3.02 Bulk Fuel Storage Facility

General Conditions

The containment structure has not varied from its use as noted in the2009 report. Some bladders are empty and some bladders are currently full.

Stability

At the time of our review, the water had not been removed for a period from within the containment and water was ponding just above the level of the gravel within the bottom of the containment. There was still considerable factor of safety against failure of oil holding bladders within the dykes with the water level as it exists.

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

There had been a considerable amount of precipitation prior to our inspection. The presence of the water in the gravel to just above the level of the top of the gravel is an indication of the integrity of the liner.

Capacity

There was a minor concern at the load-out end of the facility where the gravel ramps over the berm have worn down and some gravel from the ramps had migrated into the loading area at the end of the dyke.

Some grave was removed while we were on site to return this area to its design intent.

Recommendations

With the gravel removed, we have no further recommendations with respect to this structure.

3.03 Generator Fuel Storage Containment

General Conditions

The containment structure has not varied from its use since our 2010 annual inspection. At that time our recommendation was to limit the fuel contained in this containment facility to 77,376 litres.

There is currently one bladder in this containment facility that has a capacity when full of 120,000 litres. This bladder contains 77,376 litres when the bladder is 32" high. The guideline for Baffinland Iron Mines is to fill this bladder to no more than 76 cm (30") which represents 70,097 litres.

There is a sign posted to limit the bladder height at 30".

At the time of our visit on August 29, 2013, the bladder height was measured at 20". There was a small amount of water ponding in the bottom of the containment at the time of our review.

Stability

The structure was visually inspected for any signs of subsidence or cracking and no such indications were noted. There was no sign of seepage at the base of the structure noted. The soil structure is considered to be stable in its present condition and is in conformance with our design principles.

Recommendation

We recommended that the small amount of water ponding above the bottom of the containment be removed by creating a sump in the gravel and pumping out the water to below the gravel surface. This was done while we were on site.

We recommend that Baffinland Iron Mines continue to control the fuel in the bladder at a height of 30".

3.04 Polishing/Waste Stabilization Pond No. 1

General Conditions

PWSP No. 1 continues to be utilized as a holding facility for sewage plant effluent that does not meet water effluent quality criteria.

Currently the pond is be used primarily as a repository for sewage sludge that is periodically removed from the RBC.
The supernatant from PWSP No. 1 is periodically decanted to PWSPs Nos. 2 and 3 where it is tested and treated as required to meet Water Licence effluent requirements.

At the time of our visit there was considerable freeboard to accommodate further sewage and the structure readily conforms to its design intent.

Stability

Our review of the area around the pond at the base of the slopes showed no sign of seepage and hence we conclude that the liner has been effective in containing sewage and there are no tears or ruptures in the membrane, excepting some minor tears from past activity at the top of the dyke well above the allowable effluent level in the structure in the horizontal portion of the membrane.

A review of the top of the dyke showed no indication of cracking or settlement which would indicate stresses within the structure.

Most tears that had occurred in the liner on the top of the dyke have been patched during the period between reviews in 2008 and 2009 and are holding well. As well, there are no signs of weather related deterioration of the liner where it is exposed.

Monitoring points have been set up on the top of the dyke and have been monitored since 2009. Settlements of approximately 26 cm have occurred since that time. These settlements have not led to any stress cracks in the structure. These settlements are an indication of consolidation in the berm structure and the active layer beneath the dyke and are not considered to be of any concern.

There appears to be no sign of erosion of the dykes, even with the large amount of precipitation that occurred this current summer season.

Recommendations

We recommend that monitoring of the top of the berm continue on an annual basis through 2014. With the excellent condition of the dyke construction, we see no reason to complete this function other than annually prior to the next inspection.

3.05 Polishing Ponds/Waste Stabilization Ponds #2 and #3

General Conditions

This structure was designed and constructed as a 2 cell structure.

Treated sewage effluent from the RBC is currently discharged to PWSPs Nos. 2 and 3. The treated effluent is tested for Water Licence effluent requirements, treated if necessary, and discharged to the environment.

At the time of our visit there was considerable freeboard to accommodate further sewage and the structure readily conforms to its design intent.

Stability

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

Longitudinal cracking which appeared in the dykes of PWSP#3 due to the melt of permafrost wedges in 2009 has not reoccurred and we consider this structure to be stable in its present condition.

Monitoring points have been set upon the top of the dyke and have been monitored since 2009. Settlements in the order of up to 26 cm have occurred since that time. These settlements have not led to any stress cracks in the structure.

There appears to be no sign of erosion of the dykes and plants are continuing to seed themselves on the dykes. This growth is minimal however.

Recommendations

We recommend that monitoring of the top of the berm continue on an annual basis through 2014. With the excellent condition of the dyke construction, we see no reason to complete this function other than annually prior to the next inspection.

3.06 Helicopter Fuel Tank Containment

General Conditions

The structure was designed and constructed as a single cell structure that contains a 1000 gal fuel storage tank.

The structure currently conforms to its design intent,

In the past, a liner clad wood curb had been added to the top of the berm to prevent the erosion of gravel off the berm, caused by pulling the fuel hose from within the dyke out to the helicopters to provide them with fuel.

Stability

Our review of the area around the pond at the base of the slopes showed no sign of seepage. There is a minor amount of water ponding in the bottom of the containment indicating the integrity of the liner.

A review of the exterior and the top of the berms showed no sign of cracking or settlement which would indicate stress within the structure.

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

Recommendation

We have no recommendations with respect to this structure.

3.07 Barrel Fuel Containment

General Conditions

This particular structure which we called "Barrel Fuel Containment" in our previous inspection reports is a two cell structure which is currently used to accommodate cubes of lubricant in one cell and a number of stove fuel barrels on skids and a number of fuel dispensing tanks in the other cell.

Stability

Our review of the area around this containment structure showed no sign of seepage. This shows that there is reasonably little chance of tearing or rupture of the membrane having taken place.

A review of the exterior and top of the dyke showed no sign of cracking or settlement which would indicate stresses within the structure.

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

Recommendations

We have no recommendations with respect to this structure.

3.08 Hazardous Waste Storage

General Conditions

This particular cell was constructed contiguous with an existing cell, which is referred to on site as the "Enviro Tank Storage", from drawings by our office in 2010 and conforms to our drawings. It is also contiguous with the Stove Oil Storage cell.

This structure contains barrels and containers of hazardous waste.

Stability

Our review of the area around this cell at the base of the slopes, showed no sign of seepage.

The structure appears stable in its present condition.

Recommendation

There are no recommendations at this time.

3.09 Enviro Tank Storage

General Conditions

This particular structure is constructed contiguous with the Hazardous Waste Storage constructed in 2010 and the Stove Oil Storage cell. It is now empty.

Our review of the area around this cell at the base of the slopes showed no sign of seepage.

The structure is stable in its present condition.

Recommendations

There are no recommendations at this time.

3.10 Stove Oil Storage

General Conditions

This particular structure had been used to store barrels of stove fuel in 2011

The structure is currently empty.

This structure was constructed in accordance with a standardized drawing provided by this office utilizing a one piece liner.

Stability

Our review of the area around the containment structure shows no sign of seepage. This shows that there is reasonably little chance of tearing or rupture of the membrane having taken place.

A review of the exterior and the top of the dyke showed no sign of cracking or settlement which would indicate stresses with the structure.

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

3.11 Jet Fuel Tank and Pump Containment

This particular structure was reconstructed based on our recommendation of the 2012 Geotechnical Inspection.

The construction was completed in accordance with our recommendations for such structures and the liner was constructed as a one piece liner with geotextile protection on both sides and gravel over the geotextile as protection.

The construction appears proper and the structure is in excellent condition.

Minor water ponding confirms the integrity of the liner.

Stability

Our review of the area around this cell at the base of the slopes showed no sign of seepage.

The structure is stable in its present condition.

Recommendations.

There are no recommendations at this time.

3.12 Solid Waste Disposal Site

Berms appear stable and no erosion appears to have taken place.

Solid waste is being placed at the edge of the site and progressively covered.

The disposal is being done in exact conformity with plans prepared and guidelines set out for disposal of solid waste.

3.12 Waste oil Storage Containment

This particular structure has been used to store small amounts of waste oil.

The structure was constructed in accordance with standardized drawings designed by myself and utilized a one piece liner.

Stability

Our review of the area around the containment structure showed no sign of seepage.

There was water ponding in the bottom of the containment structure proving the integrity of the liner.

A review of the exterior and top of the dyke showed no sign of cracking or settlement which would indicate stresses within the structure.

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

Recommendations

We have no recommendations with respect to this structure.

3.13 Overview

This report is the 6th annual Geotechnical Inspection at the Mary River and Milne Inlet sites on behalf of Baffinland Iron Mines Corporation.

Over this five year period between the first and sixth inspections we have noted the following:

1. The weather conditions are such that little or no erosion takes place from wind or rain and the dykes constructed of the sand/gravel soil remain stable at slopes of 3:1 and 4:1.

2. The dykes, after a 5 year period still have only minor vegetation growing on the horizontal surfaces and it shall most certainly take decades for the dykes to naturally vegetate to form a stabilized surface.

   Nonetheless, there has been no erosion to the surface over the last 5 year period.

3. With the construction of the new camp and facilities in process much of what has been reported on is due for demolition in the immediate future.

4.0 MILNE INLET

4.01 General

As with Mary River, the containment facilities over the 5 years that we have been doing Annual Geotechnical Inspections for, have changed in function from their initial use.

In order to maintain continuity, we have maintained the same names as with previous reports.

For example, the Hazardous Waste Containment structure is still a containment structure that is in excellent condition, but it is no longer being used to contain hazardous waste. Instead, this structure is now used to contain cubes of lubricant and barrel fuel. In this report, it still referred to as Hazardous Waste Containment as was its first use for continuity in the reports.

As well, there are new geotechnical structures that have been added to the list of geotechnical structures. These new geotechnical structures are the pads upon which the very large 12M litre and smaller fuel tanks sit upon, the containment dykes around this very large tank farm and the new effluent pond for the new sewage plant.

These structures have been reviewed.

4.2 Bulk Fuel Containment Facility

General Conditions.

This particular containment has been in place for in excess of five years. It is currently being decommissioned and the last of the fuel is being removed from a small number of remaining bladders.

As well, the last of the oil impacted water contained in this containment area is being treated.

The dykes around this containment areas have remained stable and the ponding of water confirms the integrity of the liner.

It is intended that the oil impacted sand in the containment facility be landfarmed in the next season being 2014. We understand that this oil impacted sand shall remain in the containment area until the landfarm treatment area is constructed.

The structure around the fuel bladdders and the area formerly occupied by fuel bladders conforms to the original design.

A review of the interior of the containment showed minor ponding of water. The ponding of water, although minor, confirms the integrity of the structure.

The treatment system used to treat the water which collects in the structure, is in place and operational and we understand shall remain so until the structure is decommissioned.

Stability

Our review of the area around the pond at the base of the slopes, showed no sign of oil, water, or oil/water mixture and hence we conclude that the integrity of the liner, has been maintained. There were no tears or ruptures in the liner observed.

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

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

Recommendations

The performance of the structure has been tested since 2009 with the ponding of water. The observations noted during past inspections have supported the conservative design of the structure. We have no recommendations at this time.

4.03 Existing Polishing/Waste Stabilization Pond

General Conditions

This particular pond is the original PWSP that was constructed prior to 2008, is associated with the original sewage plant, and is servicing the man camp that is still in place.

The PWSP was designed as storage and polishing of effluent from the man camp that could not be immediately released to the environment.

The camp was occupied with a large construction crew and the sewage plant was operating as designed. The PWSP was not being utilized to contain additional effluent at the time of our review.

There was considerable capacity remaining in the PWSP at the time of our inspection.

Currently the PWSP conforms to the design basis for the facility.

Stability

With the PWSP constructed as it is, the structure is considered stable for long term use.

There was no sign of seepage at the bottom of the dyke. There were no signs of settlement or cracking, which are signs of stress in the structure.

Recommendations

Currently, the Milne Inlet PWSP conforms to the design intent and we have no recommendations.

4.04 Barrel Fuel Storage

General Conditions

This particular structure is constructed as a two cell structure.

This structure was originally intended for use as barrel fuel storage. However with time, this structure's use changed to that of storing lubricant cubes as well as barrel storage.

For continuity, we continue to refer to this storage/containment structure as Barrel Fuel Storage.

The structure around these two cells conforms to standardized drawings, prepared by our office for such a structure.

At the time of our inspection, there were two cells in use with minor water ponding in the bottom of the two cells.

Stability

Our review of the area around the ponds, at the base of the slopes, showed no signs of seepage.

The structures are considered stable in their present conditions.

Recommendations

We have no recommendations with respect to this structure at this time.

4.05 Hazardous Waste Storage

General Conditions

This particular structure is constructed as a 2 cell structure.

The structure conforms to the design basis for the facility.

At the time of our last inspection, this structure was utilized to store hazardous waste contained in barrels.

Since last year, the waste has been tested and hazardous materials have been removed and are in the process of being shipped out off site. Materials that have proven to be non-hazardous are currently in barrels adjacent to the structure awaiting disposal.

This containment structure, is now used as containment for barrel fuel and lubricant cubes.

The minor ponding of water in the bottom of the cells confirms the integrity of the liner.

Stability

Our review of the area around the dykes, at the base of the slopes, showed no sign of seepage.

There were no signs of stress noted in the structure. The structure is considered stable in its present condition.

Recommendations

Currently, this containment structure conforms to the design intent and we have no recommendations.

4.06 Oil and Antifreeze Containment

General Conditions

This particular structure is located between the air strip and the Bulk Fuel Storage.

The structure around this containment area conforms to standardized drawings prepared under my direction in the past.

Stability

Our review of the area around the structure at the base of the slopes, showed no signs of seepage.

There was no signs of stress in the dykes and the structure is considered stable.

Recommendations

We have no recommendations with respect to this structure.

4.07 Jet "A" Pump Containment

General Conditions

This small cell on the north side and adjacent to the Bulk Fuel Storage Containment is to control spillage during refuelling.

There was water ponding above the sand cover which confirms the integrity of the liner.

Stability

Our review of the area around the base of the dykes, showed no sign of seepage.

There was no cracking or settlement observed in the dyke structures.

Recommendations

We have no recommendations at this time with respect to this structure.

4.08 Fuel Tank Farm

General Conditions

This particular structure was discussed in the 2012 Annual Geotechnical Report as "5M litre Steel Fuel Storage Tank Containment".

The fuel storage facility has been considerably expanded since 2012.

There has been a second 5m litre tank constructed and two 12M litre tanks are under construction.

Pads have been constructed for one more 12 M litre tank and 3 more 0.75 M litre tanks which were being delivered as the report was being written.

We noted the following:

1. The containment structure was put in place prior to the construction of the tanks and the pads for the tanks were constructed with the containment dykes.

2. The dykes that had been constructed as containment for the initial 5 M litre tank, were incorporated into the overall dyke construction for the entire tank farm.

3. The drainage of the tank farm structure now utilizes the sump constructed for the initial tank.

4. The dykes incorporate rip-rap on the exterior of the dyke.

5 We would classify the quality of the work in the construction of the dykes and pads, including the base of the structure as exceptionally good and of a quality that should last for decades.

Stability

We noted no sign of weakness in any of the construction.

Design

We attach a copy of the design drawings of the fuel storage site being the following Hatch drawings:

2613-10-35-001
2613-10-035-002
2613-10-035-004

These drawings set out the plan, section, and details of the containment structure. The construction conforms to these drawings.

4.09 New Effluent Pond

General Conditions

This New Effluent Pond was constructed in 2013 to accommodate the new sewage plant and serve as a PWSP for this new plant which had yet to be put into operation at the time of our inspection.

We noted the following;

1. The pond has a design capacity of 1080 m^3 with 1.0 m freeboard.

2. The dyke is constructed of 150 mm crushed mine rock material that is not subject to erosion.

3. The dyke has a summer design capacity of 2230 m^3 with 0.3 m freeboard.

4. The quality of construction is such that this structure should last for many decades.

Stability

We noted no sign of weakness in any of the construction.

Design

We attach a copy of the following Hatch drawing:

2735-10-035-0001
2735-10-035-0002

These drawings set out the plan, section, and details of the Effluent Pond construction.

4.10 Overview

The permanent facilities for Milne Inlet are currently under construction and many of the facilities reported on are scheduled for decommissioning over the next 12 months as the new facilities are constructed.

Design drawings and photos of new facilities have been included with this report.

Respectfully submitted

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

REGISTERED PROFESSIONAL ENGINEER
B.H. MARTIN
LICENSEE
27/10/13
NWT/NU

Appendix E
Milne Sampling Log - Construction

Sample Station	Date	Time	Internal Turbidity (NTU)	External Turbidity (NTU)	External TSS (mg/L)	Internal Sp. Conductance (uS/cm)	External Sp. Conductance (uS/cm)	Internal pH	External pH	External Total Oil & Grease (mg/L)	External Ammonia (mg/L)	External Nitrate (mg/L)	Field Notes
MP-C-A	12-Jun-13	9:55	6.13	4.7	4	N/A	N/A	N/A	7.55	N/A	N/A	N/A	Milne PWSP was not being pumped during sampling.
MP-C-D	12-Jun-13	10:00	1.08	2.8	10	N/A	N/A	N/A	7.77	N/A	N/A	N/A	
MP-C-F	12-Jun-13	10:20	0.2	0.8	<2	N/A	N/A	N/A	7.97	N/A	N/A	N/A	
MP-C-Z	12-Jun-13	10:30	0.37	1.5	<2	N/A	N/A	N/A	7.93	N/A	N/A	N/A	
MP-C-A	14-Jun-13	11:10	13.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Warm weather is causing stream flows to increase significantly.
MP-C-D	14-Jun-13	11:00	3.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Warm weather is causing stream flows to increase significantly.
MP-C-F	14-Jun-13	10:55	0.76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Warm weather is causing stream flows to increase significantly.
MP-C-Z	14-Jun-13	10:40	1.81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Warm weather is causing stream flows to increase significantly.
MP-C-A	16-Jun-13	10:50	10.19	N/A	N/A	N/A	N/A	7.83	N/A	N/A	N/A	N/A	
MP-C-D	16-Jun-13	11:00	60.4	N/A	N/A	N/A	N/A	8.26	N/A	N/A	N/A	N/A	Flow has accelerated significantly due to melt.
MP-C-F	16-Jun-13	11:10	1.25	N/A	N/A	N/A	N/A	8.4	N/A	N/A	N/A	N/A	
MP-C-Z	16-Jun-13	11:30	94.3	N/A	N/A	N/A	N/A	8.23	N/A	N/A	N/A	N/A	Silt fences were installed upstream and downstream of sampling station.
MP-C-D	17-Jun-13	8:30	33.9	N/A	N/A	N/A	N/A	8.41	N/A	N/A	N/A	N/A	Pre-pumping sample
MP-C-Z	17-Jun-13	11:20	10.93	N/A	N/A	N/A	N/A	8.3	N/A	N/A	N/A	N/A	Follow-up sample to ensure silt fences are being effective in lowering turbidity readings.
MP-C-D	17-Jun-13	12:20	123	N/A	N/A	N/A	N/A	8.52	N/A	N/A	N/A	N/A	During test run - only pumped for 15 minutes
MP-C-D	17-Jun-13	15:30	121	N/A	N/A	N/A	N/A	8.48	N/A	N/A	N/A	N/A	During pumping - Pumped from 13:20 - 17:00 HRS
MP-C-A	18-Jun-13	8:30	2.71	N/A	N/A	N/A	N/A	7.33	N/A	N/A	N/A	N/A	Before water flows through new culvert at North end of bladder farm
MP-C-A	18-Jun-13	11:00	21.6	N/A	N/A	N/A	N/A	7.65	N/A	N/A	N/A	N/A	During flow - started flow at 10:00 HRS
MP-C-D	18-Jun-13	11:15	4.19	N/A	N/A	N/A	N/A	8.16	N/A	N/A	N/A	N/A	
MP-C-F	18-Jun-13	11:20	1.79	N/A	N/A	N/A	N/A	8.17	N/A	N/A	N/A	N/A	
MP-C-Z	18-Jun-13	11:30	9.63	N/A	N/A	N/A	N/A	8.07	N/A	N/A	N/A	N/A	
MP-C-A	20-Jun-13	9:30	14.3	N/A	N/A	N/A	N/A	7.37	N/A	N/A	N/A	N/A	Construction deepens ditch to drain area West of crusher
MP-C-D	20-Jun-13	9:40	10.3	N/A	N/A	N/A	N/A	7.64	N/A	N/A	N/A	N/A	Construction begins tank farm expansion
MP-C-F	20-Jun-13	9:50	1.72	N/A	N/A	N/A	N/A	7.89	N/A	N/A	N/A	N/A	
MP-C-Z	20-Jun-13	10:00	7.12	N/A	N/A	N/A	N/A	7.63	N/A	N/A	N/A	N/A	
MP-C-A	22-Jun-13	11:05	10.82	N/A	N/A	N/A	N/A	7.98	N/A	N/A	N/A	N/A	
MP-C-D	22-Jun-13	11:15	6.09	N/A	N/A	N/A	N/A	8	N/A	N/A	N/A	N/A	Tank farm expansion underway
MP-C-F	22-Jun-13	11:25	2.82	N/A	N/A	N/A	N/A	8.1	N/A	N/A	N/A	N/A	
MP-C-Z	22-Jun-13	11:30	5.01	N/A	N/A	N/A	N/A	8.08	N/A	N/A	N/A	N/A	
MP-C-A	24-Jun-13	14:20	14.5	N/A	N/A	N/A	N/A	7.55	N/A	N/A	N/A	N/A	
MP-C-D	24-Jun-13	14:30	11.3	N/A	N/A	N/A	N/A	7.81	N/A	N/A	N/A	N/A	
MP-C-F	24-Jun-13	14:35	2.92	N/A	N/A	N/A	N/A	7.69	N/A	N/A	N/A	N/A	
MP-C-Z	24-Jun-13	14:40	6.92	N/A	N/A	N/A	N/A	7.93	N/A	N/A	N/A	N/A	
MP-C-A	26-Jun-13	13:10	29.2	N/A	N/A	N/A	N/A	7.71	N/A	N/A	N/A	N/A	Significant rainfall during the previous night. External samples taken.
MP-C-D	26-Jun-13	13:25	6.1	N/A	N/A	N/A	N/A	8.18	N/A	N/A	N/A	N/A	Significant rainfall during the previous night. External samples taken.
MP-C-F	26-Jun-13	13:30	1.49	N/A	N/A	N/A	N/A	8.16	N/A	N/A	N/A	N/A	Significant rainfall during the previous night. External samples taken.
MP-C-Z	26-Jun-13	13:40	8.51	N/A	N/A	N/A	N/A	8.35	N/A	N/A	N/A	N/A	Significant rainfall during the previous night. External samples taken.
MP-C-A	28-Jun-13	13:50	8.08	N/A	N/A	N/A	N/A	8.08	N/A	N/A	N/A	N/A	
MP-C-D	28-Jun-13	13:55	3.46	N/A	N/A	N/A	N/A	8.18	N/A	N/A	N/A	N/A	
MP-C-F	28-Jun-13	14:05	70	N/A	N/A	N/A	N/A	8.33	N/A	N/A	N/A	N/A	
MP-C-Z	28-Jun-13	14:10	208	N/A	N/A	N/A	N/A	8.12	N/A	N/A	N/A	N/A	Water stagnant.
MP-C-A	30-Jun-13	14:00	2.75	N/A	N/A	N/A	N/A	8.13	N/A	N/A	N/A	N/A	
MP-C-D	30-Jun-13	14:07	2.92	N/A	N/A	N/A	N/A	8.26	N/A	N/A	N/A	N/A	
MP-C-F	30-Jun-13	14:15	5.17	N/A	N/A	N/A	N/A	8.2	N/A	N/A	N/A	N/A	
MP-C-Z	30-Jun-13	14:20	22.8	N/A	N/A	N/A	N/A	8.3	N/A	N/A	N/A	N/A	Water not flowing
MP-C-A	2-Jul-13	11:30	8.15	N/A	<2	N/A	N/A	8.03	8.05	N/A	N/A	N/A	
MP-C-D	2-Jul-13	N/A	N/A	N/A	<2	N/A	N/A	N/A	8.17	N/A	N/A	N/A	This outfall was completely dry upon inspection so was not sampled
MP-C-F	2-Jul-13	11:50	0.99	N/A	N/A	N/A	N/A	8.29	N/A	N/A	N/A	N/A	
MP-C-Z	2-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	This water was still and not draining anywhere so it was not sampled
MP-C-A	6-Jul-13	14:00	1.48	N/A	N/A	N/A	N/A	8.15	N/A	N/A	N/A	N/A	
MP-C-D	6-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	This outfall was completely dry upon inspection so was not sampled
MP-C-F	6-Jul-13	14:20	2.28	N/A	N/A	N/A	N/A	7.65	N/A	N/A	N/A	N/A	
MP-C-Z	6-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	This water was still and not draining anywhere so it was not sampled
MP-C-A	8-Jul-13	14:00	1.38	N/A	N/A	N/A	N/A	7.96	N/A	N/A	N/A	N/A	
MP-C-D	8-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	This outfall was completely dry upon inspection so was not sampled
MP-C-F	8-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	This outfall was completely dry upon inspection so was not sampled
MP-C-Z	8-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	This water was still and not draining anywhere so it was not sampled
MP-C-A	8-Jul-13	7:30	1.38	N/A	N/A	N/A	N/A	7.96	N/A	N/A	N/A	N/A	
MP-C-D	8-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	This outfall was completely dry upon inspection so was not sampled
MP-C-F	8-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	This outfall was completely dry upon inspection so was not sampled
MP-C-Z	8-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	This water was still and not draining anywhere so it was not sampled
MP-C-A	10-Jul-13	11:30	0.77	0.5	<2	N/A	612	8.36	8.13	N/A	N/A	N/A	Rainfall during the previous night. External samples taken.
MP-C-D	10-Jul-13	11:30	27.9	1.1	96	N/A	506	8.32	8.2	N/A	N/A	N/A	This outfall was completely dry upon inspection so was not sampled
MP-C-F	10-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	This outfall was completely dry upon inspection so was not sampled

MP-C-Z	10-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	This water was still and not draining anywhere so it was not sampled
MP-C-A	12-Jul-13	19:00	19.6	6.7	26	N/A	1570	8.19	8.09	N/A	N/A	N/A		Rainfall during the previous night and during the day. External samples taken.
MP-C-D	12-Jul-13	19:00	1.64	0.9	47	N/A	461	8.2	8.17	N/A	N/A	N/A		Rainfall during the previous night and during the day. External samples taken.
MP-C-F	12-Jul-13	19:00	17.65	1.7	188	N/A	352	8.16	8.02	N/A	N/A	N/A		Rainfall during the previous night and during the day. External samples taken.
MP-C-Z	12-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
MP-C-A	14-Jul-13	11:00	1.97	N/A	N/A	N/A	N/A	8.45	N/A	N/A	N/A	N/A		
MP-C-D	14-Jul-13	11:05	1.69	N/A	N/A	N/A	N/A	8.3	N/A	N/A	N/A	N/A		
MP-C-F	14-Jul-13	11:20	1.68	N/A	N/A	N/A	N/A	8.44	N/A	N/A	N/A	N/A		
MP-C-Z	14-Jul-13	N\A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No flow. Pooled water. No sample taken.
MP-C-A	16-Jul-13	17:10	10.86	N/A	N/A	N/A	N/A	8.36	N/A	N/A	N/A	N/A		
MP-C-D	16-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Stream bed dry. No sample taken.
MP-C-F	16-Jul-13	17:20	3.18	N/A	N/A	N/A	N/A	8.44	N/A	N/A	N/A	N/A		
MP-C-Z	16-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		No flow. Pooled water. No sample taken.
MP-C-A	18-Jul-13	13:55	2.19	N/A	N/A	N/A	N/A	8.26	N/A	N/A	N/A	N/A		
MP-C-D	18-Jul-13	14:10	1.41	N/A	N/A	N/A	N/A	8.23	N/A	N/A	N/A	N/A		
MP-C-F	18-Jul-13	14:20	0.9	N/A	N/A	N/A	N/A	8.29	N/A	N/A	N/A	N/A		
MP-C-Z	18-Jul-13	14:25	7.65	N/A	N/A	N/A	N/A	8.17	N/A	N/A	N/A	N/A		Construction of permanent camp pad 20 meters away from sampling site.
MP-C-D	19-Jul-13	16:55	0.94	1.1	3	N/A	409	8.46	8.06	N/A	N/A	N/A		Internal and external sample taken due to high TSS reading from Exova.
MP-C-A	20-Jul-13	9:35	2.67	N/A	N/A	746	N/A	8.26	N/A	N/A	N/A	N/A		Laydown area construction on the west side of the airstrip may affect turbidity levels in the next couple days
MP-C-D	20-Jul-13	9:45	2.29	N/A	N/A	449	N/A	8.28	N/A	N/A	N/A	N/A		
MP-C-F	20-Jul-13	9:50	0.12	N/A	N/A	754	N/A	8.18	N/A	N/A	N/A	N/A		
MP-C-Z	20-Jul-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Sample station covered by permanent camp pad construction.
MP-C-A	22-Jul-13	11:35	1.13	0.6	2	794	824	8.2	8.21	N/A	N/A	N/A		Internal and external samples taken
MP-C-D	22-Jul-13	11:50	0.71	0.2	4	635	685	8.19	8.14	N/A	N/A	N/A		Internal and external samples taken
MP-C-F	22-Jul-13	11:55	0.44	0.2	<2	753	773	8.25	8.22	N/A	N/A	N/A		Internal and external samples taken
MP-C-A	24-Jul-13	14:10	**61.5**	N/A	N/A	1068	N/A	8.24	N/A	N/A	N/A	N/A		Work on the laydown area around the ore piles and west of airstrip is causing an increase in turbidity. Silt fences are in place. Will assess daily.
MP-C-D	24-Jul-13	14:15	1.67	N/A	N/A	573	N/A	8.33	N/A	N/A	N/A	N/A		
MP-C-F	24-Jul-13	14:20	0.41	N/A	N/A	790	N/A	8.31	N/A	N/A	N/A	N/A		
MP-C-A	26-Jul-13	8:30	6.75	N/A	N/A	1015	N/A	8.19	N/A	N/A	N/A	N/A		
MP-C-D	26-Jul-13	9:45	12.4	N/A	N/A	611	N/A	8.18	N/A	N/A	N/A	N/A		
MP-C-F	26-Jul-13	9:50	0.99	N/A	N/A	864	N/A	8.38	N/A	N/A	N/A	N/A		
MP-C-A	28-Jul-13	14:10	13.2	N/A	N/A	1061	N/A	8.03	N/A	N/A	N/A	N/A		
MP-C-D	28-Jul-13	14:15	1.56	N/A	N/A	709	N/A	8.21	N/A	N/A	N/A	N/A		
MP-C-F	28-Jul-13	14:20	1.97	N/A	N/A	1104	N/A	8.15	N/A	N/A	N/A	N/A		
MP-C-A	30-Jul-13	11:45	1.26	N/A	N/A	8.14	N/A	1060	N/A	N/A	N/A	N/A		
MP-C-D	30-Jul-13	11:50	2.2	N/A	N/A	8.14	N/A	790	N/A	N/A	N/A	N/A		
MP-C-F	30-Jul-13	13:45	2.6	N/A	N/A	8.28	N/A	990	N/A	N/A	N/A	N/A		
MP-C-A	1-Aug-13	11:50	2.26	N/A	N/A	1024	N/A	8.2	N/A	N/A	N/A	N/A		
MP-C-D	1-Aug-13	11:20	0.83	N/A	N/A	737	N/A	8.18	N/A	N/A	N/A	N/A		
MP-C-F	1-Aug-13	11:25	10.11	N/A	N/A	1011	N/A	8.16	N/A	N/A	N/A	N/A		Construction of permanent camp pad occuring around pond drained by MP-C-F
MP-C-A	3-Aug-13	8:20	0.7	N/A	N/A	1079	N/A	8.24	N/A	N/A	N/A	N/A		
MP-C-D	3-Aug-13	8:10	0.93	N/A	N/A	672	N/A	8.13	N/A	N/A	N/A	N/A		
MP-C-F	3-Aug-13	8:05	0.55	N/A	N/A	956	N/A	8.23	N/A	N/A	N/A	N/A		Construction of permanent camp pad occuring around pond drained by MP-C-F
MP-C-A	5-Aug-13	9:05	3.93	N/A	N/A	1101	N/A	8.17	N/A	N/A	N/A	N/A		
MP-C-D	5-Aug-13	8:35	0.08	N/A	N/A	781	N/A	8.12	N/A	N/A	N/A	N/A		
MP-C-F	5-Aug-13	8:30	6.33	N/A	N/A	978	N/A	8.33	N/A	N/A	N/A	N/A		Construction of permanent camp pad occuring around pond drained by MP-C-F
MP-C-A	7-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Groundwater drainage - no water flowing at outfall
MP-C-D	7-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Groundwater drainage - no water flowing at outfall
MP-C-F	7-Aug-13	16:10	2.43	N/A	N/A	1061	N/A	8.3	N/A	N/A	N/A	N/A		Construction of permanent camp pad occuring around pond drained by MP-C-F
MP-C-A	9-Aug-13	17:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Groundwater drainage - no water flowing at outfall
MP-C-D	9-Aug-13	17:05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Groundwater drainage - no water flowing at outfall
MP-C-F	9-Aug-13	17:10	3.08	N/A	N/A	989	N/A	8.33	N/A	N/A	N/A	N/A		Construction of permanent camp pad occuring around pond drained by MP-C-F
MP-C-A	11-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Groundwater drainage - no water flowing at outfall
MP-C-D	11-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Groundwater drainage - no water flowing at outfall
MP-C-F	11-Aug-13	17:40	0.51	N/A	N/A	985	N/A	7.86	N/A	N/A	N/A	N/A		Construction of permanent camp pad occuring around pond drained by MP-C-F
MP-C-A	13-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Groundwater drainage - no water flowing at outfall
MP-C-D	13-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Groundwater drainage - no water flowing at outfall
MP-C-F	13-Aug-13	7:10	0.34	N/A	N/A	1119	N/A	8.06	N/A	N/A	N/A	N/A		Construction of permanent camp pad occuring around pond drained by MP-C-F
MP-C-A	15-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Groundwater drainage - no water flowing at outfall
MP-C-D	15-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Groundwater drainage - no water flowing at outfall
MP-C-F	15-Aug-13	8:30	0.4	N/A	N/A	1047	N/A	7.97	N/A	N/A	N/A	N/A		Construction of permanent camp pad occuring around pond drained by MP-C-F
MP-C-A	19-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Groundwater drainage - no water flowing at outfall
MP-C-D	19-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Groundwater drainage - no water flowing at outfall
MP-C-F	19-Aug-13	18:30	1.27	N/A	N/A	1018	N/A	8.16	N/A	N/A	N/A	N/A		Construction of permanent camp pad occuring around pond drained by MP-C-F.

MP-C-A	20-Aug-13	N/A	182	1.5	2	843	1050	8.41	8.2	<1	0.06	2.37	Samples were taken after a heavy rain event. Values are high due high traffic around the area (heavy equipment transporting materials from the beach area to different layouts.) Also, this is the lowest point and all run-off goes to this area. Water stagnant.
MP-C-D	20-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Groundwater drainage - no water flowing at outfall
MP-C-F	20-Aug-13	14:00	54.9	67	190	1037	1070	8.34	8.2	<1	1.6	2.78	Construction of permanent camp pad occuring around pond drained by MP-C-F.
MP-C-A	21-Aug-13	14:00	9.28	N/A	N/A	985	N/A	8	N/A	N/A	N/A	N/A	External samples taken 24 h after rain layouts.
MP-C-D	21-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Groundwater drainage - no water flowing at outfall`
MP-C-F	21-Aug-13	14:00	7.38	2.3	8	950	1010	8.13	8.15	<1	3.77	11.8	External samples taken 24 h after rain layouts. Due high levels of turbidity
MP-C-A	23-Aug-13	10:00	1.5	N/A	N/A	1126	N/A	8.18	N/A	N/A	N/A	N/A	
MP-C-D	23-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Groundwater drainage - no water flowing at outfall`
MP-C-F	23-Aug-13	10:00	1.32	N/A	N/A	927	N/A	8.13	N/A	N/A	N/A	N/A	Construction of permanent camp pad occuring around pond drained by MP-C-F. Silt fence were instaled the day before. Turbidity leves went down
MP-C-A	24-Aug-13	10:00	109	74.8	98	770	792	8.19	8.12	<1	0.23	1.06	External Samples Taken. Samples taken after rain
MP-C-D	24-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Groundwater drainage - no water flowing at outfall
MP-C-F	24-Aug-13	10:00	4.8	2.4	3	995	1030	8.05	8.1	<1	2.34	9.16	Construction of permanent camp pad occuring around pond drained by MP-C-F. Silt fence installed. External samples taken
MP-C-A	24-Aug-13	14:00	20	8.3	7	808	813	8.23	8.19	<1	0.14	1.32	External Samples Taken. Samples several hours after rain stop
MP-C-D	24-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No sample re-taken
MP-C-F	24-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No sample re-taken
MP-C-A	26-Aug-13	12:30	3.5	N/A	N/A	1030	N/A	8.26	N/A	N/A	N/A	N/A	
MP-C-D	26-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Groundwater drainage - no water flowing at outfall
MP-C-F	26-Aug-13	18:00	0.21	N/A	N/A	1113	N/A	8.05	N/A	N/A	N/A	N/A	
MP-C-A	30-Aug-13	14:30	2.23	N/A	N/A	1054	N/A	8.18	N/A	N/A	N/A	N/A	
MP-C-D	30-Aug-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Groundwater drainage - no water flowing at outfall
MP-C-F	30-Aug-13	14:45	0.43	N/A	N/A	1136	N/A	8.11	N/A	N/A	N/A	N/A	
MP-C-A	2-Sep-13	14:00	3.56	N/A	N/A	1078	N/A	8	N/A	N/A	N/A	N/A	
MP-C-D	2-Sep-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Groundwater drainage - no water flowing at outfall
MP-C-F	2-Sep-13	14:10	1.18	N/A	N/A	1301	N/A	8.02	N/A	N/A	N/A	N/A	
MP-C-A	6-Sep-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Groundwater drainage - no water flowing at outfall
MP-C-D	6-Sep-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Groundwater drainage - no water flowing at outfall
MP-C-F	6-Sep-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Groundwater drainage - no water flowing at outfall
MP-C-A	9-Sep-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Outfall frozen - no sample taken
MP-C-D	9-Sep-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Outfall frozen - no sample taken
MP-C-F	9-Sep-13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Outfall frozen - no sample taken

Appendix F
Survey Data

NUNA EAST LTD

Section 4

Survey Data

Job # 2999

Activity # 04 & 06

Point #	Northing	Easting	Elevation	Description
1	7976014.014	503664	0	Subbase
1310	7976061.934	503642.033	12.079	pt
1311	7976056.382	503642.091	12.055	pt
1312	7976049.664	503642.449	11.949	pt
1313	7976042.015	503642.972	12.01	pt
1314	7976035.406	503643.252	11.983	pt
1315	7976027.385	503643.643	12.019	pt
1316	7976019.804	503643.902	12.045	pt
1317	7976015.533	503643.708	12.123	pt
1318	7976008.884	503643.24	12.097	pt
1319	7976000.512	503643.196	12.105	pt
1320	7975998.858	503650.338	11.978	pt
1321	7976005.397	503650.105	11.984	pt
1322	7976012.531	503650.15	12.052	pt
1323	7976018.977	503650.223	12.038	pt
1324	7976026.543	503649.888	11.94	pt
1325	7976034.251	503650.204	11.991	pt
1326	7976041.804	503650.193	11.912	pt
1327	7976050.205	503650.197	11.965	pt
1328	7976056.684	503650.043	11.995	pt
1329	7976062.374	503649.512	12.007	pt
1330	7976062.756	503657.874	12.053	pt
1331	7976052.282	503657.887	11.938	pt
1332	7976044.573	503658.467	11.751	pt
1333	7976036.73	503658.877	11.936	pt
1334	7976028.085	503659.003	12.007	pt
1335	7976020.621	503659.027	12.037	pt
1336	7976011.632	503659.032	11.987	pt
1337	7976002.496	503658.351	11.865	pt
1338	7976007.629	503640.648	12.081	pt
1339	7976015.042	503640.264	12.052	pt
1340	7976019.264	503639.793	11.975	pt
1341	7976026.882	503640.313	11.985	pt
1342	7976034.544	503639.327	11.962	pt
1343	7976040.7	503638.784	12.011	pt
1344	7976049.342	503637.943	12.058	pt
1345	7976055.176	503637.763	12.064	pt
1346	7976061.658	503637.094	12.085	pt
1347	7976061.762	503631.924	12.109	pt
1348	7976055.242	503631.498	12.001	pt
1349	7976050.175	503631.444	12.036	pt
1350	7976041.504	503632.633	11.949	pt

1351	7976040.463	503635.503	12.035	pt
1352	7976034.343	503633.342	11.969	pt
1353	7976026.601	503634.299	12.092	pt