AGNICO EAGLE

DESIGN REPORT FOR THE LANDFARM OIL SEPARATOR SYSTEM

Meliadine Gold Project, NU

ISSUED FOR USE
FILE: 28920B

TETRA TECH

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EXECUTIVE SUMMARY

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Gold Project (the project). The mine is located approximately 25 km north from Rankin Inlet, and 80 km southwest from Chesterfield Inlet in the Kivalliq Region of Nunavut. Agnico Eagle was awarded a Type “A” Water Licence (No. 2AM-MEL1631) in 2016 for the development of the project.

Agnico Eagle retained Tetra Tech to conduct a detailed design of the water management infrastructures for the project. Several infrastructures such as water retention dikes, berms, culverts, channels, collection ponds and pumping stations are required to manage the site contact water during pre-production, operation, and interim mine closure.

More precisely, an oil separator system for the landfarm is required to be constructed. The landfarm is presented separately in document 6515-E-132-007-132-REP-009.

This report presents the site conditions, design basis and considerations, engineering analyses, construction drawings, and specifications for the detail design of the landfarm oil separator system.

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ACRONYMS & ABBREVIATIONS

Acronyms/Abbreviations	Definition
CP	Collection Pond
HDPE	High density polyethylene
L	Liters
m	Meters
mm	Millimeters
ppm	Parts per million
USgpm	US Gallons per minute

1.0 INTRODUCTION

1.1 Site Location and Access

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Project (the Project), a gold mine located approximately 25 km north from Rankin Inlet, Nunavut. Situated on the western shore of Hudson Bay, the Project site is located on a peninsula between the east, south, and west basins of Meliadine Lake (63°1'23.8'' N, 92°13'6.42"W) on Inuit Owned Land. A general location plan for the project is shown in Figure 1.1.

The area is accessible from the all-weather gravel road linking the existing exploration camp with Rankin Inlet.

1.2 Existing and Future Site Facilities

Current facilities at the Meliadine Project site include the exploration camp located on the shore of Meliadine Lake, approximately 3.5 km south-east of the future accommodations. The self-contained exploration camp consists of four wings of new trailers that can accommodate up to 200 people and includes kitchen facilities, complete with diesel generators. Power for the exploration camp is currently provided by diesel generators. Potable water for the exploration camp is pumped from Meliadine Lake.

The current project focuses on the development of the Tiriganiaq gold deposit which will be mined using conventional open-pit and underground mining operations. Proposed site facilities will include: plant site and accommodation complex buildings for 520 people, a mill, power plant, maintenance facilities, tank farm for fuel storage, ore stockpiles, waste rock storage facilities, a dry stack tailings storage facility, a landfill, a landfarm with an oil separator system, and water management systems including collection ponds, water retention dikes, water diversion berms, channels, culverts, an effluent water treatment plant, a sewage treatment plant and many pipelines.

1.3 Purpose of the Document

This report includes the final design and drawings for the oil separator within the landfarm footprint as part of the landfarm management plan for the Meliadine Project and under the Type "A" Licence application.

1.4 Scope of Work

Tetra Tech was retained by Agnico Eagle to size and design the oil separator and all auxiliary accessories to meet the operation requirements. Drawings are presented in Appendix A of this report.

2.0 DESIGN

2.1 Process design

The landfarm area is located near the industrial pad on the left shore of CP1 pond and is designed to receive soils, rock, snow, and ice contaminated with petroleum hydrocarbons and antifreeze. This will include light hydrocarbons such as diesel and gasoline, and also antifreeze, being treated in the landfarm. Runoff from the landfarm will be collected in a sump and pumped to an oil separator to separate the hydrocarbons from the water that will be pumped to CP1. The raw water quality to be treated is unknown but the expected contaminants should be diesel fuel, hydraulic oil and grease in small concentrations. The

specific gravity of the contaminants is assumed to be between 0.82-0.94. Approximately 136 m³/day of contaminated water is expected to be treated through the oil separator which will remove hydrocarbons from the water prior to being released to CP1 at a concentration as low as 5 ppm.

The system will operate every year, during the mine development, from the spring freshet to fall.

2.2 Process philosophy

Water from the thawing of contaminated ice and snow stored on the landfarm's pad, as well as surface water runoff will drain by gravity to a sump located in a low point of the landfarm. From there the contaminated water will be pumped to the oil separator system located at the entrance of the landfarm. The contaminated water in the sump will be pumped to the oil separator with an electrical diaphragm pump which will minimize emulsion of the oil-water solution. The oil separator will remove the light petroleum hydrocarbons.

The oil separator unit is designed as a horizontal honeycomb coalescer gravity pack fabricated as a single wall steel 350 US gallon tank. The oil separator will be able to treat up to 25 USgpm (maximum peak at 45 USgpm). The oil separator unit is designed with two (2) outlets, one for the treated water and a second one for petroleum hydrocarbon wastes.

Treated water will be transferred by gravity to a treated water tank from where it will be pumped to CP1 with a centrifugal pump.

With a transfer pump, petroleum hydrocarbon wastes will be pumped to a 1000 L tote tank. The tote tank will be made of semi-transparent plastic with a lid at the top to allow the operator to see when the tote is full and needs to be replaced by an empty tote. The full tote will be managed accordingly to the Hazardous Materials Management Plan (Agnico Eagle, 2015a)

A secondary containment is designed to accommodate up to 110% of the total capacity of the oil separator tanks.

Piping and flange adapters will be made of Sclairpipe HDPE DR17 PE4710 with pre-fabricated rigid polyurethane foam insulation and heat-tracing, as suction and discharge piping will be of small diameter (Ø50mm) and in-line water may freeze at night during spring and fall operation. All material used in the composition of the oil separator system is considered as health, safety and environmental hazard free.

An electrical sea container will be located next to the oil separator container.

2.3 Operation Philosophy

The oil separator system will be self-operating after manual start up at the beginning of spring melt. All pumps will be protected from dry run and containers will be protected from overfill. A flow meter will be installed at the discharge of the treated water tank to monitor the quantity of water transferred to CP1.

Oil separator operator will manually monitor the level of waste oil in the tote tank. The filling rate of waste tote tank will depend of the concentration of oil, and a level switch will automatically stop all the system if the level reaches its maximum level. Once full, the tote tank will be removed with a loader and disposed to a determined site location. Retrieved oil will be reused where applicable.

3.0 INSTALLATION

3.1 Oil separator system

The oil separator will be delivered to site as a turnkey package. All internal equipment will be shop built, installed and tested prior to shipment at the Supplier facility. The container will be installed on the side of the landfarm on a prepared and compacted surface. The same installation will be done for the electrical room. The footprint of the complete system will be limited to the two (2) sea containers and its pipelines.

3.2 Suction and discharge pipelines

The suction pipeline running from the landfarm sump to the oil separator container (approx. length of 80m) will be located along the north dyke of the landfarm and will be anchored with earthen berms every 30m. The discharge pipeline (approx. 100m) will run straight to CP1, crossing a service road to reach the discharge location on the CP1 shore. A rip rap installation will protect the shore from erosion as specified in design report 6515-E-132-005-132-REP-009. A Ø300mm culvert will also be installed at the road crossing.

4.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech and Agnico Eagle team

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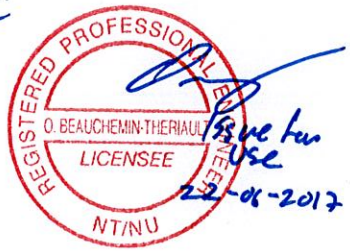

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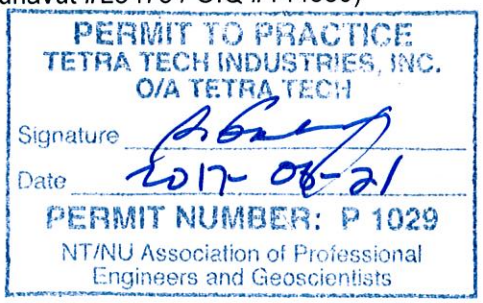

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APPENDIX A
DRAWINGS

Drawing number	Title	Revision	Emission
65-695-270-203_1	Pipeline Landfarm to CP1 and CP1 to EWTP Plan view and profile	1	For Construction
65-695-265-223_1	Landfarm to CP1 Oil Separator Station General Arrangement	1	For Purchase
65-695-265-224_1	Landfarm to CP1 Oil Separator Station Details	1	For Purchase