AGNICO EAGLE

Amaruq Exploration Project

Waste Water Treatment Plant

Situation Report

Prepared by:

Agnico Eagle Mines Limited, Exploration Division

July 30, 2015

Table of contents

Document prepared by:

David Frenette

Environment Coordinator

Agnico Eagle Mines Ltd.

INTRODUCTION

The Amaruq camp site is a mining exploration camp located approximately 50 km northwest of the Meadowbank mine. The camp can accommodate up to 130 workers. Currently, the main activities on the Amaruq project are related to diamond drilling, prospecting, geophysical surveys and environmental studies. This report is a summary of the situation regarding the Amaruq Waste Water Treatment Plant (WWTP). The quality of the effluent is currently not meeting the requirements of our water licence. For this reason, an action plan is elaborated and submitted.

KODIAK BIONEST SYSTEM

In May, Agnico Eagle installed two (2) Kodiak Bionest systems to treat the waste water produced by the Amaruq camp. The Kodiak Bionest system is an advanced generation of onsite wastewater treatment systems. The biological process is a submerged fixed-film reactor. The biomass develops and firmly attaches itself to both sides of the "ribbon-shaped" plastic media (see Figure 1). It provides a huge surface area for bacterial growth, providing the reactor with an outstanding performance and resistance to hydraulic shocking. Constant aeration of the first 2/3 of the reactor with warm air from the mechanical room assures constant and optimal biological activity, independently of the outdoor weather conditions. Linear air diffusers (Figure 3) connected to a series of diaphragm air pumps (Figure 2) are used for aeration.

Figure 1: Media

Figure 2: Diaphragm air pump

Figure 3: Linear air diffuser

BACKGROUND AND ACTION PLAN

In May 2015, the Bionest technician went to the Amaruq camp to proceed to the start of the two (2) Kodiak Bionests. Both Bionests, one (1) x 20' and one (1) x 40', were started.

Between May and July, many actions were taken by Agnico Eagle Mines staff, in collaboration with the Bionest staff, to improve the effluent quality during the ramp-up process. After the start of the Bionests, the situation was considered as "normal" even if the results were not optimal considering the commissioning process of the new installation.

From July 9th to July 13th, the Bionest technician came back on site to evaluate and work on solving the water treatment challenges considering that the effluent was not meeting the discharge standards. Problematics related to grease and water distribution between the two (2) Bionests were identified and solved.

On July 16th, a larger grease trap was built and installed to catch the grease coming from the kitchen, which was considered to be the source of the grease problematic for the water treatment.

On July 18th, the decision was taken to stop using the 20' Bionest following reception of results that were not demonstrating any sign of improvement. From that moment on, only the 40' was used.

On July 23rd, Agnico Eagle received the weekly water analysis results from the laboratory and the 40' Bionest was also not meeting the criteria to comply with the water licence.

On July 24th, the decision was taken to stop using the water toilets until further notice. Only Pacto toilets will be used and a latrine will be constructed in accordance with the water licence.

From July 27th to July 29th, the Bionest technician returned on site to clean both Bionests and restart the system. The Bionest technician asked to resume directing black water into the Bionests to rebuild the bacteria flora and initiate the re-starting process. These instructions were confirmed by the Bionest engineer and executed by our team on site. However, we decided to keep three (3) of the eight (8) toilets closed and to use the Pacto toilets instead to reduce the volume of black water send to the Bionest until good performance results are achieved.

On July 28th, two (2) x 10 micron bag filter housings were ordered to install a polishing system for the effluent (Figure 4). A UV system designed to provide a more efficient disinfection was also ordered (Figure 5). This addition is over design because the Bionests are designed to achieve the quality needed in order to respect the water licence, but with this addition, Agnico Eagle will be more confident to have constant quality.

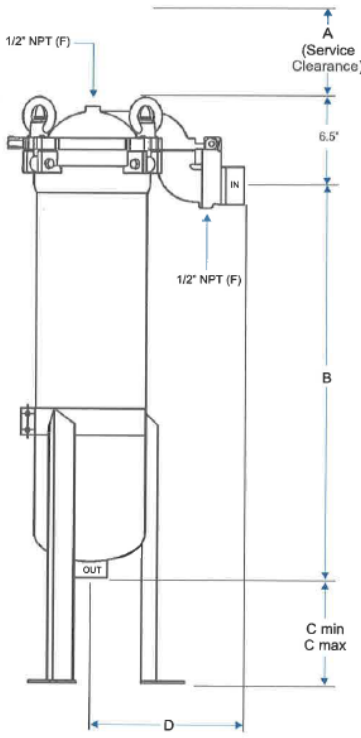
During the week of August 3rd, the additional disinfection UV and the polishing filter systems will be delivered to the Amaruq site. These additional systems are expected to be commissioned by August 14th.

We are working on another important point with the Bionest engineers, which is the optimisation of operation parameters for the Bionests. This information will be included in the Waste Water Treatment System Operation and Maintenance Plan to describe the type of water that can be treated by the Bionests and good practices to be applied to respect this criterion. Another addition in this document will be the Bionests commissioning procedure and the Emergency procedure.

Figure 4: Filter Bag Housing

FHS OT (CS/SS6) SERIES FILTER BAG HOUSING

DIM	P1	P2
A	23"	35"
B	15.0"	28.8"
C	6.3" - 6.5"	6.3" - 13.3"
D	11.0"	11.0"



SPECIFICATIONS

Maximum Pressure: . . . . . 150 psig
Temperature: . . . . . -29° C to 232° C (-20 °F to 450 °F)
Liquid Volume: P1 . . . . . 4.5 US Gal
P2 . . . . . 7.4 US Gal
Maximum Flow Rate*: P1 . . . . . 90 USGPM
P2 . . . . . 180 USGPM

* Based on new filter with water & a maximum pressure drop of 2 psig

Inlet and Outlet: . . . . . 2" FNPT
Gauge & Vent Port: . . . . . ½" FNPT
Goose Neck Drain Port: . . . . . ½" FNPT
Weight (Dry): P1 . . . . . 29 Kg
P2 . . . . . 33 Kg

MATERIALS

Housing & Cover: . . . . . CS/ Stainless Steel
Retainer Basket: . . . . . 316 Stainless Steel, 1/8" perf.
Hardware**: . . . . . Galvanized Carbon Steel
O-Rings (Standard): . . . . . Viton
3-Leg Stand . . . . . CS/ 304 Stainless Steel
Name Plate**: . . . . . Aluminum

** Stainless Steel is available as an option.

3-LEG STAND MOUNTING DETAIL

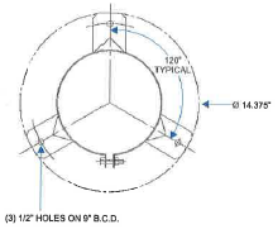


Figure 5: Upstream UV System

FLOWSHEET

These flowsheets show the modifications that will be applied to the Waste Water Treatment Plan in August.

A 10 micron polishing filter system will be added after the Bionest treatment. This filtered water will then pass through a supplementary UV disinfection system before being released into the environment.

Figure 6: Flowsheets

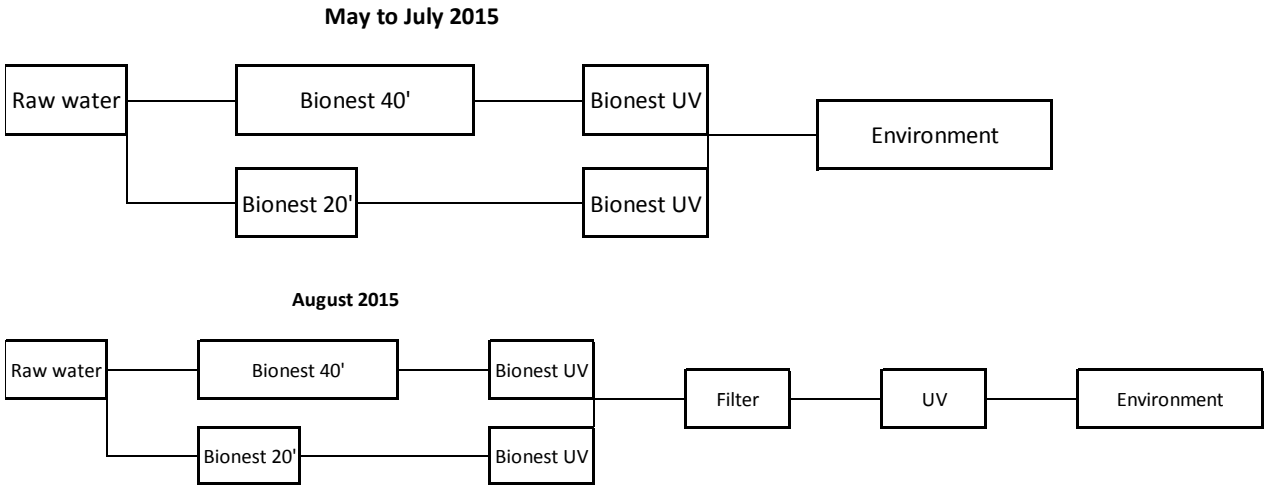


Table 1, ANALYSIS RESULTS

	Parameters	Unit	Limit	08/06/2015	15/06/2015	22/06/2015	29/06/2015	06/07/2015	13/07/2015	20/07/2015
MEA-1 (end of the pipe)	Fecal coliforms	CFU/100ml	1000CFU/100mL	56 000	880 000	***	170 000	500 000	We started to sample the 2 Bionests individually to verify the performance of each one.	
	BOD5	mg/L	80	33	46	165	258	29		
	Oil and grease	mg/L	5	<1	<1	1	28	3		
	TSS	mg/L	100	44	64	118	81	26		
	PH		6.0 to 9.5	7.53	7.44	7.28	7.49	7.35		
Container 20'	Fecal coliforms	UFC/100ml	1000CFU/100mL						440000	1800000
	BOD5	mg/L	80						110	
	Oil and grease	mg/L	5						2	
	TSS	mg/L	100						33	
	PH		6.0 to 9.5						7.53	
Container 40'	Fecal coliforms	UFC/100ml	1000CFU/100mL						11000	130000
	BOD5	mg/L	80						34	
	Oil and grease	mg/L	5						1	
	TSS	mg/L	100						28	
	PH		6.0 to 9.5						7.55	