DATE	November 15, 2016	**REFERENCE NO.**	Doc 069-1665859 Ver 0
TO	François Petrucci, Ryan Vanengen, and Jamie Quesnel Agnico Eagle Mines Limited		
CC			
FROM	Golder Associates Limited	**EMAIL**	souellet@golder.com

WATER MANAGEMENT AND WATER BALANCE RELATED TO AMARUQ EXPLORATION PORTAL/RAMP PROGRAM, QUARRY AND ADVANCED UNDERGROUND EXPLORATION AND BULK SAMPLE AMARUQ EXPLORATION SITE, NUNAVUT

1.0 INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) requested Golder Associates Limited (Golder) provide a water management plan for the Amaruq Exploration Portal/Ramp Program, Quarry and the Advanced Underground Exploration and Bulk Sample Collection Project. At this request, Golder developed a water balance and water management plan to fulfill permitting requirements related to the main application document and project description of: Amaruq Exploration Portal/Ramp Program, Quarry and the Advanced Underground Exploration and Bulk Sample Collection, submitted in March 2016 (Agnico Eagle, 2016c).

The Amaruq Exploration property is a 408 km^2 site located on Inuit-owned land approximately 150 km north of the hamlet of Baker Lake and approximately 50 km northwest of the Meadowbank Mine in the Kivalliq region of Nunavut. In early 2013, the property was acquired by Agnico Eagle subject to a mineral exploration agreement with Nunavut Tunngavik Incorporated. The Kivalliq Inuit Association issued Agnico Eagle a land use permit, and the Nunavut Water Board, a water licence for exploration purposes.

Surface drilling started in 2013 and is continuing. Drilling to date at the Amaruq Exploration Property indicates an inferred resource with the potential for future mining. Agnico Eagle is proposing to explore deep sections of the gold ore body at the Amaruq property by constructing a portal and a ramp similar to what has been constructed at the Meliadine project located outside of Rankin Inlet. As a result, Agnico Eagle has applied for an amendment to the currently approved exploration activity under the Amaruq Exploration Type B license 2BE- MEA 1318. Exploration and collection of bulk sample(s) from the underground will determine if underground mining of the ore body is feasible sometime in the future. Work on the portal would begin in 2017, with underground work on the ramp advancement to accelerate from late 2017 and operate year round in 2018 when the Amaruq Exploration Access road construction is complete. The ramp would advance rapidly from 2018 to 2020, inclusively. If the results from underground exploration are encouraging, underground activities could continue beyond 2020.

The scope of services started with a site visit carried out by Golder between September 6 and 9, 2016. During this visit, the water management strategy for the sector of the underground ramp was developed by Serge Ouellet, registered Nunavut P. Eng. Thereafter, the water balance and the water quality estimations for the same sector were performed using the GoldSim software.

2.0 FIELD OBSERVATIONS

The sector of the future ramp and waste rock pad as well as the A-P5 pond were visited to define an appropriate water management approach during the ramp development. The topography in the sector of the planned ramp slopes down gently in the direction of A-P5 pond. The A-P5 pond discharges to Whale Tail Lake at one location during the low water level period, but probably through multi-points of discharge during freshet (Figure 1). The A-P5 pond flows to Whale Tail Lake through a large zone of boulders (fractured bedrock), the width of which can reach approximately 100 m during freshet. At the time of the visit, water flow was observed over a width of approximately 10 m and between rocks in the topographic lows of the outlet.

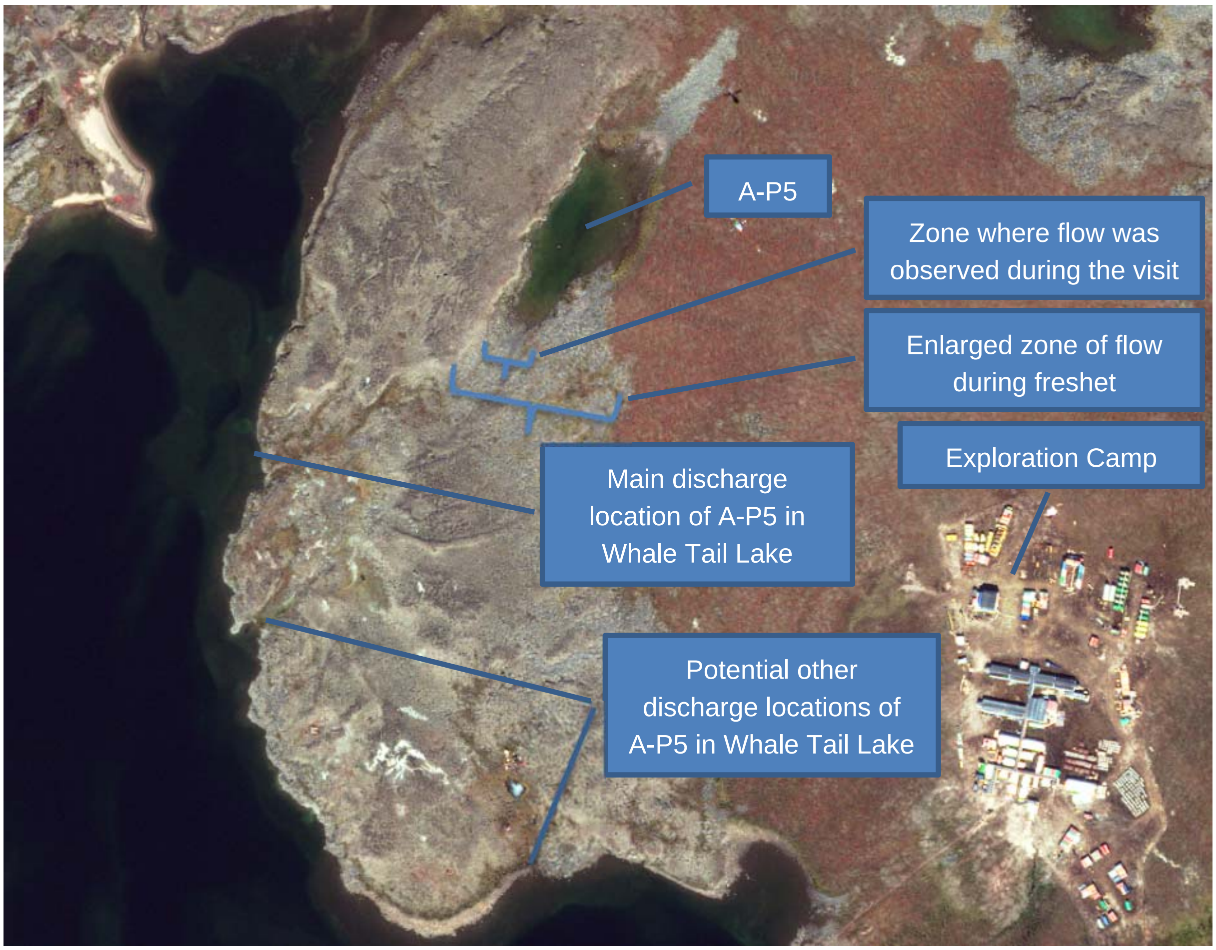

Figure 1: Field survey observations of the planned ramp sector (PhotoSat Imagery as background).

3.0 AMARUQ EXPLORATION CAMP, AMARUQ RAMP, QUARRY 1, WASTE ROCK PAD AND BULK SAMPLE WATER MANAGEMENT APPROACH

3.1 Exploration Camp Freshwater Use and Discharge

Freshwater usage includes potable use, fire suppression, and drilling water. In addition to the exploration group, the workforce to develop the portal and ramp and to operate the Quarry 1 will lead to an exploration camp capable to accommodate for 200 people. Freshwater will be sourced from Lake A17 (Whale Tail Lake) through a freshwater intake, high density polyethylene pipes, and pump system located at 607520 E and 7255295 N. Freshwater usage is estimated to 57 m^3/day for accommodation and 242 m^3/day for drilling, totaling 299 m^3/day.

Sewage will be collected from the camp and pumped to a Wastewater Treatment System (WWTS). Five Bionest Kodiak biological reactors will be installed for a total treatment capacity of 53,500 liters per day (267 l/person/day). The objective of the WWTS is to treat sewage to an acceptable level for discharge to the Whale Tail Lake via a sewage water discharge located at 607700 E and 7255385 N. The WWTS for the camp facilities will be designed to meet appropriate guidelines for wastewater discharge (for example, NWT Water Board 1992).

3.2 Amaruq Ramp, Quarry 1, Waste Rock Pad and Bulk Sample Water Management

The planned exploration ramp portal is located approximately 250 m north-west of the exploration camp (see Figure 2 and Appendix B). Although preparation activities will begin earlier the start of the excavation of the exploration portal is scheduled for the fourth quarter of 2017. West of the Exploration Ramp Portal, Quarry 1 will be used to supply waste rock and aggregate for construction and upgrading existing ancillary infrastructure on site. Excavation of Quarry 1 is scheduled over the last quarter of 2017. The rock from Quarry 1 identified as good construction material will be stockpiled on the services pad next to the crusher. North of the Ramp Portal, the Waste Rock Pad will receive the waste rock mined from the ramp, the overburden from opening of the Portal and stripping of Quarry 1 as well as potentially acid generating waste rock from Quarry 1, should any be found. A small part of this pad is also identified as ore storage (Bulk Sample Storage) for the potentially acid generating ore resulting from the bulk sample. One ditch will be built along the south side of the Waste Rock Pad; behind the Ramp Portal, this ditch ends with a culvert passing under the access road to the pad. The purpose of this ditch is to limit the runoff in the direction of the portal and end up underground.

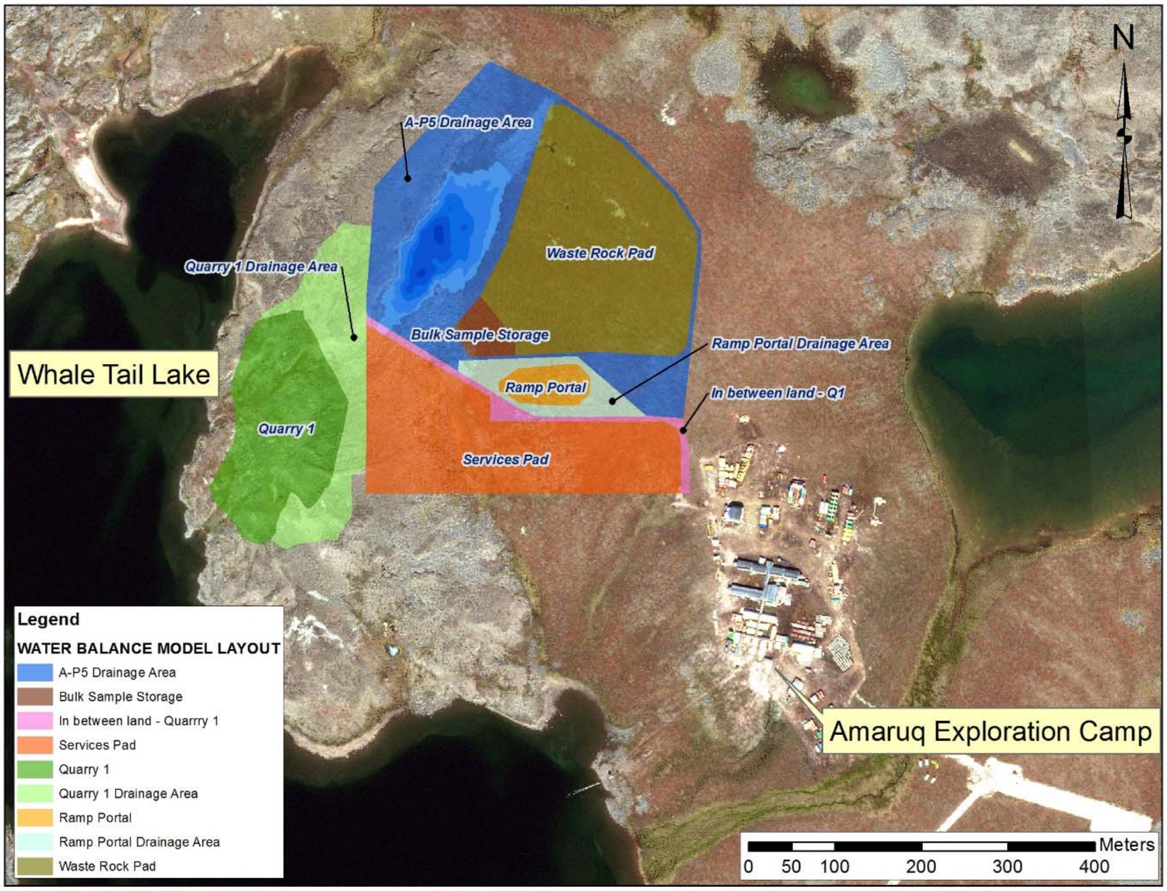

Figure 2: Water Balance Model - Site Layout

The water management flowsheet is presented in Figure 3. At the center of this flowsheet, the storm water storage pond A-P5 will be the main infrastructure of containment for contact water. In addition to receiving and storing excess water from underground (such as groundwater inflows), A-P5 pond will supply water for the underground operation. The excess water in the underground ramp will be pumped away from the different faces of operation to a main underground collection sump before being pumped up to the A-P5 pond. The volume of water required for operation will be salted with calcium chloride to avoid freezing and will be recirculated underground as much as possible. The need for a supplemental feed of water from Whale Tail Lake is expected only during a short period of operation from mid-February until the end of May, 2018 (i.e., under winter conditions, with no inflow runoff in flows to AP5) and the operations up to that point will have emptied the pond.

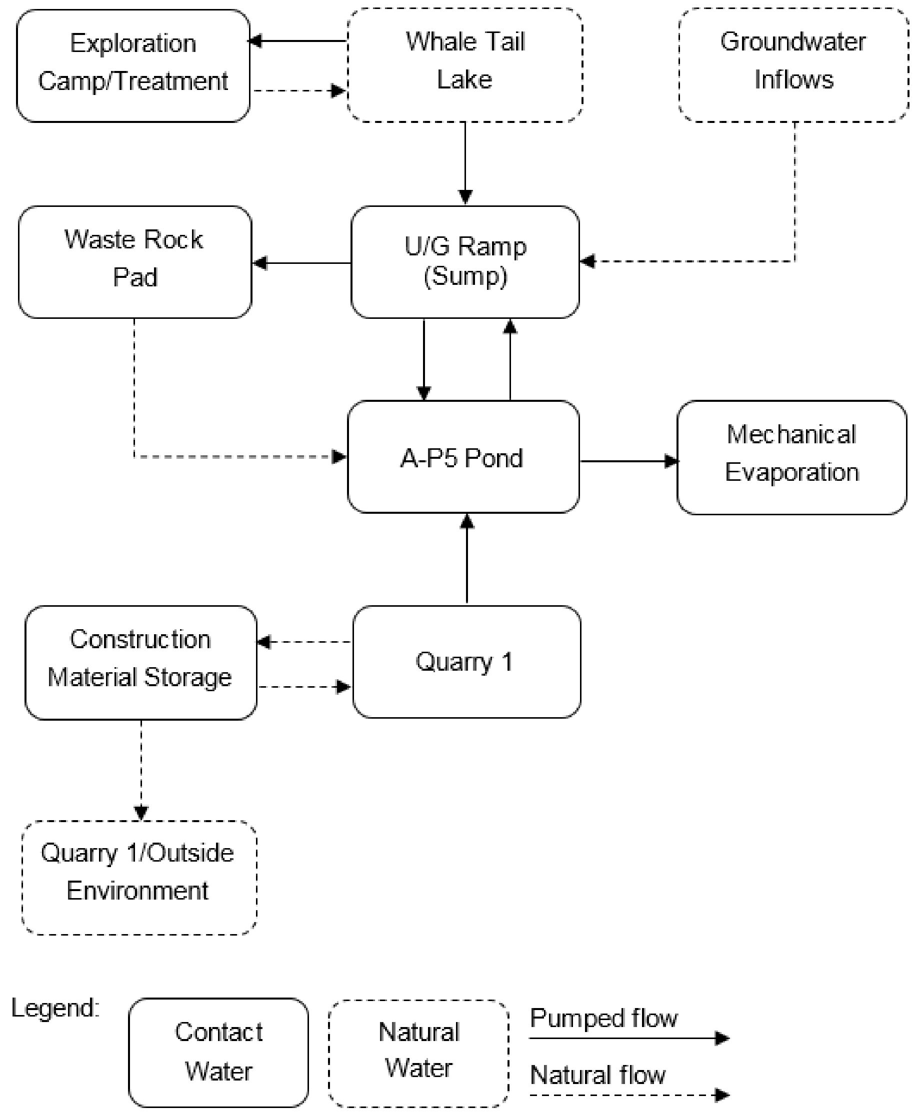

Figure 3: Flowsheet for the water management of the Amaruq underground ramp, waste rock pad, quarry and bulk sample development

As the excavation of Quarry 1 is scheduled over the last quarter of 2017 no contact water sourced from this quarry is expected. However, if contact water is observed during this period, internal sumps will be used and excess water, if any, will be pumped to the A-P5 pond. The rock sourced from Quarry 1 and stockpiled in the construction material storage will be non-acid generating and of low leachability. Although part of the runoff from this storage will report directly to Quarry 1, not all the runoff will be captured and controlled; some will flow naturally onto the tundra.

The Ramp Portal and Waste Rock Pad sector will be surrounded on the north, east, and south sides by a water diversion structure (see Figure in Appendix B). The objectives of this structure are i) to divert incoming fresh water (non-contact runoff) from the surrounding area outside the Ramp Portal and Waste Rock Pad sectors, and ii) to contain contact water runoff inside the same sector. All the contact runoff will report naturally to the A-P5 pond and will be stored in this pond for the entire ramp project life. During initial iterations of the water balance model, it was observed that the capacity of the storm water storage pond A-P5 was insufficient to manage the water on site without discharging outside the closed area of the Ramp Portal. During the first winter season of 2017 to 2018, the pond became empty and additional water was needed from nearby sources. Thus, to increase the capacity of the A-P5 pond and manage the entire volume of water within the closed area of the Ramp Portal and Waste Rock Pad sector, Agnico Eagle will develop a quarry within the footprint of A-P5 in the winter of 2018 by excavating the pond bottom. Accordingly, the size of the storm water storage pond A-P5 will be increased during the winter of 2018 by developing a quarry, increasing the current capacity of 8,500 m^3 to approximately 122,000 m^3 (Appendix B), that will allow the accumulation of all the estimated water volume over the planned years of development of the ramp. Mechanical evaporation will be used to decrease the volume of water accumulated in the storm water storage pond A-P5 every summer or only during the last summer of the planned ramp operation period.

4.0 WATER BALANCE RESULTS

The results of the water balance are presented in Figure 4 and Figure 5. Figure 4 shows a maximum volume of approximately 67,000 m^3 of contact water accumulated in the A-P5 pond from June 2018 to the end of 2020. Figure 5 shows the flowrates of the two main sources of water supplying the A-P5 pond from June 2018 to the end of 2020. The main source of contact water is the runoff from the Waste Rock Pad; the estimated flow rate reaches a maximum of 188 m^3/day in June of every year modeled. This corresponds to the maximum runoff flowrate reporting to the A-P5 pond for the footprint of the Ramp Portal and Waste Rock Pad sectors. A waste rock moisture content of 8% was used as input to the water balance (Agnico Eagle, 2016d) and the water content of the waste rock was assumed to be 8% coming from underground (Smith et al., 2013) thus additional water (precipitation and runoff) on the waste rock dump was considered to replace a part of the previous captured water, the latter reporting to A-P5 pond. The dewatering of the ramp is the second most important source of contact water over the project life; the maximum flowrates are estimated at 45, and 75 m^3/day during the month of June 2019, and 2020 respectively. These flowrates are represent half of the groundwater inflows estimated by Knight Piesold (2016). Based on experience at the Meliadine Exploration Ramp Project (Agnico Eagle, 2016d) the predicted groundwater inflows in the ramp there (Knight Piesold 2016) were reduced by a factor of 50% though engineering control by removal of moisture captured in the ventilation system and by carrying out a program of cement slurry grouting which is also expected to be carried out in this project. Quarry 1 will not transfer any water to the A-P5 pond as it will be sufficiently large to store the entire runoff until the end of 2020.

To ensure the protection of the receiving environment, all non-contact water will be diverted away from the site area. All contact water (i.e. in A-P5 pond or Quarry 1) that does not meet Type B discharge criteria will be captured, monitored and stored in A-P5, prior to discharge. Based on the water balance results, the storm water storage pond A-P5 will be the main infrastructure of containment for contact water and has the capacity to store 180% of the overall projected contact water volumes between June 2018 and the end of 2020. In the eventuality the maximum capacity of the storm water storage pond A-P5 is reached, mechanical evaporation will be used to decrease the volume of water accumulated.

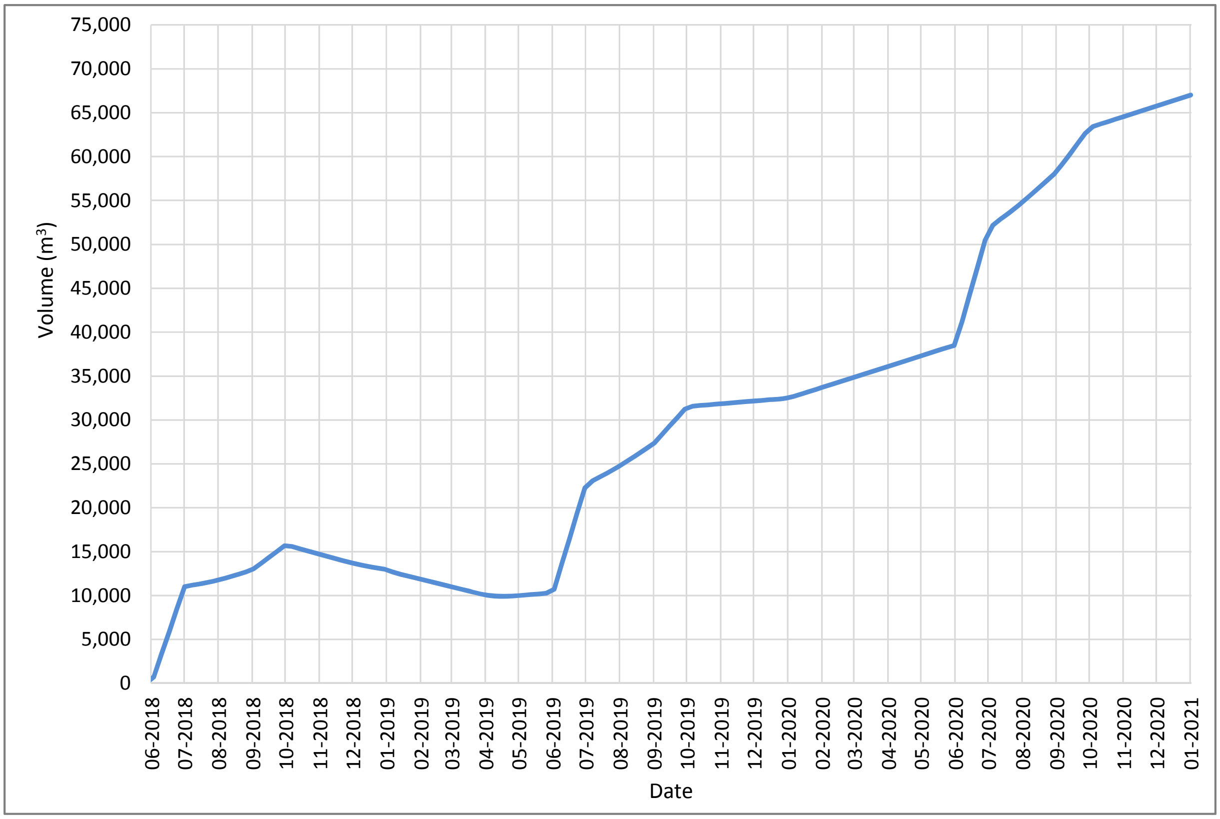

Figure 4: A-P5 Pond Volume Variation

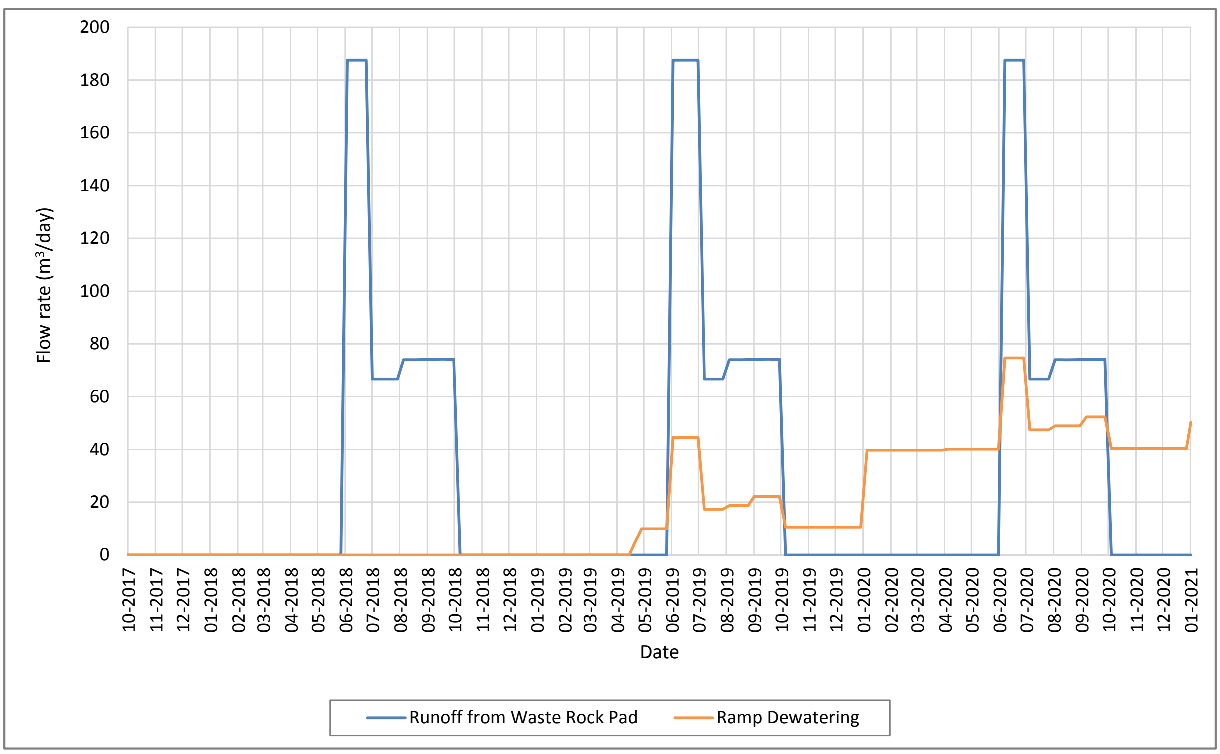

Figure 5: A-P5 Pond Inflow Rates

5.0 CLOSURE

We trust this report meets your needs at this time. Should you have any questions, please do not hesitate to contact the undersigned.

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https://capws.golder.com/sites/1665859whaletailwatermanagement/3200_underground model update/doc 069-1665859-mta-ver0_15nov_2016.docx

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APPENDIX A: DESIGN BASIS

A1.0 DESIGN BASIS

A1.1 General

A water balance model was developed in GoldSim, using a monthly timestep, a modeling period from Q4 2017 to Q4 2020, and inputs and assumptions as described in the next sub-sections, with direction from Agnico Eagle.

A1.2 Climate Input

Water balance results presented herein were based on mean annual climate input, as summarized in the water management plan of the Whale Tail Pit Project (Agnico Eagle 2016a), and reproduced below in Table A-1. Thus, results are expected to vary from those presented herein under wet or dry conditions.

Precipitation presented in Table A-1 was applied in water balance calculations, as follows, for consistency with methods of the water management of the Whale Tail Pit Project (Agnico Eagle 2016a):

- Frozen conditions were assumed from October to May;
- Rainfall during frozen conditions, as defined above, was applied as rainfall during the month of June of the same year if fallen between the months of January and May, or during the month of June of the following year if fallen between the months of October and December; and
- Snowfall outside of frozen conditions, as defined above, was applied as rainfall during the same month.

Table A-1: Mean Climate Characteristics

Month	Mean Air Temp. (°C)	Monthly Precipitation[a]		Losses		
		Rainfall (mm)	Snowfall Water Equivalent (mm)	Lake Evap. (mm)	Evapo-transpiration (mm)	Snow Sublimation (mm)
January	-31.3	0	11	0	0	9
February	-31.1	0	9	0	0	9
March	-26.3	0	14	0	0	9
April	-17.0	0.5	20	0	0	9
May	-6.4	6	12	0	0	9
June	4.9	21	5	9	3	0
July	11.6	45	0	99	32	0
August	9.8	48	2	100	32	0
September	3.1	40	11	40	13	0
October	-6.5	7	34	0	0	9
November	-19.3	0	26	0	0	9
December	-26.8	0	16	0	0	9
Annual	-11.3	168	160	248	80	72

[a] - Corrected for undercatch, as described in hydrology baseline studies of the Whale Tail Pit Project (Agnico Eagle 2016b)

A1.3 Storage Characteristics

Storage characteristics of the A-P5 pond were based on a topographic survey by Agnico Eagle in September 2016 including an estimate of the ordinary high water surface elevation (typically observed during freshet of an average year), an estimate of the ordinary low water surface elevation (typically observed at the end of the summer season), and a bathymetry of the pond (Figure A-1).

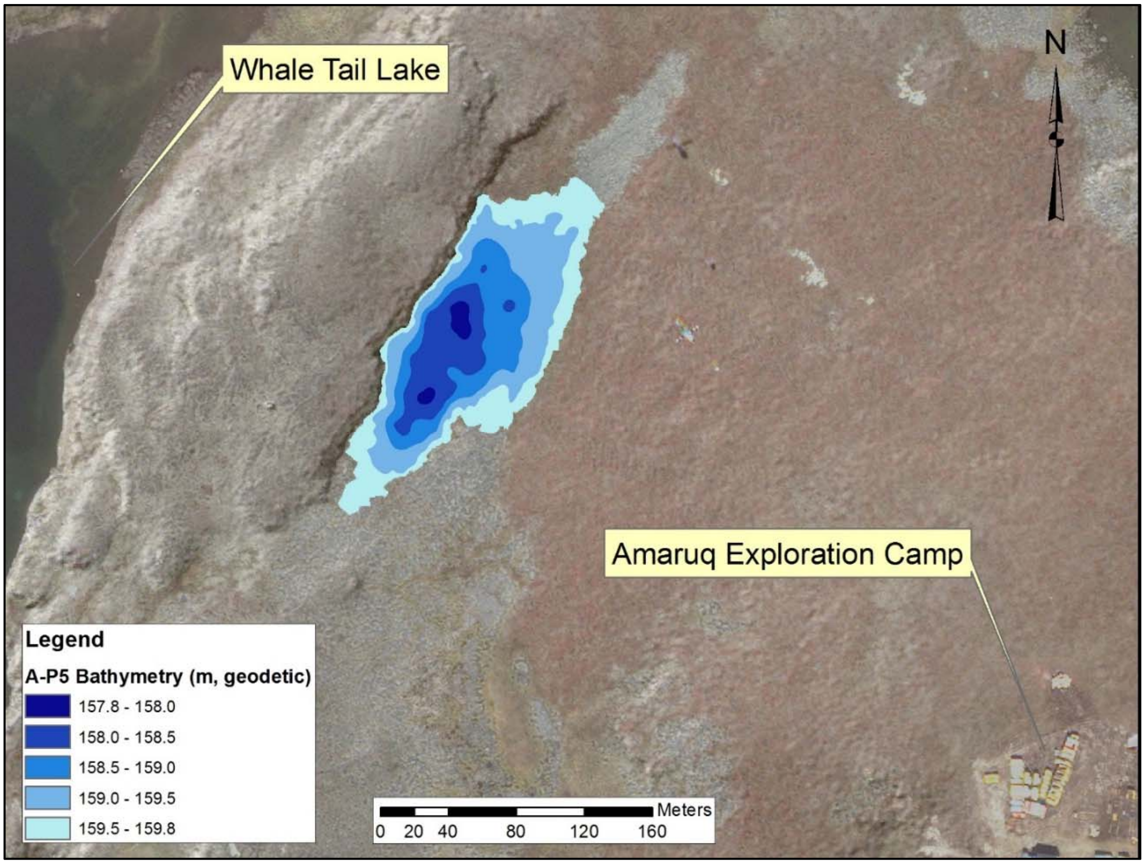

Figure A-1: A-P5 Pond Bathymetry

The results of the survey (Table A-2) indicate that the A-P5 pond has a total volume of approximately 8,500 m^3 at the ordinary high water surface elevation.

Table A-2: A-P5 Pond Survey Results

Parameter	Value
A-P5 Area (m^2)	13,532
Ordinary High water surface elevation (masl)	159.7
Low water surface elevation (masl)	159.5
Minimum pond elevation (masl)	157.8
Volume at the ordinary high water surface elevation (m^3)	8,580
Volume at the low water surface elevation (m^3)	6,370

Note: m = metre; masl = metre above sea level

For modeling purposes the A-P5 pond was assumed not to overflow above the observed ordinary high water surface elevation (i.e., 159.7 masl). Elevation-volume curves are presented in Figure A-2, under natural, and proposed excavated (deeper pond) conditions.

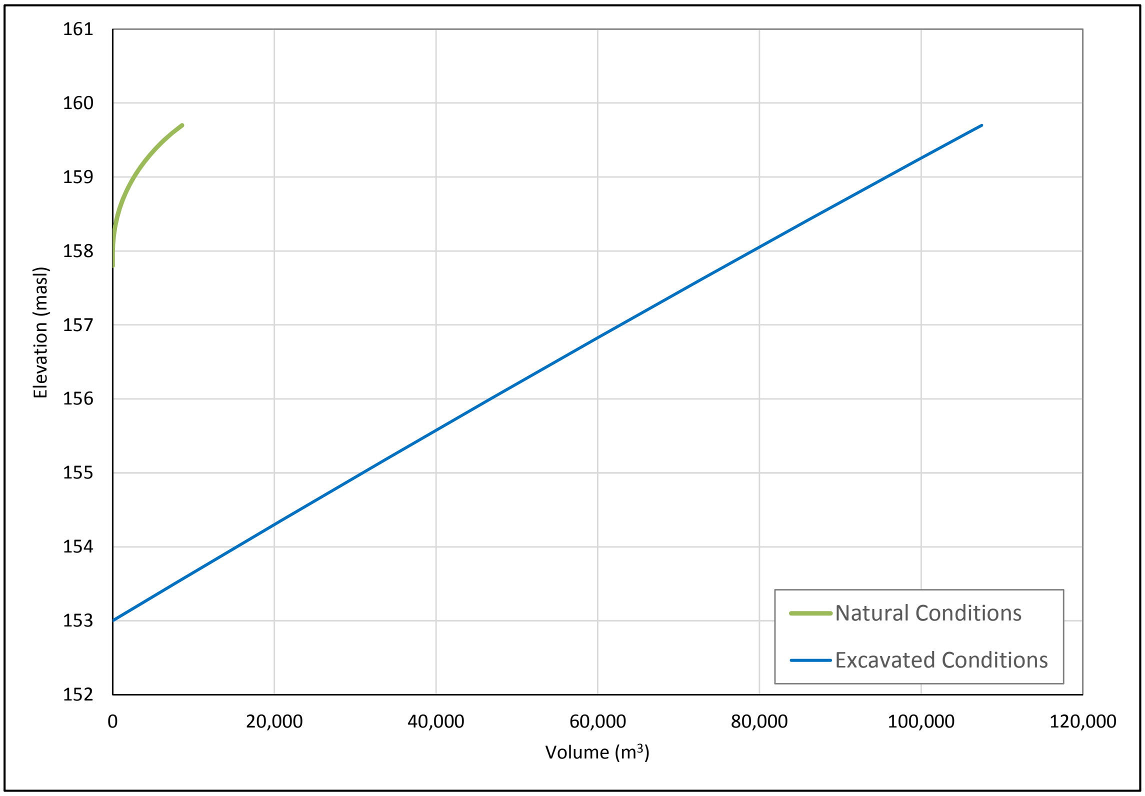

Figure A-2: A-P5 Pond Elevation-Volume Curves

A1.4 Model Input Values

Water management at the site includes natural surface runoff, water required for underground operation, waste rock humidity, water from underground infiltrations (following the development of the underground workings), and water from the active layer inflows into the Quarry 1.

Water necessary for underground operation was based on input from Agnico Eagle, as follows:

- A flow rate of 5 m^3/day for the beginning of underground ramp development from Q4 of 2017, to Q4 of 2018; and
- A flow rate of 10 m^3/day for the remainder of the modeling period (i.e., until the end of Q4 of 2020).

Waste rock mined during the ramp development contains 8% of humidity.

The water retention capacity of the waste rock dump is established at 8%, this value is the average of estimated field capacity presented in Smith et al. (2013).

Groundwater infiltration rates were based on the Knight Piesold report (2016) (see Figure A-3), with the base inflow rates increasing when the underground ramp development is traversing the talik. Based on observations performed by Agnico Eagle (2016d) for the project Meliadine, 50% of these estimated inflows are effectively used for the water balance as 50% of these inflows are considered lost in the ventilation system and limited by grouting the rock mass.

The water from the Quarry 1 active layer infiltration was assumed to be 8.7 m^3/day for the Q2 of 2018, and 16.0 m^3/day for the Q3 of 2018 (Knight Piesold, 2015).

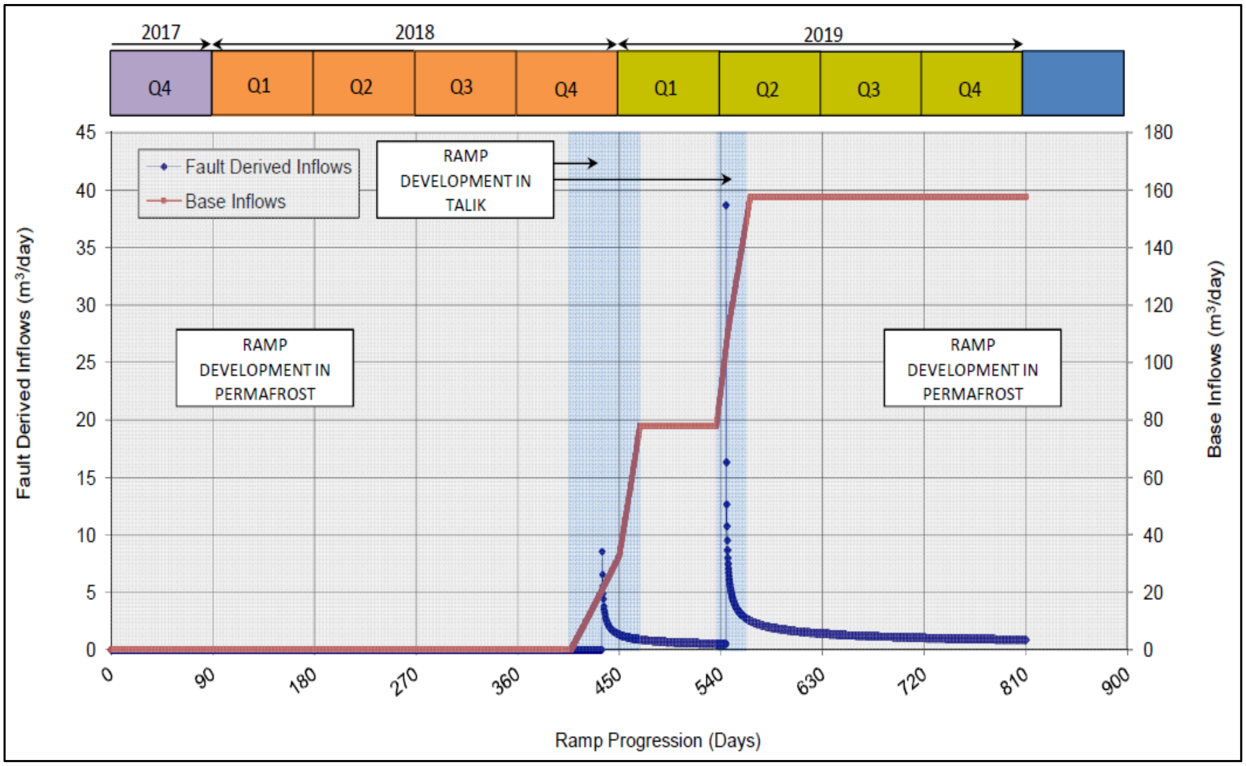

Figure A-3: Groundwater Inflow Rates (Knight Piesold, 2016)

APPENDIX B: SITE PLAN

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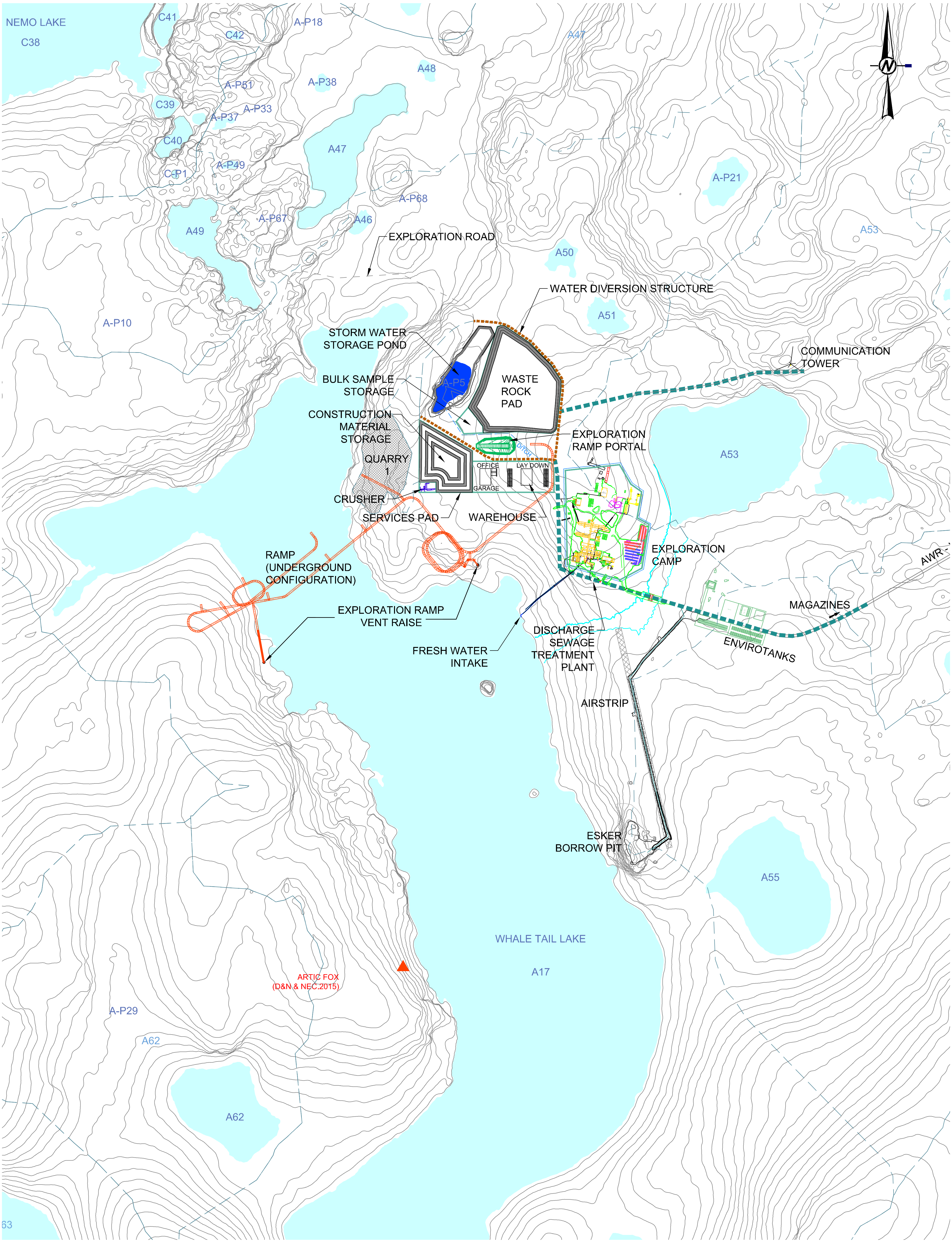

LEGEND

- ROAD
- TEMPORARY ROAD
- NATURAL WATERSHED
- DITCH
- WATER DIVERSION STRUCTURE
- INTAKE (FRESHWATER PIPE)
- EXPLORATION ROAD

0 250 500
1:10,000 METRES

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
A	2016-10-06	SITE ARRANGEMENT, RAMP AND ROAD	SO	JM	JL	SO

CLIENT
AGNICO EAGLE - MEADOWBANK DIVISION

PROJECT
AMARUQ PROJECT

CONSULTANT
Golder Associates
AGNICO EAGLE

TITLE
SITE PLAN

PROJECT NO.	PHASE	REV.		FIGURE
1665859	2100	B	1 of 1	2

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