

**APPENDIX J**  
**ABANDONMENT AND RESTORATION PLAN**

- Knight Piésold Report (Ref. No. NB102-00181/6-7, Rev. 0) 37 pages



**BAFFINLAND IRON MINES CORPORATION  
MARY RIVER PROJECT**

**BULK SAMPLING PROGRAM  
ABANDONMENT AND RESTORATION PLAN  
(REF. NO. NB102-00181/6-7)**

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**MARY RIVER PROJECT**

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**EXECUTIVE SUMMARY**

Foreword

The Mary River Project is an iron ore exploration project located in the northern Baffin Island region of Nunavut. The project is wholly owned by Canadian mining company Baffinland Iron Mines Corporation (Baffinland). Baffinland is proposing to conduct a bulk sampling program beginning in 2007. This abandonment and restoration plan (A&R Plan) addresses the abandonment and restoration of the project sites following completion of the proposed bulk sampling program at the Mary River Project area.

This plan has been drafted in late 2006 to support environmental screening and permitting activities for the bulk sampling program. The Plan will be updated and revised as appropriate prior to commencement of the bulk sampling program to reflect any changes that may have arisen in the proposal.

This A&R Plan is written with a view to address all project-related activity areas and infrastructure, the existing exploration and geotechnical drilling as well as the bulk sampling program.

Project Description

The Mary River Project is currently subject to exploration drilling at Mary River as well as feasibility study-related geotechnical drilling at locations where mine infrastructure could be placed. In addition, a bulk sampling program is proposed over a 20-month period of approximately March 2007 to October 2008, and will involve the following activities:

- Upgrade of the existing Milne Inlet tote road to allow all-weather use, including the quarrying and placement of fill on the road bed and the replacement/installation of a large number of culverts at watercourses
- Construction of an additional 100-person all-weather tent camp at Mary River, next to Baffinland's existing seasonal exploration camp
- Establishment of temporary trailer camps at Milne Inlet and part way along the Milne Inlet tote road
- Establishment of temporary fuel storage facilities at Milne Inlet, the roadside (Midway) camp and at Mary River
- The delivery of contractor mining and crushing equipment, camp materials and fuel in 2 or 3 ship voyages to Milne Inlet in August 2007, in accordance with standard northeast arctic sealift procedures, using standard sealift ships based in the vicinity of Montreal

- The drilling, blasting and storing of approximately 169,000 dry tonnes (t) of weathered surface rock on the top of Deposit No. 1 at Mary River over one or two months in late 2007
- The drilling, blasting, hauling and crushing of 250,000 t of iron ore bulk sample from Deposit No. 1 at Mary River over six to nine months, in late 2007 and 2008
- The temporary stockpiling of the iron ore bulk sample at Milne Inlet in 2008
- Barrels and debris left from historical activities in the 1960's will be removed from Milne Inlet to a landfill site near the Mary River camp
- The loading of iron ore at Milne Inlet on 3 ships that will make a total of five voyages in August-September 2008 (two ships each make two voyages, one ship makes one voyage)

#### Abandonment Scenarios

Two abandonment scenarios have been conceived in this A&R Plan: temporary suspension, and final abandonment. A temporary suspension of activities involves the temporary cease of the bulk sampling program operations, either as planned or due to unforeseen circumstances, lasting for weeks to months. This could be due to economic or operational difficulties that would cause a temporary cease of current operations at the project sites, such as a prolonged period of poor weather and related issues, fuel shortages or mechanical problems with critical equipment. All facilities will be secured in a manner similar to the seasonal shutdown of the existing Mary River camp.

Final abandonment would be undertaken at completion of the bulk sampling program, provided there are no immediate or pending plans to advance the project towards mine development. Final abandonment may also occur if the bulk sampling program was terminated before completion due to unforeseen circumstances and a decision was made to cease all exploration activities at Mary River.

Final abandonment will include removing all equipment and materials either off-site or into the on-site landfill (for inert materials), and restoring ground surfaces. Equipment and materials to be taken off-site will be transported overland to Milne Inlet. Arrangements will be made with a sealift contractor to collect the shipment of materials and equipment at Milne Inlet and ship materials to Montreal or other destinations for re-sale, salvage or disposal.

The timing of final abandonment and reclamation is largely governed by site access and weather. It is estimated that four months will be required to remove equipment and materials from Mary River with a crew of about 20 people. Final abandonment could be undertaken in the months between March and August under favourable weather conditions, leading up to sealift in August or September.

#### Follow-Up and Monitoring

All development areas related to the project will be subjected to a closure inspection by a company representative or contractor, and a brief abandonment and restoration report with photographs will be prepared, documenting the reclamation work completed and the site conditions following closure.



In order to ensure the physical and chemical stability of various components of the sites after closure of the Mary River Project facilities, monitoring and follow-up inspections of all sites will be conducted for a minimum of 1 year after final abandonment is complete.

Estimated Cost and Proposed Form of Financial Assurance

The estimated cost to complete the final abandonment work described in this A&R Plan is \$4,650.0000 (\$4.65 million). Baffinland proposes to provide financial assurance in the form of a credit note.

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**SECTION 1.0 - INTRODUCTION**

The Mary River Project is an iron ore exploration project located in the northern Baffin Island region of Nunavut. The project is wholly owned by Canadian mining company Baffinland Iron Mines Corporation (Baffinland). Baffinland is proposing to conduct a bulk sampling program beginning in 2007. This abandonment and restoration plan (A&R Plan) was prepared to address abandonment and restoration following completion of the proposed bulk sampling program at the Mary River Project area.

This plan has been drafted in late 2006 to support environmental screening and permitting activities for the bulk sampling program. The Plan will be updated and revised as appropriate prior to commencement of the bulk sampling program to reflect any changes that may have arisen in the proposal.

**1.1 BACKGROUND**

The location of the Mary River Project is shown on Figure 1.1. Site coordinates are approximately Latitude 71°20' north and Longitude 79°14' west. Baffinland has been conducting mineral exploration at Mary River since 2004, and a feasibility study is currently underway. To date exploration activities at the site have consisted of delineation drilling.

The iron ore deposits at Mary River were first discovered in 1962 through aerial reconnaissance survey. High grade hematite and magnetite deposits were discovered in one main deposit (Deposit No. 1) as well as four satellite deposits. An exploration program including geophysical surveys, geological mapping, drilling and trenching continued from 1963 until 1966. A 105-km road was constructed from Milne Inlet to Mary River during that period. The project then became inactive shortly thereafter until Baffinland initiated exploration activities in 2004. Remnant equipment and materials remain at Mary River and Milne Inlet.

**1.2 EXISTING PERMITS**

Exploration is focused on Federal Mineral Leases 2483, 2484 and 2485 that were established in the 1960s before the Nunavut Land Claims Agreement. The mineral leases with the iron ore deposits are surrounded by Inuit Owned Land that is administered by the Qikiqtani Inuit Association (QIA).

The current exploration activities, and any future abandonment and reclamation activities that may be undertaken, are subject to the terms and conditions of the following authorizations issued to Baffinland:

Authorizing Agency	Approval	Permit/License #	Expiry Date
Nunavut Water Board	Type B Water License	NWB2MRY0406	December 31, 2006
Qikiqtani Inuit Association	Inuit Land Use License	Q05L2C14	December 31, 2006
Indian and Northern Affairs	Land Use Permit	N2004C0017	June 28, 2007

Renewals with amendments are being sought for the above authorizations.

### 1.3 APPLICABLE GUIDELINES

The following guidelines were referenced during the development of this A&R Plan:

- *Guidelines for Abandonment and Restoration Planning for Mines in the Northwest Territories*, by the Northwest Territories Water Board, September 1990.
- *Mine Reclamation in Northwest Territories and Yukon*, Prepared by Steffen, Robertson and Kirsten (B.C.) Inc. for the Northern Affairs Program of the Department of Indian Affairs and Northern Development, April 1992.

The Department of Indian and Northern Affairs Canada (INAC) published a Mine Site Reclamation Policy for Nunavut in 2002, although the policy does not apply to exploration or advanced exploration stages of the development of a mineral property and only applies to new and developed mines and their mining-related activities (INAC, 2002). Draft guidelines for mine reclamation in the Northwest Territories and Nunavut were also issued by INAC in 2002 and a revision of these guidelines is still pending. Therefore, the above two approved guidelines have been used as guidance.

## **SECTION 2.0 - ABANDONMENT & RESTORATION PLAN OBJECTIVES**

In accordance with the objectives outlined in the cited guidelines, the general abandonment and restoration goals of this A&R Plan are to:

- Ensure the long-term physical and chemical stability of the project area(s) so as to protect the public's health and safety
- Enhance natural recovery of the disturbed area(s) to a state that is compatible with original conditions to allow for future use by people and wildlife
- Ensure that the requirement for long-term maintenance and monitoring is minimized

This A&R Plan is written with a view to address all project-related activity areas and infrastructure, the existing exploration and geotechnical drilling as well as the bulk sampling program.

## SECTION 3.0 - PROJECT DESCRIPTION

### 3.1 OVERVIEW

The Mary River Project is currently subject to exploration drilling at Mary River as well as feasibility study-related geotechnical drilling at potential ports at Milne Inlet and Steensby Inlet, along potential transportation corridors, and at potential wind and hydroelectric sites. The current or proposed feasibility study-related operations include the following:

- Ongoing operation of the seasonally-operated 100-person tent camp at Mary River
- Operation of up to 7 drill rigs for both exploration drilling at the Mary River ore deposits and geotechnical drilling at proposed mine infrastructure areas
- Operation of portable fly camps at Milne Inlet, Steensby Inlet, and Separation Lake candidate hydroelectric site, on a seasonal basis

In addition, a bulk sampling program is proposed over a 20-month period of approximately March 2007 to October 2008, and will involve the following activities:

- Upgrade of the existing Milne Inlet tote road to allow all-weather use, including the quarrying and placement of fill on the road bed and the replacement/installation of a large number of culverts at watercourses
- Construction of an additional 100-person all-weather tent camp at Mary River, next to Baffinland's existing seasonal exploration camp
- Establishment of temporary trailer camps at Milne Inlet and part-way along the Milne Inlet tote road
- Establishment of temporary fuel storage facilities at Milne Inlet, the roadside (Midway) camp and at Mary River
- The delivery of contractor mining and crushing equipment, camp materials and fuel in 2 or 3 ship voyages to Milne Inlet in August 2007, in accordance with standard northeast arctic sealift procedures, using standard sealift ships based in the vicinity of Montreal
- The drilling, blasting and storing of approximately 169,000 dry tonnes (t) of weathered surface rock on the top of Deposit No. 1 at Mary River over one or two months in late 2007
- The drilling, blasting, hauling and crushing of 250,000 t of iron ore bulk sample from Deposit No. 1 at Mary River over six to nine months, in late 2007 and 2008
- The temporary stockpiling of the iron ore bulk sample at Milne Inlet in 2008
- Barrels and debris left from historical activities in the 1960's will be removed from Milne Inlet to a landfill site near the Mary River camp
- The loading of iron ore at Milne Inlet on 3 ships that will make a total of five voyages in August-September 2008 (two ships each make two voyages, one ship makes one voyage)

Figure 3.1 shows the location of activity areas related to the bulk sampling program. Given that exploration drilling and feasibility study-related investigations will continue concurrent with the bulk sampling program, this section describes all equipment and infrastructure relating to the Mary River Project that will be in the region.

### 3.2 SCHEDULE

A detailed schedule of the activities involved with the bulk sample program is shown on Figure 3.2. The overall targets are as follows:

- November 2006 Submit Environmental Screening Document and Permit Applications
- March 2007 Screening completed and permits issued
- March 2007 Begin road and airstrip upgrades
- August 2007 Mobilize camp and equipment for bulk sample
- November 2007 Camp and infrastructure constructed, bulk sampling begins
- May 2008 Bulk sampling program completed
- January 2008 Start haulage of ore to Milne Inlet
- Aug/Sept 2008 Ore loaded onto ships and delivered to market

The exploration and feasibility study-related drilling are ongoing, in support of a definitive feasibility study. If the results of the feasibility study are positive and Baffinland proposes to move to mine development, exploration is likely to continue, and geotechnical investigations would support basic engineering design.

### 3.3 BULK SAMPLE

#### 3.3.1 Mining

Mining of the bulk sample will involve the following steps:

- A total of approximately 169,000 t of weathered iron ore will be stripped from two pits on Deposit No. 1 and stockpiled near the pits on the deposit. The proposed location of the bulk sample pits and weathered ore stockpile are shown on Figure 3.3.
- Approximately 125,000 t of fresh hematite ore will be removed from one pit and another 125,000 t of fresh magnetite ore will be removed from a second pit. Ore will be extracted by blasting using explosives and excavating at 5 m intervals. The total depths of the pits are estimated to be 15 m and are designed to be free-draining so that no water is impounded.
- The bulk sample ore will be transported to a crushing area, shown on Figure 3.4, where it will be crushed to produce both lump and fine ore products. Separate lump and fine ore stockpiles will be created and temporarily placed next to the crusher and at the Milne Inlet site as shown on Figures 3.4 and 3.5, respectively.
- A small volume of non-ore bearing waste rock generated during the mining will be entirely consumed in the construction of a test rail embankment as part of the project's feasibility study.



### 3.3.2 Geochemical Properties

Acid Rock Drainage (ARD) and Metal Leaching (ML) testing is being conducted on the ore (fresh and weathered hematite and magnetite) and waste rock using drill core and surface samples from the exploration program. The samples have been submitted to SGS Lakefield Research Ltd. for the following tests:

- Static Acid Base Accounting (ABA) - modified sobek method
- ICP metal scan
- XRD (mineral content assessment - % mineralogy)
- SPLP 1312 - metal leaching
- TCLP 1311 - aggressive metal leaching
- Whole rock analysis

Complete results from the above tests are not yet available. However, preliminary results that are available suggest that ARD may not be produced and ML will be minor.

There was no evidence of ARD in the field. Surface water quality downstream of the ore body exhibits generally neutral pH conditions (between 6.2 and 7.9). Sulphate concentrations in the surface water downstream are very low from <0.5 mg/L to <5 mg/L. Visually there was no evidence of iron staining caused by ARD or ML from the fresh ore. Weathered, oxidized ore did exhibit sulphide alteration but no evidence of ARD drainage or ML was observed.

The ore and waste rock do contain sulphides (mostly pyrite in the magnetite with trace phyrohtite) at low concentrations (trace). However, these sulphides are likely to be relatively slow to react if exposed to the atmosphere (oxygen) due to the cold and dry climatic conditions typical of the site. This reactivity of the sulphides and the ARD and ML potential of the ore and waste rock will be confirmed with on-site tests planned to commence in 2007.

### 3.4 STOCKPILES

Stockpiles that will be created during the bulk sampling program include:

- A stockpile of weathered iron ore located on Deposit No. 1
- A temporary crusher feed stockpile
- A temporary lump ore and fines stockpiles next to the crusher and at Milne Inlet

The hematite and magnetite pits are expected to generate approximately 102,000 t and 67,000 t of weathered ore, respectively, for a total volume of approximately 169,000 t. This equates to an approximate volume of 58,000 m<sup>3</sup>, based on a density of 4.36 t/ m<sup>3</sup> and an average bulking factor of 1.5. The proposed weathered ore stockpile location is shown on Figure 3.3. The stockpile will be developed to an approximate height of 4 m, with maximum 2H:1V side slopes.

A very small crusher feed stockpile will be developed as trucks deliver ore from the bulk sample pits to the crusher. This feed stockpile will vary in size according to production from the pits and crusher operation, but is expected to be in the order of one to two days of production (15,000 to 30,000 t).

Temporary and separate lump ore and fine ore stockpiles will be constructed at two main locations: near the crusher, and at Milne Inlet. The two proposed temporary stockpiles at the crusher are shown on Figure 3.4 and the stockpile locations at Milne Inlet are shown on Figure 3.5.

The 250,000 t bulk sample will translate into approximately 87,000 m<sup>3</sup>, based on a density of 4.36 t/m<sup>3</sup> and a rough average bulking factor of 1.5. Based on an expected 75% lump to 25% fines proportion, and not accounting for differences in bulking factors, the lump and fine ore stockpiles will have volumes in the order of 65,000 m<sup>3</sup> and 22,000 m<sup>3</sup>, respectively. The temporary ore stockpiles will be constructed as the trucks dump the ore into a conveyor hopper, and the conveyor will develop the stockpiles with stable side slopes.

### 3.5 CAMPS AND RELATED FACILITIES

Camp facilities will be constructed at Mary River (next to the existing seasonal exploration camp) and at Milne Inlet. In addition, a small roadside camp (the Midway camp) will be constructed next to Katiktok Lake. Each of the camp facilities are described below and locations are shown on Figure 3.1.

The existing 100-person capacity seasonal exploration camp at Mary River, shown on Figure 3.6, will continue to operate on a seasonal basis for the duration of the bulk sampling program, and a new 100-person all-weather camp will be constructed next to the existing camp to accommodate workers during the bulk sampling program. The existing Mary River site is equipped with two steel Quonset buildings and numerous wooden outbuildings.

A small temporary facility is proposed at the Milne Inlet site to house the sealift and road construction/operation personnel. The camp will consist of approximately 6 trailers complete with sleeping quarters, kitchen facilities and washing facilities. Power will be provided to the camp and ship-loading conveyors (when in operation) by diesel generators.

The temporary camp (Midway camp) will be located next to an existing airstrip along the tote road, approximately 27 km from Mary River. The Midway camp, consisting of four trailers will be sized for 12 people to accommodate road workers on a short-term basis during construction and will provide support to any emergencies. A staging area will be developed for trucks and equipment.

Radio towers will be positioned at Milne Inlet, Midway camp and the Mary River camp, and weather stations will be at Mary River and both Milne Inlet and Steensby Inlet.

Temporary drill camps will also be positioned temporarily at Steensby Inlet, Milne Inlet and Separation Lake to support feasibility study-related geotechnical drill programs.

### 3.6 EQUIPMENT

The list of equipment to be used during the bulk sampling program includes the following:

<b>Baffinland</b>	<b>Road Contractor</b>	<b>Mining Contractor</b>
Excavator (1)	Excavator (1)	50-t haul trucks (3)
Dozers (3)	Dozer (1)	45-t highway trucks (11)
Quads (4)	Front end loader (1)	Tractors with rock boxes
Boom truck and trailer	Vibratory compactor & screen	Front-end loaders (2)
1-t flatbed trucks (2)	Rock truck (1)	Dozer (1)
Articulated forklift truck (1)	Dump truck with plow (1)	Excavator (1)
Spill response units (4)	Housing trailers (2)	Grader (1)
Milne Inlet camp genset	Parts trailer	Service truck (1)
Midway camp genset	Supervisor truck (1)	Rock drills (2)
Mary River camp genset		Crusher with 750kw genset
Sewage system – rotory disk		Blasting truck
Maintenance shop		Crew cab pick-up trucks (7)
Warehousing sea containers		Fuel Truck (1)
Office trailer		
16 explosive magazines		

The equipment currently at the Mary River site to support exploration includes:

- 2 skid-steers
- 8 all-terrain vehicles
- 2 Dozers (D4 and D5)
- CAT 320 excavator
- Zoom boom
- 30 ft flat deck truck
- 2 flatbed pick-up trucks

In addition, the drilling contractor operates up to 7 drills and supporting equipment at Mary River, and air charter companies operate helicopters and fixed-wing aircraft at the site during each exploration season.

### 3.7 AIRSTRIPS AND ROADS

There are three existing gravel airstrips as shown on Figure 3.1. Drainage improvements will be made at all three airstrips, and lighting will be installed at the Mary River and Milne Inlet airstrips.

The Milne Inlet tote road is an existing 105 km road between the Mary River Site and Milne Inlet. At present, Baffinland's water license permits later winter access (March to May). The road will be upgraded to a year-round all-weather road for the bulk sampling program. The road improvements will involve:

- Quarrying and placement of engineered fill to improve road bearing capacity at select locations
- Road bed widening plus construction of turn-outs
- Replacement/installation of culverts at watercourses and drainages

Figures 3.7 and 3.8 shows the existing road alignment and the potential borrow sources identified for quarrying.

### 3.8 BORROW SOURCES

Three main borrow sources have been identified, at locations shown on Figures 3.7 and 3.8. Approximately 500,000 m<sup>3</sup> of sand and gravel will be excavated to support the bulk sampling activities, primarily for road upgrades. Material will be progressively stripped from the active layer at select locations identified in the field. The areas identified on the figures are expansive, and borrow areas will represent a small fraction of the borrow sources, in the order of 33 ha if quarrying was limited to 1.5 m depth. Excavation edges will be constructed to stable 2H:1V slopes, and drainage re-established as part of quarry operations. On-going monitoring will allow for progressive reclamation activities, to identify and rehabilitate any areas where thaw settlement results in ponding of water or erosion.

### 3.9 FUEL STORAGE

A total of 8 million litres (ML) of fuel will be used during the course of the bulk sampling program. Temporary fuel storage facilities will be located at the camp and crusher area at Mary River, at Midway camp, and at Milne Inlet. The following fuel storage facilities will be used:

- An 8 ML capacity bulk fuel storage facility at Milne Inlet, consisting of 125,000 L fuel bladders in a lined containment
- A small cache of 200-L drums (20-30) inside a lined containment area at the Midway camp
- A 1.9 ML capacity bulk fuel storage facility near the Mary River Camp, a Jet-A tank farm (550,000 L) for aircraft, and an additional 1.25 ML facility near the mining and crushing operations. Each facility will consist of fuel bladders in a lined containment.

Refuelling stations at Milne Inlet and Mary River will be equipped with a lined and bermed area to contain any minor spills or leaks during refuelling. The liner will be protected by sand bedding and vehicles and equipment will drive onto the lined area to refuel.

In addition, small drum caches in lined containment areas will be situated at Milne Inlet, Steensby Inlet and Separation Lake to support the geotechnical drilling underway for parts of the year.

### 3.10 CHEMICALS

Some chemicals and potentially hazardous materials associated with project operations will include:

- Oils, greases, lubricants, and EZ Mud (drilling additive) for mining and heavy equipment
- Calcium chloride flakes for drill water
- Lead acid batteries and cleaning supplies at camp sites
- Waste oils generated from mobile equipment and generators

Lubricants and oils, as well as both new and used batteries, will be stored in containers. Waste oils will be stored in drums in lined containment, until used to fuel the camp incinerator.

### 3.11 EXPLOSIVES

Approximately 240 t of pre-packaged emulsion and high explosives (Class A) will be used at the bulk sample location. The explosives will be stored in the 16 explosives magazines used for transport of the explosives to Mary River. The explosives magazines will be positioned in a bermed and fenced area with a locked gate in conformance with the *NWT/Nunavut Mine Health and Safety Act* and regulations. Detonators and explosives will be stored in separate magazines, and inventory will be strictly controlled with supervisory control. The explosives magazines will be located away from other infrastructure in accordance with the British Table of Distances, and warning signs will be prominently posted.

### 3.12 WASTE AND WATER MANAGEMENT

Water will be supplied to each camp as follows:

- The new water supply and treatment system (heated intake, ultra-violet disinfection) at Mary River will supply water to the new combined population at the camp site
- Water supply at the Milne Inlet site will consist of a holding tank, to be filled by truck from Philip's Creek during summer months and from a nearby lake during winter
- The Midway camp site will have water supplied in bottles and transported to the camp for use

Sewage and greywater will be treated and disposed of at each camp as follows:

- Sewage and grey water at Mary River will be treated using a packaged sewage treatment plant and the treated effluent will be discharged via a 2 km heat traced pipeline into Sheardown Lake
- Sewage and grey water at Milne Inlet will be treated using a packaged sewage treatment plant, and the treated effluent will be discharged by a heat-traced pipeline into the sea
- Latrine toilets will be used at the Midway camp site and the sewage will then be disposed of in the camp incinerator at Mary River

Solid wastes will be stored and disposed of as follows:

- Camp incinerators will be operated at each of the Mary River and Milne Inlet camps for disposal of combustible non-hazardous solid wastes
- A landfill will be constructed at Mary River for the disposal of non-combustible wastes such as plastics, rubber and metals
- Wastes generated at the Midway camp will be stored in containers or ore sacks and will be backhauled to Mary River for disposal by incineration or landfilling, as appropriate

## **SECTION 4.0 - TEMPORARY SUSPENSION**

A temporary suspension of activities involves the temporary cease of the bulk sampling program operations, either as planned or due to unforeseen circumstances.

A planned shutdown occurs when there is a potential for economic or operational difficulties that would cause a temporary cease of current operations at the project sites. The bulk sampling program could be temporarily suspended because of unforeseen circumstances such as a prolonged period of poor weather and related issues, fuel shortages or mechanical problems with critical equipment. Temporary suspension could last for a period of weeks to several months. The intention however, would be to immediately resume operations as soon as all issues have been resolved. All facilities will be secured in a manner similar to the seasonal shutdown of the existing Mary River camp.

### **4.1 BULK SAMPLE PITS**

The bulk sample pits have been designed to be free draining. Any blasted ore will be moved to a stockpile. The pits will be visually inspected as part of the monitoring program to identify any indications of acid generation or metal leaching, and any drainage that collects in or downstream of the bulk sample pits will be sampled and tested for general chemistry and metals.

### **4.2 STOCKPILES**

The weathered ore stockpile will be constructed with 2H:1V side slopes and to a height of 4 m which is expected to be physically stable in the long term. Inspection will be carried out to verify this. As well, any seepage observed from the weathered ore stockpile will be sampled and tested for general chemistry and metals.

Temporary ore stockpiles will be inspected for physical stability and re-grading of side slopes will be undertaken if required, prior to temporary suspension. If temporary suspension is implemented and temporary stockpiles will remain at either the crusher area or Milne Inlet longer than initially planned, shallow ditching will be excavated around the stockpiles to collect seepage for environmental monitoring.

### **4.3 CAMP AND RELATED FACILITIES**

The following measures will be undertaken at all camp facilities in a temporary suspension scenario:

- Tents and camp facilities (i.e., kitchens, outhouses, showers, warehouses, etc.) will be thoroughly cleaned and all open food and wastes incinerated. All unopened food supplies will be contained in sealed and secure containers so as not to attract any wildlife to the site.
- Oil stoves and propane systems will be shut off and supply oil drums and propane cylinders firmly closed

- Diesel generators will be shut down and winterized according to their manufacturer's procedures; fuel hoses will be drained and storage tanks connected to the power supply will be sealed and inspected

#### 4.4 EQUIPMENT

Heavy equipment and vehicles will be consolidated at either the Mary River or Milne Inlet camps. Small equipment will be returned to a designated warehouse where they will be securely stored.

#### 4.5 ROADS AND AIRSTRIPS

No closure measures are proposed for roads and airstrips during temporary suspension. An inspection of the airstrips and roads will be undertaken to ensure there is no impeded drainage or substantial erosion that requires attention.

#### 4.6 BORROW AREAS

Borrow areas will be progressively reclaimed as part of operations, including maintaining stable side slopes and restoration of natural drainage. The borrow areas will be inspected at the onset of temporary suspension, and re-grading will be completed as required to ensure the areas are physically stable.

#### 4.7 FUEL STORAGE

Bulk fuel storage facilities at Mary River and Milne Inlet sites will be inspected for leaks and all valves and dispensers closed and secured. Drums of fuel will be left within the lined containment areas. Empty fuel drums and propane cylinders will be returned to Pond Inlet.

#### 4.8 CHEMICALS

All chemicals present, such as cleaning supplies, lubricants, antifreeze, oils, and greases will be stored away in secure buildings and properly sealed.

#### 4.9 EXPLOSIVES

All explosives will be placed in the explosives magazines and locked.

#### 4.10 WATER SUPPLY AND WASTE MANAGEMENT

The water supply systems (tanks, pipes, and lines) will be completely drained, removed and stored away. Waste water treatment facilities will be shut down according to manufacturer's procedures, and any remaining sewage or sludge will be incinerated.

All combustible wastes will be incinerated and non-combustible wastes will be moved to the Mary River landfill.

4.11 MONITORING

Baffinland will arrange bi-annual site visits to inspect the camps, and repairs will be made as necessary.

Water quality monitoring will be carried out at the stockpile locations and the bulk sample pits as indicated above, and in accordance with the conditions of the water license.



## **SECTION 5.0 - FINAL ABANDONMENT**

Final abandonment would be undertaken at completion of the bulk sampling program, provided there are no immediate or pending plans to advance the project towards mine development.

Final abandonment may also occur if the bulk sampling program was terminated before completion due to unforeseen circumstances and a decision was made to cease all exploration activities at Mary River. Final abandonment will include removing all equipment and materials either off-site or into the on-site landfill (for inert materials), and restoring ground surfaces. Equipment and materials to be taken off-site will be transported overland to Milne Inlet. Arrangements will be made with a sealift contractor to collect the shipment of materials and equipment at Milne Inlet during Pond Inlet's scheduled sealift in August of any year.

Most materials and equipment found at the project sites will have some residual value for either re-sale or relocation to another exploration site. It is possible some or all of the camp infrastructure and equipment could be airlifted to another exploration site or could possibly be donated to the local communities. If there is no future use for materials in the area or they possess no residual value, they will be shipped to Montreal where they will either be salvaged or properly disposed.

Materials and equipment at the Project sites that are the property and responsibility of others will be removed from site by its owners and is not included in this A&R Plan. This would include drilling equipment, road construction equipment, mining equipment and aircraft.

### **5.1 BULK SAMPLE PITS**

The shallow pit areas created on Deposit No. 1 will be inspected for any physically unstable surfaces. The bulk sample pits have been designed to be free draining and will be left open. Rehabilitation measures will be undertaken if necessary to ensure the pits are free draining and that unstable areas do not remain. This may include additional blasting, excavation or backfilling using weathered ore.

As described in Section 3.3.2, the ore is not expected to generate acid or leach metals. The walls and floor of the two pits will be visually inspected as part of the monitoring program to identify any indications of acid generation or leaching, and any seepage that collects in or downstream of the bulk sample pits will be sampled and tested for general chemistry and metals.

If ore geochemistry results suggest that acid generation or metal leaching may occur, a contingency plan will be developed to mitigate these impacts. The concepts remain preliminary but may include quarrying of either local sand and gravel that contains carbonate minerals, or limestone rock from the nearby escarpment to the south, and placing these materials in sufficient quantity in or below the pits to neutralize acid and attenuate metals.

## 5.2 STOCKPILES

The weathered ore stockpile will be constructed with 2H:1V side slopes and to a height of approximately 4 m which is expected to be physically stable in the long term. Inspection will be carried out to verify this. As well, any seepage observed below the weathered ore stockpile during follow-up monitoring will be sampled and tested for general chemistry and metals.

Any temporary ore stockpiles at Mary River will be re-graded to ensure stable side slopes, and shallow ditching will be excavated around the stockpiles to collect seepage for environmental monitoring. Temporary ore stockpiles remaining at Milne Inlet upon final abandonment, considering the importance of this area to local users, will be removed by sealift. If the volume of materials is relatively small, consideration may be given to relocating the ore to the temporary ore stockpiles at Mary River.

If ore geochemistry results suggest that acid generation or metal leaching may occur, a contingency plan will be developed to mitigate these impacts. The concepts remain preliminary but may include quarrying of either local sand and gravel that contains carbonate minerals, or limestone rock from the nearby escarpment to the south, and placing these materials in sufficient quantity in proximity to the stockpiles to neutralize acid and attenuate metals. This could involve mixing of the neutralizing materials into the ore stockpile, or constructing a storage pad and transferring the ore onto the pad.

## 5.3 CAMP AND RELATED FACILITIES

Most materials found at the camp sites will have residual value, so if the camps can not be salvaged either through re-sale or relocation to another exploration project, the materials will be moved off-site by sealift. Tent facilities and Quonset buildings will be dismantled and, with the pre-fabricated trailers, will be transported overland to Milne Inlet. Wooden structures such as warehouses, outhouses, tent floors, bunk beds and tables will be dismantled, salvaged for re-use by others, or incinerated on site.

All camp areas will be inspected for signs of fuel spills and any contaminated materials excavated as described in Section 5.10. Ground surfaces will be re-contoured if necessary to ensure long-term physical stability.

Generators will be prepared for travel, transported overland to Milne Inlet, and sent to Montreal on sealift for re-sale. Fuel storage, hoses and filters associated with the power supply will be drained. Waste oil and residual fuels will be burned in the camp incinerator and oil/fuel filters will be managed as hazardous waste, contained and removed from site to a licensed waste disposal facility.

## 5.4 ROADS AND AIRSTRIPS

Airstrips will remain to allow for future access to the site for exploration as well as monitoring, although airstrip lighting will be removed. The Milne Inlet Tote Road and the access road to Deposit No. 1 will be inspected to ensure these areas are physically stable. Any areas of significant erosion

will be re-graded to improve long-term stability. Culverts along the Milne Inlet tote road will be removed (if required) and disposed of in an inert landfill at Mary River. The roadbed will remain for other users, in accordance with the road's designation of public access in the Nunavut Land Claim Agreement.

#### 5.5 BORROW AREAS

Borrow areas will be progressively reclaimed as part of operations, including maintaining stable side slopes and restoration of natural drainage. Final re-grading will be completed as required to re-establish natural drainage and ensure no excessive erosion occurs. Borrow area will be revisited as part of the monitoring program, to ensure no substantial thaw settlement has occurred that will necessitate further remedial action.

#### 5.6 FUEL STORAGE

Drums of fuel will be consolidated, inspected and securely sealed. Any open drums of diesel, off-specification fuel and waste oil will be disposed of in the camp incinerator. Sealed fuel drums will likely be sold locally or to other users in the region. Drums will be transported overland to Milne Inlet and loaded onto sealift. Empty fuel drums will be transported by sealift to Montreal where they will be returned to the vendor or properly discarded at a licensed disposal site.

Fuel bladders will be drained using compressed air, transferred to a truck, and relocated to Milne Inlet where they will be returned to Montreal for salvage. Small quantities of fuel in bladders will likely be incinerated on-site. If large volumes of fuel remain, consideration will be given to loading the fuel on a sealift and transporting to other users. The Mary River fuel storage facility will be emptied and decommissioned first, followed by the Milne Inlet facility once any excess fuel has been taken off site.

Containment for each fuel storage facility consists of an earthen berm lined with a petroleum-resistant geomembrane liner. Any bedding material inside the liner will be tested for petroleum hydrocarbons before being removed. Liners will be disposed of with bulky wastes in the inert landfill at Mary River. Soil beneath the lined areas will also be tested for petroleum hydrocarbons. Disposal of contaminated soils is described in Section 5.10.

#### 5.7 CHEMICALS

All chemicals, such as cleaning supplies, lubricants, antifreeze, oils, and greases will be placed in a sea container and will be transported off-site for either re-use or disposal.

Waste oil will be incinerated. Used batteries and any other hazardous waste will be taken off-site to a licensed disposal facility.

## 5.8 EXPLOSIVES

Unused explosives will be securely contained in magazines and removed from site. The explosives magazines will be transported to Milne Inlet and sent to Montreal via sealift for proper disposal or re-use.

## 5.9 WASTE AND WATER MANAGEMENT

All combustible non-hazardous wastes (including human waste) will be incinerated on site. Non-combustible bulky waste that has no salvage value will be landfilled on-site.

Existing bulky wastes from the 1960s, equipment and materials associated with recent project activities, will be inspected for any hazardous materials. Oil pans and fuel tanks will be drained and the oil or fuel incinerated. Any remaining hazardous components such as batteries, tanks and filters will be removed from site to a licensed off-site facility.

A landfill will be constructed as part of the bulk sampling program for the disposal of bulky inert wastes, including steel, rubber and plastics. Bulky wastes remnant of the 1960s will be relocated to the landfill. No organic or hazardous wastes will be disposed of in the landfill. The final location of the landfill will be determined in the future, with regard to soil conditions, drainage and proximity to water bodies. Landfill design will consider permafrost, and closure will likely include placement of a thick cover of fill that promotes the advancement of permafrost into the waste.

The water supply system (tanks and lines) will be drained, dismantled, and will be either dismantled for disposal in the landfill at Mary River or will be transported to Milne Inlet for salvage or disposal off-site.

Any greywater sumps will be abandoned in-place. Sewage treatment plants will be decommissioned in accordance with manufacturer procedures, and any remaining sewage or sludge, as well as sewage in latrine toilets at the Midway camp, will be incinerated. The treatment plants will be prepared for shipping and will be transported to Milne Inlet to be loaded onto sealift and shipped to other users. Alternatively, the treatment plants may be dismantled and disposed of in the inert landfill at Mary River.

## 5.10 CONTAMINATED SOILS

Any contaminated soils will be excavated using the skid steers or excavators and will be loaded into fibreglass ore sacks and removed off-site for disposal at a licensed treatment facility in Montreal.

## 5.11 TIMING AND SCHEDULE OF FINAL ABANDONMENT

The timing of final abandonment and reclamation is largely governed by site access and weather. Activities such as removal of lined containment facilities and the testing and excavation of contaminated soils must be completed during summer months when the ground surface is not frozen. Provided the road has been upgraded at the time of final abandonment, overland access will be year-round. Sealift is possible only during the open water period of August and September.

Upon completion of the bulk sampling program in September 2008, if final abandonment was implemented it will be possible to remove a portion of the heavy equipment and materials from site, but complete decommissioning of project facilities cannot occur while the program is still underway. Therefore, temporary suspension may occur through the winter period, with reclamation activities beginning in the spring and through the summer of 2009.

If final abandonment was unexpectedly implemented earlier, a similar schedule would apply, considering the timing constraints for reclamation activities and demobilization.

It is estimated that four months will be required to remove equipment and materials from Mary River with a crew of about 20 people. The current camp will be scaled down to 20-person capacity, initially, and then removed completely once all other restoration activities are complete. The restoration crew will move to Milne Inlet and complete restoration there.

Final abandonment could be undertaken in the months between March and August under favourable weather conditions, leading up to sealift in August or September.

## **SECTION 6.0 - FOLLOW-UP MONITORING**

In order to ensure the physical and chemical stability of various components of the sites after closure of the Mary River Project facilities, monitoring and follow-up inspections of all sites will be conducted.

The physical stability of the bulk sample excavation and weathered ore stockpile shall be monitored through visual inspection. If any temporary ore stockpiles remain, the physical stability of the stockpiles will be monitored by inspecting for tension cracks at the crest of any slopes, inspecting for signs of new progressive failure, and inspecting for erosion. The chemical stability of the site will be monitored through surface water sampling and analyses. Water samples will be collected a minimum of 1 year following the final abandonment of the site, or as otherwise dictated by the water license.

The pits will be visually inspected as part of the monitoring program to identify any indications of acid generation or leaching, and any seepage that collects in or downstream of the bulk sample pits will be collected for analytical testing for general chemistry and metals. This data, combined with forthcoming acid rock drainage and metal leaching test results, will determine how long environmental monitoring may be undertaken, and if contingency measures are required.

All development areas related to the project will be subjected to a closure inspection by a company representative or contractor, and a brief abandonment and restoration report with photographs will be prepared, documenting the reclamation work completed and the site conditions following closure.

A one time follow-up inspection of all sites will be carried out the year following the final abandonment, to ensure that conditions have not changed and remain stable.

## **SECTION 7.0 - ESTIMATED ABANDONMENT COSTS AND FINANCIAL ASSURANCE**

The estimated cost to complete the final abandonment work described in this A&R Plan is shown on Table 7.1.

The following assumptions have been made in developing the cost estimate:

- Contractor and Baffinland equipment that at site for the bulk sampling program will be available to carry out the final abandonment activities
- A dedicated sealift will be used to remove materials and equipment from site, so potential cost savings could be realized if demobilization activities were coordinated with the community sealift
- The monthly cost to operate the 20-person camp at Mary River during final abandonment will be the same as the current monthly cost to operate the current 80-person camp
- Approximately 500,000 L of unused fuel will be at Mary River and will require back-haul to Milne Inlet for off-site disposal
- All the iron ore bulk sample delivered to Milne Inlet is shipped to its destination, not requiring transport of the material back to Mary River.

Baffinland proposes to post financial assurance in the form of a credit note.

**SECTION 8.0 - CERTIFICATION**

This report was prepared, reviewed and approved by the undersigned.

Prepared by:



Richard Cook, B.Sc.  
Senior Environmental Scientist

Reviewed by:



Steve Aiken, P.Eng  
Manager Environmental Services

Approved by:



Ken D. Embree, P.Eng.  
Managing Director

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**TABLE 7.1**

**BAFFINLAND IRON MINES CORPORATION  
MARY RIVER PROJECT**

**BULK SAMPLING PROGRAM  
ABANDONMENT AND RESTORATION PLAN**

**ESTIMATED COSTS FOR FINAL ABANDONMENT**

Components and Tasks	Component Reclamation Cost
<b>Mining Areas</b>	
Inspect mining areas - included in camp operating costs	
Remedial blasting and/or excavation	\$ 10,000
<b>Stockpiles</b>	
Inspect stockpiles for physical stability - included in camp operating costs	
Recontour stockpile slopes, if required (using dozer)	\$ 5,000
<b>Camps and Related Facilities</b>	
Initial decommissioning of full-scale Mary River camp to 20-persons	
Final decommissioning of Mary River camp	
Truck containers of materials to Milne Inlet (20 containers)	
Decommission Midway camp (haul trailers to Milne)	
Decommission Milne Inlet camp	\$ 120,000
<b>Roads and Airstrips</b>	
Inspect and repair any erosion	
Remove airstrip lighting (2 airstrips)	\$ 15,000
<b>Borrow Areas</b>	
Recontour following any thaw settlement/erosion	\$ 10,000
<b>Fuel Storage Facilities (Bulk and Drums)</b>	
Return excess fuel at Mary River to Milne Inlet (assume 500,000 L )	
Drain, fold, and containerize Mary River bladder tanks	
Truck containers of tanks to Milne Inlet (3 containers)	
Drain, fold, and containerize Milne Inlet bladder tanks	
Remove geomembrane liner to landfill; recontour surface	\$ 55,000
<b>Chemicals and Explosives</b>	
Incinerate waste/unused oils during incineration operations (no cost)	
Prepare explosives magazines for shipping	
Ship magazines (16) and other chemicals to Milne Inlet	\$ 10,000
<b>Waste Management</b>	
Placement of waste materials into landfill	
Apply 1.5 m cover (dozer, truck)	\$ 28,000
<b>Contaminated Soils</b>	
Collect and test soil samples	
Excavate contaminated materials and backfill (loader and truck)	\$ 23,000
<b>General Site Area</b>	
Recontour Mary River site areas as required (using dozer)	\$ 24,000
<b>Sealift Materials from Milne Inlet to Montreal</b>	
Dedicated sea-lift for materials requiring off-site salvage or disposal	\$ 1,200,000
<b>Camp Operating Costs</b>	
Operate 20-person camp for 4 months (includes aviation)	\$ 3,000,000
<b>Environmental Monitoring</b>	
Site supervision during final abandonment; reporting	
1-Year site visit; reporting	\$ 150,000
<b>Total</b>	\$ 4,650,000

I:\102-00181-6\Assignment\Report\Report 7 Rev 0\Table 7.1 Cost Estimate.xls\Table 7.1 Closure Cost Estimate

17-Nov-06



**LEGEND:**

- Water
- Existing Community

Scale 65 32.5 0 65 130 195 260 325 Km  
(Approx.)



MARY RIVER PROJECT – BULK SAMPLING PROGRAM

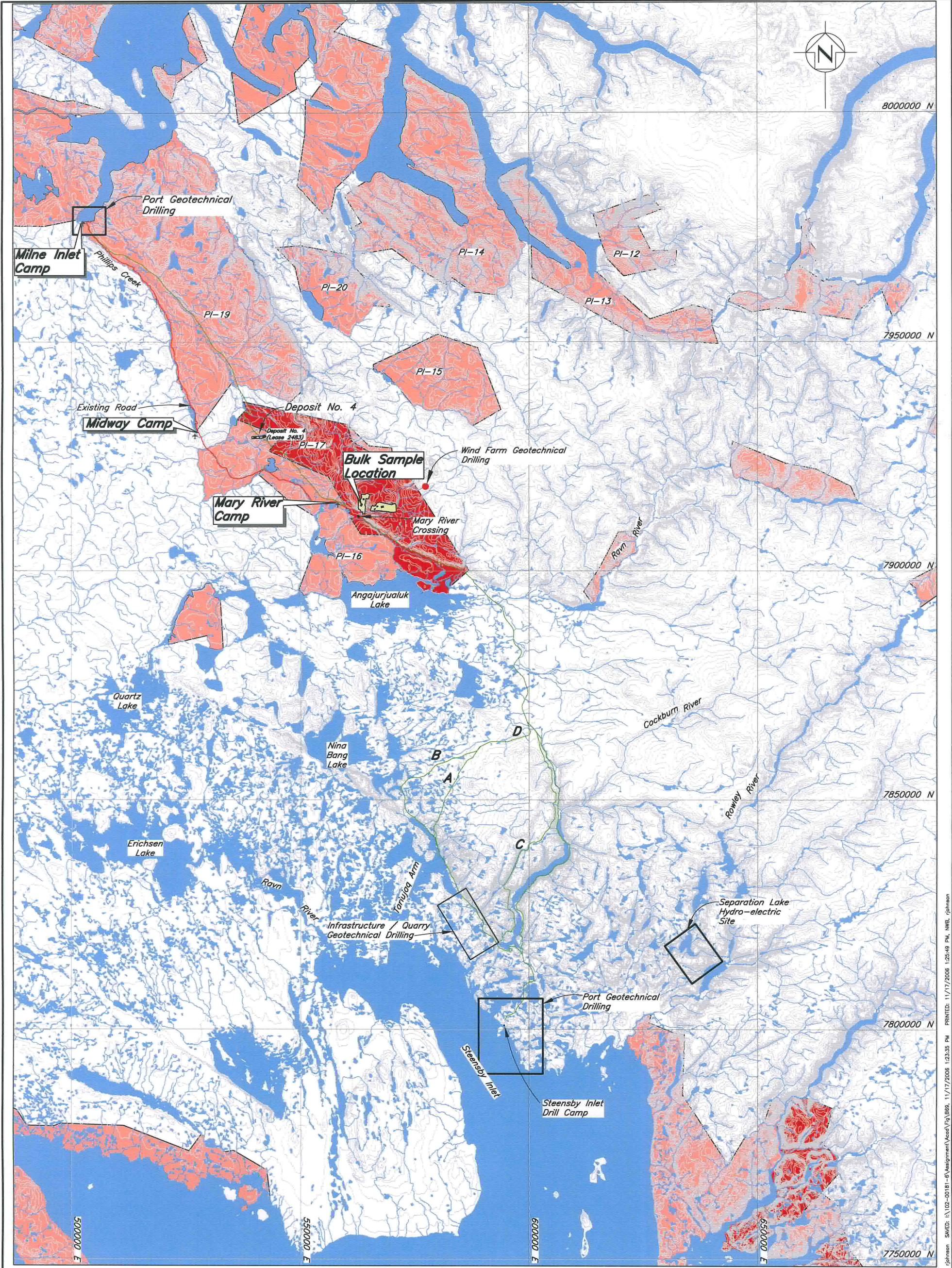
PROJECT LOCATION MAP

**Knight Piésold**  
CONSULTING

P/A NO. NB102-00181/6	REF. 7	REV. 0
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**FIGURE 1.1**





LEGEND:

- River
- Transportation Route Alternatives
- A, B.** South Route Alternatives
- Existing Road
- Contour
- Inuit Owned Land-Surface Only Excluding Minerals
- Inuit Owned Land-Surface and Subsurface including Minerals
- Mineral Leases
- Existing Airstrip

NOTES:

- Base Map © Her Majesty the Queen in Rights of Canada, Department of Natural Resources, (2004). All rights reserved. (Government of Canada, 2006).
- Coordinate grid is shown in UTM (NAD83) Zone 17 and is in metres.
- Transportation Route Alternatives were provided by Canarail.



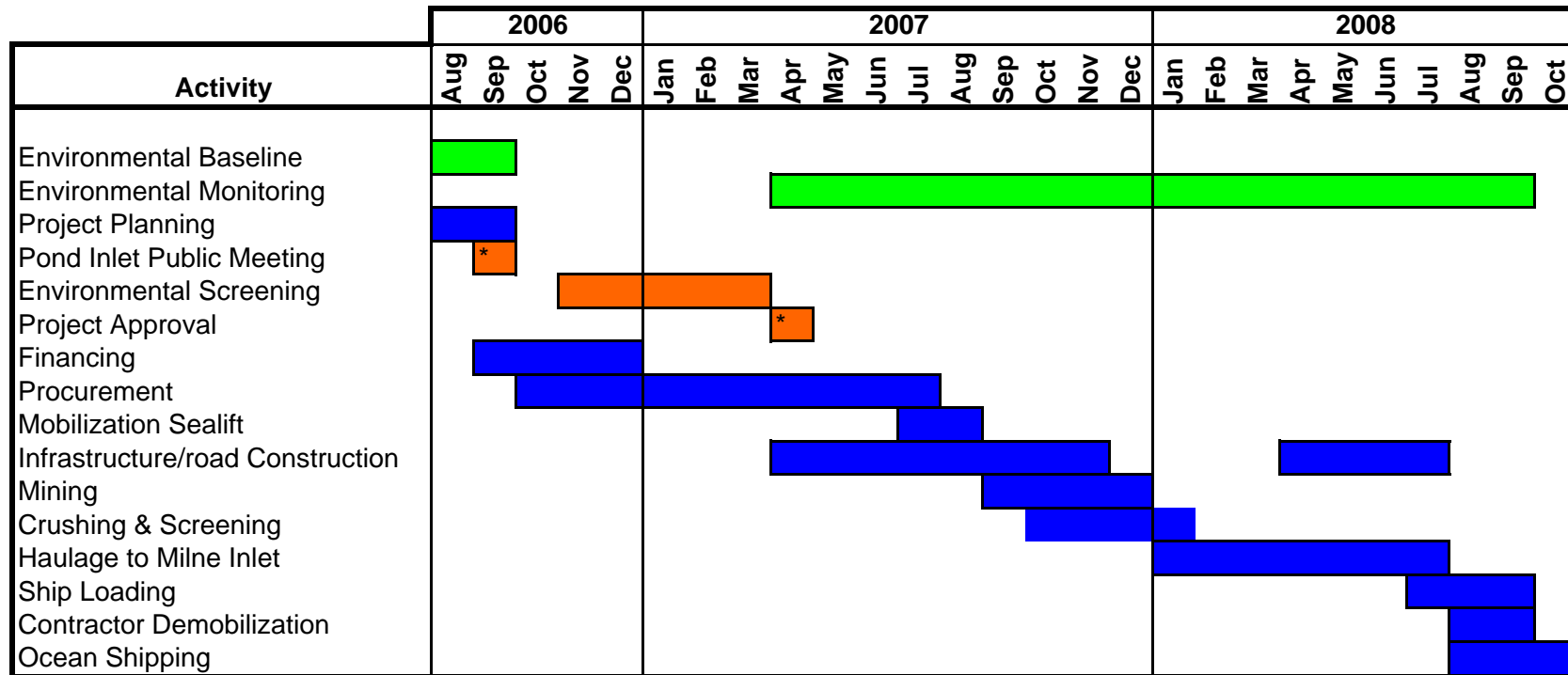
MARY RIVER PROJECT – BULK SAMPLING PROGRAM



LOCATION OF FACILITIES

P/A NO. NB102-00181/6	REF. 7	REV. 0
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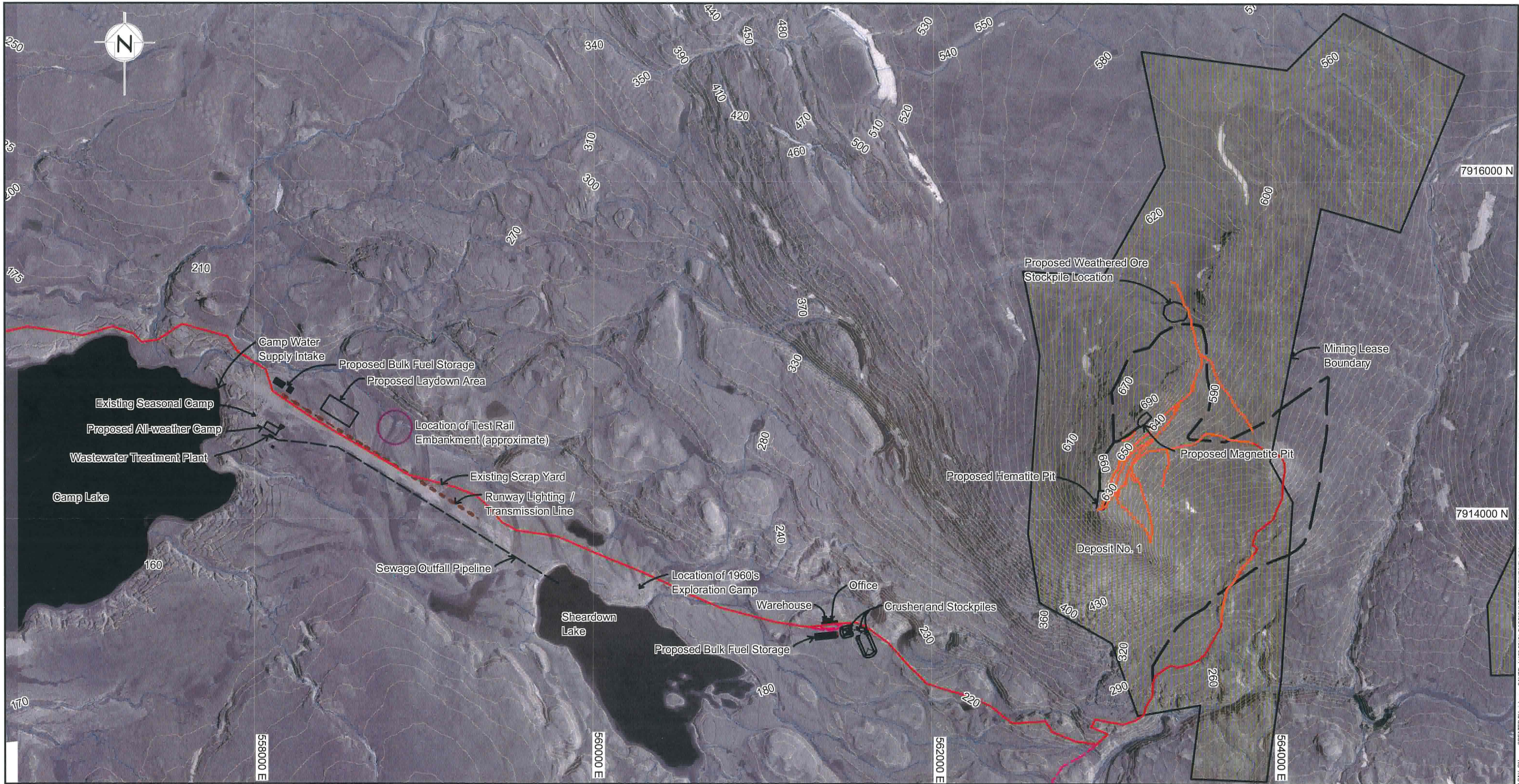
FIGURE 3.1





			
MARY RIVER PROJECT - BULK SAMPLING PROGRAM			
BULK SAMPLING PROGRAM SCHEDULE			
	P/A NO. NB102-00181/6	REF. 7	REV. 0
	FIGURE 3.2		





**LEGEND:**

- Existing Tote Road
- Existing Trails for Drills
- Proposed Pit / Stockpile Road
- New Roads
- River/Stream
- Mining Lease Boundary

**NOTES:**

- Airphotos and topography provided by Eagle Mapping (2005).
- Contour interval is 10 metres.
- Coordinate grid is shown in UTM (NAD83) Zone 17 and is in metres.
- Mining lease boundaries from Indian and Northern Affairs (2006).



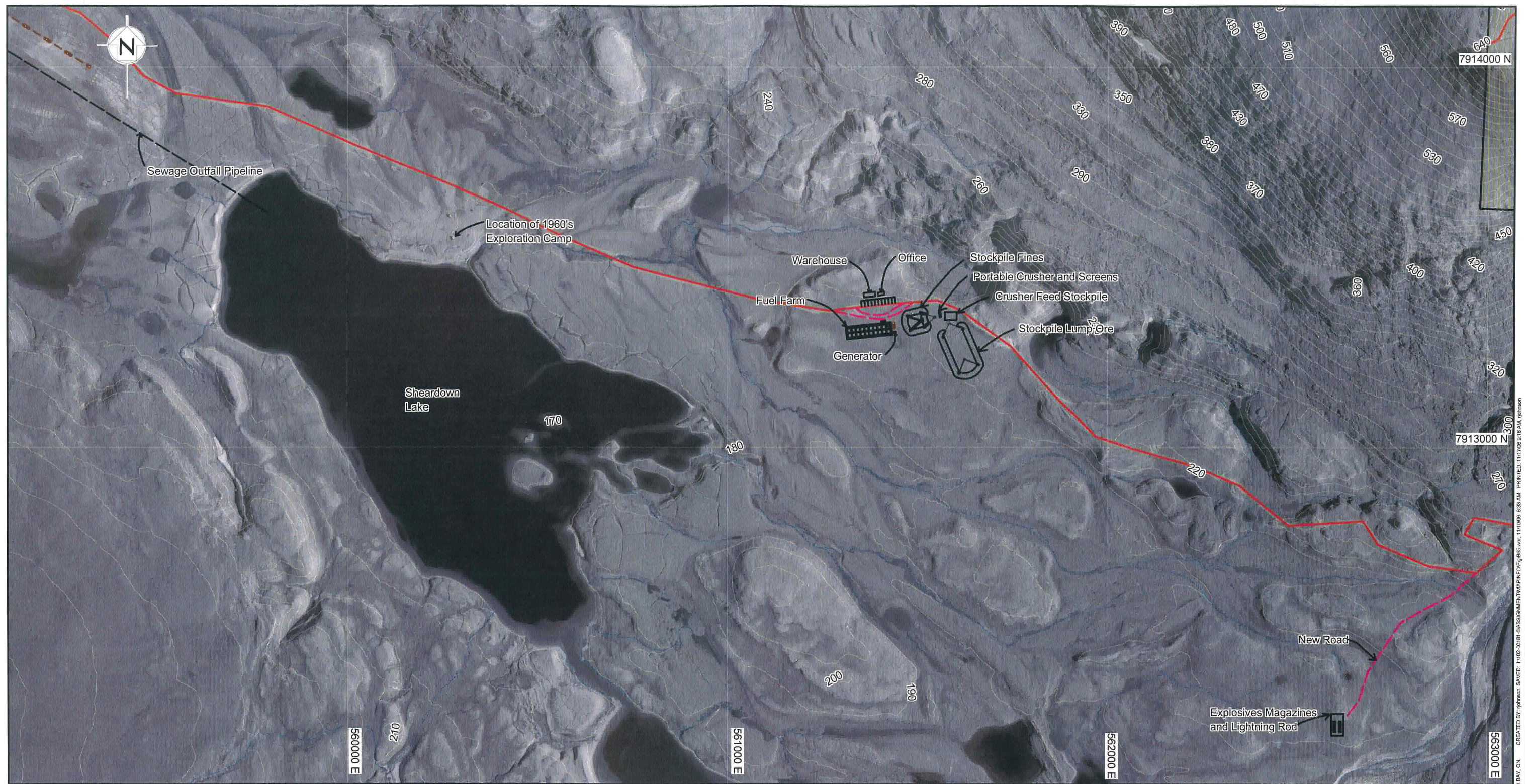
MARY RIVER PROJECT - BULK SAMPLING PROGRAM

MARY RIVER SITE LAYOUT

P/A NO. NB102-00181/6	REF. 7	REV. 0
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FIGURE 3.3





**LEGEND:**

- Existing Tote Road
- River/Stream
- Mining Lease Boundary

**NOTES:**

1. Airphotos and topography provided by Eagle Mapping (2005).
2. Infrastructure layout provided by B.H. Martin Consultants Ltd.
3. Contour interval is 10 metres.
4. Coordinate grid is shown in UTM (NAD83) Zone 17 and is in metres.

Scale 
0
250
500
 Metres

			
<b>MARY RIVER PROJECT - BULK SAMPLING PROGRAM</b>			
<b>ORE CRUSHING AREA</b>			
		P/A NO. NB102-00181/6	REF. 7
		REV. 0	<b>FIGURE 3.4</b>

NORTH BAY, ON. CREATED BY: jphinson. SAVED: I:\102-00181\BASSINMENT\MAP\FIG3.4.dwg. 11/10/06 8:33 AM. PRINTED: 11/17/06 9:16 AM. jphinson





**LEGEND:**

- Existing Tote Road
- New Road
- River/Stream
- Transmission Line
- Alternative Stockpile Location

**NOTES:**

1. Airphotos provided by Eagle Mapping (2005).
2. Infrastructure provided by B.H. Martin Consultants Ltd.
3. Contour interval is 5 metres and was provided by Eagle Mapping.
4. Coordinate grid is shown in UTM (NAD83) Zone 17 and is in metres.

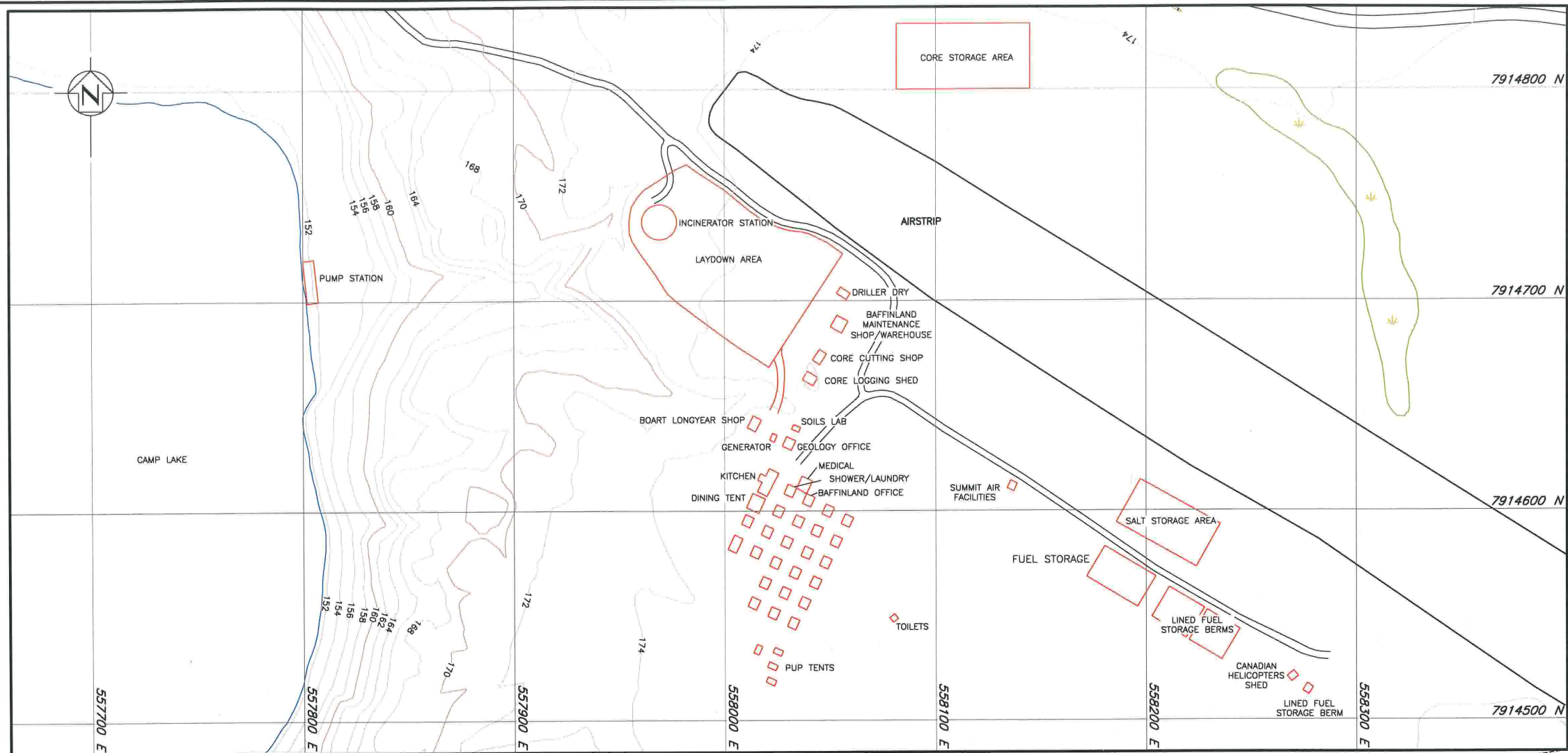


**MARY RIVER PROJECT - BULK SAMPLING PROGRAM**

**MILNE INLET SITE LAYOUT**

	P/A NO. NB102-00181/6	REF. 7	REV. 0
	<b>FIGURE 3.5</b>		





#### NOTES:

1. Coordinate grid is shown in UTM (NAD83) Zone 17 and is in metres.
2. Configuration based on 2005 mapping provided by Eagle Mapping and air photo interpretation. All layouts are approximate.
3. Red lines represent approximate location and configuration of new features not present on air photos.
4. Image from Quickbird satellite on August 10, 2005.



MARY RIVER PROJECT – BULK SAMPLING PROGRAM

EXPLORATION PROJECT SITE FACILITIES

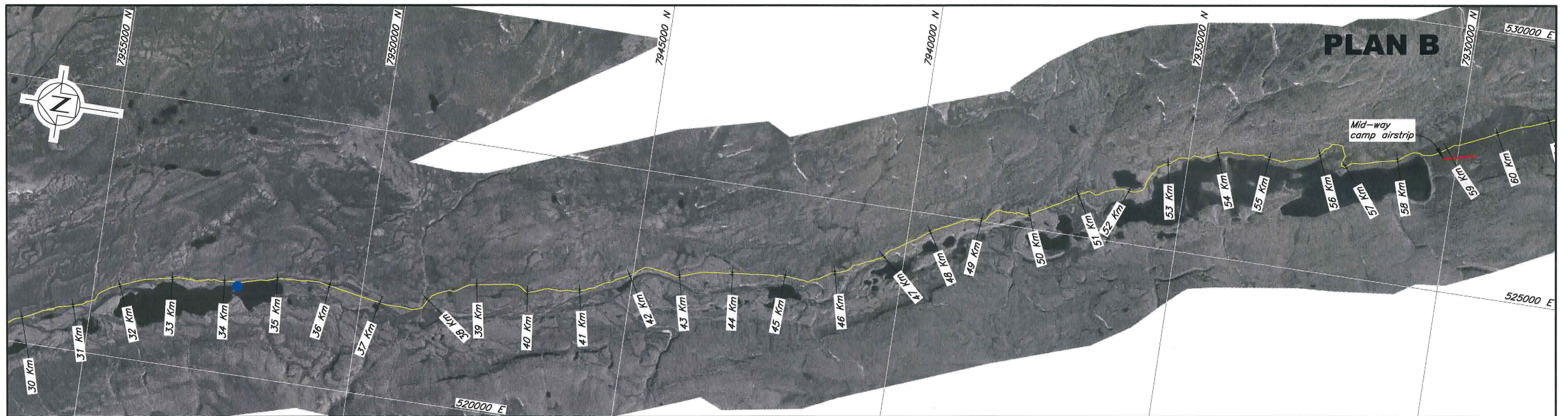
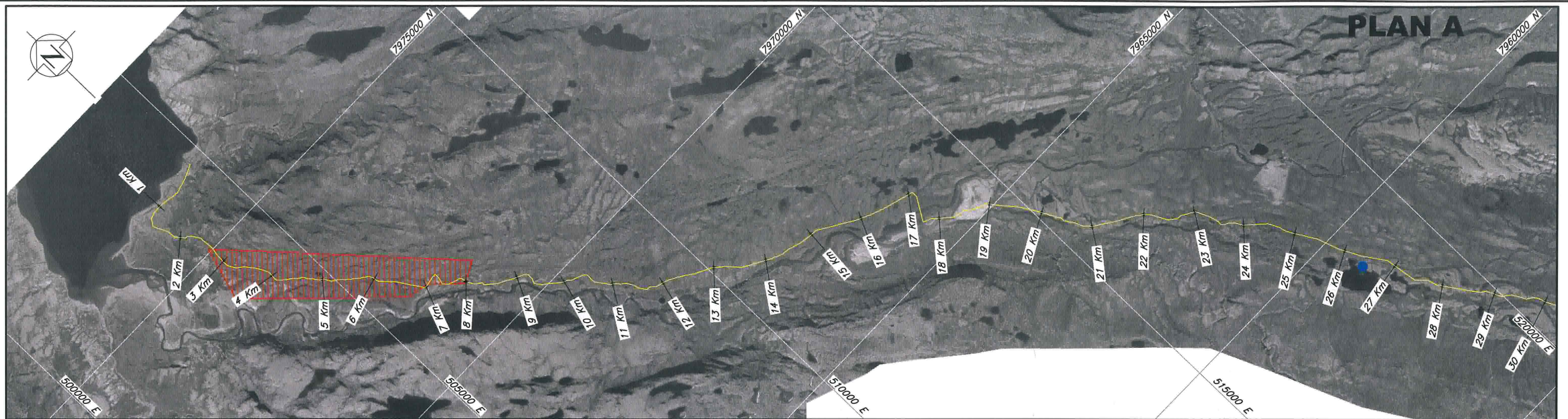
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CONSULTING

P/A NO. NB102-00181/6	REF. 7	REV. 0
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FIGURE 3.6



XREF FILE(S): Northern Route Ortho Photos Chalmers Check IMAGE FILE(S): Baffinland logo-big corp missing area (northern)\_3 missing area (northern)\_3.1 Sheet 1 Sheet 2 Sheet 3



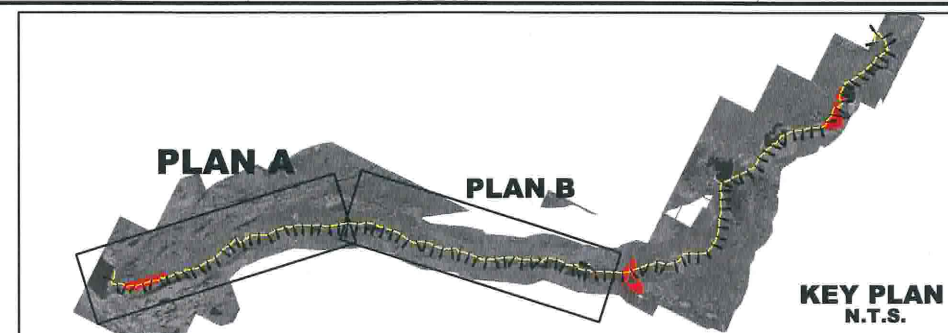
**LEGEND:**

-  Borrow Source Location
-  Existing Tote Road
-  Existing Airstrip
-  Proposed Water Take Location

**NOTES:**

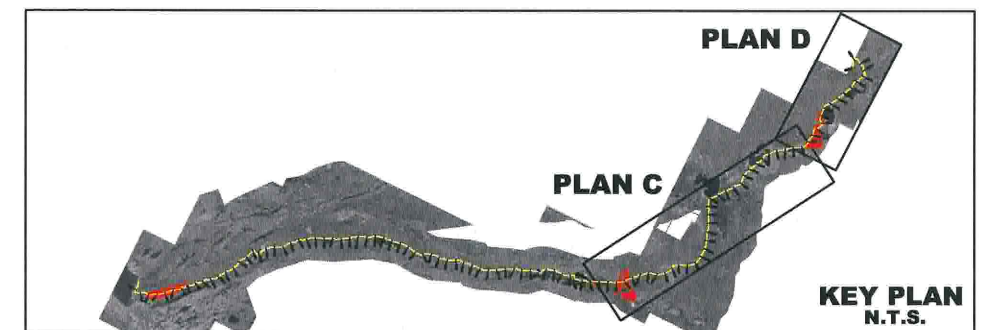
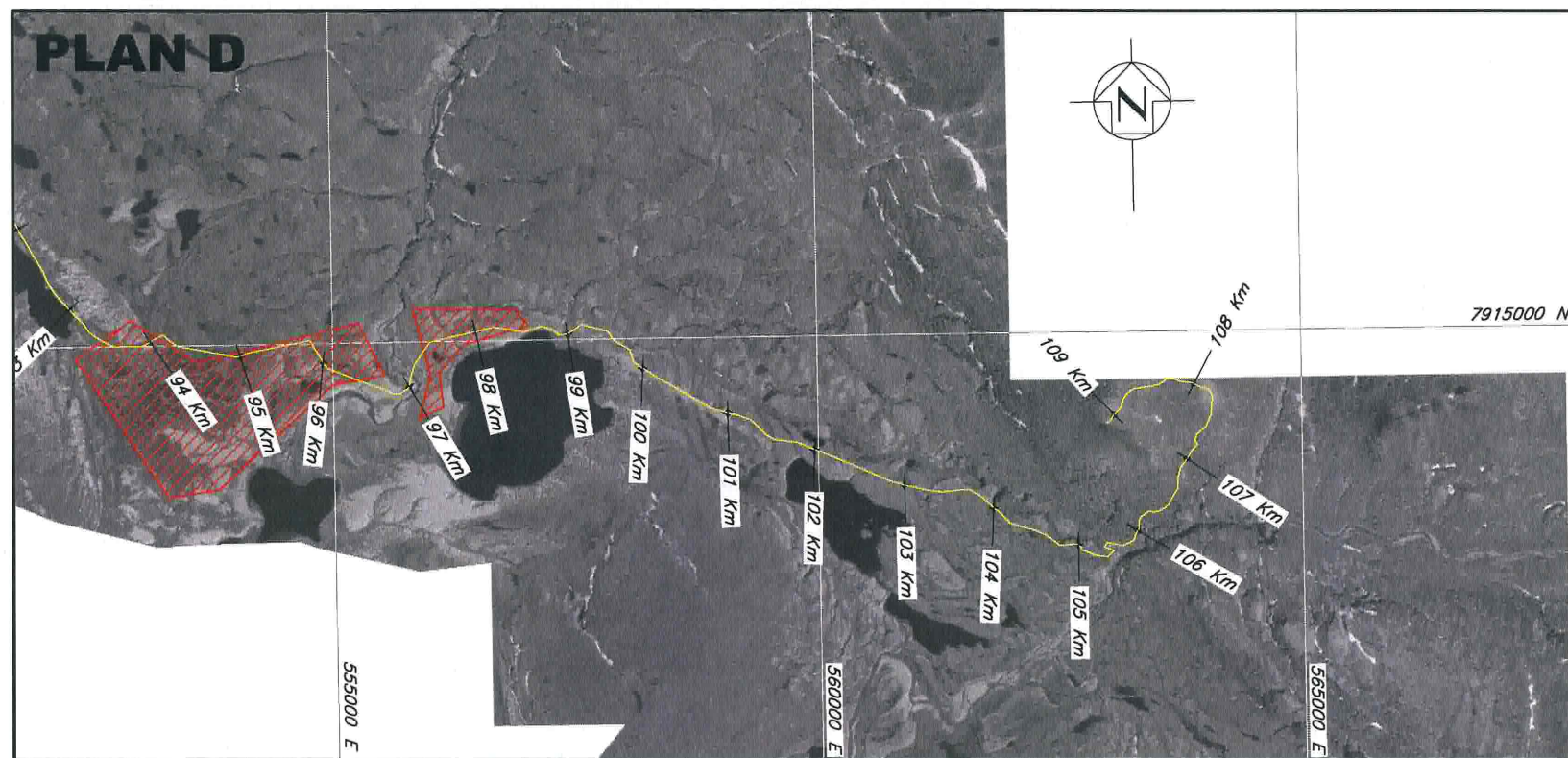
1. Airphotos provided by Eagle Mapping (2005).
2. Coordinate grid is shown in UTM (NAD83) Zone 17 and is in metres.

Scale  750 375 0 750 1500 2250 3000 3750 Metres




			
MARY RIVER PROJECT- BULK SAMPLING PROGRAM			
EXISTING MILNE INLET TOTE ROAD SHOWING BORROW SOURCES (SHEET 1 OF 2)			
		P/A NO. NB102-00181/6	REF. 7
FIGURE 3.7		REV. 0	







**LEGEND:**

-  Borrow Source Location
-  Existing Tote Road
-  Existing Airstrip

**NOTES:**

1. Airphotos provided by Eagle Mapping (2005).
2. Coordinate grid is shown in UTM (NAD83) Zone 17 and is in metres.



			
MARY RIVER PROJECT- BULK SAMPLING PROGRAM			
EXISTING MILNE INLET TOTE ROAD SHOWING BORROW SOURCES (SHEET 2 OF 2)			
	P/A NO. NB102-00181/6	REF. 7	REV. 0
	FIGURE 3.8		