TECHNICAL REPORT

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TECHNICAL REPORT

Roche Bay Iron Project A/B Zone and C-Zone Nunavut, Canada

Submitted to:
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1.0 SUMMARY

1.1 Scope of Work

Golder Associates Ltd. (Golder) was commissioned by Advanced Exploration Inc. (AEI) to provide an updated independent mineral resource estimate for the Roche Bay Iron Project and technical report for filing with the security commission. The mineral resource estimates were completed in conformance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Mineral Resource and Mineral Reserve definitions referred to in National Instrument (NI) 43-101, Standards of Disclosure for Mineral Projects. This is the third time an independent mineral resource estimate has been prepared for the C-Zone and it is the first time reporting for the A/B-Zone for AEI. The technical report is also in support of the January 17, 2012 press release (AEI, 2012). The updated mineral resource estimate for the C-Zone is based on additional metallurgical testwork and updated mineral interpolation based on 2011 drilling. The additional work completed has upgraded a material portion of the C-Zone from the Inferred classification to Indicated. The A/B-Zone Inferred mineral resource estimate is based primarily on historical data (1982) and drilling completed in 2008, metallurgical work and the same mineral resource parameters employed on the C-Zone.

The A/B-Zone and C-Zone mineral resource estimates and technical report were completed by Mr. Greg Warren, Ms. Natalie Korczak, P.Geo., under the supervision of qualified persons (QP) Mr. Paul Palmer, P.Eng., P.Geo., and Mr. Greg Greenough, P.Geo., of Golder.

1.2 Location and Ownership

The Roche Bay Iron Project is located immediately to the west of Roche Bay, approximately 60 km southwest of Hall Beach, Nunavut, Canada and located approximately 6 km from the tidal water along the east coast of the Melville Peninsula. The project is comprised of four grandfathered mineral leases and 46 mineral claims covering approximately 2,232 ha and 33,982 ha, respectively. This provides AEI with over 80 km of contiguous lease and claim boundaries from the northeast to the Roche Bay Iron Project. The main focus of the mineral resource estimate is the mineralized area identified as the A/B and C-Zones, which are located on Lease No. 2953.

The ownership of the Roche Bay Iron Project is under a Definitive Agreement reached with Roche Bay plc, the named lease owner, AEI has been granted an option to earn up to a 100% interest in the Leases subject to a royalty in favour of Roche Bay and, once the earn-in structure has been completed, AEI will acquire Roche Bay plc's interest in the Leases subject to:

i) a retained 4% Gross Overriding Royalty (GOR) on iron products (such as nuggets) having greater than 90% iron content;

ii) a 6% GOR on iron products (such as concentrates and pellets) having less than 90% iron content; and

iii) a 10% gross overriding royalty on by-product precious metals (the "Royalty").

AEI will thereafter have the right to buy out 50% of the Royalty (other than the precious metals royalty) before March 31, 2020 for a total payment of $35,000,000 plus an inflation adjustment, allowing the Company to effectively reduce the gross overriding royalty on iron products to 2% on nuggets and 3% on concentrates/pellets, respectively.

1.3 Geology and Mineralization

The Roche Bay Iron Project has been defined as an Algoma type Banded Iron Formation (BIF) deposit with five defined zones of mineralization labelled A, B, C, D and E-Zones. These zones are generally characterized by alternate bands of magnetite and silica, ranging in thickness from one metre, down to one millimetre. The strike lengths of these deposits are between 820 m and 4,800 m and the widths are between 120 m to 160 m. The dips of the deposits are generally sub-vertical to steeply dipping and strike NE-SW.

Exploration campaigns completed by Roche Bay plc in 2006 and by AEI in 2007, 2008 and 2011 have focussed primarily on the C-Zone. The C-Zone model consists of one mineralized envelope, created based on drill hole geology and total Fe metal grade data. The overall trend of the deposit is northeast-southwest, in UTM coordinates, dipping 70 degrees to the south-east. The zone has a total strike length of 5,000 m, an average horizontal thickness of 160 m, and a currently defined average depth of 300 m below surface. The mineralization is open at depth. Current geological interpretation from the surface mapping, the 2006 airborne magnetic survey, 2011 ground magnetic survey and information from the drilling programs have outlined this single continuous BIF horizon with some internal waste and non-BIF zones within the C-Zone. Based on the total length of captured data for each lithological unit, the final mineralized envelope contains approximately 81% BIF material, with reasonably small internal amounts of waste metasediments (12%), schist (4%), and gabbro and other lithologies (3%).

The A/B-Zone is primarily based on drilling from 1982 and 2008 and consists of two discrete mineralized envelopes. The overall trend of the deposit is northeast-southwest, in UTM coordinates, with a vertical dip. The west limb has a strike length of approximately 1,400 m, an average horizontal thickness of 150 m and a currently defined average depth of 130 m below surface. The east limb has a strike length of approximately 2,000 m, an average horizontal thickness of 120 m and a currently defined average depth of 160 m. Both limbs of mineralization are still open at depth.

1.4 Exploration Programs

Prior to 2006, historical exploration programs were completed on the Roche Bay Iron Project throughout two periods: from 1968 to 1970 and 1982. Metallurgical testing was completed from 1968 to 1970 and 1982 to 1984. As part of these historical exploration programs, a total of 16 drill holes were drilled into A/B Zone (15 drill holes), and C-Zone (1 drill hole) during the 1982 field program for a total length of 3,214 m. The ultimate vertical extents of the deposits were not defined by this drilling. In 2006, Roche Bay plc completed their first field season on the Roche Bay Iron Project which consisted of drilling 3 short exploration drill holes (a total of 53.94 m) with an AWX drilling system for C-Zone, confirmation surface mapping of A, B and C-Zones and an airborne high resolution magnetic gradiometer geophysical survey on A, B and C-Zones.

In addition, core samples collected from the 3 AWX drill holes and samples from historical drill core samples, stored on site, from A and C-Zones were metallurgical tested at the SGS metallurgical facility in Lakefield, Ontario, Canada (SGS Lakefield). A technical report (Palmer et al., 2007) was completed for Roche Bay plc outlining the historical data, 2006 exploration activities and metallurgical testwork by SGS Lakefield.

In 2007, 2008 and 2011, AEI financed and managed three field programs as per the Option Agreement. The focus of the 2007 drilling program was to define the C-Zone mineralization on 400 m spaced sections along the strike of the C-Zone, with holes drilled down dip and perpendicular to dip (inclined between 45º and 60º from horizontal), spaced approximately 100 m across strike. During the 2007 exploration program, a total of 36 NQ drill holes and 9,300 m were completed.

In 2008, AEI completed a multi-faceted drill campaign designed to define a mineral resource estimate of the C-Zone, confirm mineralization in the A/B-Zone and collect data to advance the project. The goals of the 2008 exploration core drilling were to further define the geology and mineralization of the iron formation and to acquire additional grade, specific gravity, metallurgical and geotechnical data to support the mineral resource estimate for the C-Zone. During the 2008 exploration program, a total of 55 NQ drill holes and 16,500 m were completed in the C-Zone. The spacing of the drilling was 200 m centres over the 4.8 km defined strike length. The drill holes were collared with dip angles varying between -45° and -75° and typically a 305° azimuth (approximately perpendicular to the strike of the iron formation). In addition to the exploration drilling on the C-Zone, 6 HQ drill holes were drilled to collect geotechnical data with 4 drill holes for infrastructure and 2 drill holes collared from the sea ice above Roche Bay to test the sea floor for possible dam/port construction. Two NQ exploration drill holes were drilled on the A/B-Zones in 2008 (located 3 km NE along strike over the C-Zone) to verify historical mineralization and provide material for future metallurgical testing and was used in the A/B-Zone mineral resource estimate.

In 2011, AEI conducted a diamond drilling program of the nearby Tuktu Iron Project followed by drilling of three diamond drill holes on the C-Zone deposit on the Roche Bay Iron Project to define resource potential. The drilling program was under the supervision of Apex Geosciences Ltd (APEX) and AEI. In addition, APEX completed a ground magnetic covering 60.2 line-km in July 2011 and a large prospecting program between July and August. During the prospecting program, a total of 786 rock samples were collected with 280 samples from the Roche Bay Iron Project. The overall focus of the prospecting program was the examination of the Archean Roche Bay greenstone belt for styles of mineralization other than the currently defined iron resources (APEX, 2012b).

Additional fieldwork that was completed in 2011 included an onshore geotechnical investigation program that was completed in September 2011. The geotechnical investigation consisted of drilling, logging and sampling 17 vertical boreholes and four ground temperature cables. The main objective of the geotechnical program was to collected information for infrastructure planning to be outlined in AEI's feasibility study currently underway.

1.5 Sample Preparation, QA/QC and Security

The general procedure for core processing at the Roche Bay camp site during the 2007 and 2011 drilling programs was to log all recovered drill core for geology and geotechnical data acquisition prior to sampling for grade. The typical grade sample length during the drilling program was 1 m and 2 m

The drill core from the 2007 exploration program was initially processed at the Roche Bay camp site preparation facility and the drill core from the 2008 and 2011 exploration program was processed at the Prep facility owned by AEI and operated by SGS in 2008 and Actlabs in 2011. All permanent half core samples from the 1982 to 2011 drilling programs are stored on site at the Roche Bay camp site. Samples from the 2006 to 2008 programs were analysed at SGS Lakefield and samples from the 2011 program were analysed at Actlabs.

During the 2011 drilling program, APEX completed core logging, sampling and sawing and was in control of the QA/QC program (standards, blanks and duplicate sampling) under the direction of AEI. Data collection during the 2011 season was to industry standards.

1.6 Data Validation

Various data verification checks have been completed on the data that was relied upon for the previous and current mineral resource estimates for the Roche Bay Iron Project by Golder. These data verification checks have included a review of a selection of the original data (core logs, assays, assay certificates and bulk density) against the drill hole database and reviews of drill hole collar survey checks, QA/QC standards and duplicate checks.

As part of the validation process, a review of Satmagan and Davis Tube magnetite values that were used in the mineral resource estimate was completed by Golder and the results of these reviews have been included in the current resource estimate.

Observations by Golder staff during site visits and data validation procedures completed have identified that AEI and its field staff have been following appropriate industry standard practices and that the quality of the data is appropriate for the mineral resource estimation.

Validation checks were also completed when the drill hole databases were uploaded to Datamine software. Any errors found were discussed with Golder and corrected. During the 2011 mineral resource estimate, validation checks were also completed by comparing the updated 3D mineralized envelope against the drill holes captured and the populated block model. The Kriged mineral resource estimate was also compared against a nearest neighbour model. The Kriged resource was validated to determine if high grade spreading was an issue (smoothness) and was found to be acceptable based on industry standards, so no corrections were required.

Mr. Palmer completed a site visit to the Roche Bay Iron Project in 2006 and on August 26, 2009. During the 2009 site visit, Mr. Palmer reviewed core from the 2007 and 2008 drilling programs, observed BIF outcrops along the strike of the C-Zone, reviewed areas for future development (plant site and sea port areas) and GPS surveyed in 12 drill hole collars from the 2007 and 2008 drilling programs.

Mr. Greg Greenough completed a site visit to the Roche Bay Iron Project on August 23, 2011. During the site visit, Mr. Greenough reviewed core from the previous 2007, 2008 and 2011 drill programs, observed BIF outcrops along the strike of the C-Zone and A/B-Zone deposits, reviewed future infrastructure areas, and visited the sample preparation lab in Hall Beach.

1.7 Mineral Process and Metallurgical Testing

A number of metallurgical and process testworks have been completed for AEI between 2006 and 2011 by various analytical laboratories that included: SGS Lakefield (Ontario), COREM (Quebec), SGA (Liebenburg, Germany) and CRIMM (China). The test results obtained by the all laboratories mentioned above revealed the following aspects primarily for the C-Zone:

- From the Roche Bay Iron Project magnetite ores, an iron concentrate 65% to 68% Fe, maximum 5% SiO_2, maximum 0.07% S and maximum 0.05% P can be profitable obtained by wet magnetic separation and sulphide flotation.
- The hardness of the Roche Bay Iron Project ores is relatively low (Bond Work Index 9 to 11 kWh/t) and, consequently, the comminution processes (crushing and grinding) are characterized by relatively low energy consumption.
- The high dissemination of the magnetite and aimed concentrate chemistry requires a fine grinding size, of 0.03 to 0.035 mm (P80) or 400 to 440 mesh.
- This fine final product, based on its chemistry and size, is an excellent iron concentrate for pelletizing process.
- The concentration process is characterized by a high efficiency (weight and iron recoveries).
- The weight and iron recoveries are 27% to 41% and 66% to 82%, respectively, in function of the ore iron grade level.

In addition, metallurgical testwork was completed by SGS and SGA on A/B-Zone ores and the results of the testwork concluded that for the A/B ores, using the process flowsheet proposed for the C-Zone, it is possible to obtain the concentrate of a high quality and value: high iron grade (70.8%Fe) and low silica grade (2.33% SiO_2). The high quality A/B-Zone ores can be blended with the C-Zone ores in order to improve the Roche Bay Iron Project concentrate quality.

1.8 Mineral Resources

The January 17, 2012 Mineral Resource Estimate is the third independent NI 43-101 mineral resource estimate AEI has published for the Roche Bay Iron Project and includes estimates for the A/B (first time being reported) and C-Zones. The mineral resource estimates were completed by Mr. Greg Warren under the direction of Mr. Greg Greenough, P.Geo., (QP) and reviewed by Mr. Paul Palmer, P.Eng., P.Geo., (QP) all of Golder. The estimate incorporated data analysis, 3D solids modelling, variogram analysis and block model interpolation utilizing Datamine Studio v3 (Datamine) in extended (double) precision.

This resource estimate is an update to the April 6, 2011 independent NI 43-101 Mineral Resource Estimate completed by Mr. Greg Greenough, P.Geo., and Mr. Paul Palmer, P.Eng., P.Geo., and submitted to AEI by Golder. The new estimate is based on drilling from 1982, 2007, 2008 and 2011 drilling programs and includes Satmagan iron results supported by Davis Tube iron test results. In addition, the resource classification was based on a drill sample density study completed by Golder and reported in the April 6, 2011 technical report.

Table 1-2 summarizes the results of the independent January 17, 2012 Mineral Resource Estimate for the A/B and C-Zones. It is based on 96 NQ drill holes and a total of 26,347 m. The mineral resource estimate used the following parameters:

- 17 diamond drill holes for the A/B-Zone (1982 and 2008 exploration programs).
- 96 diamond drill holes for the C-Zone (2007, 2008 and 2011 exploration programs).

- Bulk density values were based on a regression formula with % Fe sample values and bulk density values and density-weighting was applied to composited samples.
- Samples were composited to 2.5 m lengths for the C-Zone and 3.0 m for the A/B-Zone.
- All assays were reasonable and no metal grade capping was applied.
- Analysis showed a smoothing ratio which was within acceptable industry practice, so no variance correction was required.
- The Datamine unfold process was applied to the C-Zone for spatial continuity and the dynamic anisotropy method was applied to the A/B-Zone due to its limited dataset.
- Variogram models were developed for the C-Zone and applied to the A/B-Zone due to its limited dataset.
- Block model size was defined as 10 m (E-W) by 50 m (N-S) and 20 m (elevation) for both the A/B and C-Zones.
- All data and modelling was completed in the local drill grid (40° counter clockwise translation).
- The Fe_3O_4 (magnetics) is based on Satmagan testwork that is corrected to 206 Davis Tube testwork samples located throughout the deposit.
- The resource is based on a Ordinary Kriged estimate and variogram analysis (C-Zone variograms only) of the drill hole data. These estimates were compared to Nearest Neighbour estimates for each zone.
- Three searches were used to populate the block model based on the variogram assessment. The first search was 20 m (x) by 200 m (y) by 250 (z) in the unfolded grid which represented the second structure in the variogram assessment. The second search was two times the first search and the third search was four times the first search. Octant restrictions were used to assist in de-clustering the data.
- The mineral resource was classified based on a drill density study completed by Golder (based on proposed annual production) and the Davis Tube testwork for the C-Zone. No Davis Tube testwork was sufficient to define the A/B-Zone and only total Fe is reported.

The mineral resources are reported at a total Iron (Fe) cut-off grade of 20% Fe to reflect the "reasonable prospects" for economic extraction, and the assumption that the A/B and C-Zones deposits can be extracted through open pit methods. Note the A/B-Zone mineral resource estimate only reports % Fe (total iron) since most of the data is from 1982 drilling which did not report the other elements reported for the C-Zone.

Table 1-1: January 17, 2012 Mineral Resource Statement – Roche Bay Iron Project

	Tonnes (000,000)	Fe	Fe_3O_4	SiO_2	Al_2O_3	MnO	P_2O_5	S	LOI	Cr_2O_3	$Fe_3O_4^{DT}$
C-Zone Indicated	501.3	26.35	25.67	51.22	2.98	0.07	0.09	0.75	0.92	0.16	24.93
C-Zone Inferred	65.9	26.37	25.72	51.23	2.88	0.07	0.09	0.76	0.96	0.15	24.97
A/B-Zone Inferred	92.2	24.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes: Resources based on Fe Cut-off = 20%.
All grades in %.
$Fe_3O_4^{DT}$ are the satmagan results corrected to reflect Davis Tube testwork
No mining recoveries or dilution factors have been considered.

1.9 Conclusions

A third independent NI 43-101 mineral resource has been completed for the Roche Bay Iron Property for AEI for the A/B and C-Zones deposits and is based on drilling information collected in 1982, 2007-2008 and 2011 exploration programs under the direction of AEI, magnetite testwork, mineral interpretation and resource classification studies. A Feasibility Study (FS) is currently underway by Wardrop, A Tetra Tech Company (Wardrop) and AEI will be completed in 2012.

1.10 Recommendations

The following recommendations are provided for ongoing development of the Roche Bay Iron Property:

- Future drilling should consider further testing the BIF footwall and hanging wall zone areas in order to fully define the BIF mineralization and potentially increase the width and depth of the overall A/B and C-Zones. The A/B-Zone has only been drilled to a depth of 180 m and there is potential below this depth to add to the resource.
- Complete Infill drilling on the A/B-Zone to increase the confidence in the current resource from Inferred to Indicated. This will also require completing additional Davis Tube testwork on all infill and exploration drilling.
- Complete additional metallurgical and process testwork on the A/B-Zone ores in order to confirm the same processing methods for A/B and C-Zones.
- Future drilling programs should continue collecting geotechnical data in critical areas (i.e. proposed pit walls and known hydrogeological areas).
- Completion of additional prospecting on the A/B and C-Zones and other areas of the Roche Bay Iron Project to further evaluate the iron formations for their iron ore potential and evaluate the area's potential for hosting Archean mesothermal lode gold deposits and/or VMS mineralization. The prospecting should also be supplemented by airborne geophysical surveying with electromagnetics.

The Phase 2 work plan study includes the completion of a FS planned to be completed in 2012. The cost of the Phase 2 study is estimated to be approximately $20,000,000 and includes further engineering studies, resource definition drilling, geotechnical drilling, exploration drilling and condemnation drilling in preparation for early works programs.

2.0 INTRODUCTION

2.1 Purpose and Site Visit

Golder was commissioned by AEI to provide an updated independent mineral resource estimate for the A/B and C-Zones and technical report for filing with the security commission. The mineral resource estimate was completed in conformance with the CIM Mineral Resource and Mineral Reserve definitions referred to in NI 43-101, Standards of Disclosure for Mineral Projects. This is the third time an independent mineral resource estimate has been prepared on the Roche Bay Iron Project for AEI and is in support of the January 17, 2012 press release (AEI, 2012). The updated mineral resource estimate (effective date of April 6, 2011) for the C-Zone is based on 2011 drilling, additional metallurgical testwork, updated mineral interpolation and a resource classification study. The A/B-Zone mineral resource estimate is based on 1982 and 2011 diamond drilling and the same estimate parameters for the C-Zone. The estimation work completed on the C-Zone has upgraded a material portion from the Inferred classification to Indicated. The A/B-Zone estimate is the first time reporting of an independent NI 43-101 mineral resource estimate.

The mineral resource estimates and technical report were completed under the supervision of Mr. Paul Palmer, P.Eng., P.Geo. (QP), and Mr. Greg Greenough, P.Geo. (QP), of Golder and Mr. Greg Warren and Ms. Natalie Korczak, P.Geo.

Mr. Palmer completed a site visit to the Roche Bay Iron Project in 2006 and on August 26, 2009. During the 2009 site visit, Mr. Palmer reviewed core from the 2007 and 2008 drilling programs, observed BIF outcrops along the strike of C-Zone, reviewed areas for future development (plant site and sea port areas) and GPS surveyed in 12 drill hole collars from the 2007 and 2008 drilling programs.

Mr. Greg Greenough completed a site visit to the Roche Bay Iron Project on August 23, 2011. During the site visit, Mr. Greenough reviewed core from the previous 2007, 2008 and 2011 drill programs, observed BIF outcrops along the strike of the C-Zone and A/B-Zone deposits, reviewed future infrastructure areas, and visited the sample preparation lab in Hall Beach.

2.2 Source of Information

The sources of information that were provided in the preparation of the independent mineral resource estimate and technical report were provided by AEI under the direction of Mr. Steve Roebuck (Vice President Exploration) and from previous reports and are outlined as follows:

- January 11, 2012 Technical Report (APEX Geoscience Ltd., 2012a);
- February 17, 2012 Summary Report of the 2011 Roche Bay Area Exploration Program (APEX, 2012b);
- May 20, 2011 Technical Report (Greenough and Palmer, 2011);
- 2011 Satmagan assay data from SGS Mineral Services in Lakefield, Ontario;
- 2011 Davis Tube assay data from SGS Mineral Services in Lakefield, Ontario;
- September 17, 2009 Technical Report (Palmer and Shaw, 2009);
- 2007 and 2008 drill hole data and other field data pertaining to the 2007-2008 explorations programs provided by AEI as Microsoft Excel files;
- 2007 and 2008 drill hole assay data provided by AEI from SGS Mineral Services in Lakefield;
- February 14, 2007 Technical Report (Palmer et al., 2007); and
- January 17, 2102, News Release Advanced Exploration Inc, Reports Half Billion Tonnes in Indicated Category for C-Zone at its Roche Bay Iron Project (AEI, 2012a);

- February 14 and 16, 2012, data pertaining to permits, first nation consultation, environment studies and land tenure provided by Mr. Gary Williams, Vice President of Environmental for AEI (AEI, 2012b);
- Metallurgical data pertaining to the property in Section 14 from information provided by Dr. Florin Gheorghiu, Ph.D. Eng., Vice President of Engineering and Technology for AEI (AEI, 2012c); and
- December 9, 2011, Technical Memorandum, Design Requirements for Open Pit Slope Design in the Context of the Roche Bay Deposit and the 2011 Geotechnical Site Visit by Marc Rougier (Rougier, 2011).

All units of measure (see Figure 2-1) used in this report are in the metric system, unless stated otherwise. Currencies outlined in the report are in Canadian dollars unless otherwise stated.

Capital expenditure	CAPEX
Centimetre	cm
Cubic centimetre	cm^3
Cubic metre	m^3
Degree	°
Degrees Celsius	°C
Gram	g
Grams per tonne	g/t
Greater than	>
Hectare (10,000 m^2)	ha
Internal rate of return	IRR
Iron	Fe
Kilogram	kg
Kilograms per cubic metre	kg/m^3
Kilograms per square metre	kg/m^2
Kilometre	km
Kilometre per hour	km/h
Less than	<
Metre	m
Metres above sea level	masl
Millimetre	mm
Million	M
Million tonnes	Mt
Million tonnes per annum	Mtpa
Operating expense	OPEX
Ounce (troy ounce - 31.1035 grams)	oz
Percent	%
Pound(s)	lb
Parts per million	ppm
Parts per billion	ppb
Square km	km^2
Square metre	m^2
Short Tons (907 kgs)	tons
Tonnes (1000 kgs)	t
Tonnes per day	t/d
United States Dollars in Millions	US$M

Figure 2-1: Units of Measure and Abbreviations

3.0 RELIANCE ON OTHER EXPERTS

The authors have made no attempt to independently verify the legal status and ownership of the property claims and have relied on the information provided by AEI outlined in Section 4.0.

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 Property Location

The Roche Bay Iron Project is located immediately to the west of Roche Bay, approximately 60 km southwest of Hall Beach, Nunavut, Canada and located approximately 6 km from the tidal water along the east coast of the Melville Peninsula as illustrated on Figure 4-1. The Roche Bay Iron Project C-Zone is located on mining lease number 2953 (802.5 ha) with an approximate UTM NAD 27 location between 424000E, 7589000N and 428000E, 7593000N.

4.2 Mineral Tenure

The Roche Bay Iron Project consists of four non-continuous grandfathered mineral leases (2952, 2953, 2954 and 2955) with a total area of 2231.9 ha as illustrated on Figure 4-1 (Note: mineral lease number 2955 is located southwest of 2954). The mineral leases' expiry date is July 23, 2021 and the details of the leases are listed in Table 4-1. The mineral leases are currently 100% owned by Roche Bay plc (formally named Roche Bay Mining Corporation Company Ltd.) and AEI has completed a formal Agreement to continue earning up to 100 percent interest on the Roche Bay Iron Project announced on April 1, 2009 (AEI, 2009).

AEI has staked an additional 46 mineral claims with a total area of 33,982 ha around the mineral leases and are summarize in Table 4-2. The dates that work is required on the claims are between August 2012 and November 2013 with a number of claims held to November 2017. The combined mineral leases and mineral claims are generally contiguous from west of Hall Lake to south of the mineral leases (over 80 km) with most of the mineral leases and mineral claims illustrated on Figure 4-1 (Note: claims around the E-Zone are not contiguous with those around the IOL Parcels).

Table 4-1: Roche Bay Iron Project Mineral Leases

Lease Number	NTS Sheet 1	Expires Date	Hectares
2952	Lot 1 Group 1380 047A06	July 23, 2021	908.5
2953	Lot 2 Group 1380 047A06	July 23, 2021	802.5
2954	Lot 3 Group 1380 047A06	July 23, 2021	402.3
2955	Lot 4 Group 1380 047A06	July 23, 2021	118.6

Table 4-2: Roche Bay Iron Project Mineral Claims

Claim Name	NTS Sheet	Project Area	Date Work Required	Area (Ha)
AEI 1 F93846	47A06	Peninsula	14-Nov-2013	783.90
AEI 2 F93843	47A06	Peninsula	14-Nov-2017	627.08
AEI 3 F93847	47A06	Peninsula	14-Nov-2013	1,045.14
AEI 4 F93842	47A06	Peninsula	14-Nov-2017	313.64
AEI 5 F93849	47A06	Peninsula	14-Nov-2017	428.58
AEI 6 F93848	47A06	Peninsula	14-Nov-2017	480.78
AEI 7 F93845	47A06	Peninsula	14-Nov-2013	52.41
AEI 8 F93193	47A05 / 06	D Zone	assessment submitted	150.00
AEI 9 F93198	47A05	D Zone	assessment submitted	313.50
AEI 10 F93199	47A05 / 06	D Zone	assessment submitted	155.25
AEI 11 F93197	47A06	D Zone	assessment submitted	779.63
AEI 12 F93195	47A06	C Zone	assessment submitted	982.49
AEI 13 F93194	47A06	C Zone	assessment submitted	620.26
AEI 14 F93196	47A06	C Zone	assessment submitted	265.01
AEI 15 F93200	47A06	D Zone	assessment submitted	341.75
AEI 16 F94129	47A06	D Zone	27-Sep-2013	995.00
RBN 1 F94141	047A05/06	D Zone west	27-Sep-2013	1,035.47
RBN 2 F94142	047A05	D Zone west	27-Sep-2013	1,045.14
RBN 3 F94143	047A05	D Zone west	27-Sep-2013	1,045.14
RBN 4 F94144	047A05	D Zone west	27-Sep-2013	982.61
RBN 5 F94145	047A05	D Zone west	27-Sep-2013	663.51
RBN 6 F94146	047A05	D Zone west	27-Sep-2013	223.64
RBN 7 F94147	047A05	D Zone west	27-Sep-2013	356.42
HALL 1 F94135	047A06/A11	Hall Lake	27-Sep-2013	394.83
HALL 2 F94136	047A11	Hall Lake	27-Sep-2013	949.75
HALL 3 F94137	047A11	Hall Lake	27-Sep-2013	1,045.14
HALL 4 F94138	047A11	Hall Lake	27-Sep-2013	1,045.14
HALL 5 F94139	047A11	Hall Lake	27-Sep-2013	1,045.14
HALL 6 F94140	047A11	Hall Lake	27-Sep-2013	1,045.14
HALL 7 F94148	047A11	Hall Lake	27-Sep-2013	1,045.14
HALL 8 F94149	047A11	Hall Lake	27-Sep-2013	1,045.14
HALL 9 F94150	047A11	Hall Lake	27-Sep-2013	1,045.14
HALL 10 F94151	047A11	Hall Lake	27-Sep-2013	1,045.14
HALL 11 F94152	047A11	Hall Lake	27-Sep-2013	1,045.14
HALL 12 F94153	047A11	Hall Lake	27-Sep-2013	1,045.14
HALL 13 F94154	047A11	Hall Lake	27-Sep-2013	386.97
JG K13851	047A04	E Zone	20-Aug-2012	263.37
JC K13852	047A04	E Zone	20-Aug-2012	449.38
GW K13853	047A04	E Zone	20-Aug-2012	815.19
CD K13854	047A04	E Zone	20-Aug-2012	1,045.14
NS K13855	047A04	E Zone	20-Aug-2012	1,045.14
SR K13856	047A04	E Zone	20-Aug-2012	1,045.14
FG K13857	047A04	E Zone	20-Aug-2012	1,045.14
LN K13858	047A04	E Zone	20-Aug-2012	313.54
PEN 1 F94131	047A03	RB South	27-Sep-2013	1,045.14
PEN 2 F94132	047A03	RB South	27-Sep-2013	1,045.14

In Nunavut, all mineral lease and mineral claim boundaries are located by four corner posts and boundary posts (between the corner posts) that have been legally surveyed. Golder has not verified the location of the corner and boundary posts and has relied upon AEI that all posts are placed in accordance with the Indian and Northern Affairs Canada Acquiring Mineral Rights in Nunavut.

4.3 Ownership and Agreements

During fiscal 2007, the Company acquired the right to earn a 50.1% interest in the Roche Bay Iron Ore Project located near Roche Bay, on the eastern Melville Peninsula, Nunavut Territory from Roche Bay plc pursuant to an Option Agreement between AEI and Roche Bay plc dated January 29, 2007, as amended.

Under the Option Agreement to earn up to 50.1%, AEI paid Roche Bay plc $250,000 and issued 8,000,000 Rights (the "Rights") at an exercise price of $0.35 per Right in 2007. The Company was to issue a further 2,000,000 Rights at an exercise price of $0.60 per Right upon completion of 15,000 metres of drilling. A further 2,000,000 Rights were issuable at an exercise price of $1.00 per Right upon the completion of both (a) a total of 30,000 metres of drilling and (b) a NI 43-101 compliant pre feasibility study based on an envisioned minimum 6 million tonne per year mining operation containing a resource estimate of at least 750,000,000 tonnes of iron ore in the aggregate among the "measured" and "indicated" categories. The second tranche for 2,000,000 Rights was not issued upon completion of the 15,000 metres of drilling due to amendments to the original option agreement as noted below.

In July 2008, AEI announced an amendment to the Option Agreement with Roche Bay plc that would allow AEI to earn up to 70% of the Roche Bay Project. The July 2008 amendment was subsequently replaced by the AEI with a signed Memorandum of Understanding with Roche Bay plc dated December 3, 2008, which was later finalized on April 1, 2009 with the completion of the Definitive Agreement.

The Definitive Agreement granted AEI the option to acquire the remaining 85% (in addition to the 15% already earned) of the right, title and interest in and to the Mining Property from Roche Bay plc. The Definitive Agreement required additional payment of $365,000 in 2009, payment of $275,000 in each of 2010, 2011 and 2012, and the issuance of either 4,000,000 shares or 6,000,000 share purchase warrants with an exercise price of $0.20 for the purchase of one share. All future rights to be issued to Roche Bay plc in accordance with the previous agreement were cancelled.

In July 2009, the Definitive Agreement was approved by the TSX Venture Exchange and 4,000,000, Company shares which form part of the additional payments were issued to Roche Bay plc. The Definitive Agreement replaced the Amended and Restated Option and Farm-Out Agreement dated May 30, 2007 between AEI and Roche Bay plc. As a result of finalizing this Definitive Agreement, the Company may:

- Acquire Roche Bay plc’s interest in the Leases subject to: (i) a retained 4% Gross Overriding Royalty (GOR) on iron products (such as nuggets) having greater than 90% iron content; (ii) a 6% GOR on iron products (such as concentrates and pellets) having less than 90% iron content; and (iii) a 10% GOR on by-product precious metals (the “Royalty”); or
- Purchase Roche Bay plc’s interest in the Leases outright, and terminate the Royalty if effective, for a lump sum payment of $25,000,000 on or before March 15, 2010 or $30,000,000 after March 15, 2010 and on or before March 15, 2011.

As the Buy-Out Option was not exercised, AEI will thereafter has the right to buy out 50% of the Royalty (other than the precious metals royalty) before December 31, 2020 for a total payment of $35,000,000 plus an inflation adjustment, allowing the Company to effectively reduce the GOR on iron products to 2% on nuggets and 3% on concentrates/pellets, respectively.

Subsequent to year end, AEI announced that it has agreed to terms for a new Buy-Out Option for the Roche Bay Project with Roche Bay plc. As a result of recent discussions, AEI and Roche Bay plc have amended their Royalty Agreement and finalized a New Buy-Out Option to enable AEI to reduce any existing royalty to 1.875% on all mineral products (except precious metals).

At its election, AEI will have the opportunity to reduce the royalty rate by making a payment of $22,500,000 to Roche Bay plc by August 5, 2011. In doing so, AEI will reduce all royalties to 1.875% on all mineral products except any precious metals (such as gold) which was reduced to 3.9%. All other terms and conditions set out in AEI's agreement with Roche Bay plc will remain the same. If the New Buy-Out Option is not exercised, the previous will continue to apply. Any amendments remain subject to TSX Venture Exchange approval.

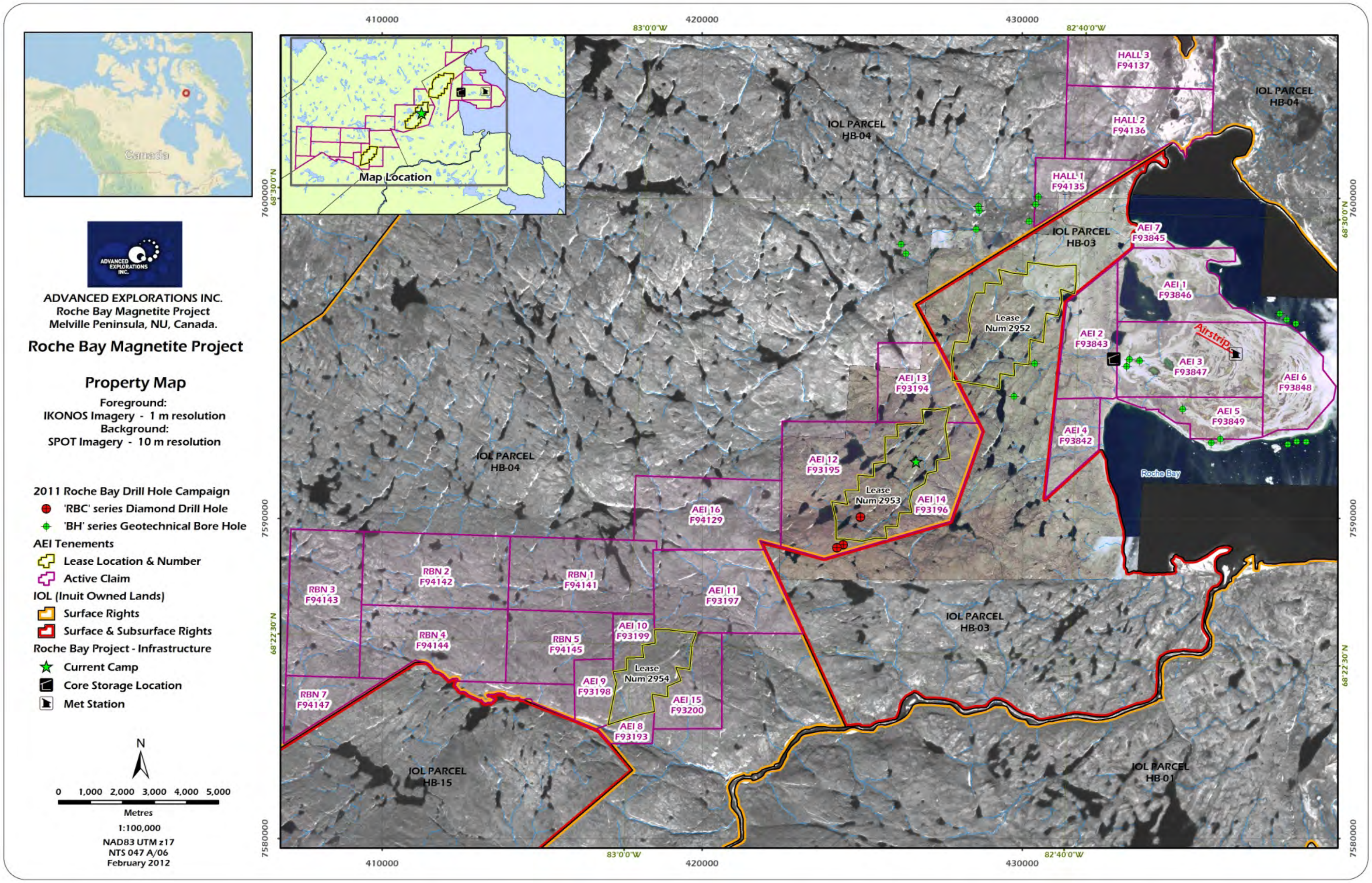


Figure 4-1: Roche Bay Iron Project Location and Mining Leases and Claims (AEI, 2012b)

4.4 Location of Mineralized Zones

The iron formations of the Roche Bay Iron Project are divided into 5 areas (mineralized zones) labelled throughout this report A, B, C, D and E-Zones. In earlier reports, these areas have also been labelled as Deposits or Areas A (Adler), B, C, D and E. For consistency in the report, these will be referred to A/B, C, D and E-Zones and are located within the mining leases outlined in Table 4-1.

The mineral resource estimates defined in this report are the A/B and C-Zones.

4.5 Environmental Liabilities and Permits

AEI has advised Golder that there are no known environmental issues or liabilities on the Roche Bay Iron Project and a summary of ongoing environmental studies is provided in Section 20.

The exploration permits that AEI requires to conduct exploration on the Roche Bay Iron Project include the following:

- A Land Use Licence from the Qikiqtani Inuit Association (QIA), required to conduct land use operations on the surface of Inuit Owned Land Parcels HB-01, HB-03 and HB-04;
- A Land Use Permit from Aboriginal Affairs and Northern Development Canada (AANDC; previously INAC) to conduct land use operations on Crown land on the Roche Bay Peninsula; and
- A water licence from the Nunavut Water Board, required to take water for camp and drilling purposes.

All permits required to undertake the current exploration program at C Zone are current and in good standing based on correspondence provided by Mr. Gary Williams, Vice President of Environmental (AEI, 2012b).

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Accessibility

The Roche Bay Iron Project is located immediately to the west of Roche Bay, approximately 60 km southwest of Hall Beach, Nunavut, Canada and located approximately 6 km from the tidal water along the east coast of the Melville Peninsula. This area of Canada is remote and north of the Arctic Circle. Access to the property is currently seasonable, between the spring (April) and fall seasons (November). During the exploration programs completed by AEI, access to site was via plane, helicopter and boat from the nearby hamlet of Hall Beach. Both supplies and camp personnel were transported this way. Hall Beach has regular commercial air service six days a week. This service depends on the weather.

5.2 Climate

The daily average temperatures from December to March are -27°C to -33°C. During the summer, the average daily temperature ranges between 1°C to 5°C. However, temperatures can reach as high as 16°C in the summer. Annual precipitation averages about 23 cm (9 inches). Fifty percent of the annual precipitation falls during the months of July, August and September. Total snowfall for the year averages 124 cm. Owing to the relative uniformity of the prevailing winds, snow accumulates in large drifts at any break point in the wind (Harper, 1984). Table 5-1 summarizes the average daily temperatures for Hall Beach town (Environment Canada, 2007). The length of the exploration operating season is between spring (April) and fall (November) with currently no safe access to site during winter.

Table 5-1: Average Temperature for Hall Beach, Nunavut 1970-2000 (Environment Canada, 2007)

Temperature	Daily Average (°C)	Standard Deviation	Daily Maximum (°C)	Daily Minimum (°C)
January	-31.8	3.5	-27.8	-35.7
February	-33.2	3.5	-29.2	-37.2
March	-29.2	2.8	-24.7	-33.7
April	-20.4	2.8	-15.2	-25.6
May	-9	2.3	-4.8	-13.2
June	0.7	2.1	3.3	-1.9
July	6.1	1.4	9.4	2.8
August	4.7	1.1	7.4	1.8
September	-0.3	1.3	1.6	-2.2
October	-9.5	3.2	-6.3	-12.6
November	-20.2	3.4	-16	-24.3
December	-27.5	3.8	-23.4	-31.5
Year	-14.1	1.4	-10.5	-17.8

Meteorological information for the Roche Bay Iron Project area has been drawn from more than 50 years of records available from the weather station located at Hall Beach, approximately 65 km to the northeast. To supplement this dataset, a new meteorological station was installed by EBA Engineering Consultants Ltd, A Tetra Tech Company (EBA), in August 2008 at the Roche Bay Iron Project airstrip. Data from this station has been collected continuously since, and downloaded remotely on a regular basis (AEI, 2012b).

5.3 Physiography

The Roche Bay Iron Project falls within two main physiographic regions of Canada. The low-lying peninsula that extends into Roche Bay ("the Roche Bay Peninsula") is part of the Foxe Basin region of the interior plains. The more rugged upland areas are part of the Canadian Shield. The summary of the physiography of the Roche Bay Iron Project area is taken directly from a report by Harper (1984) and is described in the following sections.

5.3.1 Shield Region

The upland areas are composed of metamorphic and igneous rocks. This dissected upland rises abruptly from the plain to an elevation of more than 200 m and forms a modified escarpment trending north south. The surface of the upland area rolls gently to the west and becomes mountainous (500+ m) within 20 km of the west coast of the peninsula. The mountainous area of western Melville Peninsula forms the drainage divide, with many large deeply entrenched streams flowing west to Committee Bay. Melville Peninsula was glaciated during the last glacial period, and a thin (1-2 m) veneer of till was deposited. The till is generally silty and buff to grey in colour. The till is derived from local rocks and thus is largely composed of shield type material. Owing to the lack of vegetation, there has been extensive surface washing of the till resulting in the removal of fines, leaving the ground surface littered with boulders. Existing and abandoned streams tend to concentrate boulders in their stream beds.

During the previous glaciation (110 Ka to 10 Ka), the land mass was depressed and wave action modified the landscape to an elevation of at least 110 m above sea level. At elevations below the marine limit, the till has been reworked into beaches or been completely eroded. The beaches consist of coarse pebbles and cobbles. The entire fine fraction has been removed by wave action. The beach at the highest elevation is generally poorly developed, tends to be relatively flat and is capable of supporting vegetation. An organic mat up to 0.10 m thick has formed on these areas.

5.3.2 Foxe Basin Region

The Roche Bay Peninsula extending into Roche Bay is underlain by relatively flat-lying Palaeozoic sedimentary rocks. This plain has an elevation of less than 30 masl in the vicinity of the base camp, and is up to 60 km wide at Hall Beach. Shallow lakes, swamp, and sand and gravel deposits cover the area. As the sea level dropped following deglaciation, the upper surface of the dolomite and limestone rocks was frost-shattered and wave worked into beaches. A single drill hole that penetrated the beaches indicated that the beach material was at least 3 m thick. The beaches are extensive and, owing to their mode of formation, tend to form closed depressions. Relict bedrock structures have been identified in the interbeach areas. These structures suggest that the overburden layer in the interbeach regions may be relatively thin. The beach tops tend to be well drained, dry and devoid of vegetation, and the interbeach terrain is wet and capable of supporting vegetation.

5.4 Infrastructure and Other Local Resources

There is no permanent infrastructure on the project site other than the gravel air strip located northeast of the core storage area and the dock area as illustrated on Figure 4-1. The 2007 to 2011 and current exploration main camp is located in the C-Zone deposit and approximately 8 km west of the peninsula area. All required infrastructure for exploration is already on site and used each field season. Power for the exploration programs was provided by generators and water was supplied from local lakes and rivers.

The nearest population centre is the hamlet of Hall Beach located 60 km to the northeast of the Roche Bay camp. Hall Beach has a population of 550 and is one of the longest permanently populated communities north of the Arctic Circle. Hall Beach is a northern transportation centre with a commercial-grade airport which can accommodate large jetliners with commercial flights 6 days a week. Growth in the Hall Beach area is projected to rise in the near future. The community of Igloolik, located on an island north of Hall Beach, has a population of 1,500 and is also a major area of resources (people and supplies) to the area. The majority of the Hall Beach and Igloolik population is Inuit with both Inuktitut and English languages spoken.

6.0 HISTORY

The documented history of the Roche Bay Iron Project is based on reports by Harper (1984) and Ursel (1968, 1969 and 1970) and the 2007 and 2009 Technical Reports (Palmer et al., 2007 and Palmer and Shaw, 2009).

6.1 Historical Exploration

The historical exploration activities for the Roche Bay Iron Property have taken place between 1968 and 2006.

All historical exploration prior to 2006 were completed under the direction of Borealis Exploration Ltd. (Borealis) which was a direct predecessor of Roche Bay and the exploration activities completed in 2006 were under the direction of Roche Bay.

In general, initial exploration consisted of surface and airborne geophysical surveys, surface mapping and sampling, trenching and 16 BQ core holes in 1982 (3,214 m). The 1982 core drilling focussed on the A/B-Zones to determine the grade of iron down hole as well as its consistency across strike. Only one hole was drilled in the C-Zone. Drill core and surface samples from the historical exploration programs were metallurgical tested to determine iron content, liberation and concentration methods (Davis Tube testing). Half core samples from the 1982 drill program are stored on the property (Palmer et al., 2007).

In 2006, Roche Bay commenced exploration activities that included surface mapping and 3 AWX shallow core holes (53.94 m). The core from the 2006 drilling and a selection of core from the 1982 drilling program were metallurgical tested to determine iron content, liberation and concentration methods.

All exploration activities have been previously summarized in the 2007 Technical Report (Palmer et al., 2007) including the 2006 exploration activities undertaken by Roche Bay. Those exploration activities conducted prior to the commencement of the 2007 field season are considered historic and have not been used in the current mineral resource update for the C-Zone but have been used in the first time reporting of the A/B-Zone Inferred mineral resource estimate.

6.2 Historical Tonnage and Grade Estimate

Historical tonnages for the Roche Bay Iron Property were estimated in 1968 and updated annually until 1970 by Ursel. The tonnages were updated again in 1984 by Underhill (Palmer et al., 2007) and are reproduced in Table 6-1.

Table 6-1: 1984 Historical Tonnages Estimated by Underhill
Roche Bay Iron Project

Zone	Tonnage
A (Adler)	158,000,000
B	309,000,000
C	426,000,000
D	160,000,000
E	86,000,000
Total	1,139,000,000

Underhill (Harper, 1984) calculated these historical tonnages based upon surface geological mapping of the bedrock outcrops and the metallurgical testing of rock and bulk samples. The %Fe grade of the BIF tonnage estimated by Underhill was between 23% and 34%Fe (Palmer et al., 2007).

The specific data used to calculate the historical tonnages and grades were not available and have not been confirmed by Golder (Palmer et al., 2007). The historical tonnage and grade estimate was considered by Golder to be a historical estimate as a Qualified Person had not done sufficient work to classify the historical estimates as current mineral resources for AEI. The historical estimates should not be relied upon and have been provided for the purpose of documentation of previous work.

6.3 2011 Mineral Resource Estimate

A mineral resource estimate was completed for the C-Zone (second time reporting) and was published in the 2011 Technical Report (Greenough and Palmer, 2011). This estimate was an update of a first time mineral resource estimate completed in 2009 and published in the 2009 Technical Report (Palmer and Shaw, 2009).

Table 6-2 and 6-3 summarizes the results of the independent May 20, 2011 Inferred and Indicated Mineral Resource Estimate for the C-Zone for total iron cut-off grades between 20% and 30%. An Inferred Mineral Resource of 226.264 million tonnes at an average grade of 25.85% total iron and 23.85% magnetics (Fe_3O_4) and an Indicated Mineral Resource of 323.182 million tonnes at an average grade of 26.73% total iron and 25.77% magnetics (Fe_3O_4) using a 20% iron cut-off grade to a depth of 250 m below surface was reported for the C-Zone.

Table 6-2: May 20, 2011 Roche Bay Iron Project C Zone Mineral Resource Estimate – Inferred Resource

Cut-off Grade Fe (%)	Tonnes (Mt)*	Total Fe (%)	Magnetics (%)**	$Si0_2$ (%)	Al_20_3 (%)	Mn0 (%)	P_20_5 (%)	S (%)	LOI (%)
20	**226.265**	**25.85**	**23.85**	**51.83**	**3.09**	**0.07**	**0.20**	**0.81**	**1.04**
22	199.900	26.48	24.98	51.56	2.89	0.07	0.20	0.78	1.01
24	160.598	27.31	26.59	51.15	2.63	0.07	0.21	0.74	0.96
25	135.215	27.84	27.63	50.84	2.48	0.06	0.21	0.72	0.93
26	106.697	28.46	28.88	50.42	2.31	0.06	0.21	0.70	0.90
28	53.548	29.93	31.75	49.39	1.99	0.05	0.20	0.63	0.82
30	20.601	31.56	35.07	48.08	1.66	0.04	0.19	0.56	0.63

Notes:

* All values rounded to the nearest 100,000 Tonnes.

** Magnetics is reported directly by SGS Mineral Services at the Lakefield laboratory as %Fe_3O_4 and is the percentage of contained magnetics based on Satmagan testwork. It assumes that all recovered material is magnetite. Golder accepts this as reasonable considering the pyrrhotite content is low as demonstrated by the sulphur assays.

The updated mineral resource estimate for the A/B and C-Zones has been developed by Golder and is detailed in Section 14.

Table 6-3: May 20, 2011 Roche Bay Iron Project C Zone Mineral Resource Estimate – Indicated Resource

Cut-off Grade Fe (%)	Tonnes (Mt)*	Total Fe (%)	Magnetics (%)**	$Si0_2$ (%)	Al_20_3 (%)	Mn0 (%)	P_20_5 (%)	S (%)	LOI (%)
20	**323.182**	**26.73**	**25.77**	**50.85**	**2.86**	**0.07**	**0.20**	**0.70**	**0.81**
22	291.551	27.33	27.33	50.57	2.68	0.07	0.20	0.68	0.76
24	241.326	28.22	28.64	50.10	2.41	0.06	0.20	0.64	0.71
25	211.666	28.74	29.71	49.75	2.27	0.06	0.20	0.62	0.67
26	180.750	29.29	30.89	49.34	2.14	0.05	0.20	0.60	0.63
28	117.259	30.54	33.59	48.43	1.86	0.05	0.20	0.54	0.51
30	66.195	31.74	36.09	47.59	1.61	0.04	0.20	0.49	0.32

Notes:

* All values rounded to the nearest 100,000 Tonnes.

** Magnetics is reported directly by SGS Mineral Services at the Lakefield laboratory as $\%Fe_3O_4$ and is the percentage of contained magnetics based on Satmagan testwork. It assumes that all recovered material is magnetite. Golder accepts this as reasonable considering the pyrrhotite content is low as demonstrated by the sulphur assays.

6.4 Preliminary Economic Assessment

A Preliminary Economic Assessment (PEA) was completed for the C-Zone based on the 2009 Mineral Resource Estimate and was published on March 4, 2010 (Dorval, 2010). The details of the PEA can be reviewed in the March 4, 2010 Technical Report (Dorval, 2010) filed on the SEDAR website. A summary of the topics outlined in the PEA Technical Report are as follows:

- Open pit mine design and production schedule of the C-Zone North;
- Operations and infrastructure, mining equipment, mine personnel;
- Preliminary flowsheet for an Iron Nugget Plant;
- Power generation and distribution;
- Port and shipping concepts;
- Environmental Considerations;
- Market Analysis and Market Concept;
- Cost Estimate, Financial Analysis and Investment Appraisal; and
- Risk Analysis.

Since the completion of the PEA in 2010, AEI has initiated a FS in 2011 and it is planned to be published in 2012. Many of the topics above are not current due to changes in processing methods, mining production, mining schedules, costing, etc., and therefore are not detailed in this report (specifically Sections 15 to 19 and 21 to 22). These topics will be discussed in detailed in the FS to be published by Wardrop and AEI. Where appropriate, some of these topics are briefly discussed in this report.

7.0 GEOLOGICAL SETTING

The geological setting descriptions of the Roche Bay Iron Project has been provided directly from reports by van Evendingen (1982), Ford (1982), Harper (1984) and the 2007 and 2009 Technical Reports (Palmer et al., 2007 and Palmer and Shaw, 2009). The following is a summary of the geology setting for the Roche Bay Iron deposit by previous authors with updates from exploration activities completed by AEI.

7.1 Regional Geology

The east-central portion of the Melville Peninsula is underlain by Precambrian rocks of the Churchill Structural Province in the interior, and Phanerozoic strata along the coast and eastward across the Foxe Basin.

The Precambrian rocks are predominantly Archean and Aphebian granitoids (both massive and foliated) with narrow elongated belts of Archean supracrustals cutting across the peninsula in a northeast direction, which is concordant with the main structural grain in this part of the Canadian Shield. These belts consist of a suite of rocks known as the Prince Albert Group which consist of a sequence of Aphebian (early Proterozoic) or Archean metamorphosed sedimentary and volcanic rock (greenstones) exposed mainly in two belts on the Melville Peninsula and one belt southwest of Committee Bay. Subsequent work has shown these rocks to be Archean. The rocks are predominantly metavolcanics, which vary in composition from dark-coloured basaltic rocks through intermediate dacite to light-coloured rhyolite.

Three phases of diabasic dyke rocks are present, ranging in age from possible Archean to Upper Proterozoic.

The Phanerozoic rocks consist of Cambrian-Ordovician massive micritic limestone, sandstone, dolomite and dolomitic limestone.

Illustrated on Figure 7-1 is the regional geology of the Melville Peninsula and Baffin Island area of Nunavut (Jackson and Berman, 2000).

7.2 Local and Property Geology A/B and C-Zones

The local geology of the iron deposits for the Roche Bay Iron Project has been described by Ursel (1968, 1969 and 1970), van Evendingen (1982), Ford (1982) and Harper (1984). The Roche Bay Iron Project lies in the Churchill Province of the Canadian Shield on the Melville Peninsula as illustrated on Figure 7-1 and Figure 7-2. Roche Bay formations represent upper green schist to lower amphibolite facies, and have undergone extensive metamorphism at temperatures between 500°C and 700°C. The age of these rocks has been determined to be in the range of 1,580 to 2,900 million years before present. Two periods of folding have occurred, one with a northwest-southeast axis, and the other with a northeast-southwest axis (Ford, 1982).

The Roche Bay Iron Project encompasses five deposits of Algoma type BIF which have been labelled A (or Adler), B (now A/B), C, D and E-Zones. These zones are generally characterized by alternate bands of magnetite and silica, ranging in thickness from one metre, down to one millimetre. The strike length of these deposits is between 820 m and 4,800 m and the width is between 120 m to 160 m. The dips of the deposits are generally sub-vertical to steeply dipping and strike NE-SW. Drilling to date for the C-Zone has consistently defined magnetite mineralization to a minimum depth of 250 m below surface, but is open at depth to a minimum of 540 m below surface. Drilling to date for the A/B-Zone has been defined a magnetite mineralization to a depth of 180 m below surface.

7.2.1 Lithology

The lithology of the Roche Bay Iron Project has been based on reports by Ford (1982) and Harper (1984) and is reproduced as follows.

7.2.2 Granitic Gneiss

This rock type is a member of the Amitioke Gneiss Complex, which contains units that are both older and younger than the Prince Albert Group.

In and around the mapped areas, the rocks encountered are medium to coarse-grained, well foliated gneisses of granitic composition. They are tan, grey, or reddish on weathered surface and generally pink, white, or grey/black on fresh surface. Quartz, potash (K), feldspar, and biotite are the essential minerals, with chlorite and epidote as accessories. Occasionally, mafia-rich phases up to a few metres thick are encountered. Prince Albert Group rocks are metamorphosed to amphibolite grade, and it is assumed that the surrounding granitic rocks have undergone the same metamorphism.

This unit is in contact with the eastern edge of the Prince Albert Group in the study area. The foliation is parallel to the regional trend of 35° and the observed dips are always to the east. Contacts are sharp, and probably at least partially faulted, for example, on the east flank of the C-Zone.

7.2.3 Chlorite-Tremolite Serpentine Schist

This rock unit is medium to coarse-grained and light green in colour. It weathers recessively and the weathered surface is also a light green colour. The mineralogy appears to be entirely chlorite, tremolite, and serpentine, which have replaced the original minerals. The protolith for this rock would be an ultramafic volcanics containing abundant olivine and pyroxene. Southwest of Committee Bay, these rocks exhibit relict spinifex texture, but this texture is absent in the lavas to the east and is rare on the west side of the peninsula. It is likely that the high metamorphic grade has eliminated the evidence.

In the north part of the study area from 1982 (A/B-Zone), this unit is found in thin bands (usually less than 5 m in thickness) bordering the western limit of the basaltic unit. In C-Zone, they are restricted to the east and west flanks of the deposit and the units are thicker, often reaching up to 25 m.

7.2.4 Talc-Chlorite Schist

This unit is also representative of the ultramafic lavas in the region. The rock is a very light green colour, medium-grained, and very soft. This rock is probably a result of further alteration on the chlorite-tremolite schist, where talc replaced both serpentine and tremolite. This particular rock type is restricted to the east and west margins of the Prince Albert Group, as is the chlorite-tremolite schist.

It was observed during the 1982 mapping on the western part of the C-Zone local grid that between 40N and 44N, this unit has been extensively brecciated. The brecciation (up to 30 fractures per metre) has been healed by aphanitic veins of pink material, which are probably aplitic dykes. The fractures and angles of intersection are quite regular, suggesting that healed joint sets are responsible for the brecciated appearance.

7.2.5 Quartzite

The quartzite is a grey-coloured rock with a grey-brown weathered surface. It is medium-grained and generally monomineralic. Occasionally, a few flakes of mica are present, defining the original bedding. This rock type is invariably associated with quartz-mica schist, either in abrupt contact, interbedded, or transitional. When interbedded, the individual members are often approximately 3-5 cm thick. This creates a striking pattern in outcrop, where the schist weathers recessively in comparison with the quartzite and also weathers to a rusty salmon pink colour (due to the micas).

The protolith here is quartz arenite, clastic sediment, which would be indicative of a shallower marine environment than the argillite or iron formation sediments.

This unit and the quartz-mica schist flank the main zone of iron formation at A/B-Zone. Together with ultramafic volcanics, they mark the eastern limit of the Prince Albert Group in C-Zone. At the western margin, they are again associated with ultramafics and are also occasionally mixed with basalt and BIF.

7.2.6 Quartz-Mica Schist

These are composed almost entirely of quartz and biotite with accessory muscovite. The rock is white and dark grey on fresh surface, with the entire rock becoming darker with increasing biotite content (which can range from 5 to 35%). It often contains bands rich in almandine gamete (up to 0.5 cm). It has a salmon-rusty weathering surface similar in colour to the weathered metabasalt. However, the fresh surface shows well-laminated quartz bands, 5 mm in thickness, alternating with 1-2 mm thick biotite bands. This unit is invariably found associated with quartzite and, with decreasing micaceous content, the two are gradational.

The protolith for this rock type would be either greywacke or pelite, depending on the biotite content. These rocks would be deposited in deeper water than quartzite. Alternating quartzite and schist may indicate rapid fluctuation in the water depth caused by transgressive and regressive sequences. Like the quartzite, this unit flank the A/B-Zone, and it has a strongly developed foliation, which is parallel to the regional trend. Further south, this unit (plus quartzite and ultramafic volcanics) form the eastern and western margins of the Prince Albert Group, but it is also occasionally mixed with the basalt and iron formation near the western margin.

7.2.7 Metabasalt (Gabbro)

This rock is dark green in colour and is relatively fresh at surface. It is generally massive or poorly foliated with variable grain size. Individual crystals may be up to 1 cm, but this is rare.

Commonly, crystals are 2-3 mm in size. The essential constituents of the rock are the ferromagnesian minerals (amphibole, pyroxene, and biotite), which comprise 50-70% of the total. Plagioclase feldspar (20-35%) and quartz (never more than 15%) are the other essential minerals. In addition to these, other amphiboles are also quite common, with actinolite (plus tremolite) and grunerite being dominant. Chlorite is often present, after pyroxene and hornblende. Frequently, the plagioclase shows partial alteration to clay minerals. Pyrite and pyrrhotite are the most common sulphides, and they are usually disseminated rather than in veinlets or stringers. Carbonate-rich veins are generally found near contacts. They are often irregularly shaped, showing pinch and swell structures, and they weather recessively to a light brown colour. The volcanic (greenstones) are quite resistant to weathering and form prominent knolls, ridges, and scarps. Volcanic structures are virtually absent, probably destroyed by the high degree of metamorphism. Rather poor examples of pillows were noted in the mapping from 1982 in a few widely separated locales, and there are several examples of what appear to be flow foliations, running parallel to the regional strike.

This unit is in part contemporaneous with the BIF deposition, and bands of iron formation are commonly found in a thicker basaltic sequence. Close to the iron formation contacts, the basalt often contains euhedral magnetite crystals.

Other workers in the area, as described in the Harper 1984 report, have proposed that this unit is principally a gabbro that has intruded this region as a sill-like body plus minor basaltic components. Also in Harper 1984 are opinions describing cross-cutting relationships outside the study area in 1982 and the crystal size, inclusions of iron formation, and abruptness of contacts.

7.2.8 Argillite

The argillite is a black, detrital clastic rock found only in thin beds and lenses. Weathered surfaces have rusty stains and, despite the local metamorphic grade, the rock is still aphanitic (although small crystals of mica can be observed). Owing to its well-bedded occurrence, it fractures in rectangular blocks.

This rock is intimately associated with the iron formation. The black colour, rusty weathering, and peculiar fracture pattern are all characteristic of the iron formation as well. On weathered surface, the two rock types appear very similar, and a fresh surface must be examined to ensure correct identification.

7.2.9 Granodiorite

Lenses of grey-white, massive unfoliated granodiorite are occasionally found on the west side of the study area, adjacent to the basalts and intruding into quartzites and quartz-mica schists. The age of this unit is uncertain, but it appears to be relatively unchanged from its protolith (an igneous plutonic rock), which has been injected as a sill. The mineral composition is 25% quartz, 40% plagioclase feldspar, 20% potassium feldspar, and 15% biotite.

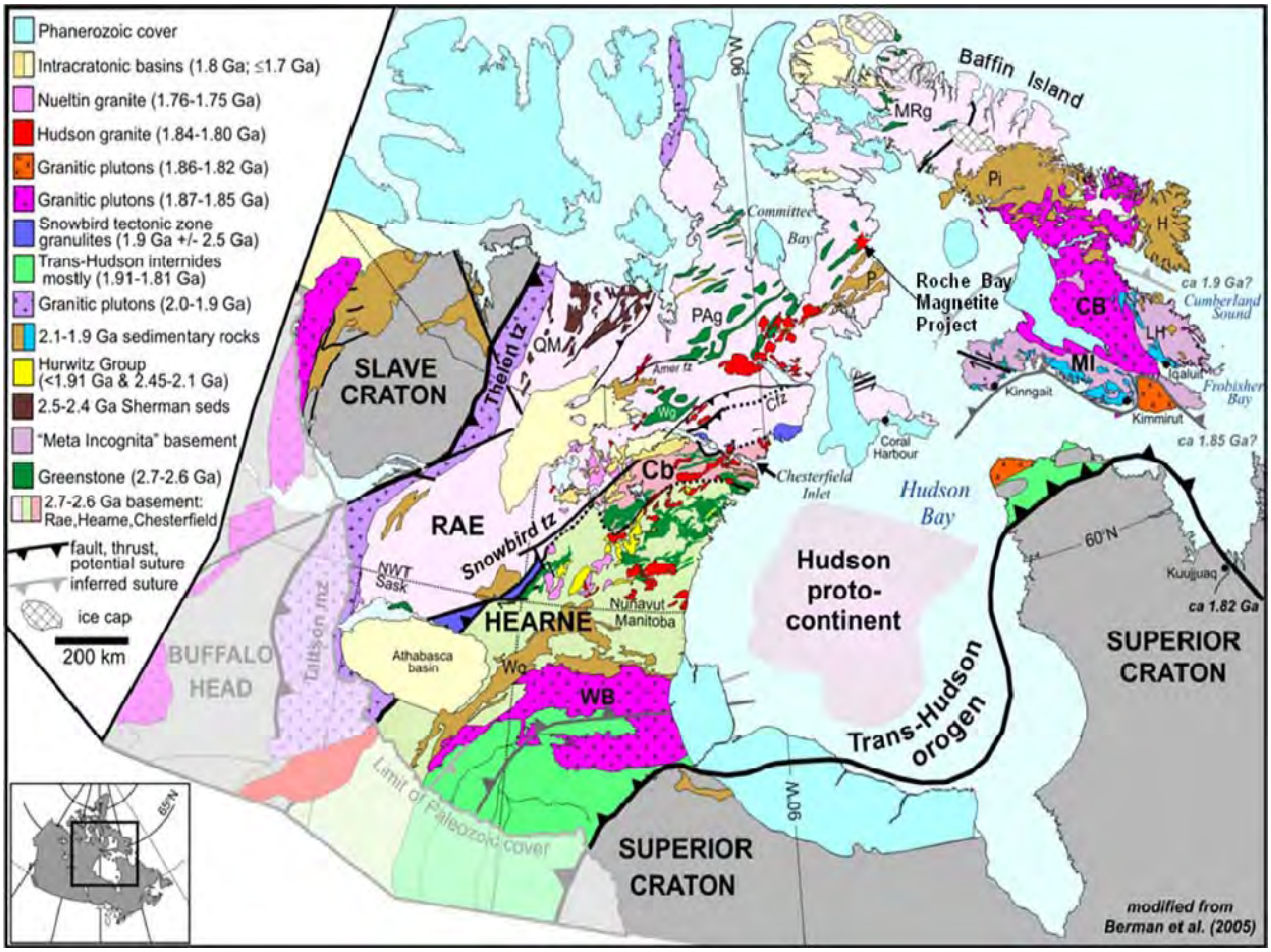


Figure 7-1: Regional Geology of the Melville Peninsula and Baffin Island Area of Nunavut (Jackson and Berman, 2000)

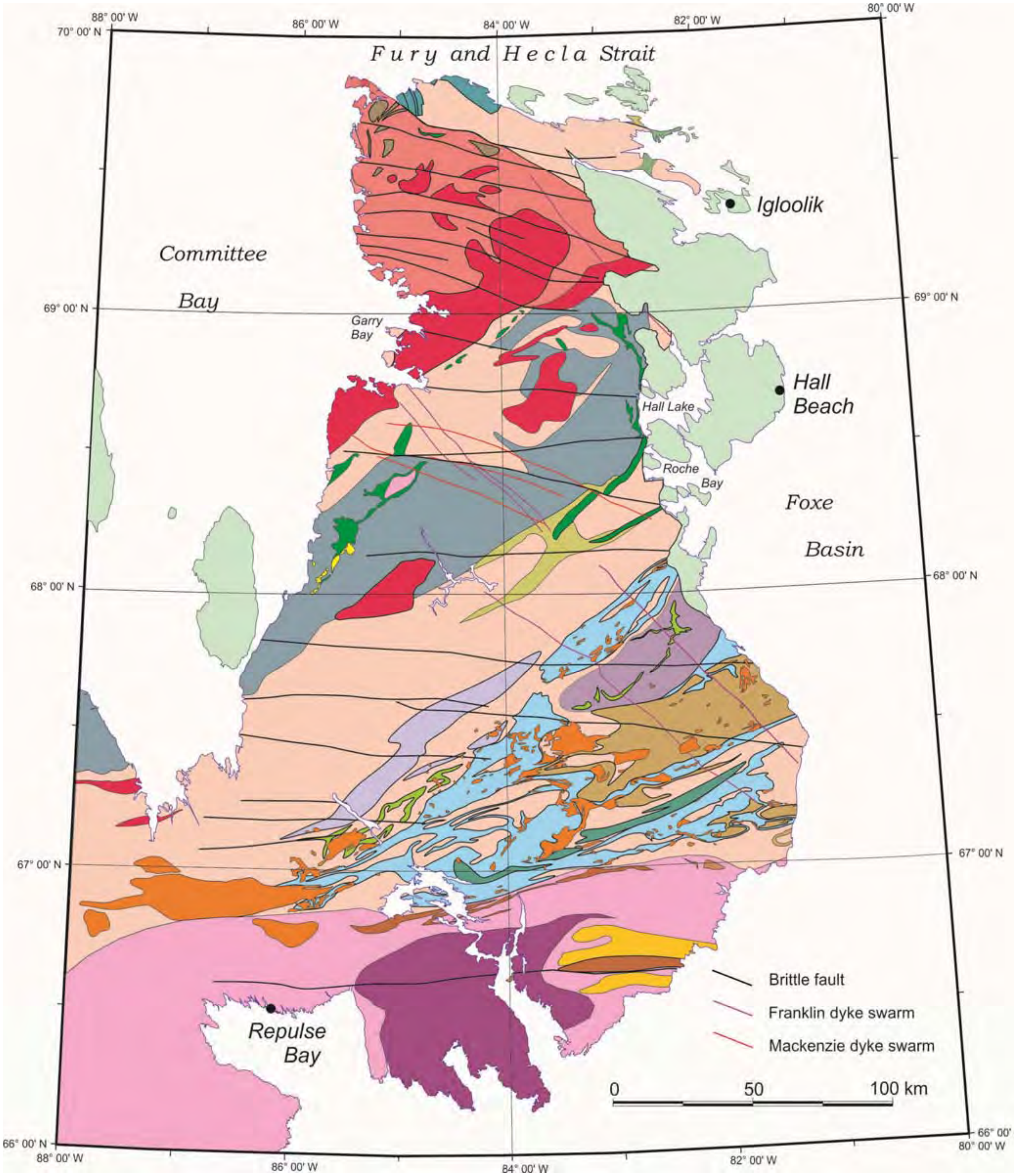


Figure 7-2: GEM Program Poster, Melville Peninsula Project, Cordilleran Roundup 2012

7.3 Structure

Illustrated on Figure 7-3 is a property geology map of the C-Zone completed by Compton et al. (2008). The BIF horizons illustrated on Figure 7-3 are bound to the west by metasediments and schist units and to the east by gabbro (metagabbro), serpentine and metasediment units. North of the C-Zone are metavolcanics and south of the C-zone are granitic gneiss. It appears that all units were turned on end and isoclinally folded. A series of steeply dipping faults cut the now near vertical dipping beds. Uplift and erosion have removed evidence of fold hinges (Ford, 1982).

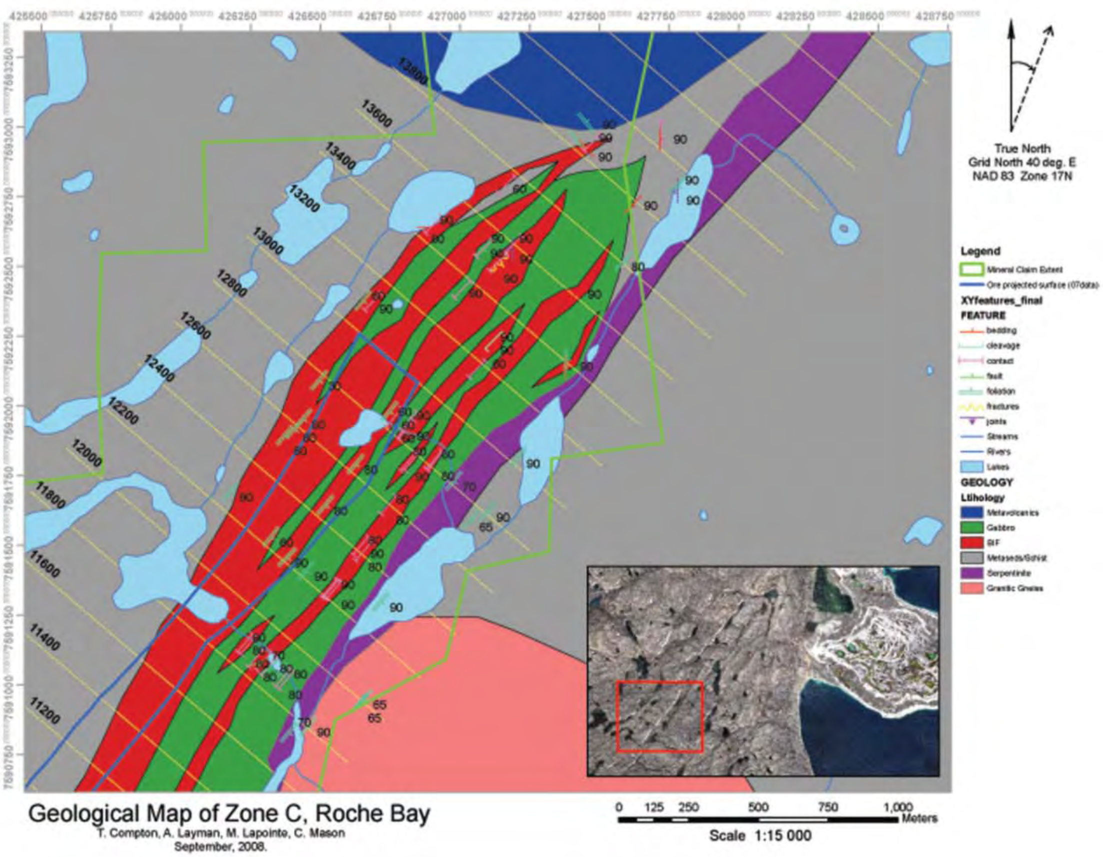


Figure 7-3: Property Geology (Compton et al., 2008)

Property scale structures observed by Harper (1984) identified bedrock outcrop pattern showing the regional NE-SW main structural trend with nearly vertical dips and foliations. Occasionally, the dip angles vary from near-vertical down to 60° to 70°. Many faults and folds are present, but the vertically dipping nature of the bedding and foliation has made structural interpretation difficult for previous authors.

Locally, the faulting can be divided into two major groups depending on trend:

- NE-SW faults with an average trend of 30° to 40° (no dip direction stated in report). The fault planes are parallel to the regional strike and are generally vertical. Relative motion is impossible to assess but, in proximity to these faults, the local rock units are more sheared and finer-grained.

- NW-SE trending faults averaging 1,200 m in length. Both sinistral and dextral strike-slip faults are present and, just south of C-Zone, an offset of up to 800 m can be noted in the Prince Albert Group. The north end of the A/B-Zone terminates against one of these faults.

Small-scale faulting (up to 1 m) was observed by Harper (1984) in slump structures within the iron formation. This faulting was reported as syndepositional, occurring while the iron formation was still capable of soft sediment deformation.

According to Scott-Ortech Mining, Ltd. (Scott-Ortech, 1982), both the A-Zone and B-Zone Deposits are bounded by vertically dipping mafic volcanic rock units. Both are terminated at the north by a nearly vertical right lateral strike slip fault trending E-W. Offset exposures of BIF continue another km to the NE of this fault.

7.4 2011 Geotechnical Review

In 2011, a review of the design requirements for the open pit slope design for the C-Zone was completed by Mr. Marc Rougier of Golder (Rougier, 2011). In this report is a review of the geotechnical data collected by AEI during the 2008 exploration program, review meetings with AEI staff and a visit to the Roche Bay Iron Project site in September 2011.

Some of the observations from this review included the following comments:

- Geotechnical Model: Nine rock mass units are identified from previous reports and a geotechnical database of exploration core, 2007 - 2008 logging, exists and has been reviewed. The C-Zone pit hanging wall will be granodiorite and BIF and are well delineated with respect to slope design. The footwall rocks of the C-Zone pit require targeted drilling to define their rock mass character.

- Structural Model (Major Features): The major structure trends are oriented parallel and perpendicular to the potential open pit area. No clear evidence of any major through-going structures that would impact the pit slopes have been identified from a review of data collected to date. Some major structures are inferred from rives orientated perpendicular to the proposed pit.

- Structural Model (Fabric): The previous works indicate two to three joint sets.

- Hydrogeological Model: The depth of permafrost to date exceeds the vertical depth of the deepest boreholes to date. For FS level study, the measuring or extrapolating with confidence the depth of permafrost is required hydrogeological information. Recommend the need to install shallow and deep thermistors. In 2012, EBA installed four ground temperature cables to depths of 17 m.

- Intact Rock Strength: Intact rock strength estimates were made in previous studies. This data should be supplemented with laboratory strength UCS testing on the major rock types.

- Strength of Structural Defects: The exploration core database provides over 1,500 m of qualitative Joint Roughness Condition (JRC) logging. This data should be supplemented with laboratory direct shear strength testing of representative joints.

- Geotechnical Characterization: An engineering geology model of the Roche Bay Iron Project site will need to be developed based on the collection of drill hole data orientated perpendicular to slope walls and include hydrogeological, structural data, and strength data.

Within this report were figures showing overburden thickness drawings, figures showing which drill holes contained geotechnical data, and the outlining of seven geotechnical drill holes planned for the proposed C-Zone pit that would collect information in the southeast and northwest pit walls.

As part of the review, Mr. Rougier visited the Roche Bay Iron Project site on September 6 and 7, 2011. The purpose of the site visit was to gain a general understanding of the site conditions and of the character of the rock mass and geological structures of the proposed open pit slopes. During the site visit, Mr. Rougier observed bedrock outcrop in the vicinity of the pit, reviewed drill core and collected core specimens from the footwall and hanging wall rock types for discussion purposes and for limited laboratory strength testing in advance of the 2012 FS. The rock types collected included gabbro, biotite schist, granodiorite, serpentinite, diorte, BIF (waste) and meta-greywacke. The results of the laboratory testwork will be provided in the FS (Rougier, 2011).

7.5 Mineralization

The Roche Bay Iron Deposit is a BIF that occurs in linear deposits in a belt of steeply dipping folded and faulted volcanics and sediments of Archean age. Five iron formations or zones have been defined on the Roche Bay Iron Project with the majority of the current exploration concentrated on the A/B and C-Zones and minor historical exploration concentrated on D and E-Zones. These zones are generally characterized by alternate bands of magnetite and silica, ranging in thickness from 1 m, down to 1 mm. The dips of the deposits are generally sub-vertical to steeply dipping and strike NE-SW.

7.5.1 C-Zone

The majority of the exploration activities by AEI are on the C-Zone. The C-Zone resource model consists of one mineralized envelope, created based on drill hole geology and total Fe metal grade data. The overall trend of the deposit is northeast-southwest, in UTM coordinates, dipping 70 degrees to the south-east. The zone has a total strike length of 5,000 m, an average horizontal thickness of 160 m, and a currently defined average depth of 300 m below surface. The mineralization is open at depth and iron mineralization was intercepted to a depth of 540 m below surface. The geological interpretation from the 2008 surface mapping, the 2006 airborne geological survey, 2011 ground magnetic survey and information from the 2007 to 2011 drilling programs had originally outlined five BIF horizons within the C-Zone as illustrated on Figure 9-1. These BIF horizons have been labelled the Hanging Wall (HWX), Main (MAIN) and Footwalls 1, 2 and 3 (FW1, FW2 and FW3). These BIF horizons have been defined by AEI geological staff based on a combination of marker stratigraphic lithological units, varying amounts of silica zones, Fe% content in the BIF zones and other mineral contents (sulphur). During the 2011 and 2012 Mineral Resource Estimates for the Roche Bay Iron Property, the C-Zone mineralization was simplified as one single continuous zone defining the Main, FW1 and FW2 horizons.

Based on the drilling samples assayed from the 2007 and 2011 exploration programs, the total iron content (as magnetite) assayed in the C-Zone horizons varied between 3% Fe (in silica rich units) to a maximum of 63% Fe with means between 25% and 28% Fe for the MAIN and FW1 and FW2 horizons.

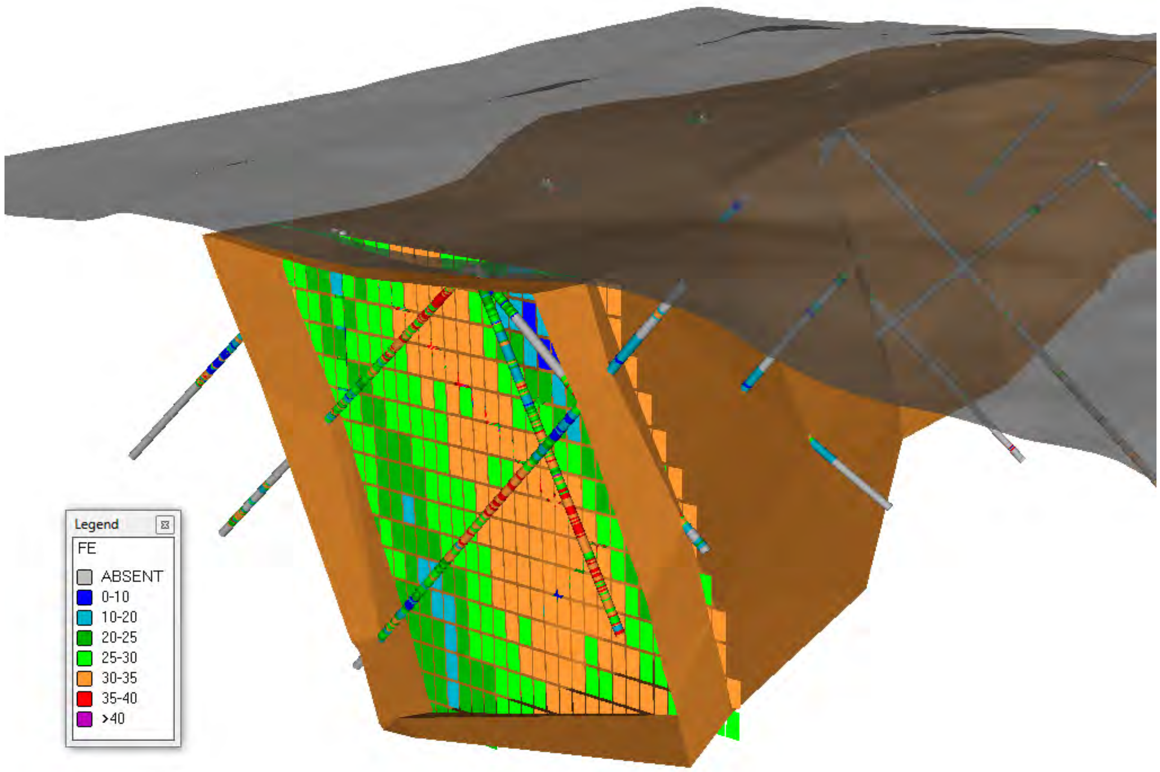


Figure 7-4: Roche Bay Iron Project C-Zone Isometric View (looking north-west local grid)

7.5.2 A/B-Zone

Scott-Ortech (1982) calculated the average ore grade for the A/B-Zone deposits using data from four previous reports (Ursel, 1969; Neal, 1969; Neal, 1970; and Studiengessellschaff fur Eisenerzaufbereltung, 1971). The average ore grade of the A-Zone deposit calculated for the Scott-Ortech study was 26.5% magnetic iron at 158 million long tons. The average ore grade of the B deposit was 20.6% magnetic iron at 309 million long tons.

A preliminary resource estimate of the A/B Zone was performed by AEI, based on historical geological mapping and feasibility studies, aeromagnetic geophysical data collected in 2006, drill data from 15 BQ core holes in 1982, and drill data from 2 NQ holes from 2008. Four BIF zones were identified based on grade similarities and open pit mining potential: AB1, AB2, AB3 and AB4. The AB1 area was modelled based on 14 core holes, the AB2 area was modelled based on 3 core holes, and the AB3 and AB4 areas were modelled from geophysics and mapping only. The A/B-Zone BIF is sub-vertical, dipping steeply to the northwest, opposite the C-Zone.

Based on drilling samples assayed from the 1982 and 2008 exploration programs, the total iron content assayed in the AB1 area samples ranged from 6.07% to a maximum of 59.21%. The total iron content assayed in the AB2 area samples ranged from 6.73% to a maximum of 34.04%.

The 2012 A/B-Zone modelling update consists of two discrete mineralized envelopes. The overall trend of the deposit is northeast-southwest, in UTM coordinates, with a vertical dip. The west limb has a strike length of approximately 1,400 m, an average horizontal thickness of 150 m and a currently defined average depth of 130 m below surface. The east limb has a strike length of approximately 2,000 m, an average horizontal thickness of 120 m and a currently defined average depth of 160 m. Both limbs of mineralization are still open at depth.

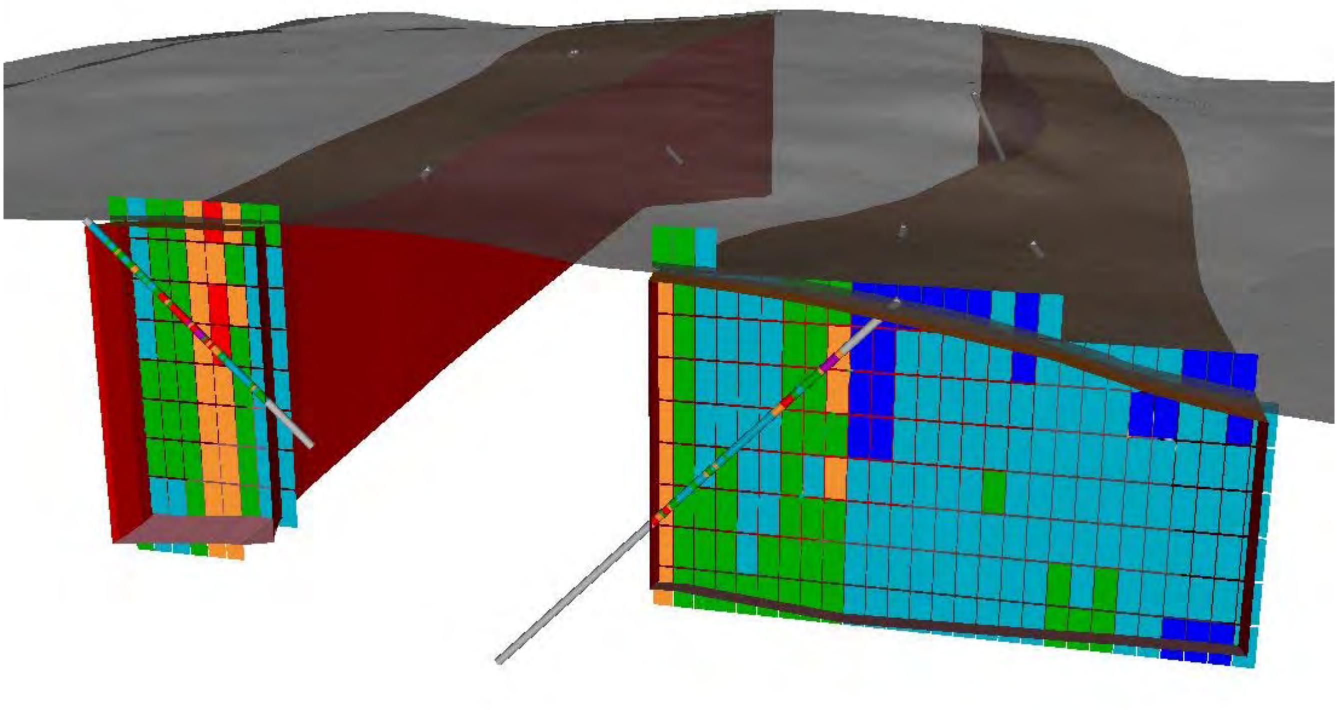


Figure 7-5: Roche Bay A/B-Zone Isometric View (looking north-north-west local grid)

7.5.3 Other Metal Mineralization

Previous authors have identified sulphide mineralization (percentages unknown) in some areas of the BIF (core and outcrops) which is dominated by pyrite and pyrrhotite with traces of chalcopyrite and arsenopyrite (van Huyssteen and Lakshmanan, 1984). Additionally, the presence of trace amounts of silver and gold has also been identified on the property from historical reports.

In July to August 2011, a prospecting program was completed by APEX on AEI's behalf (APEX, 2012b) with the main focus area being across the central Melville Peninsula which included the C-Zone deposit area. During this prospecting program, a total of 786 rock samples were collected and testing for various metals (Au, Ag, Cu, Pb, Zn, Ni). Of these samples, 280 were collected in the area of the C-Zone deposit.

The assay results of the rock samples from the prospecting identified several new mineral occurrences including the following highlighted results:

- 18 samples, near the C-Zone, contained >1,000 ppm Cu (0.10%) up to a maximum of 1.25% Cu.

- One sample on claim AEI 11 reported the highest of Au-Ag-Cu anomaly of 16.2 g/t Au, 94.0g/t Ag and 1.25% Cu.
- One sample on claim AEI 10 (southwest of C-Zone) reported a Cu-Pb-Zn anomaly of 0.36% Cu, 3.04% Pb and 2.99% Zn.
- One sample on claim AEI 12 (approximately 1 km west of C-Zone) reported a Ag-Pb-Zn anomaly of 49.1 g/t Ag, 0.60% Pb and up to 0.74% Zn.
- Of the 280 rock grab samples collected in the vicinity of C-Zone deposit area, only 11 were found to contain >100 ppb (0.10 g/t) Au with the next highest value being 354 ppb (0.35 g/t Au) located on claim AEI 12, north of the C-Zone.

The precious metal occurrence that contained 16.2 g/t Au, 94.0 g/t Ag and 1.25% Cu is located on claim AEI 11 (several km southwest of C-Zone deposit) and was assayed several times (and at a second laboratory) for confirmation, but no other significant precious metal results were identified in the remaining grab samples other than stated above. Illustrated on Figure 9-3 are the metal anomalies identified during the 2011 prospecting program by APEX.

Other observations made by APEX during the 2011 prospecting program indicated that there were a number of exhalative-looking units within the stratigraphic package. These observations, along with the presence of strongly anomalous Pb-Zn +/- Cu and Ag values, are highly suggestive of a potential for identifying Volcanogenic Massive Sulphide (VMS) mineralization.

8.0 DEPOSIT TYPE

The Roche Bay Iron Project has been classified as an Algoma type BIF. The iron formation is characterized by well-laminated rock consisting predominantly of alternating magnetite and white quartz bands. On fresh surfaces, this banding has been described as visually striking, clearly showing microstructures such as small folds and minor displacement. Weathered surfaces are commonly steel black with occasional rusty zones. The rocks have been recrystalized but are still fine grained. Essential minerals are quartz (recrystalized chert) and magnetite. In addition, the iron formation contains silicates such as amphiboles, micas and chlorite, which together may form up to 40% of the rock. Amphiboles present include grunerite, actinolite and hornblende. Chlorite is occasionally associated with magnetite, and biotite and muscovite may also be present. Sulphide mineralization is dominated by pyrite and pyrrhotite with traces of chalcopyrite and arsenopyrite. The thickness of each band in the iron formation ranges between 1 m and 1 mm, but is generally from 5 mm to 20 mm. There is also often a thickness variation between adjacent bands.

The Roche Bay iron formation deposits have been compared to the Algoma type iron formation deposits by Harper (1984) which is reproduced in Table 8-1.

Table 8-1: Comparison Table - Algoma-Type and Roche Bay Iron Deposits

Algoma-Type Iron Formation	Roche Bay Iron Deposit
Present in Archean volcanic and sedimentary rocks of the Canadian Shield.	Present in Archean volcanic and sedimentary rocks of the Canadian Shield.
Characteristically thin-banded or laminated with interlayered bands of ferruginous grey or jasper chert and hematite and magnetite.	Jasper chert and hematite rare in east Melville deposits, more common in west Melville Deposits.
Chemically precipitated sediment.	Chemically precipitated sediment.
Individual members range for more than 100 m to less than 1m thickness.	Individual members range for more than 100 m to less than 1 m thickness.
Individual members rarely extend more than a few kin along strike, but may be linked together or distributed en echelon.	Individual members rarely extend more than a few kin along strike, but may be linked together or distributed en echelon.
Massive siderite and carbonate beds, iron silicate mineral facies (glauconite, chamosite) and iron—sulphide mineral facies (pyrite, pyrrhotite) present but less abundant than oxide facies.	Calcite is often present (predominantly in microfractures) in wall rock, but less common in the banded iron formation. No massive carbonate beds observed. No siderite observed. No glauconite or chamosite observed. Pyrite and pyrrhotite are present occasionally up to a few percent.
Intimately associated with various volcanic rocks including pillowed andesite, tuffs, pyroclastics, or rhyolite flows, and with greywacke, grey-green slate, or black carbonaceous slate.	Metabasalt and possibly minor tuffs, and pyroclastics are present; rhyolite absent in this region. The dominant sedimentary rocks are quartzite and quartz-biotite schist (plus greenstones associated with the mafic volcanics). Some black slate or argillite is present (inter-bedded with quartzite and iron formation).
Tuff and fine-grained elastic beds or ferruginous cherts are inter-bedded with the iron formation.	Argillite is interbedded with the iron formation. Inter bedded quartzite occurs at the margins.
Zonal relationships: sulphide-carbonate-oxide facies.	Only oxide facies observed.
In general, the iron formation overlaps the bulk of the acidic volcanic and in turn is covered by andesitic volcanics and associated greywackes.	Iron formation interbedded with greenstone metasediments and associated with metabasalt. Acid volcanics absent in the immediate area, but present elsewhere in the greenstone belt.

9.0 EXPLORATION

9.1 Historical Exploration (1968 to 2006)

The exploration activities that have been completed on the Roche Bay Iron Project are divided into historical (1968 to 2006) and recent (2007 to 2011). All historical exploration programs were completed under the direction of Borealis prior to 2006 and the 2006 exploration program was completed under the direction of Roche Bay plc. A brief summary of the historical exploration programs prior to 2007 are outlined in Section 6.1 with details provided in the 2007 and 2009 Technical Reports (Palmer et al., 2007 and Palmer and Shaw, 2009).

9.1.1 1968-1970 Programs

The initial exploration target in the region focussed on the iron formation deposits discovered by the Geological Survey of Canada during a reconnaissance program.

Exploration activities began in 1968 with the acquisition of permits covering the Roche Bay Iron Deposit in what was then the Northwest Territory, now Nunavut Territory by Borealis. Borealis was Roche Bay plc's direct predecessor corporation and was incorporated as a Canadian Dominion Chartered Company on August 26, 1968 (Ashley et. al., 1985).

On March 22, 1968, five prospecting permits were issued in the Districts of Franklin and Mackenzie. Borealis then commenced its first field program. Ursel was commissioned to conduct an exploration program on the Roche Bay Iron Deposit on behalf of Borealis. This exploration program by Ursel consisted of reconnaissance surface geological mapping, limited ground and airborne magnetometer and sample collection. Ursel discovered the East Melville Peninsula Iron Formation (Roche Bay Iron Project), which had a strike length of approximately 30 miles. This was later narrowed down to four zones (Areas A, B, C, and D which include A/B and C-Zones) each approximately 400 ft wide and 4,000 ft in length. Ursel also discovered the West Melville Peninsula magnetite and hematite iron formation, which they estimated had a strike length of 15,000 ft and a width of 250 to 1,200 ft. From this initial field program, Ursel justified an expansion of the field program.

In 1969, a second field program was conducted by Ursel. This field program consisted of collection of five-ton bulk sample of iron formation, mapping and magnetometer surveys. This program expanded the known deposit and additional claims were staked on behalf of Borealis. Additional Area E iron formation was also identified during the 1969 field season. The 1969 program confirmed the work done in 1968 and provided better documentation of the West Melville iron formation with extensive mapping and sampling. Roche Bay was identified as a natural harbour with 60-foot depth.

The exploration program continued in 1970 and was the final year for the prospecting permit areas. To retain this area, Ursel staked a total of 122 claims. In addition to geological mapping, a geophysical survey was conducted over the areas of interest.

Tonnage estimates by Ursel (1968, 1969 and 1970) for the five iron formation areas were based only on surface mapping and are summarized in the historical section of this report.

9.1.2 1982 Program

Scott-Ortech was awarded a contract to prepare a preliminary feasibility study on the Borealis Roche Bay Iron Project. The study was limited to the Areas A (Adler) and B (now termed A/B-Zone) because they were closest to the tidewater and would require less infrastructure than the more distant deposits. The data used to generate this report was not based on diamond drilling or detailed mapping of the deposit areas. Therefore, the primary objective of the 1982 field season was to substantiate the assumptions made in the Scott-Ortech study by obtaining additional data on Areas A (Adler) and B. The 1982 program had the following objectives:

a) to define the local geology of Areas A and B by means of surface mapping, diamond drilling, and geophysics;

b) to obtain bulk samples of the ore for milling and metallurgical testing;

c) to examine the potential for other mineralization in the immediate vicinity of the iron formations; and

d) to evaluate in a preliminary sense the potential of the C deposit (C-Zone).

By the end of the 1982 field season, it was clear that Area C (C-Zone) had the highest grade of the three deposits, and was wider and larger than earlier estimated.

A drill program consisting of 3,214 m (10,542 ft) of BQ core was drilled by Midwest Drilling of Winnipeg, Manitoba with 15 drill holes on the A/B-Zone and one drill hole on the C-Zone. The 1982 drill hole locations were referenced on a local grid used in 1982. The locations of the 1982 drill holes in the A/B-Zone are illustrated on Figure 9-1. The original drill hole collars, based on the local grid, were converted to a standard UTM (NAD 27) system. Two holes from the 1982 drilling program were found in the 2006 field program and surveyed using a hand held GPS. In 2008, Northern Survey Ltd. picked up all but one drill hole from the 1982 program.

9.1.3 2006 Program

In 2006, Roche Bay completed their only field season on the Roche Bay Iron Project, which consisted of drilling 3 exploration drill holes (53.94 m) with an AWX drilling system for the C-Zone. In addition, core samples collected from the 3 AWX drill holes and samples from historical drill core samples, stored on site, from the A/B and C-Zones were metallurgically tested at SGS Lakefield.

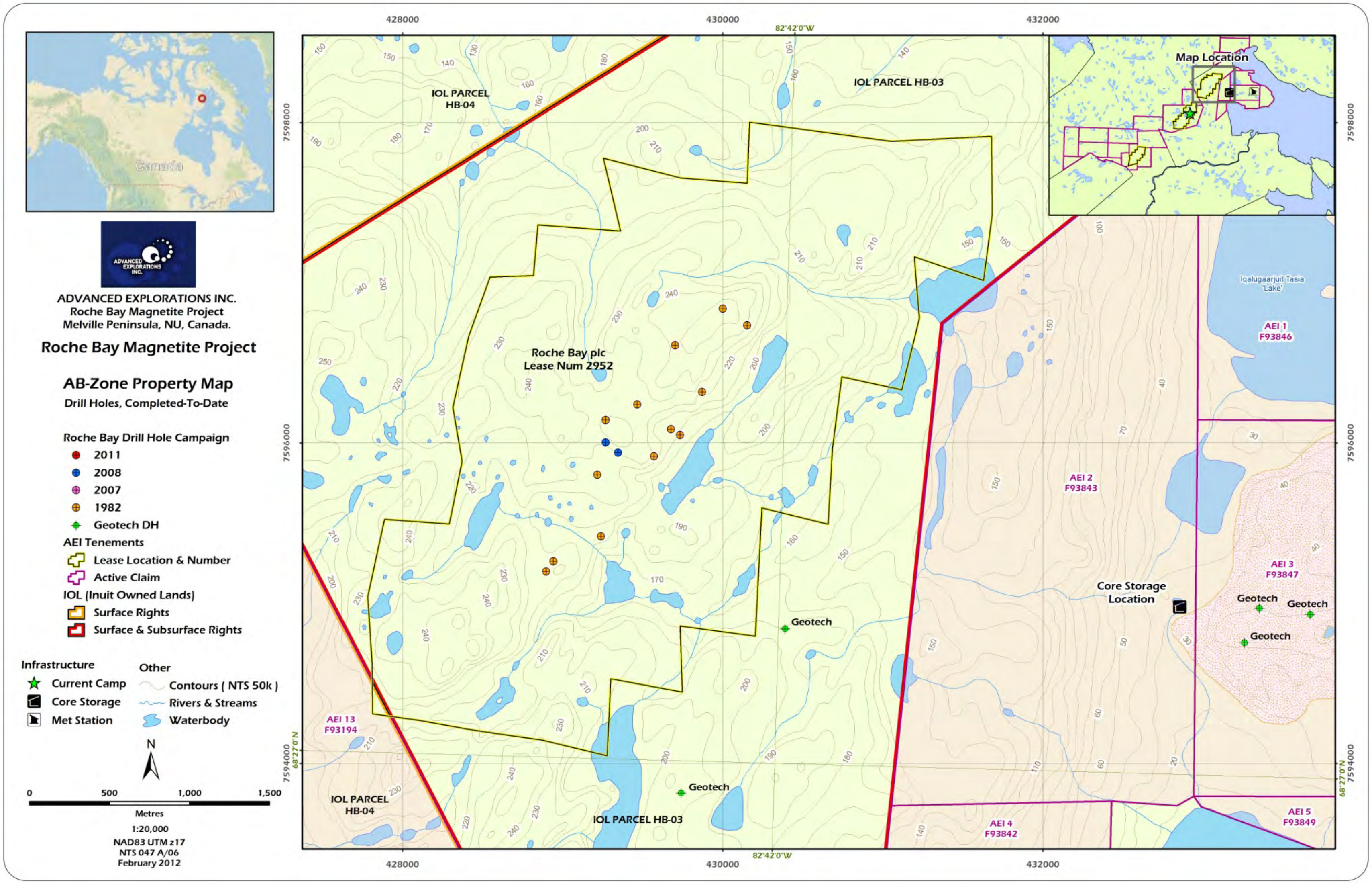


Figure 9-1: A/B-Zone Diamond and Geotechnical Drilling (1982, and 2008 and 2011)

9.2 Historical Geophysics

9.2.1 Introduction

Geophysical surveys were discussed in earlier reports by Ursel (1968, 1969 and 1970), but with no specific details to provide in this report. More detailed historical geophysical surveys were provided in Harper (1984) and are provided in the following sections.

During the 1982 field season, a detailed ground magnetometer survey was conducted over Areas A and B (A/B-Zone) by members of Borealis' summer crew. The magnetometer survey, employing two fluxgate magnetometers and one base station magnetometer for control, was carried out over the newly established grid covering both Areas A and B. A small northern portion of Area C (C-Zone) was also surveyed at a later date.

The magnetometer survey coincided with surface geological mapping and was most helpful in delineating the magnetite iron formation/wall rock contacts. It was most effective in the talus/overburden covered area, i.e. where there was an absence of bedrock exposure. Information gained from the survey was also helpful in depicting relative magnetic intensities, thereby enabling a delineation of certain horizons within the iron formation. Data obtained from the magnetometer survey coupled with surface geologic mapping were used to choose the drill hole locations and their collar orientations for the 1982 drilling program. Details of the 1982 geophysical survey are provided in Greenough and Palmer, 2011.

9.3 2007 Exploration Program

In 2007, AEI was the operator of the exploration programs on the Roche Bay Iron Project as to their Agreement with Roche Bay plc. During the 2007 field season (April to November), AEI conducted further exploration at the site primarily in the form of diamond drilling. Boart Longyear was contracted to site with 2 Longyear 38 surface diamond drill rigs. A total of 38 holes were drilled for a total of 9,260 m. The core size was NQ (45 mm).

Drilling activities were again observed during Golder's site visit and core recovery remained good. Core was logged, sawn and crushed on site, before being dispatched to SGS Lakefield for assaying. Details of the 2007 drilling program are outlined in Section 10.

9.4 2008 Exploration Program

The 2008 field season commenced in late April and wound up in early September. The program included geological and geotechnical core drilling, surface geological mapping, land survey of drill hole location, collar orientation surveys and re-sampling of drill core from the 2007 season for QA/QC and dry bulk density. The geological core drilling was primarily intended to infill the section gaps remaining from the 2007 campaign as well as increase the geological understanding of the mineral resource. The sampling and assaying of these holes was conducted in accordance with recommendations made by Golder during the site visit to increase precision and accuracy. The geotechnical core drilling was intended to assess bedrock conditions at potential surface infrastructure sites and Roche Bay submarine ground conditions. Details of the 2008 drilling program are outlined in Section 11.

9.5 2011 Exploration Program

The June to September 2011 field season consisted of the diamond drilling of the nearby Tuktu Iron Project followed by drilling of three diamond drill holes on the C-Zone deposit on the Roche Bay Iron Project to define resource potential. The drilling program was under the supervision of APEX and AEI. In addition, APEX completed a ground magnetic survey covering 60.2 line-km in July 2011 and a large prospecting program between July and August. During the prospecting program, a total of 786 rock samples were collected with 280 samples from the Roche Bay Iron Project. The overall focus of the prospecting program was the examination of the Archean Roche Bay greenstone belt for styles of mineralization other than the currently defined iron resources (APEX, 2012).

Additional fieldwork that was completed in 2011 included an onshore geotechnical investigation program that was completed in September 2011. The geotechnical investigation consisted of drilling, logging and sampling 17 vertical boreholes and four ground temperature cables. The main objective of the geotechnical program was to collect information for infrastructure planning to be outlined in AEI's feasibility study currently underway.

9.5.1 2011 Surface Magnetic Survey

The following is a summary of the 2012 APEX field program report (APEX, 2012b).

The July 2011 ground magnetic survey was conducted by APEX using GSM-19 'walking' and 'base' magnetometers with two operators. The 'walking' magnetometer collects magnetic data simultaneously with Global Positioning Satellite (GPS) positional data. The survey was conducted by an operator who follows an assistant who establishes the line to be surveyed by following a pre-loaded route in a hand-held GPS unit. The 'base' magnetometer recorded magnetic field readings at a stationary point located near the survey grid. Data was downloaded at the end of each day and was corrected for the diurnal drift and new data was levelled and added to previously collected data by a comparison with line overlaps. The grid lines were spaced 100 m apart and varied in length from 2.5 km to 200 m having been truncated relative to the boundary of Inuit Owned Land parcel HB-03 along the southern edge of the grid. Data was recorded along the lines at 2 second intervals. The diurnally corrected and levelled (combined) data was imported into Geosoft Oasis Montaj v.7.3 software (Geosoft) where final data processing and contouring was completed.

The 2011 contoured C-Zone magnetic data is illustrate on Figure 9-2 and indicates a complex structure internal to the main C-Zone BIF. The BIF comprises two main magnetic highs roughly 250 m apart. The northern of the 2 units expresses a relatively consistent positive anomaly across the grid area while the southern unit is less well defined. However, both units appear to increase in strength near the south end of the grid area at the southern boundary of Lease 2953 (APEX, 2012b).

9.5.2 2011 Prospecting Program

The following is a summary of the 2012 APEX field program report (APEX, 2012b).

The July to August 2011 prospecting program completed by APEX was across the central Melville Peninsula and included the C-Zone deposit area. The main focus of this work was the examination of Archean age Prince Albert Group (greenstone belt) rocks that occur on the west side of the peninsula. In total, 786 rock samples were collected. Of these samples, 280 were collected in the area of the C-Zone deposit area.

The result of the prospecting work completed in 2011 was the identification of several new mineral occurrences including: a gold-silver (+Cu) prospect on the AEI 11 claim (16.2 g/t Au, 94.0g/t Ag and 1.25% Cu); several other Cu occurrences with >0.2% Cu; and two (2) interesting Pb-Zn (+/-Ag) occurrences on the AEI 10 and AEI 12 claims. These occurrences, along with the locations of the 2011 rock grab samples and their Cu concentrations, are illustrated on Figure 9-3.

The most significant precious metal occurrence identified in 2011 comprises a sample that contained 16.2 g/t Au, 94.0 g/t Ag and 1.25% Cu located on claim AEI 11 (several km southwest of C-Zone Deposit). This sample was collected from a sulphide-bearing quartz vein hosted within the Roche Bay BIF. After receiving the initial assay results near the end of the field season, follow-up sampling of this vein was attempted but was limited by deteriorating weather conditions. The limited follow-up sampling failed to identify any significant results. Of the 280 rock grab samples collected in the vicinity of C-Zone Deposit area, only 11 were found to contain >100ppb (0.10 g/t) Au with the next highest value being 354 ppb (0.35 g/t) located on claim AEI 12 north of the main Roche Bay BIF.

Abundant in the Roche Bay stratigraphy are mafic volcanic units and related sediments. Associated with these mafic rocks were a number of anomalous to highly anomalous copper values. In total, 18 of the near C-Zone contained >1,000 ppm (0.10%) Cu up to a maximum of 1.25% Cu, although this value is from the precious metal bearing quartz vein occurrence on claim AEI 11 discussed above. The next highest copper value was 0.58% Cu and was associated with a gossanous (altered) zone developed in mafic volcanic on claim RBN 2 (southwest of C-Zone).

Also of note was a pair of base metal occurrences identified by prospecting in 2011. The first comprises an area of sediments and mafic volcanic located on claim AEI 10 (southwest of C-Zone) where sampling identified Cu values up to 0.36%, Pb values up to 3.04% and Zn up to 2.99%. In addition, sampling on the AEI 12 claim (approximately 1 km west of C-Zone) identified an occurrence comprising Ag values up to 49.1 g/t, Pb values up to 0.60% and Zn up to 0.74%. Observations made during the 2011 prospecting program indicate that there are a number of exhalative-looking units within the stratigraphic package. These observations, along with the presence of strongly anomalous Pb-Zn +/- Cu and Ag values, are highly suggestive of a potential for identifying Volcanogenic Massive Sulphide (VMS) mineralization.

Recommendations for future fieldwork at the Roche Bay Iron Project, beyond that related to the further evaluation of the iron formations for their iron ore potential, include the completion of additional prospecting work along the belt in conjunction with airborne geophysical surveying with electromagnetics in order to evaluate the area's potential for hosting Archean mesothermal lode gold deposits and/or VMS mineralization. In addition, a Ni-Cu occurrence (1.4%Ni and 0.4%Cu) was noted by the GSC (Corrigan and Tremblay, 2010), apparently located on IOL parcel HB-15, which indicates a potential for the Roche Bay belt to host magmatic Ni-Cu mineralization (APEX, 2012b).

9.5.3 2011 Geotechnical Drilling Program

The following is a summary of the 2011 onshore geotechnical investigation by EBA, A Tetra Tech Company (Roujanski, 2011).

A total of 17 geotechnical vertical boreholes were drilled on the Roche Bay Iron Project to support studies in the ongoing feasibility study. The boreholes were drilled in two main areas (the uplands and the peninsula lowlands) to depths of 10 to 20 m. Illustrated on Figure 9-4 are the collar locations of the geotechnical drill holes. Overburden (including frozen samples) and bedrock cores were collected from each borehole and were logged and photographed by EBA staff. The overburden samples were tested for particle size, distribution analyses, Atterberg limits, frozen bulk density and pore water salinity at EBA's Edmonton geotechnical laboratory. Rock core samples were also point load strength tested. Four of the boreholes had 17 m long ground temperature cables installed in order to determine permafrost conditions on the project site.

In order to support the geotechnical drilling data, a total a five hand-dug test pits were completed in the uplands (two) and the peninsula lowlands (three) (Roujanski, 2011).

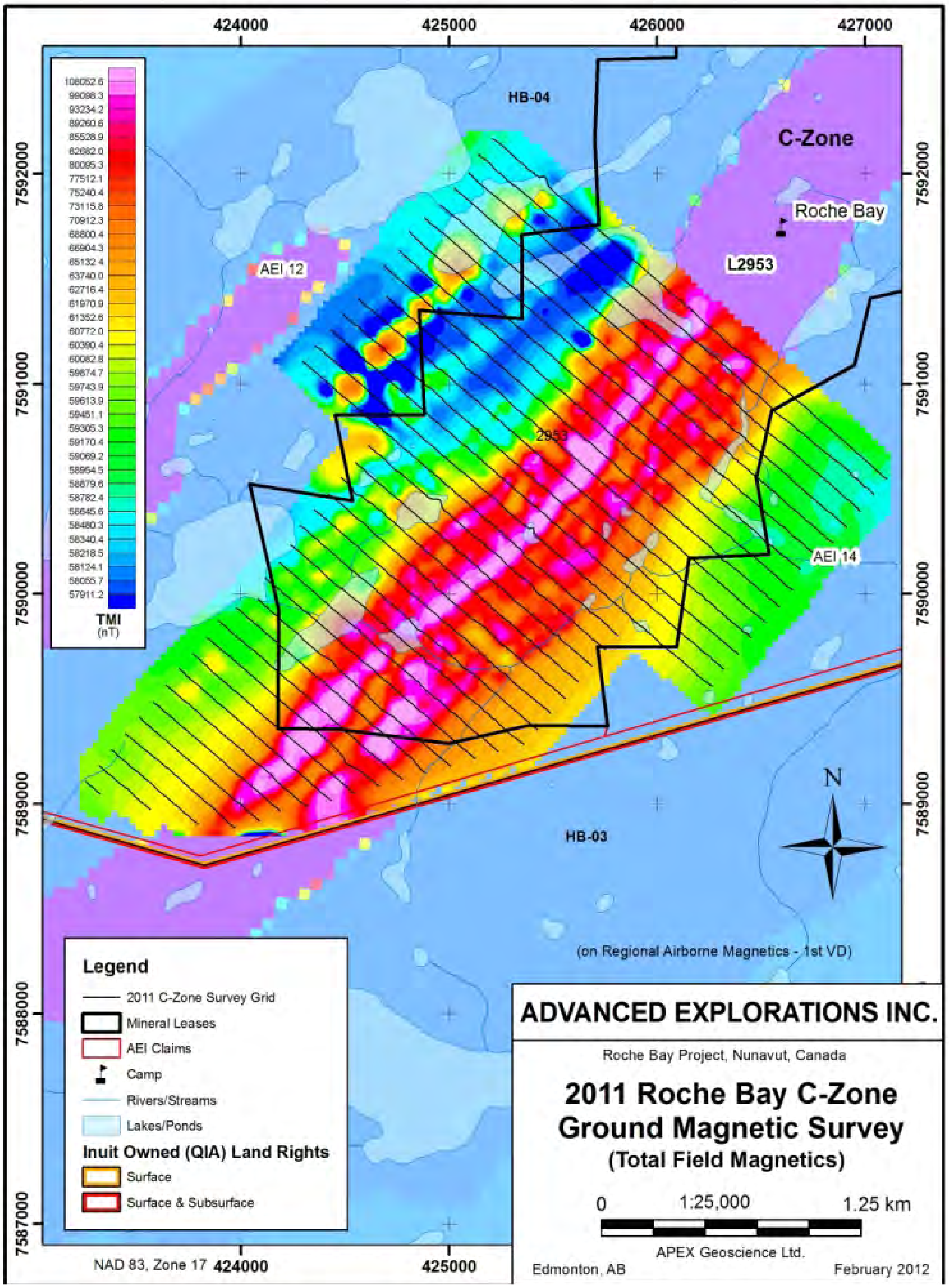


Figure 9-2: C-Zone 2011 Ground Magnetic Survey by APEX (APEX, 2012b)

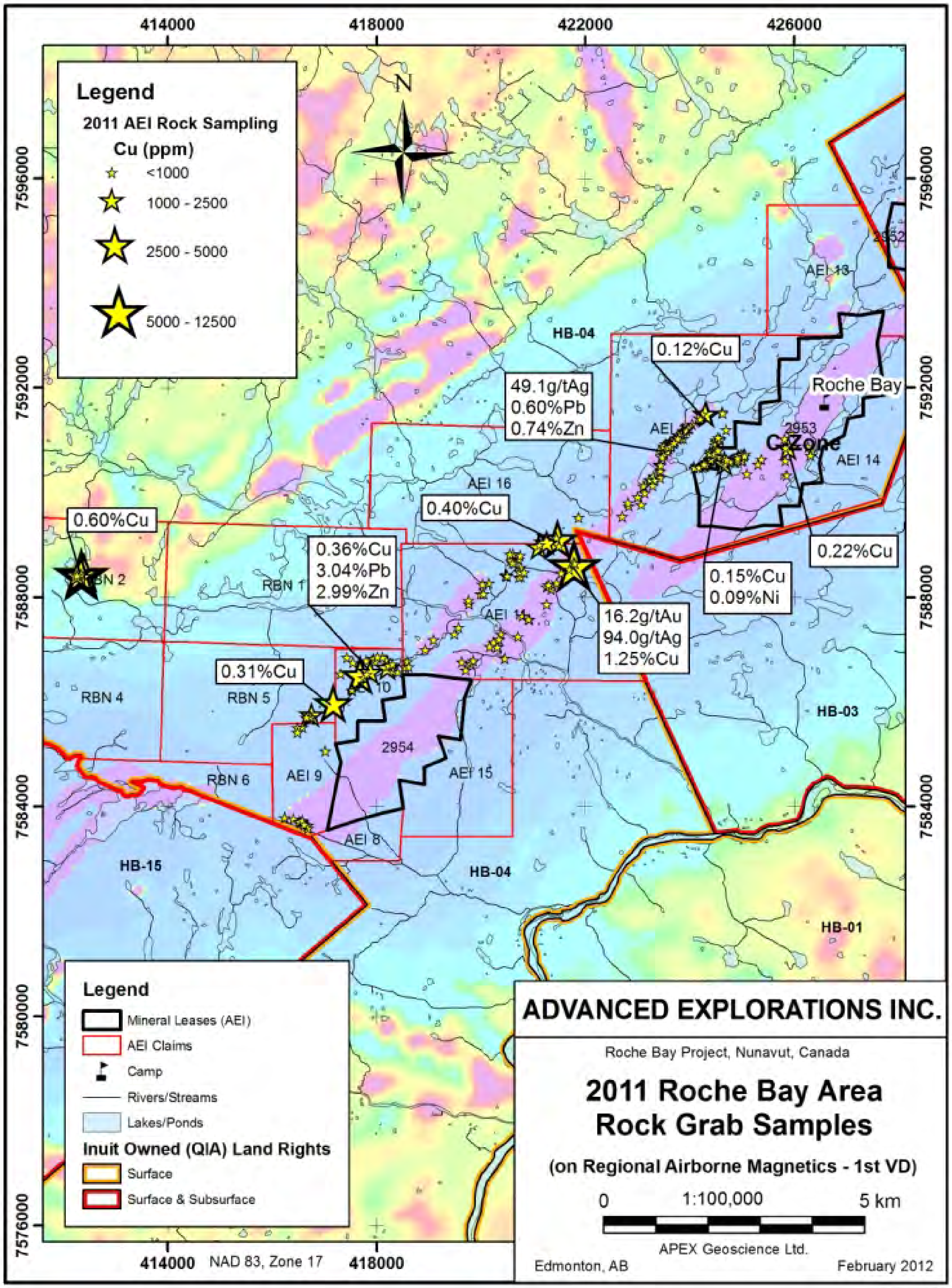


Figure 9-3: 2011 Prospecting Program at Roche Bay Iron Project Area by APEX (APEX, 2012b)

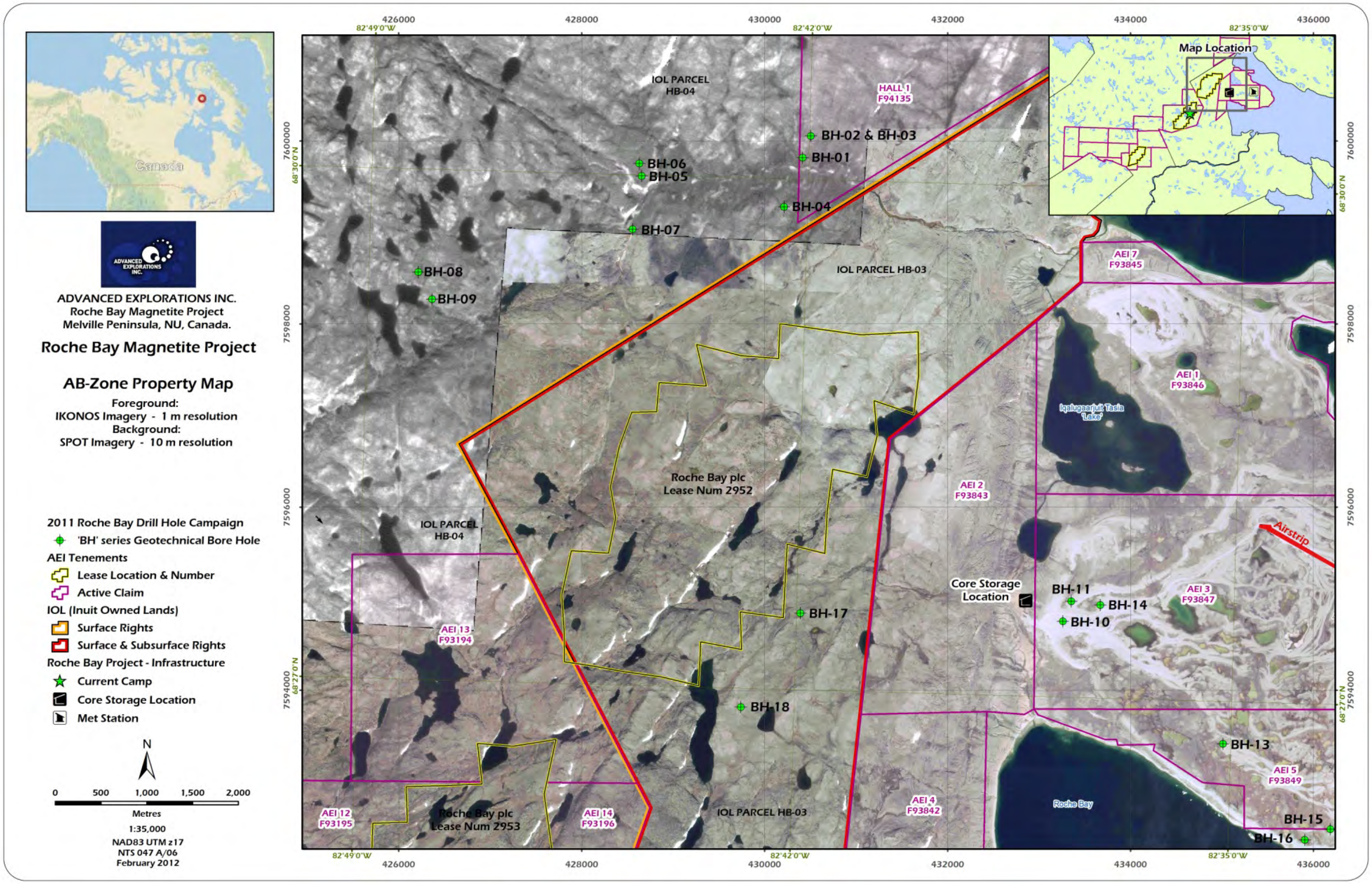


Figure 9-4: 2011 Geotechnical Drilling Program by EBA (Roujanski, 2011)

10.0 DRILLING

10.1 Historical Drilling Programs

Prior to 2006, historical exploration programs were completed on the Roche Bay Iron Project throughout two periods: from 1968 to 1970 and 1982. Metallurgical testing was completed from 1968 to 1970 and 1982 to 1984. As part of these historical exploration programs, a total of 16 drill holes were drilled: A-Zone (6 drill holes), B-Zone (9 drill holes) and C-Zone (1 drill hole) during the 1982 field program, for a total length of 3,214 m. The ultimate vertical extents of the deposits were not defined by this drilling. The deepest BIF intercepted in the 1982 drilling for A-Zone was at 165 m below surface, B-Zone was at 180 m below surface and C-Zone was at 175 m below surface. In addition, geophysical surveys completed on the property have shown that the strike length and width of the magnetic signatures is extensive (several kilometres in strike and up to 300 m in width) (Palmer et al., 2007).

In 2006, Roche Bay completed their first field season on the Roche Bay Iron Project, which consisted of drilling 3 exploration drill holes (53.94 m) with an AWX drilling system for the C-Zone. In addition, core samples collected from the 3 AWX drill holes and samples from historical drill core samples, stored on site, from the A and C-Zones were metallurgically tested at SGS Lakefield.

Illustrated on Figure 9-1 is the 1982 drilling program for the A/B-Zone and Figure 10-2 illustrates the single drill hole completed on the C-Zone.

10.2 2007 Drilling Programs

In 2007, AEI financed and managed the field program as per the Option Agreement. The focus of the 2007 drilling program was to define the C-Zone mineralization on 400 m spaced sections along the strike of the C-Zone, with holes drilled down dip and perpendicular to dip (inclined between -45º and -60º from horizontal), spaced approximately 100 m across strike. During the 2007 exploration program, a total of 38 NQ drill holes and 9,260 m were completed. The drill contractor was Boart Longyear Canada (Boart), based out of the Haileybury, Ontario and Boart used 2 Longyear-38 surface diamond drill rigs.

Drill hole collars were initially surveyed using handheld GPS, and it is these coordinates which were used in the database. These collars were surveyed in 2008 using total station survey equipment (once the estimation was completed) and, during a review by AEI, the GPS versus the total station survey found no material difference between the two surveys, and AEI is confident of the accuracy of the initial handheld GPS surveys. No down hole surveying techniques were employed during the 2007 drilling program. An in-depth review, by AEI, of down hole surveys from the 2008 drilling program indicated that drill hole deviation was on the order of +/- 11 m on strike and +/-4 m on-dip. Therefore, based on drill hole deviation estimates from the 2008 drilling and that the average 2007 drill hole length was 250 m to a maximum of 600 m and that the drill hole spacing along strike is 200 m, there is sufficient information to locate the 2007 drill holes to the current resource classification level.

10.3 2008 Drilling Program

In 2008, AEI completed a multi-faceted drill campaign designed to complete a mineral resource estimate of the C-Zone and collect data to begin advancing the project closer toward the preliminary feasibility study stage. The goals of the 2008 exploration core drilling were to further define the geology and mineralization of the iron formation and to acquire additional grade, specific gravity, metallurgical and geotechnical data to support the 2009 mineral resource estimate. During the 2008 exploration program, a total of 55 NQ drill holes and 16,500 m were completed in the C-Zone. The spacing of the drilling was 200 m centres over the 4.8 km defined strike length. The drill holes were collared with dip angles varying between -45° and -75° and typically a 305° azimuth (approximately perpendicular to the strike of the iron formation).

In addition to the exploration drilling on the C-Zone, 6 HQ drill holes were drilled to collect geotechnical data with 4 drill holes for infrastructure and 2 drill holes collared from the sea ice above Roche Bay to test the sea floor for possible dam/port construction.

Two NQ exploration drill holes were drilled on the A and B-Zones (located 3 km NE along strike over the C-Zone) to verify historical mineralization and provide material for future metallurgical testing.

Core hole depths varied from 139 m to 617 m with an average depth of 290 m. Fifty percent of the hole depths varied between 190 m and 330 m. Five holes were stopped short of the planned depths due to hole freezing. Fifty-five holes were collared at 305° azimuth perpendicular to the strike of the iron formation. Two holes were targeted at 125° to intersect specific structures. The holes were collared with dip angles varying between -45° and -75°. Fifty percent of the drill hole dip angles varied between -45° and -55°.

All 2008 drill hole collars were surveyed in 2008 using total station survey equipment and down hole surveys were completed using a the Reflex Maxibor II down hole multi-shot tool (Maxibor).

In addition, oriented drill core data was completed for 4 drill holes by using the Reflex ACE tool and clay-bombs for redundancy.

Similar to 2007, the drill contractor was Boart Longyear and five drills were provided for the program: three LY 38s and two LM 55s.

Illustrated on Figures 10-1 and 10-2 are collar locations for the 2007 and 2008 drilling programs.

10.4 2011 Drilling Program

In 2011, AEI completed three drill holes (RBC-11-93 to 95 at 731 m) on the C-Zone Deposit to identify additional mineralization in the southern extents of the deposit and this is illustrated on Figures 10-1 to 10-3.

10.5 Drilling Results Summary

A total summary of drill holes per deposit are summarized in Table 10-1 with a selection of drill hole sample results for the A/B and C-Zones provided in Tables 10-2 and 10-3, respectively. The majority of the drilling completed on the A/B Zone was from 1982 (15 holes) and 2008 (2 holes). Drilling was oriented parallel and perpendicular to strike of the zone (125° to 310° azimuth) with dip angles varying between -45° and -71° on a steeply dipping to near vertical dipping zone. Drilling on the C-Zone includes boreholes from 1982 (1), 2007 (37), 2008 (55) and 2011 (3). Exploration programs consisted of drill holes primarily orientated perpendicular (305° azimuth) to the strike length of the zone and with dip angles varying between -45° and -75° on a steeply dipping to near vertical dipping zone.

Table 10-1: Roche Bay Iron Project Drill Hole Summary

Drilling Year	No. Drill Holes (A/B-Zone)	Drill Length (m)	No. Drill Holes C-Zone	Drill Length (m)
1982	15	2887	1	327
2006	-	-	3	54
2007	-	-	37	9250
2008	2	363	55	16,039
2011	-	-	3	731
Total	17	3,250	99	26,401

Note: 2006 drilling data was not used in the 2012 Mineral Resource estimates

Table 10-2: A/B-Zone Drill Holes Intercepts

Local Grid Ref	Drill Hole No.	From	To	Core Length (m)	Total Fe %
16700N	RBA-82-006	52.0	112.0	60.0	22.52
17100N	RBA-82-008	3.1	163.8	160.7	17.00
17350N	RBA-82-009	5.3	224.0	218.7	23.46
17550N	RBA-08-016	5.2	220.0	214.8	23.34
17650N	RBA-82-003	3.6	118.2	114.6	23.30
17850N	RBA-82-010	5.2	137.2	132.0	25.39
17900N	RBA-82-015	78.4	185.0	106.6	28.57
18200N	RBA-82-011	115.0	268.7	153.7	22.87
18300N	RBA-82-001	3.0	102.7	99.7	25.85
18650N	RBA-82-012	9.5	235.5	226.0	24.44
18650N	RBA-82-013	6.0	230.0	224.0	20.93

Table 10-3: C-Zone Drill Holes Intercepts

Local Grid Ref	Drill Hole No	From	To	Core Length (m)	Total Fe %	Magnetics %	S %
9000N	RBC-11-95	37.85	149.54	111.69	23.25	20.03	0.72
9200N	RBC-11-94	133.0	283.38	150.38	26.14	26.60	0.88
9400N	RBC-08-70	114.3	277.0	162.7	28.60	31.90	0.65
9600N	RBC-08-61	79.9	215.0	135.1	26.56	25.55	0.78
10000N	RBC-08-69	5.9	91.0	85.1	25.76	25.94	0.75
10200N	RBC-08-71	6.0	90.0	84.0	26.80	26.45	0.71
10400N	RBC-08-55	49.9	142.2	92.3	28.16	29.24	0.67
10600N	RBC-08-79	24.4	160.6	106.2	26.61	22.23	0.81
10800N	RBC-08-81	56.2	183.3	127.1	26.53	25.94	0.75
11000N	RBC-08-67	48.2	182.0	133.8	27.85	30.34	0.51
11200N	RBC-08-50	64.3	188.7	124.4	28.47	33.69	0.61
11400N	RBC-07-012W	37.0	138.3	101.3	29.02	31.99	0.54
11600N	RBC-08-40	49.4	145.9	96.5	26.12	25.59	0.78
11800N	RBC-07-009W	66.6	130.8	61.2	28.36	30.11	0.59
12200N	RBC-07-038E	10.2	166.0	155.8	28.73	31.14	0.59
12400N	RBC-08-75	27.1	156.0	128.9	27.10	26.92	0.73
12400N	RBC-08-83	146.0	265.8	119.8	27.10	27.61	0.67
12600N	RBC-08-72	126.0	289.1	163.1	29.00	29.53	0.56
13000N	RBC-07-027V	26.6	189.0	162.4	29.86	35.99	0.54
13000N	RBC-07-027W	19.0	162.7	143.7	31.28	43.38	0.48
13400N	RBC-08-49	67.1	150.8	83.7	21.06	17.63	0.54
13600N	RBC-08-63	64.1	13.85	74.4	25.85	24.09	0.63

Note: Magnetics is reported directly by SGS Lakefield laboratory as %Fe_3O_4 and is the percentage of contained magnetics based on Satmagan testwork. It assumes that all recovered material is magnetite.

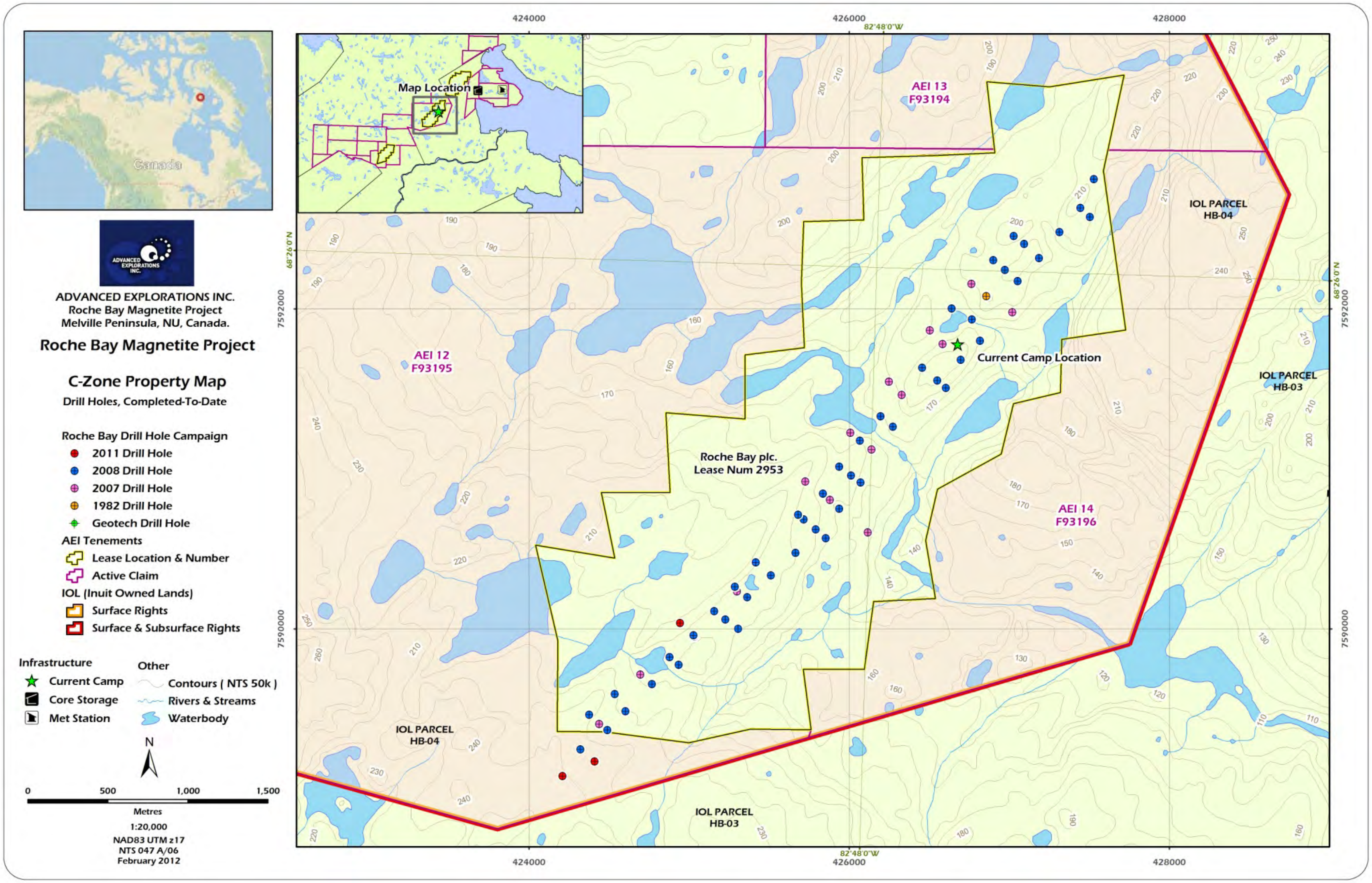


Figure 10-1: C-Zone, Diamond Drill Holes (1982 to 2011)

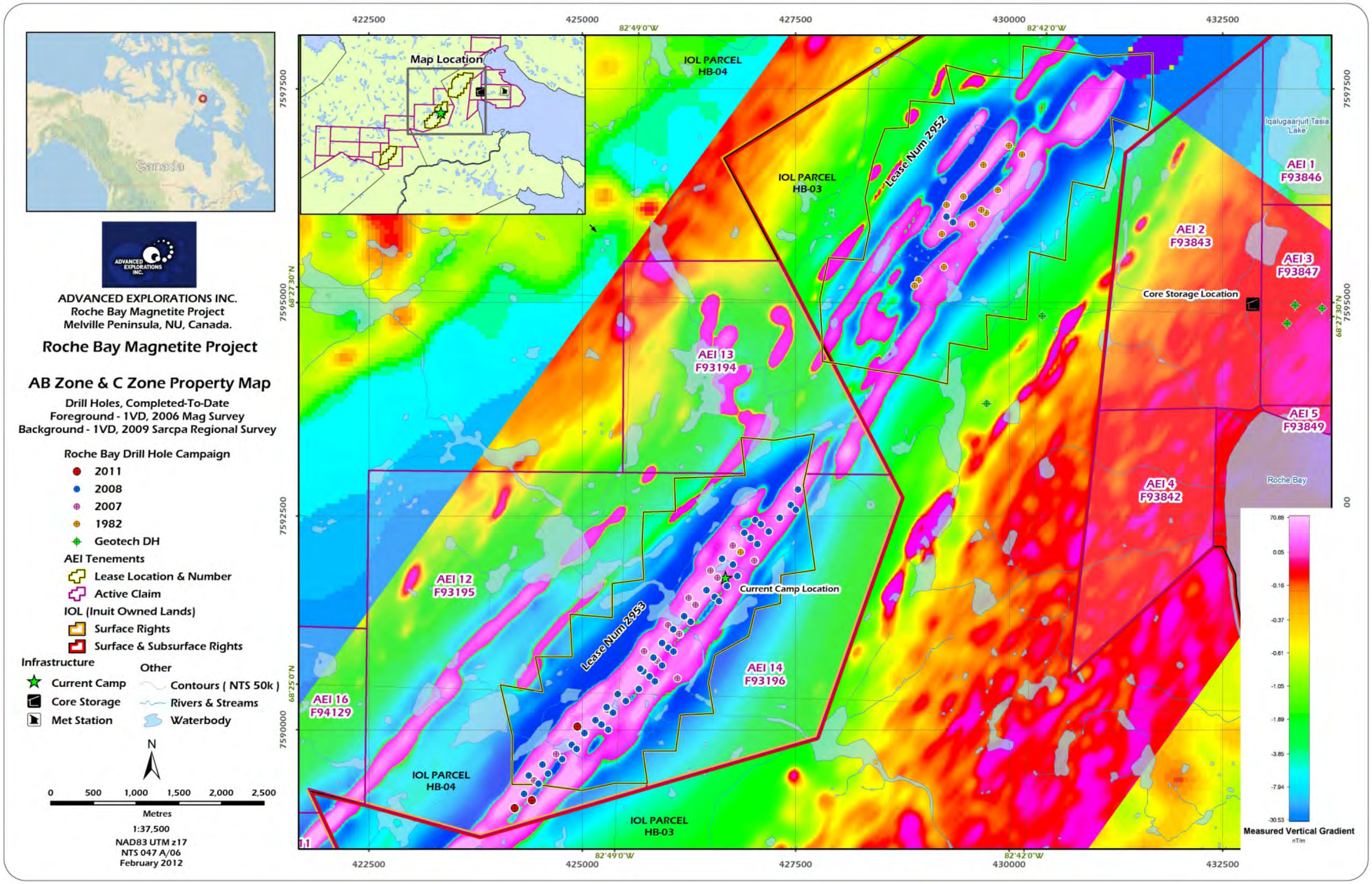


Figure 10-2: A/B-Zone and C-Zones Drill Hole Collars with Magnetics Data (1982 to 2011)

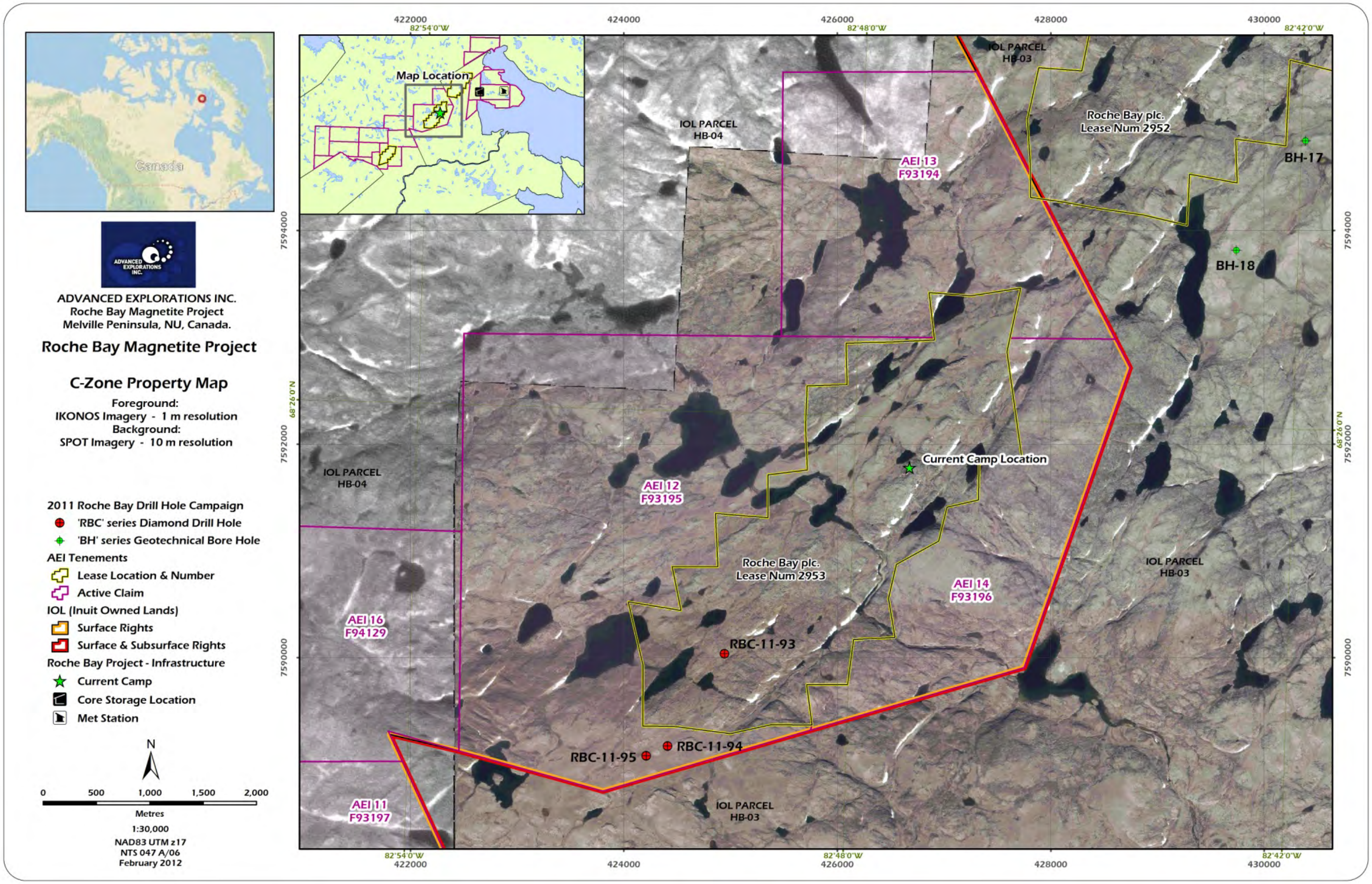


Figure 10-3: 2011 C-Zone Drilling with Sat Imagery

11.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 Historical Sampling, Preparation and Analytical Methods (pre-2006)

Prior to 2006, the historical sampling methods employed on the Roche Bay Iron Project has been a combination of grab and bulk surface samples and composited drill core samples for metallurgical testing which has been previously summarized in the 2007 Technical Report (Palmer et al., 2007).

Sample preparation and analyses for samples were completed at various testing labs through 1968 to 1984. Most historical reports detail the standard sample preparations and analysis completed. There was no indication in the reports of the status of the samples tested and it is assumed now that any remaining sample materials from this period have been discarded. Split drill core samples from the 1982 drilling program which has been used during the 2006 metallurgical testwork at SGS Lakefield could still be used for confirmation testing of historical samples tested (Palmer et al., 2007).

The 1982 samples were not used in any of the mineral resource estimates completed between 2009 to 2011, but have been included as part of the 2012 A/B-Zone Mineral Resource Estimate.

11.2 2006 Sample, Preparation and Analytical and Methods (2006)

The 2006 sampling approach used for the 3 AWX drill holes included combining all 3 drill holes into a single composited batch sample using the entire core lengths. The 3 drill holes combined equalled a total length of 53.94 m. The AWX composited sample was then combined with 163 m of core from 82-C1 (0 to 163 m) to complete the Batch 1 sample. Batch 1 was considered the “low grade” BIF sample from C-Zone and Batch 2 (82-C1 – 163 m to 315 m) was considered the “high grade” BIF sample from C-Zone.

The sample preparation and analysis methods for the 2006 drill core samples were reviewed by Golder during the January 8, 2007 site visit to the SGS testing facility and have been summarized in the 2007 Technical Report (Palmer et al., 2007). Five batch samples were provided to SGS Lakefield for testing. All batch samples were prepared by SGS Lakefield followed by XRF, recoverable magnetite (Satmagan testing), grindability (SPI and BWI) and Fe beneficiation (Coarse Cobbing and Davis Tube) testing.

The 2006 samples were not used in any of the mineral resource estimates (2009 to 2012).

11.3 2007 Sampling, Preparation and Analytical Methods

Samples collected from the 2007 drilling program were from diamond drill core, which was half sawn and crushed on site at the Roche Bay main camp and shipped to SGS Lakefield for whole rock XRF analysis and Satmagan testing. The process used by AEI to prepare and analyse core samples is summarized on Figure 11-1.

Core recovered from the drilling rigs were in 3 m runs from triple tube NQ coring equipment. The core was stored in core trays that were then transported back to the Roche Bay Iron Project camp site. The core was processed at the sample preparation facility in two tents. One tent was used for logging and photographing the core, the other was used for cutting and crushing the core. The core had an aluminum stamped tag stapled to the core tray to ensure permanent identification.

Core was simultaneously logged and marked out for sampling. Geologists marked the geological contacts onto the core and logged information was recorded on paper and later transposed to Microsoft Excel files. Core recovery was calculated by measuring actual core lengths and comparing these to the down hole depths listed at the start of each core run (marked on the core trays). Core recovery for the 2007 drill was generally above 95%. Structural information was recorded in the comments section but no geotechnical information was collected.

Core intervals intended for sampling were marked on the core at the time of logging. Sample intervals were generally set at 1 m in the iron mineralized zones and 2 m in the un-mineralized gabbro host rock. The sample intervals were occasionally altered if smaller, geologically significant units were required to be separated within the 1 m. Sample intervals were also shorter than 1 m if a geological contact occurred within an interval, in which case the assay interval was shortened to coincide with the geological boundary. Core intervals were sampled to always coincide with lithological boundaries.

Once sawn, the core was placed back into the trays and returned to the logging tent. One half of the core (always the same half), from each sample interval was collected and placed into a bucket for crushing by the field technicians. A label was also placed into the bucket to help identify the sample. A second 100 g sample was split from the original sample lot at a planned rate of approximately 1 in 25 samples (actual rates were 1 in 15) and submitted to SGS Lakefield as a field duplicate. No blank samples were included during the 2007 sampling program. Non-sampled core and remaining half-core samples permanently stored at the Roche Bay camp on core racks. The sampling preparation procedure used during the 2007 field program at the Roche Bay main camp is illustrated on Figure 11-1 and described as follows. Once the core is sawn and sampled, each bag is given a unique sample number. The first three digits represent the batch that was submitted to the laboratory. A batch usually comprised 100 to 120 samples. A drill hole may span 3 or more batches. The second series of three digits referred to the drill hole. This number will be found on all samples submitted from the same drill hole, but may be preceded by numerous batch numbers. The final series of numbers identified the specific sample on each hole.

The sampled half core was crushed 2 to 3 times in a Retsch BB100 jaw crusher to ensure a nominal -2 mm. AEI selected a sub-sample from 1 in 20 crushed samples and conducted a size screen test to ensure that 95% of the material passed -2 mm. The sample was then put through a Retsch SK100 rotor mill to further reduce the size of the material to 95% passing -1mm. The crushers were not cleaned between samples.

The crushed sample was passed through a Jones riffle splitter repeatedly, until a sample of approximately 100 g was separated. Each sample was packaged up with a unique sample label and transported to SGS Lakefield. A second 100 g sample was split from the original sample lot at the planned rate of approximately 1 in 25 (but actual rates were 1 in 15) samples and submitted to SGS as a laboratory duplicate. The remaining material was then returned to the original sample bag and stored on site for any further testwork or in case of complications in delivering the initial sample to SGS Lakefield.

Observations by Golder during the 2007 site visit indicated that the splitter was near new and found to have an even number of riffles of equal size. It was also well set up on a level bench top and well maintained. The splitter was cleaned with a brush at the end of each day. The sample collection bins beneath the splitter were confined to minimize dust loss.

No sample weights were collected by AEI as there was relatively consistent core recovery and density of rock mass. The split samples were placed in a heavy duty plastic bag, along with a white fabric sample tag with the sample ID marked with permanent marker. The fabric tag was stapled to the top of the plastic bag, which was then folded over three times and stapled again to securely enclose the sample. An entire "batch" of samples was then placed in a polyweave bag and secured for transport to SGS Lakefield for assay.

During the 2007 drilling program, the bulk density of the various rock types of the deposit was determined by the Caliper Method using volume and weight measurements using the following the steps:

- From the interval specified a sample was selected, as long a piece as possible;
- Ends were squared by diamond saw;
- Three thickness measurements were taken and averaged;
- One length measurement was taken;
- Volume was determined by partial cylinder integral; and
- Weight was determined, undried and dried, density calculated.

Sample batches were flown to Hall Beach and then transported by air and ground transport to SGS Lakefield. Once the samples were received at SGS Lakefield, they were prepared for XRF and Satmagan testing which is described below.

11.3.1 XRF Test Procedure

The XRF testing procedure employed at SGS Lakefield is based on information provided in their Mineral Services Method Summary, Method 9-6-1, Determination of Major Element Oxides and Rare Earth Oxides by Borate Fusion-XRF. Prior to XRF testing, all samples were pulverized to 150 mesh with a size analysis check done every 50 samples by SGS Lakefield. The test procedure can measure 11 whole rock oxides, two metals, 5 rare earth oxides, and 8 other oxides and LOI is determined gravimetrically.

The sample preparation includes the formation of a homogenous glass disk by the fusion of 0.2 to 0.5 g of rock pulp with 7 g of lithium tetraborate/lithium metaborate (50/50). The disk is then analyzed by WDXRF spectrometry. All elements are measured in percentage with a limit of quantification of 0.01% for most oxides and 0.02% and 0.03% for 7 of the elements. The quality control for the XRF testing includes one blank, one duplicate and a matrix suitable certified or in-house standard per batch of 20 samples. This method is accredited by the Standards Council of Canada and conforms to the requirements of the ISO/IEC 17025 standard.

11.3.2 Satmagan Test Procedure

The Satmagan testing (Satmagan 135) is a physical rather than a chemical determination of the magnetite of a small sample. The samples are pulverized to -388 µm (-48 mesh) to -140µm (100 mesh). Samples are tested dry in order to obtain a proper weight percentage. The test procedure measures the force acting on the sample in a magnetic field with a spatial gradient. The stated accuracy of the Satmagan 135 is ±0.4% or less (Rapiscan Systems). It has been assumed, based on petrographic evidence, that there is a very low proportion in Roche Bay samples of pyrrhotite (a magnetic iron sulphide mineral) that all measured material is magnetite. Each sample is tested once and provides a measure of the magnetic content as a weight percentage. Accordingly, it is equivalent to (but not in fact) an assay of %Fe_3O_4.

In 2011, an additional 797 missing Satmagan samples were provided for the mineral resource update replacing the Satmagan samples that were previously calculated from a regression analysis of total Fe, and Fe_3O_4 values.

11.3.3 Davis Tube Test Procedure

The Davis Tube test procedure used by SGS Lakefield included a head sample size of 100 g that was riffled and stage-pulverized to a P80 target of approximately 35 microns. A 20 g sub-sample was submitted to Davis Tube separation at 100 strokes/min and with 1 L/min of wash water. The non-magnetic material was continuously collected in a pail throughout the test period of 4 minutes, after which the electromagnet was interrupted and the magnetic material flushed into a separate pail. The magnetic and non-magnetic material were submitted to assay for SiO_2, AL_2O_3, Fe_2O_3, MgO, CaO, Na_2O, TiO_2, P_2O_5, MnO, Cr_2O_3, V_2O_5, LOI, S and Fe for the Davis Tube concentrate, tails and a calculated head and direct head grade.

A total of 200 drill hole samples (pulps stored at SGS Lakefield) were selected by Golder and AEI to give a general representation of the 2007 and 2008 drilling program from the C-Zone to confirm the Satmagan data. The samples selected were primarily of the 20% to 30% total Fe grade and were collected from throughout the C-Zone (50 drill holes) with half the samples collect in the widest and higher grade areas of the C-Zone.

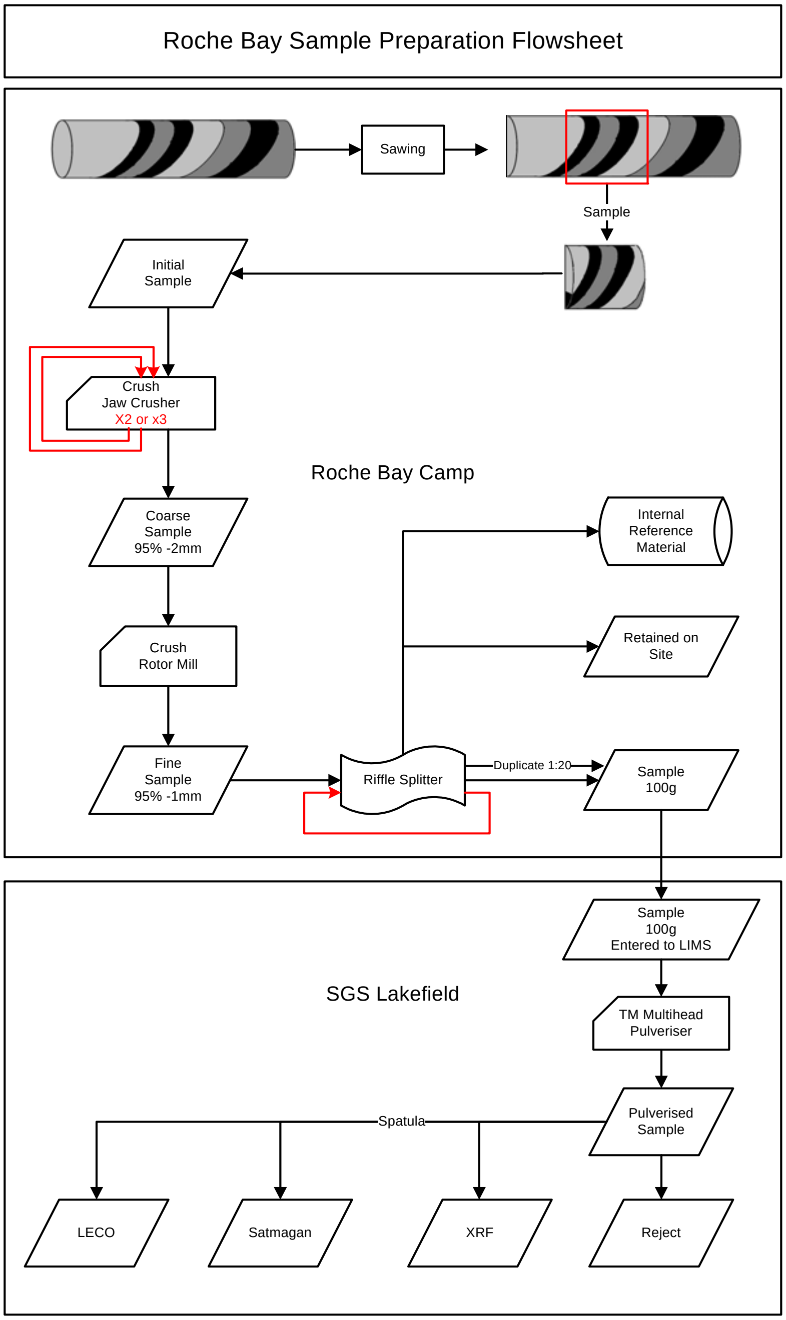


Figure 11-1: Roche Bay Iron Project Site Sample Preparation Flowsheet

11.4 2008 Sampling, Preparation and Analytical Methods

Upon receiving the exploration drill core at the Roche Bay camp, all core from the 2008 program was logged for geology and geotechnical data acquisition prior to sampling for grade. The standard grade sample interval was 2 m. All core was photographed in sequence and selectively in detail for specific structures prior to cutting. Core in areas of interest was marked and cut lengthwise with diamond saws for grade sampling. One half of the sawed core was tagged and bagged for shipment to the SGS Hall Beach facility. Sample manifests were prepared by the AEI geologists and signed-off by the Roche Bay camp manager. Non-sampled core and the remaining half-core samples were tagged and re-boxed for storage and permanently stored at the Roche Bay camp on core racks.

Core was logged both for geological and geotechnical data (rock quality designation, total core recovered and simple joint property data) prior to sampling.

Prior to samples being submitted to SGS Hall Beach, representative samples from a variety of rock types were collected and measured for bulk density using the Caliper Method to determine volume as discussed below for the 2008 sampling program (see Section 12.3). Sampling preparation at SGS Hall Beach included drying, crushing to >85% passing 13 mm chips, then splitting before being crushed to >85% passing 200 mesh (75 µm). All samples shipped to SGS Lakefield (from 2007 and 2008 programs) were further processed and analysed for whole rock XRF analysis and Satmagan (Magnetite) testing.

The 2008 sample procedure was similar to the procedures employed during the 2007 exploration program. The main exceptions included that sample sizes were generally increased to a 2 m length and continuous sampling was used from the footwall of the BIF intervals to the hanging wall with no sample breaks. During the 2008 sampling program, a selection of standard samples was included in the sample batches including a duplicate sample after initially processing at SGS Hall Beach.

Sample batches were transported from SGS Hall Beach by air and ground transport to the SGS Lakefield. Once the samples were received at SGS Lakefield, they were prepared for XRF and Satmagan testing as described in Section 11.3.

11.5 2011 Sampling, Preparation and Analytical Methods

The 2011 drill core logging and sampling was conducted and supervised by APEX staff using industry standard protocols regarding sample accuracy and data quality. Upon receiving the exploration drill core at the Roche Bay Iron Project camp, all core was logged for geology and geotechnical data acquisition prior to sampling for grade. Drill core depths provided by the drill contractor were checked and confirmed prior to logging. Sample tags were attached to the core at the end of each sample interval to prevent the accidental sampling of core beyond a specific interval.

The drill core samples were cut with a diamond saw, collected into groups, weighed, bagged and catalogued for shipping. Drill core samples from the 2011 program were initially processed at a "Prep Lab" in Hall Beach, which is owned by AEI but operated by Activation Laboratories under its standard protocols and procedures. Samples were crushed to 90% passing 2 mm, and then homogenized. A 250 gram aliquot of each sample was collected and sent to the main Activation Laboratory facility in Ancaster, ON (Actlabs).

The aliquot from the Hall Beach prep facility was pulverized to 95% passing 105µ. Aliquots of the pulp for each sample were submitted for analysis for multi-element oxides by XRF (3g aliquot), multi-element geochemical Inductively Coupled Plasma (ICP) analysis (1 g aliquot), Satmagan magnetic mineral analysis (1 g aliquot) and Sulphur (Leco) analysis (1g aliquot). A subset of samples exhibiting evidence of alteration was submitted for precious metal (gold) analysis by 30 g Fire Assay with a wet chemical (ICP) finish. A subset was also submitted for Davis Tube magnetic mineral analysis (30 g aliquot). The following sections outline the laboratory procedures used by Actlabs and they are based on procedures posted on their website or provided by Actlabs directly to AEI.

11.5.1 Satmagan 135 Magnetic Analysis (Actlabs)

The samples are pulverized to -388 µm (-48 mesh) to -140 µm (100 mesh) and a 1 g sample is tested. Samples are tested dry in order to obtain a proper weight percentage. The test procedure measures the force acting on the sample in a magnetic field with a spatial gradient. Each sample is tested once and provides a measure of the magnetic content as a weight percentage. Accordingly, it is equivalent to (but not in fact) an assay of % Fe_3O_4.

11.5.2 XRF Fusion Analysis (Actlabs)

The heavy absorber fusion technique of Norrish and Hutton are used for major element (oxide) analysis. Prior to fusion, the loss on ignition (LOI), which includes H_2O+, CO_2, S and other volatiles, can be determined from the weight loss after roasting the sample at 1050°C for 2 hours. The fusion disk is made by mixing a 0.5 g equivalent of the roasted sample with 6.5 g of a combination of lithium metaborate and lithium tetraborate with lithium bromide as a releasing agent. Samples are fused in Pt crucibles using an automated crucible fluxer and automatically poured into Pt moulds for casting. Samples are analyzed on a Panalytical Axios Advanced wavelength dispersive XRF

The intensities are then measured and the concentrations are calculated against the standard G-16 provided by Dr. K. Norrish of CSIRO, Australia. Matrix corrections were done by using the oxide alpha - influence coefficients provided also by K. Norrish. In general, the limit of detection is about 0.01 wt% for most of the elements. Eleven different oxides and LOI are measured for each sample.

11.5.3 Davis Tube Analysis (Actlabs)

The Davis Tube test procedure used by Actlabs is a 20 g sub-sample aliquot that is added to a glass tube filled with water to above the pinch-point (i.e. where the magnet points nearly meet behind the tube where the solids flow down). The magnetic field strength of the testing equipment is set to 1.5 Amps and the stroke-rate is set at 90 strokes/min. During the test procedure, the non-magnetic material is continuously collected in a pail throughout the test period of 4 minutes, after which the electromagnet was interrupted and the magnetic material flushed into a separate pail. The magnetic and non-magnetic material were submitted to assay for SiO_2, AL_2O_3, Fe_2O_3, MgO, CaO, Na_2O, TiO_2, P_2O_5, MnO, Cr_2O_3, V_2O_5, LOI, S and Fe for the Davis Tube concentrate, tails and a calculated head and direct head grade.

11.5.4 Fire Assay with ICP finish (Actlabs)

A sample size of 30 g is applied for rock samples. The sample is mixed with fire assay fluxes (borax, soda ash, silica, litharge) and with Ag added as a collector and the mixture is placed in a fire clay crucible, the mixture is preheated at 850°C, intermediate 950°C and finish 1060°C, the entire fusion process should last 60 minutes. After cooling, the lead button is separated from the slag and cupelled at 950°C to recover the Ag (doré bead) + Au, Pt, Pd.

The Ag doré bead is digested in hot (95°C) HNO 3 + HCl. After cooling for 2 hours, the sample solution is analyzed for Au, Pt, Pd by Perkin Elmer Sciex ELAN 6000, 6100 or 9000 ICP/MS. A blank and a digested standard are run every 15 samples. Instrument is recalibrated every 45 samples. Duplicates are run when sample duplicates are received by the ICP/MS department.

11.6 Davis Tube / Satmagan Comparison

One of the recommendations made in the April 24, 2009 (and revised September 17, 2009) Roche Bay Iron Project C-Zone Technical Report is that Davis Tube metallurgical tests should be conducted on representative samples from the C-Zone to confirm the suitability of the Satmagan analytical method for determining magnetite content and recovered iron.

Two hundred samples were chosen from sections 10,400 N to 13,400 N. A visual representation of the locations of the selected samples is provided on Figure 11-2. Samples were selected to give a range of %Fe values above the expected cut-off of 20%Fe.

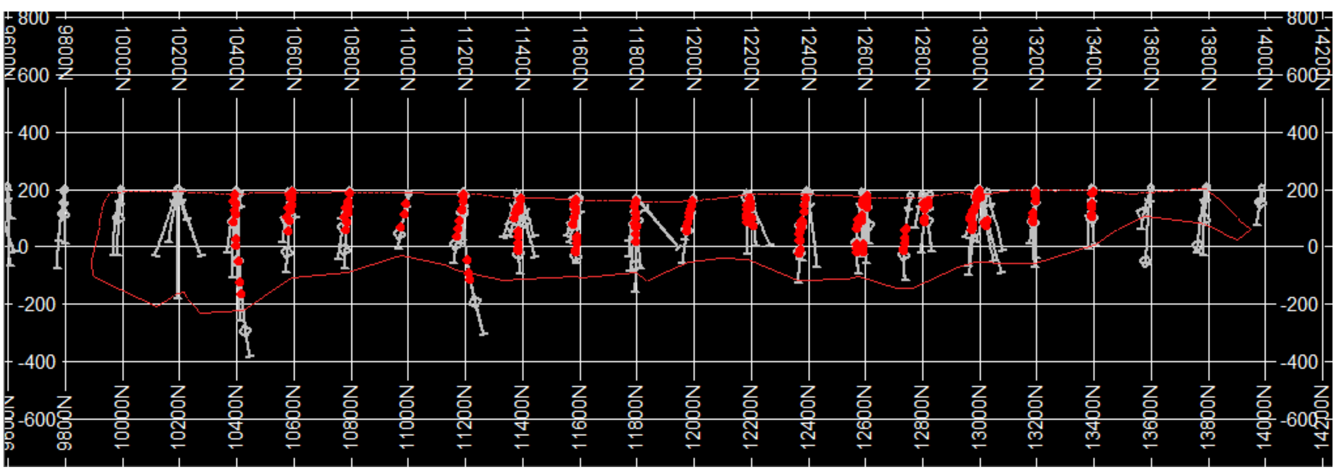


Figure 11-2: Visual Representation of the Locations of Samples Selected for Davis Tube Tests

For each sample, the %Fe in the Davis Tube concentrate and tailings was used to back-calculate the %Fe head grade. This was compared to the original assayed %Fe for the sample. If the difference was greater than 10%, the samples were removed from further analysis. Only 6 samples failed this test. For the remaining 194 samples, the %Fe in the concentrate was used to calculate magnetic Fe based on the relative element atomic weights in Fe_3O_4.

The distribution of differences between the Davis Tube magnetic Fe when compared to the Satmagan magnetic Fe is shown on Figure 11-3. The correlation between the two methods is shown on Figure 11-4. The relationship between the two methods can be described as follows:

- Davis Tube magnetic Fe (Fe_3O_4) = 1.1384 + (Satmagan magnetic Fe * 0.9267); and
- The correlation co-efficient of this relationship is 0.97.

This relationship was used to calculate the Fe_3O_4 which is reported in the mineral resource statement stated in Section 14.

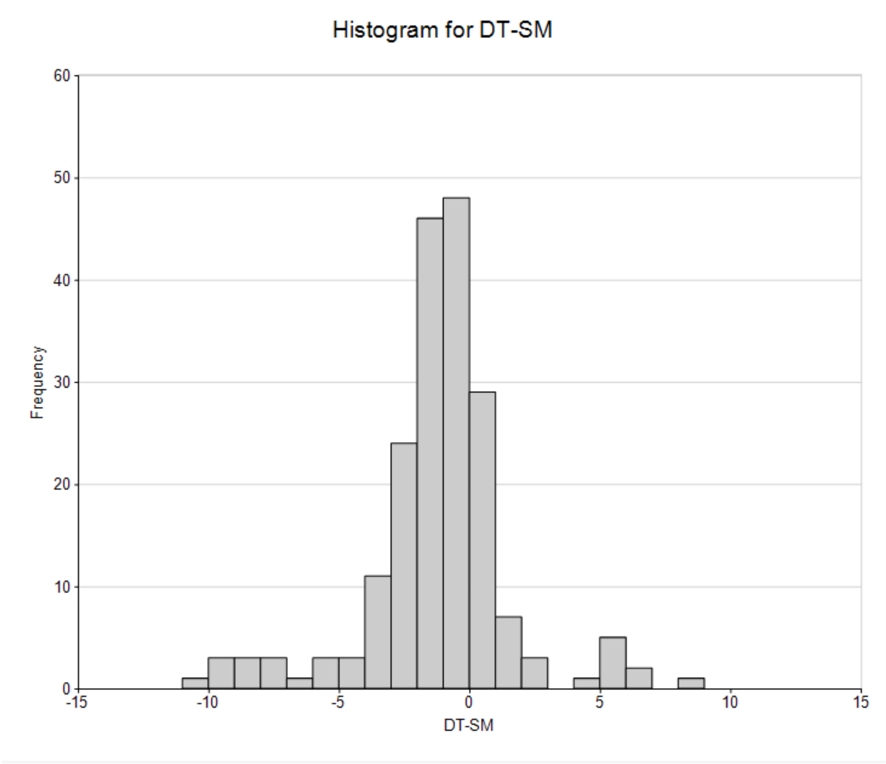


Figure 11-3: Distribution of the Differences between Davis Tube Magnetic Fe and Satmagan Magnetic Fe

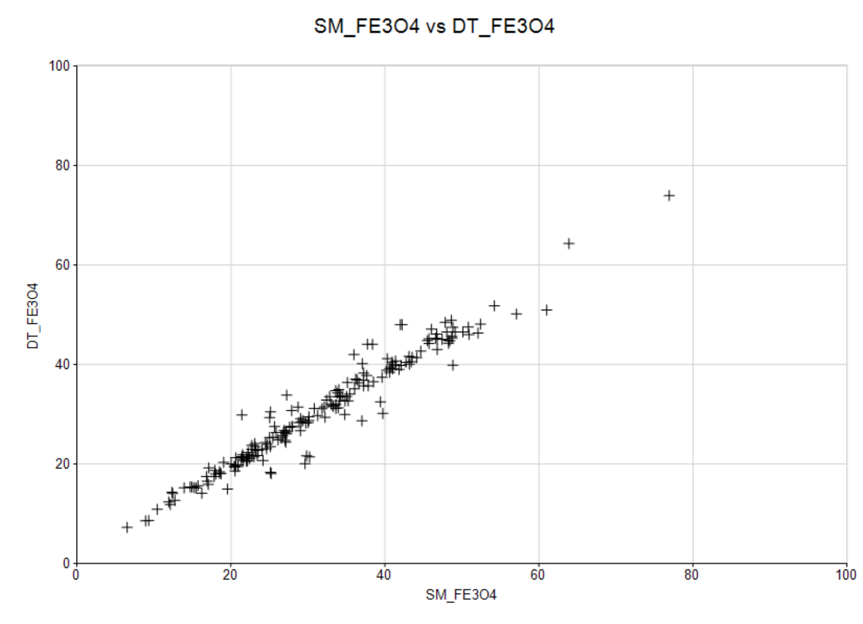


Figure 11-4: Distribution of the Differences between Davis Tube Magnetic Fe and Satmagan Magnetic Fe

12.0 DATA VERIFICATION

12.1 Historical Data Verification

A review of the Roche Bay Iron Project's historical data (pre-1960) was completed during the 2007 Technical Report (Palmer et al., 2007) and included summaries of historical field program reports, geological reports, drill logs and metallurgical testing reports that were generated from 1968-1970 and 1982 to 1984. The 2009 Mineral Resource Estimate only includes data from the 2007 and 2008 exploration programs, so no historical data verification has been included and details of the previous historical data verification can be reviewed in the 2007 Technical Report (Palmer et al., 2007). A summary of the data verification checks completed on the 2007 to 2008 data is briefly outlined below and is directly from the 2009 Technical Report (Shaw and Palmer, 2009). Verification checks completed in 2012 are outlined in Section 14 with respect to the updated mineral resource estimate.

12.2 2006 Data Verification

The 2006 data verification review that has been completed by Golder is based on the October 15, 2006 site visit conducted on the property and the January 8, 2007 site visit to the SGS Lakefield metallurgical testing facility by Mr. P. Palmer which is summarized in the 2007 Technical Report (Palmer et al., 2007).

As part of these site visits, Golder observed the 2006 drilling conditions including setup, core recovery, core storage and metallurgical testing of five batch samples submitted to SGS Lakefield which is comprised of core samples from the 2006 drilling program and split core from the 1982 drilling programs.

12.3 2007 Data Verification

The 2007 data verification conducted by Golder included a review of the drilling completed during the 2007 field season. The drilling database was interrogated using Golder's proprietary validation tools in Microsoft Access. The assay results were also analysed, in particular the standards and duplicates submitted in order to ensure the accuracy and precision of the analysis. Details of the data verification are provided in the 2009 Technical Report (Palmer and Shaw, 2009).

12.3.1 2007 Drilling Database

During the 2007 drilling program, all drill hole information collected was stored in various Microsoft Excel spreadsheets containing assays, collars and the proposed hole orientations. Golder merged the supplied 2007 collar, geology and assay information into a single Microsoft Access database. Once in this format, Golder ran a validation macro which tests the data for validity, incorrect characters, data mismatches and cross checks the individual tables against each other. During this review, no material validation errors were flagged during the database audit. The detection limit for the analysis conducted on the 2007 samples was 0.01% and any results contained within the database shown as "< 0.01%" were modified to half the detection limit of altered to 0.005%.

During the 2007 drilling program, there was no available down hole survey data collected. No down hole surveying techniques were employed during the 2007 drilling program. However, a review completed by AEI of down hole surveys from the 2008 drilling program indicated that drill hole deviation was on the order of +/- 11 m on-strike and +/-4 m on-dip. Therefore, based on drill hole deviation estimates from the 2008 drilling and that the average 2007 drill hole length was 250 m to a maximum of 600 m and that the drill hole spacing along strike is 200 m, there is sufficient information to locate the 2007 drill holes to the current resource classification level.

12.3.2 2007 Sample Assay Review

During the 2007 drilling program, AEI submitted a selection of standards and field duplicate samples.

Out of a total assay batch of 4,555 samples, there were 42 standards and 312 pairs of field duplicates submitted. This corresponds to a realised insertion rate of approximately 1 in 100 and 1 in 15, respectively. This rate is lower than typical QA/QC programs and was increased during the 2008 sampling program.

A review of the AEI standard samples used during the 2007 sampling program by Golder identified that the original certificates for the standard samples were misplaced on site and therefore could not be used to properly assess the accuracy of the assaying program. Instead, a general review of these standards was completed. There were 42 standard samples in total. Thirty-nine were labelled "HIGH IRM", two were labelled "IRM LOW" (or "low grade IRM") and one was labelled "standard IRM".

After removing obvious discrepancies (incorrect labelling, etc.), and the standard and low IRM standards (as there is insufficient quantity to draw any conclusions), there were 38 HIGH IRM samples available in the dataset.

Golder analysed the results of the remaining standard reference sample submissions using firstly, the assumption that the true mean is close to the calculated mean of the dataset and, secondly, using ranges from this expected value of 2% and 5% relative tolerance. The precision of the assays of these standards can be seen by their departure from the mean. The performance of the "High IRM" standard for Fe is in that the tolerance is generally within ±5% with no evident trend over time. It was recommended by Golder during the 2007 site visit (and implemented by AEI) that during the 2008 drilling program the standard reference materials should be submitted at a rate of 1 in 25.

The field duplicate samples were submitted to SGS Lakefield at an approximate average rate of 1 in 10 samples. Overall, the results showed a good correlation between the duplicate and original samples. In the data for Fe and SiO_2 there are 4 outlier samples that were attributed to labelling errors in the sample numbering. Excluding these obvious errors, the duplicates showed a strong correlation to their original samples for Fe, SiO_2 and MnO. The dataset for Al_2O_3 indicates that there may be 2 sample populations and also shows 3 or 4 outliers, due to the same error in the sample numbering. The dataset for S shows a weaker correlation and more than one sample population. Results were sufficient to demonstrate a reasonable level of precision in sample preparation.

Despite the absence of a certified value with which to compare the samples submitted as standards, the repeatability of these assays, as well as the results of the duplicate analysis indicate a level of precision of sufficient standard for the assay data to be used in the estimation of the current resource. The processing of these samples at an appropriate commercial laboratory (SGS Lakefield) and the provision of these sample results to AEI with certification further support the use of these assay results.

12.3.3 2007 Missing Sample Assays

The sampling procedure used at Roche Bay Iron Project prior to the commencement of the 2008 field season did not require the geologists to sample the entire down hole interval. Any areas which were not lithologically classified as BIF were not sampled, as it was obvious to the geologists that they did not contain any grade. In some instances, this led to small intervals within the BIF zone not being sampled, which in turn creates a gap in the down hole assays used for grade interpolation. Table 12-1 is a list of non-sampled intervals during the 2007 drilling program.

Table 12-1: 2007 Non-sampled Intervals through the BIF Zone

Hole ID	From	To
RBC_07_26W	202	208
RBC_07_24W	60	119.5
RBC_07_39E	89	95.8
RBC_07_39W	6.38	8.35
RBC_07_39W	11.6	12.18
RBC_07_009W	156	160
RBC_07_009W	162.66	167
RBC_07_038E	170	188
RBC_07_007E	7	17
RBC_07_007E	19	53
RBC_07_036W	38	39
RBC_07_036V	90	91
RBC_07_036E	37	82.27
RBC_07_001E	175.62	177
RBC_07_001E	36.22	37.8
RBC_07_001E	29.36	33.42
RBC_07_001E	23.42	28.53
RBC_07_001W	113.26	113.62

12.3.4 2007 Bulk Density Data

The density values for the various rock types of the deposit were determined using the Water Displacement method. This method was verified and the calculations were spot checked by Golder during the 2007 site visit and found to be reasonable. The volume measurements are likely to be subject to minor errors due to loss of core from chips made during the core sawing process, slight variances in the diameter of the core arising during drilling (the largest diameter is taken as a conservative approach) and averaging of measurements. The drying procedure was carried out in a household oven at 105 degrees Celsius, and may be subject to minor errors; however, there is very little difference in the wet and dry density readings with the exception of measurements taken in quartz vein material. This could be due to vugs and pore space within the quartz veins.

Density was determined using the Water Displacement method (weight in air / weight in air – weight in water) and compared to the Caliper Method. While the BIF densities were slightly higher using the check method (Water Displacement), most of the waste materials were significantly lower. The average density measurements for the main rock types from the 2007 sampling program are summarized in Table 12-2.

Table 12-2: Density Estimates for Roche Bay

Rock Type	Count	Average Undried Density (g/cm^3)	Average Dry Density (g/cm^3)	Average Density (Water Displacement Method) (g/cm^3)
Banded Iron Formation	50	3.28	3.28	3.25
Gabbro	6	2.97	2.97	3.02
Metasediments	7	2.88	2.87	2.91
Quartz Vein	3	2.77	2.64	2.78
Schist	7	2.88	2.88	2.93

12.4 2008 Data Verification

12.4.1 2008 Bulk Density Data

The density values for the various rock types of the deposit were determined using the Water Displacement method for whole and half-core sampled collected in August 2008. Representative samples from a variety of rock types were collected and measured. The bulk density measurements were checked for location identification and accuracy. One sample measurement was found not to have been entered into the final compilation and was consequently excluded from analysis. A total of 254 bulk density measurements were accepted. Ten samples from the available core samples were immersed in water before being oven-dried at 200°F and weighed after 6 hours, then again after 14 hours to assess the susceptibility of the drill core to absorb moisture. Average moisture content is 0.3% and varies from 0.0% to 0.7%.

Density data from 203 half-core samples were compared with Fe assays to determine whether reasonable estimates of bulk density could be calculated from iron content for the sample intervals.

The measured bulk density data was plotted against Fe to determine the correlation between the two variables. The variance of the calculated bulk density estimates compared to the measured BD data was visually estimated from the measured data from the trend line. The variability of the measured BD values was estimated to be approximately ±0.2% with precision of the calculated bulk density estimates on the order of 90%.

The objective was to provide a more useful spatial bulk density estimate correlated to Fe as 'soft data' to support a local estimate rather than to assume average values for each rock type. Global mean bulk density estimates were calculated for whole-core country rock samples lacking Fe assays. These estimates were assigned, by rock type, to the small number of sample intervals lacking actual drill core bulk density measurements. The global bulk density estimates for sample intervals lacking Fe assays are summarized in Table 12-3.

The formula of the regression curve was used to calculate bulk density for all grade sample intervals containing a valid Fe assay. An inverse distance squared estimator was used on all bulk density data, measured and 'soft' (or calculated data) in the block model for the resource estimate. The calculated bulk density formula is defined as follows:

$$\text{Bulk Density} = 0.0247 \times \%\text{Fe} + 2.6 \text{ g/cm}^3$$

Table 12-3: Dry Bulk Density Estimates for Roche Bay Iron Project

Rock Type	Horizon	Dry Bulk Density g/cm^3
AB-Zone BIF	AB	3.20
C-Zone Footwall BIF Horizon	FW1	3.20
C-Zone Footwall BIF Horizon	FW2	3.28
C-Zone Footwall BIF Horizon	FW3	3.27
C-Zone Footwall BIF Horizon	FWX	3.45
C-Zone Hanging Wall BIF Horizon	HWX	3.20
C-Zone Main BIF Horizon	MAIN	3.33
BIF Average	N\A	3.30
Gabbro	GAB	3.00
Granite\Gneiss\Quartzite\Intrusive	GRAN	2.67
Meta Sediments	METS	2.87
Meta Volcanics	METV	3.12
Quartz Vein	QZVN	2.75
Schist	SCHT	3.00
Serp\Talc	SERP	2.87

12.4.2 2008 Drilling Database

The 2008 Roche Bay Iron Project database provided to Golder in February 2009 included several Microsoft Excel spreadsheets. The collar, survey and lithology data were stored in a separate Excel spreadsheet, and the assay, density and metallurgical recovery data were stored in a single compilation file. All the original data used for the verification, except some of the original laboratory certificates, were provided by AEI. Most of the original SGS Lakefield laboratory certificates were downloaded from a secured website for independent verification.

Original source documents were compared against the AEI Microsoft Excel spreadsheet records. The check was conducted on collar, survey, lithology, assays (%Fe, %Fe_3O_4, %MnO, %P_2O_5, %Al_2O_3, %S, %SiO_2 and %LOI), and densities. No checks on core recovery were made because, while the original geotechnical logs were available, they were not included in the 2008 AEI drill hole database.

There are 110 drill holes in the current AEI drill holes database which includes drilling information from the 1982 historical drilling program and AEI's 2007 and 2008 exploration programs. Only 85 drill holes within the resource mode mineralization envelope were selected for the estimation. The drill holes that were excluded included:

- 16 historical drill holes form the 1982 exploration program (RBA-82-001 to RBA-82-016 and RBC-82-001);
- 2 drill holes in the A/B-Zone from the 2008 exploration program (RBA-08-016 and RBA-08-017); and
- 7 drill holes to the hanging wall of the C-Zone mineralization (RBC-07-004, 9, 12, 13, 21, 26, 27E).

12.4.3 Collar Review

Drill hole collar position data compiled by AEI was compared to the original data by Northern Surveys. The comparison was conducted using queries based on X, Y and Z values between the source document and the original Northern Surveys spreadsheet. Twenty collar positions were checked (about 20%) and no differences were identified.

12.4.4 Survey Review

No down hole surveys were conducted by AEI during the 2007 drilling program. During the 2008 exploration program, AEI geologists conducted down hole surveys using a Maxibor tool. Recalculation of raw data was made by AEI using either the collar position previously surveyed by Northern Survey or the planned dip and dip azimuth. Since not all the collars were surveyed by Northern Survey, not all the Maxibor surveys were corrected. The comparison was made using queries based on depth, azimuth and dip. Twenty-five percent of the data were checked (1,163 entries). Only minor discrepancies due to rounded depth values were found.

12.4.5 Lithology Review

The AEI lithology source document is a compilation of original geology logging in Microsoft Excel spreadsheets. The verification was conducted based on depths, rock codes and horizon codes between the source document and the original geology logs spreadsheet. About 18% of the data were checked (415 entries). There were 2 errors in depth values and 1 error in rock code, all explained as typing errors. They were changed directly by Golder in the AEI database and also reported to AEI.

12.4.6 Sample Assay Review

Most of the 2008 Original SRC certificates (June to December 2008) were downloaded from a secured website. Early 2008 and 2007 certificates were not available on the SRC website and were provided directly by AEI for the data sent to Golder. The verification was based on matched sample identification numbers between the original certificates and the AEI Compiled Master Assay database. Assay comparison between the database and the original were conducted in Excel for all assayed elements.

About 50% of the data in the AEI Database was verified (6,528 samples). Differences in assay values identified by Golder were addressed by AEI and a cleaned and corrected database was sent back to Golder.

12.4.7 Bulk Density Review

Only 2007 and 2008 bulk density measurements conducted by AEI were available for verification against the database. A comparison between the source file and the original calculation spreadsheet was conducted in Microsoft Access based on hole identification, depth and densities. A 100% check of the original calculation spreadsheet was conducted, which only represents 2% of the complete AEI database (255 out of 12,195 samples). Only minor discrepancies were found and these were corrected.

12.5 2008 QA/QC Procedure Review

AEI's 2008 QA/QC program consisted of inserting one field duplicate sample for every twenty samples submitted in each batch sent to SGS Hall Beach. A total of 179 field duplicates (or 3% of the total 6,200 samples) were collected from 57 drill holes from the 2008 exploration program. In addition, 233 duplicate samples (4% of the total pulps samples) from 41 batches were retagged and submitted as supplemental field samples at SGS Hall Beach.

A total of 47 analytical standards (FER-3 with Fe reported as Fe_2O_3), from the Canadian Certified Reference Materials Project (CCRMP), were inserted in 8 selected drill holes and into 10 ten SGS Hall Beach batches.

As part of SGS Lakefield's internal QA/QC program, a total of 293 samples from the 2008 drilling program were re-assayed as laboratory pulp duplicates and blanks were inserted in each batch

Comparative analysis was undertaken for half-core field duplicates for SiO_2, Al_2O_3, Fe_2O_3, Fe_3O_4 and S values by plotting histograms, scatter plots, precision plots, and calculating relative error and relative difference plots. The comparative analysis for the field sample duplicates indicates, with the exception of a few outlier samples (8 duplicate pairs or 3% of data), that the combined sampling and assaying relative error was generally acceptable. The eight samples were considered to be outliers resulting from geological variability between core halves and not representative of AEI sampling or SGS laboratory procedures.

Summarized in Table 12-4 is the relative error for field duplicate samples for Fe_2O_3 duplicate samples. The S values are slightly higher than the SiO_2, Al_2O_3, Fe_2O_3 and Fe_3O_4 assays probably because a number of these values are much closer to the detection limit.

Table 12-4: Relative Error for Field Sample Duplicates

Element	Relative Error at 1 SD (68.3%)	At 95% Confidence Level
SiO_2	±2.36	±4.62
Al_2O_3	±3.64	±7.13
Fe_2O_3	±4.12	±8.07
Fe_3O_4	±4.41	±8.65
S	±7.74	±15.16

Note: SD=Standard Deviation

A review of the comparative analysis for the supplemental field duplicate samples (re-tagged samples from SGS Hall Beach) shows similar results as the field sample duplicates (also with higher relative errors for S) as summarized in Table 12-5.

Table 12-5: Relative Error for Supplemental Field Duplicates Sample

Element	Relative Error at 1 SD (68.3%)	At 95% Confidence Level
SiO_2	±1.20	±2.34
Al_2O_3	±3.43	±6.70
Fe_2O_3	±1.40	±2.74
Fe_3O_4	±2.99	±5.87
S	±5.92	±11.60

The results of the XRF assay values for the 47 analytical standards (FER-3) indicated 3 of the samples were more than 2 times the standard deviation (SD) from the mean. The mean of the data (44.2%Fe_2O_3) exhibits a negative bias of -0.3% from the FER-3 Standard. However, the bias becomes positive (+0.4%) when the outliers are removed, as summarized in Table 12-6. Excluding the three outliers, the range of the data is ±1.85% which is acceptable and reasonable. The FER-3 Standards were submitted during the midpoint of the 2008 exploration program due to late acquisition of the Standards. Therefore, future drilling programs will require a regular standard insertion program and review of the result to determine if batches requiring re-analysis.

Table 12-6: 2008 FER-3 Standard Sample Statistics

	Original FER-3 Standards	Standards Filtered for Outliers
	Fe_2O_3 (%)	Fe_2O_3 (%)
Mean	44.2	44.9
Median	44.8	44.8
Standard Deviation	3.03	0.66
Range	20.3	3.7
Minimum	26.6	43.2
Maximum	46.9	46.9
Count	47	44

12.6 Verification Site Visits

Mr. Palmer completed a site visit to the Roche Bay Iron Project in 2006 and on August 26, 2009. During the 2009 site visit, Mr. Palmer reviewed core from the 2007 and 2008 drilling programs, observed BIF outcrops along the strike of the C-Zone, reviewed areas for future development (plant site and sea port areas) and GPS surveyed in 12 drill hole collars from the 2007 and 2008 drilling programs.

Mr. Paul Palmer visited the SGS Lakefield laboratory facilities on January 8, 2007, to observe sample preparation, Satmagan and Davis Tube testing.

Mr. Greg Greenough completed a site visit to the Roche Bay Iron Project on August 23, 2011. During the site visit, Mr. Greenough reviewed core from the previous 2007, 2008 and 2011 drill programs, observed BIF outcrops along the strike of the C-Zone and A/B-Zone deposits, reviewed future infrastructure areas, and visited the sample preparation lab in Hall Beach. Illustrated on Figures 12-1 to 12-2 are example photos from the 2011 site visit completed by Mr. Greg Greenough.

Also during the 2011 field season, Mr. Marc Rougier, geotechnical engineer with Golder, visited the Roche Bay Iron Project on September 6 and 7, 2011. The purpose of the site visit was to gain a general understanding of the site conditions and of the character of the rock mass and geological structures of the proposed open pit slopes. During the site visit, Mr. Rougier observed bedrock outcrop in the vicinity of the pit ware, reviewed drill core and collected core specimens from the footwall and hanging wall rock types for discussion purposes and for limited laboratory strength testing in advance of the 2012 FS. The rock types collected included gabbro, biotite schist, granodiorite, serpentinite, diorte, BIF (waste) and meta-greywacke. The results of the laboratory testwork will be provided in the FS (Rougier, 2011).

Figure 12-1: BIF in Core Boxes at the Roche Bay Iron Project (August, 2011)

Figure 12-2: Hall Beach Prep Lab Equipment (August, 2011)

12.7 2011 Verification of Data

Since there were no changes to the data other than the addition of the new Satmagan results and Davis Tube testing, the data 2008 data verification documented in Section 14.4 is deemed appropriate for this resource estimate. Similar checks to the drill hole data provided by AEI were carried out (overlaps, duplicates, etc.) to ensure the data remained unchanged, with no issues identified. Data from the three drill holes from the 2011 program were reviewed when inserted into Datamine software and the QA/QC program was completed in conjunction with the Tuktu drilling program by APEX under direction from AEI.

12.7.1 QA/QC Samples

As part of the Quality Assurance and Quality Control (QA/QC) protocol for the 2011 Roche Bay drill program, Standard Reference material samples (Standards), including Blank samples, were procured by AEI and were regularly inserted into the drill core sample stream by APEX staff at a frequency of one in every 20 samples. AEI produced its own iron Standards by collecting BIF surface samples and submitting the samples to Activation Laboratories for crushing and homogenization. The crushed sample was then split into three portions. One portion remained unaltered and was considered to be the “high” (100% original material) standard. The other two portions had varying amounts of silica sand added to dilute the overall iron content: in one portion, 20% silica sand was added to produce a “medium” (80% original material/20% silica sand) standard, and in the other portion, 40% silica sand was added to produce a “low” (60% original material/40% silica sand) standard. Silica sand provided by Activation Laboratories was used as a Blank (APEX, 2012a).

In addition to the insertion of standards and blanks, duplicate core samples were collected at a rate of 1 in every 20 samples by splitting (or quartering) the remaining half core following the collection of the initial sample. Finally, the efficiency of the prep lab facility in Hall Beach was examined by Actlabs through the collection of a subset of duplicate samples from crushed samples, which are referred to as 'prep duplicates' (Actlabs, 2012).

12.8 General Observations and Conclusions

Golder recommends that an appropriate database be created for the storage of collar, survey, geological and assay data. This should also include the density measurements as well as quality control samples submitted to monitor the precision and accuracy of the sampling process. Currently, all the data is stored in various Microsoft Excel spreadsheets that should be compiled into a single database system.

The standard and duplicate data indicates a suitable level of repeatability (precision); however, blank samples should be inserted into the sample batches. Down hole surveys should continue to be completed on all future drilling programs and all final collars continue to be surveyed by an independent company.

In order to continually monitor the performance of the analytical laboratories AEI uses, it is recommended that a selection of resubmitted assay pulps and rejects be sent to an umpire laboratory.

Parallel tests between Satmagan and Davis Tube analysis methods continue to determine the suitability of each as a method for determining magnetite content and recovered iron as %Fe.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Background

Mineral processing and metallurgical testing were completed on grab, trench, bulk and drill core samples from the Roche Bay Iron Project site between 1968 and 1984. A summary of these testing programs is provided in the September 17, 2009 Technical Report (Palmer and Shaw, 2009). Golder was not responsible for the metallurgical work as part of their scope and the following information is based on information provided to Golder by AEI.

Metallurgical work on the project from 2006 to 2008, based on 5 composite samples from the 2006 and 1982 drilling programs and data from the 2007 and 2008 drilling programs, were completed at a number of analytical facilities including SGS in Lakefield, Ontario and COREM in Quebec. The metallurgical testing of drill core samples from A/B and C-Zones indicates that effective concentration and recovery may be achieved by crushing, dry magnetic separation, fine grinding and wet magnetic separation.

The current proposed metallurgical process by AEI for the ores at the Roche Bay Iron Project are based on creating a product that can be processed by pelletization with a high iron and low silica and sulphur grades. This processed is summarized in the following sections and will be discussed in further detail in the FS report by Wardrop and AEI scheduled to be published in 2012.

13.2 Summary of the Metallurgical and Process Experimental Basis

13.2.1 General

The objective of the Roche Bay Iron Project metallurgical testwork programs (C-Zone ores), developed by recognized Canadian R&D Centres/Laboratories, SGS Lakefield and COREM, was the experimental investigation of the metallurgical processes able to efficiently produce a standard iron concentrate characterized by the following chemistry: minimum 65% Fe, maximum 6% SiO_2 (nominal value 5% SiO_2) and maximum 0.07% S.

The magnetic separation processes (dry and wet), at laboratory and pilot scales, including Davis Tube tests, were considered and investigated. The liberation grinding size, necessary to the obtaining of the standard concentrate quality was quantified. The laboratory and pilot sulphide flotation tests were developed, in order to quantify the flotation process parameters necessary to the obtaining of the required concentrate sulphur grade of maximum 0.07%.

In addition to the metallurgical tests, the physical characteristics of Roche Bay Iron Project ores (ore hardness) were evaluated, by the quantification of the ore energy consumptions during the crushing and grinding processes (crushing and ball mill Work Indexes).

The results of the metallurgical testwork programs and required production capacity of the Roche Bay Iron Project concentrating plant are the basis of the selection of the ore treatment flowsheet concept. Knowing the high energy consumption required by comminution processes (about 70% from total energy required by concentration process), the most efficient crushing and grinding equipment were selected. The process equipment arrangement is based on the study of the concepts existing in operation concentrating plants treating magnetite ores and presenting similar characteristics (mineralogy, chemistry, liberation degree and hardness).

13.2.2 Metallurgical Tests Results

Summary of SGS Lakefield (Canada), COREM (Canada) and SGA Liebenburg (Germany) Metallurgical Tests

Five ore composite samples (B1, B2, B3, B4 and B5 - SGS Tests) and 2 composite samples (C1 and C2 - COREM Tests) were crushed and ground, and submitted to dry and wet magnetic separation processes and sulphide flotation tests (COREM). The 2007 and 2008 SGS Lakefield and 2010 COREM reports present the test programs and results, including the quantification of the crushing and grinding energy consumption.

The ore samples marked B1, B2, B3, B4, B5 (SGS), C1 and C2 (COREM) were submitted to the comminution and enrichment tests in accordance with the testwork program, as follows:

- Crushing and grinding, in order to quantify the crushability and grinding ability of the Roche Bay ores;
- Ore enrichment by dry magnetic and wet magnetic separation testing procedures (Cobbing and Davis Tube); and
- Sulphide flotation tests.

The visually estimated makeup of Batches B1 to B5, sampled from the AB-Zone and C-Zone deposits are as follows:

Batch 1 (B1) – C-Zone high iron grade ore;

Batch 2 (B2) – C-Zone low iron grade ore;

Batch 3 (B3) – A/B-Zone containing high iron grade ore;

Batch 4 (B4) – A/B-Zone medium iron grade ore; and

Batch 5 (B5) – A/B-Zone low iron grade ore.

The chemistries of the ore composite Samples B1 to B5 and C1 and C2 are summarized in Tables 13-1 and 13-2, respectively.

Table 13-1: Chemistries of Ore Samples 1 to 5 (Source: SGS Tests, Dry Magnetic Separation Tests)

Assay	B1	B2	B3	B4	B5
Fe, %	32.90	22.80	32.90	26.30	21.70
SiO_2, %	47.70	51.90	47.80	55.00	55.50
S, %	0.40	0.70	0.29	0.50	0.72
Satmagan	40.20	16.00	42.80	22.00	15.90
%Recoverable Fem	29.10	11.60	31.00	15.90	11.50
%Recoverable Fe	88.50	50.70	94.30	60.60	52.90
%Non-recoverable Fe	3.79	11.20	1.87	10.40	10.20

Table 13-2: Chemistries of Ore Samples C1 and C2 (Source: COREM Tests)

Assay	C1	C2
Fe, %	30.10	34.50
SiO_2, %	48.91	45.12
S, %	0.54	0.28
P_2O_5, %	0.22	0.22
Magnetite (Satmagan)	26.30	39.40

The Dry Magnetic Separation (DMS) process was selected as the first phase of the enrichment process, taking into consideration its general use for primary enrichment of magnetite ores. The results of DMS tests are shown in Table 13-3.

Table 13-3: Results of Dry Magnetic Separation Tests; Maximal Iron Recoveries “IR” at Grind Size 12.5 mm (100% Passing)

Test	Grind Size K100, mm	FeCONC,1 %	SiO_2 %	S %	MAG %	WR %	IR %	Batch #
MS-1	12.5	41.10	35.20	0.64	53.40	89.00	97.70	1
MS-2	12.5	32.60	39.40	1.27	41.30	52.00	73.70	2
MS-3	12.5	37.80	39.50	0.34	62.60	92.00	98.60	3
MS-4	12.5	35.50	41.60	0.83	36.00	73.00	90.10	4
MS-5	12.5	35.70	39.80	1.43	34.60	52.00	79.20	5
MS-6	3.35	39.20	38.70	0.52	52.30	81.30	95.40	1
MS-7	3.35	36.70	40.70	1.08	37.50	44.10	70.50	2
MS-8	3.35	37.40	40.90	0.31	52.10	89.50	98.50	3
MS-9	3.35	34.20	44.30	0.66	34.00	66.10	87.20	4
MS-10	3.35	33.90	43.40	1.10	31.50	50.60	77.60	5
SJ-1	0.30	53.40	22.00	0.53	74.90	53.90	87.60	1
SJ-2	0.30	46.70	27.90	2.06	57.20	28.00	56.20	2
SJ-3	0.30	51.10	25.50	0.31	72.90	58.90	92.00	3
SJ-4	0.30	44.30	31.70	1.11	54.60	40.70	68.60	4
SJ-5	0.30	46.20	29.10	2.11	55.00	27.80	58.80	5
SJ-6	0.85	46.90	30.30	0.43	63.90	61.90	87.30	1
SJ-7	0.85	45.50	29.10	1.51	54.20	28.70	54.60	2
SJ-8	0.85	43.10	35.30	0.28	59.30	72.10	94.20	3
SJ-9	0.85	38.80	38.70	0.71	42.90	49.20	72.10	4
SJ-10	0.85	42.50	32.70	1.24	47.50	29.40	57.10	5

13.2.3 Remarks

Primary dry magnetic separation (Cobbing) is the first phase of the Roche Bay Iron Project enrichment process. The recommended grinding size in the case of Roche Bay Iron Project ores is based on the high pressure grinding at 13 mm (about ½ inch), and screening in closed circuit with a 13 mm sieve opening, as indicated by the highest iron recovery levels from SGS testing (see Table 13-3). The dry magnetic separation phase seems to be necessary if the ore iron grade is ≤32% only. In the case of the ROM ≥32%Fe, the primary dry magnetic separation is not recommended because of its negative impact on the process efficiency (at same ore iron grade, lower levels of weight and iron recoveries in the case of DMS use (Table 13-4).

Table 13-4: Process Efficiency with and without Dry Magnetic Separation (Cobbing)

PROCESS VARIANT	Fe in ROM, %									
	25	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**
With Cobbing										
Pre-Con. Iron Grade, ***FC1***, %	31.9	32.1	32.4	32.6	32.9	33.1	33.4	33.6	33.9	34.1
Cobbing Weight Rec., ***WR1***, %	63.4	66.9	70.5	74.0	77.6	81.1	84.6	88.2	91.7	95.3
Cobbing Iron Recovery, ***IR1***, %	80.8	82.6	84.5	86.2	87.9	89.5	91.1	92.6	94.1	95.5
LIMS Weight Recovery, ***WR2***, %	39.8	40.6	41.4	42.2	43.1	43.9	44.7	45.5	46.3	47.1
LIMS Iron Recovery, ***IR2***, %	81.9	82.8	83.8	84.8	85.8	86.8	87.8	88.8	89.8	90.8
Flotation Weight Rec., ***WR3***,%	91.7	92.2	92.8	93.4	94.0	94.7	95.4	96.2	97.1	98.2
Flotation Iron Recovery, ***IR3***, %	92.8	93.1	93.6	94.0	94.5	95.1	95.7	96.5	97.3	98.3
Global Weight Recovery, ***GWR***, %	***23.2***	***25.1***	***27.1***	***29.2***	***31.4***	***33.7***	***36.1***	***38.6***	***41.3***	***44.1***
Global Iron Recovery, ***GIR***, %	***61.3***	***63.7***	***66.2***	***68.7***	***71.2***	***73.9***	***76.5***	***79.3***	***82.2***	***85.3***
Without Cobbing										
ROM Iron Grade, ***SH1***, %	25	26	27	28	29	30	31	32	33	34
LIMS Weight Recovery, ***WR2***, %	22.5	24.6	26.8	29.2	31.7	34.4	37.3	40.3	43.5	46.9
LIMS Iron Recovery, ***IR2***, %	60.7	63.2	65.9	68.8	71.9	75.2	78.7	82.4	86.4	90.4
Flotation Weight Rec., ***WR3***,%	93.5	93.7	93.9	94.2	94.5	94.9	95.3	95.8	96.5	97.2
Flotation Iron Recovery, ***IR3***, %	94.2	94.3	94.5	94.7	95.0	95.3	95.7	96.1	96.7	97.4
Global Weight Recovery, ***GWR***, %	***21.0***	***23.0***	***25.2***	***27.5***	***30.0***	***32.7***	***35.5***	***38.6***	***42.0***	***45.6***
Global Iron Recovery, ***GIR***, %	***57.2***	***59.6***	***62.3***	***65.2***	***68.3***	***71.7***	***75.3***	***79.2***	***83.5***	***88.1***

Notice: The cells shaded in blue indicate the recommended process variant (with or without Dry Magnetic separation)

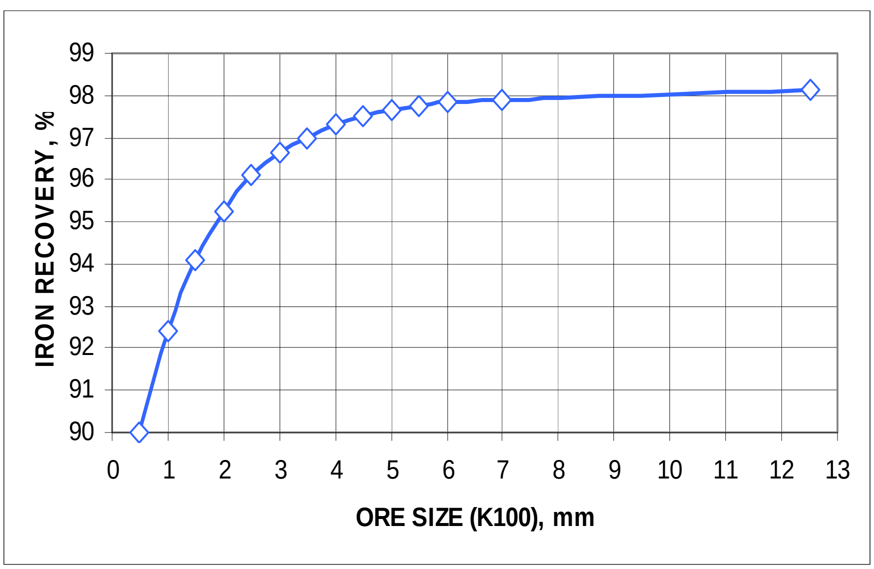


Figure 13-1: Dry Magnetic Separation: Iron Recovery vs. Crushing Size (P100)
Average Values, Samples B1 and B3

Figure 13-1 demonstrates the high efficiency of the dry magnetic process if the crushing size is >6 mm. Under these conditions, the appropriate crushing size is 12 to 13 mm. In fact, the major objective of the dry magnetic separation is the operational stability of the grinding processes (stability of the concentrate chemistry after dry magnetic separation in spite of the variability of ore quality).

Wet Magnetic Separation (SGS and COREM Davis Tube Tests) - The results of Davis Tube tests are shown in Tables 13-5 (SGS) and 13-6 (COREM). The SGS tests were conducted on ore samples B1, B2, B3, B4 and B5, ground to sizes -26, -38 and -50 µm (P80). The COREM samples grinding sizes were P80 -38 and -31 µm. The review of the test results takes into account the requirements of the standard concentrate quality specification, as follows:

- Min. 65%Fe, max. 7% SiO_2 in final concentrate and max. 0.07% S after sulphide flotation.

The study of the SGS and COREM Davis Tube test results reveals the following aspects:

- The ore grinding size of -38 µm meets the concentrate quality specification, excepting the silica grade.
- The ore grinding sizes of -35 µm (P80) seems to meet the concentrate quality specification including iron and silica grade, Fe_c>65% and $SiO_{2,C}$<7% (Table 13-5); and
- Generally, the operation of the ores >30% Fe (28% Fe cut-off) seems to ensure max. 0.7% S in magnetic concentrate, consequently the sulphide flotation process can be by-passed.

Table 13-5: SGS Davis Tube Test Results (from Ore to Magnetic Concentrate)

Test	Batch Sample	P80 µm	Fe_C %	$SiO_{2,C}$ %	S_C %	P_C %	WR %	IR %	MR %	Fe_{ORE} %	M_{ORE} %
DT-11	**B1**	26	69.00	3.54	0.63	0.01	42.1	88.3	99.2	32.9	40.2
DT-12	**B2**	26	66.40	4.65	3.58	0.02	17.1	49.8	97.6	22.8	16.0
DT-13	**B3**	26	69.20	3.06	0.29	0.01	43.5	91.5	99.0	32.9	42.8
DT-14	**B4**	26	65.70	6.49	1.93	0.02	24.9	75.4	97.8	26.3	22.0
DT-15	**B5**	26	67.60	4.10	3.57	0.02	17.2	53.6	97.1	21.7	15.9
DT-21	**B1**	38	66.90	5.02	0.71	0.01	41.9	85.2	99.0	32.9	40.2
DT-22	**B2**	38	65.70	5.88	3.45	0.02	17.9	51.6	94.7	22.8	16.0
DT-23	**B3**	38	68.30	3.65	0.29	0.01	43.6	90.5	98.7	32.9	42.8
DT-24	**B4**	38	65.40	7.15	1.90	0.03	24.7	61.4	97.4	26.3	22.0
DT-25	**B5**	38	66.00	5.36	3.53	0.02	18.1	55.1	96.6	21.7	15.9
DT-16	**B1**	50	66.00	7.11	0.64	0.01	43.5	87.3	98.6	32.9	40.2
DT-17	**B2**	50	63.00	9.28	3.52	0.03	19.5	53.9	97.1	22.8	16.0
DT-18	**B3**	50	65.10	8.41	0.36	0.01	45.3	89.6	98.6	32.9	42.8
DT-19	**B4**	50	62.00	10.10	1.94	0.03	26.2	61.8	98.1	26.3	22.0
DT-20	**B5**	50	63.40	8.31	3.59	0.02	18.7	54.6	93.4	21.7	15.9
Calc.	**B1**	***35***	***67.36***	***4.61***	***0.71***	**-**	***42.6***	***87.2***	**-**	32.9	40.2
Calc.	**B2**	***35***	***66.12***	***5.33***	***3.45***	**-**	***17.9***	***51.9***	**-**	22.8	16.0
Calc.	**B3**	***35***	***68.72***	***3.55***	***0.29***	**-**	***44.0***	***91.9***	**-**	32.9	42.8
Calc.	**B4**	***35***	***65.60***	***6.83***	***1.90***	**-**	***25.4***	***63.4***	**-**	26.3	22.0
Calc.	**B5**	***35***	***66.46***	***4.92***	***3.53***	**-**	***17.8***	***54.5***	**-**	21.7	15.9

Notice: The notation $\%M_{ORE}$ – Magnetite in Ore; High Iron Ores shaded in yellow.

Table 13-6: COREM Davis Tube Test Results (from Ore to Magnetic Concentrate)

Test	Sample	P80 µm	Fe_C %	$SiO_{2,C}$ %	S_C %	P_C %	WR %	IR %	MR %	Fe_{ORE} %	M_{ORE} %
DT-1	**C1**	38	65.00	7.52	0.56	0.03	31.0	68.1	96.9	29,6	28.4
DT-2	**C1**	31	66.10	5.48	0.54	0.02	29.9	65.7	96.5	30.1	26.3
DT-3	**C2**	38	66.10	6.80	0.58	0.02	43.1	84.8	98.4	33.6	40.6
DT-4	**C2**	31	68.08	4.30	0.54	0.01	42.3	83.5	98.6	34.5	39.4

The notations used in Tables 13-5 and 13-6 are as follows: $\%Fe_C$ – Iron in concentrate; %WR – Davis Tube Weight Recovery; %IR – Iron Recovery; %MR – Magnetite Recovery; $\%Fe_{ORE}$ – Iron in Ore; $\%M_{ORE}$ – Magnetite in Ore; High Iron Ores shaded in yellow (SGS Tests).

Remarks:

- The advanced grinding size -35 µm (P80) is required for the silica removal up to 5%. The iron grade of 65% can easily be obtained even if grinding size is-38 µm.
- The relationship of sulphur grade in magnetic concentrate vs. ore iron grade (%Sc vs. $\%Fe_{ORE}$), based on SGS and COREM Davis Tube test, confirms the SGS prediction of concentrate sulphur grade sulphur vs. ore iron grade (Figure 13-2). Consequently, if the ore iron grade is >30%, the sulphur grade in magnetic concentrate will be <0.7% and the sulphide flotation can be avoided if the concentrate will be used as a pellet feed (Figure 13-2).

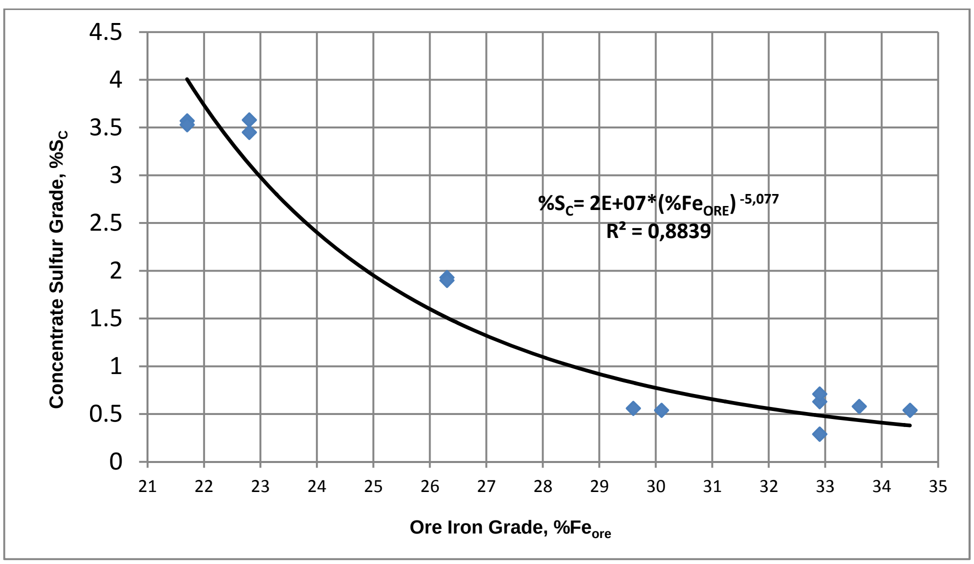


Figure 13-2: Concentrate Sulphur Grade vs. Ore Iron Grade (SGS and COREM Davis Tube Test Results)

Sulphide Flotation – The COREM sulphide flotation test results demonstrate the possibility of the sulphur removal up to 0.03% under efficient process conditions.

Based on SGS and COREM magnetic separation test results (Tables 13-5 and 13-6), the following two models were developed:

$\%Fe_{CONC}$ = -0.0049*d2+0.221*d+ 0.0106*(%MAGORE)2-0.5296*(%MAGORE)+70.2435 .... (1);

and

$\%SiO_{2,CONC}$ = -1.0113*(%FeCONC)+72.812 .... (2).

Where, $\%Fe_{CONC}$ and $\%SiO_{2,CONC}$ are the concentrate iron and silica grades resulted from the equations (1) and (2). These models can be used for the preliminary estimate of the concentrate quality in function of the ore chemistry and grinding size, (d), in µm. The degrees of confidence of the equations (1) and (2), R2 > 0.9, confirm the validity of the models presented above.

All test data have provided the required information necessary to the development of the process flowsheet of Roche Bay Iron Project ore treatment (which was developed during the PEA, Dorval, 2010). Additional metallurgical testwork programs are required to move to the feasibility study phase of the project and are currently in progress.

In 2011, COREM started two new metallurgical testwork programs on 10 representative composite samples constituted of over 1,400 samples, collected from the samples resulted from two drilling campaigns (over 16 tonnes of ore). These composite samples were submitted to the crushing, grinding, magnetic separation, sulphide flotation laboratory and pilot tests (the last in progress).

The test results obtained by all the laboratories mentioned above revealed the following aspects:

- From the Roche Bay Iron Project magnetite ores (C-Zone), an iron concentrate of 65% to 68% Fe, maximum 5% SiO_2, maximum 0.07% S and maximum 0.05% P can be profitable obtained by wet magnetic separation and sulphide flotation.
- The hardness of the Roche Bay Iron Project ores is relatively low (Bond Work Index 9 to 11 kWh/t) and, consequently, the comminution processes (crushing and grinding) are characterized by relatively low energy consumption.
- The high dissemination of the magnetite and aimed concentrate chemistry requires a fine grinding size, of 0.03 to 0.035 mm (P80) or 400 to 440 mesh.
- This fine final product, based on its chemistry and size, is an excellent iron concentrate for pelletizing process.
- The metallurgical test results, summarized above, reveal the important characteristics of Roche Bay ores; as such, the medium hardness, sulphur presence (pyrrhotite), high magnetite dispersion and low contaminant levels (P, Ti, V).
- The ore sulphur grade, because of the magnetic character of the pyrrhotite, requires additional sulphide flotation process in order to obtain the maximum grade of 0.07% S in a final concentrate. Despite this restrictive aspect, if the magnetic concentrate will be used as a pellet feed, the concentrate sulphur grade of 0.7% to 0.8% can be accepted, based on the sulphur combustion that occurs during the pellet bake process. The obtaining of the 0.7% to 0.8% S grade in the magnetic concentrate, without sulphide flotation, is possible by the selection and the use of the ore/ROM at grades >30%Fe (cut-off grade of Fe 28%). Under these ore grade conditions, the sulphide flotation process can be eliminated from the process.

- The dry magnetic separation process aims to ensure the stability of the operating parameters of the primary and secondary grinding processes, by the diminishing of the iron grade variability of the crushed ore.
- Based on the efficiency criteria, in the case of the ore >32%Fe, the dry magnetic separation is not recommended (magnetite loss).
- It will be possible, by the variation of the operational parameters, to obtain different concentrate qualities.
- Taking account of the Roche Bay Iron Project concentrate chemistry and grinding size, the pelletizing and/or direct reduction processes are the recommended for ulterior processing of Roche Bay concentrate. The chemistry and grinding size of Roche Bay Iron Project concentrate meets the quality requirements of the pelletizing and/or direct reduction processes without additional grinding and enrichment phases.
- The concentration process is characterized by a high efficiency (weight and iron recoveries).
- The weight and iron recoveries are 27% to 41% and 66% to 82%, respectively, in function of the ore iron grade level.

13.3 Ongoing Metallurgical and Process Testworks at COREM, SGA, Liebenburg, Germany and CRIMM, China

The following ongoing metallurgical testwork is underway in support of the FS to be completed by Wardrop and AEI in 2012:

- Work Program for Roche Bay Iron Project sample handling, selection and preparation and metallurgical laboratory and pilot tests (5.5 tonnes samples; 1,064 samples) aiming the selection preparation of the samples ≥25%Fe (≥28%Fe in ROM) necessary to the development of the metallurgical tests (China, 100 kg and COREM, Canada 500 kg), High Pressure Roller and Ball Mill Grinding (Thyssen Krupp Polysius, Germany, 2 tonnes samples), Advanced Ore Treatment Pilot Tests (SGA R&D Center, Germany, 2 tonnes, previously ground at Thyssen Krupp Polysius) and Semi-Industrial Concentrate Production Tests (COREM, Canada, 2 tonnes samples). The laboratory test results obtained by COREM, Canada and SGA Liebenburg, Germany, confirmed the previous test results (SGS and COREM), the obtaining of a magnetic concentrate with a minimum of 65% Fe, 5% SiO_2 and maximum 0.07% S. The pilot tests (SGA, Germany) are currently in progress.
- Work Program for Roche Bay Iron Project sample handling, selection and preparation and metallurgical laboratory and pilot tests (6 tonnes samples; ore cut-off grade of 20%Fe, ore Fe grade ≥27%) aiming the selection preparation of a composite sample for Semi-Industrial Concentrate Production Tests (COREM, Canada) based on the previous laboratory test results. The pilot tests are currently in progress (COREM, Canada).
- Ore Mineralogical Study and Laboratory Metallurgical Testwork Program is currently in progress at COREM, Canada, on the five (5) ore composite samples resulted from the preparation of 6 tonnes ore samples mentioned above (bullet 2). The testwork will include ore structures, mineral associations and their quantitative distribution being quantified. Ore liberation degree and grinding size that is necessary to the obtaining of standard concentrate are to be quantified and Wet LIMS and sulphide flotation tests are to be developed.

- Five (5) composite samples (100 kg ore; bullet 1 above; with ore cut-off grade of 25%Fe) were sent to the Changsha Research Institute of Mines and Metallurgy (CRIMM, China) in order to qualify the responses of the Roche Bay Iron Project ores to the crushing, grinding, magnetic separation (dry and wet) and sulphide flotation processes. The development of the optimal process flowsheet was required. The results of the CRIMM tests confirmed the previous test results developed by SGS, COREM and SGA for the obtaining of an iron concentrate with a minimum 65% Fe, maximum 5% SiO_2, maximum 0.05% S and -0.03 mm size. The ore processing flowsheet proposal is in accordance with the process flowsheet selected by AEI and Wardrop and will be outlined in detailed in the FS to be published in 2012.

13.3.1 Conclusions (Metallurgical Tests)

The test results obtained by all laboratories mentioned above revealed the following aspects:

- From the Roche Bay Iron Project magnetite ores, an iron concentrate 65% to 68% Fe, maximum 5% SiO_2, maximum 0.07% S and maximum 0.05% P can be profitable obtained by wet magnetic separation and sulphide flotation.
- The hardness of the Roche Bay Iron Project ores is relatively low (Bond Work Index 9 to 11 kWh/t) and, consequently, the comminution processes (crushing and grinding) are characterized by relatively low energy consumption.
- The high dissemination of the magnetite and aimed concentrate chemistry requires a fine grinding size, of 0.03 to 0.035 mm (P80) or 400 to 440 mesh.
- This fine final product, based on its chemistry and size, is an excellent iron concentrate for pelletizing process.
- The concentration process is characterized by a high efficiency (weight and iron recoveries).
- The weight and iron recoveries are 27% to 41% and 66% to 82%, respectively, in function of the ore iron grade level.

Process Tests

A High Pressure Roller Laboratory and Pilot Testwork Program was developed by Thyssen Krupp Polysius in 2011. Laboratory and pilot grinding tests, including the characterization of Roche Bay ore high pressure grinding process, roller abrasion index and the quantification of high pressure grinding process parameters were performed on 1.5 tonnes Roche Bay composite sample, ore cut-off 25% Fe, ore iron grade 28%. The excellent results of these tests demonstrate the possibility of the use of this high efficient grinding equipment (low power consumption, low OPEX and CAPEX) in the case of the Roche Bay Ores.

Concentrate Sedimentation and Dewatering Testwork Program, aiming the qualification of the response of Roche Bay concentrate to dewatering processes, taking into consideration the shipping requirement, maximum 7% moisture in the concentrate. The tests were developed by Bokela Filters, Germany, by simulating of Roche Bay process conditions (slurry temperature and fine grinding size). The results of the tests confirmed the possibility of the obtaining of maximum 7% moisture in the final concentrate, without the use of the hot steam, in spite of the low slurry temperature and very fine size of the concentrate.

13.3.2 Final Product Quality Specification

Based on the metallurgical tests results, from the ores of 27% Fe (ore cut-off 20% Fe), the most efficient final product is a fine iron concentrate, in accordance with the quality specification presented below (major chemical elements) in Table 13-7.

Table 13-7: Quality Specification of Roche Bay Magnetic Concentrate (Final Product)

%Fe	%SiO_2	%S	%P	%TiO_2	%MnO	%Al_2O_3	Size, mm	Moisture, %
min. 65	max. 5	0.07	0.03	0.03	0.03	0.40	0.03 (P80)	7

In accordance with the mentioned test results, by appropriate process operation, the higher concentrate quality can be obtained (up to 68% Fe and maximum 4% SiO_2).

13.4 Roche Bay Iron Project Ore Deposit: Experimental Qualification of A/B-Zone Ores

13.4.1 General

The extension of the study of the potential of the Roche Bay Iron Project for the A/B-Zone, located in the proximity of the C-Zone, aimed to obtain the confirmation of the previous good metallurgical test results of the testwork programs developed by SGS. Twenty ore samples collected from the A/B-Zone were sent to the recognized German Research Centre, SGA in order to quantify the beneficiation potential of the these ores.

13.4.2 Testwork Objectives and Description

Twenty (20) ore samples from Roche Bay Iron Project A/B-Zone were and are submitted to the metallurgical tests (SGA) in order to preliminary qualify the responses of the mentioned ores to the beneficiation process, as follows:

- Davis Tube tests aiming to quantify the efficiency of the wet magnetic separation and the chemistry of the magnetic concentrate;
- Two grinding size were selected, 0.063 mm and 0.04 mm (P100);
- The testing program and the test results are presented in the SGA metallurgical report; and
- Dry Magnetic Separation tests, aiming the quantification of the maximal grinding size and dry magnetic separation parameters, necessary to the producing of a pre-concentrate of minimum 45%.

Assuming the value of the ore cut-off grade of 20% Fe, from the twenty (20) samples, only one sample of 8% Fe was removed (Sample #13). The chemistries of the A/B-Zone ore samples are shown in Table 13-8.

Table 13-8: Major Chemistries of the Roche Bay A/B-Zone Ore Samples

SGA Sample ID	AEI Sample ID	Fe_t %	S %	Magnetite %	%Fe bound to Magnetite
1	08-A16-29	31.50	0.360	37.5	86.07
2	08-A16-36	36.25	0.550	41.7	83.17
3	08-A16-48	28.70	0.950	26.3	66.25
4	08-A16-60	24.45	0.770	18.2	53.82
5	08-A16-71	25.00	1.500	17.0	49.16
6	08-A16-74	37.10	1.000	44.9	87.50
7	08-A16-80	29.70	0.055	19.8	48.20
8	08-A16-113	30.30	0.580	29.1	69.44
9	08-A16-123	23.70	0.670	16.3	49.73
10	08-A16-133	23.60	0.480	29.5	90.38
11	08-A16-143	33,05	0.260	43.1	94.29
12	08-A16-151	35.20	0.180	45.5	93.46
14	08-A16-165	31.50	0.390	38.4	88.14
15	08-A16-179	28.70	0.440	31.2	78.60
16	08-A16-185	31.30	0.380	27.7	63.98
17	08-A16-187	30.60	0.590	30.8	72.77
18	08-A16-192	25.20	0.860	17.5	50.21
19	08-A16-207	34.35	0.135	39.7	83.56
20	08-A16-218	22.20	0.245	17.3	56.34

Davis Tube Test Results

The objective of the Davis Tube (DT) tests was the obtaining a magnetic concentrate minimum 65% Fe and maximum 5% SiO_2.

The DT test results reveal the following aspects:

- The grinding size of 0.04 mm (P100) can ensure, in proportion of 100%, the average iron grade of magnetic concentrate of 69.38% (Minimal value – 64.70%Fe; Maximal value – 71.30%Fe; Remark. The results obtained from Sample #20 are considered as aberrant, based on the results obtained from the tests for 0.063 mm. The justified removal of this sample allows the correct average results/values, 70.8% Fe and 2.33% SiO_2 in magnetic concentrate to be obtained.
- The process efficiency, expressed by the weight and iron recoveries, is more than acceptable (average values, weight recovery 30.4% and iron recovery 69.4%).
- The sulphur grades in the A/B-Zone magnetic concentrates are comparable with the sulphur grades of the C-Zone magnetic concentrate. Based on COREM, CRIMM and SGA tests, the sulphur removal up to 0.05% S in final concentrate is entirely and efficiently possible by sulphide flotation.

Dry Low Intensity Magnetic Separation Tests (Dry Process)

The objective of the SGA Dry Low Intensity Magnetic Separation Tests (DLIMS) has been the quantification of the maximal liberation size able to produce an iron concentrate, by dry process, ≥50% Fe.

The Roche Bay A/B-Zone ore samples were distributed in two iron grade classes (>31% Fe and <31% Fe) and the result was the obtaining of two composite samples, the first named High Grade Ore (HGO) and the second, Low Grade Ore (LGO). This methodology was required by the high capacity of the SGA dry magnetic separator and the low available quantity of the ore samples.

The results of the DLIMS tests are summarized in Table 13-9. The test results confirm the possibility of obtaining the pre-concentrates >45%Fe, by dry low intensity magnetic separation, from the Roche Bay Iron Project A/B-Zone ores (grinding size -1.6 mm). Taking account of the diameter of the separator drum and its operating parameters, the magnetic separator used to conduct the tests is identical to an industrial device. Under these conditions, the test results can be considered as commercial/industrial data.

Different drum speeds were used to conduct the test. Table 13-9 includes only the drum speeds able to produce the pre-concentrates >45% Fe (HGO, 5 m/s; LGO, 6.5 m/s; grinding size -1.6 mm).

Table 13-9: Dry Magnetic Separation: Summary of SGA Test Results

Product Chemistry and Process Efficiency	HGO 5 m/s			LGO 6.5 m/s		
Ore Grinding Size, ***d***, mm	***0.315***	***1.00***	***1.60***	***0.315***	***1.00***	***1.60***
Sample Iron Grade, ***%FeH***	34.14	34.14	34.14	28.46	28.46	28.46
Con. Iron Grade, ***%FeC***	54.24	49.60	45.90	55.02	48.70	45.80
Magnetite Con., ***%MagC***	70.20	63.10	58.90	67.10	58.10	53.80
Tailing Iron Grade, ***%FeT***	13.50	13.60	12.50	22.40	20.90	19.70
Weight Recovery, ***%WR***	50.71	57.06	64.80	18.59	27.19	33.56
Iron Recovery, ***%IR***	80.49	82.96	87.12	35.93	46.54	54.03

The selection optimal grinding size and pre-concentrate iron grade is based on the financial criteria, as follows:

- HGO: Size 1.0 mm – At the grinding size 1.0 mm, from 1 tonne of ore, the pre-concentrate quantity of 0.571 tonnes, of minimum 49.6% Fe can be produced. Considering the selling price of US$1.94/i.u (i.u. – iron unit), the amount resulted from the selling of 0.571 tonnes of concentrate will be US$54.49/t ore, at US$96.22/t concentrate.
- HGO: Size 1.6 mm – At the grinding size 1.6 mm, from 1 tonne of ore, the pre-concentrate quantity of 0.648 tonnes, of 45.90%Fe can be produced. Considering the selling price of US$1.94/i.u (i.u. – iron unit), the amount resulted from the selling of 0.648 tonnes of concentrate will be US$57.7/t ore, at US$89.05/t concentrate.
- LGO: Size 1.0 mm – At the grinding size 1.0 mm, from 1 tonne of ore, the pre-concentrate quantity of 0.272 tonnes, of minimum 49%Fe can be produced. Considering the selling price of US$1.94/i.u (i.u. – iron unit), the amount resulted from the selling of 0.272 tonnes of concentrate will be US$25.70/t ore, at US$94.48/t concentrate.

- LGO; Size 1.6 mm – At the grinding size 1.6 mm, from 1 tonne of ore, the pre-concentrate quantity of 0.336 tonnes, of 45.8%Fe can be produced. Considering the selling price of US$1.94/i.u (i.u. – iron unit), the amount resulted from the selling of 0.336 tonnes of concentrate will be US$29.85/t ore, at US$88.85/t concentrate.

Based on the rough estimate of the impact of the grinding size on the financial efficiency, the selection of the grinding size <1.6 mm seems to be financially recommended.

SGA Test Results: General Remarks (A/B-Zone Ores)

Wet Process

- The iron concentrates resulted from the wet treatment of the Roche Bay A/B-Zone ores are characterized by high quality, in the case of the grinding size <0.04 mm (similar to the liberation grinding size required by Roche Bay C-Zone ores). The average chemistry is 69.4% Fe, 2.7% SiO_2 and 1.81% S. The sulphide flotation is required.
- If the grinding size is <0.063 mm, the concentrate quality meets the standardized quality specification for iron concentrate. The average chemistry is 67.47% Fe, 5.25% SiO_2 and 1.79% S. The sulphide flotation is required.
- The efficiency of the processing of the Roche Bay Iron Project A/B-Zone ores seems to be higher than the efficiency levels of the Roche Bay C-Zone ores, but the differences are not significant.
- The development of the NI 43-101 Geological Model of Roche Bay A/B-Zone is necessary.

In conclusion, from the Roche Bay Iron Project A/B-Zone ores, using the process flowsheet proposed for Roche Bay Iron Project for the C-Zone, it is possible to obtain the concentrate of a high quality and value: High iron grade (70.8%Fe) and low silica grade (2.33% SiO_2).

The high quality A/B-Zone ores can be blended with the C-Zone ores in order to improve the Roche Bay Iron Project concentrate quality.

The final products, fine concentrates, are characterized by an outstanding excellent quality, high iron and low silica grades. The concentrate chemistry and size meet the requirements of the pelletizing process, consequently, from these ores a valuable pellet feed can be obtained by simple and cheap low intensity magnetic separation. The process flowsheet is similar to the efficient flowsheet selected for the current Roche Bay Iron Project, C- Zone.

Studies are ongoing to determine economic feasibility of producing a saleable upgraded Iron ore / pre-concentrate, which would complement the main product stream from the Roche Bay Iron project. This process would provide additional cash flow to the Roche Bay Iron Project economic base case; moreover, the near shore access to A/B and C-Zones provide substantial process flexibility for multiple product streams.

Dry Process

- The SGA dry magnetic separation test results confirm the possibility of the production of the pre-concentrates >45%Fe from the Roche Bay A/B-Zone ores (Low and High Grade Ores; Grinding size -1.6 mm; Table 13-13).
- Based on the operating and financial criteria, the recommended grinding size is -1.6 mm. The chemistries of the pre-concentrates and process efficiency are shown in Table 13-9).
- Based on the market demand, the production of the pre-concentrates ≥50%Fe (grinding size -1.0 mm) will be aimed.
- The recommended ore cut-off is 25% Fe for pre-concentrate (≥50% Fe) option. The ROM iron grade corresponding to 25% Fe cut-off is 27% and the ore reserve 193 Mt (preliminary estimate based on the data resulted from 2 holes drilled in 2008.
- The tailings resulted from the dry magnetic separation of the low grade ores (27% to 28% Fe) are characterized by >20% Fe. It is recommended to upgrade them, by wet process. The financial benefits resulted from the valorization of the tailing is not possible due to insufficient geological information.
- The sulphur grade of the concentrate can diminish the selling price of the Roche Bay A/B-Zone pre-concentrates. The average sulphur grade is 0.7%.
- For preliminary dry treatment process of Roche Bay A/B-Zone ores, considering 25% Fe cut-off (ROM 27% Fe), the SGA test results obtained from the Low Grade Ores can be used.

13.5 Roche Bay Ore Treatment and Process Flowsheet

Design Data

The development of the flowsheet concept of the Roche Bay Iron Project ore treatment has been based on the following technical and efficiency criteria:

- Production of 5.0 Mt concentrate per year, minimum 65% Fe, maximum 5% SiO_2, max. 0.07% S and -0.030 to 0.035 mm (P80);
- Maximization of the process efficiency (weight and iron recovery) and minimization of the power consumption, by the selection of the most efficient crushing, grinding and magnetic separation equipment; and
- Minimization of CAPEX and OPEX.

The mathematical and statistical treatment of the drilling data and metallurgical test results allowed the development of the Roche Bay Iron Project ore treatment process simulation and its mathematical model.

The simplified block process diagram of the Roche Bay ore treatment is shown on Figure 13-3.

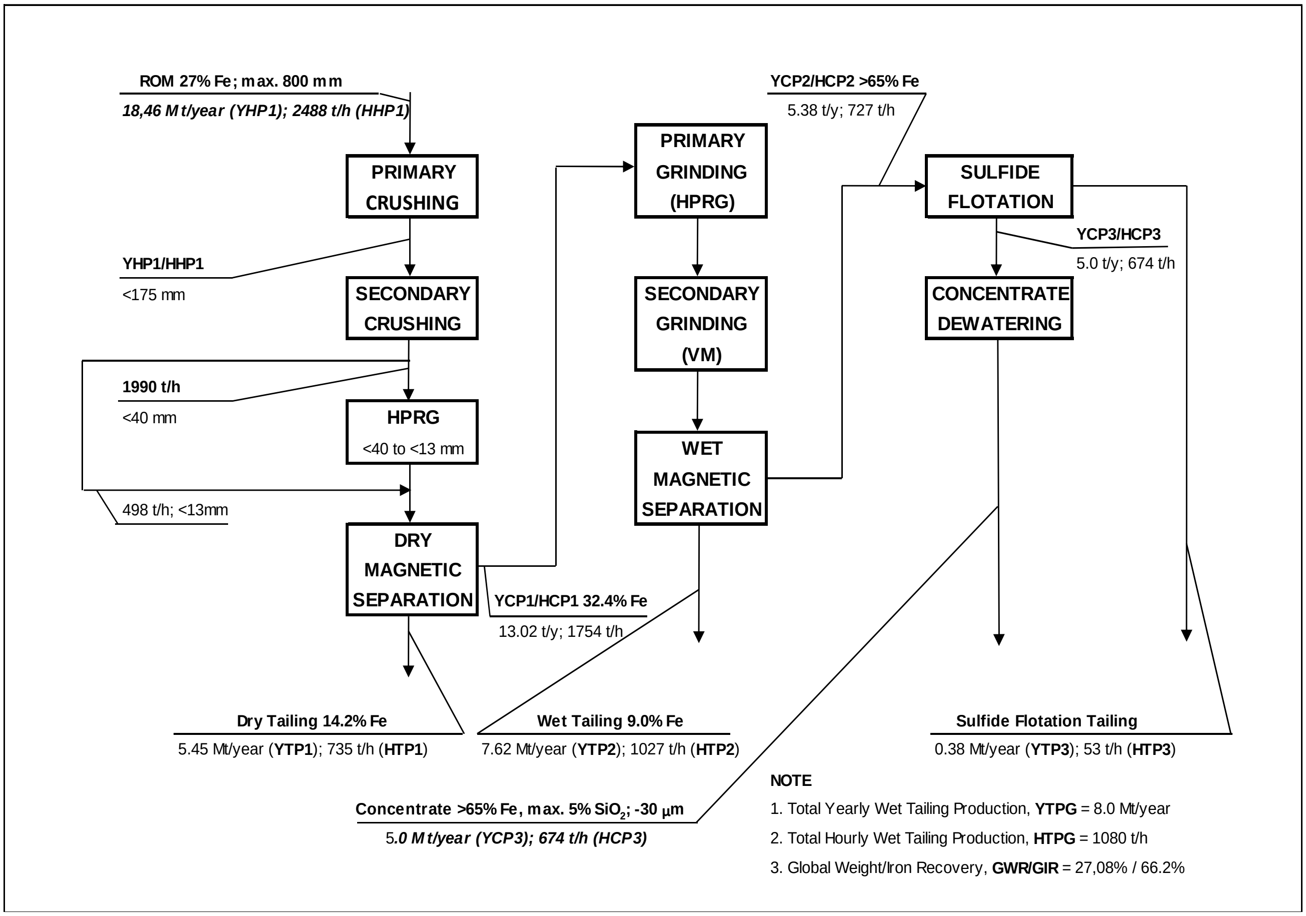


Figure 13-3: Roche Bay Ore Treatment: Simplified Block Process Diagram

The design data (material balance), resulted from the model of the concentration process, for different ore cut-off and ore iron grade levels, are shown in Table 13-10.

Table 13-10: Roche Bay Ore Treatment: Material Balance and Major Chemistries

PARAMETER	VALUE						
Ore Cut-Off, %Fe	***18***	***22***	***25***	***26***	***28***	***29***	***30***
ROM Iron Grade, ***FH1***, %	***26***	***27***	***28.7***	***29***	***30***	***31***	***32****
ROM Sulphur Grade, ***SH1***, %	0.76	0.7	0.62	0.64	0.60	0.52	0.49
Yearly ROM Production, ***YHP1***, Mt/year	***19.95***	***18.46***	***17.13***	***15.93***	***16.52***	***13.85***	***12.95***
Hourly ROM Production, ***HHP1***, t/hour	***2688***	***2488***	***2308***	***2147***	***2002***	***1867***	***1745***
Dry Magnetic Separation (COBBING)							
Cobbing Concentrate Iron Grade, ***FC1***, %	32.10	32.36	32.61	32.86	33.11	33.36	33.61
Pre-Concentrate Sulphur Grade, ***SC1***, %	1.03	0.91	0.81	0.71	0.62	0.53	0.45
Yearly Cobbing Concentrate Production, ***YCP1***, Mt/year	13.35	13.02	12.68	12.35	12.03	11.73	11.42
Hourly Cobbing Concentrate Production, ***HCP1***, t/hour	1798	1753	1708	1665	1622	1580	1538
Cobbing Tailing Iron Grade, ***FT1***, %	13.65	14.22	14.87	15.66	16.65	18.00	20.02
Yearly Cobbing Tailing Production, ***YTP1***, Mt/year	6.60	5.45	4.45	3.58	2.80	2.13	1.53
Hourly Cobbing Tailing Production, ***HTP1***, t/hour	888	735	600	482	378	287	207
Cobbing Weight Recovery, ***WR1***, %	66.93	70.47	74.01	77.55	81.09	84.63	88.17
Cobbing Iron Recovery, ***IR1***, %	82.64	84.45	86.19	87.88	89.50	91.07	92.60
Wet Magnetic Separation (LIMS)							
LIMS Concentrate Iron Grade, ***FC2***, %	65.43	65.44	65.45	65.47	65.49	65.52	65.55
LIMS Concentrate Sulphur Grade, ***SC2***,%	2.97	2.50	2.10	1.73	1.43	1.15	0.92
Yearly LIMS Concentrate Production, ***YCP2***, Mt/year	5.42	5.38	5.35	5.32	5.28	5.23	5.20
Hourly LIMS Concentrate Production, ***HCP2***, t/hour	730	727	722	717	712	707	700
LIMS Tailing Iron Grade, ***FT2***, %	9.29	8.96	8.60	8.21	7.81	7.38	6.92
Yearly LIMS Tailing Production, ***YTP2***, Mt/year	7.92	7.62	7.32	7.03	6.75	6.48	6.22
Hourly LIMS Tailing Production, ***HTP2***, t/hour	1068	1027	987	948	910	873	838
LIMS Weight Recovery, ***WR2***, %	40.63	41.43	42.23	43.05	43.87	44.69	45.52
LIMS Iron Recovery, ***IR2***, %	82.81	83.79	84.77	85.77	86.77	87.71	88.78
Sulphide Flotation							
Final Concentrate Iron Grade, ***FC3***, %	***66.09***	***65.99***	***65.90***	***65.84***	***65.79***	***65.75***	***65.72***
Final Concentrate Sulphur Grade, ***SC3***, %	***0.07***	***0.07***	***0.07***	***0.07***	***0.07***	***0.07***	***0.07***
Yearly Final Concentrate Production, ***YCP3***, Mt/year	***5.0***	***5.0***	***5.0***	***5.0***	***5.0***	***5.0***	***5.0***
Hourly Final Concentrate Production, ***HCP3***, t/hour	***674***	***674***	***674***	***674***	***674***	***674***	***674***
Flotation Tailing Iron Grade, ***FT3***, %	57.68	58.44	59.12	59.72	60.26	60.72	61.07
Yearly Flotation Tailing Production***, YTP3***, Mt/year	0.42	0.38	0.35	0.32	0.28	0.23	0.20
Hourly Flotation Tailing Production, ***HTP3***, t/hour	56.96	52.51	47.88	43.06	37.94	32.46	26.49
Flotation Weight Recovery, ***WR3***, %	92.21	92.77	93.37	94.00	94.67	85.40	96.22
Flotation Iron Recovery, ***IR3***	93.13	93.55	94.01	94.52	95.10	95.74	96.48
Global							
Global Weight Recovery, ***GWR***, %	***25.07***	***27.08***	***29.18***	***31.38***	***33.68***	***36.08***	***38.61***
Global Iron Recovery, ***GIR***, %	***63.73***	***66.19***	***68.69***	***71.24***	***73.85***	***76.53***	***79.31***
Total Yearly Wet Tailing Production, ***YTPG***, Mt/year	8.35	8.02	7.68	7.35	7.03	6.73	6.42
Total Hourly Wet Tailing Production, ***HTPG***, t/year	1125	1080	1035	992	948	907	865
Global Wet Tailing Iron Grade (solid basis), ***FTG***, %	11.74	11.36	10.93	10.45	9.90	9.29	8.58
Global Wet Tailing Sulphur Grade (solid basis), ***STG***, %	1.60	1.44	1.29	1.14	1.01	0.88	0.75
Yearly Wet Tailing Prod. (slurry 60% solid), ***SYTPG***, Mt/year	13.92	13.37	12.80	12.25	11.72	11.22	10.70
Hourly Wet Tailing Production (slurry 60% solid), ***SHTPG***, t/hour	1876	1802	1725	1651	1579	1512	1442
Global Wet Tailing Iron Grade (slurry), ***SFTG***, %	7.04	6.81	6.56	6.00	5.94	5.57	5.15
Global Wet Tailing Sulphur Grade(slurry), ***SSTG***, %	0.96	0.86	0.77	0.68	0.61	0.53	0.45

The symbols of the different production capacities, used on Figure 13-3, are explained in Table 13-10.

13.6 Process Flowsheet Concept and Equipment Selection Criteria

General Considerations

Based on the SGS, COREM, SGA and CRIMM metallurgical test results, SGS process flowsheet proposal (2008), CRIMM (2011), Thyssen Krupp Polysius, Bokela Filters and Metso Minerals proposals and suggestions, the Roche Bay Iron Project ore treatment process includes the following phases:

- Ore comminution from the ROM size max. 800 mm up to 12 to 13 mm, required by dry magnetic separation process; Dry magnetic separation process (Cobbing) is not recommended if the ROM iron grade is >32%.
- Ore grinding and enrichment, including the primary grinding (from 12 to13 mm up to 1.6 mm), secondary grinding (from 1.6 mm up to 35 µm) and wet magnetic separation (LIMS).
- Sulphide flotation necessary to the removal of the sulphur from the magnetic concentrate, up to 0.07%.
- Concentrate dewatering/thickening and filtration, in order to meet the shipping requirement, maximum 7% moisture in final concentrate.
- Wet tailing thickening.

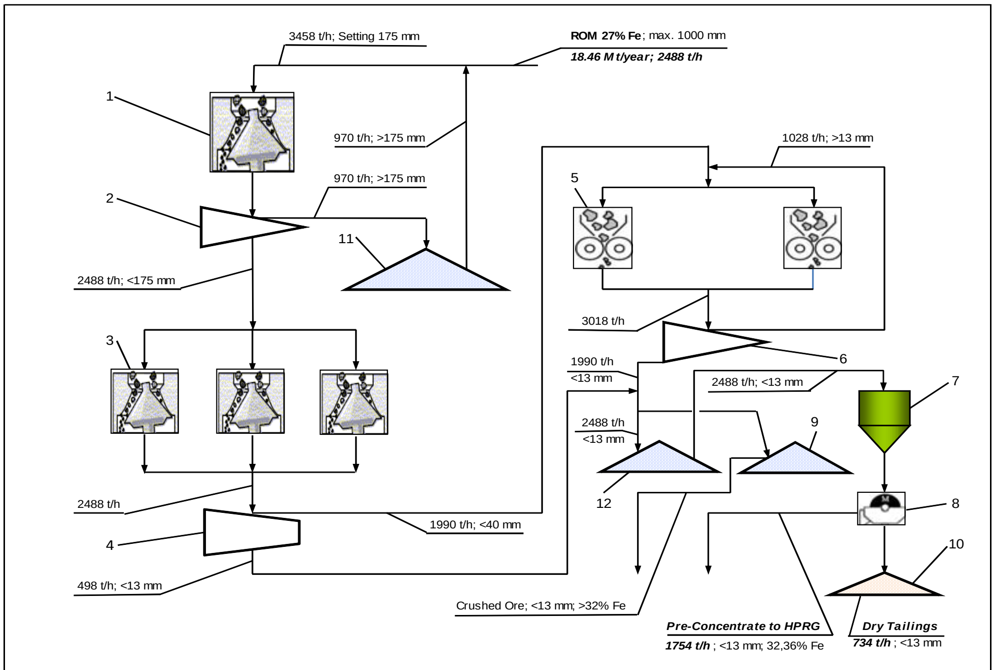
Process Flowsheet Concept and Equipment Selection Criteria

The selection of the Roche Bay Iron Project process flowsheet concept and equipment has been based on the following major technical and financial criteria:

- Respect of the metallurgical, process and concentrate quality requirements resulted from metallurgical and process testwork and concentrate quality specification.
- Optimal relationships between the required production capacity and process flowsheet concept (equipment type included) aiming the maximization of the process efficiency.
- Selection of the process equipment able, under minimal CAPEX and OPEX levels, to meet the capacity and quality requirements of the project.

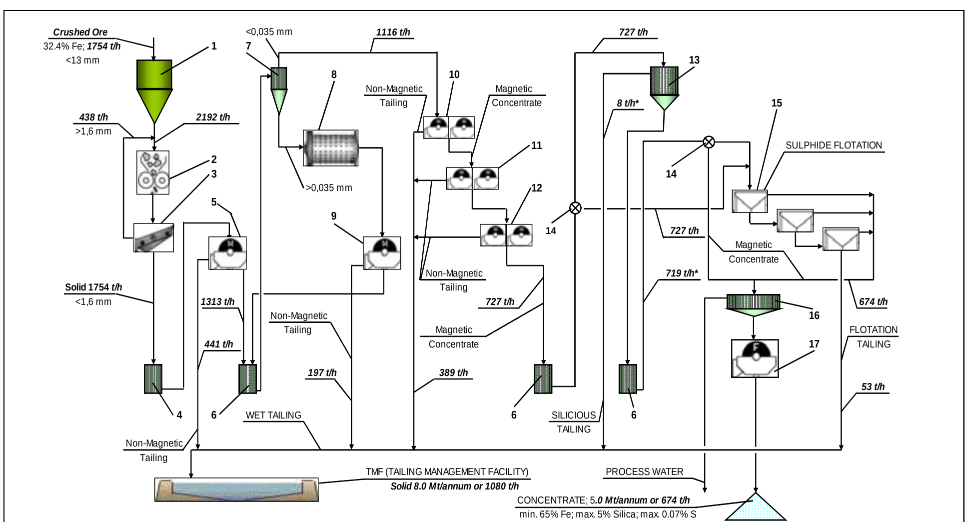
Process flowsheet will be able, by its operating flexibility, to ensure the stability of the process and product quality, under inevitable variable conditions of the production capacity and ore quality.

The detailed process flowsheets, in accordance with the simplified block process diagram of Roche Bay ore treatment are shown on Figures 13-4 and 13-5.



12	Stockpile Crushed Ore <32% Fe	6	Screening Plant 13 mm
11	Stockpile Crushed Ore >175 mm	5	High Pressure Grinding Roller (HPGR)
10	Stockpile Dry Tailings	4	Screening Plant 13 mm
9	Stockpile Crushed Ore >32% Fe	3	Secondary Cone Crushers 40 mm; 3 Units; METSO GP300S
8	Dry Magnetic Separators	2	Primary Grizzly 175 mm
7	Crushed Ore Bins	1	Primary Gyratory Crusher 175 mm; 1 Unit; METSO 42-65

Figure 13-4: Roche Bay Ore: Crushing and Grinding



10	1st WET MAGNETIC SEPARATION		
9	WET MAGNETIC SEPARATION		
8	BALL MILL or VERTIMILL GRINDING		
7	HYDROCYCLONES	17	CONCENTRATE DEWATERING
6	PUMP BOX	16	CONCENTRATE THICKENER
5	PRIMARY WET MAGNETIC SEPARATION	15	SULPHIDE FLOTATION
4	PUMP BOX	14	BY-PASS VALVE
3	WET SCREENING (1,6 mm)	13	HYDROSIZER (Optional)*
2	HIGH PRESSURE GRINDING	12	3rd WET MAGNETIC SEPARATION
1	CRUSHED ORE BINS	11	2nd WET MAGNETIC SEPARATION

NOTE

1. Total production capacity of Roche Bay Project, 5***.0 Mt/annum*** fine concentrate (Dry basis)
2. Intermediate storage bins are not shown
4. Intermediate stockpiles and bins are not shown
5. Process water circuit is not shown and final solution of«TMF» is not selected
6. Total annual operating time, 7420 h/annum
7. Global Weight & Iron Recoveries, ***GWR = 27.1%*** & ***IR = 66.2%***
9. Crushed Ore 1754 t/h resulted from Dry Magnetic Separation (Weight Recovery, ***WR1 = 70.5%***)

Figure 13-5: Roche Bay Ore Concentration Process

Dry Ore Comminution and Dry Magnetic Separation (Cobbing)

The Roche Bay Iron Project ore comminution includes the following phases:

- Ore size reduction from 800 mm (average value; max. 1,000 mm) up to 175 mm;
- Ore size reduction from 175 mm up to 12 to13 mm, the last being required by efficient operation of dry magnetic separators;
- Dry magnetic separation aiming the ensure the stability of the crushed ore quality (recommended in the case of the ores <32%Fe), in order to minimize the operating variability of the primary and secondary equipment and wet magnetic separators (LIMS); and
- Ore size reduction, from 12 to 13 mm up to 1.6 mm under maximal efficient conditions (CAPEX and OPEX).

Under incidence of the selection criteria presented above, the following size reduction options were studied:

Jaw crushers and impact crushers versus gyratory crushers (ore size reduction from 800 mm to 175 mm);

- Crushing versus semiautogenous grinding - SAG (ore size reduction from 175 mm to 12 to 13 mm);
- Wet and dry semiautogenous grinding processes; and
- Impact crushers or Rod Mills versus High Pressure Roller Grinding (HPRG) required by ore size reduction from 12 to 13 mm to 1.6 mm.

The comparative study of the comminution variants presented above has revealed the following aspects:

- The ore size reduction, from 800 mm to 175 mm, is recommended to be performed by ***gyratory crushers.*** This equipment type meets the requirements of Roche Bay Iron Project ore characteristics (medium hardness), production capacity and CAPEX and OPEX in comparison with impact (recommended for low hardness ores) and Jaw crushers (low production capacity in spite of the low CAPEX and OPEX).
- The ore size reduction from, 175 mm to 12 to 13 mm, is recommended to be performed by ***Cone Crushers*** and ***High Pressure Rollers.*** The efficient use of the SAG equipment (recognized high CAPEX and OPEX levels) is recommended in the case of the higher production capacity than Roche Bay Iron Project (***18.5 Mt/year*** or ***2488 t/h*** (ore cut-off 20%Fe; ROM 27%Fe).
- The ore size reduction, from 12 to 13 mm to 1.6 mm, is recommended to be performed by High Pressure Roller Grinding (HPRG) instead to use the fine crushing equipment or Rod Mills. The HPRG equipment is recognized for its low power consumption (1.3 to 1.5 kWh/t) and maintenance cost.

Concentration Process Flowsheet

The ore concentration process starts with a roller press grinding, aiming the size reduction of the pre-concentrated ore resulted from the dry magnetic separation process (from 12 to 13 mm to 1.7 mm). The High Pressure Roller works in closed circuit with a wet screen of 1.6 mm opening.

The screen underflow is submitted to the primary/rough wet magnetic separation (LIMS). The magnetic particles of the slurry resulted from the primary wet magnetic separation are submitted to the secondary Vertimill grinding, in order to reduce the particle size, from -1.7 mm to -0.035 mm (P80). The ground particles of -0.035 mm are submitted to a multistage wet magnetic separation (LIMS), in order to produce the magnetic concentrate of minimum 65%Fe and maximum 5% SiO_2. The magnetic concentrate will be submitted to the sulphide flotation process, in order to remove the sulphur up to 0.07% in final concentrate.

The dewatering process (concentrate and tailings) will be performed in the lamella thickeners. Due to the site climate conditions, all thickeners will be housed and heated. METSO Minerals thickeners will be used for the tailings in the range of 10 m height and 20 m diameter. The concentrate thickeners will be smaller accordingly.

The final water removal from the concentrate will be performed by pressure filters, up to 7% final concentrate moisture. The filtration tests were developed in collaboration with BOKELA FILTERS, a recognized German filter supplier.

The heated storage area (3° to 4°C) of the final concentrate of 7% moisture is necessary in order to avoid the concentrate icing.

Power Requirements

The estimate of the power requirements (power plant capacity) of Roche Bay Iron Project mining site, including all power consumers (mine, ore treatment plant, material handling and storage, port, etc.) is based on the following information and criteria:

- Statistical data and information included in the report issued by Natural Resources of Canada (NRC), resulted from existing Canadian open pit mines («Benchmarking the Energy Consumption of Canadian Open-Pit Mines»);
- Low hardness of the Roche Bay Iron Project Ores (**Work Index 9 to 11 kWh/t**; («Crushing and Grinding Work Index of Roche Bay Ores», SGS Lakefield crushing and grinding test results), in comparison with known usual high hardness of magnetite ores (**Work Index 14 to 18 kWh/t**); and
- Low energy consumption of the selected Roche Bay Iron Project crushing and grinding equipment.

The structure of necessary power for Roche Bay mine and concentrating plant, including the power requirements of the port, airport, tailing disposal, process water and no-production consumers is shown in Table 13-11.

Table 13-11: Structure of Roche Bay Power Consumption

Consumer	kWh/t conc
Mine	**2.2**
Concentrating Process	
Crushing	4.7
Grinding	40.1
Enrichment	9.9
Tailings	6.3
Process Water	5.6
Other	8.7
Total Milling	**75.3**
Port (including storage of coal, fuel etc.)	**5.0**
Non-Production Consumers	**3.0**
Total General	**85.5**

The estimated level of the Roche Bay Iron Project specific power consumption of ***85.5 kWh/t of concentrate*** seems to be acceptable in comparison with usual specific power consumption of ***100 to 130 kWh/t of concentrate*** generally required by hard magnetite ores. The low hardness of Roche Bay Iron Project ores and very low energy consumption of Roche Bay Iron Project secondary crushing and primary grinding equipment explain the difference between the energy consumptions, Roche Bay Iron Project versus other magnetite mines.

The Roche Bay power plant capacity (net power output), in the case of the production of 5.0 Mt concentrate per year (7,420 hrs/year) will be of ***57 MW_e***.

Fresh Process Water Requirements

The addition of the fresh process water (process only) is necessary to replace the water quantities lost with the wet tailings (40% water) and final concentrate (7% water). The necessary quantities of fresh process water are shown in Table 13-12.

Table 13-12: Fresh Process Water Requirements

Wet Product	Wet Production, M3/year	Wet Production, M3/h	Fresh Water, M3/year	Fresh Water, M3/h
Concentrate, 7% H_2O	5.37	724	0.37	50
Wet Tailings, 40% H_2O	13.37	1802	5.35	721
Total	**-**	**-**	**5.74**	**771**

14.0 MINERAL RESOURCE ESTIMATE

14.1 Introduction

The first independent mineral resource for the Roche Bay Iron Project was for the C-Zone only and was released on March 12, 2009, with a revised technical report dated September 17, 2009 (Golder; Palmer and Shaw, 2009). This first mineral resource estimate was based on a 25% total iron cut-off grade and defined an Inferred Mineral Resource of 357 million tonnes at an average grade of 28.07% total iron and 28.57% magnetic iron (Fe_3O_4) to a depth of 250 m below surface. The March 12, 2009 Mineral Resource was based on a mineral processing method that created an iron nugget product and had no significant Davis Tube test work results.

The second mineral resource estimate for the Roche Bay Iron Project was also for the C-Zone only and was released on April 6, 2011 (Golder; Greenough and Palmer, 2011). This estimate was based on the same number of drill holes as the March 12, 2009 Mineral Resource Estimate, but with additional Satmagan results not previously available, as well as supporting Davis Tube test results, as recommended by Golder in the April 24, 2009 Technical Report. Using a 20% total iron cut-off grade, it defined an Indicated Mineral Resource of 323 million tonnes at an average grade of 26.73% total iron and 25.77% magnetic iron and an Inferred Mineral Resource of 226 million tonnes at an average grade of 25.85% total iron and 23.85% magnetic iron.

This March 2, 2012 Mineral Resource Estimate was completed under the direct supervision of Greg Greenough, P.Geo., and reviewed by Paul Palmer, P.Eng., P.Geo. It includes both the C-Zone and A/B-Zone deposits. Three new holes were added to the C-Zone in 2011, all to the south end of the deposit, and an additional 120 Davis Tube test results were conducted. The A/B-Zone Mineral Resource Estimate was based on 17 drill holes (2 from 2008 and 15 from 1982). No significant Davis Tube test work results are available for the A/B-Zone.

Drill hole data was provided in both UTM and local (drilling) grid co-ordinates (which is a counter-clockwise rotation of 40.5° to UTM). All resource modelling work was done in the local grid coordinate system as this is the one used for section references and drill hole layout. Resource model blocks will therefore be orthogonal to the drilling grid.

The C-Zone resource model consists of one mineralized envelope, created based on drill hole geology and total Fe metal grade data. The overall trend of the deposit is northeast-southwest, in UTM coordinates, dipping 70 degrees to the south-east. The zone has a total strike length of 5,000 m, an average horizontal thickness of 160 m, and a currently defined average depth of 300 m below surface. The mineralization is open at depth.

The A/B-Zone resource model consists of two discrete mineralized envelopes. The overall trend of the deposit is northeast-southwest, in UTM coordinates, with a vertical dip. The west limb has a strike length of approximately 1,400 m, an average horizontal thickness of 150 m and a currently defined average depth of 130 m below surface. The east limb has a strike length of approximately 2,000 m, an average horizontal thickness of 120 m and a currently defined average depth of 160 m. Both limbs of mineralization are still open at depth.

All data analysis, three-dimensional solids modelling, variogram analysis and block model interpolation utilized Datamine Studio v3.19.4135, (Datamine) in extended (double) precision.

14.2 Drill Hole Data

The Roche Bay Iron Project drill hole database information supplied to Golder by AEI included a total of 96 surface holes drilled during 2007, 2008 and 2011 AEI exploration drill programs for the C-Zone and a total of 17 surface holes drilled during 1982 (Borealis) and 2008 AEI exploration drill programs for the A/B-Zone.

The pre-2011 collars, down-hole surveys, lithological descriptions and codes, dry bulk densities, and assay data files were supplied in comma-separated-value (csv) format. The 2011 collars, down-hole surveys, lithological descriptions and codes, and assay data files were supplied in Microsoft Excel (.xls) format.

A summary and description of the data files provided to Golder by AEI is provided in Table 14-1.

Table 14-1: Roche Bay Iron Project Data Files

File name	Effective Date	Comments
Collars_20090205.csv	Feb. 5, 2009	110 records; contains both UTM and local grid collar coordinates – local grid used.
Survey_20081008.csv	Oct. 8, 2008	4,518 records: no down-hole surveys available for 2007 drilling – straight from collar assumed.
Geology_20090125.csv	Jan. 25, 2009	2,227 records
Litho_20090216.csv	Feb. 16, 2009	12,195 records
Densities_20090216.csv	Feb. 16, 2009	12,195 records: 211 measured; 11205 calculated from Fe assay; 753 assigned 'default' values; 25 null values
Assay.csv	Same as previous estimate	12,240 records: -99 values set to null after import to Datamine
New_Satmagans.csv	Feb. 18, 2011	797 records, replace previously calculated Fe_3O_4 values: 10 duplicate records removed and values of "<" set to zero before import to Datamine
RBC-11-93, RBC-11-94 and RBC-11-95 .xls files	Oct. 19, 2011	3 collars in UTM coordinates, 237 down-hole surveys, 41 lithological intervals and 314 assay samples.

The data was imported into Datamine and de-surveyed using internal Datamine processes. Although the drill hole log for RBC-82-001 shows abundant BIF, no samples were taken; therefore, this hole was removed from the data for grade interpolation.

14.3 Geological Interpretation

C-Zone

A digital topographical surface was provided by AEI and the de-surveyed collar locations were checked against the surface and found to be within acceptable limits (approximately 1 m or less). A data terrain model (dtm) surface representing the base-of-overburden/top-of-bedrock was generated from the bottom of the casing intervals in the de-surveyed drill hole data.

Total iron in the deposit is very closely associated with the BIF; therefore, definition of the resource model envelope attempted to encompass as many of the contiguous multi-layered BIF horizons as possible, while keeping the amount of internal waste material to a minimum. Based on the total length of captured data for each lithological unit, the final mineralized envelope (wire frame) contains approximately 81% BIF material, with reasonably small internal amounts of waste metasediments (12%), schist (4%), and gabbro and other lithologies (3%).

Some very minor BIF intervals were observed external to the mineral envelope in the hanging wall, but were very discontinuous and ignored for this estimate. More significant BIF intervals were identified external to the footwall of the mineral envelope, but the absence of longer holes on many of the drill sections prevented reliable interpretation of another contiguous mineralized zone.

To ensure that all the mineral envelope is supported by drill data, the outer limits of the mineralization were extended using a distance of approximately 1/3 the drill spacing (to the closest un-mineralized hole or from the last mineralized hole) as a control. Surface meshes (dtms) were made from the digitized points in the general plane of the deposit using control strings for the outer limits. This method is useful for removing irregularities in the outer limits, and also for minimizing interpretational bias that can exist in wire frames generated from section or plan strings/poly-lines.

To ensure proper sample capture, points defining the mineralized envelope were snapped to the end points of the appropriate drill hole intervals and validated through visual checks. The volumes were verified to ensure that there were no intersections or invalid (open or shared) edges.

Boolean wire frame facilities in Datamine were used to provide the correct contact between the mineralized zone upper limit and bedrock/overburden, which was modelled from the logged overburden intervals in the drill hole data. The final mineralization envelope is shown on Figure 14-1.

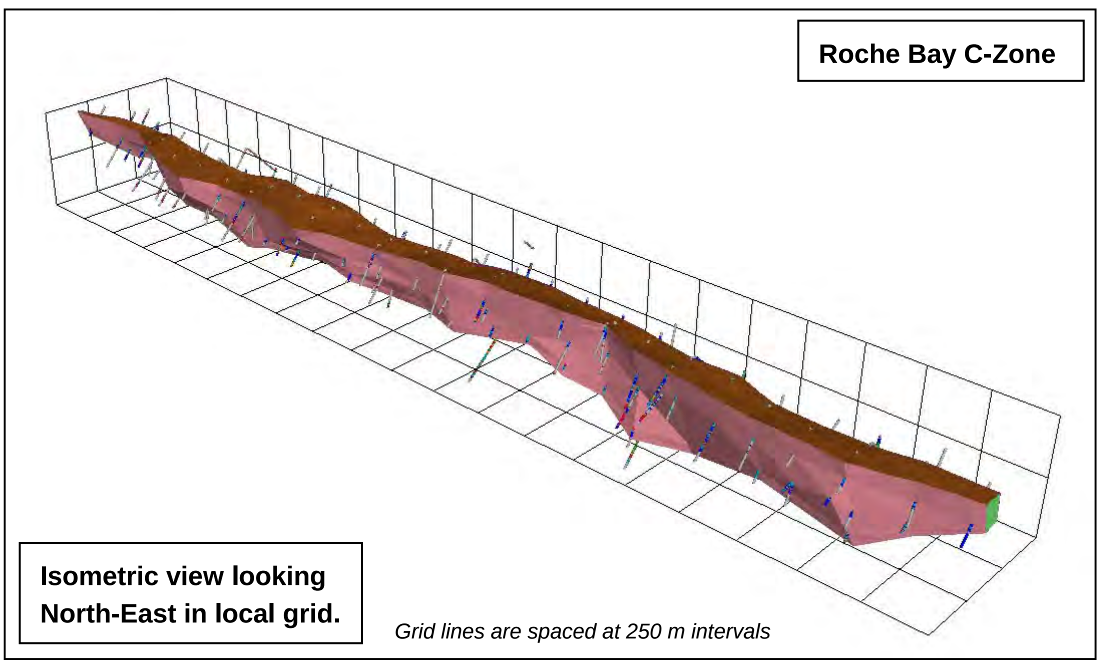


Figure 14-1: C-Zone Isometric View of Mineralized Zone and Diamond Drill Coverage

A/B-Zone

The drill hole density is much sparser and irregular in the A/B-Zone when compared to the C-Zone, so the use of magnetic survey results was used to augment the general methodologies of geological interpretation as described in C-Zone.

Comparison of the magnetic survey results over the C-Zone revealed a very close correlation between the BIF and the high magnetic signature. Under the assumption that the same correlation holds true for the A/B-Zone, the high magnetic signature was used as a guide for the surface expression of the mineralization and this was extruded to a variable depth based on the BIF intersections in the drill holes (see Figure 14-2).

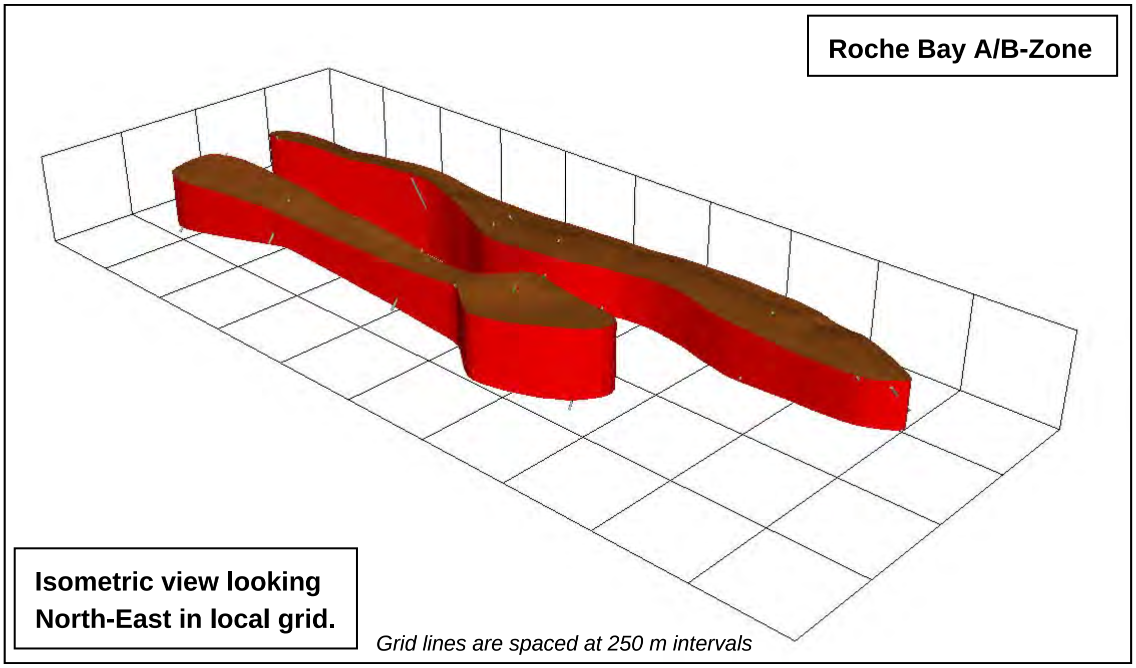


Figure 14-2: A/B-Zone Isometric View of Mineralized Zone and Diamond Drill Coverage

14.4 Exploratory Data Analysis (EDA)

14.4.1 Data Capture

The mineralization wire frame volumes were used to capture drill hole samples. Samples with centres lying within the wire frame were selected and, since all points defining the volume are snapped to the appropriate ends of the samples, no sample lengths appear outside.

C-Zone

Statistical analysis of the captured samples for the C-Zone is presented in Table 14-2, with a histogram plot of Fe (or total Fe) illustrated on Figure 14-3.

To help ensure that over-estimation of grade in the interpolation does not occur, 287 un-sampled intervals in the captured data (Sample ID = ‘NS’) were assumed to have been identified as barren material during core logging and were assigned 0.0 (zero) for TiO_2, MNO, Cr_2O_3, V_2O_5, S, Fe, and Fe_3O_4 prior to compositing. Table 14-2 for these elements shows 9 intervals of absent data (8,954 minus 8,945), representing intervals that were left as absent data; i.e., they were sampled but had no assay values (null).

The other database elements in the un-sampled intervals were left as null values.

Table 14-2: C-Zone Captured Sample Data Statistics

	Number samples	Minimum	Maximum	Total	Mean	Variance	Standard deviation
LENGTH	8954	0.01	10.00	13,557	1.51	0.59	0.77
DENSITY	8945	2.22	4.20		3.20	0.06	0.24
SIO_2	8638	3.40	93.20		51.38	40.71	6.38
AL_2O_3	8639	0.06	15.50		3.10	9.33	3.06
FE_2O_3	8945	0.00	92.40		35.13	209.19	14.46
MGO	8639	0.04	21.20		2.15	1.63	1.28
CAO	8639	0.04	14.80		2.11	1.91	1.38
NA_2O	8639	0.01	5.06		0.36	0.35	0.59
K_2O	8639	0.01	10.40		1.32	1.67	1.29
TIO_2	8945	0.00	1.97		0.10	0.03	0.16
P_2O_5	8639	0.01	2.39		0.20	0.01	0.08
MNO	8945	0.00	1.04		0.07	0.00	0.05
CR_2O_3	8928	0.00	0.43		0.02	0.00	0.02
V_2O_5	8881	0.00	0.17		0.01	0.00	0.01
LOI	8639	-2.98	40.20		0.85	2.57	1.60
SUM	8593	94.50	101.60		99.53	0.56	0.75
S	8936	0.00	5.75		0.72	0.37	0.61
FE	8945	0.00	64.62		24.65	102.71	10.13
FE_3O_4	8945	0.00	77.00		23.72	240.28	15.50
S_CONC	7512	0.00	37.03		3.49	17.52	4.19

Note: LENGTH statistics are un-weighted
DENSITY statistics are weighted by LENGTH
All other statistics weighted by LENGTH x DENSITY

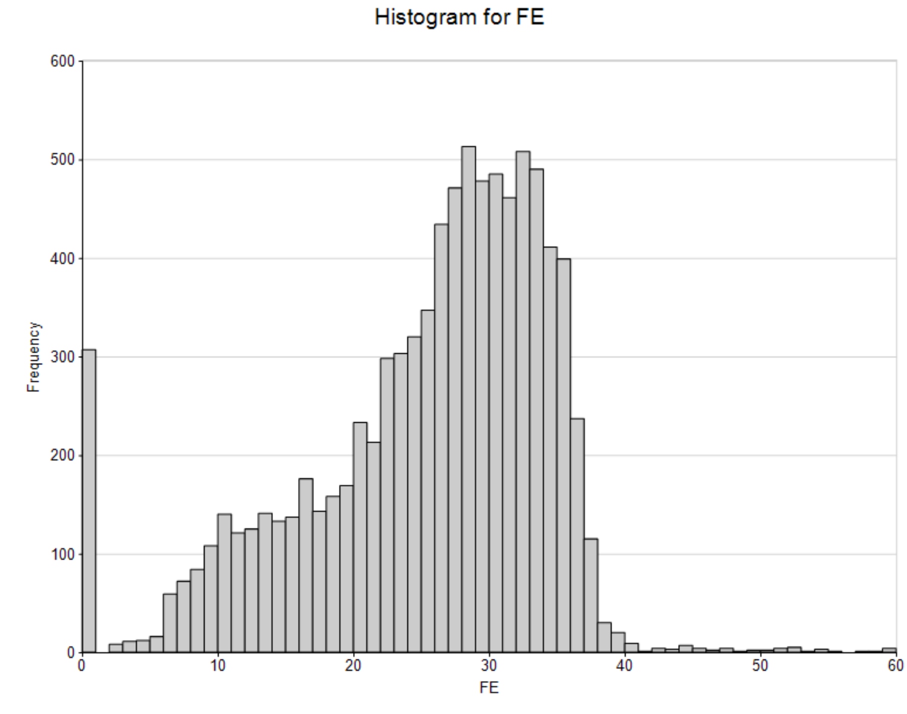


Figure 14-3: C-Zone Captured Samples Fe Histogram

A/B-Zone

Statistical analysis of the captured samples for the A/B-Zone is presented in Table 14-3, with a histogram plot of Fe (or total Fe) illustrated on Figure 14-4.

Fe is the only assay value recorded for the 15 holes drilled in the 1982 (Borealis) drilling campaign and although the standard assay suite was recorded for the two holes in the 2008 AEI drilling campaign this is insufficient to report statistics.

Table 14-3: A/B-Zone Captured Sample Data Statistics

	Number samples	Minimum	Maximum	Total	Mean	Variance	Standard deviation
LENGTH	1118	0.01	73.20	2,633	2.35	10.92	3.30
DENSITY	1118	2.60	4.06		3.10	0.06	0.25
FE	1118	0.00	59.21		21.23	99.35	9.97

Note: LENGTH statistics are un-weighted
DENSITY statistics are weighted by LENGTH
All other statistics weighted by LENGTH x DENSITY

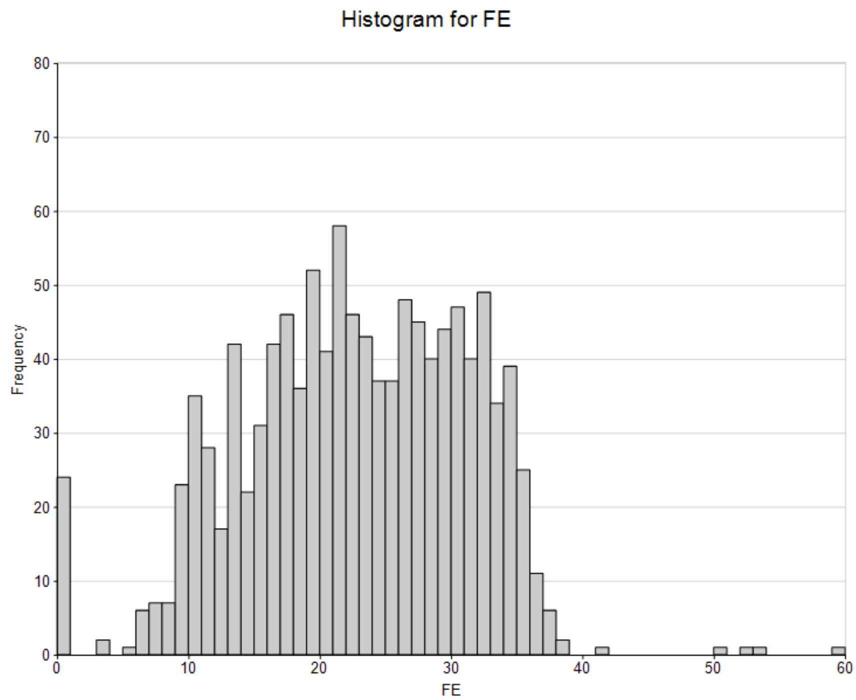


Figure 14-4: A/B-Zone Captured Samples Fe Histogram

14.4.2 Correlations

Table 14-4 shows a correlation matrix developed from the Roche Bay raw assay sample data (C-Zone and A/B-Zone) for only those samples where the magnetics (Fe_3O_4) were measured by Satmagan testing (12,791 samples).

Table 14-4: Roche Bay Correlation Matrix

	FE	FE_3O_4	FE_2O_3	CR_2O_3	S	SIO_2	MGO	NA_2O	K_2O	TIO_2
FE	1									
FE_3O_4	0.92	1								
FE_2O_3	0.99	0.91	1							
CR_2O_3	-0.28	-0.22	-0.28	1						
S	-0.09	-0.23	-0.09	-0.10	1					
SIO_2	-0.52	-0.48	-0.52	-0.07	0.32	1				
MGO	-0.54	-0.49	-0.54	0.63	-0.25	-0.24	1			
NA_2O	-0.71	-0.58	-0.72	0.07	-0.14	0.18	0.38	1		
K_2O	-0.60	-0.58	-0.61	0.11	0.29	0.33	0.17	0.31	1	
TIO_2	-0.67	-0.62	-0.68	0.13	-0.19	-0.08	0.60	0.69	0.34	1

Since Fe_2O_3 is a calculated value from total Fe, its correlation to Fe is essentially a perfect 1. The only other clear correlation is between total Iron (Fe) and measured magnetics (Fe_3O_4).

14.4.3 Bulk Density (SG)

No new bulk density information has been introduced since the March 12, 2009 Mineral Resource Estimate. See Section 12.4.1 for a detailed description of bulk density data collection and analysis documented in the previous technical report (Palmer and Shaw, 2009).

The formula of the regression curve was used to calculate bulk density for all grade sample intervals containing a valid Fe assay, and is defined as follows:

$$\textbf{DENSITY} = 0.0247 \times \%Fe + 2.6\ g/cm^3$$

Polynomial regression was run on the bulk density and Fe data again using Datamine, confirming the formula stated above for calculated density. This formula was applied to all captured intervals without measured bulk density data, for both the C-Zone and A/B-Zone, replacing the 'calculated' and 'default' values in the density data file supplied by AEI.

Figure 14-5 shows the measured and calculated density vs. assayed Fe for samples captured by the C-Zone mineralized envelope and used for the resource estimate.

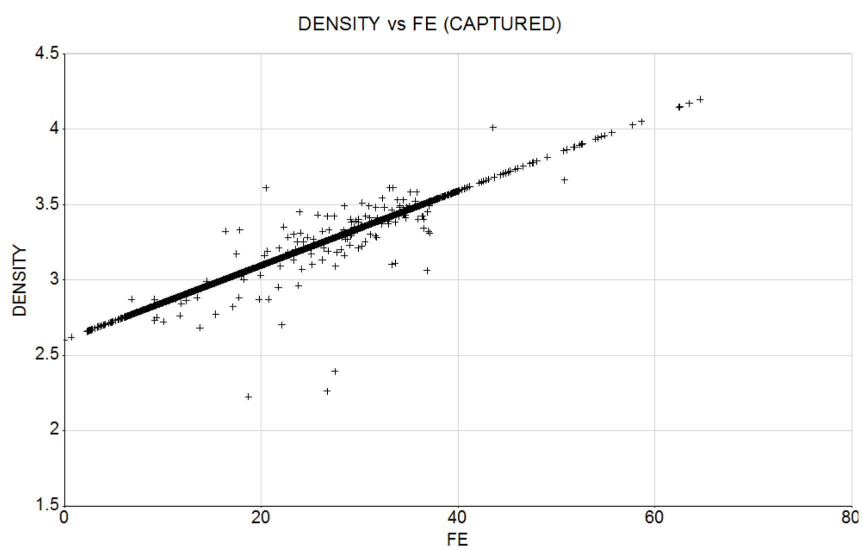


Figure 14-5: Roche Bay Density vs. Fe (measured and calculated)

14.4.4 Composites

C-Zone

A histogram of the C-Zone captured sample data lengths was used to determine an optimum composite length for grade estimation (Figure 14-6). The majority of raw sample data was either 1 m or 2 m in length. At the chosen composite length of 2.5 m, 99% of the raw samples are combined into longer lengths, and only 1% is split into smaller lengths.

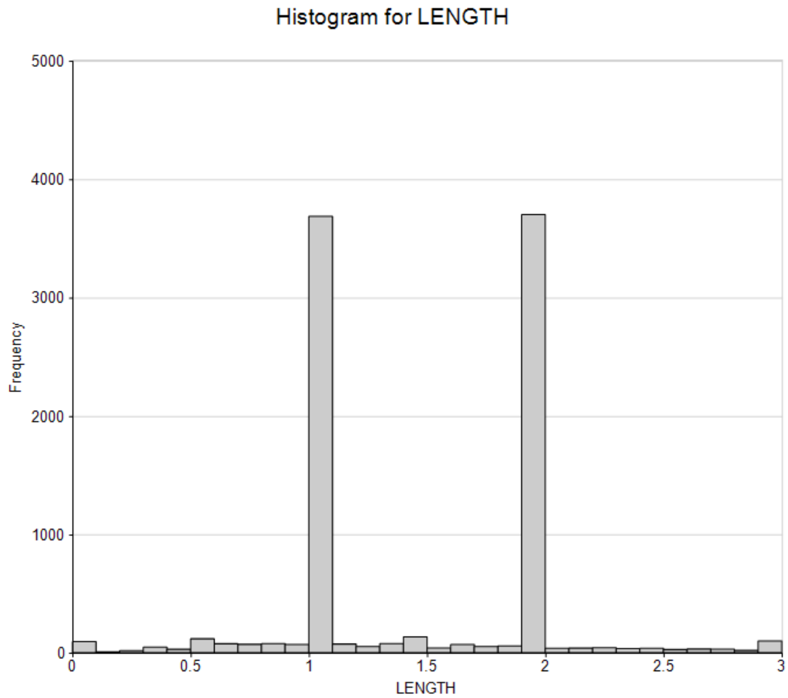


Figure 14-6: C-Zone Captured Sample Length Histogram

Prior to generating the composites, un-assayed captured intervals of TiO_2, MnO, Cr_2O_3, V_2O_5, S, Fe, and Fe_3O_4 were assigned 0.0 values (see Section 14.4.1).

A compositing process mode was used that does not eliminate any samples from the compositing process, but rather forces all samples to be included by adjusting the composite length, while keeping it as close as possible to the chosen composite interval.

The correlation between bulk density and Fe necessitated that density-weighting be used in the compositing process. Statistics for composite data weighted by sample length and density are shown in Table 14-5, and a histogram of composite Fe distribution is given on Figure 14-7. Note that the total length of composites is the same as the total length of the corresponding captured samples (Table 14-2).

Table 14-5: C-Zone Composite Data Statistics

	Number samples	Minimum	Maximum	Total	Mean	Variance	Standard deviation
LENGTH	5421	2.45	2.65	13,557	2.50	0.00	0.01
DENSITY	5421	2.44	4.00		3.20	0.05	0.23
SIO_2	5157	9.33	77.06		51.46	31.99	5.66
AL_2O_3	5157	0.20	14.74		3.15	7.81	2.79
FE_2O_3	5421	0.00	79.72		35.85	158.50	12.59
MGO	5157	0.46	18.56		2.17	1.30	1.14
CAO	5157	0.19	10.29		2.13	1.58	1.26

	Number samples	Minimum	Maximum	Total	Mean	Variance	Standard deviation
NA_2O	5157	0.01	4.69		0.37	0.27	0.52
K_2O	5157	0.01	9.91		1.33	1.34	1.16
TIO_2	5421	0.00	1.96		0.11	0.02	0.15
P_2O_5	5157	0.04	1.08		0.20	0.00	0.06
MNO	5421	0.00	0.85		0.07	0.00	0.05
CR_2O_3	5419	0.00	0.28		0.02	0.00	0.01
V_2O_5	5398	0.00	0.07		0.01	0.00	0.01
LOI	5157	-1.28	21.78		0.88	2.07	1.44
SUM	5151	96.31	101.54		99.53	0.41	0.64
S	5419	0.00	4.75		0.74	0.29	0.54
FE	5421	0.00	55.75		25.15	77.88	8.82
FE_3O_4	5421	0.00	70.74		24.12	206.78	14.38
S_CONC	4313	0.00	31.26		3.53	14.27	3.78

Note: LENGTH statistics are un-weighted
DENSITY statistics are weighted by LENGTH
All other statistics weighted by LENGTH x DENSITY

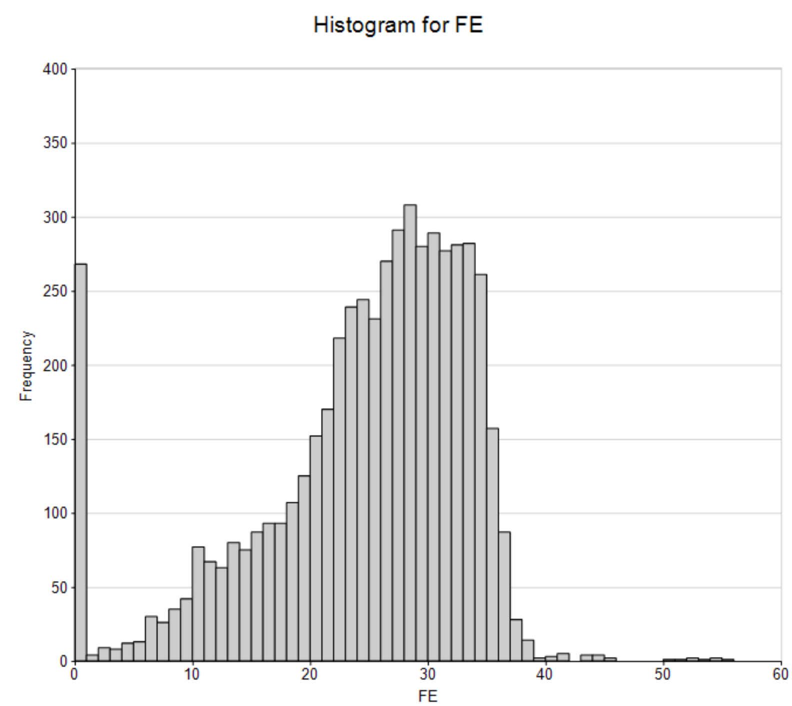


Figure 14-7: C-Zone Composites Fe Histogram

A/B-Zone

A histogram of the A/B-Zone captured sample data lengths was used to determine an optimum composite length for grade estimation (Figure 14-8). The majority of raw sample data was either 1.5 m, 2 m or 3 m in length. At the chosen composite length of 3 m, 99% of the raw samples are combined into longer lengths, and only 1% is split into smaller lengths.

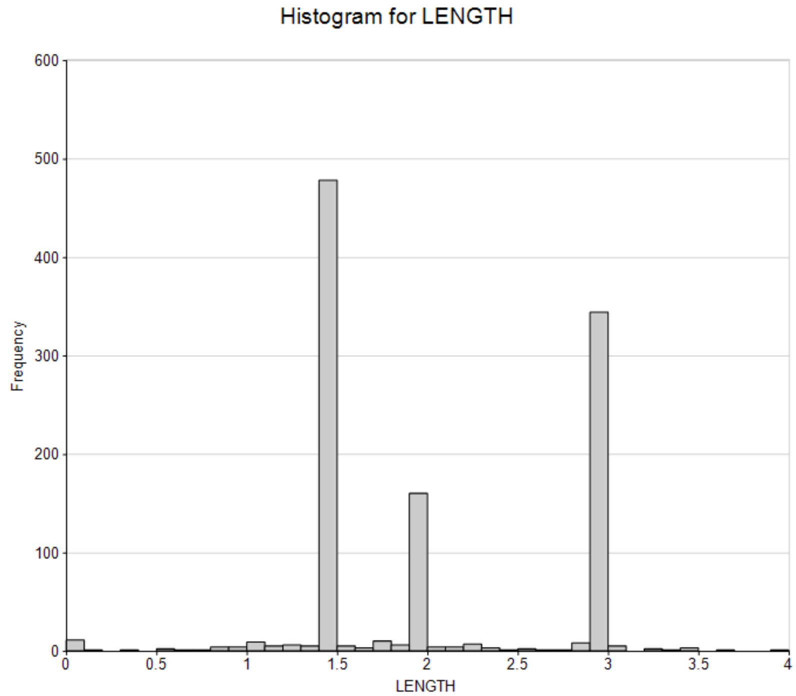


Figure 14-8: A/B-Zone Captured Sample Length Histogram

Prior to generating the composites, un-assayed captured intervals of Fe were assigned 0.0 values.

Statistics for composite sample data weighted by sample length and density are shown in Table 14-6, and a histogram of composite Fe distribution is given on Figure 14-9. Note that the total length of composites is the same as the total length of the corresponding captured samples (Table 14-3).

Table 14-6: A/B-Zone Composite Data Statistics

	Number samples	Minimum	Maximum	Total	Mean	Variance	Standard deviation
LENGTH	877	2.98	3.02	2,633	3.00	0.00	0.01
DENSITY	877	2.60	3.82		3.10	0.06	0.24
FE	977	0.00	49.21		21.17	91.80	9.58

Note: LENGTH statistics are un-weighted
DENSITY statistics are weighted by LENGTH
All other statistics weighted by LENGTH x DENSITY

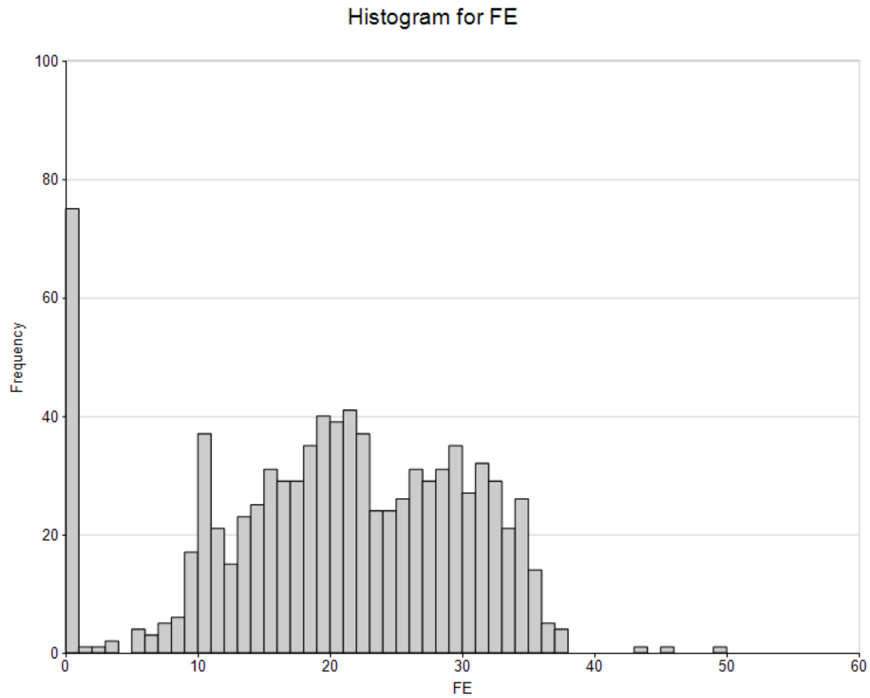


Figure 14-9: A/B-Zone Composites Fe Histogram

14.4.5 Capping Strategy

Examination of the slightly skewed Fe distribution and comparison of Fe to other elements through scatter plots indicate no unreasonably high grades in the composite sample data. This, along with minimizing the influence of higher grades through the appropriate kriging estimation parameters (minimum number of samples = 20, for example), indicate to Golder that capping is not required for either the A/B or C-Zones in this mineral resource estimate.

14.5 Resource Estimation

14.5.1 Spatial Continuity

Spatial continuity of mineralization and grade often follows a non-Cartesian system. Methodologies such as unfolding or dynamic anisotropy can be used to provide more robust variogram calculations and grade estimation in such environments.

In unfolding, mineralized geometries of footwall and hanging wall contacts are used to create a new co-ordinate space which can be described in terms such as “along-strike”, “down-dip” and “across-thickness” (rather than X, Y and Z, or N, E and Elevation). Variography and grade estimation is then conducted in this transformed space.

With dynamic anisotropy, data remains in the regular X, Y and Z (or N, E and Elevation) space, but the estimation search volumes and variogram orientations are varied on an individual block by block basis controlled by the local orientation of mineralization.

C-Zone

The unfolding approach was adopted for the C-Zone based on the nature of the mineralization and the spatially well-distributed drill hole data.

A/B-Zone

The limited amount and irregular spatial distribution of drill hole data in the A/B-Zone meant that the unfolding approach was not feasible, so dynamic anisotropy was used.

14.5.2 Grade Variography

C-Zone

The use of unfolding implicitly defines strike and dip directions, so it is only necessary to evaluate the presence of a plunge. Variogram contours were calculated and plotted for the unfolded Fe composites to test for potential plunge in the grade continuity (Figure 14-10). In the case of the C-Zone, no obvious preferred orientation (non-orthogonal to the unfolded coordinates) was observed; therefore, no additional rotations were applied to the experimental grade variogram calculations.

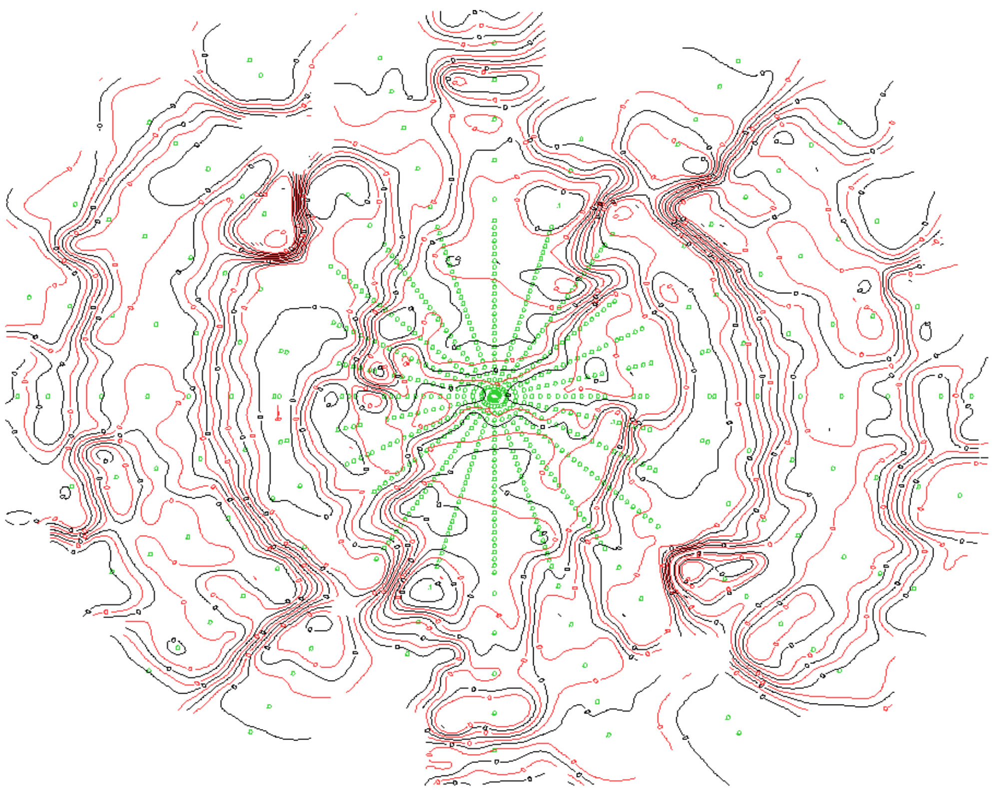


Figure 14-10: C-Zone Fe Variogram Contours in Unfolded Coordinate Space

Variogram contours of other elements in the Roche Bay suite were examined, with similar results to Fe.

Experimental variograms were calculated for all elements interpolated for the resource estimate, using the parameters shown in Table 14-7.

Table 14-7: C-Zone Experimental Grade Variogram Parameters

Elements	**Fe, Fe_2O_3, SiO_2, Al_2O_3, MgO, CaO, Na_2O, K_2O, TiO_2, P_2O_5, MnO, Cr_2O_3, V_2O_5, LOI, S, Fe_3O_4, S_Conc, Density**
Rotations	None
Lag Distance	100
Number of Lags	5
Sub-lag Distance	5
Number Lags to be Sub-lagged	2
Regularization angle	30
Number of Azimuths	2
Cylindrical search radius	25

Interactive fitting of models to the experimental variograms was carried out using Datamine. In addition to the normal variograms, the process calculates pair-wise relative variograms (PWRVGRAM), which are the same except that every term in the calculation is divided by the average value of the two samples contributing to that term. These pair-wise relative variograms were used in the variogram modelling process for all elements.

Variogram modelling assumed the best fit using an anisotropic two-structure spherical model. As seen with the variogram modelling results in Table 14-8 and Figure 14-11, the first structure ranges for all directions are relatively short. The second structure ranges were used to help define the search distances used in the grade estimates.

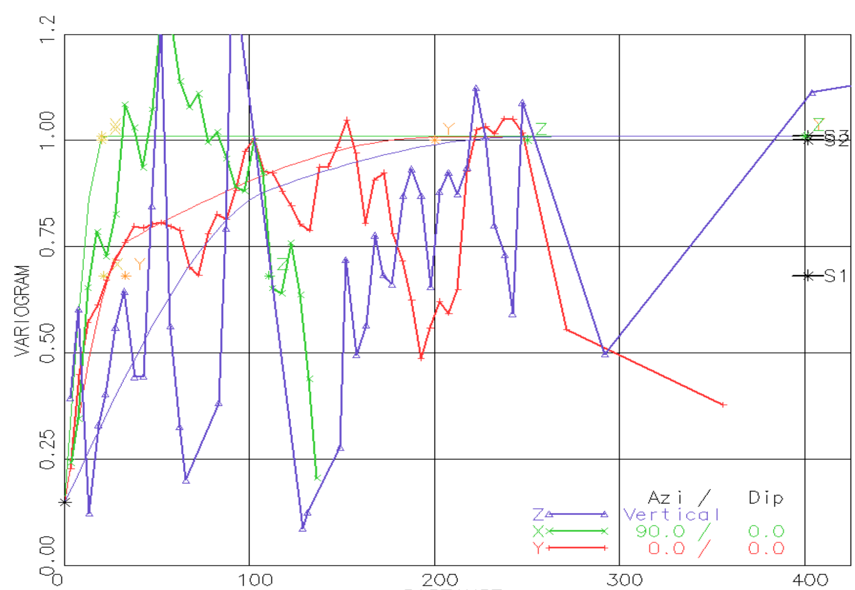
A third structure with long ranges and a very small variance was added for each model to give the variography some relevance in those kriged estimates using very long searches.

Table 14-8: C-Zone Grade Variogram Models

Element	**Nugget**	**1st Structure**				**2nd Structure**				**3rd Structure**			
		X-Range	**Y-Range**	**Z-Range**	**Variance**	**X-Range**	**Y-Range**	**Z-Range**	**Variance**	**X-Range**	**Y-Range**	**Z-Range**	**Variance**
FE,FE_2O_3	0.15	11	33	111	0.53	20	200	250	0.32	20	400	400	0.01
SIO_2	0.31	5	26	94	0.51	15	145	150	0.18	15	300	300	0.01
AL_2O_3	0.35	19	26	101	0.34	20	200	250	0.31	20	400	400	0.01
MGO	0.35	29	32	200	0.33	30	145	250	0.32	30	300	300	0.01
CAO	0.27	24	25	200	0.39	35	200	250	0.34	35	400	400	0.01
NA_2O	0.27	12	16	150	0.33	40	200	200	0.39	40	400	400	0.01
K_2O	0.33	21	25	200	0.62	20	100	250	0.05	20	200	200	0.01

Element	Nugget	1st Structure				2nd Structure				3rd Structure			
		X-Range	Y-Range	Z-Range	Variance	X-Range	Y-Range	Z-Range	Variance	X-Range	Y-Range	Z-Range	Variance
TIO_2	0.26	23	34	200	0.28	20	200	250	0.09	20	400	400	0.01
P_2O_5	0.31	21	28	150	0.46	20	150	200	0.24	20	300	300	0.01
MNO	0.26	33	42	200	0.40	25	200	250	0.35	25	400	400	0.01
CR_2O_3	0.35	23	31	200	0.34	25	200	250	0.32	25	400	400	0.01
V_2O_5	0.14	87	10	150	0.69	50	75	200	0.17	50	150	150	0.01
LOI	0.34	63	10	200	0.37	40	50	250	0.20	40	100	100	0.01
S	0.38	20	27	150	0.24	30	100	200	0.29	30	200	200	0.01
FE_3O_4	0.15	21	41	111	0.43	20	200	250	0.42	20	400	400	0.01
S_CONC	0.28	14	19	200	0.32	25	200	250	0.40	25	400	400	0.01
DENSITY	0.30	28	33	200	0.37	20	200	250	0.32	20	400	400	0.01

Note: unfolded coordinates – X=across, Y=down-dip, Z=strike



Variogram Grade: FE

3 Structure Anisotropic Model. Nugget = 0.15

Structure	Range X	Range Y	Range Z	C Value	Sill
1	21.2	33.0	110.5	0.53	0.68
2	20.0	200.0	250.0	0.32	1.00
3	20.0	400.0	400.0	0.01	1.01

Figure 14-11: C-Zone Fe Variogram Model

Note: In the unfolded coordinates, X (vertical) is across the mineralization, Y is down-dip, and Z is along strike.

A/B-Zone

There was insufficient data within the A/B-Zone to calculate variograms. Based on the similarity to the C-Zone mineralization, the variogram models for C-Zone were applied to the A/B-Zone.

14.5.3 Block Model Definition

C-Zone

The block model for the C-Zone resource covers a 3D block in local grid coordinates from 500 to 1,020 East, 8,890 to 14,090 North, and -260 to 260 Elevation. Block shape and size is typically a function of the geometry of the deposit, density of sample data, and expected potential smallest mining unit (SMU). On this basis, a parent block size of 10 m (E-W) by 50 m (N-S) by 20 m (Elevation) was defined. The block model definition parameters are summarized in Table 14-9.

Table 14-9: C-Zone Block Model Definition

Origin			Block size (m)			Number of blocks			Extent (m)		
X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
500	8,890	-260	10	50	20	52	104	26	520	5,200	520

The mineralization envelope was filled with blocks using the block model volume parameters described in Table 14-9. Sub-blocking was permitted at the boundaries to provide accurate volume representations. A volume check of the block model versus the mineralization wire frame corresponded well (see Table 14-10).

Table 14-10: C-Zone Block Model vs. Wireframe Volume Check

Number of blocks	Wire Frame Volume	Block Model Volume	Difference
118,267	209,076,930	209,138,000	0.03%

A/B-Zone

The block model for the A/B-Zone resource covers a 3D block in local grid coordinates from -100 to 600 East, 16,650 to 18,750 North, and 0 to 260 Elevation. The same parent block size as the C-Zone was used, 10 m (E-W) by 50 m (N-S) by 20 m (Elevation). The block model definition parameters are summarized in Table 14-11.

Table 14-11: A/B-Zone Block Model Definition

Origin			Block size (m)			Number of blocks			Extent (m)		
X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
-100	16,650	0	10	50	20	70	42	13	700	2,100	260

The mineralization envelope was filled with blocks using the block model volume parameters described in Table 14-11. Sub-blocking was permitted at the boundaries to provide accurate volume representations. A volume check of the block model versus the mineralization wire frames corresponded well (see Table 14-12).

Table 14-12: A/B-Zone Block Model vs. Wireframe Volume Check

Number of blocks	Wire Frame Volume	Block Model Volume	Difference
54,101	76,445,116	76,486,880	0.05%

14.5.4 Estimation Methodology

C-Zone

Block model grades for Fe, SiO_2, Al_2O_3, MgO, CaO, Na_2O, K_2O, TiO_2, P_2O_5, MnO, Cr_2O_3, V_2O_5, LOI, S, Fe_3O_4, S_Conc and Density (SG or bulk density) were estimated using Ordinary Kriging (OK). Nearest Neighbour (NN) estimates of the same elements provided de-clustered sample grades for block model validation.

Anisotropic searches were performed, using the variogram model ranges for each element as a guide for each of the 3 axes, orthogonal to the unfolded plane of the deposit. The search parameters for all elements are summarized in Table 14-13. Note that as with the variogram ranges, these search parameters are used in unfolded space during the interpolation process, where X is across the deposit, Y is down-dip, and Z is in the strike direction.

Table 14-13: C-Zone Estimation Search Parameters

	1st Search					2nd Search					3rd Search				
Element	X-Range	Y-Range	Z-Range	Min. Samples	Max. Samples	X-Range	Y-Range	Z-Range	Min. Samples	Max. Samples	X-Range	Y-Range	Z-Range	Min. Samples	Max. Samples
$FE\_FE_2O_3$	20	200	250	20	32	40	400	500	12	32	80	800	1000	5	20
SIO_2	15	145	150	20	32	30	290	300	12	32	60	580	600	5	20
AL_2O_3	20	200	250	20	32	40	400	500	12	32	80	800	1000	5	20
MGO	30	145	250	20	32	60	290	500	12	32	120	580	1000	5	20
CAO	35	200	250	20	32	70	400	500	12	32	140	800	1000	5	20
NA_2O	40	200	200	20	32	80	400	400	12	32	160	800	800	5	20
K_2O	20	100	250	20	32	40	200	500	12	32	80	400	1000	5	20
TIO_2	20	200	250	20	32	40	400	500	12	32	80	800	1000	5	20
P_2O_5	20	150	200	20	32	40	300	400	12	32	80	600	800	5	20
MNO	25	200	250	20	32	50	400	500	12	32	100	800	1000	5	20
CR_2O_3	25	200	250	20	32	50	400	500	12	32	100	800	1000	5	20
V_2O_5	50	75	200	20	32	100	150	400	12	32	200	300	800	5	20
LOI	40	50	250	20	32	80	100	500	12	32	160	200	1000	5	20
S	30	100	200	20	32	60	200	400	12	32	120	400	800	5	20
FE_3O_4	20	200	250	20	32	40	400	500	12	32	80	800	1000	5	20
S_CONC	25	200	250	20	32	50	400	500	12	32	100	800	1000	5	20
DENSITY	20	200	250	20	32	40	400	500	12	32	80	800	1000	5	20

Three basic searches were utilized to krige as many blocks in the model as possible. The first search reflected the ranges determined in the variogram modelling, the second search factored these ranges by 2, and the third search by a factor of 4. Each of these searches used octant restriction to assist in de-clustering the data used for the interpolation. For this restriction, the search volume (ellipse) is divided into eight segments (octants), with a minimum of 5 octants requiring a minimum of 1 sample and a maximum of 5 before interpolation can occur.

Octant restrictions can tend to cause blocks along the contacts to remain un-graded. To compensate for this, ungraded blocks from the interpolations using the searches in Table 14-14 were retrieved from the model and the estimation re-run using the same search parameters, but without octant restriction.

The cell discretisation used in all estimates was 5 x 10 x 5 m.

As part of the Kriged estimate, the search volume used in the interpolation of each block was written to the model file. This information was used to show that the amount of resource model interpolated without the octant restriction is very small. Table 14-14 shows the percentage of the model (by tonnage) graded by each search.

Table 14-14: C-Zone Blocks Graded per Search

Octants Used	Search	Total Blocks	Blocks Graded	Total Tonnes	% Tonnes
Yes	1	25,118	14,381	450,890,676	67%
	2	25,118	5,548	147,568,816	22%
	3	25,118	1,776	39,737,228	6%
No	1	25,118	2,344	25,372,782	4%
	2	25,118	1,010	6,358,106	1%
	3	25,118	59	79,183	0%

A/B-Zone

Block model grades for Fe were estimated using Ordinary Kriging (OK). Nearest Neighbour (NN) estimates of the same elements provided de-clustered sample grades for block model validation.

Anisotropic searches were performed, using the variogram model ranges for Fe as defined in Table 14-14. The search volume and variogram orientation was defined on an individual block-by-block basis (dynamic anisotropy).

Table 14-15 shows the percentage of the model (by tonnage) graded by each search.

Table 14-15: A/B-Zone Blocks Graded per Search

Octants Used	Search	Total Blocks	Blocks Graded	Total Tonnes	% Tonnes
Yes	1	9,912	731	21,235,685	9%
	2	9,912	2,021	57,126,368	24%
	3	9,912	4,291	106,506,521	46%
No	1	9,912	2,277	41,640,612	18%
	2	9,912	585	7,344,035	3%
	3	9,912	7	64,736	0%

14.5.5 Variance Analysis/Correction

The variability of individual block grades in the model must be close to that of the de-clustered sample data (NN), otherwise estimates of tonnages above a cut-off from the block model may be slightly inaccurate. If the actual variance is too low, tonnages will tend to be overstated and grade understated, while if the variance is too high, tonnages will tend to be understated and grade overstated. This comparison of actual variance to the theoretical variance can be called the Smoothing Ratio (SR). A smoothing ratio of >1 indicates over-smoothing, and a smoothing ratio of <1 indicates under-smoothing.

The amount of smoothing in a grade interpolation is determined by a number of items, including the block model cell size, variography, grade estimate search parameters, and the cell discretisation used in the interpolation.

It is generally accepted that if the difference between the block model global variance and the NN global variance is greater than approximately 20%, a variance correction should be considered.

C-Zone

As can be seen in Table 14-16, in general, the smoothing ratio for most of the elements interpolated is close to or within the 20% accepted smoothing limits. Since Fe is the cut-off element used in the C-Zone resource reporting, and the smoothing ratio for Fe was 1.15, no smoothing correction was necessary.

Table 14-16: C-Zone Smoothing Ratio Analysis

Element	SR	Element	SR	Element	SR	Element	SR
Fe	**1.15**	CAO	1.41	P2O5	1.66	LOI	0.99
SiO2	0.78	NA2O	1.73	MNO	1.19	S	1.13
AL2O3	1.17	K2O	0.91	CR2O3	2.00	FE3O4	1.25
MGO	1.81	TIO2	1.59	V2O5	1.39	SCONC	1.33
DENSITY	1.12						

A/B-Zone

The smoothing ratio for Fe was 1.17. No smoothing correction was necessary.

14.6 Mineral Resource Classification

C-Zone

An Indicated Mineral Resource classification was assigned based on the following controls:

- It is within the volume where Davis Tube Test samples were taken to validate the Satmagan values.
- It is within the volume of blocks graded within the Fe variogram ranges.

This is depicted on Figure 14-12.

The remaining resource was classified as Inferred.

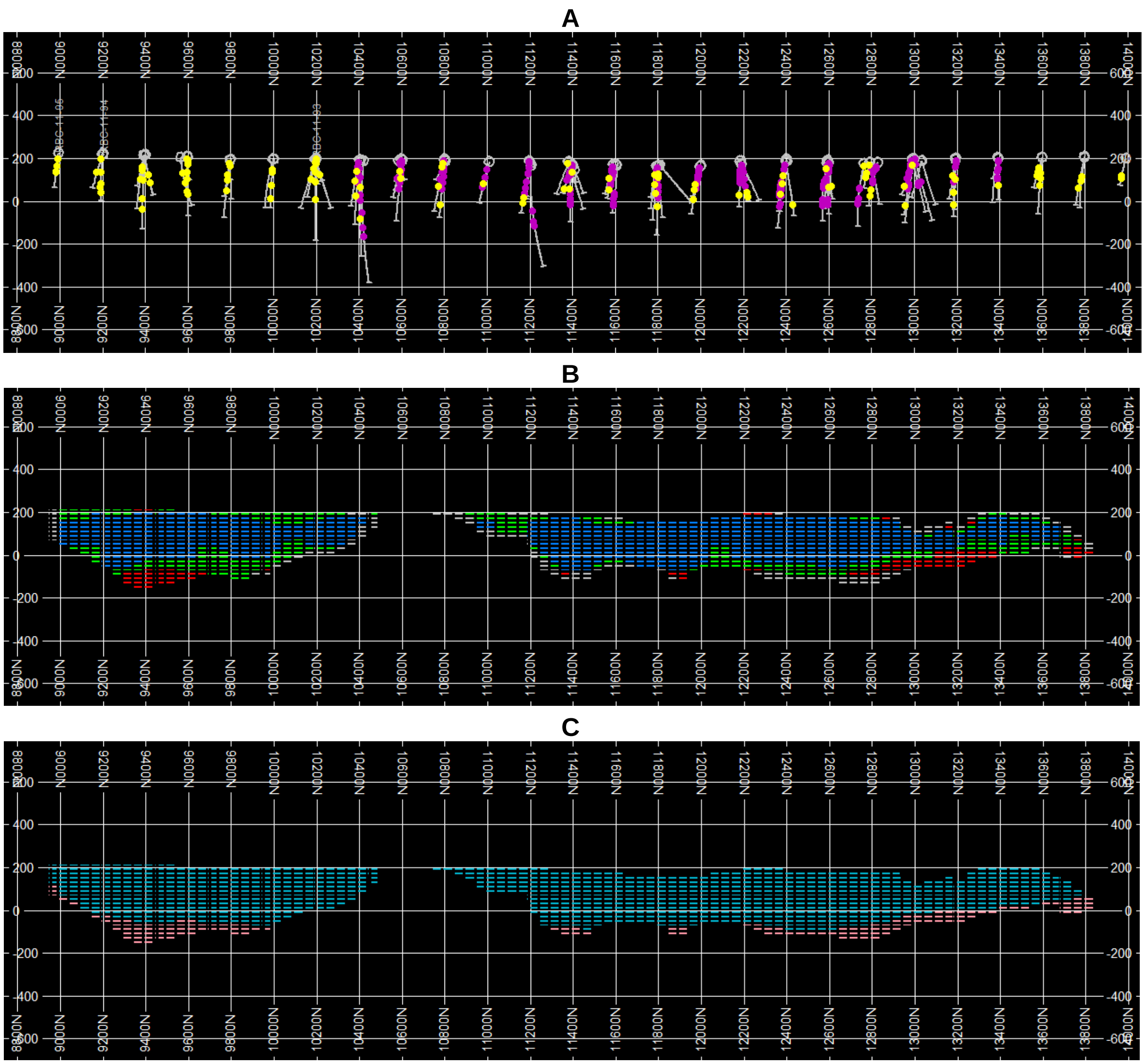


Figure 14-12: Longitudinal Section at 800E showing the Location of the Davis Tube Test Samples (A, yellow=2012 resource/purple=2011 resource), Blocks Graded within the Variogram Ranges (B, blue/green) and Resource Classification (C, cyan=Indicated Mineral Resource)

For the April 6, 2011 Mineral Resource Estimate, a drilling density / production volume study was conducted as additional support to the classification. This was not repeated or required for this March 2, 2012 Mineral Resource Estimate, but is reproduced in Section 14.6.1 in order to provide a complete record.

A/B-Zone

The entire A/B-Zone Mineral Resource was defined as Inferred based on the following criteria:

- 15 of the 17 holes were drilled in 1982 and no QA/QC information was available for these holes.
- The full assay suite was only available for the 2 holes drilled in 2008. Only total Fe was assayed for the 15 1982 holes. It was not possible, therefore, to estimate other values (such as SiO_2, Al_2O_3 and MgO) which are pertinent to the estimate.
- The drill hole distribution was irregular and the same robust estimation controls used for the C-Zone could not be applied.
- No significant Davis Tube Test samples were taken.

14.6.1 C-Zone Production Volume Study

To support the April 6, 2011 Mineral Resource Estimate classification, a drilling density / production volume study was conducted, and is included here for completeness. This is based on industry best practice, where an Indicated Resource can be established by re-modelling with approximately half of the data and the resulting change in the resource is less than 15% for a volume equal to the proposed annual production rate.

The mineral resource estimate reported in the above section is based on 85 drill holes, on approximately 200 m spaced sections, extending from 9,200 N to 14,000 N. For the purpose of the drilling density / production volume study, drill holes on approximately every second section were removed and a new block model created using 55 drill holes, on approximately 400 m spaced sections. A visual representation of the drill holes removed is provided on Figure 14-13 (where red drill holes were removed). Note that intermediate sections at the ends of the deposit were not removed as these areas were not included in the Davis Tube test program.

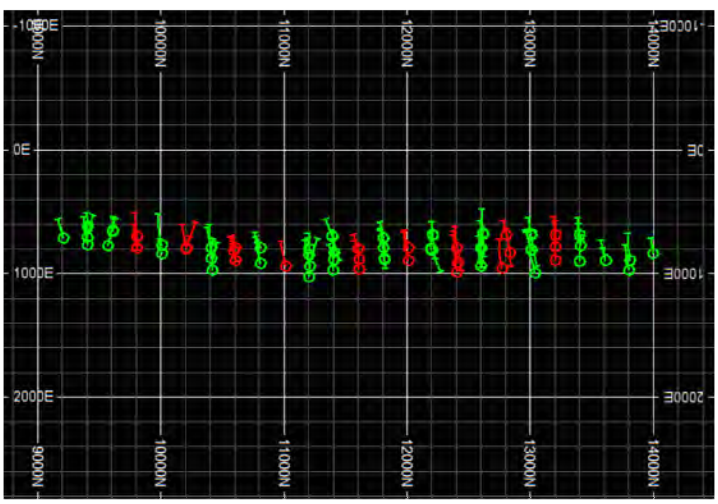


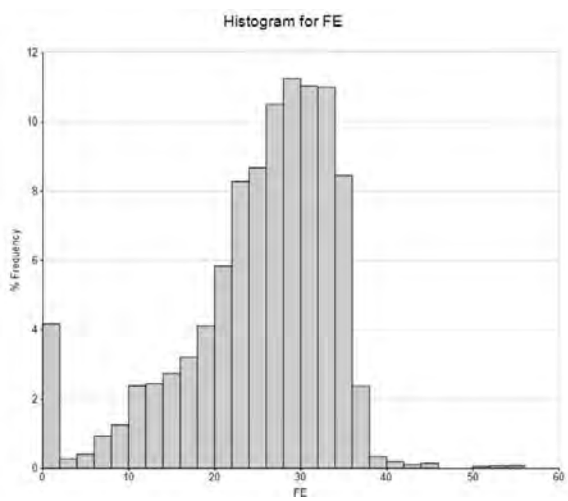
Figure 14-13: Visual Representation of the C-Zone Drill Holes Removed (Red) to Create the 400 m Model

Summary statistics of (Total) Fe in the 2.5 m drill hole composite data used for both models are provided in Table 14-17 and histograms of the (Total) Fe distribution are provided on Figure 14-14. Both the statistics and the histograms are weighted by length * density.

Table 14-17: Comparison of Statistics between the C-Zone Drill Hole Composites used in the 200 m Section Model and the 400 m Section Model

	200 m Section Model	400 m Section Model
Number of holes	85	55
Number of composites	5,301	3,279
Total composite length (m)	13,257	8,202
Total % Fe mean	25.15	25.00
Total Fe variance	78.76	76.11

200m section composites



400m section composites

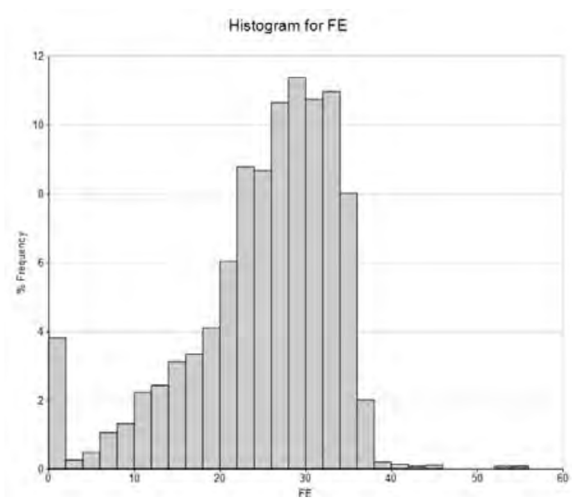


Figure 14-14: Comparison of the C-Zone Distribution of Total Fe between the 200 m Section Drill Hole Composites and the 400 m Section Drill Hole Composites

A resource block model based on the 400 m section drill hole composites was created using exactly the same search volume parameters, estimation and variogram parameters as the final resource block model (based on 200 m drilling).

Summary statistics of the (Total) Fe (Ordinary Kriging - OK) for both the 200 m section and 400 m section block models are provided in Table 14-18 and histograms of the (Total) Fe distribution are provided on Figure 14-15. Both the statistics and the histograms are weighted by tonnes. The variation in global grade and tonnage, based on different cut-offs, is provided in Table 14-19. A swath plot showing the variability of grade with northing (along strike) is provided on Figure 14-16.

Table 14-18: Comparison of C-Zone Statistics between the Blocks in the 200 m Section Model and the 400 m Section Model

	200 m Section Model	400 m Section Model
Number of blocks	24,494	24,494
Total tonnage	651,740,000	677,360,000
Total Fe mean	24.67	24.45
Total Fe variance	27.27	21.69

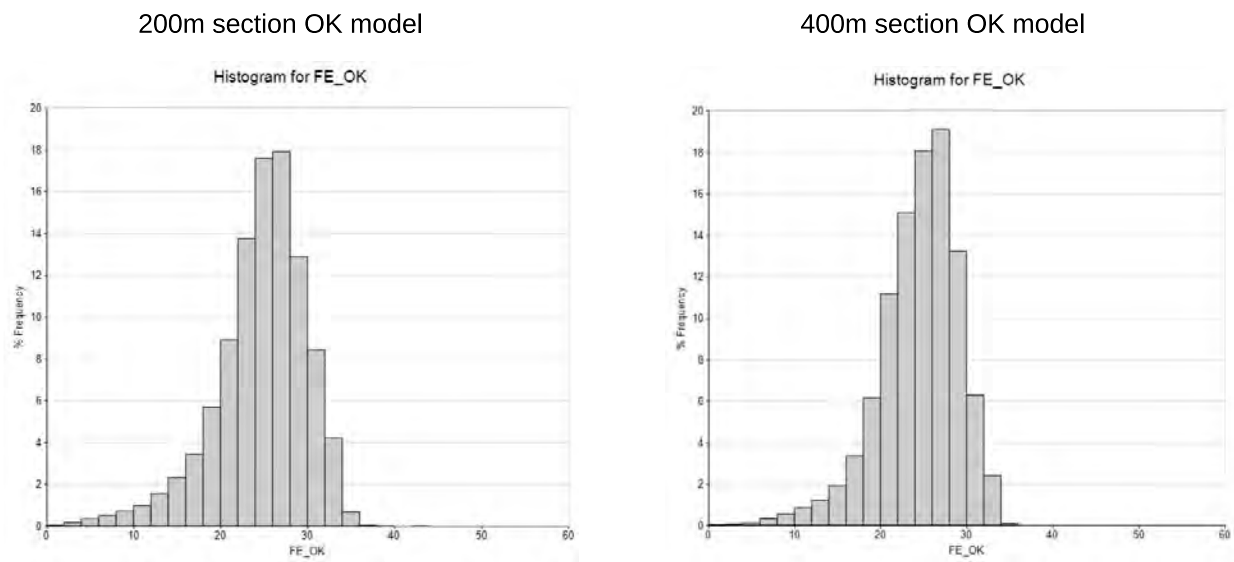


Figure 14-15: Comparison of the C-Zone Distribution of Total Fe between the 200 m Section OK Model and the 400 m Section OK Model

Table 14-19: Comparison of C-Zone Grade Tonnage Cut-offs in the 200 m Section Model and the 400 m Section Model

Cut-off Total % Fe	220 m Section Model		400 m Section Model	
	Tonnes/1000	% Fe	Tonnes/1000	% Fe
20	549,447	26.36	578,548	25.85
21	524,659	26.64	544,282	26.19
22	491,451	26.99	502,829	26.57
23	452,235	27.37	455,544	26.99
24	401,924	27.86	400,682	27.47
25	346,880	28.39	340,000	28.00

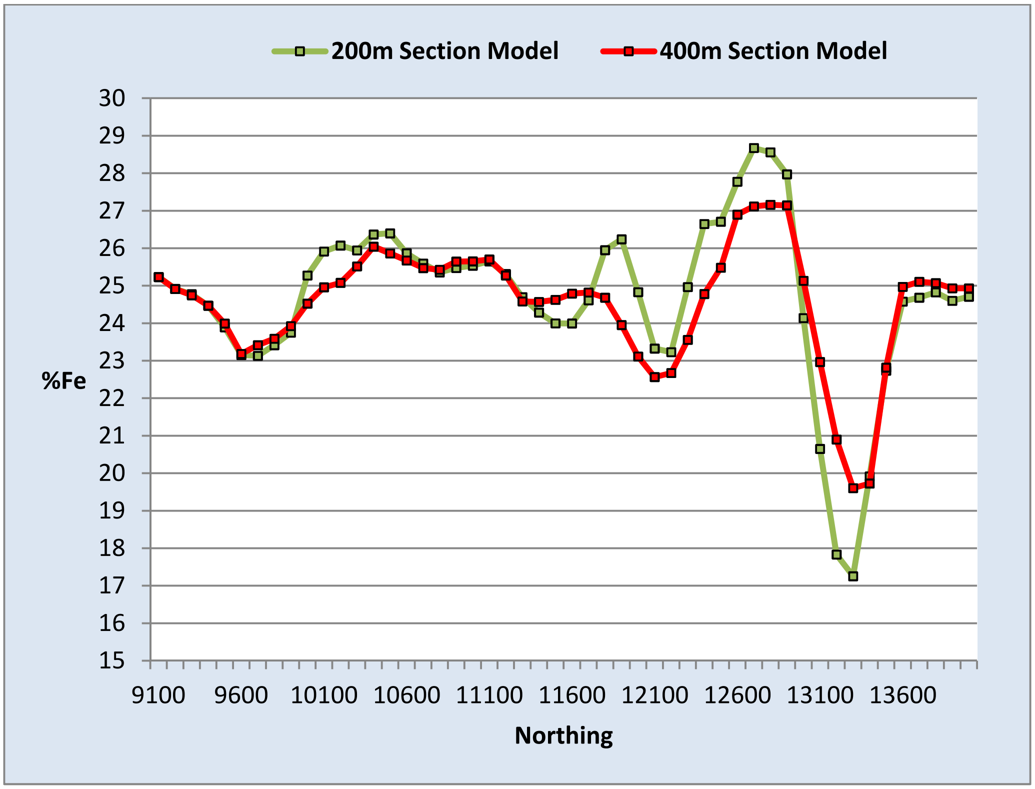


Figure 14-16: Comparison of the C-Zone Variability of Total Fe along Strike between the 200 m Section OK Model and the 400 m Section OK Model

A volume of 80 m (East, across thickness) by 700 m (North, along strike) by 60 m (Elevation, depth) and an average density of 3.2 kg/m^3 was used to represent an annual production of approximately 10,000,000 tonnes (80 * 700 * 60 * 3.2 = 10,752,000). The shape of the volume was chosen to be a reasonable representation of what might be extracted in one year.

This volume was evaluated against both the 200 m section OK model and the 400 m section OK model and the results compared. If the difference between the total Fe metal content, at a defined cut-off grade of 25%, was less than 15%, the volume "passed" the test; if not, it "failed". Figure 14-17 shows a schematic representation of this test.

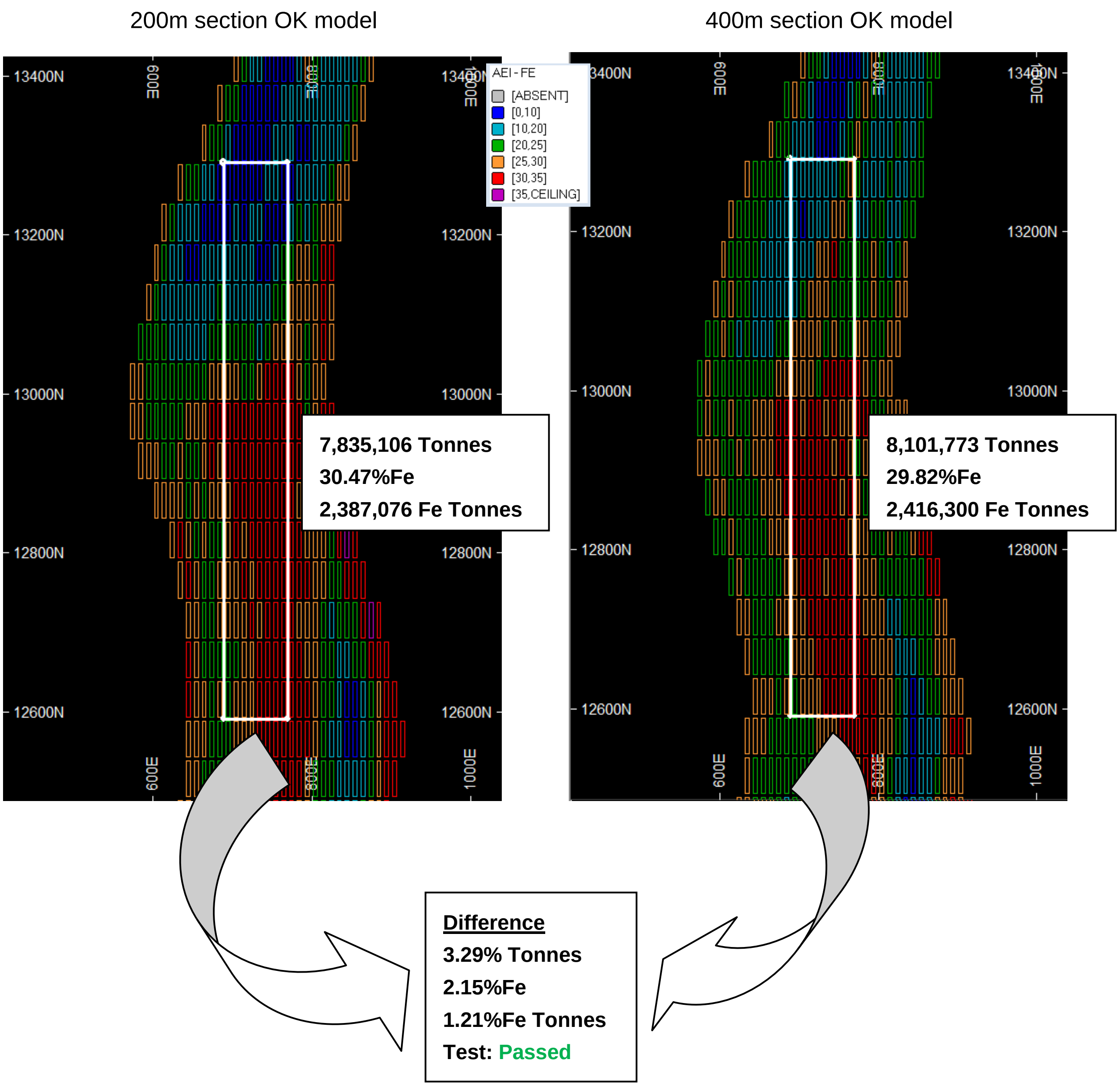


Figure 14-17: C-Zone Schematic Representation of the Production Volume Test

14.7 Block Model Validation

C-Zone

Visual Checks

The kriged block model was visually inspected in plan and section to ensure reasonable estimates when compared to the composites. Figures 14-18 and 14-19 show Fe on a typical section and plan for the C-Zone. Note the higher grade (orange-red) following the contact as a result of the unfolding option.

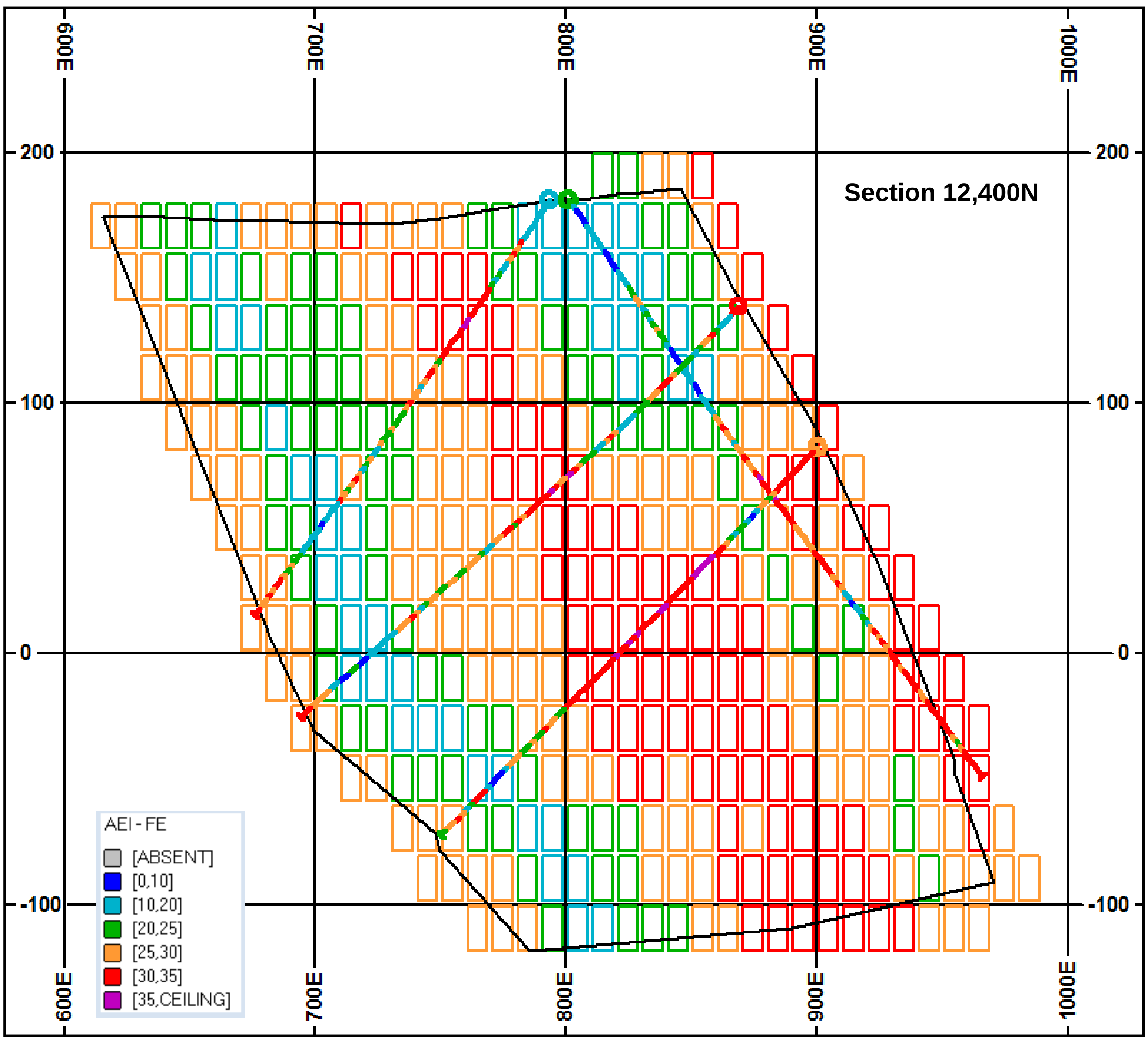


Figure 14-18: C-Zone Block Model Visual Validation (Typical West-East Section)

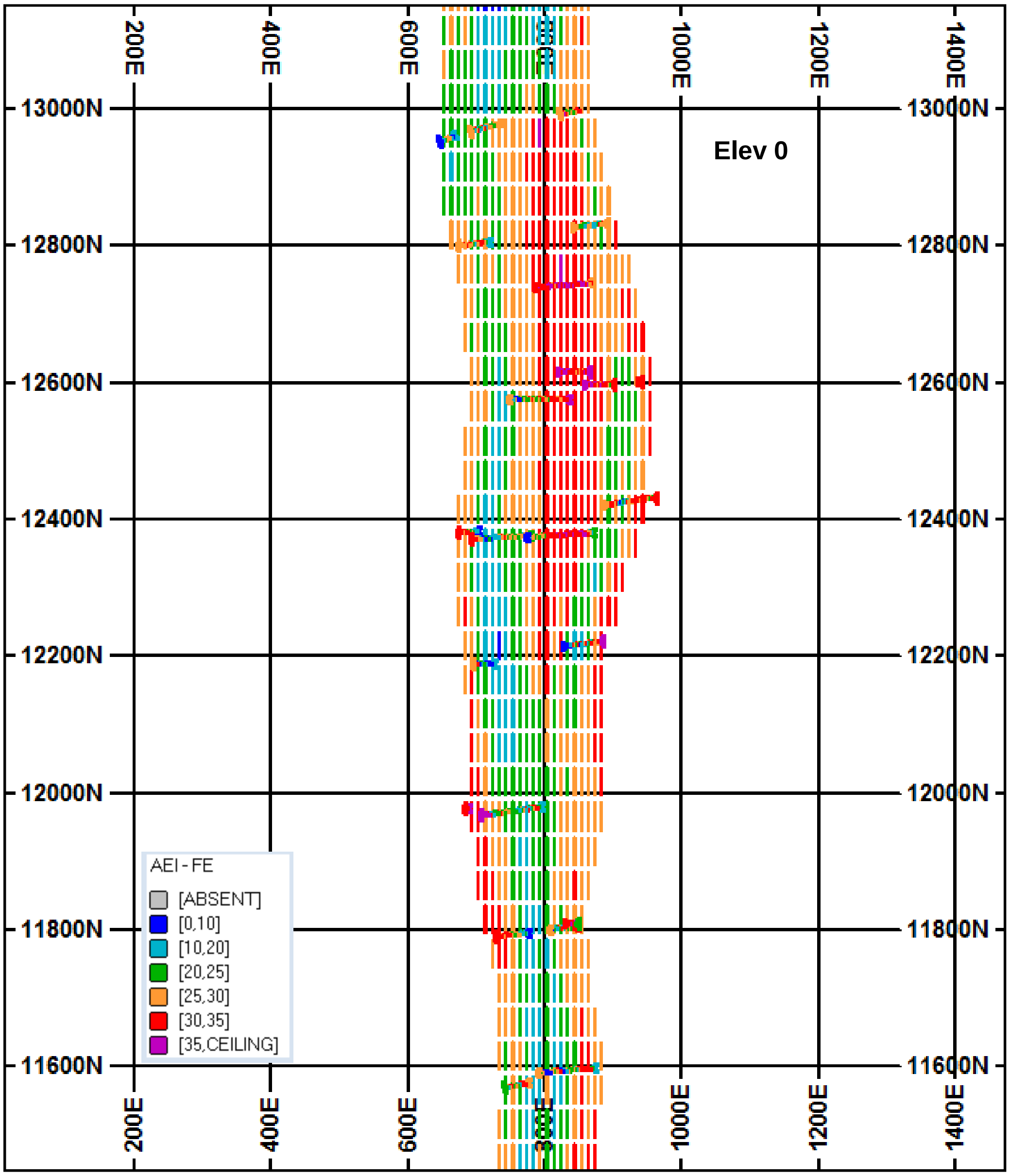


Figure 14-19: C-Zone Block Model Visual Validation (Typical Plan)

Statistics

Statistical comparisons between the composite samples, NN estimates, and kriged grade interpolations for each element are presented in Table 14-20. The NN represents the de-clustered composite data. Clustering of the drill hole data can result in differences between the global means of the composites and NN estimates, which in the case of the C-Zone is not an issue. The global means of the NN and kriged estimates should also be very similar and, for the most part, this is the case for the C-Zone estimate.

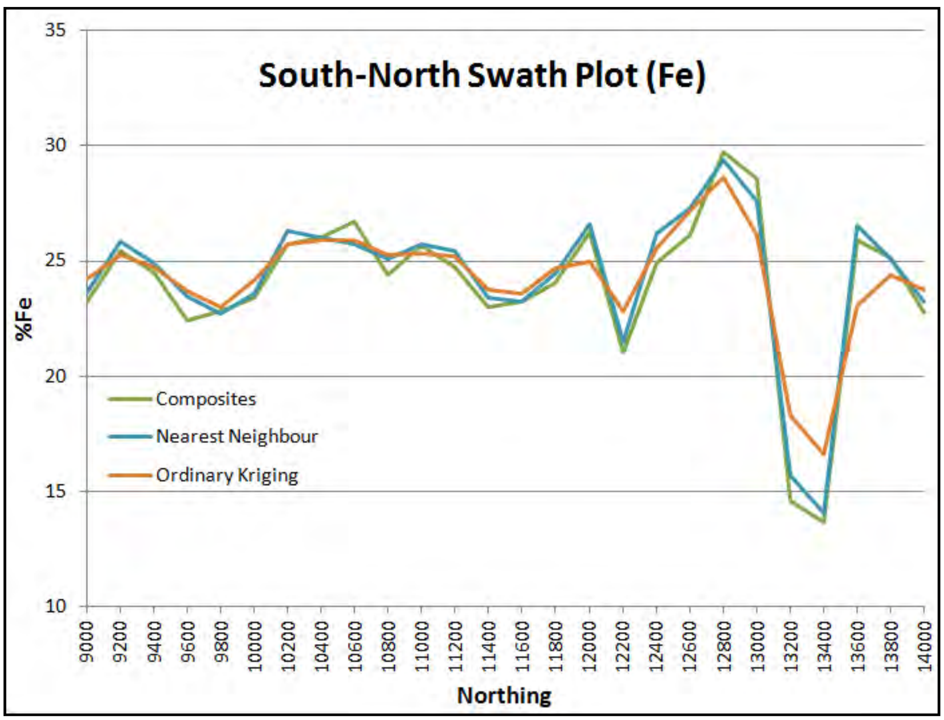
Table 14-20: C-Zone Block Model Validation Statistics

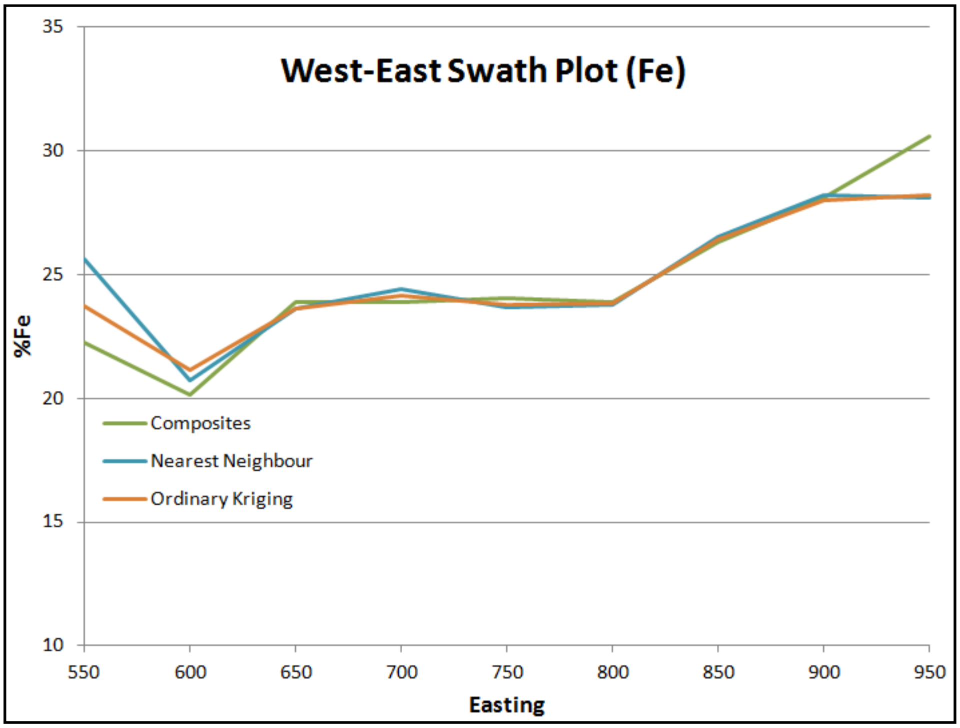
FIELD	SOURCE	SAMPLES	MIN	MAX	MEAN	VAR.
FE	Composites	5,421	0.00	55.75	25.15	77.88
	NN	25,118	0.00	55.75	24.72	80.59
	OK	25,118	0.00	40.39	24.70	27.24
SIO2	Composites	5,157	9.33	77.06	51.46	31.99
	NN	25,114	9.33	77.06	51.46	29.58
	OK	24,222	38.52	61.86	51.56	7.81
AL2O3	Composites	5,157	0.20	14.74	3.15	7.81
	NN	25,118	0.22	14.74	3.28	8.32
	OK	25,116	0.68	11.03	3.29	2.35
MGO	Composites	5,421	0.46	18.56	2.17	1.30
	NN	25,118	0.46	18.56	2.23	1.35
	OK	25,116	1.26	10.66	2.24	0.28
CAO	Composites	5,157	0.19	10.29	2.13	1.58
	NN	25,118	0.19	10.29	2.26	1.95
	OK	25,118	0.83	7.75	2.24	0.54
NA2O	Composites	5,157	0.01	4.69	0.37	0.27
	NN	25,118	0.01	4.69	0.41	0.33
	OK	24,954	0.02	2.60	0.41	0.07
K2O	Composites	5,157	0.01	9.91	1.33	1.34
	NN	25,118	0.01	9.91	1.34	1.36
	OK	25,109	0.14	4.58	1.35	0.33
TIO2	Composites	5,157	0.00	1.96	0.11	0.02
	NN	25,118	0.00	1.96	0.11	0.02
	OK	25,118	0.00	0.89	0.11	0.00
MNO	Composites	5,421	0.04	1.08	0.20	0.00
	NN	25,118	0.04	1.08	0.20	0.00
	OK	24,831	0.10	0.36	0.20	0.00
P2O5	Composites	5,157	0.00	0.85	0.07	0.00
	NN	25,118	0.00	0.85	0.07	0.00
	OK	25,118	0.00	0.18	0.07	0.00
CR2O3	Composites	5,421	0.00	0.28	0.02	0.00
	NN	25,118	0.00	0.28	0.02	0.00
	OK	25,118	0.00	0.14	0.02	0.00
V2O5	Composites	5,419	0.00	0.07	0.01	0.00
	NN	25,118	0.00	0.07	0.01	0.00
	OK	24,935	0.00	0.04	0.01	0.00

FIELD	SOURCE	SAMPLES	MIN	MAX	MEAN	VAR.
LOI	Composites	5,398	-1.28	21.78	0.88	2.07
	NN	25,118	-1.28	21.78	0.95	2.17
	OK	25,005	-0.78	5.87	0.96	0.43
S	Composites	5,157	0.00	4.75	0.74	0.29
	NN	25,118	0.00	4.75	0.75	0.30
	OK	24,923	0.00	2.09	0.75	0.08
FE3O4	Composites	5,421	0.00	70.74	24.12	206.78
	NN	25,118	0.00	70.74	23.45	203.13
	OK	25,118	0.00	53.15	23.40	80.62
SCONC	Composites	4,313	0.00	31.26	3.53	14.27
	NN	25,118	0.00	31.26	3.59	14.85
	OK	23,427	0.06	13.26	3.55	4.25
DENSITY	Composites	5,421	2.44	4.00	3.20	0.05
	NN	25,118	2.44	3.98	3.21	0.05
	OK	25,118	2.60	3.62	3.21	0.02

Swath Plot

Swath plots comparing the various grade interpolations along with the composites were generated to further validate the general accuracy of the estimate. Figure 14-20 shows Fe in the north-south, east-west and vertical directions.





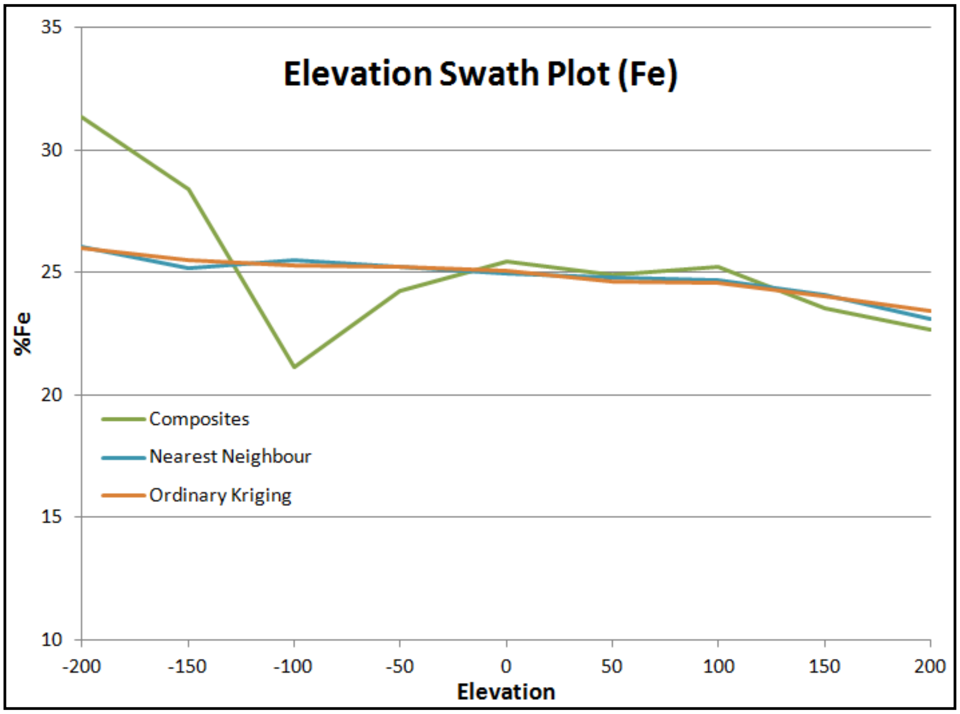


Figure 14-20: C-Zone Block Model Swath Plots

A/B-Zone

Visual Checks

The kriged block model was visually inspected in plan and section to ensure reasonable estimates when compared to the composites. Figures 14-21 and 14-22 show Fe on a typical section and plan for the A/B-Zone.

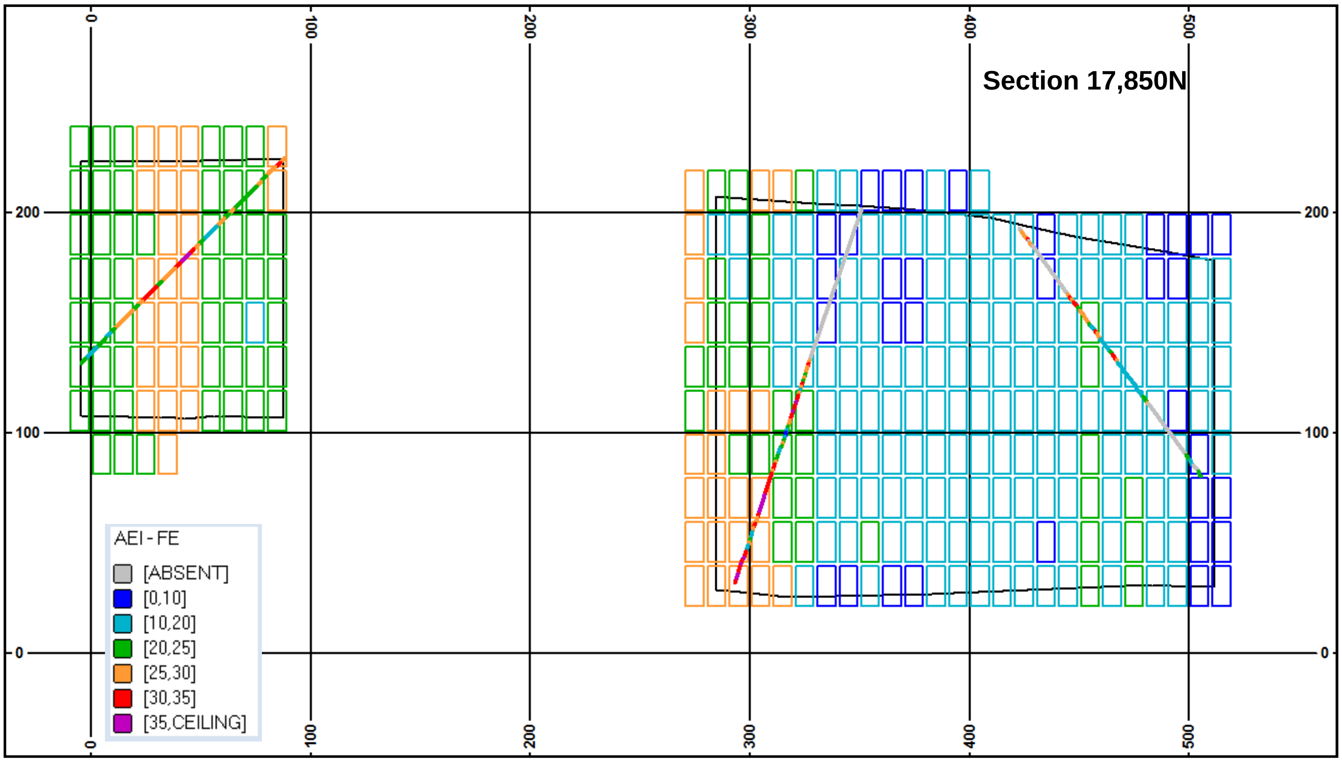


Figure 14-21: A/B-Zone Block Model Visual Validation (Typical West-East Section)

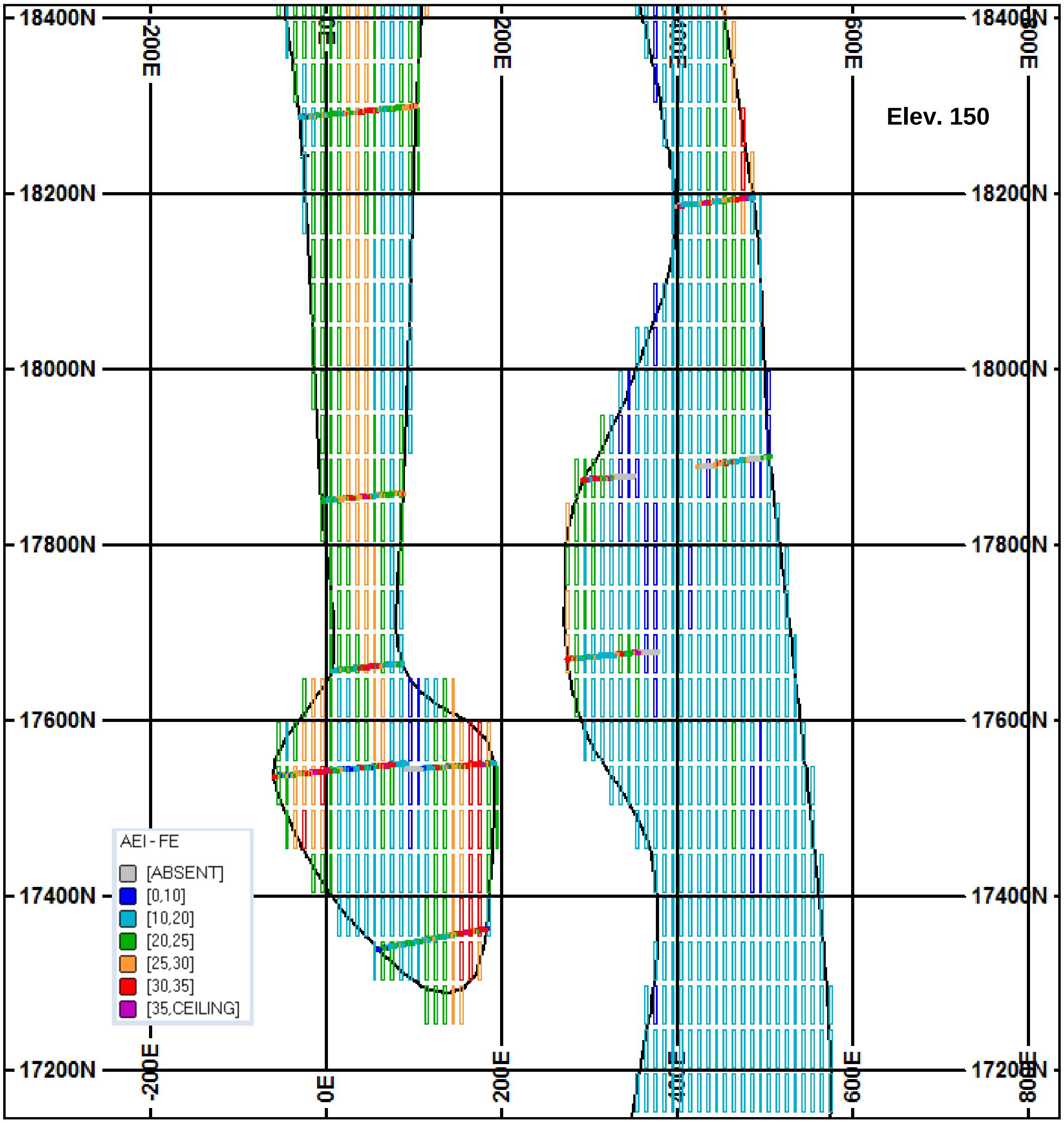


Figure 14-22: A/B-Zone Block Model Visual Validation (Typical Plan)

Statistics

Statistical comparisons between the composite samples, NN estimates, and kriged grade interpolations for each element are presented in Table 14-21. The NN represents the de-clustered composite data. The irregular nature of the drilling in the A/B-Zone results in differences between the global mean of the composites and NN estimates. The global means of the NN and kriged estimates also show a greater difference than one would normally expect, again because of the drillhole clustering.

Table 14-21: C-Zone Block Model Validation Statistics

FIELD	SOURCE	SAMPLES	MIN	MAX	MEAN	VAR.
FE	Composites	877	0.00	49.21	21.17	91.80
	NN	9,912	0.00	37.69	19.17	98.98
	OK	9,912	0.00	33.73	18.82	32.93

14.8 Cut-off Grade

The cut-off grade currently used for this March 2, 2012 Mineral Resource Estimate is 20% (Total) Fe. This is the same cut-off as was used in the April 6, 2011 Mineral Resource Estimate, but lower than the 25% (Total) Fe used in the March 12, 2009 Mineral Resource Estimate.

The change in cut-off grade resulted from a change in processing method from nugget to a fine iron concentrate, which does not require as high a ROM iron grade as the nugget method, as outlined in Section 13. The nugget production, based on quality specification, required a maximum of 0.15% S in magnetic concentrate. The SGS sulphide flotation tests demonstrated the necessity of using (ROM) ores of a maximum 0.63% S, in order to obtain, in final concentrate after sulphide flotation, of maximum of 0.15% S. Based on the data in Table 14-23, in the case of the Indicated Mineral Resources, the ROM iron grade is 28.36% at 25% Fe ore cut-off with 0.66% S. The last COREM sulphide flotation test results demonstrate the possibility of obtaining 0.03% to 0.04% S from the ores (ROM) of 0.70% to 0.72% S. As per Table 14-23, the ROM iron grade is 26.35% at 20% Fe cut-off with 0.75% S.

14.9 Mineral Resource Statements

The mineral resources for the Roche Bay deposit are reported in accordance with Canadian Securities Administrators' NI 43-101 and have been estimated in conformity with generally accepted CIM "Estimation of Mineral Resource and Mineral Reserves Best Practices" guidelines. Mineral resources are not mineral reserves and do not necessarily demonstrate economic viability. There is no certainty that all or any part of this mineral resource will be converted into mineral reserve. The resource estimate was completed under the direct supervision of Greg Greenough, P.Geo. (APGO #0825), an independent qualified person as this term is defined in NI 43-101. The effective date of this resource estimate is March 2, 2012 which supports the press release published by AEI on January 7, 2012.

The mineral resources are reported at a total Iron (Fe) cut-off to reflect the "reasonable prospects" for economic extraction, and the assumption that the deposit can be extracted through open pit methods. The resources reported are based on a 'blocks above cut-off' basis; however, these blocks were examined visually for any significant non-contiguous occurrences (outliers) and none were found.

C-Zone

Table 14-22 reports the Indicated and Inferred Mineral Resources for the C-Zone, effective March 2, 2012, and Table 14-23 is presented to show resource sensitivities to increasing Fe cut-offs.

Table 14-22: Mineral Resource Statement – Roche Bay C-Zone (March 2, 2012)

	Tonnes (000)	Fe	Fe_3O_4	SiO_2	Al_2O_3	MnO	P_2O_5	S	LOI	Cr_2O_3	$Fe_3O_4^{DT}$
Indicated	501,331	26.35	25.67	51.22	2.98	0.071	0.088	0.75	0.92	0.016	24.93
Inferred	65,952	26.37	25.72	51.23	2.88	0.068	0.086	0.76	0.96	0.015	24.97

Notes: Resources based on Fe Cut-off = 20%.
All grades in %.
$Fe_3O_4^{DT}$ are the satmagan results corrected to reflect Davis Tube testwork
No mining recoveries or dilution factors have been considered.

Table 14-23: Resource Sensitivities – Roche Bay C-Zone (March 2, 2012)

	Cut-off	Tonnes (000)	FE	FE_3O_4	SIO_2	AL_2O_3	MNO	P_2O_5	S	LOI	CR_2O_3	Fe_3O_4 DT
INDICATED	15	561,394	25.46	24.25	51.50	3.22	0.073	0.087	0.76	0.96	0.016	23.61
	16	553,438	25.60	24.44	51.47	3.19	0.073	0.087	0.76	0.95	0.016	23.79
	17	544,959	25.74	24.65	51.43	3.15	0.073	0.087	0.76	0.95	0.016	23.98
	18	533,702	25.91	24.92	51.38	3.11	0.073	0.087	0.76	0.94	0.016	24.23
	19	519,852	26.11	25.24	51.31	3.05	0.072	0.087	0.75	0.93	0.016	24.53
	20	**501,331**	**26.35**	**25.67**	**51.22**	**2.98**	**0.071**	**0.088**	**0.75**	**0.92**	**0.016**	**24.93**
	21	478,278	26.63	26.20	51.10	2.89	0.070	0.088	0.74	0.90	0.016	25.42
	22	449,900	26.96	26.84	50.95	2.79	0.068	0.089	0.72	0.88	0.016	26.01
	23	411,949	27.37	27.69	50.75	2.67	0.066	0.089	0.71	0.85	0.016	26.80
	24	368,272	27.82	28.69	50.51	2.53	0.064	0.090	0.69	0.82	0.015	27.72
	25	316,779	28.36	29.87	50.15	2.38	0.061	0.090	0.66	0.78	0.015	28.82
	26	260,555	28.98	31.25	49.71	2.22	0.058	0.090	0.64	0.73	0.015	30.10
	27	204,452	29.66	32.82	49.19	2.07	0.054	0.089	0.60	0.67	0.015	31.55
	28	156,172	30.33	34.36	48.68	1.92	0.051	0.088	0.57	0.61	0.015	32.98
	29	114,347	31.01	35.94	48.16	1.77	0.047	0.087	0.54	0.51	0.015	34.44
	30	79,093	31.68	37.45	47.67	1.64	0.044	0.086	0.50	0.38	0.015	35.84

	Cut-off	Tonnes (000)	FE	FE_3O_4	SIO_2	AL_2O_3	MNO	P_2O_5	S	LOI	CR_2O_3	Fe_3O_4 DT
INFERRED	15	73,016	25.58	24.49	51.53	3.06	0.070	0.086	0.78	0.98	0.015	23.83
	16	72,439	25.66	24.59	51.51	3.05	0.070	0.086	0.78	0.98	0.015	23.93
	17	71,487	25.78	24.76	51.48	3.03	0.070	0.086	0.78	0.98	0.015	24.08
	18	70,231	25.93	24.98	51.44	3.00	0.070	0.086	0.78	0.97	0.015	24.28
	19	68,406	26.13	25.30	51.35	2.94	0.069	0.086	0.77	0.97	0.015	24.58
	20	**65,952**	**26.37**	**25.72**	**51.23**	**2.88**	**0.068**	**0.086**	**0.76**	**0.96**	**0.015**	**24.97**
	21	62,499	26.70	26.35	51.04	2.77	0.066	0.087	0.75	0.94	0.015	25.56
	22	58,074	27.09	27.16	50.83	2.64	0.064	0.087	0.73	0.92	0.015	26.31
	23	53,485	27.49	27.95	50.61	2.52	0.062	0.088	0.71	0.91	0.015	27.04
	24	48,081	27.93	28.89	50.33	2.39	0.060	0.088	0.69	0.89	0.015	27.91
	25	42,474	28.38	29.86	50.04	2.26	0.057	0.088	0.68	0.87	0.015	28.81
	26	35,632	28.93	31.03	49.69	2.12	0.054	0.088	0.65	0.83	0.015	29.90
	27	27,843	29.61	32.44	49.27	1.95	0.051	0.087	0.63	0.78	0.014	31.20
	28	20,547	30.35	33.92	48.79	1.80	0.048	0.086	0.60	0.72	0.014	32.57
	29	14,409	31.17	35.56	48.21	1.68	0.045	0.085	0.56	0.63	0.014	34.09
	30	9,817	31.95	37.12	47.67	1.53	0.041	0.083	0.52	0.51	0.014	35.54

Notes: Resources based on Fe Cut-off = 20%.
All grades in %.
$Fe_3O_4^{DT}$ are the satmagan results corrected to reflect Davis Tube testwork
No mining recoveries or dilution factors have been considered.

A/B-Zone

Table 14-24 reports the Indicated and Inferred Mineral Resources for the A/B-Zone, effective March 2, 2012, and Table 14-25 is presented to show resource sensitivities to increasing Fe cut-offs.

Table 14-24: Mineral Resource Statement – Roche Bay A/B-Zone (March 2, 2012)

	Tonnes (000)	Fe
Inferred	92,219	24.64

Notes: Resources based on Fe Cut-off = 20%.
Only Fe was available for all holes. Other elements/compounds were not estimated.
All grades in %.
No mining recoveries or dilution factors have been considered.

Table 14-25: Resource Sensitivities – Roche Bay A/B-Zone (March 2, 2012)

	Cut-off	Tonnes (000)	FE
INFERRED	15	142,854	22.20
	16	135,471	22.56
	17	127,079	22.96
	18	115,623	23.50
	19	103,972	24.06
	20	**92,219**	**24.64**
	21	79,690	25.29
	22	68,064	25.94
	23	56,709	26.63
	24	47,140	27.27
	25	38,641	27.88
	26	31,257	28.44
	27	22,158	29.25
	28	16,078	29.92
	29	11,576	30.47
	30	7,290	31.05

Notes: Resources based on Fe Cut-off = 20%.
Only Fe was available for all holes. Other elements/compounds were not estimated.
All grades in %.
No mining recoveries or dilution factors have been considered.

15.0 MINERAL RESERVE ESTIMATE

No new mineral reserves have been defined for the Roche Bay Iron Project other that what has been stated in the PEA (Dorval, 2010). Subsequent to the PEA, additional resources have been defined and upgraded to Indicated resources in the C-Zone and Inferred resources have been defined in the A/B-Zone as outlined in the technical report. A FS will be completed in 2012 and the updated mineral reserves for the project will be defined in that technical report.

16.0 MINING METHODS

The planned mining methods for the Roche Bay Iron Project are open pit mining. During the PEA study (Dorval, 2010), an open pit mine design was completed. Subsequent to the PEA, additional resources have been defined and upgraded to Indicated resources in the C-Zone and Inferred resources have been defined in the A/B-Zone.

Ongoing pit design studies are being completed as part of the FS study by Wardrop and AEI to be published in 2012. In addition, geotechnical data reviews have been completed by Golder (Rougier, 2011) to support the current proposed design parameters with additional geotechnical field studies planned, including pit geotechnical drilling.

During 2011, geotechnical drilling programs were completed by EBA in support of the FS and were described in Section 9.5.3.

The production rates, expected mine life, stripping ratios, mining fleet requirements provided in the PEA are currently under development and will be updated in the FS.

17.0 RECOVERY METHODS

A discussion of the current processed methods for iron recovery for the project were previously discussed in Section 13.2, and are also still under development and will be discussed in detail in the FS.

18.0 PROJECT INFRASTRUCTURE

The required infrastructures for the Roche Bay Iron Project were first identified in the PEA (Dorval, 2010) and included the following topics:

- Materials Handing and Stockpiling Requirements;
- Power Generation Requirements;
- Process Plant Design;
- Civil Infrastructure; and
- Port and Shipping Considerations.

All of these topics and other project infrastructure requirements and logistics are under review and will be outlined in the FS planned to be published by Wardrop and AEI in 2012.

19.0 MARKET STUDIES AND CONTRACTS

A market study report was outlined in the PEA (Dorval, 2010) and is currently being updated by AEI and Wardrop in the FS planned to be published by Wardrop and AEI in 2012.

20.0 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 Environmental Studies

Current environmental baseline conditions of the Roche Bay Iron Project area have been investigated over the summer field seasons, from 2006 to 2011 inclusive, by EBA, A Tetra Tech Company. EBA was retained to undertake the full range of environmental baseline studies needed for the preparation of the anticipated environmental assessment and regulatory documentation required to support regulatory approval of the project. Study findings are briefly summarized in the following sections.

A summary of the environmental studies undertaken to date, and summaries of the findings, are provided below.

Table 20-1: Environmental Baseline Studies Completed to Date

Environmental Components	Valued Ecosystem Components	Previous Baseline Field Studies	Current Baseline Field Studies
Climate	Local Climate	Borealis (1984)	Meteorological station installed Aug 2008
Air Quality and Noise	Local Air Quality and Noise	None known to date	None to date
Landform	Local Landform	None known to date	None to date
Soil	Local Soils	None known to date	Preliminary work July 2006
Hydrology	Preliminary Stream Discharge rates	Borealis (1984)	July and August 2007, June 2008; stream dataloggers installed Aug 2011
Water Quality	Freshwater Lake/Stream Water Quality	Northwest Territories Water Board (unpublished)	June, July and August 2006-2008 and 2011; July 2009 and 2010
	Roche Bay Marine Water Quality	None known to date	May 2008
Fisheries and Aquatic Resources	Freshwater Fish	Borealis (1982a)	August 2006; Aug 2011
	Freshwater Fish Habitat	None known to date	August 2006; Aug 2011
	Inter-Tidal and Sub-Tidal Marine Fish Habitat	None known to date	August 2006 and August 2008
Vegetation Resources	Vegetation	Ecosat (1982)	July 2006
	Ecological Land Classification	Ecosat (1982)	July 2006 and August 2008
	Rare Plants	Ecosat (1982)	August 2008
	Upland Breeding Birds	Boothroyd (1983)	June 2006, 2007, 2008 and 2011

Environmental Components	Valued Ecosystem Components	Previous Baseline Field Studies	Current Baseline Field Studies
	Raptors	Borealis (1982a)	June, July, and August 2006-2008 and 2011
	Waterfowl and Seabirds	Reed *et al.* (1980), Borealis (1982a), and Boothroyd (1983)	June, July, and August 2006-2008 and 2011
	Barren-ground Caribou	Borealis (1982a)	June, July, and August 2006-2008 and 2011
	Sea Mammals, including Polar Bear	None known to date	June, July, and August 2006-2008 and 2011; May 2008
	Spring Open Water Reconnaissance	Stirling and Cleator (1981)	May 2008
Heritage Resources	Local Archaeological Resources	Borealis (1982a)	August 2006 and 2008; July 2011

Vegetation

Baseline vegetation studies were conducted over 24,010 ha between 2006 and 2008. A total of 17 ecosites were identified and mapped within the local study area, including eight naturally vegetated, three rock dominated, four water, one snow bed, and one disturbed site (i.e. the airstrip). Of the 17 ecosites identified, the Dwarf Shrub/ Dwarf Shrub – Heath Moss ecosite was most common in the vegetation study area, followed by Dry Sedge Meadow, Raised Beach, and Wet Sedge Moss ecosites. Well-drained sites are dominated by dwarf shrubs, lichens and dry sedge meadows, while areas with slightly more moisture are dominated by mosses and sedges.

Surface Water Quality

The water quality of streams and lakes in the Roche Bay Iron Project area has been sampled annually from 2006. Based on the results obtained, the physical and chemical water quality parameters of the waters in this area are considered to be essentially pristine and typical of Canadian arctic freshwater systems, characterized as having a pH slightly above neutral with low electrical conductivity. Nutrient parameters such as ammonia, nitrate and phosphorous are either below the detection limits or very low.

Marine Studies

Initial inter-tidal and sub-tidal marine surveys conducted by EBA in the area of the proposed dock determined that the south Roche Bay area is characterized by a gravelly/sandy intertidal zone and a gently sloping sandy seafloor. The ice scour zone included the entire inter-tidal area and approximately the first 10 m of distance below the high tide mark. This area was characterized by bare angular cobbles and gravels with no observable surface marine life growth. The inter-tidal area was characterized by bivalve (clam) shells scattered on the shoreline and macro algae (seaweeds) washed up from other areas. Sub-tidally, below the ice scour zone, epi-benthic marine life was sparse.

Terrestrial Wildlife

Terrestrial wildlife resources in the immediate Roche Bay area are generally sparse due to the bedrock-dominated conditions that characterize the Roche Bay Iron Project area. The main wildlife species known to use the region include caribou, polar bear, wolf, fox, geese, swan, various duck and falcons. Song birds and small mammals, such as arctic ground squirrels and lemmings, are common in the area.

Caribou on the Melville Peninsula are part of the Wager Bay Herd. The winter range of the Wager Bay caribou herd includes south-eastern Melville Peninsula north to within about 40 km of the southern edge of Roche Bay. Recent population estimates, calculated from caribou surveys conducted in 1995, suggest that the entire North-eastern mainland caribou population (Melville, Wager Bay and Lorillard herds) had dropped from 119,800 ± 13,900 (S.E.) in 1983 to 73,994 ± 11,670 (S.E.) in 1995 (Government of Nunavut 2005).

EBA conducted wildlife studies of the Roche Bay Iron Project study area during 2006, 2007, 2008 and 2011. Caribou densities ranged from 0.03 to 0.20 caribou/km^2 depending on the month and year surveyed.

Birds

Breeding bird and raptor surveys were also conducted in 2006, 2007, 2008 and 2011. Lapland Longspur was the most common species recorded, followed by Horned Lark. The most common shorebird species detected was Baird's Sandpiper, followed by Semipalmated Sandpiper. The least common species detected were Pectoral Sandpiper, Rock Ptarmigan and Semipalmated Plover.

Five raptor species were also noted during the surveys; Common Raven, Gyrfalcon, Peregrine Falcon, Rough-legged Hawk and Snowy Owl. The most commonly observed raptor was the Common Raven, followed by Rough-legged Hawks. Waterfowl (ducks, geese and swans) composed 97% of the total number of birds surveyed, followed by seabirds (gulls, tern, jaegers and guillemots) and loons.

Marine Mammals

Sea mammal studies were also conducted over the project area during the period 2006 to 2011. Ringed seal is the most common species found in Foxe Basin, but others include bearded seal, harbour seal, harp seal, walrus, beluga whale, narwhal and bowhead whale.

Archaeological Resources

Since 1982, a number of archaeological investigations have been conducted in the immediate Roche Bay Iron Project area by various archaeological researchers. To date, more than 80 recorded archaeological sites have been located in the general Roche Bay Iron Project area. The most recent archaeological investigations were conducted on the Roche Bay Iron Project area in August 2006 and 2008, and July 2011. The primary emphasis during these investigations was placed on the identification and location of archaeological sites in the vicinity of the proposed project infrastructure. Detailed archaeological inventory was not conducted because the exact locations of these developments could not be identified on the ground. Instead, archaeological potential was identified so that the scope of future studies could be determined. Another objective was to attempt to determine if sites or features have been impacted or are threatened by their proximity to existing facilities.

The general Roche Bay Iron Project area appears to have been occupied from the "Paleo-Eskimo" period by Pre-Dorset cultures, which date from approximately 4,000 to 2,000 years ago. The occupation of this area has extended through the Dorset and Thule phases right up to the modern Inuit.

Future Environmental Studies

Additional environmental studies will be undertaken as part of future field seasons. These potentially include:

- additional archaeological studies;
- kinetic studies of various types of mine rock, development ore, quarry material and tailings to determine proper short and long term storage options;
- rare plant studies in the areas of the mine, linear infrastructure, and plant facilities;
- additional wildlife studies;
- noise and air quality studies;
- additional fisheries and water quality studies;
- surface hydrology;
- permafrost;
- hydrogeology;
- traditional Knowledge; and
- socio-economic studies.

Baseline environmental studies will, to the extent possible, incorporate issues identified through stakeholder consultations. In addition, studies conducted over the past years will be continued in the form and frequency required to build up a continual database of information on the project area.

20.2 Permitting

20.2.1 Land Use for Exploration

All permits required to undertake the current exploration program at Roche Bay Iron Project are current and in good standing and were outlined in Section 4.5. Regulatory Review and Approvals

Development of the Roche Bay Iron Project will require the Company to obtain a Project Certificate from NIRB as required by the Nunavut Land Claim Agreement (NLCA), as well as other regulatory approvals identified in the NLCA. In addition, the project will require a Type "A" Water License for the operational phase, issued under the authority of the Nunavut Water Board (NWB). A Mineral Production Lease from Aboriginal Affairs and Northern Development Canada (AANDC) and Nunavut Tunngavik Incorporated (NTI) will be required to operate the project. Additional requirements include:

- surface land leases, on both Inuit-owned and Crown lands;

- a Fisheries Authorization under Section 35 of the federal Fisheries Act, to permit the construction of a tailings containment dam and other structures (e.g. docks) requiring the alteration of fish habitat;
- a Navigable Waters Protection Act Permit (NWPA) from Transport Canada for structures (e.g. docks, dam) proposed to be installed in the marine environment; and
- a Water License for the project, which will include authorization for planned project activities such as domestic and process water use, sewage treatment and disposal.

Many of the project review and permitting activities described above will be undertaken concurrently to the extent possible, but the most lengthy component of the regulatory review process is expected to be related to the need for the project to be referred and proceed through the Nunavut Impact Review Board (NIRB) process for screening, environmental impact assessment, public review and hearings prior to release of a Decision from NIRB. This process will be triggered by the submission of a Water License Application to the Nunavut Water Board and a Project Description Report (PDR) to the Nunavut Impact Review Board in accordance with NIRB's requirements for proposed mine developments, as stipulated in Appendix B of NIRB's "Operational Procedures" manual. The lead authorizing agency is NIRB, whose primary functions are to screen the project proposal to determine whether a review involving preparation of an Environmental Impact Statement is required, and to issue a Decision Report to the Minister. Following a positive Decision from the Minister, a Project Certificate will be issued by NIRB, including the project terms and conditions. The Minister's Decision will also permit the Nunavut Water Board and other regulatory agencies to proceed with activities leading to issuance of the Water License, as well as other permits and authorizations as will be required. It is anticipated that most of the time required to complete this process will be related to the specific steps of the established regulatory review process as determined by NIRB.

20.3 Social or Community Impact

Throughout the project, both AEI and its joint venture partner, Roche Bay plc, have maintained open communications with local communities, and supplied as much employment for local residents as possible. A summary is provided below:

2005

- August 5, 2005: Meeting with Hall Beach Mayor Paul Haulli.
- August 7, 2005: Town meeting. Present: Benjamin Cox, Pelagie Sharp and Candace Ramcharan.
- August 7-8, 2005: Rented boats from the community, procured through HTA.
- October 24, 2005: Letter to HTA concerning upcoming permit applications.
- November 18, 2005: Letter to Mayor Paul Haulli concerning upcoming permit applications.
- December, 2005: Sent Christmas card to the Hamlets and basketball nets and balls sent as a gift for the community recreation centre.

2006

- January 2006: Bought 2 houses in Hall Beach. Hired Simonie Siakukuk in June and July 2006 to do renovations.
- April 2, 2006: Informal meeting, project overview, Nunavut Premier Paul Okalik and Candace Ramcharan, in Cambridge Bay, NU.
- May 8, 2006: Town meeting with Benjamin Cox, Keith Sharp and Ryan Cunningham.
- June 01, 2006: Letter to HTA from Roche Bay plc regarding potential contamination and cleanup plans of a Borealis site.
- June 13, 2006: Second letter to HTA from Roche Bay plc regarding cleanup costs of a Borealis site.
- July 27, 2006: Meeting Ryan Cunningham and HTA to negotiate agreement for cleanup of Naguak Lake.
- November 2006: HTA visited site to see progress of Borealis site cleanup at Naguak Lake.
- November 2006: HTA flyover of Naguak Lake.
- November 10, 2006: Town meeting with Daniel Botes.
- November 22, 2006: Meeting Candace Ramcharan and Alan Johnson, Manager, Transportation Planning Division, Economic, Development and Transportation, GN: Project Update in Churchill, MB.

2007

- On-site training was offered to the local peoples in addition to employment opportunities. This included the training of 8 to 10 people as drill helpers.
- April 19, 2007: Meeting between Candace Ramcharan and Gordon MacKay, Director, Minerals and Petroleum Resources, Economic, Development and Transportation, GN: Project Update, in Iqaluit, NU.
- April 19, 2007: Meeting between Candace Ramcharan and Salamonie Shoo, QIA: Project Update, in Iqaluit, NU.
- April 20, 2007: Meeting with Candace Ramcharan and Jim Rogers (Water Resources INAC), Jeffrey Holwell (Lands Admin Specialist), Kevin Robertson (Inspector), Andrew Keim (Inspector), David Abernethy (Regional Coordinator Water Resources), Charlotte (Environmental Assessment Coordinator), Karen Costello (District Geologist).
- June 2007: The Company's Cessna plane used primarily to ferry personnel between camp and Hall Beach was used for approximately 10 hours to continue search and rescue efforts an elder from Igloolik who went missing during a hunting trip. The helicopter was also used for approximately 6 hours. He was spotted by another plane after the official search was called off and our helicopter was used to retrieve him and return him safely to Igloolik.
- June 2007: A group of hunters were stranded when the wind was blowing and the sea was too rough for them to get back to town. They were camped about 25 miles from us on the coast and we supplied food, heating oil, etc. for them for three days until they could get their boats out to sea again.

- August 23, 2007: Town meeting in Igloolik with Daniel Botes and Candace Ramcharan.
- August 25, 2007: Town meeting in Hall Beach with Daniel Botes and Candace Ramcharan.
- October 2007: Provided information for mining curriculum to Ron Ross, elementary teacher in Hall Beach. Obtained information from PDA Mining Matters and relayed to Mr. Ross.
- During the 2007 field season, the Roche Bay camp was able to accommodate and assist hunters and community members travelling through and around camp. We provided assistance, parts and tools for ATV and snowmobile breakdowns as well as shelter, food and/or gas. ATVs were also lent to hunters who arrived by boat.
- During the 2007 field season, cargo and passenger space was lent to the Hall Beach HTA (as available) when supply runs were made to Repulse Bay.
- Worked with Felix Gawor, Training & Development Specialist, Minerals and Petroleum Resource Division, ED and T, GN to participate in the Drill/field assistant course program.

2008

- Positions filled by local peoples were as follows: Core technicians (camp); Laboratory technicians (Hall Beach sample prep lab – SGS Labs); Core cutters; Kitchen support staff; Camp support staff; carpentry, electrical and plumbing, etc.; Assistant cook; Drilling assistant; Drill site reclamation staff; Bear monitor; Beach logistics supervisor; Ground support for helicopter; Camp administrative assistant; and Community representative.
- In 2008, AEI also offered on-site training and employment upgrade opportunities to local peoples including: training to assist geologists in core measurements, etc.; experienced personnel made available to assist in training new core technicians; training for assistant camp supervisor position; and training as ground support staff for helicopter.
- During 2008 field season, a sample preparation laboratory was established in Hall Beach, managed by SGS Lakefield. The lab employed three local staff members for its four months of operation.
- During the 2008 field season, AEI was asked to assist with the rescue of stranded local hunters and other non-company exploration personnel. In one particular case, the company received a call stating that an elder accompanying a hunting party was in respiratory distress and was in dire trouble. Responded by dispatching our helicopter along with the camp medic to assist. The hunting party was found; the patient stabilized and brought to Hall Beach for further medical attention.
- February 2008: AEI sponsored $1,200 to the Pauktuutit's Resource Development and Sexual Health in Inuit Communities Conference in Inuvik.
- August 18, 2008: Donation of $8,000 made by AEI to the Hall Beach Hunter's and Trapper's association's Bowhead Whale hunt by AEI.
- December 03, 2008: Donation of $2,000 made to Hall Beach for Christmas celebrations by AEI.

2009

- February 3 and 4, 2009: Attended and made a presentation to the Qikiqtaaluk Socio-Economic Monitoring Committee, hosted by the Ministry of Economic and Development, in Igloolik. During the 2009 field season, the Roche Bay camp went unused; however, some gasoline was left out for emergency use by local hunters over the winter.
- April 2009: Approximately 60 days of employment was arranged for community members at beach staging area and camp.
- April-mid June 2009: The Company hired two assistants from Hall Beach to inspect the beach area and main camp approximately twice a week to monitor security and use of the facilities.
- April to June 2009: Approximately 20 days of employment was arranged for community members to monitor beach and camp.
- September 2009: Approximately 10 days of employment was arranged for community members to secure the camp and beach for upcoming winter season.
- During the 2009 field season, the company employed as many people as possible from Hall Beach to assist in camp monitoring, and the re-establishment of fuel caches and associated berms.

2010

- During the 2010 field season, the camp again went unused, with some gasoline left out for emergency use by local hunters over the winter.
- May 17, 2010: Site visit to Roche Bay camp by Sandy Kanuk (local contact) and/or Simon Curley or Robert Itoliak.
- May 27, 2010: Two community members; Sandy Kanuk (Main contact in Hall Beach) and Simon Curley visited Roche Bay to inspect camp.
- June 13, 2010: Site visit to Roche Bay camp by Sandy Kunuk and Simon Curley.
- June 22, 2010: Donation of $1,000 made by AEI to Hall Beach for Canada Day and Nunavut Day Celebrations.
- August 06, 2010: Meeting at Hall Beach attended by AEI, QIA, members of the local Hall Beach Council, the HTA, and representatives of China's XinXing Pipes Group (Chinese investors) to update the local and government representatives on the Roche Bay project and introduce China's XinXing Pipes Group investors.
- November 4, 2010: Donation of $1,500 made by AEI to the Municipality of Hall Beach.
- Annual Christmas Party.

2011

- February 14 to 16 2011: AEI staff attended the Baffin Mayor's Forum in Iqaluit and presented on the Roche Bay project at the finale of the Forum. AEI also held a number of meetings with Hamlet Mayors and community representatives.
- March 18 to 26 2011: AEI staff spent a week in the Arctic attending council and community meetings in Igloolik and Hall Beach, as well as meetings scheduled with the HTA and CLARC to discuss the Roche Bay and Tuktu projects.
- April 19, 2011: AEI donated $500 to the Hall Beach fishing derby.
- April/May 2011: AEI hired a Community Liaison Officer in Hall Beach.
- April 2011: Preliminary work began on the Tuktu project.
- August 22, 2011: AEI flew the Hall Beach Mayor (Ammie Kipsigak) to Toronto to meet AEI staff and take part in project meetings.
- September 06 to 07, 2011: AEI staff accompanied a delegation of Chinese investors to Hall Beach and the Roche Bay project area. Investors and staff attended a community feast.
- November 02, 2011: Establishment of a 'Roche Bay Project Committee' in Hall Beach, reaffirming the communities' support of the Project and facilitating communications between the community of Hall Beach and AEI.
- November 21 and 22, 2011: Attended and made a presentation to the Qikiqtaaluk Socio-Economic Monitoring Committee, hosted by the Ministry of Economic and Development, in Iqaluit.

AEI's ongoing work programs on the Melville Peninsula will continue to provide employment opportunities, ranging from basic camp and exploration related jobs, to employment associated with larger scale drill operations, to potential advanced exploration and early construction works opportunities at the Roche Bay Iron Project site. Training opportunities will differ with the scale and complexity of each program. As always, AEI and its consultants will encourage as much employment by local residents as possible throughout the range of work types provided. However, the size and schedule of all exploration programs will be contingent on the raising of adequate finances to conduct the necessary programs.

Full scale socio-economics and traditional knowledge studies are in the planning stage, and will be conducted as part of the next phase of project development. Such studies will be coordinated with the QIA and community representatives to ensure the best data is collected, in the context of existing databases and data gaps.

As plans for additional work at the project continue, the biggest challenges that AEI will face are labour and local permitting. In order to overcome these challenges, measures need to be undertaken early to lay the foundations for training programs as well as educating stakeholders about the mining process and the project plans so they are not overwhelmed when permitting review documents begin arriving.

During this stage of the project the plans relating to waste, tailings disposal, site monitoring and waste management during the operations and post mine closure including mine closure requirements and cost is being developed in the FS and will be further outlined when that technical report is published in 2012.

21.0 CAPITAL AND OPERATING COSTS

The initial capital and operating costs for the Roche Bay Iron Project were first published in the PEA (Dorval, 2010 – filed on SEDAR) and were based on a Nugget as a final product. The CAPEX estimate from the PEA was US$1.11 billion with an OPEX of US$170.67 million per year. This business model was based on a small concentrate operation (1.5 Mtpa) feeding an iron reduction facility (1.0 Mtpa @ ~97% Fe). The details of these costs have not been reproduced in this report taking into consideration the revised plan that focuses on much larger mine production and selling the high quality iron concentrate which is to be outlined in the 2012 FS. The following is not the final FS findings and the FS remains focused on the initial start-up operation at 5 Mtpa (+20% design contingency). The following analysis is conducted as preliminary analysis for a future increase in production, with estimated OPEX and associated CAPEX. Unless otherwise stated, all currency is expressed in Canadian dollars.

21.1 Roche Bay Iron Project Consolidated CAPEX

AEI is currently completing a FS on the Roche Bay Iron Project (C-Zone) based on a 5 Mtpa start-up concentrate operation. This detailed study has not been completed and the following discussion outlines some of the opinions provided to Golder from AEI internal studies and the statements below may change once the FS is published in 2012. The intent of the following sections is to identify the ongoing changes and improvements from the previous PEA study.

The assumed production capacity of 10 Mtpa concentrate production, is based on the production capacity increase, from 5 Mtpa concentrate production. Information from AEI's completed and internal studies to date suggests further project optimization from increased production rates in excess of 8 Mtpa concentrate production. The 10 Mtpa concentrate production model presented here is based on the target expansion objective. As a result, the CAPEX level required by the second phase (Phase II) of the project can be reduced or efficiencies captured by increasing production with an additional 5 Mtpa concentrate production.

The consolidated CAPEX required by the first phase (Phase 1) of the Roche Bay Iron Project using liquefied natural gas (LNG) and based upon a 5 Mtpa concentrate production year are shown in Table 21-1.

Table 21-1: Roche Bay Iron Project Consolidated CAPEX (Phase I - 5 Mtpa; LNG Option)

Item	$M	Remarks
General	46	
Mine Area	68	
Beneficiation	291	
Tailing Management	51	
Power Plant & Distribution	153	LNG Storage Included
Utilities	10	
Roche Bay Port	180	
Material Handling and Storage	65	
Non-Production Buildings	15	
Infrastructure	50	
Spare Parts	5	
Pre-Operation	35	
Total CAPEX Phase 1	**969**	

Note: The CAPEX is based on internal studies completed by AEI and may change in the FS
Unless otherwise stated, all currency is expressed in Canadian dollars.

The additional consolidated CAPEX necessary to the production capacity from 5 Mtpa concentrate production up to 10 Mtpa concentrate production are shown in Table 21-2.

Table 21-2: Roche Bay Iron Project Consolidated CAPEX (Phase II: 5 Mtpa Increase; LNG Option)

Item	$M	Remarks
General	8	
Mine Area	20	
Beneficiation	220	
Tailing Management	5	
Power Plant & Distribution	95	LNG Storage Included
Utilities	5	
Roche Bay Port	36	
Material Handling and Storage	20	
Non-Production Buildings	5	
Infrastructure	10	
Spare Parts	2	
Pre-Operation	5	
Total CAPEX Phase 1	**431**	

Note: The CAPEX is based on internal studies completed by AEI and may change in the FS
Unless otherwise stated, all currency is expressed in Canadian dollars.

The total consolidated CAPEX required by both Phase I and Phase II for the Roche Bay Iron Project (i.e. Total costs of a 10 Mtpa concentrate production) are shown in Table 21-3.

Table 21-3: Roche Bay Iron Project Consolidated CAPEX (10 Mtpa Concentrate Production; LNG Option)

Item	$M	Remarks
General	54	
Mine Area	88	
Beneficiation	511	
Tailing Management	56	
Power Plant & Distribution	248	LNG Storage Included
Utilities	15	
Roche Bay Port	216	
Material Handling and Storage	85	
Non-Production Buildings	20	
Infrastructure	60	
Spare Parts	7	
Pre-Operation	40	
Total CAPEX Phase 1	**1400**	

Note: The CAPEX is based on internal studies completed by AEI and may change in the FS
Unless otherwise stated, all currency is expressed in Canadian dollars.

21.2 Roche Bay Project Consolidated OPEX

The economic values which form the basis of a 10 Mtpa concentrate production are estimates of the Roche Bay Iron Project's yearly operating expenditures and are based on the following assumptions. These economic values are based on internal studies completed by AEI and may change in the FS:

- The operation will have power consumption needs equivalent to 85.5 kWh/t of concentrate (Phase I - 5 Mtpa concentrate production) and 78.5 kWh/t of concentrate (Phase II - production of additional 5 Mtpa concentrate production); The average power consumption necessary to produce 10 Mtpa of concentrate production is 82 kWh/t of concentrate;
- The project would necessitate a Power Plant Capacity of 110 MW to address an initial Phase I supply and expansion to Phase II; AEI estimates that 57 MW will be required for a Phase I – 5 Mtpa concentrate production and an additional power plant capacity of 53 MW is required to increase the production capacity from 5 Mtpa to 10 Mtpa concentrate production;
- The LNG consumption assumptions are based upon the following calculation 217.4 x 10^6 Nm^3/year or 22.0 Nm^3/t concentrate; it is believed that LNG takes up about 1/600th of the normal volume of the natural gas (Nm^3), the LNG required volume will be 217,389,333 Nm^3/year/600 = *362,316 m^3/year*.
- The Roche Bay Iron Project consolidated OPEX, in accordance with the assumption presented above, are shown in the Table 22-4 and are based on internal studies completed by AEI and may change in the FS.

The Roche Bay Iron Project consolidated OPEX, in accordance with the assumption presented above, are shown in the Table 22-4 and are based on internal studies completed by AEI and may change in the FS.

Table 21-4: Roche Bay Iron Project Consolidated FOB OPEX (10 Mt Concentrate Production; LNG Option)

OPEX Item	$M/year	$/t con
Mining	140.3	14.03
Beneficiation Plant	50.0	5.00
LNG	98.8	9.88
Electrical Distribution	1.0	0.10
Utilities	1.0	0.10
Labour (all included)	54.2	5.42
Port Facilities	4.0	0.40
On Site Reclamation	0.5	0.05
Total on Site OPEX	**349.8**	**34.98**
General Administration	16.7	1.67
Total Consolidated OPEX	**366.5**	**36.65**

Note: The CAPEX is based on internal studies completed by AEI and may change in the FS
$t con = tonnes of concentrate production
Unless otherwise stated, all currency is expressed in Canadian dollars.

22.0 ECONOMIC ANALYSIS

An economic analysis of the Roche Bay Iron Project was firstly published in AEI's PEA (filed on SEDAR) and was based on the high quality iron Nugget as a final product. The Net Present Value outlined in the PEA before taxes at 10% discount rate was US$1.16 billion and Pre-tax IRR was 24.4%. Sensitivity analyses of the key parameters (CAPEX, OPEX, and Sales Revenue) were also completed. In addition, potential investment risks (diesel fuel prices, iron ore market prices, technical, etc.) were also identified in the Roche Bay Iron Project PEA. Unless otherwise stated, all currency is expressed in Canadian dollars.

The current economic analysis is based on the following assumptions and is based on internal studies completed by AEI that may change in the FS:

- Production Capacity of 10 Mtpa concentrate production, minimum 65% Fe and maximum 0.07% S and 5% SiO_2;
- Iron concentrate selling price, $106.32/t;
- Operating cost (OPEX), $36.65/t concentrate;
- Investment cost (CAPEX), $1.4 billion;
- LNG consumption (for power generation), 217.4 x 10^6 Nm^3/year, or 22 Nm^3/t concentrate; and
- Assumed LNG CIF price, $0.45/$Nm^3$, or $16/M BTU (LNG conservative price; Highest CIF LNG price, $14 to $17/M BTU, October and November 2011);

The results of the economic analysis is on a project basis only and royalties, taxes and contingency capital is not included in the summary below and is based on internal studies completed by AEI that may change in the FS:

- Net Present Value (NPV) before taxes at a 8% discount rate is $3.61 billion;
- Pre-tax IRR is 37%; and
- Undiscounted Cash Flow, $12.36 billion

Considering a potential concentrate price increase up to $121.05/t (FOB) or US$115/t (exchange rate USD/CAD = 0.95), the results of the economic analysis are on a project basis only and royalties, taxes and contingency capital is not included in the summary below:

- Net Present Value (NPV) before taxes at a 8% discount rate is $4.64billion;
- Pre-tax IRR is 43%;
- Undiscounted Cash Flow, $15.37 billion.

With the potential to use Liquified Natural Gas (LNG) as a fuel source for the power plant, significant, long-term savings can be realized on OPEX (50% on power/Arctic Diesel Fuel, 15-20% overall OPEX). This opportunity is also being evaluated in the context of an increased production rate to at least 10 mtpy (or greater) with a marginal cost increase in CAPEX (initial estimates). The approach will be further detailed in parallel to completing a FS. During the completion of the FS, the positive impact of modular design, and leveraging the project's strategic partnership through China, additional savings are anticipated. Due to the proximity to shore, the Roche Bay Iron Project has a major strategic advantage in Infrastructure/CAPEX with increased scalability of mining/processing. The reduction in infrastructure (no rail, extensive roads, etc.) is a significant advantage over more infrastructure intensive projects. An additional advantage to a near shore operation is reduced intensity of engineering, construction and schedule savings to production.

23.0 ADJACENT PROPERTIES

The nearest adjacent iron ore property to the Roche Bay Iron Project is AEI's Tuktu Iron Project located 60 km to the north. The next closest projects are the Borealis Leases which are located on the western part of the Melville Peninsula, Nunavut, approximately 103 km to 114 km west of the Roche Bay Iron Project main camp.

23.1 D, E and F-Zones

South of the C-Zone BIF are additional BIF deposits that have been identified as D, E and F-Zones (or Areas). Earlier studies during 1968 and 1970 identified the D and E-Zones and historical tonnages were defined on the D-Zone as outlined in Section 6.2 of the report.

AEI has not completed any current exploration on these zones other than the 2011 prospecting south of the C-Zone by APEX as outlined in Section 9.5.3. These zones are considered exploration potential for AEI.

23.2 Borealis Leases

The Borealis Leases were previously owned by Borealis, but are now owned by Roche Bay plc. AEI and Roche Bay plc currently have agreements in place to conduct exploration activities on the Roche Bay Iron Project. Golder staff and AEI staff also conducted a site visit to the Borealis Leases on September 12, 2008. As part of this site visit, Golder provided AEI with a report (Bordet at el., 2008) that included background information, geological setting, summary of the site visit and recommendations for the Borealis Leases and this report is briefly summarized as follows.

The iron mineralization observed on the western Melville Peninsula occurs in a series of sedimentary and metasedimentary, steeply dipping, faulted and folded Archean rocks. The iron mineralization is interpreted as Algoma-type Deposit. The stratigraphic succession consists of greenstone, quartz schist, iron formation and intrusive granite. The structure of the sequence is characterized by an anticline-syncline pair with steeply dipping, north-northeast striking axial surfaces. The axes of the folds plunge towards the southwest. The folds are cross-cut by a series of east-southeast striking faults along which lateral, mostly horizontal, movements has occurred (Bordet et al., 2008).

During the site visit by Golder, five mineralized zones were observed, identified as Borealis 1 to 5. The existence, extent and quality of the mineralization were compared to the information provided in the Borealis Exploration memorandum (Scruggs, 1977) including photographs of bedrock outcrops and general observations (Bordet at el., 2008).

Borealis 1, 2, 4 and 5 mineralized zones are characterized by a dominantly magnetic iron formation, with some local occurrences of hematite. Borealis 3 mineralized zone is mostly hematitic with some local magnetite occurrences (Bordet at el., 2008).

In 2011, Roche Bay Plc signed a joint venture agreement with West Melville Iron Corp allowing them to acquire up to 70% of the iron project now called Fraser Bay 1 – 3.

23.3 Tuktu Project

23.3.1 2009 Program

A reconnaissance sampling and mapping program for the Tuktu Iron Project (Tuktu Project) was conducted in September 2009.

AEI has identified this area as a possible location for BIF which can be a significant source of magnetite.

The Tuktu Project consists of 15 contiguous mining claims (HABS 1 to HABS 15) and is located approximately 70 km WNW of Hall Beach, Nunavut, Canada.

The September 2009 exploration program concentrated on a magnetic high located on HABS 1, which was identified from a mid-1980s geophysics map produced by the GSC. On HABS 1, there were nine rock units identified. The rock units of interest were: 1) the BIF for iron; and 2) Unit 2 gossan material which could host precious or base metal mineralization. Several samples were taken from the HABS 2 claim and BIF was identified but, due to time constraints, it was deferred to a future exploration program for detailed mapping.

Seventy-five (75) samples were collected and assayed and seventy-seven (77) waypoints enabled the interpreted outline of the granite, metasediments, gossan material, gabbro and BIF units and to construct a preliminary geological map.

A total of seventy-five (75) samples were sent for assay to SGS Lakefield. Sixty-three (63) samples were collected from HABS 1, ten (10) from HABS 2 and two (2) from HABS 10. No samples were collected from HABS 3. The testing chosen for this stage of analysis were XRF for whole rock, pyrosulphate fusion XRF to test for base metals and Fire Assay to test for gold. Satmagan Testing was completed on sixty (60) samples to measure the magnetite content. Davis Tube testing was completed on four (4) samples to determine the iron content, liberation and concentration methods. Twenty-four (24) samples were tested for gold content. Testing for base metals was completed on eleven (11) samples. The testing for base metals came back with less than or at the detection limit of the equipment. The assay results of the sampling campaign confirmed the presence of iron at HABS 1. Whole rock analysis of the samples taken at HABS 1 showed the total Fe as % Fe_2O_3 ranged from 31.6% to 54.1% with an arithmetic mean of 48.4%. The contaminants of concern for iron deposits are sulphur and phosphorus. The analysis results from the HABS 1 samples displayed a sulphur content ranging from 0.01% S to 0.43% S and a phosphorus content of <0.01% P_2O_5 to 0.23% P_2O_5. The samples were also tested for gold and base metals but produced no significant results.

Five (5) samples from HABS 3 yielded total Fe as % Fe_2O_3 ranging from 27.7% to 52.7%. Phosphorus content ranged from 0.03% P_2O_5 to 0.20% P_2O_5 and sulphur content ranged from 0.02% S to 1.18% S.

Two (2) samples from HABS 10 yielded total Fe as % Fe_2O_3 from 39.1% to 55.9%. Phosphorus content ranged from 0.08% P_2O_5 to 0.26% P_2O_5 and sulphur content ranged from 0.12% S to 0.18% S.

The BIF unit delineated in HABS 1 had a mathematical average iron content of 48.4% Fe as Fe_2O_3 (XRF) and is based on grab sample analyses. The extremely weathered condition of Unit 2 gossan made it difficult to obtain a fresh sample which is necessary for an accurate sample assay. The geology in this area supports the potential for base metal and precious metal mineralization, but sampling to date has not identified metals of a significant quantity or content.

The September 2009 mapping and sampling campaign carried out by AEI delineated a zone of BIF as wide as 700 m with a strike length of 2,600 m. The BIF unit, which has a NW-SE orientation, is hosted by metasedimentary and granitic rocks. A gabbro dyke cuts through the BIF, Unit 1, Unit 2 and Unit 2 gossan.

23.3.2 2011 Exploration Program

The following exploration program is based on information provided in the Tuktu technical report (APEX, 2012a).

In 2011, AEI added four additional contiguous mineral claims (HABS 12 to HABS 15) for a total of 15 mineral claims on the Tuktu Project. The 2011 exploration program concentrated on ground geophysical (magnetic) surveying, limited mapping and rock sampling, and an initial drilling program.

As part of the geophysical work program, 218.6 line km of ground magnetic surveys was completed. The survey data confirmed the delineation of the Tuktu BIF originally established by the 2009 mapping program, and better defined over 20 km of high magnetic anomalies. As a result, prospecting and rock sampling was conducted over the Tuktu Prospect (focused on gossan areas) and the Tuktu East (iron prospects) area magnetic anomalies. A total of 100 rock samples was collected from the gossan areas at Tuktu and the iron prospects at Tuktu East.

The results of XRF iron analyses conducted on 28 BIF samples from the Tuktu and Tuktu East areas identified high grade (magnetite-rich) iron formation at both ends of the north-south trending western magnetic feature on the HABS 2 mining claim. Two samples, located approximately 1.5 km apart, had iron compositions of 62.26% (southern sample) and 63.85% (northern sample), respectively.

A total of 33 samples collected from the Tuktu Property in 2011 were fire assayed. The highest gold concentration in the samples was 130 ppb Au. With the exception of one sample from the HABS 10 claim at 1.29% copper in chalcopyrite within basalts, no significant base metal values were measured.

The 2011 drill program was conducted between May 4, 2011 and July 21, 2011 in order to examine the magnetite content of the Tuktu BIF and to potentially identify an iron resource. The 2011 drill program included 19 holes totalling 4,070.4 m of NQ (1 7/8", 47.6 mm) drill core. One hole was abandoned due to poor ground conditions and was not included in the total. Down-hole surveys were completed on all but 5 drillholes. Cores were logged by geologists and geological technicians and all BIF intersections were sampled at an interval of 2 m. A total of 2,059 core samples were collected and analyzed. The Tuktu BIF strikes to the southeast and has a fairly consistent 70 degree dip to the southwest (APEX, 2012b). The Tuktu BIF is bounded by metasediments to the north and granites to the south.

Drilling identified a significant Algoma-type BIF, dominated by alternating thin bands of silica and magnetite. The BIF was intersected over a strike length of 2,000 m, over widths up to 400 m in the southern portion, and to depths of up to 200 m. The majority of the XRF values of the BIF samples were 35% to 45% Fe_2O_3 (APEX, 2012b).

An initial Inferred Resource Estimate was calculated by APEX (2012a). The Tuktu iron deposit was estimated to comprise 465.5M tonnes of iron formation averaging 31.06% total iron, with 35.13% magnetic, 0.3% S and 0.04% P, at a 20% iron cut-off (APEX, 2012a).

24.0 OTHER RELEVANT DATA AND INFORMATION

To the knowledge of the authors of this report, there is no other relevant data and information concerning the current property.

25.0 INTERPRETATION AND CONCLUSIONS

A third independent NI 43-101 mineral resource has been completed for the Roche Bay Iron Property for AEI for the A/B and C-Zones iron deposits and is based on drilling information collected in 1982, 2007-2008 and 2011 exploration programs under the direction of AEI, magnetite testwork, mineral interpretation and resource classification studies. A FS is currently underway by Wardrop, A Tetra Tech Company (Wardrop) and AEI will be completed in 2012.

26.0 RECOMMENDATIONS

The following recommendations are provided for ongoing development of the Roche Bay Iron Property:

- Future drilling should consider further testing the BIF footwall and hanging wall zone areas in order to fully define the BIF mineralization and potentially increase the width and depth of the overall A/B and C-Zones. The A/B-Zone has only been drilled to a depth of 180 m and there is potential below this depth to add to the resource.
- Complete Infill drilling on the A/B-Zone to increase the confidence in the current resource from Inferred to Indicated. This will also require completing additional Davis Tube testwork on all infill and exploration drilling.
- Complete additional metallurgical and process testwork on the A/B-Zone ores in order to confirm the same processing methods for A/B and C-Zones.
- Future drilling programs should continue collecting geotechnical data in critical areas (i.e. proposed pit walls and known hydrogeological areas) to support the FS.
- Completion of additional prospecting on the A/B and C-Zones and other areas of the Roche Bay Iron Project to further evaluate the iron formations for their iron ore potential and evaluate the area's potential for hosting Archean mesothermal lode gold deposits and/or VMS mineralization. The prospecting should also be supplemented by airborne geophysical surveying with electromagnetics.

The Phase 2 work plan study includes the completion of a FS planned to be completed in 2012. The cost of the Phase 2 study is estimated to cost approximately $20,000,000 and include further engineering studies, resource definition drilling, geotechnical drilling, exploration drilling and condemnation drilling in preparation for early works programs.

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Report Signature Page

The report was prepared and signed by Paul Palmer, P.Eng., P.Geo., and Greg Greenough, P.Geo., of Golder. Both authors are qualified persons as outlined by NI 43-101. The signature and effective date of this technical report is March 2, 2012.

GOLDER ASSOCIATES LTD.

Original signed and stamped by:

Greg Greenough, P.Geo.
Associate/Senior Resource Geologist

Original signed and stamped by:

Paul Palmer, P.Eng., P.Geo.
Associate, Senior Geological Engineer

GW/GG/PP/lb

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APPENDIX A

Certificates of Qualifications

GREG GREENOUGH
CERTIFICATE OF QUALIFICATION

I, Gregory F. Greenough, P.Geo., do hereby certify that:

1) I am employed as a Senior Resource Geologist at:
Golder Associates Ltd.
6700 Century Avenue, Mississauga, Ontario, Canada L5N 5Z7
Telephone: 905-567-6100; Fax: 905-567-6561
Email: ggreenough@golder.com

2) I graduated from Laurentian University in 1976 with a Hons B.Sc. degree in Geology.

3) I am registered as a Professional Geoscientist in the Province of Ontario (APGO Licence #825).

4) I have worked as a geologist in the mineral resource industry for a total of thirty-seven years since my graduation from university. My relevant experience for the purpose of this resource estimate is:

    a) Thirty years of geological experience with INCO Limited in the Sudbury Basin Cu, Ni PGE deposits, including: Senior geologist at various mines responsible for exploration projects and resource/reserve estimation; Nine years as Chief Evaluation and Design Geologist for the Ontario Division, responsible for the resources and reserves, standards, and auditing of the Sudbury Operations deposits.

    b) Consulting resource estimation experience on various projects, including laterite nickel deposits, James Bay district gold deposits, and James Bay Lowlands Ni-Cu-PGE and Chromite deposits.

    c) I also authored the May 20, 2011 Technical Report.

5) I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

6) I am responsible for Section 17 (Mineral Resource and Mineral Reserve Estimates) of the technical report titled “Technical Report, Roche Bay Iron Project A/B-Zone and C-Zone, Nunavut, Canada” with an effective date of March 2, 2012 (the “Technical Report”). I visited the property on August 23, 2011.

7) I have not had prior involvement with the property that is subject to the Technical Report, other than what is stated in 4) above

8) As of the date of this certificate, to the best of my knowledge, information and belief, the March 2, 2012 Technical Report contains all scientific and technical information that is required to be disclosed to make it not misleading.

9) I am independent of the issuer applying all the tests in Section 1.4 of the NI 43-101.

10) I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 2nd Day of March, 2012.

Original signed and stamped by:

Greg Greenough, H.BSc., P.Geo.

PAUL PALMER
CERTIFICATE OF QUALIFICATION

I, Paul Palmer, P.Geo., P.Eng., do hereby certify that:

1. I am employed as a Senior Geological Engineer at:

   Golder Associates Ltd.
   1010 Lorne Street, Sudbury, Ontario P3C 4R9
   Telephone: 705-524-6861; Fax: 705-524-1984; Email: ppalmer@golder.com

2. I graduated with a Bachelor's degree in Geology from Memorial University of Newfoundland. In addition, I have obtained a Bachelor's degree in Geological Engineering from University of Toronto.
3. I am a member in good standing of the Association of Professional Engineers Ontario, the Association of Professional Engineers and Geoscientists of the Province of Manitoba and the Association of Professional Engineers, Geologists and Geophysicists of the Northwest Territories.
4. I have practised my profession continuously since graduation. My relevant experience with respect to this project is over seventeen years of experience in exploration and mineral resource evaluation of mineral projects nationally and internationally in a variety of commodities. I also authored the February 14, 2007, April 24, 2009 and May 20, 2011 Technical Reports.
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 (NI 43 101) and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purpose of NI 43-101.
6. I am responsible for all sections of the technical report titled "Technical Report, Roche Bay Iron Project A/B-Zone and C-Zone, Nunavut, Canada" (the "Technical Report") with an effective date of March 2, 2012. I visited the Roche Bay Magnetite Project site October 15, 2006 and August 26, 2009.
7. I have not had prior involvement with the property that is subject to the Technical Report other than what is stated in Bullet 4.
8. I am not aware of any material fact or change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all the tests in section 1.4 of the National Instrument (NI) 43-101.
10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 2nd Day of March, 2012.

Original signed and stamped by:

Paul Palmer, P.Geo., P.Eng.

At Golder Associates we strive to be the most respected global company providing consulting, design, and construction services in earth, environment, and related areas of energy. Employee owned since our formation in 1960, our focus, unique culture and operating environment offer opportunities and the freedom to excel, which attracts the leading specialists in our fields. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees who operate from offices located throughout Africa, Asia, Australasia, Europe, North America, and South America.

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