Appendix 28

Whale Tail Thermal Monitoring Plan Version 3

AGNICO EAGLE

WHALE TAIL PIT PROJECT

Thermal Monitoring Plan

In Accordance with
Project Certificate No. 008, T&C 14

Prepared by:
Agnico Eagle Mines Limited – Meadowbank Division

Version 3
March 2020

EXECUTIVE SUMMARY

Agnico Eagle Mines Limited – Meadowbank Division (Agnico Eagle) received a Project Certificate No.008 from the Nunavut Impact Review Board for the development of the Whale Tail Pit, a satellite deposit located on the Amaruq Exploration property.

The deposit will be mined as an open pit (i.e., Whale Tail Pit), and ore will be hauled by truck to the approved infrastructure at Meadowbank Mine for milling. Approximately 10.2 million tonnes (Mt) of ore will be mined from the open pit and processed over a three to four-year mine life. Ore from Whale Tail Pit will be crushed on site after which it will be transported to Meadowbank Mine for milling. The mill rate will be approximately 9,000 to 12,000 tonnes per day.

This document presents the Thermal Monitoring Plan for the Whale Tail Pit in accordance with Terms and Conditions No. 14 included in the Project Certificate.

DISTRIBUTION LIST

Agnico – Engineering Superintendent

Agnico – Geotechnical Coordinator

Agnico – Environment Superintendent

Agnico – Environment General Supervisor

Agnico – Environmental Coordinator

DOCUMENT CONTROL

Version	Date (YMD)	Section	Revision
1	2018-05-04	All	To address Project Certificate No. 008. T&C 14
2	2019-03-31	All	Comprehensive update of the plan
3	2020-03-31	All	Comprehensive update of the plan

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1 INTRODUCTION

Agnico Eagle Mines Limited – Meadowbank Division (Agnico Eagle) is developing the Whale Tail Pit Project (Project), a satellite deposit located on the Amaruq property, to continue mine operations and milling at Meadowbank Mine.

The Amaruq 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 Meadowbank Mine in the Kivalliq Region of Nunavut. The deposit will be mined as an open pit (i.e., Whale Tail Pit), and ore will be hauled to the approved infrastructure at Meadowbank Mine for milling. The planned project involves: one year of construction, three years of mine operation, eight years of closure-related activities, and the post-closure period.

This document presents a Thermal Monitoring Plan prepared for the following mine facilities and natural locations:

- Waste rock storage facility (WRSF)
- Water management facilities including Whale Tail Dike, Mammoth Dike, North-East Dike, WRSF Dike, and the Whale Tail Attenuation Pond
- Whale Tail Pit
- Whale Tail Lake shore

The Thermal Monitoring Plan provides general descriptions of the different facilities, describes the anticipated impact of operation of the facilities on the permafrost and presents general guidelines that are used to define instrumentation needs for each facility. This document is not intended to provide detailed specifications for the instrumentation program, which will be defined as mining progresses and infrastructures are built. The Thermal Monitoring Plan will be reviewed periodically to adjust to the dynamics of mine construction and operation and adapt the monitoring strategy defined for each facility as needed.

1.1 PROJECT PERMIT

Meadowbank Mine is an approved mining operation and Agnico Eagle is extending the life of the mine by constructing and operating the Project. The Project was subject to an environmental review established by Article 12, Part 5 of the Nunavut Agreement. In June 2016, Agnico Eagle submitted a Final Environmental Impact Statement (FEIS) seeking a reconsideration of the Meadowbank Mine Project Certificate (No. 004/File No. 03MN107) and Type A Water Licence Amendment (No. 2AM-MEA1526) from the NIRB.

On July 2016, the NIRB determined that the proposed Project required a separate screening assessment under the Nunavut Agreement and the *Nunavut Planning and Project Assessment Act* (NuPPAA). A separate Project Certificate (NIRB Project Certificate No. 008) was issued for the Project on March 15, 2018 by the NIRB. This Thermal Monitoring Plan reflects the commitments made with respect to submissions provided during the technical review of the FEIS, to comply with Terms and Condition No. 14 included in the Project Certificate.

1.2 OBJECTIVES

The primary objective of the Thermal Monitoring Plan is to document and monitor ground thermal conditions at site and identify impacts to the permafrost, if any, that could be associated with development, operation and closure of the different mine facilities. This is done through the implementation of a monitoring program designed to assess variations in the ground thermal conditions and a data analysis program that will compare results obtained to baseline conditions prior to mine developments.

The monitoring program will allow for identification of affected permafrost zones and for the comparison between the anticipated and observed effects of the mine facilities on the permafrost. The results of the monitoring program will also be used to guide activities that might be required in the future to document the development and/or evolution of permafrost at site.

In certain areas, effects of mine operations on the permafrost are anticipated to be temporary and normal conditions are expected to be restored progressively upon closure of the mine. The monitoring plan will constitute a means to assess and validate this assumption, and monitoring results will be used to determine if mitigation actions are required and define what these will be at specific locations, as needed.

2 BACKGROUND

2.1 CLIMATE ENVIRONMENT

The Project site has the following mean climate characteristics (Agnico Eagle 2016):

- Mean annual air temperature of -11.3 °C
- In summer months from June through September, the mean monthly air temperature ranges from 4.9 to 11.6 °C. In winter months from October to May, the mean monthly air temperature ranges from -6.4 to -31.3 °C
- Mean annual total rainfall of 168 mm
- Mean annual total snowfall (water equivalent) of 160 mm

2.2 REGIONAL PERMAFROST

The Project is in the zone of continuous permafrost. Permafrost refers to subsurface soil or rock where temperatures remain at or below 0ºC for at least two consecutive years. This is synonymous to perennially cryotic ground, which may be frozen, partially frozen, or non-frozen depending on the ice/water content of the ground, and the salinity of the groundwater. The base of the permafrost is expected to be an undulating surface and the actual depth to permafrost is variable.

The Project footprint is underlain by permafrost except under portions of Whale Tail Lake where water is too deep to freeze to the bottom during winter. Taliks (areas of unfrozen ground) are expected beneath a water body where the water depth is greater than the ice thickness. Closed talik formations show a depression in the permafrost table below relatively shallow and small lakes. Open talik formations that penetrate through the permafrost and connect the lake waterbody with the sub-permafrost regime are to be expected for relatively deeper and larger lakes in the project area.

2.3 SITE SUBSURFACE GEOLOGY

The Whale Tail deposit is in the northern portion of the Whale Tail Lake. Based on previous site investigation data, soils in the project area are typically medium to coarse grained glacial till and colluvium with high coarse fragment content overlying bedrock at shallow depths. Saturated soil layers overlying frozen layers have been observed on site. A review of the records of the thermistor boreholes indicates soil thicknesses varying from 6.1 to 12.4 m. Underlying the soil, bedrock in the area generally consists of a stratigraphic sequence of greywacke, iron formation and komatiite, with varying thicknesses.

2.4 BASELINE FIELD INVESTIGATIONS

The Project site permafrost conditions were initially assessed by Knight Piésold (2015) between June and October of 2015 which included the installation of six thermistors in the vicinity of the proposed development of Whale Tail Lake to collect ground temperature data.

Golder Associates completed an additional thermal assessment for the Whale Tail Lake in 2017 (Golder 2017a) and installed four thermistors within the vicinity of Whale Tail Lake.

A Westbay well was installed on-site between March and April in 2016 where groundwater samples were collected from multiple intervals (Golder 2016a). A first estimation of the thickness of the permanently frozen permafrost was made based on information collected from the Westbay well.

Additional investigations and thermistor installations were carried out by SNC-Lavalin in 2016 and 2017 for the purpose of dike design.

2.4.1 Existing Instrumentation On Site

There are currently 33 active thermistors at the Whale Tail Site project area. Data from these thermistors have been used to estimate the site permafrost and talik conditions (Golder 2017a, 2018a).

The location and installation summary of the 33 active thermistors within the Project site are presented in Table 1. Figure 1 shows locations of active and inactive thermistors. Data are collected from the thermistors by data loggers or using manual readout units.

Results of active thermistors are presented in the Whale Tail Thermal Monitoring Report.

Figure 1. Location of Thermistors

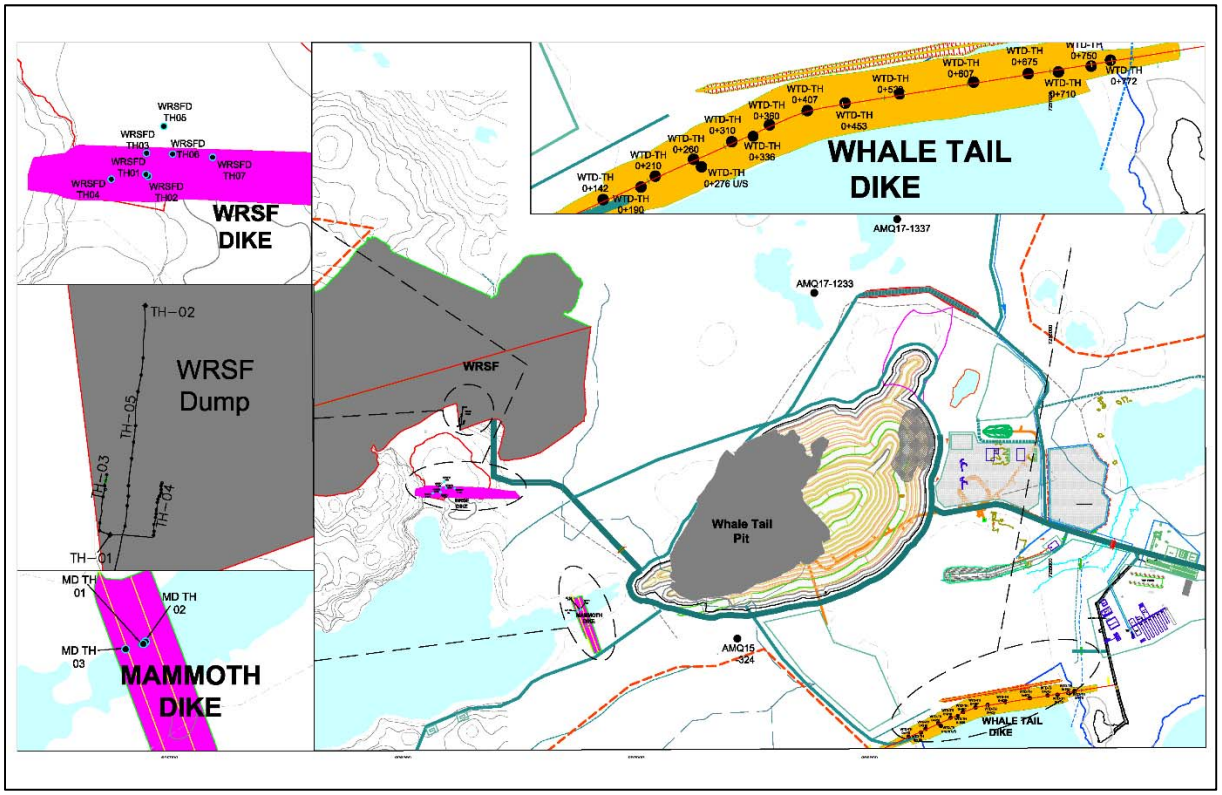

Table 1: Summary of Active Thermistors within the Project Site

Name	*Area*	*Easting (X)*	*Northing (Y)*	*Elevation (Z)*	*Azimuth*	*Dip*	*Installed*	*Active (Y) or (N)*
AMQ15-324	WTP	**606496.80**	**7254995.20**	**161.79**	323.41	-55.46	2015	Y
AMQ17-1233	IVR	**606778.00**	**7256254.00**	**162.00**	252.71	-59.06	2017	Y
AMQ17-1337	IVR	**607078.00**	**7256522.00**	**155.00**	260.37	-59.62	2017	N
WTD 0+142	WTD	**607119.94**	**7254637.98**	**156.75**		-90	2018	Y
WTD 0+190 U/S	WTD	**607165.34**	**7254653.83**	**157.42**		-90	2018	Y
WTD 0+210	WTD	**607182.85**	**7254666.19**	**157**		-90	2018	Y
WTD 0+260	WTD	**607227.51**	**7254686.28**	**157**		-90	2018	Y
WTD 0+276 U/S	WTD	**607237.2**	**7254677.3**	**157**		-90	2018	Y
WTD 0+310	WTD	**607237.98**	**7254707.09**	**157**		-90	2018	Y
WTD 0+336 U/S	WTD	**607298.44**	**7254713.45**	**157**		-90	2018	Y
WTD 0+360	WTD	**607318.81**	**7254727.15**	**157**		-90	2018	Y
WTD 0+407	WTD	**607363.08**	**7254744.86**	**157**		-90	2018	Y
WTD 0+453	WTD	**607408.60**	**7254753.72**	**157**		-90	2018	Y
WTD 0+520	WTD	**607473.78**	**7254764.22**	**157**		-90	2018	Y
WTD 0+607	WTD	**607561.24**	**7254778.35**	**157**		-90	2018	Y
WTD 0+675	WTD	**607262.31**	**7254788.86**	**157**		-90	2018	Y
WTD 0+710 U/S	WTD	**607662.32**	**7254790.63**	**157**		-90	2018	Y
WTD 0+750	WTD	**607701.81**	**7254797.04**	**157**		-90	2018	Y
WTD 0+772 U/S	WTD	**607724.15**	**7254804.63**	**157**		-90	2018	Y
WRSF TH01	WRSF	**615797.25**	**7238129.77**	**161.546**		-90	2019	Y
WRSF TH02	WRSF	**615861.49**	**7238133.24**	**162.053**		-90	2019	Y
WRSF TH03	WRSF	**615814.31 to 615799.6**	**7238118.6 to 7238117**	**162.744 to 162.042**		0	2019	Y
WRSF TH04	WRSF	**615813.38 to 615797.7**	**7238134.1to 7238132.8**	**162.138 to 161.619**		0	2019	Y
WRSF TH05	WRSF	**615860.9 to 615800.3**	**71238133.3 to 7238126**	**162.202**		0	2019	Y
MD-TH01	MD	**Slope**	**Slope**	**-**		Slope	2019	Y
MD-TH02	MD	**605926.19**	**7255102.52**	**154.9**		-90	2019	Y
MD-TH03	MD	**605926.74**	**7255102.6**	**154.9**		-90	2019	Y
WRSF TH01	WRSF Dike	**Slope**	**Slope**	**-**		Slope	2019	Y
WRSF TH02	WRSF Dike	**605416.44**	**7255526.7**	**159.07**		-90	2019	Y
WRSF TH03	WRSF Dike	**605414.98**	**7255545.01**	**155.29**		-90	2019	Y
WRSF TH04	WRSF Dike	**605387.14**	**7255524.47**	**158.15**		-90	2019	Y

WRSF TH05	WRSF Dike	**605428.59**	**7255566.21**	**153.63**		-90	2019	Y
WRSF TH06	WRSF Dike	**605435.56**	**7255544.29**	**155.35**		-90	2019	Y
WRSF TH07	WRSF Dike	**605466.94**	**7255541.78**	**155.13**		-90	2019	Y

2.5 BASELINE THERMAL MODELLING

Thermal modelling has been conducted to predict variations in the thermal regime of the permafrost. Modelling results are presented in the following reports:

- 2015 Site Permafrost Characterization by Knight Piésold (2015).
- 2017 Whale Tail Lake Thermal Assessment by Golder (2017a).
- 2017 and 2018 Golder Waste Rock Storage Facility thermal analysis for cover design by Golder (2017b, 2018b).
- 2018 Pit Lake Post-Closure Thermal Assessment by Golder (2018a).
- 2018 Dike Thermal Assessment by SNC-Lavalin (2018).
- 2019 Landform Water Balance Modelling of Whale Tail and IVR WRSF under RCP8.5 by Okane (2019a).

General results obtained from these studies are used to define the permafrost baseline conditions summarized in Section 2.6.

2.6 SUMMARY OF BASELINE PERMAFROST CONDITIONS

Baseline permafrost conditions on the Project site were estimated as follows based on thermistor data up to October 2017 and previous works. This information describes the baseline permafrost condition at the site.

- The depth of permafrost in the project site is estimated to be in the order of 427 to 495 m.
- The extrapolated mean annual ground surface temperature is estimated to be in the range of -3.4 to -9.9 °C.
- The estimated depths of zero amplitude from temperature profiles measured by the existing thermistors range from 18 m to 35 m.
- The temperatures at the depths of zero amplitude are in the range of -3.0 °C to -8.4 °C.
- The geothermal gradient is in the range of 0.005 °C/m to 0.025 °C/m.
- Based on the measured salinity concentration of 0.3% to 0.4% from groundwater samples collected on site, a freezing point depression of about 0.2 °C is estimated, which may reduce the frozen ground depth by approximately 20 m.

Ground thermal conditions under Whale Tail Lake were estimated by both thermal assessment and thermistor data. Results indicate the following:

- Under the northern portion of the lake including under the proposed pit location and along the proposed ramp area, there is likely a closed talik formation.
- An open talik is expected in the southern portion of the lake where it becomes wider and deeper.
- Data from the thermistor AMQ17-1265A installed within the lake (near southeast side of the Pit) suggests the talik depth at this location is about 112 m from the lake water level. Permafrost is present beneath the talik at that location to a depth of about 343 m.

3 THERMAL MONITORING PLAN

This section presents a general description of each facility, the expected thermal effects on the permafrost and planned thermal monitoring. The monitoring program will allow for evaluation of the actual impacts on the permafrost thermal regime during construction, operations, and closure of the facilities, and post-closure.

The information presented herein will be reviewed periodically during operations to reflect the actual site conditions.

Refer to the thermal monitoring report for analysis and presentation of the gathered data

3.1 WASTE ROCK STORAGE FACILITY

3.1.1 Facility Description

The WRSF is located north-west of the open pit. Waste rock and overburden will be trucked to the WRSF throughout mine operations, with distribution. Agnico Eagle plans to deposit a total of 64.3 million dry tonnes (Mt) of waste rock and overburden material between 2018 and 2022.

The final height of the WRSF is anticipated to be 95 m. The construction process incorporates 20-m high benches composed of four 5-m thick layers. Each bench toe will start at a setback distance of 20 m from the crest of the previous bench to form an overall side slope of 2.5H:1V.

The diorite and south greywacke material, which are both non-acid generating and non-metal leaching, represent approximately 17% (11.4 Mt) of the waste rock to be mined from the open pit and can be used as cover material for the Whale Tail WRSF. Closure of the WRSF will begin when practical as part of the progressive reclamation program. As part of the Whale Tail Pit – Waste Rock Management Plan (Agnico Eagle 2017), the Whale Tail WRSF will be covered with non-potentially acid generating and non-metal leaching (NPAG/NML) waste rock to promote freezing of the pile as a control strategy to prevent acid generation and transport of contaminants.

3.1.2 Expected Thermal Effects on Permafrost

Construction of the WRSF on the permafrost is expected to result in aggradation of permafrost into the pile. The permafrost under the pile would remain, but temperatures in the upper permafrost zone are expected to increase gradually until a thermal equilibrium is established with the active zone and zero-amplitude zone moving upward and being located within the waste rock pile. Convective cooling conditions often occur in waste piles and would potentially offset some of the temperature increase in the permafrost.

The waste rock pile itself is expected to freeze back with time and have an active layer formed on the upper portion (Okane 2019b). Climate change in the long-term is expected to extend the depth of the active layer in the pile, but the thick waste rock pile will constitute a protection to the underlying permafrost. If heat generation occurs associated with the oxidation of sulphide-bearing minerals within the pile, the process of freeze-back would be delayed and, depending on the location of the heat generation source, the upper portion of the permafrost foundation could be impacted.

3.1.3 Thermal Monitoring Plan

There is currently vertical and horizontal thermistors installed to monitor the thermal behaviour of the waste rock and underlying permafrost. Additional instruments will be installed during construction of the pile to monitor the evolution of temperature profiles with time and to evaluate if the process of permafrost aggradation and pile freeze-back is developing as anticipated. Thermistors installed during construction of the pile will be in completed benches, and additional thermistors will be installed on top of the pile upon end of operations and installation of the cover system for closure of the facility. Thermistors installed after placement of the thermal cap on top of the facility will be used to assess whether the defined cover thickness of 4.7m (Okane 2019b) is effective to maintain the top of the pile away from the active zone subject to seasonal freezing and thawing.

The thermistor strings are connected to data loggers for automatic data collection and storage. Data are reviewed periodically or as-needed, and results are summarized in the thermal monitoring reports on a yearly basis during operation and for five years after closure. The frequency of reporting will be reviewed after that and might be reduced.

3.2 WATER MANAGEMENT FACILITIES

3.2.1 Facility Description

Water management infrastructure includes contact water collection ponds, freshwater collection ponds, diversion channels, retention dikes, dams, culverts, water treatment plant for effluent, potable water treatment plant, sewage treatment plant, and discharge diffusers. All contact water on-site will be directed to an Attenuation Pond. Contact water will be treated and then released to Mammoth Lake or Whale Tail South through a discharge diffuser.

The Whale Tail Dike was constructed before operations to allow mining of the open pit. After dewatering of the lake area downstream of the dike is complete the operational lake water level upstream of the dike is predicted to be at El. 156 masl, about 3.5 m higher than the current average lake level. The dike will be breached during closure to restore the lake and will form a permanent pit lake as the open pit is flooded.

The Mammoth Dike is a dewatering structure constructed at the west side of the pit, and on the east side of Mammoth Lake to limit flow from Mammoth Lake into the pit. Similarly, the North East Dike was constructed to limit inflow from lakes A46, A47 and AP68.

The Attenuation Pond will be located between the Whale Tail Dike and the Whale Tail Pit to collect mine water, runoff and seepage from the dike. The pond operational water level is expected to be at El. 146 masl.

The WRSF Dike is a water retaining structure to manage contact water from the waste rock pile. Water will be pumped to the Attenuation Pond.

3.2.2 Expected Thermal Effects on Permafrost

The Whale Tail Dike is constructed within the lake where talik is anticipated to exist, therefore there will be no direct negative impact on the permafrost zone underneath the talik. The construction of the Whale Tail Dike is expected to have a cooling effect on the lake ground

underneath the dike due to exposure to lower dike temperature than lake water. Minimal effects to the permafrost at the abutment areas are expected.

Following lake dewatering and beginning of operations, areas downstream of the Whale Tail Dike are expected to freeze back progressively, and the upstream area of the dike is expected to remain unfrozen.

After the dike is breached in the final stages of closure, the Whale Tail Lake will be restored, causing frozen zones located downstream of the dike to thaw and progressively restoring the original lake talik.

The other dewatering dike areas are expected to have similar thermal impacts on the permafrost associated with construction, operation and closure of the dikes.

The WRSF Dike will periodically contain a pond formed from water flowing out of the waste rock facility. Depending on pond depth and operational conditions there would be impact with possible thawing of a shallow upper permafrost zone underlying the pond.

The talik zone under the Attenuation Pond would remain, but depth of the talik could be reduced as the Attenuation Pond will likely be shallower than the existing lake at that location. The surrounding areas to the pond would freeze back progressively after dewatering but would restore to talik condition after breaching of the dewatering dikes and flooding of the area.

3.2.3 Thermal Monitoring Plan

There are thermistors currently installed in the Whale Tail Dike, WRSF Dike, and Mammoth Dike areas for geotechnical monitoring. No thermistors are present in the North-East Dike area. Additional thermistor might be installed on these structures based on geotechnical monitoring need.

Thermistors have not been installed within the footprint of the proposed Attenuation Pond. As the Attenuation Pond is not anticipated to have any negative effects on permafrost due to its planned location within an existing talik area.

Most thermistor strings are connected to data loggers for automatic data collection and storage. Thermistors that are not connected to a logger are read manually in at least a monthly basis. Data are reviewed periodically or as-needed.

3.3 OPEN PIT

3.3.1 Facility Description

The Whale Tail Pit extends across the northern edge of Whale Tail Lake. Approximately 10.2 Mt of ore will be mined from the Whale Tail Pit and processed over a three to four-year mine life. The base of the pit is designed to be at El. 37 masl, about 115.5 m below the existing average lake water level of 152.5 masl.

Construction of the Whale Tail Pit site started in 2018. The operational phase will span from Year 1 (2019) to Year 4 (2022). Mining activities are currently expected to end in Year 3 (2021) and ore processing is expected to end during Year 4 (2022). Pit flooding is anticipated to commence in 2022 marking the beginning of the closure period and is expected to reach the top of the pit / base of Whale Tail Lake (138 masl) in 2025 and the initial lake in 2028.

3.3.2 Expected Effects on Permafrost

The pit will be excavated through an upper closed talik zone and underlying permafrost. During operations of the pit the talik zone is expected to freeze back progressively and the lower permafrost zone surrounding the pit walls will, in general, experience reduction in temperature other than at a shallow active zone adjacent to the pit walls subjected to seasonal thawing during summer.

Upon closure and subsequent flooding of the pit, permafrost areas underneath the pit lake are expected to gradually thaw. Thermal assessments have indicated this process would take hundreds of years (Golder 2018a). The pit lake would eventually reduce the permafrost depth in the pit surrounding ground, but this process could take significantly longer time (in the order of 10,000 years) to complete.

3.3.3 Thermal Monitoring

Two thermistors are currently active in the area near the pit. The other thermistor installed were destroyed as part of mining activity. Additional thermal investigations around the pit at shallow depth may be undertaken; the need for this will be defined during mining.

For/if any thermistors remain active or are installed in this area, they may be connected to data loggers for automatic data collection and data storage. Data will be reviewed periodically or as-needed, and results will be summarized in annual monitoring reports during operation and for five years after closure. The frequency of reporting may be modified in time as the thermal regime of the area stabilizes.

3.4 WHALE TAIL LAKE SHORE

The shore of the Whale Tail Lake south basin will be affected by increased water levels upstream of the Whale Tail Dike, while the shores of the Whale Tail Lake north basin will be affected by lake dewatering downstream of the dikes, the mining of the open pit, and re-flooding after breaching of dewatering dikes during closure of the facilities.

The design lake level of El. 156 m upstream of the Whale Tail Dike is about 3.5 m higher than the current average lake water level. This will result in flooding of part of the lake shore and shallow thawing of the upper portion of the permafrost during operations. Given the short mine operation period, the impact is anticipated to be small. Deeper portions of the permafrost in newly flooded areas upstream of the dikes are not expected to be affected significantly. After the dewatering dikes are breached, the original lake level will be restored, and permafrost conditions will recover gradually as the lake water level lowers.

There are no functional thermistors on the lake shore of Whale Tail North Basin.

There are no thermistors installed on the lake shore of Whale Tail South Basin upstream of the dike. Given the short period of time (three to four years) during which the lake shore in the South Basin will be flooded, the effects on the permafrost will be temporary and limited to the shallow upper portion of the ground. It is not considered necessary to install additional thermistors in that area.

4 CLOSURE

The Thermal Monitoring Plan presented in this document is intended to constitute a guide for instrumentation and monitoring of the Project facilities to evaluate the effects of mine developments on the thermal regime of the natural ground and relevant site infrastructures.

The instrumentation program at the different facilities will consist primarily of thermistor strings installed horizontally, vertically and at angles as needed. Data obtained from the thermistor strings will constitute the primary source of information for evaluation of changes in the thermal regime of the permafrost basin associated with construction, operations, and closure of the mine facilities.

The actual schedule of instrumentation and quantity, type of instrument, location, depth and length of the thermistor strings to be installed will be defined specifically for each facility based on the mining plan, construction schedule and accessibility to be defined during mine operation. The activities listed in this Plan will be periodically reviewed to reflect the dynamics of site development and operation. Decisions on thermistor installation will be based on the results of the monitoring program, as deemed required for a given area to assess effects on the thermal regime of the ground or facility.

Installation of different types of instrumentation such as vibrating-wire piezometers, monitoring wells and oxygen probes may be considered in the future in areas such as the WRSF if there is a need to better understand the process of water percolation, air-flow convection and heat generation within the pile.

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