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Building what matters

CONSTRUCTION SUMMARY REPORT CWTP and AsWTP

Agnico Eagle Mines Ltd

Report

653281-0004-40ER-0004_0

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Authorized Signatory:

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Mécanique industriel

EXECUTIVE SUMMARY

SNC Lavalin Stavibel inc was retained by Agnico Eagle Mines Limited to prepare a construction summary (as-built) report for the Water Treatment Plants of the Whale Tail Gold Project, Nunavut. SNC Lavalin Stavibel inc previously prepared the construction drawings and specifications as well as the design report for the Construction Water Treatment Plant (CWTP) and the Arsenic Water Treatment Plant (AsWTP).

Although SNC Lavalin Stavibel inc. was involved in the construction of CWTP and The AsWTP, the information presented in this report was provided in part by Agnico Eagle.

The construction of the CWTP was completed in July 2018. The construction of the AsWTP was completed in June 2019. The construction monitoring and quality assurance was managed by Agnico Eagle.

This report summarizes the construction as-built information for the CWTP and AsWTP.

Table of Contents

1. Introduction

This document presents the Construction and Arsenic Water Treatment Plant construction summary report required by the Water Licence 2AM-WTP1826 Part D Item 15. As required by Water Licence Schedule D, this report contains the final design and construction drawings, a summary of construction activities including photographic recorded during and after construction. The as-built drawings, detailed explanation of field decision to reflect any deviations from the original construction drawings/plans and how such deviations may affect performance of engineered structures, a discussion of the mitigation measures implemented during construction and its effectiveness are also presented.

2. Construction Summary

2.1 Site location plan

Agnico Eagle is developing the Whale Tail Project 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, approximately 55 km north of the Meadowbank mine. The Meadowbank mine is accessible from Baker Lake, located 70 kilometers to the south.

2.2 CWTP and AsWTP characteristics

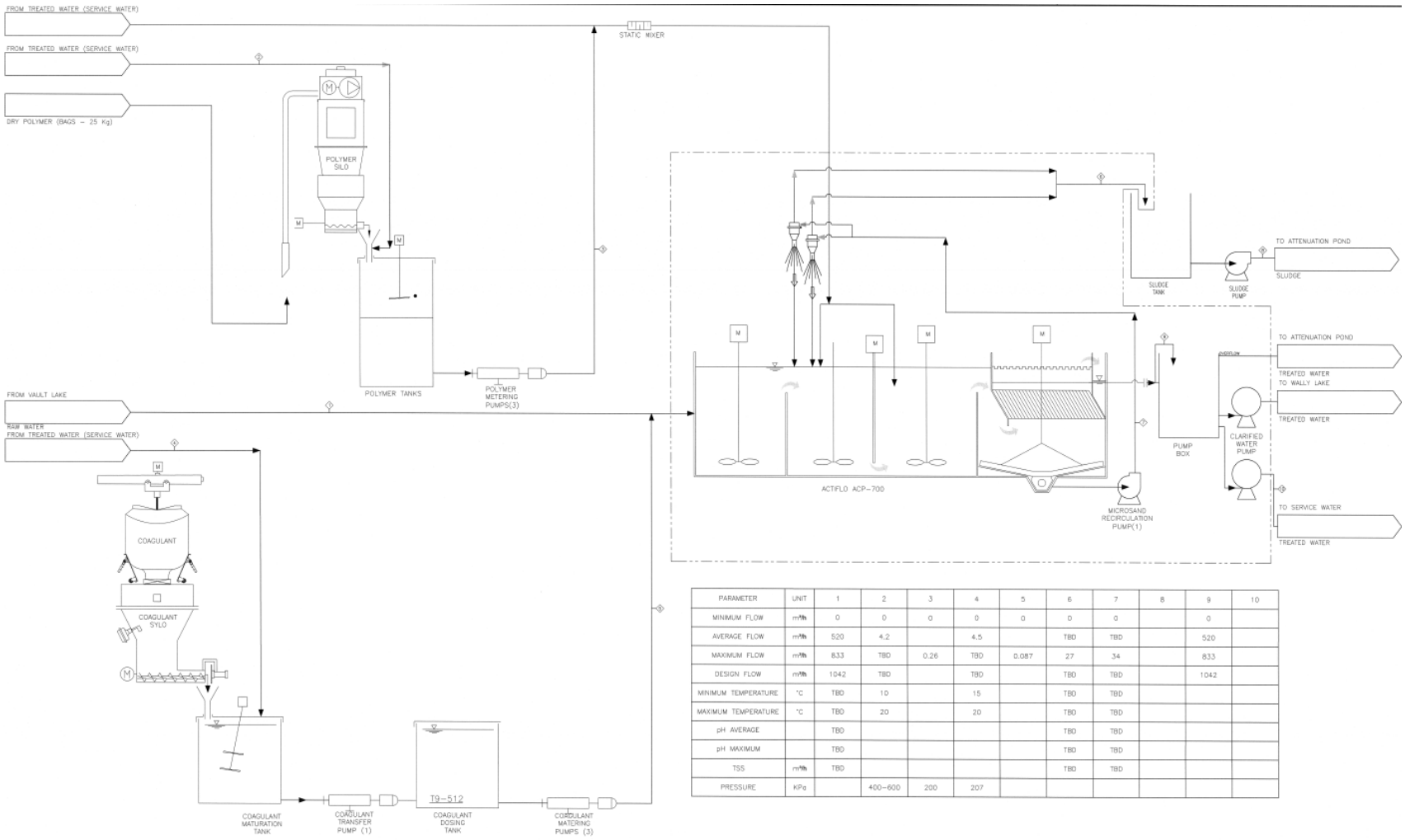
2.2.1 CWTP

The purpose of the CWTP (ACP-700R) was to remove Total Suspended Solids (TSS) from the influent water pumped from Whale Tail Lake, close to the dike construction. The equipment had an operational range of approximately 6,250 to 19,200 m^3/d. CWTP was used during the dike construction, in July and August 2018.

The equipment chosen for the CWTP was the Actiflo® used in the past at Meadowbank mine. The plant was disassembled and reassembled at Whale Tail site. The Actiflo® ACP 700 R as an operational range in the same order of magnitude that what is required for the present project (max capacity of approximately 800 m^3/h).

The main treatment component consists of one Actiflo® clarifier with two (2) recirculation lines and two (2) hydrocyclones. The Actiflo® can be operated with one (1) or two (2) lines, depending on the influent flow rate and Total Suspended Solids (TSS) content. The hydrocyclone overflow was sent to the discharge location 31 m of the shore. The TSS where passively removed from the water by percolating onto the rock fill structure located in the energy dispenser and water flowed by gravity back into Whale Tail Lake. The Actiflo® overflow is designed to meet the final effluent discharge criteria for TSS concentrations. The final effluent was monitored for pH and turbidity, which where monitored continuously. The flow rate was measured continuously in the feed pipe of the Actiflo®.

The CWTP general flow diagram is illustrated in Figure 1. The following sections describe the CWTP components.



PARAMETER	UNIT	1	2	3	4	5	6	7	8	9	10
MINIMUM FLOW	m³/h	0	0	0	0	0	0	0		0	
AVERAGE FLOW	m³/h	520	4.2		4.5		TBD	TBD		520	
MAXIMUM FLOW	m³/h	833	TBD	0.26	TBD	0.087	27	34		833	
DESIGN FLOW	m³/h	1042	TBD		TBD		TBD	TBD		1042	
MINIMUM TEMPERATURE	°C	TBD	10		15		TBD	TBD			
MAXIMUM TEMPERATURE	°C	TBD	20		20		TBD	TBD			
pH AVERAGE		TBD					TBD	TBD			
pH MAXIMUM		TBD					TBD	TBD			
TSS	m³/h	TBD					TBD	TBD			
PRESSURE	KPa		400–600	200	207						

Figure 1 : CWTP Overall Process Flow Diagram

2.2.1.1 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).

2.2.1.2 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.

2.2.1.3 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 is 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.

2.2.1.4 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 m^3/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 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 must 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 to obtain the required dosage. Initially, the formula will be based on laboratory testing and will be adjusted accordingly to the treatment plant performance.

2.2.1.5 Sludge Management

WTP rejected sludge at approximately 0.5% solid where disposed appropriately.

2.2.2 AsWTP

The purpose of the AsWTP (using Actiflo ACP-700R) is to remove Total Suspended Solids (TSS) and Arsenic (As) from the influent water. The equipment has an operational range of 6,250 m^3/d. to 38,400 m^3/d.

AsWTP is composed mainly of two treatment lines:

- One (1) As removal reactors used for pH adjustment, As oxidation, As precipitation.
- Two (2) Actiflo® treating the exit of the As removal reactor, with sludge recirculation.
- A sludge dewatering chain with two (2) centrifuges (recirculating extracted water into the Actiflo®).

The AsWTP general flow diagram is illustrated in *Figure 2*. The following sections describe the AsWTP components.

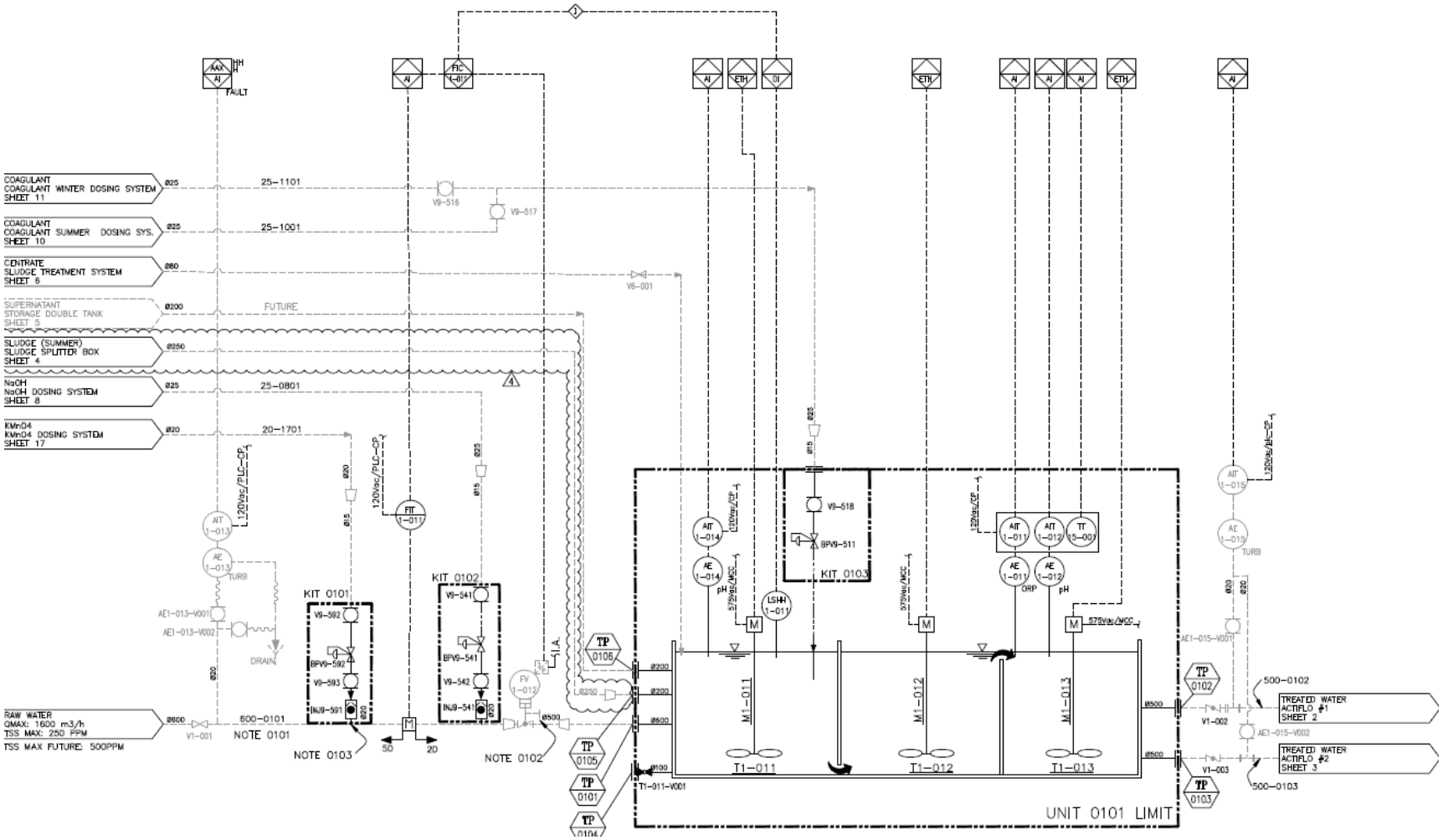


Figure 2 : —AsWTP Flowsheet (summer operation)—As removal reactor

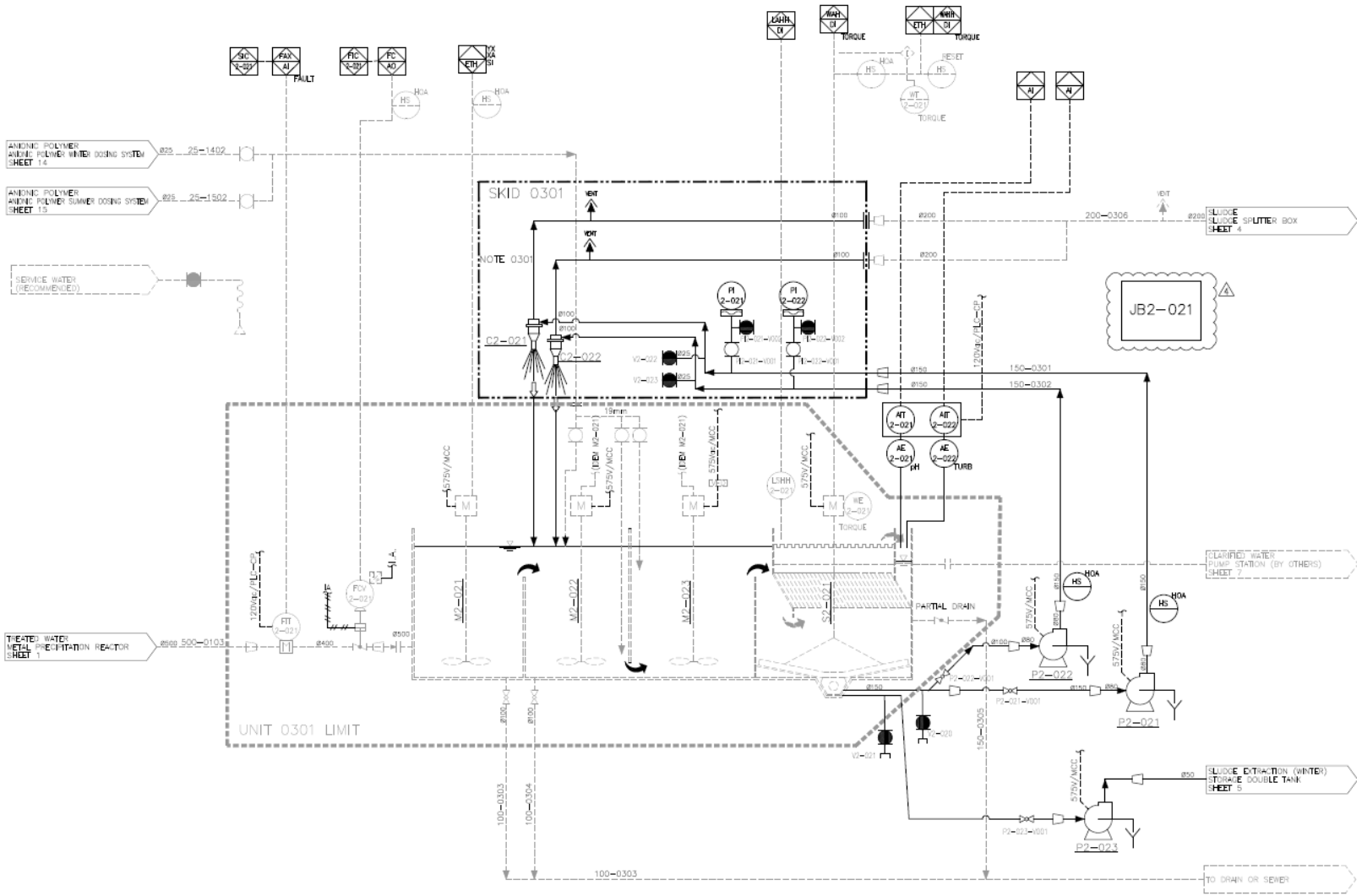


Figure 3 : —AsWTP Flowsheet (summer operation)—Actiflo

2.2.2.1 Arsenic Oxidation

The As present in water can be found under two main forms: As (III) and As (V). Depending on the redox potential of water in the Whale Tail Attenuation Pond, As (III) will be oxidized into As (V). Before entering the Arsenic Removal Reactor, a KMnO4 (potassium permanganate) solution will be added to oxidize the As (III) to As (V).

2.2.2.2 pH Adjustment

To precipitate As, ferric sulfate will be added. This reagent acidifies water and if the feed water has insufficient alkalinity, caustic soda will be added to adjust the pH before the water enters the Arsenic Removal Reactor. A pH of 7 is targeted for As uptake.

2.2.2.3 Arsenic Co-precipitation

The influent will be sent to the Arsenic Removal Reactor. In this reactor (RX75-3 from Veolia), the influent will be mixed with ferric sulfate (Fe2 (SO4)3) and recycled sludge to produce a slurry. The ferric sulfate forms a floc of ferric hydroxide (Fe (OH)3) which acts both as a bridge to tie colloidal particles together and as an active surface which forms surface complexes with many metals, such as As. The ferric sulfate will also lower the pH in the vicinity of 7.0 where the surface complexation is optimal for As (V).

The volume of the reactor is 176 m3.

A portion of the sludge collected in the Actiflo® are recycled in the Arsenic Removal Reactor to allow a longer contact time between As and iron hydroxide sludge (rate of 4:1).

According to Veolia estimation, the retention time into the Arsenic removal reactor will be approximately 3.5 min which will allow for As uptake on ferric hydroxides.

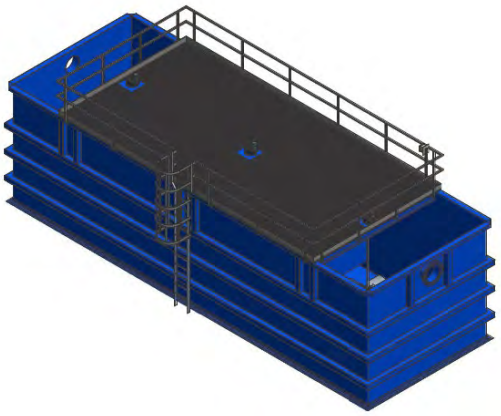


Figure 4 : As Removal Reactor

2.2.2.4 TSS Removal

The slurry from the Arsenic Removal Reactor will flow to the two (2) Actiflo® (ACP-700R). The proposed Actiflo® are designed to remove TSS from the raw water (assumption is that raw water has 500 ppm TSS). To optimize the clarification step (settling rate of 60 m/h), the maximum flow for each Actiflo® should be 800 m^3/h to respect the settling rate (60 m/h).

Actiflo® are sand-ballasted settling units with a high-rate coagulation/flocculation/sedimentation process that utilizes microsand as a seed for floc formation. The microsand provides a surface area that enhances flocculation and acts as a ballast or weight. The resulting floc settles very fast, allowing for compact clarifier designs with high overflow rates and short retention times. The use of microsand also permits the unit to perform well under dramatically changing flow rates without impacting final effluent quality.

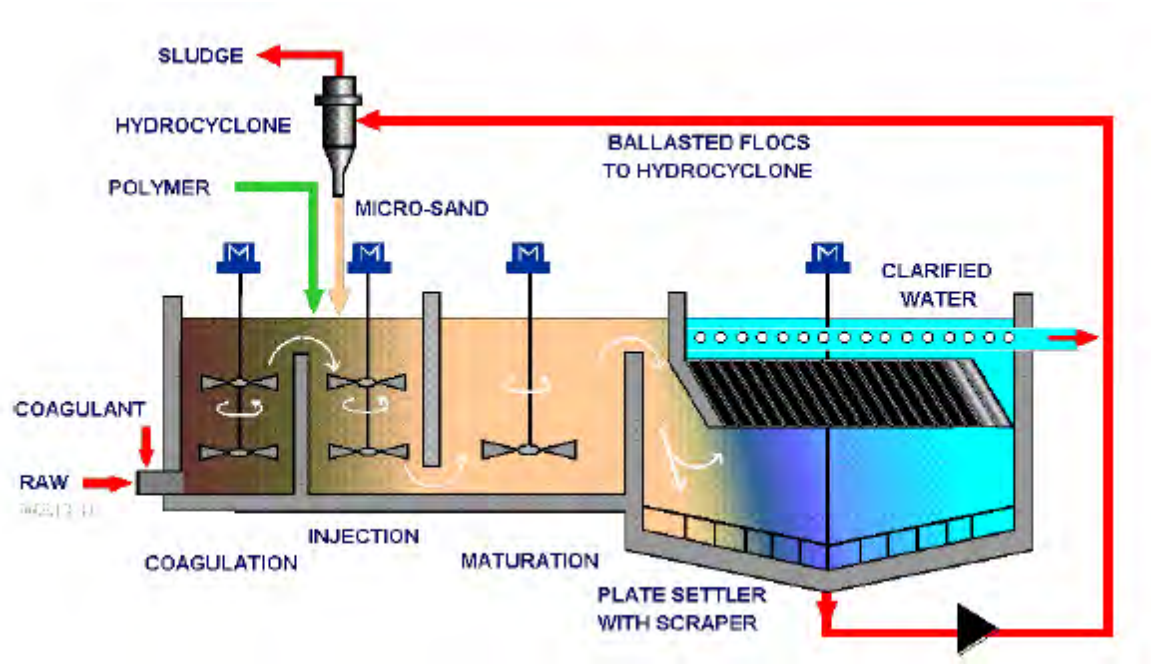


Figure 5 : *Actiflo® Process*

The slurry flows to the first basin, the coagulation chamber, where the reaction is optimized. The coagulated water then overflows to a second tank section called the injection tank. There, the microsand and flocculent aid polymer are added. The microsand provides a large contact area for floc attachment and acts as ballast, thereby accelerating the settling of the flocs. The flocculent aid

polymer binds the destabilized suspended solids to the microsand particles by forming polymer bridges. From the injection tank, the water underflows to a third tank section called the maturation tank. In this section, the microsand and sludge flocs agglomerate and grow into high-density flocs known as microsand ballasted flocs.

From the maturation zone, the water overflows to the settling section of the tank. In the settling zone, the microsand ballasted flocs settle quickly to the bottom of the unit. In the settling zone, the settling efficiency is further increased by the use of the lamella tubes. The clarified water exits the system via a series of collection troughs or wires. The clarified water is monitored for turbidity.

The sand-sludge mixture settles to the bottom of the clarifier. Scrapers force the sludge collected at the bottom of the clarifier into a centre cone from which it is continuously withdrawn and pumped to a hydro cyclone where the sludge and microsand are separated by centrifugal force. After separation, the higher density microsand is discharged from the bottom of the hydro cyclone and reinjected into the process for reuse. The lighter density sludge is discharged from the top of the hydro cyclone and directed to the sludge storage tank and recirculated into the As removal reactor or to the sludge management facilities.

To maintain a good extraction of sludge and good sand recirculation, the recirculation pumps that where existing on both Actiflo® where upgraded to provide a sufficient recirculation pumping rate. For this project, extraction pumps need to be 70 m^3/h each, resulting in an upgrade of the recirculation line and Hydro cyclone (U10-gMAX-3037, Krebs).

The excess of sludge will then be sent to the centrifuges (expected solid content 3%).

2.2.2.5 Sludge Management Strategy

The last step of the AsWTP system is the sludge dewatering, which aims to reduce sludge volume and produce a solid cake. The sludge from the Actiflo® is sent to a holding tank. As presented previously, a recirculation pump is added to recycle a portion of the sludge in the Arsenic Removal Reactor. The recycled sludge increases the reagent efficiency and promotes solid growth and thickens the sludge therefore avoiding the need to add a thickener equipment before the dewatering stage. The remaining sludge is pumped to a sludge storage Tank which will feed the centrifuges Feed as shown on Figure 5a.

The sludge from the sludge storage Tank is pumped in two (2) centrifuges (Andritz D4L) in parallel, capable of producing a cake of about 25 ± 5% solid content. The sludge dryness is dependent on the dewatering method, TSS content in the influent, flow rate and nature of the solid particles. In

addition to the solids included in raw water that enters the AsWTP, the sludge will contain adsorbed As as well as ferric hydroxides from the coagulant addition.

The centrifuges (Figure 5b) are fed continuously with constant solid content slurry. A cationic polymer is injected in the feed pipe to increase the cake dryness. The separation between liquid and solid is achieved using centrifugal forces 500 to 3000 times the gravity force. Extracted water contains cationic polymer and can be recycled back upstream of the water treatment plant. The centrifuge is automatic such that minor manual operation is required.

The cake produced by the Centrifuges go into a trailer, while the centrifuge filtrate is returned to the Arsenic Removal Reactor.

The volume of sludge will be 2–4 m^3/h approximately (depending on the TSS concentration which can vary from 250 to 500 ppm).

The cakes will be disposed at the WRSF.

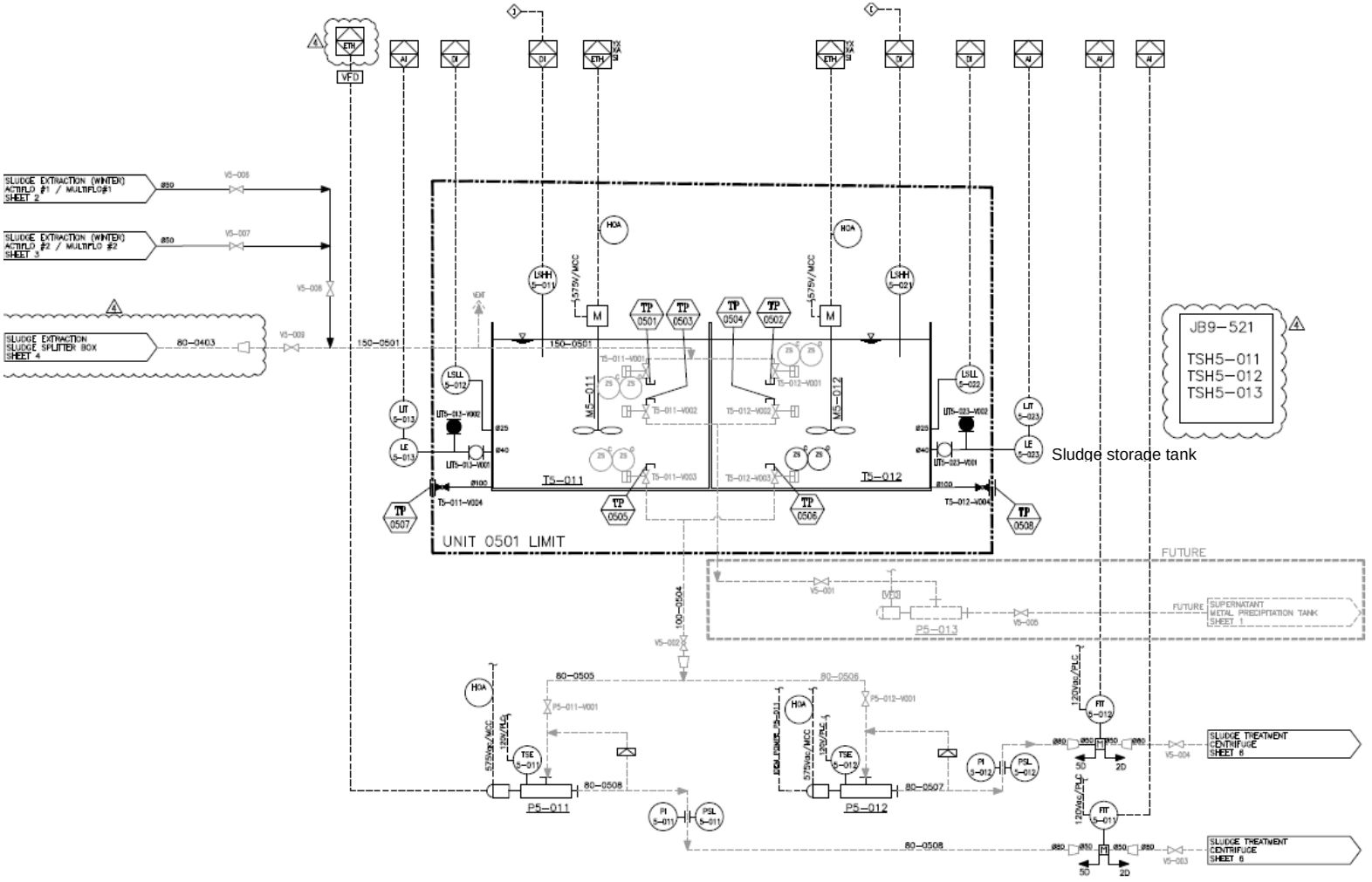


Figure 6 : AsWTP Sludge dewatering Flowsheet—sludge storage tank

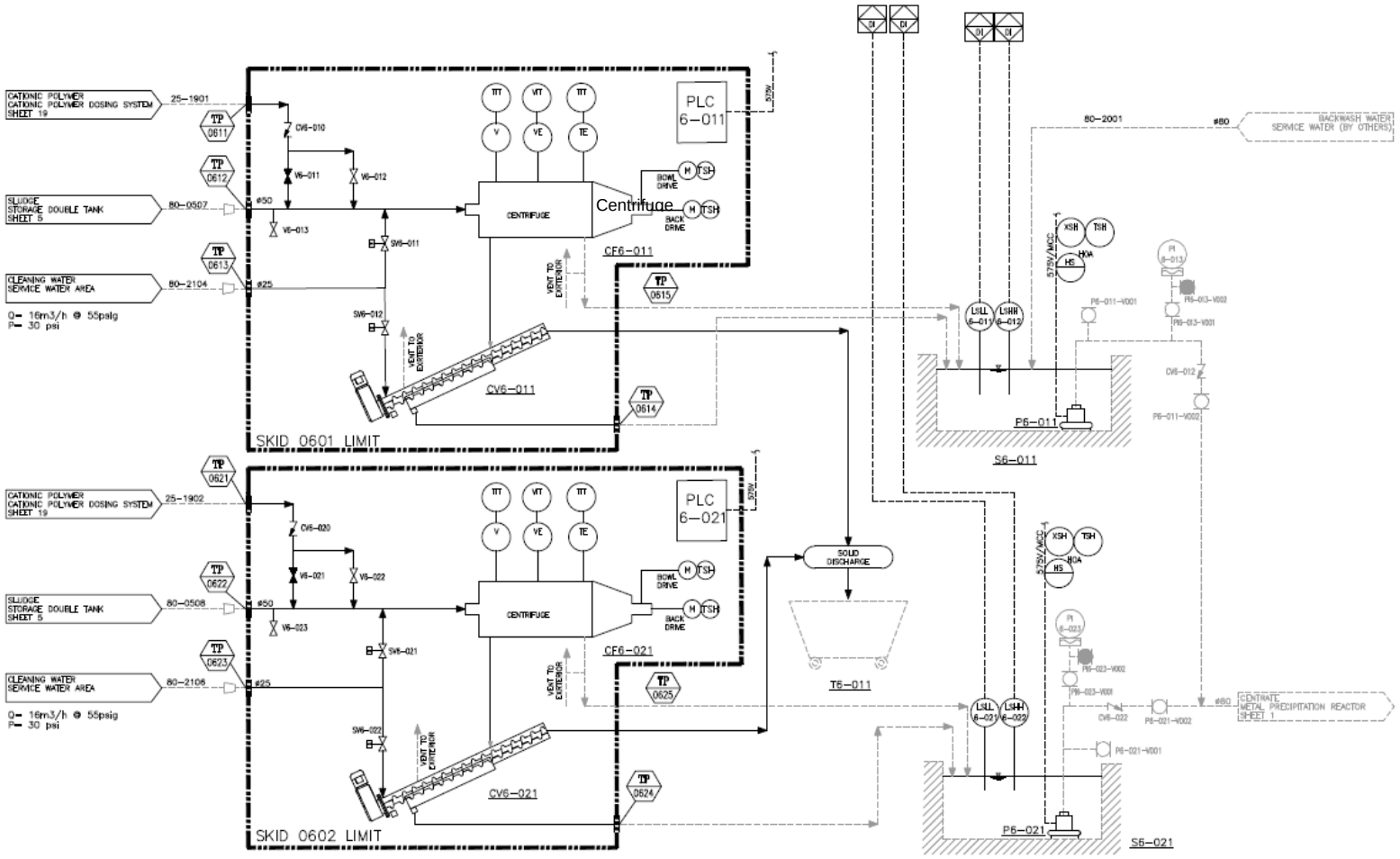


Figure 7 : —AsWTP Sludge dewatering Flowsheet showing both centrifuge

2.2.2.6 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 reagent solutions made of dry chemicals, and for polymer makeup systems. Coagulant and polymer require filtered heated water. Treated water from the AsWTP is used to produce service water.

2.2.2.7 Reagents

The main chemicals used in the AsWTP are presented below (MSDS sheets are available in Appendix A):

- **$KMnO_4$**

The potassium permanganate will oxidize the arsenic trivalent (As (III)) to produce arsenic pentavalent (As (V)) that is simpler to precipitate and separate from water. The selected oxidant to oxide As is Hydrex 9571 which will be delivered in a small bag of 25 kg (dosage 1 mg/l). The dosage is performed using a mechanical diaphragm metering pump.

- **Coagulant**

The selected coagulant is Hydrex 6266, a ferric sulfate coagulant. It will act as a sorbent for As. It will be received in bulk bags (approximately 600 kg). The dosage will be performed using a mechanical diaphragm metering pump. Sulfuric acid is required for the solution preparation. The dosage of coagulant will be set at 30 mg/l.

- **Sodium Hydroxide**

The coagulant consumes alkalinity from the water. If the water doesn't contain enough alkalinity, an alkali source, such as sodium hydroxide, is added. The sodium hydroxide will be received in 25 kg bags. The expected dosage is 10–15 mg/l.

- **Polymer**

The use of a flocculation agent is essential for a metal removal process. Polymer enables the attachment of the floc onto the microsand and as such is required to obtain good process performance. The polymer will be Hydrex 6105 at a dosage rate of 1 mg/L. It is a solid, anionic polymer used to enhance flocculation and will be received in 25 kg bags. One existing Hydra-Pol automatic preparation system will be supplied to prepare a 0.2% solution. The water used for the polymer preparation is filtered at 10–20 °C. The automatic polymer preparation/dilution system is an automatically controlled batching unit capable of preparing polymers. The system utilizes sequential batching from a high shear first stage wetting system into a mix tank with a low shear mixer.

A second automatic polymer preparation system is required for the sludge dewatering step. The polymer type (cationic type Hydrex 3613/6324) dosage will be approx. 8 g/kg TSS.

- **Microsand**

The presence of microsand allows:

- An increase in the probability of encounters between particles;
- An increase in the exchange surface and consequently in the adsorption capacity compared to conventional flocculation;
- The formation of solid and dense ballasted flocs which will resist an energetic stirring followed by rapid settling.

These properties lead to very short residence times for flocculation as well as settling thus optimizing the process. The microsand is recycled in the process and the equivalent of approximately. During operation, it is estimated that 1g of microsand per cubic metre of raw water will be lost in the sludge. Therefore, 1 g of microsand per cubic metre of raw water will be added. The microsand will be supplied in 25 kg bags and will be added manually to the Actiflo® as required, approximately once or twice a week (the dosage of sand is not continuous but by batch).

Every spring, to convert the Multiflo® back to Actiflo®, 5000 kg of Actisand™ will need to be added.

- **Sulphuric Acid**

Sulphuric acid is used for ferric sulfate preparation. Sulphuric acid will be received in bulk containers of 1 m^3 capacity at 93% concentration. The product will be used as is and the dosage is done in using mechanical diaphragm metering pumps (7 mg/l approximately).

2.3 Drawings and photographs

For both CWTP and AsWTP, all final design and construction drawings are available in the appendix B and in appendix C, construction pictures are available in appendix D.

3. Documentation on field decisions that deviate from original plans

3.1 CWTP

The CWTP and all its reagent systems where built and installed on site without modification. Document 653281-0001-40ER-0001_0 Water treatment plant- Whale tail Dike Design Report, present the rational and decisions that leaded to its construction.

3.2 AsWTP

3.2.1 Arsenic Oxidation

The construction work led to no variations from the original design in the section.

3.2.2 pH Adjustment

The pH adjustment systems are installed as per drawing, no modification where made.

3.2.3 Arsenic Co-precipitation

The Arsenic Co-precipitation system is installed as per drawing, no modification where made.

3.2.4 TSS removal

While the general arrangement is respected, due to flow restriction created by the DR11 HDPE pipe available on construction site (HDPE DR17 was ask for on drawing), piping between As Reactor and Actiflow® reactor where rebuild using NPS piping. This problem was discovered during wet commissioning off the AsWTP. Those piping modification land to a better flow through the system.

3.2.5 Sludge management

The Sludge management system is installed as per drawing, no modification where made.

3.2.6 Service water

Although the piping network wasn't built as per drawing, the service water function as intended. Those minor modification where made to benefit from the final AsWTP layout.

3.2.7 Reagent

KMnO4, Sodium hydroxide and Sulfuric acid where build as per drawing, no change in those system where made. Polymer and coagulant system where proposed by Veolia whit independent injection system for summer and winter mode. By further studying the capacity of summer and winter system, Agnico Eagle Mine chose to only install summer dossing system and manage requirement for winter operation by way of control instead of doubling equipment. For now, only the summer dossing equipment are functional. Winter dosing equipment for coagulant and polymer are available but not yet operational.

4. Construction monitoring and inspection test plan

During construction, quality control was carried out to ensure that construction-sensitive features of the design were achieved. Those controls were done by Agnico Eagle following the recommendation from Veolia operations and maintenance manual. Veolia representative was there during cold commissioning and support operation team in learning how is the AsWTP operated.

Prior to start up, interconnecting pipes and pipelines has been tested for leaks at fusion weld and flange joints with treated water. Leaks founded were repaired prior to startup. After startup, inspection will be performed by Agnico Eagle personal, to ensure piping and pipeline integrity.

Quarrying activities to build the pad wasn't near fish bearing waters. During the construction of both CWTP and AsWTP, no sediment where released in water from construction areas and no water where used to manage dust emissions from construction activity.

Appendix A

MSDS reagents

Hydrex

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product identifier	**Hydrex 6105**
Version #	01
Issue date	08-15-2014
CAS #	Mixture
Product use	Wastewater Flocculant
Manufacturer	
Supplier	VWS Canada
Address	2000 Argentia Road, Plaza IV, Suite 430 Mississauga, ON L5N 1W1 Canada
Contact Person	Hydrex Product Specialist
Telephone	(905) 286-4846
Fax	(905) 286-0488
e-mail	vwscanada.hydrex@veoliawater.com
24-Hour Emergency telephone	+1-760-476-3962 (Code:333239)

2. Hazards Identification

Potential health effects

Eyes	Health injuries are not known or expected under normal use.
Skin	Health injuries are not known or expected under normal use.
Inhalation	Health injuries are not known or expected under normal use.
Ingestion	Health injuries are not known or expected under normal use.

3. Composition / Information on Ingredients

The components are not hazardous or are below required disclosure limits.

4. First Aid Measures

First aid procedures

Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Skin contact	Rinse skin with water/shower. Get medical attention if irritation develops and persists.
Inhalation	If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.
Ingestion	Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.
General advice	If you feel unwell, seek medical advice (show the label where possible). Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Flammable properties	Dust accumulation from this product may present an explosion hazard in the presence of an ignition source.
Extinguishing media	
Suitable extinguishing media	Water spray, fog, CO2, dry chemical, or alcohol resistant foam.
Protection of firefighters	
Protective equipment for firefighters	In the event of fire, wear self-contained breathing apparatus.
Fire fighting equipment/instructions	Use water spray to cool unopened containers. Dust may form an explosive mixture in the atmosphere.
Specific methods	Use water spray to cool unopened containers.

Explosion data

Sensitivity to static discharge	Not available.
Sensitivity to mechanical impact	Not available.

6. Accidental Release Measures

Personal precautions	Slippery when wet.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not contaminate water.
Methods for cleaning up	Should not be released into the environment. Following product recovery, flush area with water. For waste disposal, see section 13 of the MSDS.

7. Handling and Storage

Handling	Avoid release to the environment. Material can be slippery when wet.
Storage	Store in a dry area. Store in closed original container at temperatures between 5°C and 30°C.

8. Exposure Controls / Personal Protection

Biological limit values	No biological exposure limits noted for the ingredient(s).

Personal protective equipment

Eye / face protection	Chemical goggles are recommended.
Skin protection	Normal work clothing (long sleeved shirts and long pants) is recommended.
Respiratory protection	No specific recommendation made, but protection against nuisance dust must be used when the general level exceeds 10 mg/m3.

9. Physical & Chemical Properties

Appearance	Not available.
Physical state	Solid.
Form	Not available.
Color	White
Odor	Not available.
pH	Not available.
Vapor pressure	0 hPa estimated
Vapor density	Not available.
Boiling point	Not available.
Melting point/Freezing point	Not available.
Solubility (water)	Not available.
Specific gravity	0.65 - 0.9
Flash point	Not available.
Auto-ignition temperature	Not available.
Ph Of 1% Solution	5 - 7

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions.
Conditions to avoid	None under normal conditions.
Incompatible materials	Not available.
Hazardous decomposition products	Upon decomposition, this product may yield oxides of nitrogen and ammonia, carbon dioxide, carbon monoxide and other low molecular weight hydrocarbons.

11. Toxicological Information

Toxicological data

Product	Species	Test Results
Hydrex 6105 (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	> 10000 mg/kg
Oral		
LD50	Rat	> 5000 mg/kg

* Estimates for product may be based on additional component data not shown.

Chronic effects Not expected to be hazardous by WHMIS criteria.

12. Ecological Information

Ecotoxicological data

Product		Species	Test Results
Hydrex 6105 (CAS Mixture)			
Algae	IC50	Algae	2276 mg/l, 72 hr
Crustacea	EC50	Daphnia	> 100 mg/l, 48 hr
Other	LC50	Rainbow Trout	> 120 mg/l, 96 hr
Aquatic			
Fish	LC50	Zebra danio (Danio rerio)	> 100 mg/l, 96 hr

* Estimates for product may be based on additional component data not shown.

Ecotoxicity Contains a substance which causes risk of hazardous effects to the environment.

Environmental effects An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Persistence and degradability Not available.

13. Disposal Considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory Information

Canadian regulations This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status Non-controlled

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

Further information
HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings
Health: 0
Flammability: 1
Physical hazard: 0

NFPA ratings
Health: 0
Flammability: 1
Instability: 0

Disclaimer
Veolia Water Solutions & Technologies is not able to anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use and or non respect of Veolia Water Solutions & Technologies' requirement.

This data sheet contains changes from the previous version in section(s):
Product and Company Identification: Product and Company Identification

Hydrex

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product identifier	**Hydrex 6266**
Version #	01
Issue date	11-12-2013
CAS #	Mixture
Product use	Wastewater Coagulant
Manufacturer	
Supplier	VWS Canada
Address	2000 Argentia Road, Plaza IV, Suite 430 Mississauga, ON L5N 1W1 Canada
Contact Person	Hydrex Product Specialist
Telephone	(905) 286-4846
Fax	(905) 286-0488
e-mail	vwscanada.hydrex@veoliawater.com
24-Hour Emergency telephone	+1-760-476-3962 (Code:333239)

2. Hazards Identification

Emergency overview WARNING

Harmful in contact with skin.

Potential health effects

Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	Harmful in contact with eyes. Do not get this material in contact with eyes.
Skin	Harmful in contact with skin. Do not get this material in contact with skin.
Inhalation	Prolonged inhalation may be harmful. Do not breathe dust/fume/gas/mist/vapors/spray.
Ingestion	Do not ingest.

3. Composition / Information on Ingredients

Non-hazardous components	CAS #	Percent
IRON, WATER-SOLUBLE SALTS, N.O.S.	10028-22-5	60 - 100
Other components below reportable levels		15 - 40

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. If a contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Continue rinsing. Get medical attention immediately.
Skin contact	Remove and isolate contaminated clothing and shoes. Immediately flush skin with plenty of water. Get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.
Inhalation	Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control center immediately.
Ingestion	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Notes to physician Symptoms may be delayed.

General advice Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties Not flammable by WHMIS criteria.

Extinguishing media

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Dry chemical, CO2, sand, earth, water spray or regular foam.

Fire fighting equipment/instructions In the event of fire, cool tanks with water spray.

Specific methods Cool containers exposed to flames with water until well after the fire is out.

Explosion data

Sensitivity to static discharge Not available.

Sensitivity to mechanical impact Not available.

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. For personal protection, see section 8 of the MSDS.

Methods for cleaning up Following product recovery, flush area with water. For waste disposal, see section 13 of the MSDS.

7. Handling and Storage

Handling Do not breathe dust/fume/gas/mist/vapors/spray. Do not get this material in contact with eyes. Do not get this material in contact with skin. Avoid prolonged exposure. Do not get this material on clothing. Do not use in areas without adequate ventilation. Wear personal protective equipment. Wash thoroughly after handling.

Storage Store in a closed container away from incompatible materials. Store in a well-ventilated place. Keep container dry. Store away from incompatible materials (see Section 10 of the MSDS).

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value
FERRIC SULFATE (CAS 10028-22-5)	TWA	1 mg/m3

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
FERRIC SULFATE (CAS 10028-22-5)	TWA	1 mg/m3

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value
FERRIC SULFATE (CAS 10028-22-5)	STEL	2 mg/m3
	TWA	1 mg/m3

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value
FERRIC SULFATE (CAS 10028-22-5)	TWA	1 mg/m3

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value
FERRIC SULFATE (CAS 10028-22-5)	TWA	1 mg/m3

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value
FERRIC SULFATE (CAS 10028-22-5)	TWA	1 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye / face protection Wear safety glasses with side shields (or goggles) and a face shield. Chemical goggles and face shield are recommended.

Skin protection Wear suitable protective clothing. Chemical resistant gloves.

Respiratory protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

9. Physical & Chemical Properties

Appearance Granular

Physical state Solid.

Form Solid.

Color Yellowish or Tan or Grey.

Odor Slight

Odor threshold Not available.

pH Not available.

Vapor pressure Not available.

Vapor density Not available.

Boiling point Not available.

Melting point/Freezing point > 572 °F (> 300 °C)

Solubility (water) Soluble

Specific gravity 3.1 estimated

Relative density Not available.

Flash point Not available.

Flammability limits in air, upper, % by volume Not available.

Flammability limits in air, lower, % by volume Not available.

Auto-ignition temperature Not available.

Other data

Density 3.10 g/cm3 estimated

10. Chemical Stability & Reactivity Information

Chemical stability Material is stable under normal conditions.

Conditions to avoid Contact with incompatible materials.

Incompatible materials Not available.

Hazardous decomposition products Not available.

Possibility of hazardous reactions Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Product	Species	Test Results
Hydrex 6266 (CAS Mixture)		
Acute		
Dermal		
LD50	Mouse	>= 200 mg/kg Calculation
Oral		
LD50	Rat	>= 650 mg/kg Calculation

* Estimates for product may be based on additional component data not shown.

Chronic effects Prolonged inhalation may be harmful. Not expected to be hazardous by WHMIS criteria.

12. Ecological Information

Ecotoxicological data

Product		Species	Test Results
Hydrex 6266 (CAS Mixture)			
Aquatic			
Acute			
Algae	EC50	Green algae (Scenedesmus acutus)	> 13 mg/l, 7 day
Fish	LC50	Mosquitofish (Gambusia affinis affinis)	>= 50 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability Not available.

13. Disposal Considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose in accordance with all applicable regulations.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport Information

TDG

- **UN number** UN3077
- **UN proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (IRON, WATER-SOLUBLE SALTS, N.O.S.)
- **Transport hazard class(es)**
  - **Class** 9
  - **Subsidiary risk** -
- **Packing group** III
- **Environmental hazards** D
- **Special precautions for user** Read safety instructions, MSDS and emergency procedures before handling.

IATA

- **UN number** UN3077
- **UN proper shipping name** Environmentally hazardous substance, solid, n.o.s. (IRON, WATER-SOLUBLE SALTS, N.O.S.)
- **Transport hazard class(es)**
  - **Class** 9
  - **Subsidiary risk** -
- **Packing group** III
- **Environmental hazards** No.
- **ERG Code** 9L

Special precautions for user	Read safety instructions, MSDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

UN number	UN3077
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Transport hazard class(es)	
Class	9
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-F
Special precautions for user	Read safety instructions, MSDS and emergency procedures before handling.

IATA; IMDG; TDG

15. Regulatory Information

Canadian regulations	This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.
WHMIS status	Controlled
WHMIS classification	D2B - Other Toxic Effects-TOXIC

WHMIS labeling

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

HMIS® ratings

Health: 2
Flammability: 0
Physical hazard: 0

NFPA ratings

Health: 2
Flammability: 0
Instability: 0

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available. Veolia Water Solutions & Technologies is not able to anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use and or non respect of Veolia Water Solutions & Technologies' requirement.

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product identifier	**Hydrex 6324**
Version #	01
Issue date	03-31-2016
CAS #	Mixture
Product use	Wastewater Flocculant
Manufacturer information	
Supplier	Veolia Water Technologies Canada Inc.
Address	2000 Argentia Road, Plaza IV, Suite 430 Mississauga, ON L5N 1W1 Canada
Contact Person	Hydrex Product Specialist
Telephone	(905) 286-4846
Fax	(905) 286-0488
e-mail	vwtcanada-hydrex@veolia.com
24-Hour Emergency telephone	+1-760-476-3962 (Code:333239)
Supplier	Not available.

2. Hazards Identification

Potential health effects

Routes of exposure	Eye contact. Ingestion. Inhalation. Skin contact.
Eyes	Health injuries are not known or expected under normal use.
Skin	Health injuries are not known or expected under normal use.
Inhalation	Health injuries are not known or expected under normal use.
Ingestion	Health injuries are not known or expected under normal use.
Potential environmental effects	May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
ADIPIC ACID	124-04-9	1 - 5
Other components below reportable levels		60 - 100

Composition comments None by WHMIS criteria.

4. First Aid Measures

First aid procedures

Inhalation	If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.
Skin contact	Rinse skin with water/shower. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.
General advice	If you feel unwell, seek medical advice (show the label where possible). Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Flammable properties Not flammable by WHMIS criteria.

Extinguishing media

Suitable extinguishing media	Not available.

Unsuitable extinguishing media	Not available.

Protection of firefighters

Specific hazards arising from the chemical	Material can be slippery when wet.
Fire fighting equipment/instructions	Use water spray to cool unopened containers.

Explosion data

Sensitivity to static discharge	Not available.
Sensitivity to mechanical impact	Not available.
Hazardous combustion products	Not available.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. For personal protection, see section 8 of the MSDS. Slippery when wet.
Environmental precautions	Do not contaminate water.
Methods for cleaning up	Should not be released into the environment. This product is miscible in water. Following product recovery, flush area with water. For waste disposal, see section 13 of the MSDS.

7. Handling and Storage

Handling	Material can be slippery when wet. Avoid release to the environment.
Storage	Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the MSDS).

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value
ADIPIC ACID (CAS 124-04-9)	TWA	5 mg/m3

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
ADIPIC ACID (CAS 124-04-9)	TWA	5 mg/m3

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value
ADIPIC ACID (CAS 124-04-9)	TWA	5 mg/m3

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value
ADIPIC ACID (CAS 124-04-9)	TWA	5 mg/m3

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value
ADIPIC ACID (CAS 124-04-9)	TWA	5 mg/m3

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value
ADIPIC ACID (CAS 124-04-9)	TWA	5 mg/m3

Biological limit values	No biological exposure limits noted for the ingredient(s).

Engineering controls	Not available.
Personal protective equipment	
Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	Wear suitable protective clothing. Chemical resistant gloves.
Respiratory protection	No personal respiratory protective equipment normally required. In case of insufficient ventilation, wear suitable respiratory equipment.
Hand protection	Chemical resistant gloves.

9. Physical & Chemical Properties

Appearance	Granular or Powder.
Physical state	Solid.
Form	Solid.
Color	White.
Odor	Odorless.
pH	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Boiling point	Not available.
Melting point/Freezing point	Not available.
Solubility (water)	Limited by viscosity
Specific gravity	Not available.
Flash point	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Auto-ignition temperature	Not available.
Bulk density	650 - 850 kg/m³
Other data	
pH in aqueous solution	7 - 9 in a 0.5% aq. sol.

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Not available.
Hazardous decomposition products	Not available.
Possibility of hazardous reactions	Not available.

11. Toxicological Information

Toxicological data

Product	Species	Test Results
Hydrex 6324		
Acute		
Dermal		
Presumed Non-Toxic	Rabbit	> 2000 mg/kg
Inhalation		
LC50	Rat	> 20 mg/l, 4 hours
Oral		
LD50	Rat	> 5000 mg/kg

Components	Species	Test Results
ADIPIC ACID (CAS 124-04-9)		
Acute		
Dermal		
LD50	Rabbit	> 5000 mg/kg
Inhalation		
NOEL	Rat	0.126 mg/l, 6 Hours
Oral		
LD50	Mouse	1900 mg/kg
	Rabbit	> 11000 mg/kg
	Rat	> 11000 mg/kg

Acute effects

Sensitization Not available.

Chronic effects Not expected to be hazardous by WHMIS criteria.

Carcinogenicity Not available.

Skin corrosion/irritation Not available.

Serious eye damage/irritation Not available.

Mutagenicity Not available.

Reproductive effects Not available.

Teratogenicity Not available.

Synergistic materials Not available.

12. Ecological Information

Ecotoxicological data

Product		Species	Test Results
Hydrex 6324			
Aquatic			
Acute			
Crustacea	EC50	Daphnia magna	> 100 mg/l, 48 hours
Fish	LC50	Danio rerio	> 100 mg/l, 96 hours

Components		Species	Test Results
ADIPIC ACID (CAS 124-04-9)			
Aquatic			
Algae	EC50	Algae	31.3 mg/l, 72 hours
Crustacea	EC50	Daphnia	85.6 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	97 mg/l, 96 hours
Acute			
Fish	EC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	> 100 mg/l, 48 hours

Ecotoxicity Contains a substance which causes risk of hazardous effects to the environment.

Environmental effects An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Aquatic toxicity Not available.

Persistence and degradability Not available.

Partition coefficient

ADIPIC ACID 0.08

Mobility in environmental media This product is miscible in water.

13. Disposal Considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport Information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory Information

Canadian regulations This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status Non-controlled

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

Recommended restrictions PROFESSIONAL USE ONLY

HMIS® ratings
Health: 0
Flammability: 0
Physical hazard: 0

NFPA ratings
Health: 0
Flammability: 0
Instability: 0

Disclaimer Veolia Water Technologies is not able to anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use and or non respect of Veolia Water Technologies' requirement.

Prepared by Hydrex Global Platform

This data sheet contains changes from the previous version in section(s):	This document has undergone significant changes and should be reviewed in its entirety.

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	**Hydrex 9571**
Version #	01
Issue date	08-27-2013
Chemical name	POTASSIUM PERMANGANATE
Product use	Wastewater Metal Precipitant
Manufacturer	
Supplier	VWS Canada
Address	2000 Argentia Road, Plaza IV, Suite 430 Mississauga, ON L5N 1W1 Canada
Contact Person	Hydrex Product Specialist
Telephone	(905) 286-4846
Fax	(905) 286-0488
e-mail	vwscanada.hydrex@veoliawater.com
24-Hour Emergency telephone	+1-760-476-3962 (Code:333239)

2. Hazards Identification

Emergency overview

DANGER

Oxidizing material.

Causes skin and eye burns.

Potential health effects

Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	Corrosive to the eyes and may cause severe damage including blindness. Causes chemical burns. Do not get this material in contact with eyes.
Skin	Causes chemical burns. Do not get this material in contact with skin.
Inhalation	Dust extremely irritating to the respiratory tract. Inhalation of dusts may cause respiratory irritation. Prolonged inhalation may be harmful. Do not breathe dust.
Ingestion	Harmful if swallowed. Ingestion causes burns of the upper digestive and respiratory tracts. Irritating. May cause nausea, stomach pain and vomiting. Do not ingest.
Chronic effects	Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.
Signs and symptoms	Contact with this material will cause burns to the skin, eyes and mucous membranes. Symptoms may include redness, edema, drying, defatting and cracking of the skin.
Potential environmental effects	Components of this product are hazardous to aquatic life. May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
POTASSIUM PERMANGANATE	7722-64-7	60 - 100
Other components below reportable levels		1 - 5

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. If a contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Continue rinsing. Get medical attention immediately.

Skin contact	Before washing use a dry brush to remove dust from skin. Remove and isolate contaminated clothing and shoes. Immediately flush skin with plenty of water. Get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.
Inhalation	Move to fresh air. If symptoms are experienced, remove source of contamination or move victim to fresh air. Get medical attention if symptoms persist.
Ingestion	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Never give anything by mouth to a victim who is unconscious or is having convulsions. Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
General advice	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Do not use mouth-to-mouth method if victim ingested the substance.

5. Fire Fighting Measures

Flammable properties	Contact with combustible material may cause fire. These substances will accelerate burning when involved in a fire. Some will react explosively with hydrocarbons (fuels). Runoff may create fire or explosion hazard.
Extinguishing media	
Suitable extinguishing media	Water.
Unsuitable extinguishing media	Dry chemicals or foams.
Protection of firefighters	
Specific hazards arising from the chemical	Fire may produce irritating, corrosive and/or toxic gases. Some may decompose explosively when heated or involved in a fire.
Protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus.
Fire fighting equipment/instructions	Do not move cargo or vehicle if cargo has been exposed to heat. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Move containers from fire area if you can do so without risk. In the event of fire, cool tanks with water spray. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.
Specific methods	Cool containers exposed to flames with water until well after the fire is out.
Explosion data	
Sensitivity to static discharge	Not available.
Sensitivity to mechanical impact	Not available.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak. Keep upwind. Ventilate closed spaces before entering them.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Runoff from fire control or dilution water may cause pollution. Do not contaminate water.
Methods for containment	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways.

Methods for cleaning up

Should not be released into the environment.

Large Spills: Do not get water inside container. Use clean non-sparking tools to collect absorbed material. Following product recovery, flush area with water.

Small Spills: Clean surface thoroughly to remove residual contamination. Clean up in accordance with all applicable regulations. For waste disposal, see section 13 of the MSDS.

Other information

Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling

DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. When using do not smoke. Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not get this material on clothing. Avoid prolonged exposure. Avoid release to the environment.

Storage

Keep away from heat and sources of ignition. Store in a closed container away from incompatible materials. Keep out of the reach of children.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Material	Type	Value
Hydrex 9571	TWA	0.2 mg/m3

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Material	Type	Value
Hydrex 9571	TWA	0.2 mg/m3

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Material	Type	Value
Hydrex 9571	TWA	0.2 mg/m3

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Material	Type	Value
Hydrex 9571	TWA	0.2 mg/m3

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Material	Type	Value	Form
Hydrex 9571	TWA	5 mg/m3	Dust.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Material	Type	Value
Hydrex 9571	Ceiling	5 mg/m3

Engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal protective equipment

Eye / face protection

Do not get in eyes. Chemical goggles are recommended.

Skin protection

Do not get this material in contact with skin. Chemical resistant gloves.

Respiratory protection

Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. If ventilation is not sufficient to effectively prevent buildup of aerosols or mists, appropriate NIOSH/MSHA respiratory protection must be provided.

9. Physical & Chemical Properties

Physical state

Solid.

Form

Solid.

Color

Dark purple

Odor

Odorless.

Other data

Decomposition temperature	464 °F (240 °C) Decomp at about 240°C with evolution of oxygen; decomp by alcohol and many other org solvents, also by concn acids with liberation of oxygen; with hydrochloric acid, chlorine liberated; readily decomp by many reducing substances, such as ferrous salts, io
Density	1.45 - 1.60 g/cm³

10. Chemical Stability & Reactivity Information

Chemical stability	Decomposes on heating.
Conditions to avoid	Avoid temperatures exceeding the decomposition temperature.
Incompatible materials	Peroxides. Acids. Glycol. Avoid contact with oxidizers or reducing agents. Powdered metal.
Hazardous decomposition products	Irritating and/or toxic fumes and gases may be emitted upon the products decomposition.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Product	Species	Test Results
Hydrex 9571		
Acute		
Oral		
LD50	Guinea pig	>= 800 mg/kg, Calculated
	Mouse	>= 700 mg/kg, Calculated
	Rat	525 - 780 mg/kg, 14 days, Calculated

* Estimates for product may be based on additional component data not shown.

Acute effects	Causes burns.
Chronic effects	Prolonged inhalation may be harmful. Not expected to be hazardous by WHMIS criteria.

12. Ecological Information

Ecotoxicological data

Product		Species	Test Results
Hydrex 9571			
Other	LC50	Rainbow Trout	1.8 mg/l, 96 hr
Aquatic			
Fish	LC50	Bluegill (Lepomis macrochirus)	2.3 mg/l, 96 hr
		Milkfish, salmon-herring (Chanos chanos)	> 1.4 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Ecotoxicity	Components of this product are hazardous to aquatic life.
Environmental effects	Harmful to aquatic organisms.
Persistence and degradability	Not available.

13. Disposal Considerations

Disposal instructions	Consult authorities before disposal. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

TDG

UN number	UN1490

UN proper shipping name	Potassium Permanganate
Hazard class	5.1
Packing group	II
Special provisions	16

IATA

UN number	UN1479
UN proper shipping name	Oxidizing solid, n.o.s. (POTASSIUM PERMANGANATE)
Transport hazard class(es)	5.1
Packing group	III
ERG code	5L

IATA; TDG

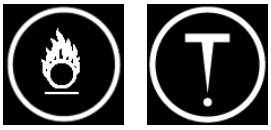
15. Regulatory Information

Canadian regulations This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status Controlled

WHMIS classification C - Oxidizing
D2B - Other Toxic Effects-TOXIC

WHMIS labeling



Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Further information HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings	Health: 1 Flammability: 0 Physical hazard: 0 Personal protection: E
NFPA ratings	Health: 1 Flammability: 0 Instability: 0 Special hazards: OX
Disclaimer	Veolia Water Solutions & Technologies is not able to anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use and or non respect of Veolia Water Solutions & Technologies' requirement.
This data sheet contains changes from the previous version in section(s):	Product and Company Identification: Product Review Toxicological Information: Toxicological Data Transport Information: Material Transportation Information

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name or designation of the mixture	NaOH 1N
Registration number	-
Synonyms	None.
Issue date	02-February-2017
Version number	01

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Not available.
Uses advised against	None known.

1.3. Details of the supplier of the safety data sheet

Supplier	Veolia Water STI
Address	Z.A.C. du Haut de Wissous - 3, avenue Le Concorde 91325 Wissous Cedex - FRANCE www.veoliawatersti.fr
Contact person	Hydrex Product Manager
Telephone	+33 (0)1 69 75 25 75
Fax	+33 (0)1 69 75 27 01
e-mail	hydrex.vwtfr@veolia.com
1.4. Emergency telephone number	+1-760-476-3961 (Code: 333239)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classificatior applies.

Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards

Skin corrosion/irritation	Category 1B	H314 - Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Category 2	H319 - Causes serious eye irritation.

Hazard summary Causes severe skin burns and eye damage. Causes serious eye irritation. Occupational exposure to the substance or mixture may cause adverse health effects.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Hazard pictograms

Signal word Danger

Hazard statements

H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H319	Causes serious eye irritation.

Precautionary statements

Prevention

P260	Do not breathe mist or vapour.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response

P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER/doctor/paramedic if you feel unwell.
P337 + P313	If eye irritation persists: Get medical advice/attention.
P342 + P311	If experiencing respiratory symptoms: Call a poison center/doctorparamedic.
P363	Wash contaminated clothing before reuse.

Storage Not available.

Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental label information None.

2.3. Other hazards None known.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Sodium hydroxide	1 - < 5	1310-73-2 215-185-5	01-2119457892-27-xxxx	011-002-00-6	
Classification:	Skin Corr. 1A;H314				
Other components below reportable levels	90 - 100				

List of abbreviations and symbols that may be used above

#: This substance has been assigned Union workplace exposure limit(s).
M: M-factor
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.
All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition comments The full text for all H-statements is displayed in section 16.

SECTION 4: First aid measures

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

4.1. Description of first aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control centre immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control centre immediately.

Ingestion Call a physician or poison control centre immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

4.2. Most important symptoms and effects, both acute and delayed Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

4.3. Indication of any immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards No unusual fire or explosion hazards noted.

5.1. Extinguishing media

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media	Not available.
5.2. Special hazards arising from the substance or mixture	During fire, gases hazardous to health may be formed.
5.3. Advice for firefighters	
Special protective equipment for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Special fire fighting procedures	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapour. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8.
For emergency responders	Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.
6.2. Environmental precautions	Avoid discharge into drains, water courses or onto the ground.
6.3. Methods and material for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use.
6.4. Reference to other sections	For personal protection, see section 8. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling	Avoid forming spray/aerosol mists. Do not breathe mist or vapour. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
7.2. Conditions for safe storage, including any incompatibilities	Protect from sunlight. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Store in cool, dry place.
7.3. Specific end use(s)	Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	VME	2 mg/m3

Biological limit values	No biological exposure limits noted for the ingredient(s).
Recommended monitoring procedures	Follow standard monitoring procedures.
Derived no-effect level (DNEL)	Not available.
Predicted no effect concentrations (PNECs)	Not available.

8.2. Exposure controls

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

General information Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection Wear safety glasses with side shields (or goggles). Before any handling, wear protective glasses side-shields complying with the NF EN 166.

Skin protection

- Hand protection Chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

- Other Wear appropriate chemical resistant clothing. Chemical resistant gloves.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment. Avoid forming spray/aerosol mists.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

Hygiene measures Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state Liquid.

Form Liquid.

Colour Colourless.

Odour Odourless.

pH 12

Melting point/freezing point Not available.

Initial boiling point and boiling range Not available.

Flash point Not available.

Flammability (solid, gas) Not applicable.

Vapour pressure Not available.

Solubility(ies)

Solubility (water) Not available.

Solubility (other) Not available.

Partition coefficient (n-octanol/water) Not available.

Viscosity Not available.

Explosive properties Not explosive.

Oxidising properties Not oxidising.

9.2. Other information

Density 1,00 g/cm³

SECTION 10: Stability and reactivity

10.1. Reactivity Reacts violently with strong acids. This product may react with oxidizing agents.

10.2. Chemical stability Material is stable under normal conditions.

10.3. Possibility of hazardous reactions No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid Contact with incompatible materials. Do not mix with other chemicals.

10.5. Incompatible materials Strong acids. Acids. Oxidizing agents.

10.6. Hazardous decomposition products No hazardous decomposition products are known.

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation May cause irritation to the respiratory system. Prolonged inhalation may be harmful.

Skin contact Causes severe skin burns.

Eye contact Causes serious eye damage.

Ingestion Causes digestive tract burns.

Symptoms Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

11.1. Information on toxicological effects

Components	Species	Test results
Sodium hydroxide (CAS 1310-73-2)		
Acute		
Dermal		
Solid		
LD50	Rabbit	1350 mg/kg
Oral		
Solid		
LD50	Rat	> 300 mg/kg
Liquid		
LD50	Rat	> 300 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Causes severe skin burns and eye damage.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory sensitisation Due to partial or complete lack of data the classification is not possible.

Skin sensitisation Due to partial or complete lack of data the classification is not possible.

Germ cell mutagenicity Due to partial or complete lack of data the classification is not possible.

Carcinogenicity Due to partial or complete lack of data the classification is not possible.

Reproductive toxicity Due to partial or complete lack of data the classification is not possible.

Specific target organ toxicity - single exposure Due to partial or complete lack of data the classification is not possible.

Specific target organ toxicity - repeated exposure Due to partial or complete lack of data the classification is not possible.

Aspiration hazard Due to partial or complete lack of data the classification is not possible.

Mixture versus substance information No information available.

Other information Not available.

SECTION 12: Ecological information

12.1. Toxicity Based on available data, the classification criteria are not met for hazardous to the aquatic environment.

Components		Species	Test results
Sodium hydroxide (CAS 1310-73-2)			
Aquatic			
Acute			
Crustacea	EC50	Water flea (Ceriodaphnia dubia)	34,59 - 47,13 mg/l, 48 hours
Fish	LC50	Western mosquitofish (Gambusia affinis)	125 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

12.2. Persistence and degradability	No data is available on the degradability of this product.
12.3. Bioaccumulative potential	No data available.
Partition coefficient n-octanol/water (log Kow)	Not available.
Bioconcentration factor (BCF)	Not available.
12.4. Mobility in soil	No data available.
12.5. Results of PBT and vPvB assessment	Not available.
12.6. Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.
EU waste code	The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Disposal methods/information	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Special precautions	Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. UN number	UN3266
14.2. UN proper shipping name	Corrosive liquid, basic, inorganic, n.o.s.
14.3. Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Hazard No. (ADR)	80
Tunnel restriction code	E
14.4. Packing group	II
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

RID

14.1. UN number	UN3266
14.2. UN proper shipping name	Corrosive liquid, basic, inorganic, n.o.s.
14.3. Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
14.4. Packing group	II
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

ADN

14.1. UN number	UN3266
14.2. UN proper shipping name	Corrosive Liquid, Inorganic, N.o.s.
14.3. Transport hazard class(es)	
Class	8

Subsidiary risk -
Label(s) 8

14.4. Packing group II

14.5. Environmental hazards No.

14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IATA

14.1. UN number UN3266

14.2. UN proper shipping name Corrosive liquid, basic, inorganic, n.o.s.

14.3. Transport hazard class(es)

Class 8
Subsidiary risk -

14.4. Packing group II

14.5. Environmental hazards No.

ERG Code 8L

14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Other information

Passenger and cargo aircraft Allowed with restrictions.
Cargo aircraft only Allowed with restrictions.

IMDG

14.1. UN number UN3266

14.2. UN proper shipping name CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.

14.3. Transport hazard class(es)

Class 8
Subsidiary risk -

14.4. Packing group II

14.5. Environmental hazards

Marine pollutant No.

EmS F-A, S-B

14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code Not established.

ADN; ADR; IATA; IMDG; RID

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work

Not listed.

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances

Not listed.

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Sodium hydroxide (CAS 1310-73-2)

Directive 94/33/EC on the protection of young people at work

Sodium hydroxide (CAS 1310-73-2)

Other regulations	The product is classified and labelled in accordance with EC directives or respective national laws This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.
National regulations	Follow national regulation for work with chemical agents. Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work, as amended.

France Classified Installations (ICPE): Listed substance/ICPE Number

Not listed.

15.2. Chemical safety assessment	No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations	Not available.
References	Not available.
Information on evaluation method leading to the classification of mixture	The classification for health and environmental hazards is derived by a combination of calculatior methods and test data, if available.
Full text of any H-statements not written out in full under Sections 2 to 15	H314 Causes severe skin burns and eye damage.
Revision information	None.
Training information	Follow training instructions when handling this material.
Disclaimer	Veolia Water Technologies is not able to anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use and or non respect of Veolia Water Technologies' requirement.

SAFETY DATA SHEET

1. Identification

Product identifier	**VEOLIA ACTISAND**
Other means of identification	None.
Recommended use	Wastewater Treatment
Recommended restrictions	Workers (and your customers or users in the case of resale) should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations. PROFESSIONAL USE ONLY

Manufacturer/Importer/Supplier/Distributor information

Manufacturer	
Supplier	Veolia Water Technologies Canada Inc.
Address	2000 Argentia Road, Plaza IV, Suite 430 Mississauga, ON L5N 1W1 Canada
Contact Person	Hydrex Product Specialist
Telephone	(905) 286-4846
Fax	(905) 286-0488
e-mail	vwtcanada-hydrex@veolia.com
24-Hour Emergency telephone	+1-760-476-3962 (Code:333239)
Supplier	Not available.

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Carcinogenicity	Category 1A
Environmental hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	May cause cancer.
Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF exposed or concerned: Get medical advice/attention.
Storage	Not available.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Other hazards	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Crystalline sillica		14808-60-7	100

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Coughing.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Not available.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Use water spray to cool unopened containers.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	The product is immiscible with water and will spread on the water surface. Stop the flow of material, if this is without risk. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Avoid prolonged exposure. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Protect from sunlight. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Store in cool, dry place.

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Material	Type	Value	Form
VEOLIA ACTISAND	TWA	0.025 mg/m3	Respirable fraction.

Components	Type	Value	Form
Crystalline sillica (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable fraction.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Material	Type	Value	Form
VEOLIA ACTISAND	TWA	0.025 mg/m3	Respirable particles.

Components	Type	Value	Form
Crystalline sillica (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable particles.

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Material	Type	Value	Form
VEOLIA ACTISAND	TWA	0.025 mg/m3	Respirable fraction.

Components	Type	Value	Form
Crystalline sillica (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable fraction.

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Crystalline sillica (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable fraction.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Material	Type	Value	Form
VEOLIA ACTISAND	TWA	0.1 mg/m3	Respirable.

Components	Type	Value	Form
Crystalline sillica (CAS 14808-60-7)	TWA	0.1 mg/m3	Respirable.

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Material	Type	Value	Form
VEOLIA ACTISAND	TWA	0.1 mg/m3	Respirable dust.

Components	Type	Value	Form
Crystalline sillica (CAS 14808-60-7)	TWA	0.1 mg/m3	Respirable dust.

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled.

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Other Use of an impervious apron is recommended. Chemical resistant gloves.

Respiratory protection Use a particulate filter respirator for particulate concentrations exceeding the Occupational Exposure Limit.

Thermal hazards Not available.

General hygiene considerations Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Solid.

Form Solid.

Color Not available.

Odor	Not available.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	< 0.0000001 kPa at 25 °C
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Insoluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Explosive properties	Not explosive.
Heat of combustion (NFPA 30B)	0 kJ/g
Molecular formula	O2Si
Oxidizing properties	Not oxidizing.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Powerful oxidizers. Chlorine.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Coughing.

Information on toxicological effects

Acute toxicity Not available.

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.) In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. May cause cancer. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

ACGIH Carcinogens

Crystalline sillica (CAS 14808-60-7)	A2 Suspected human carcinogen.

Canada - Alberta OELs: Carcinogen category

Crystalline sillica (CAS 14808-60-7)	Suspected human carcinogen.

Canada - Manitoba OELs: carcinogenicity

SILICA, CRYSTALLINE-.ALPHA.-QUARTZ, RESPIRABLE FRACTION (CAS 14808-60-7)	Suspected human carcinogen.

Canada - Quebec OELs: Carcinogen category

Crystalline sillica (CAS 14808-60-7)	Suspected carcinogenic effect in humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Crystalline sillica (CAS 14808-60-7)	1 Carcinogenic to humans.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

Canadian regulations

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No

Country(s) or region	Inventory name	On inventory (yes/no)*
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

Issue date 08-16-2016

Version # 01

Disclaimer Veolia Water Technologies is not able to anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use and or non respect of Veolia Water Technologies' requirement.

Revision information Product and Company Identification: Product Review

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Identification of the substance/preparation	**Sulphuric Acid 98%**
Use of the substance/preparation	Industrial Process Water Treatment; Water Treatment Chemical
Version #	01
Issue date	12-06-2016
"K¯ȑ!	Mixture
Manufacturer	
Supplier	VWS, Saudi - Chemical Industries
Address	Prince Musaed Bin ! bdul ! ziz Street PO Box 58515, Riyadh 11515 Saudi ! rabia
Contact Person	ȑɍ duct Manager
Telephone	+966 11 478 7721
Fax	+966 11 478 2560
e-mail	vwsme.hydrex@veolia.com
Global Emergency Contact	+1-760-476-3961 (Code:333239)

2. HAZARDS IDENTIFICATION

This preparation is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification	C;R35
Physical hazards	Not classified as a physical hazard.
Health hazards	Causes severe burns.
Environmental hazards	Not classified as an environmental hazard.
Specific hazards	Very toxic by inhalation. Causes severe burns. Prolonged exposure may cause chronic effects.
Main symptoms	Contact with this material will cause burns to the skin, eyes and mucous membranes.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	"K¯ȑ!	Percent	EC-No.	Classification
SULFURIC ! CID	7664-93-9	50 - < 60	231-639-5	C;R35
Other components below reportable levels		40 - < 50		

Composition comments The full text for all R-phrases is displayed in Section 16 of the SDS.

4. FIRST AID MEASURES

Inhalation	Move to fresh air. For breathing difficulties, oxygen may be necessary. Get medical attention immediately.
Skin contact	Remove and isolate contaminated clothing and shoes. Immediately flush skin with plenty of water. Get medical attention immediately. Wash clothing separately before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Ingestion	IF SW! LLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
General advice	In case of shortness of breath, give oxygen. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Keep victim warm. Do not use mouth-to-mouth method if victim ingested the substance.
Notes to physician	In case of shortness of breath, give oxygen. Keep victim warm.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	Foam. Powder. Carbon dioxide (CO2).

Extinguishing media which must not be used for safety reasons	DO NOT USE W! TER. ! lcohol resistant foam.
Unusual fire & explosion hazards	The product is not flammable.
Specific hazards	During fire, gases hazardous to health may be formed.
Special protective equipment for fire-fighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
Hazardous combustion products	sulfur

6. ACCIDENTAL RELEASE MEASURES

Containment procedures	Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.
Personal precautions	Keep unnecessary personnel away. Keep upwind. Keep out of low areas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. For personal protection, see section 8 of the SDS.
Environmental precautions	Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. ! void discharge into drains, water courses or onto the ground.
Methods for cleaning up	This product is miscible in water. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. This material and its container must be disposed of as hazardous waste. For waste disposal, see section 13 of the SDS. Neutralize with slaked lime (calcium hydroxide) or soda ash (sodium carbonate) and flush with plenty of water.

7. HANDLING AND STORAGE

Handling	Never add water to this product. ! void forming spray/aerosol mists. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get this material in contact with eyes. Do not get this material in contact with skin.
Storage	Never allow product to get in contact with water during storage. Keep at temperature not exceeding 43 °C. Protect from sunlight. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Store in accordance with local/regional/national/international regulation. Store in cool, dry place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
SULFURIC ! CID (C! S 7664-93-9)	TW!	0.2 mg/m3	Thoracic fraction.

Bahrain. TLVs. Resolution No. 4 Regarding the Management of Hazardous Chemicals, Exposure Limits for Dangerous and Poisonous Chemicals, Annex. 3

Components	Type	Value
SULFURIC ! CID (C! S 7664-93-9)	STEL	3 ppm
	TW!	1 mg/m3

Egypt. OELs. Threshold limits of air pollutants in the workplace (Decree No. 388, Annex 8)

Components	Type	Value
SULFURIC ! CID (C! S 7664-93-9)	STEL	3 mg/m3
	TW!	1 mg/m3

Kuwait. OELs. Maximum Limits Allowance for Occupational Exposure to Chemical Substances (TVLs) (Decision No. =>?/2001 Appendix No. (3-1))

Components	Type	Value
SULFURIC ! CID (C! S 7664-93-9)	STEL	3 mg/m3
	TW!	1 mg/m3

UAE. OELs. Maximum Allowable Limits for Air Pollutants in Working Areas [Law to Protect the Air from Pollution, Resolution of the Cabinet of Ministers No. 12 of 2006]

Components	Type	Value
SULFURIC ! CID (C! S 7664-93-9)	STEL	3 mg/m3
	TW!	1 mg/m3

UAE. Abu Dhabi. TLVs. Maximum Allowable Limits for Air Pollutants in Working Areas (AD EHSMS RF - Occupational Standards and Guideline Values, Schedule A)

Components	Type	Value	Form
SULFURIC ! CID (C! S 7664-93-9)	TW!	0.2 mg/m3	Thoracic fraction.

UAE. Dubai. OELs. Maximum Allowable Limits for Indoor Air Pollutants. Industrial Operation Regulation IO-11.0: Appendix, Tables 2 & 2A

Components	Type	Value
SULFURIC ! CID (C! S 7664-93-9)	STEL	1 mg/m3
	TW!	1 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Recommended monitoring procedures

Additional exposure data Not available.

Engineering measures to reduce exposure General ventilation normally adequate. Ventilation should effectively remove and prevent buildup of any aerosols or mists generated from the handling of this product.

Personal protective equipment

Respiratory protection Use a particulate filter respirator for particulate concentrations exceeding the Occupational Exposure Limit. ! void forming spray/aerosol mists. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. Wear a disposable respiratory equipment against droplets or dust and which complies with NF EN 149, category FFP2.

Hand protection or Rubber (natural, latex). Polyvinyl chloride (PVC). Chemical resistant gloves. Nitrile rubber. Wear protective gloves which comply with the NF EN 374. Solvent-resistant gloves (butylrubber).

Eye protection Before any handling, wear protective glasses side-shields complying with the NF EN 166.

Skin and body protection Do not get this material in contact with skin. Wear suitable protective clothing. Chemical resistant gloves. Structural firefighters protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations. In case of splashing, wear protective chemical clothes (class 6) according to the NF EN 13034, in order to avoid any contact with skin.

General !.ɟ id contact with skin. ! void contact with eyes. Use personal protective equipment as required. Eye wash fountain is recommended. Keep working clothes separately. In case of splashing, wear protective chemical clothes (class 6) according to the NF EN 13034, in order to avoid any contact with skin.

Environmental exposure controls Environmental manager must be informed of all maȸr releases.

Hygiene measures Wash hands after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Liquid
Physical state	Liquid.
Form	Not available.
Color	Colorless
Odor	Not available.
ƙ	< 1
Specific gravity	Not available.
Boiling point	626 °F (330 °C)
Flash point	Not available.

Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	0 hPa estimated
Solubility (water)	100 % Exothermic decomp causes a dangerously fast pressure increase.
Partition coefficient (n-octanol/water)	Not available.
Viscosity	26.9 mPa·s (20°C)
Vapor density	Not available.
Evaporation rate	Not available.
Melting point/Freezing point	5 °F (-15 °C)
Auto-ignition temperature	Not available.
3"	Not available.
Other data	
Density	1.40 - 1.84 g/cm³
Miscible (water)	100 %

10. STABILITY AND REACTIVITY

Conditions to avoid	Exposure to moisture. Reacts violently with strong alkaline substances. None under normal conditions. ! void exposing to heat and contact with strong oxidizing substances. Do not allow water to get into container because of reaction.
Hazardous decomposition products	Sulphur oxides.
Stability	Material is stable under normal conditions. Material reacts with water.
Materials to avoid	Organic compounds. Metals. Reducing agents. Bases.

11. TOXICOLOGICAL INFORMATION

Toxicological data

Product	Species	Test Results
Sulphuric ! cid 98%		
__Acute__		
Inhalation		
Liquid		
LC50	Rat	0.51 mg/l, 2 hours
Oral		
LD50	Rat	> 2140 mg/kg

* Estimates for product may be based on additional component data not shown.

Acute toxicity	Very toxic by inhalation. Toxic by inhalation. Causes severe burns.
Routes of exposure	Inhalation. Skin contact. Eye contact.
Toxicological information	Occupational exposure to the substance or mixture may cause adverse effects.
Chronic toxicity	ȑr longed exposure may cause chronic effects.
Carcinogenicity	Risk of cancer cannot be excluded with prolonged exposure.

Egypt OELs Carcinogen rating

SULFURIC ! CID (C! S 7664-93-9)	C2 Suspected human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

SULFURIC ! CID (C! S 7664-93-9)	1 Carcinogenic to humans.

Kuwait OELs (Decision No. 210/): Carcinogen Category

SULFURIC ! CID (C! S 7664-93-9)	! 2 Suspected human carcinogen.

UAE - Abu Dhabi TLVs: Carcinogen Category

SULFURIC ! CID (C! S 7664-93-9)	A'$>C ! 2 Suspected human carcinogen.

Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Reproductivity	Not classified.
Epidemiology	No epidemiological data is available for this product.
Local effects	Very toxic by inhalation. Causes severe burns. Irritating to respiratory system. May produce corrosive solutions on contact with water.

Symptoms and target organs Contact with this material will cause burns to the skin, eyes and mucous membranes.

12. ECOLOGICAL INFORMATION

Ecotoxicological data

Product		Species	Test Results
Sulphuric ! cid 98%			
Aquatic			
Acute			
Fish	LC50	Fish	> 42 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Ecotoxicity Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems. Not expected to be harmful to aquatic organisms.

Environmental effects ! n environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Persistence / degradability [illegible]

Bioaccumulation No data available.

Aquatic toxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Mobility This product is miscible in water.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. DISPOSAL CONSIDERATIONS

Disposal instructions Consult authorities before disposal. This material and its container must be disposed of as hazardous waste. Do not discharge into drains, water courses or onto the ground. Dispose in accordance with all applicable regulations.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). ! void discharge into water courses or onto the ground.

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

DOT

UN number UN1830
UN proper shipping name Sulfuric acid with more than 51 percent acid
Transport hazard class(es)
Class &
Subsidiary risk -
Label(s) &
Packing group
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Special provisions ! 3, ! 7, B3, B83, B84, IB2, N34, T8, TP2, TP12
Packaging exceptions 154
Packaging non bulk 202
Packaging bulk 242

IATA

UN number UN1830
UN proper shipping name Sulphuric acid with more than 51% acid
Transport hazard class(es)
Class &
Subsidiary risk -
Packing group
Environmental hazards ;ŗ0
ERG Code &?
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Other information
Passenger and cargo aircraft ! llowed with restrictions.
Cargo aircraft only ! llowed with restrictions.

IMDG

UN number UN1830

UN proper shipping name	SULPHURIC ! CID with more than 51% acid
Transport hazard class(es)	
Class	&
Subsidiary risk	-
Packing group	__
Environmental hazards	
Marine pollutant	;ꞅ0
EmS	F-! , S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.

DOT

IATA; IMDG

15. REGULATORY INFORMATION

Labeling

Contains	SULFURIC ! CID
Symbol(s)	

Corrosive

R-phrase(s)	R35 Causes severe burns.
¯&̈ hrase(s)	S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S30 Never add water to this product. S36/37/39 Wear suitable protective clothing, gloves and eye/face protection. S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S60 This material and its container must be disposed of as hazardous waste.

Follow national regulation for work with chemical agents.

Bahrain. Chemicals SubGect to the Prior Informed Consent Procedure under the Rotterdam Convention (Law No. 14 of 2012, Annex III)

Not listed.

Bahrain. CWC Chemical Substances (Decree No. 6 of 1997, Schedules 1, 2 and 3; Law No. 51 of 2009)

Not listed.

Bahrain. Prohibited Chemicals (Ministry of State for Municipal & Environmental Affairs, Resolution No 7 of 2002, On Control of Importing & Use of Prohibited & Restricted Chemicals, Table 1)

Not listed.

Bahrain. Severely Restricted Chemicals (Ministry of State for Municipal & Environmental Affairs, Resolution No 7 of 2002, On Control of Importing & Use of Prohibited & Restricted Chemicals, Table 2)

Not listed.

Regulatory information

The product is classified and labelled in accordance with EC directives or respective national laws. Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended. Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work, as amended.

16. OTHER INFORMATION

Wording of the R-phrases in sections 2 and 3

R35 Causes severe burns.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	;f

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Recommended use

Use in accordance with supplier's recommendations.

Recommended restrictions

PROFESSIONAL USE ONLY

Disclaimer

Veolia Water Technologies is not able to anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use and or non respect of Veolia Water Technologies' requirement.

Revision information

This document has undergone significant changes and should be reviewed in its entirety.

SAFETY DATA SHEET

1. Identification

Product identifier	**HYDREX 3267**
Other means of identification	None.
Recommended use	Potable Water Treatment
Recommended restrictions	PROFESSIONAL USE ONLY
Manufacturer/Importer/Supplier/Distributor information	
Supplier	Veolia Water Technologies Canada Inc.
Address	2000 Argentia Road, Plaza IV, Suite 430 Mississauga, ON L5N 1W1 Canada
Contact Person	Hydrex Product Specialist
Telephone	(905) 286-4846
Fax	(905) 286-0488
e-mail	vwtcanada-hydrex@veolia.com
24-Hour Emergency telephone	+1-760-476-3962 (Code:333239)
Supplier	Not available.

2. Hazard(s) identification

Physical hazards	Not classified.
Health hazards	Not classified.
Environmental hazards	Hazardous to the aquatic environment, acute hazard Category 3
Label elements	
Hazard symbol	None.
Signal word	None.
Hazard statement	Harmful to aquatic life.
Precautionary statement	
Prevention	Avoid release to the environment.
Response	Wash hands after handling.
Storage	Store in cool place. Protect from sunlight. Store away from incompatible materials.
Disposal	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Other hazards	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
ALUMINUM, WATER SOLUBLE SALTS, N.O.S.		39290-78-3	95
Other components below reportable levels			5

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Do not rub eyes. Rinse with water. Get medical attention if irritation develops and persists.

Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Dusts may irritate the respiratory tract, skin and eyes.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Not available.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Use water spray to cool unopened containers.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Avoid the generation of dusts during clean-up. Collect dust using a vacuum cleaner equipped with HEPA filter. Prevent product from entering drains. Large Spills: Stop the flow of material, if this is without risk. Shovel the material into waste container. Following product recovery, flush area with water. Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Material	Type	Value	Form
HYDREX 3267	TWA	1 mg/m3	Respirable fraction.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Material	Type	Value
HYDREX 3267	TWA	2 mg/m3

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Material	Type	Value	Form
HYDREX 3267	TWA	1 mg/m3	Respirable.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Material	Type	Value	Form
HYDREX 3267	TWA	1 mg/m3	Respirable fraction.

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Material	Type	Value
HYDREX 3267	TWA	2 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles) and a face shield. Chemical goggles and face shield are recommended. Before any handling, wear protective glasses side-shields complying with the NF EN 166.

Skin protection

Hand protection Chemical resistant gloves.

Other Wear suitable protective clothing. Chemical resistant gloves.

Respiratory protection Wear respirator with dust filter.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance Powder.

Physical state Solid.

Form Powder.

Color Pale yellow

Odor Slight

Odor threshold Not available.

pH 3 - 5 (0.3% solution)

Melting point/freezing point 10.4 °F (-12 °C) (33% solution)

Initial boiling point and boiling range Not available.

Flash point Not available.

Evaporation rate Not available.

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Explosive limit - lower (%) Not available.

Explosive limit - upper (%) Not available.

Vapor pressure Not available.

Vapor density Not available.

Relative density Not available.

Solubility(ies)

Solubility (water)	Easily soluble in cold water.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.

Other information

Density	800.00 - 900.00 kg/m3
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Specific gravity	0.8 - 0.9

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials. None under normal conditions.
Incompatible materials	Ammonia. Chlorine. Do not mix with other chemicals. Alkalies.
Hazardous decomposition products	Aluminum and Sulfur oxides.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Dust may irritate respiratory system.
Skin contact	Dust or powder may irritate the skin.
Eye contact	Dust may irritate the eyes.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Dusts may irritate the respiratory tract, skin and eyes.

Information on toxicological effects

Acute toxicity	Not available.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not available.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.

12. Ecological information

Ecotoxicity	Harmful to aquatic life.

Product		Species	Test Results
HYDREX 3267			
Aquatic			
Crustacea	EC50	Daphnia	91.5789 mg/l, 48 hours estimated
Acute			
Algae	EC50	Algae	14 mg/l, 72 hours OCDE TG 201

* Estimates for product may be based on additional component data not shown.

Persistence and degradability

Bioaccumulative potential No data available.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations Additional information is given in the Safety Data Sheet.

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

Issue date 04-20-2017

Version # 01

Disclaimer Veolia Water Technologies is not able to anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use and or non respect of Veolia Water Technologies' requirement.

Revision information

Product and Company Identification: Product Review
Composition / Information on Ingredients: Ingredients
Physical & Chemical Properties: Multiple Properties
Toxicological Information: Toxicological Data
Ecological Information: Ecotoxicity
Regulatory Information: United States
GHS: Classification

Coagulant
Water Clarification - Polyaluminum Chloride

Description and Use

Hydrex 3267 is a highly effective polyaluminum chloride based coagulant, supplied in solid form. This product provides a most concentrated form of active aluminum and is a cost-efficient approach where bulk delivery of liquid product is not an option.

Advantages

Hydrex 3267 provides the performance well associated with polyaluminum chloride coagulant chemistry in a most concentrated form. Reduced transportation costs, the elimination of bulk storage footprint or the elimination of tote IBC management issues are benefits associated with this form of polyaluminum chloride.

Application Information

Hydrex 3267 is rehydrated to a 33 percent (by weight) solution, prior to dosing to the system. Contact your Hydrex representative to provide verification of the active aluminum concentration of this solution.

Rehydration of Hydrex 3267 to a 33% solution should be performed with th highest quality water available. Dissolution is best acheived through use of warm water to a temperature limit of 70 degrees celsius. While complete dissolution is attainable at lower temperature, additional mixing time may be required. Take care to add the dry Hydrex 3267 in a controlled flow of the powder. Avoid "dumping" large mass of Hydrex 3267 that is disportionately greater to the mass of dilution water.

Hydrex 3267 is to be stored in a cool, dry location. Keep shipping containers unopened until required for use. For best results, Hydrex 3267 should be stored in conditons in which relative humidity does not exceed 30%. Storage temperature should not exceed 30 degrees celsius. Environmental control systems are recommended for optimal product performance.

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Website : www.veoliawaterst.com

Coagulant
Water Clarification - Polyaluminum Chloride

Specifications

Physical Form :	Solid (powder)
Bulk Density :	800 to 900 kg/m3
Specific Gravity (g/cm3) @ 25°C :	1.1 to 1.3 (as 33% solution)
Product pH :	3.0 to 5.0 (as 33% solution)
Color :	Pale Yellow
Freezing Point (°C/°F) :	Not Applicable
Solubility :	Complete (30 minutes in most cases)

Materials Compatibility

Solution tanks, piping and all wetted components should be constructed from a selection including teflon or cross-linked polyethylene. Hydrex 3267 is mildly corrosive. Avoid use of mild steel, copper, aluminum and stainless steel in contact with the solution.

Storage of the the dry Hydrex 3267 in stainless steel is acceptable.

Packaging

Hydrex 3267 is available in 25 kags or 800 kilogram supersacs.

Safety Information

Refer to the product Material Safety Data Sheet before use.

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SAFETY DATA SHEET

1. Identification

Product identifier	**Hydrex 3613**
Other means of identification	None.
Recommended use	Potable Water Flocculant
Recommended restrictions	PROFESSIONAL USE ONLY

Manufacturer/Importer/Supplier/Distributor information

Supplier	Veolia Water Technologies Canada Inc.
Address	2000 Argentia Road, Plaza IV, Suite 430 Mississauga, ON L5N 1W1 Canada
Contact Person	Hydrex Product Specialist
Telephone	(905) 286-4846
Fax	(905) 286-0488
e-mail	vwtcanada-hydrex@veolia.com
24-Hour Emergency telephone	+1-760-476-3962 (Code:333239)
Supplier	Not available.

2. Hazard(s) identification

Physical hazards	Not classified.
Health hazards	Not classified.
Environmental hazards	Not classified.

Label elements

Hazard symbol	None.
Signal word	None.
Hazard statement	The mixture does not meet the criteria for classification.
Precautionary statement	
Prevention	Observe good industrial hygiene practices.
Response	Wash hands after handling.
Storage	Store in cool place. Protect from sunlight. Store away from incompatible materials.
Disposal	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Other hazards	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
ADIPIC ACID		124-04-9	1 - < 3
Other components below reportable levels			90 - 100

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Do not rub eyes. Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed	Dusts may irritate the respiratory tract, skin and eyes.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Not available.
Specific hazards arising from the chemical	Material can be slippery when wet. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Use water spray to cool unopened containers.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. For personal protection, see section 8 of the SDS. Slippery when wet.
Methods and materials for containment and cleaning up	Avoid the generation of dusts during clean-up. Collect dust using a vacuum cleaner equipped with HEPA filter. Stop the flow of material, if this is without risk. Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Following product recovery, flush area with water. Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Material can be slippery when wet. Practice good housekeeping.
Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles) and a face shield. Chemical goggles and face shield are recommended. Before any handling, wear protective glasses side-shields complying with the NF EN 166.
Skin protection	
Hand protection	Chemical resistant gloves.
Other	Wear suitable protective clothing. Chemical resistant gloves.
Respiratory protection	Wear respirator with dust filter.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Granular or Powder.
Physical state	Solid.
Form	Powder.
Color	Off-white.
Odor	Not available.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	0.70 - 0.80 g/cm3
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
pH of 1% Solution	3 - 5

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions. Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. None under normal conditions.
Incompatible materials	Oxygen.
Hazardous decomposition products	No dangerous reaction known under conditions of normal use. At thermal decomposition temperatures, carbon monoxide and carbon dioxide. Ammonia. Nitrogen oxides (NOx). Hydrogen chloride.

11. Toxicological information

Information on likely routes of exposure

Inhalation Dust may irritate respiratory system.

Skin contact Dust or powder may irritate the skin.

Eye contact Dust may irritate the eyes.

Ingestion Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Dusts may irritate the respiratory tract, skin and eyes.

Information on toxicological effects

Acute toxicity Not known.

Product	Species	Test Results
Hydrex 3613		
Acute		
Oral		
LD50	Rat	> 5000 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Not available.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Further information This product has no known adverse effect on human health.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Product		Species	Test Results
Hydrex 3613			
Aquatic			
Crustacea	EC50	Daphnia	> 10 mg/l, 48 hr
Fish	LC50	Fish	3880 mg/l, 96 hours estimated

* Estimates for product may be based on additional component data not shown.

Persistence and degradability

Bioaccumulative potential

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations Additional information is given in the Safety Data Sheet.

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No

Country(s) or region	Inventory name	On inventory (yes/no)*
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

Issue date 04-20-2017

Version # 01

Disclaimer Veolia Water Technologies is not able to anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use and or non respect of Veolia Water Technologies' requirement.

Revision information Product and Company Identification: Product Review
Hazards Identification: US Hazardous
Composition / Information on Ingredients: Ingredients
Toxicological Information: Toxicological Data
Regulatory Information: United States
GHS: Classification

Solids conditioning for dewatering operations and water clarification aid in various industries

Description and Use

HYDREX 3613 is a highly effective cationic flocculant of high molecular weight.

HYDREX 3613 conditions solids for dewatering operations and aids water clarification processes in various industries.

HYDREX 3613 shows exceptional performance in liquid-solid separations in a wide range of shear conditions.

HYDREX 3613 may be beneficial in any liquid-solid separation process. It is especially recommended for:

- Belt filter, centrifuge and screw press dewatering
- Dissolved air floatation
- Filtration
- Thickening
- Water clarification

Advantages

- Dry product minimizes storage requirements
- Economical to use – effective at low dosage levels
- Effective high solids removal
- Effective over a wide pH range; does not alter the system pH
- Improves production and cake solids

Application Information

Stock solutions can be prepared up to 0.5 % concentration via an automated make down unit or on a batch basis. Solutions should be aged 30-60 minutes for maximum effectiveness. High quality make up water should be used. Secondary dilution water should be added to the stock solution prior to the addition point at a ratio of at least 10:1.

Centrifugal pumps should be avoided for polymer transfer.

More information on the back

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Tél. +33 1 45 11 55 55
Website : www.veoliawaterst.com

VEOLIA WATER
Solutions & Technologies

Solids conditioning for dewatering operations and water clarification aid in various industries

Specifications

Appearance:	Off White, granular powder
Degree of Charge :	Low
Relative Molecular Weight:	High
Bulk Density, kg/m^3:	750 +/- 50
pH of 0.5 % solution, at 25°C:	3.0 - 5.0
Standard Viscosity, cps :	3.0 - 3.8
Viscosity at 25°C, Cps:	
0.10 %:	80
0.25 %:	200
0.50 %:	400
1.00 %:	800

Product Sales Specification:	
Insolubles, % w/w :	0.5 max
Residual Acrylamide, %:	0.020 max

The shelf life of HYDREX 3613 is 24 months when stored in unopened packages in a dry atmosphere at temperatures no higher than 40°C.

Materials Compatibility

Solutions are no more corrosive than water and recommended materials of construction include stainless steel, fiber glass, plastic, and glass or epoxy-lined vessels. Do not use iron, copper or aluminium.

Packaging

Supplied in bags. Other packaging : please consult us.

Safety Information

Spilled polymer is very slippery and should be collected prior to flushing with water. Whoever is responsible for the use and the manipulation of HYDREX 3613 should be familiar with the safety detailed in our MSDS.

Regulatory Approvals : see MSDS

VEOLIA WATER
Solutions & Technologies

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SAFETY DATA SHEET

1. Identification

Product identifier	**VEOLIA ACTISAND**
Other means of identification	None.
Recommended use	Wastewater Treatment
Recommended restrictions	Workers (and your customers or users in the case of resale) should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations. PROFESSIONAL USE ONLY

Manufacturer/Importer/Supplier/Distributor information

Manufacturer	
Supplier	Veolia Water Technologies Canada Inc.
Address	2000 Argentia Road, Plaza IV, Suite 430 Mississauga, ON L5N 1W1 Canada
Contact Person	Hydrex Product Specialist
Telephone	(905) 286-4846
Fax	(905) 286-0488
e-mail	vwtcanada-hydrex@veolia.com
24-Hour Emergency telephone	+1-760-476-3962 (Code:333239)
Supplier	Not available.

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Carcinogenicity	Category 1A
Environmental hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	May cause cancer.
Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF exposed or concerned: Get medical advice/attention.
Storage	Not available.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Other hazards	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Crystalline sillica		14808-60-7	100

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Coughing.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Not available.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Use water spray to cool unopened containers.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	The product is immiscible with water and will spread on the water surface. Stop the flow of material, if this is without risk. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Avoid prolonged exposure. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Protect from sunlight. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Store in cool, dry place.

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Material	Type	Value	Form
VEOLIA ACTISAND	TWA	0.025 mg/m3	Respirable fraction.

Components	Type	Value	Form
Crystalline sillica (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable fraction.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Material	Type	Value	Form
VEOLIA ACTISAND	TWA	0.025 mg/m3	Respirable particles.

Components	Type	Value	Form
Crystalline sillica (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable particles.

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Material	Type	Value	Form
VEOLIA ACTISAND	TWA	0.025 mg/m3	Respirable fraction.

Components	Type	Value	Form
Crystalline sillica (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable fraction.

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Crystalline sillica (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable fraction.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Material	Type	Value	Form
VEOLIA ACTISAND	TWA	0.1 mg/m3	Respirable.

Components	Type	Value	Form
Crystalline sillica (CAS 14808-60-7)	TWA	0.1 mg/m3	Respirable.

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Material	Type	Value	Form
VEOLIA ACTISAND	TWA	0.1 mg/m3	Respirable dust.

Components	Type	Value	Form
Crystalline sillica (CAS 14808-60-7)	TWA	0.1 mg/m3	Respirable dust.

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled.

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Other Use of an impervious apron is recommended. Chemical resistant gloves.

Respiratory protection Use a particulate filter respirator for particulate concentrations exceeding the Occupational Exposure Limit.

Thermal hazards Not available.

General hygiene considerations Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Solid.

Form Solid.

Color Not available.

Odor	Not available.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	< 0.0000001 kPa at 25 °C
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Insoluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Explosive properties	Not explosive.
Heat of combustion (NFPA 30B)	0 kJ/g
Molecular formula	O2Si
Oxidizing properties	Not oxidizing.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Powerful oxidizers. Chlorine.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Coughing.

Information on toxicological effects

Acute toxicity Not available.

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.) In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. May cause cancer. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

ACGIH Carcinogens

Crystalline sillica (CAS 14808-60-7)	A2 Suspected human carcinogen.

Canada - Alberta OELs: Carcinogen category

Crystalline sillica (CAS 14808-60-7)	Suspected human carcinogen.

Canada - Manitoba OELs: carcinogenicity

SILICA, CRYSTALLINE-.ALPHA.-QUARTZ, RESPIRABLE FRACTION (CAS 14808-60-7)	Suspected human carcinogen.

Canada - Quebec OELs: Carcinogen category

Crystalline sillica (CAS 14808-60-7)	Suspected carcinogenic effect in humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Crystalline sillica (CAS 14808-60-7)	1 Carcinogenic to humans.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

Canadian regulations

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No

Country(s) or region	Inventory name	On inventory (yes/no)*
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

Issue date 08-16-2016

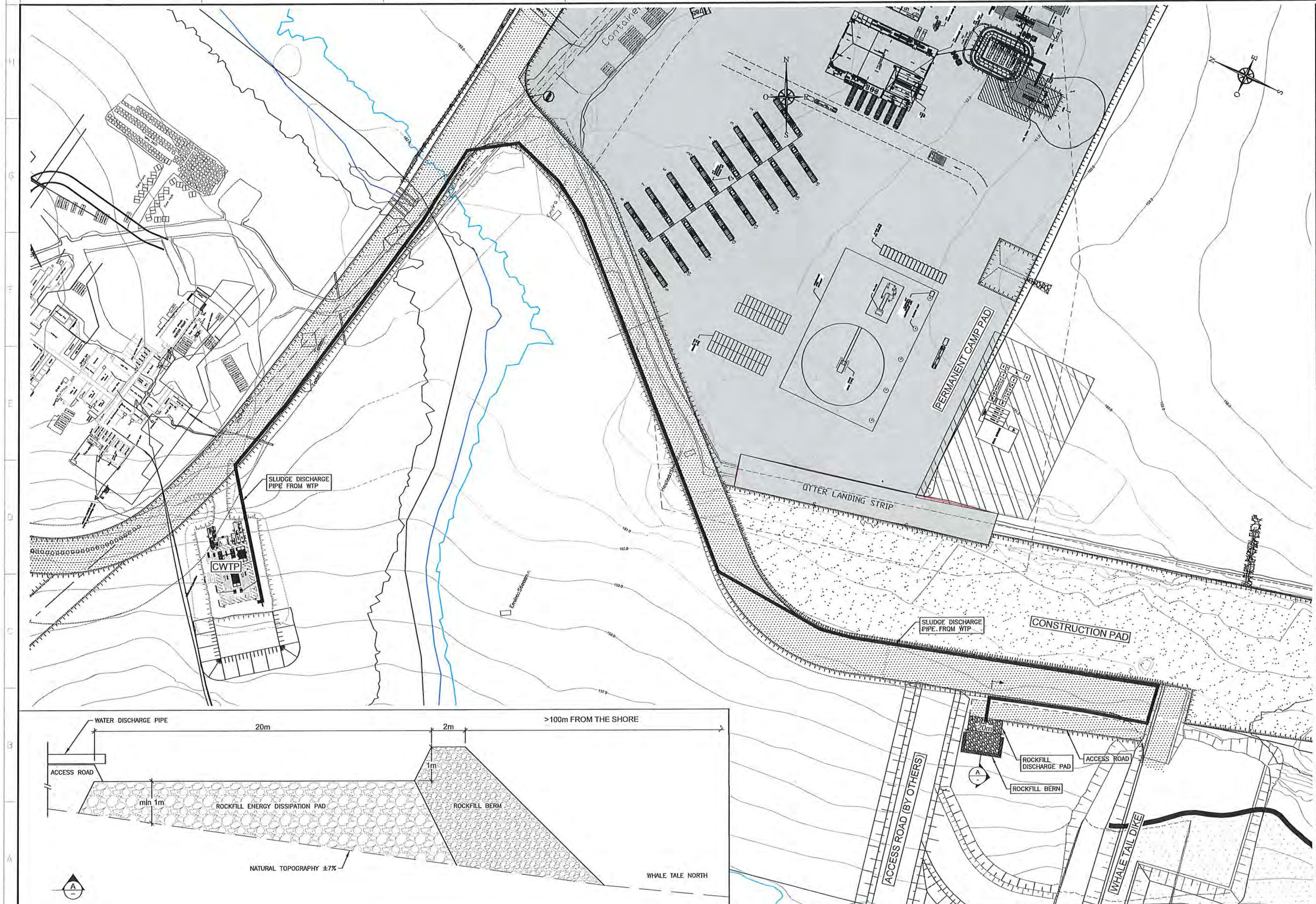
Version # 01

Disclaimer Veolia Water Technologies is not able to anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use and or non respect of Veolia Water Technologies' requirement.

Revision information Product and Company Identification: Product Review

Appendix B

Construction drawings CWTP



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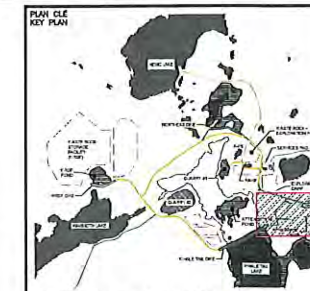

CONSTRUCTION ROADS 2017:
CONSTRUCTION ROADS 2018:

NOTES GÉNÉRALES / GENERAL NOTES

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

SNC·LAVALIN

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150, rue Gamble Ouest
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www.snclavalin.com

Project # : 644819-0000

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TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
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1	2018-04-11	ISSUED FOR CONSTRUCTION	D.D.	G.M.	E.T.
0	2018-03-20	ISSUED FOR CONSTRUCTION	D.D.	G.M.	E.T.

REVISIONS

ELECTRONICALLY SIGNED DOCUMENT
REGISTERED PROFESSIONAL ENGINEER R. MARCOUX LICENSEE NT/NU
2018-06-20

TITRE / TITLE
AGNICO EAGLE – WHALE TAIL (AMARUQ)
417 – ROADS YARDS, FENCES AND OTHER
230 – GENERAL EARTH WORKS
PLAN VIEW
PAD "Q" OF ROAD # 13
GENERAL ARRANGEMENT

DESSINÉ PAR / DRAWN BY	DANY BOULIANNE L., T.P	DATE 2018-06-20
VÉRIFIÉ PAR / CHECKED BY	RICHARD MARCOUX, ING.	2018-06-20
APPROUVÉ PAR / APPROVED BY	RICHARD MARCOUX, ING.	2018-06-20

ÉCHELLE / SCALE: 1:1000 — DATE: 2018-06-20

NO. DESSIN / DRAWING NO.: 61-417-230-241

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NO. DESSIN
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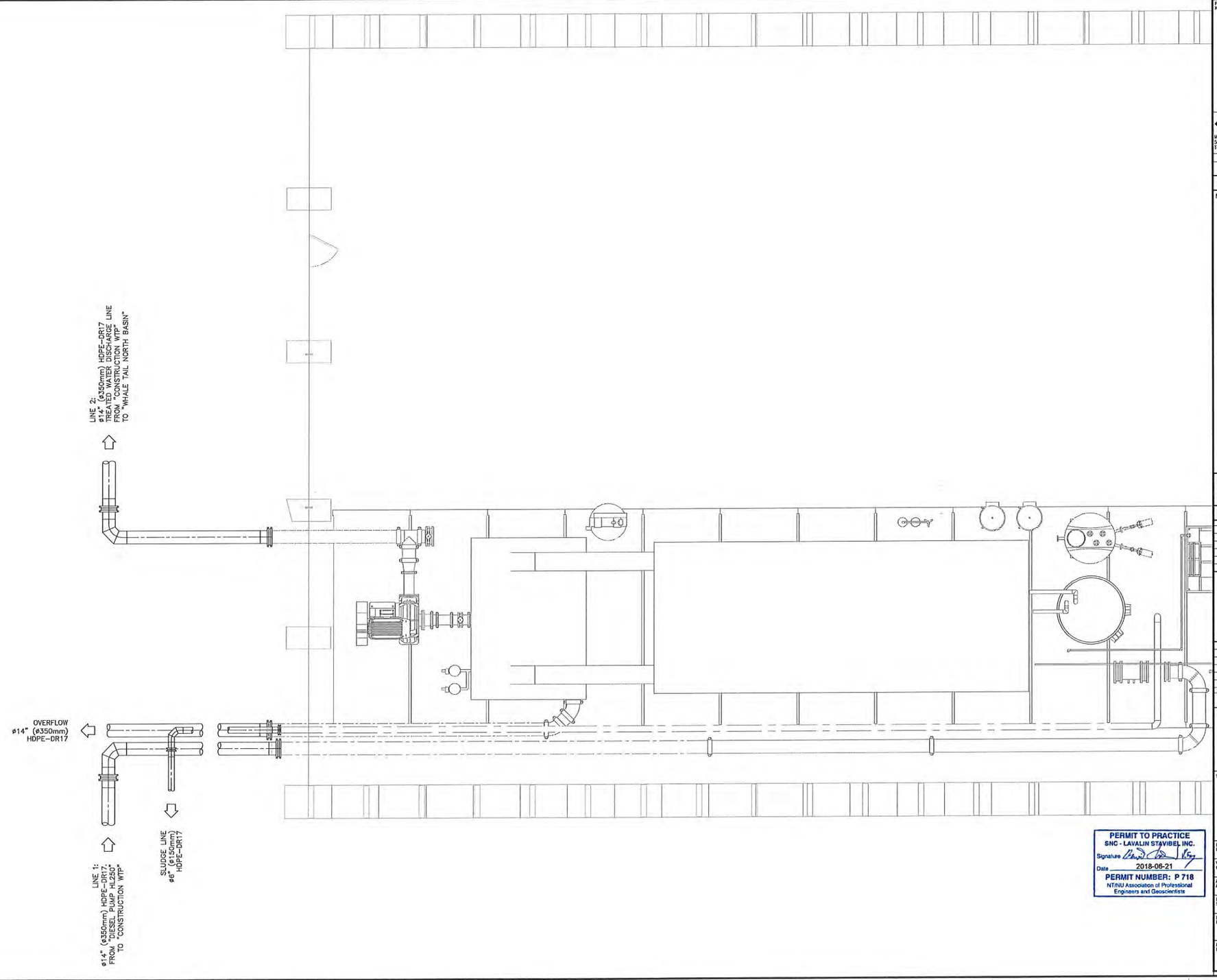

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KEY PLAN

SNC·LAVALIN

Mining & Metallurgy
5560, des Galeries Blvd., bur. 200, Quebec (Quebec), Canada G2K 2E2
Telephone: (418) 621-5500, Fax: (418) 621-6887

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

NOTES GÉNÉRALES / GENERAL NOTES

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1) –

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AGNICO EAGLE

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

REVISIONS

2018-06-20

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
648 – DEWATERING
270 – PIPING
PLAN VIEW
WATER TREATMENT PLANT
TIE–INS 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 LAVOLETTE	2018-06-20
ECHELLE / 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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Signature
Date 2018-06-21
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

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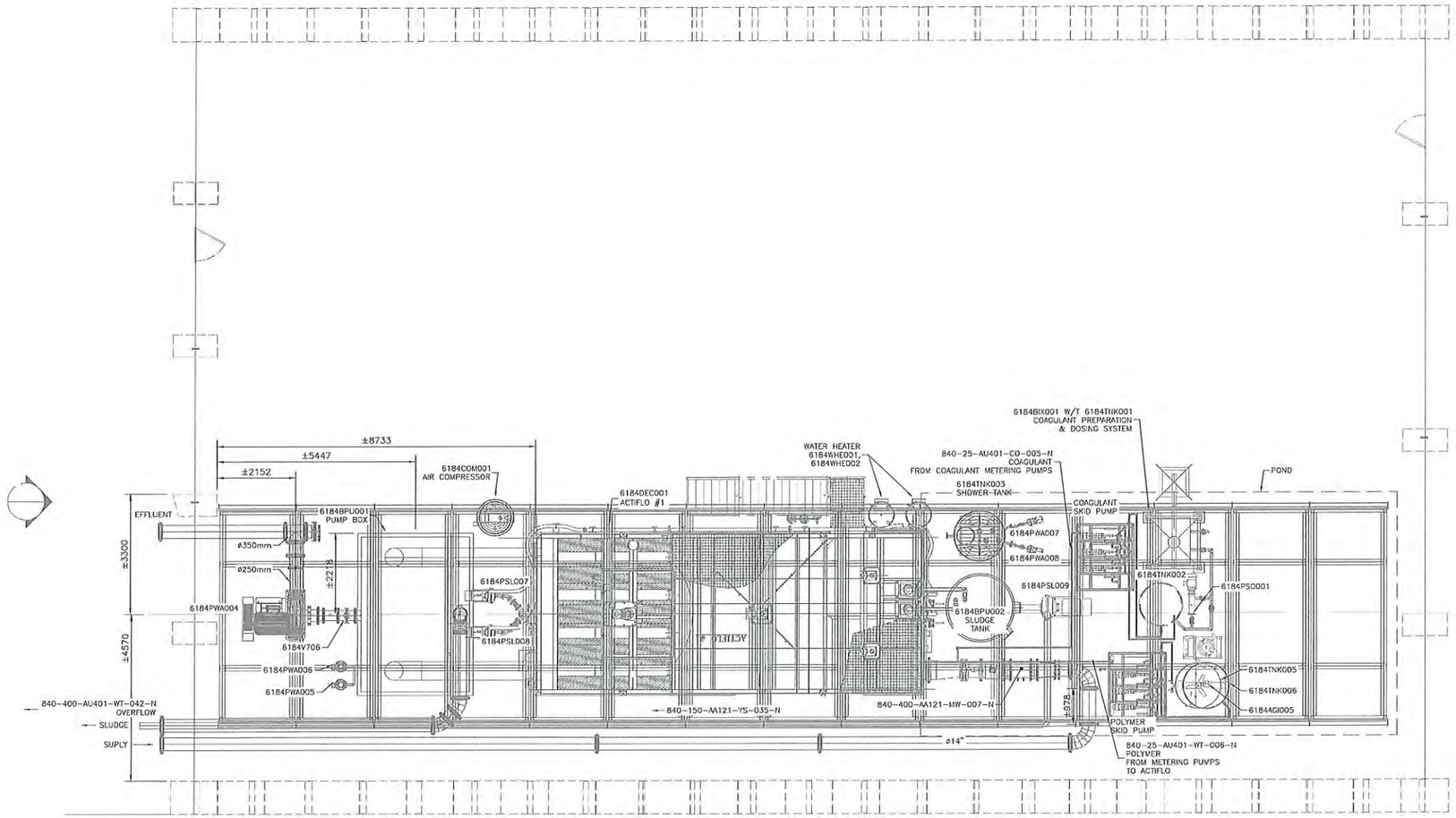

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FOR CONSTRUCTION
AGNICO EAGLE DATE : 2018-06-20

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Date 2018-06-20
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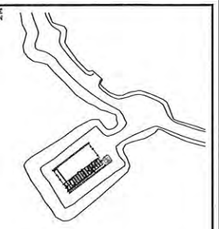

NOTES GÉNÉRALES / GENERAL NOTES

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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CK'D BY
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
BENOIT CHARTRAND, P. ING. LICENCE NT/NU 2709
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

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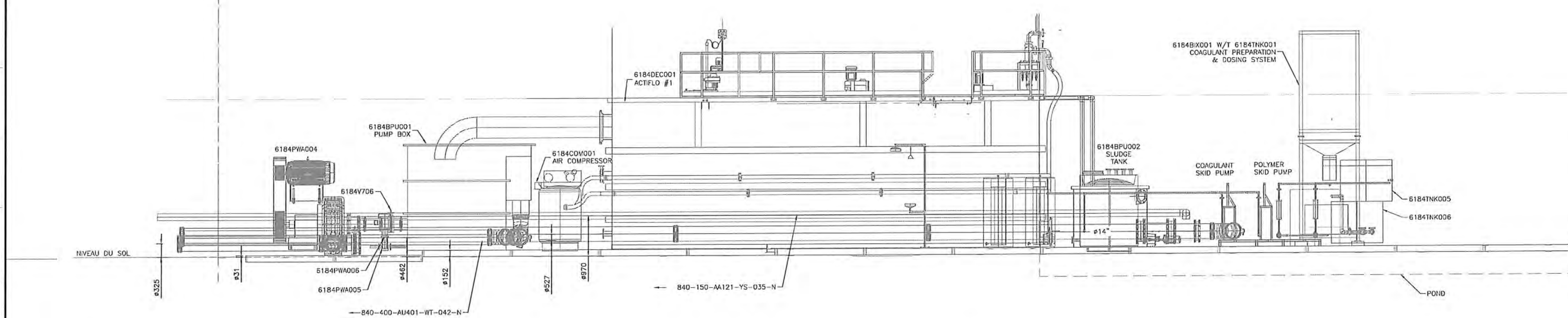

PLAN CLÉ KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

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DATE : 2018-06-20

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Date 2018-06-20
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NT/NU Association of Professional Engineers and Geoscientists

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Project # : 644819-0000

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B. CHARTRAND LICENSEE NT/NU L709
2018-06-20

TITRE / TITLE
AGNICO-EAGLE – WHALE TAIL
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DESSINÉ PAR DRAWN BY	ERIC DENONCOURT, TECH.	DATE 2018-04-27
VERIFIÉ 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

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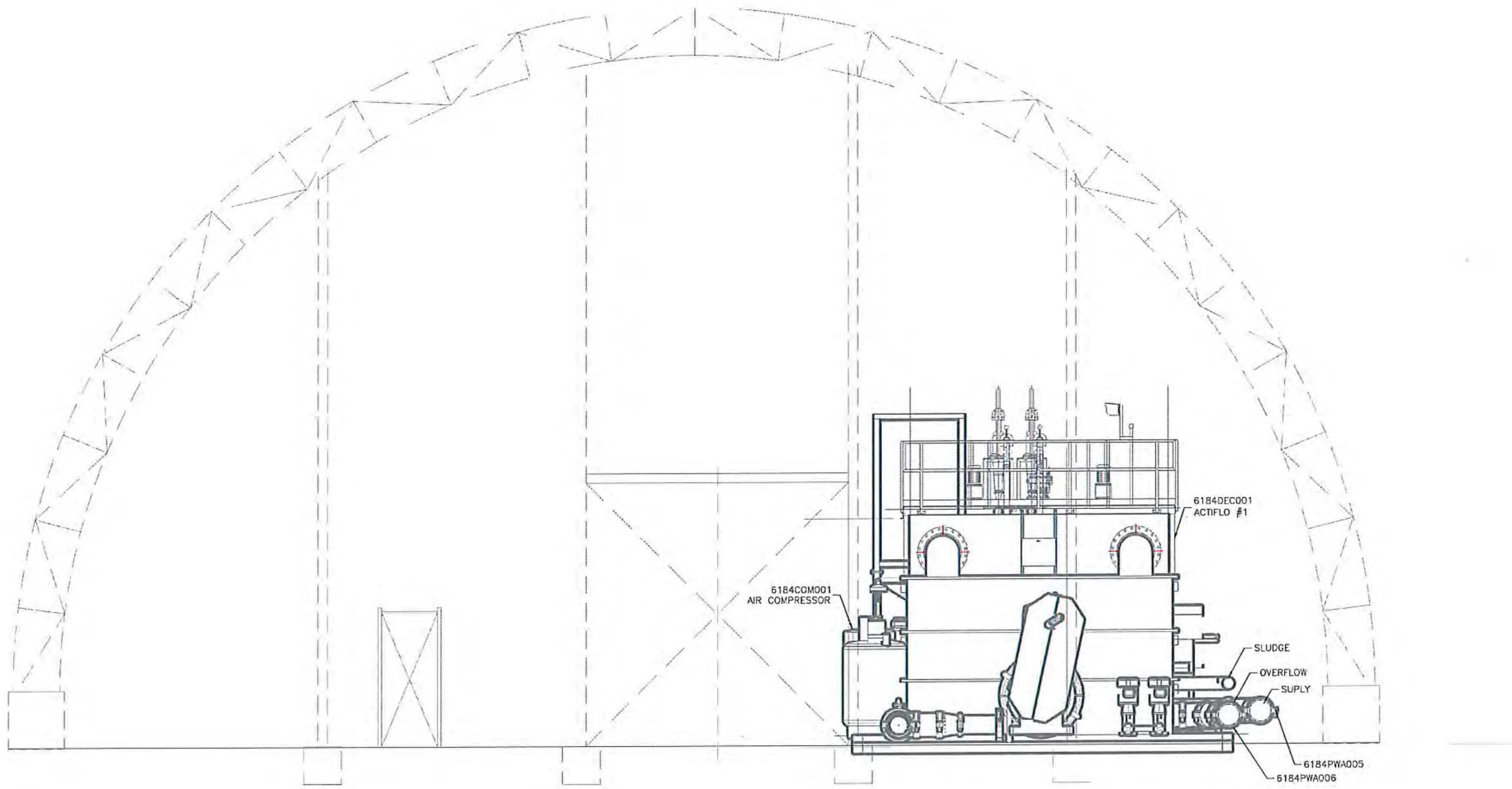

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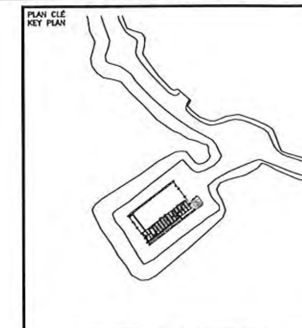

NOTES GÉNÉRALES / GENERAL NOTES

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B. CHARTRAND LICENSEE NT/NU 2018-06-20

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ÉCHELLE SCALE NTS	DATE 2018-04-27	
NO. DESSIN DRAWING NO.	61-693-210-200	
NO. PROJET PROJECT NO. 6115	REVISION 1	FEUILLE / SHT 3 / 3

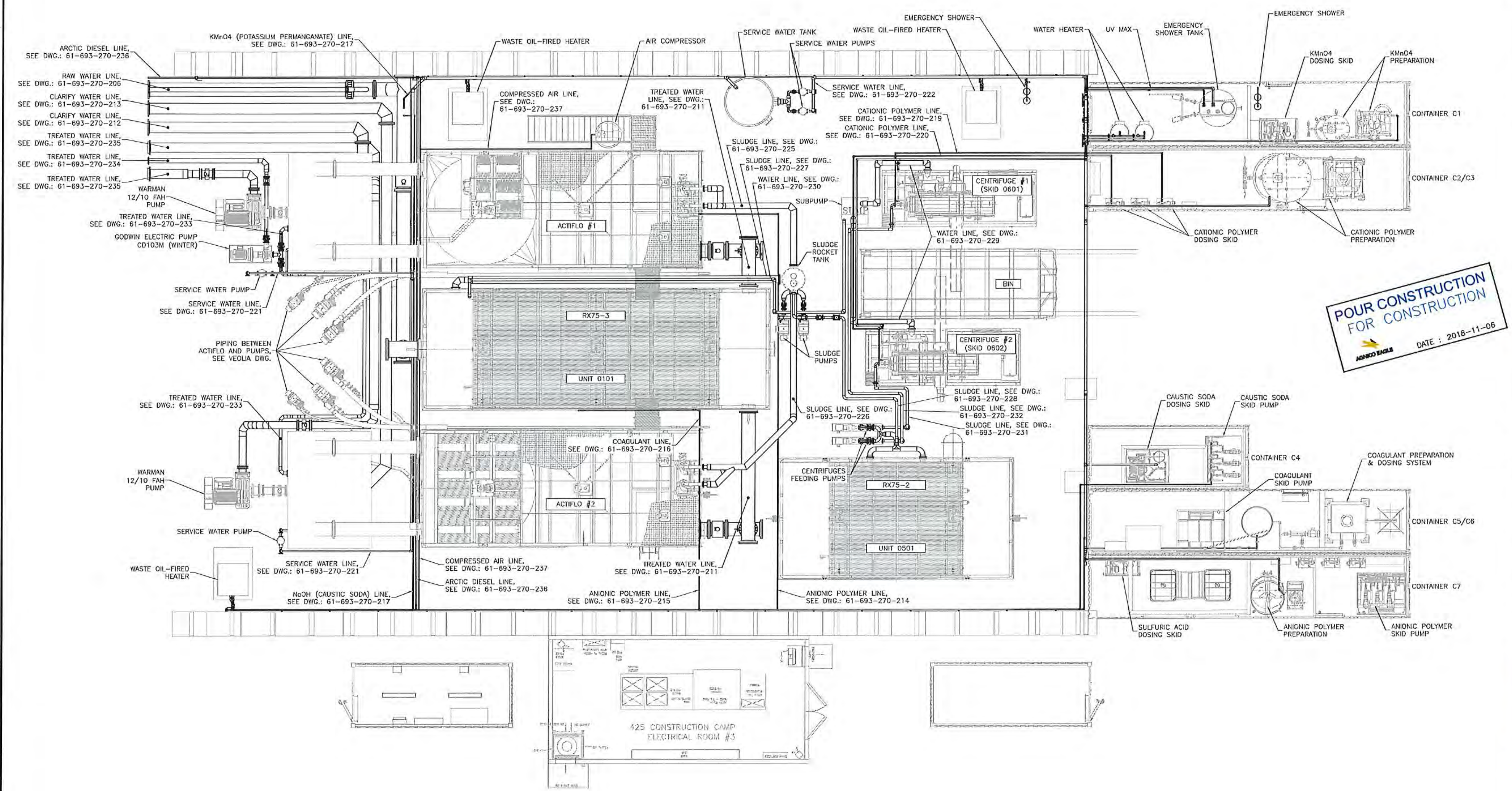
AE-CART-ARCH D

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

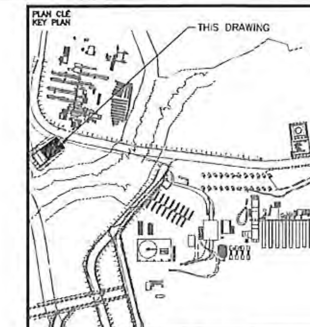
Appendix C

Construction drawings AsWTP

NO. DESSIN DRAWING NO. 61-693-270-200



PLAN VIEW
SCALE : 1:75



NOTES GÉNÉRALES / GENERAL NOTES

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
WTP – MECHANICAL EQP. LAYOUT	61-693-210-201
WTP – PIPING DETAILS	61-693-270-201@237

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2018-11-06	FOR CONSTRUCTION	B.L.	LGAG	D.LAF
A	2018-07-20	FOR COMMENTS	P.CÔTÉ	LGAG	D.LAF

REVISIONS

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2018-11-06
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
693 – FINAL WATER TREATMENT PLANT
270 – PIPING
PLAN VIEW
GENERAL ARRANGEMENT
WTP DISTRIBUTION SYSTEM

DESSINÉ PAR DRAWN BY	PIERRE-OLIVIER CÔTÉ	DATE 2018-06-08
VÉRIFIÉ PAR CHECKED BY	ISRAËL GAGNON, P. ENG.	2018-MM-JJ
APPROUVÉ PAR APPROVED BY	ISRAËL GAGNON, P. ENG.	2018-MM-JJ
ÉCHELLE SCALE	1 : 75	DATE 2018-06-08

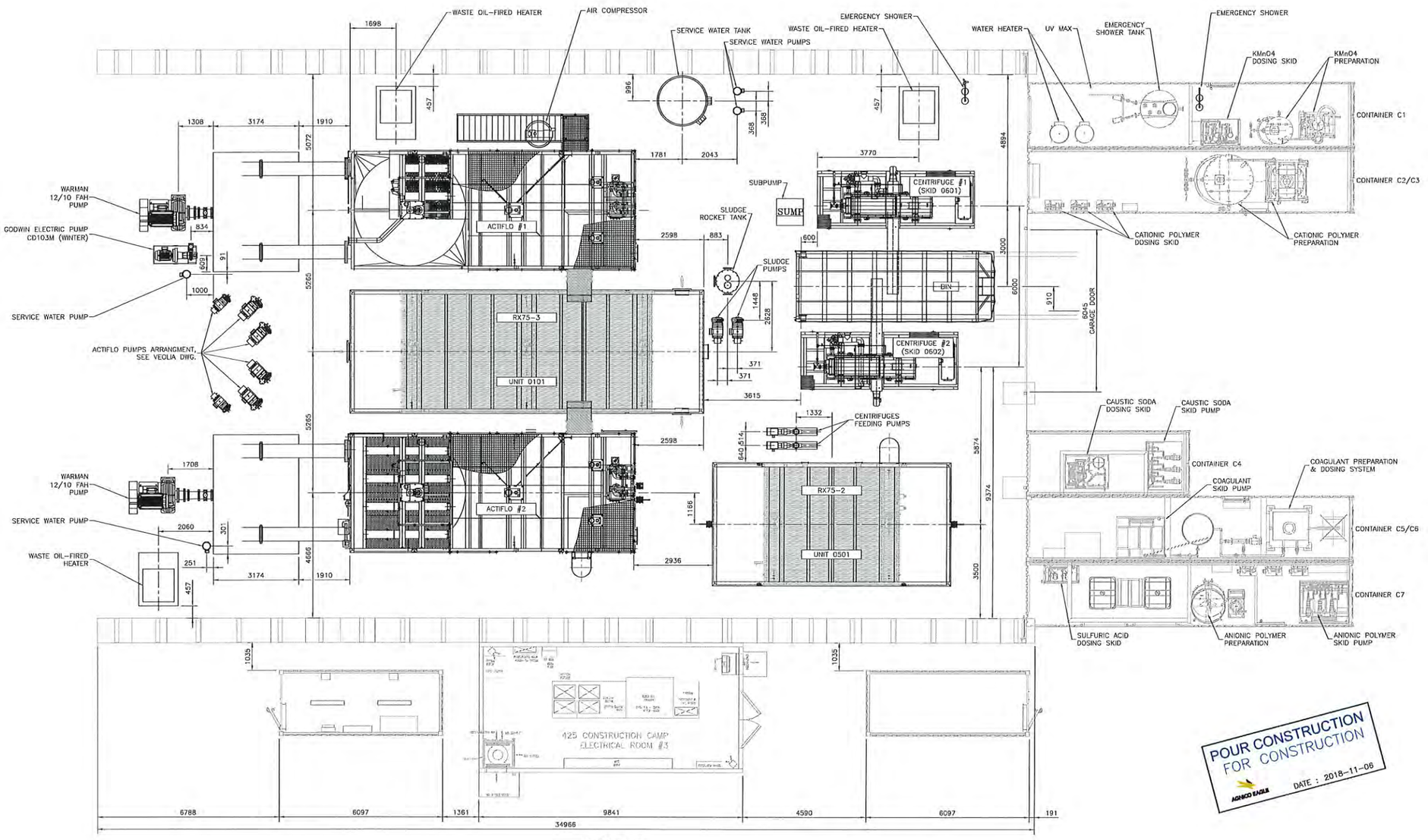
NO. DESSIN DRAWING NO. 61-693-270-200

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
6115	0	1 / 1

FILE NO. 61-693-270-200-R0.dwg

NO. DESSIN DRAWING NO. 61-693-210-201

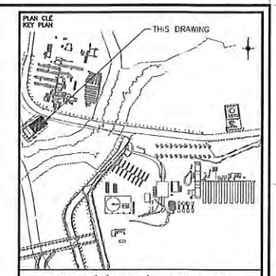
FORMAT ARCHD



PLAN VIEW
SCALE : 1:75

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2018-11-06

PLAN CLÉ
KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2018-11-06
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

2018-11-06

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG

AGNICO EAGLE

REV.	DATE	DESCRIPTION	B.L. PAO/BO	I.G. APP.	D.L. CLIENT
0	2018-11-06	FOR CONSTRUCTION			

REVISIONS

SNC·LAVALIN

SNC-Lavalin Stavibel Inc.
532, 7e Rue Ouest, Bureau 101
Amos (Québec) J9T 3W7
Tél.: 819 732-8255 Téléc.: 819 732-0259
www.snclavalin.com

Projet No. : 653281-0000

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
693 – FINAL WATER TREATMENT PLANT
210 – GENERAL ARRANGEMENT
PLAN VIEW
MECHANICAL EQUIPMENTS LAYOUT

DESSINÉ PAR / DRAWN BY	BRUNO LEMIEUX, TECH.	DATE 2018/10/24
VERIFIÉ PAR / CHECKED BY	ISRAËL GAGNON, P. ENG.	2018/10/24
APPROUVÉ PAR / APPROVED BY	ISRAËL GAGNON, P. ENG.	2018/10/24
ÉCHELLE / SCALE	1 : 75	DATE 2018-06-08

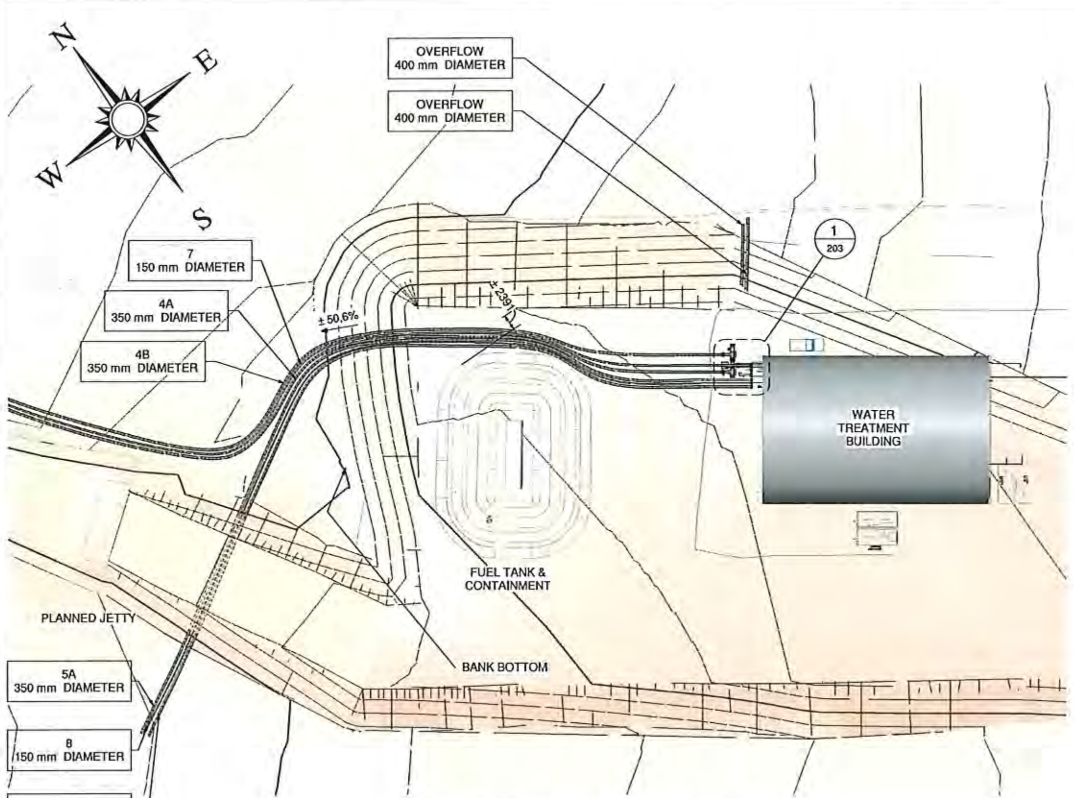
NO. DESSIN / DRAWING NO. 61-693-210-201

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6115	0	1 / 1

AE-CART-ARCH D

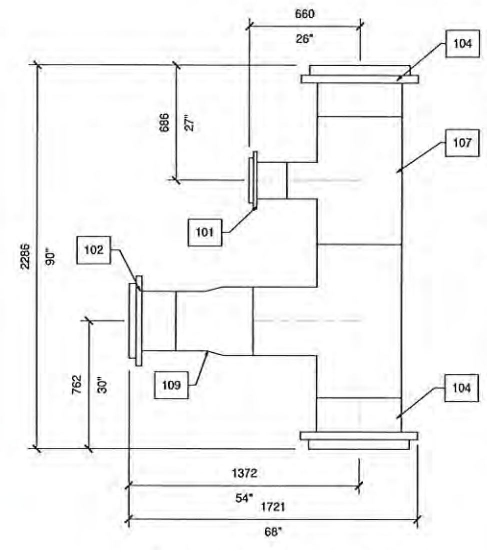
FILE NO. 61-693-210-201-R0.dwg

NO DESSIN DRAWING NO. 61-695-270-203



PLAN VIEW WATER TREATMENT PLANT AREA

1 : 500



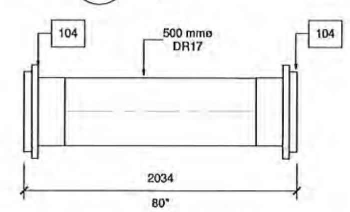
2 / 203 HEADER SECTION DETAIL

1 : 20

PIPE FITING LIST			
MARK	COUNT	SIZE	DESCRIPTION
100	2	150 mmø-150 mmø	DR17 - BACK-UP RING (DI) - STUB END (HDPE)
101	1	200 mmø-200 mmø	DR17 - BACK-UP RING (DI) - STUB END (HDPE)
102	6	350 mmø-350 mmø	DR17 - BACK-UP RING (DI) - STUB END (HDPE)
103	2	400 mmø-400 mmø	DR17 - BACK-UP RING (DI) - STUB END (HDPE)
104	7	500 mmø-500 mmø	DR17 - BACK-UP RING (DI) - STUB END (HDPE)
105	1	200 mmø	DR17 - BLIND FLANGE STEEL ISCO
106	2	500 mmø	DR17 - BLIND FLANGE STEEL ISCO
107	1	500 mmø-500 mmø-200 mmø	DR17 - BRANCH SADDLE - REDUCING TEE - HDPE
108	2	500 mmø-500 mmø-400 mmø	DR17 - BRANCH SADDLE - REDUCING TEE - HDPE
109	2	400 mmø-350 mmø	DR17 - CONCENTRIC REDUCER HDPE
110	2	400 mmø-400 mmø	DR17 - ELBOW 45° HDPE
111	2	400 mmø-400 mmø	DR17 - ELBOW 90° HDPE
112	1	500 mmø-500 mmø-500 mmø	DR17 - TEE FABRICATED HDPE
113	3	80 mmø-80 mmø	SCHEDULE 40 PIPE TREADED ELBOW Dia 80

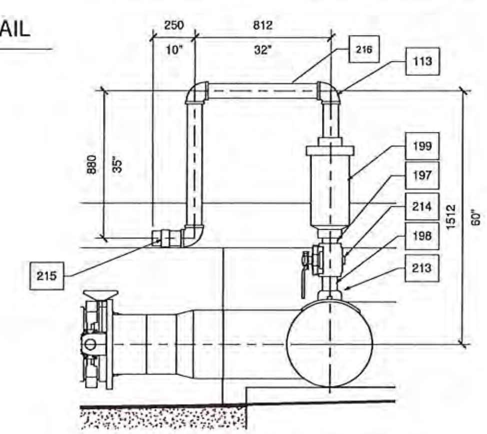
PIPE ACCESSORIES LIST			
MARK	COUNT	SIZE	DESCRIPTION
197	1		NPT MALE BRANCH Dia 80
198	1		NPT MALE BRANCH Dia 80
199	1		APCO COMBINATION AIR VALVE, MODEL 447, dia 80
200	8		THREADED ROD 3/4" X 10 UNC C/W 2 NUTS AND 2 LOCK WASHERS AND 2 WASHERS (ASTM 307 GR.B/ASTM A563 GR.A) 142 L.
201	16		THREADED ROD 3/4" X 10 UNC C/W 2 NUTS AND 2 LOCK WASHERS AND 2 WASHERS (ASTM 307 GR.B/ASTM A563 GR.A) 160 L.
202	40		THREADED ROD 1-1/8" X 7 UNC C/W 2 NUTS AND 2 LOCK WASHERS AND 2 WASHERS (ASTM 307 GR.B/ASTM A563 GR.A) 246 L.
203	24		THREADED ROD 1" X 8 UNC C/W 2 NUTS AND 2 LOCK WASHERS AND 2 WASHERS (ASTM 307 GR.B/ASTM A563 GR.A) 274 L.
204	32		THREADED ROD 1" X 8 UNC C/W 2 NUTS AND 2 LOCK WASHERS AND 2 WASHERS (ASTM 307 GR.B/ASTM A563 GR.A) 284 L.
205	60		THREADED ROD 1-1/8" X 7 UNC C/W 2 NUTS AND 2 LOCK WASHERS AND 2 WASHERS (ASTM 307 GR.B/ASTM A563 GR.A) 325 L.
206	24		THREADED ROD 1" X 8 UNC C/W 2 NUTS AND 2 LOCK WASHERS AND 2 WASHERS (ASTM 307 GR.B/ASTM A563 GR.A) 350 L.
207	3	500 mmø-500 mmø	GASKET 1/8" THICK
208	2	400 mmø-400 mmø	GASKET 1/8" THICK
209	2	350 mmø-350 mmø	GASKET 1/8" THICK
210	2	150 mmø-150 mmø	GASKET 1/8" THICK
211	2	350 mmø-350 mmø	BUTTERFLY VALVE HANDWHEEL CL-150
213	1		SADDLE ELECTROFUSION 20" IPS DR17 x 3" NPT MALE SS 304
214	1		DEZURICK ECCENTRIC PLUG VALVE, MODEL PEC,3,T1,C1,NBR WITH LEVER, Dia 80
215	1		STRAP 80 Dia 50mm X 6mm WITH MECHANICAL ANCHORS
216	5	80 mmØ	THREADED PIPE SCHEDULE 40

NOTES: PIPES SEGMENTS ARE NOT INCLUDED IN THE LIST EXCEPT FOR AIR RELEASE VALVE SYSTEM PIPE.



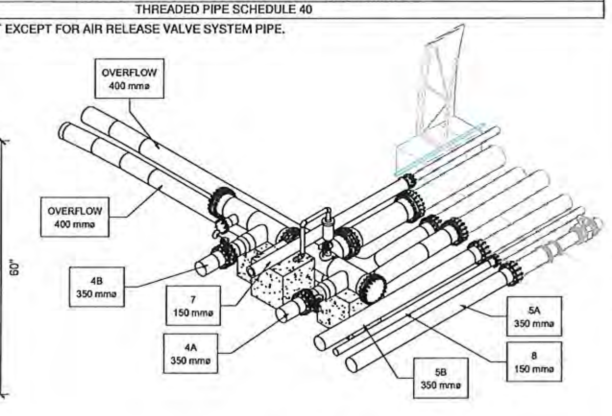
4 / 203 HEADER SECTION DETAIL

1 : 25

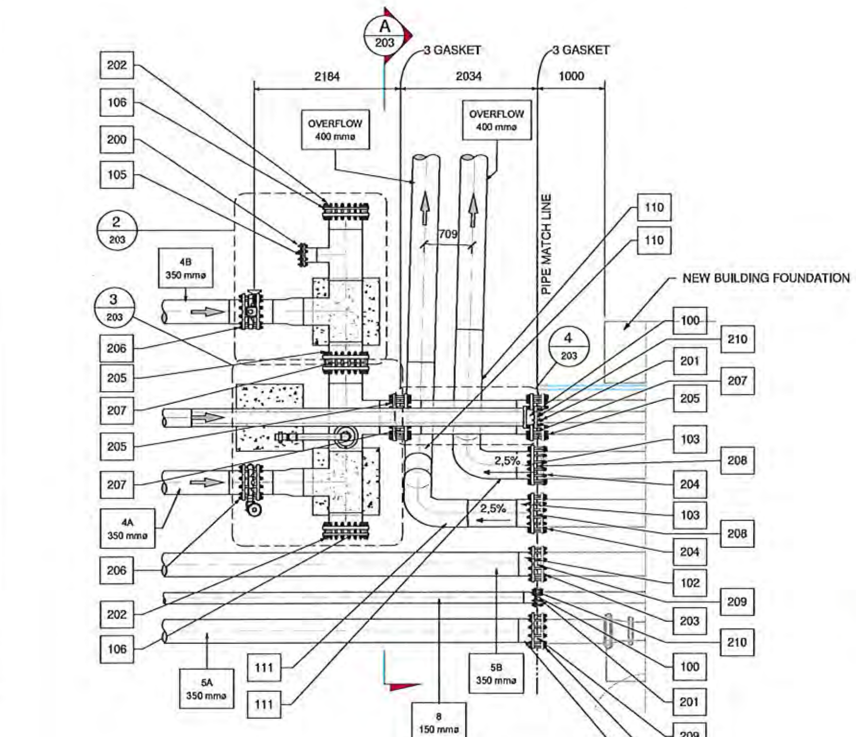


5 / 203 AIR RELEASE DETAIL

1 : 20

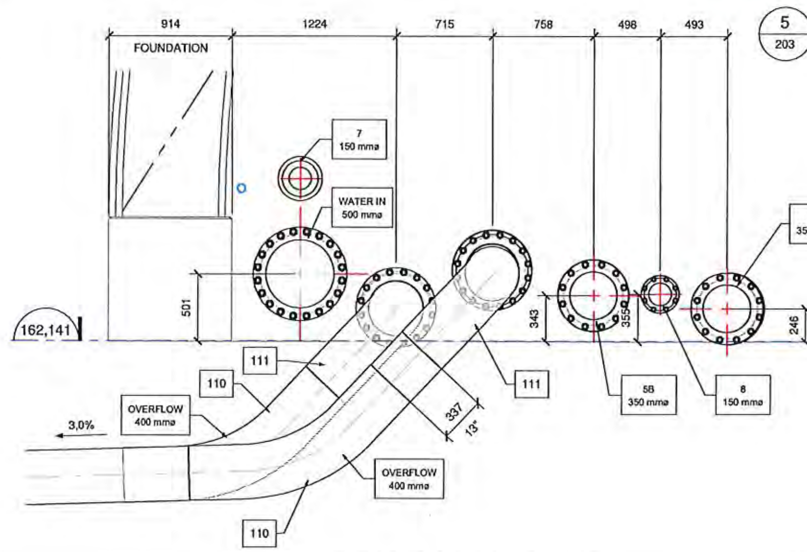


3D VIEW TIE-IN AREA



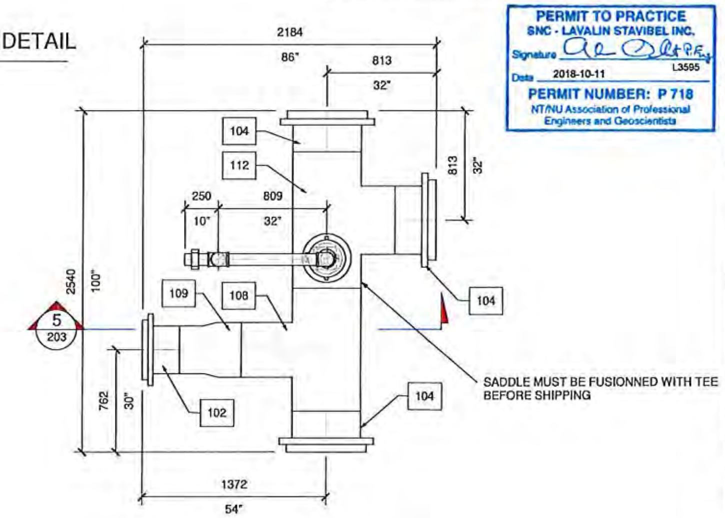
1 / 203 TIE IN DETAIL

1 : 50



A / 203 SECTION TIE IN

1 : 25



3 / 203 HEADER SECTION DETAIL

1 : 25

PLAN CLÉ
KEY PLAN

Mining & Metallurgy

651298 | 8200 | 41D6 | 0004 | 01

NOTES GÉNÉRALES / GENERAL NOTES

FOR CONSTRUCTION
POUR CONSTRUCTION
DATE 2018-10-11 15:03:54

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
L3595
Date 2018-10-11
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

AGNICO EAGLE

REV	DATE	DESCRIPTION	PAR	APP.	CLIENT
1	2018-10-10	FOR CONSTRUCTION	F.P.	É.L.	
0	2018-08-28	FOR CONSTRUCTION	F.P.	É.L.	
RB	2018-07-18	CLIENT COMMENTS	F.P.	É.L.	
RA	2018-07-18	INTERNAL COMMENTS	F.P.	É.L.	

REVISIONS

TITRE / TITLE

AGNICO EAGLE - AMARUQ DIVISION
695 - WATER MANAGEMENT
270 - PIPING
PLAN VIEW AND DETAILS
WTP TIE-INS FOR DEWATERING PHASE AND PHASE 1 OPERATION AND INLET HEADER DETAILS

DESSINÉ PAR / DRAWN BY	F.POTVIN	2018-07-18
VÉRIFIÉ PAR / CHECKED BY	É.LEBEL	2018-07-18
APPROUVÉ PAR / APPROVED BY	A.L. NGUYEN	2018-07-18
ÉCHELLE / SCALE	As indicated	DATE 2018-07-18

NO DESSIN / DRAWING NO. 61-695-270- 203

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

FORMAT ARCH D (914x610)

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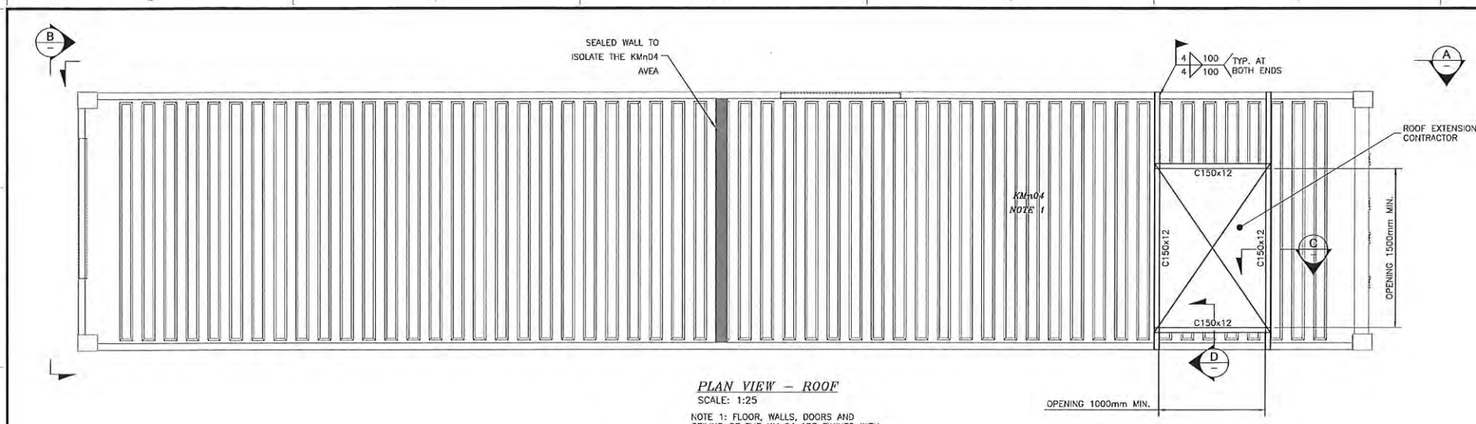
2018-10-11 15:03:54

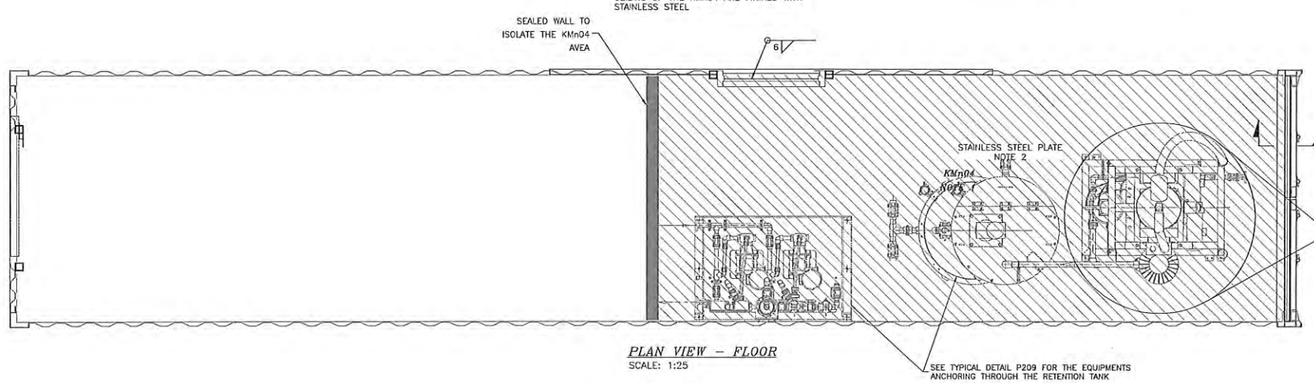
NO. DESSIN DRAWING NO. 61-693-245-201_R1

FORMAT ARCHD

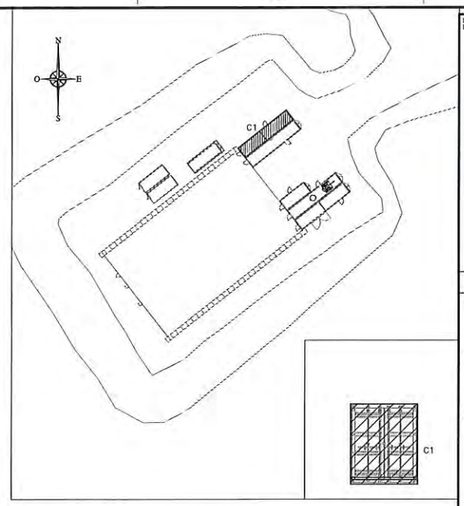


PLAN VIEW – ROOF
SCALE: 1:25

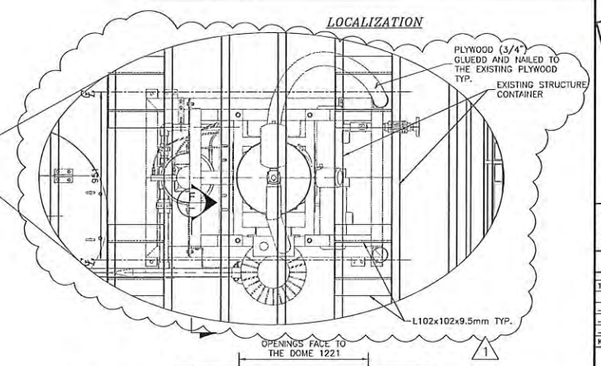
NOTE 1: FLOOR, WALLS, DOORS AND CEILING OF THE KMn04 ARE FINISHED WITH STAINLESS STEEL

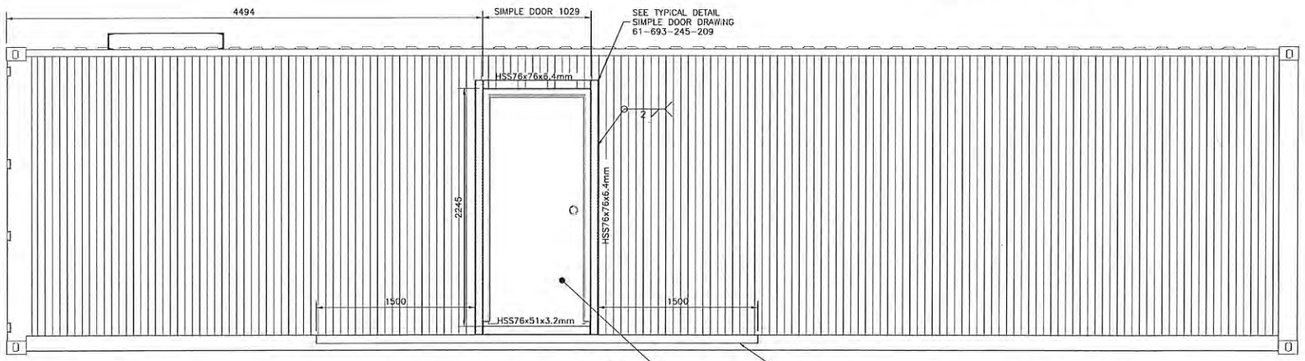


PLAN VIEW – FLOOR
SCALE: 1:25

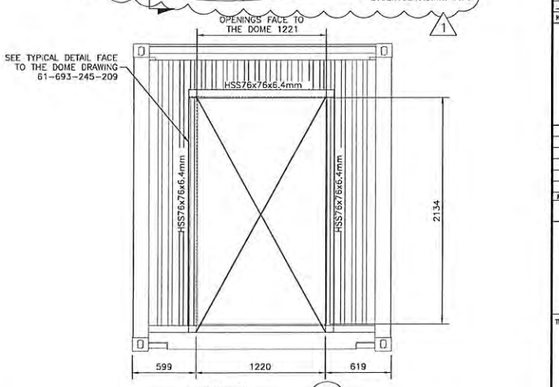


LOCALIZATION

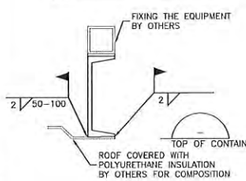




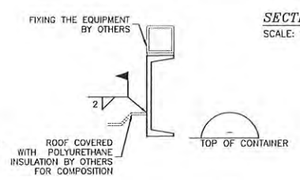
SECTION A
SCALE: 1:25



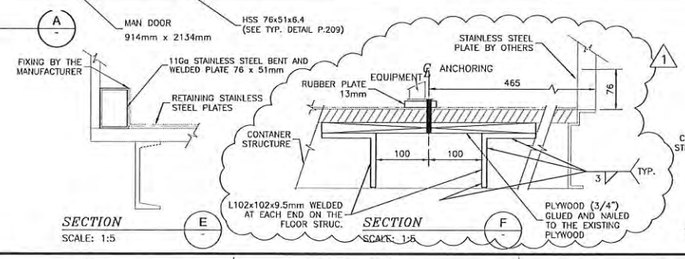
SECTION B
SCALE: 1:25



SECTION C
SCALE:1:5

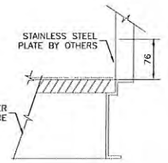


SECTION D
SCALE:1:5



SECTION E
SCALE: 1:5

SECTION F
SCALE: 1:5



TYPICAL SECTION – RETENTION TANK
SCALE: 1:5

1 ARCHITECHTURAL DETAILS NOT SHOWN FOR CLARITY

MAXIMUM LOAD: 8000 lbs

WELD THE BRIDGING AT THE PERIMETER OF THE HOLE

UNLESS NOTED OTHERWISE THE MINIMUM WELD SIZE IS 4mm

NOTE 1: THE STAINLESS STEEL RETENTION TANK SHOULD COVER THE ENTIRE FLOOR OF THE KMn04 SECTION

PLAN CLE
KEY PLAN

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2018-08-22 L3595
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

NOTES GÉNÉRALES / GENERAL NOTES

LIFTING WITH FORK ONLY (BY OTHERS)

LIFTING PROCEDURE BY AEM

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2018-08-22

SNC-Lavalin Stavibel Inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-5151 Fax: 819 797-0158
www.snclavalin.com

SNC·LAVALIN

Project # : 653281-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
TYPICAL DETAIL CONTAINER	61-693-245-209
–	–
–	–
–	–
–	–
KMn04 SERVICE AREA	AMP18-19-003

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2018-08-22	EQUIPMENT ANCHORAGES	JBD	D.L.	
0	2018-07-27	FOR CONSTRUCTION	JBD	D.L.	

REVISIONS

2018-08-22

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
693 – FINAL WATER TREATMENT PLANT
245 – STRUCTURE
CONTAINER 40 ft HIGH CUBE KMn04 AND SERVICE WATER SYSTEMS
PLAN VIEW, ELEVATION & PROFIL

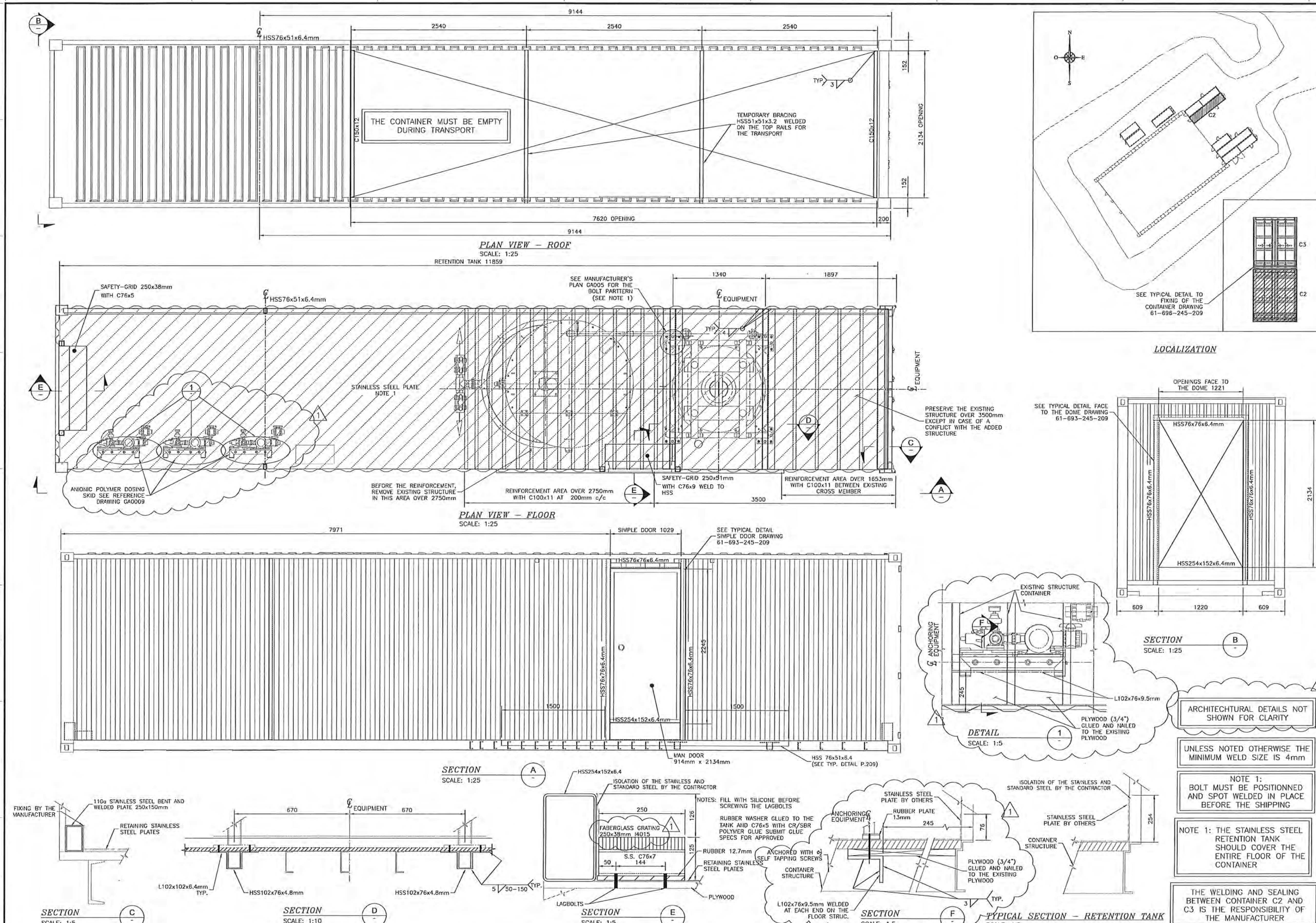
DESSINÉ PAR DRAWN BY	MICHEL LANTHIER, Tech.	DATE 2018-05-09
VERIFIÉ PAR CHECKED BY	JANICK COTE, Jr Eng.	2018-07-06
APPROUVÉ PAR APPROVED BY	DANY LAMBERT, P. Eng.	2018-07-06
ÉCHELLE SCALE	INDICATED	DATE 2018-05-09
NO. DESSIN DRAWING NO.	61-693-245-201	
NO. PROJET PROJECT NO.	6115	REVISION 1
		FEUILLE / SHT 1 / 1

AE-CART-ARCH D

P:\300-RN\653281\0001\4-Ingenierie\D-Dessins maitresse\43-ST\61-693-245-201_R1.dwg-2013-02-19 14:03:29

FILE NO. 61-693-245-201_R1.dwg

NO. DESSIN DRAWING NO. 61-693-245-202_R1



ARCHITECHTURAL DETAILS NOT SHOWN FOR CLARITY

UNLESS NOTED OTHERWISE THE MINIMUM WELD SIZE IS 4mm

NOTE 1:
BOLT MUST BE POSITIONNED AND SPOT WELDED IN PLACE BEFORE THE SHIPPING

NOTE 1: THE STAINLESS STEEL RETENTION TANK SHOULD COVER THE ENTIRE FLOOR OF THE CONTAINER

THE WELDING AND SEALING BETWEEN CONTAINER C2 AND C3 IS THE RESPONSIBILITY OF THE MANUFACTURER

PLAN CLÉ / KEY PLAN

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2018-08-22
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

NOTES GÉNÉRALES / GENERAL NOTES

LIFTING WITH FORK ONLY (BY OTHERS)

LIFTING PROCEDURE BY AEM

THE CONTAINER MUST BE EMPTY DURING TRANSPORT

POUR CONSTRUCTION / FOR CONSTRUCTION
DATE : 2018-08-22

SNC·LAVALIN
Project # : 653281-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
TYPICAL DETAIL CONTAINER	61-693-245-209

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2018-08-22	FOR CONSTRUCTION	JBD	D.L.	
0	2018-07-27	FOR CONSTRUCTION	JBD	D.L.	

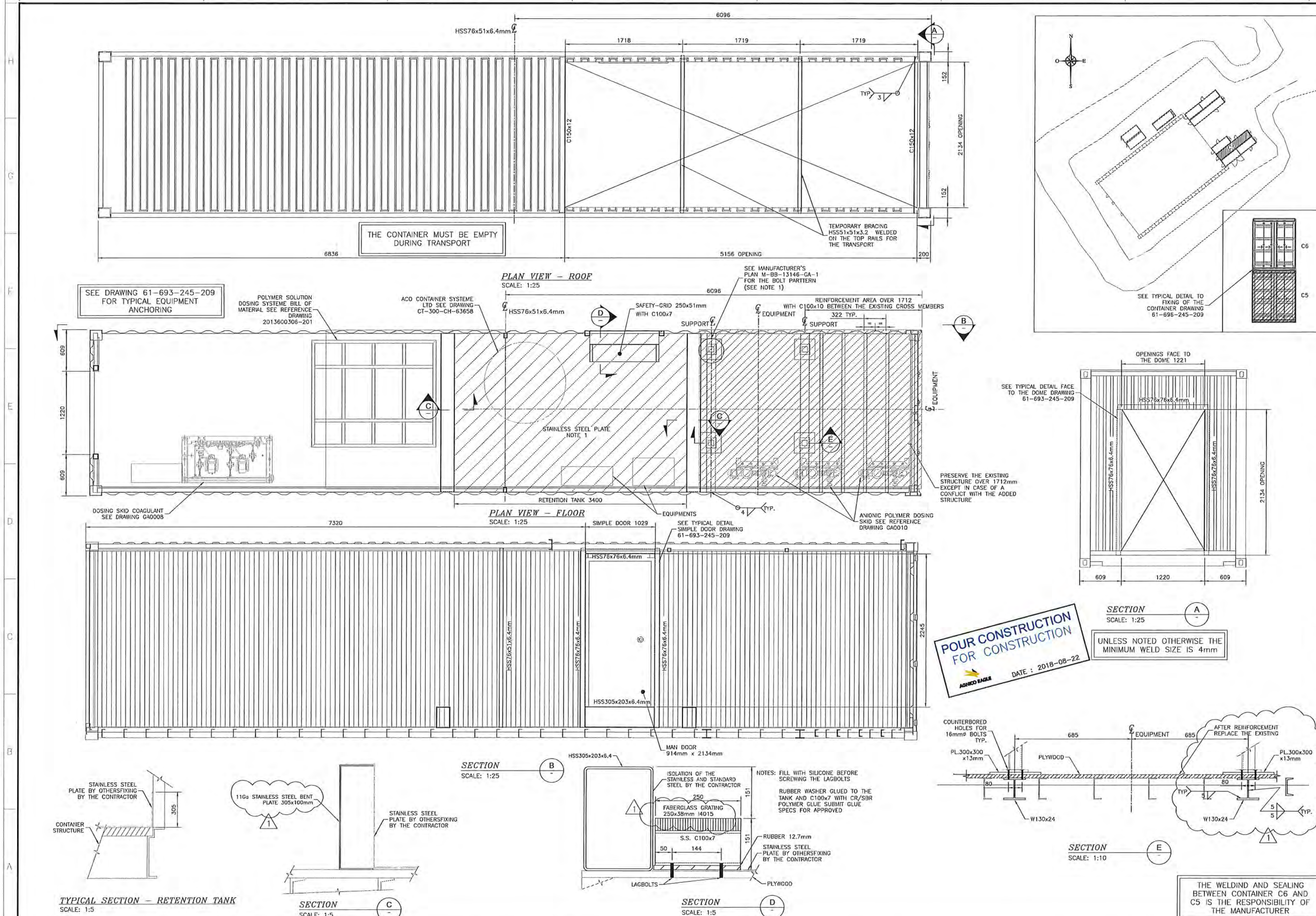
REVISIONS

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
693 – FINAL WATER TREATMENT PLANT
245 – STRUCTURAL STEEL
40 FT CONTAINER HIGH CUBE CATIONIC POLYMER AND DOSING SYSTEMS
PLAN VIEW AND SECTION

DESSINÉ PAR / DRAWN BY	MICHEL LANTHIER, Tech.	2018-05-09
VÉRIFIÉ PAR / CHECKED BY	JANICK CÔTÉ, Jr. Eng	2018-07-06
APPROUVÉ PAR / APPROVED BY	DANY LAMBERT, P.Eng.	2018-05-08
ÉCHELLE / SCALE	INDICATED	DATE 2018-05-09
NO. DESSIN / DRAWING NO.	61-693-245-202	
NO. PROJET / PROJECT NO. 6115	RÉVISION 1	FEUILLE / SHT 1/1

FILE NO. 61-693-245-202_R1.dwg

NO. DESSIN DRAWING NO. 61-693-245-205_R1



PLAN CLÉ
KEY PLAN

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2018-08-22 L3595
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

NOTES GÉNÉRALES / GENERAL NOTES

LIFTING WITH FORK ONLY (BY OTHERS)

LIFTING PROCEDURE BY AEM

THE CONTAINER MUST BE EMPTY DURING TRANSPORT

UNLESS NOTED OTHERWISE THE MINIMUM WELD SIZE IS 4mm

NOTE 1:
WELD THE EQUIPMENT BASE PLATE TO THE 300x300x13mm PLATES

SNC·LAVALIN
SNC-Lavalin Stavibel Inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.sndavalin.com

Project # : 653281-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
TYPICAL DETAIL CONTAINER	61-693-245-209
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–	–
–	–
–	–
–	–

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2018-08-22	FOR CONSTRUCTION	JBD	D.L.	
0	2018-07-27	FOR CONSTRUCTION	JBD	D.L.	

REVISIONS

2018-08-22

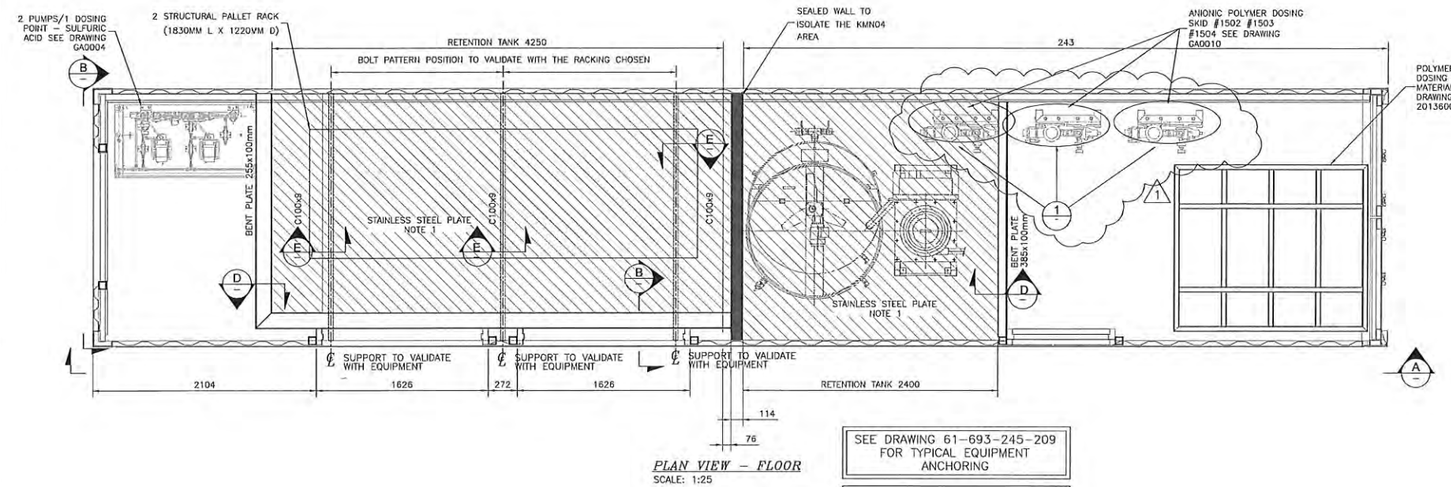
TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
693 – FINAL WATER TREATMENT PLANT
245 – STRUCTURAL STEEL
40 ft CONTAINER HIGH CUBE COAGULANT
PREPARATION AND DOSING SYSTEM
PLAN VIEW AND SECTIONS

DESSINÉ PAR / DRAWN BY	MICHEL LANTHIER, Tech.	DATE 2018-05-09
VERIFIÉ PAR / CHECKED BY	JANICK CÔTÉ, Jr.Eng.	2018-07-06
APPROUVÉ PAR / APPROVED BY	DANY LAMBERT, P.Eng.	2018-07-06
ÉCHELLE / SCALE	INDICATED	DATE 2018-05-09
NO. DESSIN / DRAWING NO.	61-693-245-205	
NO. PROJET / PROJECT NO. 6115	REVISION 1	FEUILLE / SHT 1/1

FILE NO. 61-693-245-205_R1.dwg

NO. DESSIN DRAWING NO. 61-693-245-207_R1

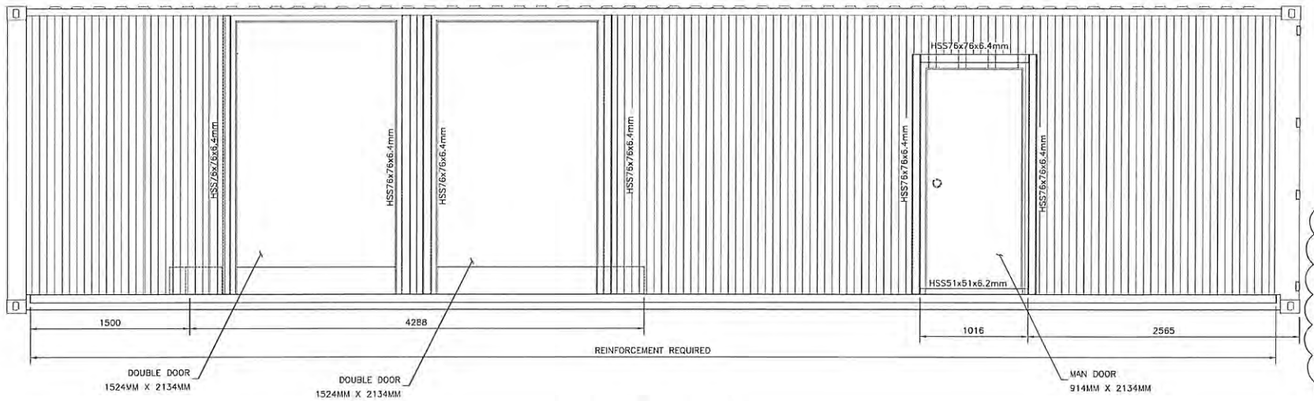
FORMAT ARCHD



PLAN VIEW – FLOOR
SCALE: 1:25

SEE DRAWING 61-693-245-209 FOR TYPICAL EQUIPMENT ANCHORING

THE CONTAINER MUST BE EMPTY DURING TRANSPORT



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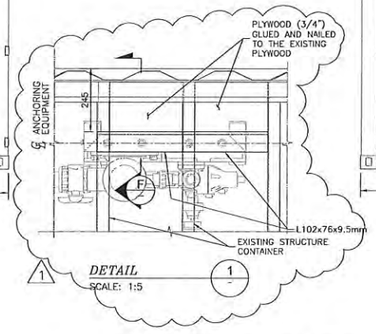
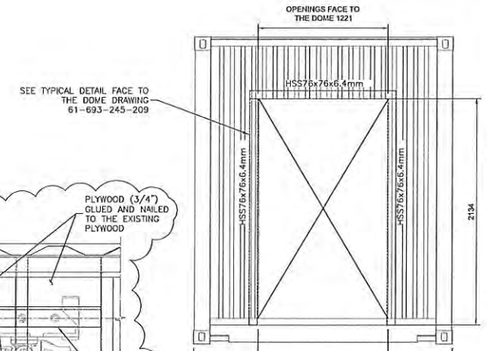
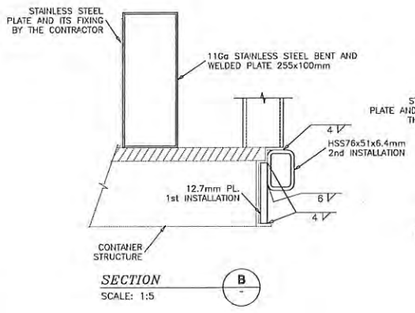


DETAIL 1
SCALE: 1:5



SECTION B
SCALE: 1:25



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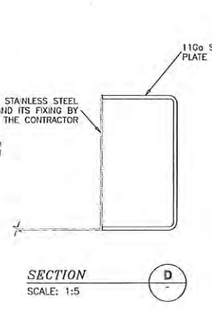

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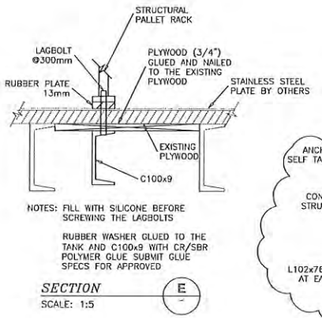
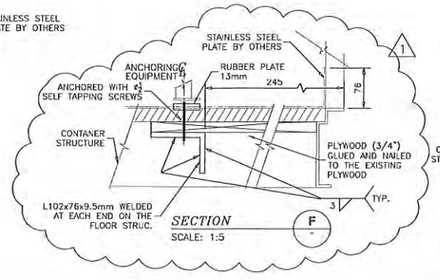
SCALE: 1:5



NOTES: FILL WITH SILICONE BEFORE SCREWING THE LAGBOLTS

RUBBER WASHER GLUED TO THE TANK AND C100x9 WITH CR/SBR POLYMER GLUE SUBMIT GLUE SPECS FOR APPROVED

SECTION E
SCALE: 1:5



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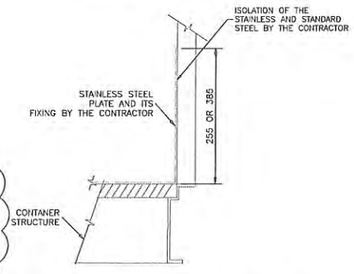


TYPICAL SECTION – RETENTION TANK
SCALE: 1:5

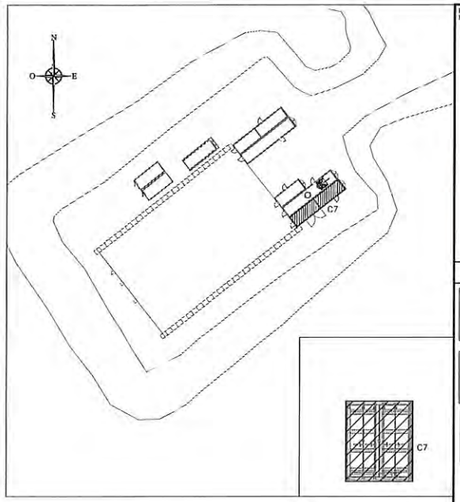
POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2018-08-22

ARCHITECHTURAL DETAILS NOT SHOWN FOR CLARITY

NOTE 1: THE STAINLESS STEEL RETENTION TANK PLATE SHOULD COVER THE ENTIRE FLOOR OF THE CONTAINER

UNLESS NOTED OTHERWISE THE MINIMUM WELD SIZE IS 4mm

PAINT THE VISIBLE SIDE OF THE BENT PLATE IN YELLOW SAFETY



PLAN CLÉ
KEY PLAN

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2018-08-22 L3595
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

NOTES GÉNÉRALES / GENERAL NOTES

LIFTING WITH FORK ONLY (BY OTHERS)

LIFTING PROCEDURE BY AEM

THE CONTAINER MUST BE EMPTY DURING TRANSPORT

SNC·LAVALIN
SNC-Lavalin Stavibel Inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel.: 819 764-5151 Fax.: 819 797-0158
www.snclavalin.com

Project # : 653281-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
TYPICAL DETAIL CONTAINER	61-693-245-209
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2018-08-22	EQUIPMENT ANCHORAGES	JBD	D.L.	
0	2018-07-27	FOR CONSTRUCTION	JBD	D.L.	

REVISIONS

2018-08-22

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
693 – FINAL WATER TREATMENT PLANT
245 – STRUCTURAL STEEL
40 fT CONTAINER HIGH CUBE KMn04 AND SERVICE WATER SYSTEM
PLAN VIEW AND SECTIONS

DESSINÉ PAR DRAWN BY	MICHEL LANTHIER, Tech.	DATE 2018-05-09
VERIFIÉ PAR CHECKED BY	JANICK CÔTÉ, Jr.Eng.	2018-07-09
APPROUVÉ PAR APPROVED BY	DANY LAMBERT, P.Eng.	2018-07-09
ÉCHELLE SCALE	INDICATED	DATE 2018-05-09
NO. DESSIN DRAWING NO.	61-693-245-207	
NO. PROJET PROJECT NO.	6115	REVISION 1
		FEUILLE / SHT 1/1

AE-CART-ARCH D

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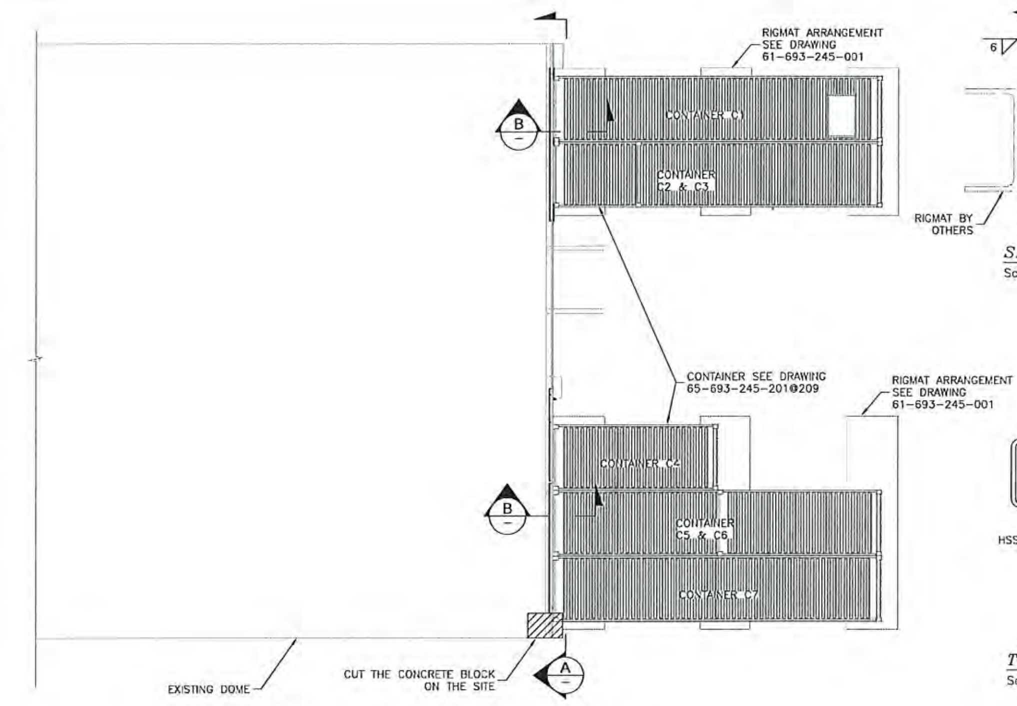
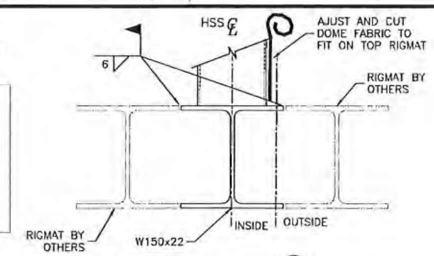
FILE NO. 61-693-245-207_R1.dwg

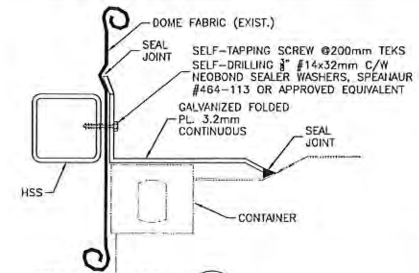
NO. DESSIN / DRAWING NO. 61-693-245-210_R0



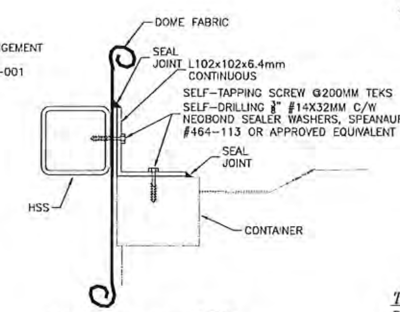
PLAN VIEW – GENERAL ARRANGEMENT
Scale: 1:125



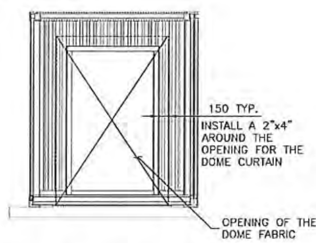
SECTION B
Scale: 1:5



TYPICAL SECTION C
Scale: 1:5
SEAL THE JUNCTION OF THE GALVANIZED PLATE AND THE CONTAINER



TYPICAL SECTION D
Scale: 1:5



TYPICAL OPENING IN THE DOME
Scale: 1:50

1. GENERAL NOTES

1.1 FOR ALL CONSTRUCTION WORKS, REFER ONLY TO DRAWINGS LABELED AS « ISSUED FOR CONSTRUCTION ».

1.2 REFER ONLY TO DIMENSIONS INDICATED ON PLANS, DO NOT THE DRAWINGS SCALE.

1.3 ALL DIMENSIONS HAVE TO BE VERIFIED AND VALIDATED ON SITE PRIOR TO CONSTRUCTION COMMENCEMENT. IN ANY CASE, NO CONTRACTOR IS PERMITTED TO INTERPRET ERRORS OR OMISSIONS BETWEEN THE PLANS AND SPECIFICATIONS OF VARIOUS PROFESSIONALS. ONLY WRITTEN QUESTIONS ON BEHALF OF THE CONTRACTOR SHALL BE CONSIDERED FOR POTENTIAL ADDENDUMS DURING THE TENDERING PERIOD. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE DRAWINGS AND SPECIFICATIONS OF ALL OTHER RELATED DISCIPLINES. ANY INTERPRETATIONS OR QUESTIONS RELATED TO PLANS DURING THE CONSTRUCTION PROCESS SHALL BE CLARIFIED BY PROFESSIONALS THROUGH WRITTEN QUESTIONS.

1.4 THE CONTRACTOR SHALL ENSURE A PRECISE CORRESPONDENCE AT THE JUNCTION OF A NEW AND EXISTING STRUCTURE. THE CONTRACTOR SHALL ENSURE A PRECISE FIT BETWEEN THE LEVEL OF A NEW FLOOR AND THAT OF AN EXISTING ONE.

1.5 THE PRESENT PLANS INDICATE IN A GENERAL MANNER, WORKS TO BE REALIZED ACCORDING TO EXISTING SITE CONDITIONS. TO ESTABLISH FINAL BID PRICE, THE CONTRACTOR SHALL MAKE SITE VISITS SO AS TO QUANTIFY ANY FACTOR OR CONSTRAINT WICH MAY AFFECT WORK REALIZATION.

1.6 FLASHING AND SEALING PART FOR THE DOME FABRIC BY OTHERS

2. STRUCTURAL STEEL

2.1 STRUCTURAL STEEL MUST RESPECT CRITERIA LISTED IN CAN/CSA-G40.20 AND CAN/CSA-G40.21, GRADE 350 W WITH EXCEPTION OF C AND L SECTION WHICH ARE TO BE OF GRADE 300 W. HSS SECTION TO BE OF ASTM 500 TYPE C GRADE 345 W.

2.3 STEEL SURFACE PREPARATION PROCESS AND PAINT COATING FOR AGNICO EAGLE. THE STEEL MUST BE FREE FROM GREASE, OIL OR ANY OTHER CONTAMINANT DETRIMENTAL TO THE GRIP.

1) MAKE SSPC-SP1
2) MAKE SSPC-SP6
3) APPLY 1 LAYER OF PRIMER OF EPOXY COR-PRO 470 (2 MILS SECS) GREY
4) APPLY 2 LAYERS OF EPOXY COATING COR-PRO 475 (5 MILS. SECS EACH) GREY

2.4 SURFACE PREPARATION BEFORE WELDING: SURFACE PREPARATION BY SANDBLAST AS PER SSPC-SP6 OR APPROVED EQUIVALENT.

2.5 REPAIRS AND TOUCH-UPS: ALL STRUCTURAL ELEMENTS (NEW AND EXISTING) WHICH HAVE BEEN DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED ONSITE.

2.6 THE CONTRACTOR OR SUB-CONTRACTOR MUST PROCEED WITH ALL WELDING WORKS IN ACCORDANCE WITH W59-03(R2008). HE MUST ALSO BE CERTIFIED AS PER W47.1-09(R2014). THE ENGINEER/OWNER RESERVES THE RIGHT TO VERIFY THESE CERTIFICATIONS BEFORE AS WELL AS AFTER THE PROJECT COMMENCEMENT.

2.7 ALL STRUCTURAL MEMBERS MUST BE CLEANED BY GRINDING PRIOR TO ALL WELDING WORKS.

2.8 BOLTS, NUTS, LOCKNUTS, AND WASHERS AS PER ASTM-A325-14. ALL BOLTS ARE M20 (U.N.O.)

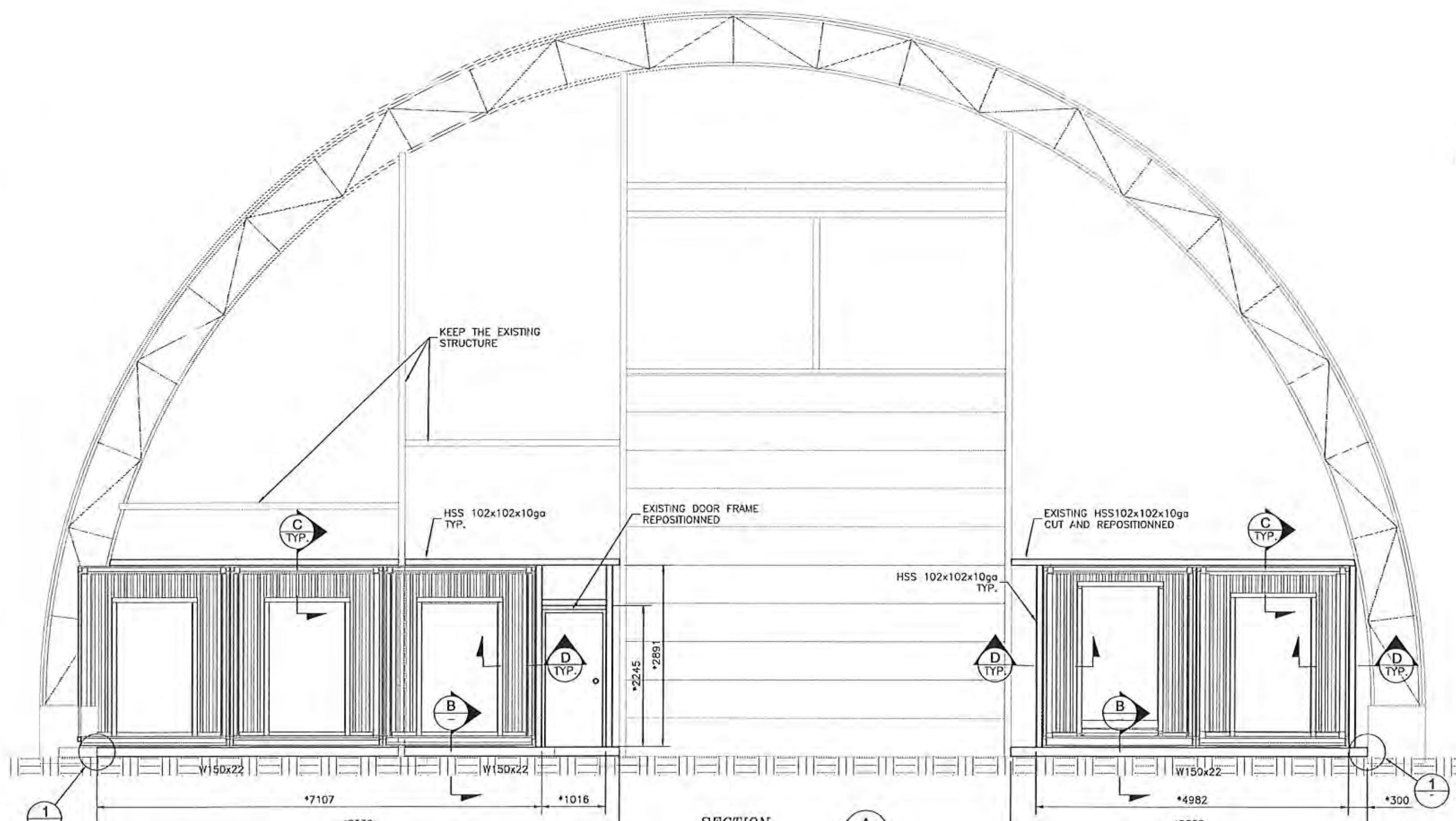
2.9 DEAD LOADS AND COLLATERAL LOADS
- STRUCTURAL STEEL (DENSITY) : 7850 kg/m3

2.10 DESIGN METHODOLOGY:

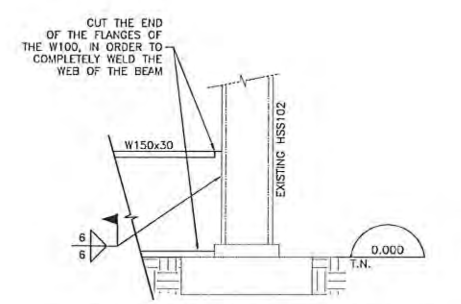
- STRUCTURAL STEEL: ULTIMATE STRENGTH DESIGN ACCORDING TO CAN/CSA-S16-14.

GROUND SETTLEMENT AND GROUND HEAVE RISK ASSUMED BY AEM

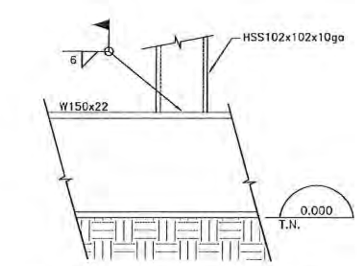
* TO BE VALIDATED



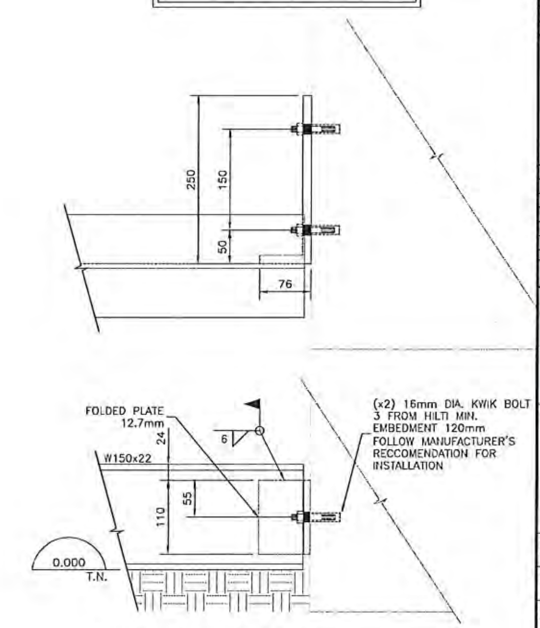
SECTION A
Scale: 1:50
* MESURE AND CUT THE STEEL BEAMS AND COLUMNS



TYPICAL DETAIL – W150 VS EXIST. HSS
SCALE: 1:5

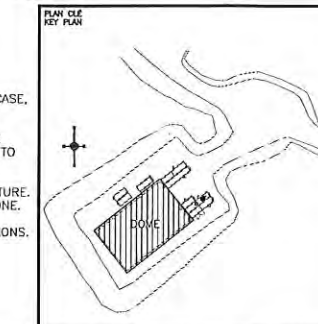


TYPICAL DETAIL – W150 VS HSS
SCALE: 1:5



TYPICAL DETAIL – ANCHORS
SCALE: 1:5

PLAN CLÉ / KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION / FOR CONSTRUCTION
AGNICO EAGLE DATE : 2018-08-17

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2018-07-17	FOR CONSTRUCTION	JBO	D.L.	

REVISIONS

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
L3595
Date 2018-08-17
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
693 – FINAL WATER TREATMENT PLANT
245 – STRUCTURE
MODIFICATION OF THE DOME
DETAIL PLAN

DESSINÉ PAR / DRAWN BY	JORDANE B.D., Tech.	DATE 2018-08-07
VÉRIFIÉ PAR / CHECKED BY	JANICK COTE, Jr. Eng.	2018-08-10
APPROUVÉ PAR / APPROVED BY	DANY LAMBERT, P.Eng.	2018-08-15
ÉCHELLE / SCALE	INDICATED	DATE 2018-08-07

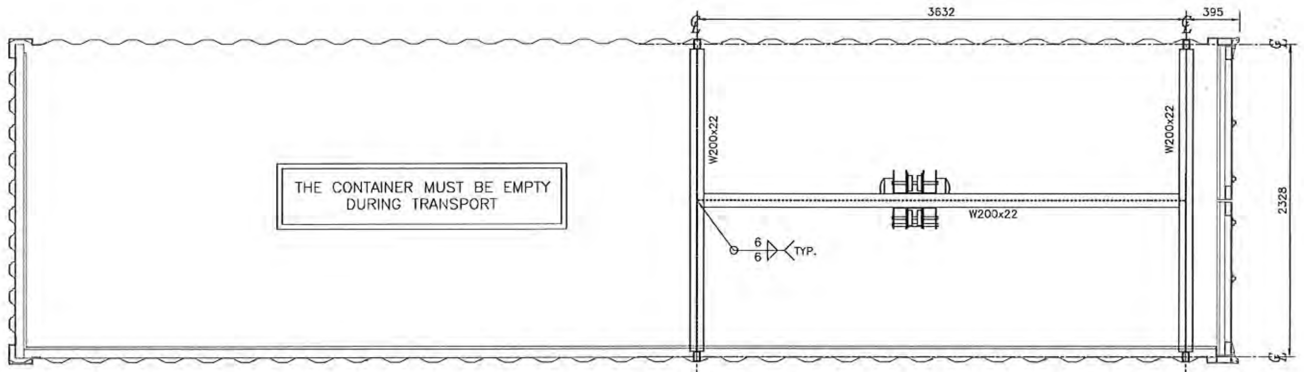
NO. DESSIN / DRAWING NO. 61-693-245-210

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6115	0	1/1

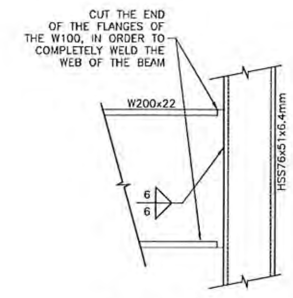
FILE NO. 61-693-245-210_R0.dwg

NO. DESSIN DRAWING NO. 61-693-245-203_R0

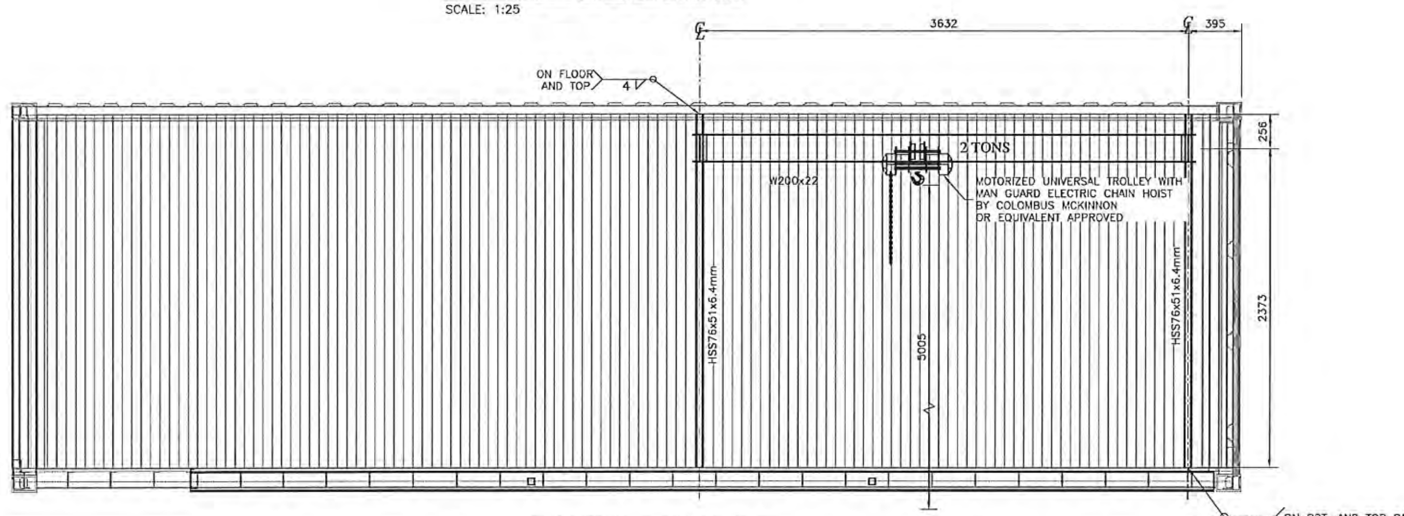
FORMAT ARCHD



PLAN VIEW – TOP OF MONORAIL
SCALE: 1:25

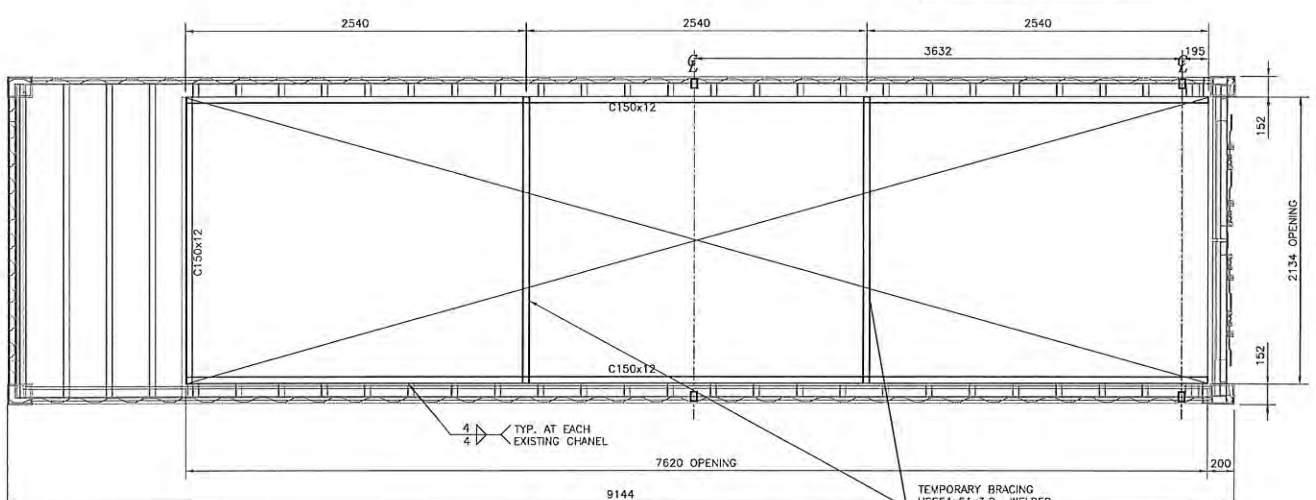


TYPICAL DETAIL – W200 VS HSS
SCALE: 1:5

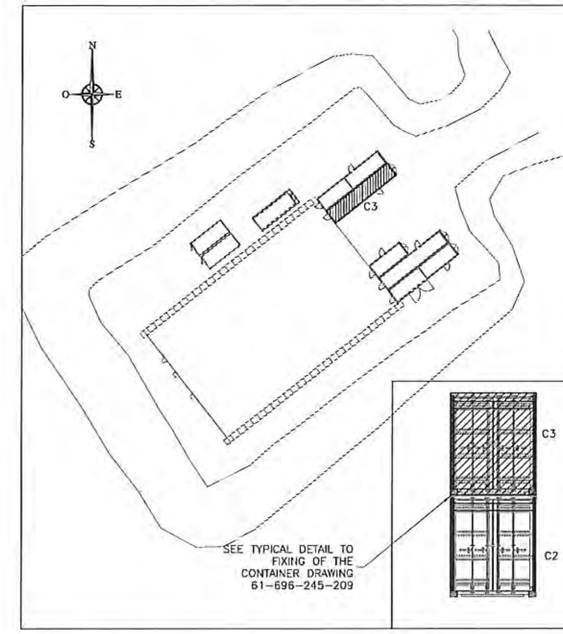


ELEVATION – MONORAIL
SCALE: 1:25

UNLESS NOTED OTHERWISE THE MINIMUM WELD SIZE IS 4mm



PLAN VIEW – FLOOR
SCALE: 1:25



MONORAIL NOTES

1. THE MAXIMUM RATED CAPACITY "2 TONS" SHALL BE PAINTED IN MIN. 150 MM. HIGH, BLACK LETTERS ON EACH SIDE OF THE WEB OF THE MONORAIL BEAM(S).
2. MONORAIL DESIGN CRITERIA:
   SAFE WORKING LOAD: 2 TONS
   MAXIMUM WHEEL LOAD: 5.1 KN
   MAXIMUM TROLLEY/HOIST WEIGHT: 90 KG
   VERTICAL IMPACT ALLOWANCE: 10%

PAINTING NOTES

a)"INTERSPEC" 3.12.F.2 (C5 STANDARD CURE) EPOXY PRIME/HIGH BUILD FINISH – NEW CONSTRUCTION SYSTEM FOR SEVERE (C5-1) EXPOSURES.
b)PRIMER: "INTERGARD" 345 SINGLE COAT APPLICATION AT 3-4 MILS (75-100 MICRONS) DRY FILM THICKNESS.
c)PRIMER COLOUR: GRAY OR RED OXIDE
d)COAT FINISH : "INTERGARD" 345 APPLIED AT 3-4 MILS (75-100 MICRONS) D.F.T.
e)COLOUR FINISH: SAFETY YELLOW (YE-3)

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2018-07-27

THE CONTAINER MUST BE EMPTY DURING TRANSPORT

THE WELDING AND SEALING BETWEEN CONTAINER C2 AND C3 IS THE RESPONSIBILITY OF THE MANUFACTURER

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

LIFTING WITH FORK ONLY (BY OTHERS)

LIFTING PROCEDURE BY AEM

UNLESS NOTED OTHERWISE THE MINIMUM WELD SIZE IS 4mm

SNC·LAVALIN

SNC-Lavalin Stavibel inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-5181 Fax: 819 797-0156
www.sncravalin.com

Project # : 653281-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
TYPICAL DETAIL CONTAINER	61-693-245-209
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2018-07-27	FOR CONSTRUCTION	JBO	D.L.	

REVISIONS

2018-07-27

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
693 – FINAL WATER TREATMENT PLANT
245 – STRUCTURAL STEEL
30 fT CONTAINER HIGH CUBE CATIONIC POLYMER AND DOSING SYSTEMS
PLAN VIEW AND SECTIONS

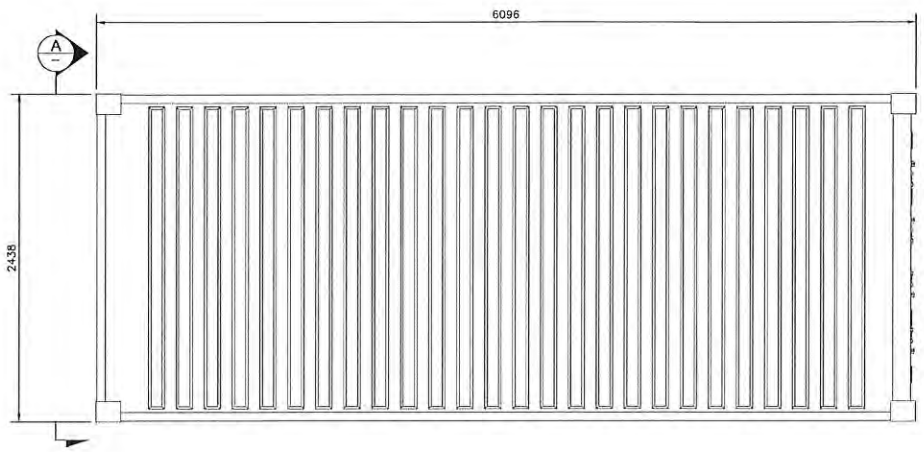
DESSINÉ PAR DRAWN BY	MICHEL LANTHIER, Tech.	DATE 2018-05-09
VÉRIFIÉ PAR CHECKED BY	JANICK CÔTÉ, Jr.Eng.	2018-07-06
APPROUVÉ PAR APPROVED BY	DANY LAMBERT, P.Eng.	2018-07-06
ÉCHELLE SCALE	INDICATED	DATE 2018-05-09
NO. DESSIN DRAWING NO.	61-693-245-203	
NO. PROJET PROJECT NO. 6115	REVISION 0	FEUILLE / SHT 1/1

AE-CART-ARCH D

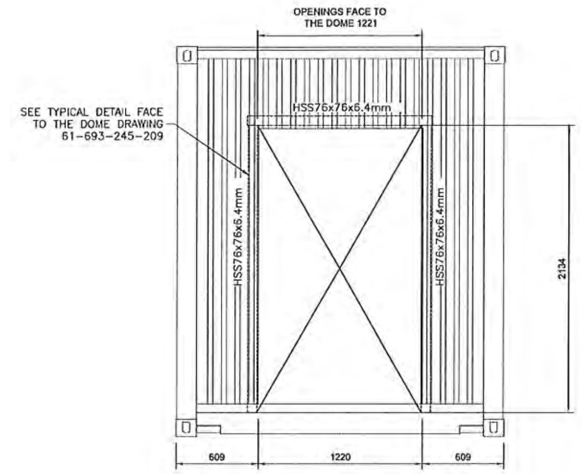
FILE NO. 61-693-245-203_R0.dwg

NO. DESSIN / DRAWING NO. 61-693-245-204_R0

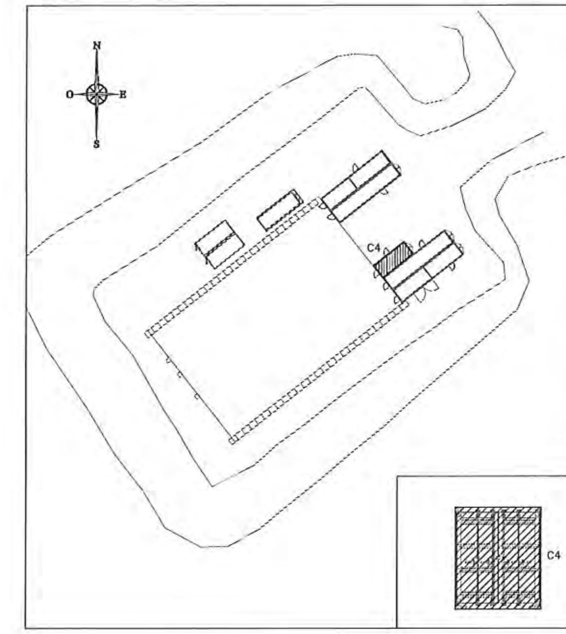
FORMAT ARCHD



PLAN VIEW – ROOF CONTAINER 20pi.
SCALE: 1:25



SECTION A
SCALE: 1:25



PLAN CLÉ / KEY PLAN

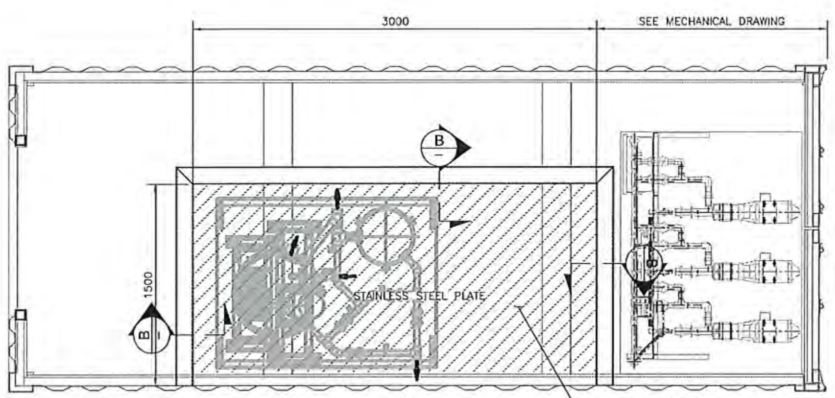
NOTES GÉNÉRALES / GENERAL NOTES

LIFTING WITH FORK ONLY (BY OTHERS)

LIFTING PROCEDURE BY AEM

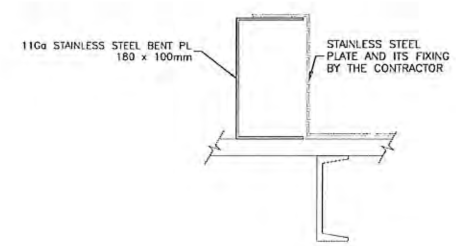
UNLESS NOTED OTHERWISE THE MINIMUM WELD SIZE IS 4mm

PAINT THE VISIBLE SIDE OF HSS 178x127X4.8mm IN YELLOW SAFETY

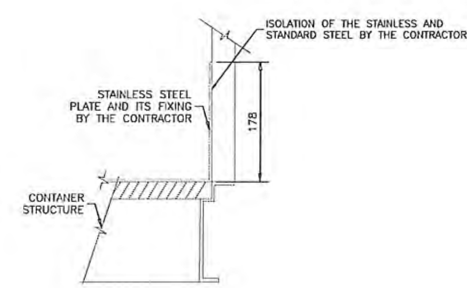


SEE DRAWING 61-693-245-209 FOR TYPICAL EQUIPMENT ANCHORING

PLAN VIEW – FLOOR
SCALE: 1:25



SECTION B
SCALE: 1:5



TYPICAL SECTION – RETENTION TANK
SCALE: 1:5

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE DATE : 2018-07-27

SNC·LAVALIN

SNC-Lavalin Stavibel inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

Project # : 653281-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
TYPICAL DETAIL CONTAINER	61-693-245-209
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2018-07-27	FOR CONSTRUCTION	JBD	D.L.	

REVISIONS

2018-07-27

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
693 – FINAL WATER TREATMENT PLANT
245 – STRUCTURAL STEEL
20 ft CONTAINER HIGH CUBE CATIONIC POLYMER AND DOSING SYSTEMS
PLAN VIEW AND SECTIONS

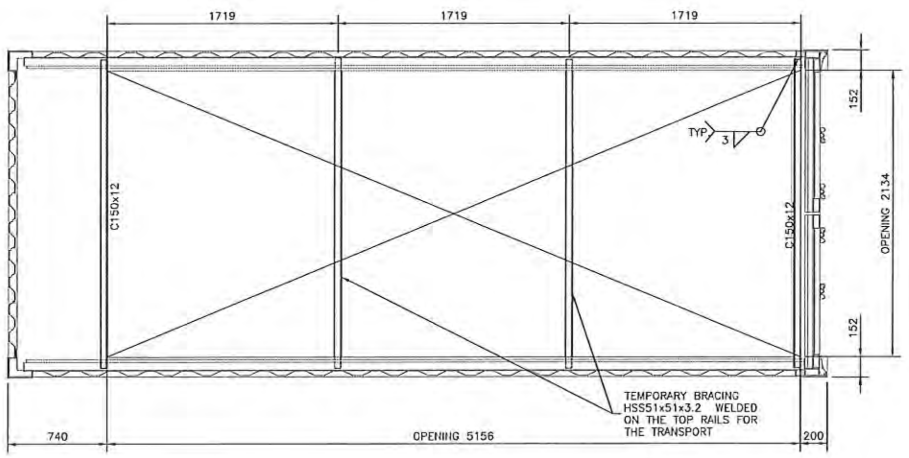
DESSINÉ PAR / DRAWN BY	MICHEL LANTHIER, Tech.	DATE 2018-05-09
VÉRIFIÉ PAR / CHECKED BY	JANICK CÔTÉ, Jr. Eng.	2018-07-06
APPROUVÉ PAR / APPROVED BY	DANY, LAMBERT P.Eng.	2018-07-06
ÉCHELLE / SCALE	INDICATED	DATE 2018-05-09
NO. DESSIN / DRAWING NO.	61-693-245-204	
NO. PROJET / PROJECT NO.	6115	REVISION 0 – FEUILLE / SHT 1/1

AE-CART-ARCH D

FILE NO. 61-693-245-204_R0.dwg

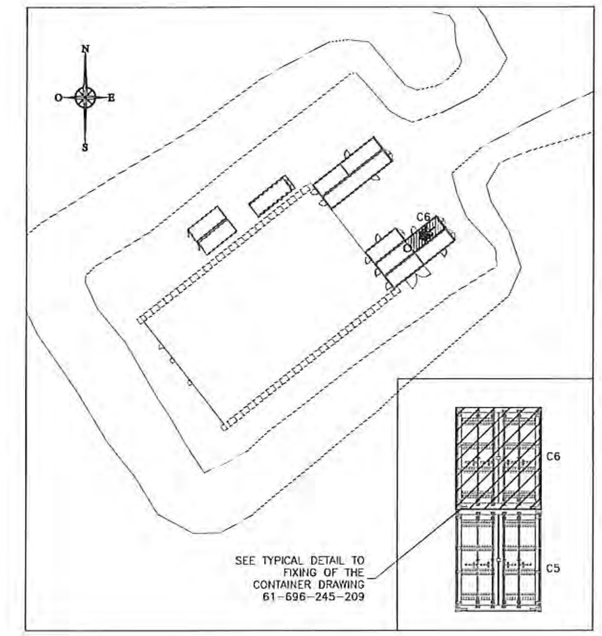
NO. DESSIN / DRAWING NO. 61-693-245-206_R0

FORMAT ARCHD



PLAN VIEW – FLOOR
SCALE: 1:25

THE CONTAINER MUST BE EMPTY DURING TRANSPORT



POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE DATE : 2018-07-27

THE WELDING AND SEALING BETWEEN CONTAINER C6 AND C5 IS THE RESPONSIBILITY OF THE MANUFACTURER

PLAN CLÉ / KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

LIFTING WITH FORK ONLY (BY OTHERS)

LIFTING PROCEDURE BY AEM

THE CONTAINER MUST BE EMPTY DURING TRANSPORT

UNLESS NOTED OTHERWISE THE MINIMUM WELD SIZE IS 4mm

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
TYPICAL DETAIL CONTAINER	61-693-245-209
–	–
–	–
–	–
–	–

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2018-07-27	FOR CONSTRUCTION	JBD	D.L.	

REVISIONS

2018-07-27

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
693 – FINAL WATER TREATMENT PLANT
245 – STRUCTURAL STEEL
20 ft CONTAINER HIGH CUBE COAGULANT PREPARATION AND DOSING SYSTEMS
PLAN VIEW AND ELEVATION

		DATE
DESSINÉ PAR / DRAWN BY	MICHEL LANTHIER, Tech.	2018-05-09
VÉRIFIÉ PAR / CHECKED BY	JANICK CÔTÉ, Jr.Eng	2018-07-13
APPROUVÉ PAR / APPROVED BY	DANY LAMBERT, P.Eng.	2018-07-13
ÉCHELLE / SCALE	INDICATED	2018-05-09

NO. DESSIN / DRAWING NO. 61-693-245-206

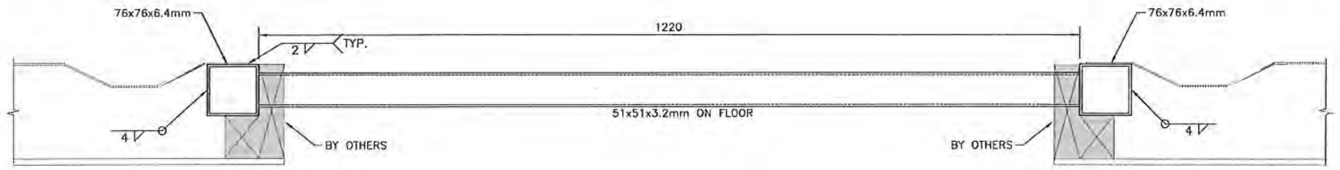
NO. PROJET / PROJECT NO.	RÉVISION	FEUILLE / SHT
6115	0	1/1

AE-CART-ARCH D

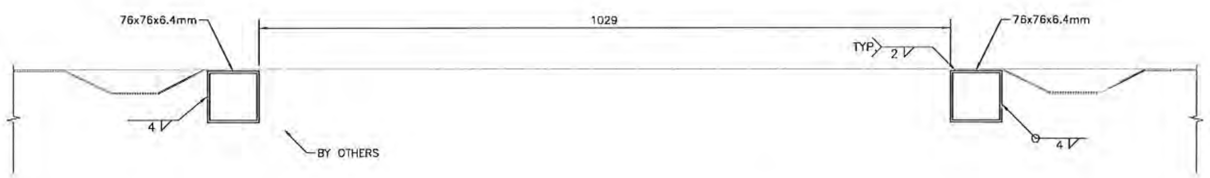
FILE NO. 61-693-245-206_R0.dwg

NO. DESSIN DRAWING NO. 61-693-245-209_R0

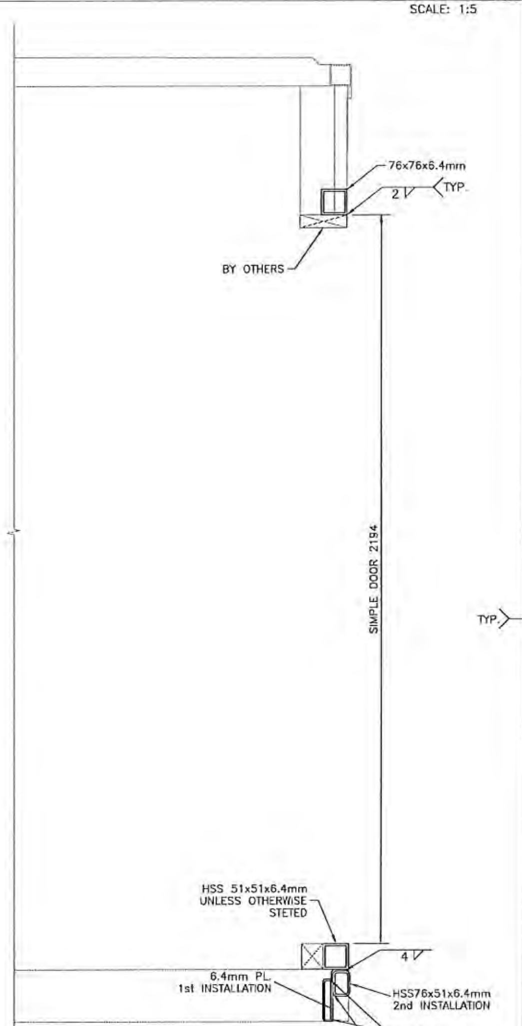
FORMAT ARCHD



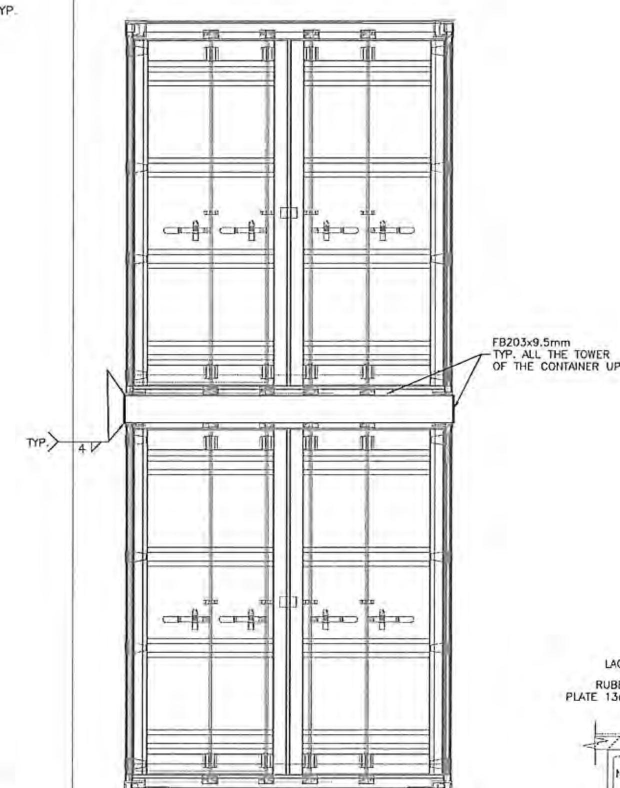
TYPICAL DETAIL – SIMPLE DOOR
SCALE: 1:5



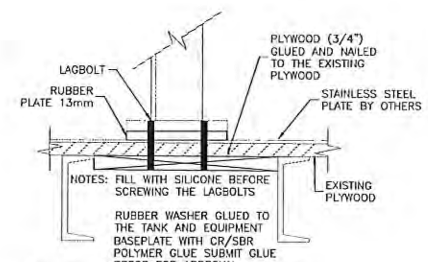
TYPICAL DETAIL – FACE TO THE DOME
SCALE: 1:5



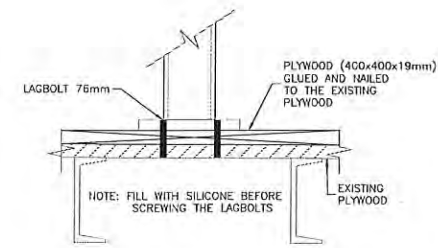
TYPICAL SECTION – OPENING
SCALE: 1:10



TYPICAL DETAIL TO FIXING OF THE CONTAINER
SCALE: 1:25



TYPICAL EQUIPMENT ANCHORING THROUGH THE RETENTION TANK
SCALE: 1:5



TYPICAL EQUIPMENT ANCHORING
SCALE: 1:5

GENERAL NOTES:

01– IN THE EVENT OF CONFLICT BETWEEN DESIGN STANDARDS, CONTRACT DOCUMENTS AND DRAWINGS, INFORMATION GIVEN ON DRAWINGS SHALL GOVERN.
02– THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE BEFORE STARTING WORK AND REPORT ALL ERRORS OR OMISSIONS TO THE ENGINEER.
03– THE CONTRACTOR SHALL CONSIDER THAT THE EXECUTION OF THE WORK DEPENDS ON THE SITE CONDITIONS. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS NOT SPECIFICALLY SHOWN ON THE DRAWINGS BUT REQUIRED TO COMPLETE THE WORK TO THE SATISFACTION OF THE ENGINEER. ALL MATERIALS SHALL BE NEW, IN GOOD CONDITION AND PREMIIUM QUALITY.
04– THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS EMPLOYEES OR HIS SUBCONTRACTORS. HE SHALL KEEP THE SITE CLEAN AND FREE OF ANY DEBRIS. THE CONTRACTOR MUST COMPLY WITH ALL LOCAL AND OWNER SAFETY RULES.
05– ALL TEMPORARY SUPPORTS ARE THE CONTRACTOR'S RESPONSIBILITY. HE SHALL APPLY ALL NECESSARY MEASURES AND INSTALL PROPER SUPPORTS TO ENSURE THE STABILITY OF THE STRUCTURES AND THE WORKER'S SAFETY.
06– DO NOT SCALE THE DRAWINGS.
07– ALL DIMENSIONS ARE SHOWN IN MILLIMETRES UNLESS NOTED OTHERWISE.
08– ALL OPENING MUST BE TEMPORARELY CLOSE FOR THE SHIPPING. (BY THE CONTRACTORS)

STRUCTURAL STEEL

09– STRUCTURAL STEEL MUST RESPECT CRITERIA LISTED IN CAN/CSA-G40.20 AND CAN/CSA-G40.21, GRADE 350 W WITH EXCEPTION OF C AND L PROFILES WHICH ARE TO BE OF GRADE 300 W.

10– REPAIRS AND TOUCH-UPS: ALL STRUCTURAL ELEMENTS (NEW AND EXISTING) WHICH HAVE BEEN DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED ON SITE.

11– THE CONTRACTOR OR SUB-CONTRACTOR MUST PROCEED WITH ALL WELDING WORKS IN ACCORDANCE WITH W59-03(R2008). HE MUST ALSO BE CERTIFIED AS PER W47.1-09(R2014). THE ENGINEER/OWNER RESERVES THE RIGHT TO VERIFY THESE CERTIFICATIONS BEFORE AS WELL AS AFTER THE PROJECT COMMENCEMENT.

12– ALL STRUCTURAL MEMBERS MUST BE CLEANED BY GRINDING PRIOR TO ALL WELDING WORKS.

13– BOLTS, NUTS, LOCKNUTS, AND WASHERS AS PER ASTM-A325-14. ALL BOLTS ARE M20 (U.N.O.)

14– DEAD LOADS AND COLLATERAL LOADS

– STRUCTURAL STEEL (DENSITY) : 7850 KG/M3

15– LIVE LOADS

– MEZZANINE: 4,8 KPA

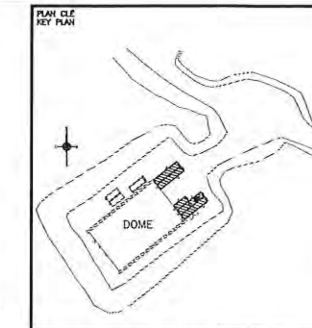
16– DESIGN METHODOLOGY:

– STRUCTURAL STEEL: ULTIMATE STRENGTH DESIGN ACCORDING TO CAN/CSA-S16-14.

PAINTING NOTES:

STEEL SURFACE PREPARATION PROCESS AND PAINT COATING FOR AGNICO EAGLE.
THE STEEL MUST BE FREE FROM GREASE, OIL OR ANY OTHER CONTAMINANT DETRIMENTAL TO THE GRIP.
1) MAKE SSPC-SP1
2) MAKE SSPC-SP6
3) APPLY 1 LAYER OF PRIMER OF EPOXY COR-PRO 470 (2 MILS SECS) GRAY
4) APPLY 2 LAYERS OF EPOXY COATING COR-PRO 475 SAFETY YELLOW (5 MILS. SECS EACH)

PLAN CLÉ KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2018-07-27

SNC·LAVALIN
SNC-Lavalin Stavibel Inc.
Project # : 653281-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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KMnO4 SERVICE AREA	AMP18-19-003

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2018-07-27	FOR CONSTRUCTION	JBD	D.L.	

REVISIONS

2018-07-27

TITRE / TITLE
AGNICO EAGLE – AMARUQ DIVISION
693 – FINAL WATER TREATMENT PLANT
245 – STRUCTURE
CONTAINER 40 ft HIGH CUBE KMnO4 AND SERVICE WATER SYSTEMS
PLAN VIEW, ELEVATION & PROFIL

DESSINÉ PAR DRAWN BY	MICHEL LANTHIER, Tech.	DATE 2018-05-09
VÉRIFIÉ PAR CHECKED BY	JANICK COTE, Jr Eng.	2018-07-06
APPROUVÉ PAR APPROVED BY	DANY LAMBERT, P. Eng.	2018-07-06
ÉCHELLE SCALE	INDICATED	DATE 2018-05-09
NO. DESSIN DRAWING NO.	61-693-245-209	
NO. PROJET PROJECT NO. 6115	REVISION 0	FEUILLE / SHT 1/1

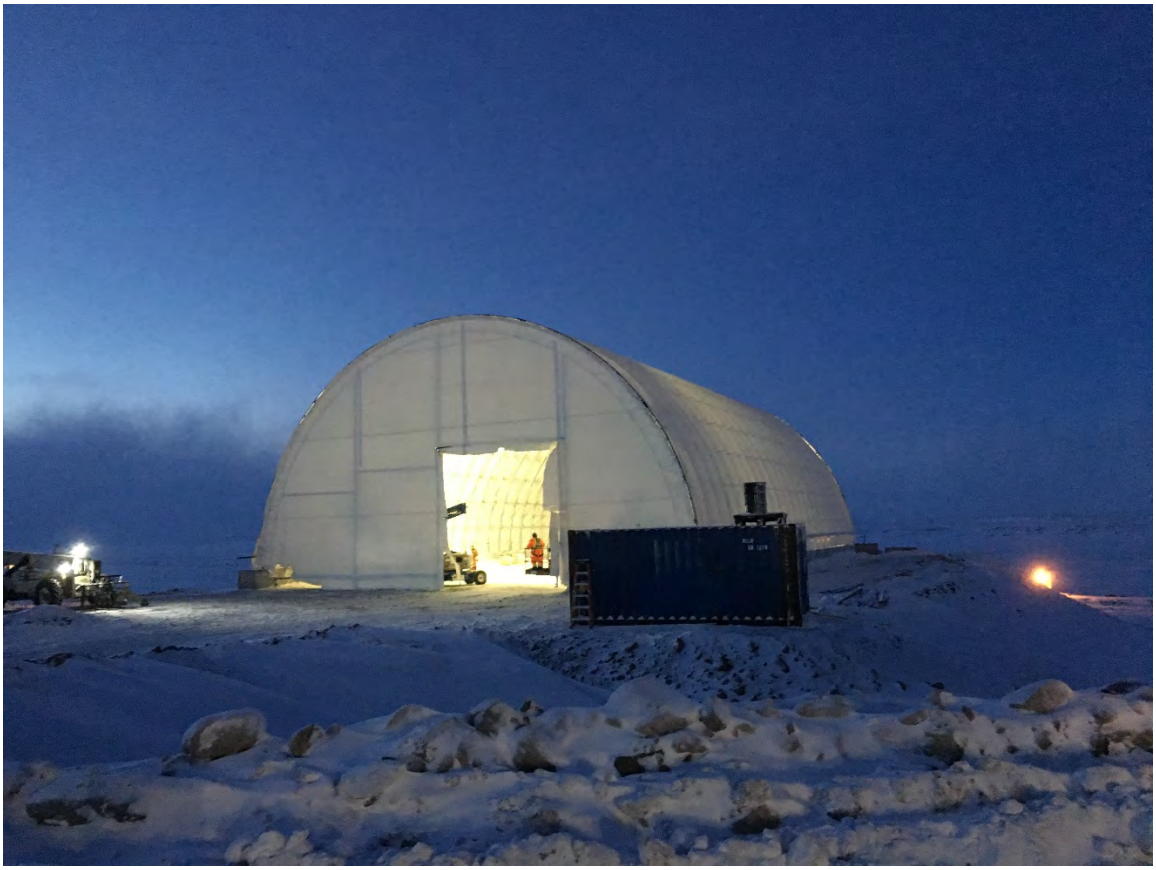
AE-CART-ARCH D

FILE NO. 61-693-245-209_R0.dwg

Appendix D

Photograph

WTP Dome tarp installation



Dome construction

Actiflo® unloading

Construction WTP general layout

Construction WTP reagents section

Construction WTP pump box

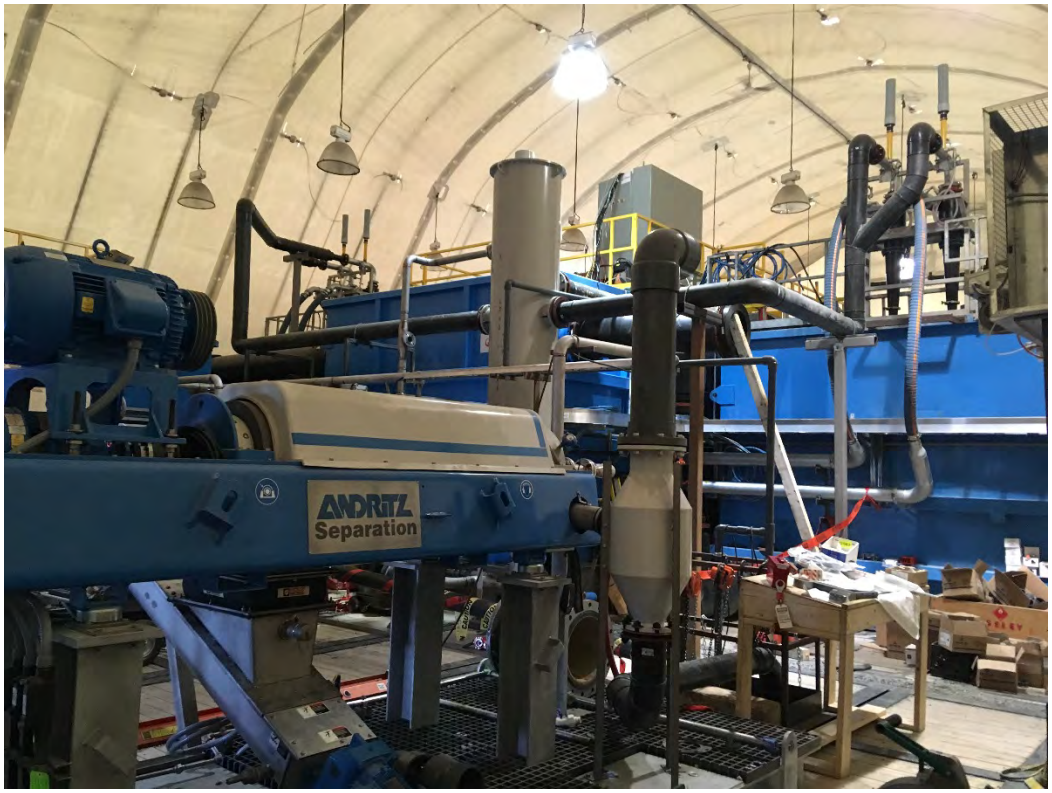
AsWTP electrical room installation

AsWTP container section installation

AsWTP containers installed

AsWTP Actiflo® localisation

AsWTP recirculation pumps layout



AsWTP centrifuge press localisation