



AGNICO EAGLE

MEADOWBANK GOLD MINE

WHALE TAIL PROJECT

WHALE TAIL LAKE NORTH BASIN DEWATERING

60-Day Notice to Nunavut Water Board
In Accordance with Water License 2AM-WTP-1826

NOVEMBER 2018

VERSION 01

DOCUMENT CONTROL

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1 INTRODUCTION

1.1 SITE LOCATION AND ACCESS

Agnico Eagle Mines Limited is developing the Whale Tail Pit Project, a satellite deposit located on the Amaruq property, in the Kivalliq Region of Nunavut (65°24'25" N 96°41'50" W). The 99,878-hectare Amaruq property is located on Inuit-owned and federal crown land; roughly 55 kilometers north of the existing Meadowbank mine. The Meadowbank Complex is accessible from Baker Lake, located 70 kilometers to the south, via an all-season access road.

1.2 SITE FACILITIES

The Amaruq mineral deposit is considered to be an extension of the currently operating Meadowbank mine. The Whale Tail pit is projected to be a conventional open pit mining operation, mined by truck-and-shovel operation. The Whale Tail road, 64-kilometers long, connects the Meadowbank site to the Amaruq site. On-site facilities will include a power plant, maintenance facilities, tank farm for fuel storage, water treatment plant (WTP), sewage treatment plant, drinking water treatment plant, as well as accommodation and kitchen facilities for approximately 400 people. **Figure 1 (Appendix A)** presents the general Whale Tail Project layout during the operation phase including its major facilities and infrastructures.

1.3 PURPOSE OF DOCUMENT

As part of the Construction Phase, the Whale Tail Lake North Basin (called hereafter the North Basin) needs to be dewatered in order to mine the Whale Tail Pit. Following the dewatering, a part of the North Basin will become the Whale Tail Attenuation Pond. This pond will received contact water from the Whale Tail site prior to discharge into the environment.

This document presents the 60-day construction notice of the Whale Tail Lake North Basin Dewatering and is submitted to the Nunavut Water Board as per requirement of the Whale Tail Type A Water Licence 2AM-WTP1826, Part D, conditions 1 and 2. The purpose of this notice is to provide final design and construction drawings and includes the system design and drawings, project timetable and environmental monitoring program.

WHALE TAIL LAKE NORTH BASIN DEWATERING

2 GENERAL SITE CONDITIONS AND DESIGN CRITERIA

The dewatering phase will consist of two different dewatering systems:

- A dewatering system pumping the water from the North Basin to the Whale Tail Lake South Basin (called hereafter the South Basin) without water treatment and discharging the effluent via submerged diffuser, if the water quality is compliant with the discharge criteria;
- A dewatering system pumping the water from the North Basin to Mammoth Lake through the water treatment facility and discharging the effluent via a submerged diffuser.

The North Basin, at the current water elevation of 152.7 masl (Surveyed on October 31st, 2018), has a total water volume of 3,140,000 m³. A two meter ice sheet is expected to form and cover the lake corresponding to a total water volume of 1,140,000 m³ and resulting in a 2,000,000 m³ of free water ("pumpable" water) until the end of May 2019.

The South Basin (first discharge location) will receive approximately 66% of the water volume (if it meets discharge criteria). If water continues to meet discharge criteria, the remaining water volume will continue to be discharged into the South Basin. However, conservatively, Agnico Eagle has assumed the remaining 34% may require treatment. If so, it will be pumped to the WTP and then discharged to Mammoth Lake. There is a possibility that the dewatering of the North Basin will be completed without any water treatment, therefore without any dewatering discharge to Mammoth Lake.

The design criteria of the dewatering system are the following:

- The dewatering system is designed to be operational in cold temperature as the dewatering phase is planned to start in February 2019 after the completion of the Whale Tail Dike when the extreme minimum temperature is -51°C (Baker Lake weather station);
- A parallel dewatering system (intakes, pumps, pipes) with one discharge diffuser is proposed to meet the flow capacity requirement in order to meet the dewatering schedule;
- The dewatering system is designed to mitigate potential sediment suspension and erosion during the dewatering phase.

2.1 DEWATERING SYSTEM – NORTH BASIN TO SOUTH BASIN

The dewatering system will consist of transferring water from North to South Basin via a submerged dewatering diffuser at a flowrate between 800 m³/h to 3,000 m³/h. This dewatering

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system will be used when the water quality in the North Basin meets effluent criteria stipulated in Water License Part D Item 7 and the MDMER Regulation. A water quality sample will be taken prior to starting the dewatering discharge. Thereafter, effluent water samples will be collected to demonstrate compliance with the discharge criteria as per the monitoring program presented in Section 5.

Dewatering from North Basin to South Basin will cease if all of the free water is pumped or if the water quality results reach the discharge criteria limits. The latter would trigger the use of the second dewatering system, e.g. from North Basin to Mammoth Lake.

2.2 DEWATERING SYSTEM – NORTH BASIN TO MAMMOTH LAKE

The dewatering system from North Basin to Mammoth Lake will consist of pumping water from the North Basin to the WTP and then discharging it into Mammoth Lake via a submerged dewatering diffuser at a flowrate between 800 m³/h to 1,600 m³/h. Effluent water samples will be collected to demonstrate compliance with the discharge criteria as per the monitoring program presented in Section 5.

2.3 DEWATERING PHASE COMPLETION - ATTENUATION POND OPERATION

Once the dewatering phase is completed, part of the North Basin located outside the Whale Tail Pit footprint will become the Whale Tail Attenuation Pond. The Attenuation Pond will receive contact water from different sumps and ponds around site. Water from the attenuation pond will be pumped, and discharged via the attenuation pond diffuser into Mammoth Lake. If water quality does not meet discharge criteria, water will be treated via the water treatment system.

The dewatering phase will be completed once all the free and pumpable water (2Mm³) is removed from the North Basin. The North Basin will then be considered as the Whale Tail Attenuation Pond. Any remaining water contained in low areas that could not be pumped and the ice portion (1.1Mm³) will be considered as contact water within the attenuation pond and will be used as part of the site water management, as per the WTP Water Management Plan. If required, the water contained in the Attenuation Pond will be treated, and the effluent water will be discharged into Mammoth Lake. The design report of the Attenuation Pond diffuser and the water treatment plant are presented in the 60-day construction notice of the water treatment plant.

Once the North Basin dewatering is complete, the Whale Tail Attenuation Pond will continue to require discharge into Mammoth Lake. Considering the diffuser associated with the WTP (detailed in the 60-day construction notice of the water treatment plant) may not be operational prior to July 2019, due to ice condition on Mammoth Lake, Agnico Eagle intends to continue

using the temporary dewatering diffuser to discharge water from the Whale Tail Attenuation Pond.

3 DEWATERING SYSTEM DESIGN

Figure 2 and **Figure 3 (Appendix A)** present the layout of both dewatering systems. The three-line system on **Figure 2** consists of three intakes, three suctions, three pumps, and three water pipelines. The lines are then merged into to one single pipe that leads to one unique diffuser for dewatering from North Basin to South Basin. A two-line system consisting of two intakes, two suctions, two pumps, two water pipelines and one diffuser will be used for the dewatering from North Basin to Mammoth Lake. The pumping system designed from the Attenuation Pond to Mammoth Lake during the Attenuation Pond normal operation is detailed the 60-day construction notice of the water treatment plant.

3.1 INTAKES AND SUCTIONS LINES

The intakes in North Basin will be located in an area with sufficient depth and sufficient distance from shore. The intakes installed will have a fish screen respecting DFO criteria (see **Figure 4, Appendix A** for the intake design). The intake installation method will reduce the risk of potential sediment uptake as the intakes will be located near the water surface and in deep sections of the lake. The suction lines will consist of 50 feet sections of pipe 14"Ø PE3608 DR17 or 14"Ø PE3608 DR11. As the water level goes down, the ramp will be extended and the pump will be lowered closer to the water elevation.

3.2 PUMPS

The selected pump model for the dewatering system from North Basin to South Basin is Goodwin HL250M.

For the dewatering system from North Basin to Mammoth Lake, the water will be pumped from the North Basin to the WTP with two Godwin HL250M pumps and from the WTP effluent to the diffuser with two Warman FAH 12x10, 250HP pumps.

3.3 PIPES

The piping used for the system will be HDPE pipe 14"Ø PE3608 DR17 or 14"Ø HDPE PE3608 DR11 insulated and non-insulated. The piping was selected by considering the design flow and pressure rating. The installation and placement of the pipelines will be done in a manner not to restrict or impede the natural flow of water.

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3.4 DEWATERING DIFFUSERS

During the dewatering phase, the water will be discharged sub-aqueously in the South Basin and Mammoth Lake via a diffuser. **Figure 5 (Appendix A)** presents the dewatering diffuser design (same design for both discharges). The locations of the diffusers were selected to have a minimal water depth of 4 m. The discharge will consist of an HDPE pipe draining towards the outlet, where a 90° elbow followed by sufficient piping to ensure sub-aqueous discharge. In the last meter of submerged piping, seven rows of four 4" holes will be pierced in the piping.

The dewatering diffusers will be installed on ice prior to the beginning of dewatering. They will be installed on a floatable device to maintain the pipe outlet near, but still below, the water surface for summer operation, if required.

3.5 WATER TREATMENT PLANT

The purpose of the WTP is to remove Total Suspended Solids (TSS) during the dewatering phase.

The WTP is composed of:

- One precipitation reactor used for pH adjustment, oxidation, precipitation process;
- Two Actiflo® in parallel, treating the precipitation reactor effluent.

The WTP effluent is designed to meet the Type A Licence final effluent discharge criteria for TSS concentrations and Arsenic during the mine operation. The final effluent is monitored continuously for pH and turbidity.

The WTP design is detailed in the 60-day construction notice of the water treatment plant.

The flowrate and total volume will be monitored during the dewatering phase with electromagnetic Rosemount flowmeters. One flowmeter will be installed at the influent of the WTP as well to monitor the total water volume treated.

4 CONSTRUCTION

4.1 DEWATERING RAMP

A dewatering ramp will be constructed in the North Basin and will be required to install the Goodwin HL250M pumps during the dewatering phase. The dewatering ramp will be progressively built to move the pumps closer to the water line as the water level goes down. The construction strategy will minimize the rockfill placement in the North Basin during the dewatering phase to avoid sediment suspension. The rockfill required for the ramp will come from non-acid generating / non-metal leaching waste rock available onsite as per our

Operational ARD-ML Sampling and Testing Plan – Whale Tail Pit Addendum June 2018 (AEM 2018).

The estimated total required material for the ramp design is 11,300 m³.

4.2 WATER TREATMENT PLANT

The water treatment plant construction details are presented in the 60-day construction notice of the water treatment plant.

4.3 TESTING AND INSPECTION

Prior to start up, the full length of pipelines will be tested for leaks at fusion weld and flange joints. If leaks are found, the joint will be re-welded or re-torqued and the hydrostatic test must be redone from the beginning.

5 ENVIRONMENTAL MONITORING PROGRAM

Routine monitoring of water quality monitoring at the WTP water outlets (opening valve at the outlet of the WTP when in operation) or at the merge ('Y') of the dewatering pipes (when the WTP is not in use) will be as per the Type A Water Licence Part D Item 7, the Water Quality Monitoring and Management Plan For Dike Construction and Dewatering (Version 1, Jan 2017) and the Metal and Diamond Mining Effluent Regulation (MDMER).

As per the Water Quality Monitoring and Management Plan For Dike Construction and Dewatering, TSS/turbidity will be measured in the receiving environment on a weekly basis; monitoring will take place, when safely possible, approximately 30 - 100 meters from end-of-pipe, dependent on stable ice conditions during ice-up. This monitoring will allow Agnico Eagle to follow the receiving environment water quality, detect any problem associated with the dewatering and put mitigation measures (for example, reducing the dewatering flow) if needed.

In addition to the monitoring and management of suspended sediments, a hydraulic monitoring plan has been developed to monitor the following components:

- Water levels in Mammoth Lake and the South Basin will be monitored on a regular basis while dewatering activities are occurring; and
- Outlet erosion inspections to monitor outlet stability, including potential erosion and/or ice damming within the outlets.

Mammoth Lake and South Basin water levels will be surveyed at a location of sufficient distance from the outlets to limit potential lake level drawdown effects. Lake water levels will be

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monitored weekly during the freshet and ice-free period, and during the ice-up period, dependent of the ice conditions and worker safety.

6 PROJECT TIMETABLE

The project timetable is presented in **Table 1** below and will be subject to change depending on the conditions encountered during the dewatering (e.g. effluent water quality).

Table 1: Project Timetable – Dewatering phase

Task	Start date (YY-MM-DD)	End date (YY-MM-DD)	Trigger
Commissioning of WTP	2019-02-15	-	-
Beginning of dewatering	2019-02-15	-	Commissioning of Whale Tail Dike
Dewatering from North Basin to South Basin	2019-02-15	2019-05-01	If water quality meet transfer requirement
Dewatering from North Basin to Mammoth Lake	2019-02-15	2019-05-01	If water treatment required
Construction of attenuation pond infrastructure (diffuser, pipeline)	2019-03-01	2019-07-01	-

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AMARUQ PROJECT

DRAWING No.	TITLE	REVISION	DATE
0	DRAWING INDEX	1	22/11/2018
1	GENERAL SITE MAP	2	18/11/2018
2	WHALE TAIL NORTH BASIN DEWATERING – NORTH BASIN TO SOUTH BASIN	3	22/11/2018
3	WHALE TAIL NORTH BASIN DEWATERING – NORTH BASIN TO MAMMOTH LAKE	3	22/11/2018
4	INTAKE CROSS-SECTION	2	22/11/2018
5	DIFFUSER CROSS-SECTION	3	22/11/2018

KEY PLAN

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WHALE TAIL NORTH BASIN DEWATERING
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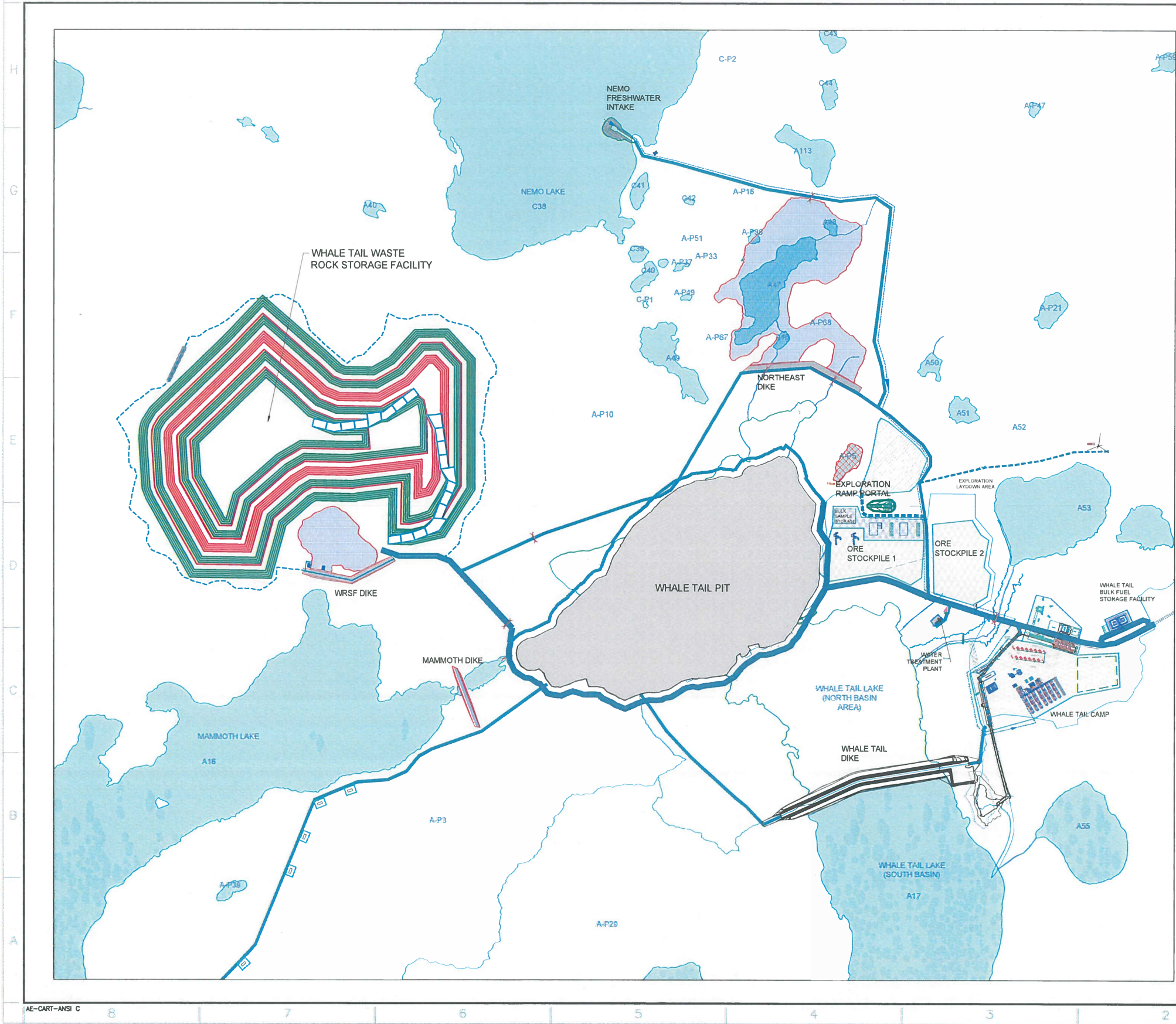
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NOTES GÉNÉRALES / GENERAL NOTES

LEGEND

- WHALE TAIL LAKE (SOUTH BASIN)
FLOODED LIMIT (WATER LEVEL: 156.0m)
- ROAD
- TEMPORARY ROAD
- NATURAL WATERSHED
- DIVERSION CHANNEL
- COLLECTION CHANNEL
- CULVERT
- INTAKE WATER PIPE
- CONTACT WATER PIPE
- FRESHWATER PIPE
- DIKE
- POND / SLUMP
- ARCHAEOLOGICAL SITE

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WHALE TAIL NORTH BASIN DEWATERING
GENERAL SITE MAP

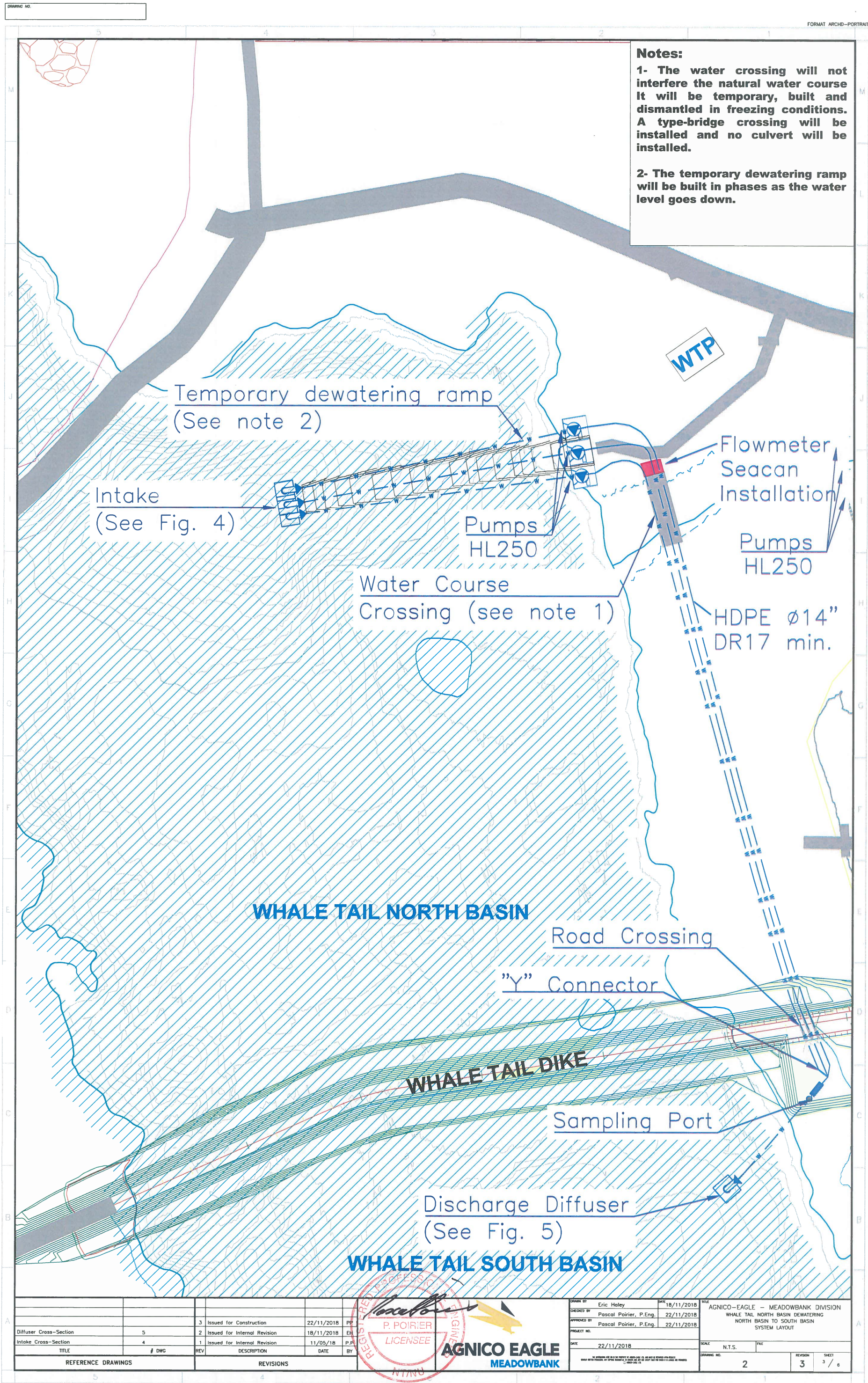
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APPROUVÉ PAR APPROVED BY	Frédéric Bolduc, P. Eng.	18/11/2018

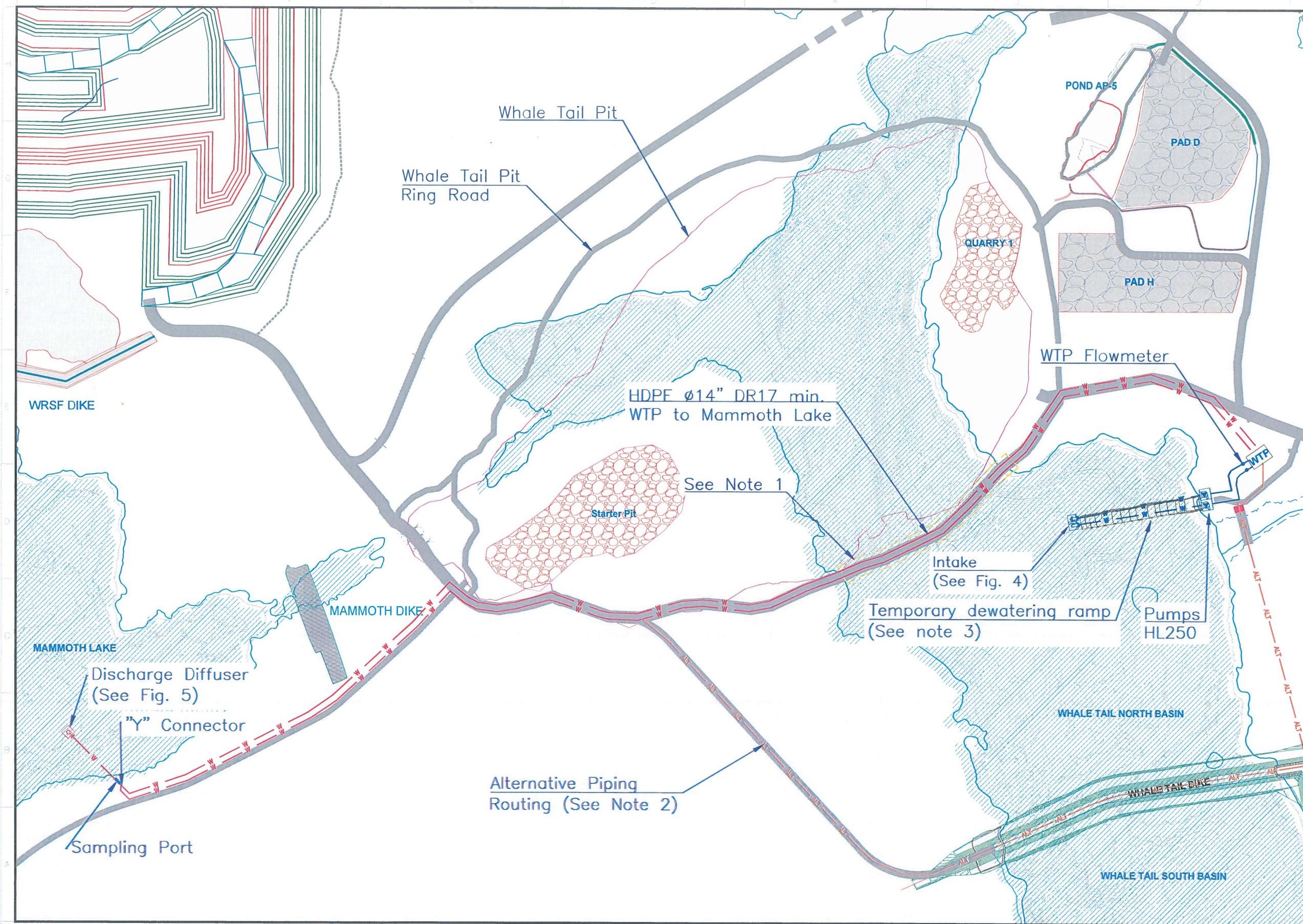
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KEY PLAN

GENERAL NOTES

Notes:

- 1- The piping crossing the Whale Tail North Basin will be installed on Whale Tail Pit ring road depending on the water level during dewatering.
- 2- Piping might be routed on Whale Tail Dike based on site condition.
- 3- The temporary dewatering ramp will be built in phases as the water level goes down.

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Intake Cross-Section	4				
Diffuser Cross-Section	5				

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TITLE
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WHALE TAIL NORTH BASIN DEWATERING
NORTH BASIN TO MAMMOTH LAKE
SYSTEM LAYOUT

DRAWN BY	DATE
Eric Haley	18/11/2018

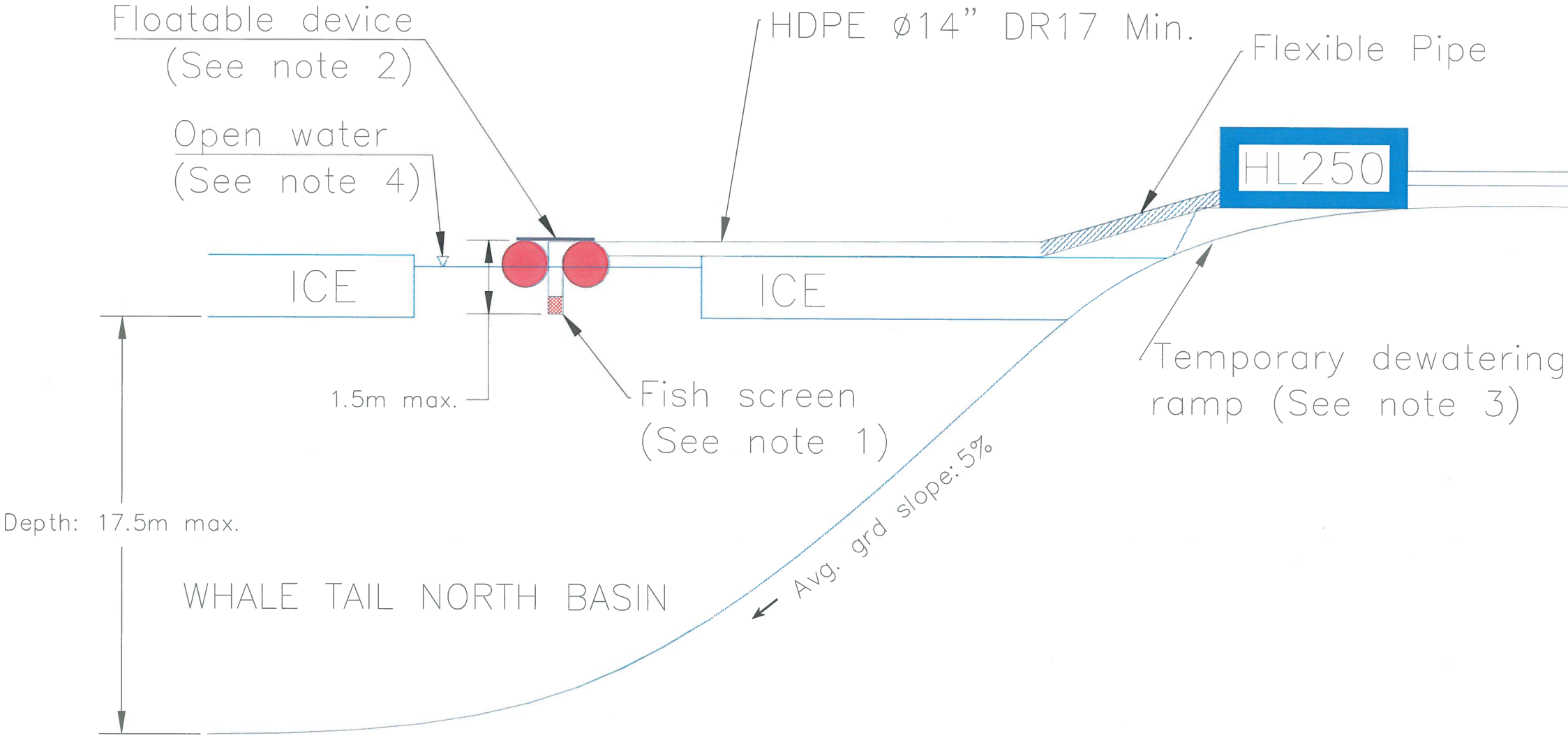
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WHALE TAIL NORTH BASIN DEWATERING INTAKE CROSS-SECTION




KEY PLAN

GENERAL NOTES

Notes:

- 1-A fish screen in compliance with DFO criteria shall be installed.
- 2-A floatable device with a buoyant force of 7300N shall be installed.
- 3-The temporary dewatering ramp will be built in phases as the water level goes down.
- 4- Ice cover shall be removed prior intake installation. Water flow will prevent the intake from freezing.




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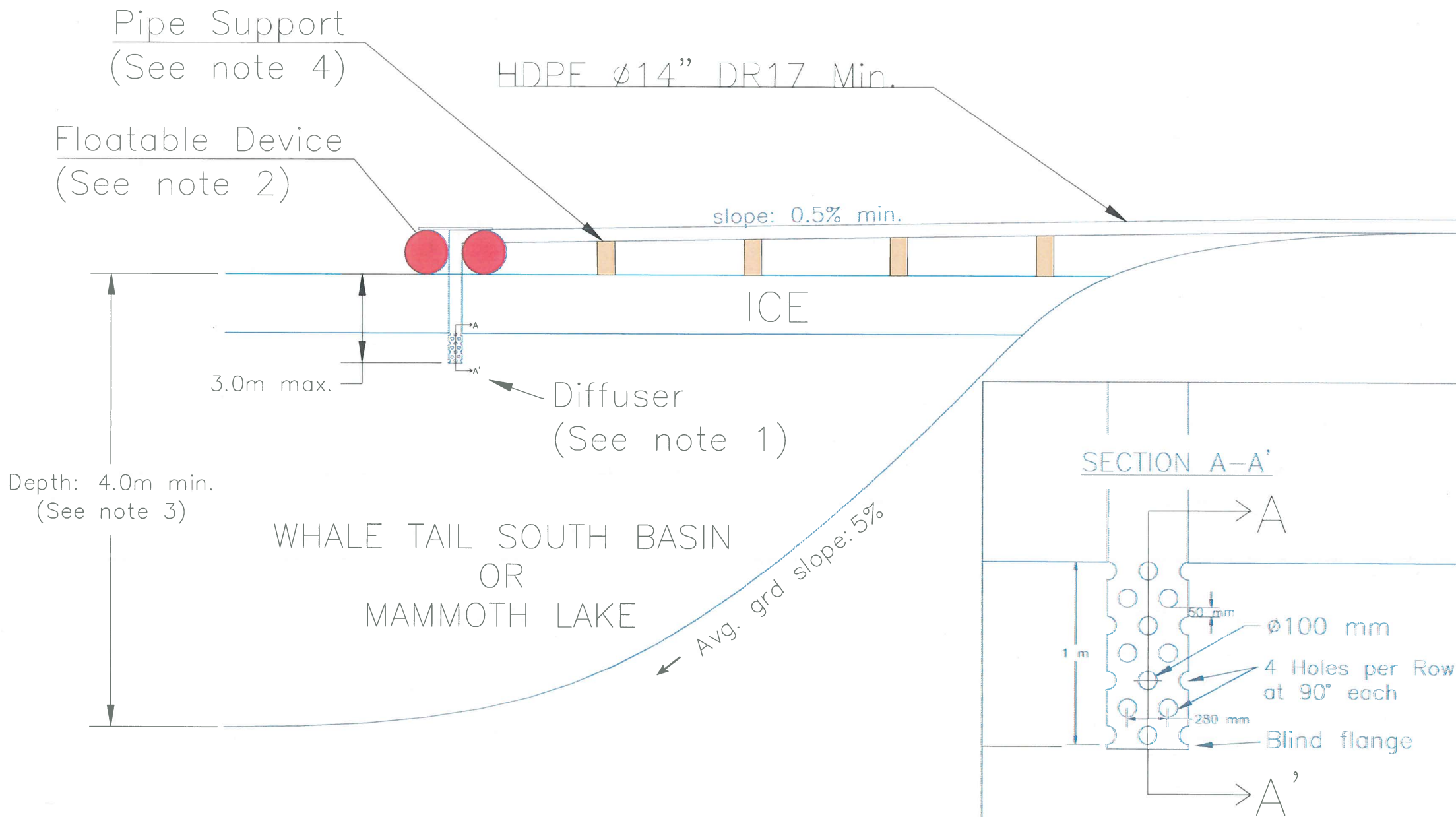


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WHALE TAIL NORTH BASIN DEWATERING
INTAKE CROSS-SECTION

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WHALE TAIL NORTH BASIN DEWATERING DIFFUSER CROSS-SECTION



KEY PLAN

GENERAL NOTES

Notes:

- 1-The diffuser is designed for 3000 m³/h and shall be installed as per drawing to prevent potential erosion and sediment suspension.
- 2-A floatable device with a buoyant force of 7300N shall be installed. The floatable device can be installed on ice as per drawing.
- 3-A minimum of 4m depth is required (corresponding to 1m depth below the diffuser) to prevent potential erosion and sediment suspension.
- 4- Quantity and spacing of the pipe support shall allow a minimum slope of 0.5%.

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WHALE TAIL NORTH BASIN DEWATERING
DIFFUSER CROSS-SECTION

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