

February 1, 2010

Via Email

Mr. Richard Dwyer
Licensing Administrator
Nunavut Water Board
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Dear Mr. Dwyer,

Re: Water License 2AM-MEA0815 Part D, Item 11 – Response To Comments on Dike Construction and Dewatering Plan, Version 3

Agnico-Eagle Mines Limited – Meadowbank Division (AEM) submitted the Water Quality and Management Plan for Dike Construction and Dewatering, Version 3 to the Nunavut Water Board (NWB) on December 2, 2009. Subsequent to the review period, which ended on January 8, AEM received comments on the Plan from Indian and Northern Affairs Canada (INAC), Environment Canada (EC), the Department of Fisheries and Oceans (DFO) and the Kivalliq Inuit Association. AEM's responses to these comments are provided in the attached appendix.

Should you require any further information, please contact me directly at 819-763-0229 or via email at stephane.robert@agnico-eagle.com.

Regards,



Stéphane Robert
Environment Superintendent

cc: *Lou-Ann Cornacchio, Indian and Northern Affairs Canada*
David Abernethy, Indian and Northern Affairs Canada
Dave Balint, Department of Fisheries and Oceans
Anne Wilson, Environment Canada
Stephen Hartman, Kivalliq Inuit Association

AEM Response to Comments on Water Quality and Management Plan for Dike Construction and Dewatering, Version 3

Indian and Northern Affairs Canada

Comment INAC-1:

As a minimum, AEM must sample TSS on a weekly basis at all monitoring stations throughout dike construction and dewatering activities. During dike construction, samples should be collected at depths with the greatest turbidity concentrations. Results must be provided for review in Monthly Monitoring Report submissions.

Response INAC-1:

AEM will sample TSS on a weekly basis at all monitoring stations during the dike construction at the maximum value. These results will be provided to the NWB in the monthly report.

Comment INAC-2:

Item #4 of the Standard Operating Procedure (SOP) for Winter Construction of the Causeway of the Bay-Goose Dike (Phase 2) provided in Section 4.3 of the plan states, “if the 7-day moving average TSS concentration exceeds the maximum monthly mean of 15 ppm, the deposition rate will be slowed down to allow more sedimentation time.” AEM should provide more detail on the methodology that will be used to determine when it is acceptable to resume to the normal pace of 2,400 tons per day and what is meant by a slowed deposition rate.

Response INAC-2:

As recommended by DFO and EC (see responses DFO-2 and EC-2 below), AEM will be using moving stations to monitor the TSS during the causeway construction. As recommended by DFO, a conservative approach of using the license limit after September 1 with the short term maximum of 25 mg/L will be used. The monthly mean and the 7- day moving average TSS concentration will not be applicable.

If the short-term limit is exceeded, the deposition will be stop and will resume when the TSS concentration will respect the short term limit.

Comment INAC-3:

Section 4.1.4 of the plan states that the winter construction of a causeway will provide a wind-breaker to protect turbidity curtains against the effects of high winds. AEM should provide a technical rationale for the type of windbreak that is suggested supported by an

assessment of wind effect wave action and subsequent impacts on the integrity of the turbidity curtain. In effect, given lessons learned the Aug. 31/09 breach of turbidity curtains there should be some form of analysis to support the height, etc. of the causeway as being an effective wind-breaker to prevent further breaches in turbidity curtains

Response INAC-3:

Since the causeway is in fact the downstream portion of the dike, it will be the same height as the dike. During last year wind storm event, the integrity of the inner curtain portion that was closer to the rock platform was not affected. The concept of the causeway was developed following this observation.

Comment INAC-4:

Item #6 of the SOP for Winter Construction of the Causeway of the Bay- Goose Dike (Phase 2) provided in Section 4.3 of the plan states that sediment traps were mobilized in the East Basin of Third Portage Lake for the winter. It is recommended that this plan be revised to include a diagram with coordinates (GPS, UTM) indicating where these sediment traps are located.

Response INAC-4:

The location map of the sediments traps (send to the NWB Sept 25, 2009) and the coordinates will be included in the future revision of the Water Quality Monitoring and Management Plan V3.

Comment INAC-5:

It is recommended that additional TSS monitoring stations be established between the inner and outer turbidity curtains during the open water construction of the Bay-Goose Dike (Phase 2). Monitoring data acquired from these stations should be used to determine the effectiveness of TSS containment measures and be included in AEM's decision making process for the implementation of mitigation measures

Response INAC-5:

AEM does not envisage the installation of regular monitoring stations between the inner and the outer turbidity curtains due to the difficulty of boat access. However, during the construction period, some TSS analysis will be done between the inner and the outer turbidity curtains for the Effect Assessment Study (EAS) of this area.

Comment INAC-6:

It is recommended that additional turbidity curtains be considered between the causeway and the unnamed island immediately south of Goose Island during open water construction of the Bay-Goose Dike (Phase 2). These curtains may effectively contain suspended sediments in the immediate construction area.

Response INAC-6:

Please see response DFO-3 below.

Comment INAC-7:

As an additional safeguard it is recommended that AEM factor into the SOP for Open Water Construction of the Bay-Goose Dike (Phase 2) an altered aggregate deposition rate based on visual inspections of the turbidity curtain and the turbidity of water.

Response INAC-7:

The visual inspections of the turbidity curtain and the water turbidity values will be taken into account in construction decisions.

Comment INAC-8:

INAC concurs with Environment Canada's Jan. 8/10 recommendation that during open water construction of the Bay-Goose Dike (Phase 2) "the four highest results from all monitoring stations (profile maxima) be averaged to compare to licensed limits and thresholds for action." TSS monitoring results at certain stations may be much lower than others due to their positioning and sedimentation patterns. A delay in implementing warranted mitigation measures could take place if data from all monitoring stations are included in the calculation of the 24-hour, 7-day moving, and 30-day moving averages.

Response INAC-8:

AEM agrees to take the average of the four highest results from all stations (profile maxima) shown on Figure 8 during the open water construction.

Comment INAC-9:

It is recommended that divers inspect the turbidity curtains prior to the start of dike construction activities during the open water season to confirm that the curtains have been properly mobilized. Divers should also be engaged as a mitigation measure if TSS concentrations exceed license limits at any monitoring station.

Response INAC-9:

For safety reason, divers will not be use to inspect the curtain. A camera can be used as an investigation tools.

Comment INAC-10:

AEM must revise their Quality Assurance / Quality Control Plan (required by Part I, Item #19 of the License) to address those procedures that are followed for the collection and analysis of turbidity and TSS data.

Response INAC-10:

Please see response EC-8 below.

Comment INAC-11 (provided in INAC's May 29/09 Technical Review of plan's previous version):

Due to the planned construction of various water retention dikes (i.e., Bay-Goose Dike, East Dike, South Camp Dike, and Vault Dike), AEM should submit diagrams that reference water quality monitoring locations, dewatering locations, and construction timetables specific to each or all water retention dikes. Currently this plan is specific to the Bay-Goose Dike construction and makes reference to the East Dike that was constructed in 2008.

Response INAC-11:

The text of the current monitoring plan was indeed clarified to avoid confusion between past and future activities. The description of the East Dike, and Bay-Goose Dike Phase 1 monitoring were left in the plan for reference. The monitoring plan for the Bay-Goose Dike Phase 2, as discussed at the November workshop, was specifically presented for approval.

Comment INAC-12 (provided in INAC's May 29/09 Technical Review of plan's previous version):

AEM must implement low-impact construction techniques throughout their dike construction activities to minimize any increase in suspended sediments in the immediate and surrounding lake environment. One such measure would include the use of aggregate materials that contain minimal fines.

Response INAC-12:

AEM has developed a low-impact construction technique for the placement of the rock platform. It starts with the rock selection process in the open-pit where rock containing more fines will not

be selected for the construction of the platform. Given that the rock used will come from a deeper portion in the open pit, it is expected to contain less fine material than the rock that was closer to surface. During the platform construction, to minimise the impact of the material deposition, the rock is deposited on the platform and then pushed with a dozer into the lake. Given the quantity of material that needs to be deposited, these are the only mitigation measures that can be effectively implemented during the very short construction period to minimise suspended sediments in the lake environment.

Environment Canada

Comment EC-1:

Section 4.1.4.1 - EC concurs with the proposal to construct a causeway over the winter within the dike footprint, in order to mitigate against suspended solids by reducing wind and current energy. The main concern is that we do not feel it has been conclusively demonstrated by the previous under-ice rock placement in Portage Arm impoundment area that construction can be done with minimal increases in suspended solids from the rock fines and from bottom disturbance. The emplacement rate and techniques proposed will need to be carefully adjusted in response to monitoring results, as there is no ability to contain suspended sediments under ice, and work will be done during the period of development for over-wintering fish eggs.

Given the timing of overwintering eggs it would be appropriate to use the licence limit for after Sept. 1st with the Short Term Maximum of 25 mg/L, at least in the vicinity of spawning areas (EC defers to the Department of Fisheries and Oceans for extent, duration and other related aspects).

Response EC-1:

AEM will use the license limit after Sept 1 with the short term maximum of 25 mg/L. Because, moving station will be used (see response DFO-2 and EC-2) only the short term limit will be applicable. The maximum monthly mean will not be applicable.

Comment EC-2:

Section 4.2.1 Figure 7 - Monitoring during causeway construction is proposed to be done from 50-100 m out, depending on ice safety, from fixed sampling stations as shown in Figure 7 of the plan. To provide more relevant data for construction decision-making, EC recommends that monitoring be done from "moving" stations around the deposition area, noting that the fixed stations would be too far away in many cases. Water clarity measurements could be done on a daily basis (ongoing as needed) to inform the rock placement rate and evaluate the effects of rock deposition. Measurements could be done

at one hole drilled up to 100 m out in the direction of increasing water depth, and additional holes could be drilled to delineate TSS movement if appreciable levels are measured.

Response EC-2:

AEM will use moving stations during the winter construction of the causeway. The monitoring stations will be as close as safety permits on either side of the causeway and in front of the causeway.

Comment EC-3:

Section 4.1.1.2 - The area between the curtains is extensive but allows for the deployment of the turbidity curtains in shallower depths. If there is elevated turbidity between the two curtains the deeper basin (106 m elevation) may focus any sediments that escape the inner curtain, and biota in this area may be affected. Will post-construction monitoring be done to evaluate effects?

Response EC-3:

An Effect Assessment Study (EAS) of this area will be done.

Comment EC-4:

Section 4.2.2 - Given the wide area enclosed by the outer curtain, including the depositional area within the 106 m depth contour line, it is unlikely that anything escaping the inner curtain would travel upslope along the bottom (noting that previous turbidity plumes occurred at depth) and it would be expected that the two eastern sampling stations and the north-east station shown on Figure 8 should remain close to background. Accordingly, averaging in these readings would understate impacts and potentially delay action in the event high turbidity was seen at the four stations to the west, in the area of high value fish habitat. To avoid this, EC recommends that the four highest results from all stations (profile maxima) be averaged to compare to licence limits and thresholds for action.

The plan states that not all stations will be monitored each time (page 14, bullet 2), and EC recommends that some further rationale be outlined in the plan for when stations would or would not be sampled.

Response EC-4:

AEM agrees to take the average of the four highest results from all stations (profile maxima) shown on Figure 8 during the open water construction.

During the open water construction, all 8 stations will be monitored each time. On page 14, bullet 2, we should read

2. Stations for routine monitoring have been established 50 to 100 meters outside of the silt curtains. All stations will be sampled every event.

Comment EC-5:

Section 5.1.2 - Bullet 9 seems to be misplaced in the dewatering section, and would belong in the dike construction section. Given the licence limits at end of pipe for dewatering, there should be no likelihood of a sediment plume occurring in connection with dewatering discharges.

Response EC-5:

Section 5.1.2 – Bullet 9 will be removed in the future revision of the Water Quality Monitoring and Management Plan V3.

Comment EC-6:

Figure 10 - Change “all stations” to “4 highest stations” in three boxes for 24 hour, 7 day, and 30 day averages.

Response EC-6:

Figure 10 will be changed in the future revision of the Water Quality Monitoring and Management Plan V3.

Comment EC-7:

Figure 12 - The first “no” should go to arrow on left.

Response EC-7:

Figure 12 will be changed in the future revision of the Water Quality Monitoring and Management Plan V3.

Comment EC-8:

EC recommends that the plan include a quality control/quality assurance (QA/QC) section for turbidity measurements. This could include the calibration of field turbidity with lab TSS results, which should be confirmed for each new site.

Response EC-8:

A quality control/quality assurance (QA/QC) section for turbidity measurements section will be added in the future revision of the Water Quality Monitoring and Management Plan V3.

Department of Fisheries and Oceans Canada

Comment DFO-1:

Since much of the planned winter construction activities will take place near high value habitat or during the time period when fish eggs may be present, a conservative approach should definitely be adhered to with the licence limits corresponding to the period after Sept. 1st.

Response DFO-1:

Please see response to comment EC-3 above.

Comment DFO-2:

Monitoring stations to be located on ice should be located as close as safety permits on either side of the causeway and in front of the work location and move in conjunction with development rather than utilizing fixed locations as depicted for winter work in Figure 7. Background levels should also be determined before construction begins.

Response DFO-2:

AEM will use moving stations during the winter construction of the causeway. The monitoring station will be as close as safety permits on either side of the causeway and in front of the causeway. Background levels have been measured during the fall.

Comment DFO-3:

DFO recommends that two additional curtains be placed between the small island south of Goose Island and the causeway. This will create a couple of additional cells, provide additional contingency and may be more effective than utilizing the curtain that is

proposed to separate the high value habitat in the east bay. Suggested are drawn on an attached figure 5.

Response DFO-3:

AEM agrees to add these two additional curtains as suggested.

Comment DFO-4:

The locations and use of monitoring results from the various station locations as depicted on Figure 8 will not provide information that will accurately identify potential impacts. Some of them are too far from the construction zone and would likely be close to background. The monitoring locations would be more appropriately located outside of the inner curtain along the area of construction.

Response DFO-4:

Please see response to comment EC-3 above.

Comment DFO-5:

All data to support the derivation of the turbidity/TSS correlation should be provided to the NWB.

Response DFO-5:

The derivation of the turbidity/TSS correlation will be provided to the NWB.