



AGNICO EAGLE

AMARUQ CAMP SITE

Waste water treatment system-
NWB Application for a Type B
Water Licence Modification

JULY 2017

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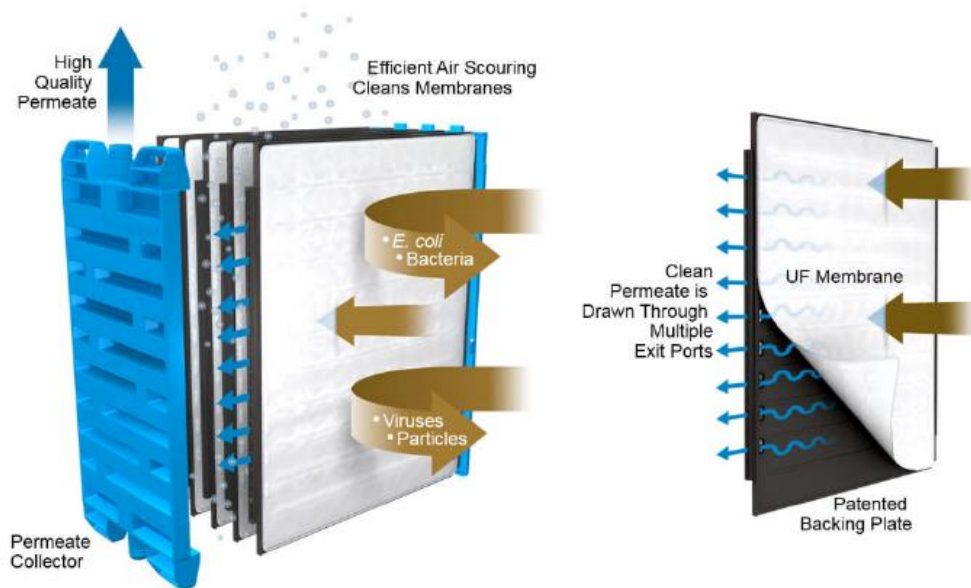
Plan prepared by:

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1. Introduction

As authorized by the water licence 2BB-MEA1318, Agnico Eagle Mines Limited is planning to increase the lodging capacity at the Amaruq camp to accommodate additional workers who will be involved in the development/construction of an underground portal/ramp, the operation of underground drilling and the bulk sampling program. To continue to respect the licence criteria in regard to the effluent quality, Agnico Eagle proposed in the amendment 4 of the licence 2BE-MEA1318 (now 2BB-MEA1318), to install two additional “Bionest” wastewater treatment systems. During the internal decision process, Agnico Eagle decided to replace the “Bionest” waste water treatment systems by a membrane bioreactor wastewater treatment system from the company Newterra. This system is designed to have a better effluent quality and due to its capacity, it could be reused at a future production camp site. This membrane bioreactor (MBR) is a combination of an activated sludge biological treatment process with membrane filtration. The ultrafiltration membranes act as a physical barrier against the passage of all particulate solids. Agnico Eagle is planning to install this new system as early as September 2017.

Figure 1, filtration membrane



2. Modification Conformity

The following section summarizes the NWB License 2BB-MEA1318 Part G, *Conditions Applying to Modifications* that states:

PART G: CONDITIONS APPLYING TO MODIFICATIONS

1. The Licensee may, without written consent from the Board, carry out Modifications to the Water Supply Facilities and Waste Disposal Facilities provided that such modifications are consistent with the terms of this Licence and the following requirements are met:

- a. the Licensee has notified the Board in writing of such proposed Modifications at least sixty (60) days prior to beginning the Modifications;
- b. such Modifications do not place the Licensee in contravention of the Licence or the *Act*;
- c. such Modifications are consistent with the NIRB Screening Decision;
- d. the Board has not, during the sixty (60) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and
- e. the Board has not rejected the proposed Modifications.

2. Modifications for which all of the conditions referred to in Part G, Item 1 have not been met can be carried out only with written approval from the Board.

3. The Licensee shall provide as-built plans and drawings of the Modifications referred to in this Licence within ninety (90) days of completion of the Modification. These plans and drawings shall be stamped by an Engineer.

3. Effluent Quality Requirement

The NWB Type B License 2BB-MEA1318 Part D – conditions applying to waste disposal, item 10, *states that: All Wastewater effluent discharged from the Wastewater Treatment System (WWTS), at Monitoring Station MEA-2 shall not exceed the following Effluent quality limits:*

Table 1, Maximum concentration of any grab sample taken at MEA-2



Parameter	Maximum Concentration of any Grab Sample
pH	6.0 to 9.5
Biochemical Oxygen Demand (BOD5)	80 mg/L
Total Suspended Solids (TSS)	100 mg/L
Fecal Coliforms	1000 CFU/100mL
Oil and Grease	5 mg/L & No visible sheen

Agnico will continue to collect water samples of the effluent during discharge at MEA-2.

4. Newterra wastewater treatment system

The new wastewater treatment system at Amaruq will be, as the Bionest systems, located in the camp, on the south side where the wastewater from the kitchen, showers and toilets is all brought to be treated. The effluent quality released by the Amaruq camp is planned to be better than the effluent from the Bionest. The MBR design value and the water licence limit are compared below.

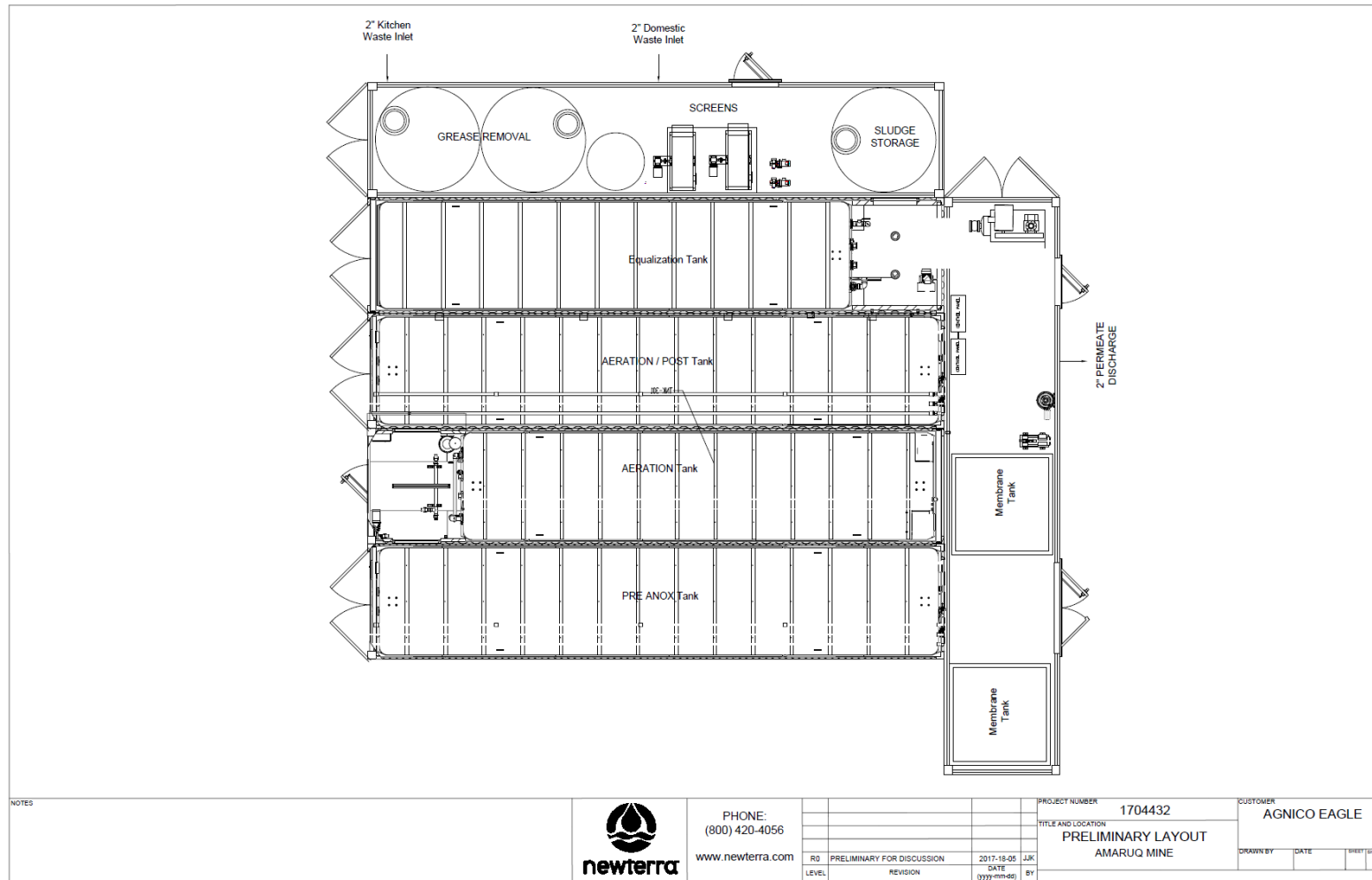
Table 2, Comparison between 2BB-MEA1318 limit and Newterra MBR design value

Parameter	Units	2BB-MEA1318 limit	Newterra MBR / design value
pH	mg/L	6.0 to 9.5	6.5 to 8.5
BOD5	mg/L	80	<5
TSS	mg/L	100	<1
Oil and Grease	mg/L	5	<1
Fecal Coliform	CFU/100ml	1000	Non-Detect



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Figure 2, Layout of the Newterra MBR



References

NWB (2016-12-01). Amended Licence No. 2BB-MEA1318 (Previously 2BE-MEA1318). AEM (2013).

Newterra (2017-05-12). Newterra MicroClear Membrane bioreactor waste water treatment system, design submittal package revision A.