AGNICO EAGLE

MELIADINE GOLD MINE

WATER MANAGEMENT PLAN

WATER LICENCE No. 2BB-MEL

December 2023

DOCUMENT CONTROL

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	2007/10	First version	Comaplex Minerals
	2009/09	Site Water Management Plan Addendum	Comaplex Minerals
	2010/08/25	The 2007 Plan and 2009 addendum were consolidated and updated to include recent license amendments	John Witteman (AEM)
	2013/10/16	Complete document revision	Alexandre Gauthier (AEM) Philip Roy (AEM) David Frenette (AEM)
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	2016/03/31	Complete document revision	Jeffrey Pratt (AEM) Jamie Quesnel (AEM)
7	December 2023	Revisions throughout for 2BB-MEL Licence Amendment	Agnico Eagle Permitting Department

Table of Contents

1.0 Introduction

This Water Management Plan pertains to Nunavut Water Board Licence No. 2BB-MEL for the Meliadine Gold Mine. This Plan addresses water use, waste disposal, geotechnical drilling within 31 meters of water body, exploration activities on the property including ongoing surface diamond drilling.

2.0 Plan Objectives

The objectives of this Plan are to:

- Monitor specified water quality parameters at the camp domestic water intake.
- Monitor the performance of the Sewage Treatment Plant (STP; BIODISK Rotating Biological Contactor) for grey and black water.
- Document water use for routine exploration activities.
- Report the quantity of water used and the results of water quality monitoring activities.

3.0 General Water Management

General code of conduct guidelines for exploration activities with respect to water management include the following:

- There is to be no diamond drilling within 31 m of a natural water body or water course unless authorized to do so.
- There is to be no fuel storage or handling of fuel vessels within 31 m of a natural water body or water course unless authorized to do so.
- A spill contingency plan is implemented for fuel, oil, and different type of hazardous materials spill prevention and preparedness.
- Drill cuttings are to be controlled and contained in depressions near the drill hole; sludge line, “Aquadam” (water filled berms) and/or silt fences can be deployed to prevent drill cutting from entering receiving waters.
- If necessary, flocculants can be employed to reduce the Total Suspended Solids (TSS) in the waste water coming from the drills.
- Drill sites are to be rehabilitated (put back to their natural state).
- When drilling through lake ice is planned, water samples are collected before, during, and after the drilling to ensure that the water quality of the lake has not been impacted by the activity.

3.1 Water Consumption Records

Water Licence No. 2BB-MEL allows for a total of 299 m^3 per day of raw water to be drawn. Water consumption is monitored, logged, and reported in the annual report to the NWB.

3.2 Camp Water Management

The domestic camp water system has been in use since 1997. Water is drawn from Meliadine Lake at pumping station labeled MEL-1. Since early June 2019, the treated sewage from the exploration camp STP is deposited in Collection Pond 1 (CP1). If the Exploration Camp STP operators suspect any upsets in the Exploration Camp STP prior to receiving accredited lab results, the effluent will be placed in the arctic corridor lift station for additional treatment in the main camp sewage treatment plant.

Agnico Eagle continues to monitor the quality of the effluent whenever the Exploration Camp STP is operational at the MEL-7 station. Parameters for which the samples are tested include: BOD5, TSS, oil & grease, fecal coliforms and pH. These tests are required by Section J, Item 7.

3.3 Wastewater Management

All wastewater generated by the exploration camp is directed to two equalization tanks (EQ Tanks) in which wastewater is homogenized through the use of aeration diffusors and pumped to the BIODISK and BIONEST units for initial biological treatment. The following information is from the manual provided by BIODISK Corporation regarding its operations.

The wastewater treatment facility at the exploration camp is a tertiary treatment aerobic sewage treatment plant. The unit is designed to remove phosphorus, and destroy nitrogenous products and organic material. It is comprised of a primary clarifier, rotating bacterial contactor (RBC) and final clarifier.

Each BIONEST is designed to operate and discharge final effluent that would meet discharge parameters outlined in the 2BB license, however, the water that is discharged from each unit is piped into the main sewage treatment plant building where it is mixed with the wastewater discharged from the BIODISKs and subsequently disinfected in the disinfection loop.

The contents of EQ tank 2 are pumped into the first chamber of each BIONEST, which is referred to as a septic tank compartment. Once filled, the wastewater passes through an effluent filter and into the second chamber referred to as the bioreactor. It is in the bioreactor where the biological treatment occurs (nitrification, just as in the RBC bio-zone of the BIODISKs). Instead of disk media, the BIONEST bioreactor contains ribbon shaped polymer media onto which bacterial cultures adhere. The third chamber acts as a final clarifier to remove residual solids before the water exits the system. Each BIONEST is equipped with a UV disinfection system at the final outlet, which are redundant in this configuration due to the discharge being later disinfected in the disinfection loop.

Sludge removal for the BIONESTs occurs when the sludge blanket in the septic tank portion of the unit reaches a thickness of approximately 18 inches, which according to the manufacturer occurs approximately every two years.

3.4 Diamond Drilling Water and Sludge Management

Agnico Eagle will not drill within 31 m of an open body of water unless authorized to do so. Drill cuttings (grinded rock) are not allowed to flow into any body of water. If needed, Agnico Eagle uses “Aquadams” and/or silt curtains and/or sludge line to manage TSS. Once the sludge has settled and TSS are removed, the water is allowed to flow into a natural water course.

Quite commonly, the process of drilling creates a depression around the borehole and the sludge is concentrated in and adjacent to that depression. Experience has shown that if the drilling sludge is spread as a thin layer around the hole, the area will re-vegetate completely within a couple of years. If a thick layer of drill sludge is deposited into depressions, re- vegetation is hindered. The present approach to drill site re-habilitation has worked well for the last 15 years.

All efforts are made to stabilize and re-contour the ground upon completion of work. Following the completion in drilling a hole, all attempts are made to pull the casing. Where this is not possible, the casing is cut off at or below the surface. Water flowing into the hole or cut off casing will freeze as all drill holes are in areas of permafrost.

When drilling on ice and passing through the water column, water samples are collected before, during (weekly) and after the drilling. The samples are analyzed for physical parameters and trace metals as set out in Section J, Item 9 of 2BB-MEL Licence.

4.0 Water Monitoring Requirements and Mitigation Measures

The exploration camp supports ongoing surface exploration activities, as well as advanced exploration activities and project development related activities.

Table 3 below outlines the monitoring requirements for the monitoring stations specified in Water License No. 2BB-MEL, while Figure 1 shows their location. The camp water is drawn from Meliadine Lake from station MEL-1, which remains unchanged since 1997. Drill water is obtained from Meliadine and small ponds proximal to the drilling targets.

Table 3: Water License No. 2BB-MEL1424 Water Quality Monitoring Stations

Monitoring Station	Location	Status
MEL-1	Raw water supply intake at Meliadine Lake	No sampling is required, only volume recorded.
MEL-6	Point of discharge for the contaminated soil treatment area	The landfarm is not decommissioned but no water has been released since 2016 as the water is transferred to the Landfarm A oil separator system and treated before being discharged in CP1.
MEL-7	Final effluent discharge from the BIODISK treatment system	Treated water from the exploration STP is trucked to CP1 or to the Main Camp STP depending on recent water quality trends. Monitoring for this station still occurs when the exploration camp STP is in operation to ensure the efficiency of the treatment system, but discharge directly to Meliadine Lake no longer occurs.

Figure 1: Water Sampling Stations Location