Baffinland Iron Mines Corporation
Mary River Project

Construction Summary Report: Milne Port Waste Management Package

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 19FEB15
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REGISTERED PROFESSIONAL ENGINEER
M. J. BUYKX
LICENSEE
19FEB15
NT/NU

2015-01-30	0	Approved for Use	S. Hess	M. Buykx	J. Cleland	D. Matthews
DATE	REV.	STATUS	PREPARED BY	CHECKED BY	APPROVED BY	APPROVED BY
			HATCH			CLIENT

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1. Facility Description

1.1 Purpose and Design Basis

The Milne Port waste management package includes the incinerator, waste management building, and the two (2) new hazardous waste containment areas (north and south).

The incinerator is used to dispose of the Milne Port facility's non-hazardous waste. The waste management building provides a heated indoor area for waste to be appropriately sorted to meet the incinerator's burning recipe requirements.

The hazardous waste containment areas are lined containment cells used to store hazardous waste/ contaminated material in support the Project's site drainage monitoring strategy.

For additional information on the controls and operations of the incinerator, see Operations and Maintenance Manual and Control documents in Appendix D.

1.2 Location and Base Elevations

The Milne Port incinerator equipment is modular and operates within three sea containers attached to the rear of the waste management building. The waste management building is located between northing N7 975 966 and N7 975 971 and easting E503 749.5 and E503 775 The building foundation has EL. 12.7m.

The north hazardous waste containment area is located east of the fuel tank farm between northing N7 976 308 and N7 976 276 and easting E503 841 and E503 919.8. The containment area's low point is at EL. 9.6m and the high point at EL. 10.9m.

The south hazardous waste containment area is located west of the accommodation facilities and east of the treated effluent pond between northing N7 975 987 and N7 975 962 and easting E503 724.2 and E503 740.6. The containment area's low point is at EL. 11.5m and the high point at EL. 12.0m.

1.3 Geometry and Access

The incinerator is located on the south side (rear) of the waste management building. Each of the three sea containers housing the incinerator equipment has an access port that penetrates the rear wall of the foldaway building. The waste management building is rectangular in shape with truck door access on the north side.

The north hazardous waste containment area has been constructed rectangular in shape to optimize the earthworks materials (granular fills and liner installation). The berms have side slopes not steeper than 1.5H:1V and a 1.0m wide horizontal liner length for appropriate liner anchoring in the outer berm. The containment area has a 4% grade access ramp on the west side and a drainage pond on the east side.

The south hazardous waste containment area has been constructed rectangular in shape to optimize the earthworks materials (granular fills and liner installation). The berms have side slopes not steeper than 1.5H:1V and a 1.0m wide horizontal liner length for appropriate liner

anchoring in the outer berm. The containment area has a 4% grade access ramp on the north side and a drainage pond on the south side.

1.4 Earthworks Materials Details

The waste management building pad and the hazardous waste containment areas have all been constructed using raised earthworks.

The pre-cast concrete block foundation arrangement in the waste management building and poured concrete floor with sumps in each half of the building serves as effluent containment.

The hazardous waste containment areas have been sealed with liner material for storage of the runoff/seepage or spills, and been covered with a layer of fill material.

2. Construction Activity Summary

Construction activities on the Milne Port waste management package started in July 2013. The construction punch list for the incinerator equipment was closed out in November 2014. The construction punch list for the waste management building remains open with the last item closeout dated December 2014. The hazardous waste containment cell liners were installed in August 2014 and the earthworks completed in September 2014.

The following summarizes the construction activities:

a. Crushed blast rock and fill material was quarried, crushed, screened, and hauled from the Milne Inlet Quarry (Q1) for use in the earthworks.

2.1 Waste Management Building with Incinerator

a. Areas were cleared and graded to prepare for the sub-base

b. Prepared sub base and granular cap

c. Placed pre-cast concrete foundation blocks

d. Placed incinerator sea containers (equipment within)

e. Installed fuel tank and required piping

f. Commission the incinerator equipment

g. Stack testing of incinerator emissions

h. Erected fold away building

i. Installed floor rebar

j. Poured concrete slab on grade

k. Connect electrical power to the building and install power distribution

l. Install HVAC system in waste management building

m. Install fire detection system in waste management building

n. Commissioned the waste management building systems.

2.2 Hazardous Waste Containment Areas (North and South)

a. Areas were cleared and graded to prepare the sub-base for the containment area

b. Constructed the access ramp

c. Constructed the pad and berm

d. Installed fill material layers

e. Installed non-woven geotextile

f. Installed liner

g. Installed second layer of non-woven geotextile

h. Installed fill material layer.

QA/QC

The quality assurance and quality control (QA/QC) for the hazardous waste containment areas was conducted by Layfield, including documents accepting the preparation of the subgrade, installation and testing of the membrane with a final inspection of the completed liner. See Appendix A for the following:

a. A certificate of acceptance of the soil subgrade for installation of the liner was verified and signed by the Hatch project coordinator and Layfield Environmental supervisor.

b. A geomembrane deployment log describes the location, size, temperature when placed, visually observed and initialled that the panel had been checked.

c. A geomembrane trial seam log tested the welding before the entire installation proceeded.

d. An air lance test log had been completed for each seam.

e. Layout drawings show all of the panel numbers, as described in the log documents.

f. A certificate of final inspection and acceptance was signed by Layfield and Hatch representatives.

3. Photographic Records

Figure 1: Pre-construction of the Milne Port waste management package [northeast view]

Figure 2: Waste Management Building: Preparing for fold away building erection

Figure 3: Waste Management Building: Incinerator equipment placed and commissioned

Figure 4: Waste Management Building: Installation of the incinerator equipment with temporary access platform for stack emissions testing

Figure 5: Waste Management Building: Erecting the fold away building

Figure 6: Waste Management Building: Installing the end walls (incinerator access ports on rear wall)

Figure 7: Waste Management Building: Incinerator fuel day tank installation

Figure 8: Waste Management Building: Completed installation viewed from the inside; access to incinerator visible in back wall

Figure 9: Waste Management Building: Completed installation from the outside

Figure 10: Waste Management Building: Completed installation, rear view

Figure 11: North hazardous waste containment area: pre-construction [west view]

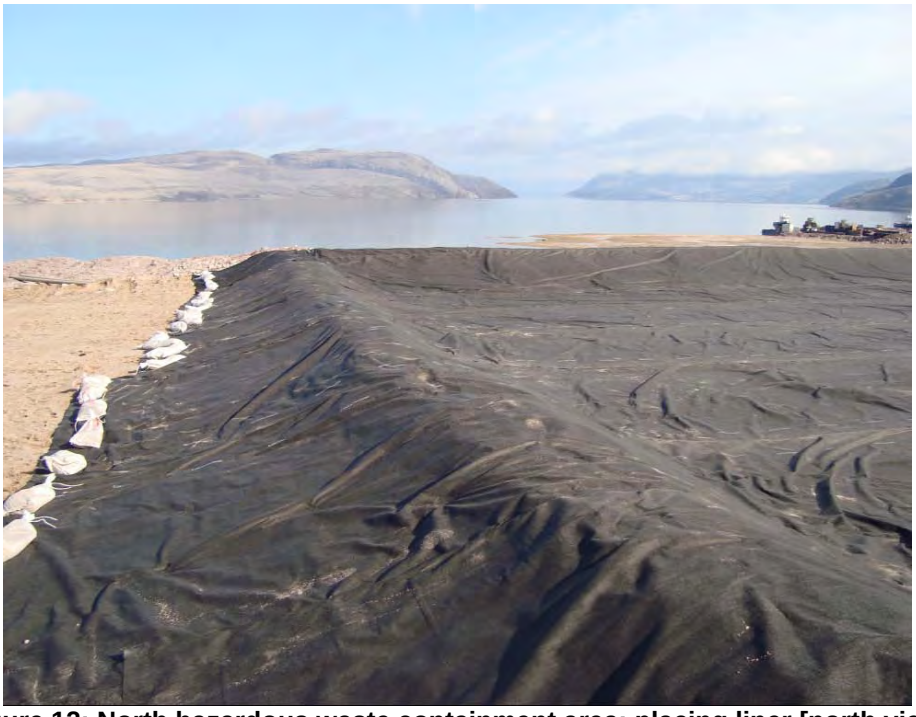

Figure 12: North hazardous waste containment area: placing liner [north view]

Figure 13: North hazardous waste containment area: North view of liner boundary [north view]

Figure 14: North hazardous waste containment area: Shaping the container pad earthworks (facing east) [west view]

Figure 15: North hazardous waste containment area: Shaping the container pad earthworks [west view]

Figure 16: North hazardous containment area: Construction complete [west view]

Figure 17: South hazardous containment area: Sub-base complete

Figure 18: South hazardous containment area: Liner installation

Figure 19: South hazardous containment area: Liner installed and berm shaped

Figure 20: South hazardous containment area: Finished and in-use [west view]

Figure 21: South hazardous containment area: Finished and in-use [south view]

4. As-Built Drawings

The as-built drawings incorporate contractor red line markups, field instructions, requests for information, field sketches, and all other inputs provided by the field engineering team. The as-built drawings are attached in Appendix B.

Table 4-1: Waste Management Package 'As-Built' Drawing List

Drawing Number	Title	Revision
H349000-2000-00-014-0004	Milne Port Infrastructure Site Layout	3
H349000-2550-10-035-0001	Milne Port Hazardous Waste Containment Cell – North Plan & Details	1
H349000-2550-10-035-0002	Milne Port Hazardous Waste Containment Cell – North Sections & Details	1
H349000-2550-10-035-0003	Milne Port Hazardous Waste Containment Cell – South Plan, Sections & Details	1

5. Field Decisions

The following sections describe the relevant field decisions made during construction:

a. Transformer stands were fabricated on-site to elevate the waste management building's transformers off the ground and install closer to the building wall to protect them from environmental conditions.

b. The incinerator's network cabinet was exposed to dust and ash in the original design location. The cabinet has vent openings located on the sides (not a sealed cabinet). The cabinet was relocated to the incinerator control room with a dedicated power outlet to prevent damage during incinerator operation.

c. Due to limited material availability on site, material substitutions were made for run of quarry granular fill in the building pad.

d. The north hazardous waste containment area was moved N5.7m from the design location (field-fit) to achieve the desired road clearances between the pond and the Toromont shop building which was constructed prior to breaking ground on the north hazardous waste containment area. The whole design for the Milne Port camp and support buildings were moved approximately 20m north. The ground near the south of camp was too soft for supporting buildings.

e. The south hazardous waste containment area was rotated 90 degrees clockwise for accessibility and moved N52.0m E15.3m from the design location (field-fit) since the design survey points located the cell in the constructed parking lot. The 90 degree rotation now has the access ramp on the north side instead of east, and the pond on the south side of the cell instead of west.

6. Performance Evaluation

As of the data collection cut-off date for this report (December 9, 2014) there have been no adverse observations in operational performance of the Milne Port waste management package.

7. Vibration Monitoring and Quarrying Activity

No vibration monitoring was conducted during the construction of the Milne Port waste management package as it was not deemed necessary based on scope of activities required for construction.

Control for quarrying activity was conducted as per the project's specific management plans:

- BAF-PH1-830-P16-0040 (H349000-1000-07-126-0013): Quarry Management Plan Milne Inlet Quarry (Q1).
- BAF-PH1-830-P16-0004 (H349000-1000-07-126-0011): Borrow Pit and Quarry Management Plan.

8. Environmental Monitoring

Environmental monitoring during the construction of the Milne Port waste management package was conducted as per the BAF-PH1-830-P16-0008 Environmental Protection Plan (EPP) recently updated in July 2014.

In addition to the EPP, BIM self-performed earthworks construction follows the requirements of the BAF-PH1-830-STD-0001 Environmental Health and Safety Management Framework issued December 2010. The Baffinland on-site Environmental Management Team was responsible for environmental monitoring at all sites during construction and following-up with the construction team(s) if there were any reported environmental incidents or non-conformances.

Waste management construction was also required to follow the requirements of the Surface Water and Aquatic Ecosystems Management Plan (March 2014), BAF-PH1-830-P16-0026. This Management Plan outlines the best management practices implemented to limit the potential for adverse impacts to receiving waters, aquatic ecosystems, fish and fish habitat used during construction. In addition this plan details the systems in place to mitigate and manage drainage and runoff at the building sites, address point and non-point discharges to surface waters and assess those discharges on water quality and quantity relative to their receiving water systems.

The Spill Contingency Plan (March 2014), BAF-PH1-830-P16-0036, in conjunction with the Emergency Response Plan (March 2014), BAF-PH1-830-P16-0007, provides guidance and instructions for first responders and Baffinland Management in the event of a spill event or other emergency such as fire or accident.

The risks to the water quality in the respective rivers and streams as a result of construction of the waste management package would originate from following sources based on construction methodology:

- Spills from equipment
- Increase in sediment load in the water

There were no recorded spills from equipment used at the construction site. During the period of construction, water quality monitoring conducted at downstream stations under Part D, Section 16 and Part I, of the Type “A” Water Licence 2AM-MRY1325 indicated total suspended solids (TSS) and other parameter at levels below the specified Water Licence criteria. The results for water quality monitoring were provided in monthly reports submitted to the Nunavut Water Board and other stakeholders. In consideration of the above, the environmental mitigation strategies were effective in maintaining runoff water quality.

9. Earthworks Data

The survey data collected has been included in Appendix C.

Two geotechnical inspections (early August and late September) were conducted in 2014 by a 3rd party, independent, Nunavut certified engineer under Part D, Section 19 of Type “A” Water Licence 2AM-MRY1325. The inspection is inclusive of waste containment structures at the Mary River Mine Site and Milne Port site. The last two inspections overlooked these new hazardous waste storage locations. This omission is known and the new north and south hazardous waste containment areas will be included in the next regularly scheduled geotechnical inspection.

10. Unanticipated Observations

There were no unanticipated observations during construction of the waste management package.

11. Surface Monitoring

Not conducted.

12. Required Maintenance

None conducted to-date.

13. Adaptive Management

For discussion of adaptive management principles and practices applied during the Construction Phase of the Project and their overall effectiveness please refer to the 2013 Annual Report to the Nunavut Impact Review Board. Any additional adaptive management practices implemented as a result of works completed in 2014 will be reported in the updated 2014 Annual Report to the Nunavut Impact Review Board.

14. Concordance with Type "A" Water Licence

The Nunavut Water Board Type "A" Licence 2AM-MRY1325, Schedule D, outlines the requirements for Construction Monitoring Reports. The following table provides a concordance of the report, herein, with the requirements included in Part D.

Table 14-1: Table of Concordance for Schedule D

Schedule D Item No.	Schedule D Description	Corresponding Section in this Report
1a	description of all infrastructure and facilities designed and constructed to contain, withhold, divert or retain Water and/or Waste;	1
1b	a summary of construction activities including photographic records before, during and after construction of the facilities and infrastructure designed to contain, withhold, divert or retain Water and/or Waste;	2, 3
1c	as-built drawings and design for facilities and infrastructure, in Item 1(a) of this schedule, designed and constructed to contain, withhold, divert or retain Water and/or Waste;	4
1d	documentation of field decisions that deviate from the original plans and any data used to support or developed facilities and infrastructure to withhold, divert or retain Water and/or Waste;	5
1e	a comparison of measured versus predicted performance of infrastructure and facilities;	6
1f	any blast vibration monitoring and control for quarrying activity carried out in close proximity to fish bearing waters;	7
1g	monitoring conducted for sediment and explosives residue release from construction areas;	8

Schedule D Item No.	Schedule D Description	Corresponding Section in this Report
1h	monitoring undertaken in accordance with Part D of the during the Construction Phase of the Project;	8
1i	details confirming that the requirements of the CCME guidance document entitled “Aboveground Storage Tank Systems for Petroleum and Allied Petroleum Products (2003)” have been met by the Licensee;	N/A
1j	data collected from instrumentation used to monitor earthworks and the interpretation of that data;	9
1k	a discussion of any unanticipated observations including changes in risk and mitigation measures implemented to reduce risk during construction;	10
1l	an overview of any method including frequency used to monitor deformations, seepage and geothermal responses;	11
1m	a summary of maintenance work undertaken as a result of settlement or deformation of dikes and dams;	12
1n	a summary of adaptive management principles and practices applied during the relevant phases of the Project and their overall effectiveness.	13

Appendix A

Liner Data

A. E349000-CC004-02-198-0001-007Sub01 Project Completion QA/QC Package VI – Hazardous Waste Containment North ***[20 pages]***

B. E349000-CC004-02-198-0001-009Sub01 Project Completion QA/QC Package VIII – Hazardous Waste Containment South ***[13 pages]***

C. E349000-CC004-02-198-0001-010Sub01 Project Completion QA/QC Package IX – Installation Warranty ***[1 page]***

HATCH	VENDOR DATA REVIEW		
Doc Number	E349000-CC004-02-198-0001-007	Sub	01
Date Received			

Review Grade	Next Submittal Status
☐ C1 – Proceed to next submission & status	☐ Internal Review ☐ Certified Final ☐ Final ☐ As-Built
☐ C2 – Proceed with exceptions as noted to next submission & status	Next Submittal Date:
☐ C3 – Do not proceed, revise as noted & resubmit	
No further submission required - Complete ☐	
☐ C4 - No further submission required - Cancelled ☐	
No further submission required - Superseded ☐	
Package Coordinator: Name, signature and Date:	

REVIEWED ONLY FOR GENERAL CONFORMITY WITH THE SPECIFICATIONS. ACCEPTANCE BY THE ENGINEER DOES NOT WARRANT OR REPRESENT THAT THE INFORMATION CONTAINED ON THIS DRAWING/DOCUMENT IS EITHER ACCURATE OR COMPLETE. THE SOLE RESPONSIBILITY FOR CORRECT DESIGN, DETAILS & DIMENSIONS SHALL REMAIN WITH THE PARTY SUBMITTING THE DRAWING/DOCUMENT.

LAYFIELD

CERTIFICATE OF ACCEPTANCE OF SOIL SUBGRADE SURFACE

PROJECT NAME: Mary River Project "Hazardous Waste"
PROJECT NUMBER: CT000071
OWNER: Baffinland Iron Mine
LOCATION: Nunavut.

I, the undersigned, a duly appointed representative of Layfield Environmental Systems Ltd. (LESL), have visually observed the soil subgrade described below, and found it to be an acceptable surface on which to install geomembrane.

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield Environmental Systems, and LESL makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield Environmental Systems accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade accepted on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield Environmental Systems and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

Area Being Accepted: Containment system. inside slopes and floor is acceptable to install underlay of LP7 and HDPE 60 mil Geomembrane.

LAYFIELD ENVIRONMENTAL SYSTEMS REPRESENTATIVE:

Date: 05 Aug / 2014
Signature:
Name: Yonatan Espindola
Title: Supervisor

OWNERS REPRESENTATIVE:

Date: Aug 12/14
Signature:
Name: Tim Thertell
Title:
Company: Hatch

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER: CT000071 **PROJECT TITLE:** Mari river Projetc "Hazardous Waste Pond"

OWNER: Baffinland Iron Mine **CONTRACTOR:** Baffinlan Iron Mines

LOCATION: Nunavut

GEOMEMBRANE **SECONDARY** **PRIMARY** **CLOSURE** **OTHER**

SUBGRADE CONDITION (SURFACE COMPACTION, PROTRUSIONS, DESICCATION, EXCESSIVE MOISTURE):

REMARKS: Underlay LP 7 60 mil HDPE liner **DATE:** 5-Aug-14

SHEET NUMBER: 1

DEPLOYMENT EQUIPMENT:

	PANEL LOCATION REFERENCE NUMBER 1	PANEL LOCATION REFERENCE NUMBER 2	PANEL LOCATION REFERENCE NUMBER 3
PANEL/ROLL NUMBER	9	9	9
DEPLOYMENT LENGTH	27m	7.92m	8.9m
AMBIENT AIR TEMP.	10	10	10
VISUAL OBSERVATION	Good	Good	Good
OBSERVED OVERLAP	5"	5"	5"
CHECKED BY	Y.E	Y.E	Y.E
ADJACENT PANEL	N= S= E= ,2,3,4,5,6,´ W= 8	N= 3,4 S= 5 E= W= 1	N= 2 S= E= 4 W= 1

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER 4	PANEL LOCATION REFERENCE NUMBER 5	PANEL LOCATION REFERENCE NUMBER 6
PANEL/ROLL NUMBER	9	9	9
DEPLOYMENT LENGTH	7m	7.9m	8.5m
AMBIENT AIR TEMP.	10	10	10
VISUAL OBSERVATION	Good	Good	Good
OBSERVED OVERLAP	5"	5"	5"
CHECKED BY	Y.E	Y.E	Y.E
ADJACENT PANEL	N= 2 S= 3 E= W= 3	N= 6,7 S= 2 E= W= 1	N= S= 5 E= 7 W= 1

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER 7	PANEL LOCATION REFERENCE NUMBER 8	PANEL LOCATION REFERENCE NUMBER 9
PANEL/ROLL NUMBER	9	9	9
DEPLOYMENT LENGTH	5.9m	31.30m	31.30m
AMBIENT AIR TEMP.	10	10	10
VISUAL OBSERVATION	Good	Good	Good
OBSERVED OVERLAP	5"	5"	5"
CHECKED BY	Y.E	Y.E	Y.E
ADJACENT PANEL	N= 6 S= 5 E= W= 6	N= S= E= 1 W= 9	N= S= E= 8 W= 10

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER 10	PANEL LOCATION REFERENCE NUMBER 11	PANEL LOCATION REFERENCE NUMBER 12
PANEL/ROLL NUMBER	9	9	11
DEPLOYMENT LENGTH	31.3m	5.7m	25.6m
AMBIENT AIR TEMP.	10	10	10
VISUAL OBSERVATION	Good	Good	Good
OBSERVED OVERLAP	5"	5"	5"
CHECKED BY	Y.E	Y.E	Y.E
ADJACENT PANEL	N= S= E= 9 W= 11,12	N= S= 12 E= 10 W= 13	N= 11 S= E= 10 W= 13

SUBMITTED BY: Y.E

DATE: 6-Aug-14

GEOMEMBRANE DEPLOYMENT LOG

LAYFIELD

PROJECT NUMBER: CT000071 **PROJECT TITLE:** Mari river Projetc "Hazardous Waste Pond"

OWNER: Baffinland Iron Mine **CONTRACTOR:** Baffinlan Iron Mines

LOCATION: Nunavut

GEOMEMBRANE **SECONDARY** **PRIMARY** **CLOSURE** **OTHER**

SUBGRADE CONDITION (SURFACE COMPACTION, PROTRUSIONS, DESICCATION, EXCESSIVE MOISTURE):

REMARKS: Underlay LP 7 60 mil HDPE liner

DATE: 5-Aug-14

SHEET NUMBER: 2

DEPLOYMENT EQUIPMENT:

	PANEL LOCATION REFERENCE NUMBER 13	PANEL LOCATION REFERENCE NUMBER 14	PANEL LOCATION REFERENCE NUMBER 15
PANEL/ROLL NUMBER	11	11	11
DEPLOYMENT LENGTH	31.30m	31.30m	31.30m
AMBIENT AIR TEMP.	10	10	10
VISUAL OBSERVATION	Good	Good	Good
OBSERVED OVERLAP	5"	5"	5"
CHECKED BY	Y.E	Y.E	Y.E
ADJACENT PANEL	N= S= E= 11,12 W= 14	N= S= E= 13 W= 15	N= S= E= 14 W=

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= S= E= W=	N= S= E= W=	N= S= E= W=

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= S= E= W=	N= S= E= W=	N= S= E= W=

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= S= E= W=	N= S= E= W=	N= S= E= W=

SUBMITTED BY: Y.E

DATE: 6-Aug-14

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: CT-000071 **PROJECT TITLE:** Mary River Project

OWNER: Baffinland Iron Mine Corporation **CONTRACTOR:** Baffinland Iron Mines

LOCATION: Hazardous Waste North **SHEET NUMBER:** 1

X TF - # FUSION **X TX - # = EXTRUSION** **TS - # = SOLVENT**

SAMPLE NUMBER	APPROX. TIME & DATE	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS												PASS OR RE - TEST	CH'KD BY	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	WEDGE TEMP. Deg F	INSIDE PEEL MODE ---------- STRENGTH					OUTSIDE PEEL MODE ---------- STRENGTH					SHEAR MODE ---------- STRENGTH				
TF1	10:40 5-Aug			10	60%	N/A	850	135	132	133	133	142	138	141	133	130	136	184	183	P	Y.E	
TX1	16:00 5-Aug			10	500	500	N/A						110	115	104	108	105	180	179	P	Y.E	
TX2	7:12 6-Aug			5	500	500	N/A						101	108	109	125	108	188	180	P	Y.E	

SUBMITTED BY: Y.E

LS FORM 3 LAYFIELD ENVIRONMENTAL SYSTEMS DATE: 06, Aug 2014

LAYFIELD

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: CT-000071 **PROJECT TITLE:** Mary River Project

OWNER: Baffinland Iron Mine Corporation **CONTRACTOR:**

LOCATION: Hazardous Waste north

PASSING TRIAL SEAMS

	NO.	TIME	TECH ID
X FUSION	TF1	10:40	JB
EXTRUSION			
SOLVENT			

SHEET NUMBER: 1

DATE: 5-Aug-14

SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL	APPROX. LENGTH WELDED (M)	DESTR. NUMBER	CHK'D BY	REMARKS	NON-DESTRUCTIVE TEST DATE	NON-DESTRUCTIVE CHECKED BY
1 / 3	SEOS	TO NEOS	11:17	13	JB	60%	850	850	8.9					
2 / 4	WEOS	TO EEOS	11:26	13	JB	60%	850	850	7.0					
2,4 / 3	SEEOS	TO NWEOS	11:40	13	JB	60%	850	850	11.6					
2 / 5	EEOS	TO WEOS	11:50	13	JB	60%	850	850	7.9					
6 / 1	SEOS	TO NEOS	12:03	13	JB	60%	850	850	8.5					
5 / 7	EEOS	TO WEOS	12:07	13	JB	60%	850	850	5.9					
6 / 7,5	SWEOS	TO NEEOS	13:06	13	JB	60%	850	850	9.7					
5,2 / 1	SEOS	TO NEOS	12:56	13	JB	60%	850	850	8.7					
1 / 8	NEOS	TO SEOS	13:14	13	JB	60%	850	850	27.0					
8 / 9	NEOS	TO SEOS	13:28	13	JB	60%	850	850	31.3					
9 / 10	NEOS	TO SEOS	13:43	13	JB	60%	850	850	31.3	DT1	Y.E		6-Aug-14	JB
								DAILY TOTAL	157.8					

** REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR, OR A POINT LOCATION ON THE SEAM.*

SUBMITTED BY: Y.E

DATE: 6-Aug-14

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: CT-000071 **PROJECT TITLE:** Mary River Project

OWNER: Baffinland Iron Mine Corporation **CONTRACTOR:**

LOCATION: Hazardous Waste north

PASSING TRIAL SEAMS

	NO.	TIME	TECH ID
X FUSION	TF1	10:40	JB
EXTRUSION			
SOLVENT			

SHEET NUMBER: 1

DATE: 5-Aug-14

SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET _____ WEDGE OR BARREL	MACHINE TEMPERATURES INDICATOR _____ WEDGE OR BARREL	APPROX. LENGTH WELDED (M)	DESTR. NUMBER	CHK'D BY	REMARKS	NON-DESTRUCTIVE TEST DATE	NON-DESTRUCTIVE CHECKED BY
11 / 12	EEOS	TO WEOS	14:00	13	JB	60%	850	850	6.8					
10 / 11,12	NEOS	TO SEOS	14:06	13	JB	60%	850	850	31.3					
11,12 / 13	NEOS	TO SEOS	14:21	13	JB	60%	850	850	31.3					
13 / 14	NEOS	TO SEOS	14:40	13	JB	60%	850	850	31.3					
14 / 15	NEOS	TO SEOS	15:00	13	JB	60%	850	850	31.3	DT2	Y.E		6-Aug-14	JB
/														
/														
/														
/														
/														
/														
								DAILY TOTAL	132.0					

** REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR, OR A POINT LOCATION ON THE SEAM.*

SUBMITTED BY: Y.E

DATE:

LAYFIELD GEOMEMBRANE VACUUM / AIR LANCE TEST LOG

PROJECT NUMBER: CT000071 **PROJECT TITLE:** Mary River Project "Hazardous Waste North "

OWNER: Baffinland Iron Mine **CONTRACTOR:** Baffinland Iron Mine

LOCATION: Nunavut

VACUUM BOX X **AIR LANCE** **SHEET NUMBER:** 1

SEAMS								REPAIRS						
SEAM NUMBER	SEAM SECTION * FROM - TO	TEST DATE	TECH ID	DEFECTS **	COMPLETE NO YES	CHK'D BY	REMARKS **	DEFECT CODE		TEST DATE	TECH ID	DEFECTS **	CHK'D BY	REMARKS **
/	-							1	A	6-Aug-14	JB			
/	-							1	B	6-Aug-14	JB			
/	-							1	C	6-Aug-14	JB			
/	-							1	D	6-Aug-14	JB			
/	-							1	E	6-Aug-14	JB			
/	-							1	F	6-Aug-14	JB			
/	-							1	G	6-Aug-14	JB			
/	-							1	H	6-Aug-14	JB			
/	-							1	I	6-Aug-14	JB			
/	-													
/	-													
/	-													
/	-													
/	-													
/	-													
/	-													
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/	-													

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER. OR A POINT LOCATION ON THE SEAM

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS

SUBMITTED BY: Y.E

LAYFIELD GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: CT000071 **PROJECT TITLE:** Hazardous Waste North

OWNER: Baffinland Iron Mine **CONTRACTOR:** Baffinland Iron Mine

LOCATION: Nunavut

DATE: 5-Aug-14

SHEET 1

SEAM NUMBER	SEAM SECTION * FROM	TO	TECH. ID	PRESSURE PSI Start	Finish	TIME START	FINISH	RESULTS PASS	FAIL	SEAM COMPLETE NO	YES	CH'KD BY	REMARKS **
1 / 3	SEOS -	NEOS	JB	40 :	40	17:30	17:35	PASS			YES	Y.E	
3 / 4	SEEOS -	NWEOS	JB	40 :	40	17:31	17:36	PASS			YES	Y.E	
2 / 4	EEOS -	WEOS	JB	40 :	40	17:32	17:37	PASS			YES	Y.E	
2 / 3	SEEOS -	NWEOS	JB	40 :	40	7:07	7:12	PASS			YES	Y.E	6-Aug-14
2 / 1	NEOS -	SEOS	JB	40 :	40	7:07	7:12	PASS			YES	Y.E	6-Aug-14
5 / 1	SEOS -	NEOS	JB	40 :	40	7:07	7:12	PASS			YES	Y.E	6-Aug-14
5 / 6	SWEOS -	NEEOS	JB	40 :	40	7:07	7:12	PASS			YES	Y.E	6-Aug-14
7 / 5	EEOS -	WEOS	JB	40 :	40	17:45	17:50	PASS			YES	Y.E	
6 / 7	NEEOS -	SWEOS	JB	40 :	40	17:40	17:45	PASS			YES	Y.E	
1 / 6	NEOS -	SEOS	JB	40 :	40	17:40	17:45	PASS			YES	Y.E	
8 / 1	SEOS -	NEOS	JB	40 :	40	16:38	16:43	PASS			YES	Y.E	
8 / 9	SEOS -	NEOS	JB	40 :	40	16:28	16:34	PASS			YES	Y.E	
9 / 10	SEOS -	NEOS	JB	40 :	40	16:27	16:32	PASS			YES	Y.E	
11 / 12	EEOS -	WEOS	JB	40 :	40	16:42	16:47	PASS			YES	Y.E	
11 / 10	SEOS -	NEOS	JB	40 :	40	16:42	16:47	PASS			YES	Y.E	
12 / 10	SEOS -	NEOS	JB	40 :	40	16:37	16:42	PASS			YES	Y.E	
11 / 13	SEOS -	NEOS	JB	40 :	40	16:42	16:47	PASS			YES	Y.E	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT ON THE SEAM.

** RECORD ANY QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

DATE: 6-Aug-14

SUBMITTED BY: Y.E

LAYFIELD GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: CT000071 **PROJECT TITLE:** Hazardous Waste North

OWNER: Baffinland Iron Mine **CONTRACTOR:** Baffinland Iron Mine

LOCATION: Nunavut

DATE: 5-Aug-14

SHEET 2

SEAM NUMBER	SEAM SECTION * FROM	TO	TECH. ID	PRESSURE PSI Start	Finish	TIME START	FINISH	RESULTS PASS	FAIL	SEAM COMPLETE NO	YES	CH'KD BY	REMARKS **
12 / 13	SEOS	NEOS	JB	40	40	16:37	16:42	PASS			YES	Y.E	
13 / 14	SEOS	NEOS	JB	40	40	16:25	16:30	PASS			YES	Y.E	
14 / 15	SEOS	NEOS	JB	40	40	16:24	16:29	PASS			YES	Y.E	
2 / 5	EEOS	WEOS	JB	40	40	17:33	17:38	PASS			YES	Y.E	
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* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT ON THE SEAM.

** RECORD ANY QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

DATE: 6-Aug-14

SUBMITTED BY: Y.E

LAYFIELD

GEOMEMBRANE DESTRUCTIVE TEST REPORT

PROJECT NUMBER: CT000071 **PROJECT TITLE:** Mari River Project
OWNER: Baffinland Iron Mine **CONTRACTOR:** Baffinland Iron Mine
LOCATION: Nunavut **SHEET NUMBER:** 1

DESTRUCTIVE TEST NUMBER*: DT 1 **TEST DATE:** 6-Aug-14
SEAM NUMBER: P9/P10 **ARCHIVE _____ LAYFIELD _____ OWNER _____ ENGINEER**
SAMPLE LOCATION: SEOS **3RD PARTY _____ YES _____ NO_____ WHO?**
DATE SEAMED / SAMPLED: 5-Aug-14 - **DATE FORWARDED TO LAB _____**
TYPE OF SEAM: FUSION **DATE LAB TEST RESULTS REC'D _____**

FIELD TEST RESULTS (units = lbf. / in. width = ppi)

SHEAR STRENGTH			PEEL ADHESION				
				INSIDE SEAM		OUTSIDE SEAM	
SPECIMEN NUMBER	SEAM STRENGTH	** LOCUS OF BREAK CODE	SPECIMEN NUMBER	ADHESION STRENGTH	LOCUS OF BREAK CODE	ADHESION STRENGTH	** LOCUS OF BREAK CODE
1	190	SE1	2	120	SE1	110	SE1
3	189	SE1	4	122	SE1	124	SE1
5	190	SE1	6	119	SE1	116	SE1
7	190	SE1	8	132	SE1	125	SE1
9	194	SE1	10	128	SE1	129	SE1
11			12				SE1

* DESTRUCTIVE TEST NUMBERS SHOULD BE SEQUENTIAL AND ARE TO BE PREFIXED BY EITHER DT (FUSION), DX (EXTRUSION) OR DS (SOLVENT).

LPL: PASS PASS

** REFER TO LOCUS OF BREAK CODE DIRECTORIES PROVIDED FOR UNSUPPORTED AND SUPPORTED MATERIALS.

3RD PARTY / LAB: PASS _____ FAIL _____

NOTES: _____

CHECKED BY: Y.E

DATE: 6-Aug-15

GEOMEMBRANE DESTRUCTIVE TEST REPORT

PROJECT NUMBER: CT000071 **PROJECT TITLE:** Mari River Project
OWNER: Baffinland Iron Mine **CONTRACTOR:** Baffinland Iron Mine
LOCATION: Nunavut **SHEET NUMBER:** 2

DESTRUCTIVE TEST NUMBER*: DT 2 **TEST DATE:** 6-Aug-14
SEAM NUMBER: P14/P15 **ARCHIVE _____ LAYFIELD _____ OWNER _____ ENGINEER**
SAMPLE LOCATION: SEOS **3RD PARTY _____ YES _____ NO_____ WHO?**
DATE SEAMED / SAMPLED: 5-Aug-14 - **DATE FORWARDED TO LAB _____**
TYPE OF SEAM: FUSION **DATE LAB TEST RESULTS REC'D _____**

FIELD TEST RESULTS (units = lbf. / in. width = ppi)

SHEAR STRENGTH			PEEL ADHESION				
				INSIDE SEAM		OUTSIDE SEAM	
SPECIMEN NUMBER	SEAM STRENGTH	** LOCUS OF BREAK CODE	SPECIMEN NUMBER	ADHESION STRENGTH	LOCUS OF BREAK CODE	ADHESION STRENGTH	** LOCUS OF BREAK CODE
1	188	SE1	2	117	SE1	111	SE1
3	195	SE1	4	118	SE1	113	SE1
5	187	SE1	6	113	SE1	115	SE1
7	197	SE1	8	118	SE1	105	SE1
9	196	SE1	10	109	SE1	107	SE1
11			12				

* DESTRUCTIVE TEST NUMBERS SHOULD BE SEQUENTIAL AND ARE TO BE PREFIXED BY EITHER DT (FUSION), DX (EXTRUSION) OR DS (SOLVENT).

LPL: PASS PASS

** REFER TO LOCUS OF BREAK CODE DIRECTORIES PROVIDED FOR UNSUPPORTED AND SUPPORTED MATERIALS.

3RD PARTY / LAB: PASS _____ FAIL _____

NOTES: _____

CHECKED BY: Y.E

DATE: 6-Aug-15

LAYFIELD

GEOMEMBRANE DEFECT / REPAIR LOG

PROJECT NUMBER: CT-000071 PROJECT TITLE: Mary River Project "Hazardous Waste North "

OWNER: Baffinland Iron Mine Corporation CONTRACTOR: Baffinland Iron Mine

LOCATION: NUNAVUT SHEET NUMBER: 1

DEFECT CODE	LOG DATE	DEFECT LOCATION		DEFECT TYPE	REPAIR TYPE	WELD TECH.		REPAIR DATE	REMARKS **	TEST DATE	CHECKED BY
		SEAM OR PANEL NO.	DEFECT LOCATION DESCRIPTION								
1 A	6-Aug-14	11,12 13	6.8m west of 1B	T	G&W	MB		5-Aug-14		6-Aug-14	JB
1 B	6-Aug-14	11,12 10	5.7m Neos too Seos	T	G&W	MB		5-Aug-14		6-Aug-14	JB
1 C	6-Aug-14	2,4 / 3	7m From Eeos to Weos	T	G&W	MB		5-Aug-14		6-Aug-14	JB
1 D	6-Aug-14	2 /	.5m East of 1E	SI	P G&W	MB		5-Aug-14		6-Aug-14	JB
1 E	6-Aug-14	2,3 / 1	2.1m Nw of 1C	T	P G&W	MB		5-Aug-14		6-Aug-14	JB
1 F	6-Aug-14	2,5 / 1	4.5m North of 1E	T	G&W	MB		5-Aug-14		6-Aug-14	JB
1 G	6-Aug-14	5,6 / 1	4.29 m North of 1F	T	P G&W	MB		5-Aug-14		6-Aug-14	JB
1 H	6-Aug-14	7,5 / 6	6.6m From NEEOS to SWEOS	T	G&W	MB		5-Aug-14		6-Aug-14	JB
1 I	6-Aug-14	1 / 8	SEOS	SI	P G&W	MB		6-Aug-14		6-Aug-14	JB
1 J		/									
1 K		/									
1 L		/									
1 M		/									
1 N		/									
1 O		/									
1 P		/									
1 Q		/									
1 R		/									
1 S		/									
1 T		/									

DEFECT TYPE:
AD - ANIMAL RELATED DAMAGE
B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
BS - BOOT/SKIRT FROM FML PENETRATION
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS-# - DESTRUCTIVE TEST NUMBER
EE - EARTHWORK EQUIPMENT DAMAGE
EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAP (UNDER SPEC.)
MD - MANUFACTURER/DELIVERY DAMAGE
PT - PRESSURE TEST CUT
SI - SOIL SURFACE IRREGULARITY
SL - SLAG ON TEXTURED SHEET
T - THREE PANEL INTERSECTION
VL - VACUUM TEST LEAK
WR - WRINKLE
WS - WELDER RESTART
OTHER:_____

REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND/WELD

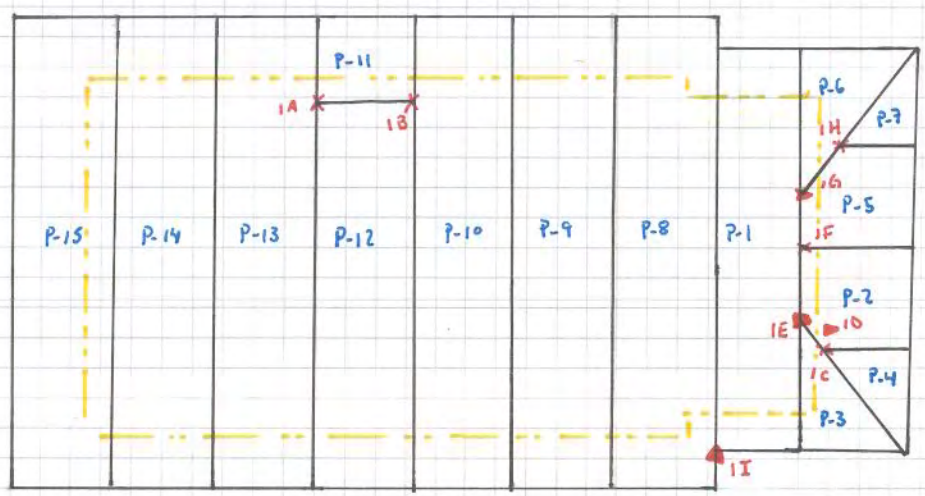
PASSING TRIAL SEAMS		
NO.	TIME	TECH ID.
TX1	16:00	MB
TX2	7:15	MB

** COLUMNS TO BE USED BY THE PROJECT SUPERVISOR OR LEAD TECHNICIAN ONLY.

SUBMITTED BY: Y.E

DATE: 6-Aug

No.	Revisions	Date (MM/DD/YY)	By



PROJECT NAME

MARY RIVER PROJECT HAZARDOUS WASTE NORTH

MATERIAL TYPE

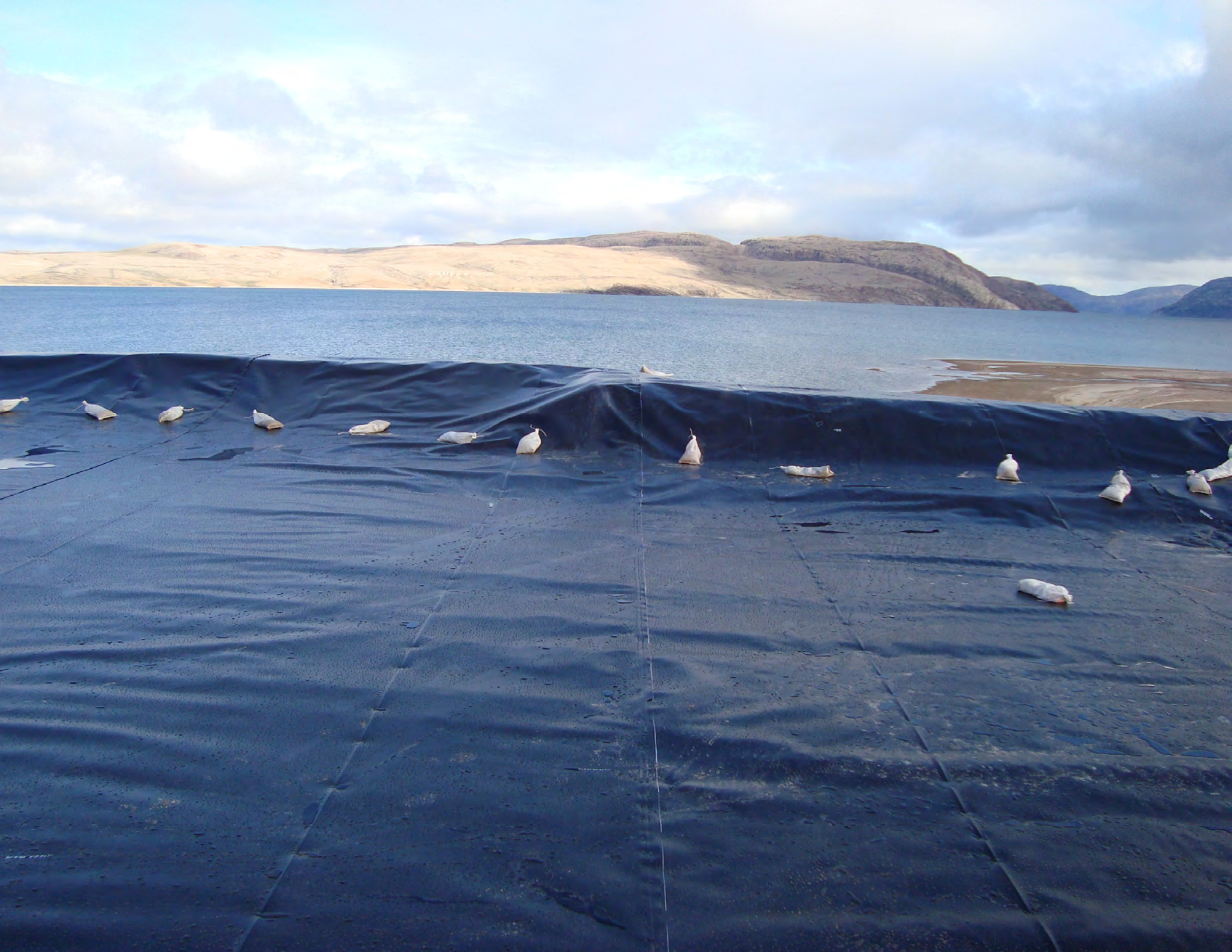
60 MIL HDPE

LAYFIELD

LEGEND

- Extent of Liner
- Toe of Slope
- Liner Field Seam
- xxx Extrusion Welding
- △ Patch
- P2 Panel Number
- 1A Repair Number

Card No. 1	PROJECT No. LT000071
DWG: OF	SCALE:
DWN:	CHKD: / APP'D:
DATE: 07/08/14	REVISION:



LAYFIELD

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Mary River Project "Hazardous Waste"
PROJECT NUMBER: CT 000071 **DATE:** 06 / Aug / 2014
OWNER: Baffinland Iron Mines
LOCATION: Nunavut.

SCOPE OF INSTALLATION(S): THE WORK
Installation of underlay layer Geotextile LP 7.
Geomembrane HDPE 60 mil with 100% testing. and
Overlay of Geotextile LP 7.
Geotextile 4180 m^2
HDPE Geomembrane 1991 m^2.

Part 1 – LAYFIELD ENVIRONMENTAL SYSTEMS LTD.

I, Yonatan Espindola, a duly appointed representative of Layfield Environmental Systems Ltd. (LESL), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield Environmental Systems' QC program and the terms and conditions of the contract.

Layfield Environmental Systems Representative:
Name: Yonatan Espindola
Title: Supervisor
Date: 06 Aug / 2014 Signature:

Part 2 – OWNER (or Representative)

I, Tim Thertell for Baffinland, a duly appointed representative of Hatch, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield Environmental Systems representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: Tim Thertell
Title:
Company: Hatch
Date: Aug 12/14 Signature:

Comments:

LAYFIELD

CERTIFICATE OF ACCEPTANCE OF SOIL SUBGRADE SURFACE

PROJECT NAME: Mary River Project "Milne inlet Hazardous Waste South"
PROJECT NUMBER: CT000071
OWNER: Baffinland Iron Mine
LOCATION: Nunavut

I, the undersigned, a duly appointed representative of Layfield Environmental Systems Ltd. (LESL), have visually observed the soil subgrade described below, and found it to be an acceptable surface on which to install geomembrane.

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield Environmental Systems, and LESL makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield Environmental Systems accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade accepted on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield Environmental Systems and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

Area Being Accepted: 379 m² is acceptable to install geomembrane.

LAYFIELD ENVIRONMENTAL SYSTEMS REPRESENTATIVE:

Date: 09 Aug 2014
Signature: Espindola Hernandez Jonatan.
Name: Jonatan Espindola
Title: Supervisor

OWNERS REPRESENTATIVE:

Date: Aug 12/14
Signature:
Name: Tim Thertell
Title:
Company: Hatch

GEOMEMBRANE DEPLOYMENT LOG

LAYFIELD

PROJECT NUMBER: CT000071 **PROJECT TITLE:** Hazardous waste South

OWNER: Baffinland Iron Mine **CONTRACTOR:** Baffinland Iron Mines

LOCATION: Nunavut

GEOMEMBRANE **SECONDARY** **PRIMARY** **CLOSURE** **OTHER** ______

SUBGRADE CONDITION (SURFACE COMPACTION, PROTRUSIONS, DESICCATION, EXCESSIVE MOISTURE):

REMARKS: Underlay of LP7 plastic HDPE 60mil and overlay LP7 **DATE:** 10-Aug-14

SHEET NUMBER: 1

DEPLOYMENT EQUIPMENT: Spreader bar and loader

	PANEL LOCATION REFERENCE NUMBER 1	PANEL LOCATION REFERENCE NUMBER 2	PANEL LOCATION REFERENCE NUMBER
PANEL/ROLL NUMBER	11	11	
DEPLOYMENT LENGTH	9.1 m	9.1m x 5.7m	
AMBIENT AIR TEMP.	3	3	
VISUAL OBSERVATION	Good	Good	
OBSERVED OVERLAP	5"	5"	
CHECKED BY	Y.E	Y.E	
ADJACENT PANEL	N= 2 S= E= W=	N= S= 1 E= W=	N= S= E= W=

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= S= E= W=	N= S= E= W=	N= S= E= W=

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= S= E= W=	N= S= E= W=	N= S= E= W=

DESCRIPTION	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER	PANEL LOCATION REFERENCE NUMBER
PANEL/ROLL NUMBER			
DEPLOYMENT LENGTH			
AMBIENT AIR TEMP.			
VISUAL OBSERVATION			
OBSERVED OVERLAP			
CHECKED BY			
ADJACENT PANEL	N= S= E= W=	N= S= E= W=	N= S= E= W=

SUBMITTED BY: Y.E

DATE: 10-Aug-14

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: CT-000071 **PROJECT TITLE:** Mary River Project "Hazardous Waste South "

OWNER: Baffinland Iron Mine Corporation **CONTRACTOR:** Baffinland Iron Mine Corporation

LOCATION: Nunavut **SHEET NUMBER:** 1

X TF - # FUSION **X TX - # = EXTRUSION** **TS - # = SOLVENT**

SAMPLE NUMBER	APPROX. TIME & DATE	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS												PASS OR RE - TEST	CH'KD BY	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	WEDGE TEMP. Deg F	INSIDE PEEL MODE ---------- STRENGTH					OUTSIDE PEEL MODE ---------- STRENGTH					SHEAR MODE ---------- STRENGTH				
TF1	13:00 9-Aug	PW 3370	JB	3	50%	N/A	850	140	134	147		142	154	126	146	133	133	200	210	P	Y.E	
TX1	13:30 9-Aug	PX 6234	MB	3	515	515	N/A						108	114	126	118	119	190	187	P	Y.E	
TF2	7:10 10-Aug-14	PW 3370	JB	3	50%	N/A	850	159	147	146	142	144	132	143	132	137	139	200	210	P	Y.E	
TX2	7:30 10-Aug-14	PX 6234	MB	3	515	515	N/A						122	120	127	113	130	212	210	P	Y.E	

SUBMITTED BY: Y.E

LS FORM 3 LAYFIELD ENVIRONMENTAL SYSTEMS DATE: 10 AUG,2014

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: CT-000071 **PROJECT TITLE:** Mary River Project "Hazardous Waste South"

OWNER: Baffinland Iron Mine Corporation **CONTRACTOR:** Baffinland Iron MineCorporarion

LOCATION: Nunavut

PASSING TRIAL SEAMS

	NO.	TIME	TECH ID
X FUSION	TF2	7:10	JB
EXTRUSION			
SOLVENT			

SHEET NUMBER: 1

DATE: 10-Aug-14

SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET _____ WEDGE OR BARREL	MACHINE TEMPERATURES INDICATOR _____ WEDGE OR BARREL	APPROX. LENGTH WELDED (M)	DESTR. NUMBER	CHK'D BY	REMARKS	NON-DESTRUCTIVE TEST DATE	NON-DESTRUCTIVE CHECKED BY
1 / 2	WEOS to	EEOS	10:30	3	JB	50%	850	850	9.1		Y.E			
/														
/														
/														
/														
/														
/														
/														
/														
/														
/														
								DAILY TOTAL						

** REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR, OR A POINT LOCATION ON THE SEAM.*

SUBMITTED BY: Y.E

DATE: 10-Aug-14

LAYFIELD GEOMEMBRANE VACUUM / AIR LANCE TEST LOG

PROJECT NUMBER: CT000071 **PROJECT TITLE:** Mary River Project "Hazardous Waste South"

OWNER: Baffinland Iron Mine Corporation **CONTRACTOR:** Baffinland Iron Mine Corporation

LOCATION: Nunavut

VACUUM BOX X **AIR LANCE** **SHEET NUMBER:** 1

SEAMS								REPAIRS						
SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	COMPLETE NO YES	CHK'D BY	REMARKS **	DEFECT CODE		TEST DATE	TECH ID	DEFECTS **	CHK'D BY	REMARKS **
/	-								1	A	10-Aug-14	JB			
/	-								1	B					
/	-								1	C					
/	-								1	D					
/	-								1	E					
/	-								1	F					
/	-								1	G					
/	-								1	H					
/	-								1	I					
/	-								1	J					
/	-								1	K					
/	-								1	L					
/	-								1	M					
/	-								1	N					
/	-								1	O					
/	-								1	P					
/	-								1	Q					
/	-								1	R					
/	-								1	S					
/	-								1	T					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER. OR A POINT LOCATION ON THE SEAM

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS

SUBMITTED BY: Y.E

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: CT000071 **PROJECT TITLE:** Mary River Project "Hazardous Waste South "

OWNER: Baffinland Iron Mines **CONTRACTOR:** Baffinland Iron Mines

LOCATION: Nunavut

DATE: 10 Aug,2014

SHEET NUMBER 1

SEAM NUMBER	SEAM SECTION * FROM	TO	TECH. ID	PRESSURE PSI Start	Finish	TIME START	FINISH	RESULTS PASS	FAIL	SEAM COMPLETE NO	YES	CH'KD BY	REMARKS **
1 / 2	WEOS	EEOS	JB	40 :	40	11:30	11:35	PASS			YES	Y.E	
/		-		:									
/		-		:									
/		-		:									
/		-		:									
/		-		:									
/		-		:									
/		-		:									
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/		-		:									
/		-		:									
/		-		:									
/		-		:									
/		-		:									
/		-		:									

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT ON THE SEAM.

** RECORD ANY QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

DATE: 10 Aug, 2014

SUBMITTED BY: Y.E

LAYFIELD

GEOMEMBRANE DEFECT / REPAIR LOG

PROJECT NUMBER: CT-000071 PROJECT TITLE: Mary River Project "Hazardous Waste South "

OWNER: Baffinland Iron Mine Corporation CONTRACTOR: Baffinlan Iron Mine Corporation

LOCATION: Nunavut SHEET NUMBER: 1

DEFECT CODE	LOG DATE	DEFECT LOCATION		DEFECT TYPE	REPAIR TYPE	WELD TECH.		REPAIR DATE	REMARKS **	TEST DATE	CHECKED BY
		SEAM OR PANEL NO.	DEFECT LOCATION DESCRIPTION								
1 A	10-Aug-14	1	SW corner	SI	P G&W	MB		10-Aug-14		10-Aug-14	JB
1 B											
1 C		/									
1 D		/									
1 E		/									
1 F		/									
1 G		/									
1 H		/									
1 I		/									
1 J		/									
1 K		/									
1 L		/									
1 M		/									
1 N		/									
1 O		/									
1 P		/									
1 Q		/									
1 R		/									
1 S		/									
1 T		/									

DEFECT TYPE: AD - ANIMAL RELATED DAMAGE; B - UNDISPERSED RESIN BEAD; BO - FUSION WELDER BURN; BS - BOOT/SKIRT FROM FML PENETRATION; CO - CHANGE OF OVERLAP; CR - CREASE; D - INSTALLATION DAMAGE; DS-# - DESTRUCTIVE TEST NUMBER; EE - EARTHWORK EQUIPMENT DAMAGE; EXT - EXTENSION; FM - FISHMOUTH; FS - FAILED SEAM LENGTH; FTS - FIELD TEST STRIP; HT - HEAT TACK BURN; IO - INSUFFICIENT OVERLAP (UNDER SPEC.); MD - MANUFACTURER/DELIVERY DAMAGE; PT - PRESSURE TEST CUT; SI - SOIL SURFACE IRREGULARITY; SL - SLAG ON TEXTURED SHEET; T - THREE PANEL INTERSECTION; VL - VACUUM TEST LEAK; WR - WRINKLE; WS - WELDER RESTART; OTHER:_____

REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND/WELD

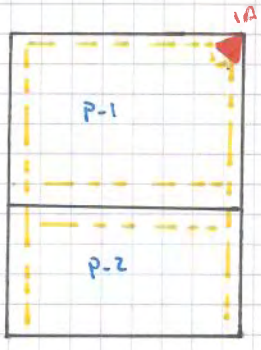
PASSING TRIAL SEAMS		
NO.	TIME	TECH ID.
TX1	13:30	MB
TX2	7:30	MB

** COLUMNS TO BE USED BY THE PROJECT SUPERVISOR OR LEAD TECHNICIAN ONLY.

SUBMITTED BY: TW

DATE:

No.	Revisions	Date (MM/DD/YY)	By



N

PROJECT NAME

HAZARDOUS WASTE South Mary River Project

MATERIAL TYPE

EL 60 60

LAYFIELD ENVIRONMENTAL SYSTEMS LTD

LEGEND

- Extent of Liner
- Toe of Slope
- Liner Field Seam
- XXX Extrusion Welding
- Δ Patch
- P2 Panel Number
- 1A Repair Number

Cust. No.	Project No.
DWG:	OF SCALE:
DWN:	CHKD: APPD:
DATE: 18/Aug/11	REVISION:

LAYFIELD

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Mary River Project "Milne inlet Hazardous Waste South"
PROJECT NUMBER: CT000071 **DATE:** 10 Aug 2014
OWNER: Baffinland Iron Mine
LOCATION: Nunavut

SCOPE OF INSTALLATION(S): THE WORK
Installation of LP7 Geotextile underlay and overlay (374 m²)
Liner Geomembrane HD 60 mil with all the testing done 100%

Part 1 – LAYFIELD ENVIRONMENTAL SYSTEMS LTD.

I, Yonatan Espindola, a duly appointed representative of Layfield Environmental Systems Ltd. (LESL), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield Environmental Systems' QC program and the terms and conditions of the contract.

Layfield Environmental Systems Representative:
Name: Yonatan Espindola
Title: Supervisor
Date: 10 Aug 2014 Signature: Espindola Hernandez Yonatan.

Part 2 – OWNER (or Representative)

I, Tim Thertell, For Baffinland, a duly appointed representative of Hatch, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield Environmental Systems representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: Tim Thertell
Title:
Company: Hatch
Date: Aug 12/14 Signature:

Comments:

LAYFIELD CANADA LTD.
Unit 2 – 117 Basaltic Road Vaughan, ON Canada

Phone: (905) 761 9123
Fax: (905) 761 -0035
Toll Free: 1 888 436 4273

Web: www.layfieldgroup.com
E-Mail: info@layfieldgroup.com

INSTALLATION WARRANTY

Layfield Reference No. : (Job #) **CT000071**

LAYFIELD CANADA LTD. (LAYFIELD) hereby warrants to Baffinland Iron Mine; (the Customer) that the work performed by LAYFIELD on the Installation described as **H349000/CC004 HDPE Liner Installation,** covering the Anmar Maintenance Pad, Ruskin Shop Pad, Landfarm (FBS 2.1.2), Snow Containment (FBS 2.1.2), Sediment Pond and Sediment Stockpile (FBS 2.1.4), Hazardous Waste Containment Areas North (FBS 2.1.1) and Hazardous Waste Containment South (FBS 2.1.3) will:

1. Meet the field seam specifications set out in the contract between LAYFIELD and the Customer (as amended by LAYFIELD's quotation), all workmanship to meet the requirements of LAYFIELD's Field Installation Quality Assurance program, and be free of defects at the time of completion of the Installation; and

2. Be free of installation defects from the date of the completion of the Installation (August 10, 2014), for a period of two (2) years so long as the completed Installation is used for the purposes and in the manner for which the Installation was designed.

Should damage or defects within the scope of the aforesaid warranties occur, LAYFIELD shall repair the damage or defects, PROVIDED THAT the area to be repaired must first be made ready by the Customer and be in a clean, dry, unencumbered condition, free from all water, soil, sludge, residuals, and liquids of any kind.

To enable LAYFIELD to investigate and determine the cause of any alleged ~~damage or defect, notice and details of any claim~~ hereunder must be presented in writing to LAYFIELD within thirty (30) days after the alleged damage or defect was first noticed or observed. Failure to provide such notice and details shall invalidate all warranties provided hereunder.

The liability of LAYFIELD under the aforesaid warranties are subject to the following conditions:

a. LAYFIELD's only obligation shall be to repair or replace any defective workmanship and in no event shall LAYFIELD be liable for any amount in excess of the cost of the Installation;

b. No allowance will be made for repairs, replacements or alterations made by the Customer unless with the prior written consent of LAYFIELD;

c. The warranties hereunder extend only to the Customer and are not transferable;

d. The warranties hereunder shall not apply to any damage or defects resulting from misuse, mechanical abuse by machinery, equipment or persons, excessive pressures or stresses, exposure of the completed Installation of harmful chemicals, unusual weather conditions, casualty catastrophe such as (but not limited to) earthquake, flood, hail, tornado, or any other act of God;

e. Under no circumstances shall LAYFIELD be liable for any special, direct, indirect, or consequential damages including the loss of use of the Installation howsoever caused;

f. The warranties hereunder are given in lieu of all other warranties, express, implied, statutory, or otherwise, and the Customer expressly waives all other warranties and claims whatsoever except those specifically given herein, and the Customer acknowledges that the warranties hereunder are accepted in preference to and to the exclusion of any or all other warranties; and

g. An Installation Warranty will not be provided for lining projects unless the installation is completed by LAYFIELD personnel or designated LAYFIELD subcontractors.

LAYFIELD CANADA LTD.

Ryan Parish, Projects & Operations Manager

Appendix B

As-Built Drawings

A. H349000-2000-00-014-0004 Rev03: Milne Port Infrastructure Site Layout ***[1 page]***

B. H349000-2550-10-035-0001 Rev01: Milne Port Hazardous Waste Containment Cell – North Plan & Details ***[1 page]***

C. H349000-2550-10-035-0002 Rev01: Milne Port Hazardous Waste Containment Cell – North Sections & Details ***[1 page]***

D. H349000-2550-10-035-0003 Rev01: Milne Port Hazardous Waste Containment Cell – South Plan, Sections & Details ***[1 page]***