GENIVAR

834 Mountjoy Street South
P.O. Box 120
Timmins, Ontario P4N 7C5
Tel. (705) 264-9413
Fax. (705) 267-2725

November 19, 2008

Baffinland Iron Mines Corporation
Suite 1016, 120 Adelaide Street West
Toronto, ON M5T 1T1

Attention: Mr. David McCann
david.mccann@baffinland.com

RE: ANNUAL GEOTECHNICAL INSPECTION 2008
BAFFINLAND IRON MINES CORPORATION
OUR REFERENCE NO. 07-039

1.0 INTRODUCTION

GENIVAR Consultants completed the annual water license geotechnical inspection of the on-site containment structures at Baffinland Iron Mines Corporation (BIM) Mary River Project. The containment structures for the operation are located at two main camp sites known as the Mary River Camp and Milne Inlet Camp.

The soil structures reviewed are as follows:

Mary River Mine Site

- Bulk Fuel Storage Facility Containment,
- Generator Fuel Storage Facility Containment,
- Polishing/Waste Stabilization Pond No. 1, and
- Polishing/Waste Stabilization Pond No. 2.

Milne Inlet Site

- Bulk Fuel Storage Facility Containment, and
- Polishing/Waste Stabilization Pond.

This report presents the findings and recommendations with respect to the aforementioned structures. We understand that this report will be used by BIM to fulfill the requirements of the Nunavut Water Board for an annual geotechnical investigation of onsite water and fuel retaining structures under Water License 2BB-MRY0710.

2.0 METHODOLOGY FOR INSPECTION

The geotechnical inspection team consisted of Mr. Barry H. Martin P. Eng., and Mike Jolink of GENIVAR Consultants, who reviewed the sites on September 3rd, 4th, 5th and 6th 2008. After this date, Mike Jolink continued to provide assistance under Mr. Martin's direction into early October until work was completed on some structures. The inspections were focused principally on the following aspects:

1. The structures were inspected for conformance with the design basis as presented in as-constructed and as-built drawings (refer to Attachment A);
2. Specifically, the structures were inspected for signs of settlement, seepage, and cracking; and
3. The areas around the soil structures were examined for evidence of seepage.

Photographs were taken to document observations made during the inspection.(refer to Attachment B). Recommendations are provided to BIM to facilitate the ongoing operation, management, and monitoring of the facilities.

3.0 MARY RIVER CAMP

3.1 Bulk Fuel Storage Facility Containment

General Conditions

At the time of the inspection of the bulk fuel storage facility, the containment structure was completed; however, the piping and dispensing modules/fuel handling facilities had yet to be constructed.

Stability

At the time of our review, there were localized shallow areas of water within the containment structure that originated from recent rain and snow/snow melt events. These localized ponds were an indication of membrane integrity.

The entire structure was visually inspected for any signs of cracking or subsidence. There was no indication of any settlements, seepage or cracking in the soil structures that formed the dykes. Also, there was no indication of seepage at the base of the soil structure dyke around the exterior. The soil containment structure is considered to be stable in its present condition and is in conformance with the design basis for the facility.

Recommendations

There are no recommendations to be made at the present time.

3.2 Generator Fuel Storage Facility Containment

General Conditions

The Generator Fuel Storage Facility containment was constructed utilizing the same principles used in the design and construction of the large fuel containment facilities at the Mary River Camp and the Milne Inlet Camp.

Stability

At the time of our review, there were localized shallow areas of water within the containment structure that originated from recent rain and snow/snow melt events. This was an indication of membrane integrity.

The entire structure was visually inspected for any signs of cracking or subsidence. There was no indication of any settlements, seepage or cracking in the soil structures that formed the dykes. Also there was no indication of seepage at the base of the soil structure dyke around the exterior. The soil containment structure is considered to be stable in its present condition and is in conformance with our design principles.

An as constructed review was carried out on this structure with respect to the height of cover over the base and minimum height of membrane in the dyke.

Recommendations

- Based on the need to contain 110 % of the bladder volume in the event of a fuel spill, the maximum volume of fuel permitted to be stored in the bladder in this facility as it is constructed, is 77,376 litres.

3.3 Polishing/Waste Stabilization Pond (PWSP) No. 1

General Conditions

PWSP No. 1 was originally designed as storage for sewage effluent during the start-up phase of the sewage treatment plants at the Mary River Camp. Once the treated sewage effluent meets water license effluent quality criteria, the plan is to release treated effluent directly to the receiving environment (Sheardown Lake). The residual treated effluent left in the ponds would be treated as necessary and released to the receiving environment once effluent quality criteria are met.

At the time of inspection, the height to the top of the liner from the ground at the exterior of the dyke was 1.25 m. The containment structure consists of a soil berm with width which varies from 2.2 to 4.0 m. The dykes have been constructed with a 3:1 slope on the interior with the exterior slope at varying slopes from 2.75:1 to 3:1. The effluent elevation was 175.897 m elevation at the time of our visit. This allowed for a freeboard of 0.34 meters and a height of effluent 0.91 meters.

The structure currently conforms to its design intent.

Stability

Our inspection of the area around the pond at the base of the slopes showed no signs of water (treated sewage effluent) and hence we conclude that there are probably no tears or ruptures in the membrane below the water table.

A review of the exterior and top of the dykes showed no indication of settlement or cracking which would be indicative of overstress on the structure.

A review of the exposed liner on the upper edge of the dyke showed a number of tears in the upper edge of the liner caused by vehicular traffic on the top of the dyke and generally within a distance of 30 m of the ramp access to the top of the dyke.

The structure is considered to be stable in its present condition.

Recommendations

- It is recommended that the exterior slopes on the dykes be built out to a 4:1 slope if the effluent level exceeds the levels measured on September 4, 2008 (175.90).
- In consideration of the potential for the thawing of permafrost regime under the PWSP, it is recommended that monitoring points be established on the dyke structure and an elevation monitoring program be implemented to measure any potential settlement. It is recommended that a monthly monitoring be implemented from May through October 2009.
- The liner rips should be repaired as soon as practicable.

3.3 Polishing/Waste Stabilization Pond #2

General Conditions

PWSP #2 was originally designed as a two-cell pond structure with a liner. At the time of the inspection, the north pond (PWSP No. 2) was constructed and the south pond (planned PWSP No. 3) was under construction. The inspection was therefore restricted to PWSP No. 2.

The bottom of the PWSP #2 structure liner was set at approximately 174.7 m elev. and the top of the liner was built to approximately 177.97 m elev. The treated effluent level was at 175.98 m elev. on September 4$^{th.}$ This accounted for a liquid depth of 1.28 m. (The slope of the interior of the dyke upon which the membrane was installed was at a slope of 3:1. The exterior slopes of the dyke are at a slope of 4:1. The structure currently conforms to its design intent.

Stability

Our review of the area around the pond at the base of the slopes showed no signs of water (sewage) and hence we conclude that the liner has been effective in containing the sewage and there are no tears or ruptures in the membrane.

A review of the exterior and top of the dykes showed no indication of settlement, seepage, or cracking which are signs of overstress on the structure. The structure is considered to be stable at its present condition.

Recommendations

- Based on the current 4:1 backslope the level of sewage in the cell shall not exceed a height of 1.8 m.
- In consideration of the potential for the thawing of permafrost regime under the PWSP, it is recommended that monitoring points be established on the dyke structure and an elevation monitoring program be implemented to measure any potential settlement. It is recommended that monthly monitoring be implemented from May to October 2009.

4.0 MILNE INLET

4.1 Bulk Fuel Containment Facility Containment

General Conditions

The structure around the fuel farm currently conforms to the design basis of the facility. A review of the interior of the dyke indicated a water depth averaging approximately 300 mm depth in the central portion of the facility. Water treatment and discharge utilizing an oil/water separation/filtration/batch process was underway. The ponding of water helps to confirm the integrity of the liner.

Stability

Our review of the area around the pond at the base of the slopes showed no signs of water or oil/water mixture and hence we conclude that the integrity of the liner has been maintained. Tears or ruptures in the membrane were not observed.

There was no indication of any settlements, seepage, or cracking at the soil structures forming the dykes.

The structure is considered to be stable at its present condition.

Recommendations

The performance of the structure has been recently tested with ponded water within the enclosure. The observations noted during our recent site visit support the conservative design of the structure. We have no recommendations at this time.

4.2 POLISHING/WASTE STABILIZATION POND

General Conditions

PWSP was originally designed as storage for sewage effluent from the RBC sewage plant installed at the site during the start-up phase of the operation. At the time of the inspection,

the effluent water quality criteria had been met and therefore the Milne PWSP was not receiving treated effluent which was being discharged to a ditch that drained to Milne Inlet.

The exterior slopes of the dykes were observed to be at 4:1. The interior slope of the dykes could not be directly observed on September 7, 2008, due to the high level of treated effluent.

Currently, the Milne PWSP structure conforms to the design basis of the facility with the exception of the high levels of treated effluent in the pond.

Stability

Based on the observed 4:1 dyke exterior slopes, the structure appears stable at current conditions which involve treated effluent near or at the top of the liner. It should be noted that despite the high treated effluent levels, there was no sign of effluent break-out or seepage at any location along the bottom of the dyke. However, as noted in the recommendations, the facility should not be operated at this effluent height for any extended period of time.

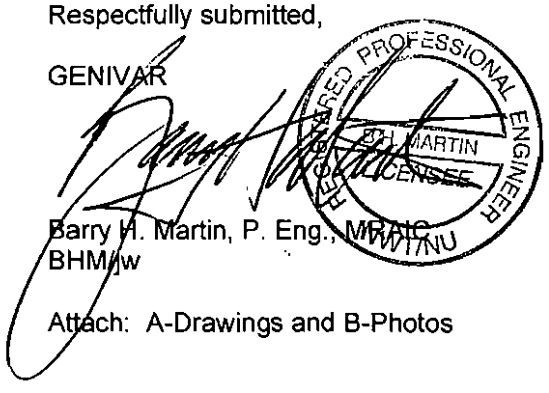
Recommendations

- The treated effluent level should be decanted to a depth 600 mm below the top of the liner. The effluent can be transported to the PWSP at Mary River via tanker truck for disposal. The long term use of this structure for the storage of effluent is acceptable so long as effluent levels are kept to the aforementioned design levels.
- In consideration of the potential for the thawing of permafrost regime under the PWSP, it is recommended that monitoring points be established on the dyke structure and an elevation monitoring program be implemented to measure any potential settlement. It is recommended that monthly monitoring be implemented from May through to October 2009.

We hope that the above report is satisfactory to BIM for inclusion into the annual geotechnical report for Nunavut Water Board. If you have any questions, please do not hesitate to contact the undersigned.

Respectfully submitted,

GENIVAR



Barry H. Martin, P. Eng., MRAIC
BHM/jw

Attach: A-Drawings and B-Photos

ATTACHMENT A: DRAWINGS

DRAWINGS

Mary River Large Fuel Farm Containment

200-06-07 Mary River Fuel Farm Required Grading Plan and Sections (Contains as constructed data)

Mary River Generator Fuel Containment Structure

200-06-10 Genset Bladder Containment As Built Plan and Sections

Mary River Polishing/Waste Stabilization Pond #1

200-06-03 As Constructed PWSP 1 Plan and Sections

Mary River Polishing/Waste Stabilization Pond #2

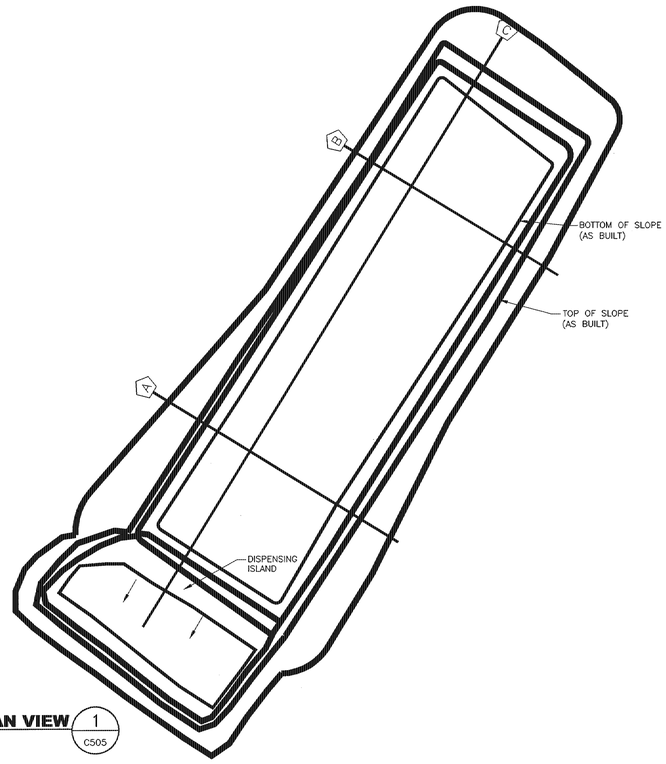
200-06-05 As Constructed PWSP 2 Plan and Sections

Milne Inlet Polishing/Waste Stabilization Pond

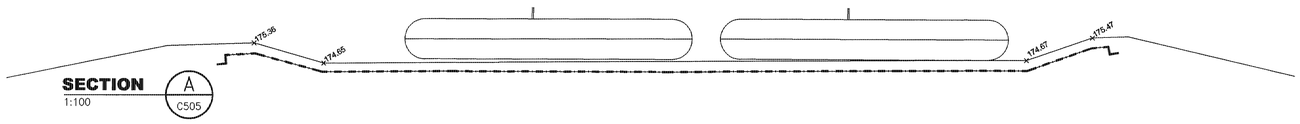
100-06-01 As Built Sewage Lagoon Plan and Profiles

Milne Inlet Fuel Farm Containment

100-06-04 Milne Inlet Fuel Farm Layout – As Built

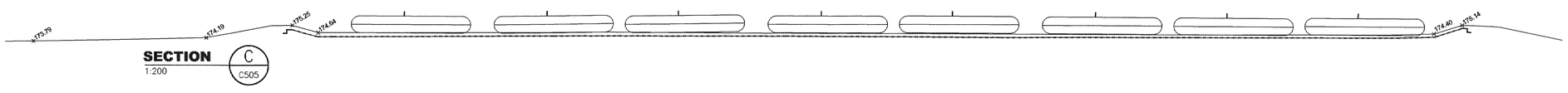


FUEL FARM B PLAN VIEW 1 / C505
1:500

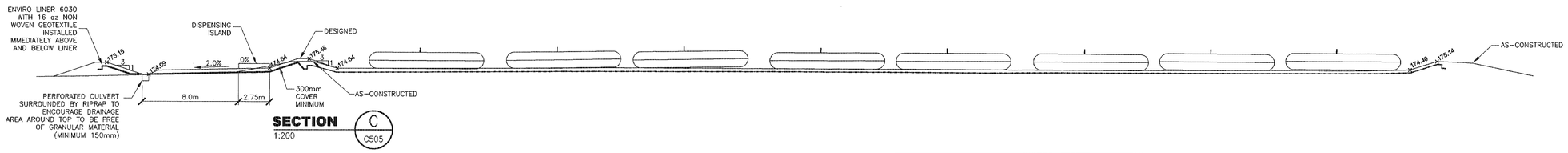


SECTION A / C505
1:100

SECTION B / C505
1:100



SECTION C / C505
1:200



SECTION C / C505
1:200

Description	Date	No.
Revisions and Issues		

NOV 19 2008

NORTH — Date Printed

GENIVAR

GENIVAR
634 Mountjoy Street South
P.O. Box 129
Timmins, Ontario P4N 7C5
www.genivar.com
Tel. 705-264-9413
Fax 705-267-2725

ARCHITECT

STRUCTURAL/CIVIL

REGISTERED PROFESSIONAL ENGINEER
S.H. MARTIN
LICENSEE
NWT/NU

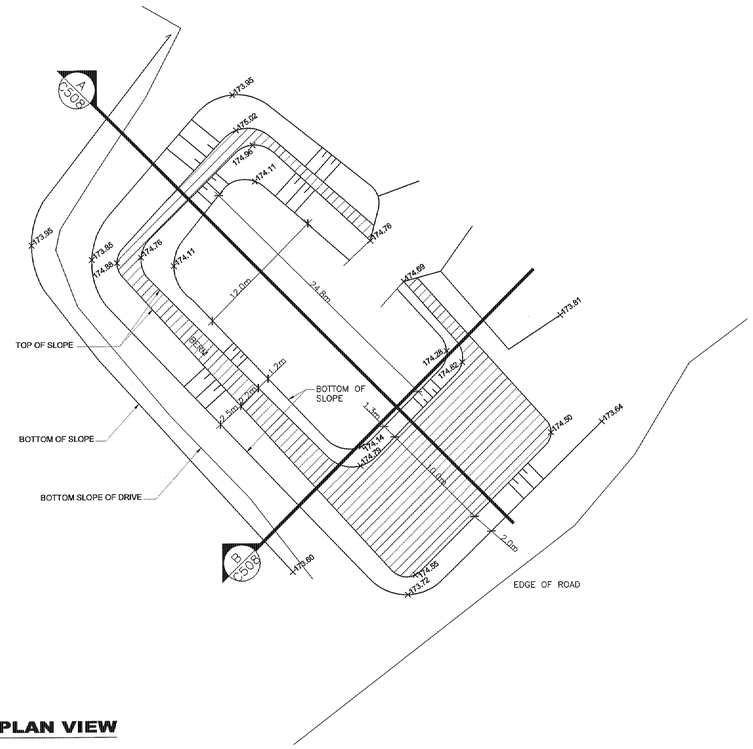
MECHANICAL

ELECTRICAL

Project
MARY RIVER PROJECT
BAFFIN LAND IRON MINES CORPORATION
BAFFINISLAND NUNAVUT

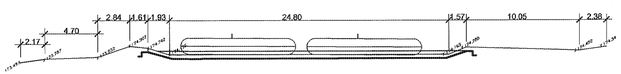
Drawing
MARY RIVER FUEL FARM REQUIRED GRADING PLAN AND SECTIONS

Date	CADD File Number
AUGUST 2008	mary r..\fuel fa..\dwg\200_06_07
Scale: AS NOTED	Job Number: **07-039**
Drawn: S.S	
Checked: CHECKED	Drawing Number: **200_06_07**
Approved: APPROVED	



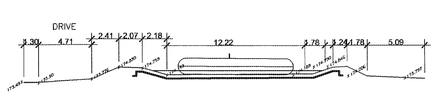
FUEL FARM E PLAN VIEW

SCALE 1:250



SECTION A C508

SCALE 1:250



SECTION B C508

SCALE 1:250

Description	Date	No.
Revisions and Issues		

NOV 19 2008

NORTH Date Printed

B.H. MARTIN CONSULTANTS LTD.
Consulting Engineers and Architect
Timmins Ontario
www.bhmartin.com

ARCHITECT

STRUCTURAL/CIVIL

REGISTERED PROFESSIONAL ENGINEER B.H.MARTIN LICENSEE NUNAVUT

MECHANICAL

ELECTRICAL

Project

MARY RIVER PROJECT
BAFFINLAND IRON MINES CORPORATION

BAFFIN ISLAND NUNAVUT

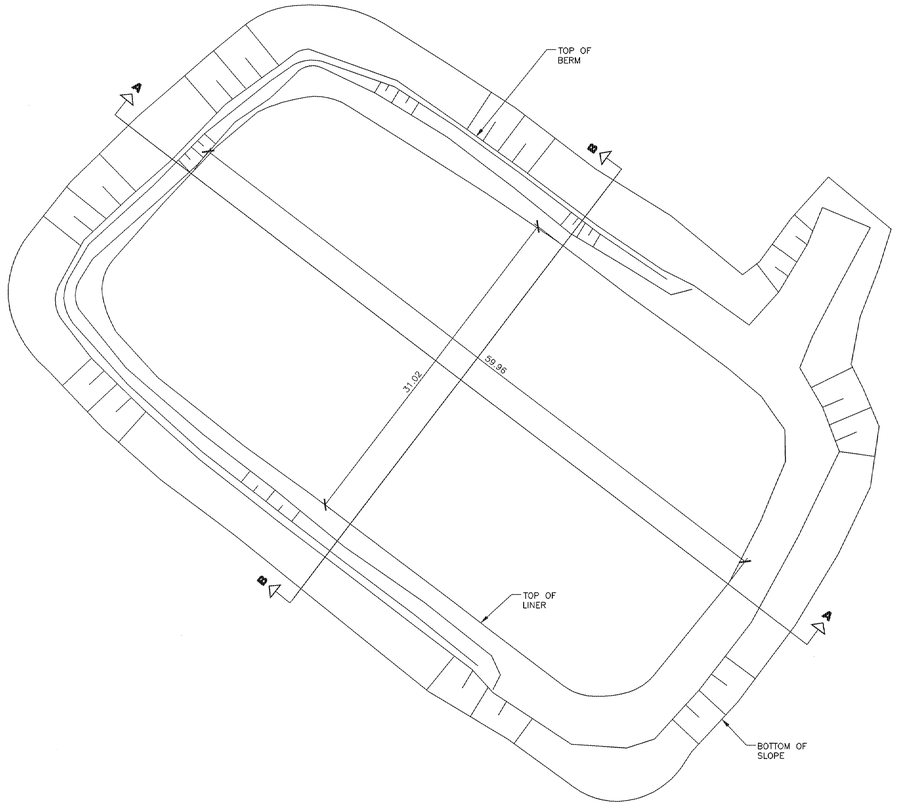
Drawing

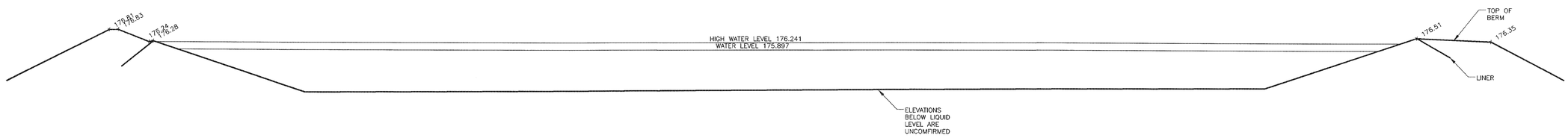
GENSET BLADDER CONTAINMENT AS BUILT PLAN AND SECTIONS

Date	CADD File Number
APRIL 2008	las con. \mary r.\fuel f..\dwg\200_06_10
Scale: AS NOTED	Job Number: **07-039**
Drawn: AB/SO/SS	
Checked	Drawing Number: **200_06_10**
Approved	

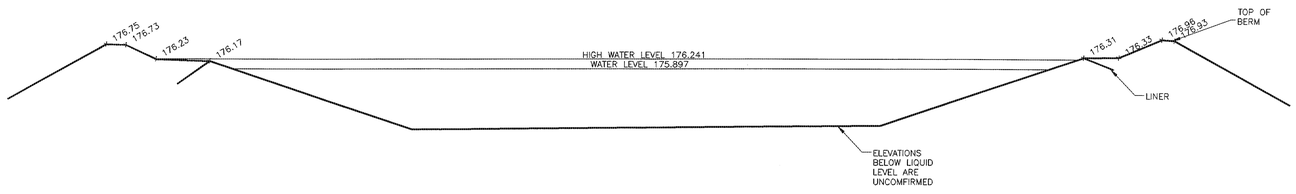
PWSP #1 AS BUILT PLAN VIEW

1:250





PWSP SECTION A
1:100 C302



PWSP SECTION B
1:100 C302

Description	Date	No.

Revisions and Issues

NOV 19 2008

NORTH Date Printed

GENIVAR

GENIVAR
834 Mountjoy Street South
P.O. Box 120
Timmins, Ontario P4N 7C5
www.genivar.com
Tel. 705-264-9413
Fax 705-267-2725

ARCHITECT STRUCTURAL/CIVIL

REGISTERED PROFESSIONAL ENGINEER B.J. MARTIN LICENSE 90195 NUNAVUT

MECHANICAL ELECTRICAL

Project

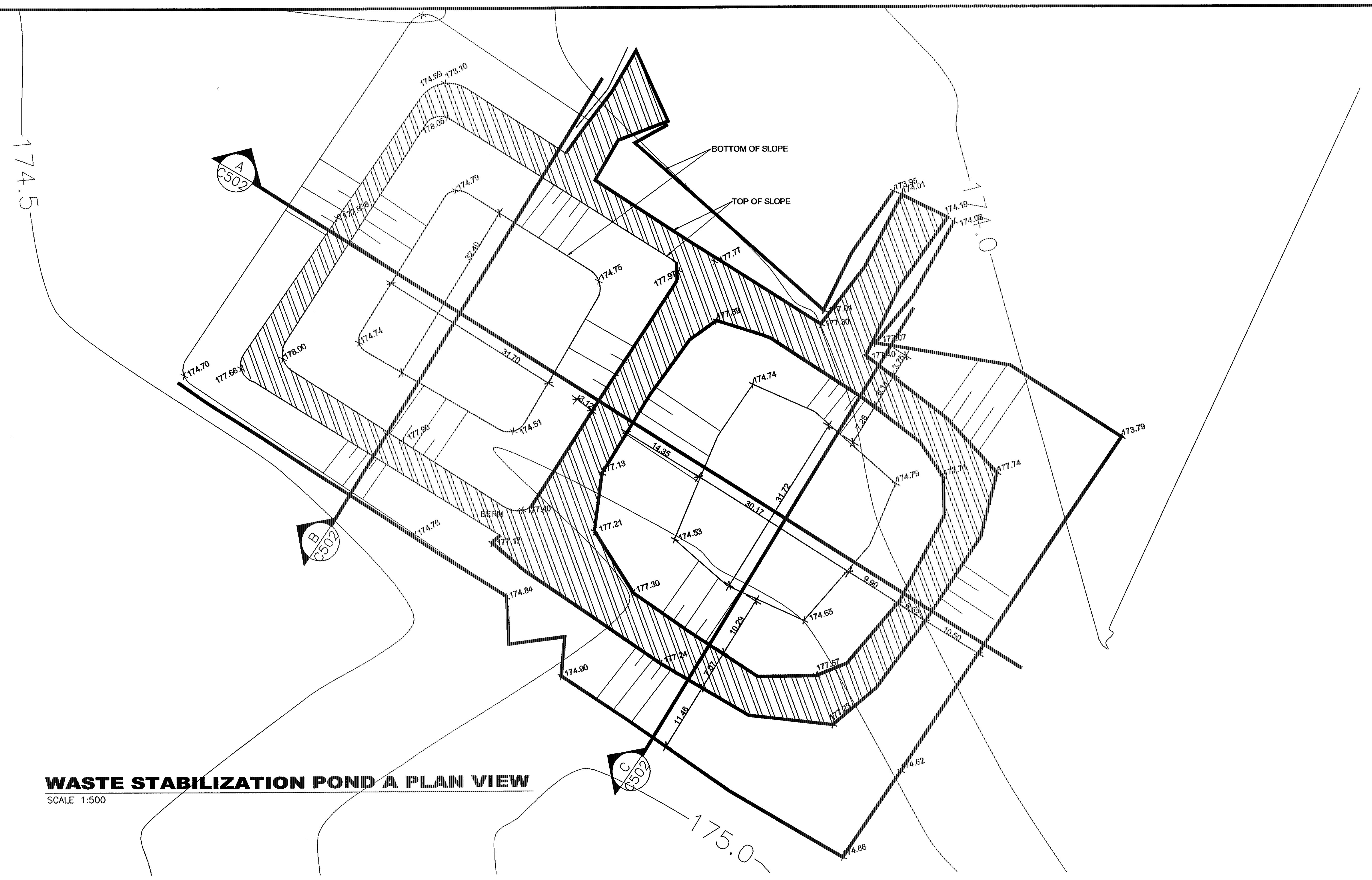
MARY RIVER PROJECT
BAFFINLAND IRON MINES CORPORATION

BAFFIN ISLAND NUNAVUT

Drawing

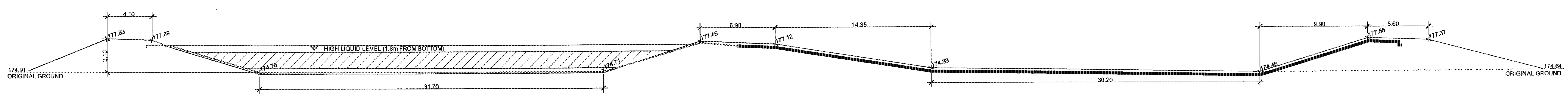
AS CONSTRUCTED
PWSP 1
PLAN AND SECTIONS

Date	CADD File Number
DATE	ss const\mary...\pwsp..\200_06_03
Scale: SEPT 2008	Job Number: **07-039**
Drawn: AB	
Checked	Drawing Number: **200_06_03**
Approved	



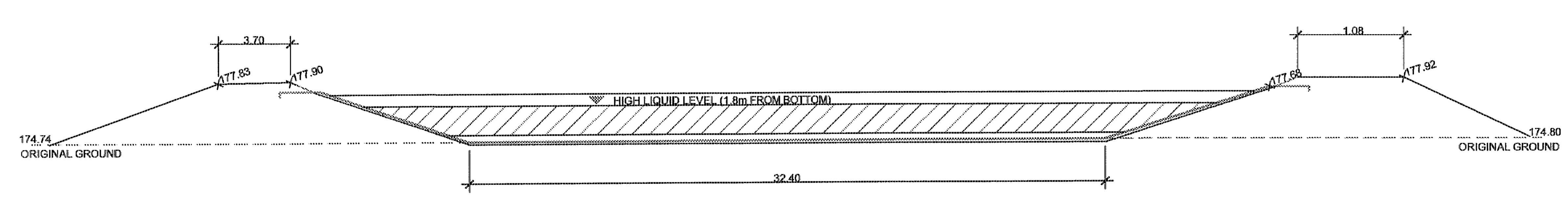
WASTE STABILIZATION POND A PLAN VIEW

SCALE 1:500



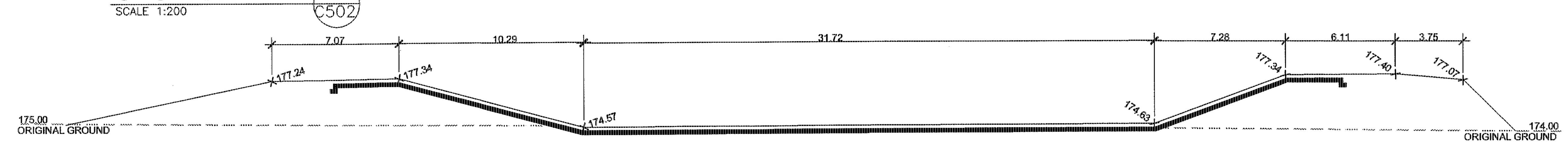
SECTION A C502

SCALE 1:200



SECTION B C502

SCALE 1:200



SECTION C C502

SCALE 1:200

Description	Date	No.
2nd Pond	Nov 4_08	1

Revisions and Issues

NORTH

NOV 19 2008

Date Printed

GENIVAR

GENIVAR
834 Mountjoy Street South
P.O. Box 120
Timmins, Ontario P4N 7C5
www.genivar.com
Tel. 705-264-9413
Fax 705-267-2725

ARCHITECT

STRUCTURAL/CIVIL

REGISTERED PROFESSIONAL ENGINEER B.H. MARON LICENSEE NWT/NU

MECHANICAL

ELECTRICAL

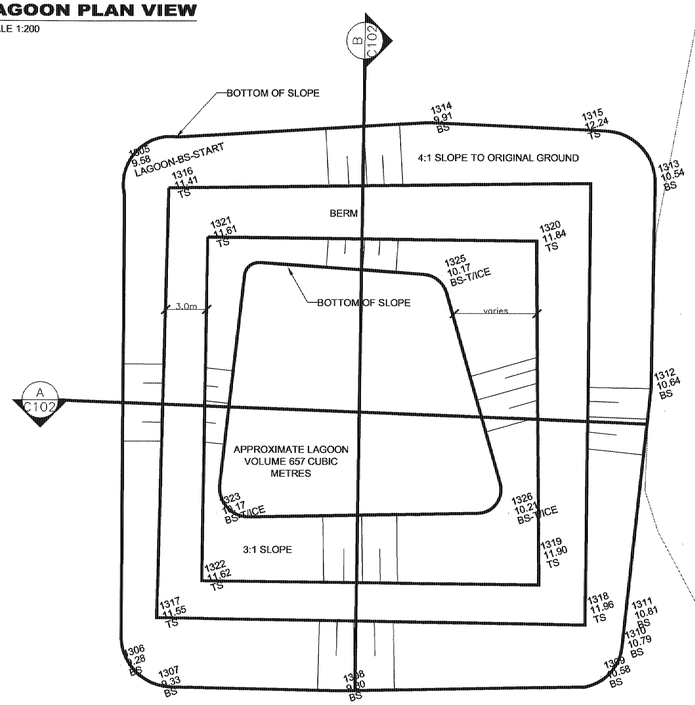
Project
MARY RIVER PROJECT
BAFFINLAND IRON MINES CORPORATION
BAFFIN ISLAND NUNAVUT

Drawing
AS CONSTRUCTED
PWSP 2
PLAN AND SECTIONS

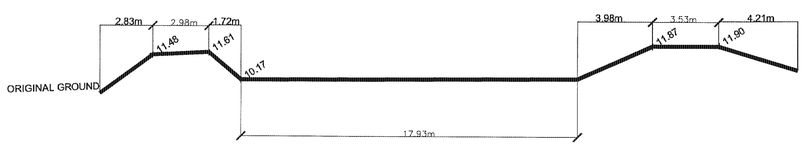
Date: NOVEMBER 2008	CADD File Number: ..\Mary..\PWSP\dwg\200_06_05
Scale: AS NOTED	Job Number: **07-039**
Drawn: SS/SO	
Checked: M.K	Drawing Number: **200_06_05**
Approved: M.K	

LAGOON PLAN VIEW

SCALE 1:200

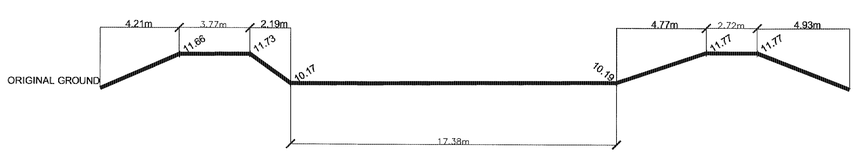


SECTION A C102



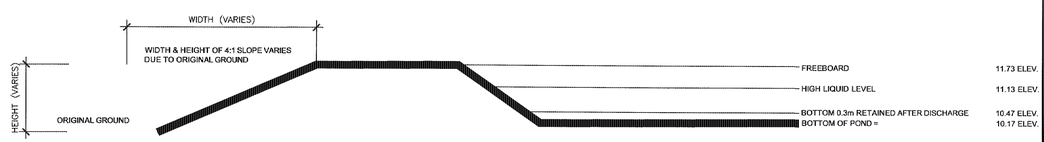
SECTION B C102

SCALE 1:150



TYPICAL LAGOON BERM

SCALE 1:75



Description	Date	No.
Revisions and Issues		

NOV 19 2008

NORTH — Date Printed

B.H. MARTIN CONSULTANTS LTD.
Consulting Engineers and Architect
Timmins Ontario
www.bhmartin.com

ARCHITECT STRUCTURAL/CIVIL

REGISTERED PROFESSIONAL ENGINEER B.H.MARTIN LICENSEE NWT/NU

MECHANICAL ELECTRICAL

Project

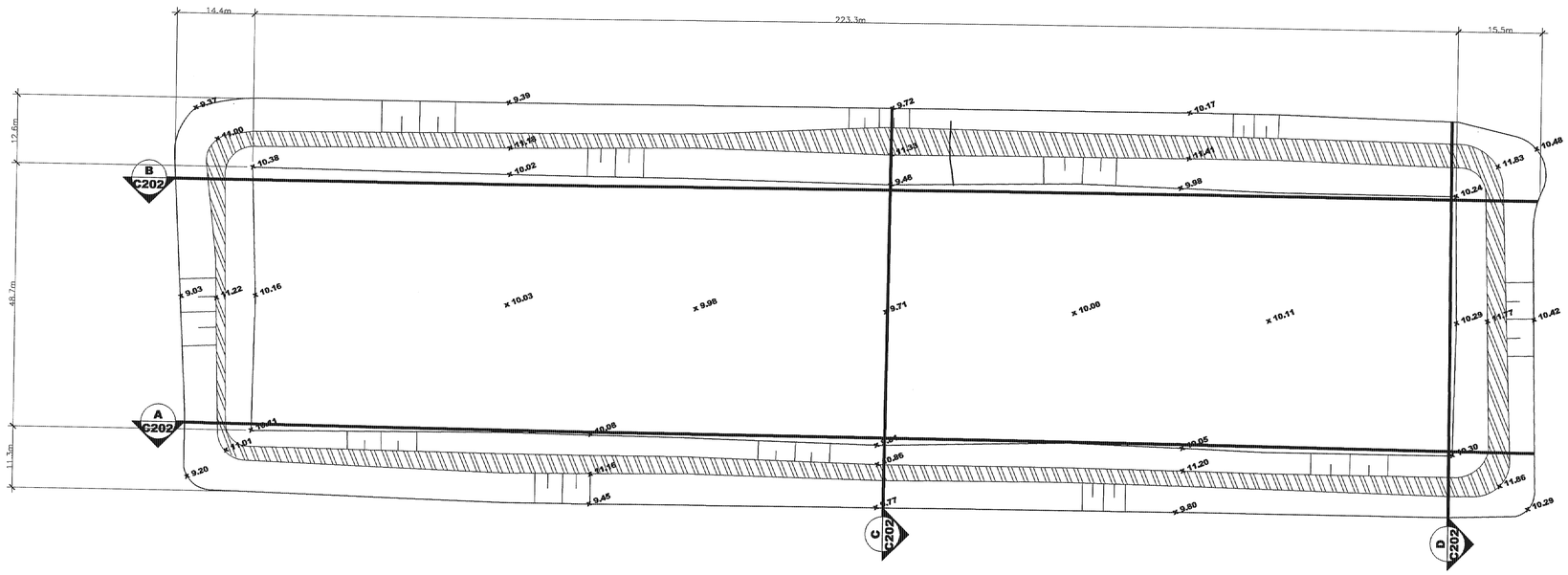
MILNE INLET

MARY-RIVER NUNAVUT

Drawing

AS BUILT SEWAGE LAGOON PLAN AND PROFILES

Date	CADD File Number
JAN 2008	milne..\pwsp..\dwg\100_06_01
Scale: AS NOTED	Job Number: **07-039**
Drawn: AB	
Checked	Drawing Number: **100_06_01**
Approved	



Description	Date	No.

Revisions and Issues

NOV 19 2008

NORTH Date Printed

B.H. MARTIN CONSULTANTS LTD.
Consulting Engineers and Architect
Timmins Ontario
www.bhmartin.com

ARCHITECT STRUCTURAL/CIVIL

REGISTERED PROFESSIONAL ENGINEER B.H. MARTIN LICENSEE

MECHANICAL ELECTRICAL

Project

Milne Inlet Project
Baffinland Iron Mines Corp

Baffin Island Nunavut

Drawing

Milne Inlet
Fuel Farm Layout
As Built

Date	CADD File Number
Dec 2007	\milne inlet\fuel farm\dwg\100_06_04
Scale 1:500	Job Number 07-039
Drawn AB	
Checked	Drawing Number 100_06_04
Approved	

ATTACHMENT B: PHOTOS

Typical damaged membrane PWSP #1.

PWSP #1

PWSP #2

PWSP #2

Milne Inlet PWSP

Milne Inlet PWSP north dike exterior.

Milne Inlet Fuel Containment Facility

Milne Inlet Fuel Containment Facility

Mary River Fuel Containment Facility
(during bladder installation)

Mary River Fuel Containment dyke

Generator Fuel Containment Cell
(shows test pit to establish membrane elevation)