



April 26th, 2017

Susanne Forbrich
A/ MMER Authorization Officer
Prairie and Northern Region
Environment Canada
9250, 49 St. NW
Edmonton, AB
T6B 1K5

Re: Environmental Effects Monitoring (EEM): Cycle 3 Meadowbank Mine Study Design

Dear Ms. Susanne Forbrich,

On April 10th, 2017, Agnico Eagle received TAP comments regarding study design entitled "Agnico Eagle Mines Ltd. – Meadowbank Division Cycle 3 Study Design" submitted on February 17th, 2017. You will find, attached with this letter, responses to these comments.

Should you require any further information or questions please contact the below via email or by telephone.

Regards,

Erika Voyer
Environment General Supervisor Nunavut
Erika.Voyer@agnicoeagle.com
819-759-3555 ext.6980

Robin Allard
Senior Environmental Coordinator
Robin.Allard@agnicoeagle.com
819-759-3555 ext. 6744

CC: *Paula Siwik, ECCC*
Cam Portt, C. Portt and Associates
Jamie Quesnel, Agnico Eagle Nunavut

1. As required under the Metal Mining Effluent Regulations, your biological monitoring studies must be conducted in accordance with your study design. If it is impossible to follow the study design because of unusual circumstances, then you may deviate from the study design but you must inform the Regional Authorization Officer without delay of those circumstances and how the study will be conducted.

Agnico Eagle's response:

Agnico Eagle take note of TAP comments and will advise without any delay the Regional Authorization Officer if the study design, because of unusual circumstances, will deviate from the original approved study design.

2. P. 26 and 51: It appears that the detection for Cd sampled in water has been lowered and will more closely align with license detection limit of 0.000010 mg/L in 2017. The TAP supports this approach.

Agnico Eagle's response:

Agnico Eagle acknowledges TAP comments.

3. P. 38: Wally Lake is considered an exposure area as of 2013. Are there data collected prior to 2013 that could be used for baseline purposes?

Agnico Eagle's response:

There are no fish data for Wally Lake prior to 2013 that can be used for baseline purposes.

4. P. 38: Fish from Vault and Phaser Lakes were transferred to Wally Lake in 2014 and 2016, and AEM recognizes that this is confounding factor in assessing fish endpoints in Wally Lake. While the change in fish community as a result of the transfer will likely confound the current study, its influence on future studies remains to be seen. There is no further discussion in the Cycle 3 Study Design as to how to deal with this issue for the present cycle or in future cycles. Are there studies from other sites that could give an indication of how long it may take the population of Wally Lake to regain a steady ecological state? Are there population estimates of the fish community or species specific age class estimates from Wally prior to the fish transfer for comparison?

Agnico Eagle's response:

To the best of our knowledge there are no studies from other sites at similar latitudes that could provide an indication of how long it may take the population of Wally Lake to return to a steady ecological state. There are no population estimated or species-specific age class estimates from Wally Lake prior to the fish transfers.

5. **P. 38:** Please note, the proposed design of 20 lethal lake trout is supported provided that power analyses continue to indicate that it is suitable.

Agnico Eagle's response:

Agnico Eagle acknowledges TAP comments.

6. **P. 40:** Cycle 1 and Cycle 2 studies both encountered higher than expected fish mortality. The Cycle 3 study design has indicated that fish sampling will not include sampling of pectoral fin rays for non-lethally sampled fish, in order to prevent after-sampling mortality due to the procedure. Fish mortality from Cycle 1 and Cycle 2 is reported as the result of gill-netting. The TAP suggests that CPUE data from previous phases be reviewed to determine whether timing and/or duration of net deployment can be adjusted to minimize by-catch.

Agnico Eagle's response:

Agnico Eagle proposed not to remove pectoral fin rays from fish that are not lethally sampled due to the limited utility of those data, the discomfort that the removal imposes on the fish, and the possible post-release complications (which could include mortality). Agnico Eagle will use the data from previous cycles to determine the appropriate amount of netting effort to collect the desired 20 fish per area, in order to minimize by-catch.

7. **P. 40:** Please clarify whether the supporting in situ variables will be collected at each net deployment location or at one location in the lake. The TAP suggests that in situ information be recorded at each net deployment location.

Agnico Eagle's response:

The lakes that will be sampled are not thermally stratified in the summer and, based on the CREMP data, there is no indication that there is significant spatial variation in dissolved oxygen, temperature or pH. There was spatial variation in specific conductance in Wally Lake while effluent was being discharged in 2016. Agnico Eagle proposes to measure temperature and specific conductance at each of net deployment location in Wally Lake and will therefore do the same at each net deployment location in the other lakes.

8. **P. 46:** The 2006 and 2007 total abundance number for Wally appears to be different from the pattern in subsequent years. Did this correspond with a change in collection location or depth?

Agnico Eagle's response:

Sample depths did vary across years in Wally Lake suggesting modest movement in sample locations. Samples in 2006 and 2007 were collected from 5 to 6 m of water

depth, whereas in subsequent years samples were collected from typically 7 to 9 m of water depth (see Figure 5-1 in the Study Design). The observation by ECCC is noted. Agnico will need to consider 2006 and 2007 when we carry out the analysis of changes over time. We will determine if we can adjust data to depth so that we can retain 2006 and 2007 in the analysis, or perhaps leave 2006 and 2007 out of the analysis.

9. **P. 48: Are there within station precision estimates for Wally Lake? A visual comparison of abundance and richness suggests that there is more variation in the samples collected from Wally contrasted to Third Portage. Will 2 subsamples adequately characterize a station?**

Agnico Eagle's response:

There are no within-station samples from Wally Lake. The observation by ECCC is noted. In order to assess whether the observation is correct, we looked at within-year variability using abundance data for Wally (WAL), Inuggugayualik (INUG) and Pipedream Lake (PDL). For log of numbers per m², the within-year residual variance was estimated by the mean-squared error (MSE) term from an analysis of variances among years. The MSE's were 0.0802 for Wally, 0.0439 for INUG and 0.0304 for PDL. An *F* ratio of largest over smallest variances (WAL/INUG) was $0.0802/0.0439 = 1.83$, which with 38 and 38 degrees of freedom was significant at $p = 0.03$. Within-year variances of abundance have therefore been significantly higher in Wally Lake than in both INUG and PDL, per Environment Canada's observation. Within-station variance could be reduced by additional sampling, but among station variance would not be reduced by the collection of additional within-station grabs. The differences in variability between lakes will persist. Agnico and its consultants will ensure that sampling within Wally Lake is carried out to minimize variability related to depth in the upcoming 2017 survey. Agnico and its consultants will also examine the influence of water depth on variability in EEM endpoints, and remove the effects of depth on endpoint variance, prior to testing effects-related hypotheses.

Prairie & Northern Region
Environmental Protection Operations Directorate
9250 – 49th Street NW
Edmonton, AB T6B 1K5

April 10, 2017

File: 7834-3-37/A350-2

Marie-Pier Marcil
Agnico Eagle Mines Ltd. Meadowbank Division
10 200, route de preissac
Rouyn-Noranda, Québec, Canada
J0Y 1C0

Dear Mme Marcil:

Subject: Metal Mining Phase 3 Biological Study Design Report Meadowbank Mine

This letter is to advise you that Environment and Climate Change Canada has reviewed your Environmental Effects Monitoring (EEM) biological study design report entitled, "Environmental Effects Monitoring: Agnico Eagle Mines Ltd. – Meadowbank Division Cycle 3 Study Design". The review of the study design report takes into account information requirements in the *Metal Mining Effluent Regulations (MMER)* of the *Fisheries Act*, and offers comments on the design based on the EEM Technical Guidance Document and on generally accepted standards of good scientific practice.

The compiled comments are attached.

Please send to my attention a final schedule relating to the biological monitoring at least two weeks prior to the commencement of field activities.

Although not required by the *MMER*, submitting an electronic version of documents in addition to paper copies would help the Department in managing all the received regulatory information. Please send the electronic copies to Susanne.Forbrich@canada.ca.

Environment and Climate Change Canada looks forward to receiving your interpretive report no later than July 1, 2018. Should you have any questions or concerns regarding the EEM program, or should you wish to discuss any major changes to the study design, please do not hesitate to contact Paula Siwik at 780-951-8824 or at paula.siwik@canada.ca.



Environment and
Climate Change Canada

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Changement climatique Canada

Sincerely,

[Handwritten signature]
for

Susanne Forbrich
Regional Director
Regional Authorization Officer

cc: Cristina Ruiu Environment and Climate Change Canada, Regina
Paula Siwik Environment and Climate Change Canada, Edmonton
Craig Broome Environment and Climate Change Canada, Yellowknife
Karen Kharatyan Nunavut Water Board, Gjoa Haven
Amanda Winegardner Indigenous and Northern Affairs Canada, Iqaluit

Attachments : Technical Advisory Panel Review of "Agnico Eagle Mines Ltd – Meadowbank Division Cycle 3 Study Design"



August 11, 2017

Susanne Forbrich
Prairie and Northern Region
Environment Canada
9250, 49 St. NW
Edmonton, AB
T6B 1K5

Re: Metal Mining Phase 3 Biological Study Design Report Meadowbank Mine

Dear Ms. Forbrich,

Following your letter dated April 10, 2017 *Metal Mining Phase 3 Biological Study Design Report Meadowbank Mine*, Agnico Eagle Ltd. Meadowbank Mine is providing the final schedule for the EEM Cycle 3. The field work will be conducted as per the study design approved by Environment Canada and the TAP, and will be conducted from August 23 to August 30.

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

Regards,

Mhaly Bois-Charlebois
Environmental Compliance Counselor
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819.759.3700 x 5479

CC: Paula Siwik, ECCC
Cam Portt, C. Portt and Associates
Jamie Quesnel, Agnico Eagle Nunavut
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