2024-06-12 MBK Baker Lake TSS

GN reference #: 2024-222

Please find the following information as a follow up to the spill report, #2024-222, submitted June 12th, 2024, by Agnico Eagle Meadowbank division. This detailed report is submitted to the Inspector in compliance with the conditions under the Nunavut Water Board License 2AM-MEA1530, Part H, Item 8c and subsection 38(7) of the fisheries act.

Description

During the fall of 2023, Agnico Eagle completed the construction of water management infrastructures (referred as 'Ditch 1' in the document). This infrastructure was designed by an external engineering firm to divert water flow away from the pads in response to spill event #2023-240. During a regular inspection of the Baker Lake Marshalling Facilities in June 2024, a turbid flow of water was observed heading into the shore of Baker Lake, creating an apparent plume of total suspended solids (**TSS**) along the shore of the lake. A portion of the water collected by the ditch is seeping through the downstream slope and berm in localized areas flowing through the Agnico Eagle facilities, where heavy equipment was travelling. The visible plumes in Baker Lake were mostly contained within a few meters from the shoreline, after which the water appeared clear based on visual observations in the field. See figure 1 below for general site layout information and flow path estimate.

Figure 1. Overall Layout - Aerial Picture with the original flow path observed on June 12th.

Water samples were taken to analyze for TSS as well as for acute lethality to *Daphnia Magna* and *Rainbow Trout*. The lethality samples were collected on June 18th and results indicating an LC50 of >100% for both *Daphnia Magna* and *Rainbow Trout*, indicating the water was not deleterious. The results for TSS samples taken in the lake within (BL-LAKE-IN) and outside (BL-OUT) the turbidity control barriers and at the outflow of the Baker Lake Water Management Ditch (BL-WMDN) are presented in Table 1 below.

Table 1. TSS Results of Baker Lake Samples

Date	BL-LAKE-IN TSS (mg/L)	BL-LAKE-OUT TSS (mg/L)	BL-WMDN TSS (mg/L)
2024-06-12	160	31	8
2024-06-13	36	6	5
2024-06-15	150	2	7
2024-06-16	3	3	4
2024-06-18	8	6	3
2024-06-19	16	12	7
2024-06-20	28	1	10
2024-06-24	6	3	No more water reporting to the sampling station
2024-06-26	6	2	N/A
2024-06-27	2	1	N/A
2024-06-28	2	2	N/A
2024-07-02	2	1	N/A

Figure 2 Area where turbid flow was observed entering Baker Lake and contained within turbidity barriers

Location: 64° 18'20" 95° 57'23". The impacted waterbody is Baker Lake.

Cause

The observed turbid runoff is due to a portion of upstream meltwater resulting from snow accumulation passing through the Marshalling Facilities and seeping through the downstream slope of Ditch 1. The water that flowed over the pad was mostly collected by the downstream water management ditch (Ditch 2) and reported to Splash Pad 2 prior to flowing toward the lake, however some was observed bypassing both Ditch 2 and Splash Pad 2. TSS control measures such as Woodchip-log booms and silt fencing have remained downstream in previous areas of concern (exits of culverts, known runoff paths). These control measures are repaired/replaced on an as needed basis by Agnico Eagle and are used to slow the flow of water towards the lake. The water flows through exposed till material, from which sediments are transported towards the lake.

Remediation Actions

Agnico Eagle continued to enforce snow management practices throughout the winter season. Prior to the 2023-2024 winter season Agnico Eagle determined snow dump locations that would reduce the impact of managed snow melt and allow for increased water collection in Ditch 1 during the freshet season. These snow dumps were inspected regularly by Agnico Eagle throughout the winter months.

Upon observation of the runoff into the lake maritime curtains were re-deployed and additional woodchip-log booms and silt fence were deployed to control the transportation of sediments. Over the next weeks, inspections and monitoring of the sector were performed by Agnico Eagle. During the monitoring, the TSS control measures were monitored, repaired, and added, if needed. Samples of the water quality (total suspended solids) of the lake at the inflow location were taken, as described in Table 1. As part of the Core Receiving Environmental Monitoring Program, water chemistry monitoring will occur in Baker Lake during the summer to evaluate potential lake water quality impact.

Figure 3. Water flow prior being collected in Ditch 2 (2024-06-12)

Figure 4. Outflow from Ditch 2 into Splash Pad 2 (2024-06-12)

Figure 5. Outflow from Ditch 1 (2024-06-12)

Figure 6. Additional turbidity controls installed to control water bypassing Ditch 2 and Splash Pad 2 (2024-06-15)

Figure 7. Contained turbidity & sediments at Baker Lake (2024-06-20)

Corrective Measures

Following the observation of localized seepage paths through ditch 1 downstream berm, a review and evaluation of the performance of the entire infrastructure is being conducted. If maintenance and remediation work is required as per recommendations of the water management infrastructure performance review, it will be planned accordingly.

Closure

We trust that the above details described appropriately the event that occurred at the Baker Lake Marshaling Facilities on June 12th, 2024 and the remediation activities. Please contact the undersigned should you have any questions.

AGNICO EAGLE

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