APPENDIX 1-E

Multiple Account Analysis

Title of document: WATER MANAGEMENT MULTIPLE ACCOUNT ANALYSIS

Client: AGNICO EAGLE MINES LTD, MEADOWBANK DIVISION

Project: WHALE PIT PROJECT
GEOTECHNICAL AND WATER MANAGEMENT INFRASTRUCTURE

Prepared by:	Angie Arbaiza, Jr. Eng	2015.12.09 14:39:29 -05'00'
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REVISION INDEX

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#	Prep.	App.	Date		
PA	AA	YJ	29/08/15	All	Internal coordination
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NOTICE TO READER

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1.0 INTRODUCTION

Agnico-Eagle Mines Limited (Agnico Eagle) is currently developing a new gold project called Whale Tail Pit Project. The project is located approximately 50 km northwest of the current Meadowbank facilities. A Scoping Study of the Amaruq Project has been initiated in the fall of 2014. Part of this study is related to the surface infrastructure required to manage the water. Agnico-Eagle has mandated SNC-Lavalin Inc. (SLI) to perform the conceptual study of the geotechnical and water management infrastructure for the project as well as to complete permitting level engineering.

Following a site visit performed in the first week of September and the reception of the Photosat survey of the study area, a multiple account analysis (MAA) session was held on September 24, 2015 where options were evaluated and discussed. The objective of this document is to present the results of the MAA session, the options developed for the water management and the rationale behind the selected options according to four (4) pillars: economy, society, environment and viability.

This document presents an overview of the studied options, the methodology and results associated with the comparative analysis, and a discussion of the results.

2.0 DEFINITION OF OPTIONS

2.1 Option 1 – Pumping towards mammoth lake

This option represents the one developed during the Scoping Study. The concept is to block the flow of water with a dike 10 m high and 800 m long to obtain sufficient capacity to store storm water. The watershed for the remaining section of the Whale Tail Lake will have to be managed in order to safely operate the Amaruq open pits.

The storm water management concept for the option is to use the south basin, the southern section of Whale Tail Lake, to temporarily store surface runoff water for the selected design flood before it is pumped into Mammoth Lake, downstream of the Mammoth dike. The storage capacity of the south basin of Whale Tail Lake will be managed to sufficiently contain the inflow design flood and subsequent floods during the pond dewatering, while maintaining a level of water to ensure the resident fish population is protected (i.e. sufficient overwintering). The dewatering process consists of pumping the pond in order to be back to its initial water level within a preset time period.

2.2 Option 2 - Channel from Whale Tail Lake to Mammoth Lake

Similar to Option 1, Option 2 concept is to block the flow of water with a dike to promote its diversion via a diversion channel directed towards Mammoth Lake. The proposed dike would be about 6 m high and 750 m long (4 m lower than with option 1). The design of the channel will be based on the natural outlet of the Whale Tail Lake to respect the seasonal water level and to minimize impact on flora and fish habitats.

2.3 Option 3 – Rerouting Water towards Mammoth Lake

Option 3 consists of blocking the water flow with the construction of the Whale Tail Dike and rerouting the water flow towards the Northwest passage to Mammoth watershed. Whale Tail Lake will be raised to approximately 160 m to permit flow towards Mammoth Lake, where the new outlet will be constructed. Whale Tail Dike will be 1,500 m long and constructed ±14 m high, about 4 m higher than Option 1. The Whale Tail South Basin created by the construction of the dike will partially flood the upstream land. A freeboard dike will be constructed at the southern portion of the basin to maintain the water into the proper watershed. Access roads to the spillway will have to be constructed and maintained.

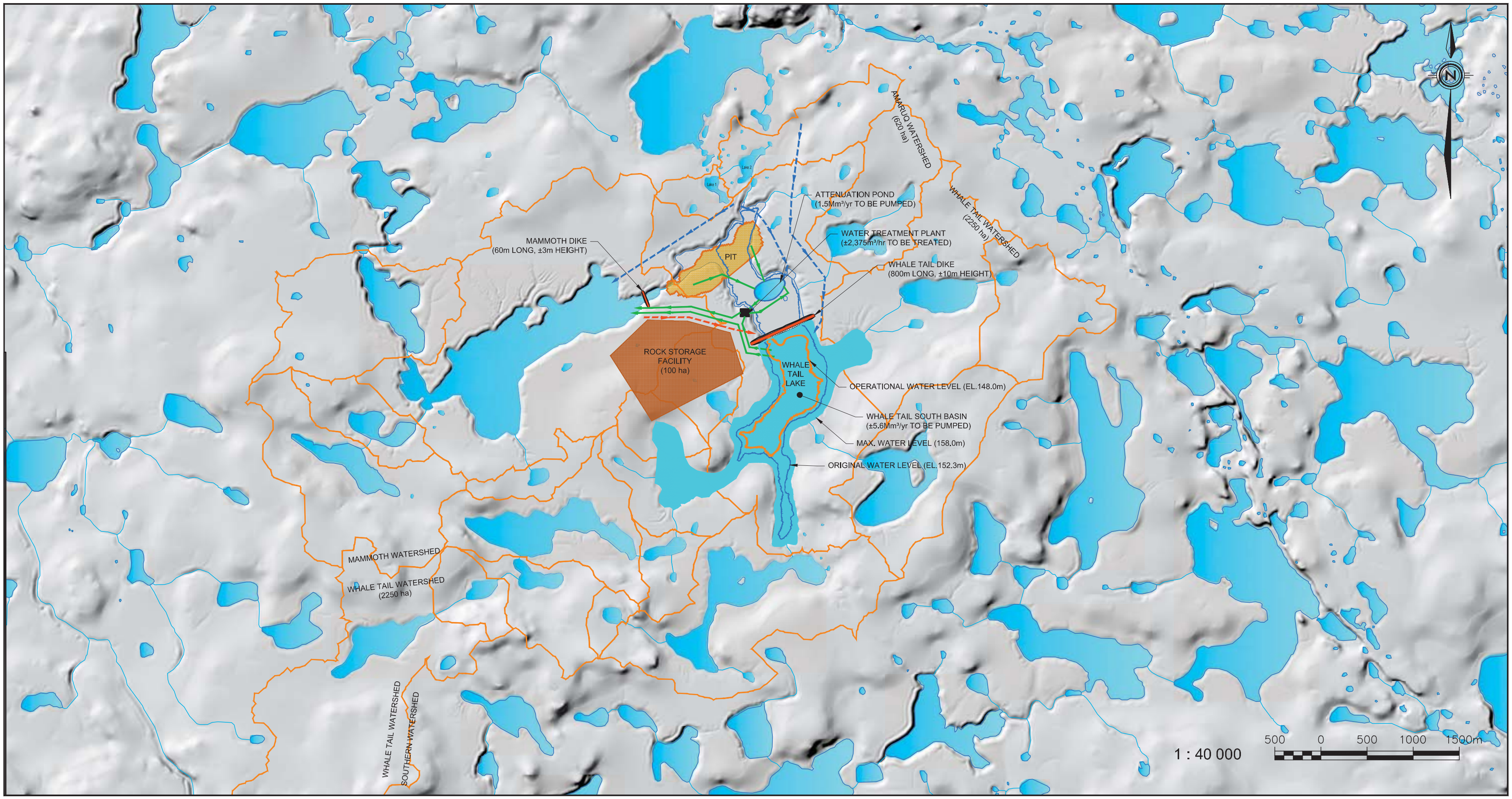
2.4 Option 4 – Rerouting Water towards Southern Watershed

Option 4 is similar to Option 3, but all water is rerouted towards the Southern watershed. The dike would need to be constructed at the same elevation than Option 3 (about 14 m high). In this option, the flow to the Northern passage will be blocked with a rockfill dike and the construction of a ditch and a spillway at the southern portion of the basin will be required. This option implies that the general water balance will be modified; about 5.6 Mm^3 of water will be added into the Southern watershed. This volume of water will be reduced to the Northern watershed.

2.5 Option 5 – Channel and rerouting water towards Mammoth Lake

Option 5 consists of blocking the water flow with the construction of the Whale Tail Dike, raising the water level of the Whale Tail Lake to approximately 156 m, and rerouting the water flow towards the Northwest passage to Mammoth watershed through a channel. This channel will be constructed to reduce the natural spillway at ±160 m (option 3) to 156 m. The Whale Tail Dike will be 800 m long and 10 m high.

Figures 2-1 to 2-5 illustrate the five (5) options described in the previous sections.



Légende:

- WATERSHED LIMITS
- LAKE
- PROPOSED DIVERSION DITCH
- WATERCOURSE
- PROPOSED COLLECTION DITCH
- PROPOSED PIPELINES

Préparé par:

SNC·LAVALIN

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Téléphone: (418) 621-5500, Télécopieur: (418) 621-8887

Préparé pour:

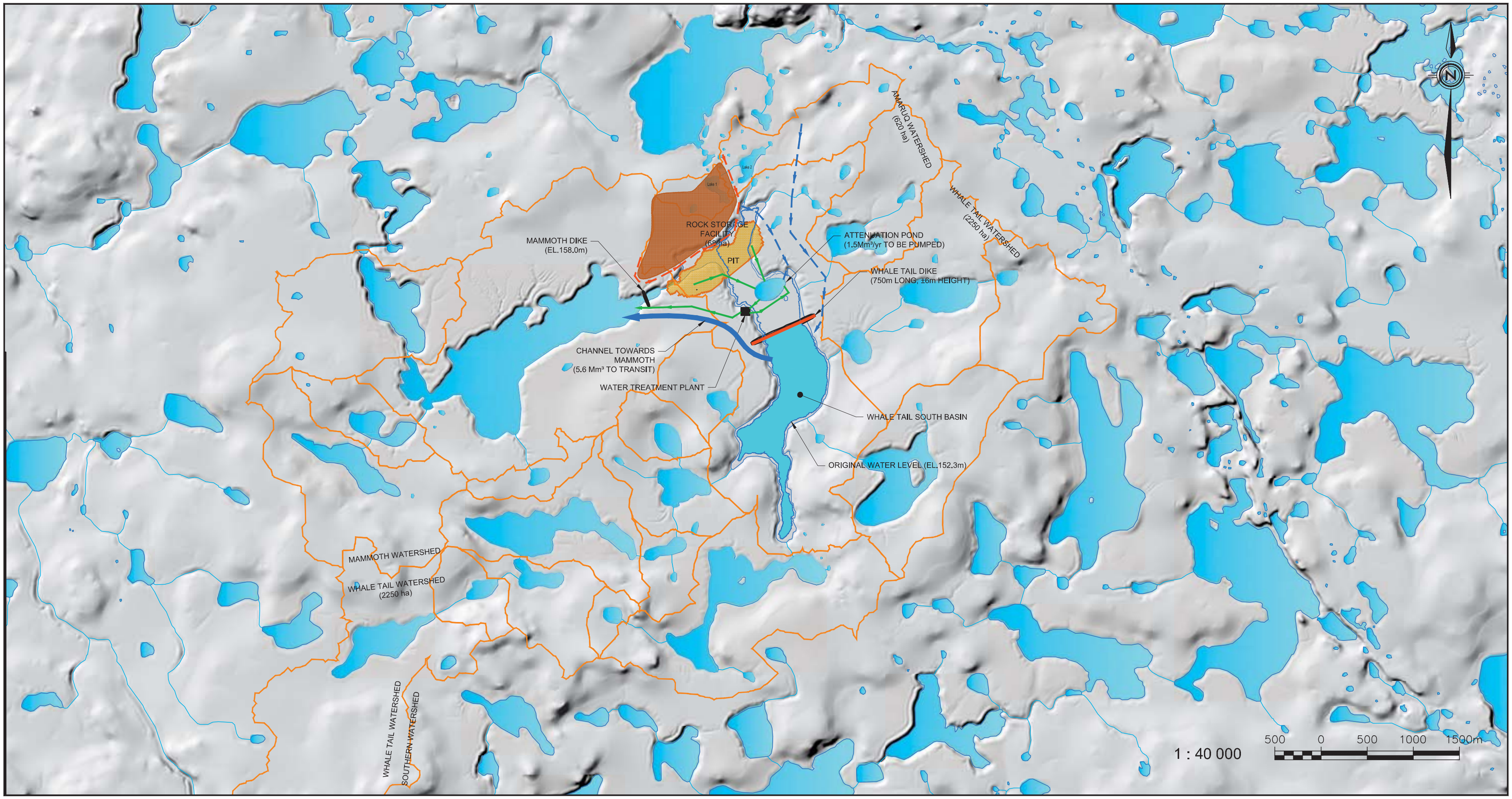
AGNICO EAGLE

Titre du projet:
AGNICO EAGLE - MEADOWBANK DIVISION
WHALE TAIL PIT PROJECT

Titre du dessin:
OPTION TO BE DEVELOPED
OPTION 1 - PUMPING TOWARDS MAMMOTH LAKE

Dessin:	Échelle:	Projet no:
E.R	1:40 000	627215
Vérif.:	Date:	Figure no:
Y.J.	2015-12-01	2-1

\\qcque1_lglprod\dessin\M_ET_M\PROJETS\627215_Amaruq_Geotech_Water_Management\40_INGENIERIE\40DD_DESSINS\PFS\TRADEOFF\VERSION 02\627215-3000-4GDD-FIG 2-1-02.dwg



Légende:

WATERSHED LIMITS

LAKE

PROPOSED DIVERSION DITCH

WATERCOURSE

PROPOSED COLLECTION DITCH

PROPOSED PIPELINES

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Titre du projet:
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WHALE TAIL PIT PROJECT

Titre du dessin:
OPTION TO BE DEVELOPED
OPTION 2 - CHANNEL FROM WHALE TAIL LAKE TO MAMMOTH LAKE

Dessin:	Échelle:	Projet no:
E.R	1:40 000	627215
Vérif.:	Date:	Figure no:
Y.J.	2015-12-01	2-2

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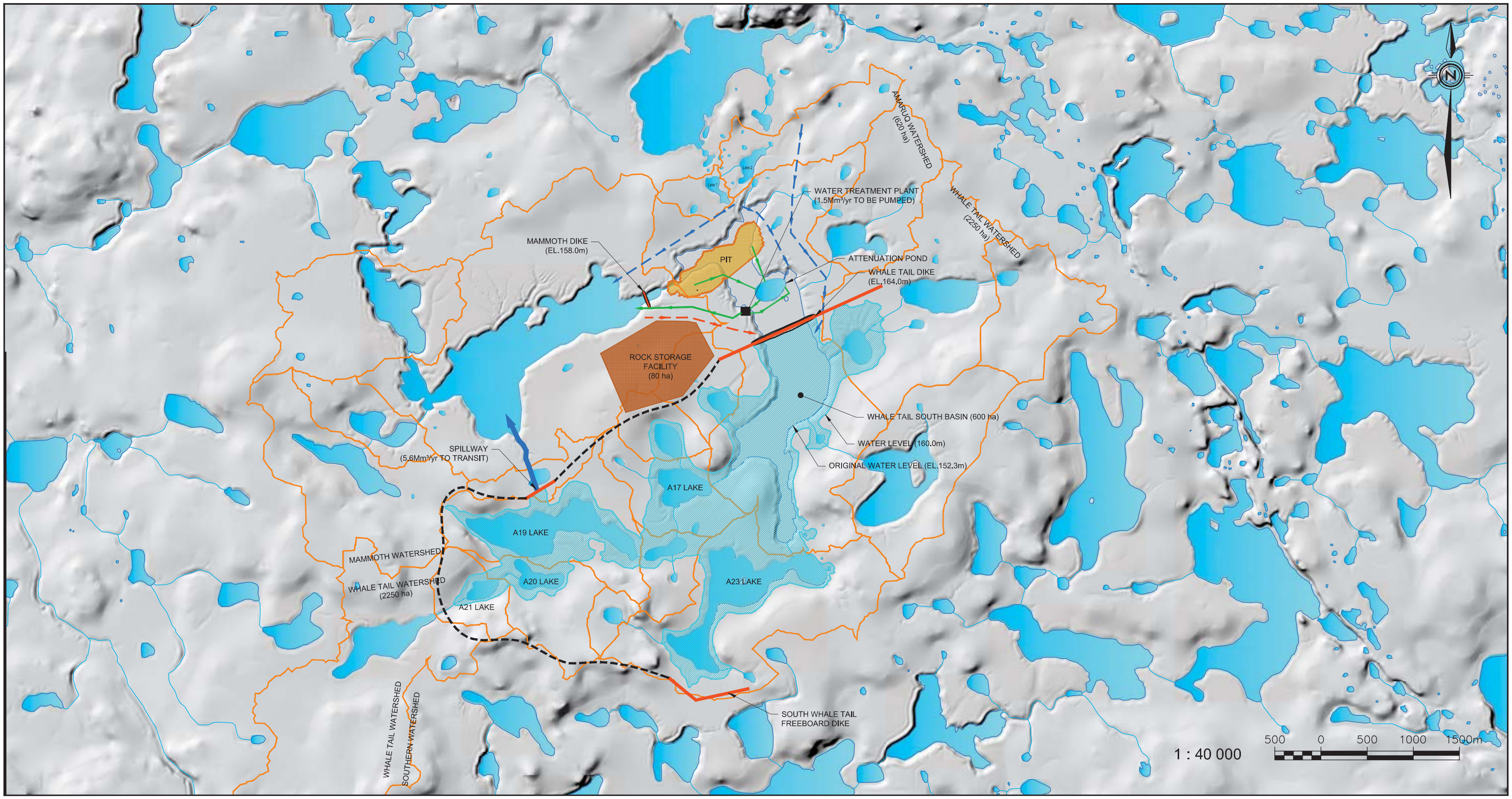

Légende:

WATERSHED LIMITS
LAKE
PROPOSED DIVERSION DITCH
WATERCOURSE
PROPOSED COLLECTION DITCH
PROPOSED PIPELINES
ACCESS ROAD

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Titre du projet:
AGNICO EAGLE - MEADOWBANK DIVISION
WHALE TAIL PIT PROJECT

Titre du dessin:
OPTION TO BE DEVELOPED
OPTION 3 - REROUTING WATER TOWARDS MAMMOTH LAKE

Dessin.	Échelle:	Projet no:
E.R	1:40 000	627215
Vérif. Y.J.	Date: 2015-12-01	Figure no: 2-3

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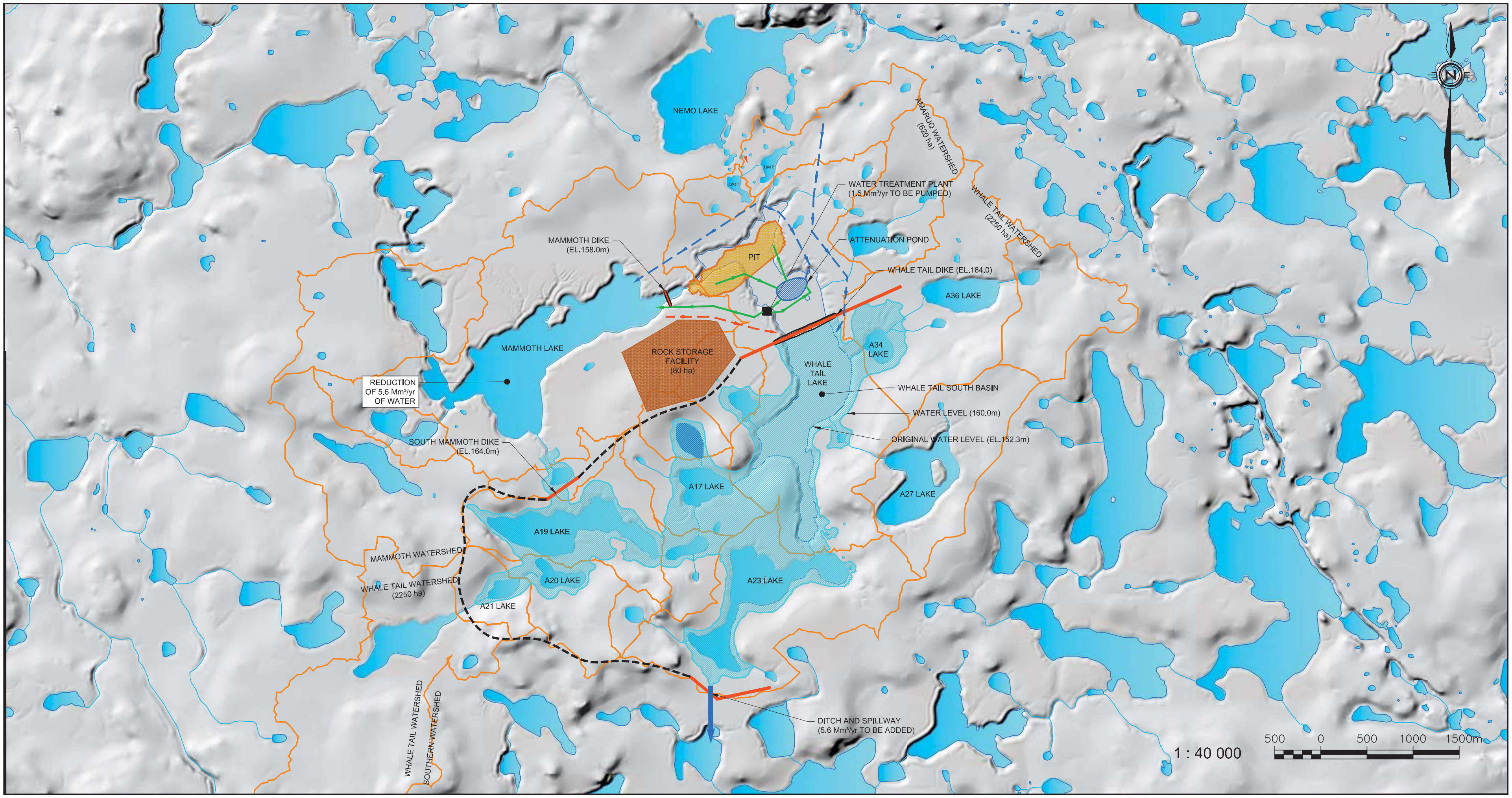

Légende:

- WATERSHED LIMITS
- LAKE
- PROPOSED DIVERSION DITCH
- WATERCOURSE
- PROPOSED COLLECTION DITCH
- PROPOSED PIPELINES
- ACCESS ROAD

Préparé par:

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WHALE TAIL PIT PROJECT

Titre du dessin:
OPTION TO BE DEVELOPED
OPTION 4 - REROUTING TOWARDS SOUTHERN WATERSHED

Dessin.	Échelle:	Projet no:
E.R	1:40 000	627215
Vérif.	Date:	Figure no:
Y.J.	2015-12-01	2-4

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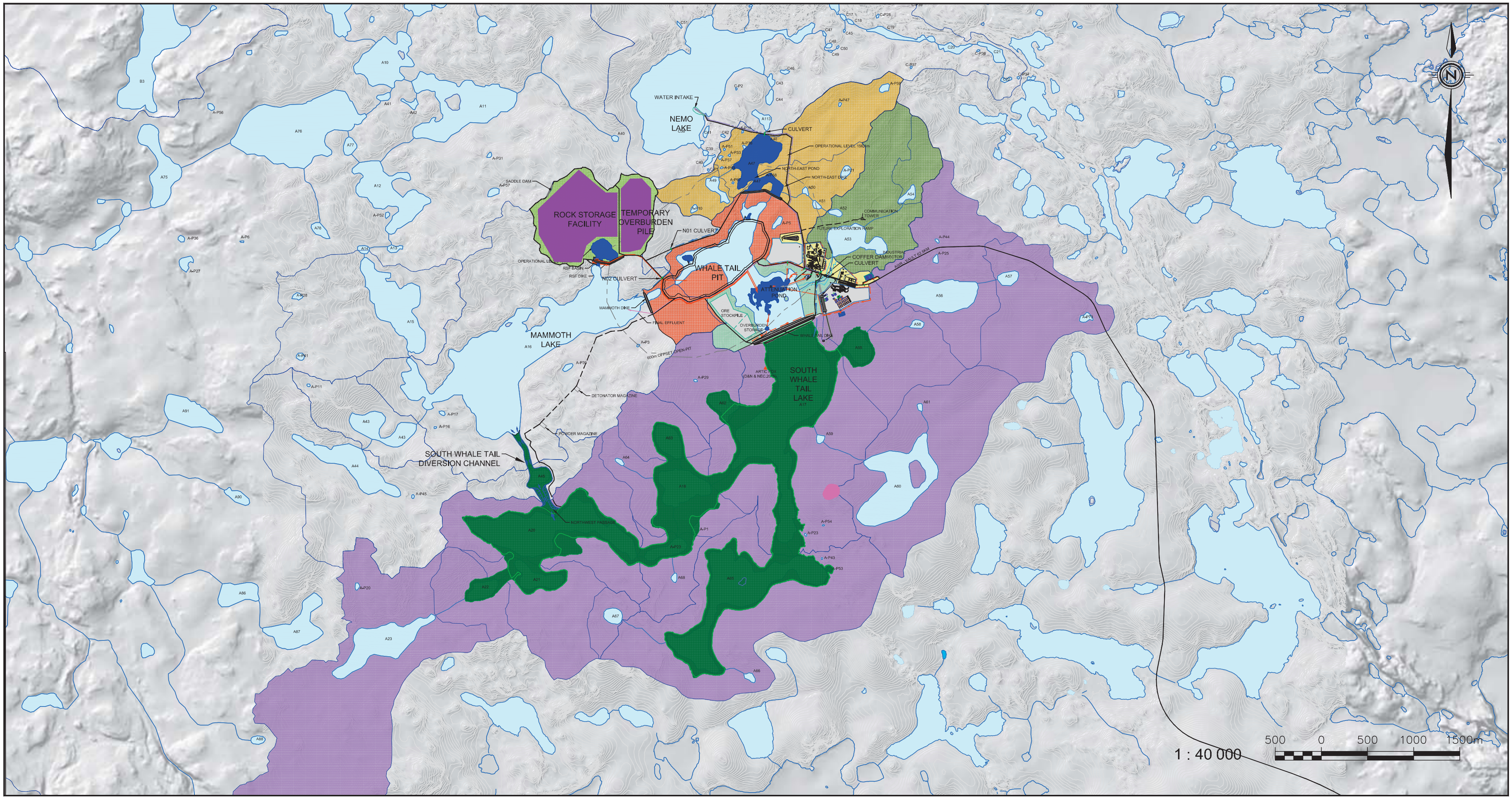

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Légende:

- WATERSHED LIMITS
- LAKE
- PROPOSED DIVERSION DITCH
- WATERCOURSE
- PROPOSED COLLECTION DITCH
- PROPOSED PIPELINES
- ACCESS ROAD

Préparé par:

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AGNICO EAGLE - MEADOWBANK DIVISION
WHALE TAIL PIT PROJECT

Titre du dessin:
OPTION TO BE DEVELOPED
OPTION 5 - CHANNEL AND REROUTING WATER TOWARDS MAMMOTH LAKE

Dessin.	Échelle:	Projet no:
E.R	1:40 000	627215
Vérif.	Date:	Figure no:
Y.J.	2015-12-04	2-5

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2.6 Pros and cons of options

The main advantages and disadvantages of the different options are presented in Table 2-1.

Table 2-1: Comparison of the different options

	ADVANTAGES	DISADVANTAGES
OPTION 1 PUMPING TOWARDS MAMMOTH LAKE	✓ Ease to adapt to an expansion phase ✓ RSF location more flexible	✓ Requires pumping in cold climate and year-round active water management ✓ High operational cost (pumps, treatment and maintenances) ✓ Water elevation of the basin highly variable (impact on traditional land use) ✓ Requires greater loss of fish habitat in southern portion of Whale Tail Lake ✓ Requires more staff to manage WTP (during operation and closure)
OPTION 2 CHANNEL FROM WTL TO MAMMOTH LAKE	✓ Passive water management (gravity) ✓ No impact on seasonal water level variations ✓ Requires lower dikes	✓ Requires large and deep trench into frozen ground ✓ Trench is not adapted to an expansion project ✓ May produce additional TSS during production and freshet ✓ Should be considered as an important engineering infrastructure ✓ RSF location to be adapted
OPTION 3 REROUTING TOWARDS MAMMOTH LAKE	✓ Passive water management ✓ Expansion project possible with the addition of a dewatering dike ✓ Adding fish habitats ✓ Ease of closure	✓ Requires large zone of land to be flooded (impact on traditional land use) ✓ Construction and maintenance of km's for access roads ✓ Important retaining structures (Whale Tail Dike about 4 m higher than Option 1).
OPTION 4 REROUTING TOWARDS SOUTHERN WATERSHED	✓ Passive water management ✓ No modification required for an expansion project ✓ Expansion project possible with the addition of a dewatering dike ✓ Adding fish habitats ✓ Ease of closure	✓ Requires large zone of land to be flooded (impact on traditional land use) ✓ Construction and maintenance of km's for access roads ✓ Impact on Whale Tail Watershed (negative water balance) and Southern watershed (positive water balance) is not evaluated
OPTION 5 CHANNEL AND REROUTING TOWARDS MAMMOTH	✓ Passive water management ✓ Expansion project possible with the addition of a dewatering dike ✓ Lower dike elevation than option 3 ✓ Ease of closure ✓ Adding fish habitats	✓ Requires large zone of land to be flooded (impact on traditional land use) ✓ Construction and maintenance of km's for access roads ✓ Construction of a channel to link South Whale Tail Lake to Mammoth can be challenging

3.0 METHODOLOGY

A MAA session with key members from Agnico Eagle and SLI was held on August 24, 2015, with the objective of choosing one option which will be brought to permitting level engineering.

The MAA session held online was conducted with the following participants:

Agnico Eagle	**Golder**	**SNC-Lavalin**
S. Ouellet	J. Lacrampe	A. Arbaiza
F. Petrucci		Y. Jalbert
R. Vanengen		

During the meeting, and built on previous discussions with stakeholders, the advantages and disadvantages of each option were presented. The option 4 was immediately discarded following a discussion on some of its major disadvantages. The reason being that this option could greatly impact the Whale Tail Watershed (negative water balance) and Southern watershed (positive water balance) and no baseline have been done for this southern watershed.

Following this first round of considerations, the remaining options were:

- Option 1 : Pumping towards Mammoth Lake
- Option 2: Channel from Whale Tail Lake to Mammoth Lake
- Option 3: Rerouting water towards Mammoth Lake
- Option 5: Channel and rerouting water towards Mammoth Lake

The session was then conducted using the Sustainability^{+} option selection tool developed by SLI. In the Sustainability^{+} tool, criteria are developed in the three (3) sustainable development pillars (Society, Environment and Economy) and a fourth engineering pillar (Viability).

Within these four (4) pillars, there are several categories that require evaluation. Each of these categories represents an essential aspect as part of an environment mining project. The following table summarizes those categories.

Table 3-1: Sustainability categories

	Society	**Environment**	**Economy**	**Viability**
Categories	Health and Safety Quality of life Employment Social Acceptability	Material Water Energy Air Biodiversity	Construction Capital Operating costs during construction Maintenance costs after reclamation	Technology Natural risks Flexibility Permits

One to six indictors are rated in each of these categories. The indicators have been chosen to be as unique as possible to each category to reduce bias in the analysis. A rating of -2, -1, 0, 1 or 2 can be assigned to each indicator. The following table shows the rating system for the indicators, which can be quantitative, qualitative or comparative. In this analysis, options have been compared relative to each other, rather than against a 'base case' option.

Table 3-2: Indicator Rating

Rate	Description
-2	Very bad performance
-1	Bad performance
0	Average performance
1	Good performance
2	Very good performance

Table 3-3 shows how the results are calculated.

Table 3-3: Calculation Methodology without Weighting

Pillar	Category	Indicator[1]	Calculation	Result
Society	Health and Safety	C1 C2 C3	X1 = average C1 to C3	Y1 = average X1 to X4
	Quality of live	C4 C5 C6	X2 = average C4 to C6	
	Employment	C7 C8 C9	X3 = average C7 to C9	
	Social Acceptability	C10 C11 C12	X4 = average C10 to C12	
Environment	Materials	C13 C14 C15	X5 = average C13 to C15	Y2 = average X5 to X9
	Water	C16 C17 C18	X6 = average C16 to C18	
	Energy	C19 C20 C21	X7 = average C19 to C21	
	Air	C22 C23	X8 = average C22 to C23	
	Biodiversity	C24 C25	X9 = average C24 to C25	
Economy	Capital cost	C26 C27	X10 = average C26 to C27	Y3 = average X10 to X13
	Operating cost during construction	C28 C29	X11 = average C28 to C29	
	Maintenance cost after reclamation	C30 C31	X12 = average C30 to C31	
	Reclamation capital cost	C32 C33	X13 = average C32 to C33	
Viability	Technology	C34 C35	X14= average C34 to C35	Y4 = average X14 to X17
	Natural Hazards	C36 C37	X15 = average C36 to C37	
	Flexibility	C38 C39	X16 = average C38 to C39	
	Permits	C40	X17 = average C40	
			Results by category [2]: Average of X1 to X17	Results by sustainable development pillar [2]: Average of Y1 to Y4

Notes: 1: The number of indicators by category vary from one to six
2: There are two ways to show the results: by category or by sustainable development pillar.

A sensitivity analysis is then carried on by applying weighting on some categories (where required). Weighting is decided according to the client's priority. The following table shows the weighting possibilities.

Table 3-4: Weighting

Weighting	Value
Low priority for the project	0,5
Required for the project	1
High priority for the project	2

As an example, if the category "water" is weighted as "high priority", the ratings of all the indicators in this category will be multiplied by 2. If the indicator's ratings are in the positive zone (from average to very good), the global result will be raised with a greater value, which will give an advantage to the option with good ratings in the "water" category.

Conversely, if the indicator's ratings are in the negative zone (average to very bad), the global result will be lowered with a greater value, which will penalize the option with bad ratings in the "water" category.

The maximal global grade of an option analyzed without weighting is 2, and the maximal global grade of an option analyzed with weighting is 4.

4.0 RESULTS

The weighing of each category has been decided during the MAA according to Agnico Eagle's priorities. However, in order to increase the speed of the exercise, SLI had identified indicators in each category prior to the MAA. During the session, each indicator was revised (refer to Figure 4-2 for the indicators that were used). The rating of each indicator was identified and revised for the 4 options in parallel.

A summary of results is provided in the following pages.

FIGURE 4-1: WEIGHTING SELECTED IN CLOSE COLLABORATION WITH AGNICO EAGLE AND GOLDER ASSOCIATES TEAM

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sustainability™

Step 1: Please provide information about the project and its options

PROJECT NO :	627215
DESCRIPTION :	PFS Water management options
OPTION 1 DESCRIPTION :	Pumping towards Mammoth
OPTION 2 DESCRIPTION :	Channel to Mammoth
OPTION 3 DESCRIPTION :	Rerouting towards Mammoth
OPTION 5 DESCRIPTION :	Channel and Rerouting towards Mammoth

Step 2 : Select a weight criteria for each category (green cells)

Weight criteria, the category is:

High Priority	for the project, weight factor of 2
Required	for the project, weight factor of 1
Low Priority	for the project, weight factor of 0.5

	Category	Weight criteria	Weight factor
	SOCIETY		
A	Health and safety	High Priority	2
B	Quality of life	Required	1
C	Employment	Required	1
D	Social acceptability	High Priority	2
	ENVIRONMENT		
E	Materials	Required	1
F	Water	High Priority	2
G	Energy	Required	1
H	Air	Low Priority	0.5
I	Biodiversity	High Priority	2
	ECONOMY		
J	Capital cost	High Priority	2
K	Operating cost during construction	High Priority	2
L	Maintenance cost after reclamation	Required	1
M	Reclamation capital costs	Required	1
	VIABILITY		
N	Technology	Low Priority	0.5
O	Natural hazards	High Priority	2
P	Adaptability	High Priority	2
Q	Permits	High Priority	2

Figure 4-2: DETAILED RESULTS

PROJECT NO :	627215
DESCRIPTION :	PFS Water management options
OPTION 1 DESCRIPTION :	Pumping towards Mammoth
OPTION 2 DESCRIPTION :	Channel to Mammoth
OPTION 3 DESCRIPTION :	Rerouting towards Mammoth
OPTION 5 DESCRIPTION :	Channel and Rerouting towards Mammoth

SNC·LAVALIN sustainability™

			INDICATOR	OPTION 1 GRADE	OPTION 1	OPTION 1 TOTAL SCORE	OPTION 2 GRADE	OPTION 2	OPTION 2 TOTAL SCORE	OPTION 3 GRADE	OPTION 3	OPTION 3 TOTAL SCORE	OPTION 5 GRADE	OPTION 5	OPTION 5 TOTAL SCORE	COMMENTS
SOCIETY																
A	Health and safety	High Priority	Level of danger for the population	2	2.0	4	-1	-1.0	-2	0		0	0		0	The population at low risk are the few hunters and trappers that may pass through the area. Option 1 does not present any risk to the population, Option 3 and 5 has an acceptable risk due to its infrastructures, Option 2 presents more risk due to the deep channel.
			Long-term safety for the population	2	2.0	4	0		0	2	2.0	4	2	2.0	4	No long term risk for the population for all options except Option 2, since the deep channel can present a risk.
			Contact with toxic and hazardous materials for the workers	0		0	1	1.0	2	1	1.0	2	1	1.0	2	Option 1 might present more risk to the workers due to the chemicals involved in the water treatment plant.
			Level of danger for the workers	-1	-1.0	-2	-2	-2.0	-4	-1	-1.0	-2	0		0	Option 2 presents high risk for workers due to the deep excavation into thick frozen OB for the channel. Option 1 presents a risk due to the variation of water level associated with pumping in cold climate with ice sheet non-supported. The height of the dike was taken into account for Option 3.
B	Quality of life	Required	Distance from resort areas (trails, snowmobile, etc.)	2	2.0	2	2	2.0	2	2	2.0	2	2	2.0	2	All options more than 10 km of distance.
			Site revaluation and accessibility after closure	0		0	-2	-2.0	-2	0		0	0		0	Option 1 , 3 and 5 allow safe access to the site. The channel of Option 2 might have to be filled for closure and might not be accessible.
C	Employment	Required	Quantity of workers	0		0	0		0	0		0	0		0	Moderate for all options
			Specialized contractor and professionals required	0		0	0		0	-1	-1.0	-1	0		0	More specialized contractors and professionals may be required for Option 3 due to the height of the dike (permafrost and talik foundation).
			Work adapted for locals	0		0	0		0	0		0	0		0	Moderate for all options.
			Long-term local economic growth	0		0	0		0	0		0	0		0	Average economic growth for all options.
			Availability of skilled labour	1	1.0	1	1	1.0	1	1	1.0	1	1	1.0	1	Available for all options.
			Local economic growth during construction	-1	-1.0	-1	0		0	1	1.0	1	-1	-1.0	-1	Local economic growth proportional to the complexity of the infrastructures, Option 3 being the highest, and Option 1 and 5 the lowest. Deep channel construction is taken into account.
D	Social acceptability	High Priority	Impact on archeological area	0		0	0		0	0		0	0		0	No archeological area found in the area of study.
			Impact on fishing area	-2	-2.0	-4	0		0	2	2.0	4	1	1.0	2	Water elevation highly variable for Option 1, impacting South Whale Tail Lake Basin. Option 2 does not impact the seasonal water level. Raising the water elevation (options 3 & 5) is seen as a positive aspect to create new fish habitats during operation.
			Impact on hunting area	-1	-1.0	-2	0		0	-2	-2.0	-4	-1	-1.0	-2	Option 3 has a higher impact due to the large zone of land that would be flooded. Option 2 has a lower impact since there is no variation on water levels.
			Social acceptability of the project	-1	-1.0	-2	-1	-1.0	-2	-1	-1.0	-2	0		0	Option 1 might not be accepted due to the pumping technology (compared to a passive system). Option 2 is a passive system but channel in thick and frozen overburden (thermal instability). Option 3 passive system but with large flooded area. Option 5 more acceptable since it is a passive system that does not require a deep long diversion channel, which is required for Option 2.
ENVIRONMENT																
E	Materials	Required	Need to import materials	0		0	1	1.0	1	0		0	0		0	Less material to be imported for Option 2.
			Disposal of excavated material with no reuse	1	1.0	1	-1	-1.0	-1	0		0	1	1.0	1	Most of the material excavated for the channel (Option 2) cannot be reused (up to 10m of frozen soil). Option 1 and 5 imply more material to be reused.
			Waste generation during construction	-1	-1.0	-1	0		0	0		0	0		0	Option 1 involves more waste generation (mechanical waste such as pipes).
			Distance from source of granular material	2	2.0	2	2	2.0	2	2	2.0	2	2	2.0	2	Less than 10 km of distance for all options.
			Availability of borrow pits	-1	-1.0	-1	-1	-1.0	-1	-1	-1.0	-1	-1	-1.0	-1	Existing borrow pits must be completed by the opening of a new pit.
F	Water	High Priority	Impact on the natural water flow	-2	-2.0	-4	1	1.0	2	-1	-1.0	-2	-1	-1.0	-2	Water elevation highly variable for Option 1. Option 3 and 5 imply a large zone of land to be flooded: TBD if it would take 2 years before to fill the reservoir. Option 2 does not impact the seasonal water level.
			This option may contribute to the TSS to the Environment	-2	-2.0	-4	1	1.0	2	0		0	0		0	Variation of water level affect the water quality (generation of TSS), therefore Option 1 generates TSS. Option 2 does not affect the water level.
			Impact on the existing drainage network	1	1.0	2	1	1.0	2	-1	-1.0	-2	-1	-1.0	-2	Option 3 and 5 impact the existing drainage network due to the elevation of the bassins that will be disturbed.
G	Energy	Required	Energy consumption for the option	-1	-1.0	-1	2	2.0	2	2	2.0	2	2	2.0	2	Option 1 consummes more energy due to pumping during operation and closure (not post-closure)
			Use of motorized equipment during construction (hour*equipment/day)	-1	-1.0	-1	0		0	-2	-2.0	-2	-1	-1.0	-1	Based on volume of material to be placed for dike.
H	Air	Low Priority	Generation of dust during construction	0		0	-1	-1.0	-0.5	-1	-1.0	-0.5	-1	-1.0	-0.5	Option 2 and 3 imply significant generation of dust due to the complexity of its infrastructures. Option 3 & 5 implies significant generation of dust due to the long road to be constructed in order to reach the channel.
			Position relative to prevailing winds during operation	0		0	0		0	0		0	0		0	Neutral for all options
I	Biodiversity	High Priority	Number of ecological services impacted	-1	-1.0	-2	0		0	-2	-2.0	-4	-1	-1.0	-2	Proportional to variable water levels and footprint.
			Presence of endangered and vulnerable species and/or exceptional forest ecosystems near the site	2	2.0	4	2	2.0	4	2	2.0	4	2	2.0	4	Based on the "Amaruq Baseline Studies - Potentially Environmentally Significant Features" document, there is no presence of endangered or vulnerable species. Presence of arctic fox den nearby the dike.

Figure 4-2: DETAILED RESULTS

PROJECT NO :	627215
DESCRIPTION :	PFS Water management options
OPTION 1 DESCRIPTION :	Pumping towards Mammoth
OPTION 2 DESCRIPTION :	Channel to Mammoth
OPTION 3 DESCRIPTION :	Rerouting towards Mammoth
OPTION 5 DESCRIPTION :	Channel and Rerouting towards Mammoth

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			INDICATOR	OPTION 1			OPTION 2			OPTION 3			OPTION 5			COMMENTS
ECONOMY				GRADE		TOTAL SCORE	GRADE		TOTAL SCORE	GRADE		TOTAL SCORE	GRADE		TOTAL SCORE	
J	Capital cost	High Priority	Risk of the option	2	2.0	4	-1	-1.0	-2	-1	-1.0	-2	0		0	Option 1 represents low risk (known operation with Meadowbank staff). Options 3 & 5 present risks associated with the permafrost degradation while flooding lands (mitigation plans might be required). Option 2 - Risk associated with exposed thick permafrost with the channel.
			Cost of the option	0		0	-2	-2.0	-4	-1	-1.0	-2	0		0	Option 1 and 5 are approximately the same cost (dike height). Option 2 has the highest cost due to deep excavation.
K	Operating cost during construction	High Priority	Water management	-2	-2.0	-4	-1	-1.0	-2	1	1.0	2	1	1.0	2	Option 1 requires water management during operation by pumping. Option 2 may require maintenance due to ice blockage / slump, etc.
L	Maintenance cost after reclamation	Required	Type of infrastructure to maintain on the long term	0		0	0		0	0		0	0		0	Only earthworks for all options.
M	Reclamation capital costs	Required	Reclamation capital costs	0		0	-1	-1.0	-1	0		0	0		0	Not evaluated yet. Option 2 has potentially a higher economical impact (plug for closure) .
VIABILITY				GRADE		TOTAL SCORE	GRADE		TOTAL SCORE	GRADE		TOTAL SCORE	GRADE		TOTAL SCORE	
N	Technology	Low Priority	Flexibility (expansion)	2	2.0	1	-2	-2.0	-1	2	2.0	1	2	2.0	1	Option 2 is not adapted to an expansion project. All the other options are flexible (Options 3 & 5 require additionnal dewatering dike), CAPEX not considered.
			Complexity of the expected work (constructability)	0		0	-2	-2.0	-1	0		0	0		0	Option 2 implies more complex infrastructres: it requires a large and deep trench into thick and frozen OB. Differences between channel & dike.
			Completeness and reliability of the data used for this concept	0		0	0		0	0		0	0		0	At this stage, data fairly complete and reliable for all options.
			Are the technologies used for this project well understood, tested and reliable?	1	1.0	0.5	0		0	0		0	0		0	Option 1 is the most reliable since it is a known operation by the client. Uncertainties related to channelling into frozen ground (and futher instability) and impact of raising water elevation (permafrost degradation).
O	Natural hazards	High Priority	Vulnerability to permafrost degradation?	0		0	0		0	-2	-2.0	-4	-1	-1.0	-2	The retaining structures of Option 3 are more vulnerable to permafrost degradation, followed by Option 5 (height of dike smaller than Option 3).
			Vulnerability to weather conditions (flooding, dryness, wind)?	0		0	-1	-1.0	-2	1	1.0	2	1	1.0	2	Option 3 and 5 can manage flooding easily whereas Option 1 needs more pumping. The channel in frozen ground (Option 2) is sensitive to extreme climate.
			Vulnerability to seismic risks (infrastructure and foundation)?	2	2.0	4	2	2.0	4	2	2.0	4	2	2.0	4	No infrastructure is vulnerable due to the location of the project.
P	Adaptability	High Priority	Integration with the client's current operations	0		0	-1	-1.0	-2	1	1.0	2	1	1.0	2	Ease to adapt pumping to the operation (Option 1) rather than maintaining a channel (option 2). Maintenance easier for options 3 & 5.
			Adaptability to sudden changes, economic constraints, materials shortage, gradual reclamation, etc.	0		0	0		0	0		0	0		0	Reasonably adaptable for all options.
Q	Permits	High Priority	Site property	0		0	0		0	0		0	0		0	Neutral for all options.
			Level of difficulty to obtain permits from government authorities	-1	-1.0	-2	0		0	-1	-1.0	-2	0		0	More difficult to obtain regulatory approval for Option 3 due to its footprint. Difficult also for Option 1 due to the variability of the water elevation that implies.

FIGURE 4-3: NON-WEIGHTED RESULTS

PROJECT NO :	627215
DESCRIPTION :	PFS Water management options
OPTION 1 DESCRIPTION :	Pumping towards Mammoth
OPTION 2 DESCRIPTION :	Channel to Mammoth
OPTION 3 DESCRIPTION :	Rerouting towards Mammoth
OPTION 5 DESCRIPTION :	Channel and Rerouting towards Mammoth

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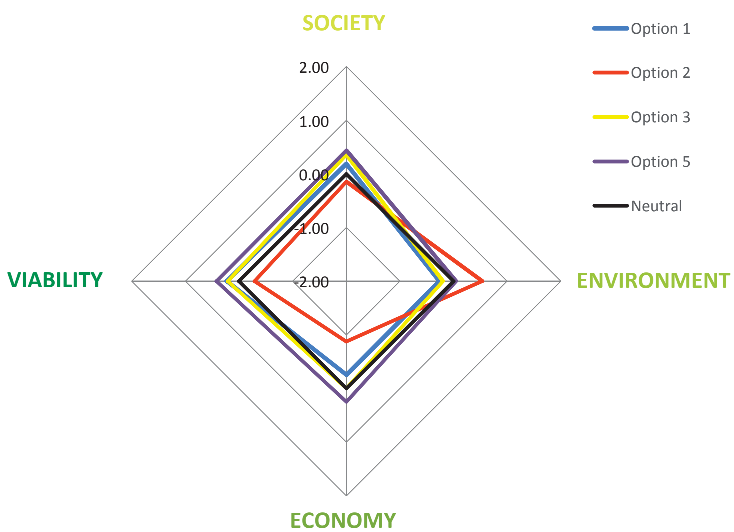
Non-weighted results by theme



Non-weighted results by theme

	Option 1	Option 2	Option 3	Option 5
COMMUNITY	0.19	-0.15	0.35	0.44
ENVIRONMENT	-0.26	0.54	-0.19	0.05
ECONOMY	-0.25	-0.88	0.00	0.25
VIABILITY	0.23	-0.29	0.21	0.42
Average:	-0.02	-0.19	0.09	0.29

Non-weighted results by category

	Option 1	Option 2	Option 3	Option 5
Health and safety	0.75	-0.50	0.50	0.75
Quality of life	1.00	0.00	1.00	1.00
Employment	0.00	0.17	0.17	0.00
Social acceptability	-1.00	-0.25	-0.25	0.00
Materials	0.20	0.20	0.20	0.40
Water	-1.00	1.00	-0.67	-0.67
Energy	-1.00	1.00	0.00	0.50
Air	0.00	-0.50	-0.50	-0.50
Biodiversity	0.50	1.00	0.00	0.50
Capital cost	1.00	-1.50	-1.00	0.00
Operating cost during construction	-2.00	-1.00	1.00	1.00
Maintenance cost after reclamation	0.00	0.00	0.00	0.00
Reclamation capital costs	0.00	-1.00	0.00	0.00
Technology	0.75	-1.00	0.50	0.50
Natural hazards	0.67	0.33	0.33	0.67
Adaptability	0.00	-0.50	0.50	0.50
Permits	-0.50	0.00	-0.50	0.00
Average:	-0.04	-0.15	0.08	0.27

Non-weighted results by category

See detailed summary

See weighted graph

FIGURE 4-4: WEIGHTED RESULTS

PROJECT NO :	627215
DESCRIPTION :	PFS Water management options
OPTION 1 DESCRIPTION :	Pumping towards Mammoth
OPTION 2 DESCRIPTION :	Channel to Mammoth
OPTION 3 DESCRIPTION :	Rerouting towards Mammoth
OPTION 5 DESCRIPTION :	Channel and Rerouting towards Mammoth

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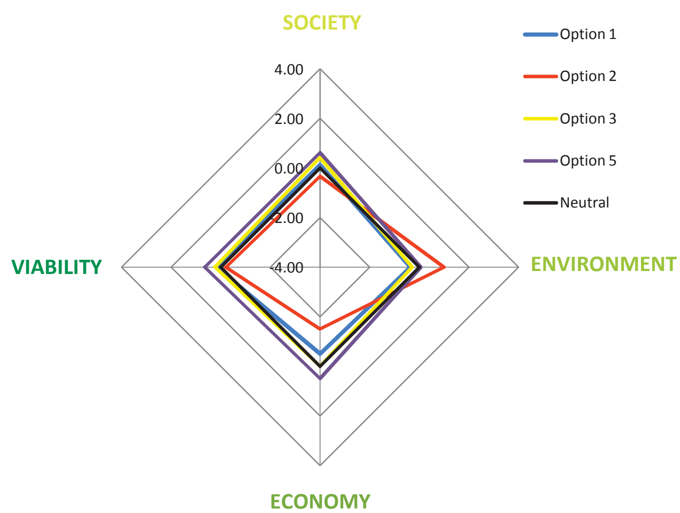
Weighted results by theme



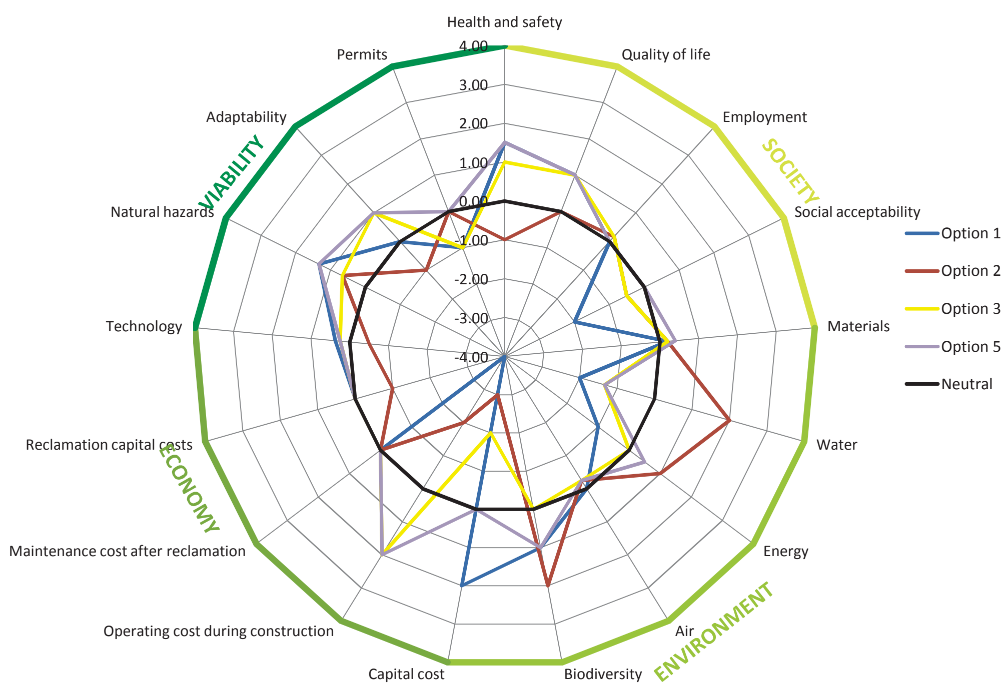
Weighted results by theme

	Option 1	Option 2	Option 3	Option 5
COMMUNITY	0.13	-0.33	0.42	0.63
ENVIRONMENT	-0.36	0.99	-0.28	0.06
ECONOMY	-0.50	-1.50	0.00	0.50
VIABILITY	0.18	-0.21	0.23	0.65
Average:	-0.14	-0.26	0.09	0.46

Weighted results by category

	Option 1	Option 2	Option 3	Option 5	Weight indicator
Health and safety	1.50	-1.00	1.00	1.50	High Priority
Quality of life	1.00	0.00	1.00	1.00	Required
Employment	0.00	0.17	0.17	0.00	Required
Social acceptability	-2.00	-0.50	-0.50	0.00	High Priority
Materials	0.20	0.20	0.20	0.40	Required
Water	-2.00	2.00	-1.33	-1.33	High Priority
Energy	-1.00	1.00	0.00	0.50	Required
Air	0.00	-0.25	-0.25	-0.25	Low Priority
Biodiversity	1.00	2.00	0.00	1.00	High Priority
Capital cost	2.00	-3.00	-2.00	0.00	High Priority
Operating cost during construction	-4.00	-2.00	2.00	2.00	High Priority
Maintenance cost after reclamation	0.00	0.00	0.00	0.00	Required
Reclamation capital costs	0.00	-1.00	0.00	0.00	Required
Technology	0.38	-0.50	0.25	0.25	Low Priority
Natural hazards	1.33	0.67	0.67	1.33	High Priority
Adaptability	0.00	-1.00	1.00	1.00	High Priority
Permits	-1.00	0.00	-1.00	0.00	High Priority
Average:	-0.15	-0.19	0.07	0.44	

Weighted results by category



See detailed summary

See non weighted graph

5.0 DISCUSSION

The channel and rerouting water from Whale Tail Lake to Mammoth Lake option (Option 5) obtained the best score, followed by the rerouting water towards Mammoth Lake option (Option 3). The pumping option (Option 1) obtained the third best score, followed by the channel option (Option 2). Table 5-1 summarizes the results for each option. Note that option 5 remains the best in the non-weighted and weighted results.

Table 5-1: Summary of the MAA Results

	Option 1 Pumping	Option 2 Channel	Option 3 Rerouting	Option 5 Channel and rerouting
Weighted results	**-0.14**	**-0.26**	**0.09**	**0.47**
Non-weighted results	**-0.02**	**-0.19**	**0.09**	**0.30**

The best option has been assigned this score mainly for its superior performance in the following categories: health and safety, social acceptability, operating cost during construction, natural hazards, adaptability and permits. In the society pillar, the Option 5 is more prone to be socially accepted as it is a passive system (a gravity fed channel) with a small channel, promoting employment and less risk for the workers. In contrast to Option 2, the construction of the small channel represents low risk for the workers since its construction is not a deep excavation into thick frozen overburden soil. In addition, the dike is not as high as the dike for Option 3, therefore the risk for the workers is reduced. In terms of economics, Option 5 suggests lower capital costs due to the height of the dike, and lower operating costs during construction. With respect to viability, this Option integrates with Meadowbank current operations and allows natural hazards to be better managed. It also proposes a smaller diversion channel (compared to Option 3) and uses a natural boulder-field to mimic the natural landscape. In addition, this option is likely to be positively received by regulatory agencies since this option uses a passive water management and creates additional fish habitat. Also, its passive water management will facilitate the closure and post-closure periods since the water accumulation from South Whale Tail Lake may be used to filling out the pit faster. Finally, the main disadvantage of Option 5 is the large zone of land to be flooded (water category), which impacts the seasonal water level and the existing drainage network due to the elevation of the basins that will be disturbed.

The rerouting towards Mammoth Lake option (Option 3) is the second best option according to the MMA performed. Since this option is very similar to Option 5, most of its strengths are similar to the preferred option. The main advantage of Option 3 compared to Option 5 is in the social acceptability category, since raising the water elevation of Whale Tail Lake will provide a passive management of water and will offset the loss of fish habitat. Nonetheless, Option 3 is not as suitable as Option 5 mainly because of the height of the dike; the construction of the dike represents a higher risk for the workers, higher energy required for the construction, and higher capital costs than the preferred option.

The main advantage of the pumping option (Option 1) is that it represents no risk to the population due to its simple infrastructure. It should be noted that traditional land use will be impacted under all scenarios (except with Option 2). However, because of the flooding of the area, less terrestrial habitat for wildlife (and therefore hunters) will be available during the summer period. Furthermore, Option 1 represents a low risk with respect to capital costs since the expected dike construction and pumping work is well understood by Agnico Eagle. The pumping option's main disadvantage is the long term operating costs for the water management and associated greenhouse gas emissions, as well as the water treatment process and maintenance during operation and closure. In addition, the high water level variability of the Whale Tail Pit South basin has a negative effect in the social acceptability, water and the permits category, as conceptual plans would require the loss of fish habitat in this basin.

For Option 2, the site visit performed during the first week of September, the reception of the Photosat survey of the area of study, and the thickness of frozen soil encountered into exploration boreholes provided a good understanding of the complexity of this option. It was concluded that the construction of the channel, which implies an important and deep excavation into thick frozen overburden soil and bedrock, is a significant challenge. The soil characteristic implies a high risk for the workers and is socially not acceptable due to the challenge in managing the discharge water quality in a long ditch that could be susceptible to thawing due to standing water. It was also noted that most of the material excavated for the channel could not be reused since most of the material is frozen soil or till (approximately 10 m). On the other hand, this option remains a strong alternative in terms of the environment since the channel respects the seasonal water levels in Whale Tail Lake South basin and minimizes the impact on flora and fish habitats. There is also less material to be imported for the construction of the channel (excavation).

In summary, the results of the MAA indicate that Option 5 (Channel and rerouting water towards Mammoth Lake) gets the best results for most of the pillars (viability, economy and society) except for the environment pillar, where Option 2 (Channel from Whale Tail Lake to Mammoth Lake) scored the best. However, the level of danger for workers and the complexity and vulnerability to weather conditions make Option 2 more risky. In overall, Option 5 proved to be the best option and has been carried forward into permitting level engineering and environmental impact assessment.