Based on the Meadowbank equipment design, it is expected to produce for the design criteria of 500 m^3/h of feed water at 500 ppm TSS, approximately 446 m3/h of clarified water below 15 ppm TSS and 54 m^3/h of sludge at 0.5% solid.

4.2 Actiflo®

The Actiflo® clarifier uses sand ballasted settling, a high rate coagulation-flocculation-sedimentation process. In the coagulation basin, TSS are destabilized under the action of the coagulant and start to form small aggregates (also called flocs). The coagulant is a trivalent soluble metal compound, usually iron or aluminum, which will cause coagulation when it reaches a certain concentration. Once the coagulant has performed the destabilizing effect, it will precipitate as a metal hydroxide and will participate in the formation of the aggregates. Water then flows into a second tank called the injection tank. There, micro-sand and polymer are added. The polymer acts as a flocculant aid, binding the destabilized solids together with the micro-sand particles by forming polymer bridges. The micro-sand provides a large contact area for floc attachment and acts as a ballast, thereby accelerating the settling of the flocs. From the injection tank, water flows into the maturation tank where flocs formed in the previous stage agglomerate and grow into high density flocs known as micro-sand ballasted flocs. Water then overflows to the settling section of the tank, and with the help of the lamella system, a solid-liquid separation is achieved resulting in clarified water exiting from the system via a collection trough or weirs. The clarified water is monitored for pH, turbidity and flow rate prior to final discharge. The flow rate signal is also connected to a flow totalizer.

The flocs settle in a portion of the system where they are collected by a rake mechanism. A proportion of the unit's design raw water flow is continuously withdrawn from the clarifier and pumped to a hydrocyclone system which separates the micro-sand from the sludge. The recovered micro-sand is reused in the process. A small quantity of the micro-sand is not recovered by the hydrocyclones and remains within the sludge. The lost micro-sand needs to be replaced periodically by adding more to the process. After micro-sand separation, the sludge is sent to discharge location point (expected solid content from 0.5 to 3 % solid depending on TSS feed water quality).

4.3 Service Water System

The service water system consists of two (2) multimedia filters, two (2) heaters, one (1) filtered water tank and two (2) service water pumps. Service water is used in the preparation of dry chemicals and for polymer makeup systems. The coagulant and polymer require filtered heated water. Treated water from the Actiflo® is used to produce service water.

4.4 Reagents

One (1) polymer as well as a coagulant is used to treat the water that flows through the Actiflo®, each is supplied by a dosing system that is adjusted according to the influent flow rate. Treated water from the Actiflo® is used for the mixing of the reagents.

The cationic polymer used is the: Hydrex 3613. Typical dosage are 1-2 ppm.

The coagulant used is the: Hydrex 3267 (poly aluminum salt). According to the supplier, for typical dosage (50 ppm), no pH correction with sodium hydroxide is expected.

4.5 Controls

The Actiflo® Feed Pump a diesel pump working on an ON/OFF mode that allows the flow to be constant during ON mode at 444 m3/h. The flow is monitored on the feed pipe of Actiflo®

The raw water TSS analyzer (turbidity sensor) is used to monitor the water quality. An alarm is triggered when a high-high turbidity is reached. The high-high turbidity alarm value is a setting that will be determined during the commissioning phase and will depend on the quality of the water to be treated.

The effluent water TSS concentration (turbidity) and pH values are monitored continuously with in-line instrumentation. If effluent concentrations reach a set point indicating that final effluent discharge criteria may be exceeded, an alarm is sent to the Operator, who will manage the system to meet effluent criteria. A second alarm is sent to the Operator if effluent concentrations reach a second set point that is just below the final effluent discharge criteria.

Addition of the two (2) required reagents are proportional to the influent water flow. Since this flow is constantly maintained, no manual adjustment is required. If the operator has to modify the influent water flow, adjustment of the reagent dosing system will be required to maintain the target dosage rate. The reagent dosing systems are equipped with pumps that maintain a constant flow rate when running at a constant frequency. The flow can be modified by changing the electric motor frequency.

The reagent dosing system is equipped with valves and graduated cylinders allowing the Operator to measure the addition rate of the reagent using a stop watch. The Operator will determine the required flow of a specific reagent by a formula based on influent flow rate. Based on this calculation, a manual adjustment to the reagent pump will be done in order to obtain the required dosage. Initially, the formula will be based on laboratory testing and will be adjusted accordingly to the treatment plant performance. With time and experience, operation performance may be improved based on the results obtained and sharing practices with other sites such as at Meliadine.

4.6 Sludge Management

Sludge at approximately 0.5% solid will be rejected into an energy disperser pad a minimum distance of 31 m from the Whale Tail Lake shore. Sludge will be discharge on an energy dispenser to avoid erosion of the tundra. Rockfill berm will be built to reduce velocity of the effluent flow to limit erosion of the lake shore. Sludge effluent will reach Whale Tail North Basin in between the Dike and the turbidity barrier number B.

Plan of the energy dispenser and the berm is provided in Appendix E.

4.7 Batch Plant Requirement

After the reception of Licence A, Agnico Eagle (AEM) plans to build the Whale Tail Dike that will allow for the mining of the Whale Tail pit. One of the construction activities consists of installing the secant piles on the center line of the Whale Tail dike to act as the impervious layer.

The secant piles are a series of cement piles secant to each other who act as an impervious barrier in the center of the dike. They are built in advance, by means of drilling, metal casings through the dike structure and anchoring them to bedrock. Later on, the casing is filled with cement then removed. For the project, a large quantity of cement is to be produced, by a nearby batch plant, to be poured into the casings. The quantity of water required to produce the cement to fill the secant piles is an average of 126 m^3/day and a production peak of 210m^3/day. The average production rate was estimate based on a construction schedule of 76 days (from August to November 2018).

5. Pumping Station

During the Whale Tail dike construction phase of the project, the main pumping requirements are the following:

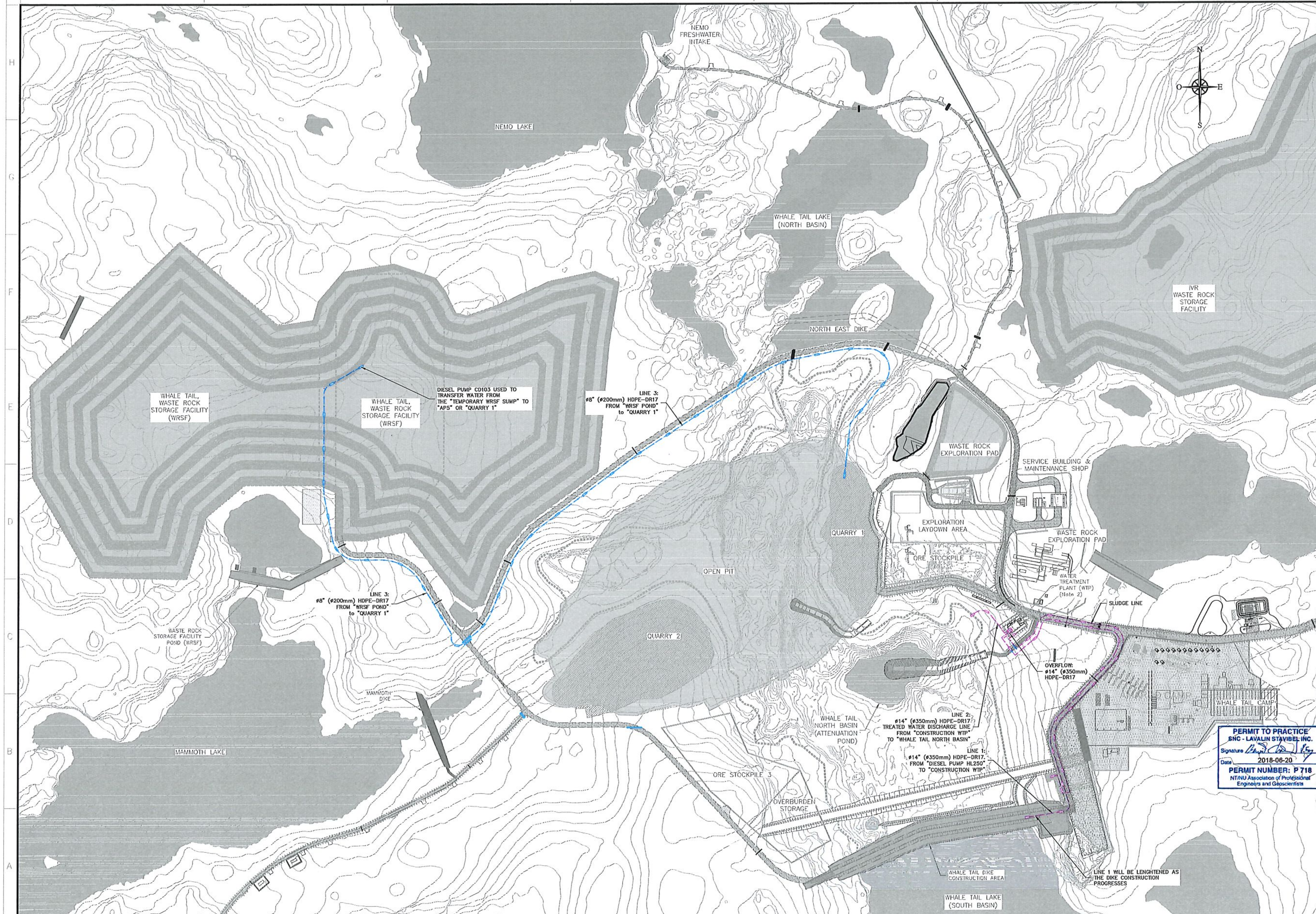
- Transfer of contact water generated from the construction work on the Whale Tail Dike to the CWTP. The water will be collected between he first turbidity curtain and the dike that encircle the work area. This water will be pumped to the Construction Water Treatment Plant (CWTP) for treatment, primarily for Total Suspended Solid (TSS) removal.
- Transfer of treated water from the CWTP to the Whale Tail North Basin.
- Transfer of sludge from the CWTP to a rock fill structure located in the energy dispenser.
- Pumping water from the North Whale Tail north basin to feed the batch plant used during dike construction.

Appendix A

Construction drawings

NO. DESSIN DRAWING NO. 651298–VIEWPORTS

FORMAT ARCHD



PLAN CLÉ
KEY PLAN

SNC·LAVALIN

Mining & Metallurgy
5500, des Galeries Blvd., bur. 200, Quebec (Quebec), Canada G2K 2E2
Telephone: (418) 621-5500, Fax: (418) 621-8887

PROJECT No	SUBDIVISION	SUBJECT	SERIAL	REV.
651298	8200	41 D6	0006	R0

NOTES GÉNÉRALES / GENERAL NOTES

Notes:
1) The following drawing provides the general routing of the pipeline on the site. The lines shown are not to scale for clarity purpose.
2) Refer to drawing 61–648–270–201 for details on the tie-ins to the Construction WTP.

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
R0	2018-06-20	ISSUED FOR CONSTRUCTION	P.C.	A.L.N.	
RB	2018-06-12	ISSUED FOR CONSTRUCTION	P.C.	A.L.N.	

REVISIONS

2018-06-20

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
648 – DEWATERING
270 – PIPING
PLAN VIEW
GENERAL PIPING SITE LAYOUT FOR CONSTRUCTION PHASE

DESSINÉ PAR DRAWN BY	STÉPHANE LANTEIGNE	DATE 2018-06-20
VERIFIÉ PAR CHECKED BY	PIERRE CARIGNAN	2018-06-20
APPROUVÉ PAR APPROVED BY	ANH-LONG NGUYEN, RENÉ LAVIOLETTE	2018-06-20
ÉCHELLE SCALE 1:5000	DATE 2018-06-08	
NO. DESSIN DRAWING NO.	61–648–270–200	
NO. PROJET PROJECT NO. 6118	REVISION R0	FEUILLE / SHT 1/1

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FILE NO. 651298–VIEWPORTS.dwg

NO. DESSIN DRAWING NO. 651298-DÉTAILS WTP

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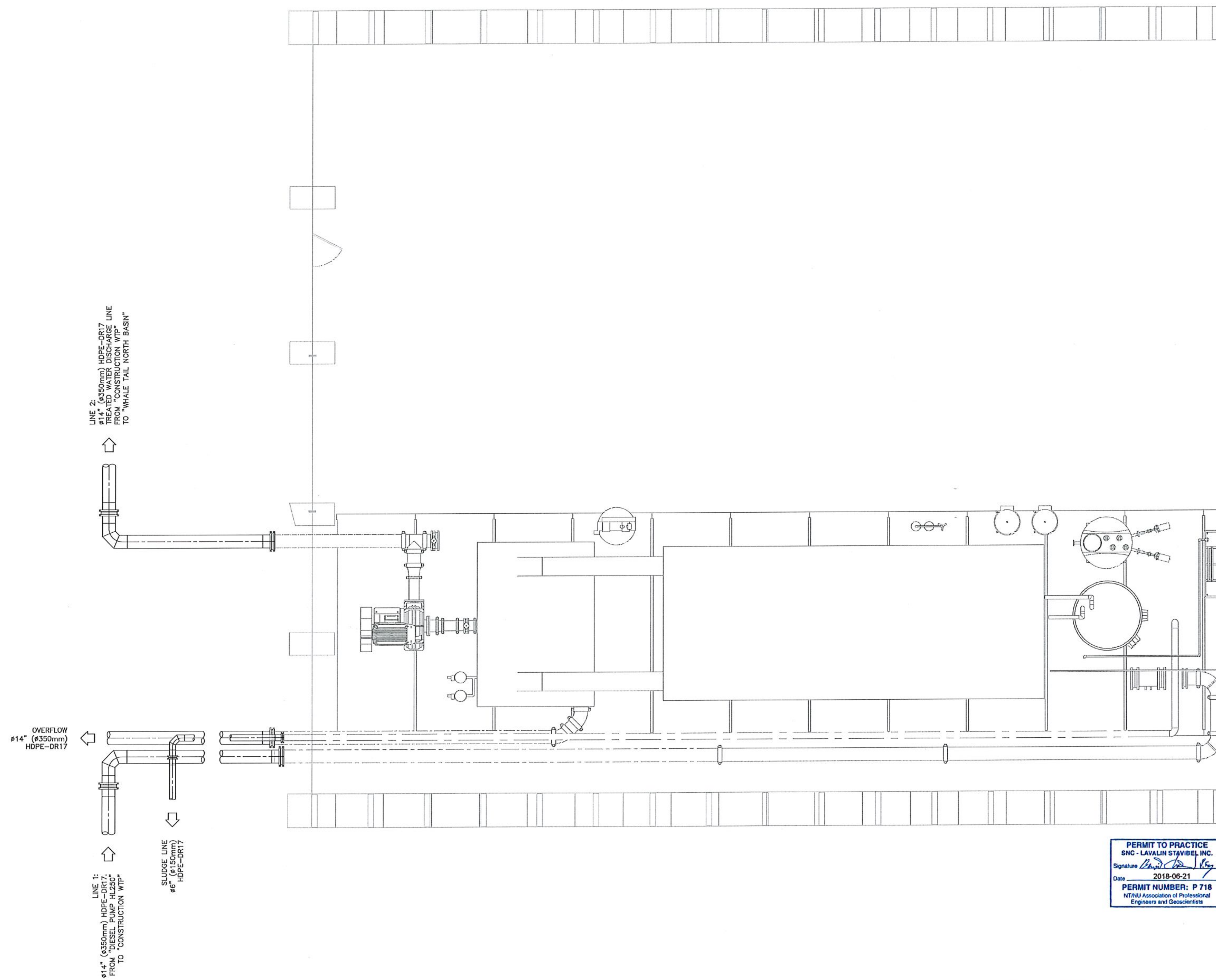

PLAN CLÉ
KEY PLAN

SNC·LAVALIN

Mining & Metallurgy
5500, des Galeries Blvd., bur. 200, Quebec (Quebec), Canada G2K 2E2
Telephone: (418) 621-5500, Fax: (418) 621-8887

PROJECT No	SUBDIVISION	SUBJECT		SERIAL	REV.
651298	8200	41	D6	0007	R0

NOTES GÉNÉRALES / GENERAL NOTES

Notes:
1) –

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
R0	2018-06-20	ISSUED FOR CONSTRUCTION	P.C.	A.L.N.	
RB	2018-06-12	ISSUED FOR CONSTRUCTION	P.C.	A.L.N.	

REVISIONS

2018-06-20

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
648 – DEWATERING
270 – PIPING
PLAN VIEW
WATER TREATMENT PLANT
TIE-INS FOR CONSTRUCTION PHASE

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2018-06-21
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

DESSINÉ PAR DRAWN BY	STÉPHANE LANTEIGNE	DATE 2018-06-20
VERIFIÉ PAR CHECKED BY	PIERRE CARIGNAN	2018-06-20
APPROUVÉ PAR APPROVED BY	ANH-LONG NGUYEN, RENÉ LAVIOLETTE	2018-06-20
ÉCHELLE SCALE 1:50	DATE 2018-06-12	

NO. DESSIN DRAWING NO. 61-648-270-201

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
6118	R0	1/1

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FILE NO. 651298-DÉTAILS WTP.dwg

NO. DESSIN / DRAWING NO. 61-693-210-200

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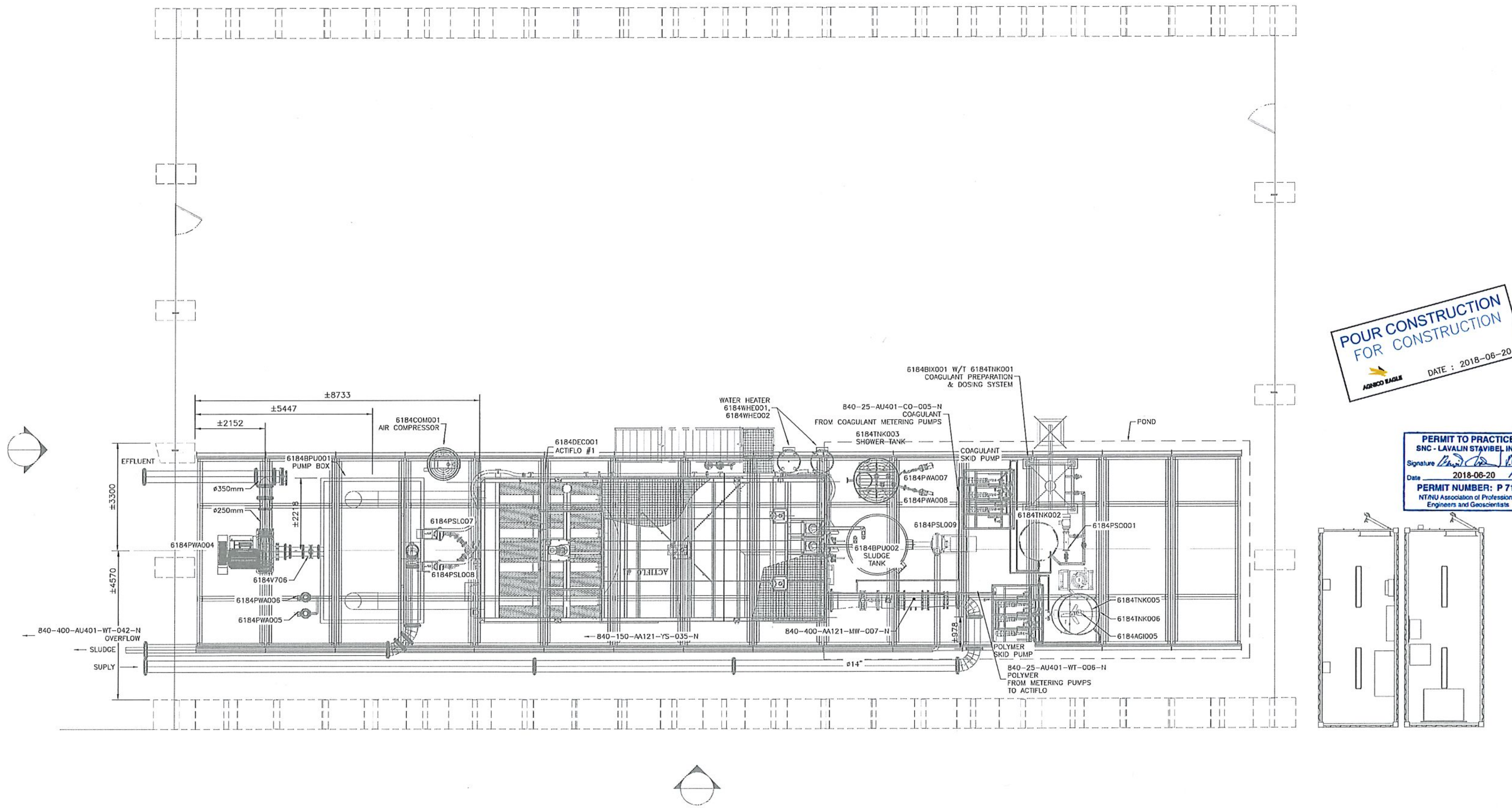
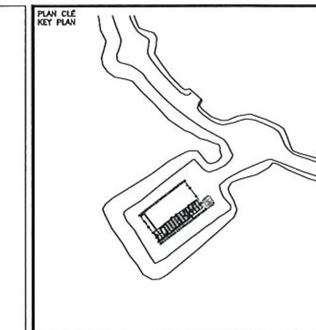


PLAN CLÉ / KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

SNC·LAVALIN

SNC-Lavalin Stavibel Inc.
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www.snclavalin.com

Project # : 644819-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2018-06-20

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2018-06-20
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2018-06-20	ISSUED FOR CONSTRUCTION	E.DEN	B.CHA	
0	2018-04-27	REQUEST FOR PERMIT	E.DEN	B.CHA	

REVISIONS

DOCUMENT SIGNÉ NUMÉRIQUEMENT

REGISTERED PROFESSIONAL ENGINEER
B CHARTRAND
LICENSEE
NT/NU
P.Eng
L3709
2018-06-20

TITRE / TITLE
AGNICO-EAGLE – WHALE TAIL
693 – FINAL WATER TREATMENT PLANT
210 – GENERAL ARRANGEMENT
LOCALISATION PLAN
WTP – ACTIFLO
RIGMAT

DESSINÉ PAR / DRAWN BY	ERIC DENONCOURT, TECH.	DATE 2018-04-27
VÉRIFIÉ PAR / CHECKED BY	ISRAEL GAGNON, P.ENG.	2018-04-27
APPROUVÉ PAR / APPROVED BY	BENOIT CHARTRAND, P.ENG.	2018-04-27
ÉCHELLE / SCALE	NTS	DATE 2018-04-27
NO. DESSIN / DRAWING NO.	61-693-210-200	
NO. PROJET / PROJECT NO.	6115	REVISION 1 — FEUILLE / SHT 1/3

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FILE NO. 61-693-210-200-R1.dwg

NO. DESSIN DRAWING NO. 61-693-210-200

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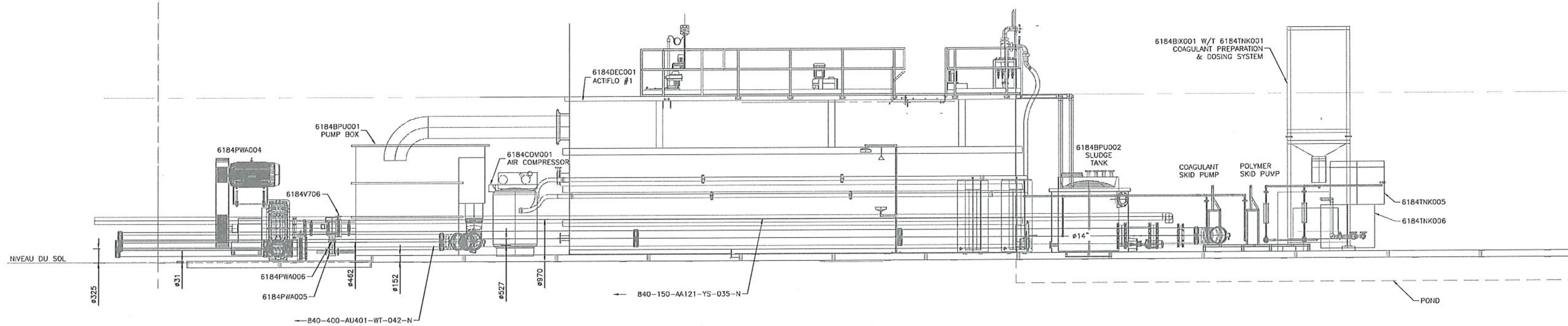
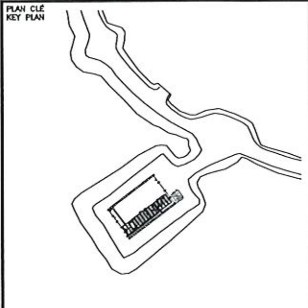


PLAN CLÉ KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2018-06-20
AGNICO EAGLE

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2018-06-20
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

SNC·LAVALIN
SNC-Lavalin Stavibel Inc.
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www.snclavalin.com

Project # : 644819-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2018-06-20	ISSUED FOR CONSTRUCTION	E.DEN	B.CHA	
0	2018-04-27	REQUEST FOR PERMIT	E.DEN	B.CHA	

REVISIONS

DOCUMENT SIGNÉ NUMÉRIQUEMENT

REGISTERED PROFESSIONAL ENGINEER B CHARTRAND LICENSEE NT/NU 1709
2018-06-20

TITRE / TITLE
AGNICO-EAGLE – WHALE TAIL
693 – FINAL WATER TREATMENT PLANT
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APPROUVÉ PAR APPROVED BY	BENOIT CHARTRAND, P.ENG.	2018-04-27
ÉCHELLE SCALE NTS		DATE 2018-04-27
NO. DESSIN DRAWING NO.	61-693-210-200	
NO. PROJET PROJECT NO. 6115	REVISION 1	FEUILLE / SHT 2 / 3

AE-CART-ARCH D

FILE NO. 61-693-210-200-R1.dwg

NO. DESSIN DRAWING NO. 61-693-210-200

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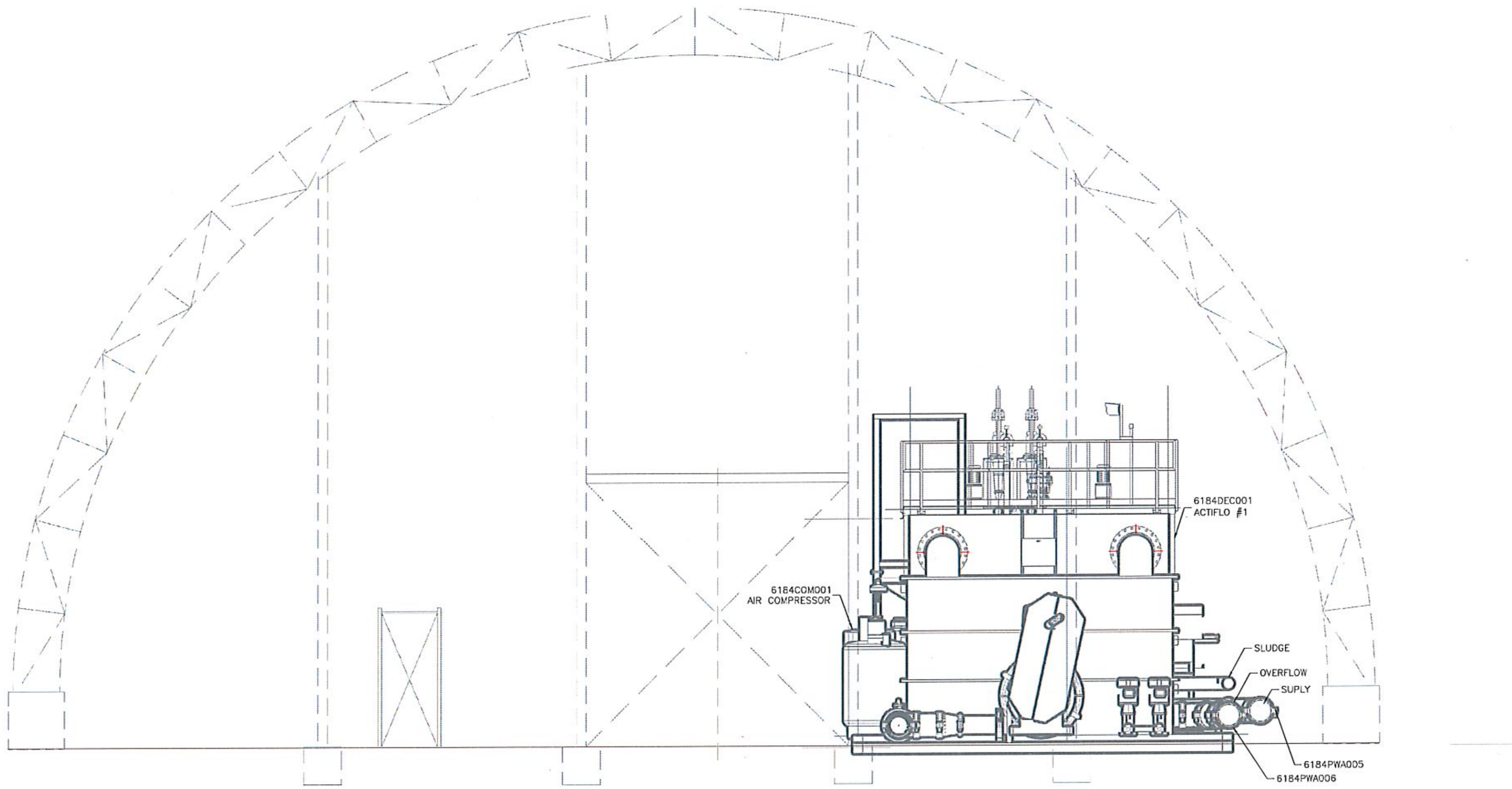

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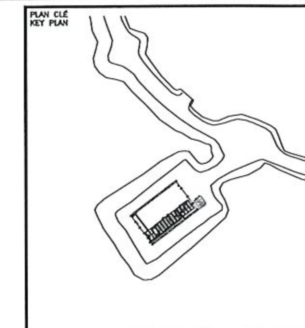

NOTES GÉNÉRALES / GENERAL NOTES

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DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2018-06-20	ISSUED FOR CONSTRUCTION	E.DEN	B.CHA	
0	2018-04-27	REQUEST FOR PERMIT	E.DEN	B.CHA	

REVISIONS

DOCUMENT SIGNÉ NUMÉRIQUEMENT

REGISTERED PROFESSIONAL ENGINEER B. CHARTRAND LICENSEE NT/NU P.Eng L3709

2018-06-20

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE DATE : 2018-06-20

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2018-06-20
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

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ÉCHELLE SCALE	NTS	DATE 2018-04-27

NO. DESSIN DRAWING NO. 61-693-210-200

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
6115	1	3 / 3

AE-CART-ARCH D

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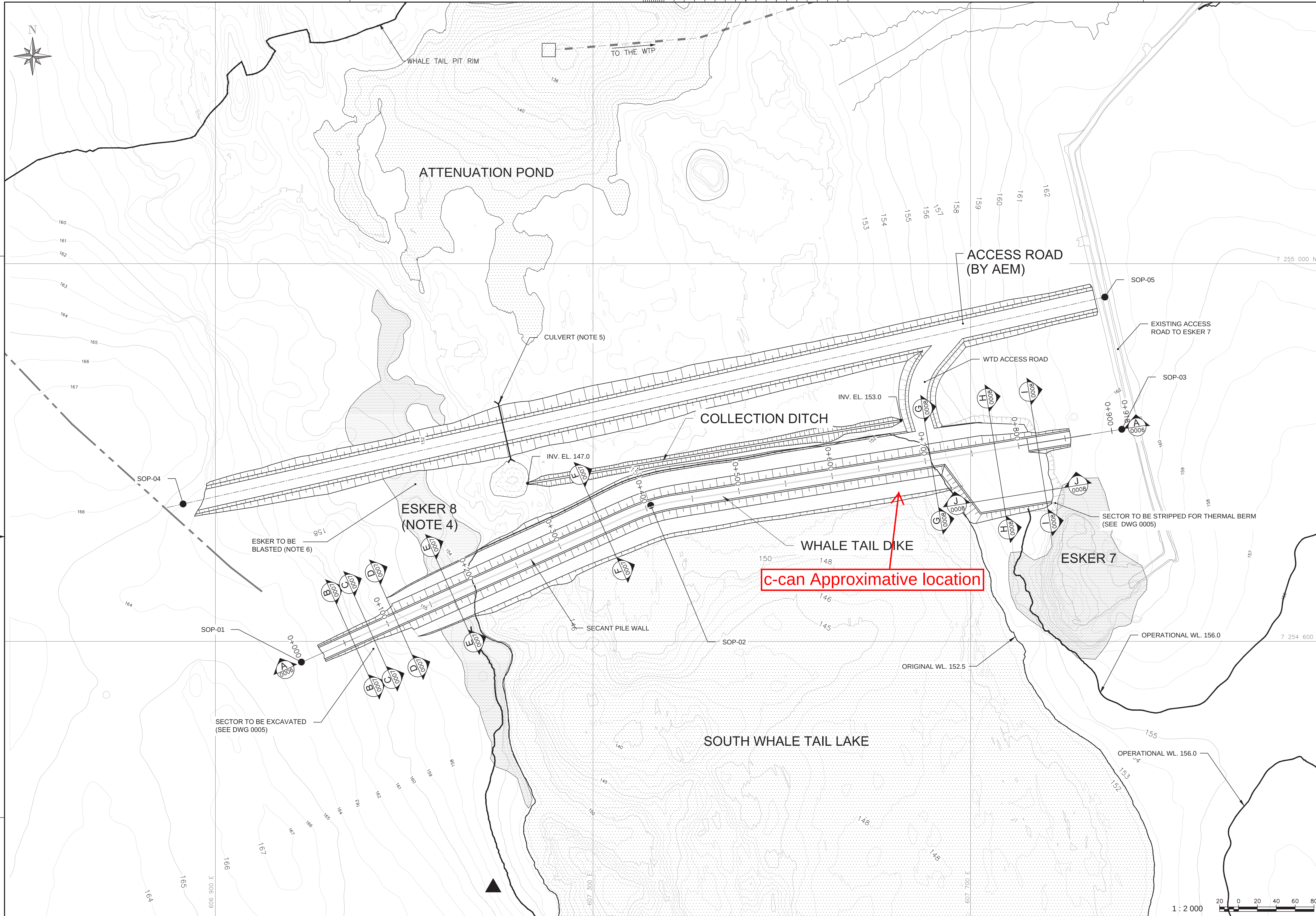

LEGEND

Plan View

(dashed line)	PROPOSED ROAD
(line)	OPERATIONAL WATER ELEVATION
(culvert symbol)	CULVERT
● SOP-01	SETTING OUT POINTS

SETTING OUT POINTS			
NAME	STA.	EASTING	NORTHING
SOP-01	0+000	606 991.1	7 254 578.1
SOP-02	0+405	607 361.2	7 254 744.1
SOP-03	0+911	607 860.3	7 254 824.6
SOP-04	---	607 865.7	7 254 745.5
SOP-05	---	607 842.3	7 254 964.6

NOTES:

1. THIS DRAWING ILLUSTRATES THE PLAN LOCATION OF WHALE TAIL DIKE AFTER CONSTRUCTION AND DEWATERING.
2. ALL ELEVATIONS AND COORDINATES ARE IN METERS.
3. WORKS SHOWN ON THIS DRAWING SHALL BE EXECUTED IN ACCORDANCE WITH THE APPLICABLE TECHNICAL SPECIFICATIONS.
4. LIMITS OF ESKERS ARE APPROXIMATE. THE CONTRACTOR SHALL MAKE ITS OWN INTERPRETATION OF ESKER LIMITS BASED ON SITE VISITS AND FIELD INVESTIGATIONS. MOST OF THE GRANULAR MATERIAL IN ESKER 7 HAS BEEN EXPLOITED. ESKER 8 TO BE EXCAVATED TO EL. 153.0 AND STOCKPILED PRIOR TO WHALE TAIL DIKE CONSTRUCTION.
5. CULVERT TO BE INSTALLED AFTER DEWATERING ON THE DOWNSTREAM SIDE OF WHALE TAIL DIKE. DETAILS TO BE DETERMINED.
6. THE EXTENT OF THE ESKER TO BE BLASTED WILL BE DEFINED AND DONE BY AEM.

ISSUE REGISTER

ISSUE No	REV.	DATE (Y/M/D)	PURPOSE OF ISSUE
02	PB	2017-12-22	ISSUED FOR CLIENT COMMENTS
01	PA	2017-12-05	ISSUED FOR INTERNAL COMMENTS

REFERENCE DRAWINGS

No	
4	6112-000-210-001_RC RECIEVED ON 2017-03-16
3	AMARUQ_UTMWF_03132017 REVCEIVED ON 2017-03-14
2	AMARUQ TOPOGRAPHY RECEIVED ON 2015-09-15
1	Amaruq Baseline Studies, Potentially Environmentally, Significant Features. Project: DA14-053-04. Dougan & Associates.

PROFESSIONAL SEAL

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PREPARATION	APPROVAL
DESIGNED A. ARBAIZA	PROJECT DISCIPLINE ENGINEER G. HAILE, ENG.
DRAWN D. LAN	PROJECT ENGINEERING MANAGER Y. JALBERT, ENG.
CHECKED Y. JALBERT / L. MACPHIE	CLIENT
DATE 2017-09-19	
SCALE AS SHOWN	

CLIENT: AGNICO EAGLE

PROJECT: AGNICO EAGLE – MEADOWBANK DIVISION AMARUQ PROJECT

TITLE: WHALE TAIL DIKE PLAN VIEW

PROJECT No	SUBDIVISION	SUBJECT	SERIAL	REV.
651298	2500	4G DD	0004	PB

A1-HOR-FRAME-EN (SI)

LAST SAVE: 2017/12/21 – 5:40pm
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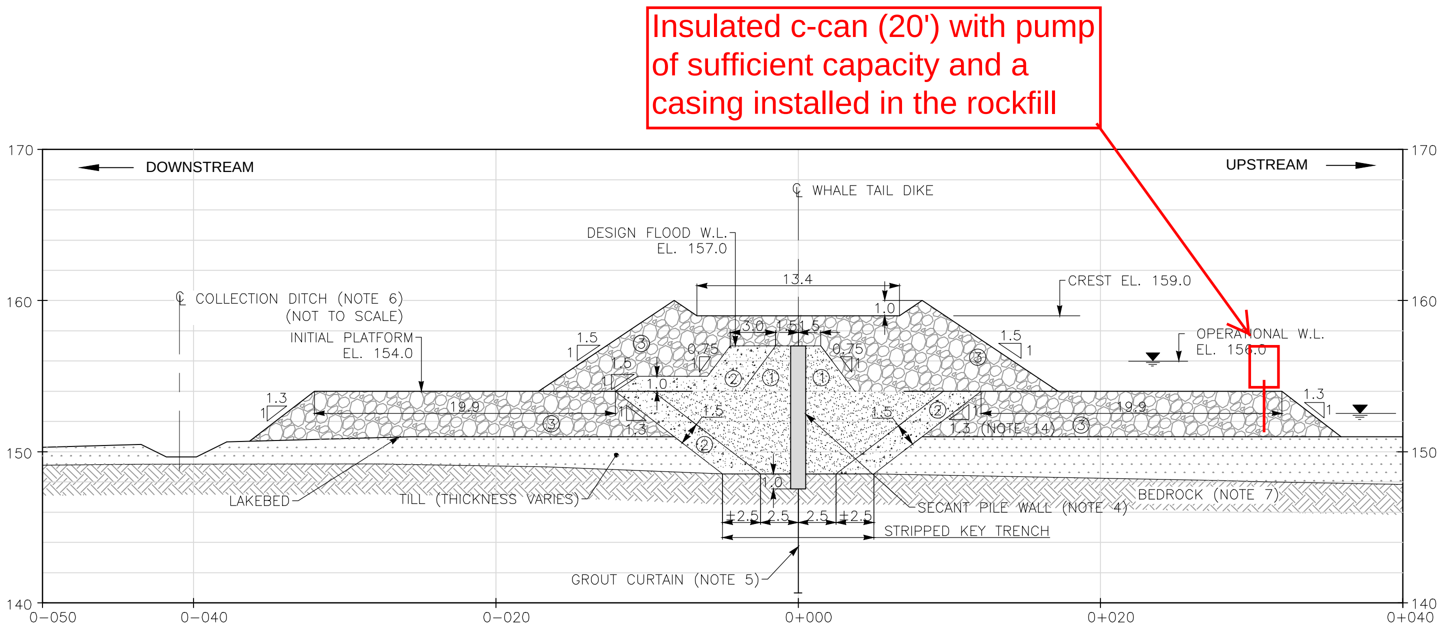

Insulated c-can (20') with pump of sufficient capacity and a casing installed in the rockfill
DOWNSTREAM
UPSTREAM
℄ WHALE TAIL DIKE
DESIGN FLOOD W.L. EL. 157.0
CREST EL. 159.0
℄ COLLECTION DITCH (NOTE 6) (NOT TO SCALE)
INITIAL PLATFORM EL. 154.0
OPERATIONAL W.L. EL. 156.0
LAKEBED
TILL (THICKNESS VARIES)
BEDROCK (NOTE 7)
SECANT PILE WALL (NOTE 4)
STRIPPED KEY TRENCH
GROUT CURTAIN (NOTE 5)
1.3 (NOTE 14)
13.4
19.9
0−050
0−040
0−020
0+000
0+020
0+040