November 2019

Construction Summary (As-Built) Report
Saline Effluent Discharge to Marine Environment

6528-180-132-REP-001

In accordance with NIRB Project No. 006 Condition 128

Prepared by:
WSP Canada inc.

DOCUMENT CONTROL

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0	2019-10-31			For comments
1	2019-11-20			Final

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Resident Engineer
Agnico Eagle Mines Limited

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1 INTRODUCTION

WSP Canada inc. (WSP) was retained by Agnico Eagle Mines (Agnico Eagle) to prepare the As-Built Report of the Saline Effluent Discharge to the Marine Environment located near Rankin Inlet, Nunavut.

In accordance with the NIRB Project No. 006 Condition 128, this As-Built Report summarizes the construction and commissioning work associated with the saline effluent discharge into the marine environment. Included in this report are:

- Site location plan;
- Underground water management strategy;
- Documentation on field decisions that deviate from the original plans;
- As-built drawings;
- Quality control report; and
- Photographs.

1.1 SITE LOCATION PLAN

The discharge point for the saline groundwater effluent is in Melvin Bay just west of Rankin Inlet. Agnico Eagle will access the area using a bypass road. The area is also accessible by Itivia Street, a gravel road linking the Agnico Eagle Fuel Storage Facility at the Itivia Harbour and Rankin Inlet.

The site location plans for the containment area, the storage tank, the pumping station, the HDPE pipe as well as the diffuser is shown below in Figure 1.1.

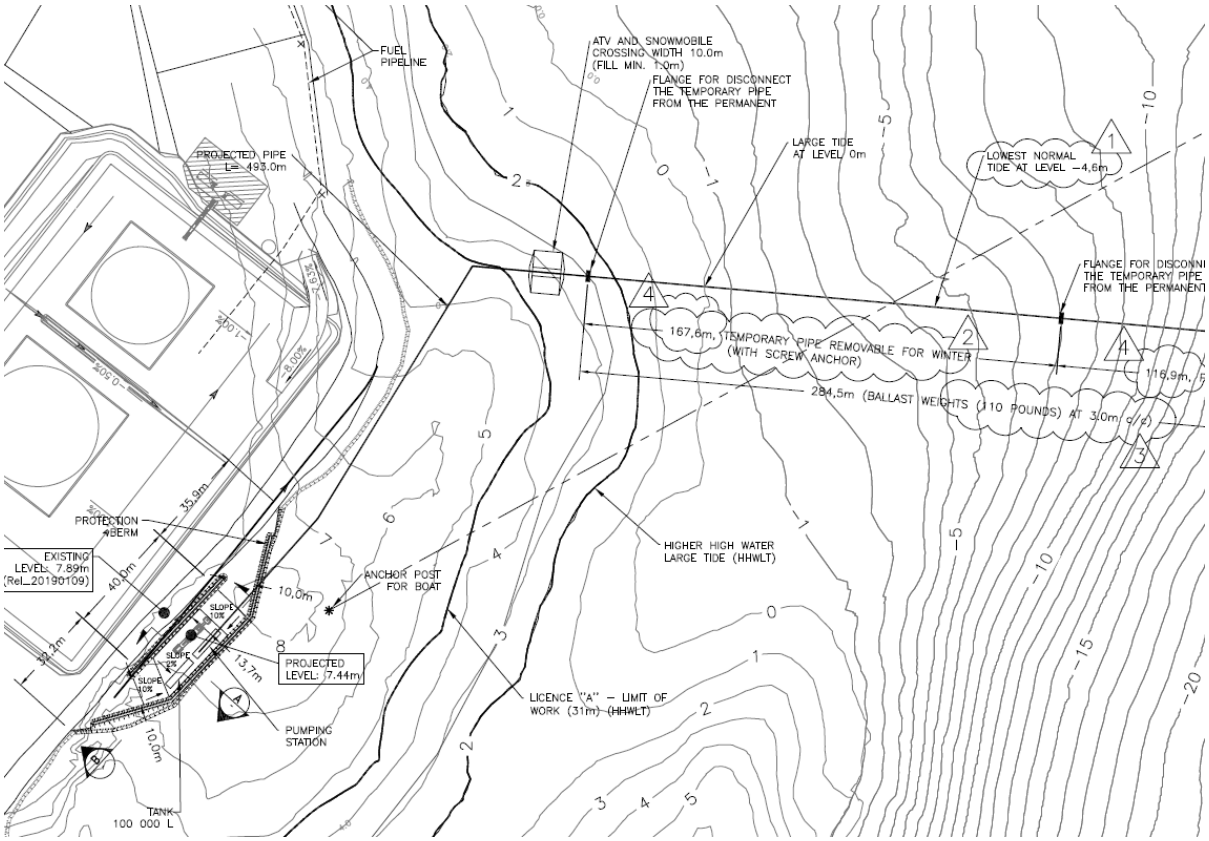


Figure 1.1 : Saline Effluent Discharge Location

1.2 UNDERGROUND WATER DISCHARGE STRATEGY

As part of their long-term groundwater management strategy, Agnico Eagle is planning to collect groundwater from the Meliadine Underground Mine, treat the influent with respect to quality standards and discharge the treated groundwater effluent into Melvin Bay.

The saline discharge system also possesses storage tank which is only used to temporarily store influent when a tanker truck arrives at Itivia, but the daily limit of 800 m^3 is already achieved.

2 CONSTRUCTION SUMMARY

2.1 CONSTRUCTION SCHEDULE

The construction of the containment, the pumping station and the HDPE terrestrial and submerged pipe lines for water discharge in Itivia were carried out between May 2019 and August 2019. The pumping system was commissioned in mid July 2019, but the entire installation was commissioned and operated only when the confirmation was received that the water was compliant to discharge to the sea as per

the regulations and the operation permit. Construction was completed according to the milestone dates shown in Table 2.1 below.

Table 2.1 : Construction timeline

Item	Starting date	Date of completion
Drilling operation (to probe depth to bedrock)	May 30th, 2019	May 30th, 2019
Excavation	June 1st, 2019	June 5th, 2019
Pumping station containment pad backfill	June 5th, 2019	July 26th, 2019
Liner system installation	June 9th, 2019	June 9th, 2019
Pumping station and storage tank installation inside the containment	June 19th, 2019	June 19th, 2019
HDPE pipe line and diffusor layout, electro fusion and installation	June 25th, 2019	July 21st, 2019
Pumping station and storage tank tie-in	July 15th, 2019	July 26th, 2019
Commissioning & system operation	August 1st, 2019	N/A

2.2 FIELD DECISIONS THAT DEVIATE FROM THE ORIGINAL PLAN

This section documents variations from original design which were approved by the designer and/or the field engineer on site for the Itivia discharge to sea works.

2.2.1 PUMPING STATION & STORAGE TANK CONTAINMENT

Deviations from the design arose during the construction of HDPE pipe line (on shore and submerged), the pumping station & storage tank and the containment pad, as summarized in Table 2.2 below. The changes listed herein do not affect the original discharge to sea strategy nor its integrity.

Table 2.2 : List of Design Changes

Item	Original design	Final installation
Water storage tank capacity	100,000 L	50,000 L
Size and location of the containment pad	108,1 m x 13,7 m	106,74 m x 13,7 m
Slopes to access and exit the containment pad.	10%	Southwest: 6.5% to 7.2% Northeast: 4.1% to 8.9%
Snowmobile and ATV crossings	1 snowmobile and ATV crossing	3 snowmobiles and ATV crossings
Final length, depth of submerged temporary pipe flange and diffusor	Projected pipe length: 493,1 m Flange to disconnect the temporary pipe level < -6 m, diffusor at level -24.6 m	Pipe length: 473 m Flange to disconnect the temporary pipe level -7.37 m, diffusor at level -24.08 m
Ballast weights and spacing	30,7 kg at 1,52 m c/c	Typ.1: 47,2 kg @ 2,85 m c/c Typ.2: 48,1 kg @ 2,85 m c/c

- At the design stage, the validation of the availability of an unused tank on site was not completed due to the weather at that time. Upon completion of an inspection in the spring, no

clean 100,000L tank was available on site, so a clean (new) 50,000L was used instead. As the water storage tank is only specified on the drawing to allow a tanker to unload in case the daily limit of 800 m³ is reached, the volume required is less than 38,000L (maximum volume of a water tanker), hence the 50,000L tank was deemed fit for purpose.

- Following the reduction of the storage tank size, the overall dimensions of the containment pad were modified to suit the dimensions of the new storage tank and the tanker. The containment capacity was therefore reduced, but still respects the design intent adequately. Since there was not much data of the natural ground in this area during the design stage, the position of the containment was optimized to fit the ground during the construction.
- The entry and exit accessing ramps were adjusted in the containment pad to fit the current configuration of the tanker axles by modifying the slope grades.
- Additional snowmobile and ATV crossings were needed to accommodate the owner of the nearby cabin during and after construction. These are to access his cabin freely from the same place he was used prior to the construction of the pipe line and the containment pad.
- The final approximative length of the pipe is 473 m instead of 493,1 m. The depth of the temporary pipe flange and the diffusor respect requirements specified on the drawing.
- The ballasts weight design changed from the issuance of this design report to the final construction drawing. However, the ballast's weight delivered by the supplier was somewhat heavier than the one specified. The spacing between the ballasts was reduced to match the required overall weight.

2.3 AS-BUILT DRAWINGS AND PHOTOGRAPHS

As-built drawings are presented in Appendix 1.

The quality control report can be found in Appendix 2.

Photographs during the construction and the final installation are shown in Appendix 3.

Appendix 1: As-built drawings

ATV TRAIL

Saline Water Storage Tank

Bypass Road

Unloading Pumping Station

Quantities Discharge
Containment
Containment: 293m³
Excavation: 1167m³
Liner: 797m²
Total Backfill: 1836m³

ATV TRAIL

Sleeves for electric cables

PROJECTED PIPE
L= 493.0m

Electric cable

Electric cable
(beside HDPE)

ATV TRAIL

Discharge Line ±473m

LICENCE "A" – LIMIT OF
WORK (31m) (HHWLT)

Top HDPE – Flange

HIGHER HIGH WATER
LARGE TIDE (HHWLT)

HAMEL ARPENTAGE	Système de Coord.: UTM15 NAD83 Echelle: n.t.s.	No plan: 6528-180-142-200-R1_ABD	Saline Effluent Discharge System As-Built drawing (1/4)	AGNICO EAGLE	Date des travaux : 2019-06/07 Date d'envoi : 2019-08-24	Dessine par: JF Landreville Approuve par: Hamel Arp.

Electric cable
(beside HDPE)

ATV TRAIL

Discharge Line ±473m

LICENCE "A" – LIMIT OF
WORK (31m) (HHWLT)

HIGHER HIGH WATER
LARGE TIDE (HHWLT)

LARGE TIDE
AT LEVEL 0m

LOWEST NORMAL
TIDE AT LEVEL –4,6m

-3.339
10
Top HDPE – Flange

-1.70
1
Water Elev

-1.45
33
WATER

-2.82
5
HDPE (Buoy)

-7.37
4
Flange (Buoy)

-14.38
3
HDPE (Buoy)

-24.08
2
End – Diffuser (Buoy)

Water Elevation
2019–07–20 @
15h00
±–1.70m

Water Elevation
2019–07–18 @
11h00
±–1.45m

End of Diffuser
Approx.
Location
N: 6963276.09
E: 546004.40
Z: –24.08

Water Elevation
when the drop–off
occur
2019–07–21 @
10h50
±0.100m

HA HAMELARPENTAGE	Système de Coord.: UTM15 NAD83 Echelle: n.t.s.	No plan: 6528–180–142–200–R1_ABD	*Saline Effluent Discharge System As-Built drawing (2/4)*	AGNICO EAGLE	Date des travaux : 2019–06/07 Date d'envoi : 2019–08–24	Dessine par: JF Landreville Approuve par: Hamel Arp.

ATV TRAIL

A

Saline Water Storage Tank

6.5%

B

Bypass Road

24,31

7.2%

13,91

17,21

B

8.9%

Unloading Pumping Station

12,6

4.1%

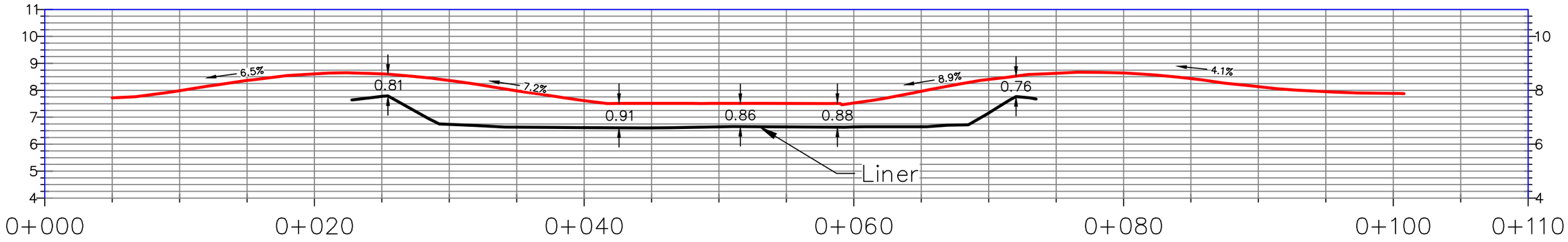
38,21

A

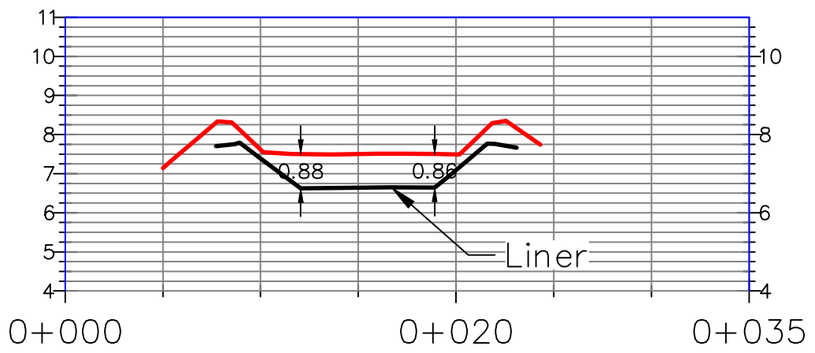
ATV TRAIL

HA HAMELARPENTAGE	Système de Coord.: UTM15 NAD83 Echelle: n.t.s.	No plan: 6528-180-142-200-R1_ABD	Saline Effluent Discharge System As-Built drawing (3/4)	AGNICO EAGLE	Date des travaux : 2019-06/07 Date d'envoi : 2019-08-24	Dessine par: JF Landreville Approuve par: Hamel Arp.

A–A PROFILE



B–B PROFILE



HA HAMEL ARPENTAGE	Système de Coord.: UTM15 NAD83 Echelle: n.t.s.	No plan: 6528–180–142–200–R1_ABD	*Saline Effluent Discharge System As-Built drawing (4/4)*	AGNICO EAGLE	Date des travaux : 2019–06/07 Date d'envoi : 2019–08–24	Dessine par: JF Landreville Approuve par: Hamel Arp.

Appendix 2: Quality control report

AGNICO-EAGLE, MELIADINE 2019, Project #6528, Saline Discharge to Sea / Itivia Offloading
AGNICO-EAGLE MINES LIMITED
Rankin Inlet - Meliadine Mine, Nunavut
FC Géosynthétiques Project No. C-19049 / #6528

QUALITY CONTROL FINAL REPORT
BY FC GÉOSYNTHÉTIQUES INC.

Prepared for:

KIVALLIQ CONTRACTORS GROUP LTD

By:

GÉOSYNTHÉTIQUES

October, 2019

AGNICO-EAGLE, MELIADINE 2019, Project #6528, Saline Discharge to Sea / Itivia Offloading
AGNICO-EAGLE MINES LIMITED
Rankin Inlet – Meliadine Mine, Nunavut
FC Géosynthétiques Project No. C-19049 / #6528

QUALITY CONTROL FINAL REPORT BY FC GÉOSYNTHÉTIQUES INC.

Prepared for:

KIVALLIQ CONTRACTORS GROUP LTD
32 Sivulliq Ave, PO Box 188
Rankin Inlet, Nunavut

By :

FC GÉOSYNTHÉTIQUES INC.
1300, 2e Rue, Parc industriel
Sainte-Marie, Québec, Canada
G6E 1G8

October, 2019

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- APPENDIX III - US-EPA Classification for Types of Break
- APPENDIX IV - Record drawing

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1. INTRODUCTION

The following report was prepared by FC Géosynthétiques Inc, for Kivalliq Contractors Group LTD.

This report contains a description as well as a certification of all work conducted by FC Géosynthétiques Inc, installer of the geomembrane. It also contains the record drawing of the geomembrane installation for the Saline Discharge to Sea and the Itivia Offloading. All installation work conducted on the geomembrane took place between 6 th and June 14 th, 2019.

2. HUMAN RESOURCES

The following list identifies the key personnel involved with the physical realization of this project

FC GÉOSYNTHÉTIQUES INC. (Geosynthetic Installer)

- Mr. François Thivierge, Construction Manager
- Mr. Jacques St-Gelais, Operation Manager
- Mr. Olivier Belval, Site Foreman
- Mr. Michael Gilbert, Field QC Inspector
- Mr. Sébastien Casavant, Technicians

KIVALLIQ CONTRACTORS GROUP LTD (General Contractor - Client)

AGNICO-EAGLE MINES LIMITED. (Quality Assurance)

3. GEOMEMBRANE INSTALLATION

This section includes a description of the work and the installation procedures used during the deployment of the geomembrane. Also, the manufacturing quality control and construction quality control procedures are detailed in this section

3.1. Description of the work

The scope of the installation was to completely cover the Saline Discharge to Sea with a geomembrane lining system. FC Géosynthétiques installed approximately 780.9 sm of 1.5 mm (60MIL) HDPE geomembrane and 611.1 m² of 1.5 mm (60MIL) Textured HDPE geomembrane for the Itivia Offloading. All the installation, seaming and repair procedures were conducted according to the project plans and specifications, and manufacturer's recommendations.

3.2. Installation Procedures

The geomembrane rolls were later deployed and installed by Texel Geosol as prescribed in the specifications. Panels were placed to minimize seams across the side slope and the tie-in seams. The panels were overlapped about 125 to 150 mm, allowing adequate double fusion welding and leaving enough material to perform peel and shear tests on seam samples (see section 3.3.2.1 for a description of these tests).

All seams between panels were made using an automated polymer fusion process, the fusion being obtained through a double hot wedge. These parallel welds create an air channel which allow air-pressure testing of the continuity of the seam (see Fig. 1).

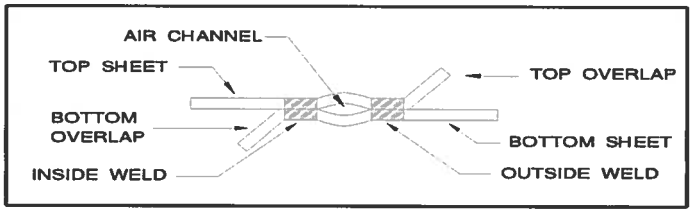


***Figure 1* - Double -Track Geomembrane Weld**

In restrictive areas where this process could not be adequately applied, such as corners, repair work and pipe penetrations, a manual extrusion fillet welding was employed (see Fig. 2).

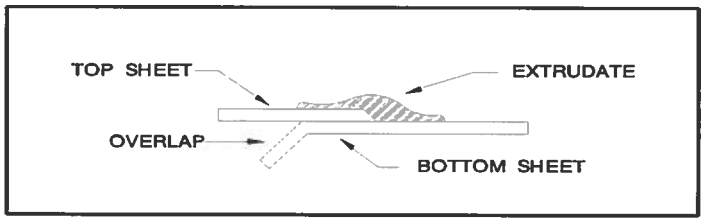


***Figure 2* - Fillet-Extruded Geomembrane Weld**

3.3. Geomembrane quality controls

3.3.1. On-site geomembrane installation

3.3.1.1 Welding trial tests

Trial tests were performed prior to any on-site seaming in order to quantify the calibration of the welding equipment. On each sample, three peel tests and two shear tests were performed. A peel adhesion test is conducted by submitting a one inch-wide seam specimen to a tensile effort on a calibrated, portable tensiometer and trying to "peel", or open the seam (see Fig. 3). A shear strength test is similar, but the tension is applied in the plane of the seam (see Fig. 4). The peel test gives an indication of the quality of the seam while the shear test demonstrates the actual behavior of the seam in service.

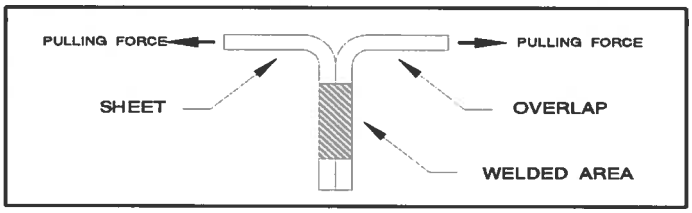


***Figure 3* - Peel Adhesion Test**

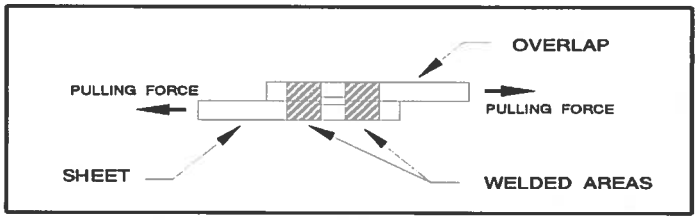


***Figure 4* - Shear Strength Test**

For each trial test, the QC Inspector recorded the date, time, ambient and operating temperatures, equipment number, speed setting, operator's initials, peel and shear values and corresponding type of break. The only type of break acceptable is designated as "FTB", as per the US-EPA classification for types of breaks, available in appendix III. The seams were made only after a satisfactory trial test had been obtained. All the results of these tests are also included in appendix I.

3.3.1.2 On-site non-destructive testing

The continuity of all seams (100%) was verified by non-destructive methods. These methods include the air-pressure test and the vacuum-box test. Any seam that failed one of these tests was rebuilt or repaired until a satisfactory result was obtained. All the results of these tests are included in Appendix I of this report.

a) Air-Pressure Testing

Air-pressure testing was employed as the primary test method. This non-destructive test method consists of injecting air at a predetermined pressure in the center air channel of fusion-welded seams (see Fig. 5). If the seam is continuous there will be very little or no drop of pressure. If a leak is present within the area under pressure, it is located and repaired. This type of non-destructive test is faster than the vacuum-box test, less observer-dependent and represents a supplementary mechanical resistance test since the geomembrane sheets are pulled away from each other by the air pressure in the channel.

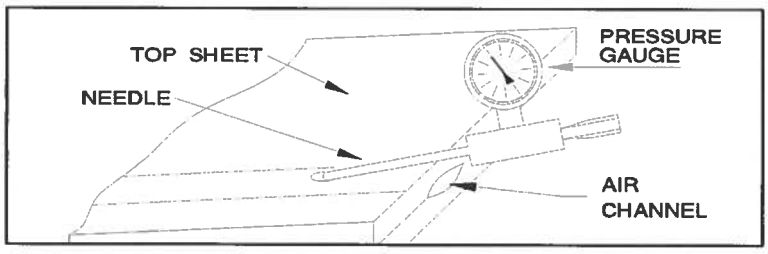
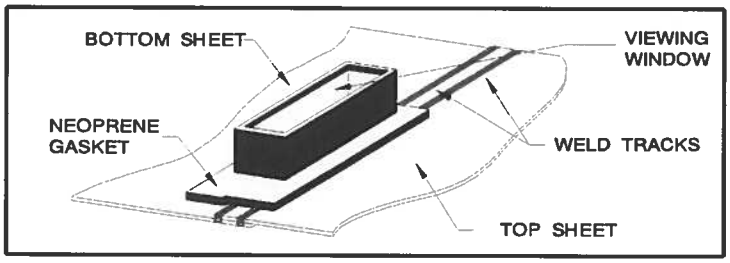


Figure 5 **- Air-Pressure Test**

b) Vacuum-box test

Wherever the air-pressure test could not be used, the vacuum-box test was employed. In this test, a film of soapy water is sprinkled over the area to be tested. A box fitted with a transparent upper cover and a neoprene lower rim is placed over that same area and connected to a vacuum pump; a negative pressure of 5 psi is then applied (see Fig. 6). If there is a puncture or discontinuous seam within this area, bubbles will appear and be detected by the observer.



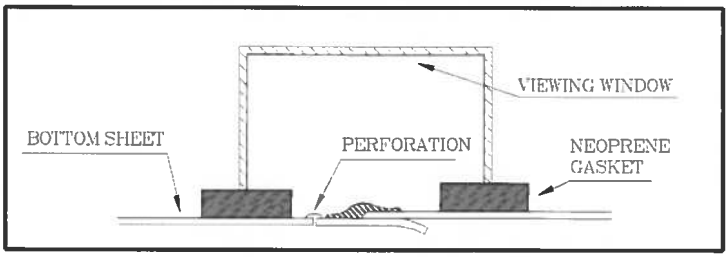


***Figure 6* - Vacuum-Box Test**

3.4. Repair Procedures

All materials were visually inspected for blemishes, punctures and other defects or damages that may have occurred during transport or panel placement. Any defect or damage was repaired as per the procedures described in this section.

Demobilization was not authorized until FC Géosynthétiques Inc, Kivalliq Contractors Group LTD and Agnico-Eagle Mines Limited completed a last visual inspection of the installation work. Any defect revealed by any step of the Quality Control Program was repaired and verified according to the prescribed procedures:

- All pockmarks, pinholes, T-seams, etc., smaller than the tip of the extruder were covered with an extrusion bead;
- All punctures, holes, tears, etc., wider than the tip of the extruder were repaired with extrusion-welded patches;
- Any seam revealed as defective by the CQC or CQA Programs was entirely rebuilt through a fusion and/or extrusion seaming process.

Prior to any fillet extrusion welding, the geomembrane was buffed to insure better adhesion of the extruded material. All repairs were visually inspected and verified by a non-destructive testing method, as described in section 3.3.2.2.

3.5. Record Drawing

The record drawing of the geomembrane installation, showing all panels, panel identification, pipe penetrations, repairs and destructive test locations, are included in Appendix IV of this report.

4. CERTIFICATION

FC Géosynthétiques Inc certifies having installed all geosynthetic materials according to the project plans and specifications provided by the consultant Agnico-Eale Mines Limited, for Kivalliq Contractors Group LTD. All installation work conducted by FC Géosynthétiques Inc meets or exceeds the standards of the geosynthetic industry.

François Thivierge

10-21-2015

François Thivierge, Construction Manager
FC GÉOSYNTHÉTIQUES INC.

Date
(mm-dd-yy)

APPENDIX I

QUALITY CONTROL PROCEDURES CONDUCTED ON SITE BY FC GÉOSYNTHÉTIQUES INC.

FC
GÉOSYNTHÉTIQUES

Fusion Trial Tests
Calibration par Fusion

Project Name / Nom de Projet: **Saline Discharge to Sea / Const. Of the Itivia Offloading**

Project No. / No. de Projet: **Phase #2 , Project #6528 / C-19049**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Trial Test No. No. de Calibration	Date (mm/dd/yy)	Time Heure	Ambient Temp. Temp. Ambiante	Equipment No. No. Équipement	Equipment Temp. Temp. Équipement	Equipment Speed Vitesse Équipement	Peel Resistance Résistance Pelage "A" (ppi)	Peel Type of Break Type de Brisure	Peel Resistance Résistance Pelage "B" (ppi)	Peel Type of Break Type de Brisure	Shear Resistance Résist. Cisaillement (ppi)	Shear Type of Break Type de Brisure	Tech.-Welder Soudeur	Tensiometer No. No. Tensiomètre
F-1	06-09-19	14:30	2 °C	MD-003	850 °F	600 °F	143	SE1	152	Ad-Brk 60%	N/A	N/A	O.B	T-9601
F-2	06-09-19	14:35	2 °C	MD-003	850 °F	600 °F	134	SE1	148	SE1	N/A	N/A	O.B	T-9601
"	"	"	"	"	"	"	136	SE1	153	SE1	N/A	N/A	"	"
"	"	"	"	"	"	"	134	SE1	156	Ad-Brk 90%	N/A	N/A	"	"
F-3	06-09-19	14:45	2 °C	MD-003	850 °F	475 °F	147	SE1	141	SE1	184	BRK	O.B	T-9601
"	"	"	"	"	"	"	149	SE1	138	SE1	187	BRK	"	"
"	"	"	"	"	"	"	141	SE1	147	SE1	N/A	N/A	"	"
F-4	06-10-19	12:20	5 °C	MD-003	850 °F	525 °F	137	SE1	142	SE1	178	BRK	O.B	T-9601
"	"	"	"	"	"	"	139	SE1	145	SE1	184	BRK	"	"
"	"	"	"	"	"	"	138	SE1	144	SE1	N/A	N/A	"	"

FC
GÉOSYNTHÉTIQUES

Extrusion Trial Tests
Calibration par Extrusion

Project Name / Nom de Projet: **Saline Discharge to Sea / Const. Of the Itivia Offloading**

Project No. / No. de Projet: **Phase #2 , Project #6528 / C-19049**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Trial Test No. No. de Calibration	Date (mm/dd/yy)	Time Heure	Ambient Temp. Temp. Ambiante	Equipment No. No. Équipement	Equipment Temp. Temp. Équipement	Pre-Heat Temp. Temp. Pré-Chauf.	Peel Resistance Résistance Pelage (ppi)	Peel Type of Break Type de Brisure	Shear Resistance Résist. Cisaillement (ppi)	Shear Type of Break Type de Brisure	Tech.-Welder Soudeur	Tensiometer No. No. Tensiomètre
E-1	06-09-19	15:45	2 °C	EX-1	260 °C	260 °C	123	SE3	177	BRK	M.G	T-9601
"	"	"	"	"	"	"	120	SE3	174	BRK	"	"
"	"	"	"	"	"	"	134	SE3	N/A	N/A	"	"
E-3	06-10-19	13:35	5 °C	EX-1	260 °C	260 °C	114	SE3	170	BRK	M.G	T-9601
"	"	"	"	"	"	"	131	SE3	170	BRK	"	"
"	"	"	"	"	"	"	118	SE3	N/A	N/A	"	"

FC
GÉOSYNTHÉTIQUES

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: Saline Discharge to Sea / Const. Of the Itivia Offloading

QC Inspector / Inspecteur CQ: Michael Gilbert

Project No. / No. de Projet: Phase #2 , Project #6528 / C-19049

Seaming Procedures / Procédures de Soudures						Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Air-Pressure Pressurisation	Vacuum Box Boîte à Vide	Starting Pressure Pression Départ (psi)	Ending Pressure Pression Fin (psi)	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
Saline Discharge to Sea													
1-2	06-09-19	15:54	25	F-3	O.B	06-09-19	16:05	X	-	31	31	Full seam	Y
1-3	06-09-19	15:54	25,7	F-3	O.B	06-09-19	16:05	X	-	31	31	Full seam	Y
2-3	06-09-19	15:40	2,1	F-3	O.B	06-09-19	15:51	X	-	29	29	Full seam	Y
2-4	06-09-19	15:35	25	F-3	O.B	06-09-19	16:55	X	-	30	30	Full seam	Y
3-4	06-09-19	15:35	25,7	F-3	O.B	06-09-19	16:55	X	-	30	30	Full seam	Y
Itivia Offloading													
1-2	06-10-19	12:25	28,6	F-4	O.B	06-10-19	12:30	X	-	31	30	Full seam	O
3-4	06-10-19	12:35	1,8	F-4	O.B	06-10-19	12:41	X	-	29	29	Full seam	O
4-5	06-10-19	12:40	0,9	F-4	O.B	06-10-19	12:47	X	-	28	28	Full seam	O
5-6	06-10-19	12:45	5	F-4	O.B	06-10-19	12:52	X	-	27	27	Full seam	O
2-3	06-10-19	13:00	6,8	F-4	O.B	06-10-19	13:35	X	-	31	31	Full seam	O
2-4	06-10-19	13:00	5,2	F-4	O.B	06-10-19	13:35	X	-	31	31	Full seam	O

FC

GÉOSYNTHÉTIQUES

Seaming Procedures
Procédures de Soudures

Project Name / Nom de Projet: **Saline Discharge to Sea / Const. Of the Itivia Offloading**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Project No. / No. de Projet: **Phase #2 , Project #6528 / C-19049**

Seaming Procedures / Procédures de Soudures						Non-Destructive Testing / Essai Non-Destructif							
Seam No. No. de Soudure	Date of Seaming Date de Soudure (mm/dd/yy)	Time of Seaming Heure de Soudure	Seam Length Longueur Soudure (m)	Trial Test No. No. Calibration	Technician-Welder Soudeur	Test Date Date de l'essai (mm/dd/yy)	Time Heure	Air-Pressure Pressurisation	Vacuum Box Boîte à Vide	Starting Pressure Pression Départ (psi)	Ending Pressure Pression Fin (psi)	Testing Details/Location Détails de l'essai/Localisation	Approved (Yes/No) Approuvé (Oui/Non)
2-5	06-10-19	13:00	2,2	F-4	O.B	06-10-19	13:35	X	-	31	31	Full seam	O
2-6	06-10-19	13:00	16	F-4	O.B	06-10-19	13:35	X	-	31	31	Full seam	O

FC
GÉOSYNTHÉTIQUES

Repair Report
Rapport de Réparation

Project Name / Nom de Projet: **Saline Discharge to Sea / Constr. Of the Itivia Offloading**

Project No. / No. de Projet: **Phase #2 , Project #6528 / C-19049**

QC Inspector / Inspecteur CQ: **Michael Gilbert**

Repair No. / No. Réparation	Type & Dimensions / Type et Dimensions			Location of Repair / Localisation de la Réparation				Date Repaired / Date Réparée (mm/dd/yy)	Date Repair Verified / Date Réparée Vérifiée (mm/dd/yy)	Approved (Yes/No) / Approuvé (Oui/Non)
	Patch / Empiècement	Extrusion Weld or Bead / Soudure Extrusion	Pipe Boot / Manchon d'étanchéité	On Panel No. / Sur Panneau No.	On Seam No. / Sur Soudure No.	Intersection of Panels / Intersection des Panneaux	Sample Location / Localisation de l'échantillon			
Saline Discharge to Sea										
R-1		E				1-2-3		06-09-19	06-09-19	Y
R-2		E				2-3-4		06-09-19	06-09-19	Y
Itivia Offloading										
R-1		E				2-3-4		06-10-19	06-10-19	Y
R-2		E				2-4-5		06-10-19	06-10-19	Y
R-3		E				2-5-6		06-10-19	06-10-19	Y

CHARTE/CHART : Empiècement/Patch (**P1** 0.3m à/to 0.6m; **P2** 0.6m à/to 1m; **P3** over 1m et plus), Extrusion (**E**), Embout/Pipe Boot (**B**), Cap strip (**CS**), Doublure/Reinforcement (**DB**) et/and Reconstruction

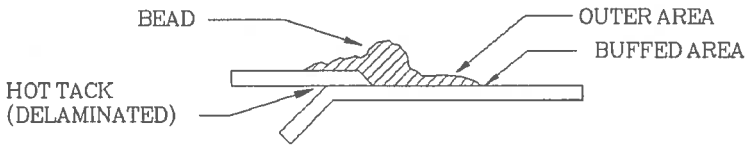
APPENDIX II

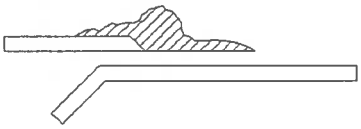
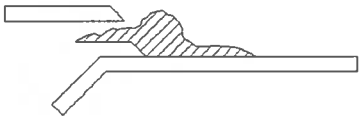
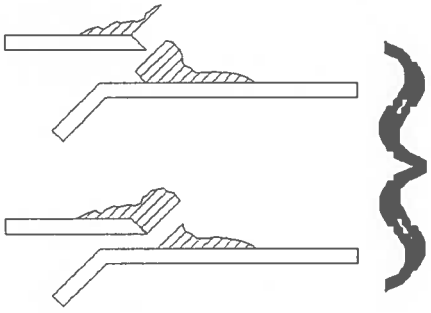
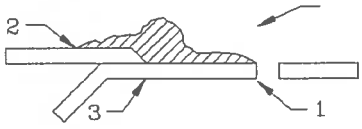
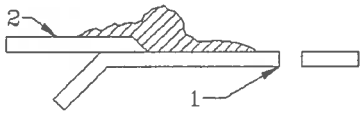
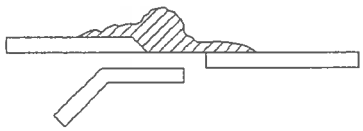
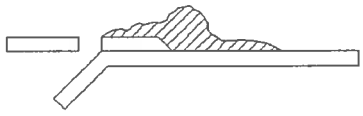
FIELD MEMOS AND COMMUNICATIONS

APPENDIX III

-US-EPA CLASSIFICATION FOR TYPES OF BREAK

FILLET–EXTRUDED GEOMEMBRANE WELD

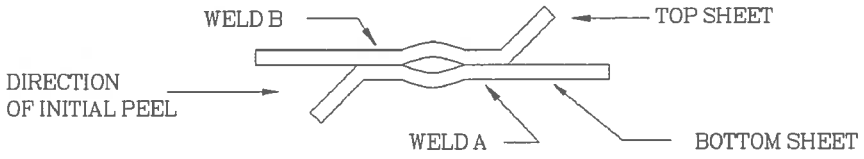


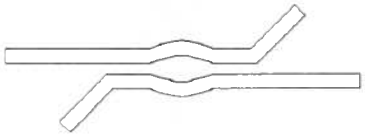
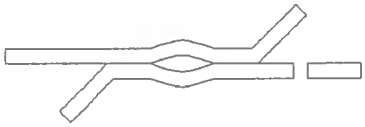
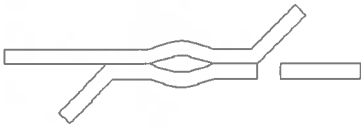
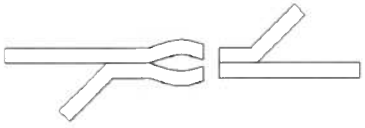
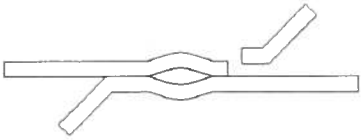
TYPES OF BREAKS	CODE	BREAK DESCRIPTION	CLASSIFICATION [a]
	AD1	FAILURE IN ADHESION. SPECIMENS MAY ALSO DELAMINATE UNDER THE BEAD AND BREAK THROUGH THE THIN EXTRUDED MATERIAL IN THE OUTER AREA.	NON–FTB
	AD2	FAILURE IN ADHESION.	NON–FTB
	AD–WLD	BREAK THROUGH THE FILLET. BREAKS THROUGH THE FILLET RANGE FROM BREAKS STARTING AT THE EDGE OF THE TOP SHEET TO BREAKS THROUGH THE FILLET AFTER SOME ADHESION FAILURE BETWEEN THE FILLET AND THE BOTTOM SHEET.	NON–FTB [b]
	SE	BREAK AT SEAM EDGE. INDICATE LOCATION BY 1,2 OR 3	FTB
	BRK	BREAK IN THE SHEET. USE 1 TO INDICATE BOTTOM SHEET AND 2 TO INDICATE TOP SHEET. IF BREAK IS IN BUFFED AREA, INDICATE WITH "(B)".	FTB
	AD–BRK	BREAK IN THE BOTTOM SHEETING AFTER SOME ADHESION FAILURE BETWEEN THE FILLET AND THE BOTTOM SHEET. (APPLICABLE TO PEEL ONLY).	FTB
	HT	BREAK AT THE EDGE OF THE HOT TACK FOR SPECIMENS WHICH COULD NOT BE DELAMINATED IN THE HOT TACK.	NO TEST

[a] FTB="FILM–TEAR BOND."

[b] ACCEPTANCE OF AD–WLD BREAKS MAY DEPEND ON WHETHER TEST VALUES MEET A MINIMUM SPECIFICATION VALUE AND NOT ON CLASSIFICATION AS A FTB OR NON–FTB BREAK.

DOUBLE–TRACK GEOMEMBRANE WELD



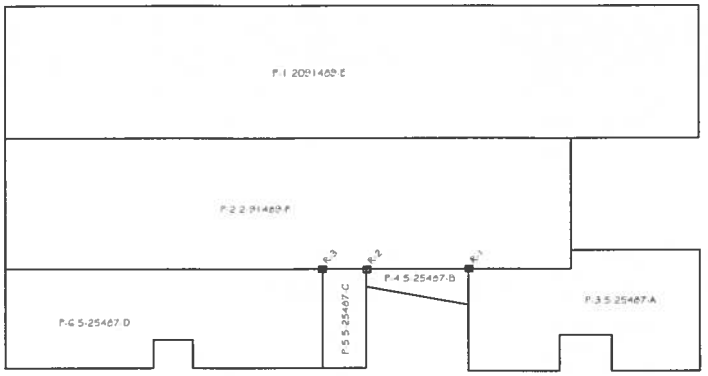
TYPES OF BREAK	CODE	BREAK DESCRIPTION	CLASSI–FICATION [a]
	AD	ADHESION FAILURE	NON–FTB
	BRK	BREAK IN SHEETING. BREAK CAN BE IN EITHER TOP OR BOTTOM SHEET.	FTB
	SE1	BREAK AT OUTHER EDGE OF SEAM. BREAK CAN BE IN EITHER TOP OR BOTTOM SHEET.	FTB
	SE2	BREAK AT INNER EDGE OF SEAM THROUGH BOTH SHEETS	FTB
	AD–BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE. BREAK CAN BE IN EITHER THE TOP OR BOTTOM SHEET.	FTB

[a] FTB="FILM–TEAR BOND."

APPENDIX IV

RECORD DRAWING

CONSTRUCTION OF THE ITIVIA OFFLOADING



0 10 20m

ÉCHELLE: 1:250

N

INGÉNIEUR / ENGINEER

AGNICO-EAGLE MINES LIMITED

LÉGENDE / LEGEND:

- EMPIÉCEMENT / PATCH
- MANCHON TUYAU / PIPE BOOT
- DESTRUCTIF / DESTRUCTIVE
- SOUDURE EXTRUSION / EXTRUSION WELD
- 1 PANNEAU NO. / PANEL NO.
- 1-30474 ROULEAU NO. / ROLL NO.
- ANCRAGE MÉCANIQUE / MECHANICAL ANCHORAGE
- SOUDURE EXISTANTE / EXISTING SEAM

CLIENT / CUSTOMER:

KIVALLIQ CONTRACTORS GROUP LTD

TYPE DE PRODUIT INSTALLÉ / PRODUCT TYPE INSTALLED

HDPE 40O MTEXTURED

TYPE DE PROJET / PROJECT TYPE

CONSTRUCTION OF THE ITIVIA OFFLOADING LINING
AS BUILT

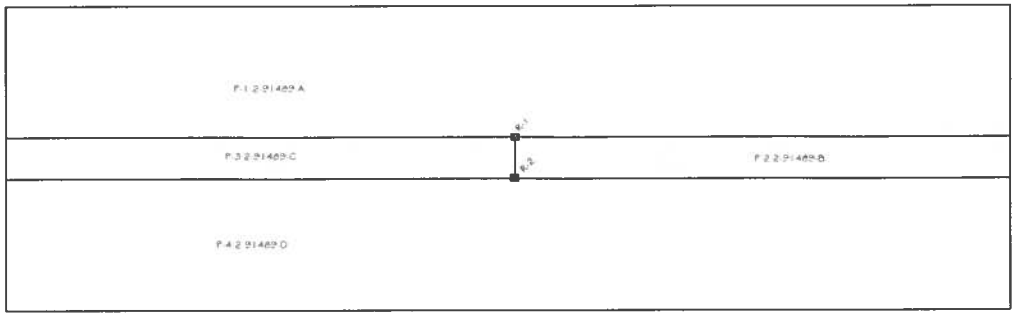
NOM DU PROJET / PROJECT NAME

AGNICO-EAGLE, MEL1ADINE 2019 / Project #6528, Itivia Offloading

FC GÉOSYNTHÉTIQUES
1300, 2e Rue, Parc industriel
Sainte Marie, QC, Canada
G1V 4T2

NO. PROJET / PROJECT NO.:	C-19049
FICHIER AUTOCAD: AUTOCAD FILE	C 19049C10.dwg
DATE (jj mm aa): DATE (dd-mm-yy):	11/10/19
DESSINÉ PAR / DRAWN BY:	E.B.
VERIFIÉ PAR / VERIFIED BY:	E.B.
APPROUVÉ PAR / APPROVED BY:	F.T.
ÉCHELLE / SCALE:	1/250
DESSIN NO / DRAWING NO:	2/2

SALINE DISCHARGE TO SEA



0 10 20m

ÉCHELLE: 1:250

N

INGÉNIEUR / ENGINEER

AGNICO-EAGLE MINES LIMITED

LÉGENDE / LEGEND:

- EMPIÈCEMENT / PATCH
- MANCHON TUYAU / PIPE BOOT
- DESTRUCTIF / DESTRUCTIVE
- SOUDURE EXTRUSION / EXTRUSION WELD
- 1 PANNEAU NO. / PANEL NO.
- 1-30474 ROULEAU NO. / ROLL NO.
- ANCRAGE MÉCANIQUE / MECHANICAL ANCHORAGE
- SOUDURE EXISTANTE / EXISTING SEAM

CLIENT / CUSTOMER:

KIVALLIQ CONTRACTORS GROUP LTD

TYPE DE PRODUIT INSTALLÉ / PRODUCT TYPE INSTALLED

HDPE 460 S MOOTH

TYPE DE PROJET / PROJECT TYPE

SALINE DISCHARGE TO SEA LINING AS-BUILT

NOM DU PROJET / PROJECT NAME

AGNICO-EAGLE, MEL/ADINE 2019 / Project #6528, Saline Discharge to Sea

FC GÉOSYNTHÉTIQUES
1300, 2e Rue, Parc industriel
Sainte-Marie, QC, Canada
G1V 4T2

NO. PROJET / PROJECT NO.:	C-19049
FICHIER AUTOCAD: AUTOCAD FILE:	C-19049SDS.dwg
DATE (yy mm dd): DATE (dd mm yy):	11/10/19
DESSINÉ PAR / DRAWN BY:	E.B.
VERIFIÉ PAR / VERIFIED BY:	E.B.
APPROUVÉ PAR / APPROVED BY:	F.T.
ÉCHELLE / SCALE:	1/250
DESSIN NO / DRAWING NO:	1/2

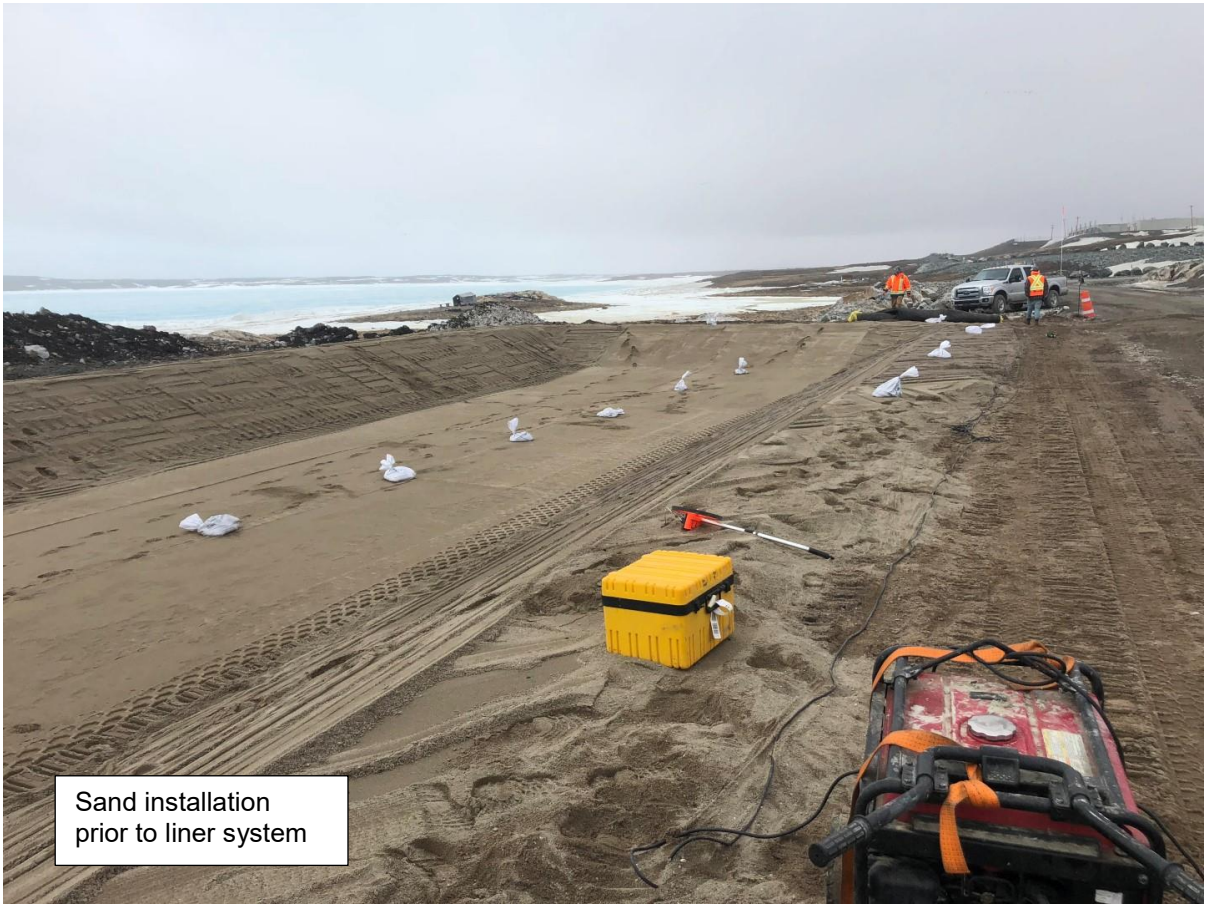
Appendix 3: Photographs

Excavation and clean up

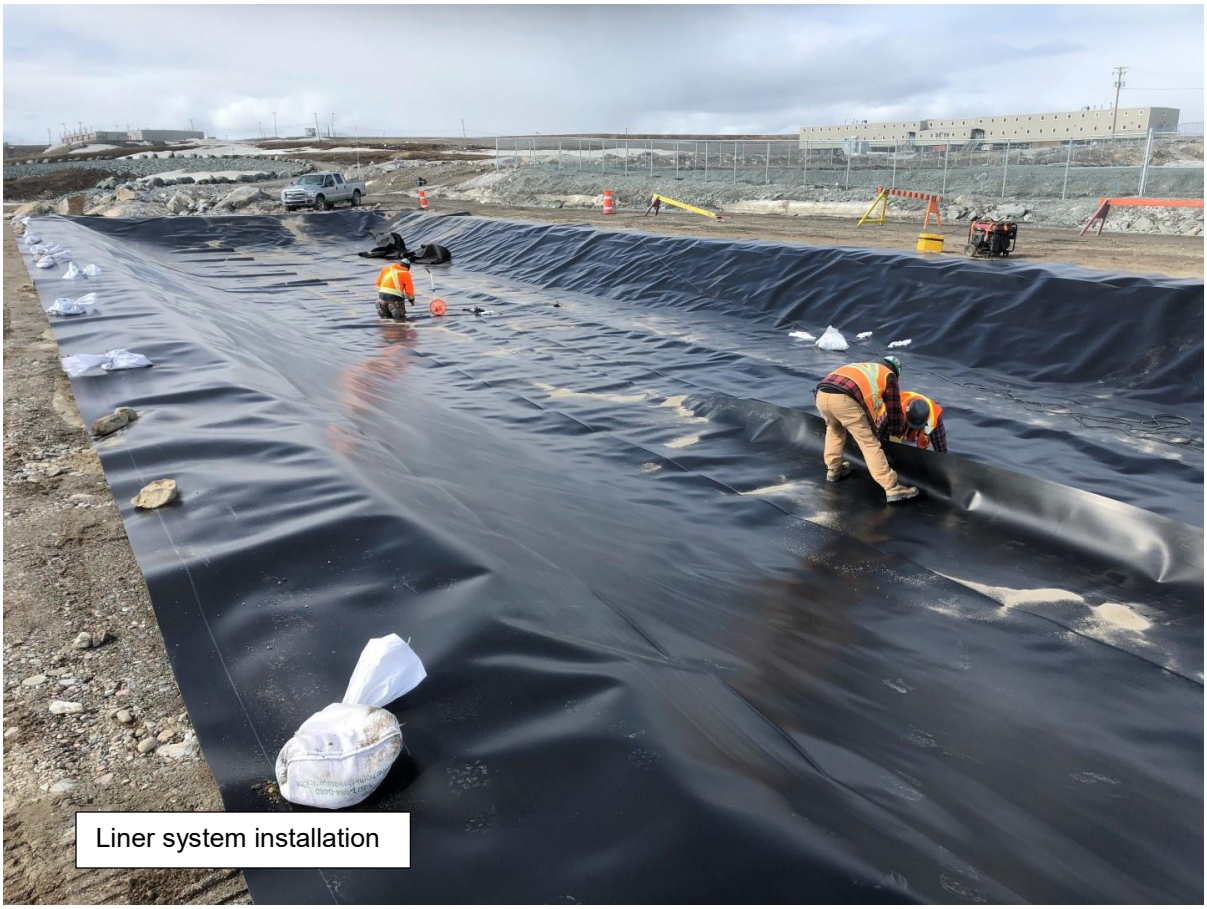
Pit run installation

Crushed material installation on south-west berm

North berm with 2:1 slope



Sand installation
prior to liner system



Liner system installation

Sand installation over liner

Sleeves installation for electrical cables

Pump house and storage tank installed

Fusion welding

Onshore HDPE pipe

HDPE pipe and electrical cables installed on shore

Submerged HDPE pipe installation

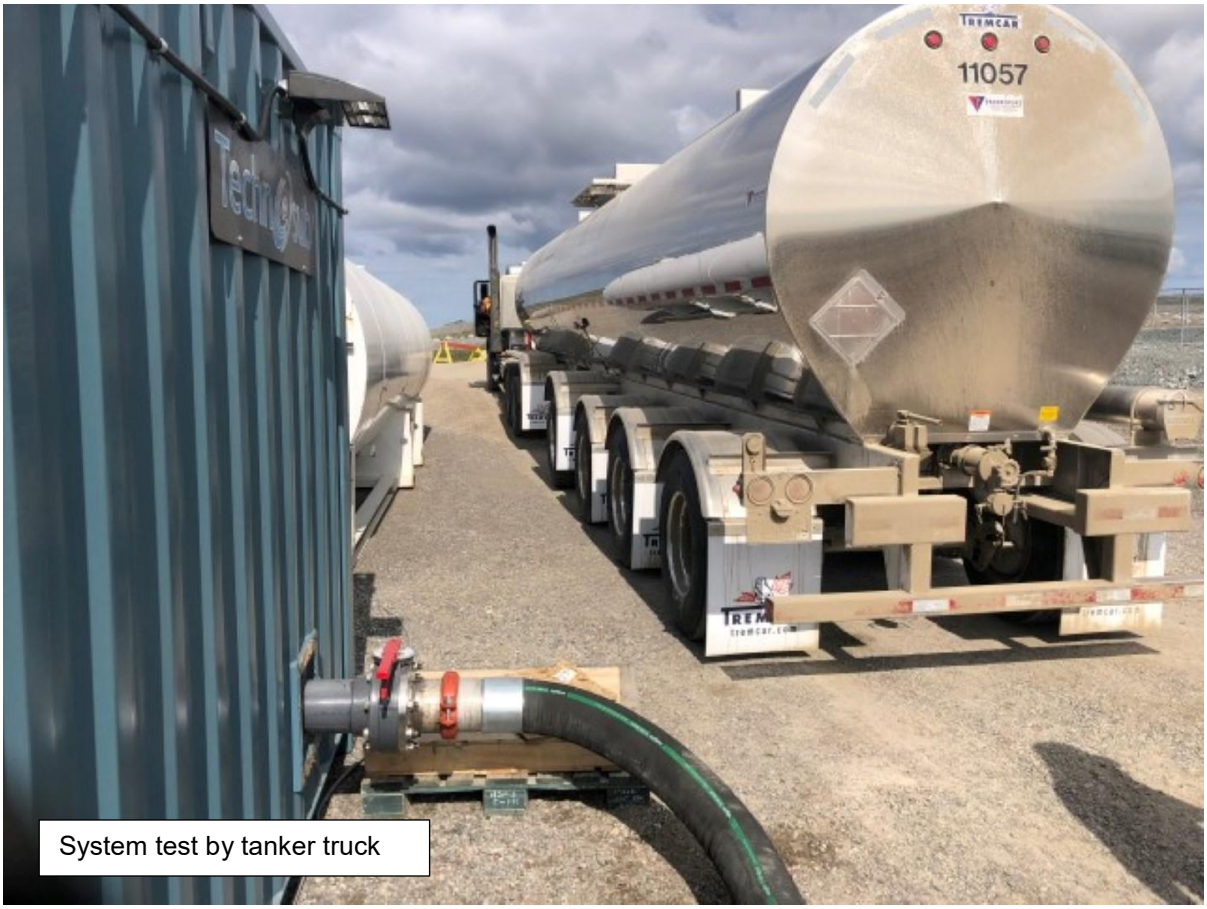
Submerged pipe installation continued

Containment pads after final adjustments

Interior of Pump House

Submerged diffuser inspection


Submerged pipe inspection



System test by tanker truck