SNC-LAVALIN INC.

5500 des Galeries Blvd., Suite 200
Quebec (Qc)
Canada G2K 2E2
Tel: (418) 621-5500
Fax: (418) 621-8887

Memorandum

Certifiée ISO 9001

TO :	Michel Groleau Agnico Eagle Mines Ltd.	**DATE :**	December 12th, 2018
C.C. :	Dominic Tremblay, SNC-Lavalin		
FROM :	Pierre-Yves Gobeil, Philippe Lemieux, SNC-Lavalin	**REF. :**	654769-5000-40ER-0002_00
SUBJECT :	Meadowbank ICRP 2018 Update considering Tailings In-Pit Deposition		

1.0 INTRODUCTION

Agnico Eagle Mines Ltd. (Agnico Ealge) Meadowbank gold open pit mine (Meadowbank, or the Project) currently in operation, located 70 km north of Baker Lake, Nunavut, achieved commercial production in March 2010. The mine plan at Meadowbank mine is expected to extend the production into January 2022, with the processing and tailings deposition of ore coming from Whale Tail Pit.

On June 29th, 2018, Agnico Eagle updated and submitted the detailed financial security cost estimate for the Meadowbank Gold Project Interim Closure and Reclamation Plan (ICRP) to Indigenous and Northern Affairs Canada (INAC) and to the Kivallik Inuit Association (KIA) to support land use and water licensing requirements. RECLAIM 7.0 workbook has been used for this estimate, as per The Guidelines for Closure and Reclamation Cost Estimate for Mines, issued by INAC, Mackenzie Valley Land and Water Board (MVLWB) and the Government of the Northwest Territories (GNWT).

In order to accommodate the tailings produced from the development of the Whale Tail Pit Project, AEM is looking to proceed to a tailings in-pit deposition in order to reduce quantities of tailings deposited in the current tailings storage facilities (TSF). Consequently, the infrastructures related to the tailings deposition will be changed, as well as the site water management and the quantities required for the TSF cover. The present memorandum details changes to the Closure and Reclamation Cost Estimate (SNC-Lavalin, 2018a) by including the tailings in-pit deposition in the analysis.

2.0 CLOSURE MEASURES AND CONSIDERATIONS

RECLAIM version 7.0 consists of eleven (11) reclamation costing worksheets used to compute the overall closure cost estimate. These include direct costs associated with the mine components. The updated cost estimate in this memo covers the closure and reclamation of the facilities impacted by the tailings in-pit deposition:

- Tailings Storage Facilities ;
- Buildings & Equipment ;
- Water Management ;
- Water Treatment ;
- Interim Care and Maintenance.

All other items remain unchanged from the previous Closure and Reclamation Cost Estimate (SNC-Lavalin, 2018a).

SNC·LAVALIN

3.0 COST ESTIMATE

3.1 Direct Cost Modifications

The direct costs include the cost related to the physical work activities to be completed for the various project components, as well as the care and maintenance requirements. Note that all water management/treatment items are based on the detailed engineering (SNC-Lavalin, 2018b).

3.1.1 Tailings Storage Facilities

Removal of Tailings Discharge Line

A total of 16,035 m of piping was added to consider the tailings in-pit deposition. The piping includes the following :

- Transfer pipes from Goose pit to junction to pits A and E ;
- Transfer pipes from Goose pit to junction to pit E ;
- Transfer pipes from Goose pit to junction to pit A ;
- Reclaim water from pit E to junction to mill ;
- Reclaim water from pit A to junction to mill ;
- Reclaim water from junction to tie in ;
- Tailing pipes (portage pit E) ;
- Tailing pipes (portage pit A) ;
- Pig launcher discharge lines (Goose pit, Pit A, Pit E).

All these quantities come from the Material take-off list – Tailings In-pit Deposition project produced by SNC-Lavalin on September 6th, 2018 (SNC-Lavalin, 2017).

A total of 4,500 m of North Cell and South Cell tailings discharge piping will be reused for the tailings in-pit deposition to reduce over quantity of piping (M. Groleau, personal communication, September 10th, 2018).

3.1.2 Buildings & Equipment

Reclaim Roads and Laydown Areas / Removal of Culverts

A total of six (6) culverts were added considering that more pipelines will be needed to cross existing roads. Additional culverts are required for:

- Transfer pipe from Goose Pit to junction to pits A and E, cross road to Goose Pit ;
- Transfer pipes from Goose pit to junction to Pit A, cross road to Pit E ;
- Reclaim water from Pit A to junction, cross road to Pit E ;
- Reclaim water from junction to tie in, cross-west road ;
- Tailing from tie in to Goose Pit, cross-west road ;
- Tailing portage pit A, cross-west road.

All these quantities come from the Material take-off list – Tailings In-pit Deposition project produced by SNC-Lavalin on September 6th, 2018 (SNC-Lavalin, 2017).

3.1.3 Water Management

Portage and Goose Pits Flooding

The following pumped pit flooding water volumes were modified :

- From Third Portage Lake to Portage Pit A and E ;
- From Third Portage Lake to Goose pit.

The updated volumes come from Agnico Eagle's 2016 Water management plan update (Table 2.15).

Pumped pit flooding water from Third Portage Lake to Portage Pit A and E is based on the water balance presented in the 2016 Water Management Plan Report and Plan Update issued in November 2017 by Agnico Eagle (Agnico Eagle, 2017).

The pump maintenance and operation items were reviewed as well considering the shorter flooding period reduced to five (5) years as indicated in the water balance.

3.1.4 Water Treatment

Temporary Water Treatment Plant Operation / Direct Pumping Costs

The volume of water to be treated was modified based on Agnico Eagle's 2016 Water management plan update (Agnico Eagle, 2017). The new volume corresponds to the available quantity of water in Portage Pits A & E at the end of the deposition in 2022.

A water treatment plant is planned to operate during the first year of closure before flooding is initated. The treatment plant design was increased to reflect this additional flow capacity.

The water treatment will be completed for one (1) year only with a treatment plant that can treat up to 12 000 m^3/day each. Associated reagents were adjusted due to the potential higher volume of water to be treated.

3.1.5 Interim Care and Maintenance

Interim Water Treatment duration / Maintenance, Surveillance, Monitoring and inspection

ICM duration of three (3) years is not considered anymore. Treatment costs are now in water management costs as treatment is required and not considered as if necessary. Maintenance, surveillance, monitoring and inspection costs for the Active Closure period were included in the Post-Closure Monitoring and Maintenance costs.

SNC·LAVALIN

3.2 Summary of Quantities

Table 1 summarizes the items updated to incorporate the tailings in-pit deposition.

Table 1 : Updated Items from ICRP of June 2018 vs ICRP including Tailings In-Pit Deposition of December 2018

Reclamation costs worksheet	Activity	Item	Quantities (June 2018)	Updated quantities (December 2018)
Tailings	Remove piping added for in-pit deposition	Removing piping	0 m	16,035 m
	Remove tailings discharge piping	Removing piping	11,500 m	7,000 m
Buildings & Equipment	Reclaim roads, laydown areas & airstrip	Remove culverts	15	21
Water Management	Flood pits	Pumped pit flooding water (3rd Portage Lake and Reclaim Pond) – Portage Pit	31,179,343 m^3	21,700,000 m^3
		Pumped pit flooding water (3rd Portage Lake) – Goose Pit	3,182,704 m^3	3,500,000 m^3
		Pump maintenance and operation	7 years	5 years
		Maintain pumps	20,832 manhours	14,880 manhours
		Annual Pump Servicing	1,176 manhours	840 manhours
		Pump Servicing Travel Allowance	14 visits	10 visits
		Camp Accomodations	1,834 days	1,310 days
	Construct temporary water treatment plan	Storage, Prep and Reactor Tanks/Silos	1 unit	2 units
		Mech. Equip. (Metering Pumps and Air)	1 unit	2 units
Water Treatment	Operate temporary water treatment plant	Direct pumping cost	177,089 m^3	3,400,000 m^3
		Number of years of water treatment	3 years	1 year
Interim Care and Maintenance	-	Number of years of ICM	3 years	0 year

3.3 Costs Estimate Summary

The present update of the estimate closure and reclamation costs for the Meadowbank Project using RECLAIM 7.0 represents a total of $83,551,136, versus $83,569,898 in the ICRP of June 2018. This total cost includes $57,868,580 of direct costs and $25,682,556 of indirect costs. The total cost is summarized in Table 2.

SNC·LAVALIN

Table 2 : Summary Financial Security Cost Estimate

Cost Item	Subtotal (Land and Water Liability) [1]
Direct Cost	
Open pit	$6,480
Portage	*$3,240*
Goose	*$1,080*
Vault	*$1,080*
Phaser	*$1,080*
Underground mine	$0
Tailings facility	*$35,127,108*
Rock pile	$2,737,534
Portage	*$2,707,534*
Vault	*$30, 000*
Buildings and equipment	*$10,683,256*
Meadowbank	*$8,029,508**
Baker Lake	*$1,660,670*
AWAR	*$993,078*
Chemicals and contaminated soil management	$1,316,981
Surface and groundwater management	$7,997,222
Interim care and maintenance	$2,487,173
SUBTOTAL DIRECT COSTS	**$57,868,580**
Indirect Cost	
Mobilization/Demobilization	$5,345,830
Post-closure monitoring and maintenance	$4,133,524
Engineering	*$2,893,429**
Project management	*$2, 893,429**
Health and safety plans/Monitoring, QA/QC and engagement costs	*$1,157,372**
Bonding/Insurance	*$578,686**
Contingency	*$8,680,287**
Market price factor adjustment	*$0*
SUBTOTAL INDIRECT COSTS	**$25,682,556**
GRAND TOTAL	**$83,551,136**

[1] Costs in black were modified. All other items remain unchanged from the previous Closure and Reclamation Cost Estimate (654769-5000-40ER-0001_00

3.4 Indirect Costs

No major changes have been made from the last ICRP update to the indirect costs. The indirect costs still include the cost related to post-closure monitoring and maintenance, mobilization and demobilization, engineering, project management, health and safety plans/monitoring, QA/QC & engagement costs, bonding/insurance and contingencies. The only difference comes from the new subtotal of capital costs used to calculate the indirect costs based on cost factors.

4.0 REFERENCES

SNC-Lavalin 2018a. Meadowbank Interim Closure and Reclamation Plan (ICRP) - Update 2018, version 00. Report No. 654769-5000-4EER-0001. June 2018.

SNC-Lavalin 2018b. In-Pit Tailings Disposal – Detailed Engineering Study Final Report, version PB. Report No. 651196-9000-40ER-0001. July 2018.

Groleau, Michel (December 10th, 2018). *FW: [EXTERNAL] RE: Demande expresse*, [email to Dominic Tremblay], [online], Dominic.Tremblay@snclavalin.com

SNC-Lavalin 2017. Material take-off list – In-pit Deposition Project, version R2. Report No. 6118-E-132-001-MTO-001 (AEM) to Agnico Eagle Mines Ltd. September 2018.

Agnico Eagle 2017. 2016 Water Management Report and Plan Update, version 02, Agnico-Eagle Mines, November 2017.