



**NIRB File No.: 10XN039**

*Related NIRB File No.: 03MN107*

**NWB File No.: 2AM-MEA0815**

June 1, 2010

Stéphane Robert  
Environment Superintendent  
Agnico-Eagle Mines Limited  
Meadowbank Division

Via email: [stephane.robert@agnico-eagle.com](mailto:stephane.robert@agnico-eagle.com)

**Re: Notice of Part 4 Screening for Agnico-Eagle Mines Ltd.'s "Meadowbank Airstrip Expansion" project proposal**

Dear Stéphane Robert:

On February 4, 2010 the NIRB received Agnico-Eagle Mines Ltd.'s (AEM) "Meadowbank Airstrip Expansion" project proposal from AEM. On February 10, 2010 the NIRB issued correspondence to AEM which advised that a conformity determination (Keewatin Regional Land Use Plan) from the Nunavut Planning Commission (NPC) and a referral for screening from one or more of the agencies responsible for authorizing the project activities would be required prior to Screening by the NIRB.

On March 2, 2010 the NIRB received notification from the Nunavut Planning Commission that no conformity determination (Keewatin Regional Land Use Plan) would be required for the "Meadowbank Airstrip Expansion" project proposal. On April 15, 2010 the Nunavut Water Board (NWB) advised the NIRB that AEM's application to expand the Meadowbank airstrip would require an amendment to the original NWB water license (2AM-MEA0815). Further, on April 18, 2010 Fisheries and Oceans Canada (DFO) advised the NIRB that the proposed airstrip expansion would require formal authorization by DFO.

After undertaking a preliminary completeness check, the NIRB determined that the project proposal as submitted did not contain sufficient information to permit proper screening and requested that additional information be submitted by May 21, 2010. On May 24, 2010 the NIRB received the requested information.

### **Related File History**

The original Meadowbank Gold Mine project (NIRB File No. 03MN107) was screened by the NIRB in 2003 and underwent an environmental Review pursuant to Part 5, Article 12 of the Nunavut Land Claims Agreement (NLCA). The NIRB held a technical meeting, pre-hearing

conference, and final hearing to facilitate its assessment of the Meadowbank Gold Mine Project. On December 30, 2006 the Board issued the Meadowbank Gold Mine Project Certificate (No. 004), allowing the project to proceed subject to terms and conditions contained therein.

Upon review of the Final Environmental Impact Statement and other materials relevant to the original NIRB file (03MN107), the Board has determined that the proposed expansion of the Meadowbank airstrip into Third Portage Lake was not assessed as part of the original Meadowbank Gold Mine project and therefore, the proposed Meadowbank Airstrip Expansion requires screening in accordance with Part 4, Article 12 of the NLCA (please see Appendix A: Supporting Documents).

The Environmental Impact Statement and other documents pertaining to the NIRB's assessment and review of the Meadowbank Gold Mine Project, File 03MN107 and related facilities can be obtained from the NIRB's ftp site at the following link:

[ftp://ftp.nirb.ca/REVIEWS/PREVIOUS\\_REVIEWS/03MN107-MEADOWBANK/02-REVIEW/](ftp://ftp.nirb.ca/REVIEWS/PREVIOUS_REVIEWS/03MN107-MEADOWBANK/02-REVIEW/).

### **Current Application**

The proposed project is located at the Meadowbank Gold Mine site, approximately 70 kilometres (km) north of the hamlet of Baker Lake. The currently proposed expansion of the Meadowbank airstrip is tentatively scheduled to begin in October 2010.

The project activities include:

- Expansion of Meadowbank airstrip to a total length of 2103 metres (m), with 412 m located within the high water mark of Third Portage Lake (in-lake portion);
- Expansion of Meadowbank airstrip to a width of 60 m;
- Deactivation of current all weather access road connection to Meadowbank site and subsequent diversion of the access road via the Tailings Road;
- Construction of expanded airstrip to utilise materials generated during mining activities at Meadowbank (an estimated total of 875,000 cubic metres of non-acid generating rock material will be required) including:
  - Approximately 700,000 cubic metres of material to be placed in the water for the in-lake portion of the expansion
  - 70,000 cubic metres of material to be used to build the diverted section of the all weather road; and
- Earthwork activities associated with airstrip expansion to utilise equipment used during other Meadowbank project construction activities.

All documents received and pertaining to this project proposal can be obtained from the NIRB's ftp site at <ftp://ftp.nirb.ca/SCREENINGS/ACTIVE%20SCREENINGS/10XN039-AEM%20-%20Meadowbank%20Airstrip%20Expansion/1-SCREENING/01-APPLICATION/> including:

- *AEM Letter to NIRB Re: Proposed Expansion of Meadowbank Airstrip*
- *AEM Project Proposal: Meadowbank Airstrip Expansion (February 2010)*
- *Maps*

- *Non technical Project Proposal summary in English*
- *Non technical Project Proposal summary in Inuktitut*
- *NPC Conformity Determination*
- *Fisheries and Oceans Application for Authorization for Works or Undertakings Affecting Fish Habitat*

Pursuant to Part 4, Article 12 of the NLCA, the NIRB shall proceed to screen this project proposal. The NIRB may request additional information at any time during the process. The NIRB will copy you on screening process related correspondence and upload related documents to the above ftp site for public access.

The NIRB is copying parties and municipalities potentially affected by AEM's project proposal with this letter, and we invite interested parties to comment directly to the NIRB by **June 22, 2010**.

The NIRB would like parties to provide comments regarding:

- Whether the project proposal is likely to arouse significant public concern; and if so, why;
- Whether the project proposal is likely to cause significant adverse eco-systemic and socio-economic effects; and if so, why;
- Whether the project is of a type where the potential adverse effects are highly predictable and mitigable with known technology, (please provide any recommended mitigation measures); and
- Any matter of importance to the Party related to the project proposal.

Please send your comments to the NIRB at [info@nirb.ca](mailto:info@nirb.ca) or via fax at (867) 983-2594.

If you have any questions or concerns, feel free to contact me directly at 867-983-4615 or via email at [ahanson@nirb.ca](mailto:ahanson@nirb.ca).

Sincerely,



Amanda Hanson  
Technical Advisor  
Nunavut Impact Review Board

cc: Distribution List  
Dave Balint, Fisheries and Oceans Canada  
Phyllis Beaulieu, Nunavut Water Board  
Luis Manzo, Kivalliq Inuit Association

Attachments: Appendix A – Supporting Documents

Enclosures (2): NIRB Comment Form (English)  
NIRB Comment Form (Inuktitut)

## APPENDIX A: SUPPORTING DOCUMENTS

1. *Excerpt from Cumberland Resources Ltd.'s Project Alternatives Report for the Meadowbank Gold Project*, submitted October 2005. Pp 3-31. Full document available at [ftp://ftp.nirb.ca/REVIEWS/PREVIOUS\\_REVIEWS/03MN107-MEADOWBANK/02-REVIEW/08-FINAL\\_EIS/174\\_051108-CRL-FEIS-MB-ITAE/SUPPORTING\\_DOCS/004project%20alternative/](ftp://ftp.nirb.ca/REVIEWS/PREVIOUS_REVIEWS/03MN107-MEADOWBANK/02-REVIEW/08-FINAL_EIS/174_051108-CRL-FEIS-MB-ITAE/SUPPORTING_DOCS/004project%20alternative/).
2. *Excerpt from Cumberland Resources Ltd.'s FEIS Appendix F: Conformity Submission Letters to NIRB (April 30<sup>th</sup> 2005 – Conformity Letter Submission #2 F.2)*, submitted October 2005. Pp 23-24. Full document available at [ftp://ftp.nirb.ca/REVIEWS/PREVIOUS\\_REVIEWS/03MN107-MEADOWBANK/02-REVIEW/08-FINAL\\_EIS/174\\_051108-CRL-FEIS-MB-ITAE/FEIS%20Part2%20Appendices/Appendices/](ftp://ftp.nirb.ca/REVIEWS/PREVIOUS_REVIEWS/03MN107-MEADOWBANK/02-REVIEW/08-FINAL_EIS/174_051108-CRL-FEIS-MB-ITAE/FEIS%20Part2%20Appendices/Appendices/).
3. Cumberland Resources Ltd. letter to Derrick Moggy, DFO, submitted March 9, 2006. Document available at [ftp://ftp.nirb.ca/REVIEWS/PREVIOUS\\_REVIEWS/03MN107-MEADOWBANK/02-REVIEW/08-FINAL\\_EIS/ADDITIONAL\\_INFORMATION/250\\_060309-CRL-Ltr-MB-DFO\\_AirstripExtension-ITAE.pdf](ftp://ftp.nirb.ca/REVIEWS/PREVIOUS_REVIEWS/03MN107-MEADOWBANK/02-REVIEW/08-FINAL_EIS/ADDITIONAL_INFORMATION/250_060309-CRL-Ltr-MB-DFO_AirstripExtension-ITAE.pdf).
4. Environment Canada Memorandum to NIRB Re *Summary of Water Quality Discussions between Environment Canada and Cumberland Resources Ltd.*, submitted March 7, 2006. Document available at [ftp://ftp.nirb.ca/REVIEWS/PREVIOUS\\_REVIEWS/03MN107-MEADOWBANK/02-REVIEW/08-FINAL\\_EIS/ADDITIONAL\\_INFORMATION/246\\_060309-EC-Memo-EC\\_Additional\\_Information-ITAE.pdf](ftp://ftp.nirb.ca/REVIEWS/PREVIOUS_REVIEWS/03MN107-MEADOWBANK/02-REVIEW/08-FINAL_EIS/ADDITIONAL_INFORMATION/246_060309-EC-Memo-EC_Additional_Information-ITAE.pdf).

### 3.8 AIRSTRIP

In coordination with the selection of the plant site, two options were considered for the site of the airstrip: one along the isthmus between the northwest arm of Second and Third Portage lakes, and the other along the southwest side of Third Portage Lake (see Figure 3.11). Although the more southern route requires less cut and fill, it would involve the construction of a roadway crossing over a narrow section in Third Portage Lake. The selected northern alternative, northwest of the plant site, is better aligned with the prevailing wind direction from the northwest and will permit the development of a more compact site with less overall disturbance.

The alignment of the airstrip has been selected based on minimizing cut and fill requirements for construction and has been based on a near balance of the excavation and backfill quantities. However, it is anticipated that additional fill materials will be required from locally available borrow sources to complete the airstrip embankment. The airstrip will be constructed in two development sequences. The first sequence will involve the construction of a gravel-surfaced pioneer airstrip nominally 915 m long x 30.5 m wide for use by aircraft such as the Beechcraft King Air B200 Jet Prop during the first years of development. This will minimize impact to Third Portage Lake as the entire strip will be constructed on land. Drainage ditches, settling ponds, and silt fences will be used to manage runoff during construction and operation of the pioneer strip. Later in mine life, the airstrip will be extended to about 1,525 m long x 50 m wide for use by larger aircraft such as Hercules and 737 aircraft. This will require the extension of the airstrip by about 380 m off-shore of Third Portage Lake. It is expected that the frequency of usage of the airstrip will be less than 100 takeoffs/landings per month.

The design of the airstrip allows for the use of intermediate volcanic (IV) rock produced from mining activities. The majority of the IV rock is non-acid-generating; however, some is expected to generate acid. The rock will be submerged off-shore, which will reduce the potential for acid generation. A capping of non-acid-generating rock will be placed over the main airstrip rock fill. To achieve the full length of 1,525 m, however, approximately 198,000 m<sup>3</sup> of fill will need to be placed at the west end of the strip, extending into the lake.

The alignment of the airstrip has been selected based on minimizing cut and fill requirements for construction and has been based on a near balance of the excavation and backfill quantities. However, it is anticipated that additional fill materials will be required from locally available borrow sources to complete the airstrip embankment. With the current alignment, the initial 915 m long strip can be built while minimizing impact to Third Portage Lake through the use of settlement ponds and silt fencing to control runoff during construction. To achieve the full length of 1,525 m, approximately 198,000 m<sup>3</sup> of fill will need to be placed at the west end of the strip, extending into the lake. The design allows the use of PAG mine rock from the Portage pit in airstrip construction. A permanent capping of non-PAG rock from the Portage pit will be placed over the mine rock fill.

### 3.9 VAULT ACCESS ROAD

The Vault pit is approximately 6 km north of the main project facilities in the Portage area and will be connected by a haul road. A road will need to be constructed to access the Vault pit and to haul ore back to the processing facilities at the Portage area. The road will be constructed with rockfill produced from the Portage pit mining activities. The road embankment will be designed to preserve

Property	Comment/Assumptions	Source
Chemical Controls	No solubility controls imposed on dike seepage water. Full constituent loads transferred to pit waters	

**Source:** Water Quality Predictions Report (Golder, 2005).

#### ***Vault Pit Water Quality***

The pH of Vault pit water is expected to remain neutral and chemical loading of pit waters are predicted to increase with time as the pit surface area increases, until the end of mine life. At the end of mine life, the flooded Vault pit water merges with that of the Vault area attenuation pond to become one water body, in the location of the former Vault Lake. Vault pit water quality is predicted to consistently meet Canadian Metal Mine Effluent Regulations (MMER) quality during operation and post closure.

#### ***Portages & Goose Island Pit Water Quality***

The lithology of pit walls is such that drainage from each pit could potentially acidify before being submerged. Depending on the extend of ARD developed, if any, the pH may be slightly acidic (between 6 and 6.5). ARD is not expected to occur immediately considering the slow reaction kinetics of some of the potentially acid generating rock that will be present on portions of pit walls. During operation, the concentrations of the majority of constituents slowly rise until pit closure. The current mine plan proposes to carry out pit water quality monitoring and pH adjustment during operation, if required, to control pit water quality. Pits will gradually be filled using water drawn from Third Portage Lake during operation and at post-closure. After the Goose Island and Portage Pits have been filled, the fully flooded pits will form one large lake. The dikes separating the pit lake from Third Portage Lake will be breached after the pit Lake water quality becomes acceptable. Fish habitat features will be engineered into the dike slopes and the bottom of the re-flooded area to ensure that high value habitat can be generated. This is a key component of the NNL (2005) plan.

#### **4.10.1.8 Airport Facilities**

##### *NIRB's Comment:*

*The Proponent shall describe: Airport facilities at the mine site. Verify length of airstrip. Provide frequency of use.*

##### *Cumberland's Response:*

The airstrip to be constructed at Meadowbank will have a runway surface 1,100 m in length, and 30.5 m in width, and be capable of handling Hawker Siddely HS-748 size aircraft. The runway surface will be compacted crushed rock and will be treated with a dust suppressant. A short apron and taxiway will be provided for parking aircraft during loading and unloading operations. The airstrip will be provided with runway lighting and be equipped with a non directional beacon

(NDB) for navigation. It is expected that up to 3 flights per week will be scheduled. The airstrip may be extended to a total length of 1,525 m and runway width of 50 m during the operational mine life to allow larger aircraft to land.

#### **4.10.1.8 Airport Facilities**

NIRB's Comment:

*The Proponent shall describe: Provide deicing and containment system.*

Cumberland's Response:

A dedicated deicing plant and equipment will not be provided at the Meadowbank airstrip. Aircraft will carry the required application equipment and the appropriate deicing agent. Overspray and runoff will report to the airstrip drainage system and be directed to the tailings impoundment. Quantities will be minimal.

#### **4.10.1.8 Airport Facilities**

NIRB's Comment:

*The Proponent shall describe construction methods; Provide quantities and sources of material for construction and maintenance.*

Cumberland's Response:

Construction of the Meadowbank airstrip will be conventional cut and fill operations, using material cut from the airstrip alignment elevations above grade and placed in areas below the design grade. Additional fill materials will be sourced from the pre stripping operations in the open pits. Surfacing of the airstrip will be crushed rock procured from the mine prestripping operations.

The airstrip will require 44,600 m<sup>3</sup> of cut and 57,000 m<sup>3</sup> of fill to achieve the design grade.

#### **4.10.1.9 Fuel & Explosives Storage Sites**

NIRB's Comment:

*Provide quantities of explosives to be stored.*

Cumberland's Response:

The annual consumption of explosives at the Meadowbank site will be 11,164 tonnes, comprised of 11,095 tonnes of ANFO (ammonium nitrate / fuel oil) and 69 tonnes of detonators. It is to be noted that ammonium nitrate is not an explosive; it only becomes explosive after on-site mixing with fuel oil. ANFO is produced on site as required for immediate loading into the drilled boreholes and detonation. It is not stored for future use but is produced on a daily basis. The quantity of explosives stored on site therefore is 69 tonnes, which are the detonators. Storage of

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March 9, 2006

Mr. Derrick Moggy  
Habitat Management Biologist  
Fisheries & Oceans Canada  
Eastern Arctic Area  
Government of Canada  
P.O. Box 358  
Iqaluit, NU X0A 0H0

Dear Mr. Moggy:

This letter is to clarify that any planned future airstrip extension at the Meadowbank Site will be accommodated without extending into Third Portage Lake. It is understood that DFO does not favour extending airstrip construction rockfill into the Third Portage Lake.

Yours truly,

CUMBERLAND RESOURCES LTD.

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Brad Thiele  
Vice President, Meadowbank Development

BT/bg



# MEMORANDUM

**To:** Karlette Tunaley  
Nunavut Impact Review Board

**From:** Colette Spagnuolo  
Environment Canada

**cc:** Craig Goodings  
Cumberland Resources Ltd.

**Date:** March 7, 2006

**RE:** Summary of Water Quality Discussions between Environment Canada and Cumberland Resources Ltd.

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On March 2, 2006, Environment Canada (EC) held a teleconference with Cumberland Resources Ltd. (CRL) and their consultants to discuss water quality issues that had been identified during the course of EC's review of the FEIS. A summary of the discussions is provided below for the information of the Nunavut Impact Review Board (NIRB).

Environment Canada has incorporated the majority of the results of these discussions into our written submission to the NIRB. However, if further review of the supplemental information provided by CRL results in any additional changes to EC's recommendations to the NIRB, these changes will be highlighted during EC's verbal presentation at the final public hearings.

## ***WATER QUALITY***

### **1. Dewatering of Lakes**

#### *Environment Canada's Issue / Recommendations*

Based on experience at the Ekati Mine, which dewatered lakes in preparation for open pit mining, drawdown of the lakes during summer resulted in much higher sediment concentrations in the water than when drawdown was done in winter. Even in winter, high suspended solids levels in the lake water limited the volume of water which could be discharged in compliance with license discharge criteria. The FEIS does not have any contingency plans for clarification of water to be discharged, beyond what can be put in the tailings area (which will also have to be drawn down in advance of inputs) and attenuation ponds. Environment Canada recommends that the development of contingency plans for treatment of turbid water during dewatering, or operational contingency plans, would be appropriate.

#### *Cumberland's Response*

Please see the Golder attachment, Section 1.1.

## 2. Lake Sediment Removal

### *Environment Canada's Issue / Recommendations*

Removal of lake bottom sediments will involve handling of saturated materials which are high in several metals (As, Cd, Cr, Cu, Pb, Hg, Ni, and Zn), and having a fine clay/silt particle size. The relatively limited volume to be placed upstream of the tailings dike following excavation of the footing area should not significantly compromise supernatant quality. With respect to the balance of the lake bottom sediments, placement in the footprint of the Portage pit lake may represent a liability when the area is re-watered. Environment Canada recommends that options for disposal of lake-bottom sediments should be refined and disposal methods developed that minimize the potential for effects on surface waters.

### *Cumberland's Response*

Please see the Golder attachment, Section 1.2

## 3. Water Treatment

### *Environment Canada's Issue / Recommendations*

Water treatment will certainly be required for reclaim pond discharges, and very possibly for pit lakes and attenuation ponds. Very limited information has been presented on the proposed treatment technology which could be used, and no target concentrations have been presented. Details have not been provided for the water treatment processes which would be used for the tailings pond effluent, nor for the settling of solids for dewatering, nor for the sewage treatment plant.

Detailed plans for water treatment should be presented for the tailings (reclaim) pond discharge, and on a contingency basis for the Vault Pit attenuation pond discharge, and for the pits. Estimates of treatment efficiency for each parameter of concern should be provided, and pH adjustment methods should be described. In addition, information on the treatment of camp sewage is needed, including the type of treatment system to be used, and the expected treatment capabilities.

### *Cumberland's Response*

Please see the Golder attachment, Section 1.3.

Information on the sewage treatment and reclaim water is as follows:

- **Sewage Treatment Systems:**  
(from the Standard Practice Manual Draft 3 Ministry of Health May 16, 2005)  
Province of British Columbia

#### 5.2 Levels of Treatment

"The Sewerage System Regulation and the Standard Practice Manual are structured around specific levels of treatment prior to discharge into the ground. As defined in the Sewerage System Regulation:

- \* Type 1 is treatment by septic tank only
- \* Type 2 is treatment that produces an effluent consistently containing less than 45 mg/l of total suspended solids and having a 5 day biochemical oxygen demand (BOD) of less than 45 mg/l; and
- \* Type 3 is treatment that produces an effluent consistently containing less than 10 mg/l of total suspended solids and having a 5 day biochemical oxygen demand (BOD) of less than 10 mg/l, and a median fecal coliform density of less than 400 Colony Forming Units (cfu) per 100ml."

▪ **Reclaim Water Treatment:**

"The treatment system for metals removal after closure would consist of a ferric co-precipitation high density sludge system (HDS) followed by final filtration. The ferric co-precipitation system would be provided by utilizing reagent make-up, agitated tanks, pumps and thickeners available in the mill after shut-down. Polishing filtration would require installation of a separate package that would be installed prior to shut-down. The HDS system would utilize ferric sulfate, lime and flocculant in a recycle sludge system. This represents conventional technology for producing effluent that meets low metal discharge limits. Final filtration would ensure that any particulate metal carry-over from the HDS system is consistently removed to meet to low environmental limits."

#### 4. Water Quality Predictions

*Environment Canada's Issue / Recommendations*

The information presented does not adequately identify the potential ecological effects associated with alteration of water quality in Third Portage Lake and Wally Lake. To assess the magnitude of impacts it would be useful to have an estimate of the extent of chronic toxicity expected to occur in the receiving environment. This should include identification of which species are likely to be affected, and how so. Also, no information has been provided regarding treatment in order for reviewers to evaluate the extent to which adverse effects could actually be eliminated.

In order to understand and properly assess effects to the aquatic receiving environment a comprehensive discussion of potential effects associated with the effluent discharge is needed. Specifically, what changes and effects are predicted for the immediate area of effluent discharges? What ecological effects will be expected when pit lakes are connected to the watershed and become a source of contaminants, major ions, and nutrients? What is the magnitude on a local scale?

Aquatic effects are discussed in the context of discharging at MMER levels for the relevant parameters, but actual discharge criteria are likely to be much lower, and treatment options should be discussed in the context of how best available technology will be employed to ensure protection of the environment.

*Cumberland's Response*

Effluent will be discharged to Third Portage Lake from the Second Portage attenuation

pond only during Years one to four or five of operation. Beyond Year 5 effluent will be directed to Goose Pit. Based on conservative predictions of water chemistry within the attenuation pond, all metals concentrations in effluent will be considerably lower for all metals prescribed in the Metal Mining Effluent Regulations. It is not anticipated that treatment will be required prior to discharge. Note that no water that comes into contact with mine tailings will be discharged to the receiving environment.

Cumberland Resources is committed to fulfilling all requirements of MMER, including environmental effects monitoring, specifically no acute toxicity to fish, investigations of sub-lethal toxicity of effluent, fish metals investigations and benthic invertebrate community surveys according to prescribed schedules.

Environment Canada expressed concern that while whole basin predictions of water quality have been made, there has been no evaluation of water quality of the lake area surrounding the discharge point. Given the relatively low metal loading predicted for the effluent and the large dilution capacity of the discharge point, we anticipate that impacts to the near-field mixing zone will be negligible. No exceedences of metals for which there are CCME guidelines will be exceeded in Third Portage Lake north basin, except for cadmium which for reasons explained earlier, is an artifact of the hardness derived guideline.

## **5. Effluent Discharge Configuration**

### *Environment Canada's Issue / Recommendations*

Environment Canada supports the use of a diffuser to facilitate mixing, but has concerns that the proximity to lake-bottom may result in disturbance of the sediments and/or bottom scour. It would be helpful to have bathymetry information for Wally Lake.

Effluent will have higher salinity than the receiving waters. Has consideration been given to the potential for density gradients to develop in low areas of the lake? It does not appear that lakes in the area tend to stratify, so this may be of minimal concern, but should be examined.

Environment Canada recommends that further details be developed for the effluent outfall configuration, and predictions for the likely behavior of the plume.

### *Cumberland's Response*

Under MMER there is a requirement to conduct a plume delineation study to determine the actual zone of impact and to determine the spatial extent of the plume. Modeling to delineate the spatial extent of the plume will be conducted as part of detailed engineering design, once the location and design of the diffuser system has been determined.

To minimize impacts to the receiving environment, the following design features will be incorporated into the effluent discharge system:

- The effluent pipe will be seated along the bottom of Third Portage Lake north basin and extend directly offshore of the north end of Second Portage Lake opposite the attenuation pond.
- Effluent will only be discharged during the open water period and not under ice.

- The pipe will run along the bottom of the lake to a depth of at least 16 m. The shoreline along Third Portage at the discharge pipe location has a very steep drop off to water of about 20 m depth at about 80 – 100 m offshore.
- Effluent will be discharged far enough away from shore and productive fish habitat so as to have no direct impacts.
- The effluent pipe will be fitted with a diffuser to facilitate mixing.
- The diffuser head will be situated several meters above the lake bottom to ensure that sediment is not disturbed or entrained in the outflow.
- The location of effluent discharge pipe will be far enough offshore to take advantage of the prevailing north – south wind direction that will facilitate longitudinal and vertical mixing.

Environment Canada will be kept apprised of developments with respect to siting and design of the effluent discharge system.

## **6. Airstrip Extension**

### *Environment Canada's Issue / Recommendations*

The report describes the potential expansion of the airstrip into Third Portage Lake by 380 m, using till material. However, there does not appear to be further information available regarding the likelihood of airstrip expansion, nor associated effects. If the airstrip is likely to be extended into the lake, EC would have concerns with introduction of sediments and contaminants into the lake. The potential for spills and dust being introduced into the lake would be increased. Further information and assessment of the airstrip extension is needed.

### *Cumberland's Response*

The airstrip has been reoriented and now will not extend into the lake.

## **7. Other Questions**

- a) Will sufficient geotechnical investigations be completed along the dike alignments so that reviewers can be confident that there will be no concerns with the silt/clay sediments not being excavated?

*Cumberland's Response:* please see Golder attachment, Section 1.4.1

- b) Have end-of-pipe effluent quality predictions been developed?

*Cumberland's Response:* please see Golder attachment, Section 1.5

- c) In the Water Quality Predictions report, pages 3-2 and 3-3, inputs for ammonia are shown as 0 from the tailings. Is ammonia already accounted for elsewhere? Why aren't CN degradation amounts included?

*Cumberland's Response:* please see Golder attachment, Section 1.6

d) Will the Goose Pit be likely to develop a chemocline?

*Cumberland's Response:* Golder will respond under separate cover.