Environment Canada Environnement Canada

ENVIRONMENT CANADA'S INTERVENTION

RESPECTING THE

AGNICO-EAGLE MINES LTD. WATER LICENCE APPLICATION

FOR THE

MEADOWBANK GOLD PROJECT

MARCH 31, 2008

Canada

Introduction

Environment Canada is a science-based Department whose business is to help Canadians live and prosper in an environment that needs to be conserved and protected. Contributing to making sustainable development a reality in Canada's North is a priority for Environment Canada. The Department focuses on provision of scientific expertise for incorporation into decisions on developments, such that all parties working together can ensure that there is minimal impact on the natural environment, and that ecosystem integrity is maintained and preserved for future generations. To this end, Environment Canada has reviewed the Agnico-Eagle Mines Ltd. (AEM) water licence application and supporting information for the Meadowbank Gold Project.

Mandate, Role and Responsibilities of Environment Canada

The mandate of Environment Canada is determined by the statutes, regulations, guidelines, policies, federal, territorial, and international agreements, and related programs that it is assigned by Parliament to administer. The overall objective is to foster harmony between society and the environment for the economic, social and cultural benefit of present and future generations of Canadians. The Department shares this goal with other federal agencies, provinces, territories and First Nations.

The *Department of the Environment Act* provides Environment Canada with general responsibility for environmental management and protection. Its obligations extend to and include all such matters over which Parliament has jurisdiction, which are not by law assigned to any other department, board, or agency of the Government of Canada. These include matters related to preservation and enhancement of the quality of the natural environment (e.g. water, air, soil), renewable resources including migratory birds and other non-domestic flora and fauna, water, meteorology, coordination of policies and programs respecting preservation and enhancement of the quality of the natural environment, development of standards and guidelines, promotion of sound environmental practices, and providing advice to federal government agencies. In delivering on these obligations Environment Canada has responsibility for specific legislation, regulations, policies, and agreements.

Of particular concern and interest for the current project are the responsibilities conferred on the Department by legislation and standards such as the:

- *Canadian Environmental Protection Act*
- *Fisheries Act* (Sections 36-42)
- *Metal Mining Effluent Regulations*
- Canada-wide Standards for Mercury Emissions
- Canada-wide Standards for Dioxins and Furans

Please see Appendix A for a brief description of the above instruments.

Relevant national policies and international agreements include the Toxic Substances Management Policy, National Pollution Prevention Strategy, UN Convention on Biological Diversity, National Biodiversity Strategy, Arctic Environmental Protection Strategy, and the National Action Program on Climate Change.

Background

Agnico-Eagle Mines Ltd. (AEM) is proposing to construct, operate, and eventually decommission a gold mine in the Kivalliq region of Nunavut, approximately 70 km north of the Hamlet of Baker Lake. The Meadowbank Gold Project consists of four main deposits which host estimated and probable open pit mining reserves of 2,768,000 oz of gold, which will be processed at a rate of 8,500 tonnes per day over an 8-10 year operating period.

Environment Canada participated in the Pre-Hearing Technical meetings held in Baker Lake February 26-27, 2008, and found this very helpful in resolving a number of issues raised in our technical submission. Environment Canada would like to commend the proponent and their consultants on their proactive approach to addressing concerns identified in the technical meetings. This intervention presents issues which are still outstanding, and summarizes several areas of agreement on issues which have been resolved. Should new or additional relevant information be brought forward in the course of the public hearings this submission will be re-examined. Within the context of the additional information, any changes in EC's recommendations and position will be brought to the attention of the Board and the proponent.

Technical Comments and Recommendations

EC's review of the Meadowbank Gold Project Water Licence Application submitted by Agnico-Eagle Mines Ltd. in August 2007 included the Type A water licence application and supporting documents issued up to March 20, 2008. Our review focuses on areas which fall under the Department's mandated responsibilities, with our comments organized under the following headings:

1. General Comments
2. Water Quality
3. Groundwater
4. Tailings and Waste Rock Management
5. Waste Management
6. Emergencies
7. Closure and Reclamation
8. Conclusion

Within each category, comments are organized by specific issue, with reference to the appropriate document section, and detailing our concerns and recommendations.

Issues relating to fish and fish habitat fall outside of EC's mandate, and therefore are not addressed in this submission. Further, EC recommends the board seek expert advice related to permafrost issues, the marine environment, hydrology and climate.

Although EC does not have groundwater expertise available, we have included comments which were provided by DFO's consultant as follow-up on groundwater issues raised by EC in the NIRB process (NIRB Condition #8), and as it pertains to EC's *Fisheries Act* responsibilities.

1.0 General

Environment Canada was pleased with the format of the water licence application materials, finding the documents well laid out and cross-referenced. Our review has identified several areas needing further work or clarification, as outlined in the following technical comments and recommendations. Where possible, we have suggested how the water licence may address such concerns, and respectfully provide recommended water licence conditions for the Board's consideration.

2.0 Water Quality

2.1 Monitoring During Dewatering of Lakes

References: Mine Waste & Water Management Report; Section: 9.1, Page: 9-1 Section 12 Table 12.1; March 2008 Proposed Water Quality Monitoring and Management Plan for Dike Construction and Dewatering at the Meadowbank Mine Sections 4 and 6.

Proponent's Conclusions:
The reports describe dewatering of areas behind dikes, and identify the potential for sediment displacement or slumping, and associated elevation of suspended solids and metals in the water to be discharged. Several mitigation techniques may be used, such as adjusting pumping rates, use of silt curtains, or use of settling ponds, to ensure water clarity/quality is acceptable for release. It is proposed that turbidity be used as an analog for TSS once field correlations have been developed.

Water quality and management plans propose to use environmental thresholds based on TSS and turbidity in the receiving environment, in conjunction with discharge quality, to trigger management actions. A short-term (24 hour) maximum of 25 mg/L TSS is proposed for times when fish eggs/larvae are present and in shoal areas at all times, and a 50 mg/L threshold is proposed for when fish eggs/larvae are not present, and for all impounded areas at all times. The maximum monthly mean TSS threshold would be 6 mg/L for times when eggs/larvae are present, and in the area of spawning habitat. For other times/areas a threshold of 15 mg/L is proposed.

TSS thresholds have also been set for the intake (discharge) quality, with a short term (24 hour) maximum of 22.5 mg/L and a maximum monthly mean of 15 mg/L.

EC's Conclusions:
The proposed approach is reasonable, and presents a plan for appropriate actions and monitoring. For clarity, we note that to ensure that the minimum extent of the receiving water body is affected, receiving environment thresholds should apply to discrete samples, as opposed to averages over locations and/or depths.

Monitoring of average TSS concentrations proposes to use a 7 day moving average. This should be done on a 6-day basis to be consistent with other licenced mines; use of 6 days instead of 7 is recommended to achieve an element of random sampling.

EC agrees that TSS and turbidity will be the main parameters controlling the dewatering discharges, but expects that there will be discharge criteria for other parameters (e.g.

aluminum, pH) which will need to be measured as well, and may require a management response.

EC's Recommendations:
EC finds the proposed monitoring plan for dike construction and lake dewatering to be sound, with some minor points to be clarified/amended, and recommends it be implemented. The points to be amended would include clarification that thresholds in the receiving environment apply to discrete sample locations, that moving averages should be on a six day basis, and inclusion of other licence criteria in triggering management action. EC recommends that submission of the final plan for approval by the Board be a condition of the water licence.

2.2 Aquatic Monitoring/EEM Integration

References: Aquatic Effects Management Program Oct. 2005 report; Metal Mining Effluent Regulations (MMER) Plan Oct. 2005; Water Quality and Flow Monitoring Plan: Section 3.3.2; March 2008 Proposed Water Quality Monitoring and Management Plan for Dike Construction and Dewatering at the Meadowbank Mine.

Proponent's Conclusions:
AEM has developed an aquatic management plan that integrates mitigation and monitoring (core monitoring, targeted studies and MMER EEM) over the life of mine. The AEMP describes the key elements, and details are to be provided in the form of "Sampling and Analysis Plans" (SAP) prior to mine construction. The first such plan has been developed for the dike construction and dewatering (Mach 2008). Sampling required under the MMER Environmental Effects Monitoring is described in the Oct. 2005 MMER plan.

EC's Conclusions:
Overall, AEM has proposed a well-reasoned approach and we concur that the plans will evolve and there will be areas which warrant further discussion. The report notes that either gradient or control-impact study designs will be used, and it should be confirmed that sufficient baseline data has been collected to characterize the full range of natural variability and provide a basis for the study design selected. Other points of discussion would include sediment quality parameters, usefulness of zooplankton monitoring, sampling locations, and capturing seasonal effects. Linkage to the Surveillance Network Program and to adaptive management will be important, as well as coordination with the EEM sampling to avoid duplication. We note that the EEM program will be developed independently and require separate approvals, so have not commented on that here.

EC's Recommendations:
EC recommends that the construction phase SAPs be developed as early as possible, and circulated for review. A comprehensive and consolidated Aquatic Effects Monitoring Plan should be prepared as a condition of the Water Licence.

With respect to groundwater monitoring, the proponent has developed a general ground water monitoring plan as part of the overall water quality and flow monitoring plan but details on the proposed ground water monitoring installations are scattered through several documents. It would help understand the proposed ground water monitoring if the proponent consolidated these details in a more specific plan that includes a schedule

for the phased installation of monitoring wells and a brief discussion of the reason for each installation.

2.3 Site Water Quality Monitoring

References: Water Quality and Flow Monitoring Plan; Response to Pre-hearing Commitments Appendix C Water Quality and Flow Monitoring Plan – Supplemental Information

Proponent's Conclusions:
Compliance and internal monitoring are described in the Water Quality and Flow Monitoring Plan. Tables and figures in this plan were amended in the March 6, 2008 letter from AEM to the NWB, with a condensed table and revised figures. The table outlining the proposed monitoring plan describes the parameters and frequency for monitoring. At the Third Portage Diffuser discharge (station CM-4) and the Wally Lake Diffuser discharge (CM-5), AEM proposes to monitor parameters regulated under the MMER on a weekly basis during discharge. For other sites to be monitored, various schedules of parameters are proposed.

EC's Conclusions:
EC has identified some specific points of concern with respect to the proposed monitoring plan. Respecting diffuser discharge stations (CM-4 and CM-5), in addition to being the compliance points for the water licence, these discharge results will be linked to the interpretation of results from the Aquatic Effects Monitoring Program and as such, a broad suite of analyses is needed to characterize these effluents. This is also required (to a somewhat lesser degree) under the MMER effluent characterization (compulsory plus recommended parameters). For frequency, monitoring should be done in advance of discharge, as well as weekly during discharge.

For other sites, there are several additional parameters which would provide useful information and/or adjustments to be made to the proposed monitoring parameters.

EC's Recommendations:
A full suite of parameters should be analyzed for the diffuser discharges, including total and dissolved metals (full ICP scan), nutrients, TDS, major ions, TSS, turbidity, and total petroleum hydrocarbons. (This would be Schedule 4 plus TPH and turbidity).
Other modifications recommended include:

- Monitored sites for diversion of non-contact waters should include aluminum, and it should not be necessary to measure cyanide (included in Schedule 5).
- The tailings storage facility (CM-6) parameters should include analysis for nitrogen compounds, but should not require cyanide compounds.
- The pit lake discharge points (CM-7 and CM-8) should be monitored for a full suite of parameters.
- For the waste rock pile monitoring (IM-2 and IM-10), the Schedule 3 parameters should be amended to include total metals as well as dissolved.
- The pit lake sites (IM-3, IM-5, IM-6 and IM-12) should be monitored for Schedule 4 parameters to give a good understanding of how water quality is developing as the pit lakes fill. This will allow time for mitigation to be developed if necessary.
- The two tailings monitoring sites (IM-7 and IM-8) should also be monitored for cyanide and total metals in addition to the Schedule 3 parameters.

- The Vault Attenuation Pond (IM-11) should have total metals measured also.
- To be consistent with the MMER, Radium 226 could be added to the MMER list, although this is not a parameter of concern for this project.

The framework provided in the Water Quality and Flow Monitoring Plan and the proposed amendments are a reasonable start, but should be further refined to ensure sufficient data are collected for management purposes as well as to inform the AEMP.

2.4 Effluent Quality Criteria

References: Response to Pre-Hearing Commitments Appendix G. Meadowbank Gold Project Proposed Discharge Water Quality Criteria.

Proponent's Conclusions:
AEM presented proposed water quality criteria at the Pre-hearing conference for discharges from the Vault and Portage Attenuation Ponds (Tables A-1 and A-2) and for surface runoff (Table 5). AEM proposes to monitor turbidity (rather than regulate) and develop appropriate criteria for inclusion in future licences.

EC's Conclusions:
Receiving waters in the project area contain very low concentrations of all parameters, and are ultra-oligotrophic with respect to having low nutrient levels and productivity. Ecosystems are based on very simple food webs, and as such are vulnerable should impacts occur to any compartment of the ecosystem. A very high level of protection is warranted when discharging effluent into such a pristine system. To that end, EC suggested effluent quality criteria at the pre-hearing technical meetings that should be both protective and achievable (Tables 3 and 4). Additional criteria were recommended for dewatering discharges and for treated sewage, noting that all effluent discharged to surface waters should pass acute toxicity tests using rainbow trout and *Daphnia magna*. Specific areas of difference are highlighted below, and EC's recommended limits (somewhat revised from those documented by AEM) are presented in Appendix B.

TSS:
The proposed criteria for surface runoff of 50 mg/L (average) or 100 mg/L (grab) are consistent with other licences issued in both Territories. However, EC notes that effects associated with suspended solids are a function of both exposure and duration. If these limits are used, there would be the expectation that duration would be minimized and that management action would be taken to protect the more productive littoral areas of lakes from sedimentation. This could be achieved either through defining a duration for the criteria, or through management plans (most practical).

Turbidity:
EC has proposed the inclusion of turbidity as a regulated parameter because of the high potential for the suspension of very fine materials in the discharge water during dewatering (due to high clay content in the lake sediments). These fines would pass unmeasured through the 1.4 µm filter that is used for suspended solids, thus not triggering the limits for suspended solids, but adding significant suspended matter to the receiving lake. Such fines remain suspended in the receiving water column for periods on the order of weeks. The resulting loss of water clarity would reduce sunlight penetration, and diminish algal production, resulting in lowered primary productivity.

EC does not feel that AEM's suggestion to monitor turbidity through the duration of the first licence and recommend limits for the renewal is practical. Our concern is specifically with dewatering, and the Vault dewatering would already have taken place by the time a licence renewal was done (if the proposed term of 7 years is granted). For this reason, EC would prefer to see turbidity as a regulated parameter.

We do have the precedent of Diavik's dewatering of their in-lake diked area for their two pits, and in this case the turbidity limit was the limiting factor for what could be discharged. Their limits were 10 NTU average/ 15 NTU grab, and the environmental manager acknowledged that even though they were below the TSS limits, the change in water clarity could easily be seen when approaching the turbidity limit (Gord MacDonald, personal communication). It should be noted that even so, they were able to discharge 60% of the lake water, which is what Meadowbank is using as a planning figure. (Diavik did note that if they had been able to dewater in the winter there may not have been as much turbidity or suspended solids, as much depended on wind and wave action on exposed sediments. The Ekati mine found winter dewatering effective in minimizing sediment concentrations.)

Total Dissolved Solids (TDS) and chloride:
EC had proposed that TDS rather than chloride be regulated, as there is precedent for this at other mine sites. However, the ion of concern is chloride, and we have no objection to the proposal by AEM to regulate chloride rather than TDS. We do feel the proposed value for Portage is too high, noting that an end of pipe criteria of 2000 mg/L would likely result in chronic bioassay test failures. In addition, chloride is a conservative parameter, i.e. it does not degrade, alter or get taken up in the environment so dilution would be the only attenuation mechanism once it is released. There is concern that concentrations could build up in the immediate receiving waters, and result in adverse impacts to aquatic life (baseline levels are < 1.0 mg/L). For these reasons, EC recommends chloride limits be investigated which will be protective of the receiving environment and achievable through life of mine. We note that the Tahera licence has a limit of 500 mg/L for chloride, while Ekati's proposed site-specific limit of 1332 mg/L to achieve mixing zone concentrations of 313 mg/L has been rejected by most stakeholders as being too high. Given the seasonal nature of the discharge, and the 64-fold dilution for Portage, it may be reasonable to set chloride limits on the order of 1000 mg/L (average) which would give mixing zone concentrations of under 16 mg/L, and conduct monitoring to identify fate and behaviour in the receiving environment. The predicted discharge concentration of 441 mg/L (possible poor-end scenario) gives room for variation in effluent quality. Much lower concentrations (< 3 mg/L) are predicted to occur in Vault discharges, and limits should be considerably lower there given the smaller receiving water volume.

EC's Recommendations:
The purpose of setting EQC is to ensure mine discharges do not cause adverse effects in the receiving environment. Parameters which are regulated should be those elements which are generated or released by the licenced activities, and the list typically includes the main parameters associated with a site-specific activity and geology. In this case, EC agrees with many of the limits proposed by AEM, but would like to see more conservative criteria applied to several of the parameters. Conversely, there are several parameters which do not need to be regulated but should be monitored. We also recommend setting criteria for dewatering, and for sewage discharges if reaching

surface waters frequented by fish. Specific parameters and criteria recommendations are provided in Appendix B.

2.5 Water Quality Predictions – Cyanide Degradation Products

References: Water Quality Predictions August 2007 Report; Response to Pre-Hearing Commitments Table 2d Item EC-7.

Proponent's Conclusions:
Regarding inclusion of cyanide (CN) degradation products in ammonia predictions, the report summary says that the Portage model does not consider CN contributions to ammonia; page 32 states that free and weak acid dissociable (WAD) CN readily degrade to HCN and volatizes and are therefore not considered in the model. The response to pre-hearing commitments notes that on page 31 it is stated that SCN and CNO are modeled to accumulate in the Reclaim Pond, while free CN is constant. Monitoring and re-modeling will be used to update predictions as water quality data become available.

EC's Conclusions:
It is not clear whether predictions for ammonia in reclaim water included all CN degradation products, but the approach to monitor and calibrate the model with real data is reasonable. To ensure ammonia does not become a problem in the reclaim water AEM will need to ensure maximum CN destruction as well as practicing rigorous source control for blasting agents.

EC's Recommendation:
EC is satisfied with AEM's undertaking to do periodic re-calibration of the water quality predictions modeling for parameters of concern as additional mine water data become available. EC recommends minimizing amounts of CN and ammonia which enter the effluent stream through use of an Ammonia Management Plan and reduction at source wherever possible.

2.6 Water Quality in Pit Lakes

References: Water Quality Predictions Section 6.2.1; Reclamation and Closure Plan; March 6 letter from AEM (Larry Connell) to the NWB re: Errata – Meadowbank Gold Project Preliminary Closure and Reclamation Plan.

Proponent's Conclusions:
AEM has clarified that closure criteria for breaching of pit lake dikes will be based on appropriate standards such as the CCME freshwater aquatic life guidelines, ambient lake conditions, or other risk-based criteria.

The long-term Portage and Goose Island pit lake water quality will meet the appropriate criteria prior to breaching of the dikes. Portage pit will develop a chemocline approximately 30 m from bottom of the pit, with TDS concentrations of about 1000 mg/L. The chemocline will slowly erode due to groundwater seepage out and through gradual mixing with the overlying waters. Vault pit is predicted to also likely develop a chemocline.

EC's Conclusions:
EC appreciates the clarification respecting closure criteria, and is satisfied with the proposed approach. However, it should be specified whether the criteria apply to the lake as a whole (average conditions) or to upper (discharge) layers only. This question arises in connection with chemocline development, stability, and potential degradation.

With respect to the Portage pit post-closure chemocline disappearance, there is uncertainty as to whether the chemocline will erode. Groundwater outflow will be at a very, very slow rate, and it is unclear where the energy for mixing at the interface will come from. If mixing is attributed to diffusive processes only, these will be insignificant (Dr. Greg Lawrence, personal communication) and would not result in mixing. A deeper chemocline is predicted to develop in Vault pit, and would be less likely to erode given the lack of a talik connection to groundwater. It is unclear why the potential for stratification is not predicted for Goose pit.

Ground water discharges to the pits are not included in the GoldSim model during flooding after mine closure, i.e. the ground water taps are turned off at the end of active mining. During flooding of the pits, ground water discharges will continue but will decrease from those quantities occurring at the end of active mining to zero discharge when the pits are fully flooded. These discharges will have some effect on the overall water quality in the pits. Third Portage Lake level is higher than Second Portage Lake; therefore, ground water will eventually flow out of the open pits once the water levels in the pits reach the level of Third Portage Lake.

Modelling of the evolution of pit lake water quality was also done independently of the GoldSim modelling using the model CE-QUAL-W2. It is unclear whether ground water discharge was taken into account in this model. If ground water discharge is not included in the modeling, the chemocline will be thicker than estimated by the proponent but by how much will depend on the proportion of ground water discharge to other sources of flood waters to the pits.

Agnico-Eagle Mines acknowledges that ground water discharges to the Portage and Goose pits will have an effect on the evolution of the pit water quality during flooding. Although they provided this qualitative analysis of the role of ground water in the evolution of the pit water quality there is no indication that they will provide any additional quantitative analysis of the possible effects. The risk to not doing this is that they may find that they are required to maintain the dikes around the flooded pits for a longer period of time after mining is completed should the chemoclines form and remain longer than anticipated at the Portage and Goose pits. The concern from a regulatory perspective is that they account for the financial liabilities to do this when considering the overall economics of the project.

As mining progresses, however, monitoring of the quantity and quality of ground water inflows to the open pits will be needed to verify these predictions and water management plans may need to be reviewed and updated depending on the results of the monitoring.

EC's Recommendations:
EC seeks clarification of the role of groundwater inputs/discharges in the evolution of pit water quality, and an evaluation of the stability of meromixis, and how that will affect water quality at closure.

It is recommended that updating and re-running of the pit water quality model be considered as data become available during the early stages of mining at the site. However, as mining advances, the need for predictive modeling will be replaced by the collection of actual monitoring data from the site.

3.0 Ground Water

3.1 Baseline Ground Water Quality Data

References: Golder Associates Ltd. 2007c. Meadowbank Gold Project – 2006 Baseline Ground Water Quality, August 16, 2007; Golder Associates Ltd. 2007d. Meadowbank Gold Project – 2007 Baseline Ground Water Quality, Submitted to Agnico-Eagle Mines Ltd. December 12, 2007; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d page 1.

Proponent's Conclusion:
In 2006, Golder Associates installed three new ground water monitoring wells, MW06-05, MW06-06 and MW06-07, to replace monitoring wells, MW03-02, MW03-03 and MW03-04, that had become inoperable. The configuration (location, depth, orientation and position of the screened interval) of two of the wells, MW06-06 and MW06-07, was similar to that of the old wells to facilitate comparison of the water quality data between monitoring years. The third well, MW06-05 was completed in IV rock on Goose Island but developed internal damage before it could be sampled and had to be abandoned. As a result, ground water samples were only collected from well MW03-01 on August 8 and August 14, 2006, from well MW06-06 on August 24, 2006 and from well MW06-07 on August 30, 2006. In 2007, wells MW06-06 and MW06-07 were also found to be defective and, therefore, only one sample was collected from well MW03-01 on August 17, 2007.

In the report on the 2006 Baseline Ground Water Quality, Golder concludes:

> *The database of groundwater chemistry data obtained to date is considered adequate for the purpose of evaluating the load of dissolved metals from groundwater since dissolved metal concentrations showed good correlation between data sets. It is also considered adequate to predict the salinity and major ion concentration of groundwater inflow into pits during operation.*

And in the report on the 2007 Baseline Ground Water Quality, they conclude:

> *The groundwater quality at MW03-01 has remained fairly consistent between 2006 and 2007, supporting the contention that the 2006 data constitute adequate baseline information for the areas investigated.*

EC's Conclusion:
In our technical submission to the NWB EC flagged several problems with the handling of groundwater data (i.e. inconsistently reporting measured vs. calculated TDS, not allowing for underestimation when using calculated values, use of field duplicates as data points, underestimation of the 2007 TDS value). Because of these issues, results from previous years that use calculated instead of measured values of TDS, use field duplicates as separate data points and use field conductivity measurements to calculate average TDS need to be reevaluated.

EC concurs with the proponent that the database of ground water chemistry data obtained to date is considered adequate to predict the salinity and major ion concentration of ground water inflow into the open pits during operation. The database of ground water chemistry is also considered adequate for the purpose of evaluating the load of dissolved metals from ground water since dissolved metal concentrations exceeded the more stringent CEQG for the protection of freshwater aquatic life in only a few instances and were generally below analytical detection limits. Nevertheless, concentrations of a few constituents such as aluminum, chromium, copper and iron above the CEQG persist and will need to be monitored.

EC's Recommendations:
EC recommends that the proponent develop a groundwater monitoring plan which addresses the concerns identified with previous data presentation, and which identifies sites for more robust permanent ground water quality monitoring wells. These should be installed at the Meadowbank site as soon as possible and ground water quality samples collected and analyzed to establish baseline ground water quality at the permanent sites prior to the start of active mining. The new baseline data should initially be compared to the existing baseline data to determine whether there are any significant variations between the two data sets.

3.2 Ground Water Monitoring Installations

References: Golder Associates Ltd. 2007c. Meadowbank Gold Project – 2006 Baseline Ground Water Quality, August 16, 2007; Golder Associates Ltd. 2007d. Meadowbank Gold Project – 2007 Baseline Ground Water Quality, Submitted to Agnico-Eagle Mines Ltd. December 12, 2007; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d page 1.

Proponent's Conclusion:
In the 2006 Baseline Ground Water Quality report Golder states:

> *The configuration of the replacement wells (location, depth, orientation and position of screened interval) is similar to that of the old wells to facilitate comparison of groundwater quality data between monitoring years. The well construction materials utilized were also similar to those used previously. Given the fragility of the PVC well constructions in the permafrost environment of Meadowbank, consideration was given to utilizing more robust construction materials such as stainless steel, which is considerably heavier and more expensive than PVC. Nevertheless, PVC was selected as the material of choice for the following reasons:*
>
> - *Short life span of the wells. Wells installed within the footprint of the pits will be destroyed shortly after operation is initiated. Should the project go ahead, the wells would be replaced with more permanent and robust structures which would be located outside the outline of the first years of pit operation.*
> - *Economics and relative ease of installation. The use of lighter PVC equipment allowed for conventional means of transportation of the material to site and well installation using standard equipment available at the site.*

They go on to note in the 2007 report:

> *Property ownership transfer and intense camp activity that occurred in 2007 precluded the completion of two sampling rounds and the replacement of*

defective wells. Out of the 7 monitoring wells installed at the site since 2003, one well remained operable.

They further indicate in the 2007 report:

Monitoring well design and installation methods have been reviewed and are being revised to improve the robustness of the next generation on installations.

EC's Conclusion:
The high degree of failure of the well installations is disappointing but EC is assured that a better understanding of the baseline groundwater quality has been obtained even though the reliability of the installations has been limited. The installation of the three replacement wells near the sites of the original wells is a required procedure that will allow comparison of the successive sets of ground water quality data even though the sites will eventually be destroyed by the mining development. Subsequent installations, however, should be placed outside areas of direct development such that they can provide a more permanent monitoring capability and, in addition, the design of the new installations needs to be revised, as suggested, to improve their reliability.
Agnico-Eagle Mines should reconsider the idea of replacing non-functioning wells as close to existing wells as possible, Within the limitations imposed by faulty monitoring installations, we believe that Cumberland has met the obligations imposed by NIRB condition no. 8 and, as such, should move on to the installation of monitoring wells at permanent monitoring sites.

The Agnico-Eagle Mines response to the EC recommendation deals solely with the present installations. The present installations are all within the footprint of areas to be developed and any reinstallations will be destroyed within a short period of time by mine development. These monitoring wells should ultimately be replaced by wells at permanent monitoring sites, and locations need to be identified. It is also noted, for example that monitoring wells will be installed between the Central Dike and the pit edge to monitor potential flow from the Tailings Storage Facility towards the pit. These are the types of installations that should be documented in a consolidated groundwater monitoring plan.

Questions about the locations of new monitoring wells at the site and the documentation of the overall ground water monitoring program remain. Although the emphasis in the AEM response is on compliance monitoring and internal monitoring, ground water monitoring is an important component for verification of the operational compliance of the tailings storage facility, pit lakes water quality, etc and, as such, should be fully documented.

EC's Recommendations:
EC recommends that more robust permanent ground water quality monitoring wells be installed at the Meadowbank site as soon as possible and ground water quality samples be collected and analyzed to establish baseline ground water quality at the permanent sites prior to the start of active mining. Following on the previous recommendation, a comprehensive groundwater monitoring plan should be developed which details the permanent installations.

4.0 Tailings and Waste Rock Management

4.1 Design Depth of the Long-term Active Zone

Reference: Section 4 and section 5.2 Mine Waste & Water Management; 2.3.2.1 Impact of Global Warming on Site Conditions, Water License; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d.

Proponent's Conclusions:
The Proponent is relying upon the freezing of the problematic mine solid wastes (overburden, rock and tailings) to minimize the release of contaminants. For example, in section 5.2 MWWM (page 5-3) it is stated "As a further ARD control measure, the Portage RSF will be capped with a 2-m thick cover of acid-buffering UM rock at closure. The depth of cover was selected based on thermistor data, which indicates the depth of thaw (active layer depth) to be on the order of 1.5 m. The cover material would be coarse to allow the development of convective cooling during winter, and insulation though trapped air within voids during summer."

AEM has committed to the minimum of two meters cover to confine the active layer within the inert materials, and will instrument to monitor freezeback efficiency and cap performance

EC's Conclusions:
The design for the waste management facilities is to operate in perpetuity. However, the proponent has suggested an upper climate change within the next century in the order of 6 °C. Although the mine site will remain within the zone of continuous permafrost, the thickness of the active layer would likely deepen. Section 2.3.2.1 Impact of Global Warming on Site Conditions underscored this, stating that "the active layer thickness would be expected to increase, and the total thickness of permafrost may slowly reduce in time." The active layer is predicted to increase in thickness by 15 to 30%. This would appear to increase the active layer to the current design of 2 meters. Given the crucial function of this cover, the thickness of 2 meters would appear to be a minimum particularly in light of the potential factors such as pile geometry and configuration (i.e. more heating to a south-facing curved pile face resulting in deeper active zone), vegetation (or lack thereof) effects, placement errors and longer term climatic changes that may make the nominal thickness of 2 meters insufficient.

Given that AEM has committed to the minimum of two meters cover to confine the active layer within the inert materials, and will instrument to monitor freezeback efficiency and cap performance, coupled with the commitment to review and evaluate future changes and respond, EC is satisfied that this is sufficient at this time.

EC's Recommendations:
EC recommends that AEM's commitments be included in a rock management plan, to be updated periodically as data are collected and reported.

4.2 Viable Contingency for Waste Rock Piles if Freezing Approach Insufficient

Reference: Water license application; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d, Item EC-11.

Proponent's Conclusion:
Site drainage would be collected and monitored during operations and closure. Specific contingencies have not been presented should early work on the waste rock piles indicate freezing would not be sufficient to isolate potentially problematic rock types.

EC's Conclusions:
The proponent is committed to a minimum cover depth on the Portage RSF at closure to confine the active layer in the inert material. A proactive management strategy is described that includes ongoing review and evaluation of relevant technology developments and AEM will respond to studies conducted during mine operation. However, no specific contingencies are identified should the cover approach prove inadequate.

EC's Recommendations:
The proponent should demonstrate that its waste facility continues to perform as designed and is protective of the environment in the long-term. AEM should be required to periodically review and document the performance of its monitoring systems, of segregation methods, evolving water quality, cover material requirements, and of relevant technology developments and study results. Such 'State of the Environment Reporting' or roll-up reporting has been the practice at other mines. Monitoring results should be compared to EIS predictions and observed differences explained; procedures, designs and measures undertaken in response to unanticipated circumstances should be documented; and improved predictions of environmental performance presented. This reporting would demonstrate the implementation of continuous improvement and adaptive management, and could be done on a triennial basis.

4.3 Environmental Characteristics of the Till

Reference: 2.3.5.3 Till & 4.1 Waste Rock Management, Water License Application; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d, Item EC-12.

Proponent's Conclusions:
The section states "All samples of till, with exception of Third Portage trench soil piles, have no potential to generate ARD. The ARD potential of trench soil pile is due to the higher sulphide content of soil directly above the ore deposit. Table 2.17 summarizes MMER exceedances of till. Leachate for till materials was compliant with MMER." Table 2.17 indicates that 5 of 11 samples had exceedances of MMER pH, including trench samples from Third Portage and samples from Goose Island. Table 4.1 indicates that the till has no ("none") acid drainage potential, low metal leaching potential and no restrictions for storage or use in construction. Ultimately, about half of the till will be incorporated into environmental structures, roadways and control measures at the mine.

In the Response to Pre-hearing Commitments, AEM commits to testing the till prior to use in any environmentally sensitive structures, screening against the most stringent federal and territorial criteria for soils.

EC's Conclusions:

The proposed measures would address the concerns identified with use of potentially problematic till.

EC's Recommendations:
EC recommends that test results be reported to the Board on an annual basis as part of a rock management plan. Reporting could include a description of measures used to ensure segregation of any potentially problematic material.

4.4 Defining the Plan to Effectively Segregate Site Mine Rock

References: Operational ARD/ML Sampling and Testing Plan (August 2007); Mine Waste & Water Management Section 5; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d Item EC-13.

Proponent's Conclusions:
The proponent is committed to updating and adapting the plan as mining advances and additional data is obtained. The sulfur content would principally define the overall Acid-Rock Drainage potential. Presumably, the total metal content would define metal-leaching character of the excavated material. Actual thresholds for action remain undefined.

EC's Conclusions:
It is recognized than an Adaptive Management Approach is going to be followed in which techniques and environmental protection measures would be iteratively improved as understanding and experience is accumulated. However, with the excavation commencing soon, the company should be in a position to propose criteria for the metal leaching. Conversely, they should be in a position to substantiate a view that by controlling acid generation, either as measured by sulfur content or neutralizing potential or the ratio, the mine rock will be effectively segregated. As much of the initial excavated material will be incorporated into site infrastructure, these long-term features must be robust and environmentally protective.

The use of "overall" pile acid-generation and neutralization potential is of very limited value, and can lead to false presumptions on the character of pile and its effluents. Although of a general interest, the management plan should not count on such measures to ensure environmental protection.

EC's Recommendation:
Relatively rapid and 'conservative' (i.e. ensuring problematic material do not become incorporated into sites where they become a liability) segregation of problematic mine waste is fundamental to environmental protection measures at many mining operations. A credible segregation system should be in place prior to excavation and based on best current understanding. During this initial period of mine development, if there remains uncertainty to the character of the excavated material, criteria of a conservative measure should be employed. A neutralization-potential to acid-potential ratio of greater than three for example, could be employed to ensure materials incorporated into key structures are not problematic. This ratio considers the nature of neutralization and any confounding measuring factors. Similarly, metal leaching criteria should be initially very conservative until a fuller understanding of its character is understood.

The segregation system should be audited periodically to affirm it continues to operate effectively as designed.

5.0 Waste Management

5.1 Waste Incineration – Compliance with the CCME Canada-wide Standards (CWS) for dioxins and furan emissions and the CWS for mercury emissions.

References: Incineration Waste Management Plan; Landfill Design and Management Plan; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d Item EC-14.

Proponent's Conclusions:
An Incinerator Waste Management Plan (IWMP) has been developed following on commitments made during the Environmental Assessment process. The Proponent plans to incinerate used petroleum products, food waste and sewage treatment sludge and has committed to use a dual chamber, high temperature incinerator (yet to be selected). Incinerator ash will be disposed of by spreading within the landfill following limited testing for compliance with the Environmental Guideline for Industrial Waste Discharges (GN, 2002).

Compliance with the Canadian Council of Ministers of the Environment (CCME) CWS for dioxins and furans and mercury will be demonstrated through an incinerator monitoring program and detailed stack emission testing, in addition to implementing the IWMP.

AEM confirms there are no plans for open burning.

EC's Conclusions:
Environment Canada commends the Proponent for committing to mitigate emissions as outlined above. Disposal of ash within the landfill should only be done after testing to confirm there are no contaminant concentrations which may be of concern. The other aspect warranting segregation to a separate area of the landfill could be the potential for sparks which could act as ignition sources to remain in the materials removed from the incinerator.

EC's Recommendations:
EC recommends inclusion of the incineration management plan as a licence requirement, with reporting of test results in the annual reports. Best practices should be implemented for ash disposal.

5.2 Landfarm Operations

References: Landfarm Design and Management Plan; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d Items EC-15-19.

EC's Conclusion:
AEM has satisfactorily addressed concerns previously identified with the landfarm operations.

EC's Recommendations:
Areas of concurrence between EC's recommendations and AEM should be documented for future follow-up, perhaps in the form of adding to a commitments list, or as an addendum to the plan.

6.0 Emergencies

6.1 Hazardous Material Management Plan - Section 8.
6.2 Revisions Required to Spill Contingency Plan

References: Meadowbank Gold Project's Hazardous Materials Management Plan; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d Items EC-20-21

EC's Conclusion:
AEM has satisfactorily addressed concerns previously identified with the Hazardous Material Management Plan and the Spill Contingency Plan.

EC's Recommendations:
Areas of concurrence between EC's recommendations and AEM should be documented for future follow-up, perhaps in the form of adding to a commitments list, or as addenda to the plans.

7.0 Closure and Reclamation

7.1 Removal of Dewatering Dikes

References: Preliminary Closure and Reclamation Plan 7.2 Dewatering Dikes; 7.2.5 Restoration Plan; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d Item EC-22

Proponent's Conclusions:
Section 7.1.4 of the Closure and Reclamation Plan indicates that "all dewatering dikes will be kept intact to provide a barrier between the open pits and surrounding lakes until the pit lake water quality levels achieve static conditions and water quality is considered acceptable for discharge without treatment into the environment." AEM is committed to ensuring appropriate mitigation measures are identified and implemented prior to initiation of the breach, and will be detailed in a plan submitted to the NWB in advance of the work.

EC's Conclusions:
EC concurs that further details regarding removal methods and appropriate mitigation can be developed prior to dike breaching.

EC's Recommendations:
Environment Canada recommends that conditions of the licence dealing with closure planning require submission of detailed information regarding the method to be used to remove/breach the dewatering dikes at least 18 months prior to commencing this work. Potential impacts of the chosen method should be discussed and mitigation measures identified.

7.2 Post-closure Maintenance of Dikes
7.3 Tailings Storage Facility Closure

References: Preliminary Closure and Reclamation Plan; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d Items EC-23 and 24

*Proponent's conclusion*s:
Monitoring is being developed as part of an Operation, Maintenance and Surveillance Manual, and the manual will incorporate recommendations made by EC at the Pre-hearing technical meetings.

EC's conclusions:
This is satisfactory, and EC looks forward to reviewing the OMS Manual.

EC's recommendations:
EC recommends that the OMS Manual be updated periodically in conjunction with the closure plans, and circulated for review.

7.4 Water Management Plan to Minimize and Control Contaminated Drainage

*References***:** Preliminary Closure and Reclamation Plan; 7.1 Closure Factors; 7.1.2 Open Pit Workings; 7.1.4 Proposed Closure Methods; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d Items EC-26.

Proponent's Conclusion:
The proponent will integrate a water management plan to minimize and control contaminated drainage.

EC's Conclusion:
AEM has addressed EC's questions and recommendations for this section.

7.5 Closure of the Water Treatment Plant (if required)

Reference: Preliminary Closure and Reclamation Plan; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d Items EC-27

Proponent's conclusion:
A specific closure strategy for this potential facility is not included in this C & R Plan, but AEM is committed to incorporating details as available in updates to the closure plan.

EC's conclusion:
Details on closure practices for this facility (if required) could be provided on a general basis; for example, if the mill is modified to include a treatment circuit at closure how would this affect timing and details of decommissioning?

EC's recommendations:

Details on how this facility will be decommissioned (if one is required) should be included in future updates to the closure and reclamation plan.

7.6 Progressively Closing the RSFs

Reference: Preliminary Closure and Reclamation Plan; Rock Storage Areas; 7.4.4 Proposed Closure Methods; AEM Response to Pre-Hearing Commitments March 7, 2008 Table 2d Items EC-28.

Proponent's Conclusion:
The proponent states that “procedures will be modified as required to achieve the objectives of the C&R Plan”, and the commitments table states that a detailed monitoring and instrumentation plan will be prepared and submitted to the NWB for review once a final waste rock deposition plan has been developed.

EC's Conclusion:
Submission of details on monitoring and instrumentation can be done in conjunction with waste rock planning, and EC agrees that this will be an evolving document which will inform future updates to the C&R plan.

EC's recommendations:
EC recommends that submission of monitoring plans be a licence requirement, with results linked to closure planning.

8.0 Conclusion

Environment Canada would like to thank the Nunavut Water Board for the opportunity to comment on the Meadowbank Gold Project water licence application, and we hope that these technical comments and recommendations are useful to the Board in their decision-making process. EC respectfully requests the opportunity to submit additional written comments after the public hearings to address any new information brought forward at the hearings. EC staff are available to review a draft water licence, and would be pleased to participate in any working groups deemed necessary by the Board. We look forward to further discussions at the April 15 – 17, 2008 Public Hearings.

APPENDIX A: RELEVANT LEGISLATION, POLICIES AND GUIDELINES

Department of the Environment Act

The *Department of the Environment Act (DOE Act)* provides EC with general responsibility for environmental management and protection. It's obligation extend to and include all matters over which Parliament has jurisdiction, and have not by law been assigned to any other department, board, or agency of the Government of Canada as related to:

- Preservation and enhancement of the quality of the natural environment (e.g. water, air, soil)
- Renewable resources including migratory birds and other non-domestic flora and fauna
- Water
- Meteorology
- Coordination of policies and programs respecting preservation and enhancement of the quality of the natural environment.

The *DOE Act* states that EC has a mandated responsibility to advise heads of federal departments, boards and agencies on matters pertaining to the preservation and enhancement of the quality of the natural environment. As such, this mandate is extremely broad.

Canadian Environmental Protection Act, 1999

Proclaimed on March 31, 2000, the new *Canadian Environmental Protection Act, 1999* (CEPA 1999, referred to hereinafter as *CEPA*) is an Act respecting pollution prevention and the protection of the environment and human health in order to contribute to sustainable development. *CEPA* shifts the focus away from managing pollution after it has been created to preventing pollution. The Act provides the federal government with new tools to protect the environment and human health, establishes strict deadlines for controlling certain toxic substances, and requires the virtual elimination of toxic substances which are bioaccumulative, persistent and result primarily from human activity.

For substances that are declared "toxic" under *CEPA* and are added to the List of Toxic substance in Schedule 1 of the Act, instruments will be proposed to establish preventive or control actions for managing the substance and thereby reduce or eliminate its release into the environment. These tools may be used to control any aspect of the substance's life cycle, from the design and development stage to its manufacture, use, storage, transport and ultimate disposal.

Examples of preventive and control instruments include:

- Regulations;
- Pollution prevention plans;
- Environmental emergency plans;
- Environmental codes of practice;
- Environmental release guidelines; and
- Pre-notification and assessment of new substances (chemicals, biochemicals, polymers, biopolymers, and animate products of biotechnology).

Authority to require emergency plans for toxic or other hazardous substances is provided in Part 8 of *CEPA*. Environmental emergency plans for such a substance(s) must cover prevention, preparedness, response and recovery.

Fisheries Act – Pollution Prevention Provisions

The Minister of Fisheries and Oceans is legally responsible to Parliament for administration and enforcement of all sections of the *Fisheries Act*. However, under a Prime Ministerial Instruction (1978) and a Memorandum of Understanding (1985), EC administers and enforces those aspects of the Act dealing with the prevention and control of pollutants affecting fish. In this context, EC works to:

- Advance pollution prevention technologies;
- Promote the development of preventative solution; and
- Work with the provinces, territories, industry, other government departments and the public on issues relating to the pollution provisions of the *Fisheries Act.*

The main pollution prevention provision is found in subsection 36(3) of the Act, and is commonly referred to as the "general prohibition". This subsection prohibits the deposit, into fish-bearing waters, of substances that are deleterious to fish. The legal definition of "deleterious substance" provided in subsection 34(1) of the Act, in conjunction with court rulings, provides a very broad interpretation of deleterious and includes any substance with a potentially harmful chemical, physical or biological effect on fish or fish habitat. One measure of a deleterious substance (such as a liquid discharge) is acute lethality as measure by the standard 96 hour fish bioassay test.

Pertinent regulations under the Fisheries Act include the Metal Mining Effluent Regulations (MMER's). The MMER's were registered and became national law on June 6, 2002. The regulations apply to all metal mines in Canada, including gold mines. The MMER's take a three tiered approach to monitoring, including end of pipe physical/chemical quality, end of pipe biological quality (through biological testing of lethality), and downstream environmental effect monitoring. The MMER's also have a requirement for comprehensive Environmental Effects Monitoring (EEM). An EEM program is a scientific assessment to evaluate the effects of mine effluent on the aquatic environment, specifically fish, fish habitat and the use of fisheries resources as defined in the Fisheries Act. An "effect" is defined in the MMER's as a statistically significant difference between fish or benthic invertebrate community measurements taken from exposure and reference areas (or along a gradient of effluent exposure). Environment Canada staff are available to assist in the development of EEM programs and to answer questions relating to the MMER's.

Canada-wide Standards for Mercury Emissions

Mercury is a naturally occurring substance, which is transformed through biological processes to methyl mercury, a persistent substance which bioaccumulates in the food chain and is particularly toxic to humans and wildlife. Mercury levels originate from a combination of naturally-occurring mercury and anthropogenically emitted mercury. Levels in any one region reflect variable combinations of local, regional and even global sources. Approximately sixty percent of the mercury entering the ecosystem is from anthropogenic sources.

Recognizing the hazard posed by anthropogenically emitted mercury entering the food chain, the CCME ministers agreed in June 2000 to the Canada-wide Standards (CWS) for Mercury Emissions. The CWS set limits for mercury emissions from several sectors, including incinerators.

Canada-wide Standards for Dioxins and Furans

Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs), commonly known as dioxins and furans, are toxic, persistent, bioaccumulative, and result predominantly from human activity. Due to their extraordinary environmental persistence and capacity to accumulate in biological tissues, dioxins and furans are slated for virtual elimination under CEPA, the federal Toxic Substances Management Policy (TSMP) and the CCME Policy for the Management of Toxic Substances.

Recognizing the hazard posed by dioxins and furans entering the environment, the CCME ministers agreed, in May 2001, to the Canada-wide Standards (CWS) for Dioxins and Furans. These standards set limits for dioxin and furan emissions from several sectors including incinerators.

Appendix B. Proposed Effluent Quality Criteria

Parameter	Unit	Vault Attenuation	Vault Dewatering	Portage Attenuation	2nd Portage Dewatering	3rd Portage Dewatering
pH	N/A	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0
TDS	mg/L	M		M		
TSS	mg/L	15	15	15	15	15
Turbidity	NTU	10	10	10	10	10
NH3-N	mg/L	20		16		
NO3-N	mg/L	28		20		
P	mg/L	1.5	M	1.0	M	M
PO4	mg/L	M		M		
SO4	mg/L	M		M		
Cl	mg/L	TBD		TBD		
Al	mg/L	1.5	1.5	1.5	1.5	1.5
Al-D	mg/L	1.0	M	1.0	M	M
As	mg/L	0.1	M	0.30	M	M
Cd	mg/L	0.002	M	0.002	M	M
Cr	mg/L	M	M	M	M	M
Cu	mg/L	0.1	M	0.1	M	M
Fe	mg/L	M	M	M	M	M
Hg	mg/L	0.0004	M	0.0004	M	M
Mo	mg/L	M	M	M	M	M
Ni	mg/L	0.2	M	0.2	M	M
Pb	mg/L	0.10	M	0.10	M	M
Zn	mg/L	0.2	M	0.4	M	M
CN	mg/L			0.5		
TPH	mg/L			3		

M = Monitor
TBD = to be developed
All metal measurements are total except for aluminum where indicated as dissolved (D)
Proposed limits are for running averages, and grab sample maximums would be twice these limits.

Treated sewage - from Teardrop Lake if going to receiving environment

BOD	mg/L	25
TSS	mg/L	25
F. coli	CFU/dL	1.00E+03