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REPORT ON

WATER QUALITY PREDICTIONS
MEADOWBANK GOLD PROJECT
NUNAVUT

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EXECUTIVE SUMMARY

This report presents water quality predictions developed for the proposed Meadowbank Gold mine located north of Baker Lake, Nunavut. Water quality predictions are provided for drainage from all major mine site components, within the proposed mine site and for pit lakes that will result from flooding of the open pits. Predictions are based on information gathered from a number of baseline studies augmented by or calibrated with existing conditions and experience at other sites, including the following northern mine sites: Diavik, Ekati, Lupin, Nanisivik, North Rankin Inlet, Snap Lake, Cullaton Lake, Cluff Lake and Colomac.

The predictions were developed using the Gold*Sim* simulation package, with modules specifically designed for the Meadowbank Project. Within the mine site footprint, predicted dissolved constituent concentrations are evaluated for each mine component on a monthly time step (as monthly averages) for the duration of operation and post closure (to Year 23 or 300 months). The effect of suspended solids on effluent water quality is also assessed. The evolution of the Portage pit lake water quality and the assessment of the Meadowbank area lakes water quality were modeled separately and results are summarized in this report. When data was not available or sparse, conservative assumptions were used.

Three scenarios are modeled. A *Probable* scenario and a *Possible Poor End* scenario provide water quality results that are anticipated to represent the probable range of drainage qualities. The *Probable* scenario uses input values that simulate observed field conditions, realistic scaling factors and explosives management. The *Possible Poor End* scenario input values simulate probable variance on observed field characteristics and selected input parameters to capture possible natural variance. A third, *Hypothetical* scenario was also completed to address concerns expressed during the NIRB review process and reflected in the Meadowbank project certificate conditions. This scenario addresses the concern that application of laboratory data directly to field conditions might not lead to realistic conditions. Inputs to this *Hypothetical* scenario are discussed modeling and results are presented for completeness,

In consideration of the early stage and dynamic nature of the project, predicted concentrations are to be considered order-of-magnitude approximations of mine site drainage water quality.

Vault Area Water Quality Predictions

The concentration of dissolved constituents in the **Vault attenuation pond water, and consequently in the effluent to Wally Lake, is predicted to comply with the Metal Mining Effluent Regulation (MMER) discharge criteria for chemical constituents throughout operation and post-closure for all scenarios**. **Vault effluent is therefore not expected to require treatment before discharge to Wally Lake.** The model predicts that in the Vault Attenuation Pond (before discharge via diffuser), a limited number of constituents (aluminum, nitrate nitrogen and possibly arsenic) may exceed the Nunavut Drinking Water (N-DW) criteria under the *Possible Poor-End* scenario. At the end of the Vaut pit life, the Vault pit will be slowly filled with water. The long-term **water quality of the resulting Vault pit lake is predicted to meet MMER discharge criteria for all constituents, under all scenarios. The model predicts that under the '*Probable*' scenario the Vault pit lake water will meet the** Nunavut DW criteria. However the model predicts that under the *Possible Poor End* scenario some constituents, possibly arsenic and antimony, may not meet the Nunavut DW criteria. With appropriate care in explosives use (assuming 5% wastage or under), the average monthly concentration of explosives by-products in pit lake water may reach over 1 mg/L for both nitrate and ammonia nitrogen. The *Possible Poor End* scenario was run assuming that the final effluent from the Vault Attenuation Pond always contained the MMER maximum effluent limit for suspended solids and that these solids constituents would contribute metals (mostly aluminum and iron) to the effluent. The effluent for this scenario still meets the MMER but some of the additional constituents (aluminum and iron) may exceed the Nunavut DW criteria.

The results of the near-field mixing and dilution analyses indicate that the mine contact water pumped from the Vault Attenuation Pond will meet the MMER criteria at the point of discharge (i.e. the diffuser), and will be within the CCME (CEQG) guidelines for the protection of aquatic life (DFO, 2006) within the mixing zone.

The thickness of the active layer will affect drainage quality of the Vault Rock Storage Facility (RSF), however, the magnitude of this effect is predicted to be insignificant during operation and minor during the post-closure period when the rock pile has reached its water-retention capacity and infiltrated drainage flows out of the pile. The effect of an increased active layer thickness on the water quality of the Attenuation Pond or pit lake is predicted to be minor because the volume of RSF drainage flowing to the Attenuation Pond is small (12% to 18%) compared to inflow from other sources.

Portage Area Water Quality Predictions

Drainage water quality from all mine components except tailings reclaim water is predicted to meet MMER criteria for chemical constituents. The pH of Portage RSF drainage could become acidic in the unlikely event that Potentially Acid Generating (PAG) materials develop Acid Rock Drainage (ARD) before the mitigative measures are fully effective. The dissolved solids concentration of the Attenuation Pond (effluent discharge prior to any treatment) is predicted to be on the order of 500 to 700 mg/L. Explosives by-products such as ammonia nitrogren and nitrate will accumulate in the Attenuation Pond. Part of these products will volatilize in the summer months but if one conservatively assumes a complete accumulation, concentrations could reach in the order of 10 mg/L. The predicted ammonia and nitrate concentrations do not, however, consider sources other than explosives such as the degradation of cyanide by-products which could increase this concentration. Given the fact that ore processing includes a cyanide destruction step, based on existing operating experience, this source is not expected to be important.

Cyanide destruction will bring cyanide levels in the tailings water to a few parts per million. However because the tailings water will be entirely recycled during the mine life, the tailings Reclaim water quality is predicted to contain total cyanide levels that will not meet MMER discharge criteria even with the diluting effect of precipitation over the tailings pond. It is also expected to contain some copper and elevated sulphate levels. The source of copper originates mostly from the ore and sulphate levels originate partly from the sulphur contained in the ore and, from the use of a copper sulfate additive required for the SO_2/air cyanide destruction process. Cyanide species are associated exclusively with tailings water in the Reclaim Pond. Free and weak acid dissociable (WAD) cyanide are expected to attenuate naturally from exposure to sunlight and volatilisation, while cyanide destruction by-products cyanate (CNO) and thiocyanate (SCN) are predicted to accumulate in the Attenuation Pond. Their concentration is predicted to reach monthly averages of around 700 mg/l (CNO) and 1000 mg/l (SCN), not accounting for any degradation, although this process would likely be slow in the Meadowbank project environment. **The concentration of some constituents in the tailings reclaim water is therefore predicted to exceed MMER criteria at the end of mine life when reclaim water will be discharged to the diked Portage pit lake and not directly to the receiving environment.** Reclaim water quality will be monitored during operation and may be treated prior to discharge. Reclaim water treatment alternatives are discussed in Golder (2007e).

An increase of the active layer thickness from 2 meters to 8 meters, due to global warming or other factors, is predicted to have a minor effect on drainage water chemistry until the RSF reaches its water retention capacity. The effect of active layer thickness variation on Attenuation Pond water quality is not significant, since the proportion of flow to the Attenuation Pond from RSF drainage is very small (less than 6%) compared to inflow from other sources.

The additional contaminant load that would result from a discharge of 15 mg/L of total suspended solids (the MMER discharge criteria limit) on effluent discharge does not change compliance of the effluent discharges: the Year 4 discharge is predicted to remain compliant with MMER and concentrations of aluminum, chloride, manganese and iron would exceed Nunavut DW levels.

The long-term Portage and Goose Island pit lake water quality is predicted to meet MMER for all constituents and for most Nunavut DW-regulated constituents with the possible exception of iron and manganese aesthetic criteria in Portage pit lake under a *Possible Poor-End* scenario.

During filling and shortly thereafter, Portage Pit Lake is predicted to develop a temporary chemocline at approximately 30 meters from the bottom of the pit (approximately 100 meters below pit lake surface). The chemocline is predicted to slowly erode, after which concentrations are expected to reflect fully mixed conditions throughout the water column. The temporary chemocline is expected to have limited effect on the above pit lake water quality which, similar to surrounding lakes, is expected to remain oxygenated with a relatively low dissolved solids concentration.

Receiving Water Quality

During dike construction, metal concentrations in pore waters of the submerged dikes are predicted to exceed guidelines for the protection of aquatic life for a limited number of constituents. Concentrations are expected to attenuate to near background lake water quality as lake water on the pit side of the dikes is drawn down. This will occur because of the hydraulic gradient created across the dike which is expected to induce flow of both dike pore water and lake water toward the pit. Post-closure, concentrations in the dikes are expected to continue to be within the guidelines for the protection of aquatic life for all parameters with the possible exception of aluminum and fluoride, although these components are likely overestimated based on the conservative assumptions used in modeling.

Excess Portage Attenuation Pond water will be release to the receiving environment through the Third Portage Lake diffuser. The diffuser will be designed to meet MMER water quality criteria at the point of discharge, (i.e. the diffuser) and to achieve Nunavut Drinking Water levels and approach as close as possible the CCME aquatic life guidelines at the boundary of a 30-m radius mixing zone from the center of the diffuser. It is predicted that the mine effluent would meet MMER at the point of discharge in Third Portage Lake, while Nunavut Drinking Water and CCME aquatic life guidelines will be achieved at the boundary of the mixing zone.

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1.0 INTRODUCTION

Agnico-Eagle Mines Ltd. (AEM) is in the process of applying for a Type –A Water License for the development of the Meadowbank Gold Project (the Project). The Project is located approximately 70 km north of Baker Lake in Nunavut within the Low Arctic ecoclimate described as one of the coldest and driest regions of Canada. Figure 1-1 shows a site location map.

This report presents water quality predictions developed for the Project. This exercise is part of the overall mining waste characterization program developed by Golder Associates Ltd. (Golder) to advance the development of water and waste management plans in response to requirements of the Nunavut Impact Review Board (NIRB) and in support of the Type-A Water License Application to the Nunavut Water Board (NWB) for the Project.

This report supersedes a previous version (Golder, 2005a) issued to NIRB in support of the Environmental Impact Assessment. The predictions presented in the current report consider an increased mining rate of 8500 tonnes per day (from 7500 t/day) and include modifications requested in the conditions of the NIRB Project Certificate No. 004, (Condition 8) and Proponent Commitments 1, 43, and 50, as follows:

> **NIRB Commitment 8:** *Cumberland shall, within 30 days of re-opening the camp, re-sample existing groundwater monitoring wells and combining the sampling data with existing rounds of groundwater sampling data, re-evaluate the salinity, major ion concentrations, and dissolved metal load of groundwater flowing to the mine pits and incorporated the results into the water quality monitoring and treatment program. At the time samples are taken Cumberland shall also assess the condition of existing groundwater monitoring wells and replace any defective wells. Cumberland shall continue to undertake semi-annual groundwater sample and re-evaluate the groundwater quality after each sample collection. Cumberland shall report the results of each re-evaluation to NIRB's Monitoring Officer, INAC and EC' and incorporate the results of the additional data into the water license application to the NWB.*
>
> **Proponent Commitment 1:** *Commit to re-run model for sensitivity analysis on total dissolved solids concentrations in pit waters.*
>
> **Proponent Commitment 43***: Re-do water quality modeling with less conservative assumptions: no rock wetting factors, no permafrost, use 1-kg IV rather than 100-kg IV rates for poor-end; used 100-kg for best estimate; higher temperature of soil to air by 4.4^{0}C; long-term water quality with global warming; minimal improvement to water quality from UM cover (not automatic transition).*

Proponent Commitment 50*: Re-evaluate (salinity) model using 2003 and 2004 groundwater data.*

This report presents the mine site components relevant to water quality predictions; the input values and assumptions used in the model; and provides results for different scenarios as monthly forecasts of water quality for drainage from each mine component.

Three scenarios are modeled. A *Probable* scenario and a *Possible Poor End* scenario provide water quality results that are anticipated to represent the possible range of drainage qualities. The *Probable* scenario use input values that simulate observed field conditions and realistic scaling factors and explosives use. The *Possible Poor End* scenario simulates possible variance on observed field characteristics and selected input parameters to capture probable natural variance. The results of the *Probable* and *Possible Poor End* scenarios are provided in Appendix II and III respectively.

In addition, a sensitivity run was also completed to address concerns expressed during the NIRB process. A *Hypothetical* scenario was developed for Vault and Portage Rock Storage Facilities (RSF), Attenuation Ponds and Pit Lake water quality, to address concerns expressed during the NIRB review process and reflected in the Meadowbank project certificate conditions. This scenario addresses the concern that application of laboratory data directly to field conditions might not lead to realistic conditions.. This scenario provides results that are considered to be outside reasonable expectations. Inputs to the *Hypothetical* scenario are discussed in this report and modeling results are presented in Appendix IV for completeness.

All scenarios modeled provide monthly forecasts of water quality which are presented as either monthly, summer or annual averages for each mine component for the relevant time periods.

2.0 MINE COMPONENTS RELEVANT TO WATER QUALITY PREDICTIONS

This chapter describes the management plans and mine components that were considered in the mine water quality model.

The model boundary is the mine footprint area. Lakes adjacent to the mine footprint such as Wally Lake, Third Portage Lake, and Second Portage Lake outside the diked areas are excluded from the model. Water chemistry evaluations for receiving lakes have been performed independently but made use of the predicted water quality for the Attenuation Pond as the effluent concentration input into the receiving lakes. Results of these studies are reported in Golder (2007a and 2007b).

2.1 Mine and Waste Management Plans

The project area currently consists of four gold deposits that include, from south to north: Goose Island, Third Portage, North Portage and Vault deposits (see Figure 1-1). The Goose Island deposit is located approximately 1,000 m south of the Third Portage Deposit and the Vault deposit is located approximately 5 km north of the North Portage deposit. The Third and North Portage deposits will be mined from two pits of the same name, joined together by a connector zone at a later stage in mine life, such that at closure, a single Portage pit will exist. The Goose Island and Vault deposits will be mined from individual pits.

During mine life, approximately 182 million tonnes (Mt) of waste rock including 9 Mt of overburden will be generated from all pits during the eight to nine year mine life.

Approximately 105 Mt of waste rock will be generated from the Goose Island, North and Third Portage deposits, the majority of which (63 Mt) will be placed into the Portage waste rock storage pile, and approximately 23 Mt will be backfilled into Portage pit. Some waste rock will be used to construct the dewatering dikes or will be placed within Second Portage and Third Portage lakes to enhance fish habitat. Dike rock will be submerged upon placement, while in-pit waste rock will be submerged upon flooding of the pits and the end of mine life. Waste rock extracted from the starter pit (shallow portion of Third Portage pit) will be used for construction of mine site roads and dikes.

Approximately 68 Mt of rock excavated from the Vault pit will be placed in the adjacent Vault Rock Storage Facility, which will consisting exclusively of Vault pit waste rock (AMEC, 2005; MMC, 2007a)

The three principal rock types that will be extracted during construction and mining include: banded iron formation (IF), ultramafic and mafic volcanic (UM), and intermediate volcanic (IV) rock. These lithologies represent approximately 20%, 24%, and 54%, respectively, of the tonnage of waste rock that will be generated from all open pits during mine life. A quartzite unit (QTZ) also occurs in localized areas of the southern pits, but will generate a significantly lower quantity of waste (2%) (AMEC, 2005). The Goose-Portage RSF will include IV, IF, UM and QTZ rock types (from the Goose Island, North and Third Portage deposits). The Vault pit waste will generate IV rock almost exclusively, which will all report to the Vault RSF.

The majority of IF and QTZ pit rock is potentially acid generating (PAG), although a significant proportion of the IF rock type has an uncertain potential for generation of acid rock drainage (ARD) and QTZ rock has very low potential acidity (but no acid-buffering capacity). The UM pit rock has a high buffering capacity; it is non acid generating (non-PAG). UM rock has the highest median neutralization potential (NP) of all rock types. IV pit rock has a variable ARD potential, the Vault IV rock having a higher buffering capacity than the Goose-Portage area IV rock and a lower proportion of the more reactive sulphides (pyrrhotite). The bulk of this rock type is non-PAG. Statistical evaluation of starter pit rock indicates that the ARD characteristics of each lithology within the starter pit are generally not statistically different from those of rocks outside the starter pit (Golder 2005b and 2005c).

The Meadowbank ore consists mainly of pyrite and pyrrhotite-hosted gold, with some native (i.e. free) gold. In the Goose and Portage deposits, gold is hosted in IF and IV rocks whereas in the Vault deposit, gold is hosted in IV rock. All ore will be processed at the same mill located east of the Portage pits at a rate of 8500 t/day. The plant will process mixed ore from the different deposits. Ore processing will include a gravity circuit, followed by a whole-ore cyanide leaching circuit. Gold recovery from the cyanide leach will be by a carbon-in-pulp (CIP) circuit. The tailings will be subjected to an SO_2/air cyanide destruction step prior to disposal. A total of approximately 22 Mt of tailings will be generated during mine life. The bulk of tailings are PAG although the delay to onset of ARD is relatively long based on geochemical testing conducted to date. One year of accelerated weathering did not achieve ARD conditions. (Golder 2005b and 2005c).

It is expected that UM rock will be used for roads and site construction with the exception of the water retention dikes. Water retention dikes will be constructed to allow mining of the Portage and Goose Island pits. The dikes will be constructed from run-of-mine rock from the pits. They will have a core of overburden, an upstream (submerged) side constructed of IF rock and a downstream (dry) side constructed of IV rock. This will take advantage of the chemical characteristics of these rock types; submerging IF rock to minimize oxidation of potentially acid-generating rock and exposing bulk IV rock which is non-PAG.

Lake bottom sediments will only be removed from the footprint area of the Central and Stormwater Attenuation Pond Dikes. The proposed construction methodology for the De-watering Dikes does not include the removal of lake bottom sediments. Within the Central (tailings) Dike footprint, lake bottom sediments will be stripped to expose the till foundation and will be disposed of immediately upstream of the Central Dike. Stripped lake bottom sediments from the dike foundation in the Stormwater Attenuation Pond will be placed downstream of the dike. The stripped material from the dike foundations will be placed on the dewatered lake bottom sediments and some may flow into the Reclaim Pond. A portion of the lake bed sediments will remain exposed for a period of time after sections of Vault, Second and Third Portage Lakes are dewatered for mine development.

Details of the tailings management strategy and the tailings deposition plan are presented in MMC (2007a) and Golder (2007c). The western end of the Second Portage Arm will be initially used as a Stormwater Attenuation Pond for the first five years of operation. During that time, tailings will be discharged from the eastern end of Second Portage Arm, and a Reclaim Pond will be operated separately from the Attenuation Pond, in the main portion of Second Portage Arm. Around Year 5 of mining, the eastern portion of the Second Portage Arm will be filled with tailings, and waters flowing to the Attenuation Pond will be re-directed to the mined out Goose Island Pit for flooding of the pit. The tailings will be deposited as a slurry up to an elevation above the current lake surface. At closure, the tailings will be capped with acid buffering run-of-mine UM rock of a minimum 2-meters thickness to host the annual active thaw depth. The tailings mass is expected to freeze over time (Golder, 2007c).

Operational details of some mine components will be developed during mine operation. Where information was lacking, conservative assumptions were made to bracket water quality predictions within reasonable bounds.

2.2 Mine Site Components

A number of mine site components will contribute flow and a chemical mass load to mine site drainage. The mine components considered in the model include the open pits, the rock storage facilities (RSF), ore stockpiles, water Attenuation Ponds, the tailings Reclaim Pond, and pit lakes that will result from flooding of the three open pits. Information from each of these components relevant to the model is presented below. The geometry, construction details and hydrology related to each component are described in the respective baseline reports and are only referenced in this report (Golder, 2007b; Golder, 2007d; Golder, 2004b; MMC, 2007a; MMC, 2007b). Figure 2-1 presents an annotated site plan containing the main components that were included as contributors of chemical mass load to drainage within the mine site.

2.2.1 Vault Area

- **Open Pit**: The Vault open pit will be operated from Year 4 to Year 8. Water collected within the Vault pit will be pumped into the Vault Attenuation Pond. The pits collect direct runoff over the pit footprint and pit walls. Groundwater seepage is not expected to occur as the Vault pit is located within permafrost. The permafrost meltwater seeping into the pit during frost-free months is assumed to be negligible compared to the other pit inflows and has not been considered in the model. Controlled flooding of the Vault pit upon closure will make use of water from Wally Lake.

- **Rock Storage Facility**: Consists of waste rock from the Vault Pit. RSF runoff and infiltrated drainage will be collected in interceptor systems (e.g., berms) at the toe of the pile and routed to the Vault Attenuation Pond. The Vault RSF will be active between operating Years 3 and 8.

- **Attenuation Pond**: Located in the previously-drained bed of Vault Lake, it will collect water from the rock storage pile, the open pits, diked areas and dike seepage, and Vault area contact water between operating Years 3 and 8. The pond will be drawn down annually during the summer months, generating discharge to Wally Lake. The attenuation in this facility consists of drainage flow control and particulate settling.

- **Wally Lake**: Final receptor of effluent from Vault Attenuation Pond during frost free months (June to September).

2.2.2 Portage Area

- **Open pits and Dikes**: The Goose Island Open Pit will be active from Year 2 to Year 4 while the Portage pits will be active from Year 1 to Year 5. Water collected within the Goose Island, Third and North Portage pits will be pumped into the Portage Attenuation Pond for the first four to five years of operation. Once the Goose Island pit is mined out in Year 4, this area will be used to collect mine site contact waters originally directed to the Attenuation Pond (northwest of the tailings impoundment). The pits will collect direct runoff over the pit footprints, diked areas and pit walls, groundwater seepage and dike seepage. Controlled flooding of all pits upon closure will occur using water from Third Portage Lake.

- **Rock Storage Facility**: This facility will receive waste rock from the Goose Island, Third and North Portage pits. Portage RSF runoff and infiltrated drainage will be collected in a ditch at the toe of the pile and routed to the Portage Attenuation Pond until Year 5, then to the Reclaim Pond. At closure, the Portage RSF will be covered with a minimum 2-meter thick layer of acid-buffering UM waste rock.

- **Attenuation Pond**: Located in the drained, north-west portion of Second Portage Lake, it will collect water from the rock storage pile, a small ore stockpile, all three open pits and Portage mine area contact water for the first four to five years of operation. During this time, the pond will be drawn down annually during ice-free summer months, resulting in effluent being discharged to Third Portage Lake. After this period, the Reclaim Pond will expand over the Attenuation Pond area and mine contact water will be re-directed to Goose Island open pit for flooding.

- **Third Portage Lake**: Final receptor of effluent discharged from the Portage Attenuation Pond for the first four to five years of operation, during ice-free months only. At Year 5 and after, mine contact water (except Portage RSF drainage) will be directed to the open pits for flooding such that mine effluent discharge to Third Portage Lake is expected to be minimal.

2.2.3 Tailings Impoundment

- **Tailings Storage Facility (TSF)**: Located in the partially drained eastern portion of the west arm of Second Portage Lake, it will contain tailings solids (i.e. processed ore) of all deposits and the process water Reclaim Pond.

- **Tailings Decant Water**: Consists of tailings process water deposited along with tailings solids into the TSF. Process water will be treated with a SO_2/air or sodium metabisulphite cyanide destruction process prior to release into the TSF.

- **Reclaim Pond**: The Reclaim Pond is located within the TSF. It will receive tailings decant water and contact water from the area immediately adjacent to the impoundment (including RSF drainage water after Year 5), direct precipitation over the impoundment and pre-treated sewage water. It may also receive pit sump water as a contingency if pit sump water quality is not acceptable for transfer to the Portage Attenuation Pond. After year 5, the tailings Reclaim Pond will expand into the area of the Attenuation Pond. The Reclaim Pond operates at a slightly negative water balance. Make-up water will be first obtained from the Attenuation Pond or open pit sumps, and any additional make-up water will be obtained from Third Portage Lake. The TSF will be progressively restored during operation. At closure, the Reclaim Pond will be drained and decant water may be treated prior to discharge to Portage Pit Lake or possibly Goose Pit Lake if necessary. The tailings solids will be covered with a minimum 2-meter thick layer of acid-buffering UM waste rock.

2.3 Water Management Plan and Site Water Balance

The site water balance and water management plan (the Plan) are described in the Meadowbank Mine Waste and Water Management report (MMC, 2007a). The Plan proposes diversions to avoid contact between clean runoff water and areas affected by the mine or mining activities. It is designed to intercept and collect contact water originating from mine-affected areas and convey the water to attenuation storage facilities where it may be treated if necessary prior to discharge to receiving Lakes.

The site water balance was modeled using the Gold*Sim* database management and simulations package. Gold*Sim* is a graphical, object-oriented mathematical model where all input parameters and functions are defined by the user and are built as individual objects or elements linked together by mathematical expressions. The object-based nature of the model is designed to facilitate understanding of the various factors which control the current or future performance of an engineered or natural system. In Gold*Sim* the various sources of water and associated chemical loads are itemized and the relative contribution to and from each drainage is evaluated from the start of operation to post-closure. The model was built to run monthly time steps for 23 years (300 months) with a starting date of October 1, two years before start of operations, and an ending date of September 30, 15 years after mine closure. Detailed information on Gold*Sim* model set up, input data and assumptions relating to climate and hydrologic characteristics of the various mine components is provided in the Mine Waste and Water Management report (MMC, 2007a).

The Meadowbank Gold*Sim* model calculates water quality at various points on site including the Vault and Portage Attenuation Pond which is the source of discharges to their respective receiving Lakes. The flow of water and transport of chemical mass between the various site components was incorporated in the Gold*Sim* model through the use of "feedback" links by which, through an iterative process, the concentration at the previous model time step is used to calculate the concentration at the current time step.

3.0 MODEL INPUT PARAMETERS

This section describes the approach taken to predict discharge water qualities from the various mine components. Inputs to the predictive model are based on information gathered from a number of baseline studies conducted to date, including open pit designs, geochemical, geotechnical and hydrogeological studies, thermal analyses, mine waste and water management and dike construction aspects of the project. This information was augmented by or calibrated with existing conditions and experience at other northern mine sites, including the following: Diavik, Ekati, Lupin, Nanisivik, North Rankin Inlet, Snap Lake, Cullaton Lake, Cluff Lake and Colomac.

The chemistry of discharge from the various mine components was derived from existing baseline data and from kinetic test leaching rates, from which were calculated lithological and mine component loading rates. Loading rates were factored in to simulate the particular environment of each mine component. The factored leaching rates were then multiplied by the flow component for each mine structure.

This section describes the assumptions and data inputs to the model and the methodology used to predict water quality.

3.1 Baseline Data

3.1.1 Rock Composition

The chemical composition of each rock type that will be disturbed by mining was obtained from static testing results (2005b). The median chemical composition of each rock type was input into Gold*Sim* to calculate mass loading from suspended solids, assuming this size fraction has the same composition as the parent rock.

3.1.2 Tailings Solids and Decant Water

The composition of tailings solids and decant water was obtained from the metallurgical process testing for whole ore from Goose Island, Portage and Vault deposits after the SO_2/air cyanide destruction process (Golder, 2005b). Table 3-1 (see attached) shows decant water quality input parameters used in the model.

3.1.3 Groundwater Quality

Information on groundwater quality was obtained from monitoring wells installed in each of the major rock formations and in the talik under the proposed tailings deposition area (Golder, 2007d). Groundwater quality data were collected over three sampling rounds in 2003, 2004 and 2006. The groundwater quality input used to describe groundwater seepage into the Portage and Goose Island pits consists of the average groundwater quality from all monitoring wells over the three sampling periods, except for salinity-related chemistry. The concentration of salinity-related major ions was increased over time to represent upwelling of connate[1] water to open pits as the pits are deepened.

Upwelling of connate water to open pits was modeled based on site groundwater concentrations of total dissolved solids (TDS) at the depth of the screened interval, augmented by information from other sites including Diavik and Lupin mines. The resulting Meadowbank site-specific TDS profile with depth was used to model the expected increase in salinity (TDS) of groundwater accumulating in the Portage and Goose Island pits on an annual basis during mine life (Golder, 2007d). The TDS concentrations were used in a regression analysis to extrapolate major ion chemistry (chloride, calcium, magnesium, potassium and sodium) on an annual basis. The groundwater quality input parameters used in Gold*Sim* are presented in Table 3-2 (see attached).

3.1.4 Undisturbed Area Runoff Water Quality

Runoff from undisturbed areas (non-contact water) constitutes approximately 15% of the inflow to the Portage Attenuation Pond and between 68% and 78% of the inflow to the Vault Attenuation Pond (MMC, 2005a). The quality of overland drainage was investigated in June 2004 (Golder 2005b). Table 3-3 (see attached) presents the average overland drainage water quality that was input into the model to represent runoff from undisturbed areas.

3.1.5 Temperature

Ambient air temperature and lake water temperature measured at the Meadowbank site were used to scale laboratory-derived weathering reaction kinetics to reflect site climate conditions (Table 3-4).

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[1] Connate water is deep, ancient groundwater that is brackish to saline with elevated total dissolved solids and chloride concentration.

Table 3-4 Ambient Air and Lake Water Temperature Model Input Parameters

Months	Actual Mean Ambient Air Temperature (ºC)	Lake Water Temperature Input (ºC)
October	-6.6	2
November	-16	2
December	-27	2
January	-33	2
February	-30	2
March	-26	2
April	-17	2
May	-6.1	2
June	3.9	5
July	12	9
August	10	12
September	3.2	5

The effect of global warming was not considered in the 23-year time span of model predictions. The long-term effects of global warming may result in a slight increase in the leaching rate of major ions in the outer layer of thawed permafrost. The effect is not expected to cause a significant increase in leaching rates throughout the entire thickness of the thawed material because of the temperature-attenuating effect of the underlying permanently-frozen substrate.

3.1.6 Explosives

Explosives use in the open pits is expected to contribute to loading of nitrates, ammonia, and sodium (in emulsion only) and consequently dissolved solids, TDS. The type of explosive to be used during operations was modeled as a 50/50 mixture of emulsion and ammonium nitrate/fuel oil (ANFO). In reality, the ratio of emulsion to ANFO will be more like 80 to 20 because an emulsion plant is included in the final design and ANFO would only be used more extensively in the pre-stripping year. The bulk compositions of the emulsion and ANFO are provided in Table 3-5.

Table 3-5 Explosive Composition (based on data from manufacturers)

Components	Ammonium Nitrate/Fuel Oil (ANFO)	Emulsion (non-aluminized)
NH_4NO_3	94 %	63 %
$NaNO_3$	0 %	18 %
H_2O	0 %	9 %
Fuel Oil	6 %	6 %
microballoons (glass)	0 %	4 %

3.2 Chemical Leaching Rates

The chemical mass released from the various mine components (rock storage areas, ore stockpile, pit walls, dike seepage, tailings) and consequent drainage water composition was evaluated using leaching rates derived from kinetic testing of waste rock and tailings (Golder 2005c). Kinetic testing of pit rock was conducted at various scales and conditions to improve simulation of field conditions:

- Laboratory testing of 1-kg samples of waste rock from each major rock type (Vault IV, Goose-Portage IV, IF and UM);
- Laboratory testing of 100-kg composite samples of Vault IV and Goose-Portage IV; and
- Field barrel testing of 200 to 250 kg samples from each major rock type (Vault IV, Goose-Portage IV, IF and UM).

Laboratory kinetic tests are designed to simulate weathering under accelerated conditions (ASTM 1996). The samples were crushed to <6.3 mm, subjected to higher flushing rate than field cells, and tested at approximately 22ºC, compared to the annual average temperature of -12°C with only four months of above-zero average temperature. The field cells consist of broken core samples with little fines and are exposed to the actual dryer, colder site climate. Table I-1 of Appendix I provides a summary of the different leaching test conditions for waste rock samples.

Under the accelerated weathering conditions simulated in the laboratory, a number of the 1-kg samples generated ARD and associated metal-rich leachates. However, the large composite samples subjected to laboratory and site conditions (field barrel tests) maintained neutral drainage and did not develop ARD. Leaching rates provided by field barrel tests were generated from coarse rock under field conditions and are therefore considered representative of the upper limit ("good" quality) of the probable range of drainage water quality. Conversely, the laboratory-derived rates correspond to accelerated weathering of waste rock and are representative of the lower end ("poor" quality) of possible water quality.

In general, ARD is not expected to occur during operation and post closure given the low reactivity and long lag time to the onset of ARD for some of the PAG rock (Golder, 2005c), and given the expected early onset of freezing conditions in RSF and on the surface of the tailings impoundment.

Constituent loading rates were calculated by converting kinetic test leachate concentrations to a weekly release rate on a mass basis. The mass load from the laboratory humidity cell results was then adjusted to account for the different site weathering conditions (geotechnical[2] and climatic). Field tests leaching rates were adjusted for geotechnical factors only.

The weekly leaching rates were used to develop lithological loading rates that were applied to each mine component, as described in the following sections. The mass loading rates used in this assessment (prior to scaling factors) are provided in Table I-2 of Appendix I. Figures I-1 to I-9 of Appendix I compare the leaching rates of selected constituents from the different test conditions.

3.2.1 Lithological Leaching Rates

Leaching rates derived from field cell tests represent the upper limit of drainage water quality from bulk rock for each major rock type. These rates were used to calculate *Probable* scenario water quality. Leaching rates derived from the 100-kg composite samples of Vault IV and Goose-Portage IV represent accelerated weathering rates of bulk IV from each area (used to calculate possible poor-end water quality). Accelerated leaching rates for bulk IF and UM rock were calculated based on kinetic test results from 1-kg samples, as no 100-kg samples were tested for these lithologies. The 1-kg samples represent small-scale variability within each lithology. In contrast, the larger 100-kg leaching cells are composites that produce a more homogenized drainage quality. Leachate chemistry from the large cells is assumed to more closely simulate drainage from IV waste rock than would a mathematically mixed drainage from individual 1-kg samples.

Considering the objective of the model to describe the likely overall characteristics of rock pile drainage rather than the chemistry of discrete flow zones within the pile, water quality predictions using the 100-kg samples are considered to be more representative of the bulk leaching characteristics of the IV lithology than predictions derived from the mathematical

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[2] Such as preferential flow paths and large grain size in the rock pile.

mixing of small scale test leachates, which do not account for geochemical processes occurring within the pile.

Individual contributions from each test cell were proportioned to most closely simulate the median chemical characteristics for key constituents (principally total sulphur, NP and arsenic content) as defined by the static test database (Golder 2005b). The rationale used to proportion the contribution from each sample is described in Table 3-6.

Table 3-6 Derivation of Chemical Leaching Rates by Lithology from Accelerated Weathering Tests.

Area	Lithology	Test Sample	Proportion	Rationale
Goose Island, Third and North Portages	Intermediate Volcanic (IV)	100-kg composite IV	100%	• Non-PAG composite sample consisting of the unused portion of all Goose and Portage IV samples characterized under the static test program.
	Iron Formation (IF)	1-kg TP023-01	50%	• Represents median contents of sulphur, neutralization potential, nickel and lead; • 75th percentile zinc content.
		1-kg G051-01	25%	• 37th percentile sulphur and neutralization potential; • Median contents of chromium, nickel, lead, zinc.
		1-kg TP344-03	20%	• Conservative proportion of sulphur content (sample is 90th percentile) with below median neutralization potential; • Median chromium, 75th percentile nickel and zinc.
		1-kg G103-03	5%	• Low-grade ore sample; represents 95th percentile sulphur content for IF rock • Represents expected low-grade ore proportion (5%) of waste rock stockpile anticipated to be distributed evenly throughout the storage area (no low-grade ore stockpile planned)
	Ultramafic (UM)	1-kg G108-01	90%	• Represents conservative proportion of sulphur content (sample is 75th percentile); • Conservative proportion of arsenic (sample is 75th percentile) and median concentrations of chromium, nickel, lead.
		1-kg NP40-02	10%	• Represents conservative proportion of arsenic content (sample is 95th percentile).
Vault	Intermediate Volcanic (IV)	100-kg composite Vault IV	100%	• Non-PAG composite sample consisting of the unused portion of all Vault IV samples characterized under the static test program.

3.2.2 Rock Pile Leaching Rates

Rock Storage Facilities

Loading rates from the Portage pit RSF were calculated based on the annual proportion of each lithology placed in the pile (Table 3-7 from AMEC, 2005). The Vault RSF consists of 100% Vault IV rock throughout the life of mine.

Table 3-7 Annual Proportion of Rock Types Stored in Portage RSF

Mining Year	IV	IF*	UM
1	25%	44%	31%
2	28%	22%	50%
3	37%	20%	43%
4	25%	36%	39%
5**	0%	0%	100%

* Proportion includes quartzite rock
** UM cover placed on Portage RSF
Source: AMEC, 2005

In-Pit Rock Storage

Some of the waste rock may be stored in the Portage Pit. The mining schedule indicates that about 26 Mt will be placed within the Portage Pit in the last two years of pit life (AMEC 2005). This rock pile will be fully submerged at closure. Table 3-8 shows the proportion of rock types expected to be disposed of in each open pit.

Table 3-8 Cumulative Proportion of Rock Types Stored in Portage Pit

IV	IF*	UM
23%	37%	40%

* Proportion includes quartzite rock
Source: AMEC, 2005

Ore Stockpile

A small ore stockpile containing approximately ten days of production (63,000 t of mineralized rock) may generate a chemical load to the Portage Attenuation Pond. The stockpile will be renewed every ten days due to the ongoing replenishment of fresh rock within the ore stockpile. To simulate this rapid replacement, leaching rates were derived from the first three weeks of kinetic testing, representative of the expected "initial flush" (Golder 2005c). In reality the ore stockpile is going to be drawn from on a continuous basis and replaced by fresh rock. Although the Goose Island sample G131-01 is more representative of ore based on its gold content, North Portage sample NP40-03 was instead selected (along with G103-03) to represent low-grade ore from a different geographical are in the mine site (the North Portage deposit). This sample is representative of high-end sulphur content (94th percentile) and demonstrated elevated leaching rates of IV rock outside of the Goose area (Table 3-9). The ore stockpile leaching rates are included in Table I-2 of Appendix I.

Table 3-9 Derivation of Constituent Leaching Rates for the Ore Stockpile

Sample	Proportion	Rationale
NP40-03	50%	• Portage area; • IV rock type; • High sulphur content and conservative (elevated) chemical loading rates.
G103-03	50%	• Goose area; • IF rock type; • High sulphur content and conservative (elevated) chemical loading rates.

For the *Probable* scenario, rock pile leaching rates were assigned a scaling factor of 10% to account for channeling of water (less rock wetting than in field cells). For the *Possible Poor-End* scenario, scaling factors were assigned to laboratory-derived leaching rates to also account for channeling of water in the rock pile and to account for colder temperatures in the stockpile. Rate factors are further discussed in Section 3.3.

3.2.3 Leaching Rates from Exposed Rock Walls in Open Pits

Exposed pit walls release mass to pit waters from precipitation running off pit wall surfaces and infiltrating through fractures. The proportion of each lithology exposed on final pit walls was used to derive loading rates. These proportions were assumed to be constant throughout mine life. The relative exposures for the three main lithologies in the Goose and Portage pits are provided in Table 3-10. The Vault pit consist of 100% IV rock.

Table 3-10 Lithological Exposures in Final Pit Outlines

Pit	IV	IF*	UM	Reference Section
Goose Island	51%	18%	31%	12+50 South
Third Portage	27%	57%	16%	1+20 South
North Portage	61%	27%	12%	10+25 North
Vault	100 %	0%	0%	-

* Proportion includes quartzite rock
Source: CRL, 2003

The damaged rock zone through which water will flow was assumed to have a thickness of 1 m, equivalent to observations on depth of fragmentation induced by blasting (Siskind and Fumanti, 1974). Scaling factors were applied to the pit wall leaching rates to account for lower site temperatures (than laboratory-derived rates), for channeling of water in fractures and for the much smaller surface area to mass ratio of pit wall rock compared to kinetic test samples.

3.2.4 Dike Leaching Rates

Water retention dikes will release a chemical load from lake water seeping through the dike[3], and from precipitation falling onto the dike. Figure 3-1 shows a cross-section through a typical water retention dike with annotated material types used for dike construction (Golder, 2003a). Loading rates were derived from laboratory leaching rates of IF rock (for seepage through dikes) and IV rock (for runoff over pit-side half of dike). Scaling factors were applied accounting for decreased oxidation rate under submerged conditions (IF rock only), colder lake water and ambient temperatures and larger grain size than laboratory tests.

Predictions of dike pore water quality on the submerged side were conducted under a separate task (Golder, 2004a). In summary, dike pore water concentrations were calculated for the period of dike construction and for the long term. Leaching rates for the construction period were based on the average from the first three weeks of kinetic testing of IF rock for Portage-area dikes and of Vault IV for the small Vault area dike. These rates were combined with expected dike material quantities and in-place void ratio (assumed to be 0.4) to derive a submerged dike pore water concentration. Post closure[4] pore water quality was predicted based on long-term laboratory-derived kinetic test results from IF and Vault IV rock, factored to account for the effect of submergence and lower oxygen diffusion (slower oxidation and metal release rates), lower lake water temperature and coarser particle size.

3.2.5 Tailings Leaching Rates

Tailings contribute to loading from two sources: from interaction between precipitation and exposed tailings and due to direct discharge of tailings decant water during mine operation. Leaching rates from exposed tailings were derived using the average concentrations of the last two leaching cycles from the composite whole ore sample. Scaling factors were applied to account for the lower site temperature. The composition of exposed tailings and decant water in the impoundment is based on the proportion of ore processed from each deposit on an annual basis, as shown in Table 3-11 (AMEC, 2005).

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[3] Dike design components are detailed in MMC (2007d).

[4] During operation, advective flow of dike porewater flow will occur toward the pit.

Table 3-11 Source of Tailings in the Tailings Storage Facility

Mining Year	Annual Proportion of Processed Ore to TSF		
	Goose Island	Portage	Vault
1	0%	100%	0%
2	19%	81%	0%
3	38%	62%	0%
4	15%	81%	4%
5	0%	36%	64%
6	0%	0%	100%
7	0%	0%	100%
8	0%	0%	100%

Source: AMEC, 2005

3.2.6 Mass Load from Explosive Usage

The chemical loading of ammonia, nitrate and sodium into drainage waters from explosives is a function of the total amount of explosives to be used (0.23 kg/tonne of rock; Golder, 2004e) and the quantity of rock blasted on a monthly basis. For the *Probable* Scenario, a 3% explosives wastage rate is used to reflect good explosives management. For the *Possible Poor-End* scenario, a rate of 5% is used to reflect possible periodic overuse of explosives. For the *Hypothetical* scenario, a wastage rate of 8% is used to reflect continued poor explosives management. The amount of wasted explosives will heavily depend on the handling of explosives during operation

Blast residues report to the rock pile and to the open pit where they are leached from the rock and report to the Attenuation Pond. The quantity of explosives used for waste rock extraction is smaller than for ore extraction because the fragmentation requirements are not as stringent. This would reduce the potential for blast residues leaching from the waste rock piles. It is conservatively assumed that one hundred percent of the amount of explosives that are exposed to runoff are assumed to dissolve, while ten percent of the explosives exposed to infiltration (through the rock pile and pit walls) are assumed to be dissolved (the 10% is consistent with a rock wetting factor of 10%). These proportions were retained as they approximate the average monthly ammonia concentrations observed in Diavik pit drainage water (DDM, 2005) and Ekati rock pile drainage (SRK, 2005), which in 2005 were in the range of 10's to low 100's mg/L total ammonia. . The use of less soluble 'emulsion' type explosive for most of the mine life should reduce the amount of explosives leached to water.

Wastage rates were applied to the quantity of rock added to the stockpile at each time step. Geochemical attenuation mechanisms that could decrease concentrations of nitrogen species were not considered.

3.2.7 Transport of Suspended Sediments

The water quality predictions focussed on dissolved constituents. In actuality, mass loading occurs both in dissolved form and particulate form (i.e., as suspended solids (TSS)). The amount of TSS in water depends on water flow dynamics, which are dictated by the configuration of the flow pathway (channel or pond). The potential effect of TSS on total constituent concentrations was evaluated for Vault and Portage effluent water quality only. It is expected that adequate engineering design and best management practices will be employed during construction, operation, and after closure to minimize the load of suspended solids discharged to the environment.

As a first step, the solid phase composition of TSS was assigned that of the parent material (either waste rock or tailings) (Golder, 2005b). For the Vault area, it was assumed that the majority of the TSS load originated from the rock storage area and therefore the median composition of Vault IV rock was used. In the Portage area, the majority of suspended solids were assumed to originate from tailings (the finest grain size material). The chemical composition associated with the TSS transported in Portage effluent was assigned that of tailings.

The potential effect of 15 mg/L TSS (MMER maximum allowable concentration) on total (i.e. dissolved and particulate) constituent concentration in Portage and Vault area effluent was evaluated by adding the TSS-derived concentrations to the predicted dissolved constituent concentration.

3.3 Leaching Rate Factors

3.3.1 Rock Wetting and Grain Size

The leaching rate of rock generally is proportional to the surface area of rock exposed to leaching solutions. The average particle size in the rock storage facilities is expected to be 10 to 100 times larger than that of particles used for the laboratory and field leaching experiments. Waste rock is expected to have a median particle diameter of 50 cm, while that of field tests is approximately 5 cm and that of laboratory tests is less than 2 cm. To account for the portion of fine particles in the rock storage, a particle size factor (F_{ps}) of 10% was assigned to laboratory rates for run-of mine waste rock and fractured pit walls. Leaching rates from the tailings were not assigned a particle size factor.

In response to NIRB technical review, the rock wetting factor (F_{rw}) of 10% previously assigned to laboratory leaching rates was assigned a value of 1 (was removed). This factor reflected the tendency for rock pile drainage to channel, resulting in development of preferential pathways and partial wetting of the on-site rock piles.

Both the grain size and rock wetting factors have been used at other sites where it assisted in successfully calibrating observed water qualities against simulated water qualities derived from field and laboratory leaching tests. One such site is the Antamina Mine in the Peruvian Andes[5], where good agreement was achieved between observed and modeled concentrations using the particle size and rock wetting factors of 10% (Golder, confidential reports to CMA).

3.3.2 Temperature

The average annual air temperature at site is -11.3 °C, with only four of 12 months having a daily average temperature above 0 °C (June to September). The influence of temperature on chemical reaction rates can be described by the Arrhenius equation. Case studies of leaching tests performed at different temperatures document the slower rates of sulphide oxidation in cold temperature relative to room temperature (Meldrum *et al*., 2001; Davé and Clulow, 1996). In general, the effect on leaching rates of major ions is a two-fold decrease for every 10 °C decrease in laboratory temperature (Davé and Blanchette, 1999; DDM, 1998). However, colder temperatures were found to have no appreciable effect on trace metal leaching rates and concentrations (DDM, 1998). Therefore, a temperature factor (F_{temp}) was applied to the leaching rates of major ions (Ca, Mg, Na, K, Si, Fe, SO_4, Cl, NO_3, and alkalinity) based on measured ambient average monthly temperature or average monthly lake water temperature. Leaching rates of all constituents were fixed at a nominal value of 1E-10 mg/kg/wk when ambient temperature was below 0 °C (Snap Lake, 2002), with the leaching products (chemical mass) stored in the rock until their release during spring freshet.

For tailings, the temperature was considered equal to ambient conditions down to a minimum temperature of 2 °C, reflecting the deposition of relatively warm tailings throughout the year. This a conservative estimate since tailings are likely to freeze from the surface downward shortly after exposure to freezing conditions, as experienced at the Nanisivik mine in Nunavut (Claypool et al., 2005). The Nanisivik experience is particularly relevant since tailings were also first deposited subaqueously in a lake having a talik, then subaerially behind a frozen shale dike, similar to the proposed tailings deposition at Meadowbank. Freeze-back of these tailings is shown to be progressing. At the North Rankin Inlet Mine also in Nunavut, tailings also are subject to freezing, with the rate of freeze-back being faster than anticipated (Meldrum et al., 2001; Dyke, 1998).

The concentration of unionized ammonia was calculated from the results output outside of Gold*Sim*, based on the predicted concentration of ammonia. Unionized ammonia constitutes a

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[5] Antamina mine climate is dry and moderately cold.

fraction f of the total ammonia present in water and can be calculated based on equations provided by Emerson (1975):

$$f = 1 / [10^{(pKa - pH)} = 1] \quad (1)$$

Where:
f is the fraction of total ammonia that is un-ionized
pKa is the dissociation constant for ammonia; and,
pH is the pH value of water.

The dissociation constants is a function of water temperature T (in Kelvin) as per:

$$pKa = 0.0901821 + 2729.92 / T \quad (2)$$

Calculations used the predicted water pH of the given simulation period and considered an Attenuation Pond temperature of +5°C (278 K) for each summer month.

Influence of Exothermic Sulphide Oxidation Reaction on Waste Rock and Tailings Temperature

The chemical oxidation of pyrite is an exothermic reaction releasing 1490 kJoules of energy per mole of pyrite oxidized according to the following:

$$FeS_2 + 3.75\ O_2 + 3.5\ H_20 \leftrightarrow Fe(OH)_3 + 2\ SO_4^{2-} + 4H^+ + 1490\ \text{kJoules} \quad (3)$$

The sulphate leaching rates of the most reactive materials were used to evaluate the upper bound of heat generation from waste rock and tailings (the accelerated leaching rate of IF rock, Vault IV rock, and combined whole ore tailings[6]). It was then assumed that the energy released would be used to heat the porewater in the waste rock piles and the tailings impoundment. The possible upper bound of heat generated from pyrite oxidation translates to an increase in pore water temperature of less than 0.02 °C per m^3 of rock per week and for whole ore tailings, of less than 0.5 °C per m^3 of tailings per week. This estimate does not account for advective/convective heat loss to air or heating of the solids mass itself. Due to the very small values for the temperature increase, the exothermic heat of reaction is not expected to affect the overall temperature of the waste rock pile or tailings.

3.3.3 Submergence

Placement of rock under water will decrease sulphide mineral oxidation rates because of the lower diffusion rate of oxygen in water than in air (lower by four orders of magnitude; Davé

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[6] Described in Golder, 2005b

et al., 1997). For constituents assumed to be released by sulphide oxidation, leaching rates of IF rock on the lake side of the water retention dikes were conservatively reduced by two orders of magnitude (F_{sub} of 0.01) based on the following:

- Literature survey and experience at other mine sites of constituent mass loading rates under submerged conditions, with emphasis on sulphate release rates considered to be representative and directly proportional to the sulphide mineral oxidation rate (DDM, 2003; Davé *et al*., 1997; Aubé *et al*., 1995). A leaching rate factor was imposed on constituents considered to be present as sulphides and released from sulphide oxidation (As, Cd, Cr, Cu, Fe, Ni, Pb, Se, SO_4, Zn).

- The assessment of the expected sulphide mineral oxidation rate in the subaqueous environment of mine area lakes (Davé and Blanchette, 1999; Davé *et al*., 1997; Lapakko, 1994; Morin, 1993).

For the remainder of the constituents (e.g., major ions), no reductions in leaching rates were applied under submerged conditions.

3.4 Geochemical Controls

Geochemical controls that can limit constituent concentrations in solution include mineral precipitation or adsorption. Both of these processes frequently are governed by pH and redox conditions in solution, which in turn may be affected by equilibrium with atmospheric gases such as oxygen and carbon dioxide. These controls were evaluated on Gold*Sim* output water chemistries using the USGS mass transfer, speciation model PHREEQC, Version 2.8 (Parkhurst and Appelo, 1999), a widely used model accepted by the scientific and regulatory community. A basic assumption of PHREEQC is that the geochemical processes modeled are under thermodynamic equilibrium conditions.

Interim Gold*Sim* water quality model runs were used to generate input water qualities to PHREEQC for identification of solubility controls and concentration limits for all modelled parameters. Solubility controls due to equilibrium with atmospheric gases (oxygen and carbon dioxide) were also considered but not retained. Exchange with atmospheric gases increased the electron potential (pe or Eh) of the solutions greatly decreased constituent solubility, particularly for iron for which solubility limits were observed (from precipitation as ferrihydrite [$Fe(OH)_3$] from circum-neutral and acidic pH solutions. These equilibrium controls were not retained for any of the drainage solutions since equilibrium with atmospheric oxygen is rarely achieved in drainage waters. As such, modeled drainage chemistries may be oversaturated with regard to certain redox-sensitive species, resulting in higher predicted concentrations than what is actually expected to occur.

Solution pH values were evaluated outside of Gold*Sim*, to ensure that considerations related to alkalinity/acidity were taken into account. Leachate chemistries were input and mixed using PHREEQC according to the expected proportion of each rock type present in the rock stockpiles and the proportion of each tailings type in the tailings impoundment. Solution pH values were also approximated by tracking proton concentrations and generating weighted drainage pH values from each mine component.

4.0 MODEL ASSUMPTIONS AND COMPUTATIONS

This section presents the assumptions and equations used to predict water quality at each mine component in the Meadowbank Project site. Input data and assumptions pertaining to climate and hydrologic characteristics and the water balance are presented in MMC (2007a). The general model characteristics are provided in Table 4-1.

Table 4-1 General Model Characteristics

Property	Value/Item	Assumption/comments
Time Step	1 month	
Simulation Start	Oct. 1, Year -3	Based on Hydrologic Year (October to September)
Scenarios	*Probable*	The BaseCase: based on observed field characteristics for rock leaching rates and active zone depth, reasonable explosive use and scaling factors, specifically: • Use of field-derived leaching rates; • ARD not generated (mine waste management strategies effective in preventing onset of ARD); • Active layer thicknesses of 2 m, with a sensitivity analysis on 8 meters thickness; • 3% explosives wastage rate (adequate management of explosives).
	Possible Poor-End	Sensitivity on the Base Case: variance on observed field conditions and less certain input parameters to capture probable natural variance, variance only on the negative side using very conservative assumptions, specifically: • Use of laboratory-derived, accelerated leaching rates; • ARD generated from reactive IF rock; • Active layer thicknesses of 8 meters; • Pit wall runoff scale factor increased from 0.01 to 0.1; • Removed channeling factors (F_{rw}); • 5% explosives wastage rate (periodic overdosage of explosives)

Property	Value/Item	Assumption/comments
	Hypothetical	Hypothetical scenario completed to address concerns of NIRB reviewers and explore the effects of applying laboratory data directly to field conditions, specifically: • Use of laboratory-derived accelerated leaching rates; • ARD generated from reactive materials; • Active layer thicknesses of 8 meters; • Removed particle size factor (F_{ps}), rock wetting factor (F_{rw}) for RSF and dikes, and decrease pit wall runoff scale factor to 0.1; • Increased thickness of layer through which RSF runoff flows from 15 cm to 30 cm depth; • 8% explosives wastage rate (sustained, poor management of explosives).

4.1 Master Loading Equations

The equations below are used to calculate chemical constituent loading from a number of different mine components, including the waste rock stockpiles, ore stockpile, pits, tailings and site runoff. Runoff and infiltration through rock masses are modeled separately to reflect the different hydrological processes and chemical loadings.

For infiltrated drainage through rock or tailings, mass load is derived per Equation 4:

$$C_{sp} = \frac{LeachRate_{Sp} \times SurfaceArea \times \rho}{\inf iltrationRate} \times \sum_{z=1}^{5} \left[(F_{temp} \times F_{ice})_{Sp} \times Temperature(month, Z) \times LayerThickness_{z} \times F_{ps} \times F_{rw} \right]$$

For runoff over waste rock, pit wall rock or tailings, mass load is derived per Equation 5:

$$C_{Sp} = \frac{LeachRate_{Sp} \times SurfaceArea \times \rho}{RunoffRate} \times (F_{temp} \times F_{ice})_{Sp} \times Temperature(month) \times ContactThickness \times F_{ps} \times F_{rw}$$

Where:

C_{sp}	Mass load of chemical species in drainage or runoff (*sp*);
Leach Rate$_{sp}$	Leaching rate for each constituent;
SurfaceArea	Surface area (footprint) of the rock or tailings mass at the particular time step;
ρ	In place density of rock (1.9 t/m^3) or tailings (1.2 t/m^3);
InfiltrationRate	Rate of infiltration: 65% and 15% for rock and tailings, respectively, during freshet (June), 80% (rock) and 40% (tailings) in summer, 0% in winter (both rock and tailings);

RunoffRate	Rate of runoff: 1-*InfiltrationRate*;
Z	In the active zone D_a, the sub-layer having a specified temperature;
LayerThickness$_z$	Thickness of the sub-layer *Z*: $D_a/5$ in rock piles and D_a in tailings;
ContactThickness	Thickness of the zone of runoff contact with rock or tailings (0.15 m);
F_{temp}	Temperature factor applied to leaching rate of temperature-dependant constituents (major ions), where the rate is decreased by a factor of two for every 10ºC decrease from 25ºC;
F_{ice}	Freezing factor applied to leaching rate of all temperature-independent constituents. F_{ice} of 1 allows for a nominal loading rate of 1E-10 mg/kg/wk to be used when the temperature is at or below 0ºC;
Temperature	Pore space temperature within sub-layer Z, a function of ambient air temperature;
F_{ps}	Grain size factor: rock = 0.1 and tailings = 1;
F_{rw}	Rock wetting factor: infiltration in rock = 0.1 and tailings = 1; runoff in rock and tailings = 1;
F_{sub}	Submerged rock leaching factor = 0.01

The various parameters and their associated assumptions are discussed in the following sections.

4.2 Rock Storage Areas

Infiltration through the rock mass is allowed up to a maximum of 1% of the volumetric water content, after which infiltration is released to drainage (MMC, 2007a). Since the full volumetric water content is not achieved during mine life, it is assumed to be reached at closure upon placement of cover in order to force release of water and project possible water quality associated with this within a reasonable time frame. Assumptions relating to geochemical components of Vault and Portage RSFs are presented in Table 4-2.

Table 4-2 Water Quality Assumptions – Rock Storage Facilities

Property	Assumptions/Comments	Source
Stockpile Footprint	Grows linearly on a monthly basis until it reaches its full footprint at half their active life, then rises in elevation.	MMC, 2007a
Thickness of Active (thaw) Layer	D_a: 2 m and 8 m active zones modeled throughout mine life and post closure.	BGC, 2004; Golder, 2003a; Ekati Diamond Mine, 2005.
Rock Pile Runoff	*ContactThickness*: For *Probable* and *Possible Poor End* scenarios, runoff is assumed to contact the top 15 cm of rock in the pile. Within this layer, water is assumed to contact 100 % of the rock (F_{rw} = 1) (very conservative). This layer is increased to 30 cm in the *Hypothetical* scenario.	Empirical values supported by observations at similar sites

Property	Assumptions/Comments	Source
Scale-up Effects on Laboratory Leaching Rates	F_{ps}: For the *Probable* and *Possible Poor End* scenarios, F_{ps} of 10% (F_{ps} = 0.1) applied to laboratory leaching rates. No scale factor applied in the *Hypothetical* scenario.	ASTM, 1996
Temperature Effect on Leaching Rates	F_{temp}: For all scenarios, leaching rates halved for every 10 ^{o}C decrease from 25 ^{o}C, for: Ca, Mg, Na, K, Si, Fe, SO_4, Cl, NO_3, and alkalinity.	Diavik, 1998; Davé and Clulow, 1996; Davé and Blanchette, 1999
	F_{ice}: for all scenarios, either 1 or 0 depending on constituent. Constituent leaching rates assumed to be 1E-10 mg/kg when pore space temperature in active zone is below 0 ^{o}C, all accumulated reaction products are released during June spring flush;	Snap Lake, 2002
	Temperature gradient within active layer (D_a): monthly average air temperature at rock pile surface to 0 ^{o}C at D_a bottom, in five temperature zones (Z).	
Explosives	Powder factor of 0.23 kg/tonne of rock mined with 3%, 5% or 8% wastage rate for the *Probable*, *Possible poor-end* and *Hypothetical* scenario, respectively.	Golder, 2004e and 2003b
	Composition: Source of nitrate, ammonia and sodium loading to rock pile drainage and runoff.	Manufacturer MSDS
	Constituent load from explosives is based on the quantity of rock. Explosives assumed to dissolve entirely. 100% explosives mass released from runoff zone, 10% released from infiltration zone	DDM, 2005; SRK, 2005
Rock Composition	Portage RSF: Representative of annual proportion of each rock type (see Table 3-7).	AMEC, 2005
	Vault RSF: Assumed 100% Vault IV rock type	
	Portage pit rock pile: (see Table 3-8)	
ARD Onset	**Portage**: *Probable* scenario: Per field cell weathering characteristics; ARD management techniques are effective in preventing onset of ARD (freezing occurs before development of ARD) Poor-end: Based on accelerated weathering characteristics, portions of waste rock and tailings develop ARD before freezing.	Golder, 2005b and 2005c; BGC, 2004.
	Vault: Expected not to generate ARD.	Golder, 2005b and 2005c
Portage Rock Pile Cover	At closure, run-of-mine UM rock cover is placed instantaneously over the surface and sides of the Portage pile. 2-meter cover thickness equivalent to D_a thickness for *Probable* scenario predictions but short of the full active thaw depth for *Possible Poor-End* and *Hypothetical* scenarios (some reactive waste rock generate leachate perpetually).	MMC, 2007b
Geochemical control	Assigned pH value to drainage and runoff based on PHREEQC modeling of mixed kinetic test leachate pH, proportioned according to lithological distribution in rock piles.	calculated

Active Layer Thickness

The amount of rock available to be leached in frost-free months was restricted to the active thaw zone. A 2-meter thick active layer was considered to be available for leaching during frost-free months, based on thermistor data obtained from the site (Golder, 2003a) and on the predicted thickness of the active layer in rock (ranging between 0.25 m and 4 m; BGC, 2004). The thickness of 2 m corresponds to the midpoint of the expected range. The rest of the pile is expected to be frozen such that constituent load would only occur in the top 2 m of the pile. The active layer was considered to have a temperature gradient from ambient temperature at the top, to freezing (0 ^{o}C) at the base of the active layer such that temperature-corrected leaching rates were applied according to the predicted temperatures within the active layer (Ekati Diamond Mines, 2005; Snap, 2002). The top portion of this layer was considered to have an ambient temperature while the bottom was considered to be near-frozen with minimal leaching.

It has been suggested that climate change could translate into an annual average air temperature increase of 6.4ºC over the next 100 years (IPCC, 2007). In consideration of this, a sensitivity analysis of constituent release was conducted using an active thaw depth of 8 m. This thickness was selected based on measurements at other northern mine sites including Ekati diamond mine (Ekati Diamond Mine, 2005). This active thaw depth is carried forward in the prediction of Attenuation Pond and Pit Lake water quality predictions.

The temperature within the pore space of the active layer was assumed to be a function of the average monthly ambient air temperature. The active layer was arbitrarily subdivided into five temperature zones having equal temperature gradients. The pore space temperature in a given month ranges from ambient in the top (surficial) layer, to 0 ^{o}C at the base of the fifth layer. Constituent leaching rates were then scaled according to the temperature in each zone in the active layer.

The development of ice lenses in the pile may result in some degree of cryo-concentration of the infiltrated drainage which would result in a reduced drainage volume, but enhanced concentrations relative to non-frozen conditions. A meaningful evaluation of this process requires a level of understanding of rock pile hydrology currently not available, and consequently this aspect was ignored in the prediction of drainage water quality. Runoff and infiltrated drainage from the rock stockpiles report to the respective Attenuation Ponds in the Vault and Portage mining areas.

Rock Stockpile Cover at Closure

At the end of mine life, it is expected that a cover of acid buffering waste rock will be placed on the surface and edges of the Portage waste rock stockpile to provide a long-term source of alkalinity and develop an active layer within waste rock that is the most environmentally benign. The cover material expected to be used is run-of-mine UM rock of a minimum 2-m thickness, to host the full thickness of the active thaw zone in the expected scenario modelled. For the *Possible Poor-End* and *Hypothetical* scenarios, the UM cover remained at 2 meters while the active layer thickness was increased to 8 meters. As such, infiltrated water accumulates mass from the UM rock cover and from 6 meters of the underlying waste rock.

4.3 Open Pits

The open pits are considered to act as sumps for drainage contacting materials within the diked areas. Chemical loading to pit water comes from:

- Infiltration through the blasting-induced fracture zone on pit walls and runoff over pit walls;
- Runoff and infiltrated drainage over the exposed, downstream portions of the water retention dikes;
- Runoff over in-pit rock storage piles;
- Seepage of lake water through the dikes, carrying a mass load from the lake and from water contacting the dike material; and
- Groundwater seepage from pit walls in the Goose Island and Portage pits where taliks are intersected. No talik is intercepted by the Vault pit and therefore groundwater is not anticipated to affect pit drainage water quality.

Water accumulating at the base of each open pit will be pumped to the respective Attenuation Ponds, although on contingency (not modeled), pit sump water from Portage and Goose Island may be sent to the Reclaim Pond if water quality is not considered acceptable for discharge to the Portage Attenuation Pond. Assumptions relating to chemical loading from the open pits are described in Table 4-3.

Table 4-3 Water Quality Assumptions – Open Pits

Property	Comment/Assumptions	Source
All Pits		
Surface Areas and Footprints	Linear growth of surface area and footprint until end of pit life.	MMC, 2007a
Damaged Rock Zone	The reactive thickness (of 1 meter) corresponds to the damaged rock zone where fractures allow contact of rock with air and water. F_{ps} (10%) and F_{rw} (10%) (combined factor of 1%) scaling factors applied to leaching rates for *Probable* scenario. The combined factor decreased to 10% for the *Possible Poor-End* and *Hypothetical* scenarios.	Siskind and Fumanti, 1974
Proportion of Exposed Lithologies	Provided by cross-sections through final pit shell. Same lithological proportions assumed throughout pit life (see Table 3-10).	CRL, 2003

Property	Comment/Assumptions	Source
Explosives	15% of the waste explosives mass report to pit walls (85% report to waste rock pile) and this explosives mass fully dissolves at each time step. The value of 15% results from calibration against concentration of explosives in pit sump water documented at other mine sites.	Ekati Diamond Mine, 2005; DDM, 2005.
Temperature Effect on Leaching Rates	For all scenarios, F_{temp}: leaching rates halved for every 10 ^{o}C decrease from 25 ^{o}C, for: Ca, Mg, Na, K, Si, Fe, SO_4, Cl, NO_3, and alkalinity.	Diavik, 1998; Davé and Clulow, 1996; Davé and Blanchette, 1999
	For all scenarios, F_{ice}: leaching rate is assumed to be 1E-10 mg/kg/wk when ambient air is at or below 0ºC in D_a. All accumulated reaction products are released during June (spring) flush;	Snap Lake, 2002
	For all scenarios, temperature gradient within the fracture zone thickness (D_a): monthly average air temperature at pit wall surface to 0 ^{o}C at the based of the fracture zone (D_a), split into five temperature zones (Z).	
Chemical Controls	pH value assigned to pit waters based on relative proportion of pit wall drainage, groundwater infiltration and direct runoff in each pit. (see Table 4.6).	calculated
Goose Island, Third and North Portage		
Pit Inflows	Direct precipitation, runoff, groundwater inflow, dike seepage and runoff all collect in the pit and are transferred to the storm/Attenuation Pond	MMC, 2007a
Groundwater seepage	TDS (major ions) concentration increases with time from upwelling of saline groundwater. Other constituents constant through time.	Golder 2007e
Onset of ARD	(same as RSF)	Golder, 2005b
Vault		
Pit Inflows	Direct precipitation and runoff only (no dike seepage, frozen groundwater). Water collect in pits then are pumped to Attenuation Pond.	Golder, 2004b
Onset of ARD	(same as RSF)	Golder 2005b
Water Retention Dikes		
Configuration of Dikes	Double dikes with low-permeability soil-bentonite seepage cutoff between the two halves.	Golder, 2007g
Construction Material	IF material on submerged (upstream) half, IV on downstream half (dry until closure).	Golder, 2007g
Leaching Rates and Factors	Laboratory-derived loading rates from the IF rock (for seepage through dikes), UM and IV rock (for runoff over pit half of dike). F_{ps} (10%), F_{sub} (1%) and F_{temp} applied to submerged rock (based on temperature of lake water). Dike runoff leaching rate factors same as RSF.	DDM, 2003; Golder, 2005b; 2004a; Lappako, 1994; Aubé et al., 1995;

4.4 Tailings Storage Facility

Details of the tailings management strategy are summarized in Section 2.1 and in Golder (2007c). Assumptions relating to chemical loads within the TSF are described in Table 4-4.

Table 4-4 Water Quality Assumptions – Tailings Storage Facility

Property	Comment/Assumptions	Source
Impoundment Footprint Area	Tailings assumed to be deposited over entire impoundment footprint and exposed to air from operation year 3 (submerged under remaining Second Portage Arm lake water in years 1 to 3).	Golder, 2007c
Tailings Composition	Tailings composition representative of the final proportion of (whole ore) tailings processed from each deposit.	AMEC, 2005
Tailings Reactive Zone	Oxygen diffusion causing oxidation and leaching of tailings are assumed to reach a depth of 0.65 m (D_a=0.65m). Oxidation and leaching assumed not to occur below this depth m depth because of saturated conditions.	Al *et al*., 1994; Meldrum *et al*., 2001
Temperature Effects on Leaching Rates	Tailings temperature assumed 10 °C in frost-free months of June to September, 2 °C at other times during operation: Z = 1 layer; F_{ice} = 1.	Golder, 2007c Diavik, 1998
Scale-up Effects on Laboratory Leaching Rates	Full laboratory leaching rate applied to tailings in reactive zone: F_{gs} = 1; F_{rw} = 1	Empirical values supported by observations at similar sites
Final Cover	At closure a cover of run-of-mine UM rock is assumed to be placed instantaneously over entire footprint of exposed tailings. 2-meter thickness to host active zone.	MMC, 2007b
Tailings Decant Water		
Reclaim Pond	In Reclaim Pond, 60% of tailings decant water is re-circulated , with 40% freshwater makeup from the Attenuation Pond. Reclaim Pond merges with Attenuation Pond water at Year 6. Tailings decant water is not mixed with other waters or discharged until end of mine life.	MMC, 2007a
Chemical Controls	Loading of constituents in tailings decant increases with time, with the exception of cyanide concentration which is controlled by the cyanide destruction process, assumed to remain constant throughout operation.	Golder 2005b; MMC, 2007a
	pH of decant assigned that of process water (pH 8).	

Property	Comment/Assumptions	Source
Cyanide	SO_2/air CN destruction process provides constant CN loading to impoundment with time but increasing CNO and CNS.	Empirical values supported by observations at similar sites
	Free and WAD CN assumed to readily degrade to HCN and volatilize (within 48 hours in summer months), therefore not considered in model. Other CN-products including ammonia and nitrates are assumed not to degrade. This conservatively estimates the amount of ammonia in water as some proportion of ammonia is likely to volatilize and be removed from the system in the summer.	Experience at other sites, and Simovic *et al*., 1984
	Total cyanide degradation rate according to Simovic *et al*. (1984) applies to metal cyanides which represent the majority of total cyanide in decant. Degradation occurring in summer months only.	Golder, 2005b; Simovic *et al*., 1984.

4.5 Stormwater Attenuation Ponds

Details of the water management strategy and site water balance are presented elsewhere (MMC, 2007a). The Vault and Portage Stormwater Attenuation Ponds will collect drainage from RSF drainage and runoff; Open pit sumps; and mine site runoff (including a small ore stockpile in the Portage area).

Portage RSF drainage will report to the Reclaim Pond after year 5. Surplus site water will be pumped from the Vault and Portage Attenuation Ponds, where water may be treated if necessary prior to release to the receiving environment (Wally Lake and Third Portage Lake respectively). Assumptions relating to chemical loads in the Vault and Portage Attenuation Ponds are described in Table 4-5.

Table 4-5 Water Quality Assumptions – Stormwater Attenuation Ponds

Property	Comment/Assumptions	Source
Pond Inflows	Portage (up to year 5) and Vault Attenuation Ponds collect direct precipitation, mine area runoff, RSF drainage and pit water. During year 5, the tailings Reclaim Pond merges with the Portage Attenuation Pond and all mine contact water is re-directed to Goose Island Pit.	MMC, 2007a
Chemical Controls	pH value assigned based on relative proportion of flow inputs to pond (see Table 4.6 attached).	Calculated from MMC, 2007a
Nitrogen Speciation	All nitrogen species are conserved; denitrification is not considered nor is final nitrogen speciation equilibrated to the predicted water pH or redox state.	Conservative estimate considering site climate
Cyanide	(same as Table 4.4)	
TSS and Total Constituent Load	Total suspended solids (TSS) assumed to be controlled in Vault and Portage Attenuation Ponds to the maximum allowable concentration of 15 mg/L for discharge to receiving lakes (conservative).	Experience at other mine sites
Effluent Chemistry	Based on Attenuation Pond chemistry. Reported chemistry is prior to any water treatment. Potential effect of TSS on water chemistry for effluent discharge. Chemical composition of TSS assumed to be that of parent material (see narrative, Section 3.2.7).	

4.6 Closure Scenario

The mine closure plan is discussed in the Site Restoration and Closure Plan (MMC, 2007b). Gold*Sim* was used to predict water quality for Portage, Goose and Vault pit lakes assuming fully mixed conditions. A separate pit lake model was undertaken to predict how the water quality in the pit lakes will evolve over time (Section 4.7). The Gold*Sim* model was run until year 23, approximately 10 years after closure. Year 23 results represent steady-state conditions for fully mixed pit lakes. Table 4-7 summarizes closure plan considerations for each mine component, and their relevance to water quality predictions.

Table 4-7 Summary of Closure Plan for Components Relevant to Water Quality

Mine Component	Closure Activity	Assumption/Comment
Portage Mine Area		
Rock storage area	UM pit rock cover, 2 m thick to coincide with active thaw layer thickness.	Drainage infiltrates through and reacts with UM cover only below which rock assumed to be frozen (2-meter active layer case), or water infiltrates through an additional 6 meters of unfrozen waste rock of different lithologies (8-meter active layer cases, possible poor-end and *hypothetical* scenario predictions).
Goose Island and Portage Pits	Flooded after end of pit life. Small pit wall surface area remaining at Portage pit while Goose Island pit completely flooded. Pit inflows consist mainly of Third Portage Lake flood waters and a smaller proportion of runoff from areas tributary to pits . In-pit waste rock is flooded along with pit. Waste rock piles are completely submerged once pits are fully flooded.	Linear decrease in pit surface area over 5 summers. Mass load from pit walls linearly decreases from closure to post-closure year 5. Increased mass load from in-pit waste rock and pit walls occurs upon flooding, loading rate based on "first flush" characteristics to account for dissolving metal salts accumulated during exposure. Rock pile in Portage Pit releases remaining explosives load during flooding. Chemical loading stops once flooded. Leaching rate factors: F_{temp} = 0.35 (10 ^oC lake water), F_{ice} = 1. Flooding water assigned lake water quality (Azimuth, 2003).
Dikes	Flooded to within approximately 1 meter of dike crests at year 5. Water retention dikes are breached once pit lake waters are of acceptable quality (dike breach not modeled).	Mass load from seepage during flooding is similar to operational load. Chemical loading stops once flooded (no hydraulic gradient across dike). Mass load from exposed dike rock flooding based on IV rock leaching, with F_{temp} = 0.35 (10 ^oC lake water), F_{ice} = 1 and F_{rw} =1;
Ore Stockpile	Not present	No load
Tailings Storage Area	2-meter thick UM rock cover.	Drainage infiltrates through UM cover only, tailings assumed to be frozen and/or water saturated below the cover.
Attenuation Pond	Portage Attenuation Pond assumed not to exist after Year 5 (attenuation is re-directed to open pits).	

Mine Component	Closure Activity	Assumption/Comment
Vault Mine Area		
Rock Storage Area	No cover, graded to enhance runoff.	Infiltration through active (thaw) layer of 2 and 8 meters thick. Rock mass assumed frozen below active layer with minimal leaching.
Pit and Attenuation Pond	Flooded over a number of years after closure, with small pit wall surface area remaining (MMC, 2007a). Pit inflows include runoff from areas tributary to pits and Wally lake water. Flooded Vault Pit Lake mixes with Vault Attenuation Pond.	Flooding causes linear decrease in exposed pit surface area over the flooding period. Mass load from pit walls linearly decreases during flooding. Mass load based on pit wall leaching rate, with F_{temp} = 0.35 (10 ^oC lake water), F_{ice} = 1 and F_{rw} = 1; Flooding water assigned Wally lake water quality (Azimuth, 2003).

4.7 Pit Lake Model

A separate model, CE-QUAL-W2, was used to predict how the water quality in Portage pit lake will evolve over time and how potential stratification might affect this evolution. The results were used to qualify the evolution of Goose Island and Vault Pit water quality. A description of the model, inputs, assumptions and results is provided in Golder, 2005d).

4.8 Meadowbank Area Lake Water Quality Model

The effects of water retention dikes on receiving lake water quality were also evaluated outside of Gold*Sim*. The report entitled: Meadowbank Gold Project, Phase I Lake Water Quality Predictions (Golder, 2004a) describes the methodology that was used to predict dike pore water quality on the Third Portage and Second Portage Lake side. These results are discussed in Section 5 of this report.

4.9 Model Limitations

The level of precision and accuracy of the water quality and mass loading predictions generally is defined by the accuracy/precision of the input parameters and the assumptions made with respect to their conformity to engineering designs. Since engineering is at the feasibility stage of design, the water quality and loading predictions are considered to be order-of-magnitude estimates. In addition, the model is an oversimplification of a more complex setting and as such results are also an order of magnitude estimate.

Modelling of water quality is based on the current level of understanding of the Project. As the Project continues to evolve, continued data collection will be required to verify and/or refine the stated model assumption and input parameters. The following presents some limitations of the current model, based on the most recent Project definition:

Changes to Project or Site Conditions: The project description and site conditions identified at the feasibility and design levels of the Project, are the basis for this water quality model. The data and approach used to estimate water quality are believed to represent the best reasonable approximation of the discharge quality to Third Portage and Wally lakes based on the current level of engineering design and knowledge about the site. Changes in the Project or site conditions are likely to affect, to variable extents, the actual site water quality.

Leaching and Loading Rates: The mass load estimates developed for Meadowbank are based on laboratory data and three years of field data. Scaling of laboratory data and small scale field tests to expected on-site conditions is a common limitation inherent to the use of controlled test data for prediction of performance of larger natural systems. Assumptions and prediction results will need to be validated with on-site data during operation.

Hydrology of Rock Storage Areas: Until more site-specific data are available, it is assumed that all the water infiltrating though the stockpile reports to the toe of pile within the same time step. The field capacity of the rock pile will cause a certain volume of infiltrated water to be retained within the pile, thereby reducing the amount of seepage. Full or partial freezing of the pile and its pore water has the potential to further reduce the amount of seepage out of the pile. The resulting drainage solution, if any is generated, may then be more concentrated than predicted. The drainage contact area with the waste rock is also dependent on local conditions. Field verification is required to provide more accurate predictions of rock stockpile drainage volume and quality.

Tailings Management: The temperature regime that will actually develop in the tailings will not be fully understood until in-situ monitoring is initiated during operation. The development of frozen zones within the tailings and related geotechnical aspects (frost heave, cracking, etc) will affect interaction between water and tailings solids, thereby affecting water quality.

System Complexity: Great care was taken to incorporate all known processes as understood during the feasibility stage of project development. However, it should be noted that in natural systems and complex man-made systems, observed conditions normally vary relative to estimated conditions, even for the most thorough system simulation.

Ultimately, even the best of models cannot compare with generation and evaluation of operational monitoring data. Once the Meadowbank site is operational, monitoring of water quality will be valuable tools to optimize waste and water management measures.

5.0 WATER QUALITY PREDICTIONS

This section presents the water quality predictions for dissolved constituents, for each mine component throughout mine life and post closure for the *Probable* and the *Possible Poor End* scenarios. *Probable* scenario model results are presented in Appendix II for each time step, from operational year 1 to post-closure Year 23. Appendix III provides model results for the *Possible Poor-End* scenario for each mine component. Appendix IV presents results of the *Hypothetical* scenario for RSF drainage, Attenuation Pond, and Pit Lake water quality. The *Hypothetical* scenario was conducted to address the concerns raised during the NIRB process on the effects of applying laboratory data directly to field conditions without consideration of some important differences between laboratory and site conditions. This scenario provides results that are considered to be outside reasonable expectations. Consequently, results are not discussed in this report.

All scenarios modeled provide monthly forecasts of water quality which are presented as either monthly, summer or annual averages for each mine component for the relevant time periods.

Comparative Water Quality Guidelines

Water quality predictions for the Vault and Portage Attenuation Ponds are compared against two sets of criteria:

- the Canadian Metal Mining Effluent Regulations (MMER, 2006), and
- the Nunavut Territory Drinking Water Criteria (N-DW),

Compliance with MMER effluent discharge criteria is considered the minimum requirement for discharge of untreated effluent. Non-compliance with MMER for waters to be discharged to the receiving environment (from the Attenuation Ponds) will trigger treatment requirements.

Tables showing water quality predictions for all mine components (in Appendices II, III and IV) include comparisons against the CCME for the protection of aquatic life (CEQG), N-DW and MMER, with concentrations above these limits highlighted and bolded. It is worth mentioning that the guidelines for the protection of aquatic life (CEQG) are generic numbers which may or may not apply to the site. The MMER effluent effect monitoring data that will be carried out at the site will be more useful in determining the protection levels. Moreover, since most drainage waters (except for Attenuation Pond water) will not be discharged directly to any natural fresh water environment, the criteria constitute a point of reference only. The predictions being order-of-magnitude estimates, concentrations that are of the same order of magnitude as the water quality limits should be viewed as potential for being above the guidelines or criteria..

5.1 Vault Mining Area Predictions

Seventy five percent of the Vault pit waste rock is acid buffering, with sufficient excess alkalinity for the bulk of Vault area waste rock to be considered non-PAG (Golder, 2005b). It is expected that, should ARD be generated in discrete locations, it would be neutralized along its flow path such that drainage would remain neutral. The pH of drainage contacting waste rock (from RSF and pit walls) is predicted to remain around 8, while the Vault Attenuation Pond is predicted to have a pH of approximately 6.6.

Probable water quality and *Possible Poor-End* quality are tabulated in Appendix II and III respectively. Tables II-1 and III-1 present Vault RSF drainage quality (2-m and 8-m active layer); Tables II-2 and III-2 present Vault pit sump water quality and Tables II-3 and III-3 are Vault Attenuation Pond water quality considering an 8-m active layer. Tables II-3 and III-3 include post-closure Vault pit lake water quality, assuming fully mixed conditions. Modeled constituent concentrations that fall above MMER and N-DW for each mine component in the Vault area are summarized in Table 5-1 and 5-2 for operation and post-closure periods respectively.

Table 5-1 Vault Area Predicted Water Quality, Operation – Summary of predicted concentrations above the water quality criteria

Mine Component Drainage	*Probable* Scenario		*Possible Poor-End* Scenario	
	> MMER	> DW	> MMER	> DW
RSF (2-m and 8-m active layer)	n.e.	NO_3	n.e.	Al, As, NO_3, Sb
Open Pit Sump	n.e.	NO_3	n.e.	As, NO_3, Sb
Attenuation Pond, Years 4 to 8	n.e.	Al, NO_3	n.e.	Al, As, NO_3

n.e. no exceedances

Table 5-2. Vault Area Predicted Water Quality, Post-closure – Summary of predicted concentration above the water quality criteria

Mine Component Drainage	*Probable* Scenario		*Possible Poor-End* Scenario	
	> MMER	> DW	> MMER	> DW
RSF (2-m and 8-m active layer)	n.e.	n.e.	As	Al, As, Sb
Year-23 Vault Pit Lake	n.e.	n.e.	n.e.	As, Sb

n.e. no exceedances

As the configuration of the Vault rock stockpile area does not change after closure, post-closure constituent concentrations in the Vault pit lake (at year 23) are essentially the same as those during the closure period at year 14.

The concentration of dissolved constituents of the **Vault attenuation pond, and consequently the effluent to Wally Lake, is predicted to comply with MMER throughout operation and post closure**. Under the *Possible Poor-End* scenario, water quality prediction for The Vault Attenuation Pond largely meet N-DW, with the possible exception of aluminum, arsenic and nitrate (from explosives use).

The long-term Vault Pit Lake water chemistry assumes fully mixed conditions and the pH does not consider possible geochemical reactions that can modify water pH (such as hydrolysis and precipitation of metal salts). At the expected pH, **dissolved constituent concentrations of Vault Pit Lake water are predicted to meet MMER for all constituents over the long term** . Under the *Possile Poor-End* scenario, water quality predictions largely meet the N-DW criteria with the possible exception of arsenic and antimony. The long-term Vault Pit Lake water quality is dominated by the quality of Wally Lake which is used to fill the pit.

5.1.1 Total Suspended Solids

The effects of TSS on total constituent concentrations are calculated for September effluent discharge of year 8 for both the *Probable* and the *Possible Poor-End* Vault Attenuation Pond water quality (see Table 5-3 attached). The additional load provided by 15 mg/L TSS (MMER maximum allowable TSS concentration) would increase the concentration of N-DW non-compliant aluminum and may increase iron concentration to above the N-DW aesthetic criteria. Vault Attenuation Pond water would still meet MMER discharge criteria for chemical constituents.

5.1.2 Active Layer Thickness

Increase of the active layer thickness from 2 meters to 8 meters results in a constituent concentration increase of less than 10% in Vault RSF drainage during operation, and an increase of up to 3 times the constituent concentrations post closure. Both of these increases are considered within the level of accuracy of the model. The difference stems from the retention of infiltrated drainage within the RSF during operation until the RSF reaches it water-retention capacity (of 1%), which is, in the model, arbitrarily set to occur at mine closure. The pit walls are not affected by the increase in active layer thickness since loading is limited to the 1-meter thickness of the fracture zone. No other mine component is affected by the increase in active layer thickness. The effect of active layer thickness increase on Attenuation Pond water quality is predicted to be insignificant, since the proportion of RSF drainage inflow to the Attenuation Pond is small compared to inflow from other sources. Portage RSF drainage water accounts for between 1% to 6% of Portage Attenuation Pond inflow, while Vault RSF drainage accounts for between 12% to 18% of Vault Attenuation Pond inflow.

5.1.3 Evolution of Pit Lake Water Quality

The evolution of water quality in Vault pit is inferred based on modeling results of the Portage pit lake. For the Portage pit lake, a density-induced chemocline was predicted to develop. The bottom elevation of Vault pit, at -32 m.a.s.l.[7], is lower than the bottom of Portage pit at -12 m.a.s.l., suggesting a greater propensity for stratification. Should a chemocline indeed also develop in Vault pit, it would be further removed vertically from the biologically active surface waters. The presence of a chemocline in Vault pit is predicted to have little effect on the quality of water above the chemocline (Golder, 2005d).

5.1.4 Receiving Lake Water Quality

A conceptual design and location for the diffuser that will discharge Vault Attenuation Pond water into Wally Lake is presented in Golder, 2007a, and is based on near-field mixing and dilution analyses of the potential mine effluent plume in Wally Lake. A summary of this analysis is presented here.

The Wally Lake outfall diffuser will be located within low value fish habitat east of the Vault Dike approximately 80 m from shore (Figure 3.3), and will have the following properties:

- Five 75 mm ports equally spaced along a 40-m long diffuser line;
- Diffuser ports rising vertically 1.0 m above the lake bottom to maximize mixing in water column and to minimize the risk of bottom sediment entrainment;
- valves or other flow control devices installed between each set of consecutive ports;
- located in a 7.4-m average depth of water during the open water period;
- 40-m long diffuser connected to an 80-m outfall pipe that conveys the effluent discharge to the diffuser line.

The results of the near-field mixing and dilution analyses indicate that the mine effluent pumped from the Vault Attenuation Pond will meet MMER guidelines at the point of discharge from the diffuser, and concentration will be within the CCME guidelines for the protection of aquatic life (DFO, 2006) within the mixing zone.

40

[7] Meters above sea level

5.2 Portage Mining Area Predictions

The rock in the Portage storage area will contain a proportion of potentially acid generating (PAG) rock, however, bulk accelerated tests and field tests show that this potential is not realized in the short to medium term (Golder 2005b, 2005c). Based on these test results, it is considered likely that the mine waste management plan will be operational before the full ARD potential is realized, if ever, from PAG materials.

Probable water quality and *Possible Poor-End* quality are presented in Tables of Appendix II and III respectively. *Hypothetical* scenario Attenuation Pond water quality is presented in Appendix IV but not discussed in this report as the input parameters and control factors used in this sensitivity analysis is not believed to adequately reflect site conditions. Tables II-4 and III-4 provide Portage RSF monthly average drainage water quality during operation and annual average post-closure for a 2-m and an 8-m active layer. Tables II-5 and III-5 provide annual average water quality in North Portage, Third Portage and Goose Island and pit sumps. Tables II-6 and III-6 provide Portage Attenuation Pond water quality (years 1 to 5), then Reclaim Pond water quality (years 5 to 9) for an 8-meter active layer thicknesses. Tables II-7 and III-7 presents annual average water quality predictions for Goose Pit Lake as it floods and post-closure, assuming fully mixed conditions, for an 8-m active layer. Tables II-8 and III-8 present the same but for Portage Pit Lake. Modeled constituent concentrations that are above MMER and N-DW during operation in the Portage area are summarized in Table 5-4.

Table 5-4 Portage Area Predicted Water Quality, Operation – Summary of predicted concentrations above the water quality criteria

Mine Component Drainage	*Probable* Scenario		*Possible Poor-End* Scenario	
	> MMER	> DW	> MMER	> DW
Rock Storage Area (2-m and 8-m active layers)	n.e.	NO_3, TDS	pH, As	Al, As, Fe, Mn, NO_3, Pb, Sb, Se, TDS
North Portage Pit Sump	n.e.	pH, NO_3	n.e.	pH, As, Fe, Mn
Third Portage Pit Sump	n.e.	pH, Al, Cl, Fe, Mn, NO_3, TDS	n.e.	pH, Al, As, Cl, Fe, Mn, NO_3, Pb, Sb, TDS
Goose Island Pit Sump	n.e.	pH, Cl, Mn, TDS	n.e.	pH, Cl, Mn, TDS
Attenuation Pond (years 1 to 5)	n.e.	pH, Al, Cl, Mn, TDS	n.e.	pH, Al, As, Cl, Fe, Mn, TDS
Reclaim Pond	CN_{total}, Cu	Al, As, Cl, Fe, Mn, Na, Sb, Se, SO_4, TDS	CN_{total}, Cu	Al, As, Cl, Fe, Mn, Na, Sb, Se, SO_4, TDS

n.e.: no exceedance

5.2.1 Portage Attenuation and Reclaim Ponds

The pH of the Portage Attenuation Pond water is dictated by the pH of its inflows. The majority of flows come from open pit sumps (estimated at 82% to 73%) and overland runoff (14% to 17%), all of slightly acidic pH. The Attenuation Pond is predicted to have a pH of between 6.0 to 6.3 in both the *Probable* scenario and the *Possible Poor-End* predictions. Explosives by-products will accumulate in the Attenuation Pond in the first five years, predicted to reach levels on the order of 3 to 10 mg/L nitrate nitrogen. Total dissolved solids are predicted to reach concentrations of 500 to 700 mg/L. **Portage effluent water quality in Years 1 to 5 is predicted to comply with MMER criteria for chemical constituents.** After this period, Portage area contact water will be re-directed to Goose Island Open pit such that very little effluent is anticipated to be discharged to Third Portage Lake after Year 5.

The merger of the Attenuation Pond with the tailings reclaim water is modeled to occur in Year 5, after which water quality of this pond is dominated by that of tailings decant water. It is expected that the pH of decant water will be maintained at around 8.0 for operational purposes. The relatively elevated copper and sulphate levels in the Reclaim Pond are thought to be caused by the copper content of the ore and maybe to the use of $CuSO_4$, an additive (catalyst) required for the $SO_{2/}$ air cyanide destruction process.

Cyanide species are associated exclusively with tailings water in the Reclaim Pond. Free and weak acid dissociable (WAD) cyanide species are expected to attenuate naturally from exposure to sunlight in the summer and therefore were not considered in the model (Simovic *et al*., 1984). The cyanide destruction by-products of cyanate (CNO) and thiocyanate (SCN) accumulate in the Attenuation Pond, reaching concentrations of around 600 mg/l and 300 mg/l respectively, not accounting for any degradation. Total cyanide is likely to degrade to some extent. The degradation of these constituents is largely dictated by pond temperature, oxygenation, sunlight, nutrient availability and biological activity. Given the location and climate of the Meadowbank site, degradation processes are likely to be slow (SRK, 2003; Logsdon *et al*., 1999). **The concentrations of some chemical constituents in the Reclaim Pond are predicted to exceed MMER criteria. However, at the end of mine life, reclaim water will be discharged to the diked Portage pit lake, not directly to the receiving environment.** Reclaim water quality will be monitored and may be treated prior to discharge to Portage pit lake. Water treatment alternatives that may be considered for use on reclaim water are presented in Golder (2007e).

5.2.2 Active Layer Thickness

The effect of an increase of the active layer thickness from 2 meters to 8 meters in the Portage RSF is not predicted to be significant during operation, until the RSF reaches its water retention capacity of 1%. Post-closure, when RSF field capacity is reached and infiltrated drainage reports to RSF drainage, the increase in constituent concentration is less than 15% in the *Probable* scenario. Pit walls are not anticipated to be affected by the active layer thickness. The in-pit rock storage piles are not affected either as their field capacity is not reached during their short exposure period (before flooding). The effect of active layer thickness increase on Attenuation Pond water quality is insignificant, since the proportion of flow to the Attenuation Pond from RSF drainage is minor (less than 6%) compared to inflow from other sources.

5.2.3 Total Suspended Solids

The effects of TSS on total constituent concentrations are calculated for effluent discharge in July of operational Year 3 (see Table 5-5 attached). The additional load provided by 15 mg/L TSS (MMER maximum allowable TSS concentration) would increase constituent concentrations but would not change compliance of the effluent discharges. Effluent quality would still comply with MMER criteria and concentration of aluminum, chloride, manganese and iron could be higher than N-DW levels.

5.2.4 Portage Area Post-Closure Conditions

Table 5-6 presents the summary of predicted concentrations above the MMER and N-DW water quality criteria for drainage water from the Portage mine component post closure.

Table 5-6 Portage Area Predicted Water Quality, Post-Closure – Summary of predicted concentrations above the water quality criteria

Mine Component Drainage	***Probable*** **Scenario**		***Possible Poor-End*** **Scenario**	
	> MMER	**> DW**	**> MMER**	**> DW**
Rock Storage Area	n.e.	n.e.	pH, As	Al, As, Fe, Hg, Mn, Sb, Se.
Year-23 Goose Pit Lake	n.e.	n.e.	n.e.	n.e.
Year-23 Portage Pit Lake	n.e.	n.e.	n.e.	Fe, Mn

n.e. no exceedances

5.2.5 Portage RSF

At closure, the Portage pile will be covered with a minimum 2-m thick cover of run-of-mine UM pit rock that will host the active layer. No significant improvement of drainage water quality is anticipated in the *Probable* scenario where ARD is not generated prior to pile freezing. Should some ARD develop in the pile (poor-end predictions), the application of the UM cover is predicted to eventually improve water quality and increase drainage pH by one to possibly two units depending on the depth of the active layer. Concentrations of nitrate and ammonia nitrogen from explosive are predicted to fall below a detectable concentration soon after the RSF stops receiving waste rock.

5.2.6 Pit Lake Water Quality

The pH of Portage and Goose Pit Lake waters is predicted to be very close to that of the Portage Lakes (pH 6.7) from which the majority of flooding water will come from (more than 98%). Water quality also tends toward that of Portage Lakes. Goose Island and Portage pit lakes meet MMER and most DW criteria, except for iron and manganese which are slightly higher than their respective aesthetic DW guideline. These concentrations assume fully mixed conditions.

Evolution of Pit Lake Water Quality

Pit lake water quality modelling was completed based on a previous mine plan (7500 tpd) in 2005 (Golder, 2005d). Although the timing of flooding of the pit and the proportion of the different rock types that will be place in the Portage Open Pit are slightly different in mine plan used for the current modeling effort, the original results are still considered relevant to describe the likely evolution of the Portage Pit Lake water quality.

Model results for Portage Pit Lake predict the development of a temporary chemocline during filling at approximately 30 meters from the bottom of the pit (approximately 100 meters below pit lake surface). The volume of water below the chemocline is predicted to be small compared to the above water column.

The chemocline prevents mixing of pit bottom water having high TDS concentrations (~1000 mg/L) with low TDS (<30 mg/L) water above the chemocline. Accordingly, metal concentrations are lower above the chemocline (slightly lower than fully mixed concentrations) and higher below. Dissolved oxygen concentrations are predicted to remain near saturation above the chemocline and low below the chemocline, resulting in anoxic conditions. Table 5-7 provides water chemistry predictions for above and below the chemocline, for selected constituents.

Table 5-7 Predicted Water Chemistry about the Portage Pit Lake Chemocline - Selected Constituents (from the previous 7500 tpd mine plan)

Constituent	Predicted Concentration (mg/L)	
	Above Chemocline	Below Chemocline
TDS	32	1060
As	0.003	0.006
Cu	0.002	0.0035
Zn	0.28	0.38

Source: Golder, 2005d

The vertical distance between the chemocline and the pit lake surface is considered large enough (more than 100 meters) to prevent exchanges between the deeper and the surface water upon dike breaching. The possibility of these two waters mixing is further reduced by the declining chemocline level with time. The denser water is predicted to remain at the bottom but slowly erode through groundwater seepage out of the pits and through gradual mixing with the overlying water column. As the high TDS layer below the chemocline erodes, the depth of the chemocline increases until it disappears completely by project Year 18 or 19, after which concentrations are stable at about the fully mixed concentrations throughout the water column.

After the chemocline disappears, dissolved oxygen remains near saturation throughout the water column, except for the very bottom layer where organic materials tends to build up (Golder, 2005d).

5.2.7 Receiving Lake Water Quality

During operation in the Portage area, Second and Third Portage Lake water quality will be affected, within 1 meter of the dike, by the presence of fine rock particles slowly dissolving at the water-dike interface. An assessment of the dike near-field water quality is presented in Golder (2004a).

Third Portage Lake water quality will also be affected by discharge from the Portage Attenuation Pond during early operation. The effects on lake water chemistry from effluent discharge into Third Portage Lake are documented in the report on Assessment of Effluent Dilution Potential from Third Portage Lake (Golder, 2007b). A summary of the results of both assessments is presented here.

Water Retention Dikes

During dike construction, concentrations of metals in pore waters of the submerged dikes are predicted to exceed some freshwater CCME guidelines (As, Cu, Ni, Mn, Pb, Se and Zn) (Golder 2004a). These concentrations are expected to attenuate to near-background lake water values shortly after construction is completed and water on the pit side of the dikes is drawn down. At this time and during operation, a hydraulic gradient will be created across the dike that will induce flow of dike pore water and lake water toward the pit. Diavik dike pore water quality is also similar to that of the adjacent Lac de Gras (DDM, 2003). Post closure, concentrations in the dikes are expected to continue to meet freshwater CCME for all parameters with the possible exception of aluminum and fluoride, although these components are likely overestimated based on the conservative assumptions used in modeling.

Portage Attenuation Pond Effluent

Excess water requiring discharge from the Portage Attenuation Pond will be discharged to Third Portage Lake via an effluent pipe and diffuser located within Third Portage Lake (Golder, 2007b). The diffuser will be situated within a low value fish habitat area of the Third Portage Lake north basin. Effluent discharges will occur only during the open water period.

The effluent diffusers at the Meadowbank Gold Project will be designed with the objective to protect aquatic life and human health. To achieve this objective, the Third Portage Lake Diffuser will be designed to meet MMER water quality criteria at the point of discharge from the diffuser, and to achieve Nunavut Drinking Water guidelines and approach as close as possible to the CCME aquatic life guidelines at the boundary of a 30-m radius mixing zone from the center of the diffuser. These criteria are regularly applied to diffusers in several jurisdictions in Canada.

Preliminary near-field mixing and dilution analyses assuming a typical diffuser configuration indicate that the mine effluent would meet MMER at the point of discharge of the diffuser in Third Portage Lake, while Nunavut Drinking Water and CCME aquatic life guidelines would be achieved at the boundary of the mixing zone.

6.0 CONCLUSIONS

Water quality predictions were developed that forecast drainage water quality from each mine component of the Meadowbank project, during operation, closure and post closure. Predictions are based on information gathered from a number of baseline studies, augmented by or calibrated with existing conditions and experience at other sites, including the following northern mine sites: Diavik, Ekati, Nanisivik, North Rankin Inlet, Snap Lake, Cullaton Lake, Cluff Lake and Colomac.

The site water balance and the water quality predictions were developed using the Gold*Sim* simulation package, with modules specifically designed for the Meadowbank project. The evolution of Portage pit lake water quality and the assessment of effects from effluent discharge to receiving Wally and Third Portage Lakes were modeled separately and are also discussed in this report.

Mass loads and dissolved constituent concentrations are evaluated at various points in the system on a monthly time step (average monthly concentrations), for the duration of operation and post-closure to Year 23. Three sets of predictions are provided. *Probable* scenario predictions are considered to be most representative estimates of site drainage water quality, based on field characteristics documented to date in addition to reasonable assumptions. A *Possible Poor-End* scenario uses input values that simulate probable negative-effects variance on observed field characteristics and selected input parameters to capture possible natural variance. A third, *Hypothetical* scenario was also completed to satisfy the requirements of the NIRB Project Certificate (no.004), however, this sensitivity analysis provides estimates that are considered to be outside reasonable expectations and therefore results are not discussed in this report.

In consideration of the dynamic nature of the Project and the use of conservative assumptions where no data were available, the predictions concentrations are to be considered as order-of-magnitude approximations of probable mine site drainage water qualities.

6.1 Vault Area Water Quality Predictions

The concentration of dissolved constituents in **Vault attenuation pond water, and consequently the effluent to Wally Lake, is predicted to comply with MMER discharge criteria for chemical constituents throughout operation and post-closure**. **Vault effluent is not expected to require treatment before discharge to Wally Lake.** A limited number of constituents (aluminum, nitrate nitrogen and possibly arsenic) may exceed Nunavut DW criteria from the onset of mining but their concentration is predicted to fall within one order of magnitude of the guideline. The long-term **Vault pit lake water quality is predicted to meet MMER for all constituents and meet Nunavut DW criteria for most regulated constituents** except possibly arsenic and antimony under *Possible Poor-*

End conditions. Total dissolved solids (TDS) are predicted to have monthly average concentration of between 300 to 500 mg/L. Under a proper level of care of explosives use (5% wastage or under), the average monthly concentration of explosives by-products in pit lake water may reach over 1 mg/L nitrate and ammonia nitrogen. Nitrate and ammonia concentrations can be reduced if stringent explosives control measures are employed during operation. The mass load to effluent quality provided by the maximum allowable suspended solids content would not change the compliance of Vault effluent, it would still meet MMER discharge criteria although some additional constituents may exceed N-DW (aluminum and iron). The concentration of these constituents could, however, be further attenuated though precipitation of oxides within the pit lake.

The results of the near-field mixing and dilution analyses indicate that the mine contact water pumped from the Vault Attenuation Pond will meet MMER guidelines at the point of discharge (i.e. the diffuser), and CCME aquatic life guidelines (DFO, 2006) within the mixing zone.

The thickness of the active layer will affect drainage quality of the Vault RSF, however the magnitude of this effect is predicted to be insignificant during operation and minor some time during the post-closure period when the rock pile has reached its water-retention capacity and infiltrated drainage flows out of the pile. The effect of an increased active layer thickness on the water quality of Attenuation Pond or pit lake is predicted to be minor because the volume of RSF drainage flowing to the Attenuation Pond is small (12% to 18%) compared to inflow from other sources.

6.2 Portage Area Water Quality Predictions

Drainage water quality from all mine components except tailings reclaim water (which will be recirculated during the life of mine), is predicted to meet MMER criteria for chemical constituents. The pH of drainage for the Portage RSF may become acidic in the unlikely event that all PAG materials develop ARD before the mitigative measures are fully effective. Overflow from the Portage Attenuation Pond will be discharged as effluent in the summer months of Years 1 to 5, after which mine contact water will be re-directed to the Goose Island open pit such that discharges to the receiving environment after Year 5 are expected to be minimal. Effluent TDS is predicted to be on the order of 500 to 700 mg/L. Explosives by-products will accumulate in the Attenuation Pond, and could reach concentrations in the order of 10 mg/L nitrate nitrogen and ammonia nitrogen. The concentration of ammonia and nitrate is very sensitive to operational practices related to the use of explosives and could vary significantly over certain periods, as is seen at other mine sites. Along with other constituents of environmental interest, they will need to be carefully monitored during operation.

The merger of the Portage Attenuation Pond with the Reclaim Pond is modeled to occur in Year 5, after which water quality is dominated by that of tailings decant water until closure when the Reclaim Pond is drained. Reclaim water contains relatively elevated copper, total cyanide and sulphate levels. The copper and sulphate levels are related to the ore constituents and maybe to the use of a copper sulfate additive required for the SO_2/air cyanide destruction process. Cyanide species are associated exclusively with tailings water in the Reclaim Pond. Free and weak acid dissociable (WAD) cyanide are expected to attenuate naturally from exposure to sunlight, while cyanide destruction by-products cyanate (CNO) and thiocyanate (SCN) are predicted to accumulate in the Attenuation Pond. Their concentration is predicted to reach monthly averages of around 700 mg/l (CNO) and 1000 mg/l (SCN), not accounting for any degradation. **The concentration of some constituents in the tailings reclaim water is predicted to exceed MMER criteria. However, at the end of mine life, reclaim water will be discharged to the diked Portage pit lake not directly to the receiving environment.** Reclaim water quality will be monitored during operation and may be treated prior to discharge. Reclaim water treatment alternatives are discussed in Golder (2007e).

Increase of the active layer thickness from 2 meters to 8 meters is predicted to have only a minor effect on drainage water chemistry until the RSF reaches its water retention capacity. Post-closure, when RSF field capacity is reached and infiltrated drainage reports to RSF drainage, constituent concentrations may increase further if ARD conditions develop in the pile before mitigation is operational. The effect of active layer thickness variation on Attenuation Pond water quality is not significant, since the proportion of flow to the Attenuation Pond from RSF drainage is very small (less than 6%) compared to inflow from other sources.

The additional load provided by 15 mg/L TSS on effluent discharge does not change compliance of the effluent discharges: the Year 4 discharge is predicted to remain compliant with MMER and concentrations of aluminum, chloride, manganese and iron would exceed N-DW levels.

6.2.1 Portage Area Post-Closure Water Quality

Portage mine site components drainage water quality is predicted to meet MMER for all constituents, with the possible exception of arsenic in Portage RSF drainage under a poor-end scenario. Application of an acid-buffering UM rock cover that will host the active thaw layer is expected to prevent the onset of ARD. Should ARD conditions develop in the pile prior to the installation of the cover and/or freezing of the pile, the cover is expected to improve the quality of RSF drainage as pH is increased by one to two units depending on the extent of ARD generation.

The long-term Portage and Goose Island pit lake water quality is predicted to meet MMER for all constituents and for most Nunavut DW-regulated constituents with the possible exception of iron and manganese aesthetic criteria in Portage Pit Lake under a *Possible Poor-End* scenario.

During filling and shortly thereafter, Portage pit lake is predicted to develop a temporary chemocline at approximately 30 meters from the bottom of the pit (approximately 100 meters below pit lake surface). Water below the chemocline is predicted to have elevated TDS (~1000 mg/L) and higher metal concentrations compared to the upper portion of the water column, which is predicted to remain fully oxygenated with low TDS and metal concentrations. The denser water is predicted to remain at the bottom but slowly erode until disappearing completely by project Year 18 or 19, after which concentrations are expected to reflect fully mixed conditions throughout the water column. The temporary chemocline will have limited effect on the above water quality which, similar to surrounding lakes, will remain oxygenated with relatively low TDS.

Receiving Water Quality

During dike construction, metal concentrations in pore waters of the submerged dikes are predicted to exceed freshwater CCME for a limited number of constituents. Concentrations are expected to attenuate to near background lake water quality as lake water on the pit side of the dikes is drawn down. A hydraulic gradient created across the dike is anticipated to induce flow of dike pore water and lake water toward the pit. Post-closure, concentrations in the dikes are expected to continue to meet freshwater CCME for all parameters with the possible exception of aluminum and fluoride, although these components are likely overestimated based on the conservative assumptions used in modeling.

The Third Portage Lake diffuser through which excess Portage Attenuation Pond water will be discharged, will be designed to meet MMER water quality criteria at the point of discharge, (i.e. the diffuser) and to achieve Nunavut Drinking Water guidelines and approach as close as possible to the CCME aquatic life guidelines at the boundary of a 30-m radius mixing zone from the center of the diffuser. These criteria are regularly applied to diffusers in several jurisdictions in Canada.

Preliminary near-field mixing and dilution analyses assumed a typical diffuser configuration and indicated that the mine effluent would meet MMER at the point of discharge in Third Portage Lake, while Nunavut Drinking Water and CCME aquatic life guidelines would be achieved at the boundary of the mixing zone.

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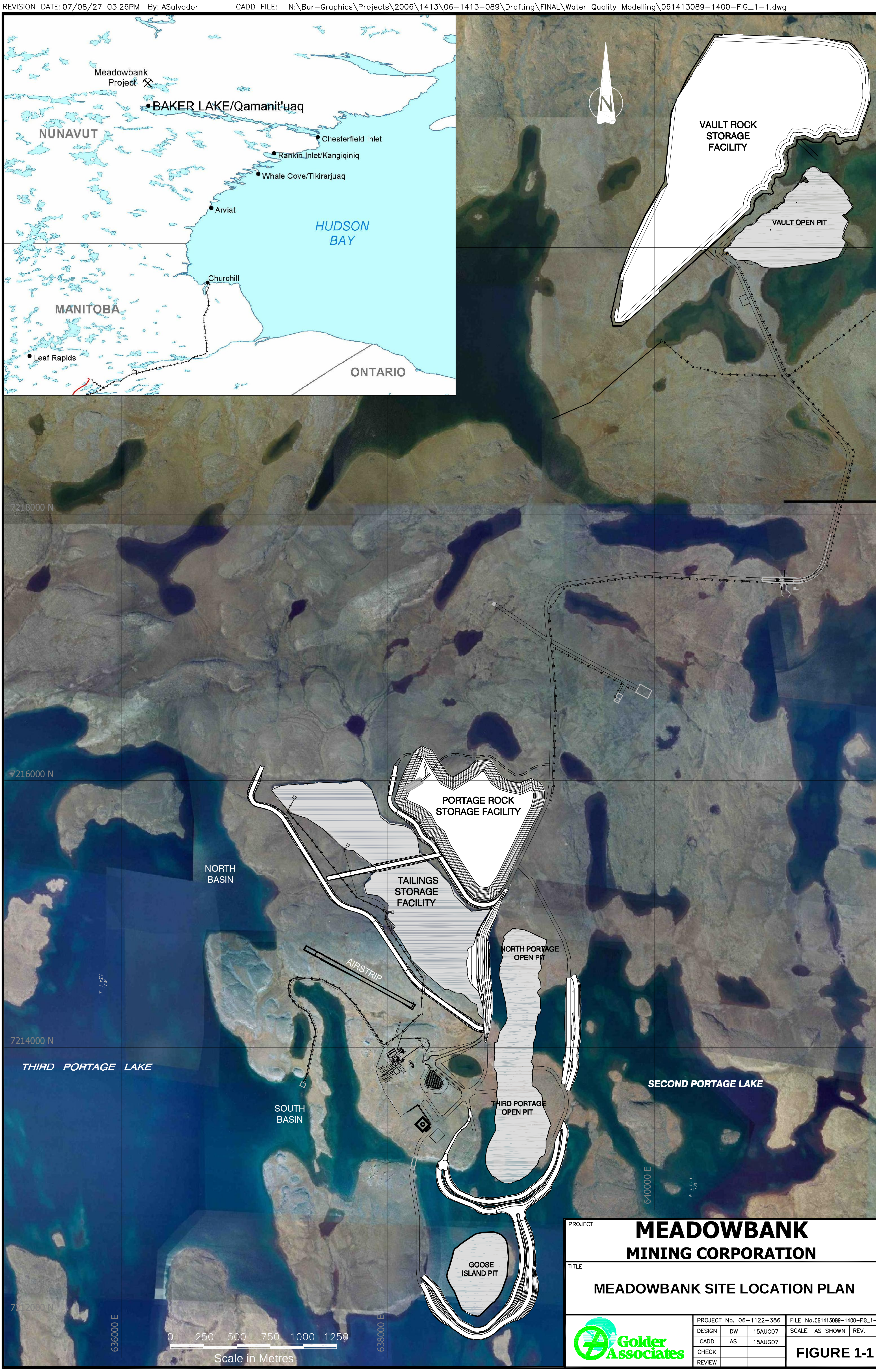
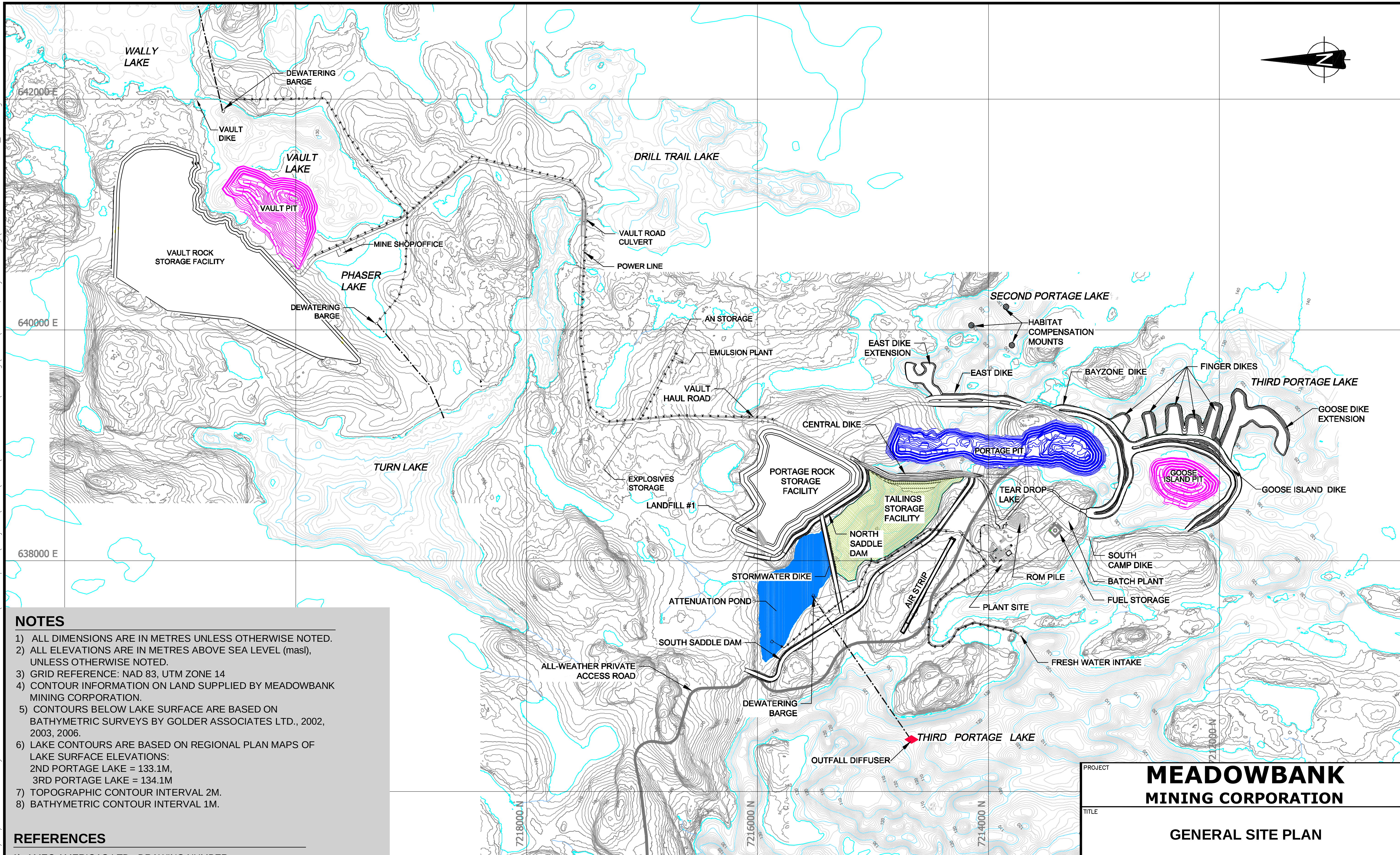
REVISION DATE: 07/08/27 03:26PM By: ASalvador CADD FILE: N:\Bur-Graphics\Projects\2006\1413\06-1413-089\Drafting\FINAL\Water Quality Modelling\061413089-1400-FIG_1-1.dwg





NOTES

1) ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2) ALL ELEVATIONS ARE IN METRES ABOVE SEA LEVEL (masl), UNLESS OTHERWISE NOTED.
3) GRID REFERENCE: NAD 83, UTM ZONE 14
4) CONTOUR INFORMATION ON LAND SUPPLIED BY MEADOWBANK MINING CORPORATION.
5) CONTOURS BELOW LAKE SURFACE ARE BASED ON BATHYMETRIC SURVEYS BY GOLDER ASSOCIATES LTD., 2002, 2003, 2006.
6) LAKE CONTOURS ARE BASED ON REGIONAL PLAN MAPS OF LAKE SURFACE ELEVATIONS:
   2ND PORTAGE LAKE = 133.1M,
   3RD PORTAGE LAKE = 134.1M
7) TOPOGRAPHIC CONTOUR INTERVAL 2M.
8) BATHYMETRIC CONTOUR INTERVAL 1M.

REFERENCES

1) AMEC AMERICAS LTD., DRAWING NUMBER A1-131395-100-C-0001 (100-C-0001.DWG), MEADOWBANK FEASIBILITY STUDY, APRIL 2005.

PROJECT
MEADOWBANK MINING CORPORATION

TITLE
GENERAL SITE PLAN

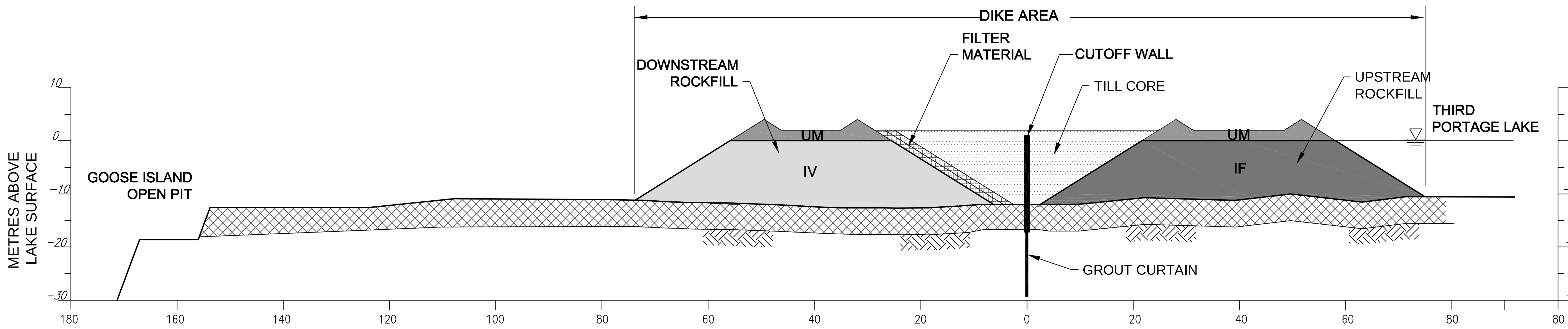
Golder Associates

PROJECT No.	06-1122-386	FILE No. 061413089-1400-FIG_2-1
DESIGN	DW	15AUG07
CADD	AS	15AUG07
CHECK		
REVIEW		

SCALE AS SHOWN REV. –

FIGURE 2-1

REVISION DATE: 07/08/20 04:20PM By: ASalvador CADD FILE: N:\Bur-Graphics\Projects\2006\1413\06-1413-089\Drafting\FINAL Water Quality Modelling\061413089-1400-FIG_2-1.dwg



TYPICAL SECTION OF GOOSE ISLAND DIKE

LEGEND

	TILL
	LAKE SEDIMENT
IV	INTERMEDIATE VOLCANIC RUN-OF-MINE WASTE ROCK
IF	IRON FORMATION RUN-OF-MINE WASTE ROCK
UM	ULTRAMAFIC AND MAFIC VOLCANIC RUN-OF-MINE WASTE ROCK

NOTES

1) SECTIONS ARE SHOWN FOR 1.6H:1.0V SIDESLOPES OF ROCKFILL. ACTUAL SLOPES WILL VARY, DEPENDING ON WATER DEPTH, ROCKFILL GRAIN SIZE, AND FOUNDATION CONDITIONS.
2) OVERBURDEN DEPTH HAS BEEN ESTIMATED BASED ON RESULTS FROM THE 2003 GOLDER GEOTECHNICAL DRILLING INVESTIGATIONS. ACTUAL OVERBURDEN DEPTHS WILL VARY.
3) ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4) CUT OFF EXTENDED 0.5M INTO BEDROCK OR EQUIPMENT REFUSAL.
5) DEPTH OF GROUT CURTAIN TO BE DETERMINED IN THE FIELD.

CADD FILE: N:\Bur-Graphics\Projects\2006\1413\06-1413-089\Drafting\FINAL\Water Quality Modelling\061413089-1400-FIG_3-1.dwg

REVISION DATE: 07/08/21 09:32AM By: ASalvador

PROJECT
MEADOWBANK MINING CORPORATION

TITLE
ROCK TYPES USED FOR CONSTRUCTION OF WATER RETENTION DIKES

Golder Associates

PROJECT No.	06-1122-386		FILE No. 061413089-1400-FIG-3-1
DESIGN	DW	15AUG07	SCALE AS SHOWN REV. -
CADD	AS	15AUG07	
CHECK			**FIGURE 3-1**
REVIEW			

Table 3-1 Tailing Decant Water Quality Input Parameters
Meadowbank Gold Project, Nunavut

Constituent		MMER (June 2002)*	Whole Ore Decant: Goose Island	Whole Ore Decant: Vault	Whole Ore Decant: Third Portage	Method Detection Limit
pH (s.u.)		6.0-9.5	7.1	8.0	7.4	0.01
Conductivity (uS/cm)			3620	3800	5880	5
Acidity - pH 4.5 (mg/L as $CaCO_3$)			0	0	0	1
Acidity - pH 8.3 (mg/L as $CaCO_3$)			7	3	9	1
Alkalinity (mg/L as $CaCO_3$)			35	85	77	1
Sulphate (mg/L)			2260	3190	3680	3
Thiosulphate (mg/L S2O3)			-	-	-	-
Hardness (mg/L as $CaCO_3$)			-	-	-	0.5
Calculated Hardness (mg/L as $CaCO_3$)			1105	1534	1947	-
Dissolved Metals (mg/L)						
Aluminum[1]	Al		0.02	0.03	<0.02	0.001
Antimony	Sb		0.001	0.006	<0.002	0.0001
Arsenic	As	0.5	0.006	0.002	0.004	0.0001
Barium	Ba		0.0885	0.096	0.117	0.00005
Beryllium	Be		<0.005	<0.01	<0.01	0.0005
Bismuth	Bi		<0.005	<0.01	<0.01	0.0005
Boron	B		<0.1	<0.2	<0.2	0.01
Cadmium[3]	Cd		<0.0005	<0.001	<0.001	0.00005
Calcium	Ca		431	579	749	0.02
Chromium[2]	Cr		<0.005	<0.01	<0.01	0.0005
Cobalt	Co		0.201	0.208	0.176	0.0001
Copper[3]	Cu	0.3	0.095	0.015	**1.44**	0.0001
Iron	Fe		6.49	0.09	0.24	0.03
Lead[3]	Pb	0.2	<0.0005	<0.001	<0.001	0.00005
Lithium	Li		<0.05	<0.1	<0.1	0.005
Magnesium	Mg		6.7	21.1	18.1	0.005
Manganese	Mn		0.0196	0.096	0.104	0.00005
Mercury	Hg		0.0006	0.0134	0.0021	0.00005
Molybdenum	Mo		0.153	0.211	0.1	0.0001
Nickel[3]	Ni	0.5	<0.005	<0.01	<0.01	0.0005
Phosphorous	P		<0.3	<0.3	<0.6	0.3
Potassium	K		70	43	143	2
Selenium	Se		<0.01	<0.02	<0.02	0.001
Silicon	Si		1.87	2.21	2.7	0.05
Silver	Ag		0.0004	0.0016	0.001	0.00001
Sodium	Na		653	716	1110	2
Strontium	Sr		0.459	1.46	0.897	0.0001
Thallium	Tl		<0.001	<0.002	<0.002	0.0001
Tin	Sn		<0.001	<0.002	<0.002	0.0001
Titanium	Ti		<0.01	<0.01	<0.02	0.01
Tungsten	W		-	-	-	-
Uranium	U		0.0034	0.0221	0.0112	0.00001
Vanadium	V		<0.01	<0.02	<0.02	0.001
Yttrium	Y		-	-	-	-
Zinc	Zn	0.5	0.01	<0.02	<0.02	0.001
Dissolved Anions (mg/L)						
Bromine	Br		-	-	-	-
Chloride	Cl		726	171	915	0.5
Fluoride[4]	F		0.19	0.16	0.18	0.02
Nutrients (mg/L)						
Nitrate Nitrogen[5]	N		19.5	81.3	55.8	0.005
Nitrite Nitrogen	NO3		<0.5	<0.5	<0.5	0.001
Nitrate + Nitrite	$N0_2$+$N0_3$		-	-	-	0.005
Ammonia	NH_3					
Ammonia + Ammonium	NH_3+NH_4		-	-	-	-
Total Phosphate	P		0.009	0.035	0.015	0.002
Cyanides (mg/L)						
Cyanate	CNO		-	-	-	-
Free Cyanide	CN		0.021	0.021	<0.001	0.005
Total Cyanide	CN	1	**15.8**	0.575	0.93	0.005
Thiocyanate	SCN		274	135	561	-
WAD Cyanide	CN		0.36	0.096	0.16	0.005

NOTES:
* Maximum authorized monthly mean concentration (based on **total** concentration).
< = less than the analytical detection limit.
Source: Golder, 2005b

Table 3-2
Groundwater Quality Input Parameters
Meadowbank Gold Project, Nunavut

North and Third Portage Pit Groundwater Quality (mg/L)

Year	Ag	Al	Alkalinity	As	B	Ba	Be	Bi	**Ca**	Cd	**Cl**	Co	Cr	Cu	F	Fe	Hardness	Hg	**K**	Li	**Mg**	Mn	Mo	**Na**	Ni	NO3_N	P	Pb	Sb	Se	Si	SO4	Sr	Tl	U	V	Zn
1	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**67.8**	0.00013	**304**	0.0030	0.00045	0.0021	0.30	0.53	285.5	1E-05	**26.6**	0.02	**52.5**	0.48	0.011	**93.5**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012
2	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**67.8**	0.00013	**304**	0.0030	0.00045	0.0021	0.30	0.53	285.5	1E-05	**26.6**	0.02	**52.5**	0.48	0.011	**93.5**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012
3	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**108.1**	0.00013	**544**	0.0030	0.00045	0.0021	0.30	0.53	457.6	1E-05	**43.1**	0.02	**84.6**	0.48	0.011	**145.3**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012
4	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**102.8**	0.00013	**512**	0.0030	0.00045	0.0021	0.30	0.53	434.7	1E-05	**40.9**	0.02	**80.3**	0.48	0.011	**138.4**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012
5	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**102.8**	0.00013	**512**	0.0030	0.00045	0.0021	0.30	0.53	434.7	1E-05	**40.9**	0.02	**80.3**	0.48	0.011	**138.4**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012
6	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**102.8**	0.00013	**512**	0.0030	0.00045	0.0021	0.30	0.53	434.7	1E-05	**40.9**	0.02	**80.3**	0.48	0.011	**138.4**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012
7	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**108.1**	0.00013	**544**	0.0030	0.00045	0.0021	0.30	0.53	457.6	1E-05	**43.1**	0.02	**84.6**	0.48	0.011	**145.3**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012
8	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**108.1**	0.00013	**544**	0.0030	0.00045	0.0021	0.30	0.53	457.6	1E-05	**43.1**	0.02	**84.6**	0.48	0.011	**145.3**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012
9	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**108.1**	0.00013	**544**	0.0030	0.00045	0.0021	0.30	0.53	457.6	1E-05	**43.1**	0.02	**84.6**	0.48	0.011	**145.3**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012

Goose Island Pit Groundwater Quality (mg/L)

Year	Ag	Al	Alkalinity	As	B	Ba	Be	Bi	**Ca**	Cd	**Cl**	Co	Cr	Cu	F	Fe	Hardness	Hg	**K**	Li	**Mg**	Mn	Mo	**Na**	Ni	NO3_N	P	Pb	Sb	Se	Si	SO4	Sr	Tl	U	V	Zn
1	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**54.4**	0.00013	**224**	0.0030	0.00045	0.0021	0.30	0.53	228.2	1E-05	**21.0**	0.02	**41.8**	0.48	0.011	**76.3**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012
2	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**43.6**	0.00013	**160**	0.0030	0.00045	0.0021	0.30	0.53	182.3	1E-05	**16.6**	0.02	**33.2**	0.48	0.011	**62.4**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012
3	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**55.5**	0.00013	**230**	0.0030	0.00045	0.0021	0.30	0.53	232.7	1E-05	**21.5**	0.02	**42.6**	0.48	0.011	**77.6**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012
4	0.00005	0.13	62	0.0027	0.91	0.12	0.0005	0.0005	**55.5**	0.00013	**230**	0.0030	0.00045	0.0021	0.30	0.53	232.7	1E-05	**21.5**	0.02	**42.6**	0.48	0.011	**77.6**	0.007	0.0025	0.13	0.0008	0.0004	0.0005	4.7	83.2	0.7	5E-05	0.0025	0.0005	0.012

Note:
Bold indicates affected by salinity increase from deep groundwater upwelling (Golder, 2004d)

Table 3-3
Average Overland Drainage Water Quality Input Parameters
Meadowbank Gold Project, Nunavut

Constituent	Input Chemistry (mg/L)
Ag	0.000025
Al	0.66
Alkalinity	14
As	0.00012
B	0.005
Ba	0.005
Be	0.0002
Bi	0.0001
Ca	3.1
Cd	0.00026
Cl	0.75
Co	0.013
Cr	0.00035
Cu	0.0034
F	0.35
Fe	0.33
Hardness	12
Hg	0.0001
K	0.39
Li	0.0014
Mg	1.05
Mn	0.063
Mo	0.00005
Na	0.48
Ni	0.010
NO3_N	0.037
P	0.015
Pb	0.0002
Sb	0.0001
Se	0.0001
Si	1.7
SO4	19
Sr	0.014
Tl	0.00001
U	0.0011
V	0.0001
Zn	0.0092

Source: Golder, 2005b

PORTAGE ATTENUATION POND

	Year 3		Year 5	
	inflow m^3/year	% of total inflow	inflow m^3/year	% of total inflow
Precipitation	55,262	2%	53,017	3%
Overland Runoff	378,724	14%	286,928	17%
Portage Rock Storage Pile Drainage	32,381	1%	109,676	6%
Portage Pit Sump	858,682	32%	938,473	55%
Goose Pit Sump	1,348,267	50%	305,895	18%
Sub-total	*2,673,316*	*100%*	*1,693,990*	*100%*

Expected Case		
Source Water pH	Sum of [H+] Year 3	Sum of [H+] Year 5
5.5	6.5E-08	9.9E-08
6.5	4.5E-08	5.4E-08
7.0	1.2E-09	6.5E-09
6.3	1.6E-07	2.8E-07
6.1	4.0E-07	0
Sum [H+]	*6.7E-07*	*5.8E-07*
pH	***6.2***	***6.2***

Poor-end (active ARD)		
Source Water pH	Sum of [H+] Year 3	Sum of [H+] Year 5
5.5	6.5E-08	9.9E-08
6.5	4.5E-08	5.4E-08
5.3	6.1E-08	3.2E-07
6.1	2.6E-07	4.4E-07
6.1	4.0E-07	1.4E-07
Sum [H+]	*8.3E-07*	*1.1E-06*
pH	***6.1***	***6.0***

VAULT ATTENUATION POND

	Year 6		Year 8	
	inflow m^3/year	% of total inflow	inflow m^3/year	% of total inflow
Precipitation	3,313	1%	2,817	1%
Overland Runoff	355,826	76%	290,590	68%
Rock Storage Pile Drainage	56,328	12%	76,424	18%
Pit Wall Rock Runoff	55,646	12%	55,646	13%
Sub-total	*471,112*	*100%*	*425,476*	*100%*

note: Vault developed in Year 4, flooded in Year 9

Expected Case		
Source Water pH	Sum of [H+] Year 6	Sum of [H+] Year 8
5.5	2.2E-08	2.1E-08
6.5	2.4E-07	2.2E-07
8.0	1.2E-09	1.8E-09
8.0	1.2E-09	1.3E-09
Sum [H+]	*2.6E-07*	*2.4E-07*
pH	***6.6***	***6.6***

Table 5-3 Effect of TSS on Total Metals Concentrations
Vault Attenuation Pond Water for Discharge
Meadowbank Gold Project, Nunavut

Constituent	**WQ Guidelines**		**Aqueous concentration from I mg/L TSS** [1]	**July Year 6 (expected case)** aqueous concentration (mg/L)		**July Year 6 (poor-end case)** aqueous concentration (mg/L)	
	DW	MMER		Dissolved (TSS = 0 mg/L)	Total (TSS = 15 mg/L)	Dissolved (TSS = 0 mg/L)	Total (TSS = 15 mg/L)
Ag			0.000001	0.00009	0.00010	0.00009	0.00010
Al	**0.1**		0.08	**0.21**	**1.42**	**0.21**	**1.43**
As	**0.025**	**0.5**	0.00001	0.00041	0.00056	0.0058	0.0060
Ba	**1**		0.0006	0.012	0.020	0.013	0.022
Be			0.000001	0.00037	0.00039	0.00038	0.00040
Ca			0.01823	7.1	7.4	7.5	7.8
Cd	**0.005**		0.000001	0.00002	0.00003	0.00002	0.00003
Cl	**250**		na	2.27	2.27	2.27	2.27
Co			0.00002	0.0004	0.0006	0.0004	0.0006
Cr	**0.05**		0.00017	0.0007	0.003	0.0008	0.003
Cu	**1.0**	**0.3**	0.00002	0.004	0.0048	0.005	0.0049
F	**1.5**		n/a	0.205	0.205	0.206	0.206
Fe	**0.3**		0.05	0.037	**0.8**	0.037	**0.8**
Hg	**0.001**		0.000000001	0.00037	0.00037	0.00037	0.00037
K			0.03	1.2	1.6	1.3	1.7
Mg			0.02	2.1	2.4	2.2	2.5
Mn	**0.05**		0.0005	0.005	0.013	0.005	0.014
Mo			0.000004	0.0003	0.000	0.0034	0.003
Na	**200**		0.01	4.5	4.6	11.2	11.4
Ni		**0.5**	0.00005	0.0028	0.0035	0.0028	0.0035
P			0.0006	0.15	0.16	0.15	0.16
Pb	**0.01**	**0.2**	0.000012	0.00037	0.00055	0.00037	0.0006
Sb	**0.006**		0.000001	0.00037	0.00039	0.0012	0.0012
Se	**0.01**		0.000025	0.0004	0.0007	0.0004	0.0008
Si			0.28	7.61	11.9	7.65	11.9
Sr			0.0002	0.04	0.04	0.05	0.05
Tl			0.00003	0.00004	0.00041	0.00004	0.00041
U			0.00001	0.001	0.001	0.003	0.003
V			0.0001	0.0004	0.002	0.0004	0.002
Zn	**5**	**0.5**	0.00006	0.007	0.008	0.007	0.008

Note:
1. Equivalent dissolved chemistry of TSS based on 1 mg of Vault pit rock dissolved in 1 litre of water

Table 5-5 Effect of TSS on Total Metals Concentrations
Portage Attenuation Pond Water for Discharge
Meadowbank Gold Project, Nunavut

Constituent	WQ Guidelines		Aqueous concentration from l mg/L TSS[1]	July Year 3 (8m probable case) aqueous concentration (mg/L)		July Year 3 (possible poor-end case) aqueous concentration (mg/L)	
	DW	MMER		Dissolved (TSS = 0 mg/L)	Total (TSS = 15 mg/L)	Dissolved (TSS = 0 mg/L)	Total (TSS = 15 mg/L)
Ag			0.000001	0.00002	0.00004	0.00003	0.00004
Al	**0.1**		0.04	**0.13**	**0.72**	**0.21**	**0.80**
As	**0.025**	**0.5**	0.00023	0.002	0.005	0.021	0.024
Ba	**1**		0.0003	0.028	0.032	0.030	0.035
Be			0.000001	0.0002	0.0002	0.0024	0.0024
Ca			0.008414	52	52	52	52
Cd	**0.005**		0.000001	0.0001	0.0001	0.0001	0.0001
Cl	**250**		n/a	**430**	**430**	**430**	**430**
Co			0.0000088	0.0033	0.0034	0.0049	0.0050
Cr	**0.05**		0.00012	0.0003	0.0021	0.0004	0.0022
Cu	**1.0**	**0.3**	0.0001	0.002	0.003	0.003	0.005
F	**1.5**		n/a	0.19	0.19	0.19	0.19
Fe	**0.3**		0.183	0.040	**2.8**	0.85	**3.6**
Hg	**0.001**		0.000000001	0.00002	0.00002	0.00003	0.00003
K			0.00974	4.0	4.2	4.3	4.4
Mg			0.01	18.4	18.6	18.6	18.8
Mn	**0.05**		0.0007	**0.1**	**0.1**	**0.2**	**0.2**
Mo			0.000005	0.008	0.008	0.008	0.009
Na	**200**		0.01	99.7	99.8	101	101
Ni		**0.5**	0.00006	0.0044	0.01	0.02	0.02
P			0.0006	0.038	0.047	0.044	0.053
Pb	**0.01**	**0.2**	0.000053	0.0011	0.0019	0.0021	0.0029
Sb	**0.006**		0.000001	0.0003	0.0003	0.0016	0.0016
Se	**0.01**		0.000025	0.0002	0.0006	0.0004	0.0007
Si			0.26	2.1	6.0	2.2	6.2
Sr			0.00013	0.19	0.2	0.20	0.2
Tl			0.000025	0.00002	0.00040	0.00004	0.00041
U			n/a	0.0020	0.002	0.0024	0.00
V			0.000057	0.00033	0.001	0.001	0.002
Zn	**5**	**0.5**	0.00014	0.0078	0.01	0.03	0.03

Note:
1. Equivalent dissolved chemistry of TSS based on 1 mg of whole ore tailings dissolved in 1 litre of water

APPENDIX I

Table I-1 Summary of Kinetic Test Conditions
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

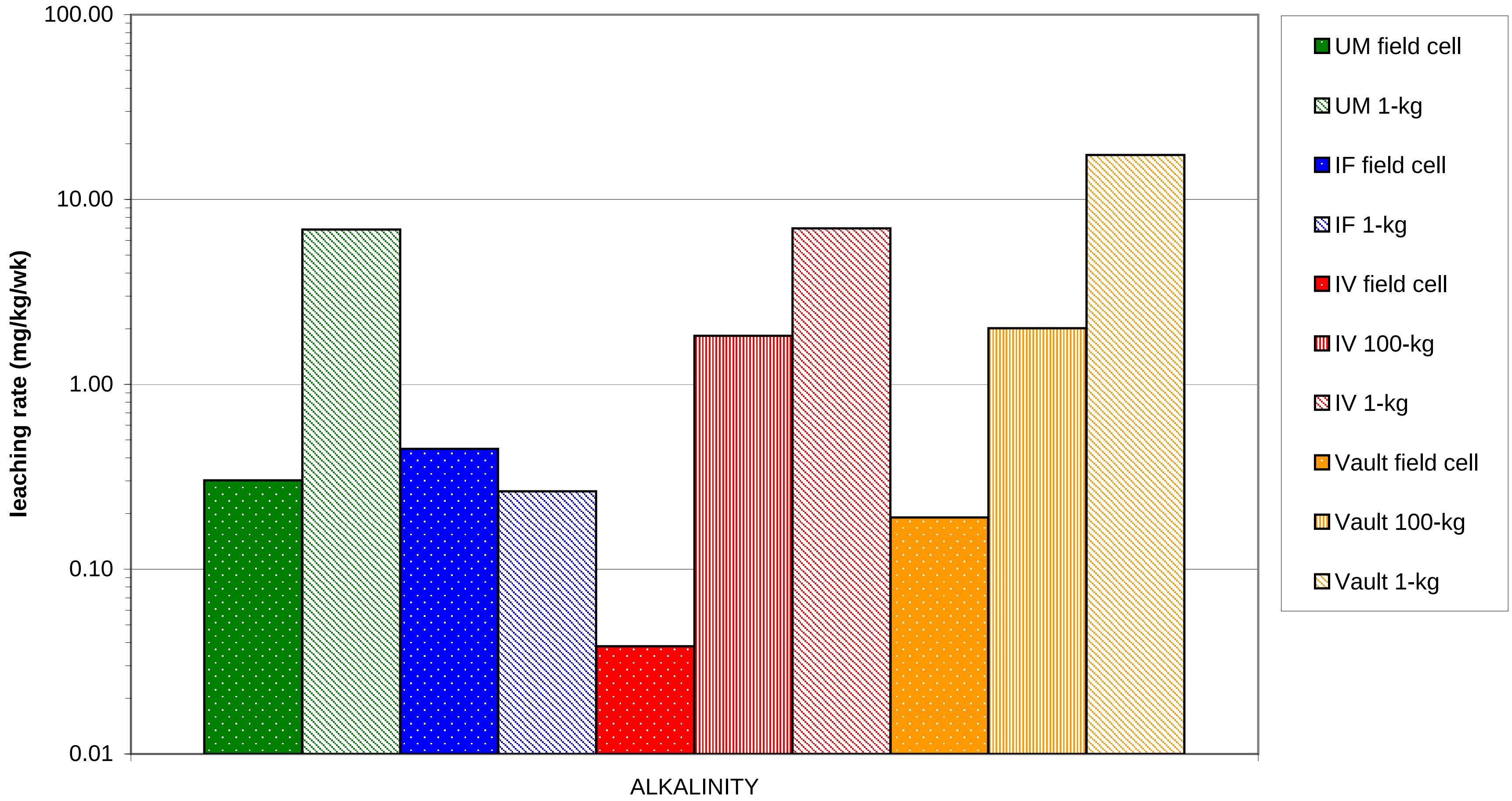
Test Cell	Grain Size	Liquid to Solid Ratio	Pore Volume per Cycle*	Number of Cells	Test Duration	Scenario Represented
1-kg HCT: all major rock types	<6.3mm crushed core	0.5L : 1kg	3 p.v. weekly	12	20 to 93 weeks	Poor-end
100-kg columns: composite IV rock	<6.3mm crushed core	0.3L : 1kg	0.2 p.v. weekly	2	57 weeks	Poor-end
Field barrels: all major rock types	core sections (~2cm to 20cm length)	~0.016L : 1kg (variable)	0.1 to 0.3 p.v. monthly	5	August 2003 to present	Expected Case

*assuming bulk density of 1.8 to 2 tonnes/m^3

Table I-2
Mass Based Chemical Leaching Rates
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Parameter	In-Situ (field) Lithological Leaching Rates				100-kg Composite IV Laboratory-Derived Leaching Rates		1-kg Laboratory-Derived Leaching Rates (calculated)		Ore Stockpile Leaching Rate*	Whole Ore Leaching Rate
	Vault IV	Portage-Goose IV	Portage-Goose IF	Portage-Goose UM	Vault IV	Portage-Goose IV	IF	UM		
Ag	6.3E-07	4.3E-07	2.1E-06	8.4E-07	1.4E-07	1.4E-07	8.0E-06	2.3E-06	2.5E-06	2.0E-06
Al	1.7E-05	2.0E-04	4.3E-05	1.7E-04	1.7E-03	1.3E-03	6.4E-02	9.3E-04	5.1E-02	3.9E-03
Alkalinity	1.9E-01	3.8E-02	4.5E-01	3.0E-01	2.0E+00	1.7E-03	2.6E-01	6.9E+00	2.5E-01	2.3E+01
As	3.9E-05	1.9E-05	3.7E-06	1.6E-04	3.2E-03	3.4E-03	7.8E-04	4.3E-02	8.8E-02	2.9E-04
B	1.3E-04	8.5E-05	4.3E-04	2.3E-04	3.3E-04	8.2E-04	7.8E-03	2.3E-02	4.2E-01	7.4E-07
Ba	1.4E-05	2.2E-06	5.3E-05	4.0E-05	7.2E-04	8.2E-04	6.8E-03	1.5E-03	7.1E-03	3.7E-07
Be	5.0E-07	6.8E-07	1.7E-06	6.7E-07	6.9E-06	7.1E-06	1.4E-03	5.2E-03	1.9E-03	9.7E-09
Bi	5.0E-07	6.8E-07	1.7E-06	6.7E-07	6.9E-06	7.1E-06	1.2E-04	1.1E-04	1.3E-04	9.7E-09
Ca	7.5E-02	1.6E-02	9.3E-02	7.3E-02	1.0E+00	8.3E-01	1.4E+00	1.4E+00	1.3E+01	2.1E-03
Cd	5.0E-07	3.5E-07	1.7E-06	6.7E-07	6.9E-07	7.1E-07	6.6E-05	1.1E-05	2.9E-04	9.7E-10
Cl	6.5E-03	1.7E-03	9.4E-03	3.8E-03	6.9E-03	7.1E-03	4.9E-01	1.1E-01	-	9.7E-06
Co	2.5E-06	1.7E-06	8.5E-06	3.3E-06	8.9E-06	2.6E-06	3.7E-03	6.0E-05	1.3E-02	9.8E-09
Cr	5.0E-07	3.3E-06	1.7E-06	6.1E-06	6.9E-06	7.1E-06	1.2E-04	1.1E-04	1.3E-04	9.7E-09
Cu	3.9E-06	1.8E-05	1.9E-05	3.2E-06	4.6E-05	6.4E-05	5.3E-03	4.4E-05	9.5E-03	6.2E-08
F	1.3E-05	3.6E-05	4.3E-05	1.7E-05	2.7E-03	6.4E-03	5.4E-02	4.5E-03	-	7.9E-07
Fe	1.3E-04	5.5E-04	2.5E-04	1.9E-04	4.2E-04	4.3E-04	5.0E+00	6.8E-03	1.4E+01	5.8E-07
Hg	5.0E-08	2.9E-08	1.7E-07	6.7E-08	6.9E-07	7.1E-07	1.2E-05	1.1E-05	1.3E-05	9.7E-10
K	7.3E-03	2.8E-03	5.6E-02	3.2E-02	1.8E-01	6.3E-01	7.4E-01	4.5E-01	5.8E+00	1.6E-04
Li	5.9E-06	1.6E-06	8.5E-06	6.6E-06	6.9E-05	2.6E-04	1.2E-03	1.1E-03	3.8E-03	9.7E-08
Mg	1.2E-02	3.8E-03	2.4E-02	2.3E-02	3.4E-01	2.5E-01	7.7E-01	5.5E-01	1.1E+01	5.5E-04
Mn	1.1E-05	5.9E-06	8.8E-04	3.3E-06	1.4E-04	9.3E-05	1.7E-01	3.0E-03	5.3E-01	3.0E-06
Mo	1.0E-04	2.7E-06	1.3E-05	3.3E-06	1.9E-03	2.4E-04	1.2E-05	1.6E-05	5.6E-05	7.9E-08
Na	6.0E-03	1.5E-03	8.8E-02	2.0E-02	2.8E-02	2.8E-02	4.6E-01	4.5E-01	1.8E+00	3.9E-05
Ni	7.7E-06	2.4E-05	1.1E-04	1.9E-05	6.9E-06	1.7E-05	3.3E-02	1.6E-04	1.7E-01	2.3E-08
NO3_N	1.3E-05	1.1E-05	4.3E-05	1.7E-05	6.9E-05	7.1E-05	8.7E-03	2.2E-02	-	9.7E-08
Pb	5.0E-07	4.4E-06	1.7E-06	6.7E-07	6.9E-07	7.1E-07	2.2E-03	1.1E-05	8.4E-03	1.5E-09
PO4_P	1.6E-03	1.1E-03	5.5E-03	2.3E-03	9.6E-04	8.2E-04	1.3E-03	2.8E-02	-	4.8E-07
Sb	5.0E-07	3.4E-06	1.7E-06	6.7E-07	4.9E-04	5.5E-04	5.8E-05	3.1E-03	1.2E-03	4.1E-08
Se	2.5E-06	1.7E-06	8.5E-06	3.3E-06	3.4E-05	1.4E-05	2.3E-04	2.3E-04	2.5E-04	1.9E-08
Si	9.5E-03	5.1E-03	2.1E-02	1.8E-02	9.6E-02	1.2E-01	1.1E+00	1.2E-01	3.0E+00	3.8E-05
SO4	2.1E-02	1.6E-02	1.4E-01	1.8E-02	2.1E+00	1.9E+00	1.5E+01	1.4E+00	1.0E+02	5.3E-03
Sr	3.7E-04	4.9E-05	3.9E-04	5.4E-04	6.0E-03	5.2E-03	1.4E-02	8.2E-03	9.6E-02	9.0E-06
Tl	1.3E-06	7.0E-07	4.3E-06	1.7E-06	1.4E-06	1.4E-06	2.3E-05	2.3E-05	3.8E-05	0.0E+00
U	1.7E-04	4.2E-06	1.0E-05	9.0E-06	1.2E-03	7.8E-04	1.4E-04	2.4E-05	9.6E-05	2.8E-08
V	1.3E-05	7.0E-06	4.3E-05	1.1E-05	2.5E-05	9.5E-05	2.3E-04	9.6E-04	2.5E-04	1.9E-08
Zn	2.5E-05	2.2E-05	8.5E-05	3.3E-05	3.2E-05	4.5E-05	2.8E-02	6.7E-04	3.2E-01	2.8E-07

Notes:
all rates in mg/kg/wk
* No data available for chloride, fluoride, nitrate, or phosphate in week 2



MEADOWBANK
MINING CORPORATION

TITLE
Comparative Lithological Leaching Rates: Alkalinity

Golder Associates

Water Quality Predictions

DRAWN	JMC	DATE	August 2007	JOB NO.	06-1122-386/2500
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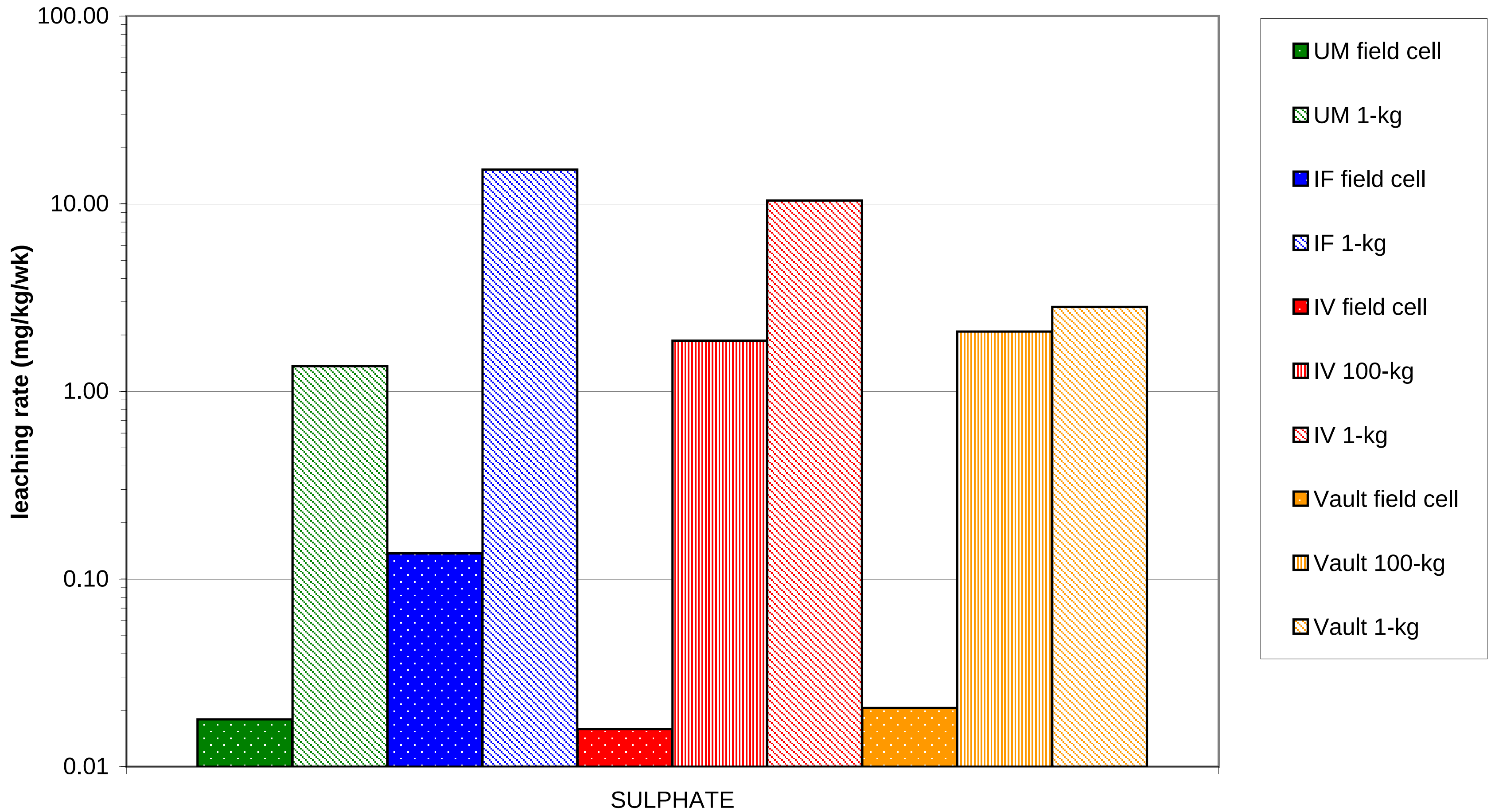
REVIEWED	VJB	FILE NO.		FIGURE NO.	I-1



MEADOWBANK
MINING CORPORATION

Golder Associates

Water Quality Predictions

TITLE

Comparative Lithological Leaching Rates: Sulphate

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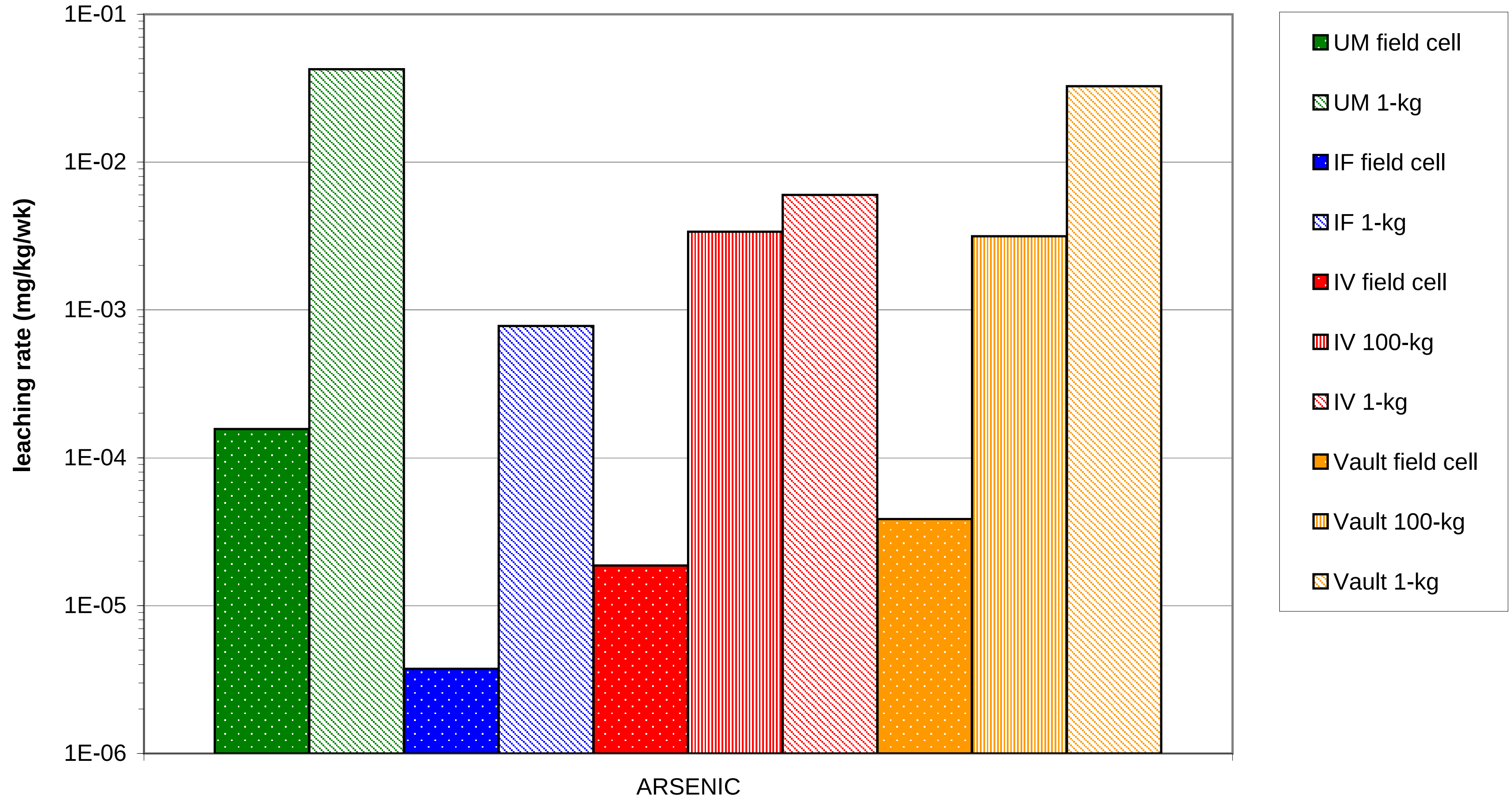

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Golder Associates **Water Quality Predictions**	DRAWN JMC	DATE August 2007	JOB NO. 06-1122-386/2500
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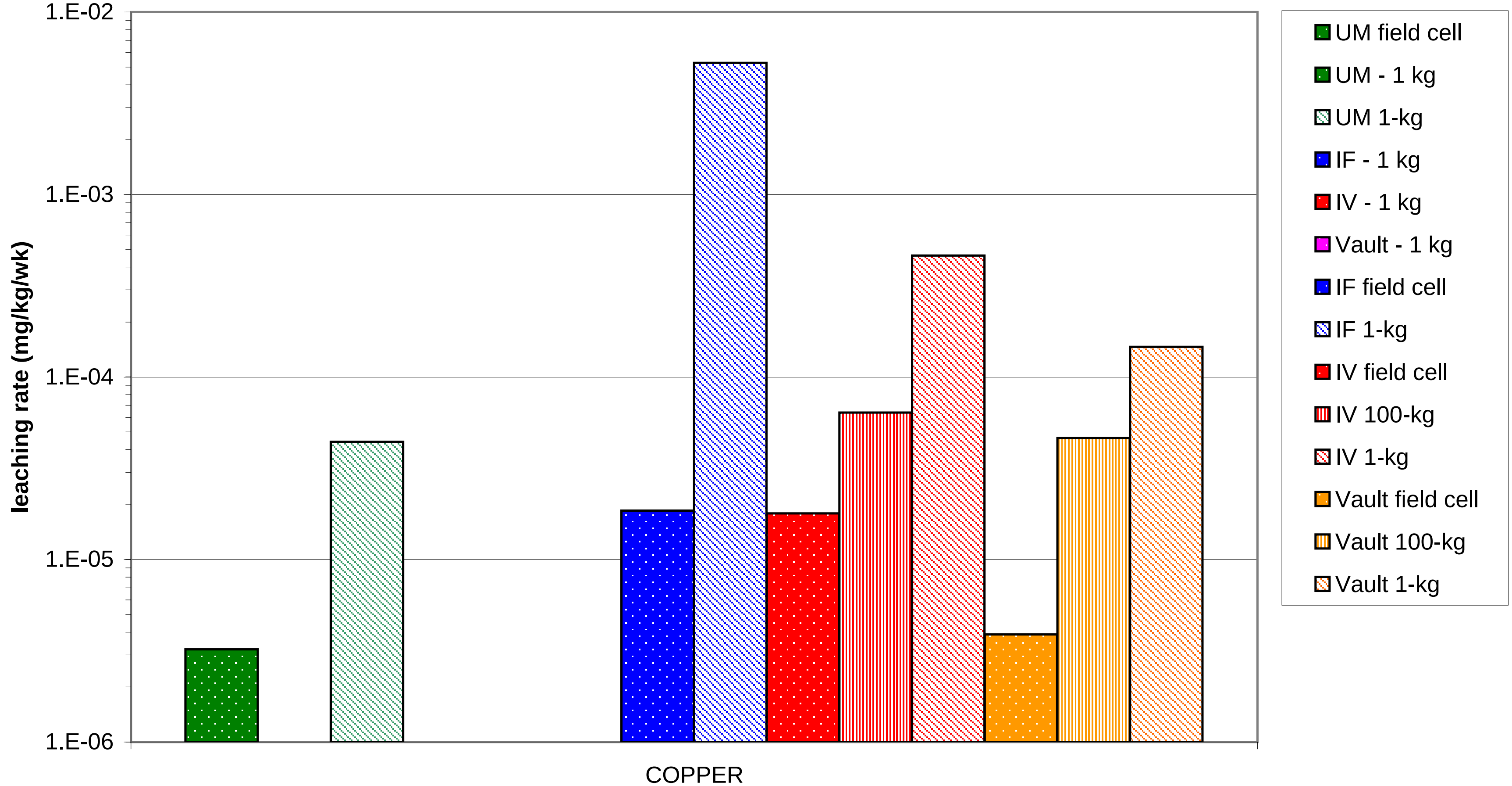

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Golder Associates — **Water Quality Predictions**	DRAWN JMC	DATE August 2007	JOB NO. 06-1122-386/2500
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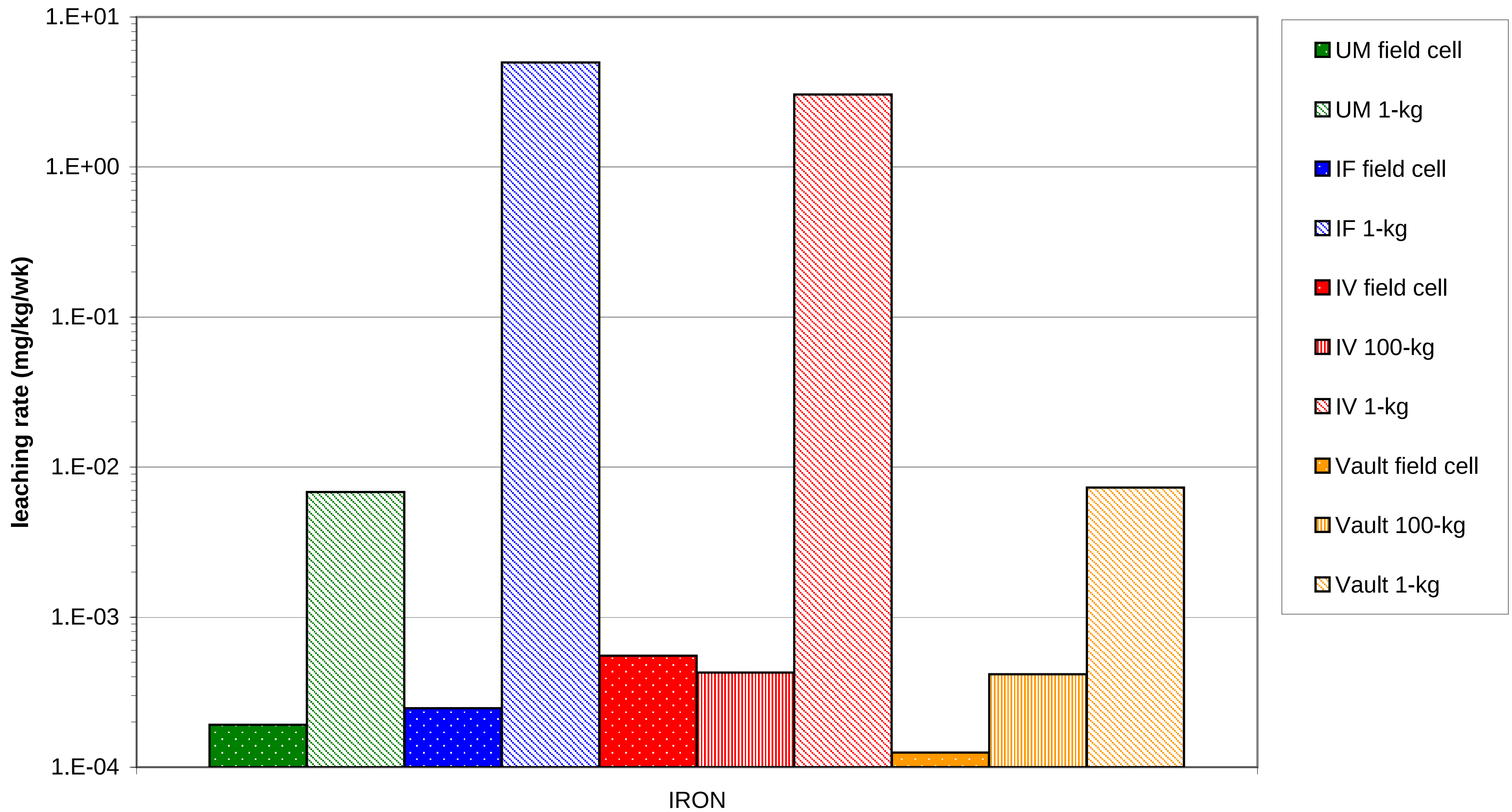

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Golder Associates — **Water Quality Predictions**	DRAWN	JMC	DATE August 2007	JOB NO.	06-1122-386/2500
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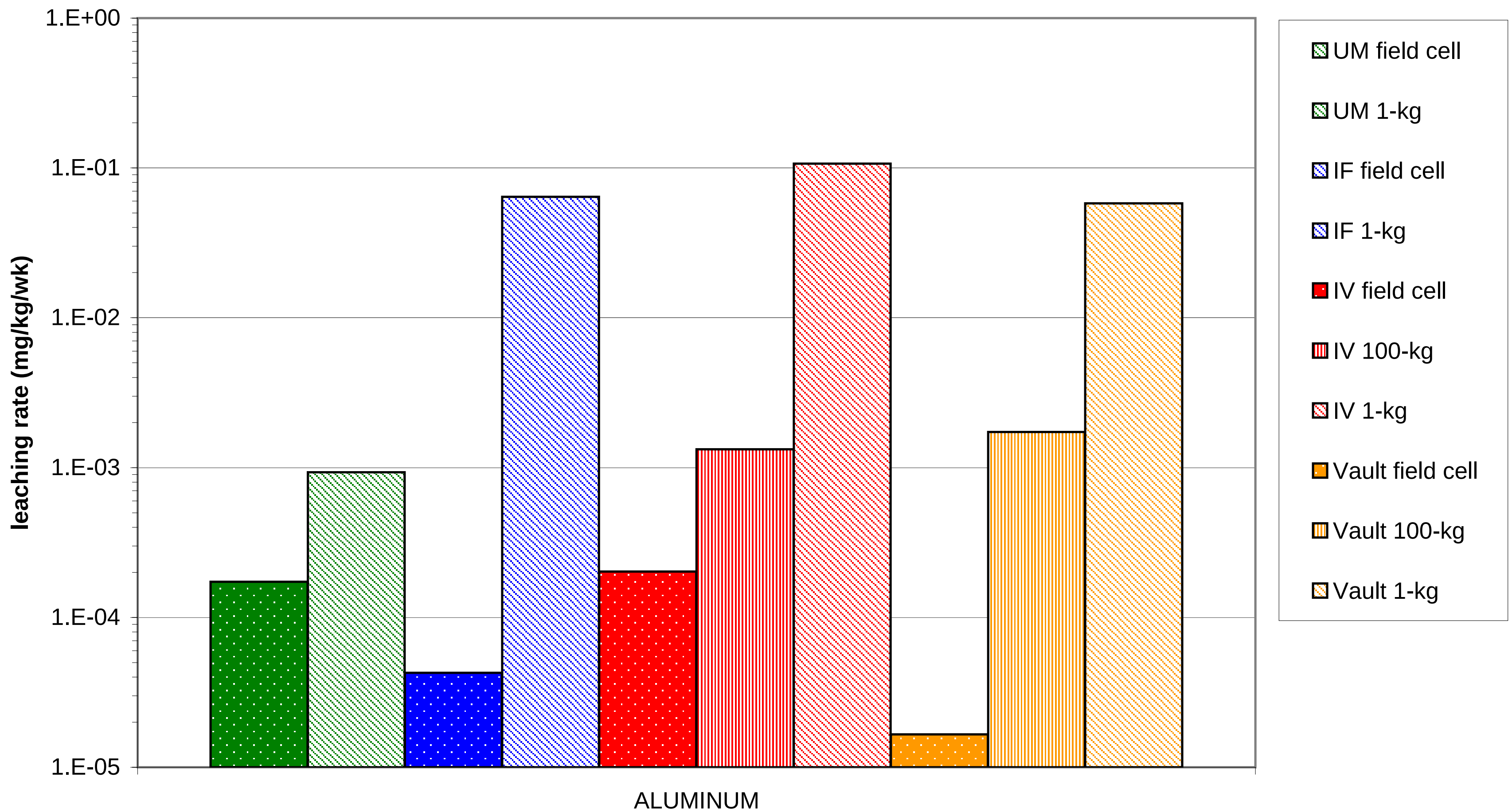

MEADOWBANK
MINING CORPORATION

TITLE
Comparative Lithological Leaching Rates: Aluminum

Golder Associates

Water Quality Predictions

DRAWN	JMC	DATE	August 2007	JOB NO.	06-1122-386/2500
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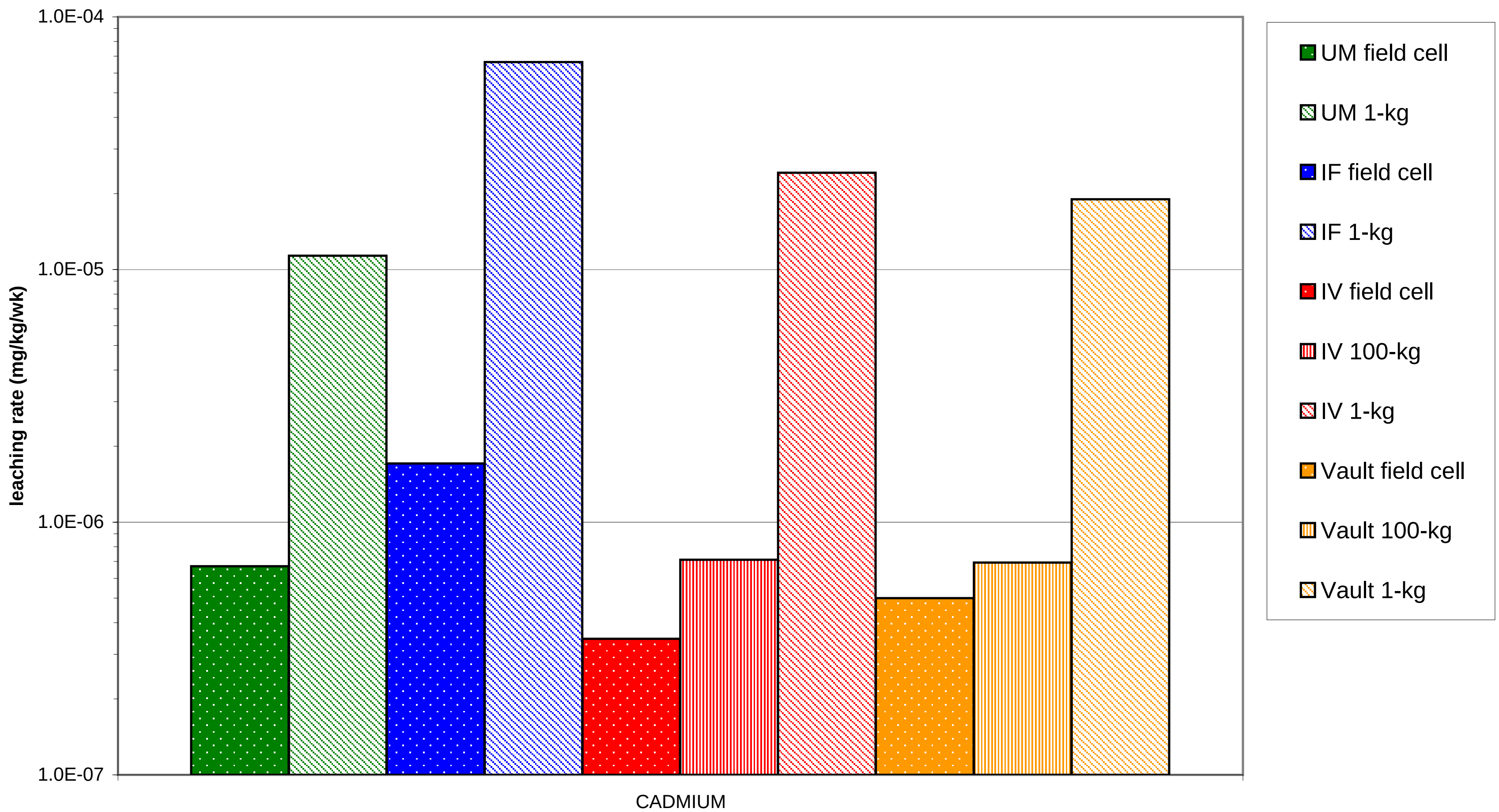

MEADOWBANK
MINING CORPORATION

Golder Associates

Water Quality Predictions

TITLE

Comparative Lithological Leaching Rates: Cadmium

DRAWN	JMC	DATE	August 2007	JOB NO.	06-1122-386/2500
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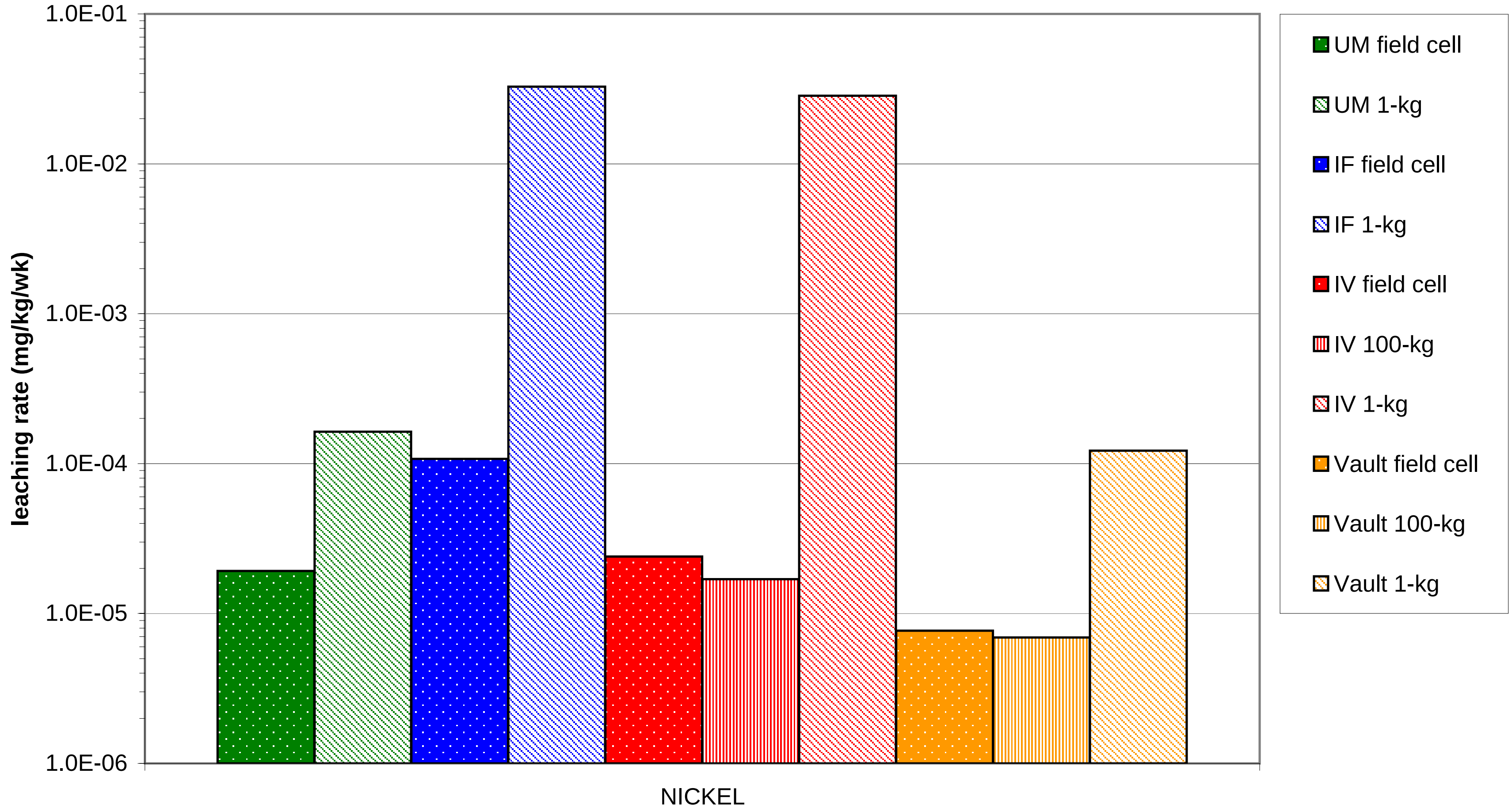

MEADOWBANK
MINING CORPORATION

TITLE
Comparative Lithological Leaching Rates: Nickel

Golder Associates

Water Quality Predictions

DRAWN	JMC	DATE	August 2007	JOB NO.	06-1122-386/2500
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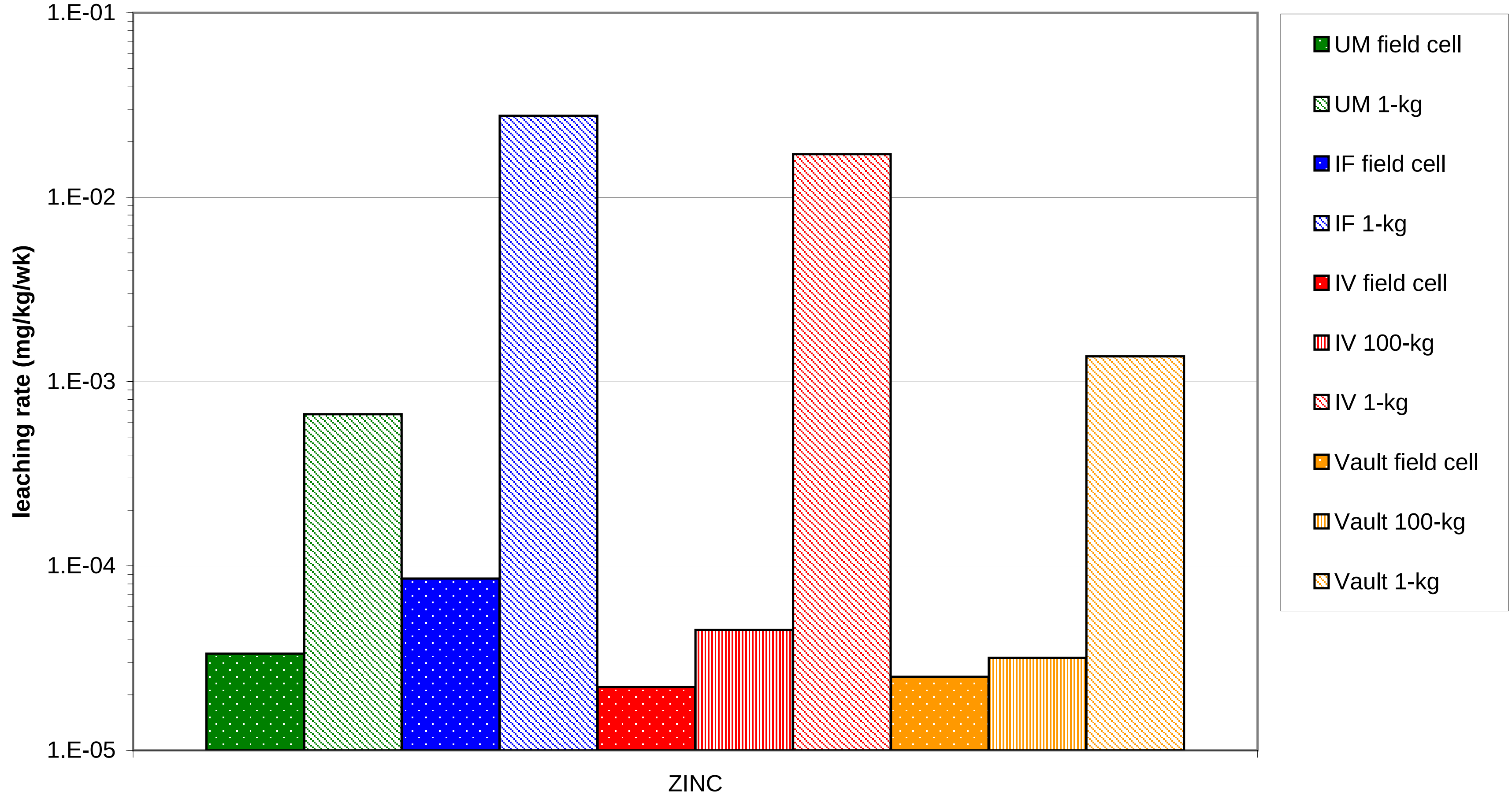

MEADOWBANK MINING CORPORATION	TITLE	**Comparative Lithological Leaching Rates: Zinc**			
Golder Associates	DRAWN	JMC	DATE August 2007	JOB NO.	06-1122-386/2500
Water Quality Predictions	CHECKED	VJB	SCALE na	DWG. NO.	
	REVIEWED	VJB	FILE NO.	FIGURE NO.	I-9

APPENDIX II

Table II-1
Predicted Water Quality (Dissolved Constituents) Probable Scenario
Vault Rock Storage Facility
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)
RRNWT - DW criteria			*6.5-8.5*		*0.1*		*0.025*	*5*	*1*				*0.005*	*250*					*0.05*	*1*	*1.5*	*0.3*	
CEQG criteria[1]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007						0.001/0.0089	0.002-0.004	0.12	0.3	
MMER criteria[5]**			6.0 - 9.5				0.5								1					0.3			
2 METER ACTIVE ZONE																							
Pit start at month 72																							
	80	June	8.0	6.9E-16	1.9E-14	2.1E-10	4.3E-14	1.4E-13	1.5E-14	5.5E-16	5.5E-16	8.2E-11	5.5E-16	7.1E-12	0.0E+00	0.0E+00	0.0E+00	2.7E-15	5.5E-16	4.3E-15	1.4E-14	1.4E-13	2.6E-10
	81	July	8.0	2.9E-06	7.7E-05	1.9E-01	1.8E-04	5.9E-04	6.4E-05	2.3E-06	2.3E-06	7.6E-02	2.3E-06	6.6E-03	0.0E+00	0.0E+00	0.0E+00	1.1E-05	2.3E-06	1.8E-05	1.3E-05	1.3E-04	2.4E-01
	82	August	8.0	6.2E-06	1.7E-04	5.7E-01	3.8E-04	1.3E-03	1.4E-04	4.9E-06	4.9E-06	2.2E-01	4.9E-06	1.9E-02	0.0E+00	0.0E+00	0.0E+00	2.5E-05	4.9E-06	3.8E-05	3.9E-05	3.9E-04	7.1E-01
5	83	September	8.0	7.8E-06	2.1E-04	8.1E-01	4.8E-04	1.6E-03	1.7E-04	6.2E-06	6.2E-06	3.2E-01	6.2E-06	2.8E-02	0.0E+00	0.0E+00	0.0E+00	3.1E-05	6.2E-06	4.8E-05	5.5E-05	5.5E-04	1.0E+00
	92	June	8.0	3.0E-06	8.1E-05	2.7E-01	1.9E-04	6.2E-04	6.7E-05	2.4E-06	2.4E-06	1.1E-01	2.4E-06	9.2E-03	0.0E+00	0.0E+00	0.0E+00	1.2E-05	2.4E-06	1.9E-05	1.8E-05	1.8E-04	3.4E-01
	93	July	8.0	4.7E-06	1.3E-04	3.5E-01	2.9E-04	9.7E-04	1.0E-04	3.7E-06	3.7E-06	1.4E-01	3.7E-06	1.2E-02	0.0E+00	0.0E+00	0.0E+00	1.9E-05	3.7E-06	2.9E-05	2.4E-05	2.4E-04	4.4E-01
	94	August	8.0	8.7E-06	2.3E-04	7.8E-01	5.4E-04	1.8E-03	1.9E-04	6.9E-06	6.9E-06	3.1E-01	6.9E-06	2.7E-02	0.0E+00	0.0E+00	0.0E+00	3.4E-05	6.9E-06	5.4E-05	5.3E-05	5.3E-04	9.7E-01
6	95	September	8.0	1.0E-05	2.8E-04	1.1E+00	6.5E-04	2.2E-03	2.3E-04	8.3E-06	8.3E-06	4.2E-01	**8.3E-06**	3.6E-02	0.0E+00	0.0E+00	0.0E+00	4.2E-05	8.3E-06	6.5E-05	7.2E-05	7.2E-04	1.3E+00
	104	June	8.0	6.5E-06	1.8E-04	5.8E-01	4.0E-04	1.3E-03	1.4E-04	5.2E-06	5.2E-06	2.3E-01	5.2E-06	2.0E-02	0.0E+00	0.0E+00	0.0E+00	2.6E-05	5.2E-06	4.0E-05	4.0E-05	4.0E-04	7.3E-01
	105	July	8.0	6.4E-06	1.7E-04	5.0E-01	4.0E-04	1.3E-03	1.4E-04	5.1E-06	5.1E-06	2.0E-01	5.1E-06	1.7E-02	0.0E+00	0.0E+00	0.0E+00	2.5E-05	5.1E-06	4.0E-05	3.4E-05	3.4E-04	6.3E-01
	106	August	8.0	1.0E-05	2.7E-04	9.1E-01	6.3E-04	2.1E-03	2.3E-04	8.0E-06	8.0E-06	3.6E-01	**8.0E-06**	3.1E-02	0.0E+00	0.0E+00	0.0E+00	4.0E-05	8.0E-06	6.3E-05	6.2E-05	6.2E-04	1.1E+00
7	107	September	8.0	1.2E-05	3.1E-04	1.2E+00	7.2E-04	2.4E-03	2.6E-04	9.2E-06	9.2E-06	4.6E-01	**9.2E-06**	4.0E-02	0.0E+00	0.0E+00	0.0E+00	4.6E-05	9.2E-06	7.2E-05	7.9E-05	7.9E-04	1.4E+00
	116	June	8.0	5.3E-06	1.4E-04	3.9E-01	3.3E-04	1.1E-03	1.2E-04	4.2E-06	4.2E-06	1.6E-01	4.2E-06	1.3E-02	0.0E+00	0.0E+00	0.0E+00	2.1E-05	4.2E-06	3.3E-05	2.7E-05	2.7E-04	4.9E-01
	117	July	8.0	4.7E-06	1.3E-04	3.1E-01	2.9E-04	9.8E-04	1.1E-04	3.8E-06	3.8E-06	1.2E-01	3.8E-06	1.1E-02	0.0E+00	0.0E+00	0.0E+00	1.9E-05	3.8E-06	2.9E-05	2.1E-05	2.1E-04	3.9E-01
	118	August	8.0	5.7E-06	1.5E-04	4.1E-01	3.5E-04	1.2E-03	1.3E-04	4.5E-06	4.5E-06	1.6E-01	4.5E-06	1.4E-02	0.0E+00	0.0E+00	0.0E+00	2.3E-05	4.5E-06	3.5E-05	2.8E-05	2.8E-04	5.2E-01
8	119	September	8.0	6.0E-06	1.6E-04	4.7E-01	3.7E-04	1.2E-03	1.3E-04	4.8E-06	4.8E-06	1.9E-01	4.8E-06	1.6E-02	0.0E+00	0.0E+00	0.0E+00	2.4E-05	4.8E-06	3.7E-05	3.2E-05	3.2E-04	5.9E-01
Long-Term Drainage Water Quality																							
23	296 - 299	Summer Average	8.0	5.4E-06	1.5E-04	4.0E-01	3.4E-04	1.1E-03	1.2E-04	4.3E-06	4.3E-06	1.6E-01	4.3E-06	1.4E-02	0.0E+00	0.0E+00	0.0E+00	2.2E-05	4.3E-06	3.4E-05	2.7E-05	2.7E-04	4.9E-01
8 METER ACTIVE ZONE																							
Pit start at month 72																							
	80	June	8.0	6.9E-16	1.9E-14	2.1E-10	4.3E-14	1.4E-13	1.5E-14	5.5E-16	5.5E-16	8.2E-11	5.5E-16	7.1E-12	0.0E+00	0.0E+00	0.0E+00	2.7E-15	5.5E-16	4.3E-15	1.4E-14	1.4E-13	2.6E-10
	81	July	8.0	2.9E-06	7.7E-05	1.9E-01	1.8E-04	5.9E-04	6.4E-05	2.3E-06	2.3E-06	7.6E-02	2.3E-06	6.6E-03	0.0E+00	0.0E+00	0.0E+00	1.1E-05	2.3E-06	1.8E-05	1.3E-05	1.3E-04	2.4E-01
	82	August	8.0	6.2E-06	1.7E-04	5.7E-01	3.8E-04	1.3E-03	1.4E-04	4.9E-06	4.9E-06	2.2E-01	4.9E-06	1.9E-02	0.0E+00	0.0E+00	0.0E+00	2.5E-05	4.9E-06	3.8E-05	3.9E-05	3.9E-04	7.1E-01
5	83	September	8.0	7.8E-06	2.1E-04	8.1E-01	4.8E-04	1.6E-03	1.7E-04	6.2E-06	6.2E-06	3.2E-01	6.2E-06	2.8E-02	0.0E+00	0.0E+00	0.0E+00	3.1E-05	6.2E-06	4.8E-05	5.5E-05	5.5E-04	1.0E+00
	92	June	8.0	3.0E-06	8.1E-05	2.7E-01	1.9E-04	6.2E-04	6.7E-05	2.4E-06	2.4E-06	1.1E-01	2.4E-06	9.2E-03	0.0E+00	0.0E+00	0.0E+00	1.2E-05	2.4E-06	1.9E-05	1.8E-05	1.8E-04	3.4E-01
	93	July	8.0	4.7E-06	1.3E-04	3.5E-01	2.9E-04	9.7E-04	1.0E-04	3.7E-06	3.7E-06	1.4E-01	3.7E-06	1.2E-02	0.0E+00	0.0E+00	0.0E+00	1.9E-05	3.7E-06	2.9E-05	2.4E-05	2.4E-04	4.4E-01
	94	August	8.0	8.7E-06	2.3E-04	7.8E-01	5.4E-04	1.8E-03	1.9E-04	6.9E-06	6.9E-06	3.1E-01	6.9E-06	2.7E-02	0.0E+00	0.0E+00	0.0E+00	3.4E-05	6.9E-06	5.4E-05	5.3E-05	5.3E-04	9.7E-01
6	95	September	8.0	1.0E-05	2.8E-04	1.1E+00	6.5E-04	2.2E-03	2.3E-04	8.3E-06	8.3E-06	4.2E-01	**8.3E-06**	3.6E-02	0.0E+00	0.0E+00	0.0E+00	4.2E-05	8.3E-06	6.5E-05	7.2E-05	7.2E-04	1.3E+00
	104	June	8.0	6.5E-06	1.8E-04	5.8E-01	4.0E-04	1.3E-03	1.4E-04	5.2E-06	5.2E-06	2.3E-01	5.2E-06	2.0E-02	0.0E+00	0.0E+00	0.0E+00	2.6E-05	5.2E-06	4.0E-05	4.0E-05	4.0E-04	7.3E-01
	105	July	8.0	6.4E-06	1.7E-04	5.0E-01	4.0E-04	1.3E-03	1.4E-04	5.1E-06	5.1E-06	2.0E-01	5.1E-06	1.7E-02	0.0E+00	0.0E+00	0.0E+00	2.5E-05	5.1E-06	4.0E-05	3.4E-05	3.4E-04	6.3E-01
	106	August	8.0	1.0E-05	2.7E-04	9.1E-01	6.3E-04	2.1E-03	2.3E-04	8.0E-06	8.0E-06	3.6E-01	**8.0E-06**	3.1E-02	0.0E+00	0.0E+00	0.0E+00	4.0E-05	8.0E-06	6.3E-05	6.2E-05	6.2E-04	1.1E+00
7	107	September	8.0	1.2E-05	3.1E-04	1.2E+00	7.2E-04	2.4E-03	2.6E-04	9.2E-06	9.2E-06	4.6E-01	**9.2E-06**	4.0E-02	0.0E+00	0.0E+00	0.0E+00	4.6E-05	9.2E-06	7.2E-05	7.9E-05	7.9E-04	1.4E+00
Long-Term Drainage Water Quality																							
23	296 - 299	Summer Average	8.0	1.4E-05	3.8E-04	9.3E-01	8.6E-04	2.9E-03	3.1E-04	1.1E-05	1.1E-05	3.7E-01	**1.1E-05**	3.2E-02	0.0E+00	0.0E+00	0.0E+00	5.5E-05	1.1E-05	8.6E-05	6.3E-05	6.3E-04	1.2E+00

Year	GoldSim Month	Actual Month	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
RRNWT - DW criteria			*0.001*				*0.05*		*200*				*11*	*0.01*		*0.006*	*0.01*		*500*					*5*	*500*	
CEQG criteria[1]*			0.000026					0.073		0.025-0.15	4.92	0.019	2.9	0.001-0.007			0.001				0.0008			0.03		
MMER criteria[5]**										0.5				0.2										0.5		
2 METER ACTIVE ZONE																										
Pit start at month 72																										
	80	June	5.5E-17	8.0E-12	6.5E-15	1.3E-11	1.2E-14	1.1E-13	1.6E+01	8.4E-15	**8.9E+01**	**1.1E+00**	***9.8E+01***	5.5E-16	1.8E-12	5.5E-16	2.7E-15	1.0E-11	2.3E-11	4.1E-13	1.4E-15	1.9E-13	1.4E-14	2.7E-14	2.0E+02	22,601
	81	July	2.3E-07	7.4E-03	6.0E-06	1.2E-02	5.0E-05	4.5E-04	1.1E+01	3.5E-05	**5.9E+01**	**7.2E-01**	***6.6E+01***	2.3E-06	1.6E-03	2.3E-06	1.1E-05	9.6E-03	2.1E-02	1.7E-03	5.9E-06	7.7E-04	5.9E-05	1.1E-04	1.4E+02	244
	82	August	4.9E-07	2.2E-02	1.8E-05	3.6E-02	1.1E-04	9.8E-04	1.2E+01	7.6E-05	**6.5E+01**	**7.9E-01**	***7.2E+01***	4.9E-06	4.8E-03	4.9E-06	2.5E-05	2.8E-02	6.3E-02	3.6E-03	1.3E-05	1.7E-03	1.3E-04	2.5E-04	1.5E+02	3,373
5	83	September	6.2E-07	3.1E-02	2.5E-05	5.1E-02	1.4E-04	1.2E-03	1.1E+01	9.5E-05	**5.9E+01**	**7.1E-01**	***6.5E+01***	6.2E-06	6.8E-03	6.2E-06	3.1E-05	4.0E-02	8.9E-02	4.6E-03	1.6E-05	2.1E-03	1.6E-04	3.1E-04	1.4E+02	6,198
	92	June	2.4E-07	1.0E-02	8.3E-06	1.7E-02	5.3E-05	4.8E-04	8.4E+00	3.7E-05	**4.7E+01**	**5.7E-01**	***5.2E+01***	2.4E-06	2.3E-03	2.4E-06	1.2E-05	1.3E-02	3.0E-02	1.8E-03	6.2E-06	8.1E-04	6.2E-05	1.2E-04	1.1E+02	56,502
	93	July	3.7E-07	1.3E-02	1.1E-05	2.2E-02	8.2E-05	7.5E-04	5.6E+00	5.8E-05	**3.1E+01**	**3.8E-01**	***3.4E+01***	3.7E-06	2.9E-03	3.7E-06	1.9E-05	1.7E-02	3.8E-02	2.8E-03	9.7E-06	1.3E-03	9.7E-05	1.9E-04	7.1E+01	542
	94	August	6.9E-07	3.0E-02	2.4E-05	4.9E-02	1.5E-04	1.4E-03	6.3E+00	1.1E-04	**3.5E+01**	**4.2E-01**	***3.8E+01***	6.9E-06	6.5E-03	6.9E-06	3.4E-05	3.9E-02	8.6E-02	5.1E-03	1.8E-05	2.3E-03	1.8E-04	3.4E-04	8.1E+01	6,746
6	95	September	8.3E-07	4.1E-02	3.3E-05	6.7E-02	1.8E-04	1.7E-03	5.9E+00	1.3E-04	**3.3E+01**	**4.0E-01**	***3.6E+01***	8.3E-06	8.9E-03	8.3E-06	4.2E-05	5.3E-02	1.2E-01	6.2E-03	2.2E-05	2.8E-03	2.2E-04	4.2E-04	7.6E+01	11,269
	104	June	5.2E-07	2.2E-02	1.8E-05	3.7E-02	1.1E-04	1.0E-03	6.8E+00	8.0E-05	**3.8E+01**	**4.6E-01**	***4.2E+01***	5.2E-06	4.9E-03	5.2E-06	2.6E-05	2.9E-02	6.5E-02	3.8E-03	1.3E-05	1.8E-03	1.3E-04	2.6E-04	8.7E+01	56,502
	105	July	5.1E-07	1.9E-02	1.6E-05	3.2E-02	1.1E-04	1.0E-03	4.3E+00	7.8E-05	**2.4E+01**	**2.9E-01**	***2.6E+01***	5.1E-06	4.2E-03	5.1E-06	2.5E-05	2.5E-02	5.6E-02	3.8E-03	1.3E-05	1.7E-03	1.3E-04	2.5E-04	5.5E+01	542
	106	August	8.0E-07	3.5E-02	2.8E-05	5.7E-02	1.8E-04	1.6E-03	4.6E+00	1.2E-04	**2.6E+01**	**3.1E-01**	***2.8E+01***	8.0E-06	7.7E-03	8.0E-06	4.0E-05	4.6E-02	1.0E-01	5.9E-03	2.1E-05	2.7E-03	2.1E-04	4.0E-04	6.0E+01	6,746
7	107	September	9.2E-07	4.4E-02	3.6E-05	7.3E-02	2.0E-04	1.8E-03	4.2E+00	1.4E-04	**2.4E+01**	**2.9E-01**	***2.6E+01***	9.2E-06	9.7E-03	9.2E-06	4.6E-05	5.8E-02	1.3E-01	6.8E-03	2.4E-05	3.1E-03	2.4E-04	4.6E-04	5.6E+01	11,269
	116	June	4.2E-07	1.5E-02	1.2E-05	2.5E-02	9.2E-05	8.3E-04	1.1E+00	6.4E-05	**6.0E+00**	**7.2E-02**	**6.6E+00**	4.2E-06	3.3E-03	4.2E-06	2.1E-05	2.0E-02	4.3E-02	3.1E-03	1.1E-05	1.4E-03	1.1E-04	2.1E-04	1.4E+01	161,430
	117	July	3.8E-07	1.2E-02	9.7E-06	2.0E-02	8.3E-05	7.5E-04	3.2E-01	5.8E-05	**1.7E+00**	**2.1E-02**	1.9E+00	3.8E-06	2.6E-03	3.8E-06	1.9E-05	1.6E-02	3.5E-02	2.8E-03	9.8E-06	1.3E-03	9.8E-05	1.9E-04	4.5E+00	2,712
	118	August	4.5E-07	1.6E-02	1.3E-05	2.6E-02	1.0E-04	9.1E-04	2.9E-01	7.0E-05	**1.5E+00**	1.9E-02	1.7E+00	4.5E-06	3.5E-03	4.5E-06	2.3E-05	2.1E-02	4.5E-02	3.4E-03	1.2E-05	1.5E-03	1.2E-04	2.3E-04	4.2E+00	33,731
8	119	September	4.8E-07	1.8E-02	1.5E-05	3.0E-02	1.1E-04	9.6E-04	2.3E-01	7.4E-05	**1.2E+00**	1.4E-02	1.3E+00	4.8E-06	3.9E-03	4.8E-06	2.4E-05	2.3E-02	5.2E-02	3.5E-03	1.2E-05	1.6E-03	1.2E-04	2.4E-04	3.5E+00	56,345
Long-Term Drainage Water Quality																										
23	296 - 299	Summer Average	4.3E-07	1.5E-02	1.2E-05	2.5E-02	9.5E-05	8.6E-04	1.2E-02	6.6E-05	1.1E-14	1.3E-16	2.7E-05	4.3E-06	3.3E-03	4.3E-06	2.2E-05	2.0E-02	4.4E-02	3.2E-03	1.1E-05	1.5E-03	1.1E-04	2.2E-04	6.9E-01	63,555
8 METER ACTIVE ZONE																										
Pit start at month 72																										
	80	June	5.5E-17	8.0E-12	6.5E-15	1.3E-11	1.2E-14	1.1E-13	1.6E+01	8.4E-15	**8.9E+01**	**1.1E+00**	***9.8E+01***	5.5E-16	1.8E-12	5.5E-16	2.7E-15	1.0E-11	2.3E-11	4.1E-13	1.4E-15	1.9E-13	1.4E-14	2.7E-14	2.0E+02	22,601
	81	July	2.3E-07	7.4E-03	6.0E-06	1.2E-02	5.0E-05	4.5E-04	1.1E+01	3.5E-05	**5.9E+01**	**7.2E-01**	***6.6E+01***	2.3E-06	1.6E-03	2.3E-06	1.1E-05	9.6E-03	2.1E-02	1.7E-03	5.9E-06	7.7E-04	5.9E-05	1.1E-04	1.4E+02	244
	82	August	4.9E-07	2.2E-02	1.8E-05	3.6E-02	1.1E-04	9.8E-04	1.2E+01	7.6E-05	**6.5E+01**	**7.9E-01**	***7.2E+01***	4.9E-06	4.8E-03	4.9E-06	2.5E-05	2.8E-02	6.3E-02	3.6E-03	1.3E-05	1.7E-03	1.3E-04	2.5E-04	1.5E+02	3,373
5	83	September	6.2E-07	3.1E-02	2.5E-05	5.1E-02	1.4E-04	1.2E-03	1.1E+01	9.5E-05	**5.9E+01**	**7.1E-01**	***6.5E+01***	6.2E-06	6.8E-03	6.2E-06	3.1E-05	4.0E-02	8.9E-02	4.6E-03	1.6E-05	2.1E-03	1.6E-04	3.1E-04	1.4E+02	6,198
	92	June	2.4E-07	1.0E-02	8.3E-06	1.7E-02	5.3E-05	4.8E-04	8.4E+00	3.7E-05	**4.7E+01**	**5.7E-01**	***5.2E+01***	2.4E-06	2.3E-03	2.4E-06	1.2E-05	1.3E-02	3.0E-02	1.8E-03	6.2E-06	8.1E-04	6.2E-05	1.2E-04	1.1E+02	56,502
	93	July	3.7E-07	1.3E-02	1.1E-05	2.2E-02	8.2E-05	7.5E-04	5.6E+00	5.8E-05	**3.1E+01**	**3.8E-01**	***3.4E+01***	3.7E-06	2.9E-03	3.7E-06	1.9E-05	1.7E-02	3.8E-02	2.8E-03	9.7E-06	1.3E-03	9.7E-05	1.9E-04	7.1E+01	542
	94	August	6.9E-07	3.0E-02	2.4E-05	4.9E-02	1.5E-04	1.4E-03	6.3E+00	1.1E-04	**3.5E+01**	**4.2E-01**	***3.8E+01***	6.9E-06	6.5E-03	6.9E-06	3.4E-05	3.9E-02	8.6E-02	5.1E-03	1.8E-05	2.3E-03	1.8E-04	3.4E-04	8.1E+01	6,746
6	95	September	8.3E-07	4.1E-02	3.3E-05	6.7E-02	1.8E-04	1.7E-03	5.9E+00	1.3E-04	**3.3E+01**	**4.0E-01**	***3.6E+01***	8.3E-06	8.9E-03	8.3E-06	4.2E-05	5.3E-02	1.2E-01	6.2E-03	2.2E-05	2.8E-03	2.2E-04	4.2E-04	7.6E+01	11,269
	104	June	5.2E-07	2.2E-02	1.8E-05	3.7E-02	1.1E-04	1.0E-03	6.8E+00	8.0E-05	**3.8E+01**	**4.6E-01**	***4.2E+01***	5.2E-06	4.9E-03	5.2E-06	2.6E-05	2.9E-02	6.5E-02	3.8E-03	1.3E-05	1.8E-03	1.3E-04	2.6E-04	8.7E+01	56,502
	105	July	5.1E-07	1.9E-02	1.6E-05	3.2E-02	1.1E-04	1.0E-03	4.3E+00	7.8E-05	**2.4E+01**	**2.9E-01**	***2.6E+01***	5.1E-06	4.2E-03	5.1E-06	2.5E-05	2.5E-02	5.6E-02	3.8E-03	1.3E-05	1.7E-03	1.3E-04	2.5E-04	5.5E+01	542
	106	August	8.0E-07	3.5E-02	2.8E-05	5.7E-02	1.8E-04	1.6E-03	4.6E+00	1.2E-04	**2.6E+01**	**3.1E-01**	***2.8E+01***	8.0E-06	7.7E-03	8.0E-06	4.0E-05	4.6E-02	1.0E-01	5.9E-03	2.1E-05	2.7E-03	2.1E-04	4.0E-04	6.0E+01	6,746
7	107	September	9.2E-07	4.4E-02	3.6E-05	7.3E-02	2.0E-04	1.8E-03	4.2E+00	1.4E-04	**2.4E+01**	**2.9E-01**	***2.6E+01***	9.2E-06	9.7E-03	9.2E-06	4.6E-05	5.8E-02	1.3E-01	6.8E-03	2.4E-05	3.1E-03	2.4E-04	4.6E-04	5.6E+01	11,269
Long-Term Drainage Water Quality																										
23	296 - 299	Summer Average	1.1E-06	3.6E-02	2.9E-05	5.8E-02	2.4E-04	2.2E-03	2.9E-02	1.7E-04	1.1E-14	1.3E-16	6.3E-05	1.1E-05	7.8E-03	1.1E-05	5.5E-05	4.6E-02	1.0E-01	8.2E-03	2.9E-05	3.8E-03	2.9E-04	5.5E-04	1.6E+00	63,555

NOTES:
1. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
2. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
3. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
4. Freshwater aquatic life criterion or guideline is hardness dependant.
5. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table II-2
Predicted Water Quality (Dissolved Constituents) Probable Scenario
Vault Pit Sump
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)
RRNWT - DW criteria			***6.5-8.5***		***0.1***		***0.025***	***5***	***1***				***0.005***	***250***		
CEQG criteria[2]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**			
MMER criteria[6]**			**6.0 - 9.5**				**0.5**								**1**	
5	80 - 83	Summer Average	8.0	1.0E-06	2.8E-05	9.1E-02	6.3E-05	2.1E-04	2.3E-05	8.1E-07	8.1E-07	3.6E-02	8.1E-07	3.1E-03	0.0E+00	0.0E+00
6	92 - 95	Summer Average	8.0	1.7E-06	4.7E-05	1.6E-01	1.1E-04	3.6E-04	3.9E-05	1.4E-06	1.4E-06	6.2E-02	1.4E-06	5.4E-03	0.0E+00	0.0E+00
7	104 - 107	Summer Average	8.0	2.4E-06	6.6E-05	2.2E-01	1.5E-04	5.0E-04	5.4E-05	1.9E-06	1.9E-06	8.6E-02	1.9E-06	7.5E-03	0.0E+00	0.0E+00

Year	GoldSim Month		CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)
RRNWT - DW criteria					***0.05***	***1***	***1.5***	***0.3***		***0.001***				***0.05***		***200***
CEQG criteria[2]*					**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**		**0.000026**					**0.073**	
MMER criteria[6]**						**0.3**										
5	80 - 83	Summer Average	0.0E+00	4.1E-06	8.1E-07	6.3E-06	6.3E-06	6.3E-05	1.1E-01	8.1E-08	3.5E-03	2.8E-06	5.8E-03	1.8E-05	1.6E-04	1.1E+01
6	92 - 95	Summer Average	0.0E+00	6.9E-06	1.4E-06	1.1E-05	1.1E-05	1.1E-04	2.0E-01	1.4E-07	6.0E-03	4.9E-06	9.9E-03	3.0E-05	2.8E-04	8.1E+00
7	104 - 107	Summer Average	0.0E+00	9.7E-06	1.9E-06	1.5E-05	1.5E-05	1.5E-04	2.7E-01	1.9E-07	8.4E-03	6.8E-06	1.4E-02	4.2E-05	3.9E-04	5.9E+00

Year	GoldSim Month		Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria						***11***	***0.01***		***0.006***	***0.01***		***500***					***5***	***500***
CEQG criteria[2]*			**0.025-0.15**	**4.92**	**0.019**	**2.9**	**0.001-0.007**			**0.001**				**0.0008**			**0.03**	
MMER criteria[6]**			**0.5**				**0.2**										**0.5**	
5	80 - 83	Summer Average	1.2E-05	**6.4E+01**	**7.8E-01**	***7.1E+01***	8.1E-07	7.7E-04	8.1E-07	4.1E-06	4.6E-03	1.0E-02	6.0E-04	2.1E-06	2.8E-04	2.1E-05	4.1E-05	1.5E+02
6	92 - 95	Summer Average	2.1E-05	**4.5E+01**	**5.5E-01**	***5.0E+01***	1.4E-06	1.3E-03	1.4E-06	6.9E-06	7.8E-03	1.7E-02	1.0E-03	3.6E-06	4.7E-04	3.6E-05	6.9E-05	1.0E+02
7	104 - 107	Summer Average	3.0E-05	**3.3E+01**	**4.0E-01**	***3.6E+01***	1.9E-06	1.8E-03	1.9E-06	9.7E-06	1.1E-02	2.4E-02	1.4E-03	5.0E-06	6.6E-04	5.0E-05	9.7E-05	7.6E+01

NOTES:
1. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
2. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
3. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
4. Freshwater aquatic life criterion or guideline is hardness dependant.
5. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table II-3
Predicted Water Quality (Dissolved Constituents) Probable Scenario
Vault Attenuation Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005	250			
CEQG criteria[2]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007				
MMER criteria[6]**			6.0 - 9.5				0.5								1		
2 METER ACTIVE ZONE																	
	68	June	No Discharge														
	69	July	6.6	2.8E-05	6.0E-02	1.2E+01	1.5E-04	1.5E-02	5.2E-03	2.0E-04	1.0E-04	2.7E+00	6.6E-04	8.0E-01	0.0E+00	0.0E+00	0.0E+00
	70	August	6.6	3.0E-05	6.4E-02	1.3E+01	1.6E-04	1.5E-02	5.3E-03	2.0E-04	1.1E-04	2.8E+00	6.2E-04	8.3E-01	0.0E+00	0.0E+00	0.0E+00
4	71	September	6.6	1.5E-05	3.3E-02	6.5E+00	7.7E-05	6.8E-03	2.6E-03	9.7E-05	5.7E-05	1.4E+00	2.6E-04	4.1E-01	0.0E+00	0.0E+00	0.0E+00
	80	June	6.6	1.1E-05	2.5E-02	4.3E+00	4.4E-05	2.2E-03	1.4E-03	4.4E-05	4.4E-05	8.3E-01	2.2E-06	2.7E-01	0.0E+00	0.0E+00	0.0E+00
	81	July	6.6	6.9E-05	1.6E-01	2.7E+01	2.8E-04	1.4E-02	8.6E-03	2.8E-04	2.8E-04	5.3E+00	1.4E-05	1.7E+00	0.0E+00	0.0E+00	0.0E+00
	82	August	6.6	3.2E-06	6.1E-03	1.1E+00	4.0E-05	6.3E-04	3.4E-04	1.1E-05	1.1E-05	2.2E-01	9.1E-07	6.7E-02	0.0E+00	0.0E+00	0.0E+00
5	83	September	6.6	1.3E-05	2.9E-02	5.1E+00	8.6E-05	2.7E-03	1.6E-03	5.2E-05	5.2E-05	1.0E+00	3.0E-06	3.2E-01	0.0E+00	0.0E+00	0.0E+00
	92	June	6.6	1.0E-05	2.2E-02	3.8E+00	8.1E-05	2.0E-03	1.2E-03	3.8E-05	3.8E-05	7.4E-01	2.4E-06	2.3E-01	0.0E+00	0.0E+00	0.0E+00
	93	July	6.6	9.4E-05	2.1E-01	3.6E+01	4.1E-04	1.9E-02	1.2E-02	3.7E-04	3.7E-04	7.1E+00	1.9E-05	2.3E+00	0.0E+00	0.0E+00	0.0E+00
	94	August	6.6	4.6E-06	7.2E-03	1.4E+00	1.0E-04	9.3E-04	4.2E-04	1.4E-05	1.4E-05	2.9E-01	1.8E-06	8.2E-02	0.0E+00	0.0E+00	0.0E+00
6	95	September	6.6	1.3E-05	2.5E-02	4.4E+00	1.5E-04	2.5E-03	1.4E-03	4.5E-05	4.5E-05	8.9E-01	3.5E-06	2.7E-01	0.0E+00	0.0E+00	0.0E+00
	104	June	6.6	8.3E-06	1.6E-02	2.8E+00	1.2E-04	1.7E-03	8.8E-04	2.9E-05	2.9E-05	5.7E-01	2.6E-06	1.7E-01	0.0E+00	0.0E+00	0.0E+00
	105	July	6.6	9.4E-05	2.1E-01	3.6E+01	4.5E-04	1.9E-02	1.1E-02	3.7E-04	3.7E-04	7.1E+00	1.9E-05	2.3E+00	0.0E+00	0.0E+00	0.0E+00
	106	August	6.6	4.9E-06	7.3E-03	1.4E+00	1.2E-04	9.9E-04	4.3E-04	1.4E-05	1.4E-05	3.0E-01	2.0E-06	8.2E-02	0.0E+00	0.0E+00	0.0E+00
7	107	September	6.6	1.3E-05	2.5E-02	4.4E+00	1.6E-04	2.6E-03	1.4E-03	4.5E-05	4.5E-05	9.0E-01	3.7E-06	2.7E-01	0.0E+00	0.0E+00	0.0E+00
	116	June	6.6	1.7E-06	2.8E-03	5.1E-01	3.5E-05	3.4E-04	1.6E-04	5.3E-06	5.3E-06	1.1E-01	6.3E-07	3.1E-02	0.0E+00	0.0E+00	0.0E+00
	117	July	No Discharge														
	118	August	No Discharge														
8	119	September	No Discharge														
Attenuation Pond transfer to Vault Pit																	
8 METER ACTIVE ZONE																	
	68	June	No Discharge														
	69	July	6.6	2.8E-05	6.0E-02	1.2E+01	1.5E-04	1.5E-02	5.2E-03	2.0E-04	1.0E-04	2.7E+00	6.6E-04	8.0E-01	0.0E+00	0.0E+00	0.0E+00
	70	August	6.6	3.0E-05	6.4E-02	1.3E+01	1.6E-04	1.5E-02	5.3E-03	2.0E-04	1.1E-04	2.8E+00	6.2E-04	8.3E-01	0.0E+00	0.0E+00	0.0E+00
4	71	September	6.6	1.5E-05	3.3E-02	6.5E+00	7.7E-05	6.8E-03	2.6E-03	9.7E-05	5.7E-05	1.4E+00	2.6E-04	4.1E-01	0.0E+00	0.0E+00	0.0E+00
	80	June	6.6	1.1E-05	2.5E-02	4.3E+00	4.4E-05	2.2E-03	1.4E-03	4.4E-05	4.4E-05	8.3E-01	2.2E-06	2.7E-01	0.0E+00	0.0E+00	0.0E+00
	81	July	6.6	6.9E-05	1.6E-01	2.7E+01	2.8E-04	1.4E-02	8.6E-03	2.8E-04	2.8E-04	5.3E+00	1.4E-05	1.7E+00	0.0E+00	0.0E+00	0.0E+00
	82	August	6.6	3.2E-06	6.1E-03	1.1E+00	4.0E-05	6.3E-04	3.4E-04	1.1E-05	1.1E-05	2.2E-01	9.1E-07	6.7E-02	0.0E+00	0.0E+00	0.0E+00
5	83	September	6.6	1.3E-05	2.9E-02	5.1E+00	8.6E-05	2.7E-03	1.6E-03	5.2E-05	5.2E-05	1.0E+00	3.0E-06	3.2E-01	0.0E+00	0.0E+00	0.0E+00
	92	June	6.6	1.0E-05	2.2E-02	3.8E+00	8.1E-05	2.0E-03	1.2E-03	3.8E-05	3.8E-05	7.4E-01	2.4E-06	2.3E-01	0.0E+00	0.0E+00	0.0E+00
	93	July	6.6	9.4E-05	2.1E-01	3.6E+01	4.1E-04	1.9E-02	1.2E-02	3.7E-04	3.7E-04	7.1E+00	1.9E-05	2.3E+00	0.0E+00	0.0E+00	0.0E+00
	94	August	6.6	4.6E-06	7.2E-03	1.4E+00	1.0E-04	9.3E-04	4.2E-04	1.4E-05	1.4E-05	2.9E-01	1.8E-06	8.2E-02	0.0E+00	0.0E+00	0.0E+00
6	95	September	6.6	1.3E-05	2.5E-02	4.4E+00	1.5E-04	2.5E-03	1.4E-03	4.5E-05	4.5E-05	8.9E-01	3.5E-06	2.7E-01	0.0E+00	0.0E+00	0.0E+00
	104	June	6.6	8.3E-06	1.6E-02	2.8E+00	1.2E-04	1.7E-03	8.8E-04	2.9E-05	2.9E-05	5.7E-01	2.6E-06	1.7E-01	0.0E+00	0.0E+00	0.0E+00
	105	July	6.6	9.4E-05	2.1E-01	3.6E+01	4.5E-04	1.9E-02	1.1E-02	3.7E-04	3.7E-04	7.1E+00	1.9E-05	2.3E+00	0.0E+00	0.0E+00	0.0E+00
	106	August	6.6	4.9E-06	7.3E-03	1.4E+00	1.2E-04	9.9E-04	4.3E-04	1.4E-05	1.4E-05	3.0E-01	2.0E-06	8.2E-02	0.0E+00	0.0E+00	0.0E+00
7	107	September	6.6	1.3E-05	2.5E-02	4.4E+00	1.6E-04	2.6E-03	1.4E-03	4.5E-05	4.5E-05	9.0E-01	3.7E-06	2.7E-01	0.0E+00	0.0E+00	0.0E+00
	116	June	6.6	1.7E-06	2.8E-03	5.1E-01	3.6E-05	3.5E-04	1.6E-04	5.3E-06	5.3E-06	1.1E-01	6.4E-07	3.1E-02	0.0E+00	0.0E+00	0.0E+00
	117	July	No Discharge														
	118	August	No Discharge														
8	119	September	No Discharge														
Attenuation Pond transfer to Vault Pit																	

Year	GoldSim Month	Actual Month	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)
RRNWT - DW criteria				0.05	1	1.5	0.3		0.001				0.05		200		
CEQG criteria[2]*				0.001/0.0089	0.002-0.004	0.12	0.3		0.000026					0.073		0.025-0.15	4.92
MMER criteria[6]**					0.3											0.5	
2 METER ACTIVE ZONE																	
	68	June															
	69	July	1.3E-04	3.1E-04	1.4E-03	7.0E-02	1.3E-02	1.0E+01	1.1E-04	5.5E-01	9.1E-04	8.0E-01	1.6E-03	1.5E-04	7.1E-01	8.8E-04	0.0E+00
	70	August	1.4E-04	3.2E-04	1.4E-03	7.3E-02	1.4E-02	1.1E+01	1.2E-04	5.6E-01	9.1E-04	8.3E-01	1.7E-03	1.5E-04	7.3E-01	9.3E-04	0.0E+00
4	71	September	6.9E-05	1.5E-04	7.3E-04	3.6E-02	6.9E-03	5.2E+00	5.9E-05	2.7E-01	4.3E-04	4.1E-01	8.7E-04	6.8E-05	3.6E-01	4.7E-04	0.0E+00
	80	June	4.4E-05	8.8E-05	5.3E-04	2.4E-02	4.4E-03	3.1E+00	4.4E-05	1.5E-01	1.8E-04	2.5E-01	6.1E-04	2.2E-05	2.7E+00	3.3E-04	1.4E+01
	81	July	2.8E-04	5.6E-04	3.3E-03	1.5E-01	2.8E-02	2.0E+01	2.8E-04	9.3E-01	1.1E-03	1.6E+00	3.9E-03	1.4E-04	3.6E+00	2.1E-03	1.2E+01
	82	August	1.3E-05	2.2E-05	1.3E-04	5.9E-03	1.1E-03	8.2E-01	1.1E-05	3.8E-02	4.4E-05	6.3E-02	1.6E-04	8.1E-05	1.8E+00	8.6E-05	9.5E+00
5	83	September	5.4E-05	1.0E-04	6.2E-04	2.8E-02	5.2E-03	3.7E+00	5.1E-05	1.7E-01	2.1E-04	2.9E-01	7.3E-04	1.1E-04	1.5E+00	3.9E-04	7.1E+00
	92	June	4.1E-05	7.6E-05	4.6E-04	2.1E-02	3.8E-03	2.8E+00	3.8E-05	1.3E-01	1.5E-04	2.2E-01	5.4E-04	1.3E-04	3.6E+00	2.9E-04	1.9E+01
	93	July	3.7E-04	7.4E-04	4.5E-03	2.0E-01	3.7E-02	2.6E+01	3.7E-04	1.2E+00	1.5E-03	2.1E+00	5.2E-03	2.8E-04	4.5E+00	2.8E-03	1.5E+01
	94	August	1.8E-05	2.6E-05	1.6E-04	7.0E-03	1.4E-03	1.1E+00	1.3E-05	4.7E-02	5.5E-05	7.9E-02	2.0E-04	2.3E-04	1.9E+00	1.1E-04	1.0E+01
6	95	September	5.0E-05	8.8E-05	5.3E-04	2.4E-02	4.5E-03	3.3E+00	4.4E-05	1.5E-01	1.8E-04	2.5E-01	6.4E-04	2.8E-04	1.7E+00	3.5E-04	8.4E+00
	104	June	3.3E-05	5.6E-05	3.4E-04	1.5E-02	2.8E-03	2.1E+00	2.7E-05	9.7E-02	1.1E-04	1.6E-01	4.1E-04	2.5E-04	2.7E+00	2.2E-04	1.4E+01
	105	July	3.7E-04	7.4E-04	4.4E-03	2.0E-01	3.7E-02	2.6E+01	3.7E-04	1.2E+00	1.5E-03	2.1E+00	5.2E-03	3.9E-04	4.0E+00	2.8E-03	1.2E+01
	106	August	1.9E-05	2.7E-05	1.6E-04	7.0E-03	1.4E-03	1.1E+00	1.3E-05	4.8E-02	5.5E-05	8.1E-02	2.1E-04	2.8E-04	1.4E+00	1.2E-04	7.3E+00
7	107	September	5.1E-05	8.9E-05	5.3E-04	2.4E-02	4.5E-03	3.3E+00	4.4E-05	1.5E-01	1.8E-04	2.6E-01	6.4E-04	3.3E-04	1.3E+00	3.5E-04	6.1E+00
	116	June	6.8E-06	1.0E-05	6.1E-05	2.7E-03	5.1E-04	3.9E-01	4.9E-06	1.8E-02	2.1E-05	3.0E-02	7.7E-05	7.9E-05	1.9E-01	4.2E-05	9.2E-01
	117	July															
	118	August															
8	119	September															
Attenuation Pond transfer to Vault Pit																	
8 METER ACTIVE ZONE																	
	68	June															
	69	July	1.3E-04	3.1E-04	1.4E-03	7.0E-02	1.3E-02	1.0E+01	1.1E-04	5.5E-01	9.1E-04	8.0E-01	1.6E-03	1.5E-04	7.1E-01	8.8E-04	0.0E+00
	70	August	1.4E-04	3.2E-04	1.4E-03	7.3E-02	1.4E-02	1.1E+01	1.2E-04	5.6E-01	9.1E-04	8.3E-01	1.7E-03	1.5E-04	7.3E-01	9.3E-04	0.0E+00
4	71	September	6.9E-05	1.5E-04	7.3E-04	3.6E-02	6.9E-03	5.2E+00	5.9E-05	2.7E-01	4.3E-04	4.1E-01	8.7E-04	6.8E-05	3.6E-01	4.7E-04	0.0E+00
	80	June	4.4E-05	8.8E-05	5.3E-04	2.4E-02	4.4E-03	3.1E+00	4.4E-05	1.5E-01	1.8E-04	2.5E-01	6.1E-04	2.2E-05	2.7E+00	3.3E-04	1.4E+01
	81	July	2.8E-04	5.6E-04	3.3E-03	1.5E-01	2.8E-02	2.0E+01	2.8E-04	9.3E-01	1.1E-03	1.6E+00	3.9E-03	1.4E-04	3.6E+00	2.1E-03	1.2E+01
	82	August	1.3E-05	2.2E-05	1.3E-04	5.9E-03	1.1E-03	8.2E-01	1.1E-05	3.8E-02	4.4E-05	6.3E-02	1.6E-04	8.1E-05	1.8E+00	8.6E-05	9.5E+00
5	83	September	5.4E-05	1.0E-04	6.2E-04	2.8E-02	5.2E-03	3.7E+00	5.1E-05	1.7E-01	2.1E-04	2.9E-01	7.3E-04	1.1E-04	1.5E+00	3.9E-04	7.1E+00
	92	June	4.1E-05	7.6E-05	4.6E-04	2.1E-02	3.8E-03	2.8E+00	3.8E-05	1.3E-01	1.5E-04	2.2E-01	5.4E-04	1.3E-04	3.6E+00	2.9E-04	1.9E+01
	93	July	3.7E-04	7.4E-04	4.5E-03	2.0E-01	3.7E-02	2.6E+01	3.7E-04	1.2E+00	1.5E-03	2.1E+00	5.2E-03	2.8E-04	4.5E+00	2.8E-03	1.5E+01
	94	August	1.8E-05	2.6E-05	1.6E-04	7.0E-03	1.4E-03	1.1E+00	1.3E-05	4.7E-02	5.5E-05	7.9E-02	2.0E-04	2.3E-04	1.9E+00	1.1E-04	1.0E+01
6	95	September	5.0E-05	8.8E-05	5.3E-04	2.4E-02	4.5E-03	3.3E+00	4.4E-05	1.5E-01	1.8E-04	2.5E-01	6.4E-04	2.8E-04	1.7E+00	3.5E-04	8.4E+00
	104	June	3.3E-05	5.6E-05	3.4E-04	1.5E-02	2.8E-03	2.1E+00	2.7E-05	9.7E-02	1.1E-04	1.6E-01	4.1E-04	2.5E-04	2.7E+00	2.2E-04	1.4E+01
	105	July	3.7E-04	7.4E-04	4.4E-03	2.0E-01	3.7E-02	2.6E+01	3.7E-04	1.2E+00	1.5E-03	2.1E+00	5.2E-03	3.9E-04	4.0E+00	2.8E-03	1.2E+01
	106	August	1.9E-05	2.7E-05	1.6E-04	7.0E-03	1.4E-03	1.1E+00	1.3E-05	4.8E-02	5.5E-05	8.1E-02	2.1E-04	2.8E-04	1.4E+00	1.2E-04	7.3E+00
7	107	September	5.1E-05	8.9E-05	5.3E-04	2.4E-02	4.5E-03	3.3E+00	4.4E-05	1.5E-01	1.8E-04	2.6E-01	6.4E-04	3.3E-04	1.3E+00	3.5E-04	6.1E+00
	116	June	6.9E-06	1.0E-05	6.2E-05	2.7E-03	5.1E-04	3.9E-01	4.9E-06	1.8E-02	2.1E-05	3.0E-02	7.7E-05	8.2E-05	1.9E-01	4.3E-05	9.2E-01
	117	July															
	118	August															
8	119	September															
Attenuation Pond transfer to Vault Pit																	

Year	GoldSim Month	Actual Month	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Decant Rate m3/mon
RRNWT - DW criteria				11		0.01		0.006	0.01		500					5	500	
CEQG criteria[2]*			0.019	2.9		0.001-0.007			0.001				0.0008			0.03		
MMER criteria[6]**						0.2										0.5		
2 METER ACTIVE ZONE																		
	68	June																0
	69	July	0.0E+00	3.1E-03	4.2E-02	3.8E-04	7.9E-04	1.5E-04	2.0E-04	2.1E+00	3.5E+00	1.0E-02	3.0E-05	2.3E-04	3.1E-03	2.6E-03	2.4E+01	228,280
	70	August	0.0E+00	3.3E-03	4.5E-02	3.7E-04	7.4E-04	1.6E-04	2.0E-04	2.3E+00	3.6E+00	1.1E-02	3.0E-05	2.4E-04	2.9E-03	2.7E-03	2.5E+01	228,280
4	71	September	0.0E+00	1.6E-03	2.3E-02	1.7E-04	3.2E-04	7.7E-05	9.7E-05	1.2E+00	1.8E+00	5.5E-03	1.4E-05	1.2E-04	1.2E-03	1.3E-03	1.2E+01	228,280
	80	June	6.8E-03	1.5E+01	1.8E-02	4.4E-05	8.6E-13	4.4E-05	4.4E-05	8.9E-01	1.2E+00	4.2E-03	4.4E-06	8.8E-05	4.4E-05	8.8E-04	4.0E+01	228,280
	81	July	6.0E-03	1.4E+01	1.1E-01	2.8E-04	6.8E-06	2.8E-04	2.8E-04	5.7E+00	7.6E+00	2.7E-02	2.8E-05	5.6E-04	2.8E-04	5.6E-03	8.0E+01	112,410
	82	August	4.7E-03	1.1E+01	4.3E-03	1.1E-05	3.7E-04	1.1E-05	1.3E-05	2.2E-01	3.0E-01	1.3E-03	2.1E-06	1.5E-04	2.1E-05	2.3E-04	2.4E+01	65,593
5	83	September	3.5E-03	7.8E+00	2.1E-02	5.2E-05	5.0E-04	5.2E-05	5.4E-05	1.1E+00	1.4E+00	5.2E-03	6.3E-06	2.5E-04	6.3E-05	1.1E-03	2.6E+01	108,300
	92	June	9.4E-03	2.1E+01	1.5E-02	3.8E-05	5.1E-04	3.8E-05	4.1E-05	7.8E-01	1.0E+00	4.0E-03	5.2E-06	2.6E-04	5.2E-05	7.8E-04	5.1E+01	228,280
	93	July	7.3E-03	1.6E+01	1.5E-01	3.7E-04	4.4E-04	3.7E-04	3.7E-04	7.6E+00	1.0E+01	3.6E-02	3.8E-05	9.1E-04	3.8E-04	7.5E-03	1.0E+02	49,653
	94	August	5.0E-03	1.1E+01	5.1E-03	1.4E-05	1.1E-03	1.4E-05	1.8E-05	2.6E-01	3.6E-01	2.1E-03	4.2E-06	4.1E-04	4.2E-05	3.1E-04	2.6E+01	52,101
6	95	September	4.1E-03	9.3E+00	1.7E-02	4.5E-05	1.4E-03	4.5E-05	5.0E-05	9.0E-01	1.2E+00	5.1E-03	7.8E-06	5.3E-04	7.8E-05	9.4E-04	2.8E+01	88,013
	104	June	7.1E-03	1.6E+01	1.1E-02	2.9E-05	1.1E-03	2.9E-05	3.3E-05	5.7E-01	7.7E-01	3.5E-03	5.9E-06	4.6E-04	5.9E-05	6.1E-04	3.8E+01	228,280
	105	July	5.9E-03	1.3E+01	1.5E-01	3.7E-04	9.5E-04	3.7E-04	3.7E-04	7.6E+00	1.0E+01	3.6E-02	4.0E-05	1.1E-03	4.0E-04	7.4E-03	9.7E+01	49,653
	106	August	3.6E-03	8.1E+00	5.1E-03	1.4E-05	1.3E-03	1.4E-05	1.9E-05	2.7E-01	3.6E-01	2.2E-03	4.8E-06	4.9E-04	4.8E-05	3.2E-04	1.9E+01	52,101
7	107	September	3.0E-03	6.8E+00	1.7E-02	4.5E-05	1.6E-03	4.5E-05	5.1E-05	9.0E-01	1.2E+00	5.3E-03	8.3E-06	6.1E-04	8.3E-05	9.5E-04	2.2E+01	88,013
	116	June	4.5E-04	1.0E+00	2.0E-03	5.3E-06	3.1E-04	5.3E-06	6.8E-06	1.0E-01	1.4E-01	7.5E-04	1.5E-06	1.4E-04	1.5E-05	1.2E-04	3.1E+00	228,280
	117	July																0
	118	August																0
8	119	September																0
Attenuation Pond transfer to Vault Pit																		
8 METER ACTIVE ZONE																		
	68	June																0
	69	July	0.0E+00	3.1E-03	4.2E-02	3.8E-04	7.9E-04	1.5E-04	2.0E-04	2.1E+00	3.5E+00	1.0E-02	3.0E-05	2.3E-04	3.1E-03	2.6E-03	2.4E+01	228,280
	70	August	0.0E+00	3.3E-03	4.5E-02	3.7E-04	7.4E-04	1.6E-04	2.0E-04	2.3E+00	3.6E+00	1.1E-02	3.0E-05	2.4E-04	2.9E-03	2.7E-03	2.5E+01	228,280
4	71	September	0.0E+00	1.6E-03	2.3E-02	1.7E-04	3.2E-04	7.7E-05	9.7E-05	1.2E+00	1.8E+00	5.5E-03	1.4E-05	1.2E-04	1.2E-03	1.3E-03	1.2E+01	228,280
	80	June	6.8E-03	1.5E+01	1.8E-02	4.4E-05	8.6E-13	4.4E-05	4.4E-05	8.9E-01	1.2E+00	4.2E-03	4.4E-06	8.8E-05	4.4E-05	8.8E-04	4.0E+01	228,280
	81	July	6.0E-03	1.4E+01	1.1E-01	2.8E-04	6.8E-06	2.8E-04	2.8E-04	5.7E+00	7.6E+00	2.7E-02	2.8E-05	5.6E-04	2.8E-04	5.6E-03	8.0E+01	112,410
	82	August	4.7E-03	1.1E+01	4.3E-03	1.1E-05	3.7E-04	1.1E-05	1.3E-05	2.2E-01	3.0E-01	1.3E-03	2.1E-06	1.5E-04	2.1E-05	2.3E-04	2.4E+01	65,593
5	83	September	3.5E-03	7.8E+00	2.1E-02	5.2E-05	5.0E-04	5.2E-05	5.4E-05	1.1E+00	1.4E+00	5.2E-03	6.3E-06	2.5E-04	6.3E-05	1.1E-03	2.6E+01	108,300
	92	June	9.4E-03	2.1E+01	1.5E-02	3.8E-05	5.1E-04	3.8E-05	4.1E-05	7.8E-01	1.0E+00	4.0E-03	5.2E-06	2.6E-04	5.2E-05	7.8E-04	5.1E+01	228,280
	93	July	7.3E-03	1.6E+01	1.5E-01	3.7E-04	4.4E-04	3.7E-04	3.7E-04	7.6E+00	1.0E+01	3.6E-02	3.8E-05	9.1E-04	3.8E-04	7.5E-03	1.0E+02	49,653
	94	August	5.0E-03	1.1E+01	5.1E-03	1.4E-05	1.1E-03	1.4E-05	1.8E-05	2.6E-01	3.6E-01	2.1E-03	4.2E-06	4.1E-04	4.2E-05	3.1E-04	2.6E+01	52,101
6	95	September	4.1E-03	9.3E+00	1.7E-02	4.5E-05	1.4E-03	4.5E-05	5.0E-05	9.0E-01	1.2E+00	5.1E-03	7.8E-06	5.3E-04	7.8E-05	9.4E-04	2.8E+01	88,013
	104	June	7.1E-03	1.6E+01	1.1E-02	2.9E-05	1.1E-03	2.9E-05	3.3E-05	5.7E-01	7.7E-01	3.5E-03	5.9E-06	4.6E-04	5.9E-05	6.1E-04	3.8E+01	228,280
	105	July	5.9E-03	1.3E+01	1.5E-01	3.7E-04	9.5E-04	3.7E-04	3.7E-04	7.6E+00	1.0E+01	3.6E-02	4.0E-05	1.1E-03	4.0E-04	7.4E-03	9.7E+01	49,653
	106	August	3.6E-03	8.1E+00	5.1E-03	1.4E-05	1.3E-03	1.4E-05	1.9E-05	2.7E-01	3.6E-01	2.2E-03	4.8E-06	4.9E-04	4.8E-05	3.2E-04	1.9E+01	52,101
7	107	September	3.0E-03	6.8E+00	1.7E-02	4.5E-05	1.6E-03	4.5E-05	5.1E-05	9.0E-01	1.2E+00	5.3E-03	8.3E-06	6.1E-04	8.3E-05	9.5E-04	2.2E+01	88,013
	116	June	4.5E-04	1.0E+00	2.0E-03	5.3E-06	3.2E-04	5.3E-06	6.9E-06	1.0E-01	1.4E-01	7.6E-04	1.5E-06	1.5E-04	1.5E-05	1.2E-04	3.1E+00	228,280
	117	July																0
	118	August																0
8	119	September																0
Attenuation Pond transfer to Vault Pit																		

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).

* December 2006
** June 6, 2002

Table II-4
Predicted Water Quality (Dissolved Constituents) Probable Scenario
Vault Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)
RRNWT - DW criteria			*6.5-8.5*		*0.1*		*0.025*	*5*	*1*				*0.005*	*250*					*0.05*	*1*	*1.5*	*0.3*
CEQG criteria[2]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**						**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**
MMER criteria[6]**			**6.0 - 9.5**				**0.5**								**1**					**0.3**		
8 METER ACTIVE ZONE																						
Filling of Pit Lake																						
8	111 - 122	Summer Average	6.7	7.4E-06	7.4E-03	5.3E+00	1.4E-04	2.1E-02	4.5E-03	2.2E-04	1.1E-05	1.8E+00	**1.1E-05**	3.2E-01	0.0E+00	0.0E+00	0.0E+00	7.5E-05	2.3E-04	3.4E-04	2.3E-02	7.4E-03
9	123 - 134	Summer Average	6.7	1.0E-05	8.2E-03	8.2E+00	2.1E-04	3.6E-02	7.4E-03	3.6E-04	1.2E-05	2.9E+00	**1.8E-05**	4.9E-01	0.0E+00	0.0E+00	0.0E+00	1.2E-04	3.7E-04	4.9E-04	3.4E-02	1.2E-02
10	135 - 146	Summer Average	6.7	1.1E-05	8.2E-03	8.6E+00	2.3E-04	3.8E-02	7.9E-03	3.9E-04	1.2E-05	3.1E+00	**2.0E-05**	5.2E-01	0.0E+00	0.0E+00	0.0E+00	1.3E-04	4.0E-04	5.1E-04	3.6E-02	1.2E-02
11	147 - 158	Summer Average	6.7	1.1E-05	8.3E-03	8.9E+00	3.1E-04	3.9E-02	8.1E-03	4.0E-04	1.2E-05	3.2E+00	**2.0E-05**	5.3E-01	0.0E+00	0.0E+00	0.0E+00	1.3E-04	4.1E-04	5.2E-04	3.7E-02	1.3E-02
12	159 - 170	Summer Average	6.7	1.1E-05	8.4E-03	9.0E+00	3.9E-04	4.0E-02	8.2E-03	4.1E-04	1.2E-05	3.2E+00	**2.1E-05**	5.4E-01	0.0E+00	0.0E+00	0.0E+00	1.3E-04	4.2E-04	5.3E-04	3.8E-02	1.3E-02
13	171 - 182	Summer Average	6.7	1.2E-05	9.0E-03	9.4E+00	4.8E-04	4.2E-02	8.6E-03	4.2E-04	1.3E-05	3.4E+00	**2.2E-05**	5.7E-01	0.0E+00	0.0E+00	0.0E+00	1.4E-04	4.3E-04	5.6E-04	3.9E-02	1.4E-02
Long-term Vault Pit Lake Water Quality																						
23	296 - 299	Summer Average	6.7	1.4E-05	1.6E-02	8.8E+00	6.3E-04	3.3E-02	7.0E-03	3.4E-04	2.7E-05	2.9E+00	**1.8E-05**	5.3E-01	0.0E+00	0.0E+00	0.0E+00	1.3E-04	3.6E-04	6.3E-04	3.9E-02	1.2E-02

Year	GoldSim Month		Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria				*0.001*				*0.05*		*200*				*11*		*0.01*		*0.006*	*0.01*		*500*					*5*	*500*
CEQG criteria[2]*				**0.000026**					**0.073**		**0.025-0.15**	**4.92**	**0.019**	**2.9**		**0.001-0.007**			**0.001**				**0.0008**			**0.03**	
MMER criteria[6]**											**0.5**					**0.2**										**0.5**	
8 METER ACTIVE ZONE																											
Filling of Pit Lake																											
8	111 - 122	Summer Average	6.7E+00	2.2E-05	4.5E-01	1.1E-03	5.2E-01	3.3E-04	2.9E-04	5.9E-01	3.0E-04	7.1E-01	4.3E-04	7.6E-01	4.4E-03	1.2E-04	1.5E-03	1.2E-04	2.2E-04	2.3E-01	2.4E+00	1.3E-03	4.4E-05	1.9E-04	6.3E-03	1.3E-03	1.3E+01
9	123 - 134	Summer Average	1.1E+01	**2.9E-05**	7.4E-01	1.8E-03	8.4E-01	4.5E-04	4.2E-04	8.1E-01	4.4E-04	3.0E-01	1.8E-04	3.1E-01	4.5E-03	1.9E-04	2.4E-03	1.9E-04	3.6E-04	2.3E-01	3.8E+00	1.3E-03	7.2E-05	2.1E-04	1.1E-02	2.0E-03	1.9E+01
10	135 - 146	Summer Average	1.1E+01	**3.0E-05**	7.9E-01	1.9E-03	8.9E-01	4.6E-04	4.5E-04	8.4E-01	4.7E-04	2.0E-01	1.2E-04	1.9E-01	4.5E-03	2.0E-04	2.5E-03	2.0E-04	3.9E-04	2.3E-01	4.1E+00	1.3E-03	7.7E-05	2.2E-04	1.1E-02	2.1E-03	2.0E+01
11	147 - 158	Summer Average	1.2E+01	**3.1E-05**	8.1E-01	2.0E-03	9.2E-01	4.8E-04	4.9E-04	8.5E-01	4.8E-04	1.5E-01	9.3E-05	1.4E-01	4.5E-03	2.0E-04	2.6E-03	2.1E-04	4.0E-04	2.3E-01	4.2E+00	1.4E-03	7.9E-05	2.3E-04	1.2E-02	2.2E-03	2.0E+01
12	159 - 170	Summer Average	1.2E+01	**3.1E-05**	8.3E-01	2.0E-03	9.3E-01	4.9E-04	5.3E-04	8.6E-01	4.8E-04	1.2E-01	7.6E-05	1.1E-01	4.5E-03	2.1E-04	2.7E-03	2.2E-04	4.1E-04	2.3E-01	4.2E+00	1.4E-03	8.1E-05	2.4E-04	1.2E-02	2.2E-03	2.0E+01
13	171 - 182	Summer Average	1.2E+01	**3.3E-05**	8.6E-01	2.1E-03	9.7E-01	5.3E-04	5.8E-04	9.0E-01	5.1E-04	1.2E-01	7.2E-05	9.9E-02	4.9E-03	2.2E-04	2.8E-03	2.4E-04	4.2E-04	2.5E-01	4.4E+00	1.5E-03	8.4E-05	2.7E-04	1.2E-02	2.3E-03	2.1E+01
Long-term Vault Pit Lake Water Quality																											
23	296 - 299	Summer Average	1.1E+01	**4.1E-05**	7.1E-01	1.7E-03	8.3E-01	6.6E-04	7.0E-04	7.6E-01	5.2E-04	8.8E-02	5.4E-05	7.5E-02	1.0E-02	1.8E-04	2.8E-03	2.1E-04	3.4E-04	5.3E-01	3.8E+00	3.5E-03	6.8E-05	5.9E-04	9.3E-03	2.2E-03	1.9E+01

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table II-5
Predicted Water Quality (Dissolved Constituents) Probable Scenario
Portage Rock Storage Facility
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005	250					0.05	1	1.5	0.3	
CEQG criteria[1]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007						0.001/0.0089	0.002-0.004	0.12	0.3	
MMER criteria[5]**			6.0 - 9.5				0.5								1					0.3			
2 METER ACTIVE ZONE																							
	32	June	7.0	5.7E-16	9.6E-14	1.9E-10	8.9E-14	1.5E-13	2.5E-14	4.5E-16	4.5E-16	4.5E-11	4.5E-16	2.6E-12	0.0E+00	0.0E+00	0.0E+00	2.2E-15	3.5E-15	2.7E-15	1.1E-14	1.2E-13	1.7E-10
	33	July	7.0	4.0E-06	6.8E-04	3.0E-01	6.3E-04	1.0E-03	1.7E-04	3.2E-06	3.2E-06	7.1E-02	3.2E-06	4.0E-03	0.0E+00	0.0E+00	0.0E+00	1.6E-05	2.5E-05	1.9E-05	1.8E-05	1.8E-04	2.7E-01
	34	August	7.0	8.5E-06	1.4E-03	8.6E-01	1.3E-03	2.2E-03	3.7E-04	6.8E-06	6.8E-06	2.1E-01	6.8E-06	1.2E-02	0.0E+00	0.0E+00	0.0E+00	3.4E-05	5.2E-05	4.0E-05	5.3E-05	5.4E-04	7.8E-01
1	35	September	7.0	1.1E-05	1.8E-03	1.2E+00	1.7E-03	2.8E-03	4.6E-04	8.5E-06	8.5E-06	2.9E-01	8.5E-06	1.7E-02	0.0E+00	0.0E+00	0.0E+00	4.2E-05	6.5E-05	5.0E-05	7.5E-05	7.6E-04	1.1E+00
	44	June	7.0	3.7E-06	6.2E-04	3.6E-01	5.8E-04	9.6E-04	1.6E-04	2.9E-06	2.9E-06	8.6E-02	2.9E-06	4.9E-03	0.0E+00	0.0E+00	0.0E+00	1.5E-05	2.2E-05	1.7E-05	2.2E-05	2.2E-04	3.2E-01
	45	July	7.0	7.9E-06	8.8E-04	4.9E-01	5.4E-04	1.8E-03	2.5E-04	6.8E-06	6.8E-06	1.1E-01	6.4E-06	8.4E-03	0.0E+00	0.0E+00	0.0E+00	3.2E-05	2.7E-05	7.5E-05	4.6E-05	4.3E-04	4.2E-01
	46	August	7.0	1.5E-05	1.5E-03	1.1E+00	8.2E-04	3.4E-03	4.5E-04	1.3E-05	1.3E-05	2.5E-01	1.2E-05	2.0E-02	0.0E+00	0.0E+00	0.0E+00	6.1E-05	4.6E-05	1.6E-04	1.2E-04	1.1E-03	9.2E-01
2	47	September	7.0	2.0E-05	1.9E-03	1.6E+00	9.6E-04	4.3E-03	5.6E-04	1.7E-05	1.7E-05	3.5E-01	1.6E-05	2.9E-02	0.0E+00	0.0E+00	0.0E+00	7.8E-05	5.6E-05	2.0E-04	1.7E-04	1.6E-03	1.3E+00
	56	June	7.0	1.3E-05	1.2E-03	8.9E-01	5.9E-04	2.8E-03	3.6E-04	1.1E-05	1.1E-05	2.0E-01	1.0E-05	1.7E-02	0.0E+00	0.0E+00	0.0E+00	5.1E-05	3.5E-05	1.3E-04	9.6E-05	8.9E-04	7.3E-01
	57	July	7.0	1.1E-05	1.4E-03	7.3E-01	7.3E-04	2.6E-03	3.4E-04	1.0E-05	1.0E-05	1.7E-01	9.1E-06	1.3E-02	0.0E+00	0.0E+00	0.0E+00	4.5E-05	3.9E-05	1.2E-04	7.9E-05	7.8E-04	6.2E-01
	58	August	7.0	1.7E-05	2.3E-03	1.3E+00	1.3E-03	3.9E-03	5.3E-04	1.5E-05	1.5E-05	3.0E-01	1.4E-05	2.3E-02	0.0E+00	0.0E+00	0.0E+00	6.8E-05	6.6E-05	1.8E-04	1.4E-04	1.4E-03	1.1E+00
3	59	September	7.0	1.9E-05	2.7E-03	1.6E+00	1.5E-03	4.4E-03	6.0E-04	1.7E-05	1.7E-05	3.8E-01	1.5E-05	2.8E-02	0.0E+00	0.0E+00	0.0E+00	7.6E-05	7.7E-05	2.1E-04	1.7E-04	1.8E-03	1.4E+00
	68	June	7.0	7.3E-16	1.2E-13	1.8E-10	4.9E-14	1.7E-13	1.8E-14	6.9E-16	6.9E-16	4.4E-11	5.7E-16	3.3E-12	0.0E+00	0.0E+00	0.0E+00	2.9E-15	3.2E-15	9.2E-15	1.8E-14	2.6E-13	1.6E-10
	69	July	7.0	1.4E-06	2.2E-04	7.0E-02	1.1E-04	3.2E-04	4.2E-05	1.3E-06	1.3E-06	1.7E-02	1.1E-06	1.2E-03	0.0E+00	0.0E+00	0.0E+00	5.5E-06	6.0E-06	1.7E-05	8.7E-06	9.9E-05	6.2E-02
	70	August	7.0	3.2E-06	5.3E-04	2.2E-01	2.6E-04	7.4E-04	9.8E-05	3.0E-06	3.0E-06	5.1E-02	2.6E-06	3.8E-03	0.0E+00	0.0E+00	0.0E+00	1.3E-05	1.4E-05	4.1E-05	2.7E-05	3.1E-04	1.9E-01
4	71	September	7.0	4.4E-06	7.2E-04	3.3E-01	3.5E-04	1.0E-03	1.3E-04	4.1E-06	4.1E-06	7.8E-02	3.6E-06	5.8E-03	0.0E+00	0.0E+00	0.0E+00	1.8E-05	1.9E-05	5.5E-05	4.1E-05	4.6E-04	2.9E-01
	80	June	7.0	4.9E-06	7.9E-04	3.2E-01	3.9E-04	1.1E-03	1.5E-04	4.6E-06	4.6E-06	7.7E-02	3.9E-06	5.8E-03	0.0E+00	0.0E+00	0.0E+00	1.9E-05	2.1E-05	6.1E-05	4.0E-05	4.6E-04	2.9E-01
	81	July	7.0	4.4E-06	6.2E-04	2.4E-01	3.1E-04	1.0E-03	1.3E-04	4.0E-06	4.0E-06	5.7E-02	3.5E-06	4.3E-03	0.0E+00	0.0E+00	0.0E+00	1.8E-05	1.7E-05	5.2E-05	2.9E-05	3.1E-04	2.1E-01
	82	August	7.0	6.5E-06	8.5E-04	4.0E-01	4.3E-04	1.5E-03	1.9E-04	5.8E-06	5.8E-06	9.4E-02	5.2E-06	7.4E-03	0.0E+00	0.0E+00	0.0E+00	2.6E-05	2.4E-05	7.3E-05	4.6E-05	4.8E-04	3.5E-01
5	83	September	7.0	7.6E-06	9.4E-04	5.2E-01	4.8E-04	1.7E-03	2.3E-04	6.7E-06	6.7E-06	1.2E-01	6.1E-06	9.4E-03	0.0E+00	0.0E+00	0.0E+00	3.0E-05	2.7E-05	8.4E-05	5.8E-05	5.8E-04	4.4E-01
Placement of UM Rock Cover																							
	92	June	7.0	7.4E-06	8.9E-04	4.7E-01	4.6E-04	1.7E-03	2.2E-04	6.6E-06	6.6E-06	1.1E-01	6.0E-06	8.6E-03	0.0E+00	0.0E+00	0.0E+00	3.0E-05	2.5E-05	8.1E-05	5.2E-05	5.2E-04	4.0E-01
	93	July	7.0	5.7E-06	8.1E-04	3.4E-01	5.2E-04	1.3E-03	1.9E-04	5.0E-06	5.0E-06	8.0E-02	4.6E-06	5.7E-03	0.0E+00	0.0E+00	0.0E+00	2.3E-05	2.5E-05	5.5E-05	3.3E-05	3.5E-04	3.0E-01
	94	August	7.0	7.0E-06	1.1E-03	5.1E-01	8.1E-04	1.7E-03	2.6E-04	6.0E-06	6.0E-06	1.2E-01	5.7E-06	7.7E-03	0.0E+00	0.0E+00	0.0E+00	2.8E-05	3.5E-05	5.7E-05	4.2E-05	4.4E-04	4.5E-01
6	95	September	7.0	7.5E-06	1.2E-03	6.1E-01	9.6E-04	1.9E-03	2.9E-04	6.3E-06	6.3E-06	1.5E-01	6.0E-06	8.8E-03	0.0E+00	0.0E+00	0.0E+00	3.0E-05	4.1E-05	5.5E-05	4.6E-05	4.9E-04	5.5E-01
Post Closure Water Quality																							
23	296 - 299	Summer Average	7.0	7.2E-06	1.5E-03	6.2E-01	1.4E-03	2.0E-03	3.4E-04	5.8E-06	5.8E-06	1.5E-01	5.8E-06	7.9E-03	0.0E+00	0.0E+00	0.0E+00	2.8E-05	5.2E-05	2.8E-05	3.5E-05	4.0E-04	5.8E-01

Year	GoldSim Month	Actual Month	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
RRNWT - DW criteria			0.001				0.05		200				11	0.01		0.006	0.01		500					5	500	
CEQG criteria[1]*			0.000026					0.073		0.025-0.15	4.92	0.019	2.9	0.001-0.007			0.001				0.0008			0.03		
MMER criteria[5]**										0.5				0.2										0.5		
2 METER ACTIVE ZONE																										
	32	June	4.5E-17	2.0E-11	4.1E-15	1.4E-11	4.4E-14	2.4E-15	5.3E+01	1.6E-14	2.9E+02	3.6E-01	3.3E+02	4.5E-16	1.5E-12	4.5E-16	2.2E-15	1.1E-11	1.7E-11	3.2E-13	1.1E-15	5.5E-15	8.1E-15	2.2E-14	6.7E+02	6,415
	33	July	3.2E-07	3.2E-02	6.4E-06	2.2E-02	3.1E-04	1.7E-05	2.7E+01	1.1E-04	1.5E+02	1.9E-01	1.7E+02	3.2E-06	2.4E-03	3.2E-06	1.6E-05	1.7E-02	2.6E-02	2.3E-03	8.1E-06	3.9E-05	5.8E-05	1.6E-04	3.5E+02	74
	34	August	6.8E-07	9.4E-02	1.9E-05	6.4E-02	6.6E-04	3.7E-05	2.5E+01	2.4E-04	1.4E+02	1.7E-01	1.5E+02	6.8E-06	7.1E-03	6.8E-06	3.4E-05	5.0E-02	7.7E-02	4.8E-03	1.7E-05	8.2E-05	1.2E-04	3.4E-04	3.2E+02	1,072
1	35	September	8.5E-07	1.3E-01	2.6E-05	9.0E-02	8.3E-04	4.6E-05	2.0E+01	3.0E-04	1.1E+02	1.4E-01	1.2E+02	8.5E-06	1.0E-02	8.5E-06	4.2E-05	7.1E-02	1.1E-01	6.0E-03	2.2E-05	1.0E-04	1.5E-04	4.2E-04	2.6E+02	2,047
	44	June	2.9E-07	3.9E-02	7.7E-06	2.6E-02	2.9E-04	1.6E-05	1.2E+01	1.0E-04	6.5E+01	8.0E-02	7.2E+01	2.9E-06	2.9E-03	2.9E-06	1.5E-05	2.1E-02	3.2E-02	2.1E-03	7.5E-06	3.5E-05	5.3E-05	1.5E-04	1.5E+02	21,810
	45	July	6.3E-07	5.6E-02	1.0E-05	3.2E-02	2.0E-03	4.3E-05	7.4E+00	3.4E-04	4.1E+01	5.0E-02	4.5E+01	1.1E-05	5.0E-03	1.0E-05	3.2E-05	2.7E-02	9.1E-02	2.7E-03	1.6E-05	5.6E-05	1.4E-04	3.2E-04	9.4E+01	222
	46	August	1.2E-06	1.3E-01	2.3E-05	7.0E-02	4.3E-03	8.6E-05	7.9E+00	6.8E-04	4.3E+01	5.3E-02	4.8E+01	2.3E-05	1.2E-02	2.0E-05	6.1E-05	6.0E-02	2.4E-01	4.5E-03	3.1E-05	1.0E-04	2.8E-04	6.2E-04	1.0E+02	2,910
2	47	September	1.6E-06	1.8E-01	3.2E-05	9.8E-02	5.7E-03	1.1E-04	7.5E+00	8.9E-04	4.1E+01	5.0E-02	4.5E+01	3.0E-05	1.7E-02	2.7E-05	7.8E-05	8.4E-02	3.6E-01	5.6E-03	3.9E-05	1.3E-04	3.6E-04	8.0E-04	9.6E+01	4,862
	56	June	1.0E-06	1.0E-01	1.8E-05	5.5E-02	3.7E-03	7.2E-05	1.0E+01	5.8E-04	5.6E+01	6.9E-02	6.2E+01	2.0E-05	9.9E-03	1.7E-05	5.1E-05	4.8E-02	2.0E-01	3.5E-03	2.5E-05	8.2E-05	2.3E-04	5.2E-04	1.3E+02	24,376
	57	July	9.0E-07	8.4E-02	1.5E-05	4.7E-02	2.8E-03	6.2E-05	6.8E+00	4.9E-04	3.8E+01	4.6E-02	4.2E+01	2.0E-05	7.9E-03	1.7E-05	4.5E-05	4.0E-02	1.5E-01	3.6E-03	2.3E-05	8.0E-05	2.0E-04	4.7E-04	8.7E+01	234
	58	August	1.4E-06	1.5E-01	2.7E-05	8.6E-02	3.9E-03	9.2E-05	7.8E+00	7.2E-04	4.3E+01	5.2E-02	4.7E+01	3.1E-05	1.4E-02	2.7E-05	6.8E-05	7.3E-02	2.4E-01	5.8E-03	3.4E-05	1.3E-04	3.0E-04	7.0E-04	1.0E+02	2,910
3	59	September	1.5E-06	1.8E-01	3.4E-05	1.1E-01	4.1E-03	1.0E-04	7.4E+00	7.9E-04	4.0E+01	4.9E-02	4.4E+01	3.6E-05	1.7E-02	3.1E-05	7.6E-05	9.2E-02	2.9E-01	6.7E-03	3.8E-05	1.4E-04	3.3E-04	7.9E-04	9.5E+01	4,862
	68	June	5.2E-17	2.0E-11	4.0E-15	1.3E-11	1.4E-13	3.9E-15	1.4E+00	2.9E-14	7.7E+00	9.4E-03	8.5E+00	1.7E-15	1.5E-12	1.5E-15	2.9E-15	1.1E-11	3.3E-11	2.0E-13	1.5E-15	4.7E-15	1.3E-14	2.4E-14	1.8E+01	69,644
	69	July	1.1E-07	7.8E-03	1.5E-06	4.8E-03	2.7E-04	7.4E-06	7.5E-01	5.8E-05	4.1E+00	5.1E-03	4.6E+00	3.3E-06	7.5E-04	2.7E-06	5.5E-06	4.1E-03	1.3E-02	4.8E-04	2.7E-06	1.1E-05	2.3E-05	5.8E-05	9.6E+00	1,170
	70	August	2.5E-07	2.4E-02	4.7E-06	1.5E-02	6.3E-04	1.7E-05	1.0E+00	1.4E-04	5.6E+00	6.9E-03	6.2E+00	7.7E-06	2.3E-03	6.4E-06	1.3E-05	1.3E-02	3.9E-02	1.1E-03	6.4E-06	2.5E-05	5.5E-05	1.4E-04	1.3E+01	14,552
4	71	September	3.4E-07	3.7E-02	7.2E-06	2.2E-02	8.6E-04	2.4E-05	1.1E+00	1.8E-04	5.9E+00	7.3E-03	6.5E+00	1.0E-05	3.5E-03	8.7E-06	1.8E-05	1.9E-02	5.9E-02	1.5E-03	8.7E-06	3.4E-05	7.5E-05	1.8E-04	1.4E+01	24,308
	80	June	3.8E-07	3.6E-02	7.1E-06	2.2E-02	9.6E-04	2.6E-05	1.7E+00	2.0E-04	9.0E+00	1.1E-02	1.0E+01	1.2E-05	3.5E-03	9.7E-06	1.9E-05	1.9E-02	5.9E-02	1.7E-03	9.6E-06	3.8E-05	8.3E-05	2.0E-04	2.1E+01	69,644
	81	July	3.5E-07	2.7E-02	5.2E-06	1.6E-02	9.8E-04	2.4E-05	4.8E-01	1.9E-04	2.5E+00	3.1E-03	2.8E+00	9.2E-06	2.6E-03	7.8E-06	1.8E-05	1.4E-02	4.6E-02	1.4E-03	8.7E-06	3.3E-05	7.6E-05	1.8E-04	6.2E+00	1,170
	82	August	5.1E-07	4.6E-02	8.6E-06	2.7E-02	1.6E-03	3.6E-05	4.4E-01	2.8E-04	2.2E+00	2.7E-03	2.4E+00	1.2E-05	4.4E-03	1.1E-05	2.6E-05	2.3E-02	8.2E-02	2.1E-03	1.3E-05	4.7E-05	1.1E-04	2.7E-04	5.7E+00	14,552
5	83	September	6.0E-07	5.9E-02	1.1E-05	3.4E-02	1.9E-03	4.2E-05	3.5E-01	3.3E-04	1.6E+00	2.0E-03	1.8E+00	1.4E-05	5.6E-03	1.2E-05	3.0E-05	2.9E-02	1.1E-01	2.4E-03	1.5E-05	5.4E-05	1.3E-04	3.1E-04	4.6E+00	24,308
Placement of UM Rock Cover																										
	92	June	5.9E-07	5.4E-02	9.9E-06	3.1E-02	1.9E-03	4.1E-05	2.4E-01	3.3E-04	9.8E-01	1.2E-03	1.1E+00	1.3E-05	5.1E-03	1.1E-05	3.0E-05	2.6E-02	9.7E-02	2.3E-03	1.5E-05	5.2E-05	1.3E-04	3.1E-04	3.1E+00	69,644
	93	July	4.5E-07	3.9E-02	7.3E-06	2.3E-02	1.1E-03	3.0E-05	8.9E-02	2.3E-04	2.7E-01	3.4E-04	3.0E-01	9.3E-06	3.4E-03	8.2E-06	2.3E-05	2.0E-02	5.7E-02	2.2E-03	1.1E-05	4.5E-05	9.6E-05	2.3E-04	1.2E+00	1,170
	94	August	5.6E-07	5.6E-02	1.1E-05	3.6E-02	1.1E-03	3.4E-05	9.1E-02	2.5E-04	2.4E-01	2.9E-04	2.6E-01	1.0E-05	4.6E-03	9.0E-06	2.8E-05	2.9E-02	6.4E-02	3.2E-03	1.4E-05	6.0E-05	1.1E-04	2.9E-04	1.4E+00	14,552
6	95	September	5.9E-07	6.7E-02	1.3E-05	4.5E-02	9.1E-04	3.5E-05	8.5E-02	2.5E-04	1.7E-01	2.1E-04	1.9E-01	9.8E-06	5.3E-03	8.9E-06	3.0E-05	3.6E-02	6.5E-02	3.6E-03	1.5E-05	6.7E-05	1.1E-04	3.0E-04	1.4E+00	24,308
Post Closure Water Quality																										
23	296 - 299	Summer Average	5.8E-07	6.7E-02	1.4E-05	4.8E-02	2.9E-05	2.8E-05	4.2E-02	1.6E-04	1.5E-17	1.9E-20	3.5E-05	5.8E-06	4.8E-03	5.8E-06	2.8E-05	3.7E-02	3.7E-02	4.6E-03	1.5E-05	7.7E-05	9.5E-05	2.8E-04	1.0E+00	27,419

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)
8 METER ACTIVE ZONE																							
	32	June	7.0	5.7E-16	9.6E-14	1.9E-10	8.9E-14	1.5E-13	2.5E-14	4.5E-16	4.5E-16	4.5E-11	4.5E-16	2.6E-12	0.0E+00	0.0E+00	0.0E+00	2.2E-15	3.5E-15	2.7E-15	1.1E-14	1.2E-13	1.7E-10
	33	July	7.0	4.0E-06	6.8E-04	3.0E-01	6.3E-04	1.0E-03	1.7E-04	3.2E-06	3.2E-06	7.1E-02	3.2E-06	4.0E-03	0.0E+00	0.0E+00	0.0E+00	1.6E-05	2.5E-05	1.9E-05	1.8E-05	1.8E-04	2.7E-01
	34	August	7.0	8.5E-06	1.4E-03	8.6E-01	1.3E-03	2.2E-03	3.7E-04	6.8E-06	6.8E-06	2.1E-01	6.8E-06	1.2E-02	0.0E+00	0.0E+00	0.0E+00	3.4E-05	5.2E-05	4.0E-05	5.3E-05	5.4E-04	7.8E-01
1	35	September	7.0	1.1E-05	1.8E-03	1.2E+00	1.7E-03	2.8E-03	4.6E-04	8.5E-06	8.5E-06	2.9E-01	8.5E-06	1.7E-02	0.0E+00	0.0E+00	0.0E+00	4.2E-05	6.5E-05	5.0E-05	7.5E-05	7.6E-04	1.1E+00
	44	June	7.0	3.7E-06	6.2E-04	3.6E-01	5.8E-04	9.6E-04	1.6E-04	2.9E-06	2.9E-06	8.6E-02	2.9E-06	4.9E-03	0.0E+00	0.0E+00	0.0E+00	1.5E-05	2.2E-05	1.7E-05	2.2E-05	2.2E-04	3.2E-01
	45	July	7.0	7.9E-06	8.8E-04	4.9E-01	5.4E-04	1.8E-03	2.5E-04	6.8E-06	6.8E-06	1.1E-01	6.4E-06	8.4E-03	0.0E+00	0.0E+00	0.0E+00	3.2E-05	2.7E-05	7.5E-05	4.6E-05	4.3E-04	4.2E-01
	46	August	7.0	1.5E-05	1.5E-03	1.1E+00	8.2E-04	3.4E-03	4.5E-04	1.3E-05	1.3E-05	2.5E-01	1.2E-05	2.0E-02	0.0E+00	0.0E+00	0.0E+00	6.1E-05	4.6E-05	1.6E-04	1.2E-04	1.1E-03	9.2E-01
2	47	September	7.0	2.0E-05	1.9E-03	1.6E+00	9.6E-04	4.3E-03	5.6E-04	1.7E-05	1.7E-05	3.5E-01	1.6E-05	2.9E-02	0.0E+00	0.0E+00	0.0E+00	7.8E-05	5.6E-05	2.0E-04	1.7E-04	1.6E-03	1.3E+00
	56	June	7.0	1.3E-05	1.2E-03	8.9E-01	5.9E-04	2.8E-03	3.6E-04	1.1E-05	1.1E-05	2.0E-01	1.0E-05	1.7E-02	0.0E+00	0.0E+00	0.0E+00	5.1E-05	3.5E-05	1.3E-04	9.6E-05	8.9E-04	7.3E-01
	57	July	7.0	1.1E-05	1.4E-03	7.3E-01	7.3E-04	2.6E-03	3.4E-04	1.0E-05	1.0E-05	1.7E-01	9.1E-06	1.3E-02	0.0E+00	0.0E+00	0.0E+00	4.5E-05	3.9E-05	1.2E-04	7.9E-05	7.8E-04	6.2E-01
	58	August	7.0	1.7E-05	2.3E-03	1.3E+00	1.3E-03	3.9E-03	5.3E-04	1.5E-05	1.5E-05	3.0E-01	1.4E-05	2.3E-02	0.0E+00	0.0E+00	0.0E+00	6.8E-05	6.6E-05	1.8E-04	1.4E-04	1.4E-03	1.1E+00
3	59	September	7.0	1.9E-05	2.7E-03	1.6E+00	1.5E-03	4.4E-03	6.0E-04	1.7E-05	1.7E-05	3.8E-01	1.5E-05	2.8E-02	0.0E+00	0.0E+00	0.0E+00	7.6E-05	7.7E-05	2.1E-04	1.7E-04	1.8E-03	1.4E+00
	68	June	7.0	7.6E-16	1.2E-13	1.9E-10	5.3E-14	1.8E-13	1.8E-14	7.1E-16	7.1E-16	4.5E-11	5.9E-16	3.4E-12	0.0E+00	0.0E+00	0.0E+00	3.0E-15	3.3E-15	9.5E-15	1.9E-14	2.7E-13	1.7E-10
	69	July	7.0	1.4E-06	2.2E-04	7.0E-02	1.1E-04	3.2E-04	4.2E-05	1.3E-06	1.3E-06	1.7E-02	1.1E-06	1.2E-03	0.0E+00	0.0E+00	0.0E+00	5.5E-06	6.0E-06	1.7E-05	8.7E-06	9.9E-05	6.2E-02
	70	August	7.0	3.3E-06	5.3E-04	2.2E-01	2.6E-04	7.5E-04	9.9E-05	3.1E-06	3.1E-06	5.2E-02	2.6E-06	3.9E-03	0.0E+00	0.0E+00	0.0E+00	1.3E-05	1.4E-05	4.1E-05	2.7E-05	3.1E-04	1.9E-01
4	71	September	7.0	4.5E-06	7.4E-04	3.3E-01	3.6E-04	1.0E-03	1.4E-04	4.2E-06	4.2E-06	8.0E-02	3.7E-06	5.9E-03	0.0E+00	0.0E+00	0.0E+00	1.8E-05	2.0E-05	5.7E-05	4.2E-05	4.7E-04	3.0E-01
	80	June	7.0	5.2E-06	8.5E-04	3.4E-01	4.2E-04	1.2E-03	1.6E-04	4.9E-06	4.9E-06	8.2E-02	4.2E-06	6.1E-03	0.0E+00	0.0E+00	0.0E+00	2.1E-05	2.3E-05	6.5E-05	4.3E-05	4.8E-04	3.0E-01
	81	July	7.0	4.9E-06	7.1E-04	2.7E-01	3.6E-04	1.1E-03	1.5E-04	4.5E-06	4.5E-06	6.4E-02	4.0E-06	4.9E-03	0.0E+00	0.0E+00	0.0E+00	2.0E-05	2.0E-05	5.9E-05	3.2E-05	3.5E-04	2.4E-01
	82	August	7.0	7.1E-06	9.5E-04	4.4E-01	4.8E-04	1.6E-03	2.1E-04	6.4E-06	6.4E-06	1.0E-01	5.8E-06	7.9E-03	0.0E+00	0.0E+00	0.0E+00	2.9E-05	2.6E-05	8.1E-05	5.0E-05	5.2E-04	3.8E-01
5	83	September	7.0	8.4E-06	1.1E-03	5.6E-01	5.5E-04	1.9E-03	2.5E-04	7.5E-06	7.5E-06	1.3E-01	6.8E-06	1.0E-02	0.0E+00	0.0E+00	0.0E+00	3.4E-05	3.0E-05	9.5E-05	6.3E-05	6.5E-04	4.8E-01
Placement of UM Rock Cover																							
	92	June	7.0	8.6E-06	1.1E-03	5.3E-01	5.4E-04	1.9E-03	2.5E-04	7.6E-06	7.6E-06	1.2E-01	6.9E-06	9.6E-03	0.0E+00	0.0E+00	0.0E+00	3.4E-05	3.0E-05	9.4E-05	5.9E-05	5.9E-04	4.5E-01
	93	July	7.0	7.4E-06	1.0E-03	4.3E-01	6.3E-04	1.7E-03	2.4E-04	6.5E-06	6.5E-06	1.0E-01	5.9E-06	7.3E-03	0.0E+00	0.0E+00	0.0E+00	2.9E-05	3.1E-05	7.4E-05	4.3E-05	4.5E-04	3.7E-01
	94	August	7.0	8.8E-06	1.3E-03	6.0E-01	9.3E-04	2.1E-03	3.1E-04	7.6E-06	7.6E-06	1.4E-01	7.1E-06	9.3E-03	0.0E+00	0.0E+00	0.0E+00	3.5E-05	4.2E-05	7.8E-05	5.2E-05	5.5E-04	5.3E-01
6	95	September	7.0	9.5E-06	1.5E-03	7.2E-01	1.1E-03	2.3E-03	3.5E-04	8.1E-06	8.1E-06	1.7E-01	7.6E-06	1.1E-02	0.0E+00	0.0E+00	0.0E+00	3.8E-05	4.9E-05	7.7E-05	5.8E-05	6.2E-04	6.5E-01
Post Closure Water Quality																							
23	296 - 299	Summer Average	7.0	1.9E-05	3.8E-03	1.5E+00	3.5E-03	5.2E-03	8.9E-04	1.5E-05	1.5E-05	3.6E-01	1.5E-05	1.9E-02	0.0E+00	0.0E+00	0.0E+00	7.5E-05	1.4E-04	7.7E-05	8.6E-05	9.5E-04	1.4E+00

Year	GoldSim Month	Actual Month	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
8 METER ACTIVE ZONE																										
	32	June	4.5E-17	2.0E-11	4.1E-15	1.4E-11	4.4E-14	2.4E-15	5.3E+01	1.6E-14	2.9E+02	3.6E-01	3.3E+02	4.5E-16	1.5E-12	4.5E-16	2.2E-15	1.1E-11	1.7E-11	3.2E-13	1.1E-15	5.5E-15	8.1E-15	2.2E-14	6.7E+02	6,415
	33	July	3.2E-07	3.2E-02	6.4E-06	2.2E-02	3.1E-04	1.7E-05	2.7E+01	1.1E-04	1.5E+02	1.9E-01	1.7E+02	3.2E-06	2.4E-03	3.2E-06	1.6E-05	1.7E-02	2.6E-02	2.3E-03	8.1E-06	3.9E-05	5.8E-05	1.6E-04	3.5E+02	74
	34	August	6.8E-07	9.4E-02	1.9E-05	6.4E-02	6.6E-04	3.7E-05	2.5E+01	2.4E-04	1.4E+02	1.7E-01	1.5E+02	6.8E-06	7.1E-03	6.8E-06	3.4E-05	5.0E-02	7.7E-02	4.8E-03	1.7E-05	8.2E-05	1.2E-04	3.4E-04	3.2E+02	1,072
1	35	September	8.5E-07	1.3E-01	2.6E-05	9.0E-02	8.3E-04	4.6E-05	2.0E+01	3.0E-04	1.1E+02	1.4E-01	1.2E+02	8.5E-06	1.0E-02	8.5E-06	4.2E-05	7.1E-02	1.1E-01	6.0E-03	2.2E-05	1.0E-04	1.5E-04	4.2E-04	2.6E+02	2,047
	44	June	2.9E-07	3.9E-02	7.7E-06	2.6E-02	2.9E-04	1.6E-05	1.2E+01	1.0E-04	6.5E+01	8.0E-02	7.2E+01	2.9E-06	2.9E-03	2.9E-06	1.5E-05	2.1E-02	3.2E-02	2.1E-03	7.5E-06	3.5E-05	5.3E-05	1.5E-04	1.5E+02	21,810
	45	July	6.3E-07	5.6E-02	1.0E-05	3.2E-02	2.0E-03	4.3E-05	7.4E+00	3.4E-04	4.1E+01	5.0E-02	4.5E+01	1.1E-05	5.0E-03	1.0E-05	3.2E-05	2.7E-02	9.1E-02	2.7E-03	1.6E-05	5.6E-05	1.4E-04	3.2E-04	9.4E+01	222
	46	August	1.2E-06	1.3E-01	2.3E-05	7.0E-02	4.3E-03	8.6E-05	7.9E+00	6.8E-04	4.3E+01	5.3E-02	4.8E+01	2.3E-05	1.2E-02	2.0E-05	6.1E-05	6.0E-02	2.4E-01	4.5E-03	3.1E-05	1.0E-04	2.8E-04	6.2E-04	1.0E+02	2,910
2	47	September	1.6E-06	1.8E-01	3.2E-05	9.8E-02	5.7E-03	1.1E-04	7.5E+00	8.9E-04	4.1E+01	5.0E-02	4.5E+01	3.0E-05	1.7E-02	2.7E-05	7.8E-05	8.4E-02	3.6E-01	5.6E-03	3.9E-05	1.3E-04	3.6E-04	8.0E-04	9.6E+01	4,862
	56	June	1.0E-06	1.0E-01	1.8E-05	5.5E-02	3.7E-03	7.2E-05	1.0E+01	5.8E-04	5.6E+01	6.9E-02	6.2E+01	2.0E-05	9.9E-03	1.7E-05	5.1E-05	4.8E-02	2.0E-01	3.5E-03	2.5E-05	8.2E-05	2.3E-04	5.2E-04	1.3E+02	24,376
	57	July	9.0E-07	8.4E-02	1.5E-05	4.7E-02	2.8E-03	6.2E-05	6.8E+00	4.9E-04	3.8E+01	4.6E-02	4.2E+01	2.0E-05	7.9E-03	1.7E-05	4.5E-05	4.0E-02	1.5E-01	3.6E-03	2.3E-05	8.0E-05	2.0E-04	4.7E-04	8.7E+01	234
	58	August	1.4E-06	1.5E-01	2.7E-05	8.6E-02	3.9E-03	9.2E-05	7.8E+00	7.2E-04	4.3E+01	5.2E-02	4.7E+01	3.1E-05	1.4E-02	2.7E-05	6.8E-05	7.3E-02	2.4E-01	5.8E-03	3.4E-05	1.3E-04	3.0E-04	7.0E-04	1.0E+02	2,910
3	59	September	1.5E-06	1.8E-01	3.4E-05	1.1E-01	4.1E-03	1.0E-04	7.4E+00	7.9E-04	4.0E+01	4.9E-02	4.4E+01	3.6E-05	1.7E-02	3.1E-05	7.6E-05	9.2E-02	2.9E-01	6.7E-03	3.8E-05	1.4E-04	3.3E-04	7.9E-04	9.5E+01	4,862
	68	June	5.4E-17	2.1E-11	4.1E-15	1.3E-11	1.5E-13	4.0E-15	1.4E+00	3.0E-14	7.7E+00	9.4E-03	8.5E+00	1.8E-15	2.0E-12	1.5E-15	3.0E-15	1.1E-11	3.4E-11	2.1E-13	1.5E-15	4.9E-15	1.3E-14	2.5E-14	1.8E+01	69,644
	69	July	1.1E-07	7.8E-03	1.5E-06	4.8E-03	2.7E-04	7.4E-06	7.5E-01	5.8E-05	4.1E+00	5.1E-03	4.6E+00	3.3E-06	7.5E-04	2.7E-06	5.5E-06	4.1E-03	1.3E-02	4.8E-04	2.7E-06	1.1E-05	2.3E-05	5.8E-05	9.6E+00	1,170
	70	August	2.6E-07	2.4E-02	4.8E-06	1.5E-02	6.4E-04	1.8E-05	1.0E+00	1.4E-04	5.6E+00	6.9E-03	6.2E+00	7.7E-06	2.3E-03	6.5E-06	1.3E-05	1.3E-02	3.9E-02	1.1E-03	6.4E-06	2.6E-05	5.6E-05	1.4E-04	1.3E+01	14,552
4	71	September	3.6E-07	3.7E-02	7.3E-06	2.3E-02	8.9E-04	2.4E-05	1.1E+00	1.9E-04	5.9E+00	7.3E-03	6.5E+00	1.1E-05	3.6E-03	9.0E-06	1.8E-05	2.0E-02	6.0E-02	1.6E-03	8.9E-06	3.6E-05	7.7E-05	1.9E-04	1.4E+01	24,308
	80	June	4.1E-07	3.8E-02	7.5E-06	2.3E-02	1.0E-03	2.8E-05	1.7E+00	2.2E-04	9.0E+00	1.1E-02	1.0E+01	1.2E-05	3.7E-03	1.0E-05	2.1E-05	2.0E-02	6.2E-02	1.8E-03	1.0E-05	4.1E-05	8.9E-05	2.2E-04	2.1E+01	69,644
	81	July	3.9E-07	3.1E-02	5.8E-06	1.8E-02	1.1E-03	2.7E-05	4.9E-01	2.1E-04	2.5E+00	3.1E-03	2.8E+00	1.0E-05	2.9E-03	8.9E-06	2.0E-05	1.6E-02	5.2E-02	1.6E-03	9.8E-06	3.7E-05	8.6E-05	2.1E-04	6.3E+00	1,170
	82	August	5.6E-07	5.0E-02	9.3E-06	2.9E-02	1.7E-03	3.9E-05	4.5E-01	3.1E-04	2.2E+00	2.7E-03	2.4E+00	1.4E-05	4.8E-03	1.2E-05	2.9E-05	2.5E-02	8.8E-02	2.3E-03	1.4E-05	5.2E-05	1.3E-04	3.0E-04	5.8E+00	14,552
5	83	September	6.7E-07	6.4E-02	1.2E-05	3.7E-02	2.1E-03	4.6E-05	3.6E-01	3.7E-04	1.6E+00	2.0E-03	1.8E+00	1.6E-05	6.1E-03	1.4E-05	3.4E-05	3.1E-02	1.1E-01	2.7E-03	1.7E-05	6.1E-05	1.5E-04	3.5E-04	4.7E+00	24,308
Placement of UM Rock Cover																										
	92	June	6.8E-07	6.1E-02	1.1E-05	3.4E-02	2.1E-03	4.7E-05	2.5E-01	3.7E-04	9.8E-01	1.2E-03	1.1E+00	1.6E-05	5.7E-03	1.3E-05	3.4E-05	2.9E-02	1.1E-01	2.7E-03	1.7E-05	6.1E-05	1.5E-04	3.5E-04	3.2E+00	69,644
	93	July	5.8E-07	4.8E-02	9.1E-06	2.9E-02	1.5E-03	3.9E-05	9.9E-02	3.0E-04	2.7E-01	3.4E-04	3.0E-01	1.3E-05	4.3E-03	1.1E-05	2.9E-05	2.4E-02	7.4E-02	2.7E-03	1.5E-05	5.7E-05	1.2E-04	3.0E-04	1.4E+00	1,170
	94	August	7.0E-07	6.6E-02	1.3E-05	4.2E-02	1.5E-03	4.4E-05	1.0E-01	3.2E-04	2.4E-01	2.9E-04	2.6E-01	1.4E-05	5.6E-03	1.2E-05	3.5E-05	3.5E-02	8.2E-02	3.7E-03	1.8E-05	7.3E-05	1.4E-04	3.6E-04	1.6E+00	14,552
6	95	September	7.5E-07	7.9E-02	1.6E-05	5.2E-02	1.4E-03	4.6E-05	9.7E-02	3.3E-04	1.7E-01	2.1E-04	1.9E-01	1.4E-05	6.4E-03	1.2E-05	3.8E-05	4.2E-02	8.5E-02	4.3E-03	1.9E-05	8.2E-05	1.5E-04	3.8E-04	1.6E+00	24,308
Post Closure Water Quality																										
23	296 - 299	Summer Average	1.5E-06	1.6E-01	3.2E-05	1.1E-01	2.3E-04	7.6E-05	1.0E-01	4.4E-04	1.5E-17	1.9E-20	8.5E-05	1.6E-05	1.1E-02	1.6E-05	7.5E-05	8.9E-02	9.3E-02	1.2E-02	3.8E-05	2.0E-04	2.5E-04	7.5E-04	2.4E+00	27,419

NOTES:
1. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
2. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
3. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
4. Freshwater aquatic life criterion or guideline is hardness dependant.
5. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table II-6
Predicted Water Quality (Dissolved Constituents)-Probable Scenario
Portage and Goose Island Open Pit Sumps
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)
RRNWT - DW criteria			***6.5-8.5***		***0.1***		***0.025***	***5***	***1***				***0.005***	***250***					***0.05***	***1***	***1.5***	***0.3***
CEQG criteria[1]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**						**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**
MMER criteria[5]**			**6.0 - 9.5**				**0.5**								**1**					**0.3**		
NORTH PORTAGE PIT																						
3	56 - 59	Summer Average	***6.3***	4.4E-07	8.2E-05	3.2E-02	3.1E-05	9.8E-05	1.2E-05	4.4E-07	4.4E-07	7.9E-03	4.6E-07	6.2E-04	0.0E+00	0.0E+00	0.0E+00	2.3E-06	2.1E-06	8.0E-06	5.2E-06	6.7E-05
4	68 - 71	Summer Average	***6.3***	7.2E-07	1.3E-04	5.0E-02	4.5E-05	1.6E-04	1.9E-05	7.1E-07	7.1E-07	1.2E-02	6.0E-07	9.8E-04	0.0E+00	0.0E+00	0.0E+00	3.0E-06	3.0E-06	1.1E-05	8.0E-06	9.7E-05
Start Flooding North Portage Pit																						
THIRD PORTAGE PIT																						
1	32 - 35	Summer Average	***6.3***	2.2E-05	8.4E-02	3.0E+01	1.8E-03	2.1E-01	3.1E-02	2.2E-04	2.2E-04	4.2E+01	**5.7E-05**	***3.1E+02***	0.0E+00	0.0E+00	0.0E+00	1.1E-03	2.5E-04	1.1E-03	**1.5E-01**	2.8E-01
2	44 - 47	Summer Average	***6.3***	3.1E-05	***1.2E-01***	4.2E+01	2.5E-03	2.9E-01	4.3E-02	3.1E-04	3.1E-04	7.8E+01	**8.0E-05**	***6.5E+02***	0.0E+00	0.0E+00	0.0E+00	1.5E-03	3.5E-04	1.5E-03	**2.0E-01**	***3.8E-01***
3	56 - 59	Summer Average	***6.3***	2.9E-05	***1.1E-01***	3.9E+01	2.4E-03	2.7E-01	4.0E-02	2.8E-04	2.8E-04	7.5E+01	**7.4E-05**	***6.3E+02***	0.0E+00	0.0E+00	0.0E+00	1.4E-03	3.3E-04	1.4E-03	**1.9E-01**	***3.6E-01***
4	68 - 71	Summer Average	***6.3***	3.0E-05	***1.1E-01***	4.0E+01	2.4E-03	2.7E-01	4.1E-02	2.9E-04	2.9E-04	7.5E+01	**7.6E-05**	***6.2E+02***	0.0E+00	0.0E+00	0.0E+00	1.5E-03	3.3E-04	1.4E-03	**1.9E-01**	***3.7E-01***
Start Flooding Third Portage Pit																						
GOOSE ISLAND PIT																						
2	44 - 47	Summer Average	***6.1***	2.1E-05	7.8E-02	2.8E+01	1.7E-03	1.9E-01	2.9E-02	2.1E-04	2.1E-04	5.3E+01	**5.4E-05**	***4.4E+02***	0.0E+00	0.0E+00	0.0E+00	1.0E-03	2.4E-04	9.9E-04	**1.4E-01**	2.6E-01
3	56 - 59	Summer Average	***6.1***	2.0E-05	7.5E-02	2.7E+01	1.6E-03	1.8E-01	2.7E-02	2.0E-04	2.0E-04	5.2E+01	**5.1E-05**	***4.4E+02***	0.0E+00	0.0E+00	0.0E+00	9.8E-04	2.3E-04	9.5E-04	**1.3E-01**	2.5E-01
Start Flooding Goose Pit																						

Year	GoldSim Month		Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria				***0.001***				***0.05***		***200***				***11***	***0.01***		***0.006***	***0.01***		***500***					***5***	***500***
CEQG criteria[1]*				**0.000026**					**0.073**		**0.025-0.15**	**4.92**	**0.019**	**2.9**	**0.001-0.007**			**0.001**				**0.0008**			**0.03**	
MMER criteria[5]**											**0.5**				**0.2**										**0.5**	
NORTH PORTAGE PIT																										
3	56 - 59	Summer Average	2.9E-02	3.4E-08	3.6E-03	7.3E-07	2.2E-03	8.2E-05	2.4E-06	7.9E-01	2.6E-05	4.4E+00	1.1E-03	**4.9E+00**	1.5E-06	3.8E-04	1.1E-06	2.3E-06	2.0E-03	8.5E-03	1.4E-04	8.5E-07	3.4E-06	7.5E-06	2.4E-05	1.0E+01
4	68 - 71	Summer Average	4.5E-02	5.6E-08	5.6E-03	1.1E-06	3.4E-03	1.5E-04	4.0E-06	2.2E+00	3.4E-05	**1.2E+01**	3.0E-03	***1.3E+01***	2.2E-06	5.9E-04	1.8E-06	3.0E-06	3.0E-03	1.1E-02	2.1E-04	1.4E-06	5.4E-06	1.3E-05	3.2E-05	2.8E+01
Start Flooding North Portage Pit																										
THIRD PORTAGE PIT																										
1	32 - 35	Summer Average	1.7E+02	4.4E-06	3.5E+00	6.2E-03	1.5E+01	***1.5E-01***	9.7E-03	7.3E+01	2.2E-03	**1.3E+01**	3.1E-03	***1.4E+01***	1.2E-03	1.2E-01	2.9E-04	2.2E-04	2.0E+00	2.4E+01	2.2E-01	2.2E-05	2.1E-03	3.6E-04	5.7E-03	***5.3E+02***
2	44 - 47	Summer Average	3.1E+02	6.1E-06	6.1E+00	8.5E-03	2.8E+01	***2.0E-01***	1.3E-02	1.5E+02	3.1E-03	**5.0E+00**	1.2E-03	**5.5E+00**	1.7E-03	1.7E-01	4.1E-04	3.1E-04	2.8E+00	3.3E+01	3.0E-01	3.1E-05	2.9E-03	5.0E-04	8.0E-03	***1.0E+03***
3	56 - 59	Summer Average	3.0E+02	5.7E-06	5.9E+00	8.0E-03	2.7E+01	***1.9E-01***	1.3E-02	1.5E+02	2.9E-03	2.3E+00	5.7E-04	2.6E+00	1.6E-03	1.6E-01	3.8E-04	2.9E-04	2.6E+00	3.1E+01	2.8E-01	3.0E-05	2.7E-03	4.7E-04	7.4E-03	***9.6E+02***
4	68 - 71	Summer Average	3.0E+02	5.9E-06	5.9E+00	8.1E-03	2.7E+01	***1.9E-01***	1.3E-02	1.4E+02	2.9E-03	2.1E+00	5.2E-04	2.3E+00	1.6E-03	1.6E-01	3.9E-04	2.9E-04	2.7E+00	3.1E+01	2.8E-01	3.1E-05	2.8E-03	4.8E-04	7.6E-03	***9.6E+02***
Start Flooding Third Portage Pit																										
GOOSE ISLAND PIT																										
2	44 - 47	Summer Average	2.1E+02	4.1E-06	4.1E+00	5.8E-03	1.9E+01	***1.4E-01***	9.0E-03	1.0E+02	2.1E-03	**5.4E+00**	8.3E-04	**6.0E+00**	1.2E-03	1.2E-01	2.7E-04	2.1E-04	1.9E+00	2.2E+01	2.0E-01	2.1E-05	2.0E-03	3.3E-04	5.4E-03	***6.8E+02***
3	56 - 59	Summer Average	2.1E+02	3.9E-06	4.0E+00	5.5E-03	1.8E+01	***1.3E-01***	8.6E-03	1.0E+02	2.0E-03	3.6E+00	5.6E-04	**4.0E+00**	1.1E-03	1.1E-01	2.6E-04	2.0E-04	1.8E+00	2.1E+01	1.9E-01	2.0E-05	1.9E-03	3.2E-04	5.1E-03	***6.7E+02***
Start Flooding Goose Pit																										

NOTES:
1. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
2. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
3. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
4. Freshwater aquatic life criterion or guideline is hardness dependant.
5. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table II-7
Predicted Water Quality (Dissolved Constituents) Probable Scenario
Portage Attenuation Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Decant Rate m3/mon
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005	250					0.05	1	1.5	0.3		0.001				0.05		200				11		0.01		0.006	0.01		500					5	500	
CEQG criteria[2]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007						0.001/0.0089	0.002-0.004	0.12	0.3		0.000026					0.073		0.025-0.15	4.92	0.019	2.9		0.001-0.007			0.001				0.0008			0.03		
MMER criteria[6]**			6.0 - 9.5				0.5								1					0.3											0.5					0.2										0.5		
2 METER ACTIVE ZONE																																																
	32	June	6.2	5.9E-06	1.3E-01	6.8E+00	1.9E-04	2.3E-02	4.2E-03	9.6E-05	3.0E-05	3.9E+00	3.9E-05	2.4E+01	0.0E+00	0.0E+00	0.0E+00	1.7E-03	1.2E-04	5.6E-04	6.2E-02	4.0E-02	1.6E+01	1.5E-05	4.3E-01	9.4E-04	1.4E+00	2.0E-02	8.5E-04	6.5E+00	1.5E-03	4.3E+00	8.3E-04	4.7E+00	5.2E-03	1.5E-04	1.0E-02	6.3E-05	8.4E-05	3.7E-01	4.5E+00	1.9E-02	1.4E-05	3.1E-04	1.7E-03	1.9E-03	5.8E+01	224,770
	33	July	No Discharge																																													0
	34	August	No Discharge																																													0
1	35	September	6.2	1.7E-05	1.3E-01	6.8E+00	1.6E-03	6.4E-02	1.1E-02	2.0E-04	1.0E-04	1.2E+01	1.3E-04	8.0E+01	0.0E+00	0.0E+00	0.0E+00	6.1E-03	2.5E-04	1.9E-03	1.9E-01	4.0E-02	4.9E+01	4.6E-05	1.1E+00	2.4E-03	4.4E+00	7.1E-02	2.6E-03	1.9E+01	7.1E-03	4.5E+00	8.7E-04	5.0E+00	1.7E-02	5.2E-04	3.2E-02	1.5E-04	1.3E-04	1.3E+00	1.5E+01	6.3E-02	1.7E-05	1.0E-03	1.0E-03	9.6E-03	1.5E+02	56,137
	44	June	6.2	1.6E-05	1.3E-01	6.8E+00	1.4E-03	1.4E-01	2.1E-02	1.6E-04	1.5E-04	3.4E+01	5.2E-05	2.7E+02	0.0E+00	0.0E+00	0.0E+00	1.4E-03	1.9E-04	9.0E-04	1.2E-01	4.0E-02	1.4E+02	8.1E-06	2.7E+00	4.2E-03	1.2E+01	1.0E-01	6.5E-03	6.3E+01	2.3E-03	3.8E+00	7.4E-04	4.2E+00	2.8E-02	8.6E-04	8.3E-02	2.1E-04	1.6E-04	1.5E+00	1.7E+01	1.5E-01	1.6E-05	1.5E-03	3.2E-04	4.9E-03	4.1E+02	456,560
	45	July	6.2	2.2E-05	1.3E-01	6.8E+00	1.7E-03	1.5E-01	2.3E-02	2.2E-04	1.8E-04	3.7E+01	1.1E-04	2.9E+02	0.0E+00	0.0E+00	0.0E+00	4.3E-03	2.7E-04	1.7E-03	2.0E-01	4.0E-02	1.5E+02	3.0E-05	3.0E+00	4.7E-03	1.3E+01	1.2E-01	6.8E-03	6.8E+01	5.1E-03	3.7E+00	7.1E-04	4.1E+00	3.3E-02	9.6E-04	8.7E-02	2.4E-04	1.9E-04	1.9E+00	2.2E+01	1.6E-01	1.9E-05	1.8E-03	3.3E-04	7.9E-03	4.5E+02	118,990
	46	August	6.2	2.5E-05	1.3E-01	6.8E+00	2.1E-03	1.6E-01	2.5E-02	2.5E-04	2.0E-04	4.2E+01	1.3E-04	3.3E+02	0.0E+00	0.0E+00	0.0E+00	5.2E-03	3.1E-04	2.0E-03	2.3E-01	4.0E-02	1.7E+02	3.6E-05	3.4E+00	5.2E-03	1.5E+01	1.4E-01	7.4E-03	7.7E+01	6.4E-03	3.2E+00	6.2E-04	3.5E+00	3.6E-02	1.1E-03	9.4E-02	2.7E-04	2.0E-04	2.1E+00	2.5E+01	1.7E-01	2.1E-05	2.0E-03	3.4E-04	1.0E-02	5.1E+02	104,110
2	47	September	6.2	2.4E-05	1.3E-01	6.8E+00	2.3E-03	1.6E-01	2.5E-02	2.4E-04	2.0E-04	4.3E+01	1.2E-04	3.4E+02	0.0E+00	0.0E+00	0.0E+00	4.6E-03	2.9E-04	1.9E-03	2.1E-01	4.0E-02	1.7E+02	3.1E-05	3.4E+00	5.1E-03	1.5E+01	1.3E-01	7.4E-03	8.0E+01	6.3E-03	3.0E+00	5.9E-04	3.4E+00	3.6E-02	1.1E-03	9.4E-02	2.7E-04	2.0E-04	2.0E+00	2.4E+01	1.7E-01	2.1E-05	1.9E-03	3.3E-04	1.0E-02	5.2E+02	181,290
	56	June	6.2	1.9E-05	1.3E-01	6.8E+00	1.7E-03	1.7E-01	2.5E-02	1.9E-04	1.8E-04	4.8E+01	6.0E-05	4.0E+02	0.0E+00	0.0E+00	0.0E+00	1.6E-03	2.2E-04	1.0E-03	1.3E-01	4.0E-02	1.9E+02	8.7E-06	3.7E+00	5.0E-03	1.7E+01	1.2E-01	7.8E-03	9.3E+01	2.7E-03	2.3E+00	4.5E-04	2.6E+00	3.4E-02	1.0E-03	9.9E-02	2.4E-04	1.8E-04	1.7E+00	2.0E+01	1.7E-01	1.9E-05	1.7E-03	3.0E-04	5.8E-03	6.0E+02	456,560
	57	July	6.2	2.4E-05	1.3E-01	6.8E+00	1.9E-03	1.8E-01	2.8E-02	2.3E-04	2.1E-04	5.2E+01	9.7E-05	4.3E+02	0.0E+00	0.0E+00	0.0E+00	3.3E-03	2.8E-04	1.6E-03	1.9E-01	4.0E-02	2.1E+02	2.2E-05	4.0E+00	5.6E-03	1.8E+01	1.4E-01	8.4E-03	1.0E+02	4.4E-03	2.7E+00	5.3E-04	3.0E+00	3.8E-02	1.1E-03	1.1E-01	2.8E-04	2.1E-04	2.1E+00	2.4E+01	1.9E-01	2.2E-05	2.0E-03	3.3E-04	7.8E-03	6.4E+02	456,560
	58	August	6.2	2.4E-05	1.3E-01	6.8E+00	2.2E-03	1.8E-01	2.7E-02	2.4E-04	2.1E-04	5.0E+01	1.1E-04	4.2E+02	0.0E+00	0.0E+00	0.0E+00	3.8E-03	2.9E-04	1.7E-03	2.0E-01	4.0E-02	2.0E+02	2.5E-05	3.9E+00	5.5E-03	1.8E+01	1.4E-01	8.1E-03	9.6E+01	5.2E-03	2.3E+00	4.4E-04	2.5E+00	3.8E-02	1.1E-03	1.0E-01	2.8E-04	2.1E-04	2.1E+00	2.4E+01	1.8E-01	2.2E-05	2.0E-03	3.3E-04	9.0E-03	6.2E+02	364,100
3	59	September	6.2	2.1E-05	1.3E-01	6.8E+00	2.1E-03	1.6E-01	2.4E-02	2.1E-04	1.8E-04	4.4E+01	8.8E-05	3.6E+02	0.0E+00	0.0E+00	0.0E+00	3.1E-03	2.4E-04	1.4E-03	1.6E-01	4.0E-02	1.7E+02	2.0E-05	3.4E+00	4.8E-03	1.6E+01	1.2E-01	7.1E-03	8.4E+01	4.7E-03	2.0E+00	3.9E-04	2.2E+00	3.3E-02	1.0E-03	9.1E-02	2.4E-04	1.8E-04	1.8E+00	2.1E+01	1.6E-01	1.9E-05	1.7E-03	2.9E-04	8.4E-03	5.4E+02	226,520
	68	June	6.2	1.9E-05	1.3E-01	6.8E+00	1.6E-03	1.7E-01	2.5E-02	1.9E-04	1.8E-04	4.6E+01	5.8E-05	3.8E+02	0.0E+00	0.0E+00	0.0E+00	1.5E-03	2.2E-04	1.0E-03	1.3E-01	4.0E-02	1.8E+02	8.0E-06	3.6E+00	5.0E-03	1.6E+01	1.2E-01	7.7E-03	8.8E+01	2.6E-03	1.6E+00	3.1E-04	1.7E+00	3.3E-02	1.0E-03	9.8E-02	2.4E-04	1.8E-04	1.7E+00	2.0E+01	1.7E-01	1.8E-05	1.7E-03	2.9E-04	5.7E-03	5.7E+02	456,560
	69	July	6.2	2.2E-05	1.3E-01	6.8E+00	1.9E-03	1.8E-01	2.7E-02	2.2E-04	2.0E-04	4.8E+01	8.6E-05	4.0E+02	0.0E+00	0.0E+00	0.0E+00	2.8E-03	2.6E-04	1.4E-03	1.7E-01	4.0E-02	1.9E+02	1.8E-05	3.8E+00	5.4E-03	1.7E+01	1.3E-01	8.1E-03	9.2E+01	4.0E-03	2.0E+00	3.9E-04	2.2E+00	3.6E-02	1.1E-03	1.0E-01	2.6E-04	2.0E-04	1.9E+00	2.3E+01	1.8E-01	2.0E-05	1.9E-03	3.1E-04	7.5E-03	6.0E+02	456,560
	70	August	6.2	2.2E-05	1.3E-01	6.8E+00	2.1E-03	1.6E-01	2.4E-02	2.2E-04	1.9E-04	4.4E+01	9.2E-05	3.6E+02	0.0E+00	0.0E+00	0.0E+00	3.3E-03	2.6E-04	1.5E-03	1.7E-01	4.0E-02	1.8E+02	2.1E-05	3.5E+00	5.0E-03	1.6E+01	1.3E-01	7.4E-03	8.4E+01	4.8E-03	1.8E+00	3.5E-04	2.0E+00	3.4E-02	1.0E-03	9.4E-02	2.5E-04	1.9E-04	1.9E+00	2.2E+01	1.7E-01	1.9E-05	1.8E-03	2.9E-04	8.4E-03	5.5E+02	249,820
4	71	September	6.2	1.9E-05	1.3E-01	6.8E+00	2.1E-03	1.4E-01	2.1E-02	1.9E-04	1.6E-04	3.8E+01	8.1E-05	3.1E+02	0.0E+00	0.0E+00	0.0E+00	2.8E-03	2.2E-04	1.3E-03	1.5E-01	4.0E-02	1.5E+02	1.8E-05	3.0E+00	4.3E-03	1.4E+01	1.1E-01	6.4E-03	7.3E+01	4.7E-03	1.9E+00	3.6E-04	2.1E+00	3.0E-02	9.3E-04	8.2E-02	2.2E-04	1.7E-04	1.6E+00	1.9E+01	1.5E-01	1.7E-05	1.6E-03	2.6E-04	8.4E-03	4.7E+02	129,460
	80	June	6.2	1.1E-05	1.3E-01	6.8E+00	1.0E-03	9.5E-02	1.4E-02	1.1E-04	1.0E-04	2.6E+01	3.5E-05	2.2E+02	0.0E+00	0.0E+00	0.0E+00	9.4E-04	1.3E-04	6.1E-04	7.7E-02	4.0E-02	1.0E+02	5.2E-06	2.0E+00	2.8E-03	9.2E+00	6.9E-02	4.4E-03	5.0E+01	1.7E-03	8.5E-01	1.7E-04	9.5E-01	1.9E-02	5.8E-04	5.6E-02	1.4E-04	1.1E-04	9.7E-01	1.1E+01	9.9E-02	1.1E-05	9.9E-04	1.7E-04	3.6E-03	3.2E+02	185,340
	81	July	No Discharge																																													0
	82	August	No Discharge																																													0
5	83	September	No Discharge																																													0
Attenuation Pond transfer to Goose Island Pit																																																

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Decant Rate m3/mon
8 METER ACTIVE ZONE																																																
	32	June	6.2	5.9E-06	1.3E-01	6.8E+00	1.9E-04	2.3E-02	4.2E-03	9.6E-05	3.0E-05	3.9E+00	3.9E-05	2.4E+01	0.0E+00	0.0E+00	0.0E+00	1.7E-03	1.2E-04	5.6E-04	6.2E-02	4.0E-02	1.6E+01	1.5E-05	4.3E-01	9.4E-04	1.4E+00	2.0E-02	8.5E-04	6.5E+00	1.5E-03	4.3E+00	8.3E-04	4.7E+00	5.2E-03	1.5E-04	1.0E-02	6.3E-05	8.4E-05	3.7E-01	4.5E+00	1.9E-02	1.4E-05	3.1E-04	1.7E-03	1.9E-03	5.8E+01	224,770
	33	July	No Discharge																																													0
	34	August	No Discharge																																													0
1	35	September	6.2	1.7E-05	1.3E-01	6.8E+00	1.6E-03	6.4E-02	1.1E-02	2.0E-04	1.0E-04	1.2E+01	1.3E-04	8.0E+01	0.0E+00	0.0E+00	0.0E+00	6.1E-03	2.5E-04	1.9E-03	1.9E-01	4.0E-02	4.9E+01	4.6E-05	1.1E+00	2.4E-03	4.4E+00	7.1E-02	2.6E-03	1.9E+01	7.1E-03	4.5E+00	8.7E-04	5.0E+00	1.7E-02	5.2E-04	3.2E-02	1.5E-04	1.3E-04	1.3E+00	1.5E+01	6.3E-02	1.7E-05	1.0E-03	1.0E-03	9.6E-03	1.5E+02	56,137
	44	June	6.2	1.6E-05	1.3E-01	6.8E+00	1.4E-03	1.4E-01	2.1E-02	1.6E-04	1.5E-04	3.4E+01	5.2E-05	2.7E+02	0.0E+00	0.0E+00	0.0E+00	1.4E-03	1.9E-04	9.0E-04	1.2E-01	4.0E-02	1.4E+02	8.1E-06	2.7E+00	4.2E-03	1.2E+01	1.0E-01	6.5E-03	6.3E+01	2.3E-03	3.8E+00	7.4E-04	4.2E+00	2.8E-02	8.6E-04	8.3E-02	2.1E-04	1.6E-04	1.5E+00	1.7E+01	1.5E-01	1.6E-05	1.5E-03	3.2E-04	4.9E-03	4.1E+02	456,560
	45	July	6.2	2.2E-05	1.3E-01	6.8E+00	1.7E-03	1.5E-01	2.3E-02	2.2E-04	1.8E-04	3.7E+01	1.1E-04	2.9E+02	0.0E+00	0.0E+00	0.0E+00	4.3E-03	2.7E-04	1.7E-03	2.0E-01	4.0E-02	1.5E+02	3.0E-05	3.0E+00	4.7E-03	1.3E+01	1.2E-01	6.8E-03	6.8E+01	5.1E-03	3.7E+00	7.1E-04	4.1E+00	3.3E-02	9.6E-04	8.7E-02	2.4E-04	1.9E-04	1.9E+00	2.2E+01	1.6E-01	1.9E-05	1.8E-03	3.3E-04	7.9E-03	4.5E+02	118,990
	46	August	6.2	2.5E-05	1.3E-01	6.8E+00	2.1E-03	1.6E-01	2.5E-02	2.5E-04	2.0E-04	4.2E+01	1.3E-04	3.3E+02	0.0E+00	0.0E+00	0.0E+00	5.2E-03	3.1E-04	2.0E-03	2.3E-01	4.0E-02	1.7E+02	3.6E-05	3.4E+00	5.2E-03	1.5E+01	1.4E-01	7.4E-03	7.7E+01	6.4E-03	3.2E+00	6.2E-04	3.5E+00	3.6E-02	1.1E-03	9.4E-02	2.7E-04	2.0E-04	2.1E+00	2.5E+01	1.7E-01	2.1E-05	2.0E-03	3.4E-04	1.0E-02	5.1E+02	104,110
2	47	September	6.2	2.4E-05	1.3E-01	6.8E+00	2.3E-03	1.6E-01	2.5E-02	2.4E-04	2.0E-04	4.3E+01	1.2E-04	3.4E+02	0.0E+00	0.0E+00	0.0E+00	4.6E-03	2.9E-04	1.9E-03	2.1E-01	4.0E-02	1.7E+02	3.1E-05	3.4E+00	5.1E-03	1.5E+01	1.3E-01	7.4E-03	8.0E+01	6.3E-03	3.0E+00	5.9E-04	3.4E+00	3.6E-02	1.1E-03	9.4E-02	2.7E-04	2.0E-04	2.0E+00	2.4E+01	1.7E-01	2.1E-05	1.9E-03	3.3E-04	1.0E-02	5.2E+02	181,290
	56	June	6.2	1.9E-05	1.3E-01	6.8E+00	1.7E-03	1.7E-01	2.5E-02	1.9E-04	1.8E-04	4.8E+01	6.0E-05	4.0E+02	0.0E+00	0.0E+00	0.0E+00	1.6E-03	2.2E-04	1.0E-03	1.3E-01	4.0E-02	1.9E+02	8.7E-06	3.7E+00	5.0E-03	1.7E+01	1.2E-01	7.8E-03	9.3E+01	2.7E-03	2.3E+00	4.5E-04	2.6E+00	3.4E-02	1.0E-03	9.9E-02	2.4E-04	1.8E-04	1.7E+00	2.0E+01	1.7E-01	1.9E-05	1.7E-03	3.0E-04	5.8E-03	6.0E+02	456,560
	57	July	6.2	2.4E-05	1.3E-01	6.8E+00	1.9E-03	1.8E-01	2.8E-02	2.3E-04	2.1E-04	5.2E+01	9.7E-05	4.3E+02	0.0E+00	0.0E+00	0.0E+00	3.3E-03	2.8E-04	1.6E-03	1.9E-01	4.0E-02	2.1E+02	2.2E-05	4.0E+00	5.6E-03	1.8E+01	1.4E-01	8.4E-03	1.0E+02	4.4E-03	2.7E+00	5.3E-04	3.0E+00	3.8E-02	1.1E-03	1.1E-01	2.8E-04	2.1E-04	2.1E+00	2.4E+01	1.9E-01	2.2E-05	2.0E-03	3.3E-04	7.8E-03	6.4E+02	456,560
	58	August	6.2	2.4E-05	1.3E-01	6.8E+00	2.2E-03	1.8E-01	2.7E-02	2.4E-04	2.1E-04	5.0E+01	1.1E-04	4.2E+02	0.0E+00	0.0E+00	0.0E+00	3.8E-03	2.9E-04	1.7E-03	2.0E-01	4.0E-02	2.0E+02	2.5E-05	3.9E+00	5.5E-03	1.8E+01	1.4E-01	8.1E-03	9.6E+01	5.2E-03	2.3E+00	4.4E-04	2.5E+00	3.8E-02	1.1E-03	1.0E-01	2.8E-04	2.1E-04	2.1E+00	2.4E+01	1.8E-01	2.2E-05	2.0E-03	3.3E-04	9.0E-03	6.2E+02	364,100
3	59	September	6.2	2.1E-05	1.3E-01	6.8E+00	2.1E-03	1.6E-01	2.4E-02	2.1E-04	1.8E-04	4.4E+01	8.8E-05	3.6E+02	0.0E+00	0.0E+00	0.0E+00	3.1E-03	2.4E-04	1.4E-03	1.6E-01	4.0E-02	1.7E+02	2.0E-05	3.4E+00	4.8E-03	1.6E+01	1.2E-01	7.1E-03	8.4E+01	4.7E-03	2.0E+00	3.9E-04	2.2E+00	3.3E-02	1.0E-03	9.1E-02	2.4E-04	1.8E-04	1.8E+00	2.1E+01	1.6E-01	1.9E-05	1.7E-03	2.9E-04	8.4E-03	5.4E+02	226,520
	68	June	6.2	1.9E-05	1.3E-01	6.8E+00	1.6E-03	1.7E-01	2.5E-02	1.9E-04	1.8E-04	4.6E+01	5.8E-05	3.8E+02	0.0E+00	0.0E+00	0.0E+00	1.5E-03	2.2E-04	1.0E-03	1.3E-01	4.0E-02	1.8E+02	8.0E-06	3.6E+00	5.0E-03	1.6E+01	1.2E-01	7.7E-03	8.8E+01	2.6E-03	1.6E+00	3.1E-04	1.7E+00	3.3E-02	1.0E-03	9.8E-02	2.4E-04	1.8E-04	1.7E+00	2.0E+01	1.7E-01	1.8E-05	1.7E-03	2.9E-04	5.7E-03	5.7E+02	456,560
	69	July	6.2	2.2E-05	1.3E-01	6.8E+00	1.9E-03	1.8E-01	2.7E-02	2.2E-04	2.0E-04	4.8E+01	8.6E-05	4.0E+02	0.0E+00	0.0E+00	0.0E+00	2.8E-03	2.6E-04	1.4E-03	1.7E-01	4.0E-02	1.9E+02	1.8E-05	3.8E+00	5.4E-03	1.7E+01	1.3E-01	8.1E-03	9.2E+01	4.0E-03	2.0E+00	3.9E-04	2.2E+00	3.6E-02	1.1E-03	1.0E-01	2.6E-04	2.0E-04	1.9E+00	2.3E+01	1.8E-01	2.0E-05	1.9E-03	3.1E-04	7.5E-03	6.0E+02	456,560
	70	August	6.2	2.2E-05	1.3E-01	6.8E+00	2.1E-03	1.6E-01	2.4E-02	2.2E-04	1.9E-04	4.4E+01	9.2E-05	3.6E+02	0.0E+00	0.0E+00	0.0E+00	3.3E-03	2.6E-04	1.5E-03	1.7E-01	4.0E-02	1.8E+02	2.1E-05	3.5E+00	5.0E-03	1.6E+01	1.3E-01	7.4E-03	8.4E+01	4.8E-03	1.8E+00	3.5E-04	2.0E+00	3.4E-02	1.0E-03	9.4E-02	2.5E-04	1.9E-04	1.9E+00	2.2E+01	1.7E-01	1.9E-05	1.8E-03	2.9E-04	8.4E-03	5.5E+02	249,820
4	71	September	6.2	1.9E-05	1.3E-01	6.8E+00	2.1E-03	1.4E-01	2.1E-02	1.9E-04	1.6E-04	3.8E+01	8.1E-05	3.1E+02	0.0E+00	0.0E+00	0.0E+00	2.8E-03	2.2E-04	1.3E-03	1.5E-01	4.0E-02	1.5E+02	1.8E-05	3.0E+00	4.3E-03	1.4E+01	1.1E-01	6.4E-03	7.3E+01	4.7E-03	1.9E+00	3.6E-04	2.1E+00	3.0E-02	9.3E-04	8.2E-02	2.2E-04	1.7E-04	1.6E+00	1.9E+01	1.5E-01	1.7E-05	1.6E-03	2.6E-04	8.4E-03	4.7E+02	129,460
	80	June	6.2	1.1E-05	1.3E-01	6.8E+00	1.0E-03	9.5E-02	1.4E-02	1.1E-04	1.0E-04	2.6E+01	3.5E-05	2.2E+02	0.0E+00	0.0E+00	0.0E+00	9.4E-04	1.3E-04	6.1E-04	7.7E-02	4.0E-02	1.0E+02	5.2E-06	2.0E+00	2.8E-03	9.2E+00	6.9E-02	4.4E-03	5.0E+01	1.7E-03	8.5E-01	1.7E-04	9.5E-01	1.9E-02	5.8E-04	5.6E-02	1.4E-04	1.1E-04	9.7E-01	1.1E+01	9.9E-02	1.1E-05	9.9E-04	1.7E-04	3.6E-03	3.2E+02	185,340
	81	July	No Discharge																																													0
	82	August	No Discharge																																													0
5	83	September	No Discharge																																													0
Attenuation Pond transfer to Goose Island Pit																																																

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table II-8
Predicted Water Quality (Dissolved Constituents) Probable Scenario
Portage Reclaim Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005	250		
CEQG criteria[2]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007			
MMER criteria[6]**			6.0 - 9.5				0.5								1	
1	27 - 38	Annual Average	8.0	4.9E-04	2.0E-01	9.5E+01	1.4E-02	1.9E-01	1.1E-01	7.4E-03	7.1E-03	1.8E+02	8.2E-04	6.0E+01	2.5E+01	3.0E+02
2	39 - 50	Annual Average	8.0	6.6E-04	2.4E-01	1.4E+02	2.2E-02	3.5E-01	1.7E-01	1.1E-02	1.1E-02	4.0E+02	1.2E-03	2.8E+02	2.9E+01	4.1E+02
3	51 - 62	Annual Average	8.0	7.9E-04	2.7E-01	1.7E+02	2.5E-02	4.3E-01	2.1E-01	1.2E-02	1.2E-02	4.3E+02	1.3E-03	4.6E+02	2.5E+01	5.2E+02
4	63 - 74	Annual Average	8.0	6.5E-04	4.3E-01	2.1E+02	2.8E-02	4.7E-01	2.8E-01	1.3E-02	1.3E-02	8.2E+02	1.4E-03	5.1E+02	1.1E+01	6.4E+02
Merging of Attenuation Pond and Tailing Reclaim Pond (in mid-year 5)																
5	75 - 86	Annual Average	8.0	4.4E-04	5.8E-01	2.5E+02	3.1E-02	4.7E-01	3.3E-01	1.4E-02	1.4E-02	1.3E+03	1.4E-03	4.9E+02	1.7E+00	7.1E+02
6	87 - 98	Annual Average	8.0	2.3E-04	5.5E-01	2.1E+02	2.1E-02	2.8E-01	2.4E-01	9.6E-03	9.3E-03	9.9E+02	9.8E-04	1.5E+02	1.1E+00	5.1E+02
7	99 - 110	Annual Average	8.0	2.3E-04	6.7E-01	2.5E+02	2.4E-02	2.8E-01	2.6E-01	1.0E-02	1.0E-02	1.1E+03	1.1E-03	1.1E+02	1.1E+00	5.5E+02
8	111 - 122	Annual Average	8.0	2.1E-05	5.7E-02	2.3E+01	2.3E-03	2.7E-02	2.5E-02	9.9E-04	9.6E-04	1.0E+02	1.0E-04	8.5E+00	9.5E-02	5.2E+01

Year	GoldSim Month		CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)
RRNWT - DW criteria					0.05	1	1.5	0.3		0.001				0.05		200	
CEQG criteria[2]*					0.001/0.0089	0.002-0.004	0.12	0.3		0.000026					0.073		0.025-0.15
MMER criteria[6]**						0.3											0.5
1	27 - 38	Annual Average	6.5E+02	4.8E-01	7.5E-03	4.0E-01	6.7E-01	1.5E+01	5.3E+02	8.7E-05	2.0E+02	7.3E-02	1.8E+01	7.0E-02	7.7E-02	1.3E+03	1.9E-02
2	39 - 50	Annual Average	9.1E+02	7.2E-01	1.1E-02	6.8E-01	1.0E+00	2.2E+01	1.1E+03	1.0E-04	2.9E+02	1.1E-01	3.5E+01	1.7E-01	1.2E-01	2.0E+03	2.7E-02
3	51 - 62	Annual Average	1.0E+03	7.8E-01	1.2E-02	6.5E-01	1.1E+00	2.4E+01	1.3E+03	1.1E-04	3.3E+02	1.3E-01	4.8E+01	2.5E-01	1.8E-01	2.3E+03	3.9E-02
4	63 - 74	Annual Average	8.1E+02	6.2E-01	1.3E-02	4.4E-01	1.1E+00	1.6E+01	2.3E+03	1.1E-04	2.9E+02	1.3E-01	6.1E+01	3.9E-01	4.3E-01	2.2E+03	8.9E-02
Merging of Attenuation Pond and Tailing Reclaim Pond (in mid-year 5)																	
5	75 - 86	Annual Average	5.2E+02	4.4E-01	1.4E-02	2.9E-01	1.1E+00	7.0E+00	3.5E+03	1.3E-04	2.3E+02	1.4E-01	7.2E+01	5.2E-01	6.6E-01	1.9E+03	1.4E-01
6	87 - 98	Annual Average	2.6E+02	2.4E-01	9.7E-03	1.5E-01	6.8E-01	2.2E+00	2.7E+03	1.1E-04	1.4E+02	9.3E-02	4.6E+01	3.6E-01	5.2E-01	1.2E+03	1.1E-01
7	99 - 110	Annual Average	2.5E+02	2.4E-01	1.0E-02	1.5E-01	7.2E-01	1.8E+00	3.0E+03	1.3E-04	1.4E+02	9.9E-02	5.0E+01	4.3E-01	5.8E-01	1.2E+03	1.2E-01
8	111 - 122	Annual Average	2.3E+01	2.2E-02	9.9E-04	1.4E-02	6.7E-02	1.3E-01	2.8E+02	1.3E-05	1.3E+01	9.3E-03	4.8E+00	4.5E-02	5.5E-02	1.1E+02	1.1E-02

Year	GoldSim Month		NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria					11		0.01		0.006	0.01		500					5	500
CEQG criteria[2]*			4.92	0.019	2.9		0.001-0.007			0.001				0.0008			0.03	
MMER criteria[6]**							0.2										0.5	
1	27 - 38	Annual Average	9.7E-01	1.2E-02	2.0E+00	5.2E-01	1.0E-03	3.6E-01	5.0E-03	1.4E-02	6.8E+00	3.9E+03	9.6E-01	1.5E-03	9.3E-03	2.2E-02	2.0E-02	6.8E+03
2	39 - 50	Annual Average	2.1E+00	2.5E-02	3.7E+00	8.6E-01	2.0E-03	6.8E-01	7.2E-03	2.1E-02	1.1E+01	6.0E+03	1.5E+00	2.1E-03	1.5E-02	2.5E-02	3.2E-02	1.0E+04
3	51 - 62	Annual Average	1.8E+00	2.2E-02	3.6E+00	9.2E-01	2.4E-03	6.8E-01	1.9E-02	2.4E-02	1.2E+01	6.9E+03	2.0E+00	2.4E-03	2.1E-02	2.6E-02	3.9E-02	1.2E+04
4	63 - 74	Annual Average	1.5E+00	1.8E-02	3.2E+00	8.9E-01	2.6E-03	4.9E-01	8.1E-02	2.6E-02	1.2E+01	8.4E+03	2.7E+00	2.6E-03	4.1E-02	2.7E-02	5.3E-02	1.4E+04
Merging of Attenuation Pond and Tailing Reclaim Pond (in mid-year 5)																		
5	75 - 86	Annual Average	1.2E+00	1.5E-02	2.9E+00	9.0E-01	2.5E-03	3.3E-01	1.4E-01	2.7E-02	1.1E+01	9.7E+03	3.3E+00	2.7E-03	6.0E-02	2.8E-02	6.7E-02	1.5E+04
6	87 - 98	Annual Average	3.3E-01	4.0E-03	1.4E+00	6.1E-01	1.4E-03	1.3E-01	1.2E-01	1.9E-02	6.4E+00	7.1E+03	2.4E+00	1.9E-03	4.7E-02	2.7E-02	5.0E-02	1.1E+04
7	99 - 110	Annual Average	1.9E-01	9.9E-04	1.4E+00	6.7E-01	1.4E-03	1.2E-01	1.3E-01	2.1E-02	6.8E+00	7.7E+03	2.8E+00	2.1E-03	5.2E-02	2.7E-02	6.0E-02	1.4E+04
8	111 - 122	Annual Average	1.1E-02	5.9E-05	1.2E-01	6.4E-02	1.3E-04	1.0E-02	1.2E-02	1.9E-03	6.4E-01	7.2E+02	2.7E-01	2.0E-04	4.9E-03	2.5E-03	6.1E-03	1.3E+03

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
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* December 2006
** June 6, 2002

Table II-9
Predicted Water Quality (Dissolved Constituents) Probable Scenario
Goose Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

			pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria			*6.5-8.5*		*0.1*		*0.025*	*5*	*1*				*0.005*	*250*					*0.05*	*1*	*1.5*	*0.3*		*0.001*				*0.05*		*200*				*11*		*0.01*		*0.006*	*0.01*		*500*					*5*	*500*
CEQG criteria[2]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**						**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**		**0.000026**					**0.073**		**0.025-0.15**	**4.92**	**0.019**	**2.9**		**0.001-0.007**			**0.001**				**0.0008**			**0.03**	
MMER criteria[6]**			**6.0 - 9.5**				**0.5**								**1**					**0.3**											**0.5**					**0.2**										**0.5**	
Year	GoldSim Month																																														
8 METER ACTIVE ZONE																																															
Filling of Pit Lake																																															
5	79 - 86	Annual Average	6.7	1.4E-05	5.1E-02	1.4E+01	7.8E-04	9.8E-02	1.6E-02	3.5E-04	7.9E-05	2.1E+01	**4.1E-05**	1.6E+02	0.0E+00	0.0E+00	0.0E+00	8.8E-04	3.6E-04	7.4E-04	9.3E-02	1.1E-01	8.3E+01	1.8E-05	2.1E+00	3.5E-03	7.4E+00	***5.2E-02***	3.6E-03	3.8E+01	1.4E-03	2.5E-01	1.6E-04	2.8E-01	1.5E-02	5.6E-04	4.4E-02	2.4E-04	3.4E-04	7.5E-01	9.9E+00	7.5E-02	6.1E-05	8.1E-04	8.1E-03	3.6E-03	2.6E+02
6	87 - 98	Annual Average	6.7	1.4E-05	5.1E-02	1.3E+01	7.7E-04	9.7E-02	1.6E-02	3.6E-04	7.7E-05	2.0E+01	**4.2E-05**	1.6E+02	0.0E+00	0.0E+00	0.0E+00	8.9E-04	3.7E-04	7.5E-04	9.4E-02	1.1E-01	8.1E+01	1.9E-05	2.0E+00	3.5E-03	7.2E+00	***5.1E-02***	3.5E-03	3.7E+01	1.4E-03	1.7E-01	1.1E-04	2.0E-01	1.4E-02	5.6E-04	4.2E-02	2.4E-04	3.6E-04	7.3E-01	9.7E+00	7.2E-02	6.3E-05	7.9E-04	8.5E-03	3.7E-03	2.5E+02
7	99 - 110	Annual Average	6.7	1.4E-05	5.4E-02	1.3E+01	7.4E-04	9.3E-02	1.5E-02	3.6E-04	7.2E-05	1.9E+01	**4.2E-05**	1.5E+02	0.0E+00	0.0E+00	0.0E+00	9.5E-04	3.8E-04	7.5E-04	9.3E-02	1.1E-01	7.6E+01	2.0E-05	2.0E+00	3.4E-03	6.7E+00	4.8E-02	3.3E-03	3.4E+01	1.4E-03	1.3E-01	7.7E-05	1.4E-01	1.3E-02	5.3E-04	3.9E-02	2.4E-04	3.6E-04	6.9E-01	9.2E+00	6.7E-02	6.5E-05	7.5E-04	8.7E-03	3.6E-03	2.3E+02
8	111 - 122	Annual Average	6.7	1.3E-05	5.4E-02	1.2E+01	7.1E-04	8.9E-02	1.5E-02	3.7E-04	6.7E-05	1.8E+01	**4.3E-05**	1.3E+02	0.0E+00	0.0E+00	0.0E+00	9.8E-04	3.8E-04	7.5E-04	9.2E-02	1.0E-01	7.0E+01	2.0E-05	1.9E+00	3.3E-03	6.3E+00	4.4E-02	3.0E-03	3.2E+01	1.4E-03	1.0E-01	6.1E-05	1.1E-01	1.2E-02	5.1E-04	3.6E-02	2.4E-04	3.6E-04	6.5E-01	8.8E+00	6.2E-02	6.6E-05	7.0E-04	9.0E-03	3.6E-03	2.1E+02
9	123 - 134	Annual Average	6.7	1.3E-05	5.4E-02	1.2E+01	6.7E-04	8.4E-02	1.4E-02	3.7E-04	6.2E-05	1.6E+01	**4.2E-05**	1.2E+02	0.0E+00	0.0E+00	0.0E+00	9.9E-04	3.9E-04	7.5E-04	9.1E-02	9.6E-02	6.5E+01	2.1E-05	1.8E+00	3.2E-03	5.8E+00	4.1E-02	2.8E-03	2.9E+01	1.4E-03	2.3E-01	1.4E-04	2.6E-01	1.1E-02	4.8E-04	3.3E-02	2.4E-04	3.7E-04	6.0E-01	8.3E+00	5.6E-02	6.8E-05	6.6E-04	9.3E-03	3.5E-03	2.0E+02
10	135 - 146	Annual Average	6.7	1.3E-05	5.3E-02	1.1E+01	6.3E-04	8.0E-02	1.4E-02	3.8E-04	5.6E-05	1.5E+01	**4.2E-05**	1.1E+02	0.0E+00	0.0E+00	0.0E+00	9.9E-04	4.0E-04	7.4E-04	8.9E-02	9.0E-02	5.9E+01	2.2E-05	1.7E+00	3.1E-03	5.3E+00	3.7E-02	2.6E-03	2.6E+01	1.4E-03	3.7E-01	2.3E-04	4.1E-01	1.0E-02	4.6E-04	3.0E-02	2.4E-04	3.8E-04	5.5E-01	7.7E+00	5.1E-02	7.0E-05	6.0E-04	9.7E-03	3.5E-03	1.8E+02
11	147 - 158	Annual Average	6.7	1.3E-05	5.2E-02	1.0E+01	5.9E-04	7.6E-02	1.3E-02	3.9E-04	5.1E-05	1.3E+01	**4.2E-05**	9.9E+01	0.0E+00	0.0E+00	0.0E+00	9.8E-04	4.0E-04	7.3E-04	8.8E-02	8.4E-02	5.4E+01	2.3E-05	1.6E+00	3.0E-03	4.8E+00	3.4E-02	2.3E-03	2.3E+01	1.3E-03	3.3E-01	2.0E-04	3.7E-01	9.3E-03	4.3E-04	2.7E-02	2.4E-04	3.8E-04	5.0E-01	7.2E+00	4.5E-02	7.2E-05	5.6E-04	1.0E-02	3.4E-03	1.6E+02
12	159 - 170	Annual Average	6.7	1.3E-05	5.3E-02	1.0E+01	5.7E-04	7.5E-02	1.3E-02	4.0E-04	4.9E-05	1.3E+01	**4.2E-05**	9.3E+01	0.0E+00	0.0E+00	0.0E+00	1.0E-03	4.1E-04	7.4E-04	8.8E-02	8.2E-02	5.1E+01	2.3E-05	1.6E+00	3.0E-03	4.6E+00	3.2E-02	2.2E-03	2.2E+01	1.4E-03	3.1E-01	1.9E-04	3.5E-01	8.8E-03	4.2E-04	2.6E-02	2.4E-04	3.9E-04	4.9E-01	7.1E+00	4.3E-02	7.3E-05	5.4E-04	1.0E-02	3.4E-03	1.5E+02
13	171 - 182	Annual Average	6.7	1.3E-05	5.6E-02	1.0E+01	5.7E-04	7.5E-02	1.3E-02	4.0E-04	4.9E-05	1.3E+01	**4.3E-05**	9.3E+01	0.0E+00	0.0E+00	0.0E+00	1.1E-03	4.1E-04	7.5E-04	9.0E-02	8.3E-02	5.1E+01	2.4E-05	1.6E+00	3.0E-03	4.6E+00	3.2E-02	2.2E-03	2.2E+01	1.4E-03	3.1E-01	1.9E-04	3.5E-01	8.9E-03	4.2E-04	2.6E-02	2.4E-04	3.9E-04	4.9E-01	7.1E+00	4.3E-02	7.3E-05	5.4E-04	1.0E-02	3.4E-03	1.5E+02
Long-term Goose Pit Lake Water Quality																																															
23	291 - 300	Annual Average	6.7	1.3E-05	6.5E-02	1.0E+01	5.8E-04	7.6E-02	1.3E-02	4.0E-04	5.1E-05	1.3E+01	**4.7E-05**	9.4E+01	0.0E+00	0.0E+00	0.0E+00	1.2E-03	4.2E-04	8.0E-04	9.5E-02	8.8E-02	5.2E+01	2.5E-05	1.6E+00	3.1E-03	4.7E+00	3.4E-02	2.3E-03	2.2E+01	1.5E-03	3.2E-01	2.0E-04	3.5E-01	9.2E-03	4.3E-04	2.6E-02	2.4E-04	4.0E-04	5.2E-01	7.5E+00	4.4E-02	7.5E-05	5.6E-04	1.0E-02	3.6E-03	1.6E+02

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table II-10
Predicted Water Quality (Dissolved Constituents) Probable Scenario
Portage Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005	250		
CEQG criteria[2]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007			
MMER criteria[6]**			6.0 - 9.5				0.5								1	
8 METER ACTIVE ZONE																
Filling of Pit Lake																
5	75 - 86	Annual Average	6.7	6.7E-06	2.4E-02	3.4E+00	1.5E-04	3.0E-02	6.0E-03	3.0E-04	3.4E-06	1.3E+00	**2.3E-05**	3.2E-01	0.0E+00	0.0E+00
6	87 - 98	Annual Average	6.7	1.5E-05	5.0E-02	1.3E+01	3.8E-03	1.0E-01	1.7E-02	5.1E-04	7.6E-05	1.7E+01	**5.0E-05**	1.3E+02	0.0E+00	0.0E+00
7	99 - 110	Annual Average	6.7	1.5E-05	4.7E-02	1.3E+01	**5.3E-03**	1.0E-01	1.7E-02	5.2E-04	7.9E-05	1.7E+01	**5.0E-05**	1.2E+02	0.0E+00	0.0E+00
8	111 - 122	Annual Average	6.7	1.5E-05	4.4E-02	1.2E+01	**6.2E-03**	9.8E-02	1.6E-02	5.2E-04	7.7E-05	1.5E+01	**4.9E-05**	1.1E+02	0.0E+00	0.0E+00
9	123 - 134	Annual Average	6.7	1.4E-05	4.1E-02	1.2E+01	**6.7E-03**	9.4E-02	1.6E-02	5.3E-04	7.5E-05	1.4E+01	**4.8E-05**	9.9E+01	0.0E+00	0.0E+00
10	135 - 146	Annual Average	6.7	1.4E-05	3.9E-02	1.1E+01	**7.1E-03**	9.1E-02	1.5E-02	5.3E-04	7.1E-05	1.3E+01	**4.7E-05**	8.9E+01	0.0E+00	0.0E+00
11	147 - 158	Annual Average	6.7	1.3E-05	3.6E-02	1.0E+01	**6.8E-03**	8.6E-02	1.5E-02	5.3E-04	6.5E-05	1.1E+01	**4.5E-05**	7.7E+01	0.0E+00	0.0E+00
12	159 - 170	Annual Average	6.7	1.3E-05	3.3E-02	9.4E+00	**5.8E-03**	7.9E-02	1.4E-02	5.1E-04	5.6E-05	1.0E+01	**4.3E-05**	6.6E+01	0.0E+00	0.0E+00
13	171 - 182	Annual Average	6.7	1.2E-05	3.3E-02	9.1E+00	**5.5E-03**	7.7E-02	1.3E-02	5.1E-04	5.2E-05	9.5E+00	**4.2E-05**	6.2E+01	0.0E+00	0.0E+00
Long-term Portage Pit Lake Water Quality																
23	291 - 300	Annual Average	6.7	1.3E-05	5.5E-02	9.4E+00	**5.4E-03**	7.6E-02	1.3E-02	5.1E-04	5.5E-05	9.5E+00	**5.0E-05**	6.1E+01	0.0E+00	0.0E+00

Year	GoldSim Month	Actual Month	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)
RRNWT - DW criteria					0.05	1	1.5	0.3		0.001				0.05		200	
CEQG criteria[2]*					0.001/0.0089	0.002-0.004	0.12	0.3		0.000026					0.073		0.025-0.15
MMER criteria[6]**						0.3											0.5
8 METER ACTIVE ZONE																	
Filling of Pit Lake																	
5	75 - 86	Annual Average	0.0E+00	5.3E-04	3.1E-04	4.1E-04	4.7E-02	2.0E-02	5.5E+00	1.8E-05	6.0E-01	1.5E-03	5.1E-01	2.4E-03	3.0E-04	6.0E-01	6.4E-04
6	87 - 98	Annual Average	0.0E+00	1.1E-03	5.1E-04	1.3E-03	1.0E-01	1.2E-01	7.0E+01	**2.7E-05**	2.2E+00	3.8E-03	6.3E+00	***5.3E-02***	3.1E-03	3.0E+01	3.6E-03
7	99 - 110	Annual Average	0.0E+00	1.1E-03	5.2E-04	1.5E-03	9.7E-02	1.2E-01	6.7E+01	**2.7E-05**	2.2E+00	3.7E-03	6.0E+00	***5.6E-02***	3.0E-03	2.9E+01	4.5E-03
8	111 - 122	Annual Average	0.0E+00	1.1E-03	5.1E-04	1.6E-03	9.3E-02	1.2E-01	6.2E+01	**2.7E-05**	2.1E+00	3.6E-03	5.6E+00	***5.6E-02***	2.7E-03	2.6E+01	5.1E-03
9	123 - 134	Annual Average	0.0E+00	1.1E-03	5.2E-04	1.6E-03	8.9E-02	1.2E-01	5.7E+01	**2.7E-05**	2.1E+00	3.4E-03	5.1E+00	***5.5E-02***	2.5E-03	2.4E+01	5.4E-03
10	135 - 146	Annual Average	0.0E+00	1.1E-03	5.2E-04	1.7E-03	8.7E-02	1.2E-01	5.2E+01	**2.7E-05**	2.0E+00	3.3E-03	4.7E+00	***5.3E-02***	2.3E-03	2.1E+01	5.7E-03
11	147 - 158	Annual Average	0.0E+00	1.0E-03	5.1E-04	1.6E-03	8.3E-02	1.1E-01	4.6E+01	**2.7E-05**	1.9E+00	3.2E-03	4.2E+00	4.9E-02	2.1E-03	1.9E+01	5.4E-03
12	159 - 170	Annual Average	0.0E+00	9.3E-04	5.0E-04	1.4E-03	7.9E-02	9.6E-02	4.1E+01	2.6E-05	1.7E+00	3.0E-03	3.7E+00	4.2E-02	1.9E-03	1.6E+01	4.7E-03
13	171 - 182	Annual Average	0.0E+00	9.2E-04	5.0E-04	1.4E-03	7.9E-02	9.2E-02	3.9E+01	**2.6E-05**	1.7E+00	3.0E-03	3.5E+00	3.9E-02	1.8E-03	1.5E+01	4.5E-03
Long-term Portage Pit Lake Water Quality																	
23	291 - 300	Annual Average	0.0E+00	1.3E-03	5.0E-04	1.5E-03	8.9E-02	1.0E-01	3.8E+01	**2.9E-05**	1.7E+00	3.0E-03	3.5E+00	4.1E-02	1.7E-03	1.5E+01	4.7E-03

Year	GoldSim Month	Actual Month	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria					11		0.01		0.006	0.01		500					5	500
CEQG criteria[2]*			4.92	0.019	2.9		0.001-0.007			0.001				0.0008			0.03	
MMER criteria[6]**							0.2										0.5	
8 METER ACTIVE ZONE																		
Filling of Pit Lake																		
5	75 - 86	Annual Average	0.0E+00	0.0E+00	2.7E-03	5.1E-04	1.5E-04	1.2E-03	1.5E-04	3.0E-04	5.7E-02	1.8E+00	4.6E-04	5.9E-05	9.4E-05	8.8E-03	1.8E-03	8.8E+00
6	87 - 98	Annual Average	6.2E-01	3.8E-04	6.9E-01	1.4E-02	5.9E-04	3.5E-02	1.2E-03	5.0E-04	6.5E-01	9.3E+00	6.3E-02	9.2E-05	7.0E-04	1.3E-02	1.3E-02	1.6E+02
7	99 - 110	Annual Average	6.2E-01	3.8E-04	6.9E-01	1.5E-02	5.9E-04	3.3E-02	1.6E-03	5.0E-04	6.4E-01	9.1E+00	6.1E-02	9.3E-05	6.7E-04	1.3E-02	1.8E-02	2.0E+02
8	111 - 122	Annual Average	6.1E-01	3.7E-04	6.8E-01	1.5E-02	5.7E-04	3.0E-02	1.9E-03	5.0E-04	6.1E-01	8.6E+00	5.8E-02	9.3E-05	6.3E-04	1.2E-02	2.0E-02	1.8E+02
9	123 - 134	Annual Average	6.0E-01	3.7E-04	6.7E-01	1.5E-02	5.6E-04	2.7E-02	2.0E-03	5.0E-04	5.7E-01	8.2E+00	5.4E-02	9.4E-05	5.8E-04	1.3E-02	2.2E-02	1.7E+02
10	135 - 146	Annual Average	6.1E-01	3.7E-04	6.7E-01	1.4E-02	5.4E-04	2.5E-02	2.1E-03	5.1E-04	5.3E-01	7.8E+00	4.9E-02	9.5E-05	5.4E-04	1.3E-02	2.3E-02	1.5E+02
11	147 - 158	Annual Average	5.7E-01	3.5E-04	6.3E-01	1.3E-02	5.0E-04	2.2E-02	2.0E-03	5.0E-04	4.7E-01	7.1E+00	4.4E-02	9.4E-05	4.8E-04	1.3E-02	2.2E-02	1.3E+02
12	159 - 170	Annual Average	4.8E-01	3.0E-04	5.4E-01	1.1E-02	4.6E-04	1.9E-02	1.8E-03	4.9E-04	4.1E-01	6.4E+00	3.8E-02	9.2E-05	4.3E-04	1.3E-02	1.9E-02	1.2E+02
13	171 - 182	Annual Average	4.5E-01	2.8E-04	5.0E-01	1.0E-02	4.5E-04	1.8E-02	1.7E-03	4.9E-04	3.9E-01	6.2E+00	3.5E-02	9.3E-05	4.1E-04	1.3E-02	1.8E-02	1.1E+02
Long-term Portage Pit Lake Water Quality																		
23	291 - 300	Annual Average	4.4E-01	2.7E-04	5.0E-01	1.1E-02	4.5E-04	1.7E-02	1.6E-03	4.8E-04	4.4E-01	6.7E+00	3.5E-02	9.1E-05	4.4E-04	1.3E-02	1.8E-02	1.1E+02

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).

* December 2006

** June 6, 2002

APPENDIX III

Table III-1
Predicted Water Quality (Dissolved Constituents) Possible Poor End Scenario
Vault Rock Storage Facility
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005
CEQG criteria[1]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007
MMER criteria[5]**			6.0 - 9.5				0.5						
8 METER ACTIVE ZONE													
Pit start at month 72													
	80	June	8.0	1.5E-16	1.9E-12	2.2E-09	3.5E-12	3.6E-13	7.9E-13	7.6E-15	7.6E-15	1.1E-09	7.6E-16
	81	July	8.0	6.4E-07	7.7E-03	2.0E+00	1.5E-02	1.5E-03	3.3E-03	3.1E-05	3.1E-05	1.0E+00	3.1E-06
	82	August	8.0	1.4E-06	1.7E-02	6.0E+00	3.1E-02	3.2E-03	7.1E-03	6.8E-05	6.8E-05	3.0E+00	6.8E-06
5	83	September	8.0	1.7E-06	2.1E-02	8.5E+00	3.9E-02	4.1E-03	8.9E-03	8.5E-05	8.5E-05	4.2E+00	8.5E-06
	92	June	8.0	6.7E-07	8.1E-03	2.8E+00	1.5E-02	1.6E-03	3.5E-03	3.3E-05	3.3E-05	1.4E+00	3.3E-06
	93	July	8.0	1.0E-06	1.3E-02	3.7E+00	2.4E-02	2.5E-03	5.4E-03	5.2E-05	5.2E-05	1.8E+00	5.2E-06
	94	August	8.0	1.9E-06	2.3E-02	8.2E+00	4.4E-02	4.5E-03	9.9E-03	9.5E-05	9.5E-05	4.1E+00	9.5E-06
6	95	September	8.0	2.3E-06	2.8E-02	1.1E+01	5.3E-02	5.5E-03	1.2E-02	1.1E-04	1.1E-04	5.6E+00	1.1E-05
	104	June	8.0	1.4E-06	1.8E-02	6.2E+00	3.3E-02	3.4E-03	7.4E-03	7.1E-05	7.1E-05	3.1E+00	7.1E-06
	105	July	8.0	1.4E-06	1.7E-02	5.3E+00	3.3E-02	3.4E-03	7.3E-03	7.0E-05	7.0E-05	2.6E+00	7.0E-06
	106	August	8.0	2.3E-06	2.7E-02	9.6E+00	5.1E-02	5.3E-03	1.2E-02	1.1E-04	1.1E-04	4.8E+00	1.1E-05
7	107	September	8.0	2.6E-06	3.1E-02	1.2E+01	5.9E-02	6.1E-03	1.3E-02	1.3E-04	1.3E-04	6.1E+00	1.3E-05
	116	June	8.0	7.7E-06	9.3E-02	2.3E+01	1.8E-01	1.8E-02	3.9E-02	3.8E-04	3.8E-04	1.2E+01	3.8E-05
	117	July	8.0	9.4E-06	1.1E-01	2.8E+01	2.2E-01	2.2E-02	4.8E-02	4.6E-04	4.6E-04	1.4E+01	4.6E-05
	118	August	8.0	1.0E-05	1.3E-01	3.1E+01	2.4E-01	2.5E-02	5.3E-02	5.1E-04	5.1E-04	1.6E+01	5.1E-05
8	119	September	8.0	1.1E-05	1.4E-01	3.5E+01	2.5E-01	2.6E-02	5.7E-02	5.5E-04	5.5E-04	1.7E+01	5.5E-05
Long-Term Drainage Water Quality													
23	296 - 299	Summer Average	8.0	2.7E-05	3.3E-01	8.0E+01	6.1E-01	6.3E-02	1.4E-01	1.3E-03	1.3E-03	4.0E+01	1.3E-04

Year	GoldSim Month	Actual Month	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)
RRNWT - DW criteria			250					0.05	1	1.5	0.3		0.001				0.05
CEQG criteria[1]*								0.001/0.0089	0.002-0.004	0.12	0.3		0.000026				
MMER criteria[5]**				1					0.3								
	80	June	7.6E-12	0.0E+00	0.0E+00	0.0E+00	9.8E-15	7.6E-15	5.0E-14	3.0E-12	4.6E-13	4.3E-09	7.6E-16	2.0E-10	7.6E-14	3.7E-10	1.5E-13
	81	July	7.0E-03	0.0E+00	0.0E+00	0.0E+00	4.0E-05	3.1E-05	2.1E-04	2.7E-03	4.2E-04	4.0E+00	3.1E-06	1.8E-01	7.0E-05	3.4E-01	6.4E-04
	82	August	2.1E-02	0.0E+00	0.0E+00	0.0E+00	8.7E-05	6.8E-05	4.5E-04	8.1E-03	1.3E-03	1.2E+01	6.8E-06	5.4E-01	2.1E-04	1.0E+00	1.4E-03
5	83	September	2.9E-02	0.0E+00	0.0E+00	0.0E+00	1.1E-04	8.5E-05	5.7E-04	1.1E-02	1.8E-03	1.7E+01	8.5E-06	7.6E-01	2.9E-04	1.4E+00	1.7E-03
	92	June	9.7E-03	0.0E+00	0.0E+00	0.0E+00	4.3E-05	3.3E-05	2.2E-04	3.8E-03	5.9E-04	5.5E+00	3.3E-06	2.5E-01	9.7E-05	4.8E-01	6.7E-04
	93	July	1.3E-02	0.0E+00	0.0E+00	0.0E+00	6.6E-05	5.2E-05	3.4E-04	4.9E-03	7.7E-04	7.2E+00	5.2E-06	3.3E-01	1.3E-04	6.2E-01	1.0E-03
	94	August	2.8E-02	0.0E+00	0.0E+00	0.0E+00	1.2E-04	9.5E-05	6.3E-04	1.1E-02	1.7E-03	1.6E+01	9.5E-06	7.4E-01	2.8E-04	1.4E+00	1.9E-03
6	95	September	3.8E-02	0.0E+00	0.0E+00	0.0E+00	1.5E-04	1.1E-04	7.7E-04	1.5E-02	2.3E-03	2.2E+01	1.1E-05	1.0E+00	3.8E-04	1.9E+00	2.3E-03
	104	June	2.1E-02	0.0E+00	0.0E+00	0.0E+00	9.2E-05	7.1E-05	4.8E-04	8.3E-03	1.3E-03	1.2E+01	7.1E-06	5.5E-01	2.1E-04	1.0E+00	1.4E-03
	105	July	1.8E-02	0.0E+00	0.0E+00	0.0E+00	9.1E-05	7.0E-05	4.7E-04	7.1E-03	1.1E-03	1.0E+01	7.0E-06	4.8E-01	1.8E-04	9.0E-01	1.4E-03
	106	August	3.3E-02	0.0E+00	0.0E+00	0.0E+00	1.4E-04	1.1E-04	7.4E-04	1.3E-02	2.0E-03	1.9E+01	1.1E-05	8.6E-01	3.3E-04	1.6E+00	2.3E-03
7	107	September	4.2E-02	0.0E+00	0.0E+00	0.0E+00	1.6E-04	1.3E-04	8.4E-04	1.6E-02	2.6E-03	2.4E+01	1.3E-05	1.1E+00	4.2E-04	2.1E+00	2.6E-03
	116	June	8.0E-02	0.0E+00	0.0E+00	0.0E+00	4.9E-04	3.8E-04	2.5E-03	3.1E-02	4.9E-03	4.6E+01	3.8E-05	2.1E+00	8.0E-04	4.0E+00	7.7E-03
	117	July	9.5E-02	0.0E+00	0.0E+00	0.0E+00	6.0E-04	4.6E-04	3.1E-03	3.7E-02	5.8E-03	5.4E+01	4.6E-05	2.5E+00	9.5E-04	4.7E+00	9.4E-03
	118	August	1.1E-01	0.0E+00	0.0E+00	0.0E+00	6.6E-04	5.1E-04	3.4E-03	4.2E-02	6.5E-03	6.1E+01	5.1E-05	2.8E+00	1.1E-03	5.3E+00	1.0E-02
8	119	September	1.2E-01	0.0E+00	0.0E+00	0.0E+00	7.1E-04	5.5E-04	3.7E-03	4.6E-02	7.2E-03	6.7E+01	5.5E-05	3.1E+00	1.2E-03	5.8E+00	1.1E-02
23	296 - 299	Summer Average	2.8E-01	0.0E+00	0.0E+00	0.0E+00	1.7E-03	1.3E-03	8.8E-03	1.1E-01	1.7E-02	1.6E+02	1.3E-04	7.2E+00	2.8E-03	1.4E+01	2.7E-02

Year	GoldSim Month	Actual Month	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
RRNWT - DW criteria				200				11	0.01		0.006	0.01		500					5	500	
CEQG criteria[1]*			0.073		0.025-0.15	4.92	0.019	2.9	0.001-0.007			0.001				0.0008			0.03		
MMER criteria[5]**					0.5				0.2										0.5		
	80	June	2.1E-12	5.6E+01	7.6E-15	1.5E+02	1.8E+00	1.7E+02	7.6E-16	1.1E-12	5.4E-13	3.7E-14	1.1E-10	2.3E-09	6.6E-12	1.5E-15	1.3E-12	2.7E-14	3.5E-14	3.7E+02	22,601
	81	July	8.6E-03	3.8E+01	3.1E-05	1.0E+02	1.2E+00	1.1E+02	3.1E-06	9.7E-04	2.2E-03	1.5E-04	9.7E-02	2.1E+00	2.7E-02	6.4E-06	5.5E-03	1.1E-04	1.5E-04	2.6E+02	244
	82	August	1.9E-02	4.1E+01	6.8E-05	1.1E+02	1.3E+00	1.2E+02	6.8E-06	2.9E-03	4.8E-03	3.3E-04	2.9E-01	6.3E+00	5.9E-02	1.4E-05	1.2E-02	2.5E-04	3.1E-04	2.9E+02	3,373
5	83	September	2.3E-02	3.7E+01	8.5E-05	9.9E+01	1.2E+00	1.1E+02	8.5E-06	4.1E-03	6.0E-03	4.2E-04	4.1E-01	8.9E+00	7.4E-02	1.7E-05	1.5E-02	3.1E-04	3.9E-04	2.7E+02	6,198
	92	June	9.1E-03	3.0E+01	3.3E-05	7.9E+01	9.6E-01	8.9E+01	3.3E-06	1.4E-03	2.3E-03	1.6E-04	1.4E-01	3.0E+00	2.9E-02	6.7E-06	5.8E-03	1.2E-04	1.5E-04	2.1E+02	56,502
	93	July	1.4E-02	2.0E+01	5.2E-05	5.2E+01	6.4E-01	5.9E+01	5.2E-06	1.8E-03	3.7E-03	2.5E-04	1.8E-01	3.8E+00	4.5E-02	1.0E-05	9.0E-03	1.9E-04	2.4E-04	1.4E+02	542
	94	August	2.6E-02	2.2E+01	9.5E-05	5.9E+01	7.1E-01	6.6E+01	9.5E-06	3.9E-03	6.7E-03	4.7E-04	3.9E-01	8.6E+00	8.2E-02	1.9E-05	1.6E-02	3.4E-04	4.4E-04	1.7E+02	6,746
6	95	September	3.2E-02	2.1E+01	1.1E-04	5.5E+01	6.7E-01	6.2E+01	1.1E-05	5.3E-03	8.2E-03	5.7E-04	5.3E-01	1.2E+01	1.0E-01	2.3E-05	2.0E-02	4.2E-04	5.3E-04	1.7E+02	11,269
	104	June	2.0E-02	2.4E+01	7.1E-05	6.3E+01	7.7E-01	7.1E+01	7.1E-06	2.9E-03	5.1E-03	3.5E-04	2.9E-01	6.5E+00	6.2E-02	1.4E-05	1.2E-02	2.6E-04	3.3E-04	1.8E+02	56,502
	105	July	1.9E-02	1.5E+01	7.0E-05	4.0E+01	4.8E-01	4.5E+01	7.0E-06	2.5E-03	5.0E-03	3.5E-04	2.5E-01	5.6E+00	6.1E-02	1.4E-05	1.2E-02	2.5E-04	3.3E-04	1.2E+02	542
	106	August	3.1E-02	1.6E+01	1.1E-04	4.3E+01	5.3E-01	4.9E+01	1.1E-05	4.6E-03	7.9E-03	5.5E-04	4.6E-01	1.0E+01	9.6E-02	2.3E-05	1.9E-02	4.0E-04	5.1E-04	1.4E+02	6,746
7	107	September	3.5E-02	1.5E+01	1.3E-04	4.0E+01	4.8E-01	4.5E+01	1.3E-05	5.8E-03	9.0E-03	6.2E-04	5.8E-01	1.3E+01	1.1E-01	2.6E-05	2.2E-02	4.6E-04	5.9E-04	1.3E+02	11,269
	116	June	1.0E-01	4.1E+00	3.8E-04	1.0E+01	1.2E-01	1.1E+01	3.8E-05	1.1E-02	2.7E-02	1.9E-03	1.1E+00	2.4E+01	3.3E-01	7.7E-05	6.6E-02	1.4E-03	1.8E-03	9.3E+01	161,430
	117	July	1.3E-01	1.5E+00	4.6E-04	2.9E+00	3.5E-02	3.3E+00	4.6E-05	1.3E-02	3.3E-02	2.3E-03	1.3E+00	2.9E+01	4.0E-01	9.4E-05	8.1E-02	1.7E-03	2.2E-03	8.8E+01	2,712
	118	August	1.4E-01	1.4E+00	5.1E-04	2.6E+00	3.2E-02	2.9E+00	5.1E-05	1.5E-02	3.6E-02	2.5E-03	1.5E+00	3.3E+01	4.5E-01	1.0E-04	8.9E-02	1.9E-03	2.4E-03	9.8E+01	33,731
8	119	September	1.5E-01	1.2E+00	5.5E-04	2.0E+00	2.4E-02	2.2E+00	5.5E-05	1.6E-02	3.9E-02	2.7E-03	1.6E+00	3.6E+01	4.8E-01	1.1E-04	9.5E-02	2.0E-03	2.5E-03	1.1E+02	56,345
23	296 - 299	Summer Average	3.6E-01	1.1E+00	1.3E-03	1.8E-14	2.2E-16	2.8E-03	1.3E-04	3.8E-02	9.4E-02	6.5E-03	3.8E+00	8.4E+01	1.2E+00	2.7E-04	2.3E-01	4.8E-03	6.1E-03	2.3E+02	63,555

NOTES:
1. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
2. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
3. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
4. Freshwater aquatic life criterion or guideline is hardness dependant.
5. Maximum authorized monthly mean concentration (based on **total** concentration).

* December 2006
** June 6, 2002

Table III-2
Predicted Water Quality (Dissolved Constituents) Possible Poor End Scenario
Vault Open Pit Sump
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)
RRNWT - DW criteria			***6.5-8.5***		***0.1***		***0.025***	***5***	***1***				***0.005***	***250***		
CEQG criteria[2]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**			
MMER criteria[6]**			**6.0 - 9.5**				**0.5**								**1**	
5	80 - 83	Summer Average	8.0	2.3E-06	2.8E-02	9.7E+00	***5.2E-02***	5.4E-03	1.2E-02	1.1E-04	1.1E-04	4.8E+00	**1.1E-05**	3.3E-02	0.0E+00	0.0E+00
6	92 - 95	Summer Average	8.0	3.9E-06	4.7E-02	1.7E+01	***8.9E-02***	9.1E-03	2.0E-02	1.9E-04	1.9E-04	8.2E+00	**1.9E-05**	5.7E-02	0.0E+00	0.0E+00
7	104 - 107	Summer Average	8.0	5.4E-06	6.6E-02	2.3E+01	***1.2E-01***	1.3E-02	2.8E-02	2.7E-04	2.7E-04	1.2E+01	**2.7E-05**	7.9E-02	0.0E+00	0.0E+00
Start flooding Vault Pit																

Year	GoldSim Month		CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)
RRNWT - DW criteria					***0.05***	***1***	***1.5***	***0.3***		***0.001***				***0.05***		***200***
CEQG criteria[2]*					**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**		**0.000026**					**0.073**	
MMER criteria[6]**						**0.3**										
5	80 - 83	Summer Average	0.0E+00	1.4E-04	1.1E-04	7.5E-04	1.3E-02	2.0E-03	1.9E+01	1.1E-05	8.7E-01	3.3E-04	1.6E+00	2.3E-03	3.1E-02	4.1E+01
6	92 - 95	Summer Average	0.0E+00	2.5E-04	1.9E-04	1.3E-03	2.2E-02	3.5E-03	3.2E+01	1.9E-05	1.5E+00	5.7E-04	2.8E+00	3.9E-03	5.3E-02	2.9E+01
7	104 - 107	Summer Average	0.0E+00	3.4E-04	2.7E-04	1.8E-03	3.1E-02	4.8E-03	4.5E+01	**2.7E-05**	2.1E+00	7.9E-04	3.9E+00	5.4E-03	**7.3E-02**	2.1E+01
Start flooding Vault Pit																

Year	GoldSim Month		Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria						***11***	***0.01***		***0.006***	***0.01***		***500***					***5***	***500***
CEQG criteria[2]*			**0.025-0.15**	**4.92**	**0.019**	**2.9**	**0.001-0.007**			**0.001**				**0.0008**			**0.03**	
MMER criteria[6]**			**0.5**				**0.2**										**0.5**	
5	80 - 83	Summer Average	1.1E-04	**1.1E+02**	**1.3E+00**	***1.2E+02***	1.1E-05	4.6E-03	***8.0E-03***	5.5E-04	4.6E-01	1.0E+01	9.7E-02	2.3E-05	1.9E-02	4.1E-04	5.2E-04	3.0E+02
6	92 - 95	Summer Average	1.9E-04	**7.6E+01**	**9.2E-01**	***8.6E+01***	1.9E-05	7.9E-03	***1.4E-02***	9.4E-04	7.9E-01	1.7E+01	1.7E-01	3.9E-05	3.3E-02	6.9E-04	8.9E-04	2.4E+02
7	104 - 107	Summer Average	2.7E-04	**5.5E+01**	**6.7E-01**	***6.2E+01***	2.7E-05	1.1E-02	***1.9E-02***	**1.3E-03**	1.1E+00	2.4E+01	2.3E-01	5.4E-05	4.6E-02	9.7E-04	1.2E-03	2.1E+02
Start flooding Vault Pit																		

NOTES:
1. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
2. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
3. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
4. Freshwater aquatic life criterion or guideline is hardness dependant.
5. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Date Printed 21/08/2007
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Table III-3
Predicted Water Quality (Dissolved Constituents) Possible Poor End Scenario
Vault Attenuation Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)
RRNWT - DW criteria			***6.5-8.5***		***0.1***		***0.025***	***5***	***1***				***0.005***	***250***		
CEQG criteria[2]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**			
MMER criteria[6]**			**6.0 - 9.5**				**0.5**								**1**	
8 METER ACTIVE ZONE																
	68	June	No Discharge													
	69	July	6.6	2.8E-05	6.0E-02	1.2E+01	1.5E-04	1.5E-02	5.2E-03	2.0E-04	1.0E-04	2.7E+00	**6.6E-04**	8.0E-01	0.0E+00	0.0E+00
	70	August	6.6	3.0E-05	6.4E-02	1.3E+01	1.6E-04	1.5E-02	5.3E-03	2.0E-04	1.1E-04	2.8E+00	**6.2E-04**	8.3E-01	0.0E+00	0.0E+00
4	71	September	6.6	1.5E-05	3.3E-02	6.5E+00	7.7E-05	6.8E-03	2.6E-03	9.7E-05	5.7E-05	1.4E+00	**2.6E-04**	4.1E-01	0.0E+00	0.0E+00
	80	June	6.6	1.1E-05	2.5E-02	4.3E+00	4.4E-05	2.2E-03	1.4E-03	4.4E-05	4.4E-05	8.3E-01	2.2E-06	2.7E-01	0.0E+00	0.0E+00
	81	July	6.6	7.0E-05	***1.6E-01***	2.7E+01	6.1E-04	1.4E-02	8.7E-03	2.8E-04	2.8E-04	5.3E+00	**1.4E-05**	1.7E+00	0.0E+00	0.0E+00
	82	August	6.6	3.1E-06	1.1E-02	3.0E+00	**1.0E-02**	1.6E-03	2.6E-03	3.2E-05	3.2E-05	1.2E+00	2.7E-06	7.2E-02	0.0E+00	0.0E+00
5	83	September	6.6	1.3E-05	3.4E-02	6.9E+00	**8.3E-03**	3.4E-03	3.5E-03	6.9E-05	6.9E-05	1.9E+00	4.4E-06	3.2E-01	0.0E+00	0.0E+00
	92	June	6.6	9.7E-06	2.5E-02	4.8E+00	**6.3E-03**	2.5E-03	2.6E-03	5.1E-05	5.1E-05	1.3E+00	3.2E-06	2.3E-01	0.0E+00	0.0E+00
	93	July	6.6	9.3E-05	***2.1E-01***	3.7E+01	**5.8E-03**	1.9E-02	1.3E-02	3.8E-04	3.8E-04	7.5E+00	**2.0E-05**	2.3E+00	0.0E+00	0.0E+00
	94	August	6.6	4.2E-06	2.0E-02	5.7E+00	**2.4E-02**	3.1E-03	5.7E-03	6.4E-05	6.4E-05	2.5E+00	5.8E-06	9.3E-02	0.0E+00	0.0E+00
6	95	September	6.6	1.2E-05	3.7E-02	9.2E+00	**2.3E-02**	4.5E-03	6.5E-03	9.3E-05	9.3E-05	3.3E+00	**7.1E-06**	2.8E-01	0.0E+00	0.0E+00
	104	June	6.6	7.5E-06	2.3E-02	5.3E+00	**1.5E-02**	2.9E-03	4.1E-03	5.9E-05	5.9E-05	1.8E+00	4.5E-06	1.8E-01	0.0E+00	0.0E+00
	105	July	6.6	9.3E-05	***2.2E-01***	3.8E+01	**1.3E-02**	2.0E-02	1.4E-02	4.0E-04	4.0E-04	8.1E+00	**2.1E-05**	2.3E+00	0.0E+00	0.0E+00
	106	August	6.6	4.5E-06	2.3E-02	6.8E+00	***3.0E-02***	3.7E-03	7.0E-03	7.6E-05	7.6E-05	3.0E+00	**7.0E-06**	9.6E-02	0.0E+00	0.0E+00
7	107	September	6.6	1.2E-05	4.1E-02	1.1E+01	***3.1E-02***	5.3E-03	8.3E-03	1.1E-04	1.1E-04	4.1E+00	**8.8E-06**	2.9E-01	0.0E+00	0.0E+00
	116	June	6.6	1.9E-06	1.1E-02	2.7E+00	**1.6E-02**	1.8E-03	3.7E-03	3.8E-05	3.8E-05	1.2E+00	3.6E-06	3.7E-02	0.0E+00	0.0E+00
	117	July	No Discharge													
	118	August	No Discharge													
8	119	September	No Discharge													
Attenuation Pond transfer to Vault Pit																

Year	GoldSim Month	Actual Month	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)
RRNWT - DW criteria					***0.05***	***1***	***1.5***	***0.3***		***0.001***				***0.05***		***200***		
CEQG criteria[2]*					**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**		**0.000026**					**0.073**		**0.025-0.15**	**4.92**
MMER criteria[6]**						**0.3**											**0.5**	
8 METER ACTIVE ZONE																		
	68	June																
	69	July	0.0E+00	1.3E-04	3.1E-04	1.4E-03	7.0E-02	1.3E-02	1.0E+01	**1.1E-04**	5.5E-01	9.1E-04	8.0E-01	1.6E-03	1.5E-04	7.1E-01	8.8E-04	0.0E+00
	70	August	0.0E+00	1.4E-04	3.2E-04	1.4E-03	7.3E-02	1.4E-02	1.1E+01	**1.2E-04**	5.6E-01	9.1E-04	8.3E-01	1.7E-03	1.5E-04	7.3E-01	9.3E-04	0.0E+00
4	71	September	0.0E+00	6.9E-05	1.5E-04	7.3E-04	3.6E-02	6.9E-03	5.2E+00	**5.9E-05**	2.7E-01	4.3E-04	4.1E-01	8.7E-04	6.8E-05	3.6E-01	4.7E-04	0.0E+00
	80	June	0.0E+00	4.4E-05	8.8E-05	5.3E-04	2.4E-02	4.4E-03	3.1E+00	**4.4E-05**	1.5E-01	1.8E-04	2.5E-01	6.1E-04	2.2E-05	9.0E+00	3.3E-04	**2.3E+01**
	81	July	0.0E+00	2.8E-04	5.6E-04	**3.3E-03**	**1.5E-01**	2.8E-02	2.0E+01	**2.8E-04**	9.4E-01	1.1E-03	1.6E+00	3.9E-03	3.4E-04	9.1E+00	2.1E-03	**2.1E+01**
	82	August	0.0E+00	3.9E-05	4.3E-05	2.7E-04	8.5E-03	1.5E-03	4.6E+00	1.3E-05	2.1E-01	1.1E-04	3.9E-01	5.9E-04	6.0E-03	6.1E+00	1.0E-04	**1.6E+01**
5	83	September	0.0E+00	7.4E-05	1.2E-04	7.4E-04	3.1E-02	5.5E-03	7.3E+00	**5.3E-05**	3.4E-01	2.7E-04	6.1E-01	1.1E-03	4.9E-03	4.7E+00	4.0E-04	**1.2E+01**
	92	June	0.0E+00	5.5E-05	8.9E-05	5.4E-04	2.2E-02	4.0E-03	4.8E+00	**3.9E-05**	2.2E-01	1.9E-04	3.9E-01	8.0E-04	3.7E-03	1.2E+01	3.0E-04	**3.2E+01**
	93	July	0.0E+00	3.9E-04	7.6E-04	**4.5E-03**	**2.1E-01**	3.7E-02	2.8E+01	**3.7E-04**	1.3E+00	1.5E-03	2.2E+00	5.4E-03	3.4E-03	1.1E+01	2.8E-03	**2.5E+01**
	94	August	0.0E+00	7.9E-05	7.6E-05	4.9E-04	1.3E-02	2.2E-03	9.7E+00	1.8E-05	4.4E-01	2.0E-04	8.3E-01	1.2E-03	1.4E-02	6.6E+00	1.5E-04	**1.7E+01**
6	95	September	0.0E+00	1.1E-04	1.4E-04	8.5E-04	3.1E-02	5.4E-03	1.3E+01	**4.9E-05**	5.9E-01	3.5E-04	1.1E+00	1.6E-03	1.4E-02	5.6E+00	3.8E-04	**1.4E+01**
	104	June	0.0E+00	6.8E-05	8.6E-05	5.4E-04	1.9E-02	3.3E-03	7.0E+00	**3.0E-05**	3.3E-01	2.0E-04	6.0E-01	1.0E-03	8.7E-03	9.3E+00	2.4E-04	**2.4E+01**
	105	July	0.0E+00	4.0E-04	7.7E-04	**4.6E-03**	**2.1E-01**	3.7E-02	3.0E+01	**3.7E-04**	1.4E+00	1.6E-03	2.4E+00	5.7E-03	7.5E-03	9.5E+00	2.8E-03	**2.0E+01**
	106	August	0.0E+00	9.5E-05	8.9E-05	5.8E-04	1.4E-02	2.4E-03	1.2E+01	1.9E-05	5.4E-01	2.4E-04	1.0E+00	1.5E-03	1.8E-02	4.7E+00	1.6E-04	**1.2E+01**
7	107	September	0.0E+00	1.3E-04	1.5E-04	9.6E-04	3.3E-02	5.7E-03	1.6E+01	**5.0E-05**	7.3E-01	4.0E-04	1.4E+00	2.0E-03	1.8E-02	4.2E+00	3.9E-04	**1.0E+01**
	116	June	0.0E+00	4.8E-05	4.3E-05	2.8E-04	5.6E-03	9.4E-04	4.6E+00	8.2E-06	2.1E-01	9.4E-05	4.0E-01	7.5E-04	9.2E-03	6.3E-01	7.0E-05	1.5E+00
	117	July																
	118	August																
8	119	September																

Year	GoldSim Month	Actual Month	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Decant Rate m3/mon
RRNWT - DW criteria				***11***		***0.01***		***0.006***	***0.01***		***500***					***5***	***500***	
CEQG criteria[2]*			**0.019**	**2.9**		**0.001-0.007**			**0.001**				**0.0008**			**0.03**		
MMER criteria[6]**						**0.2**										**0.5**		
8 METER ACTIVE ZONE																		
	68	June																0
	69	July	0.0E+00	3.1E-03	4.2E-02	3.8E-04	7.9E-04	1.5E-04	2.0E-04	2.1E+00	3.5E+00	1.0E-02	3.0E-05	2.3E-04	3.1E-03	2.6E-03	2.4E+01	228,280
	70	August	0.0E+00	3.3E-03	4.5E-02	3.7E-04	7.4E-04	1.6E-04	2.0E-04	2.3E+00	3.6E+00	1.1E-02	3.0E-05	2.4E-04	2.9E-03	2.7E-03	2.5E+01	228,280
4	71	September	0.0E+00	1.6E-03	2.3E-02	1.7E-04	3.2E-04	7.7E-05	9.7E-05	1.2E+00	1.8E+00	5.5E-03	1.4E-05	1.2E-04	1.2E-03	1.3E-03	1.2E+01	228,280
	80	June	1.1E-02	***2.6E+01***	1.8E-02	4.4E-05	9.3E-13	4.4E-05	4.4E-05	8.9E-01	1.2E+00	4.2E-03	4.4E-06	8.8E-05	4.4E-05	8.8E-04	6.6E+01	228,280
	81	July	1.0E-02	***2.3E+01***	1.1E-01	2.8E-04	2.2E-05	3.3E-04	2.8E-04	5.7E+00	7.7E+00	2.7E-02	2.8E-05	6.8E-04	2.8E-04	5.6E-03	1.0E+02	112,410
	82	August	7.9E-03	***1.8E+01***	4.3E-03	1.3E-05	9.4E-04	1.6E-03	1.2E-04	3.1E-01	2.3E+00	2.0E-02	5.5E-06	3.8E-03	8.9E-05	3.2E-04	4.8E+01	65,593
5	83	September	5.8E-03	***1.3E+01***	2.1E-02	5.3E-05	9.0E-04	1.3E-03	1.4E-04	1.1E+00	3.4E+00	2.0E-02	8.8E-06	3.2E-03	1.2E-04	1.1E-03	4.5E+01	108,300
	92	June	1.6E-02	***3.6E+01***	1.5E-02	3.9E-05	5.1E-04	9.9E-04	1.0E-04	8.3E-01	2.2E+00	1.5E-02	6.5E-06	2.4E-03	8.7E-05	8.2E-04	9.1E+01	228,280
	93	July	1.2E-02	***2.8E+01***	1.5E-01	3.7E-04	4.4E-04	1.2E-03	4.3E-04	7.6E+00	1.1E+01	4.6E-02	4.0E-05	2.8E-03	4.1E-04	7.5E-03	1.3E+02	49,653
	94	August	8.4E-03	***1.9E+01***	5.1E-03	1.8E-05	2.1E-03	3.6E-03	2.6E-04	4.7E-01	5.0E+00	4.6E-02	1.2E-05	8.9E-03	2.0E-04	4.9E-04	5.8E+01	52,101
6	95	September	6.9E-03	***1.6E+01***	1.7E-02	4.9E-05	2.4E-03	3.5E-03	2.9E-04	1.1E+00	6.4E+00	4.7E-02	1.4E-05	8.7E-03	2.2E-04	1.1E-03	5.8E+01	88,013
	104	June	1.2E-02	***2.7E+01***	1.1E-02	3.0E-05	1.2E-03	2.3E-03	1.8E-04	6.8E-01	3.5E+00	3.0E-02	9.1E-06	5.5E-03	1.4E-04	6.9E-04	7.4E+01	228,280
	105	July	1.0E-02	***2.3E+01***	1.5E-01	3.7E-04	1.0E-03	2.3E-03	5.0E-04	7.7E+00	1.2E+01	5.8E-02	4.2E-05	5.4E-03	4.7E-04	7.5E-03	1.3E+02	49,653
	106	August	6.0E-03	***1.4E+01***	5.1E-03	1.9E-05	2.6E-03	4.5E-03	3.3E-04	5.2E-01	6.1E+00	5.7E-02	1.4E-05	1.1E-02	2.4E-04	5.5E-04	4.9E+01	52,101
7	107	September	5.1E-03	***1.2E+01***	1.7E-02	5.0E-05	3.1E-03	4.7E-03	3.7E-04	1.2E+00	8.1E+00	6.2E-02	1.8E-05	1.2E-02	2.8E-04	1.2E-03	5.3E+01	88,013
	116	June	7.6E-04	1.7E+00	2.0E-03	8.2E-06	1.0E-03	2.4E-03	1.7E-04	2.0E-01	2.4E+00	3.0E-02	7.3E-06	5.8E-03	1.3E-04	2.5E-04	1.1E+01	228,280
	117	July																0
	118	August																0
8	119	September																0

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table III-4
Predicted Water Quality (Dissolved Constituents) Possible Poor End Scenario
Vault Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)
RRNWT - DW criteria			*6.5-8.5*		*0.1*		*0.025*	*5*	*1*				*0.005*	*250*					*0.05*	*1*	*1.5*	*0.3*
CEQG criteria[2]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**						**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**
MMER criteria[6]**			**6.0 - 9.5**				**0.5**								**1**					**0.3**		
8 METER ACTIVE ZONE																						
Filling of Pit Lake																						
8	111 - 122	Summer Average	6.8	7.6E-06	1.6E-02	7.4E+00	**1.6E-02**	2.3E-02	8.0E-03	2.5E-04	4.5E-05	2.9E+00	**1.4E-05**	3.2E-01	0.0E+00	0.0E+00	0.0E+00	1.2E-04	2.6E-04	5.6E-04	2.6E-02	7.8E-03
9	128 - 131	Summer Average	6.8	1.0E-05	1.6E-02	1.0E+01	**1.5E-02**	3.7E-02	1.1E-02	4.0E-04	4.4E-05	3.9E+00	**2.1E-05**	5.0E-01	0.0E+00	0.0E+00	0.0E+00	1.6E-04	4.1E-04	7.0E-04	3.7E-02	1.2E-02
10	140 - 143	Summer Average	6.8	1.1E-05	1.7E-02	1.1E+01	**1.6E-02**	4.0E-02	1.1E-02	4.2E-04	4.6E-05	4.2E+00	**2.3E-05**	5.3E-01	0.0E+00	0.0E+00	0.0E+00	1.7E-04	4.3E-04	7.4E-04	3.9E-02	1.3E-02
11	152 - 155	Summer Average	6.8	1.1E-05	1.8E-02	1.1E+01	**1.8E-02**	4.1E-02	1.2E-02	4.4E-04	4.9E-05	4.3E+00	**2.4E-05**	5.4E-01	0.0E+00	0.0E+00	0.0E+00	1.8E-04	4.5E-04	7.8E-04	4.0E-02	1.3E-02
12	164 - 167	Summer Average	6.8	1.1E-05	1.8E-02	1.2E+01	**2.0E-02**	4.2E-02	1.2E-02	4.4E-04	5.1E-05	4.5E+00	**2.6E-05**	5.5E-01	0.0E+00	0.0E+00	0.0E+00	1.8E-04	4.6E-04	8.1E-04	4.1E-02	1.3E-02
13	176 - 179	Summer Average	6.8	1.2E-05	2.1E-02	1.2E+01	**2.4E-02**	4.4E-02	1.3E-02	4.7E-04	5.9E-05	4.8E+00	**2.8E-05**	5.8E-01	0.0E+00	0.0E+00	0.0E+00	2.0E-04	4.8E-04	8.8E-04	4.3E-02	1.4E-02
Long-term Vault Pit Lake Water Quality																						
23	296 - 299	Summer Average	6.8	1.6E-05	5.3E-02	1.8E+01	***7.2E-02***	4.0E-02	2.2E-02	4.8E-04	1.7E-04	7.4E+00	**3.5E-05**	5.6E-01	0.0E+00	0.0E+00	0.0E+00	3.1E-04	5.1E-04	1.6E-03	5.1E-02	1.4E-02

Year	GoldSim Month		Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria				*0.001*				*0.05*		*200*				*11*		*0.01*		*0.006*	*0.01*		*500*					*5*	*500*
CEQG criteria[2]*				**0.000026**					**0.073**		**0.025-0.15**	**4.92**	**0.019**	**2.9**		**0.001-0.007**			**0.001**				**0.0008**			**0.03**	
MMER criteria[6]**											**0.5**					**0.2**										**0.5**	
8 METER ACTIVE ZONE																											
Filling of Pit Lake																											
8	111 - 122	Summer Average	1.1E+01	2.5E-05	6.5E-01	1.2E-03	8.9E-01	1.0E-03	9.4E-03	9.4E-01	3.2E-04	1.2E+00	9.1E-04	1.3E+00	4.4E-03	1.2E-04	2.3E-03	2.5E-03	3.8E-04	3.3E-01	4.6E+00	3.0E-02	5.0E-05	5.9E-03	6.4E-03	1.4E-03	2.1E+01
9	128 - 131	Summer Average	1.5E+01	**3.2E-05**	9.3E-01	1.9E-03	1.2E+00	1.1E-03	9.3E-03	9.6E-01	4.7E-04	4.9E-01	3.8E-04	5.2E-01	4.5E-03	1.9E-04	3.1E-03	2.5E-03	5.2E-04	3.3E-01	6.0E+00	2.9E-02	7.8E-05	5.8E-03	1.1E-02	2.1E-03	2.5E+01
10	140 - 143	Summer Average	1.6E+01	**3.3E-05**	9.9E-01	2.0E-03	1.3E+00	1.2E-03	1.0E-02	9.5E-01	4.9E-04	3.1E-01	2.4E-04	3.3E-01	4.5E-03	2.0E-04	3.3E-03	2.7E-03	5.6E-04	3.4E-01	6.4E+00	3.1E-02	8.3E-05	6.1E-03	1.1E-02	2.3E-03	2.6E+01
11	152 - 155	Summer Average	1.6E+01	**3.4E-05**	1.0E+00	2.1E-03	1.3E+00	1.3E-03	1.1E-02	9.4E-01	5.1E-04	2.3E-01	1.8E-04	2.4E-01	4.5E-03	2.1E-04	3.5E-03	2.9E-03	5.8E-04	3.4E-01	6.7E+00	3.3E-02	8.6E-05	6.6E-03	1.2E-02	2.4E-03	2.7E+01
12	164 - 167	Summer Average	1.7E+01	**3.5E-05**	1.1E+00	2.1E-03	1.4E+00	1.4E-03	1.2E-02	9.4E-01	5.3E-04	1.9E-01	1.5E-04	1.9E-01	4.7E-03	2.1E-04	3.6E-03	3.1E-03	6.0E-04	3.5E-01	6.9E+00	3.5E-02	8.8E-05	7.0E-03	1.2E-02	2.6E-03	2.8E+01
13	176 - 179	Summer Average	1.8E+01	**3.7E-05**	1.1E+00	2.2E-03	1.5E+00	1.6E-03	1.4E-02	9.8E-01	5.6E-04	1.8E-01	1.4E-04	1.7E-01	5.1E-03	2.2E-04	3.8E-03	3.6E-03	6.5E-04	3.9E-01	7.5E+00	4.1E-02	9.3E-05	8.2E-03	1.2E-02	2.8E-03	3.0E+01
Long-term Vault Pit Lake Water Quality																											
23	296 - 299	Summer Average	2.8E+01	**5.6E-05**	1.6E+00	2.0E-03	2.4E+00	3.9E-03	4.2E-02	9.2E-01	6.7E-04	1.3E-01	1.0E-04	1.3E-01	1.1E-02	2.0E-04	6.2E-03	***1.1E-02***	**1.1E-03**	9.6E-01	1.3E+01	1.3E-01	9.6E-05	2.6E-02	9.8E-03	3.2E-03	4.6E+01

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table III-5
Predicted Water Quality (Dissolved Constituents) Possible Poor End Scenario
Portage Rock Storage Facility
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005	250	
CEQG criteria[1]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007		
MMER criteria[5]**			6.0 - 9.5				0.5								1
8 METER ACTIVE ZONE															
	32	June	5.3	1.7E-15	3.6E-12	3.8E-09	2.4E-11	1.3E-11	1.2E-12	2.9E-12	6.7E-14	8.4E-10	9.3E-15	8.4E-11	0.0E+00
	33	July	5.3	1.2E-05	2.5E-02	6.0E+00	1.7E-01	9.3E-02	8.2E-03	2.1E-02	4.7E-04	1.3E+00	6.6E-05	1.3E-01	0.0E+00
	34	August	5.3	2.5E-05	5.4E-02	1.8E+01	3.6E-01	2.0E-01	1.7E-02	4.4E-02	1.0E-03	3.9E+00	1.4E-04	3.9E-01	0.0E+00
1	35	September	5.3	3.1E-05	6.7E-02	2.5E+01	4.5E-01	2.5E-01	2.2E-02	5.5E-02	1.2E-03	5.5E+00	1.7E-04	5.5E-01	0.0E+00
	44	June	5.3	1.1E-05	2.3E-02	7.3E+00	1.5E-01	8.5E-02	7.5E-03	1.9E-02	4.3E-04	1.6E+00	6.0E-05	1.6E-01	0.0E+00
	45	July	5.3	2.6E-05	1.5E-01	5.8E+00	1.4E-01	9.1E-02	2.1E-02	2.0E-02	6.3E-04	2.1E+00	1.9E-04	3.4E-01	0.0E+00
	46	August	5.3	5.0E-05	3.2E-01	1.0E+01	2.1E-01	1.5E-01	4.2E-02	3.1E-02	1.1E-03	4.7E+00	3.7E-04	8.7E-01	0.0E+00
2	47	September	5.3	6.4E-05	4.2E-01	1.3E+01	2.5E-01	1.8E-01	5.5E-02	3.7E-02	1.4E-03	6.6E+00	4.8E-04	1.3E+00	0.0E+00
	56	June	5.3	4.2E-05	2.8E-01	7.1E+00	1.5E-01	1.1E-01	3.6E-02	2.3E-02	8.9E-04	3.7E+00	3.2E-04	7.3E-01	0.0E+00
	57	July	5.3	3.6E-05	2.1E-01	7.5E+00	1.9E-01	1.2E-01	3.0E-02	2.6E-02	8.6E-04	3.2E+00	2.6E-04	5.4E-01	0.0E+00
	58	August	5.3	5.2E-05	2.9E-01	1.5E+01	3.3E-01	2.0E-01	4.4E-02	4.4E-02	1.4E-03	5.9E+00	3.7E-04	8.8E-01	0.0E+00
3	59	September	5.3	5.8E-05	3.1E-01	2.0E+01	3.9E-01	2.4E-01	4.9E-02	5.1E-02	1.5E-03	7.5E+00	4.0E-04	1.1E+00	0.0E+00
	68	June	5.3	8.0E-15	4.2E-11	8.9E-09	5.9E-11	3.5E-11	7.0E-12	7.4E-12	2.2E-13	3.5E-09	5.5E-14	4.5E-10	0.0E+00
	69	July	5.3	1.4E-05	7.4E-02	2.7E+00	1.0E-01	6.1E-02	1.2E-02	1.3E-02	3.9E-04	1.1E+00	9.7E-05	1.3E-01	0.0E+00
	70	August	5.3	3.5E-05	1.9E-01	8.6E+00	2.6E-01	1.5E-01	3.1E-02	3.3E-02	9.7E-04	3.4E+00	2.4E-04	4.3E-01	0.0E+00
4	71	September	5.3	5.4E-05	2.8E-01	1.4E+01	4.0E-01	2.4E-01	4.7E-02	5.0E-02	1.5E-03	5.8E+00	3.8E-04	7.3E-01	0.0E+00
	80	June	5.3	6.4E-05	3.4E-01	1.6E+01	4.7E-01	2.8E-01	5.6E-02	5.9E-02	1.8E-03	6.2E+00	4.4E-04	7.9E-01	0.0E+00
	81	July	5.3	8.8E-05	4.8E-01	1.8E+01	5.9E-01	3.6E-01	7.6E-02	7.6E-02	2.3E-03	7.4E+00	6.2E-04	1.0E+00	0.0E+00
	82	August	5.3	1.2E-04	6.6E-01	2.3E+01	7.2E-01	4.5E-01	1.0E-01	9.5E-02	3.0E-03	9.8E+00	8.3E-04	1.4E+00	0.0E+00
5	83	September	5.3	1.4E-04	8.1E-01	2.8E+01	8.3E-01	5.2E-01	1.2E-01	1.1E-01	3.5E-03	1.2E+01	1.0E-03	1.8E+00	0.0E+00
Placement of UM Rock Cover															
	92	June	6.5	1.4E-04	8.2E-01	2.6E+01	7.8E-01	5.0E-01	1.2E-01	1.1E-01	3.4E-03	1.1E+01	1.0E-03	1.7E+00	0.0E+00
	93	July	6.5	1.7E-04	9.1E-01	3.4E+01	1.1E+00	6.7E-01	1.4E-01	1.4E-01	4.4E-03	1.3E+01	1.2E-03	1.9E+00	0.0E+00
	94	August	6.5	1.8E-04	9.0E-01	4.7E+01	1.4E+00	8.4E-01	1.5E-01	1.8E-01	5.2E-03	1.6E+01	1.2E-03	2.1E+00	0.0E+00
6	95	September	6.5	1.9E-04	8.8E-01	6.0E+01	1.7E+00	9.9E-01	1.6E-01	2.2E-01	5.8E-03	1.8E+01	1.3E-03	2.3E+00	0.0E+00
Post Closure Water Quality															
23	296 - 299	Summer Average	6.5	4.6E-04	2.9E-01	2.8E+02	8.3E+00	4.4E+00	3.0E-01	1.0E+00	2.1E-02	5.7E+01	2.2E-03	4.6E+00	0.0E+00

Year	GoldSim Month	Actual Month	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)	NH4_N (mg/L)
RRNWT - DW criteria						0.05	1	1.5	0.3		0.001				0.05		200		
CEQG criteria[1]*						0.001/0.0089	0.002-0.004	0.12	0.3		0.000026					0.073		0.025-0.15	4.92
MMER criteria[5]**							0.3											0.5	
8 METER ACTIVE ZONE																			
	32	June	0.0E+00	0.0E+00	2.1E-13	6.7E-14	2.8E-13	5.1E-12	2.4E-10	3.5E-09	6.7E-15	2.8E-10	6.7E-13	3.4E-10	9.8E-12	9.4E-15	1.9E+02	1.7E-12	5.0E+02
	33	July	0.0E+00	0.0E+00	1.5E-03	4.7E-04	2.0E-03	8.0E-03	3.8E-01	5.6E+00	4.7E-05	4.5E-01	1.0E-03	5.4E-01	7.0E-02	6.7E-05	9.6E+01	1.2E-02	2.6E+02
	34	August	0.0E+00	0.0E+00	3.2E-03	1.0E-03	4.2E-03	2.3E-02	1.1E+00	1.6E+01	1.0E-04	1.3E+00	3.1E-03	1.6E+00	1.5E-01	1.4E-04	9.0E+01	2.5E-02	2.4E+02
1	35	September	0.0E+00	0.0E+00	4.0E-03	1.2E-03	5.2E-03	3.3E-02	1.6E+00	2.3E+01	1.2E-04	1.9E+00	4.3E-03	2.2E+00	1.8E-01	1.8E-04	7.2E+01	3.1E-02	1.9E+02
	44	June	0.0E+00	0.0E+00	1.4E-03	4.3E-04	1.8E-03	9.7E-03	4.7E-01	6.7E+00	4.3E-05	5.4E-01	1.3E-03	6.5E-01	6.4E-02	6.1E-05	4.2E+01	1.1E-02	1.1E+02
	45	July	0.0E+00	0.0E+00	8.6E-03	6.3E-04	1.2E-02	3.3E-02	2.6E+00	9.1E+00	6.3E-05	9.2E-01	1.6E-03	9.2E-01	4.0E-01	3.7E-04	2.6E+01	7.5E-02	6.9E+01
	46	August	0.0E+00	0.0E+00	1.8E-02	1.1E-03	2.6E-02	9.0E-02	7.3E+00	2.0E+01	1.1E-04	2.2E+00	3.5E-03	2.1E+00	8.4E-01	7.8E-04	2.9E+01	1.6E-01	7.3E+01
2	47	September	0.0E+00	0.0E+00	2.4E-02	1.4E-03	3.4E-02	1.3E-01	1.1E+01	2.9E+01	1.4E-04	3.2E+00	4.9E-03	3.0E+00	1.1E+00	1.0E-03	2.8E+01	2.1E-01	6.9E+01
	56	June	0.0E+00	0.0E+00	1.6E-02	8.9E-04	2.3E-02	7.7E-02	6.3E+00	1.6E+01	8.9E-05	1.8E+00	2.8E-03	1.7E+00	7.3E-01	6.7E-04	3.7E+01	1.4E-01	9.5E+01
	57	July	0.0E+00	0.0E+00	1.2E-02	8.6E-04	1.7E-02	5.6E-02	4.3E+00	1.4E+01	8.6E-05	1.5E+00	2.4E-03	1.4E+00	5.6E-01	7.3E-04	2.5E+01	1.1E-01	6.3E+01
	58	August	0.0E+00	0.0E+00	1.7E-02	1.4E-03	2.4E-02	8.8E-02	6.5E+00	2.5E+01	1.4E-04	2.7E+00	4.3E-03	2.5E+00	7.6E-01	1.2E-03	2.8E+01	1.5E-01	7.2E+01
3	59	September	0.0E+00	0.0E+00	1.8E-02	1.5E-03	2.5E-02	1.1E-01	7.6E+00	3.2E+01	1.5E-04	3.5E+00	5.4E-03	3.2E+00	8.1E-01	1.4E-03	2.7E+01	1.5E-01	6.8E+01
	68	June	0.0E+00	0.0E+00	2.4E-12	2.2E-13	3.4E-12	4.6E-11	3.1E-09	1.5E-08	2.2E-14	1.7E-09	2.4E-12	1.4E-09	1.1E-10	2.9E-13	4.9E+00	2.1E-11	1.3E+01
	69	July	0.0E+00	0.0E+00	4.1E-03	3.9E-04	6.0E-03	1.4E-02	9.3E-01	4.5E+00	3.9E-05	5.1E-01	7.2E-04	4.3E-01	1.9E-01	5.1E-04	2.9E+00	3.6E-02	7.0E+00
	70	August	0.0E+00	0.0E+00	1.0E-02	9.7E-04	1.5E-02	4.4E-02	3.0E+00	1.4E+01	9.7E-05	1.7E+00	2.3E-03	1.4E+00	4.8E-01	1.3E-03	4.4E+00	9.1E-02	9.4E+00
4	71	September	0.0E+00	0.0E+00	1.6E-02	1.5E-03	2.3E-02	7.5E-02	5.0E+00	2.4E+01	1.5E-04	2.8E+00	3.9E-03	2.4E+00	7.4E-01	2.0E-03	5.2E+00	1.4E-01	1.0E+01
	80	June	0.0E+00	0.0E+00	1.9E-02	1.8E-03	2.7E-02	8.1E-02	5.4E+00	2.6E+01	1.8E-04	3.0E+00	4.2E-03	2.5E+00	8.7E-01	2.3E-03	7.3E+00	1.6E-01	1.5E+01
	81	July	0.0E+00	0.0E+00	2.7E-02	2.3E-03	3.9E-02	1.0E-01	7.1E+00	3.1E+01	2.3E-04	3.6E+00	5.1E-03	3.1E+00	1.2E+00	2.8E-03	3.5E+00	2.4E-01	4.3E+00
	82	August	0.0E+00	0.0E+00	3.7E-02	3.0E-03	5.4E-02	1.5E-01	1.1E+01	4.2E+01	3.0E-04	4.7E+00	6.9E-03	4.1E+00	1.7E+00	3.3E-03	3.9E+00	3.3E-01	3.7E+00
5	83	September	0.0E+00	0.0E+00	4.6E-02	3.5E-03	6.6E-02	1.9E-01	1.4E+01	5.1E+01	3.5E-04	5.8E+00	8.5E-03	5.1E+00	2.1E+00	3.7E-03	4.2E+00	4.0E-01	2.7E+00
Placement of UM Rock Cover																			
	92	June	0.0E+00	0.0E+00	4.6E-02	3.4E-03	6.7E-02	1.8E-01	1.3E+01	4.7E+01	3.4E-04	5.3E+00	7.9E-03	4.7E+00	2.1E+00	3.4E-03	3.6E+00	4.1E-01	1.6E+00
	93	July	0.0E+00	0.0E+00	5.1E-02	4.4E-03	7.4E-02	1.9E-01	1.4E+01	5.6E+01	4.4E-04	6.1E+00	9.5E-03	5.6E+00	2.4E+00	4.0E-03	3.7E+00	4.5E-01	4.6E-01
	94	August	0.0E+00	0.0E+00	5.1E-02	5.2E-03	7.3E-02	2.0E-01	1.4E+01	6.7E+01	5.2E-04	6.9E+00	1.1E-02	6.6E+00	2.4E+00	4.0E-03	4.5E+00	4.4E-01	4.0E-01
6	95	September	0.0E+00	0.0E+00	5.0E-02	5.8E-03	7.1E-02	2.0E-01	1.3E+01	7.7E+01	5.8E-04	7.6E+00	1.3E-02	7.5E+00	2.3E+00	4.0E-03	5.3E+00	4.3E-01	2.9E-01
Post Closure Water Quality																			
23	296 - 299	Summer Average	0.0E+00	0.0E+00	1.8E-02	2.1E-02	1.8E-02	2.0E-01	2.0E+00	2.4E+02	2.1E-03	1.8E+01	4.4E-02	2.2E+01	8.7E-01	3.5E-03	1.8E+01	8.7E-02	2.6E-17

Year	GoldSim Month	Actual Month	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
RRNWT - DW criteria				11		0.01		0.006	0.01		500					5	500	
CEQG criteria[1]*			0.019	2.9		0.001-0.007			0.001				0.0008			0.03		
MMER criteria[5]**						0.2										0.5		
8 METER ACTIVE ZONE																		
	32	June	1.2E-02	5.6E+02	1.7E-11	1.1E-13	1.6E-11	1.7E-12	1.4E-13	1.2E-10	1.5E-09	5.2E-12	1.4E-14	2.0E-14	5.4E-13	1.7E-12	1.2E+03	6,415
	33	July	6.3E-03	2.9E+02	2.7E-02	7.9E-04	2.5E-02	1.2E-02	9.8E-04	1.9E-01	2.4E+00	3.7E-02	9.8E-05	1.4E-04	3.8E-03	1.2E-02	6.5E+02	74
	34	August	5.8E-03	2.6E+02	7.9E-02	1.7E-03	7.2E-02	2.6E-02	2.1E-03	5.5E-01	6.9E+00	7.8E-02	2.1E-04	3.0E-04	8.1E-03	2.6E-02	6.2E+02	1,072
1	35	September	4.6E-03	2.1E+02	1.1E-01	2.1E-03	1.0E-01	3.2E-02	2.6E-03	7.8E-01	9.7E+00	9.8E-02	2.6E-04	3.8E-04	1.0E-02	3.2E-02	5.2E+02	2,047
	44	June	2.7E-03	1.2E+02	3.3E-02	7.3E-04	3.0E-02	1.1E-02	9.0E-04	2.3E-01	2.9E+00	3.4E-02	9.0E-05	1.3E-04	3.5E-03	1.1E-02	2.9E+02	21,810
	45	July	1.7E-03	7.7E+01	4.1E-02	5.0E-03	2.4E-02	1.1E-02	1.3E-03	7.0E-01	9.4E+00	6.4E-02	1.3E-04	1.3E-03	3.7E-03	6.6E-02	2.0E+02	222
	46	August	1.8E-03	8.2E+01	9.0E-02	1.1E-02	4.2E-02	1.6E-02	2.2E-03	1.9E+00	2.5E+01	1.2E-01	2.2E-04	2.9E-03	5.9E-03	1.4E-01	2.4E+02	2,910
2	47	September	1.7E-03	7.7E+01	1.3E-01	1.4E-02	5.4E-02	1.9E-02	2.8E-03	2.8E+00	3.8E+01	1.5E-01	2.8E-04	3.8E-03	7.0E-03	1.8E-01	2.6E+02	4,862
	56	June	2.3E-03	1.1E+02	7.1E-02	9.3E-03	3.0E-02	1.2E-02	1.8E-03	1.6E+00	2.2E+01	9.8E-02	1.8E-04	2.5E-03	4.4E-03	1.2E-01	2.8E+02	24,376
	57	July	1.6E-03	7.1E+01	6.0E-02	7.1E-03	3.1E-02	1.5E-02	1.7E-03	1.2E+00	1.6E+01	9.3E-02	1.7E-04	2.6E-03	5.0E-03	9.2E-02	2.0E+02	234
	58	August	1.8E-03	8.1E+01	1.1E-01	9.7E-03	6.3E-02	2.5E-02	2.7E-03	1.8E+00	2.5E+01	1.4E-01	2.7E-04	4.1E-03	8.4E-03	1.3E-01	2.4E+02	2,910
3	59	September	1.7E-03	7.6E+01	1.3E-01	1.0E-02	8.4E-02	3.0E-02	3.1E-03	2.2E+00	3.0E+01	1.6E-01	3.1E-04	4.7E-03	9.8E-03	1.4E-01	2.5E+02	4,862
	68	June	3.2E-04	1.5E+01	5.7E-11	1.4E-12	3.7E-11	4.6E-12	4.5E-13	9.6E-10	1.3E-08	2.5E-11	4.5E-14	9.6E-13	1.5E-12	1.8E-11	3.2E+01	69,644
	69	July	1.7E-04	7.9E+00	1.7E-02	2.4E-03	1.1E-02	8.0E-03	7.8E-04	2.9E-01	3.9E+00	4.3E-02	7.8E-05	1.7E-03	2.6E-03	3.2E-02	2.8E+01	1,170
	70	August	2.3E-04	1.1E+01	5.5E-02	6.1E-03	3.6E-02	2.0E-02	2.0E-03	9.3E-01	1.3E+01	1.1E-01	2.0E-04	4.3E-03	6.4E-03	8.0E-02	5.8E+01	14,552
4	71	September	2.4E-04	1.1E+01	9.3E-02	9.3E-03	6.0E-02	3.1E-02	3.0E-03	1.6E+00	2.1E+01	1.7E-01	3.0E-04	6.5E-03	9.9E-03	1.2E-01	8.3E+01	24,308
	80	June	3.7E-04	1.7E+01	1.0E-01	1.1E-02	6.5E-02	3.6E-02	3.6E-03	1.7E+00	2.3E+01	2.0E-01	3.6E-04	7.7E-03	1.2E-02	1.5E-01	1.0E+02	69,644
	81	July	1.0E-04	4.9E+00	1.2E-01	1.6E-02	7.6E-02	4.6E-02	4.7E-03	2.1E+00	2.9E+01	2.6E-01	4.7E-04	9.5E-03	1.5E-02	2.1E-01	8.8E+01	1,170
	82	August	9.0E-05	4.2E+00	1.7E-01	2.2E-02	9.8E-02	5.6E-02	6.0E-03	3.0E+00	4.1E+01	3.3E-01	6.0E-04	1.1E-02	1.8E-02	2.9E-01	1.2E+02	14,552
5	83	September	6.6E-05	3.1E+00	2.1E-01	2.7E-02	1.2E-01	6.4E-02	7.1E-03	3.9E+00	5.3E+01	3.9E-01	7.1E-04	1.3E-02	2.1E-02	3.5E-01	1.4E+02	24,308
Placement of UM Rock Cover																		
	92	June	4.0E-05	2.0E+00	1.9E-01	2.7E-02	1.1E-01	6.0E-02	6.9E-03	3.7E+00	5.0E+01	3.8E-01	6.9E-04	1.2E-02	2.0E-02	3.6E-01	1.3E+02	69,644
	93	July	1.1E-05	6.5E-01	2.3E-01	3.0E-02	1.4E-01	8.3E-02	8.9E-03	4.0E+00	5.5E+01	4.6E-01	8.9E-04	1.4E-02	2.8E-02	4.0E-01	1.5E+02	1,170
	94	August	9.8E-06	6.2E-01	2.9E-01	3.0E-02	1.9E-01	1.1E-01	1.1E-02	4.2E+00	5.7E+01	5.2E-01	1.1E-03	1.4E-02	3.5E-02	3.9E-01	1.7E+02	14,552
6	95	September	7.1E-06	5.4E-01	3.3E-01	2.9E-02	2.5E-01	1.3E-01	1.2E-02	4.3E+00	5.8E+01	5.6E-01	1.2E-03	1.3E-02	4.1E-02	3.9E-01	1.9E+02	24,308
Post Closure Water Quality																		
23	296 - 299	Summer Average	6.3E-22	8.8E-01	1.1E+00	5.9E-03	1.1E+00	6.0E-01	4.5E-02	5.2E+00	6.2E+01	1.6E+00	4.5E-03	6.3E-03	1.8E-01	1.8E-01	4.9E+02	27,419

NOTES:
1. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
2. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
3. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
4. Freshwater aquatic life criterion or guideline is hardness dependant.
5. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table III-6
Predicted Water Quality (Dissolved Constituents)-Possible Poor End Scenario
Portage and Goose Island Open Pit Sumps
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005	250	
CEQG criteria[1]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007		
MMER criteria[5]**			6.0 - 9.5				0.5								1
NORTH PORTAGE PIT															
3	56 - 59	Summer Average	6.1	5.8E-06	4.9E-02	1.8E+00	4.1E-02	2.5E-02	7.5E-03	5.2E-03	1.9E-04	1.2E+00	6.1E-05	1.5E-01	0.0E+00
4	68 - 71	Summer Average	6.1	4.0E-06	8.7E-02	2.4E+00	5.6E-02	3.6E-02	1.3E-02	7.1E-03	2.9E-04	1.9E+00	9.9E-05	2.5E-01	0.0E+00
Start Flooding North Portage Pit															
THIRD PORTAGE PIT															
1	32 - 35	Summer Average	6.1	2.7E-05	1.2E-01	3.1E+01	1.6E-02	2.2E-01	3.5E-02	2.5E-03	3.2E-04	4.2E+01	9.7E-05	3.1E+02	0.0E+00
2	44 - 47	Summer Average	6.1	4.3E-05	2.0E-01	4.4E+01	3.9E-02	3.1E-01	5.3E-02	6.0E-03	5.5E-04	7.9E+01	1.7E-04	6.5E+02	0.0E+00
3	56 - 59	Summer Average	6.1	4.8E-05	2.5E-01	4.2E+01	5.7E-02	3.1E-01	5.7E-02	9.0E-03	6.7E-04	7.7E+01	2.3E-04	6.3E+02	0.0E+00
4	68 - 71	Summer Average	6.1	5.4E-05	2.9E-01	4.3E+01	6.8E-02	3.3E-01	6.3E-02	1.1E-02	7.8E-04	7.7E+01	2.7E-04	6.3E+02	0.0E+00
Start Flooding Third Portage Pit															
GOOSE ISLAND PIT															
2	44 - 47	Summer Average	6.1	2.1E-05	7.8E-02	2.8E+01	1.7E-03	1.9E-01	2.9E-02	2.1E-04	2.1E-04	5.3E+01	5.4E-05	4.4E+02	0.0E+00
3	56 - 59	Summer Average	6.1	2.0E-05	7.5E-02	2.7E+01	1.6E-03	1.8E-01	2.7E-02	2.0E-04	2.0E-04	5.2E+01	5.1E-05	4.4E+02	0.0E+00
Start Flooding Goose Pit															

Year	GoldSim Month		CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)
RRNWT - DW criteria						0.05	1	1.5	0.3		0.001				0.05		200	
CEQG criteria[1]*						0.001/0.0089	0.002-0.004	0.12	0.3		0.000026					0.073		0.025-0.15
MMER criteria[5]**							0.3											0.5
NORTH PORTAGE PIT																		
3	56 - 59	Summer Average	0.0E+00	0.0E+00	2.9E-03	1.9E-04	4.2E-03	1.8E-02	1.2E+00	4.9E+00	1.9E-05	6.6E-01	7.1E-04	4.7E-01	1.2E-01	4.5E-04	3.0E+00	2.6E-02
4	68 - 71	Summer Average	0.0E+00	0.0E+00	4.8E-03	2.9E-04	7.1E-03	3.1E-02	2.1E+00	8.0E+00	2.9E-05	1.1E+00	1.1E-03	7.7E-01	2.2E-01	8.1E-04	3.7E+00	4.3E-02
Start Flooding North Portage Pit																		
THIRD PORTAGE PIT																		
1	32 - 35	Summer Average	0.0E+00	0.0E+00	3.2E-03	3.5E-04	4.0E-03	1.6E-01	1.2E+00	1.7E+02	1.4E-05	3.7E+00	6.5E-03	1.5E+01	2.4E-01	9.8E-03	7.9E+01	2.1E-02
2	44 - 47	Summer Average	0.0E+00	0.0E+00	6.4E-03	5.9E-04	8.5E-03	2.3E-01	2.5E+00	3.2E+02	3.1E-05	6.7E+00	9.4E-03	2.8E+01	4.2E-01	1.4E-02	1.5E+02	4.6E-02
3	56 - 59	Summer Average	0.0E+00	0.0E+00	9.4E-03	7.1E-04	1.3E-02	2.3E-01	3.7E+00	3.1E+02	4.4E-05	6.8E+00	9.3E-03	2.8E+01	5.5E-01	1.3E-02	1.5E+02	7.3E-02
4	68 - 71	Summer Average	0.0E+00	0.0E+00	1.2E-02	8.2E-04	1.6E-02	2.4E-01	4.6E+00	3.1E+02	5.4E-05	7.0E+00	9.7E-03	2.8E+01	6.6E-01	1.3E-02	1.5E+02	9.3E-02
Start Flooding Third Portage Pit																		
GOOSE ISLAND PIT																		
2	44 - 47	Summer Average	0.0E+00	0.0E+00	1.0E-03	2.4E-04	9.9E-04	1.4E-01	2.6E-01	2.1E+02	4.1E-06	4.1E+00	5.8E-03	1.9E+01	1.4E-01	9.0E-03	1.0E+02	2.1E-03
3	56 - 59	Summer Average	0.0E+00	0.0E+00	9.8E-04	2.3E-04	9.5E-04	1.3E-01	2.5E-01	2.1E+02	3.9E-06	4.0E+00	5.5E-03	1.8E+01	1.3E-01	8.6E-03	1.0E+02	2.0E-03
Start Flooding Goose Pit																		

Year	GoldSim Month		NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria					11	0.01		0.006	0.01		500					5	500
CEQG criteria[1]*			4.92	0.019	2.9	0.001-0.007			0.001				0.0008			0.03	
MMER criteria[5]**						0.2										0.5	
NORTH PORTAGE PIT																	
3	56 - 59	Summer Average	7.4E+00	1.1E-03	8.3E+00	1.7E-03	7.9E-03	3.5E-03	3.9E-04	3.6E-01	5.2E+00	2.6E-02	3.7E-05	1.5E-03	1.1E-03	2.2E-02	3.0E+01
4	68 - 71	Summer Average	8.9E+00	1.4E-03	1.0E+01	2.9E-03	1.1E-02	5.0E-03	5.8E-04	6.3E-01	8.8E+00	4.3E-02	5.7E-05	2.7E-03	1.6E-03	3.7E-02	4.1E+01
Start Flooding North Portage Pit																	
THIRD PORTAGE PIT																	
1	32 - 35	Summer Average	2.1E+01	3.3E-03	2.4E+01	2.5E-03	1.3E-01	1.4E-03	4.2E-04	2.3E+00	2.7E+01	2.3E-01	4.2E-05	2.5E-03	7.9E-04	2.2E-02	5.6E+02
2	44 - 47	Summer Average	8.4E+00	1.3E-03	9.5E+00	4.6E-03	1.8E-01	3.3E-03	7.9E-04	3.3E+00	4.0E+01	3.3E-01	7.9E-05	3.9E-03	1.6E-03	4.5E-02	1.0E+03
3	56 - 59	Summer Average	3.9E+00	6.0E-04	4.4E+00	6.3E-03	1.7E-01	4.8E-03	1.1E-03	3.4E+00	4.2E+01	3.3E-01	1.0E-04	4.2E-03	2.2E-03	6.8E-02	9.9E+02
4	68 - 71	Summer Average	3.5E+00	5.5E-04	4.0E+00	7.6E-03	1.8E-01	5.7E-03	1.2E-03	3.7E+00	4.6E+01	3.4E-01	1.2E-04	4.6E-03	2.5E-03	8.5E-02	9.9E+02
Start Flooding Third Portage Pit																	
GOOSE ISLAND PIT																	
2	44 - 47	Summer Average	5.4E+00	8.3E-04	6.0E+00	1.2E-03	1.2E-01	2.7E-04	2.1E-04	1.9E+00	2.2E+01	2.0E-01	2.1E-05	2.0E-03	3.3E-04	5.4E-03	6.8E+02
3	56 - 59	Summer Average	3.6E+00	5.6E-04	4.0E+00	1.1E-03	1.1E-01	2.6E-04	2.0E-04	1.8E+00	2.1E+01	1.9E-01	2.0E-05	1.9E-03	3.2E-04	5.1E-03	6.7E+02
Start Flooding Goose Pit																	

NOTES:
1. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
2. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
3. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
4. Freshwater aquatic life criterion or guideline is hardness dependant.
5. Maximum authorized monthly mean concentration (based on **total** concentration).

* December 2006
** June 6, 2002

Table III-7
Predicted Water Quality (Dissolved Constituents) Possible Poor End Scenario
Portage Attenuation Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)
RRNWT - DW criteria			***6.5-8.5***		***0.1***		***0.025***	***5***	***1***				***0.005***	***250***					***0.05***	***1***	***1.5***	***0.3***
CEQG criteria[2]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**						**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**
MMER criteria[6]**			**6.0 - 9.5**				**0.5**								**1**					**0.3**		
8 METER ACTIVE ZONE																						
	32	June	***6.0***	5.9E-06	8.8E-02	4.7E+00	1.9E-04	2.3E-02	4.2E-03	9.6E-05	3.0E-05	3.9E+00	**4.0E-05**	2.4E+01	0.0E+00	0.0E+00	0.0E+00	1.7E-03	1.2E-04	5.8E-04	6.2E-02	6.8E-02
	33	July	No Discharge																			
	34	August	No Discharge																			
1	35	September	***6.0***	1.9E-05	***3.2E-01***	1.4E+01	**1.6E-02**	1.1E-01	1.3E-02	1.1E-03	1.4E-04	1.3E+01	**1.8E-04**	8.0E+01	0.0E+00	0.0E+00	0.0E+00	8.1E-03	2.9E-04	**3.7E-03**	**2.0E-01**	***1.1E+00***
	44	June	***6.0***	1.7E-05	9.6E-02	2.1E+01	**8.9E-03**	1.5E-01	2.2E-02	1.0E-03	1.8E-04	3.4E+01	**6.4E-05**	***2.7E+02***	0.0E+00	0.0E+00	0.0E+00	2.0E-03	2.2E-04	1.6E-03	1.2E-01	***4.0E-01***
	45	July	***6.0***	2.3E-05	***2.4E-01***	2.5E+01	**1.2E-02**	1.7E-01	2.4E-02	1.2E-03	2.1E-04	3.8E+01	**1.3E-04**	***2.9E+02***	0.0E+00	0.0E+00	0.0E+00	5.2E-03	3.1E-04	2.6E-03	**2.0E-01**	***5.5E-01***
	46	August	***6.0***	2.7E-05	***3.0E-01***	2.8E+01	**1.9E-02**	2.0E-01	2.8E-02	1.8E-03	2.6E-04	4.2E+01	**1.7E-04**	***3.3E+02***	0.0E+00	0.0E+00	0.0E+00	7.1E-03	3.7E-04	**3.9E-03**	**2.3E-01**	***9.9E-01***
2	47	September	***6.0***	2.8E-05	***2.8E-01***	2.8E+01	***2.9E-02***	2.2E-01	3.0E-02	3.0E-03	3.1E-04	4.4E+01	**1.8E-04**	***3.4E+02***	0.0E+00	0.0E+00	0.0E+00	7.5E-03	4.0E-04	**5.1E-03**	**2.2E-01**	***1.5E+00***
	56	June	***6.0***	2.2E-05	***1.2E-01***	2.6E+01	**1.6E-02**	1.8E-01	2.7E-02	2.0E-03	2.5E-04	4.8E+01	**8.6E-05**	***4.0E+02***	0.0E+00	0.0E+00	0.0E+00	2.8E-03	2.9E-04	2.7E-03	**1.4E-01**	***7.0E-01***
	57	July	***6.0***	2.7E-05	***2.1E-01***	2.9E+01	**2.1E-02**	2.1E-01	3.0E-02	2.4E-03	2.9E-04	5.2E+01	**1.3E-04**	***4.3E+02***	0.0E+00	0.0E+00	0.0E+00	4.9E-03	3.6E-04	3.5E-03	**1.9E-01**	***8.5E-01***
	58	August	***6.0***	2.8E-05	***2.4E-01***	2.9E+01	***2.7E-02***	2.2E-01	3.1E-02	3.0E-03	3.1E-04	5.1E+01	**1.5E-04**	***4.2E+02***	0.0E+00	0.0E+00	0.0E+00	6.1E-03	3.9E-04	**4.4E-03**	**2.0E-01**	***1.2E+00***
3	59	September	***6.0***	2.7E-05	***2.2E-01***	2.6E+01	***3.9E-02***	2.1E-01	3.0E-02	4.6E-03	3.4E-04	4.5E+01	**1.6E-04**	***3.6E+02***	0.0E+00	0.0E+00	0.0E+00	6.5E-03	4.1E-04	**5.7E-03**	**1.8E-01**	***1.7E+00***
	68	June	***6.0***	2.2E-05	***1.2E-01***	2.5E+01	**1.5E-02**	1.8E-01	2.8E-02	2.0E-03	2.5E-04	4.6E+01	**8.9E-05**	***3.8E+02***	0.0E+00	0.0E+00	0.0E+00	3.0E-03	2.9E-04	3.1E-03	**1.4E-01**	***8.3E-01***
	69	July	***6.0***	2.6E-05	***1.9E-01***	2.8E+01	**2.0E-02**	2.0E-01	3.0E-02	2.4E-03	2.9E-04	4.9E+01	**1.3E-04**	***4.0E+02***	0.0E+00	0.0E+00	0.0E+00	4.8E-03	3.5E-04	3.9E-03	**1.8E-01**	***1.0E+00***
	70	August	***6.0***	2.7E-05	***2.2E-01***	2.6E+01	***2.7E-02***	2.0E-01	3.0E-02	3.2E-03	3.1E-04	4.5E+01	**1.5E-04**	***3.6E+02***	0.0E+00	0.0E+00	0.0E+00	6.2E-03	3.8E-04	**5.1E-03**	**1.8E-01**	***1.4E+00***
4	71	September	***6.0***	2.8E-05	***2.3E-01***	2.4E+01	***4.6E-02***	2.0E-01	3.1E-02	5.6E-03	3.8E-04	4.0E+01	**1.8E-04**	***3.1E+02***	0.0E+00	0.0E+00	0.0E+00	7.8E-03	4.4E-04	**7.5E-03**	**1.7E-01**	***2.2E+00***
	80	June	***6.0***	1.6E-05	8.9E-02	1.5E+01	***3.6E-02***	1.2E-01	1.9E-02	4.5E-03	2.4E-04	2.7E+01	**7.7E-05**	2.2E+02	0.0E+00	0.0E+00	0.0E+00	2.9E-03	2.6E-04	**3.2E-03**	8.5E-02	***7.8E-01***
	81	July	No Discharge																			
	82	August	No Discharge																			
5	83	September	No Discharge																			
Attenuation Pond transfer to Goose Island Pit																						

Year	GoldSim Month	Actual Month	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Decant Rate m3/mon
RRNWT - DW criteria				***0.001***				***0.05***		***200***				***11***		***0.01***		***0.006***	***0.01***		***500***					***5***	***500***	
CEQG criteria[2]*				**0.000026**					**0.073**		**0.025-0.15**	**4.92**	**0.019**	**2.9**		**0.001-0.007**			**0.001**				**0.0008**			**0.03**		
MMER criteria[6]**											**0.5**					**0.2**										**0.5**		
8 METER ACTIVE ZONE																												
	32	June	1.6E+01	1.5E-05	4.3E-01	9.4E-04	1.4E+00	2.0E-02	8.5E-04	8.4E+00	1.6E-03	**7.2E+00**	8.8E-04	**8.1E+00**	5.2E-03	1.6E-04	1.0E-02	6.3E-05	8.5E-05	3.7E-01	4.5E+00	1.9E-02	1.4E-05	3.1E-04	1.7E-03	2.0E-03	6.4E+01	224,770
	33	July																										0
	34	August																										0
1	35	September	5.3E+01	**5.0E-05**	1.4E+00	2.6E-03	4.9E+00	***1.5E-01***	2.6E-03	2.1E+01	**3.1E-02**	**7.5E+00**	9.3E-04	**8.5E+00**	2.3E-02	**1.8E-03**	3.3E-02	6.5E-04	2.2E-04	1.4E+00	2.0E+01	7.7E-02	2.6E-05	1.1E-03	1.2E-03	**5.0E-02**	1.7E+02	56,137
	44	June	1.4E+02	1.1E-05	2.8E+00	4.3E-03	1.2E+01	***1.3E-01***	6.6E-03	6.4E+01	8.0E-03	**6.4E+00**	7.9E-04	**7.2E+00**	3.1E-02	1.2E-03	8.4E-02	7.0E-04	2.1E-04	1.5E+00	1.8E+01	1.5E-01	2.2E-05	1.6E-03	4.8E-04	1.3E-02	4.4E+02	456,560
	45	July	1.5E+02	**3.3E-05**	3.1E+00	4.9E-03	1.3E+01	***1.6E-01***	6.9E-03	7.0E+01	1.5E-02	**6.2E+00**	7.6E-04	**6.9E+00**	3.6E-02	1.5E-03	8.8E-02	8.1E-04	2.5E-04	1.9E+00	2.4E+01	1.6E-01	2.6E-05	1.9E-03	5.1E-04	2.3E-02	4.8E+02	118,990
	46	August	1.7E+02	**4.2E-05**	3.6E+00	5.4E-03	1.5E+01	***2.1E-01***	7.5E-03	7.8E+01	2.7E-02	**5.4E+00**	6.6E-04	**6.1E+00**	4.2E-02	2.2E-03	9.6E-02	1.2E-03	3.3E-04	2.3E+00	2.8E+01	1.8E-01	3.4E-05	2.2E-03	6.4E-04	**4.0E-02**	***5.4E+02***	104,110
2	47	September	1.8E+02	**4.2E-05**	3.9E+00	5.6E-03	1.6E+01	***2.6E-01***	7.5E-03	8.1E+01	3.7E-02	**5.1E+00**	6.3E-04	**5.8E+00**	4.6E-02	2.8E-03	9.8E-02	1.8E-03	4.2E-04	2.3E+00	3.0E+01	1.9E-01	4.3E-05	2.3E-03	8.5E-04	**5.3E-02**	***5.6E+02***	181,290
	56	June	1.9E+02	1.5E-05	3.9E+00	5.2E-03	1.7E+01	***1.7E-01***	7.8E-03	9.4E+01	1.5E-02	3.9E+00	4.8E-04	**4.4E+00**	3.9E-02	1.8E-03	1.0E-01	1.3E-03	3.1E-04	1.8E+00	2.2E+01	1.8E-01	3.1E-05	2.0E-03	6.4E-04	1.9E-02	***6.2E+02***	456,560
	57	July	2.1E+02	**2.9E-05**	4.3E+00	5.8E-03	1.9E+01	***2.1E-01***	8.5E-03	1.0E+02	2.0E-02	4.5E+00	5.6E-04	**5.1E+00**	4.4E-02	2.1E-03	1.1E-01	1.6E-03	3.7E-04	2.2E+00	2.7E+01	2.0E-01	3.7E-05	2.4E-03	7.5E-04	2.8E-02	***6.8E+02***	456,560
	58	August	2.0E+02	**3.5E-05**	4.3E+00	5.9E-03	1.8E+01	***2.4E-01***	8.3E-03	9.8E+01	2.9E-02	3.8E+00	4.7E-04	**4.3E+00**	4.6E-02	2.5E-03	1.1E-01	1.9E-03	4.1E-04	2.3E+00	2.8E+01	2.0E-01	4.2E-05	2.5E-03	8.6E-04	**4.0E-02**	***6.6E+02***	364,100
3	59	September	1.8E+02	**3.6E-05**	4.0E+00	5.4E-03	1.6E+01	***2.7E-01***	7.3E-03	8.5E+01	3.9E-02	3.4E+00	4.2E-04	**3.8E+00**	4.8E-02	3.1E-03	9.7E-02	2.8E-03	5.1E-04	2.1E+00	2.8E+01	1.9E-01	5.1E-05	2.5E-03	1.1E-03	**5.1E-02**	***5.8E+02***	226,520
	68	June	1.8E+02	1.5E-05	3.8E+00	5.2E-03	1.7E+01	***1.9E-01***	7.8E-03	8.9E+01	1.7E-02	2.6E+00	3.2E-04	**3.0E+00**	3.9E-02	1.9E-03	1.0E-01	1.2E-03	3.3E-04	1.8E+00	2.2E+01	1.8E-01	3.3E-05	2.1E-03	6.4E-04	2.2E-02	***5.9E+02***	456,560
	69	July	2.0E+02	**2.7E-05**	4.0E+00	5.7E-03	1.7E+01	***2.2E-01***	8.2E-03	9.3E+01	2.4E-02	3.4E+00	4.1E-04	**3.8E+00**	4.4E-02	2.3E-03	1.1E-01	1.5E-03	3.8E-04	2.1E+00	2.6E+01	2.0E-01	3.8E-05	2.3E-03	7.4E-04	**3.1E-02**	***6.3E+02***	456,560
	70	August	1.8E+02	**3.3E-05**	3.9E+00	5.4E-03	1.6E+01	***2.5E-01***	7.6E-03	8.5E+01	3.4E-02	3.0E+00	3.7E-04	**3.4E+00**	4.4E-02	2.8E-03	9.8E-02	1.9E-03	4.3E-04	2.1E+00	2.7E+01	1.9E-01	4.4E-05	2.3E-03	8.6E-04	**4.6E-02**	***5.8E+02***	249,820
4	71	September	1.6E+02	**4.0E-05**	3.7E+00	5.1E-03	1.4E+01	***3.3E-01***	6.7E-03	7.4E+01	5.3E-02	3.2E+00	3.9E-04	**3.6E+00**	4.8E-02	3.9E-03	8.8E-02	3.2E-03	6.0E-04	2.1E+00	2.8E+01	1.8E-01	6.1E-05	2.5E-03	1.3E-03	**6.5E-02**	***5.1E+02***	129,460
	80	June	1.1E+02	1.9E-05	2.3E+00	3.2E-03	9.5E+00	***1.6E-01***	4.6E-03	5.0E+01	1.9E-02	1.4E+00	1.8E-04	1.6E+00	2.8E-02	1.7E-03	6.1E-02	2.8E-03	3.8E-04	1.1E+00	1.4E+01	1.2E-01	3.9E-05	1.6E-03	1.0E-03	2.2E-02	3.4E+02	185,340
	81	July																										0
	82	August																										0
5	83	September																										0
Attenuation Pond transfer to Goose Island Pit																												

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table III-8
Predicted Water Quality (Dissolved Constituents) Possible Poor End Scenario
Portage Reclaim Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005	250					0.05	1	1.5	0.3		0.001
CEQG criteria[2]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007						0.001/0.0089	0.002-0.004	0.12	0.3		0.000026
MMER criteria[6]**			6.0 - 9.5				0.5								1					0.3				
1	27 - 38	Annual Average	8.0	4.9E-04	3.0E-01	9.9E+01	1.7E-02	2.0E-01	1.1E-01	7.6E-03	7.1E-03	1.8E+02	8.3E-04	6.0E+01	2.5E+01	3.0E+02	6.5E+02	4.8E-01	7.5E-03	4.0E-01	6.7E-01	1.5E+01	5.3E+02	8.7E-05
2	39 - 50	Annual Average	8.0	6.6E-04	3.8E-01	1.6E+02	3.2E-02	3.8E-01	1.7E-01	1.2E-02	1.1E-02	4.0E+02	1.2E-03	2.8E+02	2.9E+01	4.1E+02	9.1E+02	7.2E-01	1.1E-02	6.8E-01	1.0E+00	2.2E+01	1.1E+03	1.0E-04
3	51 - 62	Annual Average	8.0	8.0E-04	4.0E-01	1.9E+02	4.2E-02	4.7E-01	2.2E-01	1.4E-02	1.2E-02	4.3E+02	1.4E-03	4.6E+02	2.5E+01	5.2E+02	1.0E+03	7.8E-01	1.2E-02	6.5E-01	1.1E+00	2.5E+01	1.3E+03	1.1E-04
4	63 - 74	Annual Average	8.0	6.6E-04	5.3E-01	2.3E+02	5.1E-02	5.1E-01	2.8E-01	1.6E-02	1.3E-02	8.2E+02	1.5E-03	5.1E+02	1.1E+01	6.4E+02	8.1E+02	6.2E-01	1.3E-02	4.5E-01	1.1E+00	1.7E+01	2.3E+03	1.2E-04
Merging of Attenuation Pond and Tailing Reclaim Pond (in mid-year 5)																								
5	75 - 86	Annual Average	8.0	4.5E-04	7.0E-01	2.7E+02	6.7E-02	5.3E-01	3.4E-01	1.8E-02	1.4E-02	1.3E+03	1.5E-03	4.9E+02	1.7E+00	7.1E+02	5.2E+02	4.4E-01	1.4E-02	3.0E-01	1.1E+00	8.5E+00	3.5E+03	1.4E-04
6	87 - 98	Annual Average	8.0	2.4E-04	4.7E-01	1.9E+02	5.8E-02	3.2E-01	2.4E-01	1.4E-02	9.5E-03	9.9E+02	1.0E-03	1.5E+02	1.1E+00	5.1E+02	2.6E+02	2.4E-01	9.8E-03	1.6E-01	6.9E-01	2.7E+00	2.7E+03	1.2E-04
7	99 - 110	Annual Average	8.0	2.4E-04	5.4E-01	2.1E+02	1.0E-01	3.6E-01	2.7E-01	2.0E-02	1.0E-02	1.1E+03	1.2E-03	1.1E+02	1.1E+00	5.5E+02	2.5E+02	2.5E-01	1.1E-02	1.6E-01	7.3E-01	2.3E+00	3.0E+03	1.5E-04
8	111 - 122	Annual Average	8.0	2.2E-05	5.2E-02	2.1E+01	1.3E-02	3.6E-02	2.6E-02	2.2E-03	1.0E-03	1.0E+02	1.1E-04	8.5E+00	9.5E-02	5.2E+01	2.3E+01	2.2E-02	1.0E-03	1.4E-02	6.8E-02	2.0E-01	2.8E+02	1.7E-05

Year	GoldSim Month		K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria						0.05		200				11		0.01		0.006	0.01		500					5	500
CEQG criteria[2]*							0.073		0.025-0.15	4.92	0.019	2.9		0.001-0.007			0.001				0.0008			0.03	
MMER criteria[6]**									0.5					0.2										0.5	
1	27 - 38	Annual Average	2.0E+02	7.3E-02	1.8E+01	8.5E-02	7.7E-02	1.3E+03	2.4E-02	1.6E+00	2.0E-02	2.8E+00	5.2E-01	1.3E-03	3.6E-01	5.0E-03	1.4E-02	6.8E+00	3.9E+03	9.7E-01	1.5E-03	9.3E-03	2.2E-02	2.8E-02	6.8E+03
2	39 - 50	Annual Average	2.9E+02	1.1E-01	3.6E+01	2.2E-01	1.2E-01	2.0E+03	4.2E-02	3.5E+00	4.2E-02	5.4E+00	8.6E-01	2.8E-03	6.8E-01	7.7E-03	2.1E-02	1.1E+01	6.0E+03	1.6E+00	2.1E-03	1.5E-02	2.5E-02	5.6E-02	1.1E+04
3	51 - 62	Annual Average	3.3E+02	1.3E-01	4.8E+01	3.3E-01	1.8E-01	2.3E+03	5.9E-02	3.0E+00	3.7E-02	5.0E+00	9.2E-01	3.5E-03	6.8E-01	2.0E-02	2.5E-02	1.3E+01	6.9E+03	2.0E+00	2.5E-03	2.1E-02	2.6E-02	6.7E-02	1.2E+04
4	63 - 74	Annual Average	2.9E+02	1.3E-01	6.2E+01	4.9E-01	4.3E-01	2.2E+03	1.1E-01	2.5E+00	3.0E-02	4.3E+00	9.0E-01	4.0E-03	4.9E-01	8.3E-02	2.6E-02	1.2E+01	8.4E+03	2.7E+00	2.6E-03	4.1E-02	2.7E-02	8.5E-02	1.4E+04
Merging of Attenuation Pond and Tailing Reclaim Pond (in mid-year 5)																									
5	75 - 86	Annual Average	2.3E+02	1.4E-01	7.2E+01	6.7E-01	6.6E-01	1.9E+03	1.7E-01	2.0E+00	2.5E-02	3.9E+00	9.1E-01	4.5E-03	3.4E-01	1.4E-01	2.7E-02	1.1E+01	9.7E+03	3.3E+00	2.7E-03	6.1E-02	2.8E-02	1.1E-01	1.5E+04
6	87 - 98	Annual Average	1.4E+02	9.3E-02	4.6E+01	4.6E-01	5.2E-01	1.2E+03	1.3E-01	5.4E-01	6.6E-03	1.7E+00	6.2E-01	2.8E-03	1.4E-01	1.2E-01	1.9E-02	6.6E+00	7.1E+03	2.5E+00	1.9E-03	4.7E-02	2.8E-02	7.9E-02	1.1E+04
7	99 - 110	Annual Average	1.4E+02	1.0E-01	5.0E+01	5.9E-01	5.8E-01	1.2E+03	1.5E-01	3.1E-01	1.6E-03	1.5E+00	6.9E-01	3.5E-03	1.3E-01	1.4E-01	2.1E-02	7.1E+00	7.7E+03	2.8E+00	2.1E-03	5.3E-02	2.9E-02	1.0E-01	1.4E+04
8	111 - 122	Annual Average	1.3E+01	9.3E-03	4.9E+00	6.1E-02	5.5E-02	1.1E+02	1.5E-02	1.8E-02	9.7E-05	1.3E-01	6.6E-02	3.5E-04	1.2E-02	1.3E-02	2.0E-03	6.7E-01	7.2E+02	2.8E-01	2.0E-04	5.0E-03	2.8E-03	1.1E-02	1.3E+03

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table III-9
Predicted Water Quality (Dissolved Constituents) Possible Poor End Scenario
Goose Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)
RRNWT - DW criteria			***6.5-8.5***		***0.1***		***0.025***	***5***	***1***				***0.005***	***250***					***0.05***	***1***	***1.5***	***0.3***		***0.001***
CEQG criteria[2]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**						**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**		**0.000026**
MMER criteria[6]**			**6.0 - 9.5**				**0.5**								**1**					**0.3**				
8 METER ACTIVE ZONE																								
Filling of Pit Lake																								
5	79 - 86	Annual Average	6.7	1.5E-05	5.9E-02	1.4E+01	**9.8E-03**	1.0E-01	1.7E-02	1.4E-03	1.1E-04	2.1E+01	**5.1E-05**	1.6E+02	0.0E+00	0.0E+00	0.0E+00	1.3E-03	4.0E-04	1.4E-03	9.6E-02	2.8E-01	8.4E+01	2.1E-05
6	87 - 98	Annual Average	6.7	1.5E-05	5.9E-02	1.4E+01	**9.8E-03**	1.0E-01	1.7E-02	1.4E-03	1.1E-04	2.0E+01	**5.2E-05**	1.6E+02	0.0E+00	0.0E+00	0.0E+00	1.3E-03	4.1E-04	1.4E-03	9.6E-02	2.8E-01	8.2E+01	2.2E-05
7	99 - 110	Annual Average	6.7	1.5E-05	6.1E-02	1.3E+01	**9.8E-03**	9.8E-02	1.7E-02	1.4E-03	1.1E-04	1.9E+01	**5.2E-05**	1.5E+02	0.0E+00	0.0E+00	0.0E+00	1.4E-03	4.1E-04	1.4E-03	9.6E-02	2.7E-01	7.6E+01	2.3E-05
8	111 - 122	Annual Average	6.7	1.5E-05	6.1E-02	1.3E+01	**9.5E-03**	9.4E-02	1.6E-02	1.4E-03	1.0E-04	1.8E+01	**5.2E-05**	1.3E+02	0.0E+00	0.0E+00	0.0E+00	1.4E-03	4.2E-04	1.4E-03	9.5E-02	2.6E-01	7.1E+01	2.4E-05
9	123 - 134	Annual Average	6.7	1.4E-05	6.1E-02	1.2E+01	**9.3E-03**	8.9E-02	1.5E-02	1.4E-03	9.4E-05	1.6E+01	**5.2E-05**	1.2E+02	0.0E+00	0.0E+00	0.0E+00	1.4E-03	4.2E-04	1.4E-03	9.3E-02	2.5E-01	6.5E+01	2.5E-05
10	135 - 146	Annual Average	6.7	1.4E-05	6.0E-02	1.1E+01	**8.9E-03**	8.5E-02	1.5E-02	1.3E-03	8.7E-05	1.5E+01	**5.1E-05**	1.1E+02	0.0E+00	0.0E+00	0.0E+00	1.4E-03	4.3E-04	1.3E-03	9.1E-02	2.4E-01	6.0E+01	2.5E-05
11	147 - 158	Annual Average	6.7	1.4E-05	5.8E-02	1.1E+01	**8.4E-03**	8.1E-02	1.4E-02	1.3E-03	8.1E-05	1.4E+01	**5.0E-05**	9.9E+01	0.0E+00	0.0E+00	0.0E+00	1.4E-03	4.3E-04	1.3E-03	9.0E-02	2.3E-01	5.4E+01	2.6E-05
12	159 - 170	Annual Average	6.7	1.4E-05	5.9E-02	1.0E+01	**8.1E-03**	8.0E-02	1.4E-02	1.3E-03	7.7E-05	1.3E+01	**5.1E-05**	9.3E+01	0.0E+00	0.0E+00	0.0E+00	1.4E-03	4.4E-04	1.3E-03	9.0E-02	2.2E-01	5.2E+01	**2.6E-05**
13	171 - 182	Annual Average	6.7	1.4E-05	6.2E-02	1.1E+01	**8.1E-03**	8.0E-02	1.4E-02	1.3E-03	7.8E-05	1.3E+01	**5.2E-05**	9.3E+01	0.0E+00	0.0E+00	0.0E+00	1.4E-03	4.4E-04	1.3E-03	9.2E-02	2.2E-01	5.2E+01	**2.7E-05**
Long-term Goose Pit Lake Water Quality																								
23	291 - 300	Annual Average	6.7	1.4E-05	7.0E-02	1.1E+01	**8.2E-03**	8.1E-02	1.4E-02	1.3E-03	8.0E-05	1.3E+01	**5.5E-05**	9.4E+01	0.0E+00	0.0E+00	0.0E+00	1.6E-03	4.5E-04	1.4E-03	9.7E-02	2.3E-01	5.3E+01	**2.8E-05**

Year	GoldSim Month		K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria						***0.05***		***200***				***11***		***0.01***		***0.006***	***0.01***		***500***					***5***	***500***
CEQG criteria[2]*							**0.073**		**0.025-0.15**	**4.92**	**0.019**	**2.9**		**0.001-0.007**			**0.001**				**0.0008**			**0.03**	
MMER criteria[6]**									**0.5**					**0.2**										**0.5**	
8 METER ACTIVE ZONE																									
Filling of Pit Lake																									
5	79 - 86	Annual Average	2.2E+00	3.6E-03	7.5E+00	***7.1E-02***	3.7E-03	3.8E+01	5.2E-03	4.3E-01	2.6E-04	4.8E-01	1.7E-02	8.1E-04	4.5E-02	1.0E-03	4.2E-04	8.0E-01	1.1E+01	7.9E-02	6.8E-05	1.1E-03	8.3E-03	7.2E-03	2.6E+02
6	87 - 98	Annual Average	2.2E+00	3.6E-03	7.3E+00	***6.9E-02***	3.6E-03	3.7E+01	5.3E-03	2.9E-01	1.8E-04	3.4E-01	1.7E-02	8.0E-04	4.4E-02	1.0E-03	4.3E-04	7.8E-01	1.0E+01	7.7E-02	7.0E-05	1.0E-03	8.7E-03	7.4E-03	2.5E+02
7	99 - 110	Annual Average	2.1E+00	3.5E-03	6.8E+00	***6.6E-02***	3.4E-03	3.4E+01	5.3E-03	2.1E-01	1.3E-04	2.4E-01	1.6E-02	7.8E-04	4.1E-02	1.0E-03	4.3E-04	7.4E-01	1.0E+01	7.2E-02	7.2E-05	1.0E-03	8.9E-03	7.5E-03	2.3E+02
8	111 - 122	Annual Average	2.0E+00	3.4E-03	6.4E+00	***6.2E-02***	3.1E-03	3.2E+01	5.3E-03	1.7E-01	1.0E-04	1.9E-01	1.5E-02	7.5E-04	3.8E-02	1.0E-03	4.3E-04	7.0E-01	9.5E+00	6.6E-02	7.3E-05	9.5E-04	9.2E-03	7.4E-03	2.2E+02
9	123 - 134	Annual Average	1.9E+00	3.3E-03	5.9E+00	***5.8E-02***	2.9E-03	2.9E+01	5.2E-03	3.9E-01	2.4E-04	4.4E-01	1.4E-02	7.2E-04	3.5E-02	9.8E-04	4.4E-04	6.5E-01	9.0E+00	6.1E-02	7.4E-05	8.9E-04	9.5E-03	7.4E-03	2.0E+02
10	135 - 146	Annual Average	1.8E+00	3.2E-03	5.3E+00	***5.4E-02***	2.6E-03	2.6E+01	5.1E-03	6.2E-01	3.8E-04	7.0E-01	1.3E-02	6.8E-04	3.1E-02	9.5E-04	4.4E-04	6.0E-01	8.5E+00	5.5E-02	7.6E-05	8.3E-04	9.9E-03	7.2E-03	1.8E+02
11	147 - 158	Annual Average	1.7E+00	3.1E-03	4.9E+00	5.0E-02	2.4E-03	2.4E+01	4.9E-03	5.6E-01	3.4E-04	6.3E-01	1.2E-02	6.5E-04	2.8E-02	9.1E-04	4.5E-04	5.5E-01	7.9E+00	5.0E-02	7.8E-05	7.7E-04	1.0E-02	6.9E-03	1.6E+02
12	159 - 170	Annual Average	1.7E+00	3.1E-03	4.7E+00	4.8E-02	2.3E-03	2.2E+01	4.8E-03	5.3E-01	3.2E-04	6.0E-01	1.1E-02	6.4E-04	2.7E-02	8.9E-04	4.5E-04	5.3E-01	7.7E+00	4.7E-02	7.9E-05	7.4E-04	1.1E-02	6.8E-03	1.6E+02
13	171 - 182	Annual Average	1.7E+00	3.1E-03	4.7E+00	4.8E-02	2.3E-03	2.2E+01	4.8E-03	5.3E-01	3.2E-04	6.0E-01	1.1E-02	6.4E-04	2.7E-02	8.9E-04	4.5E-04	5.4E-01	7.8E+00	4.7E-02	7.9E-05	7.5E-04	1.1E-02	6.8E-03	1.6E+02
Long-term Goose Pit Lake Water Quality																									
23	291 - 300	Annual Average	1.7E+00	3.2E-03	4.7E+00	4.9E-02	2.3E-03	2.3E+01	5.0E-03	5.3E-01	3.3E-04	6.1E-01	1.2E-02	6.5E-04	2.7E-02	9.0E-04	4.6E-04	5.7E-01	8.1E+00	4.8E-02	8.0E-05	7.7E-04	1.1E-02	7.0E-03	1.6E+02

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table III-10
Predicted Water Quality (Dissolved Constituents) Possible Poor End Scenario
Portage Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)
RRNWT - DW criteria			***6.5-8.5***		***0.1***		***0.025***	***5***	***1***				***0.005***	***250***					***0.05***	***1***	***1.5***	***0.3***		***0.001***
CEQG criteria[2]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**						**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**		**0.000026**
MMER criteria[6]**			**6.0 - 9.5**				**0.5**								**1**					**0.3**				
8 METER ACTIVE ZONE																								
Filling of Pit Lake																								
5	75 - 86	Annual Average	6.7	6.7E-06	2.4E-02	3.4E+00	1.5E-04	3.0E-02	6.0E-03	3.0E-04	3.4E-06	1.3E+00	**2.3E-05**	3.2E-01	0.0E+00	0.0E+00	0.0E+00	5.3E-04	3.1E-04	4.1E-04	4.7E-02	2.0E-02	5.5E+00	1.8E-05
6	87 - 98	Annual Average	6.7	2.0E-05	8.2E-02	1.4E+01	**1.3E-02**	1.1E-01	2.1E-02	2.0E-03	1.6E-04	1.8E+01	**8.5E-05**	1.3E+02	0.0E+00	0.0E+00	0.0E+00	2.9E-03	5.9E-04	**4.0E-03**	1.1E-01	***8.7E-01***	7.1E+01	**3.5E-05**
7	99 - 110	Annual Average	6.7	1.9E-05	7.7E-02	1.3E+01	**1.4E-02**	1.1E-01	2.1E-02	1.9E-03	1.5E-04	1.7E+01	**8.3E-05**	1.2E+02	0.0E+00	0.0E+00	0.0E+00	2.9E-03	5.9E-04	**4.0E-03**	1.1E-01	***8.2E-01***	6.8E+01	**3.4E-05**
8	111 - 122	Annual Average	6.7	1.8E-05	7.2E-02	1.3E+01	**1.4E-02**	1.1E-01	2.0E-02	1.8E-03	1.5E-04	1.6E+01	**8.0E-05**	1.1E+02	0.0E+00	0.0E+00	0.0E+00	2.8E-03	5.9E-04	**4.0E-03**	1.0E-01	***7.9E-01***	6.3E+01	**3.4E-05**
9	123 - 134	Annual Average	6.7	1.8E-05	6.8E-02	1.2E+01	**1.4E-02**	1.0E-01	1.9E-02	1.8E-03	1.4E-04	1.4E+01	**7.8E-05**	9.9E+01	0.0E+00	0.0E+00	0.0E+00	2.7E-03	5.9E-04	**4.0E-03**	9.7E-02	***7.5E-01***	5.8E+01	**3.4E-05**
10	135 - 146	Annual Average	6.7	1.7E-05	6.4E-02	1.1E+01	**1.5E-02**	9.9E-02	1.9E-02	1.7E-03	1.4E-04	1.3E+01	**7.6E-05**	8.9E+01	0.0E+00	0.0E+00	0.0E+00	2.6E-03	5.9E-04	**3.9E-03**	9.4E-02	***7.1E-01***	5.4E+01	**3.3E-05**
11	147 - 158	Annual Average	6.7	1.6E-05	6.0E-02	1.1E+01	**1.4E-02**	9.3E-02	1.8E-02	1.6E-03	1.3E-04	1.2E+01	**7.2E-05**	7.7E+01	0.0E+00	0.0E+00	0.0E+00	2.4E-03	5.7E-04	**3.7E-03**	8.9E-02	***6.6E-01***	4.8E+01	**3.3E-05**
12	159 - 170	Annual Average	6.7	1.5E-05	5.5E-02	9.7E+00	**1.2E-02**	8.5E-02	1.6E-02	1.5E-03	1.1E-04	1.0E+01	**6.6E-05**	6.6E+01	0.0E+00	0.0E+00	0.0E+00	2.2E-03	5.5E-04	**3.3E-03**	8.5E-02	***6.0E-01***	4.2E+01	**3.1E-05**
13	171 - 182	Annual Average	6.7	1.5E-05	5.4E-02	9.4E+00	**1.1E-02**	8.3E-02	1.6E-02	1.5E-03	1.0E-04	9.8E+00	**6.5E-05**	6.2E+01	0.0E+00	0.0E+00	0.0E+00	2.1E-03	5.5E-04	**3.2E-03**	8.4E-02	***5.7E-01***	4.0E+01	**3.2E-05**
Long-term Portage Pit Lake Water Quality																								
23	291 - 300	Annual Average	6.7	1.6E-05	7.5E-02	9.7E+00	**1.1E-02**	8.2E-02	1.6E-02	1.5E-03	1.1E-04	9.7E+00	**7.3E-05**	6.1E+01	0.0E+00	0.0E+00	0.0E+00	2.5E-03	5.5E-04	**3.2E-03**	9.5E-02	***5.7E-01***	4.0E+01	**3.4E-05**

Year	GoldSim Month		K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria						***0.05***		***200***				***11***		***0.01***		***0.006***	***0.01***		***500***					***5***	***500***
CEQG criteria[2]*							**0.073**		**0.025-0.15**	**4.92**	**0.019**	**2.9**		**0.001-0.007**			**0.001**				**0.0008**			**0.03**	
MMER criteria[6]**									**0.5**					**0.2**										**0.5**	
8 METER ACTIVE ZONE																									
Filling of Pit Lake																									
5	75 - 86	Annual Average	6.0E-01	1.5E-03	5.1E-01	2.4E-03	3.0E-04	6.0E-01	6.4E-04	0.0E+00	0.0E+00	2.7E-03	5.1E-04	1.5E-04	1.2E-03	1.5E-04	3.0E-04	5.7E-02	1.8E+00	4.6E-04	5.9E-05	9.4E-05	8.8E-03	1.8E-03	8.8E+00
6	87 - 98	Annual Average	2.4E+00	4.1E-03	6.4E+00	***1.4E-01***	3.2E-03	3.1E+01	2.0E-02	1.0E+00	6.4E-04	1.2E+00	2.1E-02	1.7E-03	3.6E-02	2.0E-03	6.5E-04	8.4E-01	1.2E+01	7.3E-02	1.1E-04	1.1E-03	1.3E-02	2.9E-02	1.7E+02
7	99 - 110	Annual Average	2.4E+00	4.0E-03	6.2E+00	***1.4E-01***	3.1E-03	2.9E+01	2.0E-02	1.0E+00	6.4E-04	1.2E+00	2.2E-02	1.6E-03	3.4E-02	2.4E-03	6.5E-04	8.2E-01	1.2E+01	7.2E-02	1.1E-04	1.0E-03	1.3E-02	**3.3E-02**	2.0E+02
8	111 - 122	Annual Average	2.3E+00	3.8E-03	5.7E+00	***1.3E-01***	2.9E-03	2.7E+01	2.0E-02	1.0E+00	6.3E-04	1.2E+00	2.2E-02	1.5E-03	3.1E-02	2.6E-03	6.4E-04	7.8E-01	1.1E+01	6.8E-02	1.1E-04	9.6E-04	1.3E-02	**3.5E-02**	1.9E+02
9	123 - 134	Annual Average	2.3E+00	3.7E-03	5.3E+00	***1.3E-01***	2.7E-03	2.4E+01	2.0E-02	1.0E+00	6.3E-04	1.1E+00	2.1E-02	**1.5E-03**	2.9E-02	2.7E-03	6.4E-04	7.3E-01	1.0E+01	6.3E-02	1.1E-04	9.0E-04	1.3E-02	**3.6E-02**	1.7E+02
10	135 - 146	Annual Average	2.2E+00	3.6E-03	4.9E+00	***1.2E-01***	2.5E-03	2.2E+01	1.9E-02	1.0E+00	6.3E-04	1.2E+00	2.0E-02	**1.4E-03**	2.6E-02	2.8E-03	6.4E-04	6.8E-01	9.9E+00	5.9E-02	1.1E-04	8.4E-04	1.3E-02	**3.7E-02**	1.6E+02
11	147 - 158	Annual Average	2.1E+00	3.4E-03	4.4E+00	***1.1E-01***	2.2E-03	1.9E+01	1.8E-02	9.5E-01	5.9E-04	1.1E+00	1.8E-02	**1.3E-03**	2.3E-02	2.7E-03	6.2E-04	6.2E-01	9.1E+00	5.2E-02	1.1E-04	7.6E-04	1.3E-02	**3.5E-02**	1.4E+02
12	159 - 170	Annual Average	1.9E+00	3.2E-03	3.8E+00	***1.0E-01***	1.9E-03	1.6E+01	1.6E-02	8.2E-01	5.0E-04	9.2E-01	1.6E-02	**1.2E-03**	2.0E-02	2.4E-03	5.9E-04	5.4E-01	8.2E+00	4.5E-02	1.0E-04	6.8E-04	1.3E-02	**3.1E-02**	1.2E+02
13	171 - 182	Annual Average	1.8E+00	3.2E-03	3.7E+00	***9.5E-02***	1.9E-03	1.5E+01	1.5E-02	7.6E-01	4.7E-04	8.6E-01	1.5E-02	**1.1E-03**	1.9E-02	2.2E-03	5.9E-04	5.1E-01	7.9E+00	4.2E-02	1.0E-04	6.5E-04	1.3E-02	2.9E-02	1.1E+02
Long-term Portage Pit Lake Water Quality																									
23	291 - 300	Annual Average	1.8E+00	3.2E-03	3.6E+00	***9.6E-02***	1.8E-03	1.5E+01	1.5E-02	7.5E-01	4.6E-04	8.5E-01	1.5E-02	**1.1E-03**	1.8E-02	2.2E-03	5.9E-04	5.6E-01	8.4E+00	4.2E-02	1.0E-04	6.8E-04	1.3E-02	2.9E-02	1.1E+02

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

APPENDIX IV

Table IV-1
Predicted Water Quality (Dissolved Constituents) Hypothetical Scenario
Vault Rock Storage Facility
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005	250				
CEQG criteria[1]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007					
MMER criteria[5]**			6.0 - 9.5				0.5								1			
8 METER ACTIVE ZONE																		
Pit start at month 72																		
	80	June	8.0	1.5E-15	1.9E-11	2.2E-08	3.5E-11	3.6E-12	7.9E-12	7.6E-14	7.6E-14	1.1E-08	7.6E-15	7.6E-11	0.0E+00	0.0E+00	0.0E+00	9.8E-14
	81	July	8.0	6.4E-06	7.7E-02	2.0E+01	1.5E-01	1.5E-02	3.3E-02	3.1E-04	3.1E-04	1.0E+01	3.1E-05	7.0E-02	0.0E+00	0.0E+00	0.0E+00	4.0E-04
	82	August	8.0	1.4E-05	1.7E-01	6.0E+01	3.1E-01	3.2E-02	7.1E-02	6.8E-04	6.8E-04	3.0E+01	6.8E-05	2.1E-01	0.0E+00	0.0E+00	0.0E+00	8.7E-04
5	83	September	8.0	1.7E-05	2.1E-01	8.5E+01	3.9E-01	4.1E-02	8.9E-02	8.5E-04	8.5E-04	4.2E+01	8.5E-05	2.9E-01	0.0E+00	0.0E+00	0.0E+00	1.1E-03
	92	June	8.0	6.7E-06	8.1E-02	2.8E+01	1.5E-01	1.6E-02	3.5E-02	3.3E-04	3.3E-04	1.4E+01	3.3E-05	9.7E-02	0.0E+00	0.0E+00	0.0E+00	4.3E-04
	93	July	8.0	1.0E-05	1.3E-01	3.7E+01	2.4E-01	2.5E-02	5.4E-02	5.2E-04	5.2E-04	1.8E+01	5.2E-05	1.3E-01	0.0E+00	0.0E+00	0.0E+00	6.6E-04
	94	August	8.0	1.9E-05	2.3E-01	8.2E+01	4.4E-01	4.5E-02	9.9E-02	9.5E-04	9.5E-04	4.1E+01	9.5E-05	2.8E-01	0.0E+00	0.0E+00	0.0E+00	1.2E-03
6	95	September	8.0	2.3E-05	2.8E-01	1.1E+02	5.3E-01	5.5E-02	1.2E-01	1.1E-03	1.1E-03	5.6E+01	1.1E-04	3.8E-01	0.0E+00	0.0E+00	0.0E+00	1.5E-03
	104	June	8.0	1.4E-05	1.8E-01	6.2E+01	3.3E-01	3.4E-02	7.4E-02	7.1E-04	7.1E-04	3.1E+01	7.1E-05	2.1E-01	0.0E+00	0.0E+00	0.0E+00	9.2E-04
	105	July	8.0	1.4E-05	1.7E-01	5.3E+01	3.3E-01	3.4E-02	7.3E-02	7.0E-04	7.0E-04	2.6E+01	7.0E-05	1.8E-01	0.0E+00	0.0E+00	0.0E+00	9.1E-04
	106	August	8.0	2.3E-05	2.7E-01	9.6E+01	5.1E-01	5.3E-02	1.2E-01	1.1E-03	1.1E-03	4.8E+01	1.1E-04	3.3E-01	0.0E+00	0.0E+00	0.0E+00	1.4E-03
7	107	September	8.0	2.6E-05	3.1E-01	1.2E+02	5.9E-01	6.1E-02	1.3E-01	1.3E-03	1.3E-03	6.1E+01	1.3E-04	4.2E-01	0.0E+00	0.0E+00	0.0E+00	1.6E-03
	116	June	8.0	7.7E-05	9.3E-01	2.3E+02	1.8E+00	1.8E-01	3.9E-01	3.8E-03	3.8E-03	1.2E+02	3.8E-04	8.0E-01	0.0E+00	0.0E+00	0.0E+00	4.9E-03
	117	July	8.0	9.4E-05	1.1E+00	2.8E+02	2.2E+00	2.2E-01	4.8E-01	4.6E-03	4.6E-03	1.4E+02	4.6E-04	9.5E-01	0.0E+00	0.0E+00	0.0E+00	6.0E-03
	118	August	8.0	1.0E-04	1.3E+00	3.1E+02	2.4E+00	2.5E-01	5.3E-01	5.1E-03	5.1E-03	1.6E+02	5.1E-04	1.1E+00	0.0E+00	0.0E+00	0.0E+00	6.6E-03
8	119	September	8.0	1.1E-04	1.4E+00	3.5E+02	2.5E+00	2.6E-01	5.7E-01	5.5E-03	5.5E-03	1.7E+02	5.5E-04	1.2E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-03
Long-Term Drainage Water Quality																		
23	296 - 299	Summer Average	8.0	2.7E-04	3.3E+00	8.0E+02	6.1E+00	6.3E-01	1.4E+00	1.3E-02	1.3E-02	4.0E+02	1.3E-03	2.8E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-02

Year	GoldSim Month	Actual Month	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[4] (mg/L)
RRNWT - DW criteria			0.05	1	1.5	0.3		0.001				0.05		200	
CEQG criteria[1]*			0.001/0.0089	0.002-0.004	0.12	0.3		0.000026					0.073		0.025-0.15
MMER criteria[5]**				0.3											0.5
8 METER ACTIVE ZONE															
Pit start at month 72															
	80	June	7.6E-14	5.0E-13	3.0E-11	4.6E-12	4.3E-08	7.6E-15	2.0E-09	7.6E-13	3.7E-09	1.5E-12	2.1E-11	9.0E+01	7.6E-14
	81	July	3.1E-04	2.1E-03	2.7E-02	4.2E-03	4.0E+01	3.1E-05	1.8E+00	7.0E-04	3.4E+00	6.4E-03	8.6E-02	6.0E+01	3.1E-04
	82	August	6.8E-04	4.5E-03	8.1E-02	1.3E-02	1.2E+02	6.8E-05	5.4E+00	2.1E-03	1.0E+01	1.4E-02	1.9E-01	6.7E+01	6.8E-04
5	83	September	8.5E-04	5.7E-03	1.1E-01	1.8E-02	1.7E+02	8.5E-05	7.6E+00	2.9E-03	1.4E+01	1.7E-02	2.3E-01	6.1E+01	8.5E-04
	92	June	3.3E-04	2.2E-03	3.8E-02	5.9E-03	5.5E+01	3.3E-05	2.5E+00	9.7E-04	4.8E+00	6.7E-03	9.1E-02	4.8E+01	3.3E-04
	93	July	5.2E-04	3.4E-03	4.9E-02	7.7E-03	7.2E+01	5.2E-05	3.3E+00	1.3E-03	6.2E+00	1.0E-02	1.4E-01	3.2E+01	5.2E-04
	94	August	9.5E-04	6.3E-03	1.1E-01	1.7E-02	1.6E+02	9.5E-05	7.4E+00	2.8E-03	1.4E+01	1.9E-02	2.6E-01	3.6E+01	9.5E-04
6	95	September	1.1E-03	7.7E-03	1.5E-01	2.3E-02	2.2E+02	1.1E-04	1.0E+01	3.8E-03	1.9E+01	2.3E-02	3.2E-01	3.5E+01	1.1E-03
	104	June	7.1E-04	4.8E-03	8.3E-02	1.3E-02	1.2E+02	7.1E-05	5.5E+00	2.1E-03	1.0E+01	1.4E-02	2.0E-01	3.9E+01	7.1E-04
	105	July	7.0E-04	4.7E-03	7.1E-02	1.1E-02	1.0E+02	7.0E-05	4.8E+00	1.8E-03	9.0E+00	1.4E-02	1.9E-01	2.5E+01	7.0E-04
	106	August	1.1E-03	7.4E-03	1.3E-01	2.0E-02	1.9E+02	1.1E-04	8.6E+00	3.3E-03	1.6E+01	2.3E-02	3.1E-01	2.7E+01	1.1E-03
7	107	September	1.3E-03	8.4E-03	1.6E-01	2.6E-02	2.4E+02	1.3E-04	1.1E+01	4.2E-03	2.1E+01	2.6E-02	3.5E-01	2.5E+01	1.3E-03
	116	June	3.8E-03	2.5E-02	3.1E-01	4.9E-02	4.6E+02	3.8E-04	2.1E+01	8.0E-03	4.0E+01	7.7E-02	1.0E+00	9.3E+00	3.8E-03
	117	July	4.6E-03	3.1E-02	3.7E-01	5.8E-02	5.4E+02	4.6E-04	2.5E+01	9.5E-03	4.7E+01	9.4E-02	1.3E+00	5.6E+00	4.6E-03
	118	August	5.1E-03	3.4E-02	4.2E-01	6.5E-02	6.1E+02	5.1E-04	2.8E+01	1.1E-02	5.3E+01	1.0E-01	1.4E+00	5.9E+00	5.1E-03
8	119	September	5.5E-03	3.7E-02	4.6E-01	7.2E-02	6.7E+02	5.5E-04	3.1E+01	1.2E-02	5.8E+01	1.1E-01	1.5E+00	6.0E+00	5.5E-03
Long-Term Drainage Water Quality															
23	296 - 299	Summer Average	1.3E-02	8.8E-02	1.1E+00	1.7E-01	1.6E+03	1.3E-03	7.2E+01	2.8E-02	1.4E+02	2.7E-01	3.6E+00	1.1E+01	1.3E-02

Year	GoldSim Month	Actual Month	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
RRNWT - DW criteria					11	0.01		0.006	0.01		500					5	500	
CEQG criteria[1]*			4.92	0.019	2.9	0.001-0.007			0.001				0.0008			0.03		
MMER criteria[5]**						0.2										0.5		
8 METER ACTIVE ZONE																		
Pit start at month 72																		
	80	June	2.3E+02	2.8E+00	2.6E+02	7.6E-15	1.1E-11	5.4E-12	3.7E-13	1.1E-09	2.3E-08	6.6E-11	1.5E-14	1.3E-11	2.7E-13	3.5E-13	5.8E+02	22,601
	81	July	1.6E+02	1.9E+00	1.8E+02	3.1E-05	9.7E-03	2.2E-02	1.5E-03	9.7E-01	2.1E+01	2.7E-01	6.4E-05	5.5E-02	1.1E-03	1.5E-03	4.5E+02	244
	82	August	1.7E+02	2.1E+00	1.9E+02	6.8E-05	2.9E-02	4.8E-02	3.3E-03	2.9E+00	6.3E+01	5.9E-01	1.4E-04	1.2E-01	2.5E-03	3.1E-03	6.0E+02	3,373
5	83	September	1.5E+02	1.9E+00	1.7E+02	8.5E-05	4.1E-02	6.0E-02	4.2E-03	4.1E+00	8.9E+01	7.4E-01	1.7E-04	1.5E-01	3.1E-03	3.9E-03	6.3E+02	6,198
	92	June	1.2E+02	1.5E+00	1.4E+02	3.3E-05	1.4E-02	2.3E-02	1.6E-03	1.4E+00	3.0E+01	2.9E-01	6.7E-05	5.8E-02	1.2E-03	1.5E-03	3.9E+02	56,502
	93	July	8.2E+01	9.9E-01	9.1E+01	5.2E-05	1.8E-02	3.7E-02	2.5E-03	1.8E+00	3.8E+01	4.5E-01	1.0E-04	9.0E-02	1.9E-03	2.4E-03	3.1E+02	542
	94	August	9.2E+01	1.1E+00	1.0E+02	9.5E-05	3.9E-02	6.7E-02	4.7E-03	3.9E+00	8.6E+01	8.2E-01	1.9E-04	1.6E-01	3.4E-03	4.4E-03	4.7E+02	6,746
6	95	September	8.6E+01	1.0E+00	9.6E+01	1.1E-04	5.3E-02	8.2E-02	5.7E-03	5.3E+00	1.2E+02	1.0E+00	2.3E-04	2.0E-01	4.2E-03	5.3E-03	5.4E+02	11,269
	104	June	9.9E+01	1.2E+00	1.1E+02	7.1E-05	2.9E-02	5.1E-02	3.5E-03	2.9E+00	6.5E+01	6.2E-01	1.4E-04	1.2E-01	2.6E-03	3.3E-03	4.3E+02	56,502
	105	July	6.2E+01	7.6E-01	7.0E+01	7.0E-05	2.5E-02	5.0E-02	3.5E-03	2.5E+00	5.6E+01	6.1E-01	1.4E-04	1.2E-01	2.5E-03	3.3E-03	3.1E+02	542
	106	August	6.8E+01	8.2E-01	7.6E+01	1.1E-04	4.6E-02	7.9E-02	5.5E-03	4.6E+00	1.0E+02	9.6E-01	2.3E-04	1.9E-01	4.0E-03	5.1E-03	4.5E+02	6,746
7	107	September	6.2E+01	7.5E-01	6.9E+01	1.3E-04	5.8E-02	9.0E-02	6.2E-03	5.8E+00	1.3E+02	1.1E+00	2.6E-04	2.2E-01	4.6E-03	5.9E-03	5.1E+02	11,269
	116	June	1.6E+01	1.9E-01	1.8E+01	3.8E-04	1.1E-01	2.7E-01	1.9E-02	1.1E+01	2.4E+02	3.3E+00	7.7E-04	6.6E-01	1.4E-02	1.8E-02	7.2E+02	161,430
	117	July	4.5E+00	5.5E-02	5.1E+00	4.6E-04	1.3E-01	3.3E-01	2.3E-02	1.3E+01	2.9E+02	4.0E+00	9.4E-04	8.1E-01	1.7E-02	2.2E-02	8.2E+02	2,712
	118	August	4.1E+00	4.9E-02	4.6E+00	5.1E-04	1.5E-01	3.6E-01	2.5E-02	1.5E+01	3.3E+02	4.5E+00	1.0E-03	8.9E-01	1.9E-02	2.4E-02	9.2E+02	33,731
8	119	September	3.1E+00	3.8E-02	3.5E+00	5.5E-04	1.6E-01	3.9E-01	2.7E-02	1.6E+01	3.6E+02	4.8E+00	1.1E-03	9.5E-01	2.0E-02	2.5E-02	1.0E+03	56,345
Long-Term Drainage Water Quality																		
23	296 - 299	Summer Average	2.8E-14	3.4E-16	2.8E-02	1.3E-03	3.8E-01	9.4E-01	6.5E-02	3.8E+01	8.4E+02	1.2E+01	2.7E-03	2.3E+00	4.8E-02	6.1E-02	2.3E+03	63,555

NOTES:
1. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
2. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
3. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
4. Freshwater aquatic life criterion or guideline is hardness dependant.
5. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table IV-2
Predicted Water Quality (Dissolved Constituents) Hypothetical Scenario
Vault Attenuation Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005
CEQG criteria[2]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007
MMER criteria[6]**			6.0 - 9.5				0.5						
	68	June	No Discharge										
	69	July	6.6	2.8E-05	6.0E-02	1.2E+01	1.5E-04	1.5E-02	5.2E-03	2.0E-04	1.0E-04	2.7E+00	6.6E-04
	70	August	6.6	3.0E-05	6.4E-02	1.3E+01	1.6E-04	1.5E-02	5.3E-03	2.0E-04	1.1E-04	2.8E+00	6.2E-04
4	71	September	6.6	1.5E-05	3.3E-02	6.5E+00	7.7E-05	6.8E-03	2.6E-03	9.7E-05	5.7E-05	1.4E+00	2.6E-04
	80	June	6.6	1.1E-05	2.5E-02	4.3E+00	4.4E-05	2.2E-03	1.4E-03	4.4E-05	4.4E-05	8.3E-01	2.2E-06
	81	July	6.6	7.0E-05	1.6E-01	2.7E+01	8.9E-04	1.4E-02	8.8E-03	2.8E-04	2.8E-04	5.3E+00	1.4E-05
	82	August	6.6	3.7E-06	1.9E-02	5.7E+00	2.4E-02	3.0E-03	5.8E-03	6.3E-05	6.3E-05	2.5E+00	5.7E-06
5	83	September	6.6	1.4E-05	4.4E-02	1.1E+01	2.8E-02	5.5E-03	8.0E-03	1.1E-04	1.1E-04	4.1E+00	8.7E-06
	92	June	6.6	1.1E-05	4.0E-02	1.0E+01	3.5E-02	5.5E-03	9.1E-03	1.1E-04	1.1E-04	3.9E+00	9.5E-06
	93	July	6.6	9.4E-05	2.3E-01	4.2E+01	3.1E-02	2.2E-02	1.8E-02	4.4E-04	4.4E-04	9.8E+00	2.5E-05
	94	August	6.6	6.4E-06	4.6E-02	1.5E+01	7.3E-02	8.2E-03	1.7E-02	1.7E-04	1.7E-04	7.0E+00	1.6E-05
6	95	September	6.6	1.5E-05	6.9E-02	2.2E+01	8.4E-02	1.1E-02	2.0E-02	2.2E-04	2.2E-04	9.6E+00	2.0E-05
	104	June	6.6	1.0E-05	5.7E-02	1.7E+01	7.7E-02	9.3E-03	1.8E-02	1.9E-04	1.9E-04	7.6E+00	1.8E-05
	105	July	6.6	9.5E-05	2.5E-01	4.8E+01	6.6E-02	2.5E-02	2.6E-02	5.1E-04	5.1E-04	1.3E+01	3.3E-05
	106	August	6.6	7.0E-06	5.4E-02	1.8E+01	8.7E-02	9.6E-03	2.0E-02	2.0E-04	2.0E-04	8.4E+00	1.9E-05
7	107	September	6.6	1.5E-05	7.7E-02	2.5E+01	9.8E-02	1.2E-02	2.3E-02	2.5E-04	2.5E-04	1.1E+01	2.3E-05
	116	June	6.6	7.3E-06	7.6E-02	1.9E+01	1.4E-01	1.5E-02	3.1E-02	3.0E-04	3.0E-04	9.4E+00	3.0E-05
	117	July	No Discharge										
	118	August	No Discharge										
8	119	September	No Discharge										

Year	GoldSim Month	Actual Month	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)
RRNWT - DW criteria			250					0.05	1	1.5	0.3		0.001		
CEQG criteria[2]*								0.001/0.0089	0.002-0.004	0.12	0.3		0.000026		
MMER criteria[6]**				1					0.3						
	68	June													
	69	July	8.0E-01	0.0E+00	0.0E+00	0.0E+00	1.3E-04	3.1E-04	1.4E-03	7.0E-02	1.3E-02	1.0E+01	1.1E-04	5.5E-01	9.1E-04
	70	August	8.3E-01	0.0E+00	0.0E+00	0.0E+00	1.4E-04	3.2E-04	1.4E-03	7.3E-02	1.4E-02	1.1E+01	1.2E-04	5.6E-01	9.1E-04
4	71	September	4.1E-01	0.0E+00	0.0E+00	0.0E+00	6.9E-05	1.5E-04	7.3E-04	3.6E-02	6.9E-03	5.2E+00	5.9E-05	2.7E-01	4.3E-04
	80	June	2.7E-01	0.0E+00	0.0E+00	0.0E+00	4.4E-05	8.8E-05	5.3E-04	2.4E-02	4.4E-03	3.1E+00	4.4E-05	1.5E-01	1.8E-04
	81	July	1.7E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-04	5.6E-04	3.3E-03	1.5E-01	2.8E-02	2.0E+01	2.8E-04	9.4E-01	1.1E-03
	82	August	8.1E-02	0.0E+00	0.0E+00	0.0E+00	7.8E-05	7.4E-05	4.8E-04	1.2E-02	2.0E-03	9.8E+00	1.6E-05	4.5E-01	2.0E-04
5	83	September	3.4E-01	0.0E+00	0.0E+00	0.0E+00	1.3E-04	1.6E-04	1.0E-03	3.7E-02	6.4E-03	1.6E+01	5.8E-05	7.3E-01	4.2E-04
	92	June	2.5E-01	0.0E+00	0.0E+00	0.0E+00	1.4E-04	1.5E-04	9.6E-04	2.9E-02	5.1E-03	1.5E+01	4.5E-05	7.0E-01	3.7E-04
	93	July	2.3E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-04	8.1E-04	4.9E-03	2.1E-01	3.8E-02	3.7E+01	3.8E-04	1.7E+00	1.7E-03
	94	August	1.2E-01	0.0E+00	0.0E+00	0.0E+00	2.2E-04	1.8E-04	1.2E-03	2.5E-02	4.1E-03	2.8E+01	2.8E-05	1.3E+00	5.2E-04
6	95	September	3.3E-01	0.0E+00	0.0E+00	0.0E+00	2.8E-04	2.7E-04	1.7E-03	4.8E-02	8.1E-03	3.8E+01	6.2E-05	1.7E+00	7.8E-04
	104	June	2.2E-01	0.0E+00	0.0E+00	0.0E+00	2.4E-04	2.2E-04	1.4E-03	3.4E-02	5.7E-03	3.0E+01	4.4E-05	1.4E+00	6.0E-04
	105	July	2.3E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-04	8.8E-04	5.4E-03	2.2E-01	3.9E-02	5.0E+01	3.8E-04	2.3E+00	1.9E-03
	106	August	1.3E-01	0.0E+00	0.0E+00	0.0E+00	2.6E-04	2.1E-04	1.4E-03	2.9E-02	4.7E-03	3.3E+01	3.1E-05	1.5E+00	6.1E-04
7	107	September	3.4E-01	0.0E+00	0.0E+00	0.0E+00	3.2E-04	3.0E-04	1.9E-03	5.1E-02	8.6E-03	4.3E+01	6.5E-05	2.0E+00	8.8E-04
	116	June	9.4E-02	0.0E+00	0.0E+00	0.0E+00	3.9E-04	3.1E-04	2.1E-03	2.8E-02	4.4E-03	3.7E+01	3.5E-05	1.7E+00	6.6E-04
	117	July													
	118	August													
8	119	September													

Year	GoldSim Month	Actual Month	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Decant Rate m3/mon
RRNWT - DW criteria				0.05		200				11		0.01		0.006	0.01		500					5	500	
CEQG criteria[2]*					0.073		0.025-0.15	4.92	0.019	2.9		0.001-0.007			0.001				0.0008			0.03		
MMER criteria[6]**							0.5					0.2										0.5		
	68	June																						0
	69	July	8.0E-01	1.6E-03	1.5E-04	7.1E-01	8.8E-04	0.0E+00	0.0E+00	3.1E-03	4.2E-02	3.8E-04	7.9E-04	1.5E-04	2.0E-04	2.1E+00	3.5E+00	1.0E-02	3.0E-05	2.3E-04	3.1E-03	2.6E-03	2.4E+01	2.8E-05
	70	August	8.3E-01	1.7E-03	1.5E-04	7.3E-01	9.3E-04	0.0E+00	0.0E+00	3.3E-03	4.5E-02	3.7E-04	7.4E-04	1.6E-04	2.0E-04	2.3E+00	3.6E+00	1.1E-02	3.0E-05	2.4E-04	2.9E-03	2.7E-03	2.5E+01	3.0E-05
4	71	September	4.1E-01	8.7E-04	6.8E-05	3.6E-01	4.7E-04	0.0E+00	0.0E+00	1.6E-03	2.3E-02	1.7E-04	3.2E-04	7.7E-05	9.7E-05	1.2E+00	1.8E+00	5.5E-03	1.4E-05	1.2E-04	1.2E-03	1.3E-03	1.2E+01	1.5E-05
	80	June	2.5E-01	6.1E-04	2.2E-05	1.4E+01	3.3E-04	3.6E+01	1.8E-02	4.1E+01	1.8E-02	4.4E-05	1.5E-12	4.4E-05	4.4E-05	8.9E-01	1.2E+00	4.2E-03	4.4E-06	8.8E-05	4.4E-05	8.8E-04	9.9E+01	1.1E-05
	81	July	1.6E+00	3.9E-03	5.0E-04	1.4E+01	2.1E-03	3.2E+01	1.6E-02	3.6E+01	1.1E-01	2.8E-04	4.1E-05	3.7E-04	2.8E-04	5.7E+00	7.7E+00	2.8E-02	2.8E-05	7.8E-04	2.8E-04	5.6E-03	1.3E+02	7.0E-05
	82	August	8.5E-01	1.2E-03	1.4E-02	9.7E+00	1.3E-04	2.5E+01	1.2E-02	2.8E+01	4.3E-03	1.6E-05	2.2E-03	3.7E-03	2.7E-04	4.4E-01	5.1E+00	4.6E-02	1.2E-05	9.1E-03	2.0E-04	4.6E-04	7.8E+01	3.7E-06
5	83	September	1.3E+00	2.0E-03	1.7E-02	7.5E+00	4.5E-04	1.9E+01	9.1E-03	2.1E+01	2.1E-02	5.8E-05	3.0E-03	4.4E-03	3.5E-04	1.3E+00	7.9E+00	5.8E-02	1.8E-05	1.1E-02	2.7E-04	1.3E-03	7.4E+01	1.4E-05
	92	June	1.3E+00	2.1E-03	2.1E-02	2.0E+01	3.6E-04	5.0E+01	2.5E-02	5.6E+01	1.5E-02	4.5E-05	3.1E-03	5.4E-03	4.1E-04	1.1E+00	7.8E+00	7.0E-02	1.9E-05	1.3E-02	3.1E-04	1.1E-03	1.5E+02	1.1E-05
	93	July	3.0E+00	6.6E-03	1.8E-02	1.7E+01	2.9E-03	3.9E+01	1.9E-02	4.4E+01	1.5E-01	3.8E-04	2.6E-03	5.1E-03	7.0E-04	7.9E+00	1.6E+01	9.3E-02	5.1E-05	1.2E-02	6.1E-04	7.7E-03	1.8E+02	9.4E-05
	94	August	2.4E+00	3.4E-03	4.3E-02	1.1E+01	2.5E-04	2.7E+01	1.3E-02	3.0E+01	5.1E-03	2.8E-05	6.5E-03	1.1E-02	7.9E-04	9.1E-01	1.5E+01	1.4E-01	3.3E-05	2.7E-02	5.8E-04	9.8E-04	1.1E+02	6.4E-06
6	95	September	3.2E+00	4.3E-03	5.0E-02	8.9E+00	5.1E-04	2.2E+01	1.1E-02	2.5E+01	1.7E-02	6.2E-05	8.5E-03	1.3E-02	9.3E-04	1.7E+00	2.0E+01	1.6E-01	4.1E-05	3.1E-02	7.0E-04	1.7E-03	1.1E+02	1.5E-05
	104	June	2.6E+00	3.8E-03	4.6E-02	1.5E+01	3.7E-04	3.8E+01	1.9E-02	4.3E+01	1.1E-02	4.4E-05	6.8E-03	1.2E-02	8.5E-04	1.2E+00	1.6E+01	1.5E-01	3.6E-05	2.9E-02	6.3E-04	1.3E-03	1.4E+02	1.0E-05
	105	July	4.1E+00	8.0E-03	3.9E-02	1.4E+01	2.9E-03	3.2E+01	1.6E-02	3.6E+01	1.5E-01	3.8E-04	5.7E-03	1.0E-02	1.1E-03	8.1E+00	2.3E+01	1.6E-01	6.5E-05	2.5E-02	8.8E-04	8.0E-03	1.8E+02	9.5E-05
	106	August	2.8E+00	4.0E-03	5.2E-02	7.7E+00	2.8E-04	1.9E+01	9.4E-03	2.2E+01	5.1E-03	3.1E-05	7.8E-03	1.3E-02	9.4E-04	1.0E+00	1.7E+01	1.6E-01	3.9E-05	3.3E-02	6.9E-04	1.1E-03	9.8E+01	7.0E-06
7	107	September	3.7E+00	4.9E-03	5.8E-02	6.7E+00	5.4E-04	1.6E+01	7.9E-03	1.8E+01	1.7E-02	6.5E-05	9.8E-03	1.5E-02	1.1E-03	1.9E+00	2.3E+01	1.9E-01	4.7E-05	3.7E-02	8.1E-04	1.8E-03	1.1E+02	1.5E-05
	116	June	3.2E+00	6.1E-03	8.2E-02	1.2E+00	3.4E-04	2.4E+00	1.2E-03	2.7E+00	2.0E-03	3.5E-05	8.9E-03	2.1E-02	1.5E-03	9.9E-01	2.0E+01	2.6E-01	6.1E-05	5.2E-02	1.1E-03	1.5E-03	6.1E+01	7.3E-06
	117	July																						0
	118	August																						0
8	119	September																						0

Vault Attenuation Pond transfer to Vault Pit

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).

* December 2006
** June 6, 2002

Table IV-3
Predicted Water Quality (Dissolved Constituents) Hypothetical Scenario
Vault Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)
RRNWT - DW criteria			*6.5-8.5*		*0.1*		*0.025*	*5*	*1*				*0.005*	*250*					*0.05*	*1*	*1.5*	*0.3*	
CEQG criteria[2]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**						**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**	
MMER criteria[6]**			**6.0 - 9.5**				**0.5**								**1**					**0.3**			
8 METER ACTIVE ZONE																							
Filing of Pit Lake																							
8	128 - 131	Summer Average	6.8	1.3E-05	8.1E-02	2.4E+01	***1.4E-01***	3.6E-02	3.6E-02	5.2E-04	3.1E-04	1.1E+01	**4.1E-05**	3.8E-01	0.0E+00	0.0E+00	0.0E+00	4.6E-04	5.3E-04	**2.3E-03**	4.8E-02	1.1E-02	4.3E+01
9	128 - 131	Summer Average	6.8	1.6E-05	7.9E-02	2.6E+01	***1.3E-01***	5.0E-02	3.8E-02	6.5E-04	3.0E-04	1.2E+01	**4.7E-05**	5.5E-01	0.0E+00	0.0E+00	0.0E+00	4.9E-04	6.6E-04	**2.4E-03**	5.8E-02	1.5E-02	4.6E+01
10	140 - 143	Summer Average	6.8	1.7E-05	8.5E-02	2.8E+01	***1.5E-01***	5.3E-02	4.1E-02	7.0E-04	3.2E-04	1.3E+01	**5.1E-05**	5.9E-01	0.0E+00	0.0E+00	0.0E+00	5.3E-04	7.1E-04	**2.6E-03**	6.2E-02	1.6E-02	4.9E+01
11	152 - 155	Summer Average	6.8	1.7E-05	9.2E-02	3.0E+01	***1.6E-01***	5.5E-02	4.3E-02	7.4E-04	3.5E-04	1.4E+01	**5.4E-05**	6.0E-01	0.0E+00	0.0E+00	0.0E+00	5.6E-04	7.5E-04	**2.8E-03**	6.5E-02	1.7E-02	5.3E+01
12	164 - 167	Summer Average	6.8	1.8E-05	9.8E-02	3.1E+01	***1.7E-01***	5.7E-02	4.6E-02	7.7E-04	3.7E-04	1.4E+01	**5.8E-05**	6.2E-01	0.0E+00	0.0E+00	0.0E+00	6.0E-04	7.8E-04	**3.0E-03**	6.8E-02	1.8E-02	5.6E+01
13	176 - 179	Summer Average	6.8	2.0E-05	***1.1E-01***	3.6E+01	***2.0E-01***	6.2E-02	5.3E-02	8.5E-04	4.4E-04	1.6E+01	**6.6E-05**	6.6E-01	0.0E+00	0.0E+00	0.0E+00	6.9E-04	8.6E-04	**3.4E-03**	7.5E-02	1.9E-02	6.4E+01
Long-term Vault Pit Lake Water Quality																							
23	296 - 299	Summer Average	6.8	4.2E-05	***3.7E-01***	9.7E+01	***6.8E-01***	1.0E-01	1.6E-01	1.8E-03	1.5E-03	4.7E+01	**1.7E-04**	8.3E-01	0.0E+00	0.0E+00	0.0E+00	2.0E-03	**1.8E-03**	**1.0E-02**	**1.6E-01**	3.0E-02	1.8E+02

Year	GoldSim Month		Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria			*0.001*				*0.05*		*200*				*11*		*0.01*		*0.006*	*0.01*		*500*					*5*	*500*
CEQG criteria[2]*			**0.000026**					**0.073**		**0.025-0.15**	**4.92**	**0.019**	**2.9**		**0.001-0.007**			**0.001**				**0.0008**			**0.03**	
MMER criteria[6]**										**0.5**					**0.2**										**0.5**	
8 METER ACTIVE ZONE																										
Filing of Pit Lake																										
8	128 - 131	Summer Average	**5.2E-05**	2.1E+00	1.7E-03	3.7E+00	6.4E-03	**8.3E-02**	1.4E+00	5.9E-04	1.8E+00	1.4E-03	2.0E+00	4.4E-03	1.5E-04	1.0E-02	***2.1E-02***	**1.7E-03**	1.1E+00	2.2E+01	2.6E-01	1.0E-04	5.2E-02	7.3E-03	2.7E-03	7.0E+01
9	128 - 131	Summer Average	**5.8E-05**	2.4E+00	2.4E-03	3.9E+00	6.3E-03	**8.0E-02**	1.3E+00	7.2E-04	7.5E-01	5.8E-04	8.1E-01	4.5E-03	2.2E-04	1.1E-02	***2.1E-02***	**1.8E-03**	1.1E+00	2.3E+01	2.5E-01	1.3E-04	5.0E-02	1.2E-02	3.3E-03	7.2E+01
10	140 - 143	Summer Average	**6.1E-05**	2.5E+00	2.6E-03	4.2E+00	6.8E-03	**8.7E-02**	1.2E+00	7.7E-04	4.8E-01	3.7E-04	5.1E-01	4.5E-03	2.3E-04	1.2E-02	***2.2E-02***	**1.9E-03**	1.2E+00	2.4E+01	2.7E-01	1.4E-04	5.4E-02	1.2E-02	3.6E-03	7.7E+01
11	152 - 155	Summer Average	**6.4E-05**	2.7E+00	2.7E-03	4.4E+00	7.4E-03	**9.4E-02**	1.2E+00	8.1E-04	3.5E-01	2.7E-04	3.7E-01	4.5E-03	2.4E-04	1.2E-02	***2.4E-02***	**2.1E-03**	1.2E+00	2.6E+01	2.9E-01	1.5E-04	5.9E-02	1.3E-02	3.8E-03	8.1E+01
12	164 - 167	Summer Average	**6.7E-05**	2.8E+00	2.8E-03	4.7E+00	7.9E-03	**1.0E-01**	1.3E+00	8.5E-04	2.8E-01	2.2E-04	2.9E-01	4.7E-03	2.4E-04	1.3E-02	***2.6E-02***	**2.2E-03**	1.3E+00	2.8E+01	3.2E-01	1.5E-04	6.3E-02	1.3E-02	4.1E-03	8.6E+01
13	176 - 179	Summer Average	**7.5E-05**	3.2E+00	3.0E-03	5.4E+00	9.3E-03	**1.2E-01**	1.3E+00	9.4E-04	2.6E-01	2.0E-04	2.6E-01	5.1E-03	2.6E-04	1.5E-02	***3.1E-02***	**2.5E-03**	1.5E+00	3.2E+01	3.7E-01	1.7E-04	7.4E-02	1.4E-02	4.5E-03	9.8E+01
Long-term Vault Pit Lake Water Quality																										
23	296 - 299	Summer Average	**1.9E-04**	8.7E+00	4.7E-03	1.6E+01	3.0E-02	**4.0E-01**	2.0E+00	2.0E-03	2.0E-01	1.5E-04	2.0E-01	1.1E-02	3.3E-04	4.4E-02	***1.0E-01***	**7.5E-03**	4.8E+00	9.6E+01	1.3E+00	3.6E-04	2.5E-01	1.5E-02	9.2E-03	2.8E+02

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table IV-4
Predicted Water Quality (Dissolved Constituents) Hypothetical Scenario
Portage Rock Storage Facility
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[2] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005	250
CEQG criteria[1]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007	
MMER criteria[5]**			6.0 - 9.5				0.5							
8 METER ACTIVE ZONE														
	32	June	5.3	1.7E-14	3.6E-11	3.8E-08	2.4E-10	1.3E-10	1.2E-11	2.9E-11	6.7E-13	8.4E-09	9.3E-14	8.4E-10
	33	July	5.3	1.2E-04	2.5E-01	6.0E+01	1.7E+00	9.3E-01	8.2E-02	2.1E-01	4.7E-03	1.3E+01	6.6E-04	1.3E+00
	34	August	5.3	2.5E-04	5.4E-01	1.8E+02	3.6E+00	2.0E+00	1.7E-01	4.4E-01	1.0E-02	3.9E+01	1.4E-03	3.9E+00
1	35	September	5.3	3.1E-04	6.7E-01	2.5E+02	4.5E+00	2.5E+00	2.2E-01	5.5E-01	1.2E-02	5.5E+01	1.7E-03	5.5E+00
	44	June	5.3	1.1E-04	2.3E-01	7.3E+01	1.5E+00	8.5E-01	7.5E-02	1.9E-01	4.3E-03	1.6E+01	6.0E-04	1.6E+00
	45	July	5.3	2.6E-04	1.5E+00	5.8E+01	1.4E+00	9.1E-01	2.1E-01	2.0E-01	6.3E-03	2.1E+01	1.9E-03	3.4E+00
	46	August	5.3	5.0E-04	3.2E+00	1.0E+02	2.1E+00	1.5E+00	4.2E-01	3.1E-01	1.1E-02	4.7E+01	3.7E-03	8.7E+00
2	47	September	5.3	6.4E-04	4.2E+00	1.3E+02	2.5E+00	1.8E+00	5.5E-01	3.7E-01	1.4E-02	6.6E+01	4.8E-03	1.3E+01
	56	June	5.3	4.2E-04	2.8E+00	7.1E+01	1.5E+00	1.1E+00	3.6E-01	2.3E-01	8.9E-03	3.7E+01	3.2E-03	7.3E+00
	57	July	5.3	3.6E-04	2.1E+00	7.5E+01	1.9E+00	1.2E+00	3.0E-01	2.6E-01	8.6E-03	3.2E+01	2.6E-03	5.4E+00
	58	August	5.3	5.2E-04	2.9E+00	1.5E+02	3.3E+00	2.0E+00	4.4E-01	4.4E-01	1.4E-02	5.9E+01	3.7E-03	8.8E+00
3	59	September	5.3	5.8E-04	3.1E+00	2.0E+02	3.9E+00	2.4E+00	4.9E-01	5.1E-01	1.5E-02	7.5E+01	4.0E-03	1.1E+01
	68	June	5.3	8.0E-14	4.2E-10	8.9E-08	5.9E-10	3.5E-10	7.0E-11	7.4E-11	2.2E-12	3.5E-08	5.5E-13	4.5E-09
	69	July	5.3	1.4E-04	7.4E-01	2.7E+01	1.0E+00	6.1E-01	1.2E-01	1.3E-01	3.9E-03	1.1E+01	9.7E-04	1.3E+00
	70	August	5.3	3.5E-04	1.9E+00	8.6E+01	2.6E+00	1.5E+00	3.1E-01	3.3E-01	9.7E-03	3.4E+01	2.4E-03	4.3E+00
4	71	September	5.3	5.4E-04	2.8E+00	1.4E+02	4.0E+00	2.4E+00	4.7E-01	5.0E-01	1.5E-02	5.8E+01	3.8E-03	7.3E+00
	80	June	5.3	6.4E-04	3.4E+00	1.6E+02	4.7E+00	2.8E+00	5.6E-01	5.9E-01	1.8E-02	6.2E+01	4.4E-03	7.9E+00
	81	July	5.3	8.8E-04	4.8E+00	1.8E+02	5.9E+00	3.6E+00	7.6E-01	7.6E-01	2.3E-02	7.4E+01	6.2E-03	1.0E+01
	82	August	5.3	1.2E-03	6.6E+00	2.3E+02	7.2E+00	4.5E+00	1.0E+00	9.5E-01	3.0E-02	9.8E+01	8.3E-03	1.4E+01
5	83	September	5.3	1.4E-03	8.1E+00	2.8E+02	8.3E+00	5.2E+00	1.2E+00	1.1E+00	3.5E-02	1.2E+02	1.0E-02	1.8E+01
Placement of UM Rock Cover														
	92	June	5.3	1.4E-03	8.2E+00	2.6E+02	7.8E+00	5.0E+00	1.2E+00	1.1E+00	3.4E-02	1.1E+02	1.0E-02	1.7E+01
	93	July	5.3	1.7E-03	9.1E+00	3.4E+02	1.1E+01	6.7E+00	1.4E+00	1.4E+00	4.4E-02	1.3E+02	1.2E-02	1.9E+01
	94	August	5.3	1.8E-03	9.0E+00	4.7E+02	1.4E+01	8.4E+00	1.5E+00	1.8E+00	5.2E-02	1.6E+02	1.2E-02	2.1E+01
6	95	September	5.3	1.9E-03	8.8E+00	6.0E+02	1.7E+01	9.9E+00	1.6E+00	2.2E+00	5.8E-02	1.8E+02	1.3E-02	2.3E+01
Post Closure Water Quality														
23	296 - 299	Summer Average	5.3	4.6E-03	2.9E+00	2.8E+03	8.3E+01	4.4E+01	3.0E+00	1.0E+01	2.1E-01	5.7E+02	2.2E-02	4.6E+01

Year	GoldSim Month	Actual Month	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[3] (mg/L)	Cu[4] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)
RRNWT - DW criteria							0.05	1	1.5	0.3		0.001				0.05	
CEQG criteria[1]*							0.001/0.0089	0.002-0.004	0.12	0.3		0.000026					0.073
MMER criteria[5]**			1					0.3									
8 METER ACTIVE ZONE																	
	32	June	0.0E+00	0.0E+00	0.0E+00	2.1E-12	6.7E-13	2.8E-12	5.1E-11	2.4E-09	3.5E-08	6.7E-14	2.8E-09	6.7E-12	3.4E-09	9.8E-11	9.4E-14
	33	July	0.0E+00	0.0E+00	0.0E+00	1.5E-02	4.7E-03	2.0E-02	8.0E-02	3.8E+00	5.6E+01	4.7E-04	4.5E+00	1.0E-02	5.4E+00	7.0E-01	6.7E-04
	34	August	0.0E+00	0.0E+00	0.0E+00	3.2E-02	1.0E-02	4.2E-02	2.3E-01	1.1E+01	1.6E+02	1.0E-03	1.3E+01	3.1E-02	1.6E+01	1.5E+00	1.4E-03
1	35	September	0.0E+00	0.0E+00	0.0E+00	4.0E-02	1.2E-02	5.2E-02	3.3E-01	1.6E+01	2.3E+02	1.2E-03	1.9E+01	4.3E-02	2.2E+01	1.8E+00	1.8E-03
	44	June	0.0E+00	0.0E+00	0.0E+00	1.4E-02	4.3E-03	1.8E-02	9.7E-02	4.7E+00	6.7E+01	4.3E-04	5.4E+00	1.3E-02	6.5E+00	6.4E-01	6.1E-04
	45	July	0.0E+00	0.0E+00	0.0E+00	8.6E-02	6.3E-03	1.2E-01	3.3E-01	2.6E+01	9.1E+01	6.3E-04	9.2E+00	1.6E-02	9.2E+00	4.0E+00	3.7E-03
	46	August	0.0E+00	0.0E+00	0.0E+00	1.8E-01	1.1E-02	2.6E-01	9.0E-01	7.3E+01	2.0E+02	1.1E-03	2.2E+01	3.5E-02	2.1E+01	8.4E+00	7.8E-03
2	47	September	0.0E+00	0.0E+00	0.0E+00	2.4E-01	1.4E-02	3.4E-01	1.3E+00	1.1E+02	2.9E+02	1.4E-03	3.2E+01	4.9E-02	3.0E+01	1.1E+01	1.0E-02
	56	June	0.0E+00	0.0E+00	0.0E+00	1.6E-01	8.9E-03	2.3E-01	7.7E-01	6.3E+01	1.6E+02	8.9E-04	1.8E+01	2.8E-02	1.7E+01	7.3E+00	6.7E-03
	57	July	0.0E+00	0.0E+00	0.0E+00	1.2E-01	8.6E-03	1.7E-01	5.6E-01	4.3E+01	1.4E+02	8.6E-04	1.5E+01	2.4E-02	1.4E+01	5.6E+00	7.3E-03
	58	August	0.0E+00	0.0E+00	0.0E+00	1.7E-01	1.4E-02	2.4E-01	8.8E-01	6.5E+01	2.5E+02	1.4E-03	2.7E+01	4.3E-02	2.5E+01	7.6E+00	1.2E-02
3	59	September	0.0E+00	0.0E+00	0.0E+00	1.8E-01	1.5E-02	2.5E-01	1.1E+00	7.6E+01	3.2E+02	1.5E-03	3.5E+01	5.4E-02	3.2E+01	8.1E+00	1.4E-02
	68	June	0.0E+00	0.0E+00	0.0E+00	2.4E-11	2.2E-12	3.4E-11	4.6E-10	3.1E-08	1.5E-07	2.2E-13	1.7E-08	2.4E-11	1.4E-08	1.1E-09	2.9E-12
	69	July	0.0E+00	0.0E+00	0.0E+00	4.1E-02	3.9E-03	6.0E-02	1.4E-01	9.3E+00	4.5E+01	3.9E-04	5.1E+00	7.2E-03	4.3E+00	1.9E+00	5.1E-03
	70	August	0.0E+00	0.0E+00	0.0E+00	1.0E-01	9.7E-03	1.5E-01	4.4E-01	3.0E+01	1.4E+02	9.7E-04	1.7E+01	2.3E-02	1.4E+01	4.8E+00	1.3E-02
4	71	September	0.0E+00	0.0E+00	0.0E+00	1.6E-01	1.5E-02	2.3E-01	7.5E-01	5.0E+01	2.4E+02	1.5E-03	2.8E+01	3.9E-02	2.4E+01	7.4E+00	2.0E-02
	80	June	0.0E+00	0.0E+00	0.0E+00	1.9E-01	1.8E-02	2.7E-01	8.1E-01	5.4E+01	2.6E+02	1.8E-03	3.0E+01	4.2E-02	2.5E+01	8.7E+00	2.3E-02
	81	July	0.0E+00	0.0E+00	0.0E+00	2.7E-01	2.3E-02	3.9E-01	1.0E+00	7.1E+01	3.1E+02	2.3E-03	3.6E+01	5.1E-02	3.1E+01	1.2E+01	2.8E-02
	82	August	0.0E+00	0.0E+00	0.0E+00	3.7E-01	3.0E-02	5.4E-01	1.5E+00	1.1E+02	4.2E+02	3.0E-03	4.7E+01	6.9E-02	4.1E+01	1.7E+01	3.3E-02
5	83	September	0.0E+00	0.0E+00	0.0E+00	4.6E-01	3.5E-02	6.6E-01	1.9E+00	1.4E+02	5.1E+02	3.5E-03	5.8E+01	8.5E-02	5.1E+01	2.1E+01	3.7E-02
Placement of UM Rock Cover																	
	92	June	0.0E+00	0.0E+00	0.0E+00	4.6E-01	3.4E-02	6.7E-01	1.8E+00	1.3E+02	4.7E+02	3.4E-03	5.3E+01	7.9E-02	4.7E+01	2.1E+01	3.4E-02
	93	July	0.0E+00	0.0E+00	0.0E+00	5.1E-01	4.4E-02	7.4E-01	1.9E+00	1.4E+02	5.6E+02	4.4E-03	6.1E+01	9.5E-02	5.6E+01	2.4E+01	4.0E-02
	94	August	0.0E+00	0.0E+00	0.0E+00	5.1E-01	5.2E-02	7.3E-01	2.0E+00	1.4E+02	6.7E+02	5.2E-03	6.9E+01	1.1E-01	6.6E+01	2.4E+01	4.0E-02
6	95	September	0.0E+00	0.0E+00	0.0E+00	5.0E-01	5.8E-02	7.1E-01	2.0E+00	1.3E+02	7.7E+02	5.8E-03	7.6E+01	1.3E-01	7.5E+01	2.3E+01	4.0E-02
Post Closure Water Quality																	
23	296 - 299	Summer Average	0.0E+00	0.0E+00	0.0E+00	1.8E-01	2.1E-01	1.8E-01	2.0E+00	2.0E+01	2.4E+03	2.1E-02	1.8E+02	4.4E-01	2.2E+02	8.7E+00	3.5E-02

Year	GoldSim Month	Actual Month	Na (mg/L)	Ni[4] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[4] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Total Runoff m3/mon
RRNWT - DW criteria			200				11		0.01		0.006	0.01		500					5	500	
CEQG criteria[1]*				0.025-0.15	4.92	0.019	2.9		0.001-0.007			0.001				0.0008			0.03		
MMER criteria[5]**				0.5					0.2										0.5		
8 METER ACTIVE ZONE																					
	32	June	3.0E+02	1.7E-11	7.8E+02	1.9E-02	8.7E+02	1.7E-10	1.1E-12	1.6E-10	1.7E-11	1.4E-12	1.2E-09	1.5E-08	5.2E-11	1.4E-13	2.0E-13	5.4E-12	1.7E-11	1.9E+03	6,415
	33	July	1.6E+02	1.2E-01	4.0E+02	9.8E-03	4.5E+02	2.7E-01	7.9E-03	2.5E-01	1.2E-01	9.8E-03	1.9E+00	2.4E+01	3.7E-01	9.8E-04	1.4E-03	3.8E-02	1.2E-01	1.1E+03	74
	34	August	1.5E+02	2.5E-01	3.7E+02	9.0E-03	4.1E+02	7.9E-01	1.7E-02	7.2E-01	2.6E-01	2.1E-02	5.5E+00	6.9E+01	7.8E-01	2.1E-03	3.0E-03	8.1E-02	2.6E-01	1.3E+03	1,072
1	35	September	1.3E+02	3.1E-01	2.9E+02	7.2E-03	3.3E+02	1.1E+00	2.1E-02	1.0E+00	3.2E-01	2.6E-02	7.8E+00	9.7E+01	9.8E-01	2.6E-03	3.8E-03	1.0E-01	3.2E-01	1.2E+03	2,047
	44	June	7.1E+01	1.1E-01	1.7E+02	4.2E-03	1.9E+02	3.3E-01	7.3E-03	3.0E-01	1.1E-01	9.0E-03	2.3E+00	2.9E+01	3.4E-01	9.0E-04	1.3E-03	3.5E-02	1.1E-01	5.8E+02	21,810
	45	July	4.7E+01	7.5E-01	1.1E+02	2.6E-03	1.2E+02	4.1E-01	5.0E-02	2.4E-01	1.1E-01	1.3E-02	7.0E+00	9.4E+01	6.4E-01	1.3E-03	1.3E-02	3.7E-02	6.6E-01	5.1E+02	222
	46	August	5.7E+01	1.6E+00	1.1E+02	2.8E-03	1.3E+02	9.0E-01	1.1E-01	4.2E-01	1.6E-01	2.2E-02	1.9E+01	2.5E+02	1.2E+00	2.2E-03	2.9E-02	5.9E-02	1.4E+00	8.7E+02	2,910
2	47	September	6.0E+01	2.1E+00	1.1E+02	2.6E-03	1.2E+02	1.3E+00	1.4E-01	5.4E-01	1.9E-01	2.8E-02	2.8E+01	3.8E+02	1.5E+00	2.8E-03	3.8E-02	7.0E-02	1.8E+00	1.1E+03	4,862
	56	June	6.7E+01	1.4E+00	1.5E+02	3.6E-03	1.7E+02	7.1E-01	9.3E-02	3.0E-01	1.2E-01	1.8E-02	1.6E+01	2.2E+02	9.8E-01	1.8E-03	2.5E-02	4.4E-02	1.2E+00	8.5E+02	24,376
	57	July	4.7E+01	1.1E+00	9.9E+01	2.4E-03	1.1E+02	6.0E-01	7.1E-02	3.1E-01	1.5E-01	1.7E-02	1.2E+01	1.6E+02	9.3E-01	1.7E-03	2.6E-02	5.0E-02	9.2E-01	6.3E+02	234
	58	August	5.9E+01	1.5E+00	1.1E+02	2.7E-03	1.3E+02	1.1E+00	9.7E-02	6.3E-01	2.5E-01	2.7E-02	1.8E+01	2.5E+02	1.4E+00	2.7E-03	4.1E-02	8.4E-02	1.3E+00	9.3E+02	2,910
3	59	September	6.1E+01	1.5E+00	1.1E+02	2.6E-03	1.2E+02	1.3E+00	1.0E-01	8.4E-01	3.0E-01	3.1E-02	2.2E+01	3.0E+02	1.6E+00	3.1E-03	4.7E-02	9.8E-02	1.4E+00	1.1E+03	4,862
	68	June	7.8E+00	2.1E-10	2.0E+01	5.0E-04	2.3E+01	5.7E-10	1.4E-11	3.7E-10	4.6E-11	4.5E-12	9.6E-09	1.3E-07	2.5E-10	4.5E-13	9.6E-12	1.5E-11	1.8E-10	5.1E+01	69,644
	69	July	6.8E+00	3.6E-01	1.1E+01	2.7E-04	1.2E+01	1.7E-01	2.4E-02	1.1E-01	8.0E-02	7.8E-03	2.9E+00	3.9E+01	4.3E-01	7.8E-04	1.7E-02	2.6E-02	3.2E-01	1.4E+02	1,170
	70	August	1.4E+01	9.1E-01	1.5E+01	3.6E-04	1.7E+01	5.5E-01	6.1E-02	3.6E-01	2.0E-01	2.0E-02	9.3E+00	1.3E+02	1.1E+00	2.0E-03	4.3E-02	6.4E-02	8.0E-01	3.8E+02	14,552
4	71	September	2.0E+01	1.4E+00	1.6E+01	3.8E-04	1.8E+01	9.3E-01	9.3E-02	6.0E-01	3.1E-01	3.0E-02	1.6E+01	2.1E+02	1.7E+00	3.0E-03	6.5E-02	9.9E-02	1.2E+00	6.2E+02	24,308
	80	June	2.5E+01	1.6E+00	2.4E+01	5.8E-04	2.7E+01	1.0E+00	1.1E-01	6.5E-01	3.6E-01	3.6E-02	1.7E+01	2.3E+02	2.0E+00	3.6E-03	7.7E-02	1.2E-01	1.5E+00	6.9E+02	69,644
	81	July	2.1E+01	2.4E+00	6.7E+00	1.6E-04	8.2E+00	1.2E+00	1.6E-01	7.6E-01	4.6E-01	4.7E-02	2.1E+01	2.9E+02	2.6E+00	4.7E-03	9.5E-02	1.5E-01	2.1E+00	7.9E+02	1,170
	82	August	2.8E+01	3.3E+00	5.8E+00	1.4E-04	7.4E+00	1.7E+00	2.2E-01	9.8E-01	5.6E-01	6.0E-02	3.0E+01	4.1E+02	3.3E+00	6.0E-03	1.1E-01	1.8E-01	2.9E+00	1.1E+03	14,552
5	83	September	3.3E+01	4.0E+00	4.2E+00	1.0E-04	5.8E+00	2.1E+00	2.7E-01	1.2E+00	6.4E-01	7.1E-02	3.9E+01	5.3E+02	3.9E+00	7.1E-03	1.3E-01	2.1E-01	3.5E+00	1.3E+03	24,308
Placement of UM Rock Cover																					
	92	June	3.0E+01	4.1E+00	2.6E+00	6.3E-05	3.9E+00	1.9E+00	2.7E-01	1.1E+00	6.0E-01	6.9E-02	3.7E+01	5.0E+02	3.8E+00	6.9E-03	1.2E-01	2.0E-01	3.6E+00	1.3E+03	69,644
	93	July	3.6E+01	4.5E+00	7.2E-01	1.8E-05	2.1E+00	2.3E+00	3.0E-01	1.4E+00	8.3E-01	8.9E-02	4.0E+01	5.5E+02	4.6E+00	8.9E-03	1.4E-01	2.8E-01	4.0E+00	1.5E+03	1,170
	94	August	4.4E+01	4.4E+00	6.2E-01	1.5E-05	2.4E+00	2.9E+00	3.0E-01	1.9E+00	1.1E+00	1.1E-01	4.2E+01	5.7E+02	5.2E+00	1.1E-02	1.4E-01	3.5E-01	3.9E+00	1.7E+03	14,552
6	95	September	5.2E+01	4.3E+00	4.5E-01	1.1E-05	2.6E+00	3.3E+00	2.9E-01	2.5E+00	1.3E+00	1.2E-01	4.3E+01	5.8E+02	5.6E+00	1.2E-02	1.3E-01	4.1E-01	3.9E+00	1.8E+03	24,308
Post Closure Water Quality																					
23	296 - 299	Summer Average	1.8E+02	8.7E-01	4.0E-17	9.8E-22	8.8E+00	1.1E+01	5.9E-02	1.1E+01	6.0E+00	4.5E-01	5.2E+01	6.2E+02	1.6E+01	4.5E-02	6.3E-02	1.8E+00	1.8E+00	4.9E+03	27,419

NOTES:
1. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
2. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
3. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
4. Freshwater aquatic life criterion or guideline is hardness dependant.
5. Maximum authorized monthly mean concentration (based on **total** concentration).

* December 2006
** June 6, 2002

Table IV-5
Predicted Water Quality (Dissolved Constituents) Hypothetical Scenario
Portage Attenuation Pond
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month	Actual Month	pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)
RRNWT - DW criteria			6.5-8.5		0.1		0.025	5	1				0.005	250				
CEQG criteria[2]*			6.5 - 9.0	0.0001	0.1		0.005						0.000007					
MMER criteria[6]**			6.0 - 9.5				0.5								1			
	32	June	6.0	5.9E-06	8.8E-02	4.7E+00	2.2E-04	2.3E-02	4.2E-03	9.6E-05	3.0E-05	3.9E+00	4.2E-05	2.4E+01	0.0E+00	0.0E+00	0.0E+00	1.9E-03
	33	July	no discharge															
	34	August	no discharge															
1	35	September	6.0	2.3E-05	3.8E-01	1.6E+01	1.4E-01	5.9E-01	2.2E-02	6.1E-03	3.5E-04	1.8E+01	5.0E-04	8.0E+01	0.0E+00	0.0E+00	0.0E+00	2.3E-02
	44	June	6.0	2.0E-05	1.1E-01	2.4E+01	6.7E-02	2.4E-01	2.5E-02	6.6E-03	3.2E-04	3.5E+01	1.3E-04	2.7E+02	0.0E+00	0.0E+00	0.0E+00	4.6E-03
	45	July	6.0	2.8E-05	2.7E-01	2.8E+01	9.9E-02	3.6E-01	3.0E-02	8.1E-03	4.0E-04	3.9E+01	2.7E-04	2.9E+02	0.0E+00	0.0E+00	0.0E+00	1.1E-02
	46	August	6.0	3.4E-05	3.5E-01	3.1E+01	1.4E-01	5.4E-01	3.6E-02	1.0E-02	5.2E-04	4.6E+01	4.1E-04	3.3E+02	0.0E+00	0.0E+00	0.0E+00	1.8E-02
2	47	September	6.0	3.9E-05	3.6E-01	3.2E+01	2.0E-01	6.6E-01	4.3E-02	1.6E-02	7.0E-04	4.9E+01	5.0E-04	3.4E+02	0.0E+00	0.0E+00	0.0E+00	2.2E-02
	56	June	6.0	3.0E-05	1.7E-01	2.9E+01	1.1E-01	3.1E-01	3.6E-02	1.2E-02	5.2E-04	5.0E+01	2.0E-04	4.0E+02	0.0E+00	0.0E+00	0.0E+00	7.9E-03
	57	July	6.0	3.8E-05	2.7E-01	3.4E+01	1.5E-01	4.1E-01	4.2E-02	1.5E-02	6.6E-04	5.5E+01	3.1E-04	4.3E+02	0.0E+00	0.0E+00	0.0E+00	1.3E-02
	58	August	6.0	3.9E-05	3.1E-01	3.4E+01	1.8E-01	5.3E-01	4.4E-02	1.7E-02	7.1E-04	5.5E+01	4.0E-04	4.2E+02	0.0E+00	0.0E+00	0.0E+00	1.7E-02
3	59	September	6.0	4.1E-05	3.0E-01	3.3E+01	2.5E-01	6.0E-01	4.6E-02	2.3E-02	8.7E-04	5.1E+01	4.5E-04	3.6E+02	0.0E+00	0.0E+00	0.0E+00	1.9E-02
	68	June	6.0	2.6E-05	1.4E-01	2.8E+01	8.8E-02	3.0E-01	3.3E-02	8.7E-03	4.3E-04	4.8E+01	1.7E-04	3.8E+02	0.0E+00	0.0E+00	0.0E+00	6.5E-03
	69	July	6.0	3.1E-05	2.2E-01	3.1E+01	1.2E-01	4.0E-01	3.7E-02	1.1E-02	5.3E-04	5.1E+01	2.7E-04	4.0E+02	0.0E+00	0.0E+00	0.0E+00	1.1E-02
	70	August	6.0	3.6E-05	2.8E-01	3.0E+01	1.8E-01	5.4E-01	4.2E-02	1.6E-02	6.8E-04	4.9E+01	4.0E-04	3.6E+02	0.0E+00	0.0E+00	0.0E+00	1.7E-02
4	71	September	6.0	5.0E-05	3.6E-01	3.2E+01	3.2E-01	6.8E-01	5.4E-02	3.1E-02	1.1E-03	4.7E+01	5.6E-04	3.1E+02	0.0E+00	0.0E+00	0.0E+00	2.4E-02
	80	June	6.0	5.4E-05	3.0E-01	2.5E+01	3.4E-01	3.7E-01	5.3E-02	4.1E-02	1.3E-03	3.1E+01	3.9E-04	2.2E+02	0.0E+00	0.0E+00	0.0E+00	1.6E-02
	81	July	no discharge															
	82	August	no discharge															
5	83	September	no discharge															

Year	GoldSim Month	Actual Month	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)
RRNWT - DW criteria			0.05	1	1.5	0.3		0.001				0.05		200				11
CEQG criteria[2]*			0.001/0.0089	0.002-0.004	0.12	0.3		0.000026					0.073		0.025-0.15	4.92	0.019	2.9
MMER criteria[6]**				0.3											0.5			
	32	June	1.2E-04	7.8E-04	6.2E-02	1.0E-01	1.6E+01	1.5E-05	4.3E-01	9.4E-04	1.4E+00	2.0E-02	8.5E-04	1.0E+01	2.9E-03	1.1E+01	1.4E-03	1.3E+01
	33	July																
	34	August																
1	35	September	5.0E-04	1.5E-02	2.0E-01	6.5E+00	8.3E+01	7.1E-05	3.7E+00	4.3E-03	9.0E+00	7.4E-01	2.7E-03	2.4E+01	2.2E-01	1.2E+01	1.4E-03	1.3E+01
	44	June	3.7E-04	3.8E-03	1.2E-01	1.2E+00	1.4E+02	2.5E-05	3.3E+00	4.9E-03	1.3E+01	2.2E-01	6.7E-03	6.6E+01	3.9E-02	1.0E+01	1.2E-03	1.1E+01
	45	July	5.1E-04	7.3E-03	2.0E-01	2.1E+00	1.6E+02	5.2E-05	3.9E+00	5.7E-03	1.5E+01	3.8E-01	7.1E-03	7.2E+01	8.8E-02	9.6E+00	1.2E-03	1.1E+01
	46	August	6.4E-04	1.2E-02	2.4E-01	4.5E+00	1.9E+02	6.8E-05	5.2E+00	6.8E-03	1.8E+01	6.3E-01	7.7E-03	8.0E+01	1.6E-01	8.4E+00	1.0E-03	9.4E+00
2	47	September	8.1E-04	1.7E-02	2.3E-01	6.9E+00	2.1E+02	8.1E-05	6.4E+00	7.7E-03	2.0E+01	8.3E-01	8.0E-03	8.3E+01	2.1E-01	8.0E+00	9.8E-04	9.0E+00
	56	June	5.8E-04	8.0E-03	1.5E-01	2.4E+00	2.0E+02	4.3E-05	4.9E+00	6.3E-03	1.8E+01	3.7E-01	8.2E-03	9.5E+01	6.9E-02	6.1E+00	7.5E-04	6.8E+00
	57	July	7.5E-04	1.1E-02	2.1E-01	3.2E+00	2.2E+02	6.7E-05	5.6E+00	7.3E-03	2.0E+01	5.0E-01	9.0E-03	1.0E+02	1.1E-01	7.1E+00	8.7E-04	8.0E+00
	58	August	8.1E-04	1.4E-02	2.2E-01	4.8E+00	2.3E+02	7.5E-05	6.2E+00	7.7E-03	2.1E+01	6.6E-01	8.8E-03	9.9E+01	1.5E-01	6.0E+00	7.4E-04	6.7E+00
3	59	September	9.4E-04	1.7E-02	2.0E-01	6.5E+00	2.1E+02	8.8E-05	6.6E+00	7.9E-03	2.0E+01	7.7E-01	8.1E-03	8.7E+01	1.9E-01	5.3E+00	6.5E-04	6.0E+00
	68	June	4.8E-04	6.1E-03	1.4E-01	1.9E+00	1.9E+02	3.3E-05	4.5E+00	6.0E-03	1.7E+01	3.1E-01	8.1E-03	9.0E+01	5.8E-02	4.1E+00	5.1E-04	4.6E+00
	69	July	6.0E-04	8.7E-03	1.9E-01	2.6E+00	2.1E+02	5.1E-05	5.1E+00	6.7E-03	1.9E+01	4.4E-01	8.6E-03	9.4E+01	9.5E-02	5.3E+00	6.5E-04	5.9E+00
	70	August	7.5E-04	1.4E-02	1.9E-01	4.9E+00	2.0E+02	7.0E-05	5.7E+00	7.1E-03	1.9E+01	6.8E-01	8.1E-03	8.6E+01	1.6E-01	4.8E+00	5.8E-04	5.4E+00
4	71	September	1.2E-03	2.3E-02	2.0E-01	8.2E+00	2.0E+02	1.1E-04	6.9E+00	8.1E-03	1.9E+01	1.0E+00	7.7E-03	7.6E+01	2.5E-01	4.9E+00	6.1E-04	5.6E+00
	80	June	1.3E-03	2.1E-02	1.3E-01	4.8E+00	1.3E+02	1.3E-04	4.5E+00	6.0E-03	1.2E+01	7.6E-01	6.0E-03	5.2E+01	1.5E-01	2.2E+00	2.8E-04	2.6E+00
	81	July																
	82	August																
5	83	September																

Year	GoldSim Month	Actual Month	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)	Decant Rate m3/mon
RRNWT - DW criteria				0.01		0.006	0.01		500					5	500	
CEQG criteria[2]*				0.001-0.007			0.001				0.0008			0.03		
MMER criteria[6]**				0.2										0.5		
	32	June	5.2E-03	2.5E-04	1.0E-02	6.3E-05	9.4E-05	3.7E-01	4.6E+00	1.9E-02	1.4E-05	3.1E-04	1.7E-03	3.0E-03	7.4E+01	224,770
	33	July														0
	34	August														0
1	35	September	5.6E-02	1.1E-02	3.8E-02	3.8E-03	6.5E-04	2.6E+00	6.0E+01	1.9E-01	8.2E-05	1.5E-03	2.0E-03	4.1E-01	2.5E+02	56,137
	44	June	4.3E-02	2.8E-03	9.3E-02	4.3E-03	5.2E-04	1.7E+00	2.4E+01	1.8E-01	5.2E-05	2.0E-03	1.5E-03	6.6E-02	4.6E+02	456,560
	45	July	5.3E-02	5.2E-03	9.8E-02	5.2E-03	6.6E-04	2.3E+00	3.5E+01	2.1E-01	6.9E-05	2.4E-03	1.8E-03	1.6E-01	5.1E+02	118,990
	46	August	7.1E-02	9.0E-03	1.1E-01	6.4E-03	8.8E-04	3.0E+00	5.4E+01	2.7E-01	9.5E-05	2.9E-03	2.2E-03	2.9E-01	5.9E+02	104,110
2	47	September	9.2E-02	1.2E-02	1.2E-01	9.9E-03	1.2E-03	3.5E+00	6.8E+01	3.1E-01	1.3E-04	3.7E-03	3.2E-03	3.7E-01	6.3E+02	181,290
	56	June	6.3E-02	4.8E-03	1.2E-01	7.5E-03	9.1E-04	2.3E+00	3.2E+01	2.3E-01	9.0E-05	3.3E-03	2.5E-03	1.0E-01	6.5E+02	456,560
	57	July	7.6E-02	6.7E-03	1.3E-01	9.8E-03	1.2E-03	2.8E+00	4.1E+01	2.7E-01	1.2E-04	4.1E-03	3.3E-03	1.6E-01	7.1E+02	456,560
	58	August	8.5E-02	9.1E-03	1.3E-01	1.1E-02	1.3E-03	3.2E+00	5.3E+01	3.0E-01	1.3E-04	4.2E-03	3.5E-03	2.6E-01	7.1E+02	364,100
3	59	September	1.0E-01	1.1E-02	1.2E-01	1.5E-02	1.6E-03	3.3E+00	6.1E+01	3.1E-01	1.7E-04	4.9E-03	4.7E-03	3.1E-01	6.4E+02	226,520
	68	June	5.5E-02	4.1E-03	1.1E-01	5.8E-03	7.1E-04	2.1E+00	3.0E+01	2.2E-01	7.1E-05	3.0E-03	2.0E-03	9.3E-02	6.1E+02	456,560
	69	July	6.5E-02	5.9E-03	1.2E-01	7.5E-03	8.9E-04	2.5E+00	3.8E+01	2.5E-01	9.2E-05	3.6E-03	2.5E-03	1.6E-01	6.6E+02	456,560
	70	August	7.9E-02	9.4E-03	1.1E-01	1.0E-02	1.2E-03	3.0E+00	5.2E+01	2.8E-01	1.3E-04	4.0E-03	3.3E-03	2.8E-01	6.3E+02	249,820
4	71	September	1.1E-01	1.4E-02	1.2E-01	1.9E-02	2.1E-03	3.6E+00	6.8E+01	3.4E-01	2.2E-04	5.9E-03	6.2E-03	3.9E-01	5.9E+02	129,460
	80	June	9.3E-02	9.7E-03	1.0E-01	2.5E-02	2.6E-03	2.3E+00	3.4E+01	2.5E-01	2.6E-04	6.3E-03	8.1E-03	1.7E-01	3.9E+02	185,340
	81	July														0
	82	August														0
5	83	September														0

Portage Attenuation Pond transfer to Goose Island Pit

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table IV-6
Predicted Water Quality (Dissolved Constituents) Hypothetical Scenario
Goose Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)	CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)
RRNWT - DW criteria			***6.5-8.5***		***0.1***		***0.025***	***5***	***1***				***0.005***	***250***					***0.05***	***1***	***1.5***	***0.3***	
CEQG criteria[2]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**						**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**	
MMER criteria[6]**			**6.0 - 9.5**				**0.5**								**1**					**0.3**			
8 METER ACTIVE ZONE																							
Filling of Pit Lake																							
5	79 - 86	Annual Average	6.7	1.5E-05	5.9E-02	1.4E+01	**9.9E-03**	1.0E-01	1.7E-02	1.4E-03	1.1E-04	2.1E+01	**5.6E-05**	1.6E+02	0.0E+00	0.0E+00	0.0E+00	1.6E-03	4.1E-04	1.8E-03	9.6E-02	***3.7E-01***	8.4E+01
6	87 - 98	Annual Average	6.7	1.5E-05	5.9E-02	1.4E+01	**9.9E-03**	1.0E-01	1.7E-02	1.4E-03	1.1E-04	2.0E+01	**5.7E-05**	1.6E+02	0.0E+00	0.0E+00	0.0E+00	1.7E-03	4.2E-04	1.9E-03	9.6E-02	***3.8E-01***	8.2E+01
7	99 - 110	Annual Average	6.7	1.5E-05	6.1E-02	1.3E+01	**9.8E-03**	9.8E-02	1.7E-02	1.4E-03	1.1E-04	1.9E+01	**5.8E-05**	1.5E+02	0.0E+00	0.0E+00	0.0E+00	1.7E-03	4.3E-04	1.9E-03	9.6E-02	***3.8E-01***	7.6E+01
8	111 - 122	Annual Average	6.7	1.5E-05	6.1E-02	1.3E+01	**9.6E-03**	9.4E-02	1.6E-02	1.4E-03	1.0E-04	1.8E+01	**5.9E-05**	1.3E+02	0.0E+00	0.0E+00	0.0E+00	1.8E-03	4.3E-04	1.9E-03	9.5E-02	***3.7E-01***	7.1E+01
9	123 - 134	Annual Average	6.7	1.4E-05	6.1E-02	1.2E+01	**9.3E-03**	8.9E-02	1.5E-02	1.4E-03	9.4E-05	1.6E+01	**5.9E-05**	1.2E+02	0.0E+00	0.0E+00	0.0E+00	1.8E-03	4.4E-04	1.9E-03	9.3E-02	***3.7E-01***	6.5E+01
10	135 - 146	Annual Average	6.7	1.4E-05	6.0E-02	1.1E+01	**9.0E-03**	8.5E-02	1.5E-02	1.3E-03	8.7E-05	1.5E+01	**5.8E-05**	1.1E+02	0.0E+00	0.0E+00	0.0E+00	1.8E-03	4.4E-04	1.9E-03	9.1E-02	***3.6E-01***	6.0E+01
11	147 - 158	Annual Average	6.7	1.4E-05	5.8E-02	1.1E+01	**8.5E-03**	8.1E-02	1.4E-02	1.3E-03	8.1E-05	1.4E+01	**5.7E-05**	9.9E+01	0.0E+00	0.0E+00	0.0E+00	1.8E-03	4.5E-04	1.9E-03	9.0E-02	***3.5E-01***	5.4E+01
12	159 - 170	Annual Average	6.7	1.4E-05	5.9E-02	1.0E+01	**8.2E-03**	8.0E-02	1.4E-02	1.3E-03	7.7E-05	1.3E+01	**5.8E-05**	9.3E+01	0.0E+00	0.0E+00	0.0E+00	1.8E-03	4.5E-04	1.8E-03	9.0E-02	***3.4E-01***	5.2E+01
13	171 - 182	Annual Average	6.7	1.4E-05	6.2E-02	1.1E+01	**8.2E-03**	8.0E-02	1.4E-02	1.3E-03	7.8E-05	1.3E+01	**5.9E-05**	9.3E+01	0.0E+00	0.0E+00	0.0E+00	1.8E-03	4.6E-04	1.9E-03	9.2E-02	***3.4E-01***	5.2E+01
Long-term Goose Pit Lake Water Quality																							
23	291 - 300	Annual Average	6.7	1.4E-05	7.0E-02	1.1E+01	**8.3E-03**	8.1E-02	1.4E-02	1.3E-03	8.0E-05	1.3E+01	**6.2E-05**	9.4E+01	0.0E+00	0.0E+00	0.0E+00	2.0E-03	4.7E-04	1.9E-03	9.7E-02	***3.5E-01***	5.3E+01

Year	GoldSim Month		Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria			***0.001***				***0.05***		***200***				***11***		***0.01***		***0.006***	***0.01***		***500***					***5***	***500***
CEQG criteria[2]*			**0.000026**					**0.073**		**0.025-0.15**	**4.92**	**0.019**	**2.9**		**0.001-0.007**			**0.001**				**0.0008**			**0.03**	
MMER criteria[6]**										**0.5**					**0.2**										**0.5**	
8 METER ACTIVE ZONE																										
Filling of Pit Lake																										
5	79 - 86	Annual Average	2.1E-05	2.2E+00	3.6E-03	7.5E+00	***7.1E-02***	3.7E-03	3.8E+01	7.9E-03	6.7E-01	4.1E-04	7.5E-01	1.7E-02	9.9E-04	4.5E-02	1.0E-03	4.4E-04	8.0E-01	1.1E+01	7.9E-02	6.8E-05	1.1E-03	8.3E-03	9.5E-03	2.6E+02
6	87 - 98	Annual Average	2.2E-05	2.2E+00	3.6E-03	7.3E+00	***6.9E-02***	3.6E-03	3.7E+01	8.2E-03	4.6E-01	2.8E-04	5.2E-01	1.7E-02	1.0E-03	4.4E-02	1.0E-03	4.5E-04	7.8E-01	1.1E+01	7.7E-02	7.0E-05	1.0E-03	8.7E-03	9.9E-03	2.5E+02
7	99 - 110	Annual Average	2.3E-05	2.1E+00	3.5E-03	6.8E+00	***6.6E-02***	3.4E-03	3.4E+01	8.4E-03	3.3E-01	2.0E-04	3.7E-01	1.6E-02	9.9E-04	4.1E-02	1.0E-03	4.5E-04	7.4E-01	1.0E+01	7.2E-02	7.2E-05	1.0E-03	8.9E-03	1.0E-02	2.3E+02
8	111 - 122	Annual Average	2.4E-05	2.0E+00	3.4E-03	6.4E+00	***6.2E-02***	3.1E-03	3.2E+01	8.5E-03	2.6E-01	1.6E-04	3.0E-01	1.5E-02	9.6E-04	3.8E-02	1.0E-03	4.6E-04	7.0E-01	9.9E+00	6.6E-02	7.3E-05	9.5E-04	9.2E-03	1.0E-02	2.2E+02
9	123 - 134	Annual Average	2.5E-05	1.9E+00	3.3E-03	5.9E+00	***5.8E-02***	2.9E-03	2.9E+01	8.5E-03	6.0E-01	3.7E-04	6.8E-01	1.4E-02	9.4E-04	3.5E-02	9.8E-04	4.6E-04	6.5E-01	9.4E+00	6.1E-02	7.4E-05	8.9E-04	9.5E-03	1.0E-02	2.0E+02
10	135 - 146	Annual Average	2.5E-05	1.8E+00	3.2E-03	5.3E+00	***5.4E-02***	2.6E-03	2.6E+01	8.5E-03	9.7E-01	6.0E-04	1.1E+00	1.3E-02	9.1E-04	3.1E-02	9.5E-04	4.7E-04	6.0E-01	8.8E+00	5.5E-02	7.6E-05	8.3E-04	9.9E-03	1.0E-02	1.8E+02
11	147 - 158	Annual Average	2.6E-05	1.7E+00	3.1E-03	4.9E+00	5.0E-02	2.4E-03	2.4E+01	8.3E-03	8.7E-01	5.4E-04	9.8E-01	1.2E-02	8.8E-04	2.8E-02	9.1E-04	4.7E-04	5.5E-01	8.3E+00	5.0E-02	7.8E-05	7.7E-04	1.0E-02	9.8E-03	1.6E+02
12	159 - 170	Annual Average	**2.6E-05**	1.7E+00	3.1E-03	4.7E+00	4.8E-02	2.3E-03	2.2E+01	8.2E-03	8.2E-01	5.1E-04	9.3E-01	1.1E-02	8.7E-04	2.7E-02	8.9E-04	4.8E-04	5.3E-01	8.1E+00	4.7E-02	7.9E-05	7.4E-04	1.1E-02	9.7E-03	1.6E+02
13	171 - 182	Annual Average	**2.7E-05**	1.7E+00	3.1E-03	4.7E+00	4.8E-02	2.3E-03	2.2E+01	8.2E-03	8.2E-01	5.1E-04	9.3E-01	1.1E-02	8.7E-04	2.7E-02	8.9E-04	4.8E-04	5.4E-01	8.2E+00	4.7E-02	7.9E-05	7.5E-04	1.1E-02	9.7E-03	1.6E+02
Long-term Goose Pit Lake Water Quality																										
23	291 - 300	Annual Average	**2.8E-05**	1.7E+00	3.2E-03	4.7E+00	4.9E-02	2.3E-03	2.3E+01	8.5E-03	8.3E-01	5.1E-04	9.4E-01	1.2E-02	8.8E-04	2.7E-02	9.0E-04	4.8E-04	5.7E-01	8.5E+00	4.8E-02	8.0E-05	7.7E-04	1.1E-02	1.0E-02	1.6E+02

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002

Table IV-7
Predicted Water Quality (Dissolved Constituents) Hypothetical Scenario
Portage Pit Lake
Meadowbank Project, Nunavut
Agnico-Eagle Mines Ltd.

Year	GoldSim Month		pH s.u.	Ag (mg/L)	Al[3] (mg/L)	Alkalinity (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Cl (mg/L)	CN (mg/L)
RRNWT - DW criteria			***6.5-8.5***		***0.1***		***0.025***	***5***	***1***				***0.005***	***250***	
CEQG criteria[2]*			**6.5 - 9.0**	**0.0001**	**0.1**		**0.005**						**0.000007**		
MMER criteria[6]**			**6.0 - 9.5**				**0.5**								**1**
8 METER ACTIVE ZONE															
Filling of Pit Lake															
5	75 - 86	Annual Average	6.7	4.5E-06	1.6E-02	2.3E+00	1.0E-04	2.0E-02	4.0E-03	2.0E-04	2.3E-06	8.9E-01	**1.6E-05**	2.1E-01	0.0E+00
6	87 - 98	Annual Average	6.7	1.8E-05	7.2E-02	1.2E+01	**1.0E-02**	9.7E-02	1.9E-02	1.8E-03	1.2E-04	1.4E+01	**7.5E-05**	9.9E+01	0.0E+00
7	99 - 110	Annual Average	6.7	1.9E-05	7.9E-02	1.3E+01	**1.5E-02**	1.1E-01	2.1E-02	2.1E-03	1.6E-04	1.7E+01	**8.6E-05**	1.2E+02	0.0E+00
8	111 - 122	Annual Average	6.7	1.9E-05	7.5E-02	1.3E+01	**1.6E-02**	1.1E-01	2.0E-02	2.1E-03	1.6E-04	1.6E+01	**8.4E-05**	1.1E+02	0.0E+00
9	123 - 134	Annual Average	6.7	1.8E-05	7.1E-02	1.2E+01	**1.6E-02**	1.0E-01	2.0E-02	2.0E-03	1.5E-04	1.4E+01	**8.2E-05**	9.9E+01	0.0E+00
10	135 - 146	Annual Average	6.7	1.8E-05	6.7E-02	1.1E+01	**1.6E-02**	1.0E-01	1.9E-02	2.0E-03	1.5E-04	1.3E+01	**8.0E-05**	8.9E+01	0.0E+00
11	147 - 158	Annual Average	6.7	1.7E-05	6.2E-02	1.1E+01	**1.6E-02**	9.4E-02	1.8E-02	1.9E-03	1.3E-04	1.2E+01	**7.6E-05**	7.7E+01	0.0E+00
12	159 - 170	Annual Average	6.7	1.6E-05	5.7E-02	9.8E+00	**1.4E-02**	8.7E-02	1.7E-02	1.8E-03	1.2E-04	1.0E+01	**7.1E-05**	6.6E+01	0.0E+00
13	171 - 182	Annual Average	6.7	1.6E-05	5.6E-02	9.5E+00	**1.3E-02**	8.5E-02	1.6E-02	1.7E-03	1.1E-04	9.9E+00	**6.9E-05**	6.2E+01	0.0E+00
Long-term Portage Pit Lake Water Quality															
23	291 - 300	Annual Average	6.7	1.6E-05	7.7E-02	9.8E+00	**1.3E-02**	8.3E-02	1.6E-02	1.7E-03	1.1E-04	9.8E+00	**7.7E-05**	6.1E+01	0.0E+00

Year	GoldSim Month		CNO (mg/L)	CNS (mg/L)	Co (mg/L)	Cr[4] (mg/L)	Cu[5] (mg/L)	F (mg/L)	Fe (mg/L)	Calculated Hardness (mg/L)	Hg (mg/L)	K (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)
RRNWT - DW criteria						***0.05***	***1***	***1.5***	***0.3***		***0.001***				***0.05***
CEQG criteria[2]*						**0.001/0.0089**	**0.002-0.004**	**0.12**	**0.3**		**0.000026**				
MMER criteria[6]**							**0.3**								
8 METER ACTIVE ZONE															
Filling of Pit Lake															
5	75 - 86	Annual Average	0.0E+00	0.0E+00	3.5E-04	2.0E-04	2.7E-04	3.1E-02	1.3E-02	3.6E+00	1.2E-05	4.0E-01	1.0E-03	3.4E-01	1.6E-03
6	87 - 98	Annual Average	0.0E+00	0.0E+00	2.5E-03	5.8E-04	**3.3E-03**	1.0E-01	***7.0E-01***	5.7E+01	**3.4E-05**	2.1E+00	3.7E-03	5.2E+00	***1.1E-01***
7	99 - 110	Annual Average	0.0E+00	0.0E+00	3.0E-03	6.0E-04	**4.3E-03**	1.1E-01	***8.9E-01***	6.8E+01	**3.5E-05**	2.4E+00	4.0E-03	6.2E+00	***1.4E-01***
8	111 - 122	Annual Average	0.0E+00	0.0E+00	3.0E-03	6.0E-04	**4.3E-03**	1.0E-01	***8.6E-01***	6.3E+01	**3.5E-05**	2.4E+00	3.8E-03	5.8E+00	***1.4E-01***
9	123 - 134	Annual Average	0.0E+00	0.0E+00	2.9E-03	6.0E-04	**4.3E-03**	9.8E-02	***8.3E-01***	5.9E+01	**3.4E-05**	2.3E+00	3.7E-03	5.3E+00	***1.3E-01***
10	135 - 146	Annual Average	0.0E+00	0.0E+00	2.8E-03	6.0E-04	**4.2E-03**	9.4E-02	***7.9E-01***	5.4E+01	**3.4E-05**	2.2E+00	3.6E-03	4.9E+00	***1.3E-01***
11	147 - 158	Annual Average	0.0E+00	0.0E+00	2.6E-03	5.9E-04	**4.0E-03**	9.0E-02	***7.4E-01***	4.8E+01	**3.4E-05**	2.1E+00	3.4E-03	4.4E+00	***1.2E-01***
12	159 - 170	Annual Average	0.0E+00	0.0E+00	2.4E-03	5.6E-04	**3.6E-03**	8.5E-02	***6.8E-01***	4.2E+01	**3.2E-05**	1.9E+00	3.2E-03	3.9E+00	***1.1E-01***
13	171 - 182	Annual Average	0.0E+00	0.0E+00	2.3E-03	5.6E-04	**3.5E-03**	8.5E-02	***6.5E-01***	4.0E+01	**3.2E-05**	1.9E+00	3.2E-03	3.7E+00	***1.0E-01***
Long-term Portage Pit Lake Water Quality															
23	291 - 300	Annual Average	0.0E+00	0.0E+00	2.7E-03	5.6E-04	**3.5E-03**	9.5E-02	***6.4E-01***	4.0E+01	**3.5E-05**	1.8E+00	3.2E-03	3.6E+00	***1.0E-01***

Year	GoldSim Month		Mo (mg/L)	Na (mg/L)	Ni[5] (mg/L)	NH4_N (mg/L)	un-ionized NH3 (mg/L)	NO3_N (mg/L)	P (mg/L)	Pb[5] (mg/L)	PO4_P (mg/L)	Sb (mg/L)	Se (mg/L)	Si (mg/L)	SO4 (mg/L)	Sr (mg/L)	Tl (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Calculated TDS (mg/L)
RRNWT - DW criteria				***200***				***11***		***0.01***		***0.006***	***0.01***		***500***					***5***	***500***
CEQG criteria[2]*			**0.073**		**0.025-0.15**	**4.92**	**0.019**	**2.9**		**0.001-0.007**			**0.001**				**0.0008**			**0.03**	
MMER criteria[6]**					**0.5**					**0.2**										**0.5**	
8 METER ACTIVE ZONE																					
Filling of Pit Lake																					
5	75 - 86	Annual Average	2.0E-04	4.0E-01	4.3E-04	0.0E+00	0.0E+00	1.8E-03	3.4E-04	1.0E-04	7.8E-04	1.0E-04	2.0E-04	3.8E-02	1.2E+00	3.1E-04	3.9E-05	6.3E-05	5.9E-03	1.2E-03	5.9E+00
6	87 - 98	Annual Average	2.6E-03	2.4E+01	1.6E-02	1.2E+00	7.3E-04	1.3E+00	1.7E-02	1.4E-03	2.9E-02	1.5E-03	6.3E-04	6.7E-01	9.9E+00	5.7E-02	1.1E-04	8.7E-04	1.3E-02	2.2E-02	1.7E+02
7	99 - 110	Annual Average	3.1E-03	2.9E+01	2.2E-02	1.6E+00	1.0E-03	1.8E+00	2.2E-02	1.7E-03	3.5E-02	2.5E-03	6.7E-04	8.3E-01	1.2E+01	7.2E-02	1.1E-04	1.0E-03	1.3E-02	**3.4E-02**	2.1E+02
8	111 - 122	Annual Average	2.9E-03	2.7E+01	2.2E-02	1.6E+00	9.9E-04	1.8E+00	2.2E-02	1.7E-03	3.2E-02	2.7E-03	6.6E-04	7.9E-01	1.1E+01	6.8E-02	1.1E-04	9.8E-04	1.3E-02	**3.7E-02**	1.9E+02
9	123 - 134	Annual Average	2.7E-03	2.4E+01	2.2E-02	1.6E+00	9.8E-04	1.8E+00	2.2E-02	**1.6E-03**	2.9E-02	2.9E-03	6.6E-04	7.5E-01	1.1E+01	6.4E-02	1.1E-04	9.2E-04	1.3E-02	**3.8E-02**	1.7E+02
10	135 - 146	Annual Average	2.5E-03	2.2E+01	2.1E-02	1.6E+00	9.8E-04	1.8E+00	2.1E-02	**1.5E-03**	2.6E-02	3.0E-03	6.6E-04	7.0E-01	1.0E+01	6.0E-02	1.1E-04	8.6E-04	1.3E-02	**3.9E-02**	1.6E+02
11	147 - 158	Annual Average	2.2E-03	1.9E+01	2.0E-02	1.5E+00	9.2E-04	1.7E+00	1.9E-02	**1.4E-03**	2.3E-02	2.8E-03	6.5E-04	6.3E-01	9.4E+00	5.3E-02	1.1E-04	7.9E-04	1.3E-02	**3.7E-02**	1.4E+02
12	159 - 170	Annual Average	2.0E-03	1.7E+01	1.8E-02	1.3E+00	7.9E-04	1.4E+00	1.7E-02	**1.3E-03**	2.0E-02	2.5E-03	6.2E-04	5.5E-01	8.5E+00	4.6E-02	1.0E-04	7.0E-04	1.3E-02	**3.3E-02**	1.2E+02
13	171 - 182	Annual Average	1.9E-03	1.6E+01	1.7E-02	1.2E+00	7.3E-04	1.3E+00	1.6E-02	**1.3E-03**	1.9E-02	2.4E-03	6.1E-04	5.3E-01	8.2E+00	4.3E-02	1.0E-04	6.7E-04	1.3E-02	**3.1E-02**	1.1E+02
Long-term Portage Pit Lake Water Quality																					
23	291 - 300	Annual Average	1.8E-03	1.5E+01	1.7E-02	1.2E+00	7.2E-04	1.3E+00	1.6E-02	**1.3E-03**	1.9E-02	2.3E-03	6.1E-04	5.7E-01	8.6E+00	4.3E-02	1.0E-04	7.0E-04	1.3E-02	**3.1E-02**	1.1E+02

NOTES:
1. Assumes fully mixed conditions
2. CEQG freshwater guidelines and criteria are based on **total** metal concentrations, except for aluminum (dissolved aluminum criterion).
3. Freshwater aquatic life criterion for aluminum depends on pH, [Ca2+] and DOC. In this table, only the pH criterion has been applied to highlight exceedances.
4. Freshwater aquatic life criteria for chromium depends on the valence of chromium ion. In the above table, the Cr(VI) criterion of 0.001 mg/L is shown.
5. Freshwater aquatic life criterion or guideline is hardness dependant.
6. Maximum authorized monthly mean concentration (based on **total** concentration).
* December 2006
** June 6, 2002