintenance Manual have been submitted to the NWB in accordance with Water License 2AM-MEL1631, Part D Items 1&2 and Part F, Item 9.

Closure

Agnico Eagle is committed to the protection of the environment and believes the plan detailed above will ensure an adequate mitigation of the elevated TDS in surface containment ponds.

Should you have any questions, comments or suggestions, please do not hesitate to contact me.

Sincerely,

Jessica Huza, General Supervisor Environment - Meliadine