APPENDIX 6B-3

GEOCHEMICAL EVALUATION OF RAILWAY QUARRY MATERIALS

TECHNICAL MEMORANDUM

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Date	**December 14, 2010**		

Subject **Interim ML/ARD Assessment of Railway Quarry Rock Samples Baffinland Mary River Project – Issued for DEIS**

1.0 INTRODUCTION

AMEC was retained by Baffinland Iron Mines Corporation (Baffinland) to conduct environmental studies in support of an environmental impact assessment (EIA). As part of the supporting environmental studies, AMEC assessed the metal leaching and acid rock drainage (ML/ARD) characteristics of rock samples to support future quarry development along the proposed railway alignment.

Thirty eight rock core samples were selected for testing from a set of stored samples at SGS Mineral Services (SGS) in Lakefield, ON. These rock samples were collected by Knight Piésold in 2008. This memo provides a summary of the geochemical testing of the selected samples.

2.0 GEOLOGY

Regional geologic mapping is available for the entire route of the railway alignment (Scott and de Kemp, 1998). The first 29 km or so of the proposed railway alignment heading generally east to south-east of the Mary River site follows the boundary between the relatively flat lying Paleozoic sedimentary rock and complex Precambrian terrane. The remaining generally southward leg of the railway alignment (some 120 km) traverses only Precambrian rocks. Paleozoic rocks along the northerly leg of the railway include the Cambrian-Ordovician age Gallery and Turner Cliffs Formations and the Ordovician age Ship Point Formation.

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The Gallery formation is ~340m thick medium to coarse grained quartzose sandstone with minor siltstone, conglomerate and shale, and rare breccia, dolomitic sandstone and dolostone. The Turner Cliffs Formation is ~310m thick shaly to pure dolostone with intra-beds of dolomitic clastic sedimentary rocks. The Ship Point Formation is 50 to 275 m thick cliff forming finely crystalline dolostone commonly silty or sandy and interbedded with clastic dolomitic rocks.

The most common Precambrian rocks are Archean age migmatitic gneisses and Paleoproterozoic age granitic migmatites. The migmatites and gneisses tend to be heterogeneous with common inclusions and bands of mafic, metasedimentary and other granitic rocks. Other common Precambrian rocks along the route include Archean and Paleoproterozoic granitic intrusive rocks. Less common, but locally important in places along the route are the Archean Mary River Group rocks which are predominantly siliciclastic and mafic volcanic rocks.

3.0 TESTING PROGRAM

3.1 Sampling

Samples available for this study were collected as part of previous work by Knight Piésold mostly between July and September 2008. These samples consisted of drill core, surface saw-cut, surface grab and rock chip samples. A portion of this 2008 work by Knight Piésold was directed at geochemical assessment with respect to ML/ARD; however, samples were not analyzed at that time, but rather were stored at SGS Lakefield. The list of samples, as well as the sampling techniques and methodology employed by Knight Piésold, are documented in the memo by Knight Piésold (2010) (attached). AMEC was directed to identify a sub-set of these stored samples suitable for ML/ARD assessment. Available borehole logs from the Knight Piésold work were also provided at the request of AMEC to aid in sample selection.

3.2 Sample Selection for Testing

A review of the available information, determined that the most suitable samples for geochemical testing were the rock core samples. The increased surface areas of the surface saw-cut, chip and grab samples may have resulted in additional weathering and oxidation, making their ML/ARD characteristics unrepresentative of the pristine rock in the proposed quarry areas. AMEC has assumed that storage conditions of the rock core samples at SGS were sufficiently dry to have had a minimal effect on the samples during the two years of storage. The core samples were collected from 41 boreholes with sample depth varying from 3.9 to 138.6 m. In total, 105 rock core samples out of the 156 tabulated by Knight Piésold had corresponding borehole log information available.

Based on the available number of samples and the fact that AMEC was not involved in the siting of any of the quarries or sampling locations, a preliminary lithology-based strategy was adopted for sample selection. Samples were selected on the basis of recorded lithology and spatial distribution along the proposed railway alignment. Sample site spacing based on this strategy is on the order of a sampled site every 3 to 7 km along the route. Sample descriptions by Knight Piésold were generally consistent with the government mapped regional geology (Scott and de Kemp, 1998).

In total, 38 rock core samples from 26 boreholes were selected for geochemical testing. Where available, two samples were selected from each borehole. These included 7 sandstone, 6 granite, and 25 granitoid gneiss samples, according to rock descriptions provided by Knight Piésold.

3.3 Testing Methods

Laboratory analyses were conducted at SGS Lakefield to assess the ML/ARD characteristics of the samples. Testing methodologies followed those described in the document ***Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials*** (MEND, 2009).

Analytical testing conducted on the samples consisted of:

- Acid-base accounting (ABA) including total sulphur, sulphate sulphur, sulphide by difference, total carbon (TC), total inorganic carbon (TIC), modified Sobek NP, and paste pH;
- Single addition Net Acid Generation (NAG) testing;
- Total metals by aqua regia digestion with ICP-MS finish;
- Leachable metals by the Shake Flask Extraction (SFE) test;
- Mineralogy by Rietveld XRD.

All rock samples were analyzed for ABA, NAG and total metals. The SFE and Rietveld XRD analyses were performed on selected samples.

4.0 GEOCHEMICAL TESTING RESULTS

4.1 Acid Base Accounting (ABA)

Results of ABA testing are summarized in Figure 1, with detailed results presented in Table 1. For the purposes of this screening level assessment, acid potential (AP) has been conservatively interpreted as maximum acid potential calculated on the basis of total sulphur.

Overall findings of these ABA results, based on rock descriptions provided by Knight Piésold are summarized as follows:

- All samples exhibited very low to low carbonate NP and low to moderate Sobek neutralization potential (NP).
- Rocks identified as granites and sandstone consistently exhibited very low acid potential (AP).
- Granite samples had neutralization potential ratios (NPR) ranging from 10 to 100.
- Sandstone samples had NPR values ranging from 19 to 24.
- Rocks identified as granitoid gneisses had a usually low but variable AP with low carbonate NP and low to moderate Sobek NP.
- Two granitoid gneiss samples had NPR values <2, with the remainder having NPR values ranging from 3 to 90.

Paste pH of the granite and granitoid gneiss rocks ranged from 8.6 to 10.1 (median 9.8). The paste pH of sandstone samples was distinctly lower and ranged from 6.1 to 7.9 (median 6.6).

Results of NAG testing on the 38 rock samples are shown in Table 2. The NAG test is a complimentary test to ABA which provides an assessment of the potential of a sample to generate acid. Values of NAG_{pH} greater than 4.5 indicate that a sample has little potential to produce net acidity in the future. The majority of rock samples (36 of 38 samples) had NAG_{pH} values greater than 4.5. The NAG_{pH} of two granitoid gneiss samples were below 4.5 suggesting the potential to produce net acidity. The two samples with low NAG_{pH} were the same two samples that exhibited the NPR <2 in traditional ABA testing.

4.2 Metal Analysis

4.2.1 Total Metals (aqua-regia extraction)

In order to identify metals of potential environmental significance, total metals results were compared to average continental crustal abundances (Price 1997). The concentration of an element was considered enriched if concentrations were greater than ten times the average crustal abundance. Metal results are presented in Table 3. It should be noted that the total concentration of an element does not determine the metal leaching potential of that element.

In general, all rock samples contained low metal contents and only two results were present that exceeded 10 times the average crustal abundance. No metal enrichment was detected from the samples identified in borehole logs as granite or sandstone. A single highly anomalous Ni value was reported from one granitoid gneiss sample, with a concentration of 2000 µg/g in comparison to 750 µg/g for 10 times crustal abundance. The bismuth content of another granitoid gneiss sample was 0.11 µg/g compared to ten times the average crustal abundance of of 0.085 µg/g. This bismuth concentration is close to the MDL of 0.09 µg/g..

4.2.2 Leachable Metals

Six samples representing the three different rock types identified from borehole logs underwent Shake Flask Extraction (SFE) testing. The SFE testing results (Table 4) were compared to the Metal Mining Effluent Regulation values (MMER, 2002). More stringent guideline values are also provided for reference purposes only. Guidelines for protection of aquatic life and the drinking water guidelines (CWQG-PAL and CDWG values in Table 4) which are focused on the preservation of water quality in the receiving waterbody for specific receptors (i.e., aquatic life, drinking water) are conservative since these values represent concentrations at point of use or exposure, not point of discharge. These guidelines are useful to identify parameters of interest when evaluating final discharge to receiving waters.

Results of SFE analyses (Table 4) for all samples, had a final pH that was neutral to alkaline with generally low concentrations of metals and no exceedances of MMER limits. The pH in SFE leachates for a number of these samples marginally exceeded the MMER limit of 9.5. This is not unexpected for freshly exposed rock materials under agitation and at the high solid-solution ratios of the test. The high pH (and corresponding elevated aluminum concentrations) were likely related to the weak alkalinity associated with aluminosilicate mineral dissolution. It is unlikely the elevated pH (and associated aluminum) will be observed under field conditions.

Two additional samples have been submitted for SFE analysis on the basis of ABA and total metal results (see Tables 1 and 3).

4.3 Mineralogy

The same six samples selected for SFE analysis were also analyzed by Rietveld XRD with results presented in Table 5. Carbonates and sulphides were not detected in any of the samples analyzed.

Mineralogy of the selected samples is generally consistent with rock descriptions in the Knight Piésold borehole logs for five of the six samples. The lack of quartz and the high plagioclase feldspar content of one of the “granite” samples indicated this rock is not granitic, but more likely an intermediate intrusive or other calcium-plagioclase rich rock. The other granite sample and the granitoid gneiss samples exhibited similar mineralogy consistent with granitoid rocks. The major differences among these three granitoid samples were variations in the feldspar mineral contents. Minor ferromagnesian mineral content of one of the gneiss samples had chlorite (clinochlore) instead of biotite.

Sandstone samples were quartz-rich with only minor feldspar and trace clay mineral kaolinite. Two additional samples were submitted for XRD analysis on the basis of ABA and total metal resuts (see Tables 1 and 3).

5.0 DISCUSSION OF RESULTS

Characterization of the net acid potential of the rock follows the criteria outlined in MEND (2009). The threshold between potentially acid generating (PAG) and non potentially acid generating (Non-PAG) materials is defined by the neutralization potential ratio (NPR), a measure of the ratio of the acid potential (AP) to neutralization potential (NP). Following the guidelines provided in MEND (2009), mine rock materials with NPR >2 are classified as Non-PAG. Mine rock samples with NPR <1 are considered PAG and materials with NPR between 1 and 2 are classified as having an uncertain potential of generating acid. Based on NPR values, the majority of rock samples (95%) are Non-PAG materials.

Results of this ML/ARD assessment suggest that potential railway quarry rock, represented by the samples analyzed, will have little potential to generate acid or produce leachable metals at concentrations of concern. The sulphide content of the samples analyzed were typically low (average 0.02%) and more than 50% of the samples contained negligible amounts of sulphide. The minimum total NP measured was very low (3 to 6 kg CaCO3/t for sandstone and granitic rocks respectively). However, even with this low NP, a sulphide content in excess of about 0.1% is still required to be classified as net acid generating.

The two samples with NPR <2 (based on MPA, or maximum acid potential) are from the same regionally mapped migmatite unit in the vicinity of Cockburn Lake; however, they are from two sites more than 4 km apart. Other gneiss samples at each of these sites and a site in between have NPRs ranging from 3 to 78. This suggests that PAG rock can occur within the migmatite unit in this area, but its distribution is complex.

Of the 38 samples in total, 36 had metal contents less than 10 times the average crustal abundance. A single highly anomalous sample with Ni at a concentration more than 10 times average crustal abundance also contains anomalous Mg (7.4 wt.%) and had a NPR of 70 and carbonate NPR of 15. Reitveld XRD and SFE analysis is currently underway on this sample to determine its mineralogical composition and the presence or absence of readily leachable metals of this apparently unique sample. SFE analyses on otherwise typical samples of each of the three rock types indicated low levels of easily leachable metals.

This lithologically-based screening study of targeted sandstone, felsic intrusive and gneissic rocks within the railway alignment suggests these materials are suitable as quarry source material with low potential for ML/ARD. Additional analysis is required at the individual quarry scale that considers anticipated tonnages to be utilized and more completely verifies whether PAG and/or metal leaching materials are present. Future evaluations would benefit from greater consideration of the regional geological mapping in relation to specific quarry locations and more detailed geological study of the proposed quarry rocks. In particular, this work suggests that sandstones and intrusive granitic rocks show greater homogeneity and less potential for ML/ARD, and may require lower levels of characterization; whereas, the heterogeneity of the gneisses (probably migmatites) may warrant a greater level of scrutiny, especially for the unit in the vicinity of Cockburn Lake.

6.0 CONCLUSIONS

A lithologically-based ML/ARD screening assessment has been completed on targeted sandstone, felsic intrusive and gneissic rocks sampled by Knight Piésold in 2008 along the proposed railway alignment.

Based on the results of this assessment, the following conclusions are made.

- The three rock-types investigated along the proposed railway alignment appear to have a low potential for metal leaching and acid rock drainage (ML/ARD) and should be suitable as quarry sources.
- However, due to the screening level nature of this assessment, individual quarry sites should be subjected to additional site specific ML/ARD characterization.
- The relatively low NP in most of these rock types means that the presence of low contents of sulphide could result in ML/ARD conditions. Diligence through adequate levels of sampling will be necessary to ensure that even low concentrations of sulphide are identified.
- Two samples of gneiss were identified that are potentially acid generating. This result and the expected heterogeneity of this unit suggest a greater level of characterization of gneiss over the other rock types may be warranted.
- Better integration of regional geological information may aid in further assessment in the Precambrian terrane. Characterizing on the basis of specific mapped units rather than simply “granite” and “gneiss” may lead to more predictable and cost effective management of potential ML/ARD.

7.0 FUTURE WORK

A small number of pending analyses for XRD and SFE will be integrated with this data upon receipt from the laboratory. These results may provide additional detail on the more anomalous samples within this data set, but are not expected to change the overall findings.

Development of the proposed quarries will require, additional site specific sampling and analysis to assess each location to an acceptable level of detail for regulatory review. This data and additional stored samples at SGS Lakefield may be suitable to supplement these additional studies, where sample locations can be adequately verified as directly representative of quarry material. Further assessment could benefit from integration of regional geological information with site scale geology.

8.0 REFERENCES

Canadian Council of Ministers of the Environment. 2007, Canadian Water Quality Guidelines for the Protection of Aquatic Life.

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Knight Piésold. 2010. Summary of Railway Quarry Sample Collection for Geochemical Testing – Memorandum (NB102.181/25-A.01, September 2010).

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Scott, D.J. and de Kemp, E.A. Bedrock geology compilation, northern Baffin Island and northern Melville Peninsula, North West Territories; Geological Survey of Canada, Open File, 3633, scale 1:500,000.

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Attachments:
Table 1: Acid Base Accounting Analysis of Rock Samples
Table 2: Net Acid Generating Analysis of Rock Samples
Table 3: Total Metal Analysis of Rock Samples
Table 4: Shake Flask Extraction Analysis of Rock Samples
Table 5: Mineralogy of Rock (quantitative Rietveld phase analysis (%wt.))
Figure 1: Railway Quarry Rock Samples – Neutralization Potential vs. Acid Potential
Memo From Knight Piésold Consulting – Summary of Railway Quarry Sample Collection for Geochemical Testing

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TABLES

Table 1. Acid Base Accounting Analysis for Rock Samples

Sample ID	Rock Type	Paste pH	Total Sulphur	Sulphate Sulphur	Sulphide Sulphur*	Total Carbon	AP*	NP	Carb-NP	NPR	Carb-NPR
			(wt.%)				(kg $CaCO_3$/tonne)				
BH3-2008-146 ARD-01	Granite	10.0	0.005	<0.01	<0.01	0.018	0.2	9.0	1.5	58	10
BH3-2008-146 ARD-03	Granite	9.9	<0.005	<0.01	<0.01	0.015	0.2	16	1.3	101	8
BH3-2008-178 ARD-01	Granite	9.8	0.013	0.01	<0.01	0.029	0.4	7.3	2.4	18	6
BH3-2008-179 ARD-02	Granite	9.9	0.034	0.03	<0.01	0.020	1.1	11	1.7	10	2
BH3-2008-180 ARD-03	Granite	9.9	0.028	0.03	<0.01	0.047	0.9	10	3.9	12	4
BH4-2008-125RD ARD-01	Granite	9.6	0.010	0.01	<0.01	0.030	0.3	5.8	2.5	19	8
BH4-2008-125RD ARD-03	Granite	9.7	0.017	0.02	<0.01	0.027	0.5	7.3	2.3	14	4
BH2007-36 ARD-01	Granitoid gneiss	9.4	0.133	0.09	0.043	0.036	4.2	17	3.0	4	1
BH2007-36 ARD-03	Granitoid gneiss	9.9	0.169	0.08	0.089	0.020	5.3	22	1.7	4.1	0
BH3-2008-148 ARD-01	Granitoid gneiss	9.6	0.025	0.03	<0.01	0.076	0.8	15	6.3	19	8
BH3-2008-148 ARD-03	Granitoid gneiss	9.9	<0.005	<0.01	<0.01	0.052	0.2	12	4.3	74	28
BH3-2008-165RD2 ARD-01	Granitoid gneiss	9.9	0.066	0.04	0.026	0.016	2.1	14	1.3	7	1
BH3-2008-165RD2 ARD-03	Granitoid gneiss	9.9	0.026	0.03	<0.01	0.023	0.8	7	1.9	9	2
BH3-2008-83 ARD-03	Granitoid gneiss	10.0	0.005	<0.01	<0.01	0.069	0.2	12	5.8	78	37
BH4-2008-83 ARD-01	Granitoid gneiss	10.1	0.008	<0.01	<0.01	0.026	0.3	9	2.2	34	9
BOR12B-DH1 ARD-01	Granitoid gneiss	9.9	0.008	<0.01	<0.01	0.017	0.3	10	1.4	38	6
BOR12B-DH2 ARD-03	Granitoid gneiss	9.5	0.151	0.06	0.091	0.019	4.7	9.2	1.6	1.9	0
BOR12B-DH3 ARD-02	Granitoid gneiss	9.8	0.045	0.03	0.015	0.017	1.4	10	1.4	7	1
BOR13A-DH1 ARD-01	Granitoid gneiss	8.9	0.006	<0.01	<0.01	0.165	0.2	17	14	91	73
BOR13A-DH1 ARD-03	Granitoid gneiss	9.4	<0.005	<0.01	<0.01	0.017	0.2	6.0	1.4	38	9
BOR7D-DH1 ARD-01	Granitoid gneiss	9.5	0.008	<0.01	<0.01	0.068	0.3	10	5.7	41	23
BOR7D-DH2 ARD-02	Granitoid gneiss	9.8	0.032	0.03	<0.01	0.024	1.0	10	2.0	10	2
BOR7D-DH3 ARD-03	Granitoid gneiss	9.9	0.020	0.02	<0.01	0.021	0.6	9	1.8	14	3
BR13-DH1(RD)-ARD-01	Granitoid gneiss	9.9	0.071	0.04	0.031	0.029	2.2	6	2.4	2.8	1
BR13-DH1(RD)-ARD-03	Granitoid gneiss	9.8	0.416	0.24	0.176	0.034	13.0	7	2.8	0.5	0
BR1B-DH ARD-02	Granitoid gneiss	8.6	0.046	0.05	<0.01	0.258	1.4	96	22	67	15
BR1C-DH ARD-01	Granitoid gneiss	9.5	0.012	0.01	<0.01	0.038	0.4	18	3.2	48	8
BR1C-DH ARD-03	Granitoid gneiss	9.2	0.052	0.04	<0.01	0.077	1.6	19	6.4	12	4
BR3A-DH2 ARD-02	Granitoid gneiss	9.3	<0.005	<0.01	<0.01	0.007	0.2	5.2	0.6	33	4
BR3A-DH3 ARD-01	Granitoid gneiss	9.5	<0.005	<0.01	<0.01	0.007	0.2	6.6	0.6	42	4
BR7-DH1 ARD-01	Granitoid gneiss	9.7	0.035	0.04	<0.01	0.026	1.1	10	2.2	9	2
BR7-DH1 ARD-03	Granitoid gneiss	9.8	0.049	0.03	0.019	0.018	1.5	12	1.5	8	1
BR3A-DH1 ARD-01	Sand	7.1	<0.005	<0.01	<0.01	0.010	0.2	3.0	0.8	19.2	5
BOR2A-DH1 ARD-01	Sandstone	6.6	<0.005	<0.01	<0.01	0.009	0.2	3.8	0.8	24	5
BOR2A-DH1 ARD-02	Sandstone	6.1	<0.005	<0.01	<0.01	0.010	0.2	3.5	0.8	22	5
BOR2A-DH2 ARD-03	Sandstone	6.6	0.005	<0.01	<0.01	0.007	0.2	3.3	0.6	21	4
BR3A-DH1 ARD-02	Sandstone	6.7	<0.005	<0.01	<0.01	0.007	0.2	3.0	0.6	19.2	4
BR3A-DH2 ARD-03	Sandstone	7.9	<0.005	<0.01	<0.01	0.008	0.2	3.5	0.7	22	4
No. of sample		38	38	38	38	38	38	38	38	38	38
Minimum		6.1	0.005	0.010	0.010	0.007	0.2	3.0	0.6	0.5	0.2
Maximum		10.1	0.416	0.240	0.176	0.258	13.0	96	22	101	73
Mean			0.041	0.030	0.021	0.037	1.3	12	3.1	9	2
Median		9.7	0.013	0.010	0.010	0.022	0.4	9.4	1.8	24	5
Standard Deviation		1.1	0.074	0.040	0.032	0.047	2.3	15	3.9	26	13
10^{th} Percentile		7.0	0.005	0.010	0.010	0.008	0.2	3.5	0.6	4.1	0.7
90^{th} Percentile		9.9	0.090	0.053	0.035	0.071	2.8	17	5.9	69	17

Notes:

AP = Acid potential in tonnes $CaCO_3$ equivalent per 1000 tonnes of material.

* AP is calculated conservatively from the total sulphur content (maximum potential acidity).

NP = Neutralization potential in tonnes $CaCO_3$ equivalent per 1000 tonnes of material.

Carbonate NP is calculated from total carbon originating from carbonates and is expressed in kg $CaCO_3$/tonne.

NPR = Net Potential Ratio = NP/AP; Carb-NPR = Carb-NP/AP

Shaded samples selected for SFE and Reitveld XRD analysis based on ABA or aqua-regia metal results (results pending).

Table 2. Net Acid Generating Test Results on Rock Samples

Sample ID	Rock Type	NAGpH	NAG (pH 4.5)	NAG (pH 7.0)
			kg H2SO4/tonne	kg H2SO4/tonne
BH3-2008-146 ARD-01	Granite	6.94	0	0.7
BH3-2008-146 ARD-03	Granite	7.17	0	0.0
BH3-2008-178 ARD-01	Granite	6.92	0	0.7
BH3-2008-179 ARD-02	Granite	7.02	0	0
BH3-2008-180 ARD-03	Granite	7.22	0	0
BH4-2008-125RD ARD-01	Granite	6.54	0	2.9
BH4-2008-125RD ARD-03	Granite	6.82	0	1.3
BH2007-36 ARD-01	Granitoid gneiss	5.71	0	0.6
BH2007-36 ARD-03	Granitoid gneiss	5.83	0	0.6
BH3-2008-148 ARD-01	Granitoid gneiss	7.86	0	0
BH3-2008-148 ARD-03	Granitoid gneiss	7.41	0	0
BH3-2008-165RD2 ARD-01	Granitoid gneiss	6.70	0	1.0
BH3-2008-165RD2 ARD-03	Granitoid gneiss	7.02	0	0
BH4-2008-83 ARD-01	Granitoid gneiss	6.88	0	0.7
BH3-2008-83 ARD-03	Granitoid gneiss	7.49	0	0
BOR12B-DH1 ARD-01	Granitoid gneiss	7.13	0	0
BOR12B-DH2 ARD-03	Granitoid gneiss	3.87	1.0	1.3
BOR12B-DH3 ARD-02	Granitoid gneiss	7.02	0	0
BOR13A-DH1 ARD-01	Granitoid gneiss	8.49	0	0
BOR13A-DH1 ARD-03	Granitoid gneiss	7.05	0	0.0
BOR7D-DH1 ARD-01	Granitoid gneiss	7.59	0	0
BOR7D-DH2 ARD-02	Granitoid gneiss	7.04	0	0
BOR7D-DH3 ARD-03	Granitoid gneiss	7.06	0	0
BR13-DH1(RD)-ARD-01	Granitoid gneiss	6.59	0	1.0
BR13-DH1(RD)-ARD-03	Granitoid gneiss	2.92	8.9	9.6
BR1B-DH ARD-02	Granitoid gneiss	9.50	0	0
BR1C-DH ARD-01	Granitoid gneiss	7.93	0	0
BR1C-DH ARD-03	Granitoid gneiss	8.39	0	0
BR3A-DH2 ARD-02	Granitoid gneiss	6.44	0	2.9
BR3A-DH3 ARD-01	Granitoid gneiss	6.84	0	1.0
BR7-DH1 ARD-01	Granitoid gneiss	7.12	0	0
BR7-DH1 ARD-03	Granitoid gneiss	7.14	0	0
BR3A-DH1 ARD-01	Sand	6.08	0	1.3
BOR2A-DH1 ARD-01	Sandstone	6.07	0	2.2
BOR2A-DH1 ARD-02	Sandstone	5.78	0	3.8
BOR2A-DH2 ARD-03	Sandstone	5.59	0	3.5
BR3A-DH2 ARD-03	Sandstone	5.86	0	3.3
BR3A-DH1 ARD-02	Sandstone	6.17	0	2.0
No. of sample		38	38	38
Minimum		2.9	0	0
Maximum		9.5	8.9	9.6
Mean			0.3	1.1
Median		7.0	0	0.3
Standard Deviation		1.1	1.4	1.8
10^{th} Percentile		5.8	0	0
90^{th} Percentile		7.9	0	3.0

Table 3. Total Metal Analysis of Rock Samples

Sample ID	Rock Type	Hg	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Li	Mg	Mn	Mo	Na	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn
		µg/g	%	µg/g	µg/g	µg/g	µg/g	%	µg/g	µg/g	µg/g	µg/g	%	%	µg/g	%	µg/g	µg/g	%	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	%	µg/g	µg/g	µg/g	µg/g
Average Concentration (Continental Crustal)*		0.09	8.23	1.8	425	3	0.0085	4.15	0.15	25	102	60	5.63	2.085	20	2.33	950	1.2	2.355	84	14	0.2	0.05	2.3	370	0.565	0.85	2.7	120	70
Ten Times Average Concentration (Crustal)		0.85	82.3	18	4250	30	0.085	41.5	1.5	250	1020	600	56.3	20.85	200	23.3	9500	12	23.55	840	140	2	0.5	23	3700	5.65	8.5	27	1200	700
BH3-2008-146 ARD-01	Granite	< 0.1	1.40	1.1	19	0.40	< 0.09	0.78	< 0.02	4.6	85	2.0	2.00	0.23	18	0.34	120	0.4	0.40	15	3.5	< 0.8	< 0.7	1.8	120	0.10	0.09	0.43	25	16
BH3-2008-146 ARD-03	Granite	< 0.1	1.70	1.4	240	0.38	< 0.09	1.10	< 0.02	10	92	3.9	3.40	0.62	25	1.10	260	1.4	0.32	45	4.6	< 0.8	< 0.7	1.9	63	0.19	0.19	3.1	55	21
BH3-2008-178 ARD-01	Granite	< 0.1	1.10	0.9	110	0.20	< 0.09	0.23	0.03	2.9	180	5.6	1.50	0.78	15	0.23	76	0.8	0.23	6.0	15	< 0.8	< 0.7	0.6	30	0.07	0.23	3.9	14	20
BH3-2008-179 ARD-02	Granite	< 0.1	1.30	0.8	140	0.24	< 0.09	0.50	0.03	6.6	96	12	2.60	0.87	16	0.55	180	2.0	0.24	8.3	9.6	< 0.8	< 0.7	1.0	37	0.13	0.34	1.3	41	45
BH3-2008-180 ARD-03	Granite	< 0.1	1.10	1.4	92	0.26	< 0.09	0.42	< 0.02	5.0	160	14	1.70	0.74	15	0.39	180	0.8	0.22	7.8	7.1	< 0.8	< 0.7	0.9	31	0.09	0.30	1.4	25	33
BH4-2008-125RD ARD-01	Granite	< 0.1	0.38	< 0.5	36	0.21	< 0.09	0.17	< 0.02	2.0	98	5.0	0.90	0.24	16	0.15	66	1.4	0.08	3.6	11	< 0.8	< 0.7	2.9	9.9	0.05	0.16	7.5	4	20
BH4-2008-125RD ARD-03	Granite	< 0.1	0.70	0.9	53	0.34	< 0.09	0.19	0.02	3.1	63	8.4	1.40	0.48	24	0.32	120	1.1	0.13	5.2	6.9	< 0.8	< 0.7	0.9	12	0.06	0.26	3.5	14	28
BH2007-36 ARD-01	Granitoid gneiss	< 0.1	1.10	1.1	110	0.26	< 0.09	0.87	< 0.02	10	70	19	3.50	0.83	21	0.92	270	1.2	0.07	11	3.3	< 0.8	< 0.7	0.8	20	0.17	0.41	0.70	49	75
BH2007-36 ARD-03	Granitoid gneiss	< 0.1	1.60	1.1	170	0.26	< 0.09	1.40	0.02	12	69	49	4.80	1.20	21	0.96	280	1.3	0.21	13	7.1	< 0.8	< 0.7	1.7	61	0.29	0.62	2.0	69	86
BH3-2008-148 ARD-01	Granitoid gneiss	< 0.1	1.40	0.8	120	0.26	< 0.09	0.78	< 0.02	11	66	46	2.90	0.88	23	0.92	210	1.8	0.20	31	6.0	< 0.8	< 0.7	1.4	27	0.18	0.33	0.19	57	44
BH3-2008-148 ARD-03	Granitoid gneiss	< 0.1	1.30	1.7	110	0.20	< 0.09	0.48	< 0.02	7.0	180	7.4	1.70	0.89	18	0.61	180	0.4	0.22	23	6.0	< 0.8	< 0.7	0.9	34	0.13	0.40	0.45	23	34
BH3-2008-165RD2 ARD-01	Granitoid gneiss	< 0.1	1.10	0.9	110	0.17	< 0.09	0.71	< 0.02	8.3	110	41	2.90	0.58	12	0.54	150	0.7	0.19	13	4.7	< 0.8	< 0.7	1.3	24	0.16	0.16	0.56	43	56
BH3-2008-165RD2 ARD-03	Granitoid gneiss	< 0.1	1.10	1.0	69	0.25	< 0.09	0.32	0.07	3.9	150	16	1.40	0.47	10	0.20	95	0.2	0.30	7.1	11	< 0.8	< 0.7	0.5	17	0.06	0.10	2.8	11	26
BH3-2008-83 ARD-03	Granitoid gneiss	< 0.1	1.30	1.0	100	0.16	< 0.09	0.52	0.03	5.4	150	2.2	1.70	0.87	9	0.61	190	0.5	0.22	17	8.2	< 0.8	< 0.7	0.7	33	0.10	0.25	0.17	18	36
BH4-2008-83 ARD-01	Granitoid gneiss	< 0.1	1.00	1.1	100	0.19	< 0.09	0.39	< 0.02	5.0	110	6.8	1.50	0.71	10	0.47	140	0.3	0.22	15	4.0	< 0.8	< 0.7	0.5	26	0.10	0.25	0.37	19	29
BOR12B-DH1 ARD-01	Granitoid gneiss	< 0.1	1.30	1.1	82	0.24	< 0.09	0.31	< 0.02	4.0	54	5.1	2.00	0.91	25	0.48	250	1.0	0.18	5.5	12	< 0.8	< 0.7	1.9	24	0.11	0.41	3.5	21	36
BOR12B-DH2 ARD-03	Granitoid gneiss	< 0.1	1.20	0.9	74	0.21	< 0.09	0.20	0.04	8.2	89	22	2.30	0.98	29	0.82	330	0.4	0.07	19	20	< 0.8	< 0.7	2.0	9.4	0.16	0.56	5.5	27	51
BOR12B-DH3 ARD-02	Granitoid gneiss	< 0.1	1.50	1.2	110	0.44	< 0.09	0.32	< 0.02	6.3	57	11	2.10	1.10	25	0.67	290	1.4	0.19	11	8.4	< 0.8	< 0.7	1.8	21	0.14	0.47	2.5	27	41
BOR13A-DH1 ARD-01	Granitoid gneiss	< 0.1	0.94	1.2	49	0.39	**0.11**	0.53	< 0.02	4.6	150	5.4	1.20	0.66	24	0.43	160	0.3	0.09	12	2.5	< 0.8	< 0.7	0.5	8.9	0.05	0.24	1.3	13	18
BOR13A-DH1 ARD-03	Granitoid gneiss	< 0.1	1.10	0.6	50	0.78	< 0.09	0.08	0.07	3.0	110	8.7	1.30	0.73	15	0.34	120	0.6	0.13	4.0	8.7	< 0.8	< 0.7	0.8	8.4	0.01	0.10	9.4	25	19
BOR7D-DH1 ARD-01	Granitoid gneiss	< 0.1	1.10	1.2	49	0.27	< 0.09	0.30	0.10	1.9	170	7.8	1.40	0.69	12	0.18	120	5.4	0.22	4.6	35	< 0.8	< 0.7	0.8	17	0.04	0.17	10	5	33
BOR7D-DH2 ARD-02	Granitoid gneiss	< 0.1	1.10	0.8	140	0.16	< 0.09	0.32	0.03	4.7	60	22	2.00	0.83	21	0.45	260	1.1	0.18	7.4	17	< 0.8	< 0.7	0.9	23	0.12	0.59	5.4	25	50
BOR7D-DH3 ARD-03	Granitoid gneiss	< 0.1	1.00	0.6	74	0.06	< 0.09	0.26	< 0.02	3.4	130	20	1.20	0.46	17	0.31	140	0.5	0.25	5.6	2.4	< 0.8	< 0.7	< 0.5	22	0.08	0.20	0.15	14	25
BR13-DH1(RD)-ARD-01	Granitoid gneiss	< 0.1	1.00	1.1	68	0.07	< 0.09	0.17	0.12	2.3	66	21	1.00	0.57	13	0.23	120	0.9	0.23	6.1	7.7	< 0.8	< 0.7	1.7	8.8	0.06	0.17	0.26	5	41
BR13-DH1(RD)-ARD-03	Granitoid gneiss	< 0.1	1.10	1.2	110	0.05	< 0.09	0.16	0.42	3.8	80	72	2.00	0.79	22	0.53	190	1.2	0.11	2.6	11	< 0.8	< 0.7	3.5	4.8	0.13	0.32	2.2	12	120
BR1B-DH ARD-02	Granitoid gneiss	< 0.1	0.09	8.8	1.1	0.03	< 0.09	0.59	< 0.02	70	290	8.7	4.00	0.001	< 2	7.40	620	0.4	0.02	**2000**	0.51	< 0.8	< 0.7	< 0.5	7.8	0.01	< 0.02	0.007	11	20
BR1C-DH ARD-01	Granitoid gneiss	< 0.1	2.00	1.2	300	0.02	< 0.09	0.66	< 0.02	16	46	58	2.30	0.79	24	1.70	200	0.3	0.14	72	0.49	< 0.8	< 0.7	< 0.5	9.1	0.14	0.18	0.039	50	21
BR1C-DH ARD-03	Granitoid gneiss	< 0.1	1.40	1.9	35	0.18	< 0.09	0.92	0.03	13	86	73	2.30	0.16	18	1.20	230	0.8	0.18	23	1.6	< 0.8	< 0.7	< 0.5	7.3	0.18	0.05	1.4	55	18
BR3A-DH2 ARD-02	Granitoid gneiss	< 0.1	0.68	0.9	9.5	0.44	< 0.09	0.04	0.02	3.9	73	1.7	1.40	0.14	14	0.68	100	1.0	0.03	15	3.5	< 0.8	< 0.7	0.6	2.6	0.01	< 0.02	2.7	8	18
BR3A-DH3 ARD-01	Granitoid gneiss	< 0.1	0.80	0.7	26	0.35	< 0.09	0.07	< 0.02	2.6	160	2.4	1.30	0.37	12	0.42	93	0.3	0.13	7.2	3.8	< 0.8	< 0.7	< 0.5	5.5	0.005	0.04	3.8	7	20
BR7-DH1 ARD-01	Granitoid gneiss	< 0.1	1.00	0.8	82	0.10	< 0.09	0.29	< 0.02	8.4	72	31	1.70	0.78	21	0.64	260	0.9	0.08	13	6.0	< 0.8	< 0.7	< 0.5	7.5	0.15	0.35	2.8	32	37
BR7-DH1 ARD-03	Granitoid gneiss	< 0.1	1.10	0.9	88	0.14	< 0.09	0.65	0.03	9.5	95	44	1.80	0.61	16	0.64	260	0.4	0.18	17	3.6	< 0.8	< 0.7	0.6	13	0.15	0.29	0.81	36	35
BR3A-DH1 ARD-01	Sand	< 0.1	0.04	0.8	5.0	< 0.02	< 0.09	0.004	< 0.02	0.61	210	3.0	0.27	0.03	< 2	0.00	23	0.7	0.02	4.4	1.1	< 0.8	< 0.7	< 0.5	3.8	0.002	< 0.02	1.1	< 1	1.3
BOR2A-DH1 ARD-01	Sandstone	< 0.1	0.18	1.1	2.6	0.04	< 0.09	0.01	< 0.02	0.53	120	4.0	0.42	0.03	2	0.01	34	2.5	0.02	8.9	1.8	< 0.8	< 0.7	< 0.5	2.6	0.003	< 0.02	1.0	< 1	1.7
BOR2A-DH1 ARD-02	Sandstone	< 0.1	0.19	1.1	2.0	0.03	< 0.09	0.01	< 0.02	0.82	230	2.4	0.33	0.02	< 2	0.01	30	0.3	0.02	4.7	1.5	< 0.8	< 0.7	< 0.5	2.7	0.002	< 0.02	0.77	1	1.3
BOR2A-DH2 ARD-03	Sandstone	< 0.1	0.12	0.9	2.4	0.03	< 0.09	0.01	< 0.02	0.29	85	1.4	0.20	0.02	< 2	0.00	13	0.2	0.02	2.2	1.3	< 0.8	< 0.7	< 0.5	1.9	0.002	< 0.02	0.62	< 1	1.2
BR3A-DH1 ARD-02	Sandstone	< 0.1	0.20	1.0	2.5	0.03	< 0.09	0.005	< 0.02	0.53	100	4.4	0.32	0.06	< 2	0.00	32	1.8	0.02	6.5	1.5	< 0.8	< 0.7	< 0.5	3.3	0.002	< 0.02	0.96	< 1	2.7
BR3A-DH2 ARD-03	Sandstone	< 0.1	0.06	0.8	2.5	< 0.02	< 0.09	0.01	< 0.02	0.69	230	3.9	0.29	0.07	< 2	0.01	27	0.5	0.02	5.0	0.89	< 0.8	< 0.7	< 0.5	3.3	0.002	< 0.02	0.63	< 1	2.3
No. of sample		38	38	38	38	38	38	38	38	38	38	38	38	38	32	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38
Minimum		< 0.1	0.04	< 0.5	1.1	< 0.02	< 0.09	0.004	< 0.02	0.29	46	1.4	0.20	0.001	< 2	0.003	13	0.2	0.02	2.2	0.49	< 0.8	< 0.7	< 0.5	1.9	0.002	< 0.02	0.007	< 1	1.2
Maximum		< 0.1	2.00	8.80	300	0.78	< 0.09	1.40	0.42	70	290	73.0	4.80	1.20	29.0	7.40	620	5.4	0.40	2000	35.0	< 0.8	< 0.7	3.5	120	0.29	0.62	10	69	120
Mean		< 0.1	0.97	1.24	77	0.22	< 0.09	0.39	0.07	7.0	117	17.7	1.76	0.56	17.6	0.67	169	1.0	0.15	65	6.8	< 0.8	< 0.7	1.3	20	0.09	0.27	2.2	25	8
Median		< 0.1	1.10	1.00	74	0.21	< 0.09	0.32	0.03	4.6	97	8.6	1.70	0.64	17.5	0.46	155	0.8	0.18	8.6	5.4	< 0.8	< 0.7	0.9	13	0.09	0.25	1.3	23	5
Standard Deviation			0.49	1.30	65	0.16		0.34	0.10	11	57	19.9	1.04	0.35	6.0	1.18	115	0.9	0.10	323	6.6			0.8	22	0.07	0.15	2.5	18	24
10^{th} Percentile		< 0.1	0.16	0.80	2.5	0.03	< 0.09	0.01	0.02	0.67	62	2.3	0.33	0.03	10.2	0.007	31	0.3	0.02	4.3	1.2	< 0.8	< 0.7	0.6	3.1	0.002	0.10	0.2	5.4	2.1
90^{th} Percentile		<0.1	1.43	1.40	140	0.40	<0.09	0.81	0.11	11	189	46.9	3.05	0.90	24.9	1.00	273	1.8	0.24	25	12.9	<0.8	<0.7	2.0	35	0.17	0.48	5.4	54	53

Note :

* From Price (1997)

Bold result exceeds 10 continental crust value.

Shaded samples selected for SFE and Reitveld XRD analysis based on ABA or aqua-regia metal results (results pending).

Table 4. Shake Flask Extraction Analysis of Rock Samples

Sample ID	Unit	MMER	CWQG (PAL)	CDWQ	NWB	BH3-2008-180 ARD-03	BH3-2008-165RD2 ARD-03	BH3-2008-146 ARD-01	BOR7D-DH1 ARD-01	BOR2A-DH1 ARD-02	BR3A-DH1 ARD-02
Sample	weight(g)					250	250	250	250	250	250
Volume mL	D.I. H2O					750	750	750	750	750	750
InitialpH	units					8.98	9.19	8.82	9.60	6.99	7.47
Final pH	units	6.0 - 9.5	6.5 - 9.0	6.5 - 8.5	6.0 - 9.5	**9.53**	9.50	**9.74**	9.49	7.11	7.52
Mercury (Hg)	mg/L	-	0.026	0.001		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aluminum (Al)	mg/L	-	0.005-0.1[a)]	-		1.05	0.96	2.11	0.64	0.06	0.24
Antimony (Sb)	mg/L	-		0.006		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Arsenic (As)	mg/L	0.5	0.005	0.005		< 0.0002	0.0038	< 0.0002	0.0002	0.0003	0.0003
Barium (Ba)	mg/L	-	-	1		0.00312	0.00245	0.00172	0.00389	0.00419	0.00355
Beryllium (Be)	mg/L	-	-	-		< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Bismuth (Bi)	mg/L	-	-	-		0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Calcium (Ca)	mg/L	-	-	-		2.29	2.53	1.80	3.00	2.87	0.15
Cadmium (Cd)	mg/L	-	0.000017	0.005		< 0.000003	< 0.000003	< 0.000003	< 0.000003	< 0.000003	< 0.000003
Cobalt (Co)	mg/L	-	-	-		0.000020	0.000023	0.000015	0.000006	0.000255	0.000131
Chromium (Cr)	mg/L	-	0.001	0.051		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper (Cu)	mg/L	0.3	0.002-0.004[b)]	≤1.0[3)]		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0010
Iron (Fe)	mg/L	-	0.3	<0.3[3)]		0.048	0.030	0.034	0.047	0.007	0.009
Lead (Pb)	mg/L	0.2	0.001-0.007[b)]	0.01		0.00031	0.00037	0.00008	0.00074	0.00003	0.00023
Lithium (Li)	mg/L	-	-	-		0.010	0.005	0.012	0.003	0.005	0.003
Magnesium (Mg)	mg/L	-	-	-		0.339	0.228	0.233	0.320	1.59	0.154
Manganese (Mn)	mg/L	-	-	≤0.05		0.00223	0.00110	0.00065	0.00072	0.0326	0.00786
Molybdenum (Mo)	mg/L	-	0.073	-		0.00116	0.00174	0.00011	0.00272	0.00029	0.00107
Nickel (Ni)	mg/L	0.5	0.025-0.15[b)]	-		< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0005	0.0002
Potassium (K)	mg/L	-	-	-		10.1	5.89	2.92	11.1	1.95	2.30
Selenium (Se)	mg/L	-	0.001	-		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Sodium (Na)	mg/L	-	-	-		11.4	7.72	8.47	17.1	9.68	9.83
Strontium (Sr)	mg/L	-		-		0.0146	0.0095	0.0209	0.0169	0.0359	0.0029
Thallium (Tl)	mg/L	-		-		< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00005
Tin (Sn)	mg/L	-		-		0.00003	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001
Titanium (Ti)	mg/L	-		-		0.0066	0.0034	0.0033	0.0024	0.0005	0.0057
Uranium (U)	mg/L	-		-		0.00246	0.00200	0.000201	0.0254	0.000670	0.000771
Vanadium (V)	mg/L	-		-		0.00626	0.00373	0.00422	0.00567	0.00176	0.00214
Zinc (Zn)	mg/L	0.5	0.03	≤5.0		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

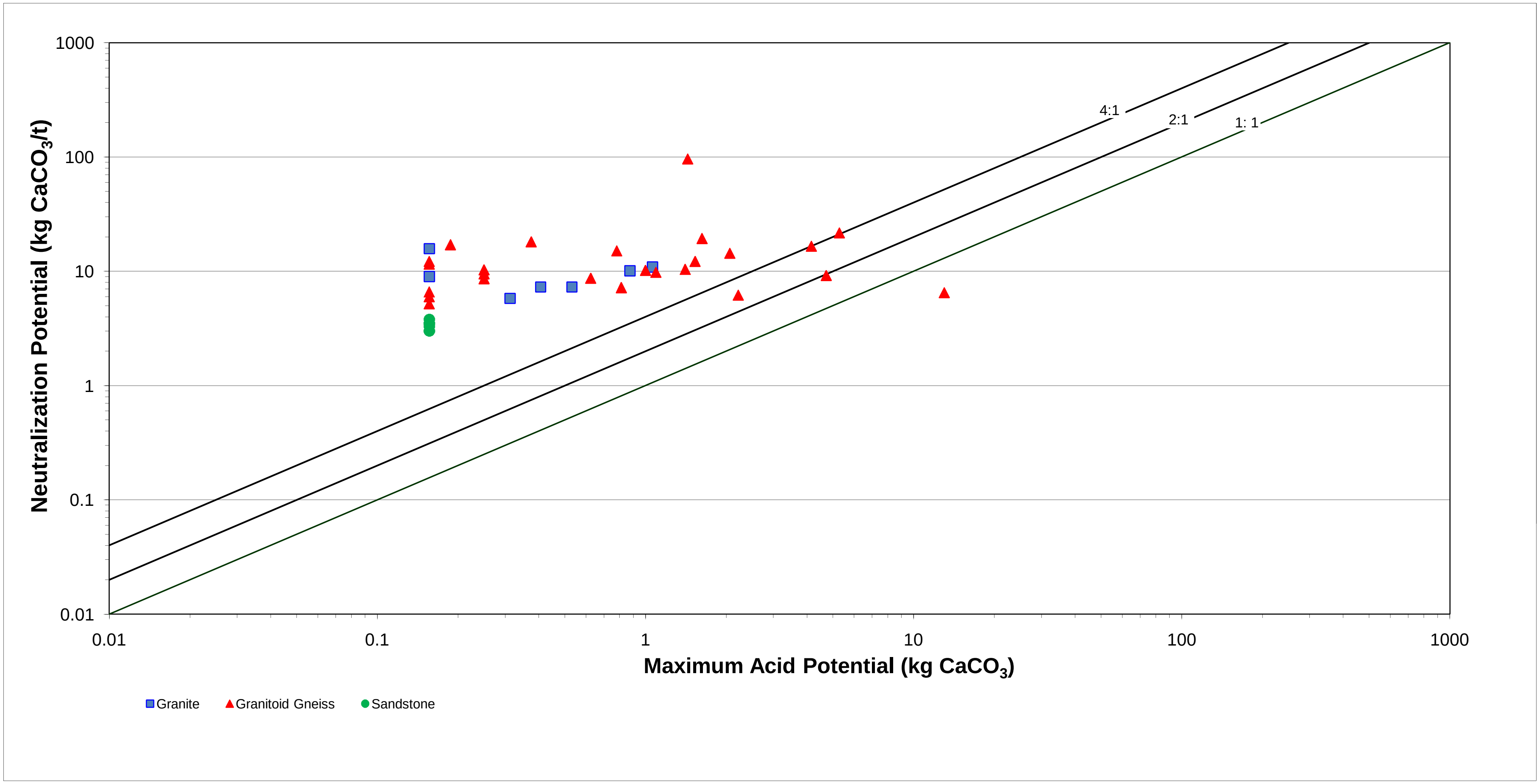
Note:
MMER = Metal Mining Effluent Regulation
Bold value indicates parameter exceeds the MMER value.
CWGQ (PAL) and CDWG provided for reference only (see text)
CWGQ (PAL) = Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guideline for the protection of Aquatic Life
CDWG = Health Canada - Canadian Drinking Water Guideline
NWB = Nunavut Water Board Wastewater Criteria
a) varies with pH
b) varies with hardness
c) aesthetic objective

Table 5. Mineralogy of Rock Samples (quantitative Rietveld phase analysis (%wt.))

Mineral		Ideal Formula	Granite *		Granitoid Gneiss *		Sandstone *	
			BH3-2008-180 ARD-03 (wt %)	BH3-2008-146 ARD-01 (wt %)	BH3-2008-165RD2 ARD-03 (wt %)	BOR7D-DH1 ARD-01 (wt %)	BOR2A-DH1 ARD-02 (wt %)	BR3A-DH1 ARD-02 (wt %)
Quartz		SiO_2	25.8	0.0	27.2	28.3	98.4	97.7
Orthoclase	Feldspars	$KAlSi_3O_8$	11.0	3.0	13.2	5.5	0.2	0.4
Microcline	Feldspars	$KAlSi_3O_8$	5.4	1.5	3.2	26.1	1.2	1.7
Albite	Feldspars	$NaAlSi_3O_5$	11.9	3.4	12.0	20.7	--	--
Anorthite	Feldspars	$CaAl_2Si_2O_8$	26.7	68.4	31.0	5.6	--	--
Enstatite (orthopyroxene)		$(Mg, Fe)_2Si_2O_6$	4.8	5.2	3.6	1.7	--	--
Diopside (clinopyroxene)		$CaMgSi_2O_6$	6.7	6.6	4.9	5.3	--	--
Actinolite (amphibole)		$Ca_2(Mg,Fe^{2+})_5Si_8O_{22}(OH)_2$	3.0	9.0	2.6	3.0	--	--
Biotite		$K(Mg,Fe^{2+})_3AlSi_3O_{10}(OH)_2$	4.5	2.6	2.1	0.1	--	--
Magnetite		Fe_3O_4	0.2	0.3	0.3	0.4	--	--
Clinochlore		$(Mg, Fe)_5(Si_3Al)O_{10}(OH)_8$	--	--	--	3.2	--	--
Kaolinite		$Al_2Si_2O_5(OH)_4$	--	--	--	--	0.2	0.2
Total			100	100	100	100	100	100

* Rock name from Knight Piésold borehole log

FIGURE



Baffinland

amec

Mary River Project

Railway Quarry Rock Samples
NP vs. MPA

Drawn by: JA	Checked by: SW	Date: December 2010
Project: TC101507		FIGURE 1

MEMO FROM KNIGHT PIÉSOLD CONSULTING

Knight Piésold
CONSULTING

MEMORANDUM

To:	Doron Golan	Date:	September 10, 2010
Copy To:	Matthew Pickard, Bill Napier, Stephan Theban	File No.:	NB102-181/25-A.01
From:	Ryan Weir	Cont. No.:	NB10-00467
Re:	Summary of Railway Quarry Sample Collection for Geochemical Testing		

The purpose of this memorandum is to summarize the sampling methods and inventory of samples collected by Knight Piésold Ltd. (Knight Piésold) in 2008 for geochemical testing. These samples were sent to SGS Minerals Services (SGS) in Lakefield, ON in 2008 and have remained in storage since that time.

Sample sites (quarry IDs) and locations are shown on the attached progress prints, Figures 3-2.5 to 3-2.8.

Sampling Methods

Geochemical samples were collected through July to September 2008 by Knight Piésold field personnel. Samples were collected by surface saw-cut sampling to assess suitable ballast material; chip sampling for geochemical testing; surface grab sampling mainly for durability testing; or core sampling also for geochemical testing.

Surface saw-cut sampling was conducted using a cutoff saw equipped with a diamond concrete cutting blade. Cuts were made in a rectangular pattern on a portion of bedrock exposed at surface within the site. The cuts were made as deep as the blade could cut into the rock to obtain the largest manageable sample as possible. The rock was then broken out using a large chisel and small sledge/rock hammer.

Chip sampling was conducted using a large chisel and/or a small sledge/rock hammer. On a portion of bedrock exposed at surface within a proposed site, small composite samples of approximately 5 kg of chips were collected.

Surface grab sampling was conducted by sampling naturally fractured/broken pieces of bedrock exposed at surface within a proposed site. Sample size was approximately 25 to 30 kg.

Core sampling was conducted using rotary diamond drill rigs equipped with various sized core barrels set up on various geotechnical and geomechanical programs holes. Suitable samples of lengths varying from 0.17 to 1.10 m were taken from various rock types encountered during the programs.

All samples were properly bagged and/or placed in buckets or core boxes; labelled; manifested; and submitted to SGS for analyses and/or eventual testing. All samples remain in their original containers stored in a covered outdoor storage area at SGS.

A summary of all samples is provided on Table 1.

Signed: Ryan Weir, E.I.T.
Geological Engineering

Approved: Steve Aiken, P.Eng.
Manager, Environmental Services

Attachments:

Table 1 Rev 0 Summary of Saw-cut, Chip, Grab and Core Sampling
Figure 3-2.5 Rev A Railway Construction Potential Development Area (Sheet 1 of 4) – Progress Print
Figure 3-2.6 Rev A Railway Construction Potential Development Area (Sheet 2 of 4) – Progress Print
Figure 3-2.7 Rev A Railway Construction Potential Development Area (Sheet 3 of 4) – Progress Print
Figure 3-2.8 Rev A Railway Construction Potential Development Area (Sheet 4 of 4) – Progress Print

/rdw

Knight Piésold
CONSULTING

TABLE 1

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

SUMMARY OF SAW-CUT, CHIP, GRAB AND CORE SAMPLING

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Sample Site	Sample ID	Date Sampled	Drillhole (if applicable)	Depth (if applicable) (m)	Length (if applicable) (m)	Location Northing (m)	Location Easting (m)	Buckets	Pallets
Saw-Cut Samples									
BAL1-2008	BAL1-08-1	1-Jul-08	-	-	-	7811137	601065	BAL1-08-1A	1 of 16
								BAL1-08-1B	5 of 17
								BAL1-08-1C	4 of 17
BAL1-2008	BAL1-08-2	1-Jul-08	-	-	-	7811065	601049	BAL1-08-2A	9 of 17
								BAL1-08-2B	7 of 17
								BAL1-08-2C	17 of 17
BAL1-2008	BAL1-08-3	30-Jun-08	-	-	-	7811035	601078	BAL1-08-3A	13 of 17
								BAL1-08-3B	14 of 17
								BAL1-08-3C	16 of 17
BAL1-2008	BAL1-08-4	30-Jun-08	-	-	-	7811027	601153	BAL1-08-4A	11 of 17
								BAL1-08-4B	12 of 17
								BAL1-08-4C	15 of 17
BAL1-2008	BAL1-08-5	30-Jun-08	-	-	-	7810941	601103	BAL1-08-5A	16 of 16
								BAL1-08-5B	8 of 17
								BAL1-08-5C	10 of 17
BAL2-2008	BAL2-08-1	3-Jul-08	-	-	-	7807589	598784	BAL2-08-1A	7 of 16
								BAL2-08-1B	3 of 17
								BAL2-08-1C	6 of 17
BAL2-2008	BAL2-08-2	3-Jul-08	-	-	-	7807534	598794	BAL2-08-2A	6 of 16
								BAL2-08-2B	2 of 17
								BAL2-08-2C	1 of 17
BAL2-2008	BAL2-08-3	3-Jul-08	-	-	-	7807431	598793	BAL2-08-3A	5 of 16
								BAL2-08-3B	14 of 16
								BAL2-08-3C	15 of 16
BAL3-2008	BAL3-08-1	4-Jul-08	-	-	-	7806539	598737	BAL3-08-1A	4 of 16
								BAL3-08-1B	11 of 16
								BAL3-08-1C	12 of 16
BAL3-2008	BAL3-08-2	4-Jul-08	-	-	-	7806484	598715	BAL3-08-2A	2 of 16
								BAL3-08-2B	9 of 16
								BAL3-08-2C	13 of 16
BAL4-2008	BAL3-08-1	4-Jul-08	-	-	-	7806100	598472	BAL4-08-1A	3 of 16
								BAL4-08-1B	8 of 16
								BAL4-08-1C	10 of 16
Chip Samples									
BAL1-2008	BAL1-C-01	30-Jun-08	-	-	-	7811039	601166	3	-
	BAL1-C-02	30-Jun-08	-	-	-	7811047	601159	5	-
	BAL1-C-03	30-Jun-08	-	-	-	7811046	601166	4	-
	BAL1-C-04	30-Jun-08	-	-	-	7811047	601112	3	-
	BAL1-C-05	30-Jun-08	-	-	-	7811046	601113	6	-
	BAL1-C-06	2-Jul-08	-	-	-	7811084	601026	1	-
	BAL1-C-07	2-Jul-08	-	-	-	7811095	601005	3	-
	BAL1-C-08	2-Jul-08	-	-	-	7811065	601049	1	-
	BAL1-C-09	2-Jul-08	-	-	-	7811035	601078	1	-
	BAL1-C-10	2-Jul-08	-	-	-	7811037	601100	2	-
BAL2-2008	BAL2-C-01	2-Jul-08	-	-	-	7807424	598800	-	-
	BAL2-C-02	2-Jul-08	-	-	-	7807480	598749	4	-
	BAL2-C-03	2-Jul-08	-	-	-	7807555	598804	-	-
	BAL2-C-04	2-Jul-08	-	-	-	7807557	598769	4	-
	BAL2-C-05	2-Jul-08	-	-	-	7807593	598808	6	-
	BAL2-C-06	3-Jul-08	-	-	-	7807606	598791	2	-
BAL3-2008	BAL3-C-01	4-Jul-08	-	-	-	7806385	598681	-	-
	BAL3-C-02	4-Jul-08	-	-	-	7806427	598691	2	-
	BAL3-C-03	4-Jul-08	-	-	-	7806461	598745	-	-
	BAL3-C-04	4-Jul-08	-	-	-	7806508	598748	6	-
BAL4-2008	BAL4-C-01	4-Jul-08	-	-	-	7806081	598442	5	-
	BAL4-C-02	4-Jul-08	-	-	-	7806011	598448	3	-

TABLE 1

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

SUMMARY OF SAW-CUT, CHIP, GRAB AND CORE SAMPLING

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Sample Site	Sample ID	Date Sampled	Drillhole (if applicable)	Depth (if applicable) (m)	Length (if applicable) (m)	Location Northing (m)	Location Easting (m)	Buckets	Pallets
QMR2	QMR2-C01	23-Aug-08	-	-	-	7914123	560278	-	-
	QMR2-C02	23-Aug-08	-	-	-	7914065	560314	-	-
	QMR2-C03	23-Aug-08	-	-	-	7914147	560380	-	-
	QMR2-C04	23-Aug-08	-	-	-	7914278	560266	-	-
	QMR2-C05	23-Aug-08	-	-	-	7914204	560215	-	-
	QMR2-C06	23-Aug-08	-	-	-	7914189	560136	-	-
	QMR2-C07	23-Aug-08	-	-	-	7914237	560052	-	-
	QMR2-C08	23-Aug-08	-	-	-	7914331	560016	-	-
	QMR2-C09	23-Aug-08	-	-	-	7914330	559947	-	-
	QMR2-C10	23-Aug-08	-	-	-	7914104	560118	-	-
Q0-500	Q0-500-C01	21-Aug-08	-	-	-	7912025	563929	-	-
	Q0-500-C02	21-Aug-08	-	-	-	7912000	563918	-	-
	Q0-500-C03	21-Aug-08	-	-	-	7912002	563944	-	-
	Q0-500-C04	21-Aug-08	-	-	-	7911929	563969	-	-
	Q0-500-C05	21-Aug-08	-	-	-	7911878	563998	-	-
Q25+500	Q25+500-C01	25-Aug-08	-	-	-	7900471	586081	-	-
	Q25+500-C02	25-Aug-08	-	-	-	7900444	586122	-	-
	Q25+500-C03	25-Aug-08	-	-	-	7900449	586145	-	-
	Q25+500-C04	25-Aug-08	-	-	-	7900426	586168	-	-
	Q25+500-C05	25-Aug-08	-	-	-	7900393	586284	-	-
	Q25+500-C06	25-Aug-08	-	-	-	7900485	586168	-	-
	Q25+500-C07	25-Aug-08	-	-	-	7900480	586194	-	-
Q50+000	Q50+000-C01	24-Aug-08	-	-	-	7881055	597448	-	-
	Q50+000-C02	24-Aug-08	-	-	-	7881050	597503	-	-
	Q50+000-C03	24-Aug-08	-	-	-	7881007	597532	-	-
	Q50+000-C04	24-Aug-08	-	-	-	7880949	597509	-	-
	Q50+000-C05	24-Aug-08	-	-	-	7880981	597391	-	-
Q67+200	Q67+200-C01	24-Aug-08	-	-	-	7865512	599851	-	-
	Q67+200-C02	24-Aug-08	-	-	-	7865525	599861	-	-
	Q67+200-C03	24-Aug-08	-	-	-	7865546	599822	-	-
Q77+200	Q77+200-C01	22-Aug-08	-	-	-	7857932	605048	-	-
	Q77+200-C02	22-Aug-08	-	-	-	7857894	605045	-	-
	Q77+200-C03	22-Aug-08	-	-	-	7857837	605110	-	-
	Q77+200-C04	22-Aug-08	-	-	-	7857805	605109	-	-
	Q77+200-C05	22-Aug-08	-	-	-	7857815	605172	-	-
Q82+700	Q82+700-C01	22-Aug-08	-	-	-	7852797	606181	-	-
	Q82+700-C02	22-Aug-08	-	-	-	7852768	606230	-	-
	Q82+700-C03	22-Aug-08	-	-	-	7852722	606238	-	-
	Q82+700-C04	22-Aug-08	-	-	-	7852775	606285	-	-
	Q82+700-C05	22-Aug-08	-	-	-	7852703	606299	-	-
Grab Samples									
Q0-500	Q0-500-G01	21-Aug-08	-	-	-	7912029	563931	1/2	-
	Q0-500-G01	21-Aug-08	-	-	-			2/2	-
	Q0-500-G02	21-Aug-08	-	-	-	7911978	563915	1/2	-
	Q0-500-G02	21-Aug-08	-	-	-			2/2	-
	Q0-500-G03	21-Aug-08	-	-	-	7912003	563945	1/2	-
	Q0-500-G03	21-Aug-08	-	-	-			2/2	-
Q10+250	Q10+250-G01	25-Aug-08	-	-	-	7905676	572168	1/2	-
	Q10+250-G01	25-Aug-08	-	-	-			2/2	-
	Q10+250-G02	25-Aug-08	-	-	-	7905676	572168	1/2	-
	Q10+250-G02	25-Aug-08	-	-	-			2/2	-
Q50+000	Q50+000-G01	24-Aug-08	-	-	-	7880981	597391	1/2	-
	Q50+000-G01	24-Aug-08	-	-	-			2/2	-
	Q50+000-G02	24-Aug-08	-	-	-	7881067	597501	1/2	-
	Q50+000-G02	24-Aug-08	-	-	-			2/2	-
Q56+750	Q56+750-G01	24-Aug-08	-	-	-	7875333	598936	1/2	-
	Q56+750-G01	24-Aug-08	-	-	-			2/2	-
	Q56+750-G02	24-Aug-08	-	-	-	7875355	598874	1/2	-

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TABLE 1

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Sample Site	Sample ID	Date Sampled	Drillhole (if applicable)	Depth (if applicable) (m)	Length (if applicable) (m)	Location Northing (m)	Location Easting (m)	Buckets	Pallets
Q56+750 (cont'd)	Q56+750-G02	24-Aug-08	-	-	-	(7875355)	(598874)	2/2	-
	Q56+750-G03	24-Aug-08	-	-	-	7875302	598891	1/2	-
	Q56+750-G03	24-Aug-08	-	-	-			2/2	-
Q64+400	Q64+400-G01	24-Aug-08	-	-	-	7868630	600079	1/2	-
	Q64+400-G01	24-Aug-08	-	-	-			2/2	-
	Q64+400-G02	24-Aug-08	-	-	-	7868608	600171	1/2	-
	Q64+400-G02	24-Aug-08	-	-	-			2/2	-
	Q64+400-G03	24-Aug-08	-	-	-	7868654	600176	1/2	-
	Q64+400-G03	24-Aug-08	-	-	-			2/2	-
Q67+200	Q67+200-G01	24-Aug-08	-	-	-	7865564	599799	1/2	-
	Q67+200-G01	24-Aug-08	-	-	-			2/2	-
	Q67+200-G02	24-Aug-08	-	-	-	7865489	599862	1/2	-
	Q67+200-G02	24-Aug-08	-	-	-			2/2	-
Q77+200	Q77+200-G01	22-Aug-08	-	-	-	7857894	605045	1/2	-
	Q77+200-G01	22-Aug-08	-	-	-			2/2	-
	Q77+200-G02	22-Aug-08	-	-	-	7857837	605110	1/2	-
	Q77+200-G02	22-Aug-08	-	-	-			2/2	-
	Q77+200-G03	22-Aug-08	-	-	-	7857815	605172	1/2	-
	Q77+200-G03	22-Aug-08	-	-	-			2/2	-
Q82+700	Q82+700-G01	22-Aug-08	-	-	-	7852799	606190	1/2	-
	Q82+700-G01	22-Aug-08	-	-	-			2/2	-
	Q82+700-G02	22-Aug-08	-	-	-	7852757	606252	1/2	-
	Q82+700-G02	22-Aug-08	-	-	-			2/2	-
	Q82+700-G03	22-Aug-08	-	-	-	7852715	606244	1/2	-
	Q82+700-G03	22-Aug-08	-	-	-			2/2	-
Core Samples									
-	ARD01	UNK.	BH4-2008-83	6	0.86	-	-	ARD-72	-
	ARD02	UNK.		11.9	0.94	-	-	ARD-72	-
	ARD03	UNK.		21.1	1.02	-	-	ARD-72	-
-	ARD01	UNK.	BH3-2008-83	16	0.29	-	-	ARD-74	-
	ARD02	UNK.		20.7	0.34	-	-	ARD-74	-
	ARD03	UNK.		24.6	0.36	-	-	ARD-74	-
-	ARD01	UNK.	BH2007-33	19.6	0.36	-	-	ARD-72	-
	ARD02	UNK.		41.3	0.33	-	-	ARD-72	-
	ARD03	UNK.		61	0.34	-	-	ARD-72	-
-	ARD01	UNK.	BH2007-36	7.5	0.33	-	-	ARD-74	-
	ARD02	UNK.		18.3	0.33	-	-	ARD-75	-
	ARD03	UNK.		30	0.33	-	-	ARD-75	-
CUT122+750	ARD01	6-Sep-08	BH3-2008-146	17.4	0.3	-	-	ARD-75	-
	ARD02	6-Sep-08		20.55	0.36	-	-	ARD-75	-
	ARD03	6-Sep-08		26.4	0.33	-	-	ARD-75	-
CUT122+750	ARD01	6-Sep-08	BH3-2008-148	5.4	0.25	-	-	ARD-75	-
	ARD02	6-Sep-08		19.2	0.31	-	-	ARD-75	-
	ARD03	6-Sep-08		26.3	0.27	-	-	ARD-75	-
Q138+100 (BAL2)	ARD01	6-Sep-08	BH3-2008-178	3.9	0.33	-	-	ARD-74	-
	ARD02	6-Sep-08		20.2	0.32	-	-	ARD-74	-
	ARD03	6-Sep-08		35.1	0.32	-	-	ARD-74	-
Q138+100 (BAL2)	ARD01	9-Sep-08	BH3-2008-179	10	0.34	-	-	ARD-75	-
	ARD02	9-Sep-08		18.6	0.31	-	-	ARD-75	-
	ARD03	9-Sep-08		29.7	0.32	-	-	ARD-75	-
Q139+600 (BAL3)	ARD01	8-Sep-08	BH3-2008-180	7.7	0.34	-	-	ARD-74	-
	ARD02	8-Sep-08		20.7	0.35	-	-	ARD-74	-
	ARD03	8-Sep-08		30.6	0.29	-	-	ARD-74	-
CUT137+515	ARD01	7-Sep-08	BH4-2008-125RD	6	0.94	-	-	ARD-76	-
	ARD02	7-Sep-08		14.55	0.9	-	-	ARD-76	-
	ARD03	7-Sep-08		20.1	0.8	-	-	ARD-76	-
North Tunnel	ARD01	7-Sep-08	NTUN-DH02	22.9	0.85	-	-	ARD-76	-
	ARD02	9-Sep-08		45.54	0.78	-	-	ARD-76	-

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TABLE 1

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

SUMMARY OF SAW-CUT, CHIP, GRAB AND CORE SAMPLING

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Sample Site	Sample ID	Date Sampled	Drillhole (if applicable)	Depth (if applicable) (m)	Length (if applicable) (m)	Location Northing (m)	Location Easting (m)	Buckets	Pallets
North Tunnel (cont'd)	ARD03	9-Sep-08	NTUN-DH02 (cont'd)	60.72	0.83	-	-	ARD-76	-
	BF01	9-Sep-08		39.63	0.17	-	-	KP-1	-
	BF02	9-Sep-08		49.33	0.2	-	-	KP-1	-
	BF03	9-Sep-08		59.1	0.21	-	-	KP-1	-
	UCS01	7-Sep-08		15.75	0.26	-	-	KP-1	-
	UCS02	7-Sep-08		29.5	0.27	-	-	KP-1	-
	UCS03	9-Sep-08		37.95	0.22	-	-	KP-1	-
	UCS04	9-Sep-08		49.1	0.23	-	-	KP-1	-
	UCS05	9-Sep-08		66.1	0.27	-	-	KP-1	-
North Tunnel	ARD01	22-Sep-08	NTUN-DH08	63.96	0.87	-	-	ARD-71	-
	ARD02	24-Sep-08		90.6	0.985	-	-	ARD-71	-
	ARD03	26-Sep-08		121.7	0.95	-	-	ARD-71	-
	BF01	23-Sep-08		73.37	0.32	-	-	KP-1	-
	BF02	24-Sep-08		92.1	0.25	-	-	KP-1	-
	BF03	25-Sep-08		113.19	0.34	-	-	KP-1	-
	UCS01	22-Sep-08		30.93	0.27	-	-	KP-2	-
	UCS02	22-Sep-08		51.29	0.31	-	-	KP-2	-
	UCS03	23-Sep-08		69.6	0.28	-	-	KP-2	-
	UCS04	24-Sep-08		92.61	0.3	-	-	KP-2	-
	UCS05	25-Sep-08		113.53	0.35	-	-	KP-2	-
	UCS06	26-Sep-08		118.45	0.43	-	-	KP-2	-
	UCS07	26-Sep-08		128.39	0.29	-	-	KP-2	-
	UCS08	27-Sep-08		138.6	0.23	-	-	KP-2	-
North Tunnel	ARD01	24-Sep-08	NTUN-DH10	24.5	1	-	-	ARD-73	-
	ARD02	25-Sep-08		49.9	1.05	-	-	ARD-73	-
	ARD03	26-Sep-08		73.03	0.97	-	-	ARD-73	-
	BF01	24-Sep-08		22.35	0.22	-	-	KP-1	-
	BF02	25-Sep-08		47.9	0.23	-	-	KP-1	-
	BF03	26-Sep-08		69.5	0.34	-	-	KP-1	-
	UCS01	24-Sep-08		21.78	0.24	-	-	KP-2	-
	UCS02	24-Sep-08		28.58	0.22	-	-	KP-2	-
	UCS03	25-Sep-08		40.26	0.26	-	-	KP-2	-
	UCS04	25-Sep-08		57.8	0.27	-	-	KP-2	-
	UCS05	26-Sep-08		80.58	0.31	-	-	KP-2	-
	UCS06	26-Sep-08		96.78	0.32	-	-	KP-2	-
South Tunnel	ARD01	11-Sep-08	STUN-DH01	25.92	0.81	-	-	ARD-72	-
	ARD02	12-Sep-08		45.42	0.73	-	-	ARD-72	-
	ARD03	21-Sep-08		60.3	0.92	-	-	ARD-72	-
	BF01	12-Sep-08		37.4	0.26	-	-	KP-1	-
	BF02	12-Sep-08		46.15	0.21	-	-	KP-1	-
	BF03	21-Sep-08		59.19	0.41	-	-	KP-1	-
	UCS01	10-Sep-08		15.75	0.21	-	-	KP-1	-
	UCS02	11-Sep-08		32.52	0.22	-	-	KP-1	-
	UCS03	12-Sep-08		39.11	0.18	-	-	KP-1	-
	UCS04	12-Sep-08		47.49	0.24	-	-	KP-1	-
	UCS05	22-Sep-08		65.31	0.31	-	-	KP-2	-
Ballast 1	ARD01	5-Sep-08	BAL1-DH1	46.3, 47.6	0.47, 0.46	-	-	ARD-57	-
	ARD02	5-Sep-08		32.1	1.02	-	-	ARD-57	-
	ARD03	5-Sep-08		14	0.94	-	-	ARD-57	-
Ballast 1	ARD01	5-Sep-08	BAL1-DH2	15	1.02	-	-	ARD-57	-
	ARD02	5-Sep-08		30.3	1.01	-	-	ARD-58	-
	ARD03	5-Sep-08		47.1	0.96	-	-	ARD-58	-
Ballast 1	ARD01	5-Sep-08	BAL1-DH3	5.8	1	-	-	ARD-58	-
	ARD02	5-Sep-08		15.7	0.97	-	-	ARD-58	-
	ARD03	5-Sep-08		22.7	23.7	-	-	ARD-60	-
Ballast 1	ARD01	5-Sep-08	BH3-2008-166	6.6	0.76	-	-	ARD-59	-
	ARD02	5-Sep-08		17.6	0.66	-	-	ARD-59	-
	ARD03	5-Sep-08		32.2	0.65	-	-	ARD-59	-

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TABLE 1

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

SUMMARY OF SAW-CUT, CHIP, GRAB AND CORE SAMPLING

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Sample Site	Sample ID	Date Sampled	Drillhole (if applicable)	Depth (if applicable) (m)	Length (if applicable) (m)	Location Northing (m)	Location Easting (m)	Buckets	Pallets
Ballast 1	ARD01	5-Sep-08	BH4-2008-122	6.15	1	-	-	ARD-60	-
	ARD02	5-Sep-08		17.9	0.97	-	-	ARD-60	-
	ARD03	5-Sep-08		28	1	-	-	ARD-60	-
BR3A/3B	ARD01	18-Sep-08	BR3A-DH1	11.2	0.96	7905630	572191	ARD-63	-
	ARD02	18-Sep-08		22.7	0.9			ARD-63	-
	ARD03	18-Sep-08		28.9	0.96			ARD-63	-
BR3A/3B	ARD01	19-Sep-08	BR3A-DH2	13.3	1.05	7905590	572258	ARD-70	-
	ARD02	19-Sep-08		20.1	1			ARD-70	-
	ARD03	19-Sep-08		28.3	1.1			ARD-70	-
BR3A/3B	ARD01	18-Sep-08	BR3A-DH3RD2	9.7	1	7905619	572305	ARD-64	-
	ARD02	18-Sep-08		16.3	1			ARD-64	-
	ARD03	18-Sep-08		23	1			ARD-64	-
BOR2A	ARD01	19-Sep-08	BOR2A-DH1	11.4	0.95	7902411	579168	ARD-67	-
	ARD02	19-Sep-08		21.1	0.86			ARD-67	-
	ARD03	19-Sep-08		29.4	0.97			ARD-67	-
BOR2A	ARD01	19-Sep-08	BOR2A-DH2	19.4	0.99	7902497	579092	ARD-69	-
	ARD02	19-Sep-08		25.5	0.94			ARD-69	-
	ARD03	19-Sep-08		34.4	1.02			ARD-69	-
BOR7D	ARD01	18-Sep-08	BOR7D-DH1	4.8	1	7889364	595915	ARD-61	-
	ARD02	18-Sep-08		13	1			ARD-62	-
	ARD03	18-Sep-08		22.9	1			ARD-62	-
BOR7D	ARD01	18-Sep-08	BOR7D-DH2	6.9	0.86	7889478	595925	ARD-65	-
	ARD02	18-Sep-08		13.4	1			ARD-65	-
	ARD03	18-Sep-08		22.7	0.98			ARD-66	-
BOR7D	ARD01	18-Sep-08	BOR7D-DH3RD	5.9	0.93	7889387	596018	ARD-64	-
	ARD02	18-Sep-08		13.9	0.95			ARD-65	-
	ARD03	18-Sep-08		22.4	1.04			ARD-65	-
BR7	ARD01	18-Sep-08	BR7-DH1	7.1	0.91	7882597	598495	ARD-66	-
	ARD02	18-Sep-08		13.9	1.02			ARD-66	-
	ARD03	18-Sep-08		23.7	0.9			ARD-66	-
BOR12B	ARD01	19-Sep-08	BOR12B-DH1	7	1	7868662	600176	ARD-68	-
	ARD02	19-Sep-08		13.3	0.85			ARD-68	-
	ARD03	19-Sep-08		22.3	1.01			ARD-69	-
BOR12B	ARD01	19-Sep-08	BOR12B-DH2	6.2	1.04	7868605	600162	ARD-67	-
	ARD02	19-Sep-08		14.2	0.95			ARD-68	-
	ARD03	19-Sep-08		22.2	1			ARD-68	-
BOR12B	ARD01	18-Sep-08	BOR12B-DH3	8.2	1	7868628	600057	ARD-62	-
	ARD02	18-Sep-08		15.9	0.95			ARD-62	-
	ARD03	18-Sep-08		23.3	0.97			ARD-63	-
BOR13A	ARD01	18-Sep-08	BOR13A-DH1	10.3	1	7865499	599785	ARD-61	-
	ARD02	18-Sep-08		19.5	1			ARD-61	-
	ARD03	18-Sep-08		29	1			ARD-61	-
BR13	ARD01	26-Sep-08	BR13-DH1RD	9.91	0.99	7841006	607648	ARD-71	-
	ARD02	26-Sep-08		16.9	1.03			ARD-71	-
	ARD03	26-Sep-08		23.96	1.04			ARD-71	-
CUT132+750	ARD01	27-Sep-08	BH3-2008-165RD2	10	0.96	-	-	ARD-73	-
	ARD02	27-Sep-08		19.1	1			ARD-73	-
	ARD03	27-Sep-08		28.11	0.99			ARD-73	-
QMR2	ARD01	-	QMR2	-	-	-	-	-	-
	ARD02	-		-	-			-	-
	ARD03	-		-	-			-	-
BR1B	ARD01	-	BR1B-DH	4.65	0.8	7912030	563867	ARD-80	-
	ARD02	-		15.4	0.75			ARD-80	-
	ARD03	-		24.6	0.75			ARD-80	-
BR1C	ARD01	-	BR1C-DH	5.2	0.55	7911028	564458	ARD-81	-
	ARD02	-		14.5	0.7			ARD-81	-
	ARD03	-		24.2	0.8			ARD-81	-
BR1D	ARD01	-	BR1D-DH	5.4	0.85	7910819	564632	ARD-78	-

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TABLE 1

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

SUMMARY OF SAW-CUT, CHIP, GRAB AND CORE SAMPLING

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Sample Site	Sample ID	Date Sampled	Drillhole (if applicable)	Depth (if applicable) (m)	Length (if applicable) (m)	Location Northing (m)	Location Easting (m)	Buckets	Pallets
BR1D (cont'd)	ARD02	-	BR1D-DH (cont'd)	15.3	0.75	(7910819)	(564632)	ARD-78	-
	ARD03	-		25	0.7			ARD-78	-
BR1E	ARD01	-	BR1E-DH	7.55	0.85	7910655	564959	ARD-79	-
	ARD02	-		16.9	0.9			ARD-79	-
	ARD03	-		25.55	0.9			ARD-79	-
BR1F	ARD01	-	BR1F-DH	6	0.75	7910467	565183	ARD-77	-
	ARD02	-		15.9	0.85			ARD-77	-
	ARD03	-		26.75	0.75			ARD-77	-

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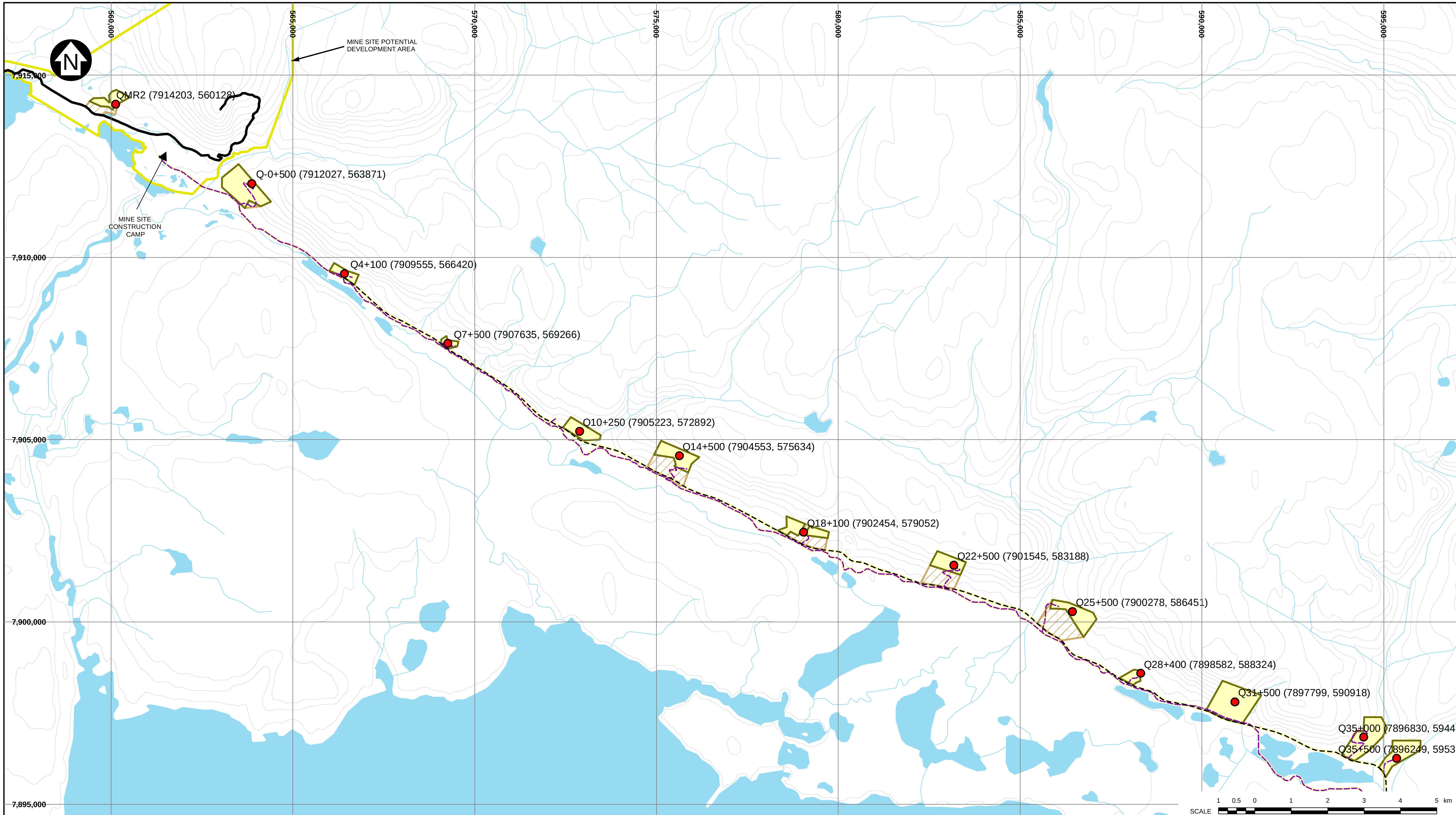

LEGEND:

- WATER
- ESTIMATED QUARRY POTENTIAL DEVELOPMENT AREA
- AREA OF POTENTIAL ACCESS (PRELIMINARY)
- MINE SITE POTENTIAL DEVELOPMENT AREA
- POTENTIAL DEVELOPMENT AREA
- RIVER/STREAM/DRAINAGE
- MILNE INLET TOTE ROAD
- PROPOSED RAILWAY ALIGNMENT
- PROPOSED CONSTRUCTION ACCESS ROAD

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
-	DDMMM'10	ISSUED FOR ---	-	-	-	-

PROGRESS PRINT
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NOTES:

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2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL VARIES.
4. RAILWAY ALIGNMENT PROVIDED BY CANARAIL CONSULTANTS INC. (AUGUST 12, 2010).

BAFFINLAND IRON MINES CORPORATION

MARY RIVER PROJECT

RAILWAY CONSTRUCTION POTENTIAL DEVELOPMENT AREA (SHEET 1 OF 4)

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P/A NO.	REF NO.
NB102-181/25	8

FIGURE 3-2.5 REV A

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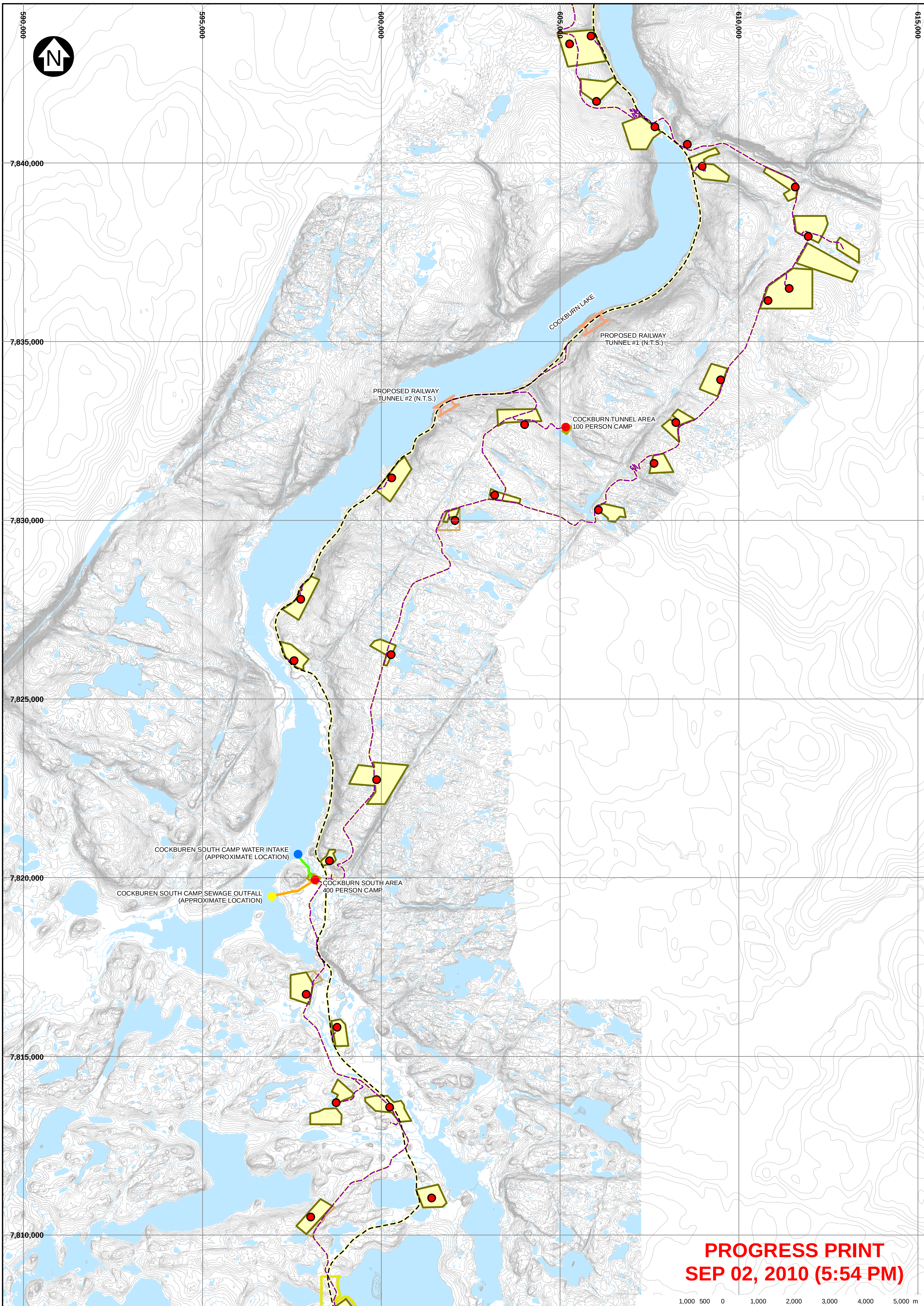

LEGEND:

- WATER
- ESTIMATED QUARRY POTENTIAL DEVELOPMENT AREA
- AREA OF POTENTIAL ACCESS (PRELIMINARY)
- POTENTIAL DEVELOPMENT AREA
- RIVER/STREAM/DRAINAGE
- MILNE INLET TOTE ROAD
- PROPOSED RAILWAY ALIGNMENT
- PROPOSED CONSTRUCTION ACCESS ROAD
- POTENTIAL RAILWAY CONSTRUCTION CAMP LOCATION

NOTES:

1. BASE MAP 1:250,000 © HER MAJESTY THE QUEEN IN RIGHTS OF CANADA, DEPARTMENT OF NATURAL RESOURCES (2004).
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL VARIES.
4. RAILWAY ALIGNMENT PROVIDED BY CANARAIL CONSULTANTS INC. (AUGUST 12, 2010).

A	DDMMM'10	ISSUED FOR -	RAC	ASM	-	-
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D

BAFFINLAND IRON MINES CORPORATION

MARY RIVER PROJECT

RAILWAY CONSTRUCTION POTENTIAL DEVELOPMENT AREA (SHEET 3 OF 4)

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P/A NO.	REF NO.
NB102-181/25	8

FIGURE 3-2.7 REV A

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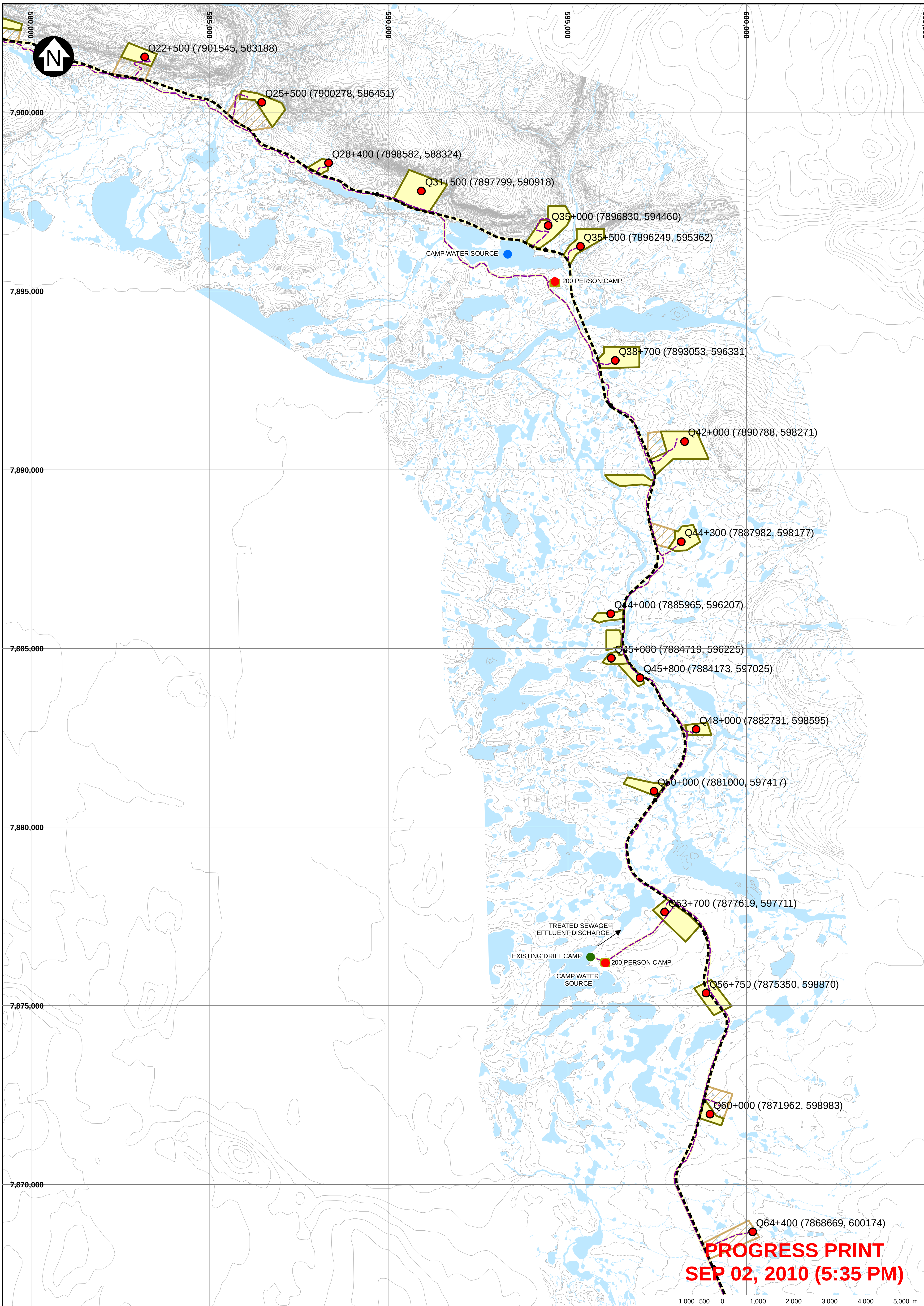

LEGEND:

- WATER
- ESTIMATED QUARRY POTENTIAL DEVELOPMENT AREA
- AREA OF POTENTIAL ACCESS (PRELIMINARY)
- POTENTIAL DEVELOPMENT AREA
- RIVER/STREAM/DRAINAGE
- MILNE INLET TOTE ROAD
- PROPOSED RAILWAY ALIGNMENT
- PROPOSED CONSTRUCTION ACCESS ROAD
- EXISTING CAMP LOCATION
- POTENTIAL RAILWAY CONSTRUCTION CAMP LOCATION

NOTES:

1. BASE MAP 1:250,000 © HER MAJESTY THE QUEEN IN RIGHTS OF CANADA, DEPARTMENT OF NATURAL RESOURCES (2004).
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL VARIES.
4. RAILWAY ALIGNMENT PROVIDED BY CANARAIL CONSULTANTS INC. (AUGUST 12, 2010).

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MARY RIVER PROJECT

RAILWAY CONSTRUCTION POTENTIAL DEVELOPMENT AREA (SHEET 2 OF 4)

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P/A NO. NB102-181/25 | REF NO. 8

FIGURE 3-2.6 | REV A

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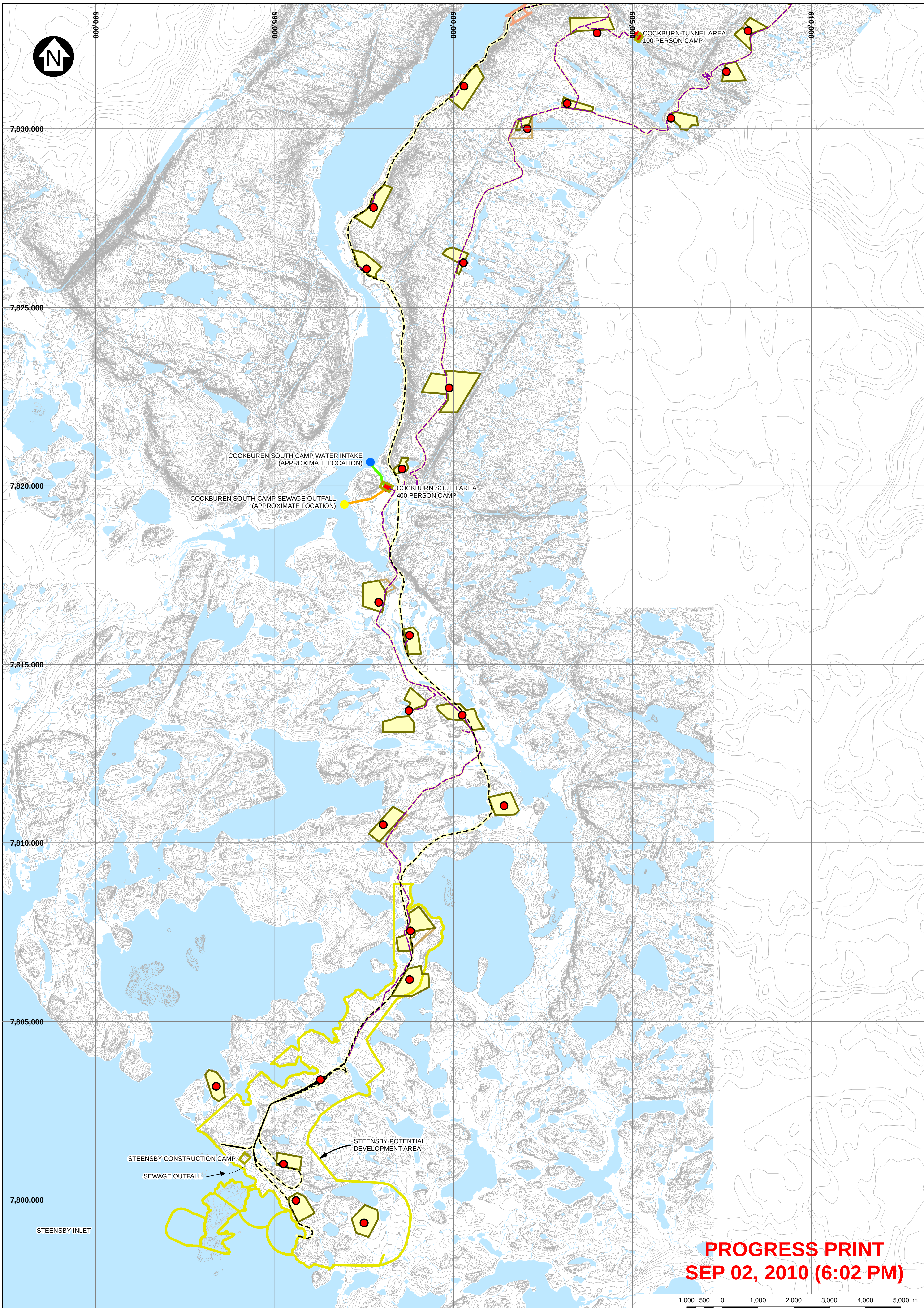

LEGEND:

- WATER
- ESTIMATED QUARRY POTENTIAL DEVELOPMENT AREA
- AREA OF POTENTIAL ACCESS (PRELIMINARY)
- STEENSBY INLET POTENTIAL DEVELOPMENT AREA
- POTENTIAL DEVELOPMENT AREA
- RIVER/STREAM/DRAINAGE
- MILNE INLET TOTE ROAD
- PROPOSED RAILWAY ALIGNMENT
- PROPOSED CONSTRUCTION ACCESS ROAD
- WATER INTAKE PIPELINE
- SEWAGE OUTFALL PIPELINE
- POTENTIAL RAILWAY CONSTRUCTION CAMP LOCATION
- WATER INTAKE LOCATION (APPROXIMATE ONLY)
- SEWAGE OUTFALL LOCATION (APPROXIMATE ONLY)
- POTENTIAL QUARRY LOCATION

NOTES:

1. BASE MAP 1:250,000 © HER MAJESTY THE QUEEN IN RIGHTS OF CANADA, DEPARTMENT OF NATURAL RESOURCES (2004).
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL VARIES.
4. RAILWAY ALIGNMENT PROVIDED BY CANARAIL CONSULTANTS INC. (AUGUST 12, 2010).

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
A	DDMMM'10	ISSUED FOR -	RAC	ASM	-	-

BAFFINLAND IRON MINES CORPORATION

MARY RIVER PROJECT

RAILWAY CONSTRUCTION POTENTIAL DEVELOPMENT AREA (SHEET 4 OF 4)

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P/A NO.	REF NO.
NB102-181/25	8

FIGURE 3-2.8 REV A

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