

APPENDIX E.5
WASTE ROCK GEOCHEMISTRY REPORT

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MINE ROCK ML/ARD CHARACTERIZATION REPORT

DEPOSIT 1, MARY RIVER PROJECT

Submitted to:

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**March 2014
TC123908**

March 26, 2014
TC123908

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Dear Mr. Millard:

**Re: Mine Rock ML/ARD Characterization Report
Deposit 1, Mary River Project**

Please find attached a report on the metal leaching and acid rock drainage (ML/ARD) characterization of materials from Mary River Deposit No. 1 of Baffinland Iron Mine site.

The report presents the results and current interpretation of geochemical analyses available up to December 2013.

Please do not hesitate to contact us should you have any questions.

Yours very truly,

AMEC Environment & Infrastructure
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EXECUTIVE SUMMARY

AMEC was retained by Baffinland Iron Mines Corporation (Baffinland) to conduct the geochemical characterization of waste rock in support of the Environmental Impact Assessment (EIA) for the Mary River Project, located on the northern half of Baffin Island. This report documents geochemical investigations from field and laboratory testing programs up to February 2014. This report provides results and interpretation of static and kinetic testing data to assess the potential for metal leaching and acid rock drainage (ML/ARD) from waste rock related to mining of Deposit No. 1 ore. The proposed Deposit No. 1 open pit is anticipated to produce approximately 566 Mt of waste rock during the life of the mine.

AMEC has evaluated previous geochemical studies and completed additional testing on drill core representative of the proposed waste rock and pit walls exposed during mining operations. Geochemical characterization of waste rock from this study and previous studies was completed using accepted ML/ARD assessment techniques. Results of this geochemical characterization will be used to guide waste rock management planning and the management of seepage and runoff from the mine rock stockpiles and open pit.

The waste rock was subdivided based on broad geo-structural categories about the iron ore zone, mainly by hanging wall and footwall zones. A total of 776 waste rock samples were selected as representing the waste rock categories and broad spatial coverage of non-ore mine rock in the vicinity of the open pit development. All 776 waste rock samples were analyzed for modified Sobek acid base accounting (ABA), NAG_{pH} and elemental content. Subsets of drillcore samples were also analyzed for downhole variability, NAG leachate, short-term metal leaching, whole rock elemental content, detailed mineralogical analysis, and long-term kinetic testing.

Results of ABA testing determined that waste rock is generally characterized as having low neutralization potentials (NP) and low acid potentials (AP). Data suggests that the waste rock is dominated by non-carbonate sources of NP (e.g. silicates) with lesser NP derived from carbonate sources. Sulphide was the primary form of sulphur

Approximately 85% of waste rock samples had neutralization potential ratios (NPR) greater than 2 and are classified as non potentially acid generating and are unlikely to generate acidic drainage. Approximately 10% of the samples had NPR values of less than 1, and 5% of the samples were classified as having uncertain acid generating potential ($1 < \text{NPR} < 2$). Extrapolating these results to the project waste rock model, indicates that approximately 11% of in-pit waste rock is expected to have $\text{NPR} < 2$ and is considered potentially acid generating (PAG). Proximity to ore appears to correlate to increased PAG quantities ($\text{NPR} < 2$) with the footwall schist and hanging wall schist zones identified with the greatest proportion of PAG of the major waste units.

Waste rock samples were enriched in S, Se and Bi, with some enrichment of Au, As, Ag, Cd, Cr, Fe, Mn, Ni, Pb, Sb and Tl. However the apparent Se enrichment was a result of the high analytical detection limit for this element. Based on short-term leach tests there is little evidence

of metal leaching under neutral pH conditions with the possible exception of Ni and Cu in isolated samples. Two years of humidity cell testing indicates circum neutral pH drainage quality for most cells, and weakly acidic drainage has been produced from three cells. Metal release rates were generally low for most cells. Higher metal release rates for Cd, Co, Cu, Ni, Pb and Zn were observed in the lower pH humidity cells that had solid concentrations of the same metals on the higher range of those detected in the Deposit 1 mine rock.

Estimates of NP depletion based on Ca and Mg release rates are unsuitable for waste rock dominated by non-carbonate NP sources. Testing of carbonate NP-depleted mine rock in humidity cells indicates that circum-neutral pH conditions are still present after more than two years of operation. Based on the cold conditions at site this suggests that non-acid conditions in PAG rock may persist for significantly longer than anticipated. Humidity cell testing is continuing in combination with mineralogical studies to better understand the neutralization mechanisms and improve estimates of lag time to acid on-set.

Seepage and run off quality of stockpiles were monitored to provide understanding of the potential for acid drainage and metal leaching from the mine rock. Results indicated low metal concentrations, with the exception of elevated sulphate and Ni which were below MMER standards.

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1.0 INTRODUCTION

AMEC was retained by Baffinland Iron Mines Corporation (Baffinland) to conduct environmental studies in support of the environmental impact assessment (EIA) for the Mary River Project. AMEC is currently conducting ongoing metal leaching and acid rock drainage (ML/ARD) studies for the Project. This report provides a summary of data collected to February 2014.

Baffinland is planning to mine iron ore at their Mary River site located on the northern half of Baffin Island, approximately 160 km south of Mittimatalik (Pond Inlet), 270 km south-east of Nanisivik, 300 km north of Hall Beach, and 1000 km north-west of Iqaluit, the capital of Nunavut Territory, Canada. This area experiences a mean annual temperature of approximately -12°C and monthly averages below -20°C from December to March. Above freezing temperatures occur only from June to August, with an average high of 4.4°C in July.

There are currently five deposits of potential economic interest identified at the site. The current mine development relates to Deposit No.1, which is the largest and best known of the economic deposits at the site.

The current projected life of mine is about 21 years based on reserves in Deposit No.1. The proposed mine will include the open pit, crushing and screening facilities, and the ore and waste rock storage facilities. The dimension of the ultimate open pit will be approximately 2,000 m in length, 1,200 m in width and range in depth from 195 m on the south side to 465 m on the north side (Aker Kvaerner, 2008).

The economic iron deposits at the Mary River project represent high-grade examples of Algoma-type iron formation. Deposit No. 1 ores contain magnetite and hematite in different proportions. About 566 Mt of waste rock are anticipated to be produced during the life of the mine.

1.1 Objectives and Scope of Work

The objective of this assessment was to characterize the metal leaching and acid rock drainage (ML/ARD) characteristics of the mine rocks that will be produced from the currently proposed final open pit. The ML/ARD assessment results will provide input for the management of the mine rock and also the management of the seepage and runoff from the mine rock stockpiles and open pit.

Materials characterized in this study include rock core samples that represent rock types that will be placed in waste rock stockpiles and potentially exposed on pit walls. To further improve the understanding of the potential for acid drainage and metal leaching from the mine rock, the seepage and run off quality of mine rock stockpiles that were monitored for several years by Baffinland were also included in the assessment.

1.2 Geology and Environmental Conditions

1.2.1 Regional Geology

The northern part of Baffin Island consists of the ca. 3.0-2.5 Ga Committee Fold belt which lies within the Rae domain of the western Churchill Province (Jackson and Berman, 2000). The Committee belt extends north-east for around 2000 km from south-west of Baker Lake, Nunavut Territory to northwestern Greenland. Four major assemblages of Precambrian rocks have been identified within the Committee Belt. The iron ore deposits occur as part of the supra-crustal rocks of the Neoarchean aged (2.76-2.71 Ga) Mary River Group in the region. The Central Borden Fault Zone passes within 1 km to the south-west of the site. This fault separates the highly deformed Precambrian rocks to the north-west from the early Paleozoic relatively flat lying sedimentary rocks to the southwest. The generalized stratigraphic sequence of the Mary River group from top to base according to Young et al. (2004) and Johns and Young (2006) is:

- Interbedded ultramafic and intermediate volcanic rocks;
- Quartzite;
- Algoma-type oxide and silicate-facies iron formation;
- Amphibolite; and
- Psammite and sedimentary migmatite.

The thickness of individual units varies considerably across the area. Ultramafic and gabbroic intrusions in the form of small sills and dykes (<10 m in thickness) may occur within the sedimentary rocks, iron formation and amphibolite units (Johns and Young, 2006). Locally these intrusions have been observed to contain thin sulphide veinlets and disseminated sulphides. At the deposit scale, the overall sequence can be complicated by inferred early isoclinal folds and ramp and flat thrust faults (Young *et al.*, 2004) which create complex and variable stratigraphic relationships. The contact between the Mary River group and gneiss basement rock are generally not directly exposed, being obscured by younger granitic intrusions.

Iron formation within the Mary River Group occurs as an oxide- and silicate- facies unit. Oxide facies iron formations vary from lean magnetite-chert to iron-ore quality deposits of magnetite and hematite (Johns and Young, 2006). Genesis of high grade iron ores is the result of the Hudsonian age deformation and metamorphism of enriched Archean Banded Iron Formation. The silicate-facies iron formation is generally thin and found in association with the oxide-facies, although it also occurs on its own. It commonly contains coarse garnet, anthophyllite, cummingtonite, and actinolite porphyroblasts.

The surficial geology of the area generally consists of locally abundant Holocene glacio-lacustrine sediments, alluvial sediments (alluvial deposits), marine and glacio-marine deltaic sediments and end moraine till, with occasional outcrops of pre-Quaternary bedrock and sedimentary rock formations. The Holocene glacio-lacustrine sediments are typically in the range of 1 to 10 m thick, consisting of proglacial sand and gravel outwash. The sediments commonly form braided floodplains, terraces and fans. The early Holocene and Wisconsinan

tills are mainly veneers and blankets. Till veneers are 0.5 to 2 m thick and are discontinuous. Some veneer surfaces are reinforced with boulders, either due to washing by subglacial meltwater or permafrost processes, and restrict outcrop exposures. Till blankets are undulating and range from 2 to 10 m thick with drumlins and ribbed moraines in places.

The Mary River Camp is located in a major glaciofluvial outwash deposit in what appears to be a classic “U” shaped valley. In addition to the glaciofluvial deposits, there are some direct glacial deposits consisting of kames, moraines and eskers in and around the south-eastern portion of Sheardown Lake. The outwash valley is essentially a relatively flat plane with very little local relief, the major exceptions being along water bodies, esker deposits and adjacent to valley edges.

1.2.2 Deposit Geology

Deposit No.1 occurs at the nose of a syncline plunging steeply to the north-east (Aker Kvaerner, 2008). The iron formation occupies the nose and two limbs of this feature with a ~1300 m long northern portion and a ~700 m long southern portion. The footwall to the iron formation mainly consists of gneiss with minor schist, psammitic gneiss (psammite) and amphibolite. The hanging wall is primarily composed of schist and volcanic tuff with lesser amphibolite and metasediment.

The hanging wall primarily encompasses chlorite–actinolite schist and garnetiferous amphibolites. Meta-volcanic tuff is also a significant lithology identified in the hanging wall. The footwall mainly consists of quartz-feldspar-mica gneiss with lesser meta-sediment (greywacke) and quartz-mica schist. Microcline and albite are the predominant feldspars within the gneiss and biotite is generally more abundant than muscovite. Rocks are observed to represent at least amphibolite grade metamorphism.

The iron ore deposits at the Mary River project represent high-grade examples of Algoma-type iron formation and are composed of hematite, magnetite and mixed hematite-magnetite-specular hematite varieties of ore (Aker Kvaerner, 2008). The iron deposits consist of a number of lensoidal bodies that vary in their proportions of the main iron oxide minerals and impurity content of sulphur and silica in the ore. The massive hematite ore is the highest grade ore and also has the fewest impurities, which may indicate it was derived from relatively pure magnetite or that chert, quartzite and sulphides were leached and oxidized during alteration of the iron formation.

1.2.1 Climate and Hydrology

Northern Baffin Island is one of the coldest regions in Canada. The region experiences a mean annual temperature of approximately -15°C, with mean daily temperatures below -20°C from November through April, and above 0°C during June through August. The long period of sub-zero temperatures results in a very short runoff season, typically occurring from June through September. Runoff may extend to late October in systems with large lake components. The frigid temperatures also result in very low precipitation values for northern Baffin Island, from the combined effect of the low moisture carrying capacity of cold air and the scarcity of liquid water

available for evaporation. According to Natural Resources Canada the region is classified as semi-arid with mean annual total precipitation ranging from 200 to 400 mm, although regional climate stations suggest that the true value is near the lower end of this range. The amount of water available for runoff is further reduced by the processes of evaporation, transpiration and sublimation. The frigid climate and subsequent lack of significant vegetative cover combine to minimize the volume of water evaporated and transpired to very low levels. Conversely sublimation frequently occurs during the winter months, largely as a result of blowing snow transport.

The presence of permafrost, coupled with the lack of vegetative cover, also has a profound effect on regional hydrologic systems. Permafrost typically restricts water from infiltrating the ground to any great depth, while the lack of surface vegetation results in little to no impedance or loss of runoff as it flows to the river channels. Therefore, July and August rainfall events tend to produce flashy stream flow conditions.

1.3 Previous Geochemical Studies

1.3.1 Summary of Previous Work

A previous geochemical study (2006 to 2008) by Knight Piésold (2008) included analysis of 97 waste rock samples, 21 ore samples and 7 overburden samples. Waste rock and ore samples were collected from rock cores at 34 boreholes drilled in 2004, 2005 and 2006. Waste rock samples were categorized spatially on the basis of hanging wall and footwall materials. All samples underwent acid-base accounting (ABA) analysis, total element analysis by aqua regia leach, and whole rock analysis by X-ray Fluorescence (XRF). ABA analysis included assessment of acid potential (AP) on the basis of measured total sulphur and calculated sulphide sulphur concentrations. Assessment of neutralization potential (NP) was on the basis of total neutralization potential determined by the modified Sobek method and carbonate NP (CarbNP) by measurement of total inorganic carbon.

Selected samples were additionally analysed using the Net Acid Generation (NAG) test, mineralogy by X-ray diffraction (XRD), and short-term leaching tests using Standard (USEPA 1312) Synthetic Precipitation Leaching Procedure (SPLP) at pH 4.5, a modified SPLP procedure and the Toxic Characteristic Leaching Procedure (USEPA 1311). The modified SPLP procedure used deionized water at pH 5.5 and a liquid to solid ratio of 1:3 rather than 1:20 for the standard SPLP.

A humidity cell testing program was conducted on ten rock samples from the Mary River project in early 2008 (Knight Piésold, 2008). The humidity cell testing consisted of: three humidity cells containing footwall samples; and seven humidity cells containing hanging wall samples. Two samples of footwall rocks and five samples of hanging wall rock that underwent the humidity cell testing had values of NPR less than 2. The humidity cells were operated for 53 weeks. The preliminary results of humidity cell tests that covered 20 weeks of operation were reported by Knight Piésold (2008).

Another geochemical testing program was conducted in 2008 as a part of the bulk ore sampling program (Knight Piésold, 2009). Twenty-three rock samples were collected from 130,000 tonnes of blasted rock from the west side of Deposit No.1. These samples represented three different ore types and varieties, including weathered ore, representative ore and non-representative high manganese ore. All of these samples were subjected to the same testing as the waste rock samples, namely ABA, total elements by aqua regia, whole rock analyses, and modified SPLP testing.

1.3.2 Summary of Previous Geochemistry Results

Interpretation of the principal results from the initial geochemical investigations (2006 to 2009) for the project includes the following key observations:

Waste Rock

- 74% of both hanging wall and footwall waste rock samples contained <0.1% sulphide sulphur;
- The modified Sobek NP of hanging wall and footwall waste rock samples was low (median values at 15 kg CaCO₃/t and 9 kg CaCO₃/t, respectively);
- Generally only a fraction of this NP was provided by carbonate;
- The overall low sulphide content of the waste rocks combined with the prevailing low NP and particularly the low carbonate NP leads to uncertainty in prediction of future ARD on the basis of static testing alone;

Ore

- From the 2006 to 2008 core sampling program 100% of hematite dominant ore samples and 56% of magnetite dominant ore samples contained <0.1% sulphide sulphur;
- The corresponding median modified Sobek NP of hematite dominant and magnetite dominant ore samples was 1.7 and 6.75, respectively;
- From the 2008 ore bulk sample program the sulphide content of the representative ore was 0.01% or less and the modified Sobek NP of representative ore was observed over a very narrow range of 1.3 to 4.5 kg CaCO₃/t; and
- The fraction of NP provided by carbonate in ore material was low with the notable exception that some samples of magnetite dominant ore that exhibited greater carbonate NP than modified Sobek NP presumably due to the presence of siderite.

Overburden

- For the seven shallow overburden samples the sulphide content was low (0.01% or less); and
- The median modified Sobek NP was 172 with most NP in overburden samples related to carbonate.

Overall, the previous geochemical study indicated that 21 of 23 (91%) footwall rock samples, 65 of 74 (88%) hanging wall samples, 11 of 16 (69%) ore samples, and all overburden samples had neutralization potential ratio (NPR) values greater than 2 for NPR calculated using modified Sobek NP and AP based on sulphide sulphur. Representative ore samples from the subsequent bulk ore sampling program indicated very low sulphide content at or below detection limits with $\text{NPR} > 2$ for all samples.

Results of short-term leaching tests (SPLP and modified SPLP) indicated that several metal parameters such as aluminum, barium, iron and manganese were susceptible to leaching at concentrations greater than 1 mg/L from some footwall and hanging wall samples (Knight Piésold, 2008).

These initial study results and the data from 10 humidity cells (initiated by Knight Piésold and operated for 53 weeks) assisted in directing initial studies completed by AMEC in 2010 and have been factored into the subsequent investigations completed by AMEC and documented herein.

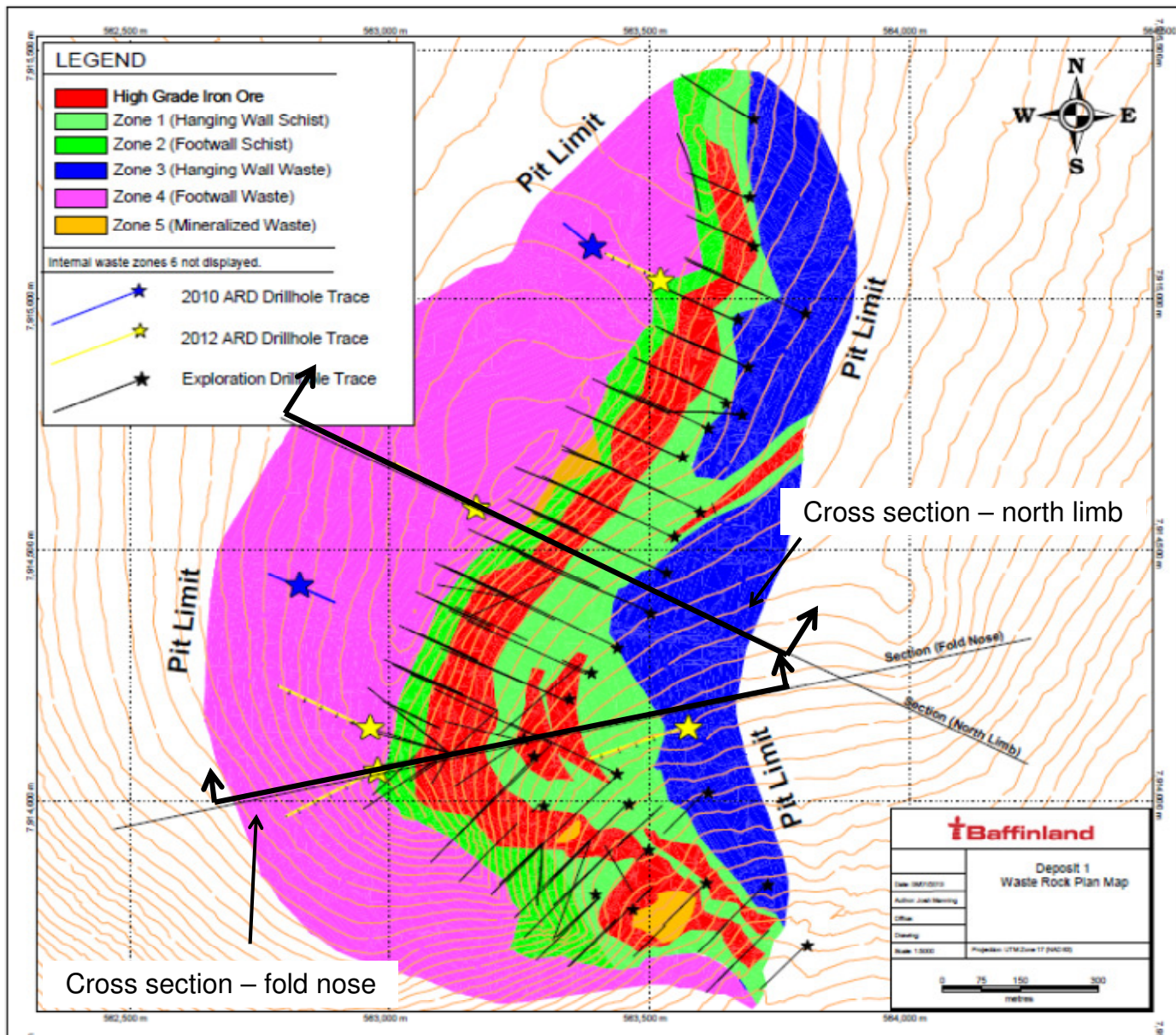
1.4 Mine Plan

The proposed Mary River Project will consist of an open pit and adjacent waste rock stockpile, plus supporting buildings and infrastructure. Ore will be mined from the Deposit No. 1 pit and shipped directly offsite for further processing.

Intense deformation and lack of outcrop limit the ability to subdivide by lithology on the basis of future mined tonnages. Rather, the waste material has been subdivided on the basis of zonal relationships around the iron ore. For the previous Knight Piésold work, this was done on the basis of hanging wall and footwall zones around the ore. In 2011 spatial refinement of the waste rock model was completed by George H Wahl and Associates (GHWA) and Hatch (Hatch 2011) that included subdivision of the hanging wall and footwall zones on the basis of broad geo-structural categories and observations of trends in observed sulphide mineralization. The subdivided waste rock distribution model was further refined by Baffinland in 2013 on the basis of additional waste rock drilling and sampling in 2012 (Table 1-1, Figure 1-1, Figure 1-2 and Figure 1-3).

Table 1-1: Summary of Waste Types and Tonnages

Waste Type	In-Pit Tonnage (Mt)	Waste (%)	Lithologies (in approximate order of abundance)
Footwall Schist (FWS)	74.1	13	chlorite, mica, or amphibole schist; gneiss; greywacke; amphibolite; and meta-volcanic (tuff); inter-bedded zones of banded iron formation
Footwall Waste (FW)	263	46	gneiss; metasediments (e.g., greywacke); chlorite, mica or amphibole schist; and amphibolites
Hanging wall Schist (HWS)	139.6	25	chlorite, mica, or amphibole schist; amphibolite; greywacke; and meta-volcanic (tuff); inter-bedded zones of banded iron formation
Hanging wall Waste (HW)	77.5	14	meta-volcanic (tuff); greywacke; amphibolite; chlorite, mica or amphibole schist; ultramafite; and gneiss
Internal Waste (IW)	2.1	0.4	schist; amphibolite; and meta-volcanic (tuff)
Mineralized Waste (MW)	9.7	1.7	high grade iron formation (elevated Mn, S or P); and banded iron formation
Total	566	100	



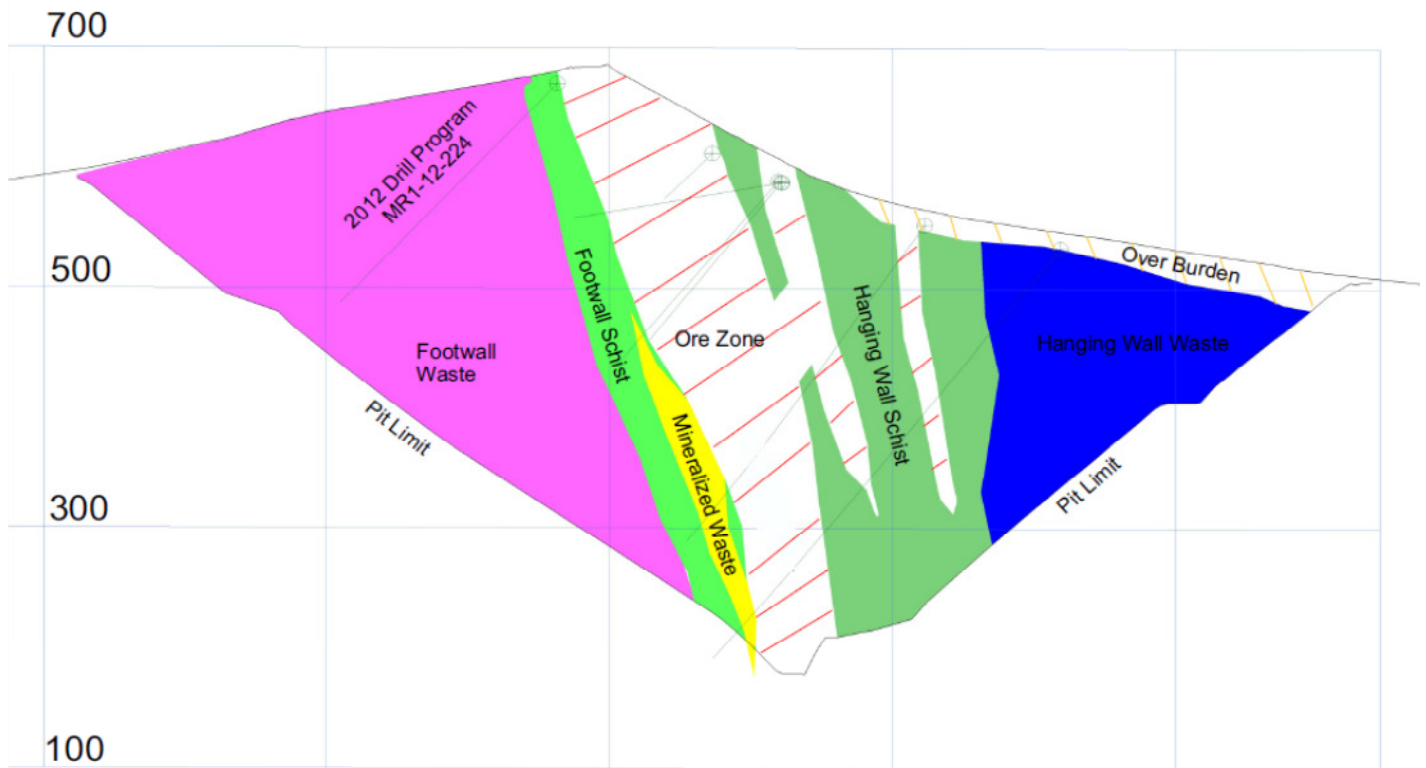
Baffinland Iron Mines Corporation		amec
Mary River Project		
Plan View of Waste Rock Distribution in Deposit 1		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		FIGURE 1-1

Mary River Deposit # 1

2013 Waste Rock Model (North Limb)

NW

SE



Baffinland
Iron Mines Corporation

amec

Mary River Project

North Limb Cross Section of Waste Rock
Distribution in Deposit 1

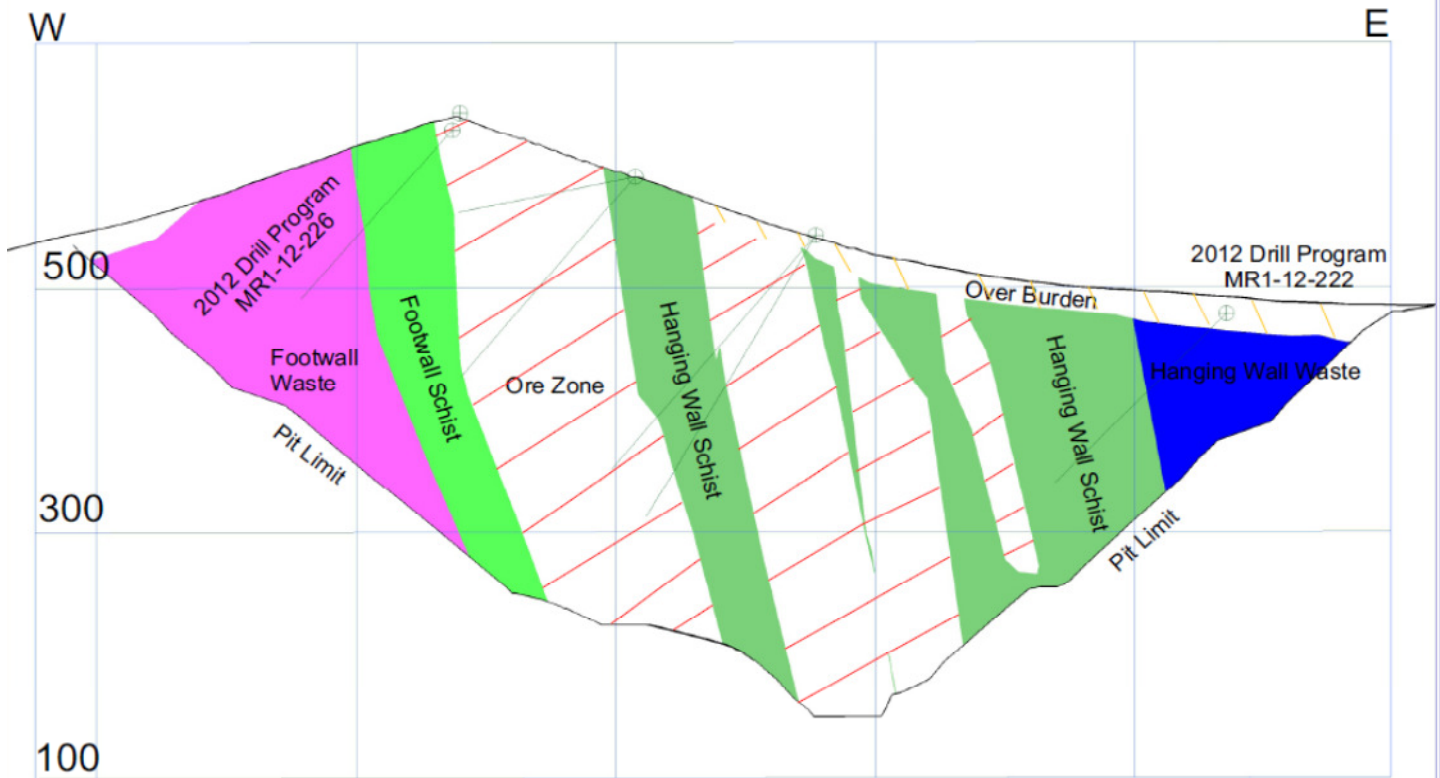
Drawn by: LC Checked by: SW Date: March 2014

Project: TC123908

FIGURE 1-2

Mary River Deposit # 1

2013 Waste Rock Model (Fold Nose)



 	
Mary River Project	
Fold Nose Cross Section of Waste Rock Distribution in Deposit 1	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	FIGURE 1-3

2.0 PROGRAM DESIGN

2.1 Regulatory Context

The approach and methodology for the data interpretation used in this report was based on the guidance described in the reference document *Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials* (MEND 2009) which represents best practice and industry standard approaches and methodologies for ML/ARD sampling and characterization in Canada.

2.2 Acid Base Accounting

The ML/ARD characterization conducted in this study follows the testing methods outlined in the standards described above. The analyses included:

- The determination of paste pH;
- Several potential measures of neutralization potential (NP), namely total carbon, total inorganic carbon, and modified Sobek NP; and
- Assessment of acid potential (AP) based on sulphur species (total sulphur, sulphate-sulphur, and sulphide-sulphur by difference).

Assessment of the potential for a sample to generate acidity is defined by the ratio of the neutralization potential (NP) to the acid potential (AP) and is referred to as the neutralization potential ratio (NPR). For initial screening and practical purposes, the threshold separating potentially acid generating (PAG) rock from non-potentially acid generating (NPAG) rock is an NPR value of 2. This value is generally accepted as industry best practice (MEND 2009). Rock with NPR values between 1 and 2 is considered to have an uncertain acid generating potential, whereas rock with $NPR < 1$ is considered to be likely acid generating.

2.3 Metals/Elemental Content

Chemical extraction and analysis is used to quantify the concentration of elements in samples, but does not provide a direct assessment of metal leaching potential. There are no regulatory standards that apply directly to the elemental content of mine rock.

The elemental content of mine rock was evaluated against average elemental crustal compositions (Price 1997). For screening purposes, samples with more than 10 times the average crustal abundance for a given element were considered to be enriched in that element.

2.4 Leachable Metals

The results of short term leach testing are used as screening tools to assess whether short term metal leaching could potentially occur from a sample.

Results were screened by conducting a comparison of leachate results to Metal Mining Effluent Regulation (MMER, 2002), Canadian Environmental Quality Guidelines for the protection of aquatic life (CEQG-PAL) (CCME, 2014), and the Canadian Drinking Water Guidelines (CDWQ).

The MMER limits, CEQG-PAL and CDWQ values are not directly comparable to leachates from source materials. This comparison is strictly for reference purposes and implies neither compliance nor non-compliance with the specified standard or guideline.

2.5 Kinetic Tests

There are no criteria that are directly applicable to assess metal leaching data from kinetic tests such as humidity cells. Kinetic test results must be interpreted and are informative in terms of:

- Rates of sulphide oxidation, neutralization potential depletion and metal leaching rates;
- Site-specific PAG and NPAG thresholds; and
- Interpreted timing of the onset of acidic conditions in PAG materials.

2.6 Program Components

In 2010 based on review of the previous geochemical investigations AMEC developed a follow-up geochemical characterization program to augment the geochemical database for the project by increasing the representivity of the data. The program has been carried out in the following stages:

2010

- Additional ML/ARD sampling of hanging wall and footwall waste rock material from existing drill core (primarily 2008 and 2009);
- Locating, sampling and analysis of three boreholes in previously un-sampled regions of the footwall to the deposit; and
- Review of available runoff and drainage data from existing ore stockpiles at the Mary River site and Milne Inlet.

2011

- Initiation of nine additional standard humidity cells and eight carbonate neutralization depleted humidity cells;
- Co-direction with GHWA of an expanded Baffinland sampling program of the mine rock materials on the basis of a revised waste rock spatial model;
- Guided Baffinland geologists in sampling requirements for ML/ARD;
- ML/ARD analysis of samples from this expanded program; and
- Detailed mineralogical analysis of selected samples.

2012

- Assisted Baffinland in siting boreholes targeting previously unsampled regions of the future pit;

- Provided support and guidance to Baffinland geologists in logging and sampling for ARD/ML characterization.
- ML/ARD analysis of selected samples from the 2012 boreholes;
- Continuous down-hole sampling of these boreholes for metals and sulphur content;
- Reconnaissance for potential source materials for possible future field cells; and
- Ongoing monitoring and interpretation of results for the operating humidity cells.

2013

- Preliminary planning for possible field cell construction in 2014;
- Ongoing monitoring and interpretation of results for the operating humidity cells;
- Detailed mineralogical analysis of selected samples (in process); and
- Mineral liberation analysis (MLA) of subsamples from two operating humidity cells (collected in December 2013) (in process).

3.0 METHODS

3.1 Static Testing

3.1.1 Sample Collection

All samples of mine rock for ML/ARD characterization were collected from archived rock core stored on the project site. The samples were pre-selected using borehole logs within regular (~10 m) target intervals. All sampling was conducted or overseen by Baffinland geologists with experience at the deposit with the objective of selecting the most representative rock material within the target interval. Samples for ABA analysis comprised approximately one to two meter intervals of core.

For the 2011 and 2012 sampling programs the Baffinland geologists also systematically collected 10 to 15 cm of core that was visually representative of rock represented in adjacent ABA samples. ABA and mineralogy samples were described in the field according to standard rock coding for the site. It was recognized that the generally low NP and lack of carbonate as well as the low AP could add challenges to predicting the potential for acid generation for this project. Thus, a particular focus on the non-carbonate mineralogy was important.

For the 2012 waste rock drilling and sampling program sampling density for ABA analysis was increased slightly (~5-8 m) due to relatively low intersected rock volume afforded by this program from the relatively widely spaced boreholes. In addition, continuous sampling of each of the 2012 boreholes was completed at approximately 2m intervals with analysis for total sulphur and metals to assess down-hole continuity of mineralization in the waste units sampled.

In total 776 ABA and 376 mineralogy (MIN) samples were collected. For the 2012 program an additional 259 samples were collected for the continuous sampling described above. Samples were inventoried, packed and shipped to SGS Laboratories at Lakefield, ON for sample preparation and analysis. A summary of the numbers of samples and analyses completed is provided in Table 3-1. Analytical methods are summarized in the following sections.

The spatial distribution of the ABA sample set throughout the final Mary River Deposit 1 pit is provided in Figures 3-1 and 3-2.

3.1.2 Acid Base Accounting

ABA testing methods were applied to assess the acid generation and neutralization potential of the geologic material. The testing techniques and calculations are outlined below:

Paste pH

Paste pH is a method used to assess the immediate balance of acidity / alkalinity of a sample. Paste pH is one of the principal drivers indicating solubility for many trace elements and metals

in water. The paste pH is measured from the supernatant following mixing of one part sample and one part de-ionized water.

Forms of Sulphur and Acid Potential (AP)

Sulphur in a geologic sample can be in the form of sulphide sulphur, acid-leachable sulphate, acid-insoluble sulphate, organic sulphur, elemental sulphur, and occasionally other forms of sulphur. Part of ABA testing quantifies the total sulphur, leachable sulphate sulphur and sulphide sulphur content. Total sulphur in the samples was determined by the Leco carbon/sulphur induction furnace method. Sulphate sulphur was determined by dilute hydrochloric acid digestion and colorimetry. Sulphide sulphur was calculated as the difference between total sulphur and sulphate sulphur. The acid potential (AP) is a measure of a samples potential to generate acidity primarily due to oxidation of sulphide-bearing minerals. Sulphide sulphur (as determined here by difference) was used to estimate AP.

For this study, where a sample had no measurable sulphur content (i.e., less than the method detection limit of 0.01%) and thus the AP value was less than detection, a minimum value of 0.31 kg CaCO₃/tonne was assumed and substituted for the AP.

Forms of Neutralization Potential (NP)

The neutralization potential (NP) is the measure of the ability of a sample to neutralize a known volume of acid during a short exposure period. The amount of NP was determined using the Modified Sobek method which represents the NP as determined empirically in the prescribed acidification/titration test (hereafter NP). Measurement of inorganic carbon provides an estimate of the NP attributable to carbonate minerals (hereafter CarbNP). For this work total carbon was determined by Leco analysis and inorganic carbon (as carbonate) was determined following the pyrolysis Leco method.

Carbonate NP values were calculated from total inorganic carbon results with the exception of 2010 samples which were calculated from total carbon results. Inconsistencies were identified in 2010 total inorganic carbon results (see Section 4.1). Specifically it was identified that 5% of the inorganic carbon results exceeded total carbon results for this data set.

Neutralization Potential Ratio (NPR)

The NPR value is a widely accepted criterion to characterize the potential of geologic materials to produce net acidity. Values less than one indicate that the AP exceeds NP, and values greater than one indicate that a sample has excess NP. As previously described, an initial practical screening value separating PAG rock from NPAG is an NPR value of 2 (MEND 2009). Values of NPR between 1 and 2 are considered to have an uncertain acid generating potential, whereas rock with NPR<1 are considered to be likely acid generating.

3.1.3 Net Acid Generation (NAG) Test and NAG Leachate Analysis

The single addition NAG test was conducted on selected mine rock samples, and is a complimentary test to ABA which provides additional assessment of the potential to generate acidity. Hydrogen peroxide was applied to rapidly oxidize sulphide minerals in a sample to determine if it has enough neutralization capacity to buffer the acidity generated during sulphide oxidation. Approximately 2.5 g of pulverized sample was reacted with 250 mL of 15% hydrogen peroxide at room temperature until effervescence ceased. The sample was then heated for a minimum of two hours and boiled rapidly for several minutes to decompose remaining peroxide. De-ionized water was added to the sample to bring the final volume to 250 mL. The resulting pH of this solution is measured and referred to as the NAG_{pH} . Values for NAG_{pH} greater than 4.5 indicate that a sample has little potential to produce net acidity in the future, whereas values less than 4.5 suggest that the sample has the potential to produce net acidity.

Selected samples with elevated sulphur content (>1%) were additionally analysed by the sequential NAG test that sequentially repeats the single addition NAG test to ensure all sulphide is reacted during testing.

For the 2011 sampling program, elemental analysis of the leachate from the NAG tests was also completed on each sample with $\text{NPR} < 2$ and/or $\text{NAG}_{\text{pH}} < 4.5$. A few NPAG samples with mid-range AP and NP for the data set were also included for comparison. The leachates were analyzed for pH, acidity, alkalinity, sulphate, and dissolved metals/elements by ICP/OES (major elements) or ICP/MS (minor and trace elements).

The concentrations reported in NAG leachates are not comparable to any regulatory guidance limits or criteria. Rather the test provides an assessment of metal release as a result of induced peroxide oxidation of the sample. The NAG leachate test was included in 2011 work largely to provide additional data for use in generating a simulated PAG water quality to be used in modeling since no PAG water quality was available from on-going kinetic tests at the time.

3.1.4 Elemental Analyses

Elemental analysis was used to quantify the metals content in the rock samples by aqua regia digestion. Quantification of major elements was conducted by Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) and minor elements determined by Inductively Coupled Plasma Mass Spectrometry (ICP-MS). Digestion by aqua regia is considered a near total digestion as the majority of minerals in the rocks are dissolved (including sulphides and carbonates) with the exception of some resistant minerals such as silicates that may only be partially digested. Dissolution of most environmentally significant metal phases is achieved by this technique.

A subset of samples (10) also underwent a four acid digest which is considered a more complete digestion than aqua regia. This stronger digestion in some instances has the potential to extract higher concentrations of some metals; however, these will in general be related to a more complete digestion of weathering resistant phases (silicates).

3.1.5 Shake Flask Extraction

Leachable metal tests are used to assess the presence of potentially soluble elements and their release during initial stages of weathering. The leachable metal test completed was the SFE test conducted using a 3:1 de-ionized water to solid ratio agitated for 24 hours. The resulting leachates were analyzed for pH, and dissolved metals by ICP/OES (major elements) or ICP/MS (minor/trace elements).

SFE testing was completed on 113 samples from the 2010 and 2011 sampling programs. Samples with typical and enriched concentrations were chosen for analysis among different rock types.

Analysis of leachable metals by shake flask extraction (SFE) testing on selected mine rock samples was completed to provide an indication of the potential release of soluble metals during initial stages of weathering. The SFE testing was conducted using a 3:1 de-ionized water to solid ratio agitated for 24 hours. The resulting leachates were analyzed for pH, conductivity, hardness, sulphate and dissolved metals.

3.1.6 Mine Rock Stockpile Monitoring

In order to better assess actual site drainage quality, AMEC has also evaluated site drainage data collected and analysed by Baffinland. Monitoring of runoff and seepage from ore stockpiles was completed by Baffinland between 2008 and 2010. The monitoring data is limited to the short summer period in a given year due to the short annual melt and runoff period at the site. The existing stockpiles at the site include the following:

- Weathered ore and minor waste rock excavated from the surface of Deposit No. 1 (adjacent to the bulk sample pit);
- Lump and fine ore from bulk sample pit of Deposit No. 1 (site of crusher); and
- Ore grade material stored at Milne Inlet.

Initial data collected in 2008 was for surface seepage and runoff collected directly at surface. For 2009 and 2011 some locations were monitored by sampling within the active layer in the shallow subsurface. Water was sampled from a corner of the waste rock/weathered ore stockpile in 2009 to 2011. Test pits were installed to the base of the active layer around the ore stored at the bulk sample crushing facility in 2009. Samples of drainage into these pits were collected in 2009 to 2011. In addition, two field lysimeters were constructed in the vicinity of the crusher stockpile in August 2010 by placing lump and fine ore on a geosynthetic liner. This allowed direct sampling of drainage from each of these materials. Three drive points were installed in 2010 to the base of the active layer around the ore-grade material stored at Milne Inlet.

In addition, a natural seep from the vicinity of the bulk sample pit has also been sampled on four occasions.

3.1.7 Mineralogy

An original set of 20 samples (2011) and a follow up set of 28 samples (2013) were selected for detailed mineralogical characterization and submitted to Rod Johnson & Associates for analysis using optical microscopy, Rietveld XRD and Scanning Electron Microscopy (SEM) with EDS analysis. The samples were selected to cover a range of lithologies, waste types and ABA characteristics. Preliminary results for the 2013 mineralogy work are incorporated in this report with a number of samples in process.

In addition, two humidity cells were subsampled in December 2013. These samples are currently undergoing mineral liberation analysis (MLA). This technique uses automated scanning electron microscopic techniques to quantify mineral quantities and degree of surface exposure within the crushed material. The objective of this work is to provide a higher level of understanding of mineral forms and textures, and particularly the fraction of sulphide exposed within the humidity cell sample. It is expected this could add to the understanding of the prolonged neutral drainage and low sulphate release rates thus far observed in laboratory tests for mine rock at this site. It is planned to incorporate these results and the full 2013 mineralogical analyses into a future update of this report.

3.2 Kinetic Testing

A set of samples were selected for humidity cell analysis based on the 2010 static testing program. The samples for humidity cell testing were selected primarily on the basis of refining the limits of PAG and non-PAG materials and to better understand the effectiveness of non-carbonate NP in limiting ARD. In addition, the specific samples were selected for their spatial location in the deposit and in relation to previous humidity cell testing completed by Knight Piésold. This review has confirmed that all samples are well distributed spatially across the deposit.

3.2.1 Standard Humidity Cells

The purpose of testing using standard humidity cells (herein referred to as 'humidity cells') was to assess the ARD on-set time of PAG samples with different ranges of AP and NP contents. A second objective was to more carefully assess the threshold between PAG and non-PAG materials, which have been defined only on the basis of ABA static testing and assuming all materials with an NPR of <2 are PAG. Humidity cell testing of materials with an NPR between 1 and 2 may provide better information on what the appropriate NPR threshold to segregate acid generating from non-acid generating rock will be and how effective categorization of PAG and non-PAG on the basis of NP is.

A humidity cell program was previously conducted for 53 weeks on ten rock samples from the Mary River project in early 2008 (Knight Piésold, 2008). Five of the samples each represented a single lithology, while the others were of mixed lithology or consisted of composites of two or more lithologies. In addition, one of the samples had a sulphide content of 5% which is considered relatively high for mine rock at the project site.

The current standard humidity cell testing program was initiated in May 2011. Selection of samples was primarily focused on the three main lithologies (gneiss, schist and volcanic tuff) and covered a range of sulphide content. An upper sulphide content limit of around 1% was considered to be representative of most of the PAG rocks based on available ABA data. Representative rock samples with NPR less than 2 were selected from the major hanging wall and footwall lithologies. Where a limited number of samples existed with NPR values between 1 and 2, a sample with the NPR slightly higher than 2 was also selected. Static test results for the selected samples are presented in Table 3-1. Nine rock samples representing major lithologies of hanging wall and footwall rock were selected for humidity cell testing based on the waste subdivisions available at the time. Samples have since been categorized according to the updated waste type subdivisions (FW, FWS, HW, HWS, IW). A single sample of magnetite dominant ore has also been included in the program.

3.2.2 Neutralization Potential Depleted Humidity Cells

The results of ABA testing on the Mary River Deposit No.1 samples indicated that the carbonate NP of the samples was generally lower compared to the modified Sobek NP. A significant number of samples (approximately 76%) had carbonate NP that was 20% or less than the Sobek NP. These results suggest silicate minerals as the long-term source of NP when the carbonate minerals are exhausted. Silicate minerals are able to buffer the mine waste pH at near neutral conditions under low acid generation rates (Mattson, 2009; Miller et al., 2010); however, effectiveness in this regard is dependent on the material and particularly the specific minerals present, and sulphide reaction rates.

Therefore, specialized NP-depleted humidity cells were initiated in September 2011. These cells are being operated to assess the drainage chemistry of waste rock devoid of carbonate neutralization capacity. Samples were subjected to a sodium acetate leach prior to placement in the cells in order to dissolve carbonate minerals prior to testing.

Eight samples from the major lithologies (gneiss, schist and volcanic tuff) were selected for the NP-depleted humidity cells (Table 3-1).

3.2.3 Depletion Calculations

Sulphide depletion time was calculated by dividing total sulphide sulphur content by the average sulphur release rate (steady state release rate of sulphate). Depletion time for NP was conservatively estimated by dividing the total carbonate content by the sum of the average steady state release rate of Ca plus Mg on a molar basis.

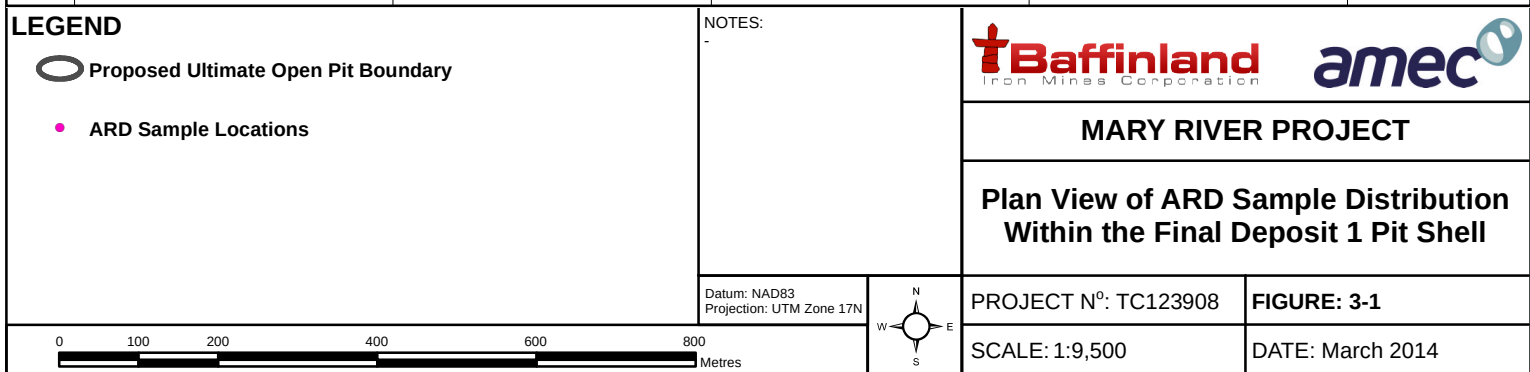
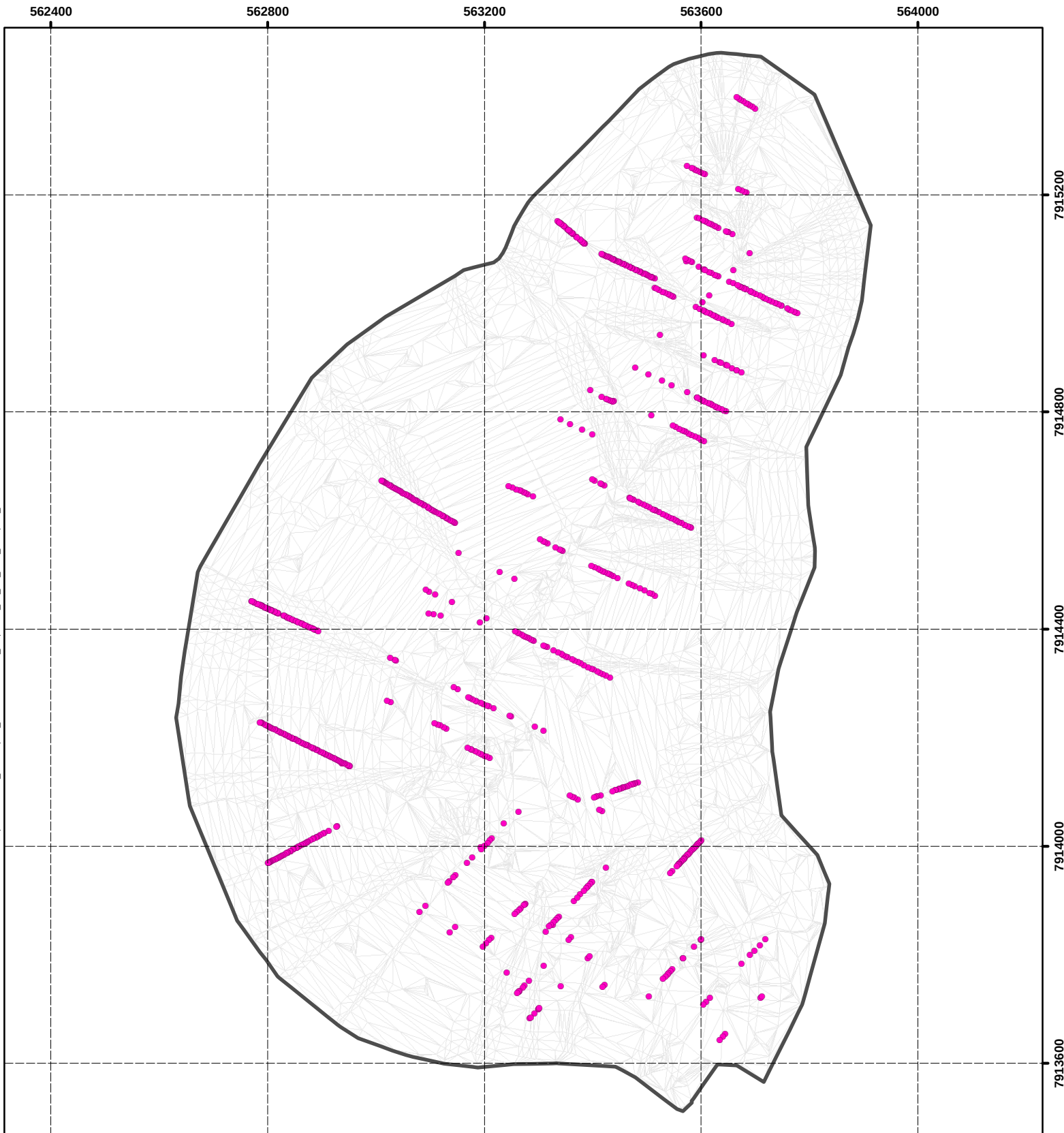
Table 3-1: Summary of Analyses Completed

Waste Classification	ABA	NAG	Sequential NAG	Metals - Aqua Regia		Metals - Four Acid	SFE	NAG Leachate	Whole Rock	Rietveld XRD	Qualitative XRD	Detailed Mineralogy	Humidity Cells
				ABA	2012 Continuous*								
All	776	776	4	776	489	10	113	94	376	24**	376	49	17**
Footwall Schist	143	143	-	143	78	2	24	18	74	7	74	9	5
Footwall Waste	271	271	1	271	361	3	19	7	45	7	45	14	4
Hanging Wall Schist	270	270	3	270	50	2	50	56	187	6	187	16	5
Hanging Wall Waste	62	62	-	62	-	2	11	2	47	1	47	5	1
Mineralized Waste	12	12	-	12	-	1	6	6	13	2	13	5	1
Internal Waste	18	18	-	18	-	-	3	5	10	-	10	-	-

* 2012 Downhole Mineralization Continuity Assessment

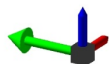
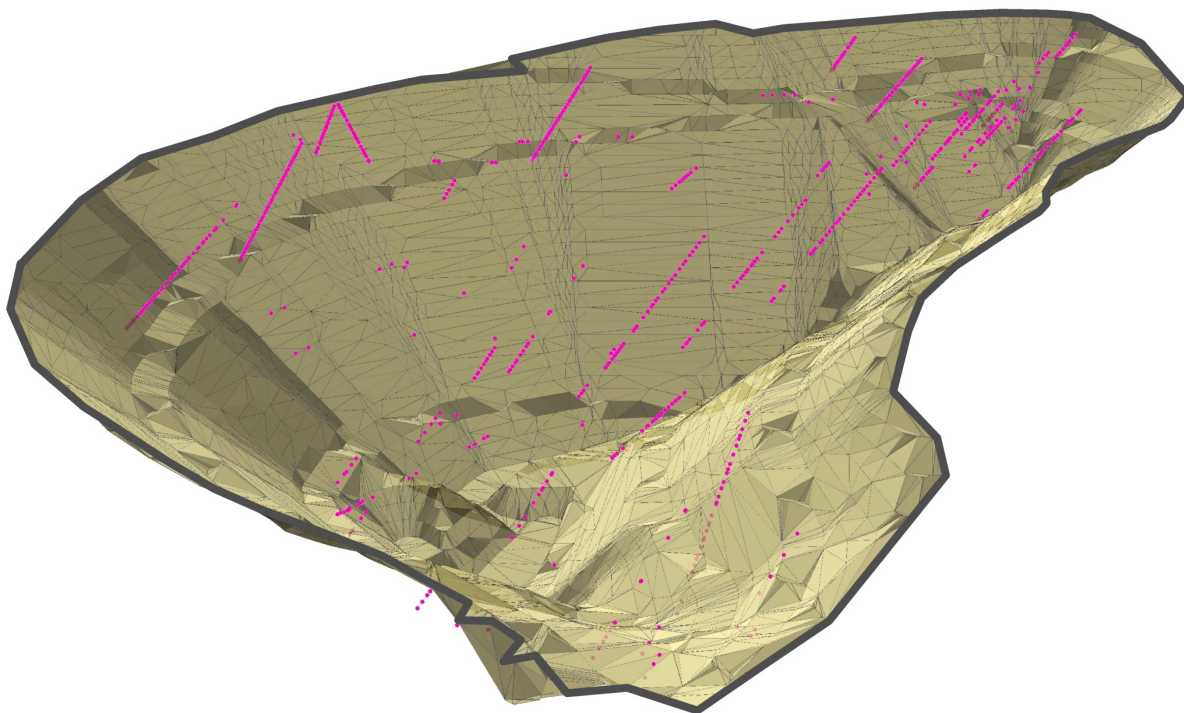
** Includes one ore zone sample previously identified as hanging wall waste

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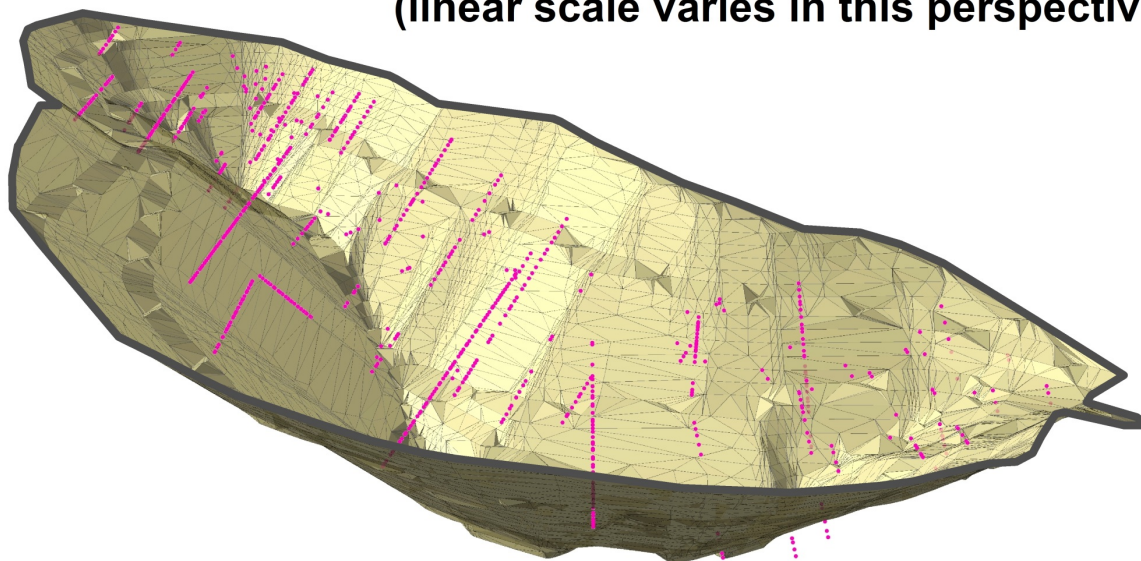




Three-Dimensional Looking Northwest (linear scale varies in this perspective)



Three-Dimensional Looking Northeast (linear scale varies in this perspective)



LEGEND

○ Proposed Ultimate Open Pit Boundary

● ARD Sample Locations

NOTES:

-

Datum: NAD83
Projection: UTM Zone 17N

Baffinland
Iron Mines Corporation

amec

MARY RIVER PROJECT

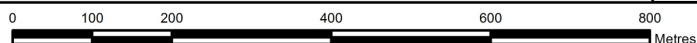
**Oblique View of ARD Sample Distribution
Within the Final Deposit 1 Pit Shell**

PROJECT N^o: TC123908

FIGURE: 3-2

SCALE: 1:9,500

DATE: March 2014



4.0 RESULTS

The following sections present and discuss the static and kinetic testing results carried out on waste rock samples from the project. The overall analysis has been evaluated on the basis of waste rock subdivisions (footwall schist, footwall waste, hanging wall schist, hanging wall waste, mineralized waste and internal waste). Descriptions of the waste rock classifications can be found in Table 1-1.

4.1 Static Testing

Detailed results of static testing can be found in Appendix A.

4.1.1 Acid Base Accounting

A statistical summary of all 2010 to 2012 ABA results is presented in Table 4-1. Detailed ABA and NAG test analytical results for all samples can be found in Appendix A.

All rock samples (n=776) had paste pH values between 3.8 and 10, with a median value of 9.0. Concentrations of total sulphur of the entire dataset ranged from the minimum detection limit (MDL) of 0.005 to 22%. Sulphide sulphur contents range from MDL (0.01%) to 22%. Comparison of total sulphur to sulphide (Figure 4-1) suggests sulphide is the primary form of sulphur present, especially for total sulphur content >0.2%. At total sulphur concentrations below 0.2% increasing scatter is observed in the data that suggests a possible increasing component of non-sulphide sulphur in some samples or analytical variability as minimum detection limit is approached.

A comparison of carbonate carbon to total carbon confirms that carbonate is the predominant form of carbon in the samples. It was identified that a number of samples exhibited carbonate carbon in excess of total carbon suggesting an unknown analytical bias for some samples (Figure 4-2). Further inspection revealed that this bias pertained mostly to a small subset of the 2010 samples only (Figure 4-3). Therefore, for the 2010 sample set, total carbon was used to calculate CarbNP. CarbNP values ranged from 0.083 to 514 kg CaCO₃/t with mean and median values of 11 and 0.69 kg CaCO₃/t, respectively.

Neutralization potential (NP) of the entire dataset ranged from -18 to 487 kg CaCO₃/t with mean and median values of 21 and 15 kg CaCO₃/t, respectively (Table 4-1). A comparison of NP and CarbNP is provided in Figure 4-4. Overall, there were three trends observed in the relationship. Samples with similar NP and CarbNP were interpreted to be carbonate dominated (calcite or dolomite). Samples with CarbNP greater than NP were interpreted to contain iron or manganese carbonates (siderite or ankerite). Samples that exhibited NP greater than CarbNP were classified as non-carbonate dominated (e.g., silicates) and represent the majority of samples tested. Typically non-carbonate dominated samples exhibit NP less than 50 kg CaCO₃/t.

Seven of the 776 samples exhibited either acidic paste pH, a negative NP or both (Table 4-2). The samples were apparently anomalous and included three hangingwall schist, two internal

waste, one mineralized waste and one footwall schist. One of these samples contained very low sulphur and no observations in borehole logs to indicate the reason for the negative NP. The remaining six samples all were within or stratigraphically just above High Grade Magnetite Iron Formation. They also show evidence of oxidation in the form of limonitic alteration or fillings and the presence of sulphate sulphur.

These samples though stratigraphically similar are widely spaced and limited in extent. Where logged in detail they represent features on the order of 5 to 10 m or less in thickness, do not appear to be continuous and are from widely spaced boreholes along the deposit (between 200 m and 1800 m apart). Though identified in only these few samples (<1% of the database), these characteristics are notable since they suggest short-term risk of ML/ARD.

The calculated NPR values for the entire ABA database ranged from very low (0.00003) to 621 with mean and median values of 2.7 and 26, respectively (Table 4-1). CarbNPR values ranged from 0.0004 to 571 with mean and median values of 1.4 and 1.9, respectively.

Based on the total dataset, 10% of samples had an NPR less than 1 and 85% had an NPR greater than 2 (Table 4-3; Figure 4-5 and 4-6). Forty-three percent (43%) of samples had CarbNPR <1 and 49% of samples had CarbNPR >2 (Figure 4-7). Based on MEND guidelines, approximately 15% of the samples would be classified as PAG based on NPR <2.

In general, samples with NPR <1 had NAG_{pH} values near or less than 4.5 (Figure 4-8) indicating a potential to produce acidity in the future. Samples with NPR >2 had NAG_{pH} values greater than 4.5 indicating little potential to produce acidity in the future. Samples with NPR between 1 and 2 had varying NAG_{pH} values, classifying them as uncertain in terms of future acid generation potential. There were several outlier samples that had NPR <1 and NAG_{pH} values greater than 4.5 (8 of 776 samples) or had NPR >2 and NAG_{pH} values less than 4.5 (13 of 776 samples). These samples are also classified as having uncertain acid generation potential in the future. Overall, NAG_{pH} is reasonably consistent with ABA data in classifying the acid generating character of the samples on the basis of an NPR threshold of 2.

The following sections discuss the ABA results by waste classification.

4.1.1.1 Footwall Schist

A total of 143 footwall schist samples have been analyzed (Table 4-1 and Appendix A) with results summarized below.

The paste pH ranged from 4.8 to 10 with a median paste pH of 8.9.

Concentrations of total sulphur in the footwall schist samples ranged from 0.005 to 5.6%, with mean and median values of 0.29 and 0.044%, respectively. Sulphide was the primary form of sulphur in the majority of samples.

The AP ranged from 0.31 to 130 kg CaCO₃/t with mean and median values of 7.0 and 0.31 kg CaCO₃/t, respectively.

The NP of footwall schist samples ranged from 4.6 to 71 kg CaCO₃/t, with a mean and median of 16 and 13 kg CaCO₃/t, respectively. The CarbNP varied from 0.083 to 178 kg CaCO₃/t with mean and median values of 8.5 and 0.50 kg CaCO₃/t, respectively. All three types of samples in terms of NP form (carbonate, Fe carbonate and non-carbonate) are represented in the results (Figure 4-4), with non-carbonate dominated samples in the majority.

The NPR values of the footwall schist samples varied from 0.21 to 176 with mean and median values of 2.3 and 23, respectively. CarbNPR values ranged from 0.034 to 345 with mean and median values of 1.2 and 1.0, respectively.

Approximately 20% of the samples (29 of 143) had NPR <2 and 10% of samples (15 of 143) had NPR <1. Some 59% of the samples (85 of 143) had a CarbNPR <2 and 50% of samples (72 of 143) had a CarbNPR <1.

4.1.1.2 Footwall Waste

A total of 272 footwall waste samples have been analyzed (Table 4-1 and Appendix A) with results summarized below.

The paste pH ranged from 5.5 to 10 with a median paste pH of 10.

Concentrations of total sulphur in the footwall waste samples ranged from 0.005 to 1.8%, with mean and median values of 0.069 and 0.022%, respectively. Sulphide was the primary form of sulphur in the majority of samples.

The AP ranged from 0.31 to 43 kg CaCO₃/t with mean and median values of 1.4 and 0.31 kg CaCO₃/t, respectively.

The NP of footwall waste samples ranged from 2.9 to 93 kg CaCO₃/t, with a mean and median of 16 and 13 kg CaCO₃/t, respectively. The CarbNP varied from 0.083 to 81 kg CaCO₃/t with mean and median values of 4.4 and 1.2 kg CaCO₃/t, respectively. Non-carbonate dominated samples were in the majority with a small subset of carbonate dominated samples observed. No Fe carbonate dominated samples were observed.

The NPR values of the footwall waste samples varied from 0.50 to 298 with mean and median values of 12 and 34, respectively. CarbNPR values ranged from 0.002 to 277 with mean and median values of 3.2 and 4.3, respectively.

Approximately 4% of the samples (10 of 272) had an NPR <2 and 2% of samples (6 of 272) had an NPR <1. Some 33% of the samples (91 of 272) had a CarbNPR <2 and 23% of samples (64 of 272) had a CarbNPR <1.

4.1.1.3 Hanging Wall Schist

A total of 270 hanging wall schist samples have been analyzed (Table 4-1 and Appendix A) with results summarized below.

The paste pH ranged from 4.3 to 10 with a median paste pH of 8.4.

Concentrations of total sulphur in the hanging wall schist samples ranged from 0.005 to 22%, with mean and median values of 0.60 and 0.12%, respectively. Sulphide was the primary form of sulphur in the majority of samples.

The AP ranged from 0.31 to 693 kg CaCO₃/t with mean and median values of 15 and 1.8 kg CaCO₃/t, respectively.

The NP of hanging wall schist samples ranged from -6.5 to 487 kg CaCO₃/t, with a mean and median of 26 and 18 kg CaCO₃/t, respectively. The CarbNP varied from 0.083 to 514 kg CaCO₃/t with mean and median values of 17 and 0.72 kg CaCO₃/t, respectively. All three types of samples in terms of NP form (carbonate, Fe carbonate and non-carbonate) are represented in the results (Figure 4-4), with non-carbonate dominated samples in the majority.

The NPR values of the hanging wall schist samples varied from very low (0.00003) to 621 with mean and median values of 1.7 and 13, respectively. CarbNPR values ranged from 0.0004 to 571 with mean and median values of 1.1 and 0.37, respectively.

Approximately 24% of the samples (64 of 270) had an NPR <2 and 17% of samples (46 of 270) had an NPR <1. Some 63% of the samples (170 of 270) had a CarbNPR <2 and 58% of samples (156 of 270) had a CarbNPR <1.

4.1.1.4 Hanging Wall Waste

A total of 62 hanging wall waste samples have been analyzed (Table 4-1 and Appendix A) with results summarized below.

The paste pH ranged from 7.7 to 10 with a median paste pH of 8.7.

Concentrations of total sulphur in the hanging wall waste samples ranged from 0.005 to 0.63%, with mean and median values of 0.074 and 0.039%, respectively. Sulphide was the primary form of sulphur in the majority of samples.

The AP ranged from 0.31 to 17 kg CaCO₃/t with mean and median values of 1.5 and 0.31 kg CaCO₃/t, respectively.

The NP of hanging wall waste samples ranged from 7.7 to 129 kg CaCO₃/t, with a mean and median of 29 and 20 kg CaCO₃/t, respectively. The CarbNP varied from 0.083 to 89 kg CaCO₃/t with mean and median values of 13 and 0.75 kg CaCO₃/t, respectively. Non-carbonate

dominated samples were in the majority with a small subset of carbonate dominated samples observed. A single Fe carbonate dominated sample was also observed.

The NPR values of the hanging wall waste samples varied from 2.3 to 413 with mean and median values of 20 and 44, respectively. CarbNPR values ranged from 0.035 to 285 with mean and median values of 8.7 and 1.9, respectively.

None of the hangingwall waste samples (0 of 62) had an NPR <2. Some 52% of the samples (32 of 862) had a CarbNPR <2 and 34% of samples (21 of 62) had a CarbNPR <1.

4.1.1.5 Internal Waste

A total of 12 internal waste samples have been analyzed (Table 4-1 and Appendix A) with results summarized below.

The paste pH ranged from 3.9 to 9.5 with a median paste pH of 8.1.

Concentrations of total sulphur in the internal waste samples ranged from 0.0080 to 3.7%, with mean and median values of 0.61 and 0.083%, respectively. Sulphide was the primary form of sulphur in the majority of samples.

The AP ranged from 0.31 to 83 kg CaCO₃/t with mean and median values of 14 and 1.4 kg CaCO₃/t, respectively.

The NP of internal waste samples ranged from -18 to 44 kg CaCO₃/t, with mean and median values of 14 and 10 kg CaCO₃/t, respectively. The CarbNP varied from 0.083 to 57 kg CaCO₃/t with mean and median values of 7.7 and 0.22 kg CaCO₃/t, respectively. Most samples were non-carbonate dominated with a single Fe carbonate dominated sample observed.

The NPR values of the internal waste samples varied from 0.0001 to 141 with mean and median values of 1.0 and 12, respectively. CarbNPR values ranged from 0.002 to 25 with mean and median values of 0.54 and 0.32, respectively.

Approximately 42% of the samples (5 of 12) had an NPR <2 and 33% of samples (4 of 12) had an NPR <1. Some 67% of the samples (8 of 12) had a CarbNPR <2 and all of these samples had CarbNPR <1.

4.1.1.6 Mineralized Waste

A total of 17 mineralized waste samples have been analyzed (Table 4-1 and Appendix A) with results summarized below.

The paste pH ranged from 3.8 to 10 with a median paste pH of 8.2.

Concentrations of total sulphur in the mineralized waste samples ranged from 0.021 to 4.4%, with mean and median values of 0.81 and 0.33%, respectively. Sulphide was the primary form of sulphur in the majority of samples.

The AP ranged from 0.31 to 127 kg CaCO₃/t with mean and median values of 17 and 5.5 kg CaCO₃/t, respectively.

The NP of mineralized waste samples ranged from -5.7 to 92 kg CaCO₃/t, with a mean and median of 29 and 21 kg CaCO₃/t, respectively. The CarbNP varied from 0.083 to 356 kg CaCO₃/t with mean and median values of 41 and 1.3 kg CaCO₃/t, respectively. All three types of samples in terms of NP form (carbonate, Fe carbonate and non-carbonate) are represented in the results (Figure 4-4), with non-carbonate dominated samples in the majority.

The NPR values of the mineralized waste samples varied from 0.004 to 42 with mean and median values of 1.7 and 4.3, respectively. CarbNPR values ranged from 0.0007 to 73 with mean and median values of 2.4 and 0.29, respectively.

Approximately 39% of the samples (7 of 17) had an NPR <2 and 28% of samples (5 of 17) had an NPR <1. Some 78% of the samples (13 of 17) had a CarbNPR <2 and 72% of samples (12 of 17) had a CarbNPR <1.

4.1.2 Estimation of PAG Tonnage

For planning purposes the tonnage of PAG waste rock was based on the proportion of samples by waste type with an NPR <2 (Table 4-4). Based on this the overall estimated PAG tonnage is 63 Mt or 11% of the total waste rock tonnage.

4.1.3 Elemental Content

A statistical summary of the elemental content by waste type is provided in Table 4-5. For screening purposes, elemental content of the mine rock samples were compared to 10 times average continental crust values (Price, 1997) (see Table 4-6). Complete elemental content results are provided in Appendix A.

Concentrations of selenium have been detected above the 10 times crustal abundance screening value. It is noted that the MDL for selenium (0.7 µg/g) is greater than the 10 times crustal abundance value of 0.5 µg/g. A total of 97 of the 776 samples were greater than the MDL for selenium which also exceeded the screening value.

Concentrations of Bi exceeded the screening value of 0.25 µg/g for 17% of the samples (134 of 776 samples). Bi exceedances of the 10 times criteria for the various waste types on a percentage basis are lowest in the distal waste types (hanging wall and footwall waste) and highest proximal to the ore (e.g., mineralized waste, footwall schist and hanging wall schist).

Several other elements including gold, arsenic and sulphur had 4-6% of their concentrations above their respective screening values. Silver, cadmium, chromium, iron, manganese, nickel, lead, antimony and thallium had 1-3% of their samples concentrations above the applicable screening values. Lithium, tin and zinc had less than three exceedances of their respective screening values.

Elements that were elevated varied among the waste types. The variations in distribution of these elements (by waste classification) are identified in Table 4-4.

4.1.3.1 Elemental Analysis by Four Acid Digest

To better understand the distribution of metals within the mine rock, a subset of samples (10) from the 2011 program were analysed for elements using the stronger four acid digest. This digestion technique is a closer to total digestion as it will dissolve most of the resistant silicate minerals that are incompletely dissolved by the aqua regia digestion. The 10 samples were compared to their aqua regia counterparts (Table 4-7).

For most elements, the four acid digestion did result in higher concentrations than the aqua regia digestion; however, generally the concentrations were still below the ten times crustal abundance value outlined in Price (1997). Arsenic, antimony, gold and silver had two or three samples, respectively, that had four acid leach concentrations that were at least one order of magnitude higher than their aqua regia counterparts and exceeded the ten times crustal abundance. One sample exhibited iron and manganese four acid concentrations that exceeded the ten times crustal abundance value and were approximately an order of magnitude higher than the aqua regia leached concentrations.

These results identify the likely presence of a recalcitrant source or sources of some elements in some samples that is poorly released in the aqua regia leach. These elements are inferred to be present as fine inclusions in resistant minerals (e.g., quartz and other silicates) or in solid solution in resistant minerals. Such an element reservoir would have very low environmental availability.

4.1.4 Leachable Metals

4.1.4.1 Shake Flask Extraction

The SFE testing results are presented in Appendix A along with a comparison to regulated MMER effluent discharge values and the more stringent CEQG-PAL, and CDWQ values. The comparisons are provided for reference purposes only. Table 4-8 presents a summary of results that have exceeded MMER, CEQG-PAL or CDWQ limits by waste type.

Most samples exhibited a neutral to alkaline pH with only 5 of 113 samples reporting a pH less than the MMER criteria. Seven of 113 samples reported a pH less than the CEQG-PAL and CDWQ guidelines 6.5. A number of samples exceed the upper pH limits specified by the preceding guidelines and criteria (pH 9.5, 9.0 and 8.5, respectively); however, these apparently

elevated pH values are a result of the low liquid to solid ratio of the SFE test and the mineralogy of the sample. Dissolved metal concentrations were generally low; however, one sample did exceed the MMER standard for copper and three samples exceeded for nickel. Concentrations of a number of elements were elevated when compared to CEQG-PAL and CDWQ. Iron exceeded the CEQG-PAL and CDWQ guidelines in 35% of samples. Aluminum exceeds the CEQG-PAL guideline in 66% of the samples. Both aluminum and iron are prone to colloidal behaviour and colloids may be less mobile in natural flow systems than observed in this laboratory test. Cadmium, chromium and selenium also exceeded CEQG-PAL values in 8%, 17% and 21% of samples, respectively. Arsenic, copper, molybdenum, nickel, lead and zinc also all exceeded their respective CEQG-PAL values in 5% or less of the samples. Arsenic, cadmium, copper, lead and selenium exceeded the CDWQ guidelines in 4% or less of samples.

A number of samples tested exhibited an acidic pH. Generally this was consistent with samples that also exhibited negative paste pH (Table 4-2). Two samples exhibited a mildly acidic pH (~pH 5.5) in the SFE test, but had neutral paste pHs. Both of these samples contain high sulphide content for this project (22% and 3.8%). The slightly depressed pH in the SFE test may be a result of the relatively aggressive conditions of the test on these high sulphide low NP samples (agitation and reaction for 24 hours).

Among the anomalous samples previously identified a number exhibited elevated Ni leaching. In addition, one sample with 1.4 and 0.4% sulphide and sulphate, respectively, exhibited high Ni leaching in the SFE test at 7.1 mg/L (Table 4-2).

4.1.4.2 Baffinland Stockpile Monitoring

Results of Baffinland drainage and seepage monitoring related to the 2008 ore bulk sampling program are provided in Appendix C. For monitoring adjacent to stockpiles, in general, results indicated circum-neutral (ca. pH 7) drainage with little evidence of metal leaching adjacent to these stockpiles and no concentrations reported in excess of MMER limits. Samples from an intermittent seep from a rock face near the Bulk Sample pit also had very low metal concentrations.

Analysis of drainage from two lysimeters constructed in 2010 within ore stockpile material (exposed since the 2008 bulk sampling program) indicated the presence of elevated sulphate and some metals (notably Mn and Ni); however, this material contained non-representative ore with a clear potential to negatively influence drainage quality; the relationship of this drainage data to the waste rock lithologies is also uncertain.

Metal concentrations for the lysimeters were all below MMER limits. Concentrations of manganese and nickel were noticeably elevated in comparison to samples from other stockpile sampling data. A single high Fe result was noted in an initial unfiltered sample from the lump ore stockpile. This may indicate the presence of fine particulate iron or colloidal iron that was subsequently attenuated within the stockpile during later sampling events. The elevated manganese may be related to non-representative manganese ore used in bed material for

construction of the crusher pad at this location. This non-representative manganese ore contains a high fraction of Mn in siderite (iron carbonate) that is expected to be relatively soluble. The nickel may be similarly related to this non-representative ore or perhaps results from sulphide oxidation that may be occurring in this ore stockpile. Higher concentrations of cadmium (<0.0006 mg/L) than noted elsewhere were also observed in drainage from both lysimeters.

4.1.4.3 NAG Leachate

Metals analysis of the leachate from NAG tests for selected samples was also completed on each sample with NPR <2 and/or NAGpH <4.5 . A few non-PAG samples with mid-range AP and NP for the data set were also included for comparison. Results are presented in Appendix A.

Released metal loads in PAG materials tested typically include elevated concentrations of Co, Cu, Ni and Zn consistent with the principal trace sulphides identified in mineralogical studies (see below).

4.2 Downhole Analysis

The following sections outline the results of the down-hole continuity assessment for the five 2012 drillholes. The locations of the five drillholes are shown on Figure 1-1. The assessment included evaluation of the trends for NPR, S, Fe, Mn, Cr, Cu, Pb, Zn, Ni, Co, As, Bi and Mo. The set of metals chosen included common metals of environmental concern that were consistently above detection limits.

4.2.1 MR1-12-222

Drillhole MR1-12-222 was 287 m and intersected zones of hanging wall schist and ore overlain by a thick layer of overburden (>100 m vertical). The intersected lithology was primarily schist with 25 m of banded iron formation from approximately 173 to 198 m downhole. Trends in NPR, S and selected metal content (Cu, Pb, Zn, Ni, Co, As, Bi and Mo) with drilled depth are presented in Figures 4-9 through 4-12.

NPR values in the schist were primarily classified as non-PAG while the banded iron formation samples were primarily PAG based on available ABA data for the drill hole.

In comparing metal trends to down-hole sulphur content, the relationship varies from distinct metals-sulphur depth association as observed around 150 m depth in schist to weaker metals-sulphur associations with the banded iron formation (173 to 198 m depth). Metal contents including Cr, Cu, Zn, Ni, and Co are distinctly low in the banded iron formation. A very narrow and sharp spike in Cr, Ni and Co is observed just above the S rich signature at 150 m depth. Ni and Co do follow very similar trends with depth albeit at generally low concentrations (<100 and <40 $\mu\text{g/g}$, respectively) except in close vicinity of the ore with concentrations in the range of 300 and 60 $\mu\text{g/g}$, respectively.

4.2.2 MR1-12-223

Drillhole MR1-12-223 was 175 m and intersected zones of footwall schist and footwall waste overlain by a layer of overburden (approximately 10 m vertical). The intersected lithologies were gneiss and schist. Trends in NPR, sulphur by aqua regia and selected metal content (Fe, Mn, Cr, Cu, Pb, Zn, Ni, Co, As, Bi and Mo) with drilled depth are presented in Figures 4-13 through 4-16.

Based on the available ABA data for the hole NPR values downhole were primarily classified as non-PAG with the exception of a 5 m section between 135 and 140 m..

In comparing metal trends to downhole sulphur content, the relationship appears to show a weak metals-sulphur correlation throughout the top 130 m of the hole. The trend strengthens in the footwall waste from approximately 130 m to the end of the hole. Ni and Co exhibit a similar relationship as observed in MR1-12-222 with elevated concentrations in close proximity to ore and generally similar trend with depth.

4.2.3 MR1-12-224

MR1-12-224 was 252 m and intersected zones of ore, footwall schist and footwall waste overlain by a layer of overburden (approximately 10 m vertical). Mine rock lithologies intersected along this hole included schist, gneiss, volcanic tuff and ultramafics. Trends in NPR, sulphur and selected metal content (Fe, Mn, Cr, Cu, Pb, Zn, Ni, Co, As, Bi and Mo) with drilled depth are presented in Figures 4-17 through 4-20.

NPR values downhole were all classified as non-PAG based on the available ABA data for the hole. Sulphur content was consistently low for this hole (rarely >0.1%). The correlation between downhole sulphur content and metals is weak. Metal contents are generally low with the exception of several narrow (~4m wide) metal enriched zones (three Pb rich) two enriched in Cr, Ni and Co ($\pm$ Pb). As described for other boreholes, Ni and Co generally followed similar trends with depth.

4.2.4 MR1-12-225

Drillhole MR1-12-225 was 287 m and intersected zones of footwall schist and footwall waste overlain by a layer of overburden (approximately 10 m vertical). Lithologies intersected along this hole included schist, gneiss and volcanic tuff. Trends in NPR, sulphur and selected metal content (Fe, Mn, Cr, Cu, Pb, Zn, Ni, Co, As, Bi and Mo) with drilled depth are presented in Figures 4-21 through 4-24.

NPR values down the hole were all classified as non-PAG based on the available ABA data for the hole. Sulphur content was consistently low with several narrow single sample spikes of 0.2 to 0.3%. In comparing metal trends to downhole sulphur content there is similarly a weak to no association for most metals. Copper at low concentrations does exhibit a frequent association with the narrow sulphur spikes. Other metal contents are similarly low with generally

only weak to no association with other metal trends with depth. Consistent with other boreholes Ni and Co do follow a similar trend with depth.

4.2.5 MR1-12-226

Drillhole MR1-12-226 was 290 m long and intersected zones of ore, footwall schist and footwall waste overlain by a layer of overburden (approximately 10 m vertical). Mine rock lithologies intersected along this hole included schist, gneiss and amphibolite. Trends in NPR, sulphur and selected metal content (Fe, Mn, Cr, Cu, Pb, Zn, Ni, Co, As, Bi and Mo) with drilled depth are presented in Figures 4-25 through 4-28.

NPR values down the hole were all classified as non-PAG based on the available ABA data for the hole. Sulphur content was consistently low with several narrow single sample spikes of 0.2 to 0.3%. In comparing metal trends to downhole sulphur content there is a weak to no association to approximately 225m depth. Below 225m Cu, Pb and Zn exhibit generally similar trends with depth with peaks that tend to associate with sulphur. Consistent with other boreholes Ni and Co are sometimes elevated adjacent to ore and overall follow a similar trend with depth.

4.2.6 Discussion of Iron Formation

Based on the results of the iron formation trends seen with sulphur in drillhole MR1-12-222 a brief analysis of the High Grade and Banded Iron Formations was completed using the static data discussed in Section 4.1 and the parameters utilized in the down-hole assessment.

The statistical summary of banded iron formation waste rock is provided in Table 4-8 in comparison to statistics for high grade iron formation waste rock and all waste rock. This comparison confirms that with exception of As and Mn, median and 90th percentile concentrations for selected metals of concern (Table 4-9) are consistently lower in the banded iron formation compared to high grade iron formation and all waste rock. Specifically, concentrations of Cr, Cu, Zn, Ni, and Co are approximately 50% lower in banded iron formation than all waste rock. This was the same general relationship observed in the data for MR1-12-222.

4.3 Mineralogy

4.3.1 Rietveld XRD

Mineralogy examination by Rietveld XRD was conducted on 24 samples representing a range in waste rock types and lithologies, and included all samples tested in humidity cells. Rietveld XRD is generally capable of quantifying minerals to a few wt. % and to fractions of a weight % when suitable diffraction conditions exist. Overall, the Rietveld XRD results indicate fairly broad mineralogical variation even among similar rock types. However, the mineral assemblages are those commonly observed in metamorphic rocks. The following sections summarize the overall mineralogical trends among the samples on the basis of the major rock types with specific

discussion of carbonate and sulphide minerals where observed. Detailed results are presented in Appendix A.

4.3.1.1 Gneiss

Seven gneiss samples were analysed. The samples were predominantly quartz-rich (40% to 74% quartz) with a single quartz-poor sample (6.9% quartz). For the quartz-rich samples the next the most abundant minerals were phyllosilicates (muscovite or biotite/phlogopite) and sometimes chlorite. The dominant minerals in the low quartz content sample were phlogopite and two types of chlorite. Garnet, and andalusite were observed in four of seven samples and staurolite was observed in a single sample. Iron oxides (magnetite or maghemite and hematite) were a significant component (2.5 to 18%) in the four samples containing garnet and andalusite. A single gneiss sample contained plagioclase (25%), potassium feldspar (11%) and pyroxene (6%).

Pyrite was detected in two of the gneiss samples (0.6 and 1% pyrite). The sample with 1% pyrite also contained carbonates including calcite (1.9%), the manganese carbonate rhodocrosite (2.1%) and dolomite (0.6%).

4.3.1.2 Metasediment

Three metasediment samples were analysed. Overall mineral compositions were similar to the gneiss samples with lesser quartz (28 to 40%). All three samples contained plagioclase (28 to 54%) and potassium feldspar (2 to 18%). Chlorite was identified at 30% in one sample with none observed in the other two. The two samples that contained no chlorite also contained only 4% or less of biotite or biotite and muscovite combined. Two samples contained the amphibole actinolite (1.3 to 5.7%) and one of these contained magnetite (2.5%).

Pyrite was detected in one of the samples at 0.3%. This sample also contained calcite (0.9%) and dolomite (1.9%).

4.3.1.3 Schist

Six schist samples were analysed. The samples were predominantly quartz-poor (below detection to 9.8% quartz) with a single quartz-rich sample (44% quartz). The samples were generally chlorite-rich (59 to 90% chlorite) with a single sample identified with low chlorite content (17%). Other phyllosilicates were identified in the sample with little chlorite, namely muscovite (23%) and phlogopite (44%). Garnet was detected (21% and 7.7%) in two schist samples. Magnetite was detected (3.2 to 11%) in four of the six samples and was generally accompanied by other oxides (e.g., ilmenite, hematite and spinel). Two schist samples contained no oxides.

Pyrite was detected in three of the six samples at 0.9 to 2.5%. No carbonate minerals were detected in these schist samples.

4.3.1.4 Volcanic Tuff

Six volcanic tuff samples were analysed. These samples exhibited the widest range in mineralogy of the major rock types. Quartz and chlorite were both detected in all of these samples; however the quantities varied. Quartz content among the five samples ranged from 7.1 to 50% and chlorite ranged from 5.1 to 35%. Other major minerals (>20%) observed in the volcanic tuff samples include: talc (two samples), hematite (two samples), the amphibole ferropargasite (two samples), phlogopite (one sample), and plagioclase (one sample).

Pyrite was detected in three of the six samples at 0.7 to 3.3%. Carbonates were detected in four of the six samples including the three samples identified with pyrite.

4.3.1.5 Ore

One magnetite dominant ore sample was analyzed. As expected magnetite was the dominant mineral in this sample (87%) with hematite being the next most abundant mineral (7.6%). Chlorite and quartz were present in minor amounts (4.4 and 1.2%, respectively). This sample contained no detectable carbonate or sulphides.

4.3.2 Qualitative XRD

Qualitative XRD work was done at Queen's University in 2012 on mineralogical samples collected in the 2011 field season. These samples were derived from 10 cm long drill core intervals directly above a corresponding ABA sample, sharing the same lithology (Appendix A).

As expected, lithology plays a larger role in the mineralogy than the waste classification. Minerals that appeared in most samples were quartz and clinochlore. Micas (eg. muscovite, phlogopite and biotite) are also common among the samples. Other major rock forming minerals included feldspars, amphiboles (cummingtonite and hornblende). were also present throughout a variety of lithologies and waste classifications. A variety of garnets and hematite were also present in a number of samples.

Other minerals were more lithology specific, in particular to the banded and high grade iron formation samples. Magnetite and sometimes illite were observed primarily in banded and high grade iron formation samples and willemseite (a nickel bearing mineral in the talc group) was found almost exclusively in the banded and high grade iron formation samples. It is notable that samples identified with willemseite were not anomalous with respect to Ni. Therefore the willemseite identified by qualitative XRD is more likely talc or minesoteite both of which have recently been identified by R-XRD in current mineralogical studies that are in process.

Pyrite was the only sulphide that was present in the qualitative XRD. It was detected in banded and high grade iron formations, gniesses, metasediments, amphibolites and schists. Although occurring in almost all rock units, it was proportionately noted more often in the high grade iron formation samples than in any other rock unit. To be clear, the high grade iron formation samples represented in this study were selected on the basis of the waste rock model

presumably based on the presence of elevated sulphur content and are expected to be representative of mine waste rock and not ore.

Carbonates that were detected in these samples were siderite, dolomite, ankerite and calcite. Siderite was observed only in the high grade iron formation samples and ankerite was observed only in the banded and high grade iron formation samples. Dolomite, the second most abundant carbonate identified by the qualitative XRD analysis, was observed in the banded and high grade iron formations, amphibolites and the metasediments. Calcite, identified mostly as a magnesium calcite, was present in the amphibolites, metasediments and the volcanic tuffs.

4.3.3 Whole Rock

Samples collected in the 2011 field season also underwent whole rock analysis in support of the qualitative XRD work described above (Appendix A). Results are generally consistent with the mineralogical identifications provided.

4.3.4 Detailed Mineralogical Characterization

A selection of 20 samples representing a range of waste types and lithologies was submitted for detailed mineralogical characterization with results provided in Appendix D. An additional set of 28 samples representing a range of waste types, lithologies and ABA characteristics (Figures 4-29 to 4-32) was submitted for detailed mineralogical analysis in 2013 and work is in progress.

Additional mineralogical work is underway so interpretation of the 2011 results is considered preliminary. Overall, the samples contain mineral assemblages typical of at least amphibolites metamorphic grade. Sixteen of the twenty samples contained sulphides and a variety were identified in the rocks studied. The sulphides pyrite (FeS_2), chalcopyrite (CuFeS_2), pyrrhotite ($\text{Fe}_{(1-x)}\text{S}$), and sphalerite (Fe,ZnS) were commonly identified as accessory minerals. Pentlandite, $((\text{Fe, Ni, Co})_9\text{S}_8)$ was identified in three samples and marcasite (FeS_2) was identified in one sample. Only one sample contained measurable amounts of pyrite (1.8 wt.%, by Rietveld analysis). No sulphides were identified in four of the samples and all other samples contained sulphide in trace amounts. In most cases the sulphides were disseminated and fresh without oxidized shells and often included within silicate minerals.

The major rock forming silicate minerals observed in this study include: quartz, feldspar (plagioclase and alkali feldspar), amphibole (cummingtonite and hornblende), biotite, muscovite, and chlorite. Plagioclase composition spanned the range from albite to anorthite composition with the latter when present likely to be more prone to more rapid weathering. The other major rock forming mineral was the oxide magnetite, which occurred in iron formation.

The rocks observed in this study can be subdivided into five groups based on the relative abundance of the major rock forming minerals: quartz-feldspar-rich, amphibolite (composed dominantly of amphibole and plagioclase), magnetite-rich, mica-rich (biotite and/or muscovite), and chlorite-rich. However, field lithological classifications (which may be based on additional

textural information) generally do not coincide with the above subdivision. No carbonate minerals were identified in this study, however, the Leco carbon content of the corresponding ABA sample set (data not available at the time of sample selection) were all less than 0.21%. Carbonates may also be present as fracture fillings or coatings at spacings beyond that assessed in the detailed mineralogy.

4.4 Kinetic Testing

A summary of ABA and key metal characteristics (Cu, Ni and Zn) for each cell as well as depletion calculations are provided in Table 4-10. Available humidity cell data for the seventeen cells are presented in Appendix B. Based on over 120 weeks of data for standard humidity cells and 109 weeks for NP depleted humidity cells the following observations are made:

- The pH of all humidity cells exhibited a generally steady trend or exhibited a slight decline over test duration;
- The pH of most cells were in the range of pH 5.5 to 7;
- Three cells exhibited slowly declining pH throughout testing reaching a minimum measured weakly acidic pH between 4.5 and 5 after approximately 2 years of operation;
- Sulphate release rates for most cells generally declined in the first 20 weeks of operation and subsequently exhibited a stable trend or continued to steadily decline at a slower rate;
- A few cells have indicated a possible slight increasing trend in sulphate release after 100 weeks of operation;
- Sulphate release rate weakly correlates to sulphide content;
- The highest steady sulphate release rates are relatively low in the range of 6 to 20 mg/kg/wk which corresponds to humidity cells with 0.2 to 1.0 % sulphide;
- The rest of the humidity cells including a cell with a sulphide content of 0.6% exhibited sulphate release rates of less than 3 mg/kg/wk;
- The ratio $(Ca+Mg)/SO_4$ for most humidity cells is in the range of 1 to 2;
- One cell (5171) with low but relatively elevated carbonate NP for the test materials (2.8 kg $CaCO_3/t$) notably has a steady $(Ca+Mg)/SO_4$ ratio of 3 suggesting sulphide oxidation is low enough that a significant component of the carbonate NP is being depleted by the DI water flush alone;
- For all cells except those with pH <5, 16 elements (Ag, Al, As, Be, Bi, Cr, Li, Pb, Sb, Tl, W and Zn) had leachate concentrations that were generally at or near detection; and

- Metal release rates are generally the highest in the lower pH humidity cells with notable release rates for Cd, Co, Cu, Ni, Pb and Zn in cells MRARD10-055 and 5178 which also contain near worst case solid concentrations for these metals in Deposit 1 mine rock (Table 4-10);

In addition to the on-going humidity cell testing, initial humidity cell testing by Knight Piésold included two cells with particularly elevated sulphide content for this site (4.6 and 1.5%) and similar low NP and CarbNP as the operational humidity cells. These cells operated for one year with final pH above 5.5 and generally low metal release rates (Appendix B).

4.4.1 Estimates of Depletion and Acid Onset

Estimates of sulphide and carbonate depletion time for all humidity cells are presented in Table 4-10. The calculations are conservative and assume the sulphate release rate is due to oxidizing sulphide and the molar Ca + Mg release rate in each cell is from carbonate. On the basis of these calculations, a single low sulphide CarbNP depleted cell exhibits equal carbonate and sulphide depletion times, but the remainder of the cells have shorter carbonate depletion times than sulphide depletion times and are predicted to be PAG on the basis of the depletion calculations described.

It is notable that, five of the 17 cells exhibit carbonate depletion times of less than 2 years, but have yet to produce acidic drainage even though testing has been on-going for over 2 years. Weakly acidic drainage has been produced from three cells, but two of these three cells have carbonate depletion times calculated to be greater than five years. Carbonate depletion is therefore not a good model for most of these cells.

Based on these conservative estimates of NP depletion, the existing humidity cell responses and the short summer, cold climate conditions of Baffin Island, it is likely that the lag time to acid generation will be protracted (should it occur) and will be in the order of at least several years. While hot-spots could develop from localized pockets of high sulphide low NP material, the down-hole continuity assessment indicates such atypical concentrations within site waste rock are likely to be well dispersed. Using existing humidity cell data as a guide and allowing for cold climate, minimum acid on-set lag times, should it be expected to occur, could be perhaps five or more years.

Humidity cell testing is continuing in combination with mineralogical and MLA work to better understand the acid generation and neutralization mechanisms for Deposit 1 waste rock and improve prediction of lag time to acid on-set should it be expected to occur.

Table 4-1: Summary of Acid Base Accounting Results

Waste Classification	Parameter	Paste pH	Total Sulphur	Sulphate	Sulphide*	Total Carbon	Carbonate	AP**	NP	CarbNP***	NPR****	CarbNPR
			%					kg CaCO ₃ /t				
All	Count	776	776	776	776	776	776	776	776	776	776	776
	Min	3.8	0.0050	0.010	0.010	0.0050	0.0050	0.31	-18	0.083	0.000033	0.00035
	Max	10	22	5.5	22	6.7	31	693	487	514	621	571
	Median	9.0	0.044	0.020	0.014	0.021	0.025	0.42	15	0.69	26	1.9
	Average		0.32	0.076	0.248	0.19	0.62	7.8	21	11	2.7	1.4
	Standard Deviation	0.90	1.3	0.25	1.1	0.64	2.2	35	30	39	44	36
	10th Percentile	7.9	0.0050	0.010	0.010	0.0090	0.0050	0.31	7.7	0.083	1.0	0.029
	90th Percentile	10	0.59	0.14	0.46	0.36	1.3	14	33	21	71	21
Footwall Schist	Count	143	143	143	143	143	143	143	143	143	143	143
	Min	4.8	0.0050	0.010	0.010	0.0050	0.0050	0.31	4.6	0.083	0.21	0.0034
	Max	10	5.6	1.5	4.2	3.3	11	130	71	178	176	345
	Median	8.9	0.044	0.020	0.010	0.015	0.011	0.31	13	0.50	23	1.0
	Average		0.29	0.073	0.23	0.20	0.50	7.0	16	8.5	2.3	1.2
	Standard Deviation	0.86	0.70	0.15	0.58	0.62	1.6	18	11	27	27	30
	10th Percentile	7.7	0.0050	0.010	0.010	0.0062	0.0050	0.31	7.4	0.083	0.90	0.039
	90th Percentile	10	0.74	0.14	0.72	0.22	0.85	22	26	14	62	6.8
Footwall Waste	Count	272	272	272	272	272	272	272	272	272	272	272
	Min	5.5	0.0050	0.010	0.010	0.0050	0.0050	0.31	2.9	0.083	0.50	0.0019
	Max	10	1.8	0.55	1.4	1.0	4.9	43	93	81	298	277
	Median	10	0.022	0.010	0.010	0.023	0.034	0.31	13	1.2	33	4.3
	Average		0.070	0.033	0.044	0.070	0.25	1.4	16	4.4	12	3.2
	Standard Deviation	0.47	0.17	0.056	0.12	0.13	0.59	3.8	12	10	37	31
	10th Percentile	9.0	0.0050	0.010	0.010	0.0080	0.0050	0.31	7.9	0.083	4.4	0.27
	90th Percentile	10	0.17	0.070	0.077	0.15	0.65	2.4	25	11	70	34
Hanging Wall Schist	Count	270	270	270	270	270	270	270	270	270	270	270
	Min	4.3	0.0050	0.010	0.010	0.0050	0.0050	0.31	-6.5	0.083	0.000033	0.00035
	Max	10	22	5.5	22	6.7	31	693	487	514	621	571
	Median	8.4	0.12	0.040	0.057	0.022	0.022	1.8	18	0.62	13	0.37
	Average		0.60	0.12	0.48	0.26	0.97	15	26	17	1.7	1.1
	Standard Deviation	0.68	2.0	0.39	1.8	0.83	3.4	56	46	56	50	41
	10th Percentile	7.7	0.0080	0.010	0.010	0.010	0.0050	0.31	7.7	0.083	0.41	0.0095
	90th Percentile	10	0.91	0.18	0.72	0.37	1.3	22	33	21	73	19
Hanging Wall Waste	Count	62	62	62	62	62	62	62	62	62	62	62
	Min	7.7	0.0050	0.010	0.010	0.0060	0.0050	0.31	7.7	0.083	2.3	0.035
	Max	10	0.63	0.17	0.54	1.1	4.7	17	129	89	413	285
	Median	8.7	0.039	0.015	0.010	0.025	0.035	0.31	20	0.75	44	1.9
	Average		0.074	0.032	0.048	0.19	0.71	1.5	29	13	20	8.7
	Standard Deviation	0.51	0.11	0.036	0.080	0.28	1.2	2.5	24	21	68	48
	10th Percentile	8.3	0.0050	0.010	0.010	0.012	0.0050	0.31	11	0.083	6.6	0.21
	90th Percentile	10	0.17	0.079	0.11	0.65	2.8	3.3	63	49	89	50
Internal Waste	Count	12	12	12	12	12	12	12	12	12	12	12
	Min	3.9	0.0080	0.010	0.010	0.0070	0.0050	0.31	-18	0.083	0.00012	0.0021
	Max	9.5	3.7	1.1	2.7	2.9	3.4	83	44	57	141	25
	Median	8.1	0.083	0.030	0.046	0.020	0.0050	1.4	10	0.22	12	0.32
	Average		0.61	0.16	0.45	0.32	0.45	14	14	7.7	1.0	0.54
	Standard Deviation	1.9	1.1	0.31	0.79	0.83	1.1	25	17	18	45	7.2
	10th Percentile	4.4	0.010	0.010	0.010	0.0082	0.0050	0.31	-0.97	0.083	0.04	0.0045
	90th Percentile	9.3	1.2	0.33	1.2	0.62	1.7	37	35	28	82	4.8
Mineralized Waste	Count	17	17	17	17	17	17	17	17	17	17	17
	Min	3.8	0.021	0.010	0.010	0.010	0.0050	0.31	-5.7	0.083	0.0041	0.00066
	Max	10	4.4	1.1	4.1	4.7	9.2	127	92	356	42	73
	Median	8.2	0.33	0.13	0.18	0.041	0.013	5.5	21	1.3	4.3	0.29
	Average		0.81	0.26	0.55	1.0	1.7	17	29	41	1.7	2.4
	Standard Deviation	1.2	1.1	0.32	1.0	1.6	3.3	31	25	94	14	25
	10th Percentile	7.8	0.12	0.016	0.045	0.013	0.0050	1.4	10	0.083	0.38	0.010
	90th Percentile	8.7	1.8	0.69	1.2	4.0	8.0	37	56	144	34	55

* Calculated as the difference between measured total sulphur and sulphate sulphur

** Calculated from sulphide sulphur

*** Samples completed in 2010 and earlier are calculated from total carbon (see text); 2011 and 2012 samples are calculated from carbonate carbon

****Negative NPR values are recalculated using an NP of 0.01 kg CaCO₃/t

Table 4-2: Summary of Anomalous Samples

Primary Anomaly	Waste Classification	Sample ID	Lithology	Paste pH	Total Sulphur	Sulphate	Sulphide	AP	NP	CarbNP	NPR	CarbNPR	NAGpH	SFE Final pH	Ni in SFE
					%			kg CaCO ₃ /t							(mg/L)
ABA*	Hanging Wall Schist	16242	Amphibolite	9.07	0.082	0.040	0.042	283	-2.2	3.5	-0.0078	0.012	7.71	9.15	0.0025
	Hanging Wall Schist	MRARD10 129	Schist	4.26	12	2.6	9.8	133	-6.5	1033	-0.049	7.8	1.84	n.d.	n.d.
	Hanging Wall Schist	MRARD10 039	Amphibolite	5.66	0.38	0.38	<0.01	177	-1.1	32	-0.0062	0.18	5.29	4.70	0.81
	Internal Waste	16642	Schist	3.85	3.7	1.1	2.7	120	-18	221	-0.15	1.8	2.17	3.06	3.1
	Internal Waste	16640	High Grade Iron Formation	4.06	0.59	0.34	0.25	127	-1.6	21	-0.013	0.17	2.96	n.d.	n.d.
	Mineralized Waste	16068	High Grade Iron Formation	3.77	0.60	0.52	0.078	118	-5.7	6.5	-0.048	0.055	2.73	n.d.	n.d.
	Footwall Schist	16348	High Grade Iron Formation	4.76	1.3	0.48	0.79	149	17	66	0.11	0.44	6.58	4.44	0.22
SFE [pH]	Hanging Wall Schist	16012	High Grade Iron Formation	6.56	5.7	1.9	3.8	205	9.5	316	0.046	1.5	1.93	5.54	0.18
	Hanging Wall Schist	16420	Schist	7.31	22	<0.01	22	228	33	1849	0.15	8.1	1.96	5.41	0.32
SFE [Ni]	Footwall Waste	16118	Schist	8.20	1.8	0.39	1.4	256	23	115	0.090	0.45	2.85	6.83	7.1

* Exhibits acidic paste pH (< 5), negative NP or both.

n.d.= no data

Table 4-3: Summary of Neutralization Potential Ratio Distribution

Waste Classification	Number of Samples	NPR Distribution				
		NPR < 1	1 < NPR < 2	2 < NPR < 3	3 < NPR < 4	NPR > 4
All	776	76	39	29	27	605
Footwall Schist	143	15	14	5	4	105
Footwall Waste	272	6	4	9	8	245
Hanging Wall Schist	270	46	18	13	13	180
Hanging Wall Waste	62	0	0	1	2	59
Internal Waste	12	4	1	0	0	7
Mineralized Waste	17	5	2	1	0	9
Waste Classification	Number of Samples	Carbonate NPR Distribution				
		NPR < 1	1 < NPR < 2	2 < NPR < 3	3 < NPR < 4	NPR > 4
All	776	333	66	46	43	288
Footwall Schist	143	72	13	13	13	32
Footwall Waste	272	64	27	15	21	145
Hanging Wall Schist	270	156	14	12	6	82
Hanging Wall Waste	62	21	11	4	2	24
Internal Waste	12	8	0	2	0	2
Mineralized Waste	17	12	1	0	1	3

Table 4-4: Inferred PAG Tonnage

Waste Rock Domain	Tonnage	No. Samples	Mean Sulphur	Mean NPR*	% Samples NPR <2	PAG tonnage
	(Mt)		%			(Mt)
Footwall Schist	74.1	143	0.29	2.3	20%	15.0
Footwall Waste	263	271	0.070	12	4%	9.7
Hanging Wall Schist	139.6	270	0.60	1.7	24%	33.1
Hanging Wall Waste	77.5	62	0.074	20	0%	0
Internal Waste	2.1	12	0.61	1.0	42%	0.9
Mineralized Waste	9.7	18	0.81	1.7	41%	3.99
Total	566	776				62.7

Table 4-5: Summary of Elemental Content in ABA Samples

Parameter	Hg	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Li	Mg
Unit	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
Average Crustal Abundance*	0.085	0.004	0.075	82300	1.8	425	3	0.025	41500	0.15	25	102	60	56300	20850	20	23300
Ten Times Average Crustal Abundance*	0.85	0.04	0.75	823000	18	4250	30	0.25	415000	1.5	250	1020	600	563000	208500	200	233000
All	Count	776	376	776	776	776	776	776	776	776	776	776	776	776	776	776	776
	Min	0.10	0.020	0.010	10	0.50	0.010	0.020	0.090	25	0.020	0.25	0.50	0.10	33	1.0	19
	Max	0.20	1.4	11	116000	260	1900	10	28	110000	30	140	2400	480	700000	60000	140000
	Median	0.10	0.020	0.080	29000	0.50	96.5	0.56	0.090	2100	0.050	14	77	21	52500	7350	20000
	Average	0.10	0.027	0.16	34716	4.7	163	0.88	0.29	5490	0.18	19	172	39	111967	9820	29605
	Standard Deviation	3.6E-03	0.073	0.59	22571	20	229	1.0	1.2	10251	1.2	17	251	49	144574	10014	25
	10th Percentile	0.10	0.020	0.010	7700	0.50	1.7	0.12	0.090	380	0.020	5.0	23	3.1	22000	100	3.0
	90th Percentile	0.10	0.020	0.33	69000	5.4	410	2.1	0.41	14500	0.20	38	440	110	335000	22000	70000
	Count	143	74	74	143	143	143	143	143	143	143	143	143	143	143	143	143
Footwall Schist	Min	0.10	0.020	0.010	1000	0.50	0.22	0.030	0.090	110	0.020	1.1	1.2	0.90	11000	40	2.0
	Max	0.10	0.22	1.3	100000	260	1900	6.4	3.3	40000	3.0	91	950	380	700000	42000	93000
	Median	0.10	0.020	0.060	34000	0.50	150	0.78	0.10	1800	0.050	14	72	13	77000	7300	23000
	Average	0.10	0.028	0.14	39513	5.4	273	1.0	0.24	3366	0.11	17	127	31	141161	10619	30383
	Standard Deviation	2.5E-16	0.031	0.21	24088	26	351	0.89	0.39	5354	0.26	13	162	51	171654	11119	45
	10th Percentile	0.10	0.020	0.010	7080	0.50	2.7	0.27	0.090	440	0.020	5.5	23	2.8	29000	102	2.0
	90th Percentile	0.10	0.020	0.40	72600	6.7	698	2.0	0.48	6600	0.20	31	330	74	468000	26000	67600
	Count	272	45	45	272	272	272	272	272	272	272	272	272	272	272	272	272
	Min	0.10	0.020	0.010	5300	0.50	2.2	0.080	0.090	71	0.020	1.2	2.3	0.70	7200	170	3.0
Footwall Waste	Max	0.10	1.4	11	93000	13	1200	5.1	5.9	41000	30	79	2200	330	150000	60000	87000
	Median	0.10	0.020	0.11	23000	0.50	160	0.34	0.090	2900	0.040	9.85	62.5	17	33000	16000	15500
	Average	0.10	0.051	0.42	26776	0.62	204	0.63	0.32	4906	0.33	12	102	29	36390	16710	19347
	Standard Deviation	4.2E-16	0.21	1.6	15470	0.85	158	0.76	0.80	5712	1.9	8.5	217	41	18679	9065	14338
	10th Percentile	0.10	0.020	0.034	12000	0.50	67	0.17	0.090	1200	0.020	4.3	22.1	4.13	19000	6720	7810
	90th Percentile	0.10	0.020	0.52	45000	0.70	419	1.4	0.467	11000	0.339	20.9	129	56	53000	26900	37900
	Count	270	187	187	270	270	270	270	270	270	270	270	270	270	270	270	270
	Min	0.10	0.020	0.010	10	0.50	0.010	0.020	0.090	25	0.020	0.25	0.50	0.10	33	1.0	19
	Max	0.20	0.16	1.3	116000	190	1470	10	28	110000	2.2	140	1500	480	690000	34000	130000
Hanging Wall Schist	Median	0.10	0.020	0.080	41000	0.75	15	0.69	0.090	1400	0.040	23	155	30	105000	1100	31000
	Average	0.10	0.023	0.13	40340	9.0	81	1.1	0.32	6745	0.092	26	252	48	156485	4094	38531
	Standard Deviation	0.0061	0.013	0.17	24136	28	168	1.3	1.8	14642	0.15	21	269	53	152956	6176	28538
	10th Percentile	0.10	0.020	0.010	3880	0.50	0.99	0.080	0.090	169	0.020	6.1	22	2.7	23900	77	2.0
	90th Percentile	0.10	0.020	0.26	72000	13	221	2.8	0.37	22200	0.20	48	651	115	420000	14000	80100
	Count	62	47	47	62	62	62	62	62	62	62	62	62	62	62	62	62
	Min	0.10	0.020	0.010	600	0.50	0.70	0.020	0.090	210	0.020	1.7	21	0.90	8700	39	2.0
	Max	0.10	0.030	0.42	91000	16	830	4.4	0.43	49000	0.35	110	2400	160	200000	21000	140000
	Median	0.10	0.020	0.07	34500	0.60	74	0.51	0.090	2150	0.055	25	150	53	51000	4100	17
Hanging Wall Waste	Average	0.10	0.020	0.092	41347	1.9	111	0.79	0.11	9081	0.092	26	253	67	65721	5565	18
	Standard Deviation	9.8E-17	0.0015	0.089	24793	2.9	136	1.0	0.064	11793	0.081	16	361	51	48008	4955	10
	10th Percentile	0.10	0.020	0.020	16100	0.50	4.4	0.041	0.090	815	0.020	9.3	55	5.0	21100	437	6.1
	90th Percentile	0.10	0.020	0.21	80900	6.6	284	2.3	0.16	24700	0.20	41	498	134	139000	12000	32
	Count	12	10	10	12	12	12	12	12	12	12	12	12	12	12	12	12
	Min	0.10	0.020	0.010	1200	0.50	0.30	0.040	0.090	110	0.020	2.1	31	1.1	36000	38	2.0
	Max	0.10	0.030	0.65	69000	1.5	350	2.9	0.32	5200	0.20	48	1090	73	630000	22000	13
	Median	0.10	0.020	0.055	3500	0.50	5.3	0.78	0.090	2000	0.035	5.4	75	5.9	380000	120	2.0
	Average	0.10	0.022	0.12	19342	0.67	79	0.85	0.14	2218	0.071	12	201	17	367333	1971	4.2
Internal Waste	Standard Deviation	1.4E-17	0.0042	0.20	24972	0.34	120	0.78	0.078	1662	0.069	14	304	25	195986	6309	4.2
	10th Percentile	0.10	0.020	0.010	1420	0.50	1.3	0.061	0.090	252	0.020	2.7	33	1.2	89800	58	2.0
	90th Percentile	0.10	0.030	0.25	61100	1.2	217	1.4	0.25	3990	0.19	26	392	61	604000	438	12
	Count	17	13	13	17	17	17	17	17	17	17	17	17	17	17	17	17
	Min	0.10	0.020	0.020	670	0.50	0.35	0.12	0.090	40	0.020	2.2	14	1.9	6900	36	2.0
	Max	0.10	0.14	1.1	68000	38	1900	1.1	1.5	6200	0.20	57	290	250	700000	37000	47
	Median	0.10	0.020	0.16	7100	0.7	2.4	0.49	0.090	1700	0.060	14	43	31	410000	100	2.0
	Average	0.10	0.042	0.24	18735	6.2	142	0.54	0.32	1986	0.09	19	64	44	356994	4862	7.7
	Standard Deviation	1.4E-17	0.038	0.29	21855	11	457	0.31	0.39	1679	0.073	16	72	57	239429	9888	11
Mineralized Waste	10th Percentile	0.10	0.020	0.052	988	0.50	0.58	0.20	0.090	304	0.020	3.8	15	9.4	58200	51	2.0
	90th Percentile	0.10	0.086	0.45	51200	25	172	0.986	0.84	4000	0.20	40	138	69	656000	15200	16
	Count	17	13	13	17	17	17	17	17	17	17	17	17	17	17	17	17

*Price 1997

Table 4-5: Summary of Elemental Content in ABA Samples

Parameter	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Sn	Sr	Ti	Ti	U	V	Y	Zn
Unit	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
Average Crustal Abundance*	950	1.2	23550	84	1050	14	350	0.2	0.05	2.3	370	5650	0.85	2.7	120	33	70
Ten Times Average Crustal Abundance*	9500	12	235500	840	10500	140	3500	2	0.5	23	3700	56500	8.5	27	1200	330	700
All	Count	776	776	776	376	776	230	776	776	776	776	776	776	776	776	376	776
	Min	2.3	0.10	8.0	0.10	2.0	0.26	15	0.80	0.70	0.50	0.22	0.10	0.020	0.0020	1.0	0.47
	Max	35000	450	3730	2410	6900	2174	35000	14	8.9	53	89	6300	2.2	23	210	26
	Median	530	1.2	310	33	320	3.5	300	0.80	0.70	0.80	5.9	1050	0.22	1.4	48	3.7
	Average	1206	5.4	457	82	561	11	972	0.85	0.80	1.3	8.6	1317	0.31	2.0	57	4.6
	Standard Deviation	2855	25	486	158	743	81	2929	0.69	0.50	2.3	9.1	1107	0.34	2.4	46	3.5
	10th Percentile	220	0.30	77	6.6	22	1.2	63	0.80	0.70	0.50	2.0	120	0.020	0.049	7.5	1.4
	90th Percentile	2000	6.6	1000	190	1350	17	1800	0.80	0.80	2.3	18	2800	0.725	4.6	120	9.0
	Count	143	143	143	143	74	143	35	143	143	143	143	143	143	143	74	143
	Min	70	0.10	8.0	4.3	2.0	0.52	15	0.80	0.70	0.50	0.82	37	0.020	0.026	1.0	1.1
Footwall Schist	Max	18000	360	3230	1040	5400	32	3900	14	6.2	5.0	49	4830	2.2	8.8	180	14
	Median	370	1.7	240	25	750	4.6	160	0.80	0.70	0.90	4.4	910	0.26	1.8	35	5.3
	Average	1317	9.6	323	65	985	7.5	652	0.92	0.83	1.2	6.4	1216	0.37	2.3	51	5.6
	Standard Deviation	2900	36	347	118	992	7	992	1.1	0.59	1.0	6.0	1075	0.40	1.9	45	2.5
	10th Percentile	170	0.30	68	7.4	63	1.7	54	0.80	0.70	0.50	1.8	190	0.020	0.25	9.2	2.6
	90th Percentile	2380	13	638	164	2440	18	1660	0.80	0.80	2.5	12	2840	0.73	5.2	120	8.8
	Count	272	272	272	272	45	272	174	272	272	272	272	272	272	272	45	272
	Min	92	0.10	30	2.3	71	0.40	18	0.80	0.70	0.50	1.1	55	0.020	0.13	1.0	3.2
	Max	1400	87	1800	790	2400	2174	7700	3.3	1.4	53	36	6300	1.9	23	210	26
	Median	500	1.0	545	12	630	5.4	300	0.80	0.70	1.0	6.6	2100	0.46	2.2	38	9.4
Footwall Waste	Average	531	3.1	596	30	726	22	549	0.81	0.72	1.7	8.6	2095	0.52	3.3	46	10
	Standard Deviation	232	8.4	317	75	572	135	923	0.16	0.091	3.5	6.5	1099	0.30	3.1	36	5.2
	10th Percentile	280	0.30	230	4.51	130	1.3	68	0.80	0.70	0.50	3.1	712	0.21	0.942	11	4.9
	90th Percentile	839	4.6	1000	45.9	1320	26.9	1210	0.80	0.70	3.0	16	3600	0.88	6.88	90	17
	Count	270	270	270	270	187	270	21	270	270	270	270	270	270	270	187	270
	Min	2.3	0.10	9.0	0.10	2.0	0.26	33	0.80	0.70	0.50	0.22	0.10	0.020	0.0030	1.0	0.47
	Max	35000	450	3730	1950	6900	113	35000	14	8.9	53	89	3000	1.6	8.2	210	17
	Median	570	1.1	140	90.5	240	2.4	1800	0.90	0.70	0.60	6.1	470	0.040	0.62	62	2.9
	Average	1346	6.0	357	132	399	4.4	5011	0.86	0.86	1.0	10	731	0.14	1.0	68	3.3
	Standard Deviation	2863	31	556	171	677	8.8	8385	0.81	0.69	1.1	11	698	0.21	1.2	50	2.2
	10th Percentile	229	0.30	71	12	12	0.93	71	0.80	0.70	0.50	1.6	67.8	0.020	0.022	6.0	1.2
Hanging Wall Schist	90th Percentile	2710	6.8	1010	292	906	7.41	16000	0.80	1.0	2.0	21	1710	0.33	2.2	140	5.4
	Count	62	62	62	62	47	62	0	62	62	62	62	62	62	62	47	62
	Min	130	0.10	68	6.9	23	0.39	-	0.80	0.70	0.50	0.69	26	0.020	0.0020	2.0	0.67
	Max	4000	13	3000	2410	1900	30	-	3.1	2.6	4.2	77	2800	0.67	7.1	190	8.4
	Median	750	0.65	325	91	280	2.5	-	0.80	0.70	0.50	6.9	1000	0.090	0.23	74	3.8
	Average	1051	1.3	743	149	378	4.0	-	0.84	0.74	0.83	11	1109	0.14	0.74	81	3.8
	Standard Deviation	919	1.8	770	313	312	5.0	-	0.29	0.24	0.68	13	709	0.15	1.3	46	1.6
	10th Percentile	242	0.30	98	18	178	1.0	-	0.80	0.70	0.50	2.3	112	0.020	0.012	26	1.9
	90th Percentile	2290	2.75	1890	179	656	9	-	0.80	0.70	1.8	23	2090	0.31	2.5	149	5.6
	Count	12	12	12	12	10	12	0	12	12	12	12	12	12	12	10	12
Hanging Wall Waste	Min	310	0.60	45	5.0	2.0	0.92	-	0.80	0.70	0.50	0.44	15	0.020	0.083	1.0	0.57
	Max	23000	44	580	240	2400	22	-	2.0	1.2	1.2	9.7	950	1.0	5.8	130	6.5
	Median	970	3.1	89	7.8	485	2.8	-	0.80	0.70	0.50	3.85	205	0.020	0.44	13	1.8
	Average	2999	6.3	130	44	738	5.1	-	0.90	0.78	0.66	3.7	255	0.10	1.0	39	2.7
	Standard Deviation	6352	12	144	70	808	6.4	-	0.35	0.15	0.26	2.6	256	0.3	1.6	50	2.0
	10th Percentile	448	1.0	52	6.3	2.9	1.5	-	0.80	0.70	0.50	0.66	19	0.020	0.16	2.1	0.84
	90th Percentile	2960	6.2	129	94	1860	13	-	0.80	0.89	1.1	5.5	399	0.058	1.6	119	5.5
	Count	17	17	17	17	13	17	0	17	17	17	17	17	17	17	13	17
	Min	200	0.60	33	8.8	3.0	0.91	-	0.80	0.70	0.50	0.55	17	0.020	0.074	4.0	0.57
	Max	32000	57	590	360	1600	26	-	0.80	2.4	2.1	9.2	3200	1.6	4.6	150	4.6
Internal Waste	Median	4100	2.9	73	32	120	3	-	0.80	0.70	0.70	2.5	220	0.030	0.48	24	3.2
	Average	8130	12	148	51	436	6.6	-	0.80	1.0	0.96	3.0	553	0.17	0.88	33	3.3
	Standard Deviation	9432	21	165	82	549	7.2	-	1.1E-16	0.55	0.58	2.4	841	0.39	1.1	40	1.1
	10th Percentile	598	0.76	41	11	20	1.1	-	0.80	0.70	0.50	0.94	25	0.020	0.22	4.6	2.4
	90th Percentile	19600	55	410	69	1232	16	-	0.80	1.9	1.9	5.7	1420	0.38	1.3	80	4.5
	Count	17	17	17	17	13	17	0	17	17	17	17	17	17	17	13	17
	Min	200	0.60	33	8.8	3.0	0.91	-	0.80	0.70	0.50	0.55	17	0.020	0.074	4.0	0.57
	Max	32000	57	590	360	1600	26	-	0.80	2.4	2.1	9.2	3200	1.6	4.6	150	4.6
	Median	4100	2.9	73	32	120	3	-	0.80	0.70	0.70	2.5	220	0.030	0.48	24	3.2
	Average	8130	12	148	51	436	6.6	-	0.80	1.0	0.96	3.0	553	0.17	0.88	33	3.3
Mineralized Waste	Standard Deviation	9432	21	165	82	549	7.2	-	1.1E-16	0.55	0.58	2.4	841	0.39	1.1	40	1.1
	10th Percentile	598	0.76	41	11	20	1.1	-	0.80	0.70	0.50	0.94	25	0.020	0.22	4.6	2.4
	90th Percentile	19600	55	410	69	1232	16	-	0.80	1.9	1.9	5.7	1420	0.38	1.3	80	4.5

*Price 1997

Table 4-6: Number of Samples Greater than 10X Average Crustal Abundance

Waste Classification	Au	Ag	As	Bi	Cd	Cr	Fe	Li	Mn	Mo	Ni	Pb	S	Sb	Se*	Sn	Zn
	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
Number of Samples	376	376	776	776	776	776	776	776	776	776	776	776	230	776	776	776	776
Avg Crustal	0.004	0.075	1.8	0.025	0.15	102	56300	20	950	1.2	84	14	350	0.2	0.05	2.3	70
10x Avg Crustal	0.04	0.75	18	0.25	1.5	1020	563000	200	9500	12	840	140	3500	2	0.5	23	700
All	16	7	31	134	13	12	23	3	16	48	4	4	13	5	97	1	2
Footwall Schist	5	2	4	32	1	0	10	3	5	15	1	0	2	2	18	0	1
Footwall Waste	1	2	0	41	11	3	0	0	0	11	0	4	3	1	21	1	1
Hanging Wall Schist	6	2	24	49	1	5	8	0	4	17	2	0	8	1	44	0	0
Hanging Wall Waste	0	0	0	3	0	3	0	0	0	1	1	0	0	1	5	0	0
Internal Waste	0	0	0	2	0	1	2	0	1	1	0	0	0	0	4	0	0
Mineralized Waste	4	1	3	7	0	0	3	0	6	3	0	0	0	0	5	0	0

* Only values above detection are included

Table 4-7 Four Acid Digestion Compared to Aqua Regia Digestion

Sample ID				16468		16176		16148		16394		16100		16196		16746		16398		16416		16282	
Waste Classification				Footwall Schist		Footwall Schist		Footwall Waste		Footwall Waste		Footwall Waste		Hanging Wall Schist		Hanging Wall Schist		Hanging Wall Waste		Hanging Wall Waste		Mineralized Waste	
Lithology				Schist		High Grade Iron Formation		Gneiss		Gneiss		Schist		Metasediment		Volcanic Tuff		Amphibolite		Schist		Banded Iron Formation	
Analysis	Avg Crustal	10x Avg Crustal	Units	4-Acid	Aqua Regia	4-Acid	Aqua Regia	4-Acid	Aqua Regia	4-Acid	Aqua Regia	4-Acid	Aqua Regia	4-Acid	Aqua Regia	4-Acid	Aqua Regia	4-Acid	Aqua Regia	4-Acid	Aqua Regia	4-Acid	Aqua Regia
Au	0.004	0.04	µg/g	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.02
Ag	0.075	0.75	µg/g	0.86	0.06	0.27	0.05	0.85	0.06	0.70	0.11	1.9	0.78	0.17	0.10	0.36	0.06	0.16	0.02	1.2	0.05	0.08	0.16
Al	82300	823000	µg/g	82000	55000	10000	4200	58000	5300	56000	13000	57000	11000	85000	14000	52000	40000	80000	85000	85000	79000	2200	1300
As	1.8	18	µg/g	14	<0.50	21	0.80	15	0.80	<1.0	<0.50	<1.0	<0.50	<1.0	<0.50	22	7.4	<1.0	<0.50	90	0.60	<1.0	2.4
Ba	425	4250	µg/g	580	490	6.9	2.8	730	38	1700	170	250	160	370	220	4.9	1.6	12	2.8	130	115	3.0	0.88
Be	3	30	µg/g	1.6	0.65	0.60	0.41	6.5	0.93	1.6	0.22	1.6	0.16	0.39	0.04	0.88	0.68	2.2	1.9	3.2	2.6	0.97	0.64
Bi	0.025	0.25	µg/g	<0.09	<0.09	0.13	0.2	2.7	0.36	<0.09	0.09	0.91	0.72	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09
Ca	41500	415000	µg/g	1000	1100	6400	5400	100000	13000	12000	2700	20000	1600	62000	14000	430	200	1200	1200	1500	1500	560	340
Cd	0.15	1.5	µg/g	0.72	<0.02	0.37	<0.02	1.5	0.16	0.53	0.02	4.8	3.7	0.29	0.06	0.45	0.02	0.18	<0.02	0.89	<0.02	0.12	<0.02
Co	25	250	µg/g	8.5	5.2	4.3	2.3	8.4	1.2	8.1	7.2	9.8	5.9	48	26	30	22	63	35	35	24	31	23
Cr	102	1020	µg/g	110	43	37	35	64	58	130	79	94	87	150	140	650	570	200	140	1200	1200	55	35
Cu	60	600	µg/g	3.0	2.1	17	13	8.2	2.3	34	31	310	260	62	61	67	54	45	34	7.5	4.8	40	34
Fe	56300	563000	µg/g	68000	57000	630000	470000	60000	7300	32000	28000	25000	17000	51000	18000	130000	96000	110000	89000	110000	98000	520000	520000
K	20850	208500	µg/g	23000	20000	170	110	18000	2000	27000	3800	15000	9200	8700	5600	180	110	220	170	9000	8700	120	69
Li	20	200	µg/g	82	38	<2.0	<2.0	5.0	3.0	13	10	23	15	16	13	28	20	26	17	20	15	<2.0	<2.0
Mg	23300	233000	µg/g	54000	44000	10000	2200	40000	4700	11000	10000	16000	10000	23000	8000	47000	43000	130000	100000	110000	93000	11000	3800
Mn	950	9500	µg/g	800	440	7800	1800	4000	410	500	430	550	320	1400	480	2000	540	2500	1800	4900	3700	11000	4200
Mo	1.2	12	µg/g	3.4	2.3	1.0	0.70	1.8	1.1	2.2	1.4	12	5.8	0.70	0.60	2.0	1.7	<0.10	0.10	1.2	0.60	2.4	2.0
Na	23550	235500	µg/g	870	570	200	98	2300	260	12000	450	21000	360	29000	1700	180	87	180	81	450	350	170	89
Ni	84	840	µg/g	12	6.4	12	6.9	10	2.3	11	7.9	31	21	150	93	270	200	190	93	160	110	45	32
P	1050	10500	µg/g	420	420	2400	2300	420	380	860	770	270	230	340	320	36	42	280	260	460	370	32	34
Pb	14	140	µg/g	10	9.2	0.62	0.97	55	14	33	3.8	43	13	12	2.3	0.82	1.2	2.3	2.8	4.2	3.6	2.1	2.6
Sb	0.2	2	µg/g	<0.80	<0.80	2.2	<0.80	0.90	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	4.3	<0.80	<0.80	<0.80
Se	0.05	0.50	µg/g	2.3	<0.70	1.6	<0.70	1.8	<0.70	1.2	<0.70	<0.70	<0.70	1.9	<0.70	2.6	<0.70	1.1	<0.70	<0.70	<0.70	2.9	<0.70
Sn	2.3	23	µg/g	3.9	2.0	2.5	<0.50	3.3	<0.50	3.3	<0.50	7.3	3.0	2.1	<0.50	1.9	<0.50	2.0	<0.50	6.4	1.8	1.5	<0.50
Sr	370	3700	µg/g	9.6	8.4	9.4	7.0	140	16	120	7.4	190	5.8	130	13	1.6	1.1	5.7	4.7	8.4	6.8	2.0	1.1
Ti	5650	56500	µg/g	2400	1800	420	280	3000	850	4700	710	920	670	6800	2100	2400	190	4500	110	4400	2100	77	74
Tl	0.85	8.50	µg/g	0.80	0.72	0.33	0.27	0.23	0.05	0.49	0.11	0.46	0.37	0.13	0.11	<0.02	<0.02	<0.02	<0.02	0.21	0.20	<0.02	0.02
U	2.7	27	µg/g	11	7.6	0.36	0.16	3.5	1.2	2.0	1.4	7.7	7.0	0.30	0.10	1.6	0.89	0.19	0.031	2.8	0.66	0.49	0.37
V	120	1200	µg/g	24	19	15	13	32	4	51	18	23	17	240	93	59	36	230	120	110	62	10	8.0
Y	33	330	µg/g	9.3	6.1	15	4.3	47	16	11	11	15	11	17	4.5	10	2.7	5.3	1.8	9.7	3.3	7.9	3.2
Zn	70	700	µg/g	63	38	33	8.3	150	20	78	39	240	180	89	38	37	25	130	83	77	54	50	13

Table 4-8: Shake Flask Extraction Results Screening

Waste Classification	Sample numbers	Final pH	Hg	Al	As	Ba	Cd	Cr	Cu	Fe	Mo	Ni	Pb	Se	Zn
	Units	units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MMER	6.0-9.5							0.3			0.500	0.20		0.50
All	113	28	-	-	-	-	-	-	1	-	-	3	0	-	0
Footwall Schist	24	6	-	-	-	-	-	-	0	-	-	0	0	-	0
Footwall Waste	19	12	-	-	-	-	-	-	0	-	-	1	0	-	0
Hanging Wall Schist	50	7	-	-	-	-	-	-	0	-	-	1	0	-	0
Hanging Wall Waste	11	2	-	-	-	-	-	-	0	-	-	0	0	-	0
Internal Waste	3	1	-	-	-	-	-	-	1	-	-	1	0	-	0
Mineralized Waste	6	0	-	-	-	-	-	-	0	-	-	0	0	-	0
Waste Classification	Sample numbers	Final pH	Hg	Al	As	Ba	Cd	Cr	Cu	Fe	Mo	Ni	Pb	Se	Zn
	Units	units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	CEQG (PAL)	6.5-9.0	0.026	0.005-0.1 (a)	0.005		0.00009	0.001	0.002-0.004 (b)	0.3	0.07	0.025-0.15 (b)	0.001-0.007 (b)	0.001	0.03
All	113	56	0	75	3	-	9	19	6	39	3	6	1	24	4
Footwall Schist	24	10	0	14	0	-	3	3	2	10	3	1	0	7	1
Footwall Waste	19	17	0	18	0	-	1	3	0	10	0	1	1	1	0
Hanging Wall Schist	50	18	0	31	2	-	3	9	2	14	0	3	0	12	2
Hanging Wall Waste	11	7	0	9	0	-	0	2	0	2	0	0	0	1	0
Internal Waste	3	3	0	2	1	-	2	1	2	1	0	1	0	2	1
Mineralized Waste	6	1	0	1	0	-	0	1	0	2	0	0	0	1	0
Waste Classification	Sample numbers	Final pH	Hg	Al	As	Ba	Cd	Cr	Cu	Fe	Mo	Ni	Pb	Se	Zn
	Units	units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	CDWQ	6.5-8.5	0.001		0.005	1.00	0.005	0.051	1.0	0.3			0.01	0.01	5.00
All	113	87	0	-	3	0	1	0	1	39	-	-	1	4	0
Footwall Schist	24	14	0	-	0	0	0	0	0	10	-	-	0	2	0
Footwall Waste	19	18	0	-	0	0	0	0	0	10	-	-	1	0	0
Hanging Wall Schist	50	40	0	-	2	0	0	0	0	14	-	-	0	0	0
Hanging Wall Waste	11	10	0	-	0	0	0	0	0	2	-	-	0	1	0
Internal Waste	3	3	0	-	1	0	1	0	1	1	-	-	0	1	0
Mineralized Waste	6	2	0	-	0	0	0	0	0	2	-	-	0	0	0

Notes:

(a) Varies with pH (screening conservatively used lowest value)

(b) Varies with hardness (screening conservatively used lowest value)

MMER = Metal Mining Effluent Regulations

CEQG (PAL)= Canadian Council of Minister of the Environment (CCME) Canadian Water Quality Guideline for the protection of Aquatic Life

CDWQ = Health Canada - Canadian Drinking Water Quality Guideline

MMER, Ceqg (PAL) and CDWQ provided for reference purposes (see text)

Table 4-9: Summary of Iron Formation Samples

Waste Classification	Parameter	Total Sulphur	Sulphide*	AP**	NP	NPR	As	Bi	Co	Cr	Cu	Fe	Mn	Mo	Ni	Pb	Zn
		%		kg CaCO ₃ /t			µg/g										
Banded Iron Formation	Count	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	Min	0.0080	0.010	0.31	4.7	0.10	0.50	0.090	1.2	10	1.2	120000	46	0.40	3.3	0.67	2.1
	Max	4.8	4.8	149	487	112	49	1.5	23	450	250	550000	14000	4.0	97	9.4	58
	Median	0.50	0.42	13	13	1.7	4.6	0.090	5.1	28	6.5	385000	1015	1.2	8.6	2.2	7.4
	Average	0.96	0.84	26	74	2.8	9.3	0.19	6.7	50	28	380909	2962	1.6	16	2.9	12
	Standard Deviation	1.3	1.3	40	137	26	12	0.30	5.9	92	56	119639	4130	1.2	21	2.1	13
	10th Percentile	0.14	0.025	0.78	6.1	0.22	0.50	0.090	1.6	11	1.4	174000	113	0.51	3.9	1.3	4.9
	90th Percentile	2.0	1.9	61	304	32	26	0.28	13	68	43	508000	9420	3.3	31	5.2	22
High Grade Iron Formation	Count	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	Min	0.0060	0.010	0.31	-5.7	0.0013	0.50	0.090	1.3	4.4	1.4	91000	160	0.40	3.7	0.26	3.7
	Max	5.7	4.2	130	71	47	260	1.0	130	170	380	700000	35000	450	180	52	83
	Median	0.60	0.41	13	15	1.3	2.3	0.16	7.5	33	31	540000	3650	2.8	23	3.6	13
	Average	1.1	0.84	26	22	0.86	18	0.27	17	40	50	539604	6511	16	34	5.5	17
	Standard Deviation	1.3	1.0	31	19	8.0	45	0.26	22	30	70	117174	7705	65	35	8.1	14
	10th Percentile	0.13	0.085	2.7	4.9	0.11	0.50	0.090	2.6	13	5.7	417000	464	0.70	7.0	1.1	6.3
	90th Percentile	2.5	2.0	63	57	10	43	0.73	41	74	88	680000	18000	22	82	8.2	32
All Waste Rock	Count	776	776	776	776	776	776	776	776	776	776	776	776	776	776	776	776
	Min	0.0050	0.010	0.31	-18	0.000033	0.50	0.090	0.25	0.50	0.10	33	2.3	0.10	0.10	0.26	0.70
	Max	22	22	693	487	621	260	28	140	2400	480	700000	35000	450	2410	2174	3280
	Median	0.044	0.014	0.42	15	26	0.50	0.090	14	77	21	52500	530	1.2	33	3.5	40
	Average	0.32	0.248	7.8	21	2.7	4.7	0.29	19	172	39	111967	1206	5.4	82	11	53
	Standard Deviation	1.3	1.1	35	30	44	20	1.2	17	251	49	144574	2855	25	158	81	127
	10th Percentile	0.0050	0.010	0.31	7.7	1.0	0.50	0.090	5.0	23	3.1	22000	220	0.30	6.6	1.2	13
	90th Percentile	0.59	0.46	14	33	71	5.4	0.41	38	440	110	335000	2000	6.6	190	17	82

* Calculated as the difference between measured total sulphur and sulphate sulphur

** Calculated from sulphide sulphur

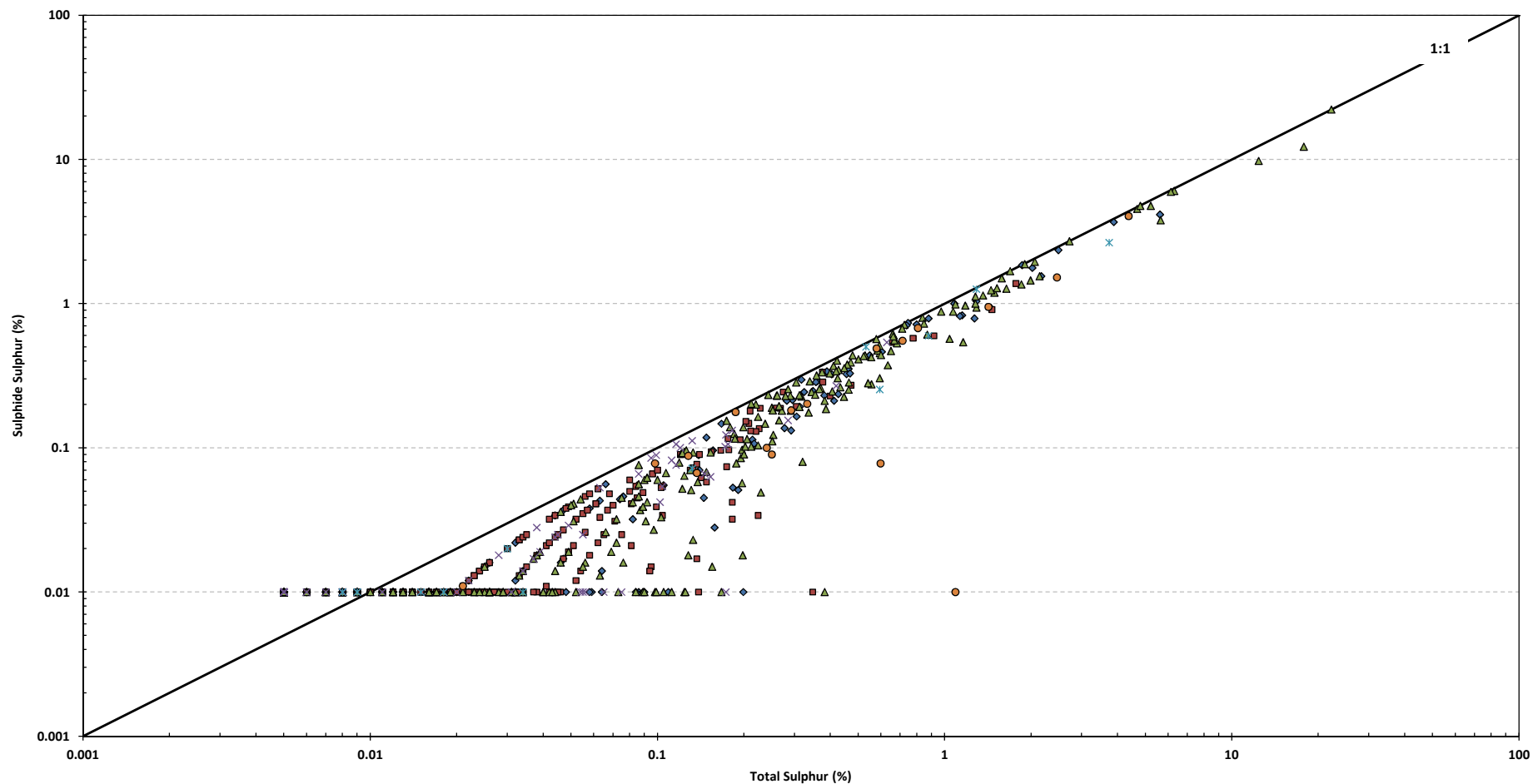
Table 4-10: Summary Static Data for Standard and NP Depleted Humidity Cell Samples

Sample ID	Borehole ID	Waste Classification	Lithology	Humidity Cell Type	Total Sulphur	Sulphide	AP*	NP	CarbNP**	Non CarbNP	Non CarbNP	NPR	CarbNPR	Cu	Ni	Zn	Cu	Ni	Zn	Carbonate NP Depletion	Sulphide Depletion	
					%			kg CaCO ₃ /t			%			ppm						years		
MRARD10-055	MR1-08-159	Footwall Schist	Gniess	Standard	0.36	0.29	9.1	9.6	0.083	9.5	99	1.1	0.055	30	50	722	0.60	0.60	1.00	5.8	26	
MRARD10-057	MR1-08-161	Footwall Schist	Gniess	NP Depleted ^[1]	0.19	0.05	1.5	15	0.083	14.9	99	10	1.3	29	15	24	0.59	0.30	0.26	14	14	
MRARD10-074	MR1-08-149	Footwall Schist	Gniess	Standard	0.66	0.58	18	8.0	1.6	6.4	80	0.44	0.087	22	37	32	0.51	0.53	0.39	3.3	34	
MRARD10-123	MR1-08-155	Footwall Schist	Gniess	NP Depleted ^[1]	0.42	0.27	8	21	0.083	21	100	2.5	0.18	31	6.0	21	0.62	0.08	0.21	23	57	
MRARD10-048	MR1-08-163	Footwall Schist	Schist	NP Depleted ^[1]	0.19	0.11	3.3	5	0.083	5.3	98	1.6	1.0	48	130	42	0.73	0.83	0.53	0.8	30	
5174	ARD-2B-NW	Footwall Waste	Gniess	NP Depleted ^[1]	0.061	0.011	0.3	4.2	0.083	4.1	98	12	5.1	17	5.7	30	0.44	0.08	0.35	18	22	
MRARD10-030	MR1-09-170	Footwall Waste	Gniess	Standard	0.27	0.19	5.9	12	0.83	11.4	93	2.1	0.21	5.8	46	14	0.19	0.58	0.11	14	53	
5171	ARD-2A-SE	Footwall Waste	Metasediment	Standard	0.40	0.23	7.2	9.0	2.8	6.2	69	1.3	0.63	92	4.0	26	0.86	0.02	0.28	7.9	64	
5172	ARD-2A-SE	Footwall Waste	Metasediment	NP Depleted ^[1]	0.12	0.015	0.5	6	0.083	5.6	99	12	5.0	43	5.1	17	0.70	0.06	0.16	4.4	11	
5178	ARD-2B-NW	Footwall Waste	Schist	Standard	1.5	0.91	28	23	1.5	21.1	93	0.79	0.053	67	620	100	0.80	0.99	0.94	1.5	21	
MRARD10-026	MR1-09-173	Hanging Wall Schist	Schist	NP Depleted ^[1]	0.67	0.21	6.6	14	0.083	13.9	99	2.1	0.38	33	110	51	0.64	0.77	0.67	0.2	17	
MRARD10-092	MR1-08-142	Hanging Wall Schist	Schist	Standard	0.59	0.31	9.7	23	0.083	23.3	100	2.4	0.052	2.3	45	30	0.07	0.58	0.35	3.8	149	
MRARD10-051	MR1-08-158	Hanging Wall Schist	Volcanic Tuff	NP Depleted ^[1]	0.65	0.39	12.2	14	0.083	13.9	99	1.1	0.27	98	48	38	0.88	0.59	0.46	0.3	36	
MRARD10-080	MR1-08-149	Hanging Wall Schist	Volcanic Tuff	Standard	1.3	1.0	31	20	0.13	20.2	99	0.65	0.024	8.8	46	12	0.28	0.58	0.08	1.1	54	
MRARD10-105	MR1-08-141	Hanging Wall Schist	Volcanic Tuff	Standard	0.87	0.61	19	16	1.3	14.4	92	0.82	0.28	9.4	6.9	9.4	0.30	0.11	0.06	6.4	124	
MRARD10-082	MR1-08-150	Hanging Wall Waste	Volcanic Tuff	NP Depleted ^[1]	0.12	0.06	1.7	7	0.83	5.8	87	3.8	1.6	7.7	6.8	3.8	0.25	0.11	0.01	5.7	5.8	
MRARD10-120	MR1-08-148	Ore Zone	Iron Formation	Standard	0.46	0.30	9.4	5.6	1.1	4.5	81	0.60	0.12	4.5	20	9.9	0.14	0.37	0.07	9.5	46	

* Calculated from sulphide sulphur

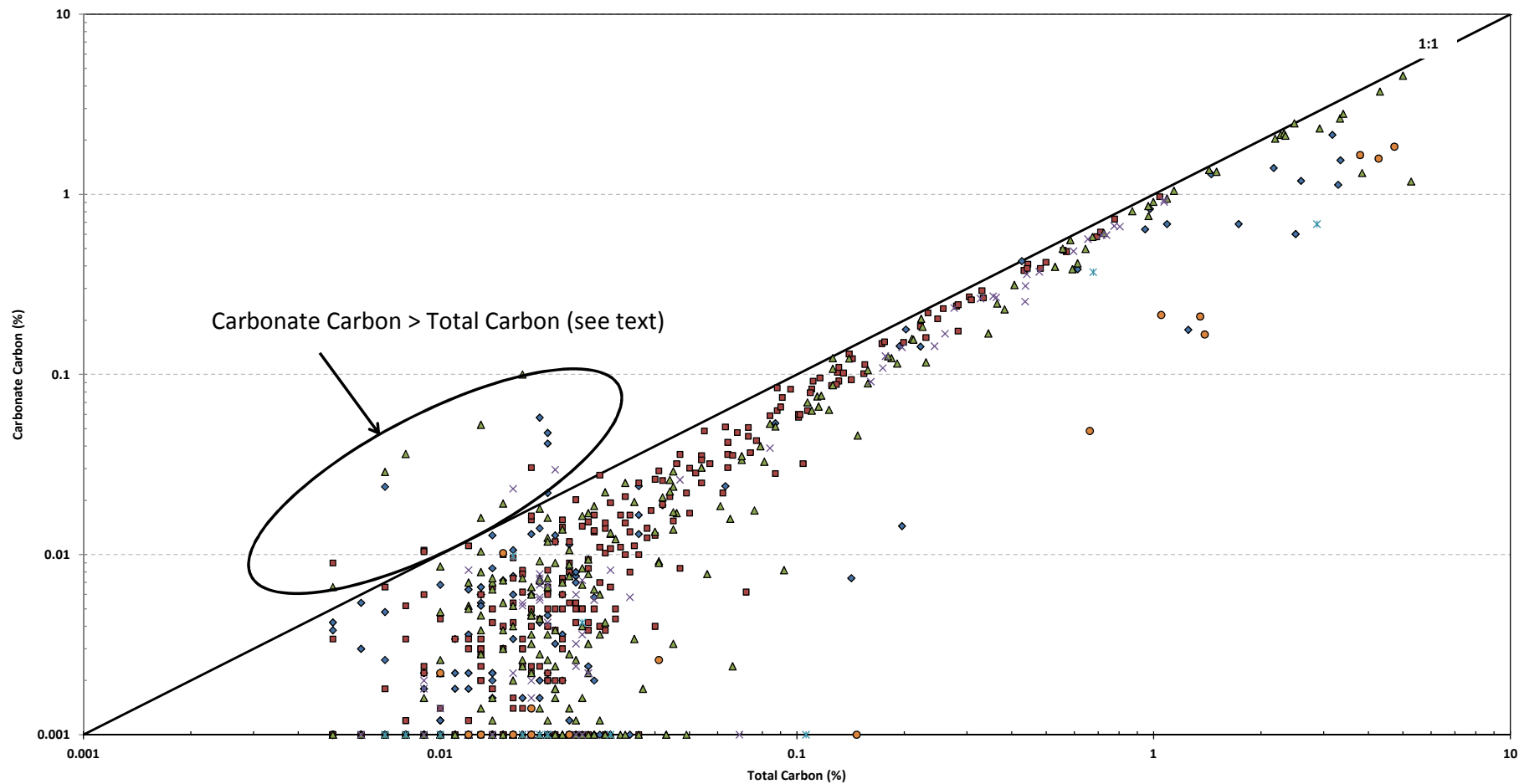
** Calculated from minimum between total carbon and carbonate carbon

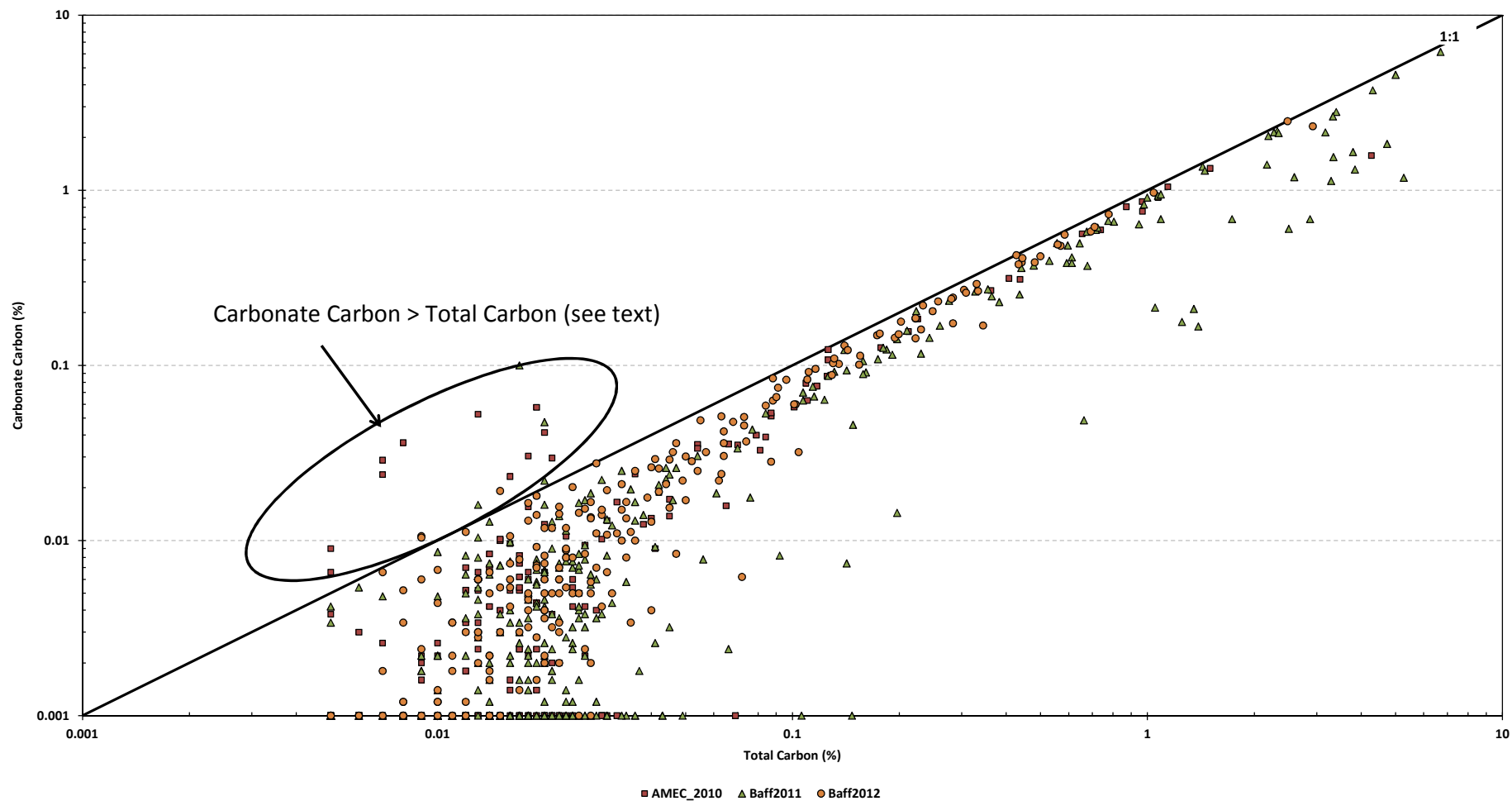
[1] Post Depletion values used for ABA Data

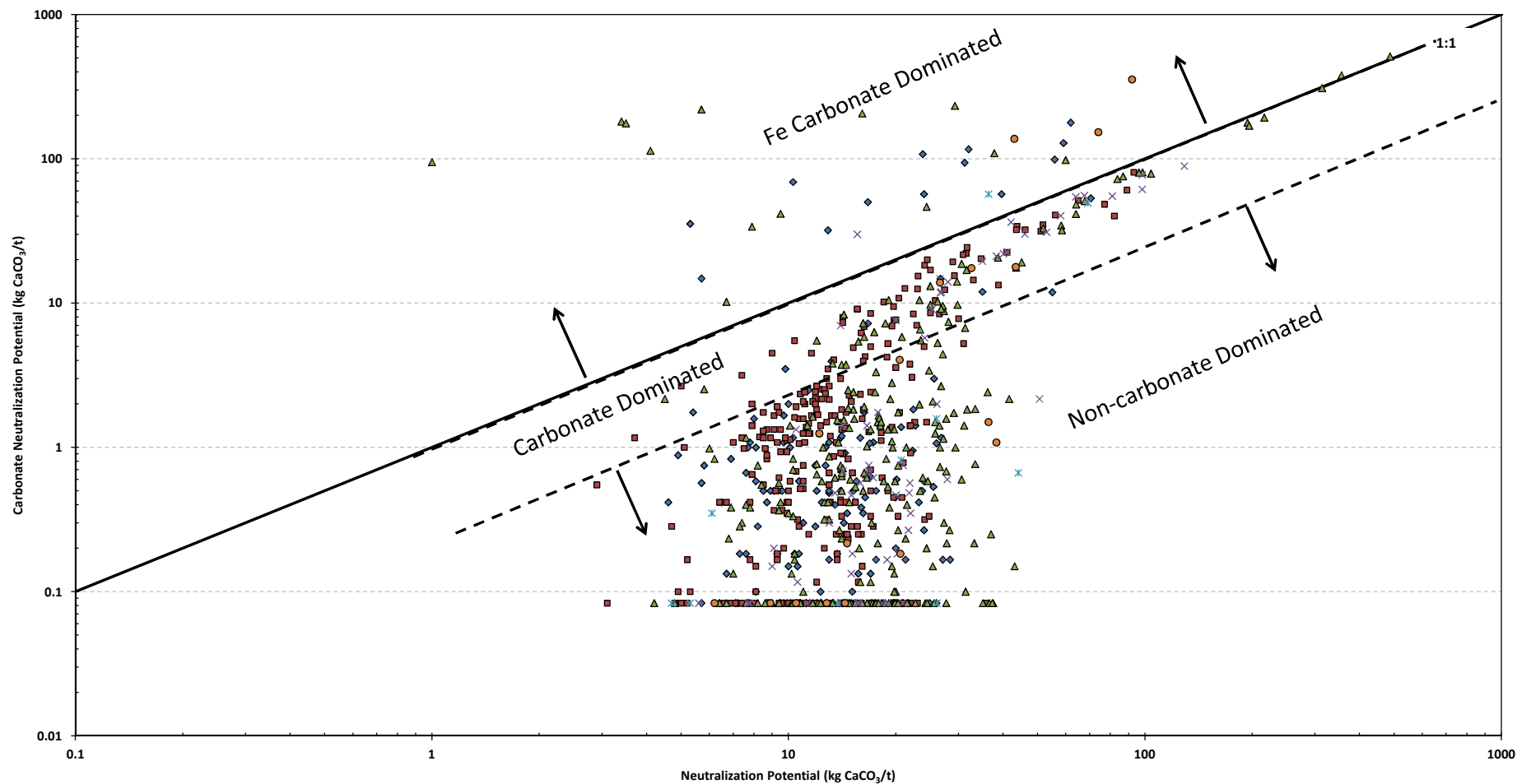


◆ Footwall Schist ■ Footwall Waste ▲ Hanging Wall Schist × Hanging Wall Waste * Internal Waste ● Mineralized Waste

 	
Mary River Project	
Total Sulphur vs Sulphide Sulphur	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	Figure 4-1

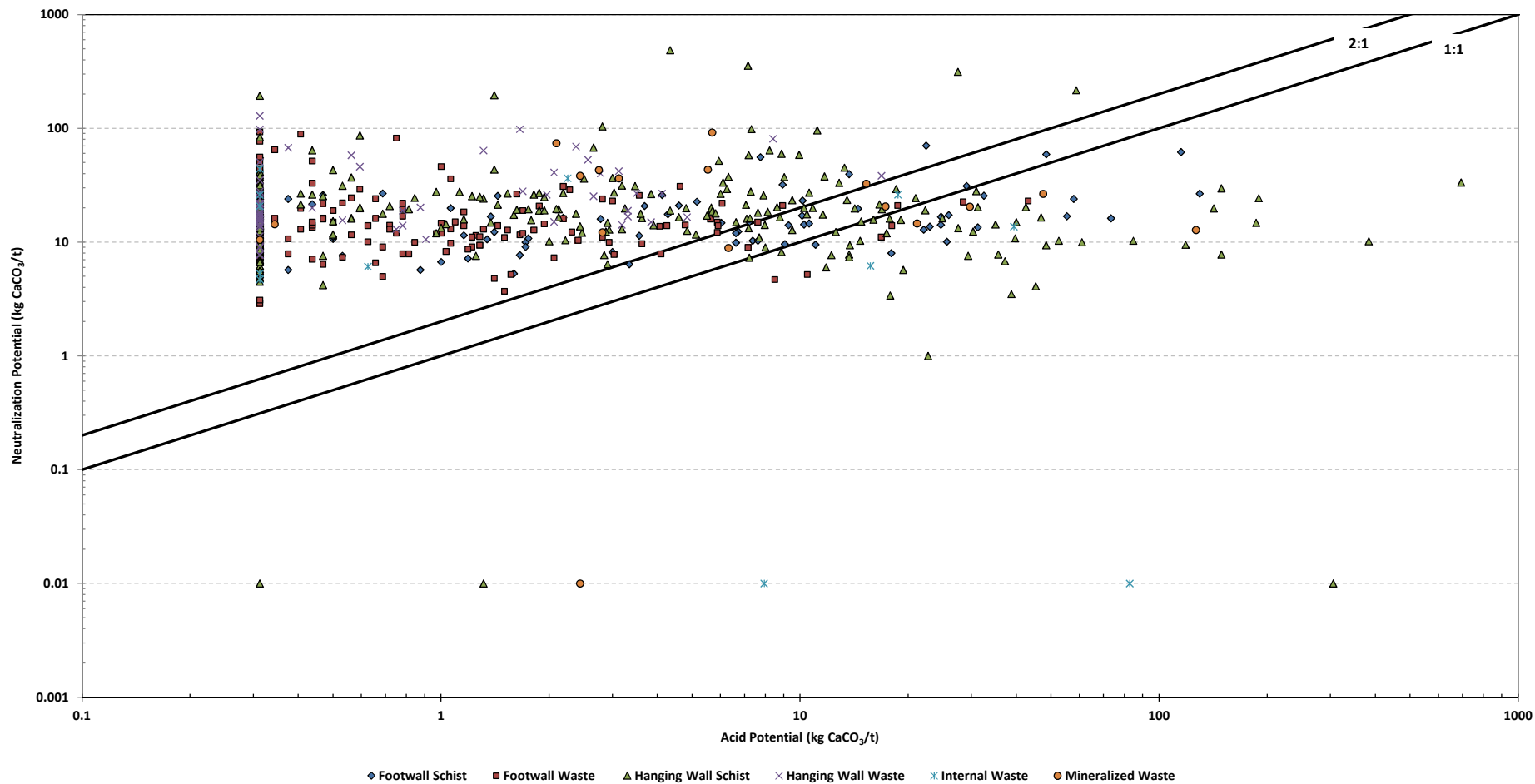






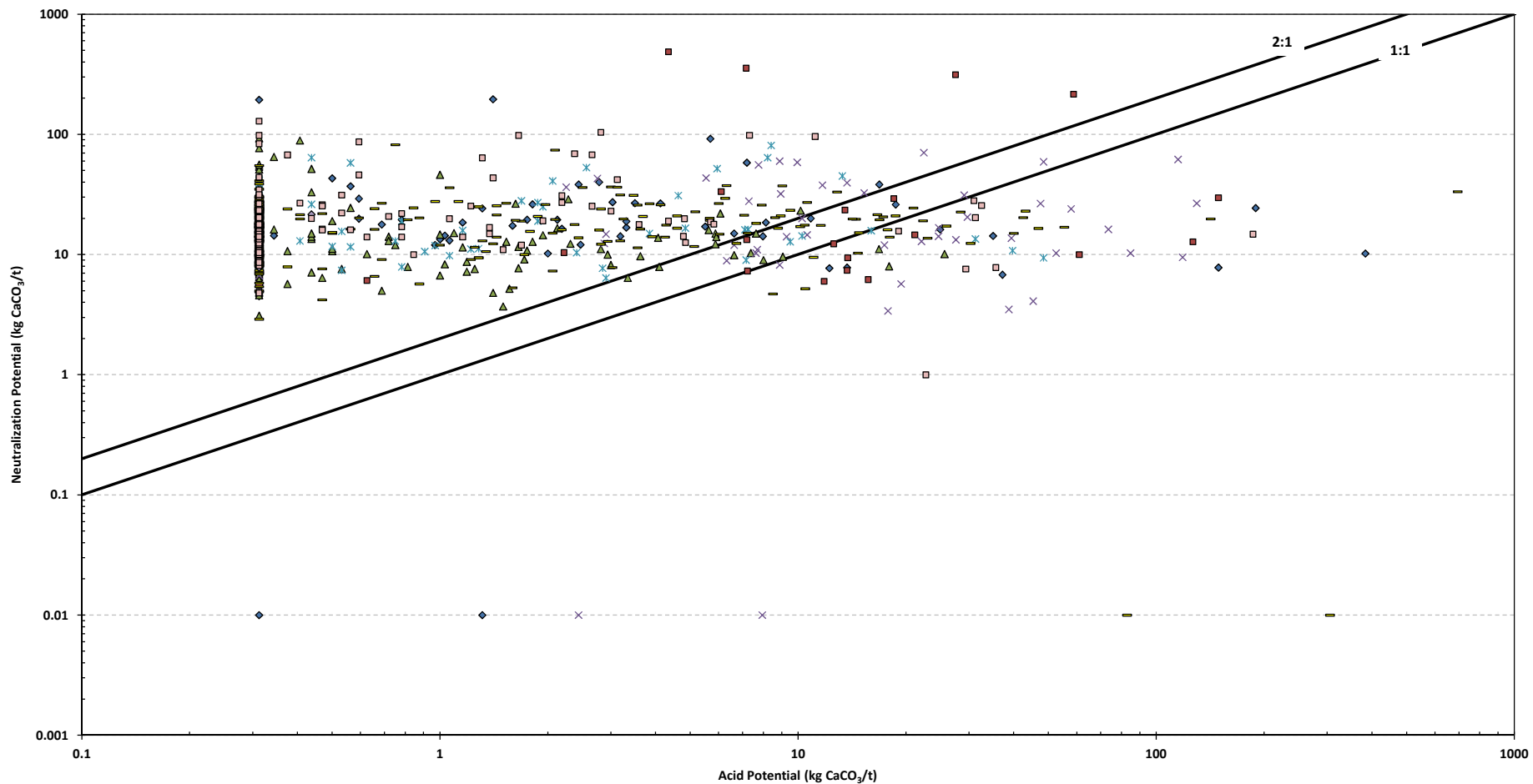
◆ Footwall Schist ■ Footwall Waste ▲ Footwall Waste × Hanging Wall Schist × Hanging Wall Waste ● Internal Waste

Mary River Project		
Carbonate Neutralization Potential vs Neutralization Potential		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure 4-4



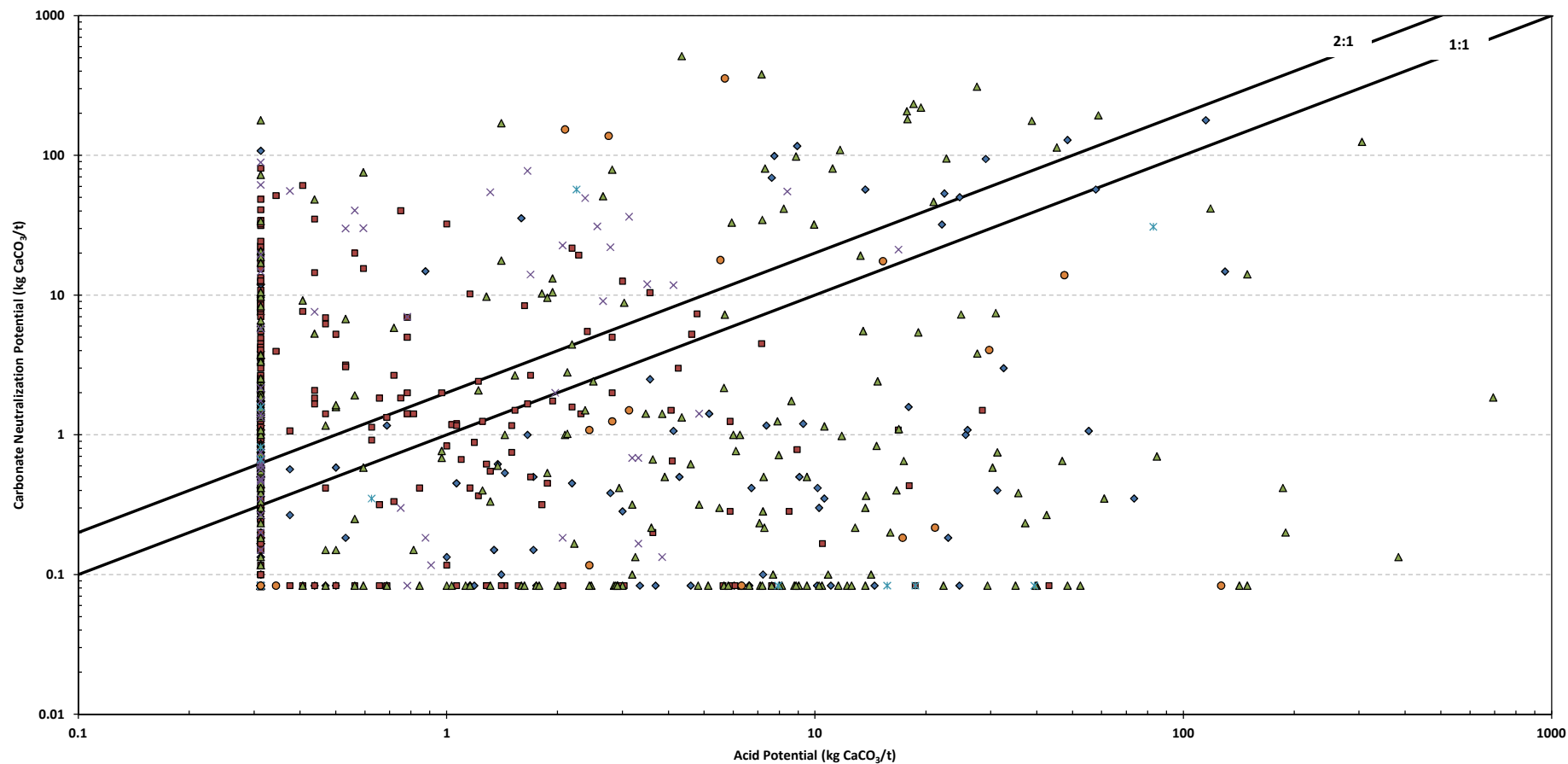
* Negative NPR values are re-calculated using an NP of 0.01 kg CaCO₃/t

Mary River Project		
Neutralization Potential vs Acid Potential		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure 4-5

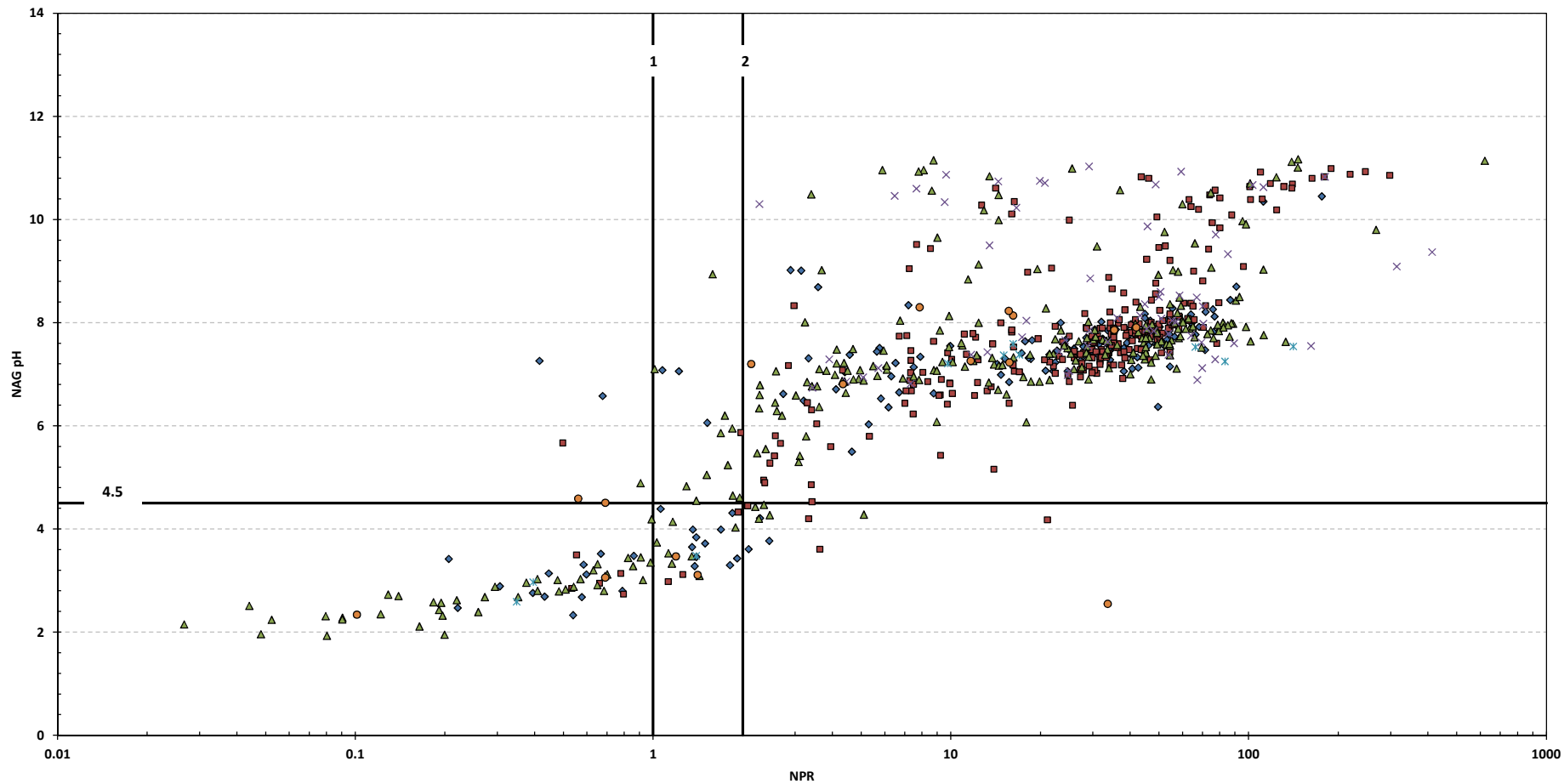


* Negative NPR values are re-calculated using an NP of 0.01 kg CaCO₃/t

Mary River Project		
Neutralization Potential vs Acid Potential (Lithology)		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908	Figure 4-6	

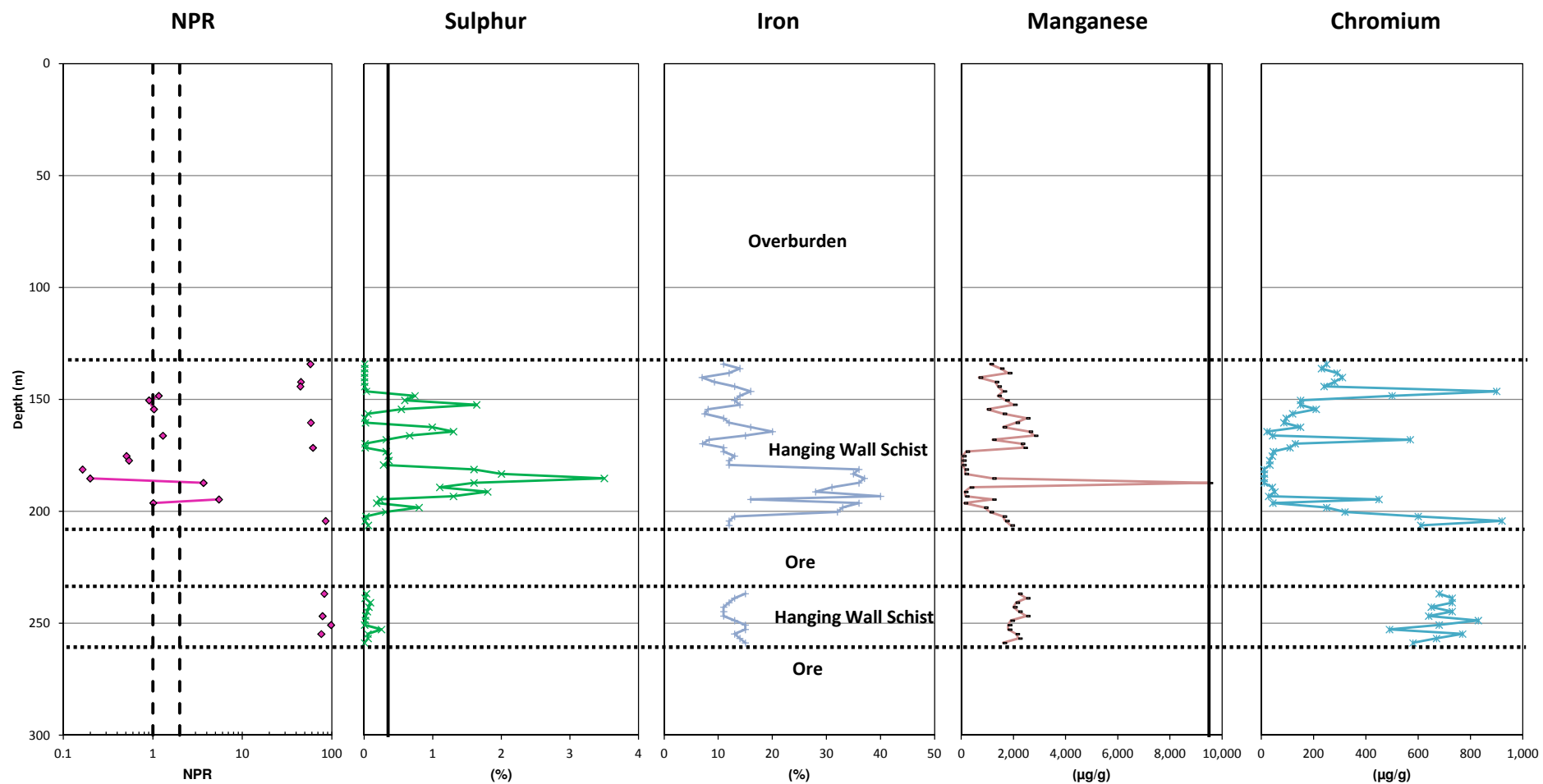


◆ Footwall Schist ■ Footwall Waste ▲ Hanging Wall Schist × Hanging Wall Waste × Internal Waste ● Mineralized Waste



◆ Footwall Schist ■ Footwall Waste ▲ Hanging Wall Schist × Hanging Wall Waste * Internal Waste ● Mineralized Waste

 	
Mary River Project	
NAG pH vs Neutralization Potential Ratio	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	Figure 4-8

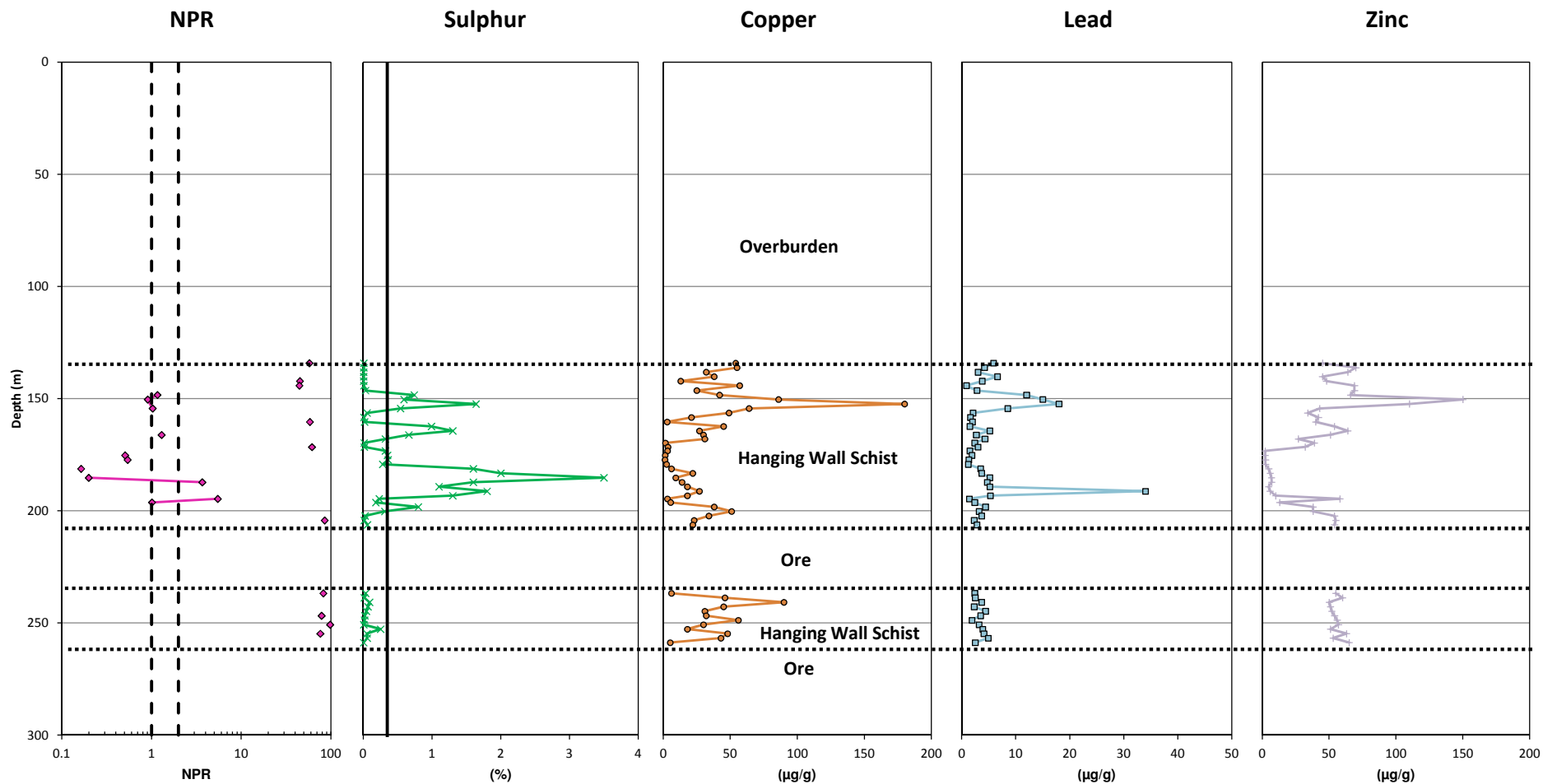


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line (not shown on plots where there are no exceedances)

Baffinland Iron Mines Corporation		amec
Mary River Project		
Downhole Analysis MR1-12-222		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure 4-9

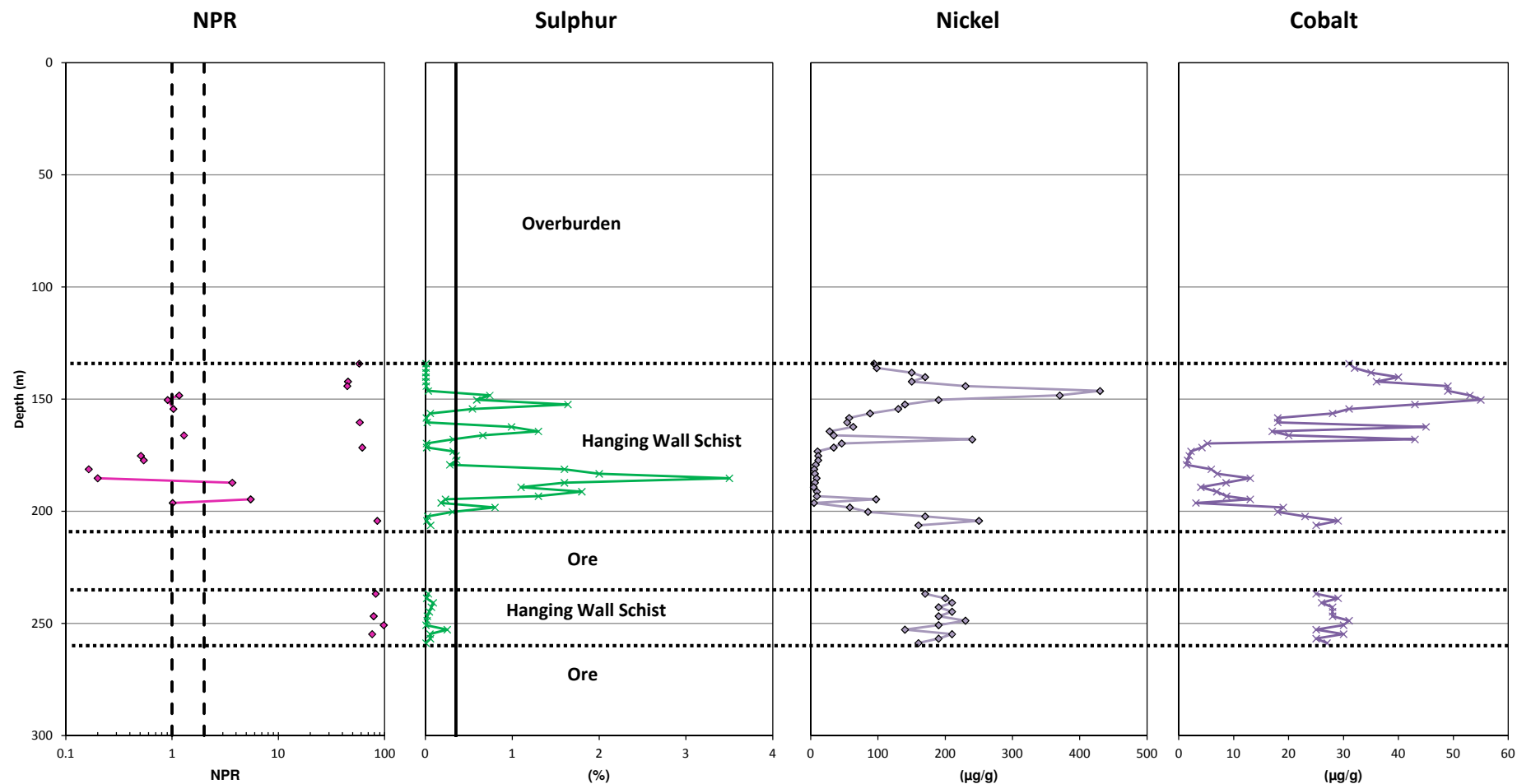


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Baffinland Iron Mines Corporation		amec Engineering & Consulting
Mary River Project		
Downhole Analysis MR1-12-222		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure 4-10

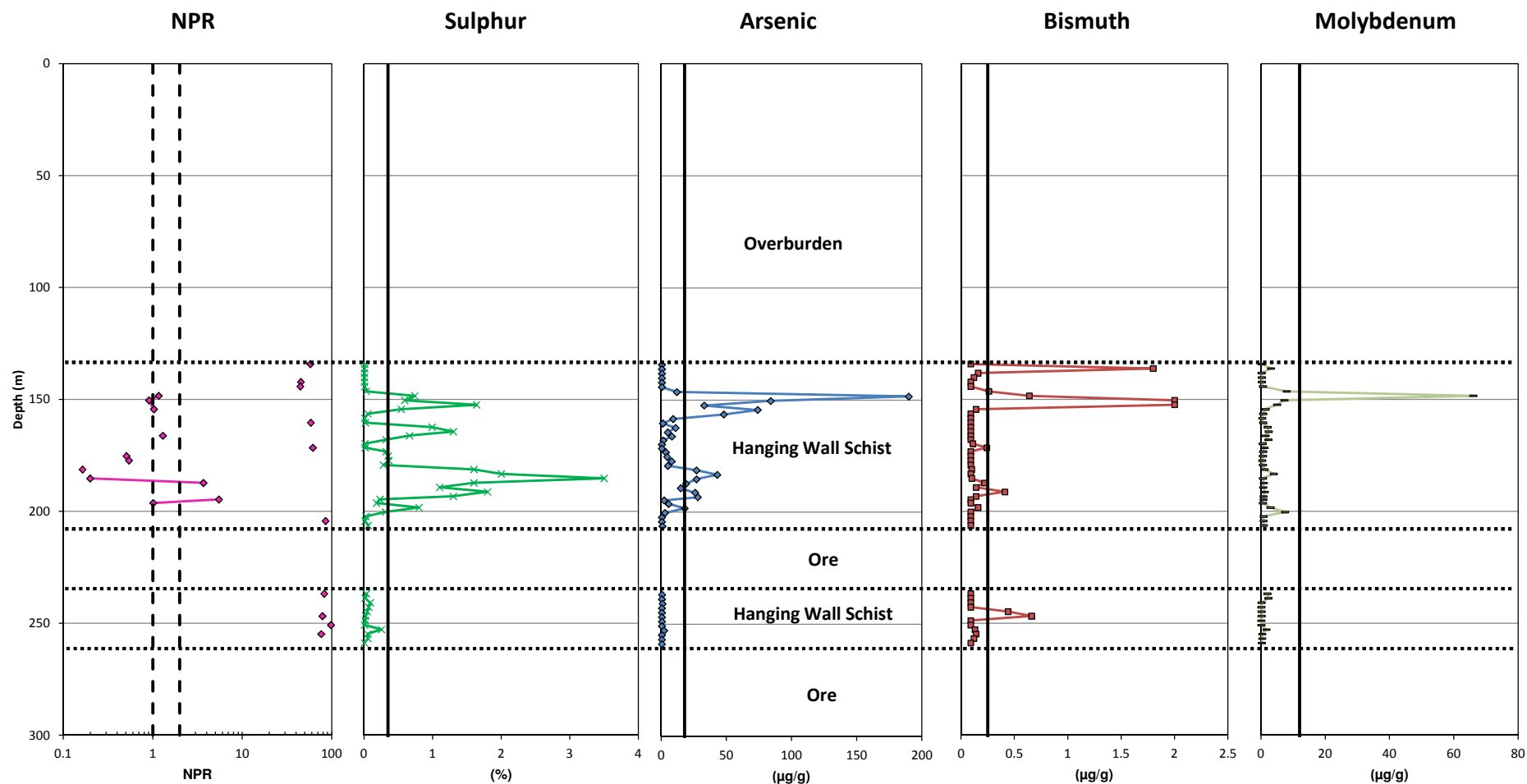


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Baffinland Iron Mines Corporation		amec AMERICAN MINING ENGINEERING CORPORATION
Mary River Project		
Downhole Analysis MR1-12-222		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure 4-11

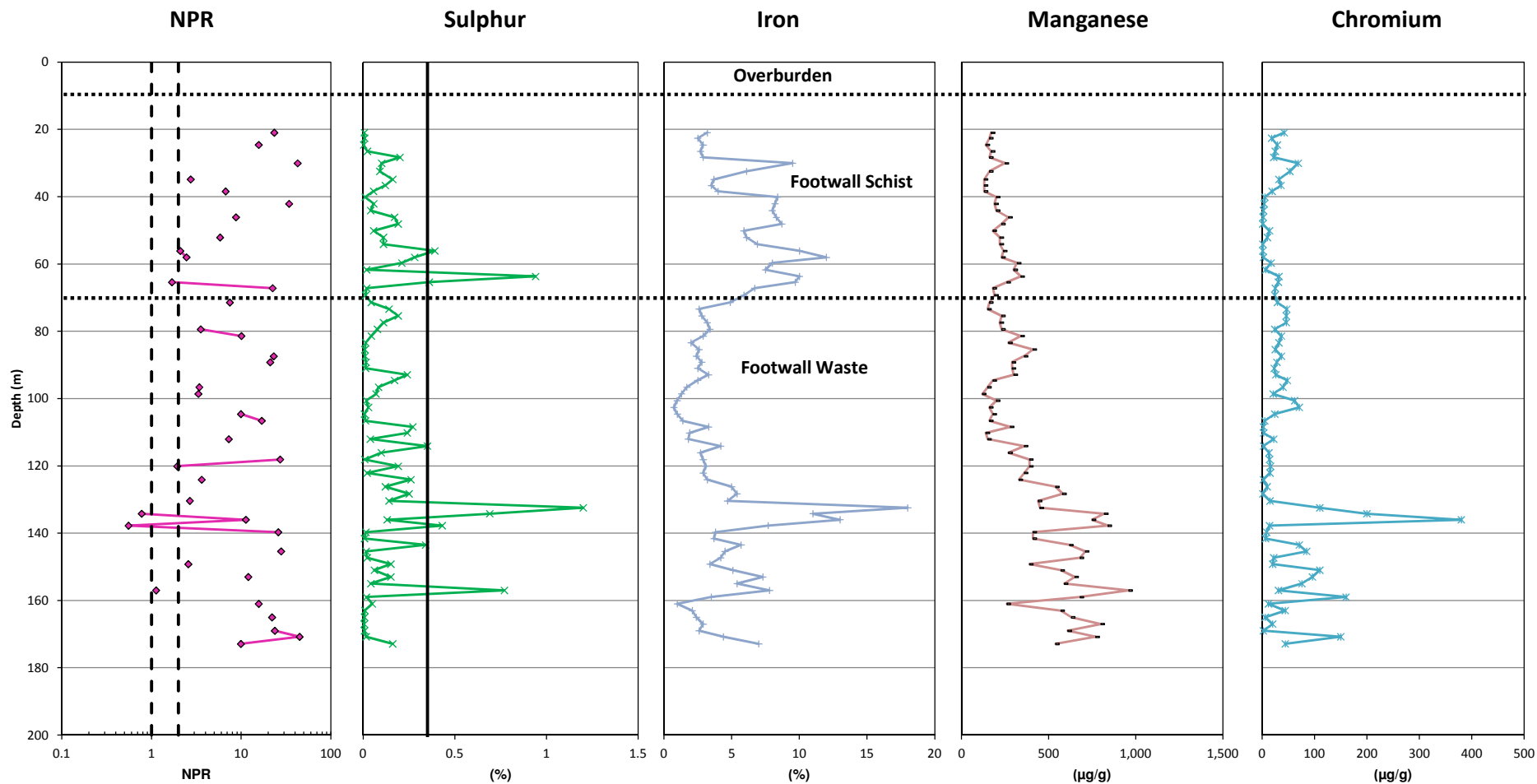


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Mary River Project		
Downhole Analysis MR1-12-222		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908	Figure 4-12	

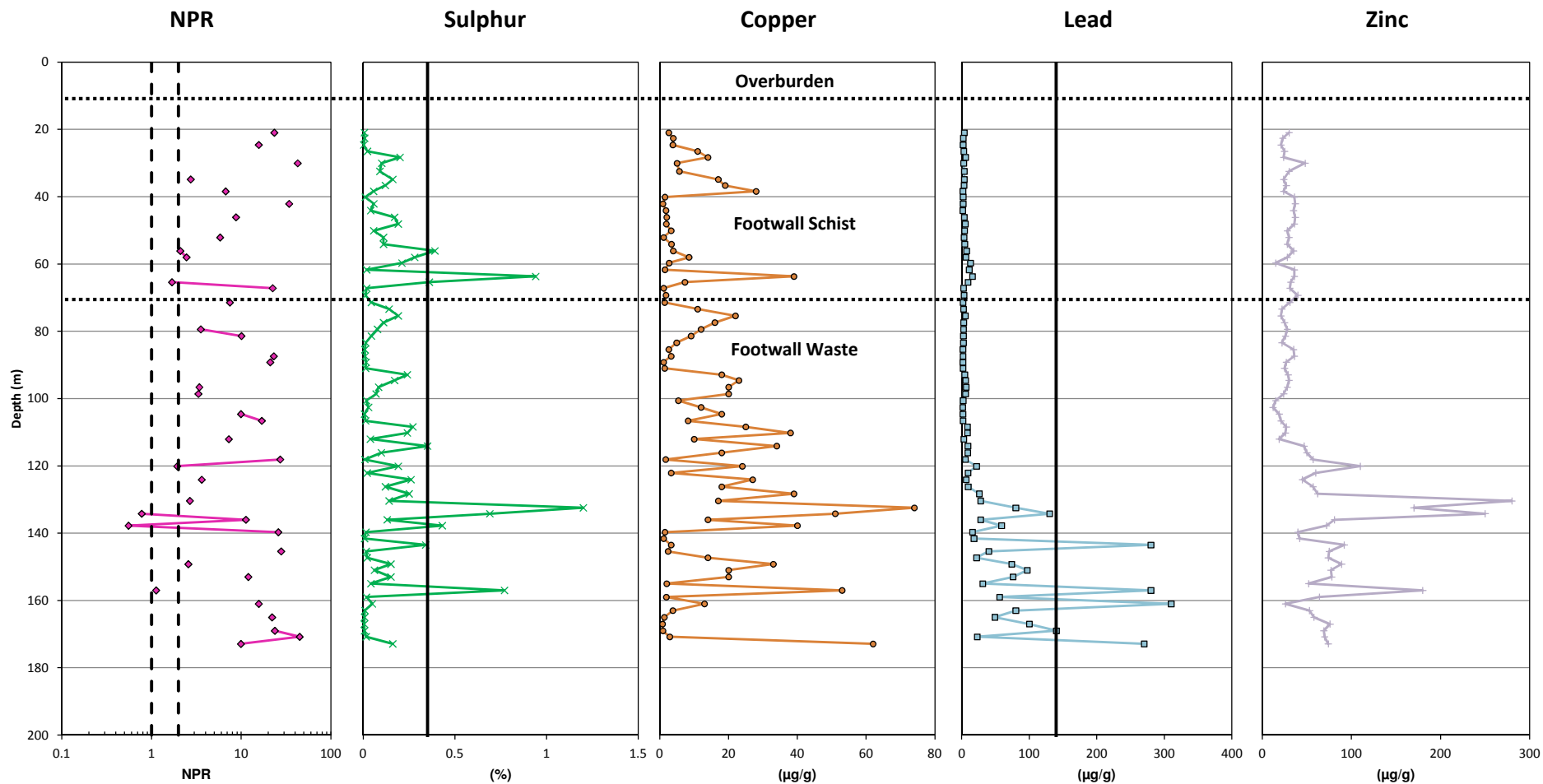


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Baffinland Iron Mines Corporation		amec
Mary River Project		
Downhole Analysis MR1-12-223		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908	Figure: 4-13	

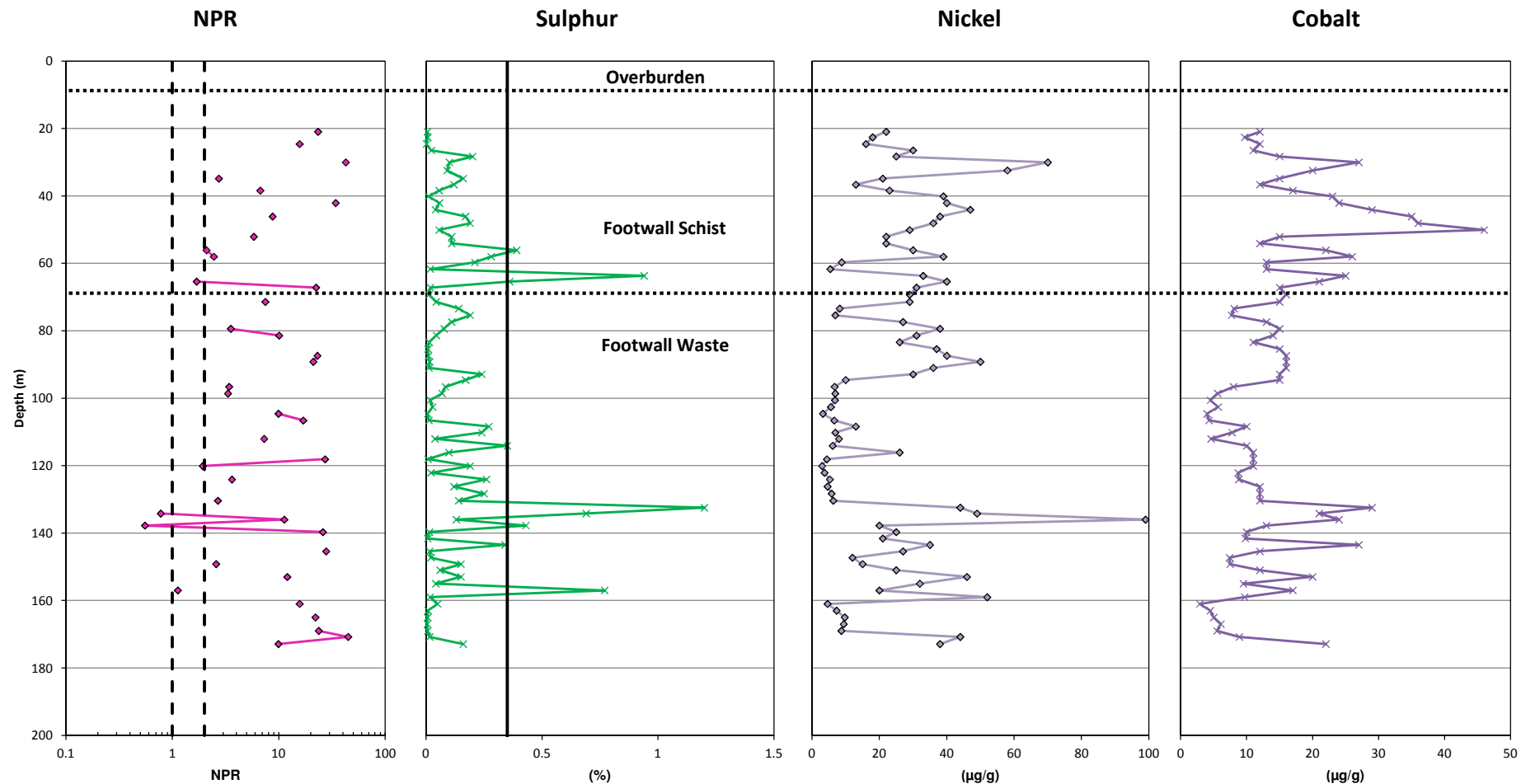


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Baffinland Iron Mines Corporation		amec
Mary River Project		
Downhole Analysis MR1-12-223		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure 4-14

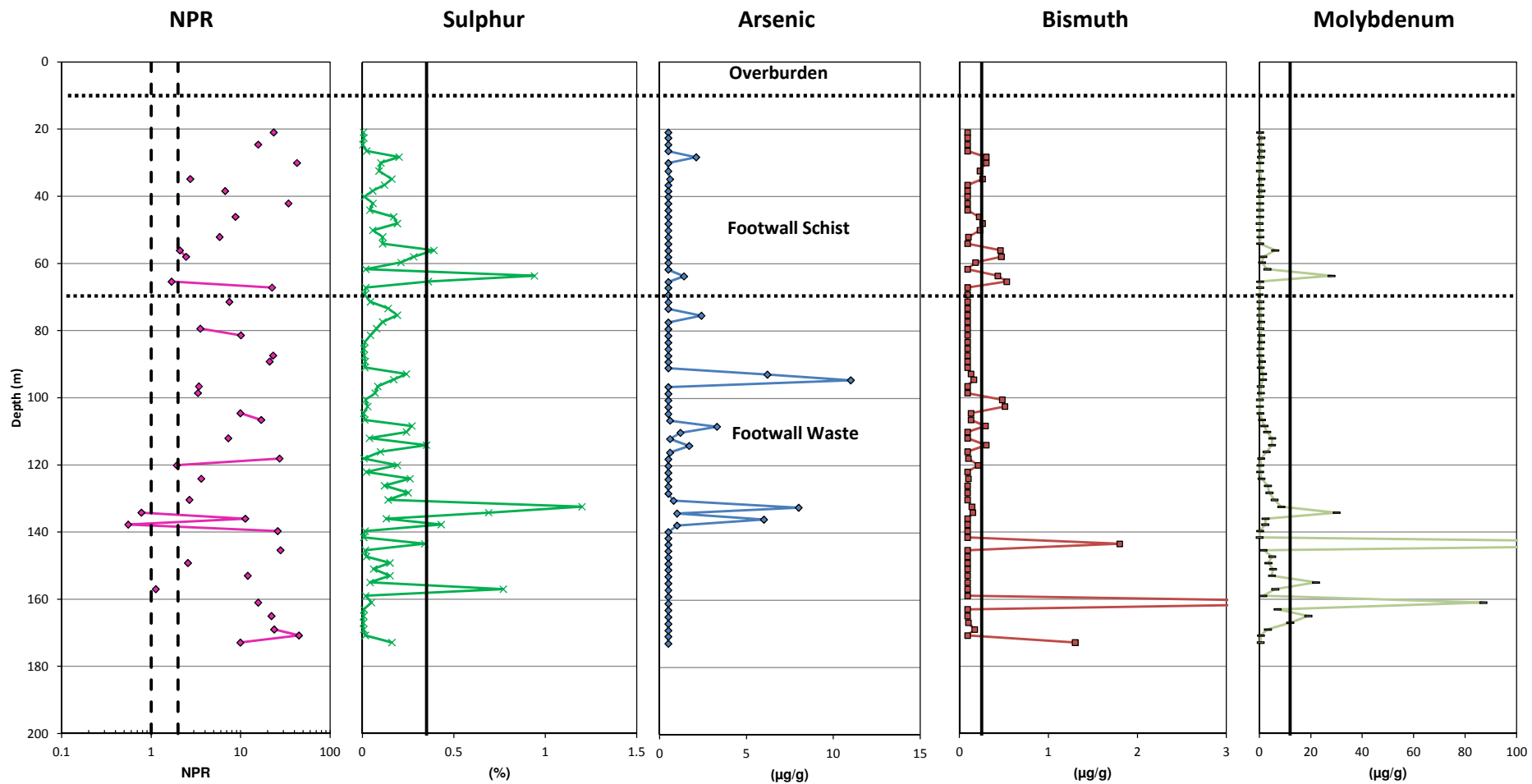


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Baffinland Iron Mines Corporation		amec AMERICAN MINING ENGINEERING CORPORATION
Mary River Project		
Downhole Analysis MR1-12-223		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure 4-15

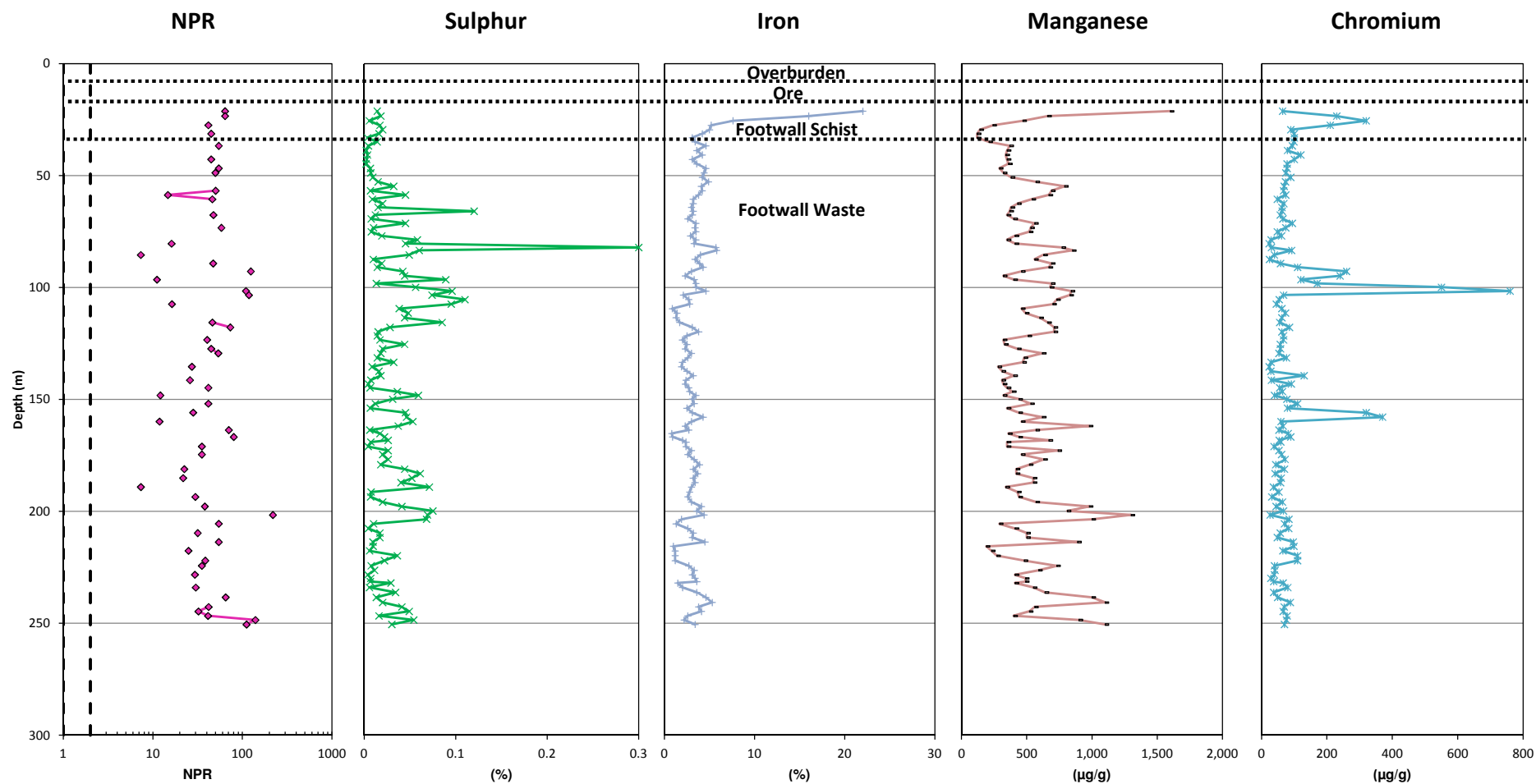


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Baffinland Iron Mines Corporation		amec
Mary River Project		
Downhole Analysis MR1-12-223		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure 4-16

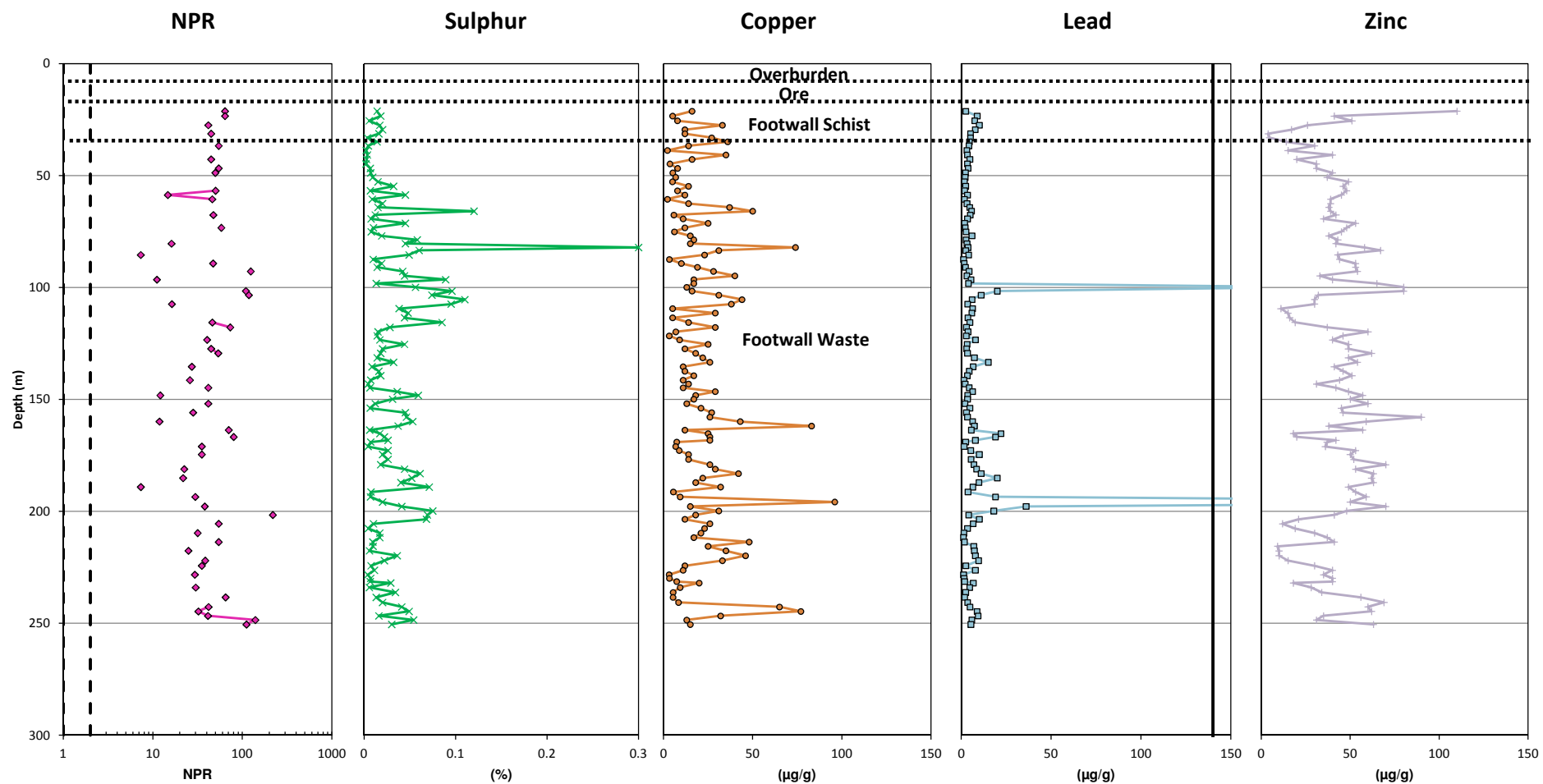


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Mary River Project		
Downhole Analysis MR1-12-224		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908	Figure 4-17	

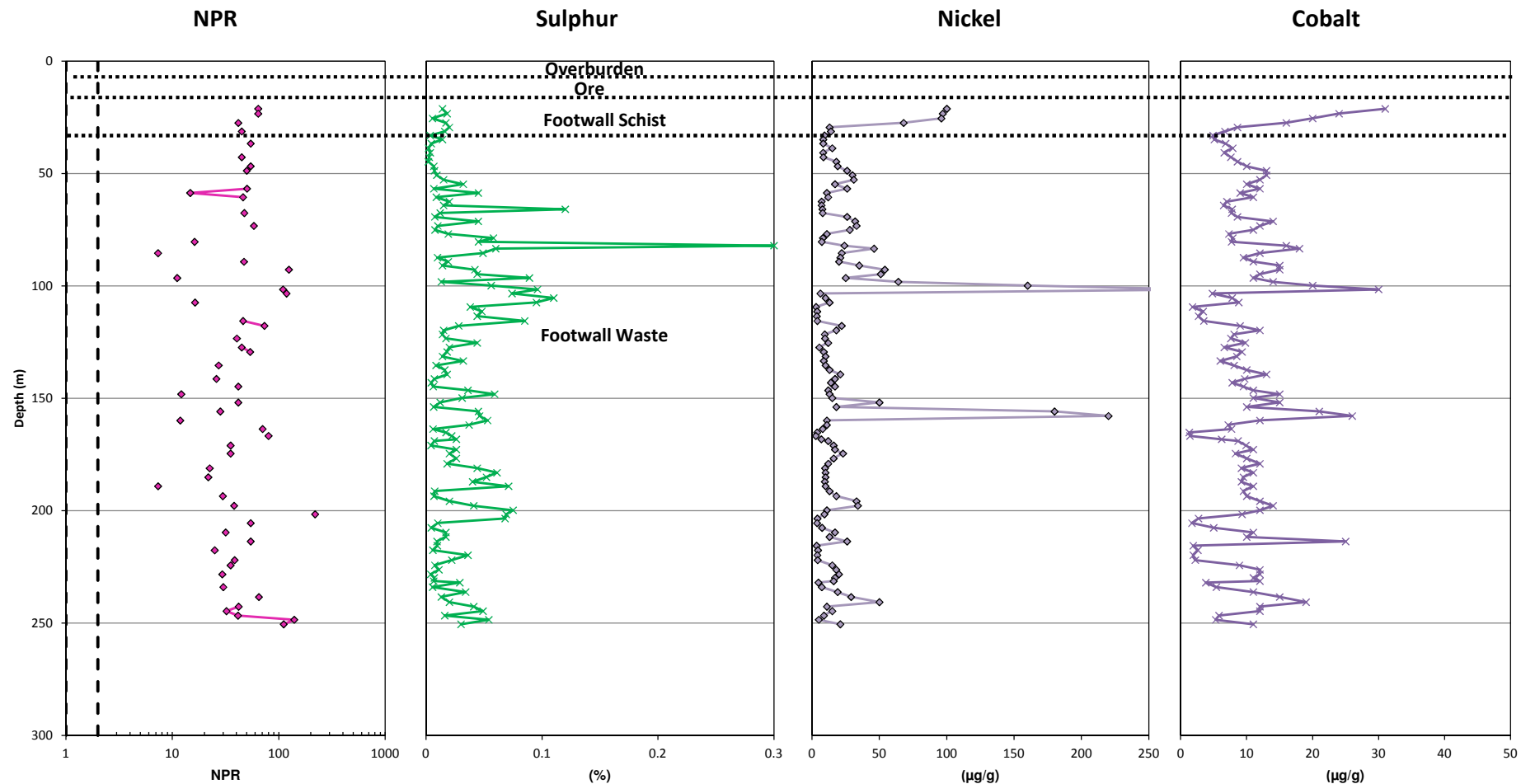


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Baffinland Iron Mines Corporation		amec
Mary River Project		
Downhole Analysis MR1-12-224		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure 4-18

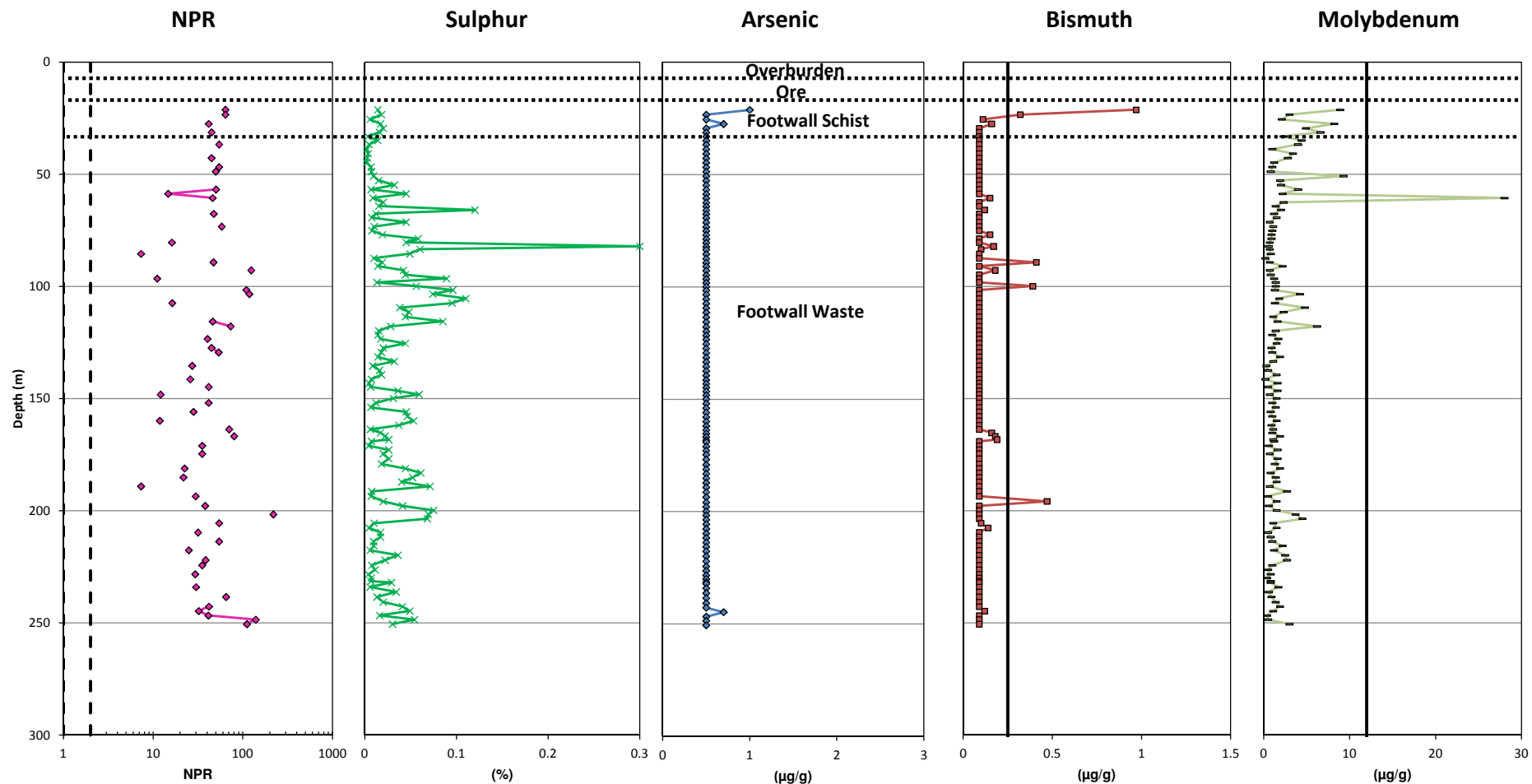


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Mary River Project		
Downhole Analysis MR1-12-224		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908	Figure 4-19	

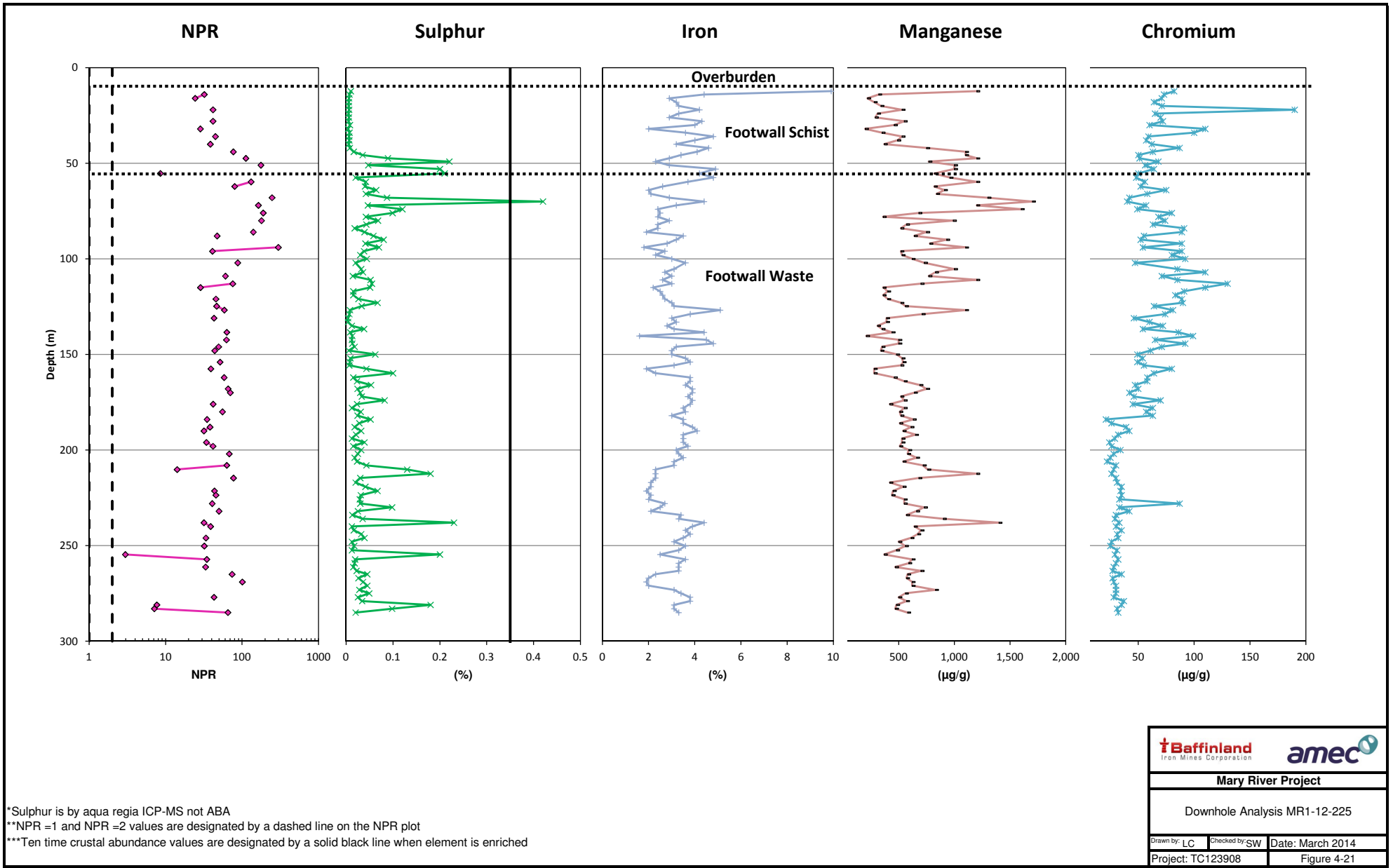


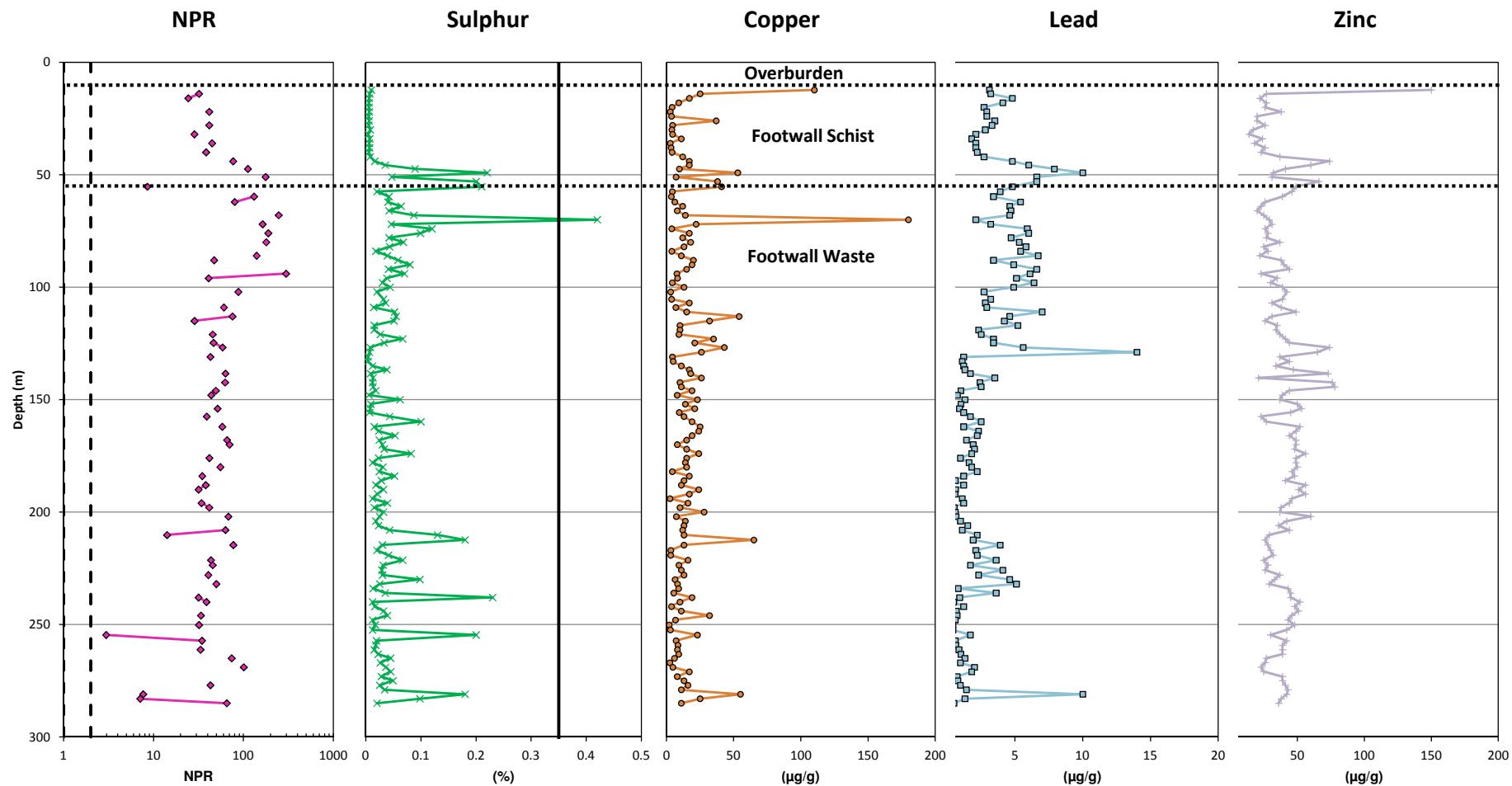
*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Mary River Project		
Downhole Analysis MR1-12-224		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908	Figure 4-20	



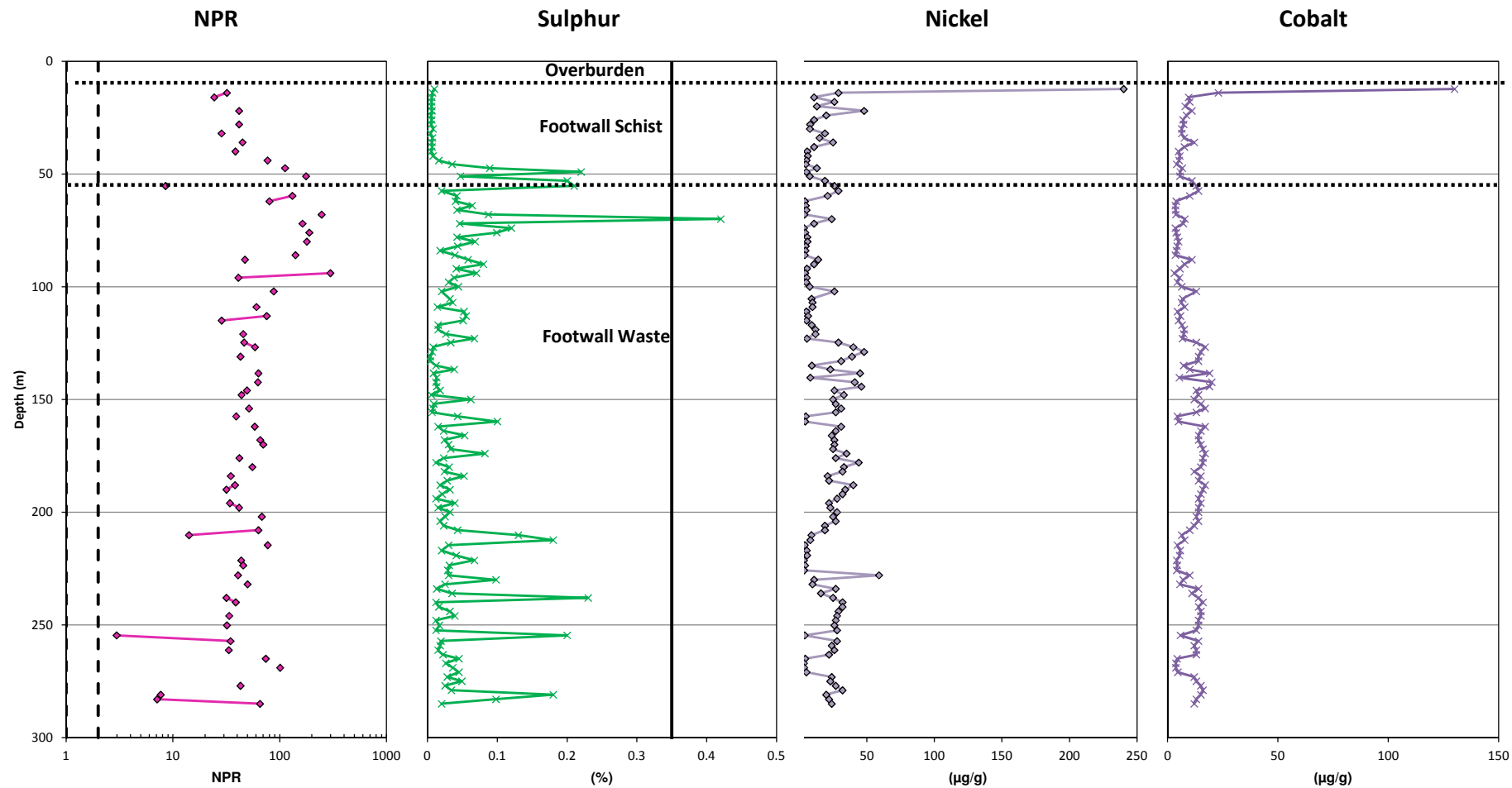


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Baffinland Iron Mines Corporation		amec AMERICAN MINING ENGINEERING CORPORATION
Mary River Project		
Downhole Analysis MR1-12-225		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure: 4-22

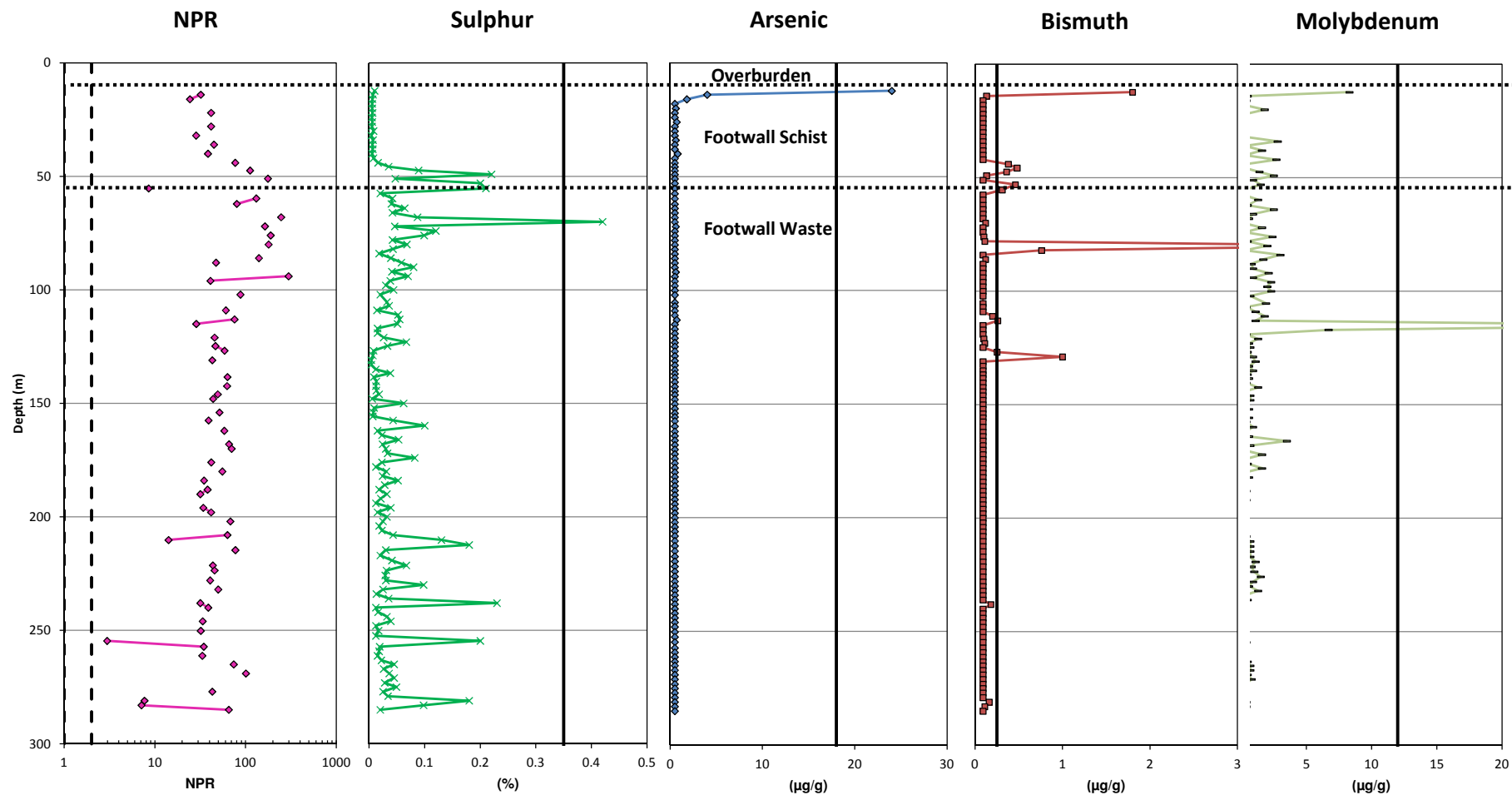


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Mary River Project		
Downhole Analysis MR1-12-225		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908	Figure 4-23	

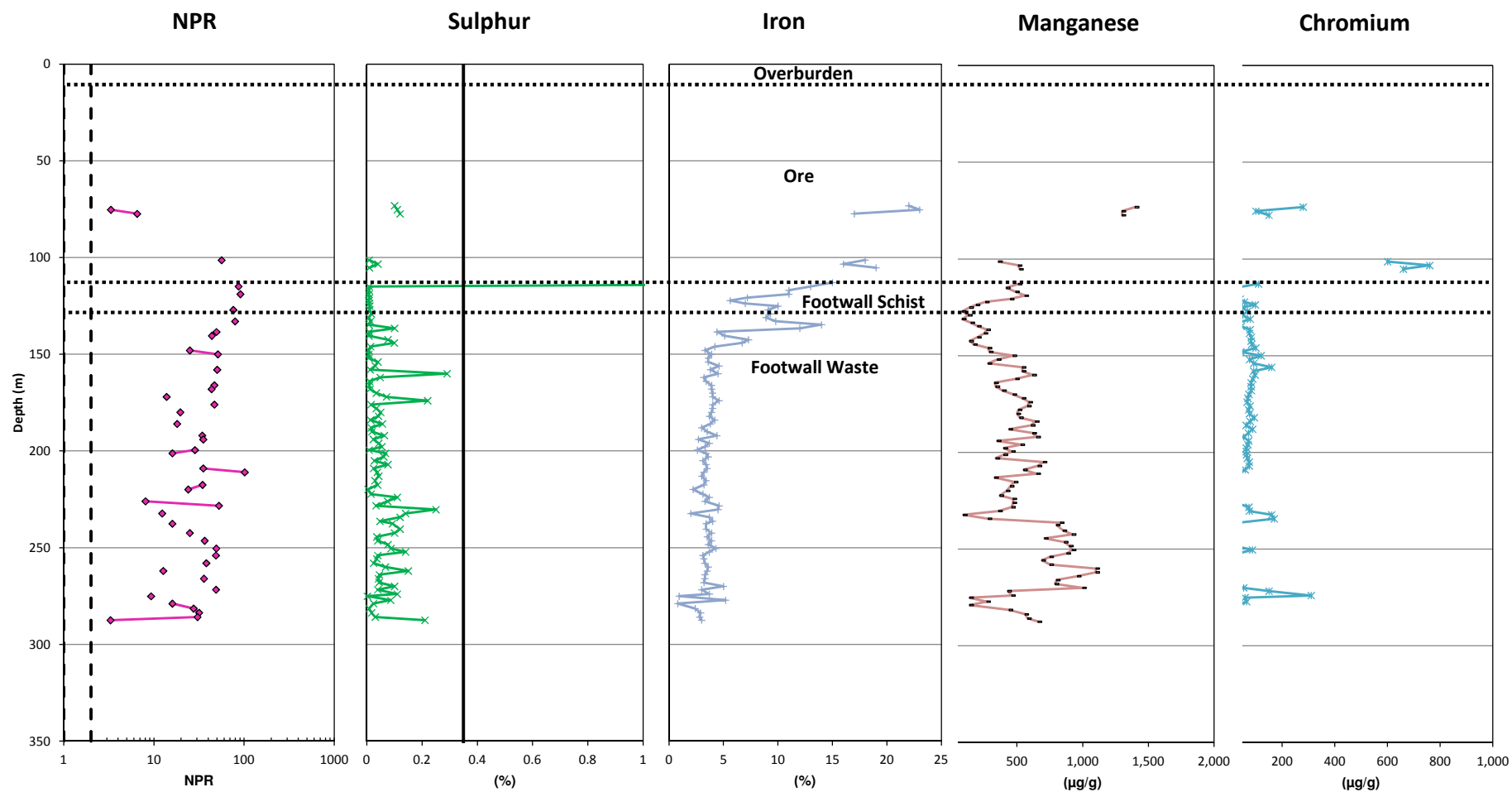


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Baffinland Iron Mines Corporation		amec
Mary River Project		
Downhole Analysis MR1-12-225		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure 4-24

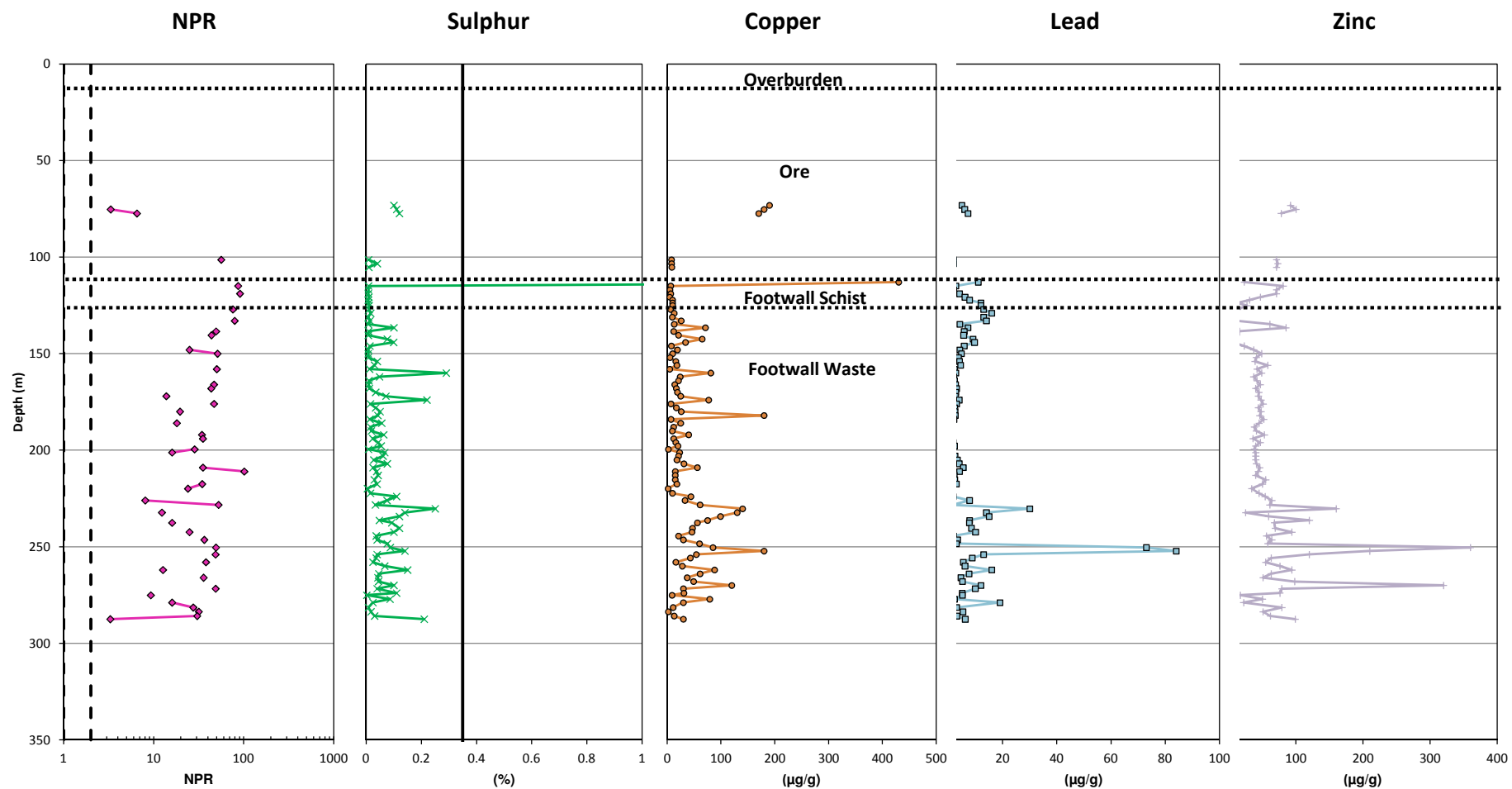


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Baffinland Iron Mines Corporation		amec
Mary River Project		
Downhole Analysis MR1-12-226		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure 4-25

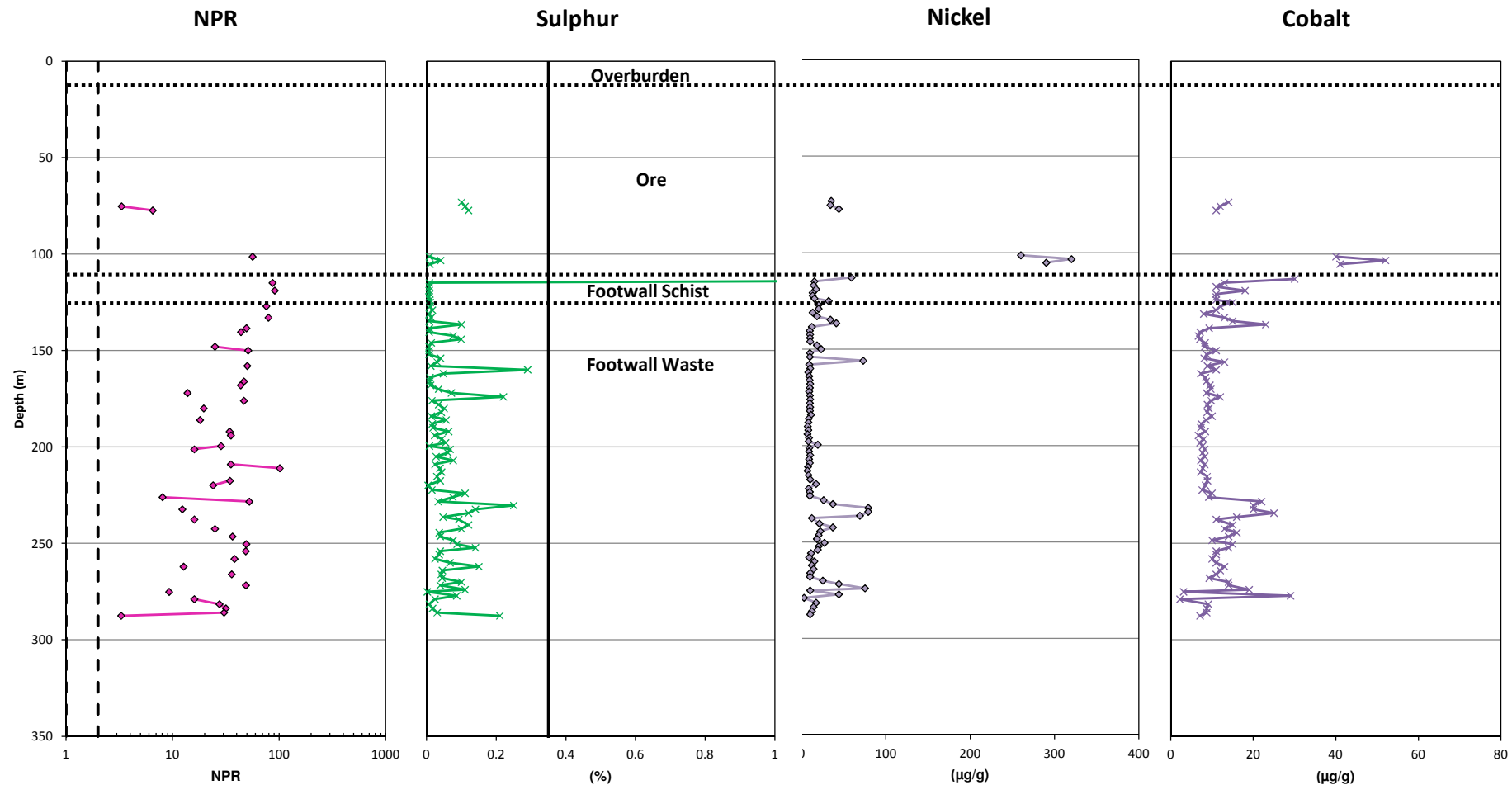


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Baffinland Iron Mines Corporation		amec AMERICAN MINING ENGINEERING CORPORATION
Mary River Project		
Downhole Analysis MR1-12-226		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908	Figure 4-26	

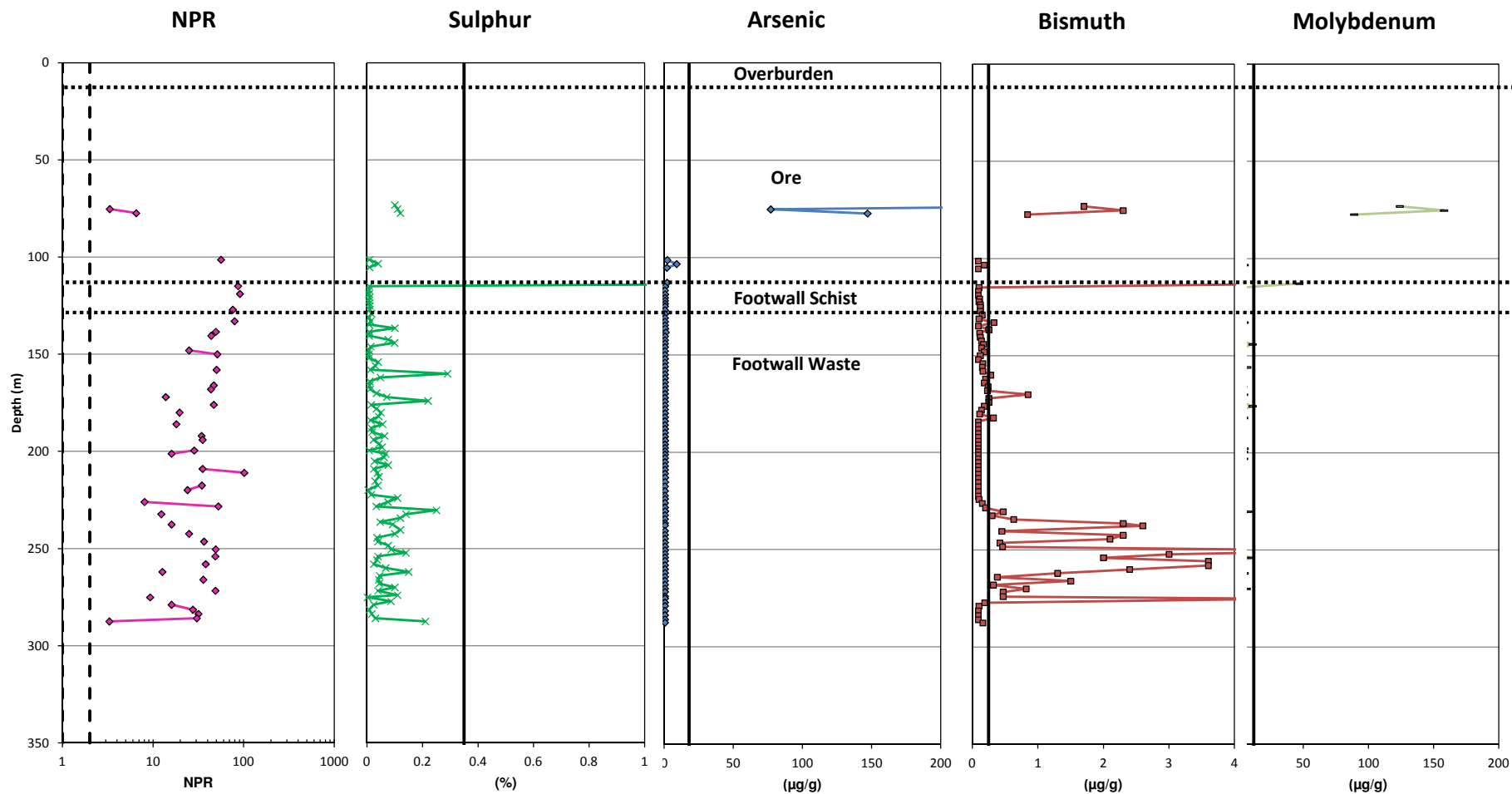


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

***Ten time crustal abundance values are designated by a solid black line when element is enriched

Mary River Project		
Downhole Analysis MR1-12-226		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908	Figure 4-27	

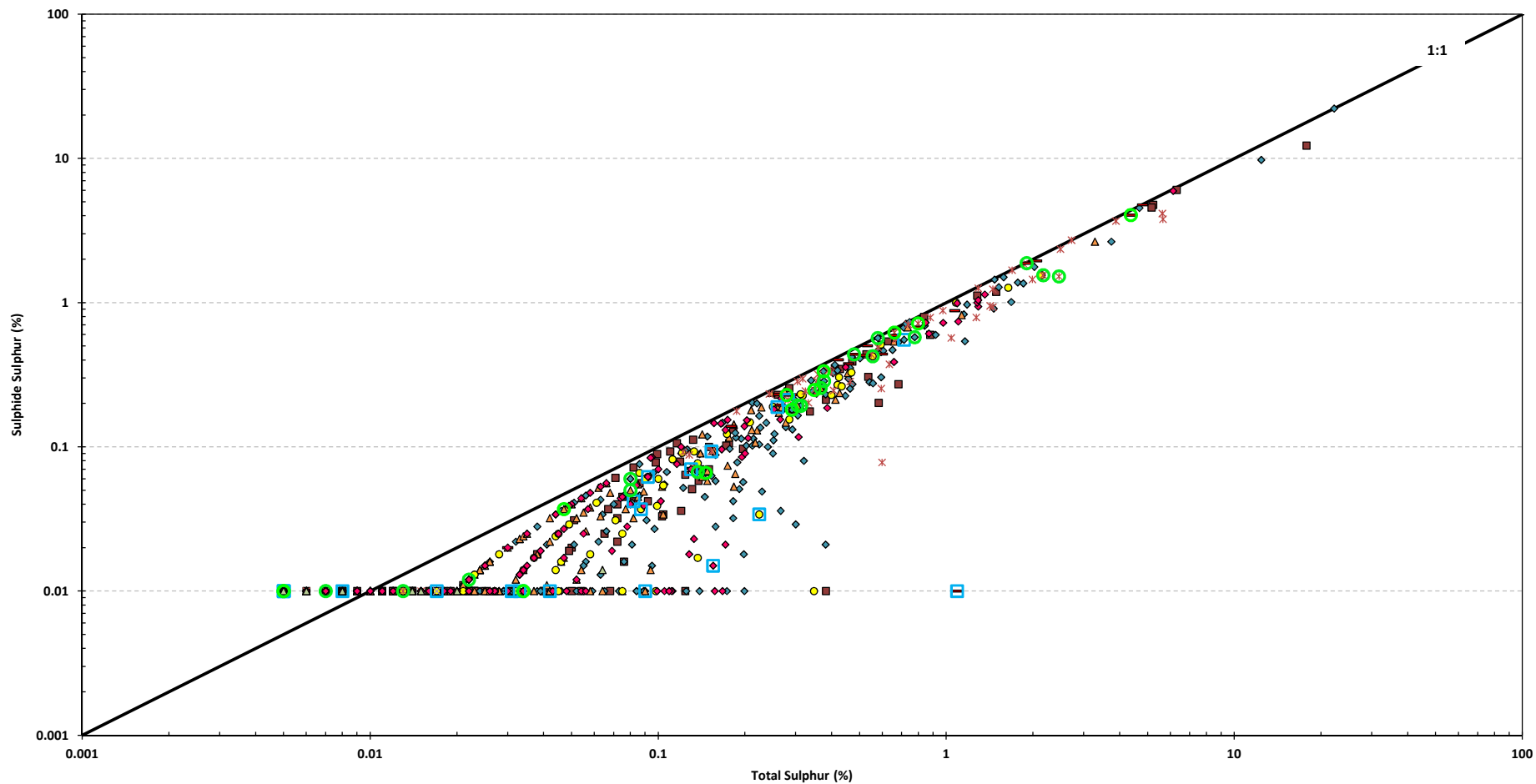


*Sulphur is by aqua regia ICP-MS not ABA

**NPR =1 and NPR =2 values are designated by a dashed line on the NPR plot

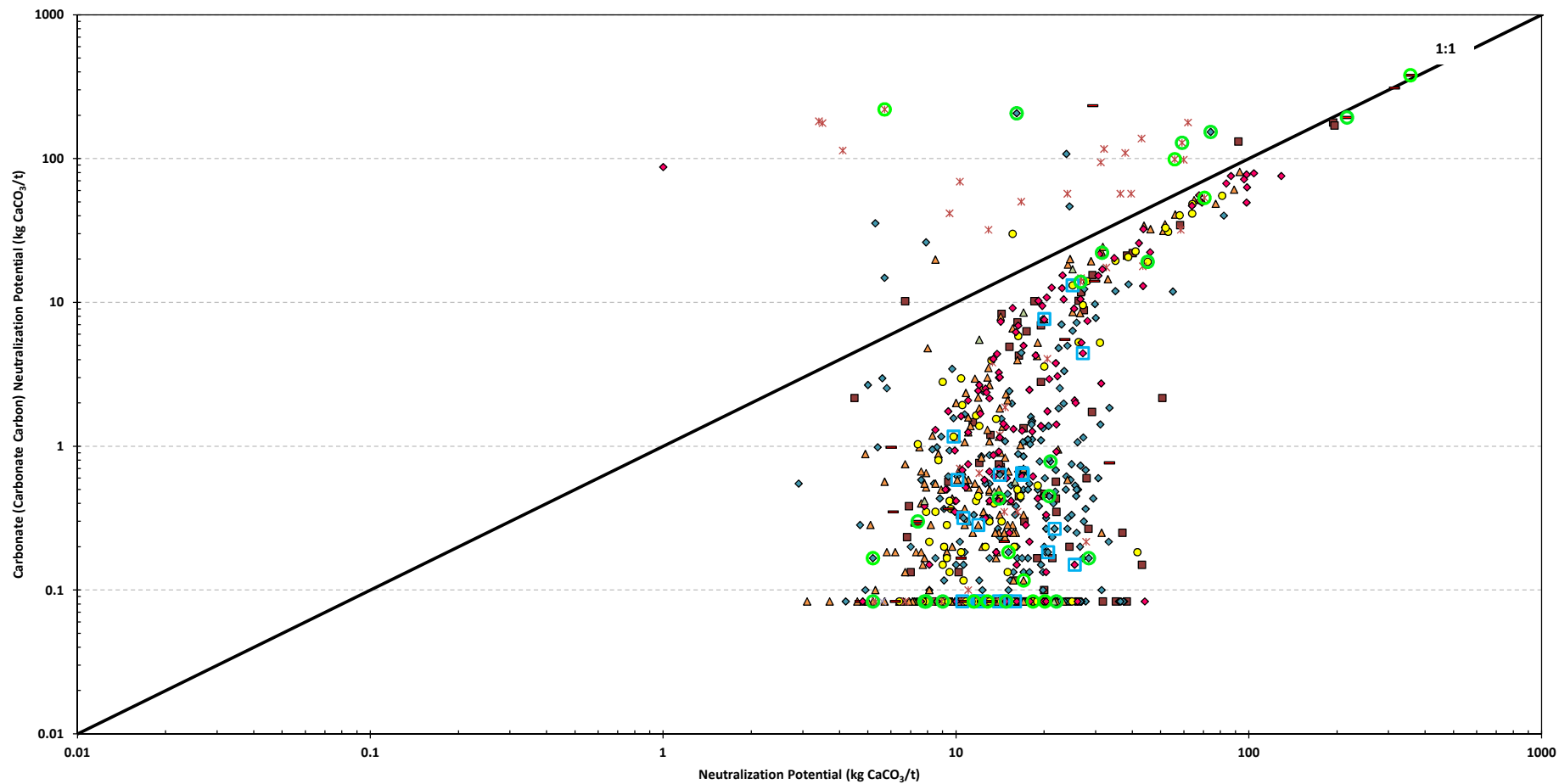
***Ten time crustal abundance values are designated by a solid black line when element is enriched

Baffinland Iron Mines Corporation		amec Engineering & Consulting
Mary River Project		
Downhole Analysis MR1-12-226		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908	Figure: 4-28	



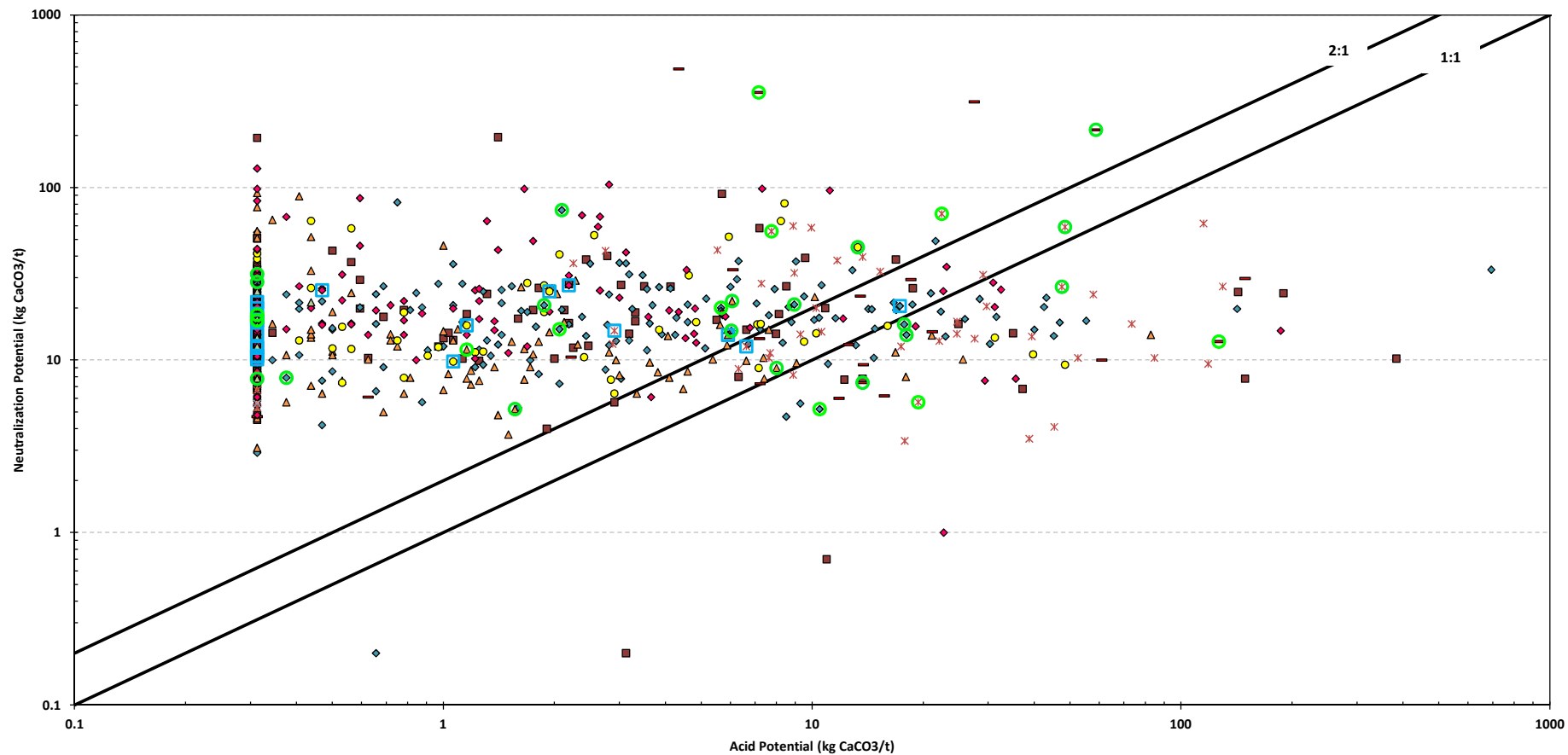
■ Amphibolite ◆ Schist ▲ Gneiss ● Metasediment × HG_Iron Formation — Banded Iron Formation ◆ Volcanic Tuff ▲ Ultramafic × Quartz Zone ■ Mineralogy Samples (2011) ● Mineralogy Samples (In Progress)

Mary River Project		
Mineralogy Sample Distribution Total Sulphur vs Sulphide		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908	Figure 4-29	

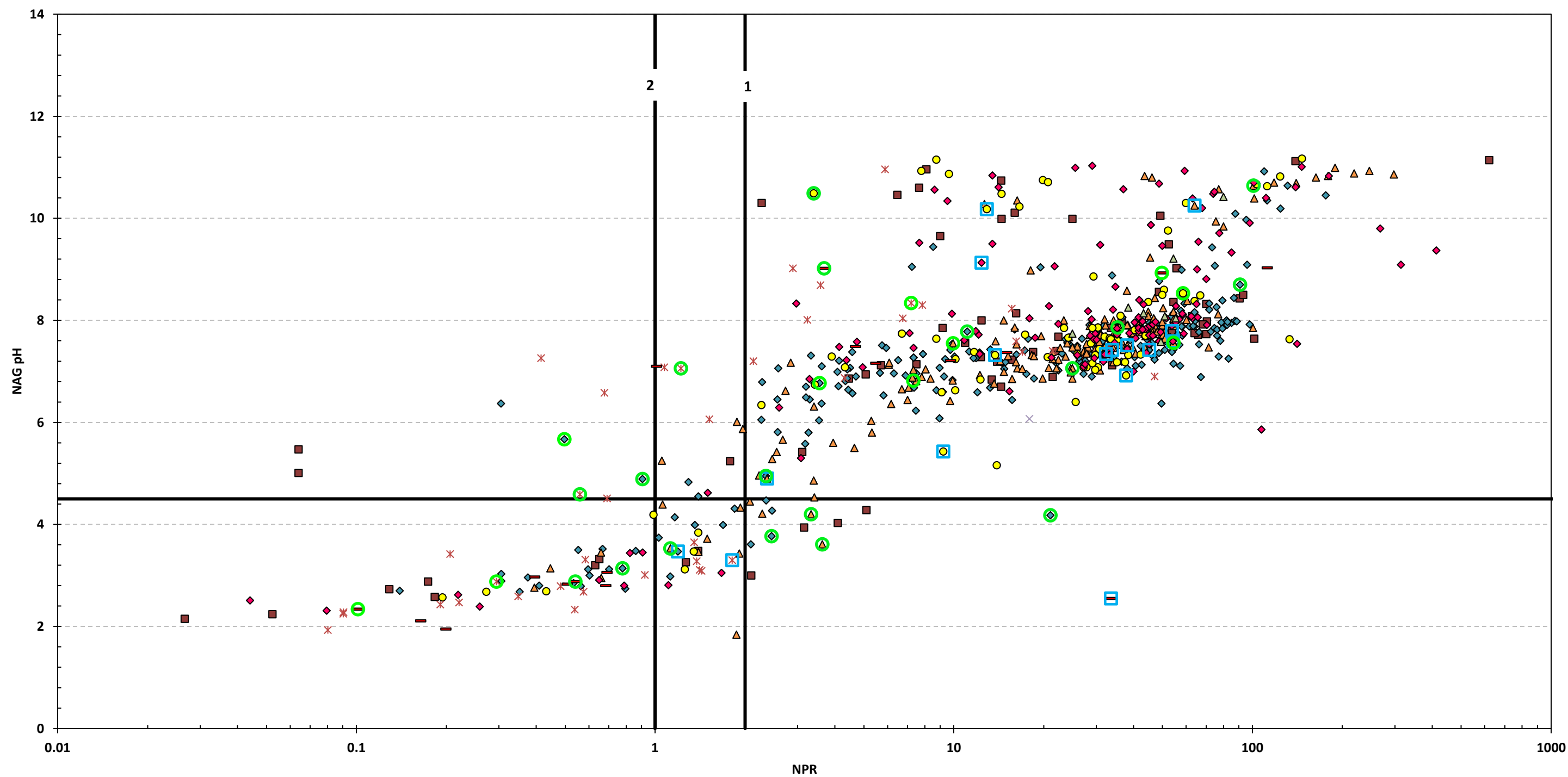


■ Amphibolite ◆ Schist ▲ Gniess ● Metasediment ✕ HG_Iron Formation — Banded Iron Formation ◆ Volcanic Tuff ▲ Ultramafic ✕ Quartz Zone □ Mineralogy Samples (2011) ○ Mineralogy Samples (In Progress)

 	
Mary River Project	
Mineralogy Sample Distribution Carbonate Neutralization Potential vs Neutralization Potential	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	Figure 4-30



■ Amphibolite ◆ Schist ▲ Gneiss ● Metasediment × HG_Iron Formation — Banded Iron Formation ◆ Volcanic Tuff ▲ Ultramafic × Quartz Zone ■ Mineralogy Samples (2011) ● Mineralogy Samples (In Progress)



■ Amphibolite ◆ Schist ▲ Gniess ● Metasediment ✕ HG_Iron Formation — Banded Iron Formation ◆ Volcanic Tuff ▲ Ultramafic ✕ Quartz Zone □ Mineralogy Samples (2011) ● Mineralogy Samples (In Progress)

Mary River Project		
Mineralogy Sample Distribution NAG pH vs Neutralization Potential Ratio		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure 4-32

5.0 SUMMARY AND CONCLUSIONS

The following is a summary of the key findings of the ML/ARD characterization studies completed to date for the Baffinland Deposit 1 mine rock.

5.1 Waste Rock

5.1.1 Acid Generation and Neutralization Potential

- Total sulphur content >0.2% is primarily in the form of sulphide sulphur, and total sulphur content <0.2% may have a greater component of non-sulphide sulphur content.
- The median sulphide content of the waste rock is 0.014% overall with 90th percentile concentrations of 0.59%.
- Hanging wall waste rock and mineralized waste units exhibit slightly higher median values (0.057 and 0.18%, respectively) and 90th percentile concentrations of 0.9% and 1.8%, respectively.
- The overall NP of waste rock ranged from -18 to 487 kg CaCO₃/t, but was predominantly low (median of 15 and 90th percentile of 33 kg CaCO₃/t).
- Carbonate is the predominant form of carbon and the carbonate NP ranged from 0.083 to 514 kg CaCO₃/t.
- Samples with similar NP and CarbNP are interpreted to be carbonate dominated (calcite or dolomite).
- Samples with CarbNP greater than NP are interpreted to contain iron or manganese carbonates (siderite/rhodocrosite or ankerite).
- Samples that exhibit NP greater than CarbNP are non-carbonate dominated (e.g., silicates) and represent the majority of samples tested.
- Calculated NPR values ranged from very low (0.00003) to 621, and suggest that approximately 10% of samples are classified as PAG (NPR <1) and 5% of samples have an uncertain acid generating potential (1<NPR<2).
- Calculated CarbNPR values ranged from 0.00035 to 571 and suggest that approximately 43% of samples are classified as PAG (NPR <1) and 8% of samples have an uncertain acid generating potential (1<NPR<2).
- NAG_{pH} (an independent measure of PAG status) is generally supportive of the NPR <2 PAG threshold, and there is little evidence CarbNPR is a reasonable measure for assessing whether material is PAG or not.
- Proximity to ore appears to correlate to increased PAG quantities (NPR <2) with the footwall schist and hanging wall schist zones identified with the greatest quantity of PAG of the major waste units;

- Footwall waste samples were predominantly non-carbonate dominated with apparently isolated PAG zones present locally.
- No PAG samples based on $\text{NPR} < 2$ were identified in the hanging wall waste.
- Based on the waste rock model approximately 11% of in-pit waste rock is expected to be PAG based on $\text{NPR} < 2$.
- Humidity cell testing indicates generally circum neutral (as low as pH 6) drainage quality after two years for most cells. A few cells have produced weakly acidic drainage ($\text{pH} < 5$) and increased metal leaching after two years of operation in the laboratory. Considering the humidity cell results and the cold climate conditions at site it is expected (aside from potential localized hot spot effects) that the lag time to acid on-set in PAG rock would be or the order of 5 years or longer. Work is continuing to refine the understanding of acid on-set and neutralization to be expected within these materials.
- Short-term risk of ML/ARD was apparent in seven widely spaced and apparently isolated samples with acidic paste pH and/or negative NP. These samples tend to occur with a similar stratigraphic horizon within the upper regions or just above the High Grade Magnetite Iron Formation;

5.1.2 Mineralogy

- Pyrite (FeS_2) was the most common sulphide observed with chalcopyrite (CuFeS_2), pyrrhotite ($\text{Fe}_{(1-x)}\text{S}$), and sphalerite (Fe,ZnS) less common accessory minerals.
- Pentlandite ($\text{Fe, Ni, Co}_9\text{S}_8$) was a less frequently observed sulphide, but in addition to pyrrhotite may be an important host for Ni and Co in waste rock.
- Carbonate minerals present include: calcite, dolomite-ankerite and siderite/rhodocrosite; however, their distribution is sporadic.
- Other principal rock forming minerals within the waste rock vary by lithology and within lithologies and comprise primarily: quartz, chlorite, feldspars, micas and amphiboles in various forms and abundance. The oxides magnetite and hematite are common accessory minerals, with garnet and pyroxenes present in certain samples.

5.1.3 Metals

- Screening based on 10 times average crustal abundance has identified, in addition to elevated S, the frequent presence of elevated Se and Bi in waste rock and less frequently Au, As, Ag, Cd, Cr, Fe, Mn, Ni, Pb, Sb, and Tl. However the Se exceedances appear to be a function of the high detection limit which was greater than the crustal screening value.
- Based on down-hole analysis, metal-sulphur correlations are generally weak and when they occur the associated metal often varies from location to location.

- Metal concentrations are sometimes elevated over short intervals (metres) adjacent to ore zones.
- Similarly, metal-metal correlations are generally weak and (only sometimes evident in downhole trends over localized zones) with a possible exception for Co and Ni which is probably mineralogically controlled by the pyrrhotite and pentlandite concentration (apparently present at generally low abundance).
- A somewhat elevated sulphide content can be present in banded iron formation; however, metal associations with this unit appear low in comparison to high-grade iron formation waste and overall waste rock.
- Based on short-term leach tests there is little evidence of metal leaching under neutral pH conditions with the possible exception of Ni and Cu in isolated samples. Aluminum and iron were somewhat elevated in the short-term leach tests completed; however, the short-term leach results are not directly applicable to actual leaching conditions. Release of aluminum and iron in humidity cells is low.
- With the exception of two humidity cells with high metal contents metal loading rates based on kinetic tests are low.

5.1.4 Ore

- Earlier studies of ore identified that hematite dominant ore samples and most magnetite dominant ore samples were low in sulphide (generally <0.1%) with low NP and carbonate NP that can sometimes be elevated by the presence of Fe or Mn carbonate;
- The 2008 ore bulk sample program identified that the sulphide content of the representative ore was 0.01% or less with NP observed over a very narrow range of 1.3 to 4.5 kg CaCO₃/t;
- The minimum steady pH observed in humidity cell testing of a magnetite dominant ore sample with 0.3% sulphide over 120 weeks was pH 6 and associated metal loading rates were low;
- Baffinland monitoring of ore stockpiles at site between 2008 and 2011 indicated low metal seepage and runoff concentrations; and
- Elevated sulphate and Ni (but below the MMER standard) was identified in direct collection of seepage from non-representative ore.

6.0 CLOSURE

This report has been prepared for the exclusive use of Baffinland Iron Mines Corporation for specific application to the Mary River Project. The work was conducted in accordance with generally accepted practices, and the verbal and written requests from Baffinland Iron Mines Corporation, that restricted the investigations to the assessment of the specifically identified issues associated with the site. No other warranty, expressed or implied, is made.

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7.0 REFERENCES

- Aker Kvaerner. 2008. Definitive Feasibility Study Report Mary River Iron Ore Project Northern Baffin Island, Nunavut.
- AMIRA. 2000. ARD Test Handbook. Prepared by Ian Wark Research Institute and Environmental Geochemistry International Pty Ltd. May, 2002.
- AMEC, 2012. Waste Rock Geological and Geochemical Characterization Program, Mary River Project – Deposit No.1, January 2012.
- Canadian Council of Ministers of the Environment. 2007, Canadian Water Quality Guidelines for the Protection of Aquatic Life, accessed on-line March 2014.
- EPA.1991. Guideline for Handling Chemical Concentration Data Near the Detection Limit in Risk Assessment. <http://www.epa.gov/reg3hwmd/risk/human/info/guide3.htm>.
- Hatch. 2011. Correspondence from Ian Thompson, November 16, 2011.
- Health Canada, 2012, Guidelines for Canadian Drinking Water Quality.
- Jackson. G.D. and Berman, R.G. 2000. Precambrian Metamorphic and Tectonic Evolution of Northern Baffin Island, Nunavut. Canada. The Canadian Mineralogist. Vol.38. p 399-421.
- Johns, S.M. and Young, M.D. 2006. Bedrock geology and economic potential of the Archean Mary River Group, northern Baffin Island, Nunavut. Geology Survey of Canada. Current Research 2006-C5.
- Knight Piésold. 2008. Baffinland Iron Mines Corporation, Mary River Project Environmental Characterization of Deposit No.1 Waste Rock, Ore & Construction Material. Ref. No. NB102-00181/11-7. Draft Report, Prepared for Baffinland Iron Mines Corporation, 18 December 2008.
- Knight Piésold. 2009. Environmental Assessment of Waste Materials Originating from the Bulk Sample Program from Deposit No.1, Baffinland Mary River Project (NB09-00189, March 2009).
- Matson. 2009. Assessing the Availability and Source of Non-carbonate Neutralization Potential by Pre-treatment of Kinetic Test Samples. Proceeding 8th International Conference Acid Rock Drainage (ICARD). June 2009. Skellefteå. Sweden. <http://www.proceedings-stfandicard-2009.com/>
- MEND. 2009. Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. Natural Resources Canada.

Miller, S.D. Stewart, S.W. Rusdinar, Y. Schuman. et al. 2010. Methods for Estimation of Long-Term Non-Carbonate Neutralization of Acid Rock Drainage. Science of the total Environment 408, Pp. 2129-2135.

MMER. 2002. Metal Mine Effluent Regulations SOR/2002-222.

Price, W.A. 1997, DRAFT Guidelines and Recommended Method for Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Colombia. British Colombia Ministry of Employment and Investment, Energy and Minerals Division. Smithers, B.C.

Young, M.D., Sandeman, H., Berniolles, F., and Gertzbein, P.M. 2004. A preliminary stratigraphic and structural geology framework for the Archean Mary River Group, northern Baffin Island, Nunavut. Geology Survey of Canada. Current Research 2004-C1.

APPENDIX A
STATIC DATA TABLES

Waste solid	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	Paste pH	Fix Rate	Total Sulphur	Sulphate	Sulphide*	Total Carbon	Carbonate	Carbonate (as Carbon)	AP**	NP	Carbon***	NP****	CarbonR
Feedwater Schist	AMEC 2010	MR400101	MR1 08 143	100.4	101.4	Amphibolite	8.26	1	0.01	0.01	<0.01	0.01	<0.01	0.001	0.3	8.5	0.5	27.2	1.6
Feedwater Schist	Baff2011	16306	MR1 04 44	388.6	389.6	Amphibolite	9.54	1	0.01	<0.01	<0.01	0.01	<0.01	0.001	0.3	10.5	0.1	33.6	0.3
Feedwater Schist	Baff2011	16388	MR1 05 49	367.6	368.6	Amphibolite	8.62	1	0.14	0.07	0.07	0.01	0.03	0.005	2.2	16.4	0.5	7.5	0.2
Feedwater Schist	Baff2011	16414	MR1 05 67	194.7	195.6	Amphibolite	8.62	1	0.01	0.01	<0.01	0.01	<0.01	0.001	0.3	21.3	0.2	0.3	0.3
Feedwater Schist	AMEC 2010	MR400102	MR1 09 179	160.0	161.0	Gneiss	9.50	1	0.02	0.02	<0.01	0.01	0.03	0.005	0.3	9.7	1.1	10.1	3.5
Feedwater Schist	AMEC 2010	MR400103	MR1 09 179	176.0	177.0	Gneiss	9.40	1	0.02	0.02	<0.01	0.01	0.03	0.002	0.3	5.8	0.8	18.6	2.4
Feedwater Schist	AMEC 2010	MR400104	MR1 09 179	150.0	151.0	Gneiss	8.08	1	0.01	0.01	<0.01	0.01	<0.01	0.001	0.3	15.9	1.2	50.9	3.7
Feedwater Schist	AMEC 2010	MR400105	MR1 09 179	165.3	166.0	Gneiss	8.53	1	0.01	0.01	0.02	0.01	0.03	0.007	0.3	7.8	1.3	17.8	3.5
Feedwater Schist	AMEC 2010	MR400106	MR1 09 179	115.2	116.0	Gneiss	9.23	1	0.01	<0.01	<0.01	<0.01	<0.01	0.001	0.3	4.6	0.4	14.7	1.3
Feedwater Schist	AMEC 2010	MR400107	MR1 08 162	170.0	171.0	Gneiss	9.36	1	0.02	0.02	<0.01	<0.01	<0.01	0.001	0.3	6.5	0.4	20.8	1.3
Feedwater Schist	AMEC 2010	MR400108	MR1 08 162	186.0	187.0	Gneiss	9.00	1	0.01	0.01	0.02	0.01	0.03	0.002	0.3	7.7	1.0	17.0	0.6
Feedwater Schist	AMEC 2010	MR400109	MR1 08 162	20.0	21.0	Gneiss	8.48	1	1.13	0.31	0.82	0.01	<0.01	0.001	25.6	10.1	1.0	0.4	0.04
Feedwater Schist	AMEC 2010	MR400110	MR1 08 159	190.0	191.0	Gneiss	9.21	1	0.36	0.07	0.29	0.01	<0.01	0.001	9.1	9.6	0.5	1.1	0.1
Feedwater Schist	AMEC 2010	MR400111	MR1 08 161	160.0	161.0	Gneiss	9.49	1	0.43	0.19	0.24	0.01	0.04	0.008	0.3	10.3	1.2	1.2	0.2
Feedwater Schist	AMEC 2010	MR400112	MR1 08 149	220.0	221.0	Gneiss	7.31	1	0.66	0.09	0.57	0.02	0.39	0.058	17.9	8.0	1.6	0.4	0.1
Feedwater Schist	AMEC 2010	MR400113	MR1 08 140	165.0	166.0	Gneiss	8.41	1	0.01	<0.01	<0.01	<0.01	<0.01	0.001	0.3	8.7	0.4	27.8	1.3
Feedwater Schist	AMEC 2010	MR400114	MR1 08 154	260.2	261.0	Gneiss	9.02	1	<0.01	<0.01	<0.01	0.01	<0.01	0.001	0.3	6.9	0.8	22.7	0.1
Feedwater Schist	AMEC 2010	MR400115	MR1 07 121	220.0	221.0	Gneiss	9.53	1	0.09	0.03	0.06	0.01	<0.01	0.001	0.5	9.1	0.5	5.3	0.3
Feedwater Schist	AMEC 2010	MR400116	MR1 07 121	236.0	237.0	Gneiss	9.29	1	0.01	<0.01	<0.01	0.01	<0.01	0.001	0.3	12.7	1.0	40.6	3.2
Feedwater Schist	AMEC 2010	MR400117	MR1 08 155	149.0	150.0	Gneiss	9.23	1	0.46	0.13	0.33	<0.01	<0.01	0.001	10.2	23.2	0.4	2.3	0.04
Feedwater Schist	Baff2011	16080	MR1 05 72	195.1	196.1	Gneiss	9.11	1	0.07	<0.01	0.06	0.01	<0.01	0.001	1.8	10.8	0.1	6.2	0.05
Feedwater Schist	Baff2011	16062	MR1 05 72	314.2	315.2	Gneiss	8.85	1	0.01	<0.01	<0.01	0.02	0.02	0.004	0.3	11.0	0.3	35.2	1.0
Feedwater Schist	Baff2011	16064	MR1 05 72	328.1	329.1	Gneiss	9.80	1	0.22	0.11	0.11	0.01	<0.01	0.001	3.3	6.4	0.1	1.9	0.02
Feedwater Schist	Baff2011	16056	MR1 05 72	334.8	335.9	Gneiss	9.93	1	<0.01	<0.01	<0.01	0.01	<0.01	0.001	0.3	7.7	0.1	24.6	0.3
Feedwater Schist	Baff2011	16102	MR1 04 44	362.6	363.6	Gneiss	9.70	1	0.05	<0.01	<0.01	0.02	<0.01	0.001	1.2	11.5	0.1	9.9	0.1
Feedwater Schist	Baff2011	16104	MR1 04 44	371.7	372.7	Gneiss	9.84	1	0.01	<0.01	<0.01	0.02	0.01	0.001	0.3	14.6	0.1	46.7	0.3
Feedwater Schist	Baff2011	16108	MR1 04 44	394.2	395.1	Gneiss	9.73	1	0.01	<0.01	<0.01	0.01	<0.01	0.001	0.3	11.2	0.1	35.8	0.1
Feedwater Schist	Baff2011	16110	MR1 08 145	132.5	133.7	Gneiss	8.63	1	<0.01	<0.01	<0.01	0.01	<0.01	0.001	0.3	8.1	0.1	25.9	0.3
Feedwater Schist	Baff2011	16112	MR1 08 145	145.2	146.1	Gneiss	8.63	1	<0.01	<0.01	<0.01	0.03	0.01	0.001	0.3	9.5	0.1	30.4	0.3
Feedwater Schist	Baff2011	16114	MR1 08 145	152.2	153.2	Gneiss	9.30	1	<0.01	<0.01	<0.01	0.02	<0.01	0.001	0.3	12.3	0.1	39.4	0.3
Feedwater Schist	Baff2011	16118	MR1 08 141	342.2	343.2	Gneiss	9.08	1	0.02	0.02	0.08	0.01	0.06	0.001	1.0	10.0	0.1	21.4	0.6
Feedwater Schist	Baff2011	16132	MR1 04 38	155.7	156.6	Gneiss	9.06	1	0.02	0.02	<0.01	0.02	<0.01	0.001	0.3	9.7	0.1	31.0	0.3
Feedwater Schist	Baff2011	16134	MR1 04 38	164.5	165.5	Gneiss	9.92	1	0.03	0.03	<0.01	0.02	0.01	0.002	0.3	9.3	0.2	29.8	0.6
Feedwater Schist	Baff2011	16136	MR1 04 38	170.0	171.0	Gneiss	9.93	1	0.02	0.02	<0.01	0.02	<0.01	0.001	0.3	10.9	0.3	32.0	0.3
Feedwater Schist	Baff2011	16138	MR1 05 49	355.1	356.0	Gneiss	9.66	1	0.05	0.03	0.02	0.02	0.04	0.007	0.5	10.7	0.6	21.4	1.2
Feedwater Schist	Baff2011	16158	MR1 07 118	14.6	15.6	Gneiss	9.15	1	0.06	0.02	0.04	0.02	<0.01	0.001	1.2	7.2	0.1	6.1	0.1
Feedwater Schist	Baff2011	16160	MR1 07 118	26.9	27.8	Gneiss	9.39	1	<0.01	<0.01	<0.01	0.01	<0.01	0.001	0.3	7.1	0.1	22.7	0.1
Feedwater Schist	Baff2011	16178	MR1 09 172	186.9	188.0	Gneiss	9.29	1	0.01	<0.01	<0.01	0.01	<0.01	0.001	0.3	8.7	0.1	27.8	0.3
Feedwater Schist	Baff2011	16610	MR1 05 67	173.4	174.4	Gneiss	9.24	1	0.01	0.01	<0.01	0.01	<0.01	0.001	0.3	5.7	0.1	18.2	0.3
Feedwater Schist	Baff2011	16612	MR1 05 67	181.9	182.9	Gneiss	8.79	1	0.06	0.06	0.01	0.01	<0.01	0.001	0.3	8.8	0.1	28.2	0.3
Feedwater Schist	Baff2011	16616	MR1 05 67	206.2	207.2	Gneiss	8.57	1	0.02	0.02	<0.01	0.02	<0.01	0.001	0.3	10.7	0.1	27.8	0.2
Feedwater Schist	Baff2011	16654	MR1 08 159	182.3	183.3	Gneiss	9.53	1	0.05	0.03	0.02	0.01	0.01	0.002	0.5	7.6	0.2	14.3	0.3
Feedwater Schist	Baff2011	16726	MR1 06 90	153.4	154.4	Gneiss	9.05	1	0.09	0.09	<0.01	0.02	0.01	0.001	0.3	10.7	0.1	34.2	0.3
Feedwater Schist	Baff2011	16738	MR1 06 80	200.1	201.1	Gneiss	9.21	1	0.41	0.21	0.21	0.01	<0.01	0.001	6.6	19.0	0.1	1.5	0.03
Feedwater Schist	Baff2011	16790	MR1 06 84	192.4	193.5	Gneiss	9.30	1	0.06	0.06	<0.01	0.01	<0.01	0.001	0.3	10.1	0.1	32.3	0.3
Feedwater Schist	Baff2012	4994	MR1 12 223A	21.4	23.0	Gneiss	9.13	2	0.03	0.02	0.01	0.01	0.03	0.007	0.4	5.7	0.6	15.2	2.2
Feedwater Schist	Baff2012	4995	MR1 12 223B	21.0	22.6	Gneiss	8.90	2	0.01	<0.01	<0.01	0.01	0.03	0.002	0.3	7.3	0.2	23.4	2.9
Feedwater Schist	Baff2012	4997	MR1 12 223C	24.2	26.5	Gneiss	9.01	2	0.05	0.05	<0.01	0.02	0.05	0.001	0.3	11.2	0.2	32.7	4.2
Feedwater Schist	Baff2012	15402	MR1 12 223D	34.9	36.7	Gneiss	8.51	2	0.16	0.06	0.10	0.01	0.02	0.003	3.0	8.2	0.3	2.7	0.3
Feedwater Schist	Baff2012	15404	MR1 12 223E	38.4	40.1	Gneiss	8.44	2	0.08	0.05	0.03	0.02	0.01	0.002	1.0	6.7	0.1	6.7	1.6
Feedwater Schist	Baff2012	15419	MR1 12 223F	61.3	63.3	Gneiss	9.23	2	<0.01	<0.01	0.02	<0.01	<0.01	0.001	0.5	11.2	0.1	32.4	4.5
Feedwater Schist	Baff2012	15482	MR1 12 224A	27.5	29.5	Gneiss	9.16	1	0.02	<0.01	0.01	0.03	0.03	0.006	0.3	13.0	0.5	41.6	7.2
Feedwater Schist	Baff2012	15484	MR1 12 224B	31.3	33.3	Gneiss	10.00	1	0.02	<0.01	0.01	0.02	0.07	0.014	0.3	14.0	1.2	44.8	5.1
Feedwater Schist	Baff2012	15702	MR1 12 225A	14.0	16.0	Gneiss	9.13	1	0.01	0.01	<0.01	0.01	0.12	0.009	0.3	10.9	0.2	16.8	1.3
Feedwater Schist	Baff2012	15703	MR1 12 225B	16.0	18.0	Gneiss	9.46	1	0.01	<0.01	<0.01	0.02	0.04	0.008	0.3	7.6	0.7	24.3	6.4
Feedwater Schist	Baff2012	15706	MR1 12 225C	22.0	24.0	Gneiss	9.15	1	0.01	<0.01	<0.01	0.02	0.07	0.013	0.3	13.0	1.1	41.6	4.8
Feedwater Schist	Baff2012	15709	MR1 12 225D	28.0	30.0	Gneiss	9.46	1	0.01	<0.01	<0.01	0.01	0.03	0.006	0.3	13.0	0.5	41.6	3.5
Feedwater Schist	Baff2012	15711	MR1 12 225E	32.0	34.0	Gneiss	9.22	1	0.01	<0.01	<0.01	0.01	0.03	0.001	0.3	14.8	0.5	28.5	3.5
Feedwater Schist	Baff2012	15713	MR1 12 225F	36.0	38.0	Gneiss	9.57	1	0.01	<0.01	<0.01	0.01	0.03	0.006	0.3	14.0	0.5	41.6	3.5
Feedwater Schist	Baff2012	15715	MR1 12 225G	40.0	42.0	Gneiss	9.78	1	0.01	<0.01	<0.01	0.01	0.03	0.006	0.3	12.0	0.5	38.4	4.3
Feedwater Schist	Baff2012	15717	MR1 12 225H	46.0	48.0	Gneiss	9.17	1	0.01	<0.01	<0.01	0.01	0.03	0.006	0.3	14.0	0.6	38.4	4.7
Feedwater Schist	Baff2012	16070	MR1 06 105	165.6	166.1	High Grade Iron Formation	7.20	1	1.45	0.52	0.93	3.29	5.65	1.131	29.1	31.2	94.2	1.1	3.2
Feedwater Schist	Baff2012	16072	MR1 06 105	171.5	172.5	High Grade Iron Formation	7.92	2	2.17	0.62	1.55	3.34	7.73	1.547	48.4	59.1	128.9	1.2	2.7
Feedwater																			

Waste solid	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	Paste pH	Fix Rate	Total Sulphur	Sulphate	Sulphide*	Total Carbon	Carbonate	Carbonate (as Carbon)	AP**	NP	CarbNP***	NP****	CarbNP
Footwall Waste	AMEC_2010	5175	ARD 2B NW	10.7	11.0	Grns	9.04	1	0.01	0.01	<0.01	0.01	0.02	0.003	0.3	5.1	1.0	16.3	2.2
Footwall Waste	AMEC_2010	5182	ARD 2B NW	61.0	62.0	Grns	9.53	1	0.66	0.12	0.54	0.01	0.01	0.001	16.8	11.1	1.1	0.7	0.1
Footwall Waste	AMEC_2010	5183	ARD 2B NW	66.0	67.0	Grns	9.81	1	0.03	0.03	<0.01	0.01	<0.01	0.001	0.3	7.4	1.2	23.7	3.7
Footwall Waste	AMEC_2010	5184	ARD 2B NW	73.0	74.0	Grns	9.76	1	0.02	0.02	<0.01	0.01	0.02	0.004	0.3	12.4	2.2	39.7	6.9
Footwall Waste	AMEC_2010	5185	ARD 2B NW	79.0	80.0	Grns	9.04	0.04	0.049	0.04	0.049	0.04	0.008	0.008	1.5	12.8	1.3	11.0	1.0
Footwall Waste	AMEC_2010	5186	ARD 2B NW	84.0	85.0	Grns	9.49	1	0.09	0.08	0.014	0.02	<0.01	0.001	0.4	13.5	1.7	30.9	3.8
Footwall Waste	AMEC_2010	5187	ARD 2B NW	89.0	90.0	Grns	9.27	1	0.02	0.02	<0.01	0.01	0.02	0.001	0.3	11.4	1.3	36.5	4.0
Footwall Waste	AMEC_2010	5188	ARD 2B NW	96.0	97.0	Grns	9.78	1	0.01	0.01	<0.01	0.01	0.01	0.001	0.3	11.4	1.3	36.5	4.0
Footwall Waste	AMEC_2010	5189	ARD 2B NW	100.0	101.0	Grns	9.32	1	0.02	0.02	<0.01	0.01	0.01	0.001	0.3	13.6	1.5	43.5	3.5
Footwall Waste	AMEC_2010	MRAR010 030	MR1 09 170	103.0	104.0	Grns	8.60	1	0.27	0.08	0.19	0.02	0.05	0.010	5.9	12.2	1.3	21.1	0.2
Footwall Waste	AMEC_2010	MRAR010 043	MR1 09 167	103.0	104.0	Grns	9.53	1	0.01	0.01	<0.01	0.01	<0.01	0.001	0.3	15.9	0.5	13.1	0.2
Footwall Waste	AMEC_2010	MRAR010 045	MR1 09 167	50.0	51.0	Grns	9.61	1	0.03	0.01	0.02	<0.01	<0.01	0.001	0.5	6.4	0.4	13.7	0.9
Footwall Waste	AMEC_2010	MRAR010 046	MR1 09 167	65.0	65.9	Grns	9.05	1	<0.01	<0.01	<0.01	<0.01	0.05	0.009	0.3	6.7	0.4	21.4	1.3
Footwall Waste	Barf2011	16086	ARD 2A NW	12.4	13.4	Grns	9.93	1	0.15	0.09	0.06	0.021	0.02	0.004	1.8	12.8	0.3	7.1	0.2
Footwall Waste	Barf2011	16112	ARD 2B NW	8.9	9.9	Grns	9.43	1	<0.01	<0.01	<0.01	<0.01	<0.01	0.001	0.3	9.7	0.1	31.0	0.3
Footwall Waste	Barf2011	16114	ARD 2B NW	10.5	11.4	Grns	9.37	1	<0.01	<0.01	<0.01	<0.01	<0.01	0.001	0.3	9.9	0.1	31.7	0.3
Footwall Waste	Barf2011	16126	ARD 2B NW	58.8	59.8	Grns	9.58	1	0.21	0.03	0.18	<0.05	<0.01	0.001	5.6	16.0	0.1	2.8	0.01
Footwall Waste	Barf2011	16128	ARD 2B NW	62.7	63.9	Grns	9.63	1	0.01	<0.01	<0.01	<0.01	<0.01	0.001	0.3	17.0	0.1	54.4	0.3
Footwall Waste	Barf2011	16130	ARD 2B NW	78.5	79.4	Grns	9.48	1	0.27	0.03	0.244	<0.01	<0.01	0.001	7.6	15.0	0.1	2.0	0.01
Footwall Waste	Barf2011	16132	ARD 2B NW	87.8	88.9	Grns	9.58	1	0.02	<0.01	<0.01	<0.01	<0.01	0.001	0.3	15.0	0.1	48.0	0.3
Footwall Waste	Barf2011	16134	ARD 2B NW	93.1	94.1	Grns	9.99	1	0.01	<0.01	<0.01	<0.01	<0.01	0.001	0.3	17.0	0.1	54.4	0.3
Footwall Waste	Barf2011	16136	ARD 2A SE	6.9	7.9	Grns	9.89	1	0.23	0.04	0.19	<0.01	0.02	0.003	5.9	15.0	0.3	2.6	0.05
Footwall Waste	Barf2011	16138	ARD 2A SE	17.8	18.9	Grns	9.63	1	0.26	0.07	0.19	<0.01	<0.01	0.001	5.9	14.0	0.1	2.4	0.01
Footwall Waste	Barf2011	16146	ARD 2A SE	48.5	49.4	Grns	9.88	1	0.15	0.06	0.09	0.01	<0.01	0.001	2.9	10.0	0.1	1.4	0.01
Footwall Waste	Barf2011	16148	ARD 2A SE	58.1	59.1	Grns	9.91	1	<0.01	<0.01	<0.01	0.11	0.46	0.001	0.3	9.7	0.1	64.0	24.6
Footwall Waste	Barf2011	16180	MR1 08 158	306.9	308.0	Grns	9.70	1	0.03	0.02	0.01	0.02	<0.01	0.001	0.4	7.1	0.1	16.2	0.2
Footwall Waste	Barf2011	16190	MR1 05 49	371.2	374.2	Grns	9.74	1	0.03	0.02	<0.01	0.02	0.02	0.003	0.3	10.7	0.3	34.2	0.9
Footwall Waste	Barf2011	16191	MR1 10 49	382.5	383.5	Grns	9.74	1	0.03	0.02	<0.01	0.02	0.02	0.003	0.3	11.4	0.4	35.8	1.0
Footwall Waste	Barf2011	16194	MR1 05 49	391.7	394.6	Grns	9.52	1	0.04	0.04	<0.01	0.02	0.04	0.007	0.3	10.1	0.6	32.3	1.9
Footwall Waste	Barf2011	16180	MR1 09 172	195.3	196.3	Grns	9.45	1	<0.01	<0.01	<0.01	0.01	0.01	0.002	0.3	9.3	0.2	29.8	0.6
Footwall Waste	Barf2011	16180	MR1 09 172	206.4	207.4	Grns	9.64	1	<0.01	<0.01	<0.01	0.01	0.01	0.001	0.2	14.5	0.1	42.3	0.1
Footwall Waste	Barf2012	15434	MR1 12 223	96.6	98.6	Grns	9.46	2	0.09	0.04	0.05	0.01	<0.01	0.001	1.4	4.8	0.1	3.4	0.4
Footwall Waste	Barf2012	15435	MR1 12 223	98.6	100.6	Grns	9.06	2	0.08	0.03	0.05	0.01	<0.01	0.001	1.6	5.2	0.1	3.3	0.4
Footwall Waste	Barf2012	15438	MR1 12 223	104.6	106.6	Grns	9.49	1	0.01	<0.01	<0.01	0.01	<0.01	0.001	0.3	1.1	0.1	3.3	0.7
Footwall Waste	Barf2012	15439	MR1 12 223	108.6	108.4	Grns	10.18	1	0.04	0.02	0.01	0.01	<0.01	0.001	0.3	5.3	0.1	17.0	0.2
Footwall Waste	Barf2012	15442	MR1 12 223	112.1	114.1	Grns	9.50	1	0.04	0.02	0.02	<0.01	<0.01	0.001	0.7	5.0	0.1	7.3	0.6
Footwall Waste	Barf2012	15445	MR1 12 223	118.1	120.1	Grns	9.67	1	0.01	<0.01	<0.01	0.01	0.03	0.007	0.3	8.5	0.6	27.2	1.9
Footwall Waste	Barf2012	15446	MR1 12 223	120.1	121.1	Grns	9.67	1	0.01	<0.01	<0.01	0.01	0.03	0.007	0.3	8.5	0.6	27.2	1.9
Footwall Waste	Barf2012	15448	MR1 12 223	121.1	126.2	Grns	9.70	1	0.30	0.11	0.19	0.01	<0.01	0.001	6.1	22.0	0.1	3.6	0.1
Footwall Waste	Barf2012	15451	MR1 12 223	130.4	132.5	Grns	9.92	1	0.18	0.06	0.12	0.01	0.01	0.002	3.6	9.7	0.2	2.7	0.2
Footwall Waste	Barf2012	15487	MR1 12 224	36.7	37.8	Grns	9.18	1	<0.01	<0.01	<0.01	0.01	0.01	0.001	0.3	17.0	0.2	12.5	0.5
Footwall Waste	Barf2012	15490	MR1 12 224	42.8	44.8	Grns	9.77	1	<0.01	<0.01	<0.01	0.02	0.02	0.003	0.3	14.0	0.3	44.8	5.9
Footwall Waste	Barf2012	15492	MR1 12 224	46.8	48.8	Grns	9.32	1	0.01	<0.01	<0.01	0.01	0.02	0.004	0.3	17.0	0.3	54.4	4.8
Footwall Waste	Barf2012	15493	MR1 12 224	48.8	50.8	Grns	8.97	1	0.01	<0.01	<0.01	0.01	0.02	0.003	0.3	15.6	0.3	49.9	2.9
Footwall Waste	Barf2012	15497	MR1 12 224	56.7	58.7	Grns	9.07	1	0.01	<0.01	<0.01	0.01	0.02	0.003	0.3	17.0	0.3	49.9	2.9
Footwall Waste	Barf2012	15498	MR1 12 224	58.7	60.6	Grns	9.66	1	0.04	0.01	0.03	0.04	0.05	0.010	1.0	14.7	0.8	14.7	3.0
Footwall Waste	Barf2012	15499	MR1 12 224	60.6	62.5	Grns	9.83	1	0.01	<0.01	<0.01	0.02	0.08	0.016	0.3	14.4	1.4	46.1	4.8
Footwall Waste	Barf2012	15503	MR1 12 224	69.3	71.3	Grns	9.61	1	0.01	<0.01	<0.01	0.02	0.14	0.008	0.3	14.4	1.4	46.1	4.8
Footwall Waste	Barf2012	15510	MR1 12 224	80.4	82.1	Grns	9.96	1	0.03	<0.01	0.02	0.03	0.07	0.014	0.6	10.1	1.1	16.2	3.6
Footwall Waste	Barf2012	15513	MR1 12 224	85.5	87.5	Grns	9.52	1	0.05	0.01	0.04	0.01	0.05	0.011	1.2	8.7	0.9	7.3	0.6
Footwall Waste	Barf2012	15515	MR1 12 224	89.5	91.5	Grns	9.15	1	<0.01	<0.01	<0.01	0.01	0.01	0.001	0.3	14.5	0.2	21.0	0.5
Footwall Waste	Barf2012	15523	MR1 12 224	103.4	105.4	Grns	10.15	3	0.02	<0.01	0.01	0.50	2.10	0.420	0.4	51.7	35.0	118.2	95.1
Footwall Waste	Barf2012	15525	MR1 12 224	107.4	109.4	Grns	10.09	2	0.06	<0.01	0.05	0.15	0.51	0.101	1.6	26.5	8.4	16.3	7.9
Footwall Waste	Barf2012	15529	MR1 12 224	115.6	117.8	Grns	10.19	3	0.05	0.02	0.03	0.48	1.34	0.388	1.0	46.1	32.4	46.1	40.1
Footwall Waste	Barf2012	15539	MR1 12 224	171.8	172.8	Grns	9.94	1	0.01	<0.01	<0.01	0.01	0.04	0.001	0.6	11.0	0.8	45.2	7.1
Footwall Waste	Barf2012	15572	MR1 12 224	197.8	199.8	Grns	9.10	1	0.03	<0.01	0.02	0.09	0.32	0.063	0.5	19.0	5.3	38.0	14.7
Footwall Waste	Barf2012	15574	MR1 12 224	201.8	203.5	Grns	9.15	4	0.02	<0.01	0.01	0.78	3.45	0.730	0.4	89.0	60.9	239.1	159.4
Footwall Waste	Barf2012	15576	MR1 12 224	242.7	244.7	Grns	9.05	1	0.02	<0.01	<0.01	0.01	0.01	0.001	0.4	11.5	0.4	7.1	7.2
Footwall Waste	Barf2012	15596	MR1 12 224	244.7	246.7	Grns	10.02	1	0.02	0.01	0.01	0.06	0.11	0.022	0.4	14.1	1.8	32.2	11.8
Footwall Waste	Barf2012	15597	MR1 12 224	246.7	248.6	Grns	10.04	1	0.01	<0.01	<0.01	0.06	0.21	0.042	0.3	12.9	3.5	41.3	17.1
Footwall Waste	Barf2012	15644	MR1 12 226	138.4	140.4	Grns	9.63	1	<0.01	<0.01	<0.01	0.01	0.01	0.001	0.3	16.3	0.4	6.7	0.7
Footwall Waste	Barf2012	15665	MR1 12 226	140.4	142.4	Grns	9.69	1	<0.01	<0.01	<0.01	0.01	0.01	0.002	0.3	13.7	0.2	43.8	3.5
Footwall Waste	Barf2012	15669	MR1 12 226	148.0	150.0	Grns	9.62	1	<0.01	<0.01	<0.01	0.01	0.02	0.001	0.3	17.0	0.2	25.0	5.3
Footwall Waste	Barf2012	15670	MR1 12 226	150.0	152.0	Grns	9.44	1	<0.01	<0.01	<0.01	0.01	0.02	0.00					

Waste solid	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	Paste pH	Fix Rate	Total Sulphur	Sulphate	Sulphide*	Total Carbon	Carbonate	Carbonate (as Carbon)	AP**	NP	Carb/NP***	NP****	Carb/NP
									%			%			Ag CaCO ₃				
Footwall Waste	Baff2012	15429	MR12 22 223	87.1	89.2	Schist	8.87	2	0.02	<0.01	0.01	0.02	<0.01	0.001	0.2	1.2	0.1	23.0	4.0
Footwall Waste	Baff2012	15430	MR12 22 223	89.2	91.0	Schist	8.78	2	0.02	<0.01	0.01	0.01	<0.01	0.001	0.4	7.9	0.1	21.1	1.8
Footwall Waste	Baff2012	15431	MR12 22 223	134.2	136.0	Schist	9.13	1	0.78	0.2	0.58	0.01	0.03	0.005	18.0	14.0	0.4	0.8	0.04
Footwall Waste	Baff2012	15434	MR12 22 223	160.0	137.8	Schist	9.11	1	0.10	0.05	0.05	0.01	0.03	0.006	1.7	19.0	0.5	11.3	0.4
Footwall Waste	Baff2012	15435	MR12 22 223	137.8	139.7	Schist	9.03	1	0.17	0.2	0.27	0.03	0.03	0.007	8.5	4.7	0.3	0.6	0.1
Footwall Waste	Baff2012	15436	MR12 22 223	139.7	141.6	Schist	9.27	1	0.02	0.02	<0.01	0.01	0.01	0.001	0.3	8.1	0.1	25.9	3.2
Footwall Waste	Baff2012	15439	MR12 22 223	145.4	147.3	Schist	9.51	1	0.02	0.02	<0.01	0.01	0.01	0.010	0.3	8.7	0.8	27.8	8.8
Footwall Waste	Baff2012	15441	MR12 22 223	149.2	151.0	Schist	9.40	1	0.10	0.02	0.02	0.01	0.01	0.010	1.0	7.8	0.1	24.1	0.7
Footwall Waste	Baff2012	15463	MR12 22 223	153.0	155.0	Schist	8.88	1	0.18	0.15	0.03	0.01	0.01	0.001	1.0	12.0	0.1	12.0	0.8
Footwall Waste	Baff2012	15465	MR12 22 223	157.0	159.0	Schist	9.63	1	0.92	0.32	0.60	0.01	<0.01	0.001	18.7	21.0	0.1	1.1	0.05
Footwall Waste	Baff2012	15467	MR12 22 223	161.0	163.0	Schist	9.67	1	0.05	0.03	0.03	0.01	0.01	0.001	0.3	6.7	0.1	2.1	0.1
Footwall Waste	Baff2012	15469	MR12 22 223	165.0	167.0	Schist	9.94	1	0.01	0.01	<0.01	0.01	0.01	0.001	0.3	6.9	0.1	22.1	1.6
Footwall Waste	Baff2012	15471	MR12 22 223	169.0	170.8	Schist	10.04	1	0.01	0.01	<0.01	0.01	<0.01	0.001	0.3	7.4	0.1	23.7	1.9
Footwall Waste	Baff2012	15472	MR12 22 223	170.8	172.9	Schist	9.22	1	0.02	0.02	<0.01	0.01	<0.01	0.001	0.3	14.0	0.1	44.8	2.7
Footwall Waste	Baff2012	15473	MR12 22 224	172.9	175.0	Schist	9.14	1	0.18	0.14	0.04	0.03	0.007	0.001	1.3	11.0	0.8	9.9	1.9
Footwall Waste	Baff2012	15506	MR12 22 224	73.3	75.1	Schist	9.92	1	0.01	<0.01	<0.01	0.03	0.007	0.013	0.3	18.2	1.1	58.2	9.1
Footwall Waste	Baff2012	15517	MR12 22 224	92.8	94.8	Schist	9.96	2	0.01	<0.01	<0.01	0.23	0.80	0.161	0.3	18.8	13.4	124.2	61.3
Footwall Waste	Baff2012	15518	MR12 22 224	96.5	98.2	Schist	9.70	1	0.08	0.02	0.06	0.02	0.03	0.005	1.5	10.8	0.5	11.1	1.0
Footwall Waste	Baff2012	15522	MR12 22 224	101.6	103.4	Schist	9.58	3	0.04	0.02	0.02	0.57	2.41	0.482	0.8	82.1	40.2	109.5	63.2
Footwall Waste	Baff2012	15530	MR12 22 224	117.8	119.8	Schist	9.75	1	0.01	0.01	<0.01	0.09	0.42	0.084	0.3	22.9	7.0	73.3	23.5
Footwall Waste	Baff2012	15578	MR12 22 224	209.7	211.7	Schist	9.93	1	0.02	0.02	<0.01	0.02	0.03	0.005	0.3	19.5	0.4	2.2	5.3
Footwall Waste	Baff2012	15580	MR12 22 224	213.7	215.6	Schist	8.90	1	0.02	0.02	<0.01	0.02	0.03	0.006	0.3	17.0	0.5	54.4	5.9
Footwall Waste	Baff2012	15661	MR12 22 226	133.0	134.8	Schist	9.65	1	<0.01	<0.01	<0.01	0.02	0.02	0.004	0.3	24.8	0.3	79.4	5.3
Footwall Waste	Baff2012	15666	MR12 22 226	199.5	201.2	Schist	9.71	1	<0.01	<0.01	<0.01	0.03	0.07	0.014	0.3	8.9	1.2	28.5	7.7
Footwall Waste	Baff2012	15723	MR12 22 225	55.1	57.5	Schist	9.93	1	0.09	0.09	0.10	0.30	2.06	0.009	2.8	24.0	5.0	8.5	3.0
Footwall Waste	Baff2012	15725	MR12 22 225	99.7	62.1	Schist	9.79	1	0.01	<0.01	<0.01	0.30	1.35	0.270	0.3	41.0	22.5	113.2	81.1
Footwall Waste	Baff2012	15746	MR12 22 225	102.1	105.4	Schist	9.96	2	0.01	<0.01	<0.01	0.17	0.74	0.149	0.3	27.4	12.4	87.7	46.1
Footwall Waste	Baff2012	15867	MR12 22 226	271.0	274.0	Schist	9.86	2	0.01	<0.01	<0.01	0.01	0.01	0.001	0.3	11.9	0.1	21.2	2.8
Footwall Waste	Baff2012	15869	MR12 22 226	275.1	277.1	Schist	9.30	1	<0.01	<0.01	<0.01	0.01	0.03	0.007	0.3	2.9	0.6	9.3	3.7
Footwall Waste	Baff2012	15871	MR12 22 226	278.9	281.5	Schist	9.79	1	0.01	0.01	<0.01	0.05	0.16	0.032	0.3	5.0	2.7	16.0	12.3
Footwall Waste	Baff2012	15872	MR12 22 226	281.5	283.7	Schist	9.81	1	<0.01	<0.01	<0.01	0.03	0.06	0.001	0.2	16.0	1.0	6.5	6.7
Footwall Waste	Baff2012	15873	MR12 22 226	283.7	285.9	Schist	9.87	1	0.01	<0.01	<0.01	0.03	0.07	0.013	0.3	9.9	1.1	31.7	7.2
Footwall Waste	Baff2012	15874	MR12 22 226	285.9	287.5	Schist	9.71	1	0.01	<0.01	<0.01	0.04	0.06	0.011	0.3	9.5	0.9	30.4	9.3
Footwall Waste	Baff2012	15875	MR12 22 226	287.5	289.0	Schist	9.73	1	0.23	0.09	0.14	0.05	0.18	0.036	4.3	14.0	3.0	8.3	0.9
Footwall Waste	Baff2012	15876	MR12 22 226	289.0	290.6	Ultramafic	9.82	1	0.63	0.23	0.46	0.03	0.02	0.001	17.0	17.0	8.9	66.1	
Footwall Waste	Baff2012	15877	MR12 22 224	205.6	207.6	Ultramafic	9.55	1	<0.01	<0.01	<0.01	0.14	0.51	0.102	0.3	17.0	8.5	54.4	36.0
Footwall Waste	Baff2012	15882	MR12 22 224	217.8	219.8	Ultramafic	9.40	1	<0.01	<0.01	<0.01	0.02	0.03	0.005	0.3	7.8	0.4	25.0	6.4
Footwall Waste	Baff2012	15883	MR12 22 224	221.8	224.3	Ultramafic	9.41	1	<0.01	<0.01	<0.01	0.08	0.31	0.068	0.5	11.4	0.4	12.8	1.8
Footwall Waste	Baff2012	15533	MR12 22 224	123.4	125.4	Volcanic Tuff	9.88	1	0.01	0.01	<0.01	0.05	0.15	0.030	0.3	12.6	2.5	40.3	13.3
Footwall Waste	Baff2012	15535	MR12 22 224	127.4	129.4	Volcanic Tuff	10.02	1	0.01	0.01	<0.01	0.03	0.04	0.008	0.3	14.0	0.7	44.8	6.9
Footwall Waste	Baff2012	15536	MR12 22 224	129.4	131.4	Volcanic Tuff	10.00	1	0.01	0.01	<0.01	0.03	0.04	0.008	0.3	14.0	0.7	44.8	6.9
Footwall Waste	Baff2012	15539	MR12 22 224	135.4	137.4	Volcanic Tuff	9.94	1	0.01	<0.01	<0.01	0.02	0.08	0.016	0.3	8.5	1.3	27.2	5.9
Footwall Waste	Baff2012	15542	MR12 22 224	141.4	143.1	Volcanic Tuff	9.71	1	0.01	<0.01	<0.01	0.01	0.01	0.002	0.3	8.1	0.2	25.9	1.9
Footwall Waste	Baff2012	15544	MR12 22 224	144.8	146.5	Volcanic Tuff	9.97	1	0.01	0.01	<0.01	0.03	0.04	0.008	0.3	13.0	0.7	41.6	9.1
Footwall Waste	Baff2012	15546	MR12 22 224	148.2	149.9	Volcanic Tuff	9.93	1	0.04	0.02	0.04	0.03	0.04	0.008	1.2	14.0	0.4	21.1	1.6
Footwall Waste	Baff2012	15548	MR12 22 224	151.9	153.9	Volcanic Tuff	9.58	1	0.02	0.02	<0.01	0.03	0.03	0.005	0.3	13.0	0.4	41.6	8.3
Footwall Waste	Baff2012	15550	MR12 22 224	155.9	157.9	Volcanic Tuff	9.84	1	0.05	0.02	0.03	0.05	0.09	0.017	0.8	22.0	1.4	28.2	5.3
Footwall Waste	Baff2012	15552	MR12 22 224	159.9	161.9	Volcanic Tuff	9.84	1	0.05	0.02	0.03	0.05	0.09	0.017	0.8	22.0	1.4	28.2	5.3
Footwall Waste	Baff2012	15554	MR12 22 224	163.7	165.3	Volcanic Tuff	10.12	1	0.01	<0.01	<0.01	0.03	0.06	0.011	0.3	22.0	0.9	70.4	7.5
Footwall Waste	Baff2012	15561	MR12 22 224	174.6	176.8	Volcanic Tuff	10.10	1	0.02	0.01	<0.01	0.03	0.06	0.015	0.3	11.0	1.3	35.2	8.8
Footwall Waste	Baff2012	15562	MR12 22 224	181.1	183.1	Volcanic Tuff	10.13	1	0.01	0.02	<0.01	0.13	0.08	0.001	0.6	10.6	0.6	40.2	11.2
Footwall Waste	Baff2012	15566	MR12 22 224	185.1	187.1	Volcanic Tuff	10.04	2	0.04	0.01	0.03	0.10	0.30	0.060	0.8	17.0	5.0	21.8	10.9
Footwall Waste	Baff2012	15568	MR12 22 224	191.1	193.1	Volcanic Tuff	9.97	1	0.06	0.01	0.05	0.02	0.05	0.009	1.5	11.0	0.8	7.3	1.3
Footwall Waste	Baff2012	15570	MR12 22 224	193.5	195.8	Volcanic Tuff	9.89	1	0.01	0.01	<0.01	0.02	0.03	0.006	0.3	9.3	0.5	29.8	5.3
Footwall Waste	Baff2012	15572	MR12 22 224	195.8	198.0	Volcanic Tuff	9.89	1	0.01	0.01	<0.01	0.03	0.11	0.001	0.3	11.9	0.1	31.2	2.8
Footwall Waste	Baff2012	15587	MR12 22 224	228.3	229.9	Volcanic Tuff	9.96	1	0.01	<0.01	<0.01	0.01	0.03	0.006	0.3	9.2	0.5	29.4	3.5
Footwall Waste	Baff2012	15591	MR12 22 224	234.0	236.2	Volcanic Tuff	9.93	1	<0.01	<0.01	<0.01	0.03	0.11	0.021	0.3	9.4	1.8	30.1	8.8
Footwall Waste	Baff2012	15592	MR12 22 224	238.4	240.7	Volcanic Tuff	9.77	1	0.01	0.01	<0.01	0.03	0.04	0.001	0.3	10.7	0.1	10.7	0.7
Footwall Waste	Baff2012	15598	MR12 22 224	248.6	250.6	Volcanic Tuff	9.88	3	0.01	0.01	<0.01	0.44	1.94	0.388	0.3	43.6	32.4	139.5	117.9
Footwall Waste	Baff2012	15599	MR12 22 224	250.6	252.0	Volcanic Tuff	10.09	3	0.01	<0.01	<0.01	0.28	1.22	0.244	0.3	34.7	20.3	111.0	75.5
Footwall Waste	Baff2012	15597	MR12 22 225	124.7	126.8	Volcanic Tuff	9.93	1	0.01	0.01	<0.01	0.03	0.06	0.001	0.3	10.6	0.4	32.7	7.7
Footwall Waste	Baff2012	15758	MR12 22 225	126.8	128.9	Volcanic Tuff	9.71	1	0.01	<0.01	<0.01	0.02	0.04	0.007	0.3	18.3	0.6	58.6	4.3
Footwall Waste	Baff2012	15760	MR12 22 225	131.0	133.0	Volcanic Tuff	9.83	1	0.01	<0.01	<0.01	0.01	0.05	0.010	0.				

Waste solid	Sampling Program	Sample ID	Borehole ID	From	To	Lithology	Paste pH	Fix Rate	Total Sulphur	Sulphate	Sulphide*	Total Carbon	Carbonate	Carbonate (as Carbon)	AP**	NP	Carbon***	NP****	CarbonP	
				(m)					%			%				Ag	g/g			
Hanging Wall Schist	Baff2012	4907	MR1 12 222	177.2	179.3	Banded Iron Formation	8.45	1	0.48	0.04	0.44	0.02	0.02	0.004	12.7	7.4	0.3	0.5	0.1	
Hanging Wall Schist	Baff2012	4909	MR1 12 222	181.3	183.3	Banded Iron Formation	8.38	1	2.06	0.11	1.95	0.03	0.02	0.004	60.9	10.0	0.4	0.2	0.04	
Hanging Wall Schist	Baff2012	4911	MR1 12 222	185.3	187.3	Banded Iron Formation	8.09	1	4.80	0.03	4.77	0.34	0.85	0.169	149.1	29.1	14.1	0.2	0.2	
Hanging Wall Schist	Baff2012	4912	MR1 12 222	187.3	189.3	Banded Iron Formation	8.55	1	1.90	0.02	1.88	2.92	11.60	0.232	58.8	24.6	19.5	3.7	0.1	
Hanging Wall Schist	Baff2012	4916	MR1 12 222	194.7	196.3	Banded Iron Formation	8.72	1	0.07	0.02	0.05	0.02	0.008	0.008	0.1	19.4	0.8	0.1	0.3	
Hanging Wall Schist	Baff2012	4917	MR1 12 222	196.3	198.3	Banded Iron Formation	8.72	1	0.26	0.03	0.23	0.04	0.02	0.003	7.2	7.3	0.3	1.0	0.4	
Hanging Wall Schist	AMEC_2010	MR1A01009	MR1 08 144	193.1	193.8	Greens	8.99	1	-0.03	-0.03	-0.01	0.01	-0.01	0.001	0.3	18.8	0.8	60.2	2.7	
Hanging Wall Schist	AMEC_2010	MR1A01015	MR1 08 144	195.0	195.0	Greens	8.94	1	-0.01	-0.01	-0.01	0.01	-0.01	0.001	0.2	18.8	0.8	60.2	2.7	
Hanging Wall Schist	Baff2011	16028	MR1 05 72	122.4	123.3	Greens	8.02	1	0.37	0.11	0.26	0.01	-0.01	0.001	8.0	9.0	0.1	1.1	0.01	
Hanging Wall Schist	Baff2011	16001	MR1 05 77	82.4	83.4	Greens	9.01	1	0.15	0.08	0.07	0.03	0.06	0.012	2.1	36.6	1.0	7.8	0.5	
Hanging Wall Schist	Baff2011	16002	MR1 05 77	92.2	93.2	Greens	8.71	1	0.03	0.02	0.01	0.01	-0.01	0.001	0.3	17.0	0.1	0.4	0.1	
Hanging Wall Schist	Baff2011	16032	MR1 08 154	257.8	258.8	Greens	8.78	1	0.05	0.01	0.04	0.01	0.02	0.005	1.3	7.6	0.4	6.1	0.3	
Hanging Wall Schist	Baff2011	16234	MR1 05 53	139.3	140.3	High Grade Iron Formation	8.12	4	0.36	0.04	0.32	0.59	1.92	0.384	9.9	58.5	32.0	5.9	3.2	
Hanging Wall Schist	Baff2011	16016	MR1 05 72	58.7	59.6	High Grade Iron Formation	6.56	1	5.65	1.86	3.79	0.56	2.50	0.500	118.4	5.5	41.7	0.1	0.4	
Hanging Wall Schist	Baff2011	16018	MR1 05 72	69.6	70.6	High Grade Iron Formation	7.41	1	1.89	0.54	1.45	1.43	6.83	1.367	43.1	133.9	0.1	2.5	0.2	
Hanging Wall Schist	Baff2011	16020	MR1 05 72	84.2	85.2	High Grade Iron Formation	6.38	1	1.04	0.47	0.57	2.32	10.90	2.181	17.8	3.4	181.8	0.2	10.2	
Hanging Wall Schist	Baff2011	16052	MR1 05 72	208.3	209.3	High Grade Iron Formation	7.74	1	0.46	0.18	0.28	0.01	-0.01	0.001	8.9	8.2	0.1	0.9	0.03	
Hanging Wall Schist	Baff2011	16022	MR1 08 158	204.2	205.2	High Grade Iron Formation	8.84	1	0.01	0.01	-0.01	0.01	-0.01	0.001	0.3	6.7	0.1	21.4	0.3	
Hanging Wall Schist	Baff2011	16324	MR1 08 141	182.2	183.1	High Grade Iron Formation	8.60	1	0.12	0.03	0.09	0.02	-0.01	0.001	2.9	12.4	0.1	4.3	0.03	
Hanging Wall Schist	Baff2011	16442	MR1 05 47	270.9	271.9	High Grade Iron Formation	8.62	1	0.15	0.06	0.09	0.02	-0.01	0.001	2.9	14.8	0.1	5.1	0.03	
Hanging Wall Schist	Baff2011	16446	MR1 05 47	282.5	283.6	High Grade Iron Formation	8.31	1	0.40	0.07	0.33	0.03	-0.01	0.001	10.9	20.0	0.1	2.0	0.03	
Hanging Wall Schist	Baff2011	16450	MR1 05 47	294.4	295.4	High Grade Iron Formation	8.37	1	0.24	-0.03	0.23	0.02	0.01	0.003	7.3	27.8	0.2	3.8	0.03	
Hanging Wall Schist	Baff2011	16456	MR1 05 47	313.6	314.8	High Grade Iron Formation	7.83	1	2.72	-0.01	2.7	0.03	0.04	0.008	84.7	10.3	0.7	0.1	0.01	
Hanging Wall Schist	Baff2011	16478	MR1 05 46	212.8	213.8	High Grade Iron Formation	8.19	1	0.67	0.11	0.6	0.03	0.04	0.008	17.4	12.0	0.7	0.7	0.04	
Hanging Wall Schist	Baff2011	16488	MR1 04 45	176.1	177.2	High Grade Iron Formation	8.24	1	1.69	0.09	1.55	0.72	0.09	-0.01	0.001	12.5	10.3	0.1	0.2	0.02
Hanging Wall Schist	Baff2011	16548	MR1 09 176	163.4	165.4	High Grade Iron Formation	8.27	1	0.63	0.26	0.4	3.84	6.57	1.315	11.7	17.8	109.6	6.2	9.4	
Hanging Wall Schist	Baff2011	16558	MR1 09 176	203.4	204.4	High Grade Iron Formation	8.88	1	0.01	-0.03	-0.01	0.04	0.11	0.022	0.3	14.7	1.9	47.0	6.0	
Hanging Wall Schist	Baff2011	16568	MR1 09 176	221.6	224.6	High Grade Iron Formation	8.94	1	0.01	-0.03	-0.01	0.04	0.11	0.022	0.3	14.7	1.9	47.0	6.0	
Hanging Wall Schist	Baff2011	16622	MR1 08 154	224.9	225.9	High Grade Iron Formation	6.32	1	1.45	0.21	1.24	2.34	10.60	2.121	38.8	5.3	176.8	0.1	4.6	
Hanging Wall Schist	Baff2011	16624	MR1 08 154	237.5	238.5	High Grade Iron Formation	6.79	1	0.66	0.04	0.62	3.33	13.20	2.642	19.4	5.7	220.2	0.3	11.4	
Hanging Wall Schist	Baff2011	16626	MR1 08 154	241.8	242.8	High Grade Iron Formation	6.84	1	0.38	0.04	0.34	3.27	5.49	0.887	12.7	98.2	0.1	21.8	0.1	
Hanging Wall Schist	Baff2011	16628	MR1 08 154	251.5	252.5	High Grade Iron Formation	8.43	1	0.97	0.09	0.88	0.15	0.23	0.046	27.6	13.3	3.8	0.5	0.1	
Hanging Wall Schist	AMEC_2010	MR1A01016	MR1 09 176	260.0	260.4	Metasediment	8.47	1	0.30	0.01	-0.01	0.03	0.01	0.002	0.3	41.6	2.2	133.1	6.9	
Hanging Wall Schist	Baff2011	16026	MR1 05 72	110.0	111.1	Metasediment	8.43	1	0.01	-0.01	-0.01	0.01	-0.01	0.001	0.3	13.3	0.1	42.6	0.3	
Hanging Wall Schist	Baff2011	16034	MR1 08 152	139.4	139.4	Metasediment	8.59	1	0.59	0.15	0.44	0.06	0.01	0.007	48.4	0.1	13.1	0.2	0.00	
Hanging Wall Schist	Baff2011	16038	MR1 05 72	153.3	154.3	Metasediment	9.40	1	0.42	0.12	0.30	0.02	-0.01	0.001	9.5	12.8	0.1	1.3	0.01	
Hanging Wall Schist	Baff2011	16196	MR1 08 158	85.4	86.4	Metasediment	9.65	3	0.09	0.03	0.06	0.21	0.79	0.158	1.9	25.0	13.2	12.9	6.8	
Hanging Wall Schist	Baff2011	16198	MR1 08 158	95.4	96.2	Metasediment	9.47	3	0.17	0.09	0.08	0.24	0.84	0.207	4.2	14.6	13.2	8.6	4.8	
Hanging Wall Schist	Baff2011	16200	MR1 08 158	105.1	106.2	Metasediment	9.54	1	0.10	0.04	0.06	0.03	0.03	0.006	1.9	19.0	0.5	10.1	0.3	
Hanging Wall Schist	Baff2011	16202	MR1 08 158	114.6	115.6	Metasediment	9.31	4	0.25	0.06	0.19	0.53	1.98	0.396	5.9	51.9	33.0	8.7	5.6	
Hanging Wall Schist	Baff2011	16204	MR1 08 158	125.5	126.5	Metasediment	9.33	3	0.03	0.05	0.02	0.01	0.01	0.001	0.3	11.5	0.6	8.6	0.1	
Hanging Wall Schist	Baff2011	16206	MR1 08 158	134.2	135.1	Metasediment	9.33	3	0.56	0.13	0.425	0.38	1.15	0.230	13.3	45.1	19.2	3.4	1.4	
Hanging Wall Schist	Baff2011	16208	MR1 08 158	145.9	146.9	Metasediment	9.40	3	0.03	0.03	-0.01	0.36	1.24	0.248	0.3	38.7	20.7	123.8	66.2	
Hanging Wall Schist	Baff2011	16210	MR1 08 158	154.7	155.7	Metasediment	9.64	3	0.04	0.03	-0.01	0.12	0.32	0.064	0.4	26.2	5.3	59.9	12.1	
Hanging Wall Schist	Baff2011	16212	MR1 08 158	164.1	164.1	Metasediment	9.64	3	0.02	0.04	-0.01	0.16	0.42	0.04	0.41	48.1	48.4	110.6	110.6	
Hanging Wall Schist	Baff2011	16214	MR1 04 44	224.4	225.4	Metasediment	8.34	1	0.32	0.09	0.23	0.02	-0.01	0.001	7.1	56.1	0.1	2.3	0.01	
Hanging Wall Schist	Baff2011	16296	MR1 04 44	233.1	234.2	Metasediment	8.04	1	1.64	0.37	1.27	0.02	-0.01	0.001	39.7	10.8	0.1	0.3	0.00	
Hanging Wall Schist	Baff2011	16298	MR1 04 44	245.5	246.5	Metasediment	8.04	1	0.05	0.05	0.04	0.01	0.01	0.001	16.0	0.2	0.1	0.1	0.04	
Hanging Wall Schist	Baff2011	16300	MR1 04 44	258.7	259.7	Metasediment	8.36	1	0.09	0.05	0.04	0.02	-0.01	0.001	1.2	15.9	0.1	13.8	0.1	
Hanging Wall Schist	Baff2011	16484	MR1 05 46	245.0	246.0	Metasediment	8.98	1	0.13	0.04	0.09	0.01	-0.01	0.001	2.9	6.4	0.1	2.2	0.03	
Hanging Wall Schist	Baff2011	16486	MR1 05 46	288.5	289.5	Metasediment	8.80	1	0.02	0.02	-0.01	0.04	0.01	0.001	0.3	4.9	0.1	28.5	0.3	
Hanging Wall Schist	Baff2011	16496	MR1 05 46	293.2	294.1	Metasediment	8.80	1	0.12	0.03	0.09	0.01	-0.01	0.001	2.8	7.7	0.1	2.7	0.03	
Hanging Wall Schist	Baff2011	16502	MR1 04 45	192.5	193.6	Metasediment	8.36	1	0.31	0.08	0.23	0.03	0.03	0.006	7.3	16.2	0.5	2.2	0.01	
Hanging Wall Schist	Baff2011	16506	MR1 05 77	21.6	22.6	Metasediment	9.22	1	-0.01	-0.01	-0.01	0.06	0.09	0.019	0.3	13.7	1.6	43.8	10.0	
Hanging Wall Schist	Baff2011	16508	MR1 05 77	32.0	33.0	Metasediment	9.07	1	-0.01	-0.01	-0.01	0.16	0.21	0.03	0.2	14.2	0.2	13.3	0.6	
Hanging Wall Schist	Baff2011	16494	MR1 08 156	8.7	9.8	Metasediment	8.93	2	-0.01	-0.01	-0.01	0.11	0.35	0.070	0.3	16.3	5.8	52.2	18.7	
Hanging Wall Schist	Baff2011	16496	MR1 08 156	15.3	16.3	Metasediment	9.46	1	0.05	0.03	0.02	0.04	0.10	0.020	0.5	11.7	1.6	23.4	3.3	
Hanging Wall Schist	Baff2011	16492	MR1 14 38	17.0	17.9	Metasediment	9.11	1	0.09	0.01	-0.01	0.11	0.39	0.005	0.4	11.1	0.4	10.4	0.3	
Hanging Wall Schist	Baff2011	16300	MR1 05 72	132.9	133.9	Quartz Zone	6.81	1	0.02	0.02	-0.01	0.01	-0.01	0.001	0.3	5.6	0.1	17.9	0.3	
Hanging Wall Schist	AMEC_2010	MR1A01001	MR1 09 171	67.0	68.0	Schist	7.56	1	0.32	0.24	0.08	0.03	-0.01	0.001	2.5	36.2	2.4	14.5	1.0	
Hanging Wall Schist	AMEC_2010	MR1A01002	MR1 09 179	80.2	81.2	Schist	8.01	1	0.02	0.02	0.01	0.01	0.01	0.001	0.3	14.7	0.1	4.2	0.2	
Hanging Wall Schist	AMEC_2010	MR1A01003	MR1 09 179	45.0	46.0	Schist	7.74	1	0.03	0.03	-0.01	0.41	1.57	0.314	0.3	7.9	33.9	25.3	108.5	
Hanging Wall Schist	AMEC_2010	MR1A01006	MR1 09 177	130.2	131.0	Schist	8.32	1	0.06	0.04	0.02	0.02	0.01	0.001	0.5	15.3	1.6	30.6	3.2	
Hanging Wall Schist	AMEC_2010	MR1A01007	MR1 09 177	55.0	56.0	Schist	8.50	1	0.20	0.18	0.02	0.02	0.0							

Waste solid	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	Paste pH	Flz Rate	Total Sulphur	Sulphate	Sulphide*	Total Carbon	Carbonate	Carbonate (as Carbon)	AP**	NP	CarbNP****	NP****	CarbNP	
Hanging Wall Schist	Barf2012	4962	MR1 12 222	246.5	248.8	Schist	7.82	1	0.02	0.02	<0.01	0.02	0.04	0.007	0.3	24.6	0.6	78.7	5.9	
Hanging Wall Schist	Barf2012	4964	MR1 12 222	250.8	252.8	Schist	8.03	1	0.01	<0.01	<0.01	0.02	0.04	0.007	0.3	30.6	0.6	97.9	5.1	
Hanging Wall Schist	Barf2012	4966	MR1 12 222	254.8	256.8	Schist	7.71	1	0.03	0.03	<0.01	0.02	0.04	0.007	0.3	23.8	0.6	76.2	5.3	
Hanging Wall Schist	AMEC_2010	MR1 08 152	MR1 08 152	90.0	90.0	Volcanic Tuff	8.99	1	0.10	0.09	0.01	0.01	0.04	0.007	0.3	12.5	1.0	40.0	3.2	
Hanging Wall Schist	AMEC_2010	MR1 08 158	MR1 08 158	160.3	161.0	Volcanic Tuff	9.41	1	0.13	0.11	0.02	0.01	0.04	0.005	0.7	20.8	5.8	28.9	8.1	
Hanging Wall Schist	AMEC_2010	MR1 08 158	MR1 08 158	120.0	121.0	Volcanic Tuff	8.09	3	0.35	0.12	0.23	0.97	3.79	0.759	7.3	98.5	80.6	13.5	11.0	
Hanging Wall Schist	AMEC_2010	MR1 08 152	MR1 08 152	30.0	31.0	Volcanic Tuff	9.50	2	0.09	0.03	0.06	0.13	0.82	0.123	1.9	19.1	10.5	9.9	5.4	
Hanging Wall Schist	AMEC_2010	MR1 08 152	MR1 08 152	51.0	51.0	Volcanic Tuff	9.01	1	0.01	<0.01	<0.01	0.01	0.04	0.005	0.1	11.8	0.1	37.7	1.5	
Hanging Wall Schist	AMEC_2010	MR1 08 156	MR1 08 156	95.0	96.0	Volcanic Tuff	8.31	1	0.20	0.06	0.14	0.02	0.03	0.005	4.3	19.0	1.3	44.4	0.3	
Hanging Wall Schist	AMEC_2010	MR1 08 150	MR1 08 150	75.0	75.9	Volcanic Tuff	8.63	1	0.02	0.02	<0.01	0.01	0.18	0.036	0.3	14.1	0.7	45.1	2.1	
Hanging Wall Schist	AMEC_2010	MR1 08 141	MR1 08 141	81.0	81.7	Volcanic Tuff	8.14	1	0.18	0.17	0.14	0.17	0.14	0.007	22.7	1.9	95.0	4.2		
Hanging Wall Schist	AMEC_2010	MR1 08 157	MR1 08 157	45.0	46.0	Volcanic Tuff	8.19	1	0.04	0.02	0.02	0.08	0.16	0.033	0.5	31.3	6.8	58.9	12.7	
Hanging Wall Schist	AMEC_2010	MR1 08 149	MR1 08 149	90.0	91.0	Volcanic Tuff	7.94	1	1.28	0.28	1.00	0.01	0.01	0.002	31.3	20.3	0.8	0.6	0.02	
Hanging Wall Schist	AMEC_2010	MR1 08 157	MR1 08 157	65.4	66.0	Volcanic Tuff	8.90	1	0.02	0.02	<0.01	0.01	0.05	0.007	0.14	3.1	14.1	3.8	45.1	12.0
Hanging Wall Schist	AMEC_2010	MR1 08 144	MR1 08 144	211.0	211.0	Volcanic Tuff	7.80	1	6.13	0.17	5.96	0.01	<0.01	0.001	186.3	14.8	0.4	0.1	0.002	
Hanging Wall Schist	AMEC_2010	MR1 08 147	MR1 08 147	40.0	41.0	Volcanic Tuff	8.83	3	0.45	0.09	0.36	0.97	4.31	0.863	11.2	96.2	80.5	8.6	7.2	
Hanging Wall Schist	AMEC_2010	MR1 08 147	MR1 08 147	25.0	26.0	Volcanic Tuff	8.52	1	0.03	0.02	0.01	0.11	0.32	0.063	0.4	26.8	9.2	66.0	22.6	
Hanging Wall Schist	AMEC_2010	MR1 08 147	MR1 08 147	70.0	71.0	Volcanic Tuff	8.72	1	0.08	0.03	0.05	0.21	0.78	0.156	1.4	41.5	17.7	30.9	12.6	
Hanging Wall Schist	AMEC_2010	MR1 08 146	MR1 08 146	80.2	81.2	Volcanic Tuff	9.27	1	0.25	0.07	0.18	0.09	0.26	0.051	5.7	18.7	7.3	3.3	1.3	
Hanging Wall Schist	AMEC_2010	MR1 08 153	MR1 08 153	35.0	36.0	Volcanic Tuff	9.53	1	0.01	<0.01	<0.01	0.05	0.09	0.017	0.3	14.5	3.8	46.4	12.0	
Hanging Wall Schist	AMEC_2010	MR1 08 140	MR1 08 140	60.0	61.0	Volcanic Tuff	9.42	2	0.02	0.02	<0.01	0.23	0.92	0.188	0.3	20.6	18.8	97.9	60.0	
Hanging Wall Schist	AMEC_2010	MR1 08 141	MR1 08 141	200.0	201.0	Volcanic Tuff	8.20	1	0.87	0.26	0.61	0.07	0.08	0.016	19.1	15.7	5.4	0.8	0.3	
Hanging Wall Schist	AMEC_2010	MR1 08 156	MR1 08 156	40.3	41.3	Volcanic Tuff	9.02	3	0.01	<0.01	<0.01	<0.01	0.01	0.807	0.3	81.7	72.6	267.8	232.3	
Hanging Wall Schist	Barf2011	16006	MR1 05 72	30.5	31.5	Volcanic Tuff	8.04	1	0.01	<0.01	<0.01	0.01	<0.01	0.001	0.3	4.8	0.1	15.4	0.3	
Hanging Wall Schist	Barf2011	16032	MR1 05 72	135.6	136.0	Volcanic Tuff	7.90	1	0.04	0.04	<0.01	0.01	0.01	0.001	0.3	8.6	0.1	27.5	0.3	
Hanging Wall Schist	Barf2011	16262	MR1 05 51	183.1	184.1	Volcanic Tuff	7.60	1	0.36	0.22	1.14	0.02	0.023	0.005	35.6	7.8	0.4	0.2	0.01	
Hanging Wall Schist	Barf2011	16266	MR1 05 51	197.9	197.9	Volcanic Tuff	8.12	1	1.29	0.35	0.94	0.01	<0.01	0.001	29.4	7.6	0.1	0.3	0.01	
Hanging Wall Schist	Barf2011	16270	MR1 05 51	214.0	215.0	Volcanic Tuff	8.76	1	0.18	0.11	0.53	0.01	<0.01	0.001	4.8	18.9	0.2	5.7	0.1	
Hanging Wall Schist	Barf2011	16272	MR1 05 51	224.3	225.3	Volcanic Tuff	8.69	1	0.39	0.2	0.19	0.01	<0.01	0.001	5.8	17.9	0.1	3.1	0.01	
Hanging Wall Schist	Barf2011	16470	MR1 05 46	51.7	52.7	Volcanic Tuff	8.32	1	0.01	<0.01	<0.01	0.04	<0.01	0.001	0.3	20.3	0.1	65.0	0.3	
Hanging Wall Schist	Barf2011	16554	MR1 09 176	182.4	183.4	Volcanic Tuff	9.12	1	0.01	0.04	<0.01	0.01	0.04	0.001	1.4	16.2	0.6	30.8	0.6	
Hanging Wall Schist	Barf2011	16664	MR1 08 146	55.5	56.5	Volcanic Tuff	9.12	1	0.03	0.03	<0.01	0.18	0.63	0.126	0.3	23.3	10.5	74.6	33.6	
Hanging Wall Schist	Barf2011	16666	MR1 08 146	64.2	65.2	Volcanic Tuff	8.85	2	1.09	0.1	0.99	0.16	0.45	0.089	30.9	28.1	7.4	0.9	0.2	
Hanging Wall Schist	Barf2011	16668	MR1 08 146	72.7	73.7	Volcanic Tuff	9.59	1	0.13	0.06	0.07	0.08	0.27	0.053	2.2	27.1	4.4	12.4	2.0	
Hanging Wall Schist	Barf2011	16670	MR1 08 146	85.2	85.2	Volcanic Tuff	9.04	1	0.19	0.04	0.07	0.08	0.13	0.01	12.2	25.4	2.1	27.5	0.3	
Hanging Wall Schist	Barf2011	16698	MR1 08 156	23.0	24.0	Volcanic Tuff	9.25	3	0.07	0.05	0.02	1.00	4.54	0.909	0.6	86.8	75.7	146.2	127.5	
Hanging Wall Schist	Barf2011	16700	MR1 08 156	33.8	34.8	Volcanic Tuff	9.17	3	0.20	0.11	0.09	0.72	3.06	0.612	2.7	67.8	51.0	25.5	19.2	
Hanging Wall Schist	Barf2011	16702	MR1 08 156	41.3	42.3	Volcanic Tuff	9.48	1	0.18	0.1	0.20	0.13	0.16	0.02	11.6	10.2	17.0	10.6	7.9	
Hanging Wall Schist	Barf2011	16704	MR1 08 156	51.7	52.7	Volcanic Tuff	8.86	3	0.20	0.11	0.09	1.09	4.74	0.949	2.8	104.0	79.5	37.0	28.1	
Hanging Wall Schist	Barf2011	16706	MR1 08 156	58.5	59.5	Volcanic Tuff	9.64	1	0.01	<0.01	<0.01	0.01	0.04	0.007	0.3	13.5	0.6	43.2	2.0	
Hanging Wall Schist	Barf2011	16708	MR1 08 156	65.4	66.4	Volcanic Tuff	9.11	1	0.13	0.07	0.11	0.02	0.49	0.01	0.6	41.3	0.1	37.9	0.1	
Hanging Wall Schist	Barf2011	16710	MR1 08 156	77.7	77.7	Volcanic Tuff	8.48	1	0.17	0.17	<0.01	0.03	0.08	0.016	0.3	14.8	1.4	47.4	4.4	
Hanging Wall Schist	Barf2011	16718	MR1 06 90	14.2	15.2	Volcanic Tuff	8.41	1	0.21	0.09	0.12	0.02	0.01	0.003	1.6	17.8	0.2	5.0	0.1	
Hanging Wall Schist	Barf2011	16720	MR1 06 90	22.5	23.6	Volcanic Tuff	8.31	1	0.27	0.11	0.16	0.01	0.02	0.004	4.8	12.6	0.3	2.6	0.1	
Hanging Wall Schist	Barf2011	16746	MR1 06 84	44.9	45.9	Amphibolite	9.12	1	0.14	0.02	0.14	0.01	0.01	0.001	1.3	18.9	0.2	54.2	0.1	
Hanging Wall Waste	Barf2011	16364	MR1 04 33	13.6	14.5	Amphibolite	9.23	4	0.13	0.02	0.11	0.24	0.72	0.144	0.5	26.8	12.0	7.7	3.4	
Hanging Wall Waste	Barf2011	16366	MR1 04 33	22.5	23.5	Amphibolite	8.53	3	0.63	0.09	0.54	0.44	1.27	0.254	16.8	38.3	21.2	2.3	1.3	
Hanging Wall Waste	Barf2011	16368	MR1 04 33	32.5	33.5	Amphibolite	9.26	3	0.39	0.03	0.26	0.32	1.26	0.26	1.7	40.0	16.6	7.9	7.9	
Hanging Wall Waste	Barf2011	16372	MR1 04 33	43.2	44.3	Amphibolite	9.74	1	0.18	0.05	0.13	0.20	0.71	0.141	4.1	26.7	11.8	6.5	2.9	
Hanging Wall Waste	Barf2011	16374	MR1 04 33	52.4	53.3	Amphibolite	9.76	1	0.12	<0.01	0.11	0.01	0.04	0.008	3.3	16.8	0.7	5.1	0.2	
Hanging Wall Waste	Barf2011	16384	MR1 05 77	11.8	12.8	Amphibolite	9.08	1	0.17	0.07	0.08	0.01	0.04	0.004	0.2	14.2	0.7	4.5	0.2	
Hanging Wall Waste	Barf2011	16396	MR1 05 47	22.9	23.9	Amphibolite	8.59	1	0.01	0.01	<0.01	0.02	0.03	0.007	0.3	21.9	0.6	70.1	1.8	
Hanging Wall Waste	Barf2011	16398	MR1 05 47	35.8	36.8	Amphibolite	8.43	1	0.01	<0.01	<0.01	0.02	0.04	0.008	0.3	16.8	0.7	53.8	2.1	
Hanging Wall Waste	Barf2011	16400	MR1 05 47	45.8	46.7	Amphibolite	8.51	1	<0.01	<0.01	<0.01	0.02	0.03	0.006	0.3	20.0	0.5	64.0	1.5	
Hanging Wall Waste	Barf2011	16402	MR1 05 47	56.3	57.3	Amphibolite	8.74	1	0.11	0.07	0.11	0.47	0.61	0.01	1.3	18.9	0.2	5.7	0.1	
Hanging Wall Waste	Barf2011	16404	MR1 05 47	63.5	64.5	Amphibolite	8.34	1	0.01	<0.01	<0.01	0.02	0.02	0.004	0.3	22.0	0.4	70.4	1.1	
Hanging Wall Waste	Barf2011	16408	MR1 05 47	82.8	83.8	Amphibolite	9.34	1	0.01	<0.01	<0.01	0.05	0.13	0.026	0.3	50.6	2.2	163.9	6.9	
Hanging Wall Waste	Barf2011	16410	MR1 05 47	91.4	94.4	Amphibolite	9.63	1	0.01	<0.01	<0.01	0.01	0.04	0.001	0.4	17.5	0.8	47.9	1.9	
Hanging Wall Waste	Barf2011	16082	MR1 06 105	20.3	20.62	Greens	9.54	1	0.01	<0.01	<0.01	0.01	<0.01	0.001	0.3	7.8	0.1	25.0	0.3	
Hanging Wall Waste	Barf2011	16084	MR1 06 105	215.4	216.4	Greens	9.45	1	<0.01	<0.01	<0.01	0.01	<0.01	0.001	0.3	7.7	0.1	24.6	0.3	
Hanging Wall Waste	AMEC_2010	MR1 09 176	MR1 09 176	60.0	61.0	Metasediment	8.40	1	0.08	0.01	0.01	0.01	0.14	0.001	1.4	40.2	1.4	45.4	0.4	
Hanging Wall Waste	AMEC_2010	MR1 09 176	MR1 09 176	100.0	101.0	Metasediment	8.40	1	0.29	0.13	0.16	0.02	0.03	0.005	4.8	16.6	1.4	3.4	0.3	
Hanging Wall Waste	AMEC_2010	MR1 09 176	MR1 09 176	140.0	141.0	Metasediment	8.53	1												

Table A-2: Net Acid Generating Test Results

Waste Type	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	NAG pH after Reaction	Volume of 0.1 N NaOH (mL) to pH 4.5	NAG (kg H ₂ SO ₄ /tonne) to pH 4.5	NAG (kg H ₂ SO ₄ /tonne) to pH 7
Footwall Schist	AMEC_2010	MRAR010 081	MR1 08 143	100.4	101.4	Amphibolite	7.26	0	0	0
Footwall Schist	Baff2011	16306	MR1 04 44	388.64	389.6	Amphibolite	7.85	0	0	0
Footwall Schist	Baff2011	16388	MR1 05 49	367.55	368.6	Amphibolite	7.14	0	0	0
Footwall Schist	Baff2011	16614	MR1 05 67	194.67	195.68	Amphibolite	7.93	0	0	0
Footwall Schist	AMEC_2010	MRAR010 004	MR1 09 179	160	161	Gneiss	7.72	0	0	0
Footwall Schist	AMEC_2010	MRAR010 005	MR1 09 179	176	177	Gneiss	7.30	0	0	0
Footwall Schist	AMEC_2010	MRAR010 011	MR1 09 178	150	151	Gneiss	7.64	0	0	0
Footwall Schist	AMEC_2010	MRAR010 015	MR1 09 178	165.3	166	Gneiss	7.47	0	0	0
Footwall Schist	AMEC_2010	MRAR010 031	MR1 09 170	115.15	116	Gneiss	6.99	0	0.1	0.3
Footwall Schist	AMEC_2010	MRAR010 033	MR1 08 162	170	171	Gneiss	7.07	0	0	0
Footwall Schist	AMEC_2010	MRAR010 034	MR1 08 162	185	186	Gneiss	5.56	0	0.1	0.3
Footwall Schist	AMEC_2010	MRAR010 044	MR1 09 167	20	21	Gneiss	2.76	4.4	6.7	14.0
Footwall Schist	AMEC_2010	MRAR010 055	MR1 08 159	190	191	Gneiss	4.39	0.1	1.1	0.3
Footwall Schist	AMEC_2010	MRAR010 057	MR1 08 161	160	161	Gneiss	3.46	0.7	1.6	2.3
Footwall Schist	AMEC_2010	MRAR010 074	MR1 08 149	220	221	Gneiss	3.14	2.0	3.6	6.5
Footwall Schist	AMEC_2010	MRAR010 104	MR1 08 140	165	166	Gneiss	7.35	0	0	0
Footwall Schist	AMEC_2010	MRAR010 110	MR1 08 154	260.2	261	Gneiss	7.05	0	0.00	0
Footwall Schist	AMEC_2010	MRAR010 114	MR1 07 121	220	221	Gneiss	6.03	0	0.10	0.3
Footwall Schist	AMEC_2010	MRAR010 115	MR1 07 121	236	237	Gneiss	7.35	0	0.00	0
Footwall Schist	AMEC_2010	MRAR010 123	MR1 08 155	149	150	Gneiss	4.21	0.30	2.00	1.0
Footwall Schist	Baff2011	16062	MR1 05 72	314.21	315.21	Gneiss	7.4	0	0	0
Footwall Schist	Baff2011	16064	MR1 05 72	328.13	329.1	Gneiss	3.43	0.72	1.22	2.4
Footwall Schist	Baff2011	16066	MR1 05 72	334.78	335.88	Gneiss	7.06	0	0	0
Footwall Schist	Baff2011	16302	MR1 04 44	362.6	363.62	Gneiss	7.55	0	0	0
Footwall Schist	Baff2011	16304	MR1 04 44	371.69	372.69	Gneiss	8.04	0	0	0
Footwall Schist	Baff2011	16308	MR1 04 44	394.2	395.3	Gneiss	7.87	0	0	0
Footwall Schist	Baff2011	16310	MR1 04 45	112.5	113.65	Gneiss	7.40	0	0	0
Footwall Schist	Baff2011	16312	MR1 04 45	145.2	146.3	Gneiss	7.87	0	0	0
Footwall Schist	Baff2011	16314	MR1 04 45	152.16	153.16	Gneiss	7.75	0	0	0
Footwall Schist	Baff2011	16318	MR1 04 141	343.2	344.22	Gneiss	7.47	0	0	0
Footwall Schist	Baff2011	16352	MR1 04 38	155.66	156.6	Gneiss	7.35	0	0	0
Footwall Schist	Baff2011	16354	MR1 04 38	164.5	165.48	Gneiss	7.44	0	0	0
Footwall Schist	Baff2011	16356	MR1 04 38	170.47	171.37	Gneiss	7.51	0	0	0
Footwall Schist	Baff2011	16386	MR1 05 49	355.12	356.2	Gneiss	7.36	0	0	0
Footwall Schist	Baff2011	16518	MR1 07 118	14.61	15.56	Gneiss	7.13	0	0	0
Footwall Schist	Baff2011	16520	MR1 07 118	28.9	29.83	Gneiss	7.46	0	0	0
Footwall Schist	Baff2011	16578	MR1 05 172	146.8	148	Gneiss	7.39	0	0	0
Footwall Schist	Baff2011	16610	MR1 05 67	173.35	174.36	Gneiss	7.32	0	0	0
Footwall Schist	Baff2011	16612	MR1 05 67	181.9	182.89	Gneiss	7.47	0	0	0
Footwall Schist	Baff2011	16616	MR1 05 67	206.17	207.15	Gneiss	7.54	0	0	0
Footwall Schist	Baff2011	16654	MR1 08 159	182.3	183.25	Gneiss	7.1	0	0	0
Footwall Schist	Baff2011	16726	MR1 06 90	153.4	154.38	Gneiss	7.46	0	0	0
Footwall Schist	Baff2011	16738	MR1 06 80	200.14	201.14	Gneiss	3.72	0.62	1.61	2
Footwall Schist	Baff2011	16750	MR1 06 84	190.39	191.4	Gneiss	7.69	0	0	0
Footwall Schist	Baff2012	4994	MR1 12 233A	21.4	23	Gneiss	7.3	0	0	0
Footwall Schist	Baff2012	4995	MR1 12 223	20.96	22.6	Gneiss	8	0	0	0
Footwall Schist	Baff2012	4997	MR1 12 223	24.6	26.5	Gneiss	6.85	0	0.11	0.4
Footwall Schist	Baff2012	15402	MR1 12 223	34.85	36.65	Gneiss	6.82	0	0.11	0
Footwall Schist	Baff2012	15404	MR1 12 223	38.4	40.1	Gneiss	6.65	0	0.21	0.7
Footwall Schist	Baff2012	15419	MR1 12 223	67.38	69.28	Gneiss	7.23	0	0	0
Footwall Schist	Baff2012	15482	MR1 12 224	71.5	73.5	Gneiss	7.85	0	0	0
Footwall Schist	Baff2012	15484	MR1 12 224	31.3	33.1	Gneiss	8.17	0	0	0
Footwall Schist	Baff2012	15702	MR1 12 225	14	16	Gneiss	8.02	0	0	0
Footwall Schist	Baff2012	15703	MR1 12 225	16	18	Gneiss	7.67	0	0	0
Footwall Schist	Baff2012	15706	MR1 12 225	22	24	Gneiss	7.97	0	0	0
Footwall Schist	Baff2012	15709	MR1 12 225	28	30	Gneiss	7.83	0	0	0
Footwall Schist	Baff2012	15711	MR1 12 225	32	34	Gneiss	7.71	0	0	0
Footwall Schist	Baff2012	15713	MR1 12 225	36	38	Gneiss	8.09	0	0	0
Footwall Schist	Baff2012	15715	MR1 12 225	40	42	Gneiss	7.9	0	0	0
Footwall Schist	Baff2012	15717	MR1 12 225	44	45.7	Gneiss	8.12	0	0	0
Footwall Schist	Baff2011	16310	MR1 08 158	264.9	265.4	High Grade Iron Formation	7.65	0	3.68	1.8
Footwall Schist	Baff2011	16376	MR1 08 158	287.46	288.5	High Grade Iron Formation	3.3	0.95	1.75	3.1
Footwall Schist	Baff2011	16328	MR1 08 141	298.11	299.01	High Grade Iron Formation	2.33	11.99	19.34	38.4
Footwall Schist	Baff2011	16330	MR1 08 141	304.4	305.3	High Grade Iron Formation	8.34	0	0	0
Footwall Schist	Baff2011	16332	MR1 08 141	313.1	314	High Grade Iron Formation	9.02	0	0	0
Footwall Schist	Baff2011	16334	MR1 08 141	321.9	322.9	High Grade Iron Formation	3.31	1.08	3.32	3.5
Footwall Schist	Baff2011	16348	MR1 04 38	140.8	141.8	High Grade Iron Formation	6.58	0	0.28	0.9
Footwall Schist	Baff2011	16382	MR1 05 49	345.56	346.56	High Grade Iron Formation	6.89	0	0	0
Footwall Schist	Baff2011	16384	MR1 05 49	350.3	351.54	High Grade Iron Formation	6.05	0.41	1.14	1.3
Footwall Schist	Baff2011	16462	MR1 04 41	109.51	110.47	High Grade Iron Formation	3.05	0	0	0
Footwall Schist	Baff2011	16478	MR1 08 146	198.21	199.24	High Grade Iron Formation	2.47	8.81	13.38	29.4
Footwall Schist	Baff2011	16682	MR1 08 146	207	208.04	High Grade Iron Formation	3.28	1.1	1.79	3.6
Footwall Schist	Baff2011	16686	MR1 08 146	224.61	225.66	High Grade Iron Formation	2.68	4.59	6.3	14.9
Footwall Schist	Baff2011	16688	MR1 08 146	211.7	212.75	High Grade Iron Formation	6.08	0	0.16	0
Footwall Schist	AMEC_2010	MRAR010 081	MR1 08 142	168.1	169	Metasediment	7.34	0	0	0
Footwall Schist	Baff2011	16350	MR1 04 38	146.6	147.6	Metasediment	2.69	4.83	7.58	15.8
Footwall Schist	Baff2011	16358	MR1 04 38	176.38	177.28	Metasediment	7.34	0	0	0
Footwall Schist	Baff2011	16464	MR1 04 41	113.85	114.81	Metasediment	7.85	0	0	0
Footwall Schist	Baff2011	16576	MR1 09 172	181.44	182.41	Metasediment	3.84	0.39	2.43	1.3
Footwall Schist	AMEC_2010	MRAR010 095	MR1 08 163	155	156	Schist	7.64	0	0	0
Footwall Schist	AMEC_2010	MRAR010 047	MR1 08 163	110	111	Schist	7.56	0	0	0
Footwall Schist	AMEC_2010	MRAR010 048	MR1 08 163	89	90	Schist	6.49	0	0.10	0.3
Footwall Schist	AMEC_2010	MRAR010 049	MR1 08 163	135	136	Schist	7.55	0	0	0
Footwall Schist	AMEC_2010	MRAR010 058	MR1 08 159	160	161	Schist	4.31	0.2	1.4	0.9
Footwall Schist	AMEC_2010	MRAR010 063	MR1 08 157	173.4	174.4	Schist	7.04	0	0	0
Footwall Schist	AMEC_2010	MRAR010 090	MR1 08 144	60	61	Schist	7.11	0	0	0
Footwall Schist	AMEC_2010	MRAR010 091	MR1 08 145	98.2	99.2	Schist	7.41	0	0	0
Footwall Schist	AMEC_2010	MRAR010 097	MR1 08 143	185	186	Schist	8.07	0	0	0
Footwall Schist	AMEC_2010	MRAR010 102	MR1 08 143	143	144	Schist	7.58	0	0	0
Footwall Schist	AMEC_2010	MRAR010 111	MR1 08 144	100	101	Schist	7.06	0	0.00	0
Footwall Schist	AMEC_2010	MRAR010 113	MR1 08 144	80	81	Schist	7.61	0	0	0
Footwall Schist	AMEC_2010	MRAR010 121	MR1 08 155	130.4	131.4	Schist	6.37	0.00	0.30	0.1
Footwall Schist	AMEC_2010	MRAR010 126	MR1 08 145	27	28	Schist	7.50	0.00	0.00	0.0
Footwall Schist	Baff2011	16168	MR1 08 160	176.7	177.8	Schist	7.87	0	0	0
Footwall Schist	Baff2011	16172	MR1 08 158	270.56	271.6	Schist	7.51	0	0	0
Footwall Schist	Baff2011	16174	MR1 08 158	276.3	277.4	Schist	7.38	0	0	0
Footwall Schist	Baff2011	16178	MR1 08 158	294.4	295.4	Schist	3.46	1.1	2.72	5.8
Footwall Schist	Baff2011	16336	MR1 08 141	334.7	335.75	Schist	7.77	0	0	0
Footwall Schist	Baff2011	16466	MR1 04 41	122.42	123.39	Schist	7.44	0	0	0
Footwall Schist	Baff2011	16468	MR1 04 41	130.6	131.56	Schist	7.78	0	0	0
Footwall Schist	Baff2011	16572	MR1 09 172	164.43	165.46	Schist	6.71	0	0.14	0
Footwall Schist	Baff2011	16574	MR1 09 172	173	174	Schist	3.52	1.01	3.47	1.1
Footwall Schist	Baff2011	16646	MR1 08 159	141.86	142.93	Schist	7.67	0	0	0
Footwall Schist	Baff2011	16648	MR1 08 159	147.43	148.48	Schist	7.43	0	0	0
Footwall Schist	Baff2011	16650	MR1 08 159	153.3	154.28	Schist	7.64	0	0	0
Footwall Schist	Baff2011	16652	MR1 08 159	164.2	165	Schist	3.12	2.12	4.25	7
Footwall Schist	Baff2011	16680	MR1 08 146	201.6	202.63	Schist	6.96	0	0.08	0.3
Footwall Schist	Baff2011	16690	MR1 08 146	243.39	244.4	Schist	8.21	0	0	0
Footwall Schist	Baff2011	16722	MR1 06 90	141.9	142.9	Schist	2.89	5.21	9.28	17.1
Footwall Schist	Baff2011	16724	MR1 06 90	144.7	145.69	Schist	7.82	0	0	0
Footwall Schist	Baff2011	16736	MR1 06 80	186.61	187.61	Schist	3.97	0.2	1.19	0.7
Footwall Schist	Baff2011	16752	MR1 06 84	204.15	205.15	Schist	7.92	0	0	0
Footwall Schist	Baff2011	16754	MR1 08 159	171.44	172.39	Schist	7.99	0	0	0
Footwall Schist	Baff2012	4989	MR1 12 233A	11.4	11.6	Schist	7.15	0	0	0
Footwall Schist	Baff2012	4992	MR1 12 233A	17.7	19.9	Schist	7.6	0	0	0
Footwall Schist	Baff2012	5000								

Table A-2: Net Acid Generating Test Results

Waste Type	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	NAG pH after Reaction	Volume of 0.1 N NaOH (mL) to pH 4.5	NAG (kg H ₂ SO ₄ /tonne) to pH 4.5	NAG (kg H ₂ SO ₄ /tonne) to pH 7
Footwall Waste	AMEC_2010	5182	ARD 28 NW	61	62	Gneiss	2.95	0	0	0
Footwall Waste	AMEC_2010	5183	ARD 28 NW	66	67	Gneiss	7.29	0	0	0
Footwall Waste	AMEC_2010	5184	ARD 28 NW	73	74	Gneiss	7.48	0	0	0
Footwall Waste	AMEC_2010	5185	ARD 28 NW	80	81	Gneiss	6.81	0	0.1	0.3
Footwall Waste	AMEC_2010	5186	ARD 28 NW	84	85	Gneiss	6.80	0	0.1	0.3
Footwall Waste	AMEC_2010	5187	ARD 28 NW	89	90	Gneiss	7.52	0	0	0
Footwall Waste	AMEC_2010	5188	ARD 28 NW	95	96	Gneiss	7.31	0	0	0
Footwall Waste	AMEC_2010	5189	ARD 28 NW	100	101	Gneiss	7.48	0	0	0
Footwall Waste	AMEC_2010	MRARD10 030	MR1 09 170	103	104	Gneiss	4.45	0.1	0.4	0.3
Footwall Waste	AMEC_2010	MRARD10 043	MR1 09 167	40	41	Gneiss	7.48	0	0	0
Footwall Waste	AMEC_2010	MRARD10 045	MR1 09 167	50	51	Gneiss	6.76	0	0.10	0.3
Footwall Waste	AMEC_2010	MRARD10 046	MR1 09 167	65	65.9	Gneiss	7.24	0	0	0
Footwall Waste	Baff2011	16086	ARD 2A NW	12.4	13.4	Gneiss	6.68	0	0.08	0.3
Footwall Waste	Baff2011	16112	ARD 2A NW	8.85	9.9	Gneiss	7.75	0	0	0
Footwall Waste	Baff2011	16114	ARD 2A NW	10.47	11.44	Gneiss	7.25	0	0	0
Footwall Waste	Baff2011	16126	ARD 2A NW	58.76	59.76	Gneiss	7.17	0	0	0
Footwall Waste	Baff2011	16128	ARD 2A NW	62.7	63.88	Gneiss	8.37	0	0	0
Footwall Waste	Baff2011	16130	ARD 2A NW	78.51	79.43	Gneiss	5.87	0	0.39	1.2
Footwall Waste	Baff2011	16132	ARD 2A NW	87.8	88.9	Gneiss	7.78	0	0	0
Footwall Waste	Baff2011	16134	ARD 2A NW	93.12	94.12	Gneiss	7.72	0	0	0
Footwall Waste	Baff2011	16136	ARD 2A SE	6.9	7.9	Gneiss	5.42	0	0.3	1
Footwall Waste	Baff2011	16138	ARD 2A SE	17.81	18.86	Gneiss	4.9	0	0.42	1.4
Footwall Waste	Baff2011	16146	ARD 2A SE	48.46	49.4	Gneiss	6.31	0	0.08	0.3
Footwall Waste	Baff2011	16148	ARD 2A SE	58.6	59.1	Gneiss	10.25	0	0	0
Footwall Waste	Baff2011	16180	MR1 08 158	306.89	307.99	Gneiss	7.53	0	0	0
Footwall Waste	Baff2011	16180	MR1 05 49	374.2	374.2	Gneiss	7.9	0	0	0
Footwall Waste	Baff2011	16182	MR1 05 49	382.59	383.49	Gneiss	7.59	0	0	0
Footwall Waste	Baff2011	16184	MR1 05 49	391.7	392.6	Gneiss	7.34	0	0	0
Footwall Waste	Baff2011	16580	MR1 09 172	195.3	196.3	Gneiss	7.34	0	0	0
Footwall Waste	Baff2011	16582	MR1 09 172	205.4	207.41	Gneiss	7.47	0	0	0
Footwall Waste	Baff2012	15434	MR1 12 223	96.6	98.6	Gneiss	4.53	0	0.3	1
Footwall Waste	Baff2012	15435	MR1 12 223	98.6	100.6	Gneiss	4.2	0.08	0.32	0.3
Footwall Waste	Baff2012	15438	MR1 12 223	104.6	106.6	Gneiss	6.82	0	0.19	0.6
Footwall Waste	Baff2012	15439	MR1 12 223	106.6	108.4	Gneiss	7.03	0	0.19	0.6
Footwall Waste	Baff2012	15442	MR1 12 223	112.05	114.1	Gneiss	6.88	0	0.35	1.1
Footwall Waste	Baff2012	15445	MR1 12 223	118.1	120.1	Gneiss	7.39	0	0	0
Footwall Waste	Baff2012	15446	MR1 12 223	120.1	122.1	Gneiss	4.31	0.1	0.41	0.3
Footwall Waste	Baff2012	15448	MR1 12 223	124.1	126.2	Gneiss	3.61	0.46	1.15	3.7
Footwall Waste	Baff2012	15451	MR1 12 223	130.4	132.46	Gneiss	5.66	0	0.25	0.8
Footwall Waste	Baff2012	15487	MR1 12 224	36.7	38.7	Gneiss	8.03	0	0	0
Footwall Waste	Baff2012	15490	MR1 12 224	42.77	44.77	Gneiss	7.76	0	0	0
Footwall Waste	Baff2012	15492	MR1 12 224	46.77	48.77	Gneiss	7.89	0	0	0
Footwall Waste	Baff2012	15493	MR1 12 224	48.77	50.77	Gneiss	7.97	0	0	0
Footwall Waste	Baff2012	15497	MR1 12 224	56.77	58.67	Gneiss	8.24	0	0	0
Footwall Waste	Baff2012	15498	MR1 12 224	58.67	60.57	Gneiss	8	0	0	0
Footwall Waste	Baff2012	15499	MR1 12 224	60.57	62.5	Gneiss	7.94	0	0	0
Footwall Waste	Baff2012	15503	MR1 12 224	67.6	69.53	Gneiss	7.83	0	0	0
Footwall Waste	Baff2012	15510	MR1 12 224	80.4	82.1	Gneiss	7.18	0	0	0
Footwall Waste	Baff2012	15513	MR1 12 224	85.45	87.45	Gneiss	7.03	0	0	0
Footwall Waste	Baff2012	15515	MR1 12 224	89.25	91.25	Gneiss	8.01	0	0	0
Footwall Waste	Baff2012	15523	MR1 12 224	103.41	105.41	Gneiss	10.7	0	0	0
Footwall Waste	Baff2012	15525	MR1 12 224	107.41	109.41	Gneiss	10.35	0	0	0
Footwall Waste	Baff2012	15529	MR1 12 224	115.61	117.6	Gneiss	10.8	0	0	0
Footwall Waste	Baff2012	15539	MR1 12 224	171.01	172.81	Gneiss	7.86	0	0	0
Footwall Waste	Baff2012	15572	MR1 12 224	197.82	199.82	Gneiss	8.58	0	0	0
Footwall Waste	Baff2012	15574	MR1 12 224	201.62	203.64	Gneiss	10.88	0	0	0
Footwall Waste	Baff2012	15575	MR1 12 224	242.71	244.71	Gneiss	7.71	0	0	0
Footwall Waste	Baff2012	15596	MR1 12 224	244.71	246.71	Gneiss	7.9	0	0	0
Footwall Waste	Baff2012	15597	MR1 12 224	246.71	248.55	Gneiss	7.9	0	0	0
Footwall Waste	Baff2012	15604	MR1 12 226	138.44	140.44	Gneiss	7.66	0	0	0
Footwall Waste	Baff2012	15605	MR1 12 226	140.44	142.44	Gneiss	7.69	0	0	0
Footwall Waste	Baff2012	15609	MR1 12 226	148	150	Gneiss	6.86	0	0	0
Footwall Waste	Baff2012	15670	MR1 12 226	150	152	Gneiss	7.8	0	0	0
Footwall Waste	Baff2012	15674	MR1 12 226	158	160	Gneiss	7.72	0	0	0
Footwall Waste	Baff2012	15678	MR1 12 226	166	168	Gneiss	7.81	0	0	0
Footwall Waste	Baff2012	15679	MR1 12 226	168	170	Gneiss	7.74	0	0	0
Footwall Waste	Baff2012	15681	MR1 12 226	172	174	Gneiss	7.59	0	0	0
Footwall Waste	Baff2012	15683	MR1 12 226	176	178	Gneiss	7.73	0	0	0
Footwall Waste	Baff2012	15685	MR1 12 226	180	182	Gneiss	7.69	0	0	0
Footwall Waste	Baff2012	15688	MR1 12 226	186	188	Gneiss	8.88	0	0	0
Footwall Waste	Baff2012	15691	MR1 12 226	192	194	Gneiss	8	0	0	0
Footwall Waste	Baff2012	15692	MR1 12 226	194	196	Gneiss	7.9	0	0	0
Footwall Waste	Baff2012	15696	MR1 12 226	201.2	203	Gneiss	7.86	0	0	0
Footwall Waste	Baff2012	15700	MR1 12 226	209	211	Gneiss	7.87	0	0	0
Footwall Waste	Baff2012	15726	MR1 12 225	62.11	64	Gneiss	9.84	0	0	0
Footwall Waste	Baff2012	15729	MR1 12 225	68	70	Gneiss	10.93	0	0	0
Footwall Waste	Baff2012	15731	MR1 12 225	72	74	Gneiss	10.87	0	0	0
Footwall Waste	Baff2012	15733	MR1 12 225	76	78	Gneiss	10.99	0	0	0
Footwall Waste	Baff2012	15735	MR1 12 225	80	82	Gneiss	10.83	0	0	0
Footwall Waste	Baff2012	15738	MR1 12 225	86	88	Gneiss	10.69	0	0	0
Footwall Waste	Baff2012	15739	MR1 12 225	88	90	Gneiss	8.44	0	0	0
Footwall Waste	Baff2012	15742	MR1 12 225	94	96	Gneiss	10.86	0	0	0
Footwall Waste	Baff2012	15743	MR1 12 225	96	98	Gneiss	7.98	0	0	0
Footwall Waste	Baff2012	15749	MR1 12 225	109	111	Gneiss	8.36	0	0	0
Footwall Waste	Baff2012	15751	MR1 12 225	113	115	Gneiss	9.94	0	0	0
Footwall Waste	Baff2012	15752	MR1 12 225	115	117	Gneiss	7.89	0	0	0
Footwall Waste	Baff2012	15755	MR1 12 225	121	123	Gneiss	7.9	0	0	0
Footwall Waste	Baff2012	15774	MR1 12 225	157.5	159.8	Gneiss	7.81	0	0	0
Footwall Waste	Baff2012	15802	MR1 12 225	214.65	217	Gneiss	10.57	0	0	0
Footwall Waste	Baff2012	15805	MR1 12 225	221.4	223.6	Gneiss	10.83	0	0	0
Footwall Waste	Baff2012	15806	MR1 12 225	223.6	225.8	Gneiss	9.23	0	0	0
Footwall Waste	Baff2012	15828	MR1 12 225	269	271	Gneiss	10.64	0	0	0
Footwall Waste	Baff2012	15837	MR1 12 226	211	213	Gneiss	10.39	0	0	0
Footwall Waste	Baff2012	15840	MR1 12 226	217.5	219.89	Gneiss	7.79	0	0	0
Footwall Waste	Baff2012	15841	MR1 12 226	219.89	222.28	Gneiss	7.55	0	0	0
Footwall Waste	Baff2012	15844	MR1 12 226	226	228.3	Gneiss	7.04	0	0	0
Footwall Waste	Baff2012	15860	MR1 12 226	258	260	Gneiss	7.91	0	0	0
Footwall Waste	Baff2012	15862	MR1 12 226	262	264	Gneiss	10.28	0	0	0
Footwall Waste	Baff2012	15864	MR1 12 226	266	268	Gneiss	7.52	0	0	0
Footwall Waste	AMEC_2010	5143	ARD 2A NW	19	20	Metasediment	7.08	0	0	0
Footwall Waste	AMEC_2010	5144	ARD 2A NW	25	26	Metasediment	7.16	0	0	0
Footwall Waste	AMEC_2010	5145	ARD 2A NW	30	31	Metasediment	7.18	0	0	0
Footwall Waste	AMEC_2010	5147	ARD 2A NW	40	41	Metasediment	6.63	0	0.2	0.7
Footwall Waste	AMEC_2010	5148	ARD 2A NW	45	46	Metasediment	7.18	0	0.48	1.6
Footwall Waste	AMEC_2010	5149	ARD 2A NW	53	54	Metasediment	6.59	0	0.2	0.7
Footwall Waste	AMEC_2010	5161	ARD 2A SE	26	27	Metasediment	7.03	0	0	0
Footwall Waste	AMEC_2010	5162	ARD 2A SE	34	35	Metasediment	7.08	0	0	0
Footwall Waste	AMEC_2010	5163	ARD 2A SE	44	45	Metasediment	7.08	0	0	0
Footwall Waste	AMEC_2010	5167	ARD 2A SE	65	66	Metasediment	6.84	0	0.4	1.3
Footwall Waste	AMEC_2010	5168	ARD 2A SE	72	73	Metasediment	7.23	0	0	0
Footwall Waste	AMEC_2010	5169	ARD 2A SE	79	80	Metasediment	5.16	0	0.3	1
Footwall Waste	AMEC_2010	5171	ARD 2A SE	90	91	Metasediment	3.12	1.5	2.1	4.8
Footwall Waste	AMEC_2010	5172	ARD 2A SE	96	97	Metasediment	7.08	0	0	0
Footwall Waste	Baff2011	16088	ARD 2A NW	23	24	Metasediment	7.28	0	0	0
Footwall Waste	Baff2011	16090	ARD 2A NW	33.36	34.49	Metasediment	7.44	0	0	0
Footwall Waste	Baff2011	16094	ARD 2A NW	46.78	47.7	Metasediment	6.4	0	0.22	0.7
Footwall Waste	Baff2011	16096	ARD 2A NW	50.88	51.88	Metasediment	6.50	0	0.08	0.3
Footwall Waste	Baff2011	16140	ARD 2A SE	23.52	24.52	Metasediment	7.68	0	0	0
Footwall Waste	Baff2011	16142	ARD 2A SE	32.34	33.26	Metasediment	7.61	0	0	0
Footwall Waste	Baff2011	16144	ARD 2A SE	41.19	42.19	Metasediment	7.31	0	0	0
Footwall Waste	Baff2011	16150	ARD 2A SE	66.84	67.74	Metasediment	8.38	0	0	0
Footwall Waste	Baff2011	16152	ARD 2A SE	78.62	79.54	Metasediment	5.43	0	0.32	1
Footwall Waste	Baff2011									

Table A-2: Net Acid Generating Test Results

Waste Type	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	NAG pH after Reaction	Volume of 0.1 N NaOH (mL) to pH 4.5	to pH 7	NAG (kg H ₂ SO ₄ /tonne) to pH 4.5	to pH 7
Footwall Waste	Baff2012	15429	MR1 22 223	87.4	89.2	Schist	7.35	0	0	0	0
Footwall Waste	Baff2012	15430	MR1 22 223	89.2	91	Schist	4.18	0.11	0.38	0.4	1.2
Footwall Waste	Baff2012	15453	MR1 22 223	134.2	136	Schist	3.14	1.69	3.04	5.5	9.9
Footwall Waste	Baff2012	15454	MR1 22 223	136	137.76	Schist	7.39	0	0	0	0
Footwall Waste	Baff2012	15455	MR1 22 223	137.76	139.7	Schist	8.5	0.71	1.66	2.3	5.4
Footwall Waste	Baff2012	15456	MR1 22 223	139.7	141.6	Schist	7.45	0	0	0	0
Footwall Waste	Baff2012	15459	MR1 22 223	145.4	147.3	Schist	7.42	0	0	0	0
Footwall Waste	Baff2012	15461	MR1 22 223	149.2	151	Schist	5.81	0	0.38	0	1.2
Footwall Waste	Baff2012	15463	MR1 22 223	151	153	Schist	6.59	0	0.25	0	0.8
Footwall Waste	Baff2012	15465	MR1 22 223	157	159	Schist	2.98	2.29	3.46	7.4	11
Footwall Waste	Baff2012	15467	MR1 22 223	161	163	Schist	6.44	0	0.25	0	0.8
Footwall Waste	Baff2012	15469	MR1 22 223	165	167	Schist	7.16	0	0	0	0
Footwall Waste	Baff2012	15471	MR1 22 223	169	170.8	Schist	7.63	0	0	0	0
Footwall Waste	Baff2012	15472	MR1 22 223	170.8	172.9	Schist	7.39	0	0	0	0
Footwall Waste	Baff2012	15473	MR1 22 223	172.9	175	Schist	6.83	0	0.07	0	0.2
Footwall Waste	Baff2012	15506	MR1 22 224	73.31	75.11	Schist	7.88	0	0	0	0
Footwall Waste	Baff2012	15517	MR1 22 224	92.79	94.79	Schist	10.19	0	0	0	0
Footwall Waste	Baff2012	15519	MR1 22 224	96.49	98.19	Schist	7.78	0	0	0	0
Footwall Waste	Baff2012	15522	MR1 22 224	101.59	103.41	Schist	10.92	0	0	0	0
Footwall Waste	Baff2012	15530	MR1 22 224	117.8	119.8	Schist	9.43	0	0	0	0
Footwall Waste	Baff2012	15578	MR1 22 224	209.7	211.7	Schist	7.81	0	0	0	0
Footwall Waste	Baff2012	15580	MR1 22 224	213.7	215.62	Schist	7.97	0	0	0	0
Footwall Waste	Baff2012	15661	MR1 22 226	132.95	134.75	Schist	8.39	0	0	0	0
Footwall Waste	Baff2012	15695	MR1 22 226	199.52	201.2	Schist	7.91	0	0	0	0
Footwall Waste	Baff2012	15723	MR1 22 225	55.3	57.5	Schist	9.44	0	0	0	0
Footwall Waste	Baff2012	15725	MR1 22 225	59.7	62.11	Schist	10.64	0	0	0	0
Footwall Waste	Baff2012	15746	MR1 22 225	102.08	105.35	Schist	10.09	0	0	0	0
Footwall Waste	Baff2012	15867	MR1 22 226	217.7	214	Schist	8.77	0	0	0	0
Footwall Waste	Baff2012	15869	MR1 22 226	275.1	277.14	Schist	6.9	0	0.11	0	0.4
Footwall Waste	Baff2012	15871	MR1 22 226	278.9	281.45	Schist	7.82	0	0	0	0
Footwall Waste	Baff2012	15872	MR1 22 226	281.45	283.65	Schist	7.21	0	0	0	0
Footwall Waste	Baff2012	15873	MR1 22 226	283.65	285.85	Schist	7.27	0	0	0	0
Footwall Waste	Baff2012	15874	MR1 22 226	285.85	287.5	Schist	7.61	0	0	0	0
Footwall Waste	Baff2012	15875	MR1 22 226	287.5	289	Schist	6.45	0	0.15	0	0.5
Footwall Waste	Baff2012	15556	MR1 22 224	166.76	168.25	Ultramafic	10.42	0	0	0	0
Footwall Waste	Baff2012	15576	MR1 22 224	205.54	207.64	Ultramafic	9.21	0	0	0	0
Footwall Waste	Baff2012	15582	MR1 22 224	217.62	219.82	Ultramafic	7.74	0	0	0	0
Footwall Waste	Baff2012	15584	MR1 22 224	222.02	224.32	Ultramafic	8.54	0	0	0	0
Footwall Waste	Baff2012	15533	MR1 22 224	123.39	125.39	Volcanic Tuff	7.96	0	0	0	0
Footwall Waste	Baff2012	15535	MR1 22 224	127.39	129.39	Volcanic Tuff	7.86	0	0	0	0
Footwall Waste	Baff2012	15536	MR1 22 224	129.39	131.39	Volcanic Tuff	7.89	0	0	0	0
Footwall Waste	Baff2012	15539	MR1 22 224	135.39	137.39	Volcanic Tuff	7.09	0	0	0	0
Footwall Waste	Baff2012	15542	MR1 22 224	141.39	143.09	Volcanic Tuff	7.32	0	0	0	0
Footwall Waste	Baff2012	15544	MR1 22 224	144.79	146.49	Volcanic Tuff	7.79	0	0	0	0
Footwall Waste	Baff2012	15546	MR1 22 224	148.19	149.89	Volcanic Tuff	7.75	0	0	0	0
Footwall Waste	Baff2012	15548	MR1 22 224	151.89	153.89	Volcanic Tuff	7.85	0	0	0	0
Footwall Waste	Baff2012	15550	MR1 22 224	155.89	157.89	Volcanic Tuff	8.18	0	0	0	0
Footwall Waste	Baff2012	15552	MR1 22 224	159.89	161.89	Volcanic Tuff	7.93	0	0	0	0
Footwall Waste	Baff2012	15554	MR1 22 224	163.69	165.26	Volcanic Tuff	7.91	0	0	0	0
Footwall Waste	Baff2012	15561	MR1 22 224	174.6	176.8	Volcanic Tuff	7.84	0	0	0	0
Footwall Waste	Baff2012	15564	MR1 22 224	181.14	183.14	Volcanic Tuff	7.93	0	0	0	0
Footwall Waste	Baff2012	15566	MR1 22 224	185.14	187.14	Volcanic Tuff	9.06	0	0	0	0
Footwall Waste	Baff2012	15568	MR1 22 224	189.14	191.34	Volcanic Tuff	7.46	0	0	0	0
Footwall Waste	Baff2012	15570	MR1 22 224	193.54	195.82	Volcanic Tuff	7.74	0	0	0	0
Footwall Waste	Baff2012	15585	MR1 22 224	224.32	226.32	Volcanic Tuff	7.74	0	0	0	0
Footwall Waste	Baff2012	15587	MR1 22 224	228.32	229.92	Volcanic Tuff	7.63	0	0	0	0
Footwall Waste	Baff2012	15591	MR1 22 224	234.02	236.22	Volcanic Tuff	7.62	0	0	0	0
Footwall Waste	Baff2012	15593	MR1 22 224	238.42	240.71	Volcanic Tuff	8.34	0	0	0	0
Footwall Waste	Baff2012	15598	MR1 22 224	248.55	250.55	Volcanic Tuff	10.61	0	0	0	0
Footwall Waste	Baff2012	15599	MR1 22 224	250.55	252	Volcanic Tuff	10.4	0	0	0	0
Footwall Waste	Baff2012	15757	MR1 22 225	124.74	126.8	Volcanic Tuff	7.93	0	0	0	0
Footwall Waste	Baff2012	15758	MR1 22 225	126.8	128.9	Volcanic Tuff	8.11	0	0	0	0
Footwall Waste	Baff2012	15760	MR1 22 225	131	133	Volcanic Tuff	7.98	0	0	0	0
Footwall Waste	Baff2012	15764	MR1 22 225	138.4	140.34	Volcanic Tuff	8.04	0	0	0	0
Footwall Waste	Baff2012	15766	MR1 22 225	142.37	144.3	Volcanic Tuff	8.08	0	0	0	0
Footwall Waste	Baff2012	15768	MR1 22 225	146	148	Volcanic Tuff	7.77	0	0	0	0
Footwall Waste	Baff2012	15769	MR1 22 225	148	150	Volcanic Tuff	7.83	0	0	0	0
Footwall Waste	Baff2012	15772	MR1 22 225	154	155.7	Volcanic Tuff	8.04	0	0	0	0
Footwall Waste	Baff2012	15776	MR1 22 225	162.06	164	Volcanic Tuff	8.13	0	0	0	0
Footwall Waste	Baff2012	15779	MR1 22 225	168	170	Volcanic Tuff	8.06	0	0	0	0
Footwall Waste	Baff2012	15780	MR1 22 225	170	172	Volcanic Tuff	8.81	0	0	0	0
Footwall Waste	Baff2012	15783	MR1 22 225	176	178	Volcanic Tuff	8.4	0	0	0	0
Footwall Waste	Baff2012	15785	MR1 22 225	180	182	Volcanic Tuff	7.96	0	0	0	0
Footwall Waste	Baff2012	15787	MR1 22 225	184	186	Volcanic Tuff	8.66	0	0	0	0
Footwall Waste	Baff2012	15789	MR1 22 225	188	190	Volcanic Tuff	7.49	0	0	0	0
Footwall Waste	Baff2012	15790	MR1 22 225	190	192	Volcanic Tuff	7.19	0	0	0	0
Footwall Waste	Baff2012	15793	MR1 22 225	196	198	Volcanic Tuff	8.21	0	0	0	0
Footwall Waste	Baff2012	15794	MR1 22 225	198	200	Volcanic Tuff	8.06	0	0	0	0
Footwall Waste	Baff2012	15796	MR1 22 225	202	204	Volcanic Tuff	10.2	0	0	0	0
Footwall Waste	Baff2012	15799	MR1 22 225	208	210.2	Volcanic Tuff	10.39	0	0	0	0
Footwall Waste	Baff2012	15800	MR1 22 225	210.2	212.4	Volcanic Tuff	10.61	0	0	0	0
Footwall Waste	Baff2012	15808	MR1 22 225	228	230	Volcanic Tuff	7.65	0	0	0	0
Footwall Waste	Baff2012	15810	MR1 22 225	232	234	Volcanic Tuff	9.46	0	0	0	0
Footwall Waste	Baff2012	15813	MR1 22 225	238	240	Volcanic Tuff	7.34	0	0	0	0
Footwall Waste	Baff2012	15814	MR1 22 225	240	242	Volcanic Tuff	7.75	0	0	0	0
Footwall Waste	Baff2012	15817	MR1 22 225	246	248	Volcanic Tuff	7.41	0	0	0	0
Footwall Waste	Baff2012	15819	MR1 22 225	250.2	252.4	Volcanic Tuff	7.33	0	0	0	0
Footwall Waste	Baff2012	15821	MR1 22 225	254.65	257.2	Volcanic Tuff	8.31	0	0	0	0
Footwall Waste	Baff2012	15822	MR1 22 225	257.2	259.2	Volcanic Tuff	7.56	0	0	0	0
Footwall Waste	Baff2012	15824	MR1 22 225	261.2	263.2	Volcanic Tuff	7.33	0	0	0	0
Footwall Waste	Baff2012	15826	MR1 22 225	265	267	Volcanic Tuff	10.48	0	0	0	0
Footwall Waste	Baff2012	15832	MR1 22 225	277	279	Volcanic Tuff	7.82	0	0	0	0
Footwall Waste	Baff2012	15834	MR1 22 225	281	283	Volcanic Tuff	9.52	0	0	0	0
Footwall Waste	Baff2012	15835	MR1 22 225	283	285	Volcanic Tuff	7.75	0	0	0	0
Footwall Waste	Baff2012	15836	MR1 22 225	285	286.5	Volcanic Tuff	9	0	0	0	0
Hanging Wall Schist	AMEC 2010	MR1801038	MR1 08 160	15.2	16.2	Amphibolite	7.64	0	0	0	0
Hanging Wall Schist	AMEC 2010	MR1801039	MR1 08 160	92	93	Amphibolite	5.29	0	0.4	1.3	0
Hanging Wall Schist	AMEC 2010	MR1801037	MR1 08 154	253	254	Amphibolite	7.48	0	0.00	0	0

Table A-2: Net Acid Generating Test Results

Waste Type	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	NAG pH after Reaction	Volume of 0.1 N NaOH (mL) to pH 4.5	NAG (kg H ₂ SO ₄ /tonne) to pH 4.5	Volume of 0.1 N NaOH (mL) to pH 7	NAG (kg H ₂ SO ₄ /tonne) to pH 7
Hanging Wall Schist	Baff2012	4927	MR1 22 222	177.3	179.2	Banded Iron Formation	2.88	2.2	2.42	2.2	2.9
Hanging Wall Schist	Baff2012	4929	MR1 22 222	181.3	183.3	Banded Iron Formation	2.11	14.47	15.75	46	50
Hanging Wall Schist	Baff2012	4931	MR1 22 222	185.3	187.3	Banded Iron Formation	1.95	4.8	5.2	78	84
Hanging Wall Schist	Baff2012	4932	MR1 22 222	187.3	189.3	Banded Iron Formation	9.06	0	0	0	0
Hanging Wall Schist	Baff2012	4936	MR1 22 222	194.7	196.3	Banded Iron Formation	6.86	0	0	0	0
Hanging Wall Schist	Baff2012	4937	MR1 22 222	196.3	198.3	Banded Iron Formation	7.1	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 099	MR1 08 144	193	193.8	Gneiss	8.01	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 125	MR1 08 144	195	196	Gneiss	6.86	0.00	0.00	0.0	0.0
Hanging Wall Schist	Baff2011	16028	MR1 05 72	122.35	123.3	Gneiss	3.51	0.68	1.5	2.2	4.8
Hanging Wall Schist	Baff2011	16600	MR1 05 77	82.35	83.36	Gneiss	6.89	0	0.6	0	1.9
Hanging Wall Schist	Baff2011	16603	MR1 05 77	91.15	92.18	Gneiss	7.56	0	0	0	0
Hanging Wall Schist	Baff2011	16632	MR1 08 154	257.79	258.77	Gneiss	7.17	0	0	0	0
Hanging Wall Schist	Baff2011	16612	MR1 05 72	58.7	59.6	High Grade Iron Formation	1.93	5.9	6.5	96	106
Hanging Wall Schist	Baff2011	16616	MR1 05 72	65.6	70.6	High Grade Iron Formation	2.28	11.04	13.05	37	44
Hanging Wall Schist	Baff2011	16620	MR1 05 72	84.2	85.2	High Grade Iron Formation	2.43	7.44	8.38	25	28
Hanging Wall Schist	Baff2011	16652	MR1 05 72	208.3	209.3	High Grade Iron Formation	3.01	2.02	2.91	64	9.3
Hanging Wall Schist	Baff2011	16222	MR1 08 158	204.15	205.15	High Grade Iron Formation	7.4	0	0	0	0
Hanging Wall Schist	Baff2011	16204	MR1 08 141	182.22	183.12	High Grade Iron Formation	6.87	0	0.1	0	0.3
Hanging Wall Schist	Baff2011	16442	MR1 05 47	270.91	271.92	High Grade Iron Formation	6.88	0	0.06	0	0.2
Hanging Wall Schist	Baff2011	16446	MR1 05 47	282.5	283.6	High Grade Iron Formation	4.61	0	0.57	0	1.8
Hanging Wall Schist	Baff2011	16450	MR1 05 47	294.37	295.37	High Grade Iron Formation	7.07	0	0	0	0
Hanging Wall Schist	Baff2011	16456	MR1 05 47	313.64	314.75	High Grade Iron Formation	2.35	11.46	17.79	36	56
Hanging Wall Schist	Baff2011	16478	MR1 05 46	212.8	213.81	High Grade Iron Formation	3.09	1.66	3.01	5.4	9.7
Hanging Wall Schist	Baff2011	16498	MR1 04 45	174.08	177.22	High Grade Iron Formation	2.32	16.45	12.5	34	41
Hanging Wall Schist	Baff2011	16548	MR1 09 176	164.29	165.39	High Grade Iron Formation	8.01	0	0	0	0
Hanging Wall Schist	Baff2011	16558	MR1 09 176	203.44	204.41	High Grade Iron Formation	6.9	0	0.06	0	0.2
Hanging Wall Schist	Baff2011	16566	MR1 09 176	223.6	224.61	High Grade Iron Formation	3.09	1.48	2.69	4.8	8.7
Hanging Wall Schist	Baff2011	16622	MR1 08 154	224.92	225.94	High Grade Iron Formation	2.25	12.18	14.3	40	47
Hanging Wall Schist	Baff2011	16624	MR1 08 154	237.53	238.48	High Grade Iron Formation	2.88	3.02	5.09	10	17
Hanging Wall Schist	Baff2011	16626	MR1 08 154	241.81	242.76	High Grade Iron Formation	8.04	0	0	0	0
Hanging Wall Schist	Baff2011	16638	MR1 08 154	251.53	252.54	High Grade Iron Formation	2.75	2.94	3.21	4.96	11
Hanging Wall Schist	Baff2011	16234	MR1 05 53	139.25	140.25	High Grade Iron Formation	10.96	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 013	MR1 09 176	260	260.4	Metasediment	7.63	0	0	0	0
Hanging Wall Schist	Baff2011	16026	MR1 05 72	1.0	11.05	Metasediment	7.82	0	0	0	0
Hanging Wall Schist	Baff2011	16034	MR1 05 72	138.4	139.4	Metasediment	2.57	7.5	12.56	25	41
Hanging Wall Schist	Baff2011	16038	MR1 05 72	153.3	154.32	Metasediment	3.47	0.8	2.02	2.6	6.6
Hanging Wall Schist	Baff2011	16196	MR1 08 158	85.35	86.39	Metasediment	10.18	0	0	0	0
Hanging Wall Schist	Baff2011	16198	MR1 08 158	95.28	96.19	Metasediment	10.81	0	0	0	0
Hanging Wall Schist	Baff2011	16200	MR1 08 158	105.13	106.17	Metasediment	7.24	0	0	0	0
Hanging Wall Schist	Baff2011	16202	MR1 08 158	114.63	115.6	Metasediment	11.15	0	0	0	0
Hanging Wall Schist	Baff2011	16204	MR1 08 158	125.5	126.48	Metasediment	10.48	0	0	0	0
Hanging Wall Schist	Baff2011	16206	MR1 08 158	134.2	135.1	Metasediment	10.49	0	0	0	0
Hanging Wall Schist	Baff2011	16208	MR1 08 158	145.9	146.93	Metasediment	10.82	0	0	0	0
Hanging Wall Schist	Baff2011	16210	MR1 08 158	154.67	155.67	Metasediment	10.1	0	0	0	0
Hanging Wall Schist	Baff2011	16212	MR1 08 158	163.31	164.34	Metasediment	11.17	0	0	0	0
Hanging Wall Schist	Baff2011	16294	MR1 04 44	224.4	225.43	Metasediment	6.34	0	0.08	0	0.3
Hanging Wall Schist	Baff2011	16296	MR1 04 44	233.1	234.17	Metasediment	2.68	5.96	10.38	19.5	33.9
Hanging Wall Schist	Baff2011	16298	MR1 04 44	245.5	246.5	Metasediment	4.95	0	1.48	0.4	4.8
Hanging Wall Schist	Baff2011	16300	MR1 04 44	258.73	259.7	Metasediment	7.32	0	0	0	0
Hanging Wall Schist	Baff2011	16484	MR1 05 46	245.03	246	Metasediment	4.43	0.09	0.41	0.3	1.4
Hanging Wall Schist	Baff2011	16494	MR1 05 46	288.5	289.5	Metasediment	7.42	0	0	0	0
Hanging Wall Schist	Baff2011	16496	MR1 05 46	293.16	294.12	Metasediment	6.2	0	0.12	0	0.4
Hanging Wall Schist	Baff2011	16502	MR1 04 45	192.5	193.59	Metasediment	5.47	0	0.33	0	1.1
Hanging Wall Schist	Baff2011	16586	MR1 05 77	21.62	22.62	Metasediment	7.7	0	0	0	0
Hanging Wall Schist	Baff2011	16588	MR1 05 77	30.86	31.86	Metasediment	7.65	0	0	0	0
Hanging Wall Schist	Baff2011	16604	MR1 08 156	8.73	9.79	Metasediment	9.76	0	0	0	0
Hanging Wall Schist	Baff2011	16606	MR1 08 156	15.34	16.31	Metasediment	7.85	0	0	0	0
Hanging Wall Schist	Baff2011	16612	MR1 04 18	16.97	17.97	Metasediment	7.86	0	0	0	0
Hanging Wall Schist	Baff2011	16630	MR1 05 72	132.87	133.87	Quartz Zone	6.07	0	0.11	0	0.4
Hanging Wall Schist	AMEC_2010	MRAR010 001	MR1 09 171	67	68	Schist	7.17	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 002	MR1 09 179	20.2	21	Schist	7.61	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 003	MR1 09 179	45	46	Schist	7.40	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 006	MR1 09 177	130.2	131	Schist	7.73	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 007	MR1 09 177	165	166	Schist	6.90	0	0	0	0.3
Hanging Wall Schist	AMEC_2010	MRAR010 014	MR1 09 176	185.2	186	Schist	7.86	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 016	MR1 09 172	63	64	Schist	6.77	0	0	0	0.3
Hanging Wall Schist	AMEC_2010	MRAR010 020	MR1 09 172	115	116	Schist	5.80	0	0.3	0	1.0
Hanging Wall Schist	AMEC_2010	MRAR010 022	MR1 09 176	175	176	Schist	7.07	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 024	MR1 09 173	110	111	Schist	7.33	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 027	MR1 09 169	52.2	53	Schist	7.23	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 028	MR1 09 169	45	46	Schist	8.12	0	1.7	5.7	11.7
Hanging Wall Schist	AMEC_2010	MRAR010 032	MR1 09 169	30	31	Schist	7.57	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 026	MR1 09 173	130	131	Schist	4.47	0.10	0.70	0.30	2.20
Hanging Wall Schist	AMEC_2010	MRAR010 041	MR1 08 158	185	187.7	Schist	7.84	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 052	MR1 08 152	75	75.6	Schist	8.0	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 060	MR1 08 157	85	86	Schist	6.37	0.00	0.40	0.0	1.3
Hanging Wall Schist	AMEC_2010	MRAR010 068	MR1 08 140	50	51	Schist	2.80	4.5	7.3	15	24
Hanging Wall Schist	AMEC_2010	MRAR010 070	MR1 08 140	80	81	Schist	7.20	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 078	MR1 08 153	80	81	Schist	6.86	0	0.1	0	0.3
Hanging Wall Schist	AMEC_2010	MRAR010 084	MR1 08 147	55	56	Schist	8.00	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 086	MR1 08 147	90	91	Schist	7.24	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 092	MR1 08 142	30	31	Schist	4.27	0.1	1.0	0.3	3.3
Hanging Wall Schist	AMEC_2010	MRAR010 094	MR1 08 147	110	110.5	Schist	6.92	0	0.10	0	0.3
Hanging Wall Schist	AMEC_2010	MRAR010 096	MR1 08 146	99.5	100.5	Schist	9.07	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 101	MR1 08 153	100	101	Schist	7.38	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 103	MR1 08 141	227.8	228.8	Schist	7.11	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 109	MR1 08 141	145	146	Schist	6.95	0	0.10	0	0.3
Hanging Wall Schist	AMEC_2010	MRAR010 117	MR1 08 156	40	41	Schist	6.86	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 119	MR1 08 156	80.8	81	Schist	8.33	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 122	MR1 08 156	100	101	Schist	6.64	0	0.40	0	1.3
Hanging Wall Schist	AMEC_2010	MRAR010 124	MR1 08 143	70	71	Schist	7.21	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 127	MR1 08 143	20	21	Schist	7.36	0	0	0	0
Hanging Wall Schist	AMEC_2010	MRAR010 128	MR1 08 141	165	166	Schist	6.90	0	0.10	0	0.3
Hanging Wall Schist	AMEC_2010	MRAR010 129	MR1 08 154	183	184	Schist	1.84	8.30	10.30	131	165
Hanging Wall Schist	AMEC_2010	MRAR010 130	MR1 08 153	149.9	150.9	Schist	9.08	0	0	0	0
Hanging Wall Schist	Baff2011	16002	MR1 05 72	19.9	20.9	Schist	6.08	0	0	0	0.4
Hanging Wall Schist	Baff2011	16004	MR1 05 72	23.5	24.6	Schist	6.86	0	0.05	0	0.2
Hanging Wall Schist	Baff2011	16060	MR1 08 160	11.15	12.25	Schist	7.41	0	0	0	0
Hanging Wall Schist	Baff2011	16214	MR1 08 158	176.5	177.5	Schist	9.97	0	0	0	0
Hanging Wall Schist	Baff2011	16216	MR1 08 158	183.68	184.68	Schist	7.88	0	0	0	0
Hanging Wall Schist	Baff2011	16218	MR1 08 158	193.04	194.04	Schist	2.68	6.15	10.39	22	31.8
Hanging Wall Schist	Baff2011	16220	MR1 08 158	197.23	198.25	Schist	6.79	0	0.13	0	0.4
Hanging Wall Schist	Baff2011	16254	MR1 05 51	156.02	157.02	Schist	7.66	0	0	0	0
Hanging Wall Schist	Baff2011	16256	MR1 05 51	163.2	164.27	Schist	7.46	0	0	0	0
Hanging Wall Schist	Baff2011	16258	MR1 05 51	167.85	168.77	Schist	7.26	0	0	0	0
Hanging Wall Schist	Baff2011	16260	MR1 05 51	173.39	174.39	Schist	7.58	0	0.08	0	0.3
Hanging Wall Schist	Baff2011	16290	MR1 04 44	106.93	107.83	Schist	8	0	0	0	0

Table A-2: Net Acid Generating Test Results

Waste Type	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	NAG pH after Reaction	Volume of 0.1 N NaOH (mL)			
								to pH 4.5	to pH 7	to pH 4.5	to pH 7
Hanging Wall Schist	Baff2011	16230	MR1 05 52	125.9	126.79	Schist	2.7	0	0	0	0
Hanging Wall Schist	Baff2011	16344	MR1 04 38	25.7	26.7	Schist	7.98	0	0	0	0
Hanging Wall Schist	Baff2011	16346	MR1 04 38	36.8	37.73	Schist	7.81	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 021	MR1 09 173	60	90.6	Volcanic Tuff	7.60	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 040	MR1 08 158	160.3	161	Volcanic Tuff	8.02	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 051	MR1 08 158	120	121	Volcanic Tuff	10.84	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 053	MR1 08 152	30	31	Volcanic Tuff	8.13	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 059	MR1 08 152	50	51	Volcanic Tuff	7.36	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 066	MR1 08 150	95	96	Volcanic Tuff	7.22	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 067	MR1 08 150	75	75.9	Volcanic Tuff	7.71	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 069	MR1 08 141	80	81	Volcanic Tuff	2.51	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 076	MR1 08 157	45	46	Volcanic Tuff	7.74	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 080	MR1 08 149	90	91	Volcanic Tuff	2.91	3.3	5.6	11	18
Hanging Wall Schist	AMEC 2010	MRAR010 082	MR1 08 157	65.4	66	Volcanic Tuff	7.53	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 085	MR1 08 144	210	211	Volcanic Tuff	2.31	20	35	65	117
Hanging Wall Schist	AMEC 2010	MRAR010 087	MR1 08 147	40	41	Volcanic Tuff	10.56	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 088	MR1 08 147	25	26	Volcanic Tuff	9.54	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 089	MR1 08 147	70	71	Volcanic Tuff	9.48	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 095	MR1 08 146	80.2	81.2	Volcanic Tuff	6.85	0	0.10	0	0.3
Hanging Wall Schist	AMEC 2010	MRAR010 098	MR1 08 153	35	36	Volcanic Tuff	7.70	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 100	MR1 08 146	60	61	Volcanic Tuff	9.91	0	0	0	0
Hanging Wall Schist	AMEC 2010	MRAR010 105	MR1 08 141	200	201	Volcanic Tuff	3.44	0.9	2.6	2.9	8.3
Hanging Wall Schist	AMEC 2010	MRAR010 112	MR1 08 156	40.3	41.3	Volcanic Tuff	9.80	0	0.00	0	0
Hanging Wall Schist	Baff2011	16066	MR1 05 72	30.46	31.46	Volcanic Tuff	6.61	0	0.05	0	0.2
Hanging Wall Schist	Baff2011	16032	MR1 05 72	135.55	136	Volcanic Tuff	7.14	0	0	0	0
Hanging Wall Schist	Baff2011	16262	MR1 05 51	183.09	184.09	Volcanic Tuff	2.62	5.65	10.21	18.6	33.6
Hanging Wall Schist	Baff2011	16266	MR1 05 51	197	197.9	Volcanic Tuff	2.39	7.25	9.59	23.8	31.5
Hanging Wall Schist	Baff2011	16270	MR1 05 51	214	215	Volcanic Tuff	7.48	0	0	0	0
Hanging Wall Schist	Baff2011	16272	MR1 05 51	224.28	225.28	Volcanic Tuff	5.3	0	0.47	0	1.5
Hanging Wall Schist	Baff2011	16470	MR1 05 46	55.72	56.72	Volcanic Tuff	7.93	0	0	0	0
Hanging Wall Schist	Baff2011	16554	MR1 05 176	182.43	183.43	Volcanic Tuff	7.61	0	0	0	0
Hanging Wall Schist	Baff2011	16664	MR1 08 146	55.52	56.48	Volcanic Tuff	10.52	0	0	0	0
Hanging Wall Schist	Baff2011	16666	MR1 08 146	64.23	65.23	Volcanic Tuff	3.45	1.17	2.74	3.8	9
Hanging Wall Schist	Baff2011	16668	MR1 08 146	72.71	73.66	Volcanic Tuff	5.13	0	0	0	0
Hanging Wall Schist	Baff2011	16670	MR1 08 146	84.19	85.2	Volcanic Tuff	8.28	0	0	0	0
Hanging Wall Schist	Baff2011	16698	MR1 08 156	23	23.95	Volcanic Tuff	11.01	0	0	0	0
Hanging Wall Schist	Baff2011	16700	MR1 08 156	33.82	34.82	Volcanic Tuff	10.99	0	0	0	0
Hanging Wall Schist	Baff2011	16702	MR1 08 156	41.25	42.25	Volcanic Tuff	10.1	0	0	0	0
Hanging Wall Schist	Baff2011	16704	MR1 08 156	51.73	52.74	Volcanic Tuff	10.57	0	0	0	0
Hanging Wall Schist	Baff2011	16706	MR1 08 156	58.53	59.53	Volcanic Tuff	8.31	0	0	0	0
Hanging Wall Schist	Baff2011	16708	MR1 08 156	65.37	66.38	Volcanic Tuff	7.1	0	0	0	0
Hanging Wall Schist	Baff2011	16710	MR1 08 156	76.7	77.69	Volcanic Tuff	7.97	0	0	0	0
Hanging Wall Schist	Baff2011	16718	MR1 06 90	14.21	15.17	Volcanic Tuff	7.08	0	0	0	0
Hanging Wall Schist	Baff2011	16720	MR1 06 90	22.5	23.56	Volcanic Tuff	6.28	0	0.13	0	0.4
Hanging Wall Schist	Baff2011	16746	MR1 06 84	44	44.93	Volcanic Tuff	7.59	0	0	0	0
Hanging Wall Waste	Baff2011	16364	MR1 04 33	13.6	14.5	Amphibolite	10.6	0	0	0	0
Hanging Wall Waste	Baff2011	16366	MR1 04 33	22.5	23.5	Amphibolite	10.3	0	0	0	0
Hanging Wall Waste	Baff2011	16368	MR1 04 33	31.6	32.6	Amphibolite	10.73	0	0	0	0
Hanging Wall Waste	Baff2011	16372	MR1 04 33	43.2	44.25	Amphibolite	10.46	0	0	0	0
Hanging Wall Waste	Baff2011	16374	MR1 04 33	52.38	53.28	Amphibolite	6.94	0	0.07	0	0.2
Hanging Wall Waste	Baff2011	16384	MR1 05 177	11.81	12.76	Amphibolite	6.80	0	0	0.11	0
Hanging Wall Waste	Baff2011	16396	MR1 05 47	22.9	23.94	Amphibolite	8.32	0	0	0	0
Hanging Wall Waste	Baff2011	16398	MR1 05 47	35.76	36.8	Amphibolite	7.79	0	0	0	0
Hanging Wall Waste	Baff2011	16400	MR1 05 47	45.78	46.73	Amphibolite	7.74	0	0	0	0
Hanging Wall Waste	Baff2011	16402	MR1 05 47	54.4	55.34	Amphibolite	7.12	0	0	0	0
Hanging Wall Waste	Baff2011	16404	MR1 05 47	63.5	64.47	Amphibolite	7.98	0	0	0	0
Hanging Wall Waste	Baff2011	16408	MR1 05 47	82.82	83.82	Amphibolite	7.55	0	0	0	0
Hanging Wall Waste	Baff2011	16410	MR1 05 47	91.4	92.4	Amphibolite	7.4	0	0	0	0
Hanging Wall Waste	Baff2011	16082	MR1 06 105	205.29	206.24	Gneiss	7.06	0	0	0	0
Hanging Wall Waste	Baff2011	16084	MR1 06 105	215.38	216.38	Gneiss	6.98	0	0.05	0	0.2
Hanging Wall Waste	AMEC 2010	MRAR010 008	MR1 09 176	60	78.6	Metasediment	7.81	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 009	MR1 09 176	100	101	Metasediment	6.74	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 010	MR1 09 176	140	141	Metasediment	7.63	0	0	0	0
Hanging Wall Waste	Baff2011	16182	MR1 08 158	14.9	16	Metasediment	7.72	0	0	0	0
Hanging Wall Waste	Baff2011	16184	MR1 08 158	24.09	25.09	Metasediment	10.23	0	0	0	0
Hanging Wall Waste	Baff2011	16186	MR1 08 158	34.57	35.57	Metasediment	10.67	0	0	0	0
Hanging Wall Waste	Baff2011	16188	MR1 08 158	46.7	47.6	Metasediment	10.87	0	0	0	0
Hanging Wall Waste	Baff2011	16190	MR1 08 158	60.38	61.53	Metasediment	10.75	0	0	0	0
Hanging Wall Waste	Baff2011	16192	MR1 08 158	65.53	66.6	Metasediment	10.63	0	0	0	0
Hanging Wall Waste	Baff2011	16194	MR1 08 158	73.75	74.79	Metasediment	10.71	0	0	0	0
Hanging Wall Waste	Baff2011	16122	MR1 09 176	13	14	Metasediment	8.36	0	0	0	0
Hanging Wall Waste	Baff2011	16524	MR1 09 176	42.5	43.58	Metasediment	8.51	0	0	0	0
Hanging Wall Waste	Baff2011	16526	MR1 09 176	52.5	53.5	Metasediment	8.49	0	0	0	0
Hanging Wall Waste	Baff2011	16528	MR1 09 176	63.92	64.92	Metasediment	8.4	0	0	0	0
Hanging Wall Waste	Baff2011	16530	MR1 09 176	71.98	72.98	Metasediment	8.5	0	0	0	0
Hanging Wall Waste	Baff2011	16532	MR1 09 176	82.67	83.62	Metasediment	8.86	0	0	0	0
Hanging Wall Waste	Baff2011	16534	MR1 09 176	93.96	94.91	Metasediment	8.09	0	0	0	0
Hanging Wall Waste	Baff2011	16536	MR1 09 176	104.66	105.66	Metasediment	7.55	0	0	0	0
Hanging Wall Waste	Baff2011	16538	MR1 09 176	115.2	116.17	Metasediment	7.29	0	0	0	0
Hanging Wall Waste	Baff2011	16540	MR1 09 176	123	124	Metasediment	7.38	0	0	0	0
Hanging Wall Waste	Baff2011	16542	MR1 09 176	132.72	133.72	Metasediment	7.85	0	0	0	0
Hanging Wall Waste	Baff2011	16544	MR1 09 176	141.43	142.43	Metasediment	7.66	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 062	MR1 08 155	65	66	Schist	7.29	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 073	MR1 08 155	20	21	Schist	6.87	0	0.20	0	0.7
Hanging Wall Waste	AMEC 2010	MRAR010 017	MR1 09 172	30.65	31.65	Schist	7.43	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 056	MR1 08 152	165	166	Schist	7.38	0	0	0	0
Hanging Wall Waste	Baff2011	16406	MR1 05 47	76	76.9	Schist	7.84	0	0	0	0
Hanging Wall Waste	Baff2011	16412	MR1 05 47	106.3	107.1	Schist	7.49	0	0	0	0
Hanging Wall Waste	Baff2011	16414	MR1 05 47	116.57	117.66	Schist	7.12	0	0	0	0
Hanging Wall Waste	Baff2011	16416	MR1 05 47	125.4	126.3	Schist	7.62	0	0	0	0
Hanging Wall Waste	Baff2011	16548	MR1 09 172	29.83	30.83	Schist	6.82	0	0	0.9	0
Hanging Wall Waste	Baff2011	16376	MR1 04 33	61.38	62.28	Ultramafic	8.04	0	0	0	0
Hanging Wall Waste	Baff2011	16378	MR1 04 33	67.5	68.4	Ultramafic	8.08	0	0	0	0
Hanging Wall Waste	Baff2011	16380	MR1 04 33	73.47	74.37	Ultramafic	8.14	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 002	MR1 09 173	20	21	Volcanic Tuff	9.37	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 023	MR1 09 173	45	46	Volcanic Tuff	9.09	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 025	MR1 09 173	70	71	Volcanic Tuff	8.02	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 062	MR1 08 158	80	80.9	Volcanic Tuff	9.71	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 052	MR1 08 158	20	21	Volcanic Tuff	8.04	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 054	MR1 08 158	40	41	Volcanic Tuff	9.31	0	0	0	0
Hanging Wall Waste	Baff2011	16170	MR1 04 33	37.74	38.64	Volcanic Tuff	10.34	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 079	MR1 08 146	40	40.9	Volcanic Tuff	10.68	0	0	0	0
Hanging Wall Waste	AMEC 2010	MRAR010 082	MR1 08 150	40	41	Volcanic Tuff	9.50	0	0	0	0
Hanging Wall Waste	Baff2011	16656	MR1 08 146	14	14.98	Volcanic Tuff	9.87	0	0	0	0
Hanging Wall Waste	Baff2011	16658	MR1 08 146	25.34	26.3	Volcanic Tuff	10.83	0	0	0	0
Hanging Wall Waste	Baff2011	16660	MR1 08 146	35.3	36.3	Volcanic Tuff	10.93	0	0	0	0
Hanging Wall Waste	Baff2011	16662	MR1 08 146	45.81	46.82	Volcanic Tuff	11.03	0	0	0	0
Internal Waste	Baff2011	16274	MR1 05 51	314.16	315.16	Amphibolite	3.48	1.08	2.63	3.4	8.1

Table A-3: Sequential Net Acid Generation Results

Sample	Waste Classification	Lithology	Single Addition NAG _{pH}	Total Sulphur	Sulphide	Final pH	Sequential NAG			
				%			Vol NaOH to PH 4.5	Vol NaOH to PH 7.0	NAG (pH 4.5)	NAG (pH 7.0)
							mL		kg H2SO4/tonne	
5178	Footwall Waste	Schist	2.74	1.5	0.91	2.69	7.50	11.50	15	23
						4.4	0.10	0.30	0.2	0.6
						5.7	0	0.20	0	0.4
						5.91	0	0.10	0	0.2
4929	Hanging Wall Schist	Banded Iron Formation	2.11	2.1	2.0	2.19	13.09	14.13	43	47
						3.35	0.67	1.19	2.2	3.9
4931	Hanging Wall Schist	Banded Iron Formation	1.95	4.8	4.8	2.02	4.4	5	73	83
						2.57	3.59	4.12	12	14
4932	Hanging Wall Schist	Banded Iron Formation	9.02	1.9	1.9	8.43	0	0	0	0
						8.83	0	0	0	0

Table A4-4: Elemental Content Results

Waste solid	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	Hg	Au	Ag	Al	As	Ba	Be	Bi	Cs	Cd	Co	Cr	Cu	Fe	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Sn	Sr	Ti	Tl	U	V	Y	Zn			
							ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Footwall Schist	AMEC_2010	MRARID10 091	MR1 08 143	100.4	101.4	Amphibolite	<0.10			62000	1.5	410	0.76	0.14	640	<0.20	9.1	950	131	87000	2900	26	40000	590	0.5	170	1040		1.9		<0.80	<0.70	0.9	1.3	250	0.11	0.24	100			47		
Footwall Schist	Baff2011	16306	MR1 04 44	388.6	389.6	Amphibolite	<0.10	<0.02	0.03	40000	<0.5	600	0.74	<0.09	700	<0.02	9.6	72	3.5	51000	26000	25	23000	2800	28	570	21	270	13		<0.80	<0.70	2.3	12	1600	0.58	0.63	29	2.1	34			
Footwall Schist	Baff2011	16388	MR1 05 49	367.6	368.6	Amphibolite	<0.10	<0.02	0.13	73000	0.6	600	2	0.41	2200	<0.02	7	25	45	95000	26000	39	48000	410	1.5	700	6.2	690	24		<0.80	<0.70	1.8	13	1700	0.48	2.3	37	5.4	46			
Footwall Schist	Baff2011	16614	MR1 06 154	200.6	201.6	Amphibolite	<0.10	<0.02	<0.01	22000	<0.5	380	0.53	<0.09	700	<0.02	9.6	72	3.5	51000	26000	25	23000	2800	28	570	21	270	13		<0.80	<0.70	<0.50	1.1	1600	0.39	1.8	38		35			
Footwall Schist	AMEC_2010	MRARID10 004	MR1 09 179	160.0	161.0	Gneiss	<0.10			83000	0.60	230	2.5	<0.09	1800	<0.20	18	28	1.8	13000	10000	36	82000	310	15	280	85		2.3		<0.80	<0.70	3.3	6.3	1100	0.21	1.8	46		22			
Footwall Schist	AMEC_2010	MRARID10 005	MR1 09 179	176.0	177.0	Gneiss	<0.10			77000	0.60	39	2.8	<0.09	1700	<0.20	14	9.1	15	13000	4800	38	70000	1800	8	160	55		4.6		<0.80	<0.70	4.6	6.8	420	0.12	1.3	53		53			
Footwall Schist	AMEC_2010	MRARID10 011	MR1 09 178	150.0	151.0	Gneiss	<0.10	<0.02	0.03	55000	5.4	6.8	0.58	0.14	800	<0.20	30	44	47	17000	83	13	49000	1200	2.3	75	120	2.5		<0.80	<0.70	2.9	9.2	440	<0.02	1.5	15		44				
Footwall Schist	AMEC_2010	MRARID10 015	MR1 09 178	155.7	156.6	Gneiss	<0.10	<0.02	0.03	59000	4.7	150	0.73	<0.09	1100	<0.20	11	310	47	82000	9500	8	13000	200	0.6	270	170	3.7		<0.80	<0.70	6.1	1300	0.28	0.86	120		46					
Footwall Schist	AMEC_2010	MRARID10 031	MR1 09 170	115.2	116.0	Gneiss	<0.10			89000	12	5.8	3.4	<0.09	210	<0.20	53	48	46	130000	800	330	40000	320	74	420	180		2.6		<0.80	<0.70	1.8	1.7	880	0.23	1.8	110		106			
Footwall Schist	AMEC_2010	MRARID10 033	MR1 08 162	170.0	171.0	Gneiss	<0.10			61000	<0.5	3.1	0.27	<0.09	2900	<0.20	37	520	123	59000	97	5	55000	990	0.3	82	220		1.7		<0.80	<0.70	<0.50	2.4	300	<0.02	0.72	130		50			
Footwall Schist	AMEC_2010	MRARID10 034	MR1 08 162	186.0	186.0	Gneiss	<0.10			44000	<0.5	690	0.61	<0.09	1500	<0.20	12	77	29	62000	27000	11	18000	310	2.2	610	15		15		<0.80	<0.70	1.5	4.4	2200	0.71	2.9	38		24			
Footwall Schist	AMEC_2010	MRARID10 044	MR1 09 167	20.0	21.0	Gneiss	<0.10			26000	16	450	0.88	<0.09	1600	<0.20	17	170	24	70000	4600	6	14000	320	1.3	220	69		8.9		<0.80	<0.70	<0.50	7.2	650	0.19	0.71	71		18			
Footwall Schist	AMEC_2010	MRARID10 055	MR1 08 159	190.0	191.0	Gneiss	<0.10			34000	0.7	2.9	0.91	0.68	170	0.2	16	71	6.5	130000	410	47	27000	1200	5.7	140	29	1.4		1.4		<0.70	2.9	6.4	650	0.05	3.4	78		36			
Footwall Schist	AMEC_2010	MRARID10 057	MR1 08 161	160.0	161.0	Gneiss	<0.10			59000	<0.5	0.9	2.2	0.19	4900	<0.20	24	390	6.4	150000	180	29	59000	490	0.3	97	140	4		1.4		<0.70	2.9	6.4	650	0.05	3.4	78		36			
Footwall Schist	AMEC_2010	MRARID10 074	MR1 08 149	220.0	221.0	Gneiss	<0.10			18000	<0.5	16	0.15	<0.09	1100	<0.20	17	110	98	17000	2400	24	10000	360	0.4	1400	48		5.8		<0.80	<0.70	1.3	15	1400	0.05	0.1	75		29			
Footwall Schist	AMEC_2010	MRARID10 104	MR1 08 140	165.0	166.0	Gneiss	<0.10			47000	<0.5	960	0.35	0.11	1900	<0.20	18	59	70	63000	29000	5	21000	170	1	750	17		32		<0.80	<0.70	3	8.4	2600	0.71	1.4	140		9.3			
Footwall Schist	AMEC_2010	MRARID10 110	MR1 08 154	206.2	207.8	Gneiss	<0.10			7400	1.8	7.3	0.31	0.16	<0.20	14	38	4.5	60700	140	6	8700	460	3.6	71	20	1.5		<0.80	2.6	<0.50	1.1	190	<0.02	0.59	28		9.9					
Footwall Schist	AMEC_2010	MRARID10 114	MR1 07 121	220.0	221.0	Gneiss	<0.10			21000	<0.5	1100	0.72	<0.09	1000	<0.20	5.5	95	5.1	28000	7300	8	12000	280	2.1	250	8.6		2.3		1.3		<0.70	0.9	8.1	640	0.21	2	11		16		
Footwall Schist	AMEC_2010	MRARID10 115	MR1 07 121	236.0	237.0	Gneiss	<0.10			82000	<0.5	1300	1.1	<0.09	210	<0.20	42	170	75	88000	15000	21	51000	510	0.2	340	170		7.2		<0.80	<0.70	1.2	1.9	1100	0.35	0.058	180		60			
Footwall Schist	AMEC_2010	MRARID10 123	MR1 08 155	149.0	150.0	Gneiss	<0.10			81000	<0.5	4.2	1.1	<0.09	150	<0.20	43	730	8	132000	73	<2.00	31000	940	0.2	89	290		2.2		<0.80	<0.70	<0.50	1.8	230	0.05	2.4	110		96			
Footwall Schist	Baff2011	16062	MR1 05 72	314.2	315.2	Gneiss	<0.10	<0.02	<0.01	44000	<0.5	480	0.63	<0.09	1200	0.05	23	150	5.8	72000	19000	20	27000	400	1.2	410	410	9.1		<0.80	<0.70	0.8	7.6	2100	0.42	0.51	170	2.3		38			
Footwall Schist	Baff2011	16064	MR1 05 72	328.1	329.1	Gneiss	<0.10	<0.02	0.23	19000	<0.5	300	0.33	0.1	820	0.03	7.2	31	120	31000	15000	10	12000	400	0.7	320	5.6	110	4.7		<0.80	<0.70	<0.50	1.7	1700	0.56	1.9	12		3.8			
Footwall Schist	Baff2011	16066	MR1 05 72	334.8	335.9	Gneiss	<0.10	<0.02	0.06	19000	<0.5	330	0.13	<0.09	1600	<0.03	9.7	15	12	31000	15000	15	11000	510	0.7	480	15	430	3.2		<0.80	<0.70	1.2	3.2	2300	0.49	1	42		4.5			
Footwall Schist	Baff2011	16302	MR1 04 44	362.6	363.6	Gneiss	<0.10	<0.02	0.04	29000	<0.5	280	0.83	<0.09	1900	<0.02	9.9	72	17	47000	19000	8	17000	330	2	420	14	900	7.6		<0.80	<0.70	1.1	26	2400	0.47	2.9	32		7.2			
Footwall Schist	Baff2011	16304	MR1 04 44	371.7	372.7																																						

Table A-4: Elemental Content Results

Waste solid	Sampling Program	Sample ID	Borehole ID	From To (m)	Lithology	Hg	Au	Ag	Al	As	Ba	Be	Bi	Cs	Cd	Co	Cr	Cu	Fe	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Sn	Sr	Ti	Tl	U	V	Y	Zn	
						µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
Footwall Schist	Baff2012	15405	MR1-12-223	40.1	42.1	Schist	<0.10			55000	<0.5	30	1.9	<0.09	2000	0.03	23	5.3	1.5	84000	2400	21	67000	200	0.3	59	39		2.1	100	<0.80	<0.70	1.2	2.9	960	0.22	4.8	39	36	
Footwall Schist	Baff2012	15406	MR1-12-223	42.1	44.1	Schist	<0.10			53000	<0.5	21	1.4	<0.09	1800	0.03	24	19	0.9	82000	1800	11	65000	190	0.3	57	40		2.1	570	<0.80	<0.70	1.1	2.8	780	0.09	5.1	24	37	
Footwall Schist	Baff2012	15407	MR1-12-223	44.1	46.1	Schist	<0.10			51000	<0.5	15	0.95	0.09	1300	<0.02	29	2.6	1.8	80000	650	18	66000	200	0.3	47	47		1.6	400	<0.80	<0.70	1.1	2.3	500	0.03	7.4	15	35	
Footwall Schist	Baff2012	15408	MR1-12-223	46.1	48.1	Schist	<0.10			51000	<0.5	21	1.1	0.22	2100	0.05	35	2.1	2	83000	1100	17	64000	170	0.3	91	38		3.9	1700	<0.80	<0.70	1.1	2.6	830	0.07	5.3	18	37	
Footwall Schist	Baff2012	15409	MR1-12-223	48.1	50.1	Schist	<0.10			53000	<0.5	16	0.75	0.26	2200	0.04	36	1	1.9	67000	875	17	66000	230	0.1	48	36		5.2	1900	<0.80	<0.70	2	3.1	530	0.04	11	17	36	
Footwall Schist	Baff2012	15410	MR1-12-223	50.1	52.1	Schist	<0.10			38000	<0.5	16	0.68	0.23	1000	0.04	46	14	3.3	59000	943	14	47000	180	0.3	61	29		4.3	560	<0.80	<0.70	0.7	3.2	270	0.05	10	7	28	
Footwall Schist	Baff2012	15411	MR1-12-223	52.1	54.1	Schist	<0.10			41000	<0.5	13	1.1	0.1	770	0.03	15	10	1.1	61000	1100	21	44000	220	0.4	70	22		3.5	1100	<0.80	<0.70	0.5	3.6	320	0.06	8.8	5	30	
Footwall Schist	Baff2012	15412	MR1-12-223	54.1	56.1	Schist	<0.10			47000	<0.5	28		<0.09	1200	0.05	12	1.5	3.4	69000	1100	23	50000	220	0.3	87	22		4.4	1100	<0.80	<0.70	0.8	3.2	540	0.06	6.4	9	28	
Footwall Schist	Baff2012	15413	MR1-12-223	56.1	58.1	Schist	<0.10			61000	<0.5	28			2300	0.1	22		3.9	100000	1900	27	69000	240	0.2				1000	<0.80	<0.70	1.2	4.4	1000	<0.80	<0.70	1.2	3.7	35	18
Footwall Schist	Baff2012	15414	MR1-12-223	58.0	59.7	Schist	<0.10			64000	<0.5	29	2.1	0.47	3300	0.06	26	2.4	8.5	120000	1800	21	75000	230	1.5	99	39		6.1	2800	<0.80	<0.70	1.8	4.2	840	0.12	4.3	35	28	
Footwall Schist	Baff2012	15415	MR1-12-223	59.7	61.7	Schist	<0.10			51000	<0.5	510	1.4	0.18	3400	0.07	13	17	2.7	80000	26000	19	36000	320	1	520	8.8		13	2100	<0.80	<0.70	1.9	5.2	2300	0.94	7.1	36	15	
Footwall Schist	Baff2012	15416	MR1-12-223	61.7	63.7	Schist	<0.10			53000	<0.5	580	2.6	<0.09	4500	0.06	13	6.7	1.5	75000	25000	27	37000	300	1.1	520	5.4		11	180	<0.80	<0.70	2.4	7.1	2200	0.79	9.6	42	36	
Footwall Schist	Baff2012	15417	MR1-12-223	63.7	65.4	Schist	<0.10			66000	<0.5	640	1.7	0.41	11876	0.29	25	32	39	100000	30000	28	46000	340	28	190	33		16	9400	<0.70	2	9.9	2200	0.93	5.3	120	36		
Footwall Schist	Baff2012	15418	MR1-12-223	65.4	67.2	Schist	<0.10			63000	<0.5	360	2.1	0.53	5000	0.09	21	31	7.3	97000	16000	37	51000	260	0.3	340	40		9.2	3600	<0.70	<0.70	1.5	7.2	1400	0.49	5.5	120	32	
Footwall Schist	Baff2012	15479	MR1-12-224	21.2	23.4	Schist	<0.10			67000	<0.5	10	45	2	0.97	350	0.06	61	64	16	220000	1100	244	39000	1600	8.9	110	100		2.5	140	<0.80	<0.70	0.6	3	380	0.03	5.8	62	110
Footwall Schist	Baff2012	15480	MR1-12-224	23.4	25.5	Schist	<0.10			68000	<0.50	570	1.3	0.32	1100	0.04	24	230	5.1	160000	20000	32	43000	660	3	360	97		8.8	180	<0.80	<0.70	1.4	3.6	1800	0.63	4	70	41	
Footwall Schist	Baff2012	15630	MR1-12-226	73.2	75.3	Schist	<0.10			17000	372	16	0.65	1.7	130	0.22	14	280	190	220000	380	3	15000	1400	124	51	35		5	1000	<0.80	<0.70	4.1	1.1	0.89	230	0.35	0.6	130	92
Footwall Schist	Baff2012	15631	MR1-12-226	75.3	77.4	Schist	<0.10			45000	77	34	0.81	2.3	130	0.17	12	100	180	230000	340	5	27000	1300	158	56	34		6	1100	<0.80	<0.70	6.2	2.1	1.2	210	0.04	0.84	110	100
Footwall Schist	Baff2012	15632	MR1-12-226	77.4	79.7	Schist	<0.10			48000	147	9.5	0.64	0.84	110	0.13	11	150	170	170000	180	7	29000	13000	89	71	44		7.2	1200	<0.80	<0.70	2.6	0.8	1.8	190	0.03	0.89	130	78
Footwall Schist	Baff2012	15644	MR1-12-226	101.3	103.3	Schist	<0.10			80000	2.2	2.9	0.93	<0.09	801	<0.02	40	600	7.9	180000	130	<2.00	68000	360	3	50	260		1.8	79	<0.80	<0.70	0.6	1.3	270	<0.02	1.2	100	71	
Footwall Schist	Baff2012	15645	MR1-12-226	103.3	105.2	Schist	<0.10			80000	9.0	1.2	1.3	0.18	1300	0.03	52	760	8.1	160000	90	3	74000	510	4.9	51	320		1.8	400	<0.80	<0.70	<0.50	1.5	240	<0.02	1.4	110	73	
Footwall Schist	Baff2012	15646	MR1-12-226	105.2	107.2	Schist	<0.10			78000	1.9	2.3	1.5	<0.09	98	0.03	41	660	8.6	190000	<2.00	66000	320	2.8	45	290		1.5	92	<0.80	<0.70	<0.50	0.68	310	<0.02	1.5	100	71		
Footwall Schist	Baff2012	15650	MR1-12-226	114.9	116.9	Schist	<0.10			35000	2.1	120	1.4	5.4	430	0.06	80	110	430	15000	280	1	430	510	47	110	58		11	26000	<0.80	<0.70	1.2	6	530	0.07	3.3	61	20	
Footwall Schist	Baff2012	15651	MR1-12-226	114.9	116.9	Schist	<0.10			81000	0.60	140	0.84	0.1	2100	0.04	13	22	6.5	130000	4200	9	66000	420	2.7	120	15		2.7	79	<0.80	<0.70	0.7	6.5	680	0.11	3	48	81	
Footwall Schist	Baff2012	15652	MR1-12-226	116.9	118.9	Schist	<0.10			15000	<0.5	12	0.27	<0.09	1700	0.03	11	21	4.9	110000	410	10	65000	490	0.4	72	14		1.9	78	<0.80	<0.70	<0.50	5.8	270	<0.02	2.2	41	71	
Footwall Schist	Baff2012	15653	MR1-12-226	118.9	120.7	Schist	<0.10			84000	<0.6	290	1.2	<0.09	2700	0.03	18	16	6.6	110000	11000	23	70000	560	0.3	270	17		4.1	70	<0.80	<0.70	1.8	8.2	960	0.23	3.4	48	71	
Footwall Schist	Baff2012	15654	MR1-12-226	120.7	122.3	Schist	<0.10			63000	<0.5	160	0.71	0.36	17000	0.07	6.6	51	9.6	29000	14000	28	19000	1200	1.4	520	13		7.5	890	<0.80	<0.70	0.8	16	1400	0.45	1.7	23	38	
Footwall Schist	Baff2012	15655	MR1-12-226	122.2	123.7	Schist	<0.10			47000	<0.5	910	2	0.1	2100	<0.02	11	57	9.6	56000	21000	112	27000	260	1.1	620	13		7.8	71	<0.80	<0.70	2.7	11	1500	0.51	3.4	40	31	
Footwall Schist	Baff2012	15656	MR1-12-226	123.7	125.1	Schist	<0.10			47000	<0.5	1200	1.5	0.12	2100	<0.02	11	98	10	70000	31000	27	26000	190	1.3	850	15		12	85	<0.80	<0.70	2.3	7.9	2400	0.77	2.2	42	13	
Footwall Schist	Baff2012	15657	MR1-12-226	125.1	127.1	Schist	<0.10			68000	<0.5	1200	1.5	0.12	3600	<0.02	15	50	10	100000	28000	26	45000	140	0.8	810	32		12	100	<0.80	<0.70	2.9	14	2200	0.79	2.2	59	27	
Footwall Schist	Baff2012	15658	MR1-12-226	127.1	129.1	Schist	<0.10			63000	<0.5	1600	1.1	0.12	2700	<0.02	12	68	6.2	91000	39000	35	26000	83	1	1100	20		13	99	<0.80	<0.70	3.8	12	2100	1.1	2.1	59	47	
Footwall Schist	Baff2012	15719	MR1-12-225	47.4	49.1	Schist	<0.10			28000	<0.5	160	0.71	0.36	17000	0.07	6.6	51	9.6	29000	14000	28	19000	1200	1.4	520	13		7.5	890	<0.80	<0.70	0.8	16	1400	0.45	1.7	23	38	
Footwall Schist	Baff2012	15721	MR1-12-225	49.1	51.0	Schist	<0.10			20000	<0.5	150	0.62	0.13	17000	<0.07	5.7	68	6.3	23000	9900	20	11000	770	2.5	630	5.3		10	2200	<0.80	<0.70	0.6	3.1	970	0.33	4	7	32	
Footwall Schist	Baff2012	15721	MR1-12-225	51.0	53.0	Schist	<0.10			29000	<0.5	180	0.72	<0.09	19000	0.05	5.5	56	7.1	29000	15000	24	14000	1000	0.9	820	7.8		6.6	470	<0.80	<0.70	0.7	28	1500					

Table A-4: Elemental Content Results

Waste solid	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	Hg	Au	Ag	Al	As	Ba	Be	Bi	Cs	Cd	Co	Cr	Cu	Fe	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Sn	Sr	Ti	Tl	U	V	Y	Zn	
							µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
Footwall Waste	Baff2012	15510	MR1-12-224	80.4	82.1	Gneiss	<0.10			18000	<0.5	250	0.15	<0.09	2800	<0.02	7.7	23	15	33000	14000	22	8500	410	0.7	580	7.2	3.1	450	<0.80	<0.70	3.5	6	2700	0.34	1.7	35	42			
Footwall Waste	Baff2012	15511	MR1-12-224	82.1	83.5	Gneiss	<0.10			31000	<0.5	440	0.18	<0.17	2100	<0.02	16	30	74	57000	25000	29	17000	470	0.6	470	24	3.7	3000	<0.80	<0.70	2.8	5	2800	0.5	4.2	61	58			
Footwall Waste	Baff2012	15512	MR1-12-224	83.5	85.5	Gneiss	<0.10			34000	<0.5	550	0.2	0.1	4700	0.03	18	92	31	58000	26000	32	21000	850	0.7	470	46	2.5	600	<0.80	<0.70	1.3	5.6	3100	0.51	2.2	99	67			
Footwall Waste	Baff2012	15513	MR1-12-224	85.5	87.5	Gneiss	<0.10			23000	<0.5	370	0.22	<0.09	1700	<0.02	12	39	23	40000	17000	26	14000	630	0.8	530	22	4.1	490	<0.80	<0.70	2	6.8	2300	0.33	2.9	43	43			
Footwall Waste	Baff2012	15514	MR1-12-224	87.5	89.5	Gneiss	<0.10			20000	<0.5	170	0.13	<0.09	1100	<0.02	9.5	24	3.3	34000	16000	24	11000	560	0.2	490	21	1.2	97	<0.80	<0.70	3.7	3.5	2200	0.34	0.95	43	47			
Footwall Waste	Baff2012	15515	MR1-12-224	89.3	91.0	Gneiss	<0.10			26000	<0.5	430	0.29	0.41	2200	<0.02	11	58	10	39000	19000	29	15000	690	0.7	1200	20	1.6	190	<0.80	<0.70	4.7	11	2100	0.38	2	52	53			
Footwall Waste	Baff2012	15516	MR1-12-224	91.0	92.8	Gneiss	<0.10			29000	<0.5	420	0.34	<0.09	2400	<0.02	15	110	19	43000	22000	30	23000	670	2.2	1100	35	2.3	140	<0.80	<0.70	3.6	10	2600	0.62	3.1	64	53			
Footwall Waste	Baff2012	15523	MR1-12-224	103.4	105.4	Gneiss	<0.10			16000	<0.5	170	0.23	<0.09	19000	0.11	4.8	67	21	21000	12000	14	11000	830	1.6	1300	6.2	11	740	<0.80	<0.70	0.7	33	1400	0.33	1	13	32			
Footwall Waste	Baff2012	15524	MR1-12-224	105.4	107.4	Gneiss	<0.10			18000	<0.5	160	0.14	<0.09	9100	0.05	7.8	54	44	27000	15000	16	13000	790	1.8	1400	6.2	11	1100	<0.80	<0.70	1.4	34	2000	0.4	3.2	79	12			
Footwall Waste	Baff2012	15525	MR1-12-224	107.4	109.4	Gneiss	<0.10			20000	<0.5	160	0.18	<0.09	7700	0.02	8.8	45	38	28000	16000	18	13000	700	1.3	1100	13	3.5	950	<0.80	<0.70	0.6	10	2100	0.49	1.2	52	30			
Footwall Waste	Baff2012	15526	MR1-12-224	109.4	111.4	Gneiss	<0.10			6800	<0.5	120	0.15	<0.09	10900	0.03	1.8	62	5.1	8800	4400	6	4300	460	0.8	490	3	6.3	380	<0.80	<0.70	0.6	14	1100	0.16	3.8	6	11			
Footwall Waste	Baff2012	15527	MR1-12-224	111.4	113.5	Gneiss	<0.10			10000	<0.5	160	0.16	<0.09	13000	0.03	3.4	73	29	14000	7100	10	7500	490	2.3	1000	3.8	5.8	480	<0.80	<0.70	0.8	14	1300	0.26	3.4	11	15			
Footwall Waste	Baff2012	15528	MR1-12-224	113.5	116.0	Gneiss	<0.10			11000	<0.5	170	0.16	<0.09	18000	0.04	2.7	62	5.1	17000	6600	9	6600	600	1.1	1100	3.5	3.6	440	<0.80	<0.70	0.6	15	1200	0.28	2.4	9	16			
Footwall Waste	Baff2012	15529	MR1-12-224	115.6	117.8	Gneiss	<0.10			12000	<0.5	140	0.19	<0.09	18000	0.03	3.5	55	14	17000	8900	10	7500	660	1.6	940	3.9	4.7	850	<0.80	<0.70	0.8	16	1300	0.31	2.9	10	19			
Footwall Waste	Baff2012	15558	MR1-12-224	169.0	171.0	Gneiss	<0.10			17000	<0.5	63	0.27	<0.09	2300	0.02	8.7	59	7.4	24000	8900	20	9500	350	1.2	680	12	2.4	70	<0.80	<0.70	0.7	5.8	1400	0.2	1.5	32	37			
Footwall Waste	Baff2012	15559	MR1-12-224	171.0	172.8	Gneiss	<0.10			18000	<0.5	75	0.24	<0.09	1500	0.02	9.9	38	6.8	24000	13000	20	9600	350	0.6	540	16	1.5	42	<0.80	<0.70	<0.50	4.4	1600	0.38	1.1	31	36			
Footwall Waste	Baff2012	15560	MR1-12-224	172.8	174.8	Gneiss	<0.10			21000	<0.5	88	0.27	<0.09	14000	0.03	11	53	8.8	30000	14000	27	16000	540	1.6	770	17	5.2	260	<0.80	<0.70	1.1	9.9	2100	0.46	1.5	45	53			
Footwall Waste	Baff2012	15571	MR1-12-224	195.8	197.8	Gneiss	<0.10			22000	<0.5	79	0.32	0.47	1800	0.54	12	64	96	30000	16000	28	14000	570	1.5	640	33	4.8	69	<0.80	<0.70	0.9	5.6	2100	0.51	2.3	48	50			
Footwall Waste	Baff2012	15572	MR1-12-224	197.8	199.8	Gneiss	<0.10			30000	<0.5	150	0.32	<0.09	6200	0.17	14	44	15	41000	23000	25	19000	980	0.6	820	34	36	410	<0.80	<0.70	1.9	9.4	2800	0.72	2.5	57	70			
Footwall Waste	Baff2012	15573	MR1-12-224	199.8	201.6	Gneiss	<0.10			26000	<0.5	62	0.62	<0.09	7900	0.06	12	67	31	36000	16000	38	24000	810	1.5	870	11	18	750	<0.80	<0.70	1	12	2100	0.59	3.7	66	48			
Footwall Waste	Baff2012	15574	MR1-12-224	201.6	203.5	Gneiss	<0.10			29000	<0.5	60	0.97	<0.09	27000	0.04	9.3	26	18	44000	12000	58	40000	1300	3.7	480	9.2	4.1	690	<0.80	<0.70	1.5	14	1500	0.44	4.7	49	41			
Footwall Waste	Baff2012	15584	MR1-12-224	240.7	242.7	Gneiss	<0.10			32000	<0.5	110	0.73	<0.09	2600	<0.02	19	88	8.4	53000	19000	68	12000	1100	1.4	670	50	3.5	200	<0.80	<0.70	1.3	8	2000	0.5	3.4	62	149			
Footwall Waste	Baff2012	15595	MR1-12-224	242.7	244.7	Gneiss	<0.10			22000	<0.5	120	0.22	<0.10	1600	0.12	69	65	38000	14000	49	13000	560	1.9	670	11	4.8	446	<0.80	<0.70	1.9	5.7	1900	0.6	1.7	33	49				
Footwall Waste	Baff2012	15596	MR1-12-224	244.7	246.7	Gneiss	<0.10			22000	0.70	190	0.19	0.12	3800	<0.02	12	66	77	41000	19000	19	12000	520	1	610	15	8.7	490	3.3	<0.70	9.6	7	2800	0.5	2.9	34	62			
Footwall Waste	Baff2012	15597	MR1-12-224	246.7	248.6	Gneiss	<0.10			15000	0.50	190	0.21	<0.09	4100	<0.02	5.8	78	32	26000	12000	15	7900	400	0.4	730	8.8	9.3	160	1.8	<0.70	5	9.1	1900	0.32	4.4	32	35			
Footwall Waste	Baff2012	15664	MR1-12-226	138.4	140.4	Gneiss	<0.10			32000	1.1	380	1.1	0.11	2400	<0.02	9.3	76	12	44000	19000	13	18000	250	0.7	430	12	5.8	82	<0.80	<0.70	1.6	4.2	1800	0.46	3.1	31	16			
Footwall Waste	Baff2012	15665	MR1-12-226	140.4	142.4	Gneiss	<0.10			34000	<0.5	400	0.6	0.12	2200	<0.02	7.1	83	21	51000	20000	12	17000	300	2.3	480	8.5	3	1670	<0.80	<0.70	1.9	10	1600	0.67	1.7	33	49			
Footwall Waste	Baff2012	15666	MR1-12-226	142.4	144.1	Gneiss	<0.10			43000	<0.5	940	0.31	0.14	2000	<0.02	6.2	65	73000	31000	10	17000	1400	2.8	700	9.8	9.1	760	<0.80	<0.70	2.4	4	2800	0.69	4	38	7.6				
Footwall Waste	Baff2012	15667	MR1-12-226	144.1	146.0	Gneiss	<0.10			40000	<0.5	750	0.23	0.17	2200	<0.02	7	84	34	67000	29000	11	16000	170	1	690	9.8	9.6	990	<0.80	<0.70	2	3.9	2700	0.68	4.4	36	6.2			
Footwall Waste	Baff2012	15668	MR1-12-226	146.0	148.0	Gneiss	<0.10			33000	<0.5	370	0.86	0.14	1700	<0.02	8.3	100	7.7	42000	20000	24	18000	280	3.5	540	10	5.8	130	<0.80	<0.70	1	5	1600	0.5	2.8	25	23			
Footwall Waste	Baff2012	15669	MR1-12-226	148.0	150.0	Gneiss	<0.10			24000	<0.5	210	0.39	0.18	1500	<0.02	8.2	43	19	33000	15000	19	17000	390	0.9	330	18	4.2	70	<0.80	<0.70	0.7	2.6	1300	0.45	2.8	18	37			
Footwall Waste	Baff2012	15670	MR1-12-226	150.0	152.0	Gneiss	<0.10			32000	<0.5	350	0.71	0.12	1900	<0.02	11	100	10	39000	19000	24	23000	470	2.3	570	23	4.8	69	<0.80	<0.70	1.9	10	1600	0.6	1.7	33	49			
Footwall Waste	Baff2012	15671	MR1-12-226	152.0	154.0	Gneiss	<0.10			27000	<0.5	300	0.68	<0.09	1800	<0.02	8.7	76	5.2	36000	17000	16	16000	350	2.2	530	9.7	3.7	72	<0.80	<0.70	0.6	3.6	1500	0.52	1.4					

Table A-4: Elemental Content Results

Waste solid	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	Hg	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Sn	Sr	Ti	Tl	U	V	Y	Zn		
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
Footwall Waste	Baff2011	16144	ARD 2A SE	41.2	42.2	Metasediment	<0.10	<0.02	0.08	15000	0.60	85	0.22	<0.09	1900	0.05	6.2	6.4	6.6	23000	15000	25	8800	410	1.2	540	6.2	640	3.2		<0.80	<0.70	0.9	3.7	2400	0.37	2.7	36	8.9	39		
Footwall Waste	Baff2011	16150	ARD 2A SE	66.8	67.7	Metasediment	<0.10	<0.02	0.06	23000	1.0	200	0.12	7300	0.09	8	57	23	36000	21000	38	15000	860	0.8	950	7.7	620	9.3		<0.80	<0.70	0.9	16	2700	0.72	1.5	55	15	73			
Footwall Waste	Baff2011	16152	ARD 2A SE	78.6	79.5	Metasediment	<0.10	<0.02	0.19	9400	1.0	66	0.24	0.1	2200	0.08	3.5	10	48	15000	6700	9	5900	220	2.1	1800	4.2	210	10		<0.80	<0.70	1.2	22	1000	0.22	6.1	13	12	16		
Footwall Waste	Baff2011	16156	ARD 2A SE	92.7	93.8	Metasediment	<0.10	<0.02	0.70	9900	0.90	87	1.5	2.9	5900	0.23	3.2	97	78	17000	7600	19	4500	420	1.7	1600	3.9	120	1.2		<0.80	<0.70	1.1	33	780	0.37	7.4	11	20	26		
Footwall Waste	Baff2011	16360	MRI 04 38	182.2	183.2	Metasediment	<0.10	<0.02	0.06	36000	<0.5	290	0.52	<0.09	1700	0.06	14	58	5.1	51000	27000	12	20000	2800	2.2	580	32	760	11		<0.80	<0.70	1	4	2900	0.64	3.1	67	5.2	9.9		
Footwall Waste	Baff2011	16362	MRI 04 38	197.1	198.0	Metasediment	<0.10	<0.02	0.03	45000	<0.5	850	0.36	<0.09	1300	0.04	16	96	4.7	61000	33000	13	27000	4600	3.3	770	44	570	11		<0.80	<0.70	1.4	3	3600	0.8	3.1	90	4.4	12		
Footwall Waste	AMEC_2010	5146	ARD 2A NW	35.0	36.0	Schist	<0.10	<0.5	540	0.37	<0.09	2200	0.03	28	180	11	8900	6000	49	57000	810	31	650	70						<0.80	<0.70	1.2	4	6300	1.6	0.47	170	170	170			
Footwall Waste	AMEC_2010	5150	ARD 2A NW	59.0	60.0	Schist	<0.10	<0.5	3300	<0.5	350	0.6	3.1	3600	0.17	24	280	66	41000	21000	49	34000	550	2.9	74	430	110	3.7		<0.80	<0.70	2.7	7.1	3300	1.0	2.3	98	120	120			
Footwall Waste	AMEC_2010	5151	ARD 2A NW	65.0	66.0	Schist	<0.10	<0.5	<0.5	450	0.43	0.73	4900	1.1	23	310	150	43000	30000	43	33000	550	0.8	640	110	7.6			<0.80	<0.70	5.1	12	3800	1.3	2.7	73	270	270				
Footwall Waste	AMEC_2010	5152	ARD 2A NW	70.0	71.0	Schist	<0.10	<0.5	2900	<0.5	450	0.3	0.34	1400	2.1	11	74	260	41000	22000	32	16000	490	2.1	590	7.4	21		<0.80	<0.70	1.1	5.6	2600	0.86	7.1	34	270	270				
Footwall Waste	AMEC_2010	5153	ARD 2A NW	75.0	76.0	Schist	<0.10	<0.5	4900	<0.5	370	0.96	4.2	3700	0.56	24	100	170	65000	23000	69	42000	880	6.3	340	40	120		<0.80	<0.70	6	6	4800	0.74	2.6	100	270	270				
Footwall Waste	AMEC_2010	5154	ARD 2A NW	85.0	86.0	Schist	<0.10	<0.5	2000	<0.5	250	0.12	0.7	2300	0.14	7	75	20	31000	15000	22	9300	460	37	730	4.9	4.2		<0.80	<0.70	2.5	6.2	2800	0.47	2.1	33	71	71				
Footwall Waste	AMEC_2010	5155	ARD 2A NW	95.0	96.0	Schist	<0.10	<0.5	83	0.56	0.71	1100	0.26	4.3	110	12	21000	10000	31	10000	400	6.2	490	5.6	28			<0.80	<0.70	1.6	4.3	1400	0.33	2.2	1.9	100	100					
Footwall Waste	AMEC_2010	5156	ARD 2A NW	105.0	106.0	Schist	<0.10	<0.5	2300	<0.5	250	0.25	0.17	3200	0.27	8.3	72	15	41000	18000	24	12000	560	47	620	5	34		<0.80	<0.70	2.6	6.7	3700	0.62	2.4	38	95	95				
Footwall Waste	AMEC_2010	5170	ARD 2A SE	85.0	86.0	Schist	<0.10	<0.5	18000	0.70	93	0.54	0.34	11000	0.45	21	390	110	26000	15000	27	19000	1200	1.1	340	100			<0.80	0.8	0.7	36	2500	0.94	3.9	58	36	36				
Footwall Waste	AMEC_2010	5173	ARD 2A SE	103.0	104.0	Schist	<0.10	<0.5	15000	0.50	70	0.31	<0.09	10000	0.1	15	370	34	23000	13000	34	14000	260	1.3	430	65	7		<0.80	0.8	<0.50	26	2500	0.76	2.1	63	29	29				
Footwall Waste	AMEC_2010	5176	ARD 2B NW	14.0	15.0	Schist	<0.10	<0.5	92000	0.80	95	2.4	0.69	3400	0.25	34	700	13	94000	17000	35	86000	860	0.7	570	150	13		<0.80	<0.70	1.6	3.9	3100	1.4	3.2	83	170	170				
Footwall Waste	AMEC_2010	5177	ARD 2B NW	18.0	19.0	Schist	<0.10	<0.5	8000	13	67	3.6	<0.09	4000	2.6	36	780	8	91000	25000	26	86000	280	53	540	180	12		<0.80	<0.70	1.3	5.2	3700	0.94	1.9	140	450	450				
Footwall Waste	AMEC_2010	5178	ARD 2B NW	24.0	25.0	Schist	<0.10	<0.5	71000	0.90	2.6	0.63	0.09	5900	0.26	73	2200	67	77000	440	7	74000	430	0.9	30	620	27		<0.80	0.8	<0.50	3.9	380	0.21	1.8	91	100	100				
Footwall Waste	AMEC_2010	5179	ARD 2B NW	35.0	36.0	Schist	<0.10	<0.5	55000	<0.5	160	5.1	0.1	880	0.03	10	100	1.9	38000	21000	52	45000	490	2.1	390	26	14		<0.80	0.7	1.3	4.3	840	0.61	15	27	42	42				
Footwall Waste	AMEC_2010	5180	ARD 2B NW	47.0	48.0	Schist	<0.10	<0.5	73000	<0.5	270	3.3	<0.09	1800	<0.02	6.4	17	0.7	31000	35000	92	57000	440	0.8	630	4.9	12		<0.80	<0.70	1.5	15	440	0.73	8.2	31	46	46				
Footwall Waste	AMEC_2010	5181	ARD 2B NW	55.0	56.0	Schist	<0.10	<0.5	84000	<0.5	490	3.2	<0.09	3100	0.02	14	34	7.6	55000	43000	81	56000	420	0.6	780	23	26		<0.80	<0.70	1.8	14	2500	0.9	2.8	79	79	79				
Footwall Waste	Baff2011	16092	ARD 2A NW	36.6	37.6	Schist	<0.10	<0.02	0.04	45000	<0.5	340	0.45	<0.09	7600	0.09	25	190	23	65000	35000	48	39000	990	2.3	490	64	340	18		<0.80	<0.70	0.7	8.6	5300	0.9	0.42	210	5.4	33		
Footwall Waste	Baff2011	16098	ARD 2A NW	56.7	57.6	Schist	<0.10	<0.02	0.45	30000	<0.5	430	0.43	0.59	2500	0.32	19	110	200	48000	25000	44	32000	640	2.7	490	54	280	4		<0.80	<0.70	3.3	6.6	3600	1.3	2.4	120	8.3	170		
Footwall Waste	Baff2011	16100	ARD 2A NW	68.1	69.3	Schist	<0.10	<0.02	0.78	11000	<0.5	160	0.16	0.72	1600	0.37	5.9	87	260	17000	9200	15	10000	320	5.8	360	21	230	13		<0.80	<0.70	3	5.8	670	0.37	7	17				

Table A-4: Elemental Content Results

Waste solid	Sampling Program	Sample ID	Borehole ID	From (m)	To (m)	Lithology	Hg	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Sn	Sr	Ti	Tl	U	V	Y	Zn		
							µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
Footwall Waste	Baff2012	15557	MR1-12-224	168.3	169.0	Volcanic Tuff	<0.10			12000	<0.5	26	0.34	0.19	13000	0.28	6.2	54	26	20000	3300	17	12000	670	1.1	310			7.8	260	<0.80	<0.70	1	19	1000	0.09	2.3	25	42			
Footwall Waste	Baff2012	15561	MR1-12-224	174.6	176.8	Volcanic Tuff	<0.10			18000	<0.5	110	0.25	<0.09	2300	0.04	8.3	61	14	26000	14000	20	18000	540	0.3	860	23		10	200	<0.80	<0.70	2	7.8	1600	0.47	3.8	30	50			
Footwall Waste	Baff2012	15562	MR1-12-224	176.8	179.1	Volcanic Tuff	<0.10			23000	<0.5	140	0.21	<0.09	8600	0.02	10	72	14	33000	14000	39	22000	630	1.6	730	16		5.4	260	<0.80	<0.70	2.5	13	1900	0.49	3.6	46	52			
Footwall Waste	Baff2012	15563	MR1-12-224	179.1	181.1	Volcanic Tuff	<0.10			24000	<0.5	140	0.22	<0.09	8800	0.06	12	43	26	39000	20000	25	13000	520	1.3	950	12		7	180	<0.80	<0.70	3.3	7.7	3100	0.69	3.4	59	70			
Footwall Waste	Baff2012	15564	MR1-12-224	181.1	183.1	Volcanic Tuff	<0.10			20000	<0.5	120	0.19	<0.09	4000	0.08	9.2	70	29	32000	16000	20	9700	420	1.9	950	9.6		8.4	440	<0.80	<0.70	2.9	10	2500	0.53	5.2	48	53			
Footwall Waste	Baff2012	15565	MR1-12-224	183.1	185.1	Volcanic Tuff	<0.10			22000	<0.5	130	0.16	<0.09	3600	0.16	11	41	42	37000	18000	21	10000	420	0.8	990	10		11	610	<0.80	<0.70	3.1	9.4	2900	0.58	3.8	53	63			
Footwall Waste	Baff2012	15566	MR1-12-224	185.1	187.1	Volcanic Tuff	<0.10			21000	<0.5	120	0.29	<0.09	8100	0.17	9.5	60	22	32000	16000	20	11000	550	1.4	970	10		20	520	<0.80	<0.70	3.7	13	2500	0.5	4.7	45	62			
Footwall Waste	Baff2012	15567	MR1-12-224	187.1	189.1	Volcanic Tuff	<0.10			24000	<0.5	130	0.29	<0.09	5500	0.16	9.2	58	18	34000	18000	27	13000	550	1.5	1100	9.5		9.8	400	<0.80	<0.70	3	12	2700	0.55	4.2	44	63			
Footwall Waste	Baff2012	15568	MR1-12-224	189.1	191.3	Volcanic Tuff	<0.10			19000	<0.5	85	0.23	<0.09	2300	0.17	11	36	32	30000	15000	22	9200	340	0.7	730	10		6.4	710	<0.80	<0.70	2	7.1	2400	0.49	5.7	35	49			
Footwall Waste	Baff2012	15569	MR1-12-224	191.3	193.5	Volcanic Tuff	<0.10			19000	<0.5	78	0.21	<0.09	3200	0.14	9.5	53	5.5	28000	15000	23	11000	430	2.7	680	13		3.7	73	<0.80	<0.70	1.4	5.7	2300	0.5	1.8	45	53			
Footwall Waste	Baff2012	15570	MR1-12-224	193.5	195.8	Volcanic Tuff	<0.10			19000	<0.5	50	0.25	<0.09	1600	0.13	10	31	9.3	26000	14000	24	12000	440	0.5	580	18		19	67	<0.80	<0.70	0.8	4.5	1900	0.45	1.4	37	59			
Footwall Waste	Baff2012	15585	MR1-12-224	224.3	226.3	Volcanic Tuff	<0.10			22000	<0.5	59	0.32	<0.09	2700	<0.02	8.9	39	12	27000	16000	25	15000	730	1	900	15		2.5	74	<0.80	<0.70	0.9	5	1800	0.54	4.2	41	30			
Footwall Waste	Baff2012	15586	MR1-12-224	226.3	228.3	Volcanic Tuff	<0.10			24000	<0.5	76	0.28	<0.09	1800	<0.02	12	41	11	33000	19000	25	15000	990	0.5	710	13		7.8	110	<0.80	<0.70	1.5	4	2000	0.62	2.1	45	100			
Footwall Waste	Baff2012	15587	MR1-12-224	228.3	229.9	Volcanic Tuff	<0.10			21000	<0.5	65	0.23	<0.09	1400	<0.02	12	39	3.1	31000	17000	22	12000	410	0.8	680	20		1.2	39	<0.80	<0.70	0.6	4.1	2400	0.62	1.2	53	35			
Footwall Waste	Baff2012	15588	MR1-12-224	229.9	231.4	Volcanic Tuff	<0.10			24000	<0.5	94	0.25	<0.09	2400	<0.02	11	28	3.3	34000	18000	26	14000	490	0.4	770	17		1.5	70	<0.80	<0.70	1.1	5.7	2600	0.66	1.8	61	40			
Footwall Waste	Baff2012	15589	MR1-12-224	231.4	232.0	Volcanic Tuff	<0.10			24000	<0.5	70	0.22	<0.09	2200	<0.02	12	37	7.4	36000	20000	23	14000	490	0.8	560	16		1.8	64	<0.80	<0.70	1.9	4.5	2800	0.69	1.3	64	40			
Footwall Waste	Baff2012	15590	MR1-12-224	232.0	234.0	Volcanic Tuff	<0.10			11000	<0.5	57	0.28	<0.09	2800	0.04	3.8	86	20	15000	7200	13	6100	410	0.8	690	4.7		6.6	290	<0.80	<0.70	1.1	7.6	730	0.22	6.1	10	18			
Footwall Waste	Baff2012	15591	MR1-12-224	234.0	236.2	Volcanic Tuff	<0.10			14000	<0.5	90	0.28	<0.09	1800	<0.02	5.4	80	9.3	20000	11000	14	8500	550	1.7	650	7.2		4.6	55	<0.80	<0.70	1.6	6.2	1300	0.35	5.1	19	28			
Footwall Waste	Baff2012	15592	MR1-12-224	236.2	238.4	Volcanic Tuff	<0.10			23000	<0.5	53	0.59	<0.09	1400	<0.02	11	37	5.4	36000	12000	39	25000	640	0.6	510	19		2.4	340	<0.80	<0.70	1.7	5.1	1400	0.4	4.4	47	34			
Footwall Waste	Baff2012	15593	MR1-12-224	238.4	240.7	Volcanic Tuff	<0.10			29000	<0.5	49	0.85	<0.09	2884	<0.02	15	49	5.3	46000	11000	53	32000	1000	0.9	450	29		1.9	130	<0.80	<0.70	1.7	6.7	1000	0.33	3.7	43	56			
Footwall Waste	Baff2012	15598	MR1-12-224	248.6	250.6	Volcanic Tuff	<0.10			14000	<0.5	82	0.21	<0.09	19000	0.05	5.3	76	13	22000	10000	11	9800	900	0.5	850	5		5.8	540	<0.80	<0.70	0.7	24	1500	0.27	5.7	30	31			
Footwall Waste	Baff2012	15599	MR1-12-224	250.6	252.0	Volcanic Tuff	<0.10			21000	<0.5	150	0.2	<0.09	18800	<0.02	11	70	15	34000	17000	18	15000	1100	3	1800	21		5.3	300	<0.80	<0.70	2.1	20	2300	0.45	2.9	48	63			
Footwall Waste	Baff2012	15577	MR1-12-225	126.8	128.8	Volcanic Tuff	<0.10			23000	<0.5	230	0.3	<0.09	1368	0.02	13	64	21	31000	17000	21	13000	560	0.3	1300	41		3.4	330	<0.80	<0.70	<0.50	4.4	1700	0.50	1.7	48	63			
Footwall Waste	Baff2012	15758	MR1-12-225	126.8	128.8	Volcanic Tuff	<0.10			37000	<0.5	350	0.67	0.25	5000	<0.02	17	81	43	51000	25000	37	22000	1100	0.5	790	40		5.6	80	<0.80	<0.70	0.6	9	2500	0.69	1.3	58	74			
Footwall Waste	Baff2012	15759	MR1-12-225	128.9	131.0	Volcanic Tuff	<0.10			30000	<0.5	270	0.62	1	2000	<0.02	15	74	26	38000	19000	26	21000	710	0.9	440	48		14	68	<0.80	<0.70	0.6	5.3	1800	0.5	0.69	42	65			

Table A-4: Elemental Content Results

Waste solid	Sampling Program	Sample ID	Borehole ID	From To (m)	Lithology	Hg	Au	Ag	Al	As	Ba	Be	Bi	Cs	Cd	Co	Cr	Cu	Fe	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Sn	Sr	Ti	Tl	U	V	Y	Zn	
						µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
Hanging Wall Schist	Baff2011	16596	MR1 05 77	70.7	71.7	Amphibolite	<0.10	<0.02	0.09	23000	<0.5	33	0.07	<0.09	25000	0.08	19	65	110	21000	2400	10	7900	550	0.5	1400	69	240	2	<0.80	<0.70	<0.50	18	1400	0.07	0.024	52	3.6	38	
Hanging Wall Schist	Baff2011	16604	MR1 05 77	102.8	103.8	Amphibolite	<0.10	<0.02	0.08	42000	1.3	260	0.16	<0.09	12000	0.05	41	210	15000	17000	28	27000	230	0.5	460	110	440	3.3	<0.80	<0.70	<0.50	18	4000	0.27	0.012	180	1.1	46		
Hanging Wall Schist	Baff2011	16606	MR1 05 77	111.3	112.3	Amphibolite	<0.10	<0.02	0.12	50000	1.1	640	0.12	<0.09	320	0.22	50	250	12000	69000	25000	56	32000	330	1.5	650	140	43	18	<0.80	<0.70	<0.50	10	2800	0.26	0.012	170	0.63	59	
Hanging Wall Schist	Baff2011	16608	MR1 05 77	180.8	181.8	Amphibolite	<0.10	<0.02	0.02	36000	<0.5	1.2	0.66	<0.09	75	<0.02	19	250	13	34000	150	6	46000	160	0.3	60	110	16	0.87	<0.80	<0.70	<0.50	10	1600	0.26	0.012	170	0.63	59	
Hanging Wall Schist	Baff2011	16630	MR1 08 154	254.0	254.9	Amphibolite	<0.10	<0.02	<0.01	54000	1.1	210	0.22	<0.09	840	<0.02	6.8	68	1.8	130000	4300	30	47000	880	2.8	130	12	200	3.4	<0.80	<0.70	<0.50	3.6	730	0.1	2.5	2.4	4	39	
Hanging Wall Schist	Baff2011	16224	MR1 05 53	37.3	38.3	Amphibolite	<0.10	<0.02	0.07	57000	0.60	66	4.7	<0.09	3700	0.03	33	880	1.5	150000	2100	63	93000	1600	0.4	190	280	1400	1.2	<0.80	<0.70	1.1	12	1600	0.05	1.3	80	3.9	49	
Hanging Wall Schist	Baff2011	16226	MR1 05 53	45.8	46.7	Amphibolite	<0.10	<0.02	0.11	64000	0.60	42	5.1	<0.09	4200	0.03	30	660	3.9	98000	2100	40	98000	2200	0.4	180	200	1600	1.3	<0.80	<0.70	1.1	11	2100	0.05	1.2	96	5.4	57	
Hanging Wall Schist	Baff2011	16232	MR1 05 53	131.8	132.8	Amphibolite	<0.10	0.07	0.49	21000	75	3.3	0.81	1.6	2500	0.03	31	43	5.8	250000	150	43	75000	440	2.6	170	89	660	18	<0.80	<0.70	0.8	16	1600	0.06	0.96	30	1.9	33	
Hanging Wall Schist	Baff2011	16400	MR1 05 38	12.1	12.1	Amphibolite	<0.10	<0.02	0.16	44000	1.4	84	0.21	<0.09	40	<0.02	0.16	460	1.4	134000	1600	20	14000	20	0.3	160	180	10	<0.80	<0.70	0.8	16	1600	0.26	0.012	170	0.63	59		
Hanging Wall Schist	Baff2011	16326	MR1 08 141	212.2	213.1	Banded Iron Formation	<0.10	<0.02	0.01	1700	49	2.1	0.27	<0.09	110000	0.13	6.2	10	3.9	360000	96	<2.00	45000	7700	1.3	110	8.5	9	2	<0.80	0.8	<0.50	23	58	<0.02	0.049	5	5.2	7.1	
Hanging Wall Schist	Baff2011	16432	MR1 05 47	203.4	204.5	Banded Iron Formation	<0.10	<0.02	0.06	4100	16	4.5	0.29	<0.09	63000	<0.02	2.8	16	6.9	43000	16000	<2.00	30000	14000	2.8	270	18	1400	1.4	<0.80	<0.70	<0.50	18	15	<0.02	0.044	2	1.4	5.9	
Hanging Wall Schist	Baff2011	16436	MR1 05 47	230.3	231.2	Banded Iron Formation	<0.10	0.16	0.20	3200	13	1.8	0.23	0.33	74000	<0.09	10	12	44	460000	82	<2.00	33000	8700	0.7	99	20	620	2.7	<0.80	0.9	0.7	20	95	0.02	0.076	8	6.4	6.5	
Hanging Wall Schist	Baff2011	16468	MR1 05 47	235.2	236.3	Banded Iron Formation	<0.10	<0.02	0.10	5300	4.6	8.3	0.41	<0.02	5.8	17	19	33000	870	3	17000	410	1.1	290	15	1000	2.6	<0.80	0.9	<0.50	12	110	0.02	0.38	7	4.7	4.7			
Hanging Wall Schist	Baff2011	16474	MR1 05 46	156.7	157.6	Banded Iron Formation	<0.10	<0.02	0.02	2500	0.8	1.5	0.19	<0.09	1100	<0.02	1.7	17	1.2	480000	100	3	13000	330	0.5	100	3.8	300	1.1	<0.80	1	<0.50	2	26	<0.02	0.14	6	2.6	5.9	
Hanging Wall Schist	Baff2011	16476	MR1 05 46	161.4	162.5	Banded Iron Formation	<0.10	<0.02	0.01	2700	2.7	2.5	0.21	<0.09	1300	<0.02	1.5	18	4.3	490000	130	2	12000	380	0.4	130	3.7	410	1.6	<0.80	3.7	<0.50	3.2	27	<0.02	0.097	5	2.4	14	
Hanging Wall Schist	Baff2011	16514	MR1 04 45	236.5	237.6	Banded Iron Formation	<0.10	<0.02	0.03	2700	5.8	0.59	0.34	<0.09	82000	0.17	5.1	17	24	420000	54	<2.00	41000	10000	1.4	74	9.1	<2.00	1.8	<0.80	0.9	0.5	24	120	<0.02	0.22	7	5.4	8.7	
Hanging Wall Schist	Baff2011	16562	MR1 09 176	208.0	208.9	Banded Iron Formation	<0.10	<0.02	0.09	1100	9.6	1.8	1.3	0.1	1600	<0.02	4.6	31	120	490000	70	<2.00	5300	380	1.1	56	5.7	550	1.9	<0.80	<0.70	0.7	3.7	11	<0.02	0.11	<1.00	1.9	6.1	
Hanging Wall Schist	Baff2011	16564	MR1 09 176	215.4	216.4	Banded Iron Formation	<0.10	<0.02	<0.01	1300	2.7	3.3	0.8	<0.09	1000	<0.02	1.2	25	2.6	510000	120	<2.00	6600	450	1.8	79	3.3	310	0.67	<0.80	<0.70	<0.50	4.7	31	<0.02	0.058	1	1.3	5.7	
Hanging Wall Schist	Baff2012	4925	MR1-12-222	173.3	175.3	Banded Iron Formation	<0.10			620	3.6	0.83	0.13	<0.09	480	<0.02	2.2	46	3.2	110000	76	<2.00	2900	180	0.7	83	10		<0.80	0.9	<0.50	2	13	<0.02	0.043	<1.00		2.2		
Hanging Wall Schist	Baff2012	4926	MR1-12-222	175.3	177.3	Banded Iron Formation	<0.10			310	4.5	0.3	0.08	<0.09	300	<0.02	1.9	42	1.4	130000	74	<2.00	1500	46	0.6	85	11		<0.80	<0.70	<0.50	1.7	1.2	<0.02	0.008	<1.00		2.2		
Hanging Wall Schist	Baff2012	4927	MR1-12-222	177.3	179.3	Banded Iron Formation	<0.10			320	8	0.34	0.07	<0.09	370	<0.02	1.6	32	1.3	120000	64	<2.00	4000	48	0.4	80	11		<0.80	<0.70	<0.50	2.1	0.5	<0.02	0.005	<1.00		2.4		
Hanging Wall Schist	Baff2012	4928	MR1-12-222	179.3	181.3	Banded Iron Formation	<0.10	<0.02	<0.01	340	5.1	0.6	0.06	<0.09	440	<0.02	1.4	33	2.5	120000	70	<2.00	3800	45	0.4	78	7.3		<0.80	<0.70	<0.50	3.2	2.5	<0.02	0.02		2.4			
Hanging Wall Schist	Baff2012	4929	MR1-12-222	181.3	183.3	Banded Iron Formation	<0.10			3300	27	0.83	0.02	0.1	1460	<0.02	1.9	11	6.1	86000	72	<2.00	3300	140	1.5	61	5.1		<0.80	1.5	<0.50	14	20	0.06	0.042	4	18.3			
Hanging Wall Schist	Baff2012	4930	MR1-12-222	183.3	185.3	Banded Iron Formation	<0.10			1100	43	1.1	0.11	<0.09	700	<0.02	7	12	22	350000	55	<2.00	5500	140	4	56	6.1		<0.80	2.8	<0.50	9.4	13	0.05	0.045	3	5.9			
Hanging Wall Schist	Baff2012	4931	MR1-12-222	185.3	187.3	Banded Iron Formation	<0.10			1200	27	1.6	0.13	0.1	6200	<0.02	13	11	9.3	370000	71	<2.00	5500	1200	0.6	8.6	5.2	35000	<0.80	2.8	<0.50	13	19	0.09	0.032	4	6.9			
Hanging Wall Schist	Baff2012	4932	MR1-12-222	187.3	189.3	Banded Iron Formation	<0.10			2000	19	1.9	0.16	0.22	46000	<0.02	8.6	11	14	360000	72	<2.00	21000	9500	0.9	120	6.1		<0.80	<0.70	<0.50	18	17	0.03	0.02	5	7.1			
Hanging Wall Schist	Baff2012	4933	MR1-12-222	189.3	191.3	Banded Iron Formation	<0.10			760	15	1.4	0.14	0.14	710	<0.02	4	42	18	110000	65	<2.00	2700	140	0.7	72	4.3	210		<0.80	1	<0.50	8.6	16	<0.02	0.016	3	4.7		
Hanging Wall Schist	Baff2012	4934	MR1-12-222	191.3	193.3	Banded Iron Formation	<0.10			1200	26	2.8	0.19	0.41	790	<0.02	6.9	52	27	280000	70	<2.00	4900	120	1.2	56	9.1		<0.80	<0.70	<0.50	8.8	49	0.05	0.041	11	5.8			
Hanging Wall Schist	Baff2012	4935	MR1-12-222	193.3	194.7	Banded Iron Formation	<0.10			2100	28	3.1	0.21	0.14	1700	<0.02	8.7	28	18	400000	63	<2.00	5200	160	0.8	52	8.9		<0.80	1.2	<0.50	15	43	0.04	0.11	11	10			
Hanging Wall Schist	Baff2012	4936	MR1-12-222	194.7	196.3	Banded Iron Formation	<0.10			47000	2.2	16	1.6	<0.09	3400	<0.02	13	450	3.1	160000	1200	30	73000	1200	0.8	120	97		<0.80	<0.70	<0.50	15	1300	0.02	0.42	92	58			
Hanging Wall Schist	Baff2012	4937	MR1-12-222	196.3	198.3	Banded Iron Formation	<0.10			800	5.7	1.1	0.23	<0.09	1100	<0.02	3.1	44	5.5	360000	60	<2.00	2500	110	0.6	61	4.8		<0.80	<0.70	<0.50	8.8	25	<0.02	0.032	4	13			
Hanging Wall Schist	AMEC_2010	MRARD10 109	MR1 08 144	191.8	191.8	Gneiss	<0.10	<0.02	0.09	44000	<0.50	420	0.13	<0.09	22000	<0.20	33	760	55	38000	16000	23	21000	1230	0.5	1370	130	0.85	<0.80	<0.70	<0.50	1.5	120	0.02	0.016	3	4.7			
Hanging Wall Schist	AMEC_2010	MRARD10 125	MR1 08 144	195.0	196.0	Gneiss	<0.10	<0.02	0.08	42000	<0.50	260	1.1	<0.09	920	<0.																								

Table A-4: Elemental Content Results

Waste solid	Sampling Program	Sample ID	Borehole ID	From To (m)	Lithology	Hg	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Sn	Sr	Ti	Tl	U	V	Y	Zn		
Hangang Wall Schist	Baff2011	16418	MR1 05 47	136.9 137.9	Schist	<0.10	0.03	0.18	77000	3	3	1.6	<0.09	1300	<0.02	21	1300	51	160000	370	17	94000	3300	0.7	140	77	320	3.2			<0.80	1	1.4	3.5	460	0.05	0.88	40	3.8	71	
Hangang Wall Schist	Baff2011	16420	MR1 05 47	143.8 144.9	Schist	<0.10	<0.02	0.49	45000	130	1.5	0.5	0.9	730	<0.02	92	620	66	130000	220	11	59000	2300	2.3	150	150	120	9.2			<0.80	5.9	0.9	3.3	55			62	3.1	55	
Hangang Wall Schist	Baff2011	16422	MR1 05 47	158.3 159.3	Schist	<0.10	<0.02	0.14	81000	3.2	7.8	2.7	0.1	1200	0.04	16	630	5.4	130000	830	17	99000	4100	6.2	150	93	250	2.1			<0.80	<0.70	2.6	5	910	0.07	1.3	63	3.9	93	
Hangang Wall Schist	Baff2011	16424	MR1 05 47	165.3 174.2	Schist	<0.10	<0.02	0.22	48000	6.3	25	1.8	0.14	1500	0.11	22	73	13	60000	1400	9	65000	2700	0.5	210	76	520	3.8			<0.80	0.9	1.7	4	500			5	5.2	110	
Hangang Wall Schist	Baff2011	16426	MR1 05 47	173.2 174.2	Schist	<0.10	<0.02	0.26	73000	1.2	2.9	0.14	0.65	103	17	10	2.2	88000	950	15	95000	4100	0.1	170	89	81	6.9			<0.80	2	3.3	3.8	630	0.02	1.7	7	4.6	160		
Hangang Wall Schist	Baff2011	16428	MR1 05 47	178.0 179.0	Schist	<0.10	<0.02	0.2	79000	12	4.3	3.1	0.35	1400	0.04	17	170	20	140000	510	15	98000	4100	3	160	77	340	5			<0.80	1.2	2.5	3.7	920	0.06	0.61	58	4.4	120	
Hangang Wall Schist	Baff2011	16430	MR1 05 47	189.2 190.2	Schist	<0.10	0.04	0.21	80000	<0.50	6.5	2.6	0.37	910	0.08	10	310	7.6	160000	640	21	95000	4100	15	150	62	100	2			<0.80	<0.70	2.2	4.6	420	0.03	2.2	8	4.4	56	
Hangang Wall Schist	Baff2011	16434	MR1 05 47	224.1 225.1	Schist	<0.10	<0.02	0.16	72000	0.6	9.5	0.11	0.11	910	0.05	5.5	14	1.5	110000	830	8	89000	3200	1.2	140	12	210	2			<0.80	<0.70	3.6						6.8	54	
Hangang Wall Schist	Baff2011	16472	MR1 04 45	83.6 83.6	Schist	<0.10	<0.03	0.16	61000	3.8	1.5	0.35	0.40	50	0.02	10	60	0.16	120000	1400	25	32000	1200	1.5	97	290	3.5			<0.80	1.1	<0.50	7.9	230	0.12	0.01	19	2.1	46		
Hangang Wall Schist	Baff2011	16500	MR1 04 45	248.9 185.9	Schist	<0.10	<0.02	0.16	44000	3.2	1.5	0.99	0.16	2400	<0.02	22	460	71	190000	100	20	92000	2000	0.4	130	150	610	2.9			<0.80	<0.70	0.6	6.6	23	92	<0.02	0.66	51	3.5	56
Hangang Wall Schist	Baff2011	16506	MR1 04 45	205.5 206.6	Schist	<0.10	<0.02	0.13	44000	1.4	2.5	1.7	0.19	460	<0.02	21	390	21	220000	120	32	38000	940	0.4	120	180	10	2			<0.80	<0.70	1.3	6.3	200	<0.02	0.96	59	2.8	30	
Hangang Wall Schist	Baff2011	16508	MR1 04 45	213.9 214.9	Schist	<0.10	<0.02	0.19	60000	2.2	1.1	0.88	0.31	810	<0.02	33	450	40	270000	120	18	74000	1300	0.3	95	240	24	2.3			<0.80	<0.70	1.4	8.4	170	<0.02	0.8	72	3.2	56	
Hangang Wall Schist	Baff2011	16510	MR1 04 45	223.0 224.0	Schist	<0.10	<0.02	0.20	31000	0.6	24	1.5	0.16	1100	<0.02	35	290	32	120000	5200	22	18000	1800	0.2	240	150	3	35			<0.80	0.8	0.6	4.5	140	0.06	0.95	51	1.9	21	
Hangang Wall Schist	Baff2011	16512	MR1 04 45	233.7 234.7	Schist	<0.10	0.05	0.30	69000	13	1.4	0.53	0.98	400	0.03	30	300	59	160000	140	5	56000	3200	3.6	120	150	37	3.6			<0.80	<0.70	<0.50	1.6	240	0.05	3.7	66	3	91	
Hangang Wall Schist	Baff2011	16546	MR1 09 176	155.6 156.6	Schist	<0.10	<0.02	0.17	84000	1.2	25	4.7	0.26	1600	0.05	35	700	100	110000	2700	20	99000	4200	1.7	120	110	450	3.3			<0.80	<0.70	1.7	4.8	2000	0.11	0.59	85	2.6	74	
Hangang Wall Schist	Baff2011	16550	MR1 09 176	166.5 167.5	Schist	<0.10	<0.02	0.06	68000	1.4	1.3	0.36	<0.09	1300	<0.02	20	130	25	160000	930	6	63000	570	3	77	52	450	1.7			<0.80	<0.70	<0.50	5.8	400	<0.02	0.2	140	1.3	66	
Hangang Wall Schist	Baff2011	16552	MR1 09 176	173.7 174.7	Schist	<0.10	<0.02	0.08	42000	0.7	81	2	0.11	890	<0.03	3.9	81	5.7	66000	820	41	29000	790	8.2	270	55	220	6.8			<0.80	<0.70	2.4	6.5	610	0.17	2.3	5	6	25	
Hangang Wall Schist	Baff2011	16556	MR1 09 176	193.6 194.6	Schist	<0.10	<0.02	0.01	24000	1.1	6.3	1.6	0.1	800	0.06	7.7	170	3.4	28000	760	26	21000	420	1.6	210	44	2000	3.1			<0.80	<0.70	<0.50	1.7	340	<0.02	2.7	25	10	12	
Hangang Wall Schist	Baff2011	16560	MR1 09 176	204.3 205.3	Schist	<0.10	<0.02	<0.01	43000	<0.50	88	3.6	<0.09	5400	0.04	13	170	2.1	78000	3900	16	38000	800	4.7	160	30	2300	5.8			<0.80	<0.70	<0.50	13	650	0.21	2.3	85	9.5	28	
Hangang Wall Schist	Baff2011	16570	MR1 09 172	114.3 115.3	Schist	<0.10	<0.02	0.07	62000	1.4	28	1.3	0.41	2000	0.03	9.7	54	34	260000	1000	36	77000	1500	17	80	30	670	4.1			<0.80	<0.70	1.1	8.9	610	0.02	1.7	61	3.8	61	
Hangang Wall Schist	Baff2011	16598	MR1 05 77	76.5 77.5	Schist	<0.10	<0.02	0.03	26000	<0.50	17	0.07	<0.09	24000	0.06	13	60	72	14000	1700	8	6400	340	0.5	950	37	290	0.93			<0.80	<0.70	<0.50	21	1300	0.03	0.02	55	3.2	23	
Hangang Wall Schist	Baff2011	16608	MR1 08 154	105.7 106.7	Schist	<0.10	<0.02	0.10	49000	1.6	30	2.6	0.12	1600	<0.02	26	730	31	140000	1300	36	72000	1400	1.2	120	260	360	2.2			<0.80	<0.70	0.8	7.2	480	<0.02	0.59	51	2.4	39	
Hangang Wall Schist	Baff2011	16620	MR1 08 154	113.4 114.4	Schist	<0.10	<0.02	0.10	55000	1.7	12	4.2	0.12	2500	0.03	28	500	35	140000	1800	44	88000	1600	1.7	140	130	540	1.2			<0.80	<0.70	1.7	3.4	560	0.03	0.57	62	3.4	46	
Hangang Wall Schist	Baff2011	16672	MR1 08 146	92.3 93.3	Schist	<0.10	<0.02	<0.01	42000	<0.50	0.51	0.13	<0.09	570	<0.02	21	180	6	38000	51	5	51000	340	0.6	49	73	120	0.28			<0.80	<0.70	<0.50	0.34	220	<0.02	0.003	91	1.2	26	
Hangang Wall Schist	Baff2011	16674	MR1 08 146	103.3 104.3	Schist	<0.10	<0.02	0.07	24000	<0.50	160	0.04	<0.09	5200	<0.02	19	140	96	24000	5000	30	31000	110	0.2	200	81	84	2.9			<0.80	<0.70	<0.50	7	1050	0.08	0.004	44	0.87	19	
Hangang Wall Schist	Baff2011	16676	MR1 08 146	114.9 115.9	Schist	<0.10	<0.02	0.04	46000	<0.50	3.7	0.81	0.09	350	<0.02	54	1120	78	85000	93	9	37000	600	1.3	78	930	78	0.59			<0.80	<0.70	<0.50	0.89	370	<0.02	0.05	84	0.65	44	
Hangang Wall Schist	Baff2011	16712	MR1 08 156	84.1 85.1	Schist	<0.10	<0.02	0.01	4800	0.6	0.4	<0.09	1000	<0.02	48	740	91	88000	100	14	510	4000	310	1.4	510	240	1.1			<0.80	<0.70	<0.50	0.12	0.01	0.11	19	2.1	64			
Hangang Wall Schist	Baff2011	16714	MR1 08 156	92.0 93.1	Schist	<0.10	<0.02	<0.01	53000	<0.50	190	0.04	<0.09	1100	<0.02	53	230	60	88000	16000	55	37000	900	1.9	280	140	320	3.1			<0.80	<0.70	<0.50	5.6	1430	0.17	0.008	160	2.8	25	
Hangang Wall Schist	Baff2011	16716	MR1 08 156	100.2 101.1	Schist	<0.10	0.04	0.03	46000	<0.50	2.1	0.38	<0.09	5000	0.07	28	290	50	86000	160	9	54000	550	1	76	78	2200	2.2			<0.80	<0.70	<0.50	10	410	<0.02	1.6	60	2.8	47	
Hangang Wall Schist	Baff2011	16740	MR1 06 84	16.6 17.6	Schist	<0.10	<0.02	<0.01	39000	2.1	2.6	0.23	<0.09	710	0.14	12	230	9.2	82000	130	12	31000	150	2.6	86	110	340	5.3			<0.80	<0.70	<0.50	7.2	180	<0.02	1	35	2.8	145	
Hangang Wall Schist	Baff2011	16742	MR1 06 84	24.7 25.6	Schist	<0.10	<0.02	0.04	35000	1.5	1.3	0.12	<0.09	110	0.12	13	250	22	68000	200	8	25000	77	1.9	86	110	58	0.65			<0.80	<0.70	<0.50	0.85	310	<0.02	1.4	40	2.1	42	
Hangang Wall Schist	Baff2011	16744	MR1 06 84	35.7 36.7	Schist	<0.10	<0.02	0.01	38000	0.6	1	0.3	<0.09	750	0.02	29	640	6.2	120000	82	10	55000	750	1.6	97	290	1.6			<0.80	<0.70	<0.50	0.12	0.01	0.11	19	2.1	64			
Hangang Wall Schist	Baff2011	16748	MR1 06 84	53.2 54.3	Schist	<0.10	<0.02	0.02	37000	3.8	6.1	0.91	<0.09	1400	0.04	13	280	11	340000	2400	14	31000	160	1.9	120	390	53	0.93			<0.80	<0.70	<0.50	1.5	250	<0.02	1	64	1.5	65	
Hangang Wall Schist	Baff2012	4905	MR1																																						

Table A-4: Elemental Content Results

Waste solid	Sampling Program	Sample ID	Borehole ID	From To (m)	Lithology	Hg	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Cr	Cu	Fe	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Sn	Sr	Ti	Tl	U	V	Y	Zn	
						µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
Hanging Wall Waste	AMEC_2010	MRARD10 008	MR1 09 176	60.0 61.0	Metasediment	<0.10			59000	0.7	330	0.74	<0.09	1900	<0.20	8.9	55	12	67000	21000	35	26000	360	13	820	22	30		<0.80	<0.70	4.2	8.7	1400	0.67	0.62	83		47	
Hanging Wall Waste	AMEC_2010	MRARD10 009	MR1 09 176	100.0 101.0	Metasediment	<0.10			85000	<0.50	830	4.4	<0.09	590	<0.20	15	80	1.2	190000	7300	30	65000	1300	4.5	160	56	11		<0.80	<0.70	1.2	4.3	830	0.54	2.6	75		81	
Hanging Wall Waste	AMEC_2010	MRARD10 010	MR1 09 176	140.0 141.0	Metasediment	<0.10			16000	<0.50	22	0.53	<0.09	260	<0.20	1.7	150	5.1	31000	430	9	8100	260	3.3	180	18	3.3		<0.80	<0.70	2.2	2.4	190	0.02	2.8	2		9.6	
Hanging Wall Waste	Baff2011	16182	MR1 08 158	14.5 15.0	Metasediment	<0.10	<0.02	0.01	26000	0.8	140	0.39	<0.09	11000	0.06	5.5	57	11	41000	9900	27	9000	640	0.7	540	18	410	6.2	<0.80	<0.70	<0.50	10	1400	0.14	0.59	26	3.4	47	
Hanging Wall Waste	Baff2011	16184	MR1 08 158	24.1 25.1	Metasediment	<0.10	<0.02	0.10	17000	1.1	15	0.06	<0.09	18000	0.16	28	110	13000	1500	21	9500	1000	0.6	1200	89	210	6.7		<0.80	<0.70	<0.50	11	1100	0.04	0.049	74	4	41	
Hanging Wall Waste	Baff2011	16186	MR1 08 158	34.6 35.6	Metasediment	<0.10	<0.02	0.08	22000	0.8	19	0.04	<0.09	22000	0.09	27	170	130	30000	1800	47	21000	820	0.3	840	78	260	4		<0.80	<0.70	<0.50	11	1400	0.02	0.035	140	5.2	41
Hanging Wall Waste	Baff2011	16188	MR1 08 158	46.7 47.6	Metasediment	<0.10	<0.02	0.1	27000	0.6	80	0.06	<0.09	34000	0.17	25	150	110	33000	4800	27	19000	990	0.8	1900	78	270	6.7		<0.80	<0.70	<0.50	18	1300	0.08	0.083	110	5.8	52
Hanging Wall Waste	Baff2011	16190	MR1 08 158	65.4 65.5	Metasediment	<0.10	<0.02	0.12	19000	0.6	78	0.03	<0.09	16000	0.05	34	180	120	28000	4100	26	18000	580	0.4	1500	110	230	1.3		<0.80	<0.70	<0.50	9.9	1500	0.07	0.023	110	5	33
Hanging Wall Waste	Baff2011	16192	MR1 08 158	65.5 66.6	Metasediment	<0.10	<0.02	0.04	26000	0.6	300	0.05	<0.09	17000	0.02	31	200	31000	10000	26	18000	760	0.5	1800	110	250	1.3		<0.80	<0.70	<0.50	15	2400	0.17	0.022	130	3.8	29	
Hanging Wall Waste	Baff2011	16194	MR1 08 158	73.8 74.8	Metasediment	<0.10	<0.02	0.28	28000	0.6	120	0.07	<0.09	25000	0.35	31	180	97	43000	8400	30	22000	1200	0.5	1400	98	250	11		<0.80	<0.70	<0.50	16	2000	0.13	0.052	110	5	71
Hanging Wall Waste	Baff2011	16522	MR1 09 176	33.0 34.0	Metasediment	<0.10	<0.02	0.02	44000	6.7	37	0.41	<0.09	1600	<0.02	34	230	32	63000	3400	13	52000	1900	0.4	68	130	270	0.63		<0.80	<0.70	<0.50	1.5	110	0.06	0.012	150	1.9	60
Hanging Wall Waste	Baff2011	16524	MR1 09 176	42.5 43.6	Metasediment	<0.10	<0.02	0.02	52000	1.4	120	0.53	<0.09	1300	<0.02	40	220	130	80000	5300	18	61000	1800	0.3	100	120	270	2.4		<0.80	<0.70	<0.50	1.5	840	0.09	0.053	130	2.2	48
Hanging Wall Waste	Baff2011	16526	MR1 09 176	52.5 53.5	Metasediment	<0.10	<0.02	0.01	38000	1.6	290	0.47	<0.09	1500	<0.02	47	360	13	53000	7900	33	32000	540	1.4	440	390	260	1		<0.80	<0.70	<0.50	4.2	620	0.18	0.11	91	3.7	31
Hanging Wall Waste	Baff2011	16528	MR1 09 176	63.9 64.9	Metasediment	<0.10	<0.02	0.04	68000	2.2	96	0.86	<0.09	1400	<0.02	33	310	5	110000	4200	19	75000	2500	0.2	98	130	320	1.4		<0.80	<0.70	0.5	2	730	0.06	0.18	100	4.1	62
Hanging Wall Waste	Baff2011	16530	MR1 09 176	72.0 73.0	Metasediment	<0.10	<0.02	0.03	44000	6.8	320	0.55	<0.09	1400	<0.02	30	230	42	68000	6800	23	49000	1200	0.6	190	98	350	1.3		<0.80	<0.70	0.6	2.8	770	0.1	0.32	120	4.3	47
Hanging Wall Waste	Baff2011	16532	MR1 09 176	82.7 83.6	Metasediment	<0.10	<0.02	0.07	5900	4.4	16	0.07	<0.09	8400	0.02	5.6	61	42	8700	1000	4	3600	190	1.8	820	15	330	2.1		<0.80	0.7	<0.50	7	600	<0.02	0.93	18	3.5	12
Hanging Wall Waste	Baff2011	16534	MR1 09 176	94.0 94.9	Metasediment	<0.10	<0.02	0.04	36000	3	370	0.62	<0.09	1300	0.02	35	390	51	40000	12000	12	35000	1370	0.4	160	160	400	3.2		<0.80	<0.70	0.6	2.3	2000	0.27	0.23	99	4.7	43
Hanging Wall Waste	Baff2011	16536	MR1 09 176	104.7 105.7	Metasediment	<0.10	<0.02	0.19	33000	1.4	400	1	<0.09	4500	<0.02	39	510	38	40000	9500	7	25000	620	2.3	290	350	540	3.9		<0.80	0.8	1.3	5.4	1400	0.18	0.59	57	3.8	27
Hanging Wall Waste	Baff2011	16538	MR1 09 176	115.2 116.2	Metasediment	<0.10	<0.02	0.42	84000	8.6	24	2.3	0.19	2000	0.03	40	310	110	150000	1100	18	89000	3200	2.9	86	180	620	4.1		<0.80	<0.70	1.4	6.1	1000	0.03	0.22	150	3.1	105
Hanging Wall Waste	Baff2011	16540	MR1 09 176	123.0 124.0	Metasediment	<0.10	<0.02	0.09	34000	1.8	230	0.41	0.09	11000	0.06	15	140	58	58000	15000	5	18000	740	2	370	50	410	11		<0.80	<0.70	2	4.1	2200	0.46	0.96	68	3.2	22
Hanging Wall Waste	Baff2011	16542	MR1 09 176	132.8 133.7	Metasediment	<0.10	<0.02	0.04	39000	3.2	150	0.72	<0.09	1100	0.09	20	220	32	63000	14000	10	20000	740	2.8	300	81	360	2.7		<0.80	<0.70	1.3	3.7	1800	0.41	0.9	73	3.5	37
Hanging Wall Waste	Baff2011	16544	MR1 09 176	141.4 142.4	Metasediment	<0.10	<0.02	0.30	75000	2.4	88	1.5	0.23	2100	0.19	29	300	150	130000	3300	18	75000	3000	1.3	180	170	790	2.2		<0.80	<0.70	1	6.5	960	0.07	0.08	110	3.8	84
Hanging Wall Waste	AMEC_2010	MRARD10 062	MR1 08 155	65.0 66.0	Schist	<0.10			33000	<0.50	180	0.12	<0.09	17000	<0.20	26	130	134	33000	10000	15	15000	630	0.3	1080	57	2.2		<0.80	<0.70	<0.50	14	2400	0.24	0.14	160		42	
Hanging Wall Waste	AMEC_2010	MRARD10 073	MR1 08 155	20.0 21.0	Schist	<0.10			38000	<0.50	5.7	3.2		2000	<0.20	210	61	0.9	71000	1500	18	34000	320	0.5	180	40			<0.80	<0.70	<0.50	0.69	990	0.05	4.3	65		25	
Hanging Wall Waste	AMEC_2010	MRARD10 017	MR1 09 172	30.7 31.7	Schist	<0.10			600	2.6	4.3	0.05	<0.09	11000	<0.20	110	330	11	57000	39	<2.00	140000	960	0.5	79	2410			<0.80	<0.70	<0.50	22	74	<0.02	0.23	8		59	
Hanging Wall Waste	AMEC_2010	MRARD10 056	MR1 08 152	165.0 166.0	Schist	<0.10			53000	1.2	31	0.7	<0.09	1400	<0.20	7.2	92	8	85000	13000	11	38000	510	1.7	100	15			3.1	<0.70	2.3	6	370	0.18	2.7	26		48	
Hanging Wall Waste	Baff2011	16406	MR1 05 47	76.0 76.9	Schist	<0.10	<0.02	0.01	7000	0.4	29	0.49	<0.09	310	<0.02	63	2400	66	9000	160	8	7500	370	0.2	130	460	23	0.57		<0.80	<0.70	<0.50	2.4	340	<0.02	0.093	61	0.67	31
Hanging Wall Waste	Baff2011	16412	MR1 05 47	106.3 107.3	Schist	<0.10	<0.02	0.04	40003	<0.50	167	0.73	<0.09	950	0.06	16	620	15	68000	11000	8	43000	3200	1.8	420	91	280	8.1		<0.80	<0.70	1.2	5.4	1600	0.31	0.58	47	3	39
Hanging Wall Waste	Baff2011	16414	MR1 05 47	116.6 117.7	Schist	<0.10	<0.02	0.07	79000	0.7	22	1.8	<0.09	1600	0.03	22	880	29	140000	2400	12	120000	4000	0.7	160	91	440	2.1		<0.80	<0.70	1.3	6	1100	0.06	0.43	57	2.6	62
Hanging Wall Waste	Baff2011	16416	MR1 05 47	125.4 126.3	Schist	<0.10	<0.02	0.05	79000	0.6	115	2.6	<0.09	1500	<0.02	24	1200	4.8	98000	8700	15	93000	3700	0.6	350	110	370	3.6		<0.80	<0.70	1.8	6.8	2100	0.2	0.66	62	3.3	54
Hanging Wall Waste	Baff2011	16588	MR1 09 172	29.8 30.8	Schist	<0.10	<0.02	0.04	29000	1.2	170	1.2	<0.09	3100	0.03	17	300	54	49000	3900	32	22000	180	2	270	110	1900	9.2		<0.80	<0.70	0.5	18	640	0.16	1.7	54	5.3	22
Hanging Wall Waste	Baff2011	16376	MR1 04 33	61.4 62.3	Ultramafic	<0.10	<0.02	0.02	21000	<0.50	180	<0.02	<0.09	5000	<0.02	19	91	17	24000	11000	27	24000	200	0.4	1100	78	120	2.4		<0.80	<0.70	<0.50	8.4	1400	0.55	<0.01	47	0.87	33
Hanging Wall Waste	Baff2011	16378	MR1 04 33	67.5 68.4	Ultramafic	<0.10	<0.02	0.25	14000	0.6	130	0.02	<0.09	6500	0.07	13	76	150	15000	4100</																			

Table A-5: Shake Flask Extraction Results

Waste Classification	Program	Sample ID	Lithology	Units	Final pH	Hg	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Li	Mg	Mn	Mo	Na	Ni	Pb	Sb	Se	Sn	Sr	Ti	Ti	U	V	Zn																																																															
																																			MMER	6.0-9.5	0.026	0.005-0.1 (a)	0.05	1.00	0.000090	0.001	0.002-0.004 (b)	0.3	0.05	0.073	0.025-0.15 (b)	0.001-0.007 (b)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001																															
																																																																			CEQG (PAL)	6.5-9.0	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Footwall Schist	AMEC 2010	MR ARD 10-091	Amphibolite	7.33	<0.00010	0.02	<0.0002	0.00102	0.00004	<0.00001	2.62	<0.00003	0.00177	<0.0005	<0.0005	0.026	4.15	0.038	8.49	0.179	0.00021	1.71	0.0037	0.00058	<0.0002	<0.0010	<0.00001	0.0032	0.0006	<0.00002	0.00075	0.00023	5.00																																																																
Footwall Schist	Baff2011	16614	Amphibolite	9.84	<0.00010	1.09	0.0013	0.0131	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003																																																															
Footwall Schist	AMEC 2010	MR ARD 10-115	Gneiss	9.74	<0.00010	2.15	<0.0002	0.00324	0.00003	<0.00001	0.04	<0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003																																																															
Footwall Schist	Baff2011	16338	Gneiss	9.40	<0.00010	0.35	0.0003	0.00063	<0.00002	<0.00001	1.48	<0.00003	0.000129	0.0025	<0.0005	0.288	6.17	<0.0010	2.92	0.0047	0.00049	1.43	0.0011	0.00002	<0.0002	<0.0010	0.00004	0.0089	0.0020	<0.00002	0.00009	0.00673	0.001																																																																
Footwall Schist	Baff2011	16352	Gneiss	8.60	<0.00010	1.32	<0.0002	0.0114	0.00006	<0.00001	1.08	0.000097	0.00016	0.0005	<0.0005	0.929	2.18	0.004	2.53	0.0142	0.105	0.387	0.0005	0.00033	<0.0002	<0.0010	<0.00001	0.0023	0.0294	<0.00002	0.00074	0.00092	0.001																																																																
Footwall Schist	Baff2011	16356	Gneiss	9.42	<0.00010	4.00	0.0003	0.0170	0.0001	<0.00001	0.09	0.000020	0.00064	0.0008	0.0009	2.15	18.6	0.003	0.9017	0.0241	0.00356	3.86	0.0016	0.00232	<0.0002	<0.0010	<0.00001	0.0009	0.0802	<0.00002	0.005317	0.0108	0.002																																																																
Footwall Schist	Baff2011	16652	Gneiss	8.98	<0.00010	2.04	0.0027	0.0066	0.00005	<0.00001	0.59	0.000086	0.00045	0.0005	0.0005	0.852	26.5	0.003	0.823	0.0086	0.111	1.67	0.0015	0.00325	<0.0002	<0.0010	<0.00001	0.0040	0.0308	0.00004	0.00122	0.00394	0.002																																																																
Footwall Schist	Baff2011	16726	Gneiss	9.02	<0.00010	0.90	<0.0002	0.0081	<0.00002	<0.00001	0.98	0.000040	0.00013	<0.0005	0.0010	0.330	21.9	0.007	1.80	0.0074	0.0452	4.50	0.0004	0.00004	<0.0002	<0.0010	0.00001	0.0044	0.0143	<0.00002	0.00017	0.00109	<0.001																																																																
Footwall Schist	Baff2011	16070	High Grade Iron Formation	6.82	<0.00010	0.01	0.0043	0.00710	0.00001	54.6	<0.00003	0.000467	<0.0005	0.0058	0.006	12.1	0.007	51.7	19.7	0.00030	2.33	0.0048	0.00013	<0.0002	0.0005	<0.00001	0.0087	0.0006	0.00004	0.00174	0.00077	0.003																																																																	
Footwall Schist	Baff2011	16076	High Grade Iron Formation	7.33	<0.00010	<0.01	0.0004	0.00551	<0.00002	<0.00001	44.7	0.000004	0.00162	<0.0005	0.0052	0.012	2.06	0.002	42.9	4.85	0.00241	3.97	0.0067	0.00002	<0.0002	0.0004	<0.00001	0.0274	0.0003	0.00002	0.000170	0.00013	0.001																																																																
Footwall Schist	Baff2011	16176	High Grade Iron Formation	8.15	<0.00010	0.05	0.0005	0.00045	<0.00002	<0.00001	67.0	<0.00003	0.000022	<0.0005	<0.0005	0.239	0.842	0.003	7.92	0.0546	0.00036	0.41	0.0004	<0.00002	<0.0002	<0.0010	<0.00001	0.0366	0.0006	<0.00002	0.000013	0.00009	<0.001																																																																
Footwall Schist	Baff2011	16328	High Grade Iron Formation	7.82	<0.00010	0.07	0.0044	0.00467	<0.00002	<0.00001	78.8	0.000007	0.00210	<0.0005	<0.0005	0.004	2.39	0.008	32.2	0.840	0.0122	2.75	0.0061	<0.00002	0.0011	0.003	<0.00001	0.267	<0.00	0.00018	0.00042	0.00041	<0.001																																																																
Footwall Schist	Baff2011	16334	High Grade Iron Formation	8.04	<0.00010	0.03	0.0008	0.00083	<0.00002	<0.00001	6.77	<0.00003	0.000113	<0.0005	<0.0005	0.150	1.05	0.010	15.4	0.279	0.00387	0.58	0.0007	0.00003	0.0003	<0.0010	<0.00001	0.0149	0.0004	<0.00002	0.000028	0.00014	<0.001																																																																
Footwall Schist	Baff2011	16348	High Grade Iron Formation	4.44	<0.00010	0.02	0.0009	0.00327	0.00128	<0.00001	50.0	0.00171	0.141	0.0012	0.0015	681	0.138	0.003	241	457	0.00018	2.80	0.218	0.00004	<0.0002	0.016	<0.00001	0.0341	0.0005	0.00006	0.000298	0.00017	0.060																																																																
Footwall Schist	Baff2011	16678	High Grade Iron Formation	8.10	<0.00010	0.07	<0.0002	0.0296	<0.00002	<0.00001	3.00	<0.00003	0.00004	<0.0005	0.0059	0.008	12.1	0.007	51.7	19.7	0.00030	2.33	0.0048	0.00013	<0.0002	0.0005	<0.00001	0.0087	0.0006	0.00004	0.00174	0.00077	0.003																																																																
Footwall Schist	Baff2011	16464	Metasediment	9.46	<0.00010	2.91	<0.0002	0.0162	0.00003	<0.00001	0.07	0.000004	0.00013	<0.0005	0.0058	0.999	18.6	0.010	0.414	0.00308	1.96	0.0003	0.00002	<0.0002	<0.0010	<0.00001	0.0005	0.0301	<0.00002	0.000068	0.00290	<0.001																																																																	
Footwall Schist	AMEC 2010	MR ARD 10-097	Schist	9.73	<0.00010	0.55	0.0004	0.00057	<0.00002	<0.00001	4.14	<0.00003	0.000068	<0.0005	<0.0005	0.048	8.05	0.004	0.931	0.00503	0.00176	7.74	0.0002	0.00042	<0.0002	<0.0010	<0.00001	0.0168	0.0045	<0.00002	0.000006	0.0353	<0.001																																																																
Footwall Schist	Baff2011	16178	Schist	8.40	<0.00010	1.06	<0.0002	0.0135	0.00003	0.00001	0.83	<0.00003	0.000011	<0.0005	<0.0005	0.705	28.7	0.003	1.59	0.011	0.188	0.00427	2.40	0.0009	0.00079	0.0003	<0.0010	<0.00001	0.0045	0.0339	0.00006	0.000437	0.00378	0.003																																																															
Footwall Schist	Baff2011	16468	Schist	9.60	<0.00010	1.97	<0.0002	0.0035	<0.00002	<0.00001	0.05	0.000003	0.00003	<0.0005	<0.0005	0.340	10.9	0.002	0.318	0.00308	0.00113	1.84	0.0001	0.00018	<0.0002	<0.0010	<0.00001	0.0010	0.0096	<0.00002	0.000124	0.00087	<0.001																																																																
Footwall Schist	Baff2011	16652	Schist	7.77	<0.00010	0.04	0.0006	0.0556	<0.00002	<0.00001	27.8	0.000008	0.00037	<0.0005	0.0008	0.029	50.6	0.024	27.2	0.0707	0.00600	2.88	0.0009	<0.00002	0.0004	0.007	<0.00001	0.0710	0.0002	0.00002	0.000039	0.00040	<0.001																																																																
Footwall Schist	Baff2011	16930	Schist	8.22	<0.00010	0.22	0.0002	0.0063	<0.00002	<0.00001	21.8	<0.00003	0.00004	<0.0005	<0.0005	<0.003	12.8	0.002	8.41	0.0010	0.00020	2.22	0.0009	<0.00002	<0.0002	<0.0010	<0.00001	0.0394	0.0001	0.00004	<0.00	0.00061	<0.001																																																																
Footwall Schist	Baff2011	16722	Schist	7.56	<0.00010	0.02	<0.0002	0.0059	<0.00002	<0.00001	37.1	0.000038	0.00126	0.0005	0.0022	0.008	11.8	0.029	159	0.0495	0.00028	45.8	0.0003	0.00011	<0.0002	0.0025	<0.00001	0.0272	0.0003	0.00017	0.00016	0.00041	0.004																																																																
Footwall Schist	Baff2011	16074	Ultramafic	8.66	<0.00010	0.15	0.0005	0.0327	<0.00002	<0.00001	172	0.000017	0.000262	<0.0005	<0.0005	<0.003	76.3	<0.0010	20.6	0.0028	0.07918	5.37	0.0050	0.00005	<0.0002	<0.0																																																																							

Table A-6: Net Acid Generating Leachate Results

Waste Classification	Program	Sample ID	Lithology Unit	Final pH units	Alkalinity mg/L as CaCO ₃	Acidity mg/L as CaCO ₃	SO ₄ mg/L	Hg mg/L	Ag mg/L	Al mg/L	As mg/L	B mg/L	Ba mg/L	Be mg/L	Bi mg/L	Ca mg/L	Cd mg/L	Co mg/L	Cr mg/L	Cu mg/L	Fe mg/L	K mg/L	Li mg/L	Mg mg/L	Mn mg/L	Mo mg/L	Na mg/L	Ni mg/L	Pb mg/L	Sb mg/L	Se mg/L	Sn mg/L	Sr mg/L	Ti mg/L	Tl mg/L	U mg/L	V mg/L	Zn mg/L	
			MMER	6.0-9.5							0.5									0.3								0.5	0.2										
Footwall Schist	Baff2011	16064	Gniess	3.36	<2.00	35	62	<0.0001	0.00055	1.21	<0.0002	0.161	0.1930	0.00033	<0.00001	1.58	0.000417	0.0300	0.0067	0.717	0.498	14.2	0.008	3.09	0.253	0.00002	1.12	0.0225	0.00135	<0.0002	0.003	0.00001	0.00688	0.0009	0.00016	0.0102	<0.0003	0.019	
Footwall Schist	Baff2011	16738	Gniess	3.72	<2.00	50	110	<0.0001	0.00095	5.22	<0.0002	0.0584	0.5440	0.00123	<0.00001	2.13	0.000626	0.0056	0.0086	0.0038	0.086	35.0	0.006	7.52	0.277	0.00394	2.44	0.0323	0.00436	0.0004	<0.001	0.00004	0.0211	0.0089	0.00018	0.00343	0.0171	0.004	
Footwall Schist	Baff2011	16076	High Grade Iron Formation	3.56	<2.00	408	790	<0.0001	0.00002	0.93	0.0008	0.153	0.0061	0.00227	<0.00001	41.6	0.000638	0.139	0.0008	1.91	184	0.663	0.003	44.5	112	0.00011	0.42	0.368	0.00044	<0.0002	0.012	0.00003	0.0272	0.0014	0.00009	0.000594	0.00007	0.041	
Footwall Schist	Baff2011	16176	High Grade Iron Formation	3.24	<2.00	45	88	<0.0001	0.00021	2.38	<0.0002	0.0824	0.0158	0.00130	<0.00001	8.99	0.000091	0.0139	0.0046	0.100	0.660	1.29	0.004	7.25	1.70	0.00003	1.41	0.0462	0.00031	0.0004	0.002	0.00005	0.0186	0.0006	0.00279	0.000623	<0.0003	0.030	
Footwall Schist	Baff2011	16328	High Grade Iron Formation	2.28	<2.00	594	1300	<0.0001	0.00605	11.7	0.0625	0.0754	0.0163	0.00313	<0.00001	129	0.000300	0.500	0.0206	0.851	82.6	1.29	0.010	73.9	42.8	0.00017	1.28	0.917	0.02150	<0.0002	0.037	0.00002	0.0480	0.0022	0.00234	0.000688	<0.0003	0.074	
Footwall Schist	Baff2011	16334	High Grade Iron Formation	3.22	<2.00	81	250	<0.0001	0.00269	2.35	0.0006	0.0644	0.0090	0.00189	<0.00001	3.88	0.000196	0.104	0.0049	37.5	11.5	0.738	0.004	29.9	39.3	0.00008	0.73	0.229	0.00367	<0.0002	0.008	<0.0001	0.0119	0.0014	0.00098	0.00718	<0.0003	0.089	
Footwall Schist	Baff2011	16384	High Grade Iron Formation	3.66	<2.00	45	110	<0.0001	0.00014	2.03	<0.0002	0.0792	0.0025	0.00072	<0.00001	6.68	0.000203	0.0829	0.0121	0.152	0.072	9.89	0.006	16.7	1.23	0.00097	1.49	0.236	0.00898	<0.0002	0.004	0.00004	0.0127	0.0009	0.00044	0.00211	0.00040	0.058	
Footwall Schist	Baff2011	16678	High Grade Iron Formation	2.47	<2.00	446	660	<0.0001	0.00347	27.2	0.0011	0.0748	0.3220	0.00333	<0.00001	29.9	0.000583	0.105	0.0333	3.28	39.6	14.0	0.017	34.4	3.52	0.00260	1.13	0.624	0.02360	0.0003	0.027	0.00004	0.121	0.0053	0.00074	0.00181	0.00006	0.105	
Footwall Schist	Baff2011	16682	High Grade Iron Formation	3.27	<2.00	56	110	<0.0001	0.00071	3.15	<0.0002	0.0382	0.2290	0.00093	<0.00001	6.28	0.000184	0.0389	0.0089	0.243	0.596	6.44	0.010	11.7	0.627	0.00011	0.99	0.0821	0.00405	0.0004	0.004	0.00001	0.0145	0.0011	0.00050	0.000781	<0.0003	0.060	
Footwall Schist	Baff2011	16686	High Grade Iron Formation	2.75	<2.00	168	260	<0.0001	0.00146	8.20	<0.0005	0.0815	0.0096	0.00364	<0.00001	35.7	0.000343	0.0346	0.0099	0.641	12.4	1.02	0.003	9.46	1.53	0.00011	0.99	0.108	0.00343	0.0003	0.008	0.00002	0.0458	0.0024	0.00036	0.000807	<0.0003	0.021	
Footwall Schist	Baff2011	16688	High Grade Iron Formation	5.93	<2.00	34	110	<0.0001	0.00005	0.02	<0.0002	0.0592	0.0114	0.00002	<0.00001	7.93	0.000015	0.0049	0.0075	0.0016	0.015	1.12	0.002	16.3	19.8	0.00026	1.04	0.0136	<0.0002	0.002	0.003	<0.00001	0.0057	0.0010	0.00013	0.000004	<0.0003	0.003	
Footwall Schist	Baff2011	16350	Metasediment	2.69	<2.00	228	350	<0.0001	0.00234	16.9	0.0004	0.0526	0.3850	0.00328	<0.00001	9.29	0.00114	0.113	0.0122	0.334	2.58	31.2	0.032	22.2	0.888	0.00004	1.63	0.124	0.00204	<0.0002	0.003	0.00006	0.0297	0.0037	0.00029	0.00091	0.00022	0.078	
Footwall Schist	Baff2011	16576	Metasediment	3.74	<2.00	31	120	<0.0001	0.00027	1.53	0.0004	0.0949	0.0205	0.00008	<0.00001	2.45	0.000265	0.209	0.0062	0.226	3.48	2.64	0.020	22.5	0.681	0.00054	1.25	4.02	0.00028	0.0002	0.003	0.00002	0.0133	0.0009	0.00066	0.00149	<0.0003	0.031	
Footwall Schist	Baff2011	16178	Schist	3.34	<2.00	62	160	<0.0001	0.00033	6.14	<0.0002	0.123	0.3640	0.00103	<0.00001	2.77	0.00214	0.0781	0.0074	0.0298	0.163	43.5	0.012	9.95	0.346	0.00146	2.70	0.115	0.00268	<0.0002	<0.001	0.00002	0.0179	0.0119	0.00086	0.0151	0.0764	0.219	
Footwall Schist	Baff2011	16574	Schist	3.47	<2.00	71	340	<0.0001	0.00194	3.82	0.0004	0.0824	0.0994	0.00114	<0.00001	6.91	0.00222	0.293	0.0124	0.438	10.4	7.82	0.023	61.9	3.09	0.00046	1.66	3.03	0.01510	<0.0002	0.011	0.00003	0.0256	0.0021	0.00129	0.00534	0.00011	0.274	
Footwall Schist	Baff2011	16652	Schist	3.10	<2.00	107	230	<0.0001	0.00320	7.88	0.0005	0.0755	0.4000	0.00249	<0.00001	5.02	0.000307	0.256	0.0080	0.491	0.721	43.5	0.058	18.5	0.463	<0.00001	1.49	0.237	0.01440	0.0003	0.010	0.00003	0.0252	0.0023	0.00052	0.0126	<0.0003	0.033	
Footwall Schist	Baff2011	16722	Schist	3.04	<2.00	221	650	<0.0001	0.00390	24.5	0.0004	0.106	0.0355	0.00317	<0.00001	3.94	0.000042	0.402	0.0017	0.0558	6.52	6.55	0.112	118	0.473	0.00298	0.44	0.911	0.01850	0.0003	0.015	0.00001	0.0237	0.0046	0.00064	0.00175	0.00005	0.084	
Footwall Schist	Baff2011	16736	Schist	3.89	<2.00	40	170	<0.0001	0.00031	4.14	<0.0002	0.0818	0.2660	0.00044	<0.00001	2.72	0.000124	0.0528	0.0040	0.0885	0.060	48.4	0.022	20.8	0.305	0.00020	1.78	0.0408	0.00172	0.0004	0.002	0.00004	0.0087	0.0026	0.00019	0.0156	0.00168	0.010	
Footwall Waste	Baff2011	16130	Gniess	5.33	<2.00	9	92	<0.0001	0.00013	0.05	<0.0002	0.106	0.0801	<0.00002	<0.00001	7.51	0.000080	0.000973	0.0029	0.0010	0.060	26.3	<0.001	10.0	0.223	0.00103	2.24	0.0017	0.00020	<0.0002	0.004	0.00013	0.0311	0.0058	0.00009	0.000134	0.0487	0.002	
Footwall Waste	Baff2011	16136	Gniess	5.29	<2.00	8	84	<0.0001	0.00016	0.09	<0.0002	0.0802	0.1220	<0.00002	<0.00001	7.28	0.000232	0.00307	0.0041	0.0014	0.003	25.8	0.010	7.16	0.574	0.0186	3.20	0.0020	0.00024	<0.0002	0.002	<0.00001	0.0260	0.0104	0.00005	0.000146	0.0134	0.004	
Footwall Waste	Baff2011	16138	Gniess	4.88	<2.00	209	83	<0.0001	0.00044	0.26	<0.0002	0.0816	0.1360	<0.00002	<0.00001	5.07	0.00178	0.00437	0.0038	0.0035	<0.0003	26.2	0.015	7.48	0.493	0.0172	3.60	0.0046	0.00047	<0.0002	0.002	<0.00001	0.0241	0.0058	0.00010	0.000251	0.0187	0.013	
Footwall Waste	Baff2011	16152	Metasediment	5.10	<2.00	252	75	<0.0001	0.00020	0.08	<0.0002	0.0648	0.0710	<0.00002	<0.00001	11.6	0.000419	0.00391	0.0134	0.0020	<0.0003	14.8	0.002	3.13	0.286	0.00508	8.69	0.0054	0.00018	<0.0002	0.002	<0.00001	0.0818	0.0018	0.00015	0.000279	0.0113	0.003	
Footwall Waste	Baff2011	16102	Schist	5.50	<2.00	6	150	<0.0001	0.00049	0.04	0.0003	0.159	0.0330	<0.00002	<0.00001	5.53	0.0104	0.00793	0.0199	0.0073	0.006	4.8	0.018	17.7	0.391	0.00099	2.00	0.0083	<0.00002	0.007	<0.00001	0.0260	0.0010	0.00022	0.00052	0.00007	0.020		
Footwall Waste	Baff2011	16118	Schist	2.79	<2.00	266	540	<0.0001	0.00280	14.8	0.0008	0.0265	0.0011	0.00130	<0.00001	2.22	0.296	0.592	0.0884	1.03	3.99	6.75	0.011	63.0	0.281	0.00127	0.73	9.60	4.63000	<0.0002	0.004	0.00008	0.00614	0.0019	0.0119	0.00541	0.00027	39.9	
Footwall Waste	Baff2011	16154	Schist	5.06	<2.00	10	140	<0.0001	0.00029	0.23	0.0005	0.136	0.1740	0.00005	<0.00001	16.7	0.00137	0.0498	0.1120	0.0154	0.0011	30.9	0.010	12.3	0.284	0.00036	2.69	0.354	0.00134	0.0004	0.007	0.00004	0.109	0.0010	0.00036	0.000071	0.00069	0.013	
Hanging Wall Schist	Baff2011	16014	Amphibolite	4.15	<2.00	15	97	<0.0001	0.00103	0.64	<0.0002	0.0664	0.0014	0.00006	<0.00001	0.91	0.001444	0.0790	0.0199	0.0292	0.030	0.685	0.003	10.9	0.699	0.0682	0.43	0.153	0.00062	0.0004	0.002	0.00002	0.00733	0.0004	0.00025	0.00233	0.00839	0.016	
Hanging Wall Schist	Baff2011	16036	Amphibolite	2.45	<2.00	327	370	<0.0001	0.00371	14.4	0.0055	0.0624	0.0044	0.00044	<0.00001	1.11	0.000421	0.285	0.0440	0.554	23.8	0.799	0.003	15.0	0.923	0.00123	0.53	0.656	0.02600	0.0004	0.005	0.00003	0.00938	0.0025	0.00029	0.00417	0.00056	0.033	
Hanging Wall Schist	Baff2011	16046	Amphibolite	2.10	<2.00	162	1600	<0.0001	0.00068	41.0	0.0196	0.113	0.0096	0.00499	<0.00001	4.16	0.000195	0.476	0.0722	4.13	24.3	1.27	0.016	37.5	1.27	0.00025	0.44	1.39	0.08370	<0.0002	0.009	0.00024	0.0214	0.0069	0.				

Table A-7: Rietveld X-Ray Diffraction Results

Sample ID		Formula	MRARD10-091	MRARD10-055	MRARD10-057	MRARD10-074	MRARD10-123	MRARD10-048	MRARD10-077	5164	5174	MRARD10-030	5145	5171	5172	5178	5181	MRARD10-026	MRARD10-092	MRARD10-051	MRARD10-080	MRARD10-083	MRARD10-105	MRARD10-082	MRARD10-036	MRARD10-120	
Minerals			Footwall Schist	Footwall Schist	Footwall Schist	Footwall Schist	Footwall Schist	Footwall Schist	Footwall Schist	Footwall Schist	Footwall Waste	Footwall Waste	Footwall Waste	Footwall Waste	Footwall Waste	Footwall Waste	Footwall Waste	Hanging Wall Schist	Hanging Wall Schist	Hanging Wall Schist	Hanging Wall Schist	Hanging Wall Schist	Hanging Wall Schist	Hanging Wall Waste	Mineralized Waste	Ore Zone	
Waste Classification			Amphibolite	Gneiss	Gneiss	Gneiss	Gneiss	Schist	Schist	Volcanic Tuff	Gneiss	Gneiss	Gneiss	Metasediment	Metasediment	Metasediment	Schist	Schist	Volcanic Tuff	Volcanic Tuff	Volcanic Tuff	Volcanic Tuff	Volcanic Tuff	Volcanic Tuff	Schist	Iron Formation	
Lithology																											
Quartz	Feldspars	SiO ₂	3.8	41.4	56.4	40.9	6.9	9.8	38.5	39.7	73.8	65.7	28.5	39.9	31.6	8	3.6	6.9	-	21.3	15.7	15.1	7.1	50.2	43.9	1.2	
Albite		NaAl ₃ Si ₃ O ₈	-	-	-	-	0.1	-	-	7.2	0.1	-	3.5	54.1	35.5	-	2.8	-	-	3.9	-	12.3	-	2	-	-	
Anorthite		CaAl ₂ Si ₂ O ₈	-	-	-	-	-	-	-	17.7	-	-	24.5	-	-	-	-	-	-	-	-	9.4	-	-	-	-	
Orthoclase		KAlSi ₃ O ₈	-	-	-	-	-	-	-	7.9	-	-	8.4	-	-	-	2.8	-	-	-	-	5.5	-	-	-	-	
Microcline		KAlSi ₃ O ₈	-	-	-	-	2.1	-	-	-	3.3	4.3	-	2.8	1.9	18	-	-	-	-	0.7	-	0.8	-	0.5	-	-
Chlorite	Chlorites	(Fe,Mg,Mn) ₁₂ Al(Si ₆ Al) ₂ O ₁₀ (OH) ₈	-	7	-	-	10.6	55.8	-	-	-	-	-	-	-	80.8	-	54.2	70.9	35.3	16.9	-	19.9	5.1	-	-	
Clinocllore		(Mg,Fe) ₁₂ (Si ₆ Al) ₂ O ₁₀ (OH) ₈	67.7	-	-	-	-	-	7.7	-	-	-	-	-	-	-	-	16.7	-	-	-	5.8	-	-	44.3	-	
Chamosite		(Fe,Mg) ₁₂ Al(Si ₆ Al) ₂ O ₁₀ (OH) ₈	-	-	2.8	6.3	6.1	6.8	-	-	-	3.8	-	-	-	-	8.7	-	5	8.1	-	-	-	-	-	-	
Muscovite		KAl ₂ (AlSi ₄ O ₁₀)(OH) ₂	-	46.4	-	-	4.6	-	5.3	-	1.2	21.5	-	0.3	-	2.3	-	22.9	-	-	-	-	-	-	-	4.4	
Talc		Mg ₃ Si ₄ O ₁₀ (OH) ₂	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21.8	-	25	-	-	
Stilpnomelane	Phyllosilicates	K(Fe ²⁺ ,Mg,Fe ³⁺) ₁₄ (SiAl) ₁₂ (O,OH) ₂₇	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	-	-	-	
Biotite		K(Mg,Fe) ₂ (AlSi ₂ O ₁₀)(OH) ₂	4.5	4.7	23.1	13.4	1.2	-	0.5	0.6	0.4	20.4	0.6	4.1	1.1	-	1.5	-	-	-	-	3.3	-	-	-	-	
Phlogopite		KMg ₂ (AlSi ₂ O ₁₀)(OH)	-	-	-	-	43.8	-	40.7	15	-	-	23.3	-	-	-	44.1	-	-	-	-	-	-	-	-	-	
Kaolinite		Al ₂ Si ₂ O ₅ (OH) ₄	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6	-	-	-	
Almandine		Garnets	Fe ₃ Al ₂ Si ₂ O ₁₂	-	-	2.2	14.7	4.3	7.7	-	-	-	2.3	-	-	-	-	21.5	-	-	-	-	1	-	-	-	-
Siderite	Carbonates	FeCO ₃	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	0.1	-	-	-	-	
Rhodochrosite		MnCO ₃	-	-	-	-	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Calcite		CaCO ₃	-	-	-	-	1.9	-	-	-	-	-	-	-	0.9	-	-	-	-	-	10.6	-	0.4	-	6.5	-	
Dolomite		CaMg(CO ₃) ₂	-	-	-	-	0.4	-	-	-	-	-	-	-	1.9	-	-	-	-	2.4	-	0.2	-	-	-	-	
Pyrite		Sulphides	FeS ₂	-	0.6	-	-	1	0.9	-	-	-	-	-	-	0.3	2.5	-	1.1	-	1.4	3.3	-	-	0.7	-	-
Magnetite	Oxides	Fe ₃ O ₄	3.6	-	-	-	-	10.3	-	0.1	-	3	0.1	-	2.50	-	-	3.2	11.1	-	12.6	0.2	13.7	11	4.3	86.8	
Maghemite		γ-Fe ₂ O ₃	-	-	1.8	5.1	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ilmenite		FeTiO ₃	-	-	-	-	3.3	-	-	-	-	-	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	
Chromite		FeCr ₂ O ₄	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	
Spinel		MgAl ₂ O ₄	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	3.1	-	
Rutile		TiO ₂	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	-	-	
Hematite		Fe ₂ O ₃	17.2	-	0.7	13.2	1.9	1.4	-	-	-	-	0.7	-	-	-	-	-	1.3	9	-	25.8	-	27.5	-	3.9	7.6
Ferropargasite		Amphiboles	(Ca,Na) ₂₋₃ (Mg,Fe,Al) ₃ Si ₆ (Si,Al) ₂ O ₂₂ (OH) ₂	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.1	-	-
Actinolite			Ca ₄ (Mg,Fe) ₃ Si ₆ O ₂₂ (OH) ₂	-	-	-	-	-	-	-	1.1	-	-	1.3	-	5.70	-	-	-	-	-	-	17	-	-	-	-
Enstatite		Pyroxenes	(Mg,Fe) ₂ Si ₂ O ₆	-	-	-	-	-	-	-	1.1	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-
Diopside	CaMgSi ₂ O ₆		-	-	-	-	-	-	-	5.1	-	-	5.8	-	-	-	-	5	-	-	-	-	14.7	-	-	-	
Epidote	Epidotes	Ca ₂ Al ₂ Fe(SiO ₄)(Si ₂ O ₇)(O,OH) ₂	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Staurolite		Fe ₃ Al ₃ O ₉ (SiO ₄) ₃ (O,OH) ₂	-	-	12.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.5	-	-	-	
Kaolinite		Al ₂ Si ₂ O ₅ (OH) ₄	3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	-	-	-	-	-	-	-	-	
Andalusite		Al ₂ SiO ₅	-	-	0.6	6.5	9.7	-	7.4	-	-	4.1	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	

Table A-8: Qualitative XRD and Whole Rock Analysis

Waste Classification	Lithology	MIN Sample ID	Minerals	Whole Rock (%)												
				SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	V2O5	LOI
Footwall Schist	Amphibolite	16305	Quartz, Phlogopite, Clinocllore, Andalusite	65	14	11	3.6	0.19	0.11	3.4	0.58	0.16	0.050	0.010	0.010	1.9
Footwall Schist	Amphibolite	16387	Clinocllore, Phlogopite, Almandine	34	24	18	10	0.52	0.11	3.5	1.5	0.32	0.14	0.010	0.020	7.1
Footwall Schist	Amphibolite	16613	Quartz, Magnesiohornblende (ferrous), Phlogopite	54	13	8.7	11	6.4	0.41	2.9	0.64	0.31	0.34	0.13	0.030	2.4
Footwall Schist	Gniess	16061	Quartz, Clinocllore, Phlogopite	58	14	13	6.5	0.41	0.070	2.4	0.96	0.30	0.10	0.040	0.040	4.0
Footwall Schist	Gniess	16063	Quartz, Muscovite, Clinocllore, Phlogopite	70	15	5.1	2.4	0.13	0.21	3.8	0.51	0.11	0.050	0.010	0.010	1.4
Footwall Schist	Gniess	16065	Quartz, Clinocllore, Phlogopite, Muscovite	67	16	6.9	2.6	0.25	0.19	3.9	0.80	0.20	0.080	0.010	0.010	1.4
Footwall Schist	Gniess	16079	Quartz, Clinocllore, Muscovite, Phlogopite	69	15	5.5	2.2	0.24	0.24	4.5	0.81	0.20	0.040	0.010	0.010	2.2
Footwall Schist	Gniess	16301	Quartz, Andalusite, Clinocllore, Phlogopite, Muscovite	66	17	6.5	2.8	0.31	0.19	3.7	0.94	0.23	0.020	0.010	0.010	1.8
Footwall Schist	Gniess	16303	Quartz, Andradite, Biotite, Clinocllore	60	18	11	4.2	0.31	0.11	3.5	0.87	0.25	0.050	0.010	0.020	0.91
Footwall Schist	Gniess	16307	Quartz, Phlogopite, Andalusite, Cordierite, Clinocllore	65	17	8.5	3.9	0.25	0.080	2.8	0.87	0.20	0.060	0.010	0.010	0.98
Footwall Schist	Gniess	16309	Quartz, Muscovite, Clinocllore	77	13	3.5	1.1	0.11	0.17	3.2	0.19	0.090	0.010	0.010	0.010	2.2
Footwall Schist	Gniess	16311	Quartz, Muscovite, Clinocllore	66	16	6.3	2.8	0.17	0.22	4.5	0.34	0.10	0.050	0.020	0.010	3.6
Footwall Schist	Gniess	16313	Quartz, Clinocllore, Muscovite, Annite	60	16	8.8	4.8	0.53	0.15	4.9	0.96	0.39	0.13	0.030	0.010	3.3
Footwall Schist	Gniess	16337	Quartz, Cordierite, Clinocllore, Anthophyllite	51	14	12	17	0.53	0.070	0.31	0.79	0.38	0.14	0.15	0.030	4.0
Footwall Schist	Gniess	16351	Quartz, Muscovite, Phlogopite	63	18	6.1	2.4	0.26	0.19	5.8	0.84	0.22	0.030	0.010	0.010	2.2
Footwall Schist	Gniess	16353	Quartz, Muscovite	66	16	6.0	2.2	0.39	0.24	5.3	1.1	0.30	0.050	0.010	0.010	2.1
Footwall Schist	Gniess	16355	Quartz, Muscovite, Clinocllore, Phlogopite	55	21	9.1	4.4	0.25	0.25	6.3	1.0	0.20	0.080	0.020	0.030	2.4
Footwall Schist	Gniess	16385	Quartz, Phlogopite, Pyrope, Clinocllore, Cordierite	60	16	14	4.7	0.20	0.090	2.7	0.59	0.13	0.10	0.010	0.010	1.5
Footwall Schist	Gniess	16517	Quartz, Clinocllore, Phlogopite	77	11	6.1	1.9	0.10	0.13	2.8	0.32	0.080	0.050	0.020	0.010	2.0
Footwall Schist	Gniess	16519	Quartz, Clinocllore, Illite	69	16	4.4	1.9	0.18	0.25	4.2	0.61	0.14	0.040	0.020	0.010	3.1
Footwall Schist	Gniess	16577	Quartz, Illite, Clinocllore	72	13	4.7	2.1	0.12	0.17	3.8	0.44	0.10	0.020	0.010	0.010	2.4
Footwall Schist	Gniess	16609	Quartz, Muscovite, Clinocllore	74	13	4.9	2.0	0.020	0.13	3.0	0.070	0.030	0.020	0.030	0.010	2.5
Footwall Schist	Gniess	16611	Quartz, Clinocllore, Muscovite	69	16	3.3	3.0	0.040	0.26	4.0	0.090	0.040	0.040	0.020	0.010	3.4
Footwall Schist	Gniess	16615	Quartz, Muscovite	68	16	4.0	2.1	0.28	0.22	5.4	0.79	0.20	0.030	0.020	0.010	2.2
Footwall Schist	Gniess	16653	Quartz, Muscovite	67	16	5.1	2.5	0.24	0.21	5.4	0.80	0.19	0.020	0.010	0.020	2.1
Footwall Schist	Gniess	16725	Quartz, Andalusite, Phlogopite, Clinocllore	63	16	9.4	5.0	0.090	0.12	3.2	0.84	0.090	0.030	0.030	0.020	1.8
Footwall Schist	Gniess	16737	Quartz, Annite, Muscovite, Clinocllore	68	13	8.2	2.5	0.16	0.20	4.3	0.59	0.14	0.060	0.010	0.010	1.8
Footwall Schist	Gniess	16749	Quartz, Clinocllore, Phlogopite, Andalusite	74	13	4.9	2.4	0.10	0.12	2.9	0.26	0.090	0.030	0.010	0.010	2.4
Footwall Schist	High Grade Iron Formation	16069	Magnetite, Siderite, Clinocllore, Pyrite	1.9	1.5	76	4.6	0.31	0.010	0.050	0.060	0.010	3.9	0.010	0.010	9.5
Footwall Schist	High Grade Iron Formation	16071	Magnetite, Siderite	0.72	0.090	93	0.98	0.97	0.010	0.010	0.010	0.010	1.1	0.010	0.010	1.0
Footwall Schist	High Grade Iron Formation	16075	Magnetite, Siderite, Clinocllore, Pyrite, Quartz	3.6	0.63	73	3.2	2.6	0.010	0.010	0.020	1.5	4.5	0.010	0.010	10
Footwall Schist	High Grade Iron Formation	16169	Magnetite, Cummingtonite	18	0.67	75	4.2	0.51	0.040	0.010	0.010	0.30	2.6	0.010	0.010	-1.3
Footwall Schist	High Grade Iron Formation	16175	Clinocllore, Pyrite, Magnetite, Anthophyllite	13	3.6	76	3.8	0.69	0.010	0.010	0.12	0.44	1.4	0.010	0.010	-0.01
Footwall Schist	High Grade Iron Formation	16327	Magnetite, Pyrite, Hematite, Quartz	0.23	0.16	98	0.20	0.050	0.010	0.010	0.010	0.050	0.30	0.010	0.010	-0.3
Footwall Schist	High Grade Iron Formation	16329	Magnetite, Siderite	0.53	0.17	83	2.9	0.24	0.010	0.010	0.010	0.010	3.3	0.010	0.010	9.5
Footwall Schist	High Grade Iron Formation	16331	Magnetite, Dolomite	0.41	0.28	96	0.70	1.2	0.010	0.010	0.010	0.020	0.42	0.010	0.010	-1.3
Footwall Schist	High Grade Iron Formation	16333	Magnetite, Hematite, Quartz, Cummingtonite	21	1.6	72	3.0	0.26	0.020	0.010	0.070	0.050	1.1	0.010	0.010	0.070
Footwall Schist	High Grade Iron Formation	16347	Magnetite, Siderite, Hematite, Pyrite, Clinocllore	1.9	0.78	81	2.0	0.52	0.010	0.010	0.010	0.30	2.4	0.010	0.010	10.0
Footwall Schist	High Grade Iron Formation	16381	Magnetite, Ankerite, Quartz, Hematite	0.90	0.27	88	2.5	1.1	0.030	0.010	0.010	0.010	1.9	0.010	0.010	3.3
Footwall Schist	High Grade Iron Formation	16383	Magnetite, Quartz, Hematite	2.0	0.66	98	0.45	0.050	0.010	0.010	0.030	0.030	0.44	0.010	0.010	-1.5
Footwall Schist	High Grade Iron Formation	16461	Magnetite, Ankerite, Quartz, Clinocllore	6.2	1.1	81	3.9	3.2	0.010	0.010	0.040	0.15	0.73	0.010	0.010	2.9
Footwall Schist	High Grade Iron Formation	16677	Magnetite, Clinocllore, Phlogopite, Pyrope	23	18	44	7.7	0.070	0.11	3.1	0.60	0.060	0.91	0.020	0.020	2.0
Footwall Schist	High Grade Iron Formation	16681	Magnetite, Quartz, Clinocllore	6.2	1.1	93	0.65	0.50	0.020	0.020	0.040	0.35	0.090	0.010	0.010	-2.6
Footwall Schist	High Grade Iron Formation	16685	Magnetite, Clinocllore	3.4	1.4	94	0.90	0.98	0.010	0.020	0.050	0.72	0.20	0.010	0.010	-2.6
Footwall Schist	High Grade Iron Formation	16687	Magnetite	3.3	0.44	93	1.7	0.45	0.020	0.010	0.010	0.31	1.3	0.010	0.010	-1.7
Footwall Schist	Metasediment	16349	Quartz, Phlogopite, Andalusite, Clinocllore	66	17	9.2	2.4	0.32	0.050	2.1	1.2	0.25	0.080	0.010	0.030	1.1
Footwall Schist	Metased															

Table A-8: Qualitative XRD and Whole Rock Analysis

Waste Classification	Lithology	MIN Sample ID	Minerals	Whole Rock (%)												
				SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	V2O5	LOI
Hanging Wall Schist	Amphibolite	16629	Quartz, Almandine, Clinocllore, Phlogopite	45	18	26	6.8	0.20	0.040	1.7	0.65	0.12	0.24	0.010	0.010	2.0
Hanging Wall Schist	Banded Iron Formation	16325	Magnetite, Dolomite	0.46	0.29	43	9.5	19	0.010	0.010	0.010	0.010	1.1	0.010	0.010	26
Hanging Wall Schist	Banded Iron Formation	16430	Magnetite, Ankerite, Quartz, Hematite, Sepiolite	14	1.5	77	3.2	1.4	0.010	0.53	0.010	0.19	0.39	0.010	0.010	1.4
Hanging Wall Schist	Banded Iron Formation	16435	Magnetite, Quartz, Ankerite	8.6	0.66	79	2.1	3.9	0.010	0.010	0.010	0.20	0.89	0.010	0.010	1.7
Hanging Wall Schist	Banded Iron Formation	16437	Magnetite, Hematite, Quartz, Willemseite	21	0.86	71	5.4	0.68	0.020	0.030	0.010	0.45	0.080	0.010	0.010	-0.54
Hanging Wall Schist	Banded Iron Formation	16473	Magnetite, Hematite, Clinocllore, Willemseite, Quartz	13	1.6	81	3.9	0.93	0.030	0.010	0.060	0.68	0.050	0.010	0.010	-0.42
Hanging Wall Schist	Banded Iron Formation	16475	Magnetite, Willemseite, Clinocllore, Hematite	16	0.92	75	7.3	0.080	0.010	0.010	0.030	0.030	0.080	0.020	0.010	0.26
Hanging Wall Schist	Banded Iron Formation	16513	Magnetite, Willemseite, Clinocllore, Quartz	20	1.6	65	9.1	0.82	0.020	0.010	0.040	0.010	0.61	0.010	0.010	1.9
Hanging Wall Schist	Banded Iron Formation	16561	Magnetite, Quartz, Hematite, Willemseite	6.9	0.22	92	1.2	0.39	0.010	0.010	0.010	0.29	0.080	0.010	0.010	-2.15
Hanging Wall Schist	Banded Iron Formation	16563	Magnetite, Quartz, Hematite, Willemseite	24	0.46	66	8.0	0.050	0.010	0.020	0.020	0.010	0.060	0.010	0.010	0.41
Hanging Wall Schist	Gniess	16027	Quartz, Clinocllore, Almandine, Phlogopite	50	18	20	5.2	0.16	0.11	1.9	0.92	0.020	0.74	0.11	0.040	3.4
Hanging Wall Schist	Gniess	16599	Quartz, Clinocllore, Cordierite, Annite	51	19	14	8.5	0.38	0.32	1.2	1.3	0.070	0.28	0.070	0.070	3.6
Hanging Wall Schist	Gniess	16601	Quartz, Cordierite, Clinocllore, Phlogopite, Ferroglaucophane	44	20	21	9.1	0.22	0.23	0.76	1.4	0.16	0.38	0.060	0.090	3.4
Hanging Wall Schist	Gniess	16631	Quartz, Phlogopite, Clinocllore, Andalusite	69	16	5.7	2.5	0.17	0.11	2.8	0.60	0.13	0.040	0.010	0.010	2.5
Hanging Wall Schist	High Grade Iron Formation	16011	Magnetite, Quartz, Pyrite	2.8	0.53	92	1.5	0.050	0.010	0.020	0.010	0.010	0.41	0.010	0.010	1.9
Hanging Wall Schist	High Grade Iron Formation	16015	Magnetite, Clinocllore, Pyrite	2.7	2.4	89	2.1	0.010	0.010	0.010	0.12	0.010	0.81	0.010	0.010	1.5
Hanging Wall Schist	High Grade Iron Formation	16019	Magnetite, Goethite, Quartz	0.23	0.13	95	0.12	0.010	0.020	0.010	0.010	0.010	0.79	0.010	0.010	3.3
Hanging Wall Schist	High Grade Iron Formation	16051	Magnetite, Clinocllore, Pyrite	6.1	5.6	83	3.9	0.010	0.010	0.010	0.15	0.020	0.070	0.010	0.010	0.060
Hanging Wall Schist	High Grade Iron Formation	16221	Quartz, Magnetite	46	0.21	54	0.24	0.19	0.020	0.010	0.010	0.14	0.030	0.010	0.010	-1.54
Hanging Wall Schist	High Grade Iron Formation	16233	Hematite, Clinocllore	1.8	0.99	93	0.83	0.48	0.020	0.020	0.030	0.33	0.040	0.010	0.010	1.3
Hanging Wall Schist	High Grade Iron Formation	16323	Magnetite, Hematite, Quartz, Willemseite	16	0.28	77	6.1	0.21	0.010	0.010	0.010	0.080	0.030	0.010	0.010	-0.27
Hanging Wall Schist	High Grade Iron Formation	16441	Magnetite, Pyrite	3.3	1.0	95	1.6	0.54	0.010	0.010	0.030	0.38	0.050	0.010	0.010	-2.07
Hanging Wall Schist	High Grade Iron Formation	16445	Magnetite, Quartz, Clinocllore	7.8	1.1	93	1.1	0.24	0.020	0.010	0.020	0.17	0.040	0.010	0.010	-2.06
Hanging Wall Schist	High Grade Iron Formation	16449	Magnetite, Quartz, Pennanite	22	2.4	71	2.3	0.050	0.010	0.010	0.050	0.020	0.060	0.010	0.010	0.66
Hanging Wall Schist	High Grade Iron Formation	16455	Magnetite, Clinocllore, Pyrite	16	12	57	8.2	0.040	0.020	0.040	0.66	0.020	0.43	0.080	0.030	4.6
Hanging Wall Schist	High Grade Iron Formation	16477	Magnetite, Quartz, Willemseite, Clinocllore	15	1.1	80	3.4	0.34	0.010	0.010	0.020	0.060	0.10	0.010	0.010	-0.68
Hanging Wall Schist	High Grade Iron Formation	16497	Magnetite, Pyrite, Hematite, Clinocllore, Quartz	3.7	1.2	85	1.1	0.11	0.010	0.020	0.050	0.070	0.010	0.010	0.010	8.8
Hanging Wall Schist	High Grade Iron Formation	16547	Magnetite	1.6	1.0	86	1.5	0.40	0.020	0.010	0.040	0.15	3.9	0.010	0.010	4.1
Hanging Wall Schist	High Grade Iron Formation	16557	Magnetite, Hematite, Quartz, Chabazite, Talc	13	0.78	81	2.1	0.21	0.010	0.010	0.010	0.11	1.4	0.010	0.010	0.050
Hanging Wall Schist	High Grade Iron Formation	16565	Magnetite, Willemseite, Hematite	13	0.34	82	5.1	0.030	0.020	0.010	0.010	0.010	0.060	0.010	0.010	-1.32
Hanging Wall Schist	High Grade Iron Formation	16621	Magnetite, Goethite, Hematite, Pyrite	0.50	0.35	94	0.13	0.070	0.010	0.010	0.020	0.060	0.20	0.010	0.010	3.0
Hanging Wall Schist	High Grade Iron Formation	16623	Magnetite, Hematite	3.6	2.4	92	0.67	0.18	0.010	0.010	0.060	0.060	1.0	0.010	0.010	-0.52
Hanging Wall Schist	High Grade Iron Formation	16625	Magnetite, Siderite, Quartz	0.38	0.19	75	4.3	0.90	0.010	0.010	0.010	0.010	3.2	0.010	0.010	1.4
Hanging Wall Schist	High Grade Iron Formation	16627	Quartz, Magnetite, Hematite, Clinocllore	7.6	0.52	92	0.49	0.22	0.010	0.010	0.020	0.16	0.66	0.010	0.010	-2.39
Hanging Wall Schist	Metasediment	16025	Quartz, Cordierite, Phlogopite, Clinocllore	58	18	11	6.1	0.040	0.14	2.4	0.99	0.010	0.11	0.060	0.040	2.6
Hanging Wall Schist	Metasediment	16033	Quartz, Clinocllore, Phlogopite	46	15	20	9.5	0.030	0.030	1.7	0.74	0.010	0.18	0.16	0.040	6.1
Hanging Wall Schist	Metasediment	16037	Quartz, Clinocllore, Cordierite, Phlogopite	51	18	19	6.6	0.030	0.11	3.0	0.74	0.030	0.080	0.080	0.040	2.2
Hanging Wall Schist	Metasediment	16195	Albite, Quartz, Magnesiohornblende, Phlogopite	52	18	9.2	4.6	7.9	4.0	0.98	1.2	0.070	0.28	0.060	0.060	0.65
Hanging Wall Schist	Metasediment	16197	Quartz, Magnesiohornblende, Clinocllore, Annite, Calcite	49	17	12	4.3	10	1.7	1.6	1.0	0.070	0.34	0.050	0.060	1.6
Hanging Wall Schist	Metasediment	16199	Quartz, Magnesiohornblende, Phlogopite, Clinocllore	51	12	11	11	8.3	0.73	1.8	0.79	0.45	0.18	0.10	0.030	2.4
Hanging Wall Schist	Metasediment	16201	Quartz, Magnesiohornblende, Anorthite, Clinocllore, Dolomite	51	16	11	4.8	11	1.6	1.1	0.92	0.060	0.31	0.050	0.060	2.2
Hanging Wall Schist	Metasediment	16203	Quartz, Labradorite, Phlogopite, Magnesiohornblende, Clinocllore	56	17	7.5	3.7	8.0	2.4	1.5	0.94	0.070	0.21	0.060	0.060	1.4
Hanging Wall Schist	Metasediment	16205	Quartz, Magnesiohornblende, Anorthite, Annite, Clinocllore, Calcite	54	16	11	4.1	11	1.2	0.56	1.1	0.080	0.36	0.040	0.060	0.86
Hanging Wall Schist	Metasediment	16207	Quartz, Labradorite, Magnesiohornblende, Phlogopite, Clinocllore	50	18	6.8	5.2	12	2.6	1.1	1.1	0.080	0.20	0.060	0.060	2.1
Hanging Wall Schist	Metasediment	16209	Magnesiohornblende, Quartz, Phlogopite, Albite, Clinocllore	46	17	11	8.4	11	0.53	2.0	0.94	0.060	0.32	0.060	0.070	2.2
Hanging Wall Schist	Metasediment															

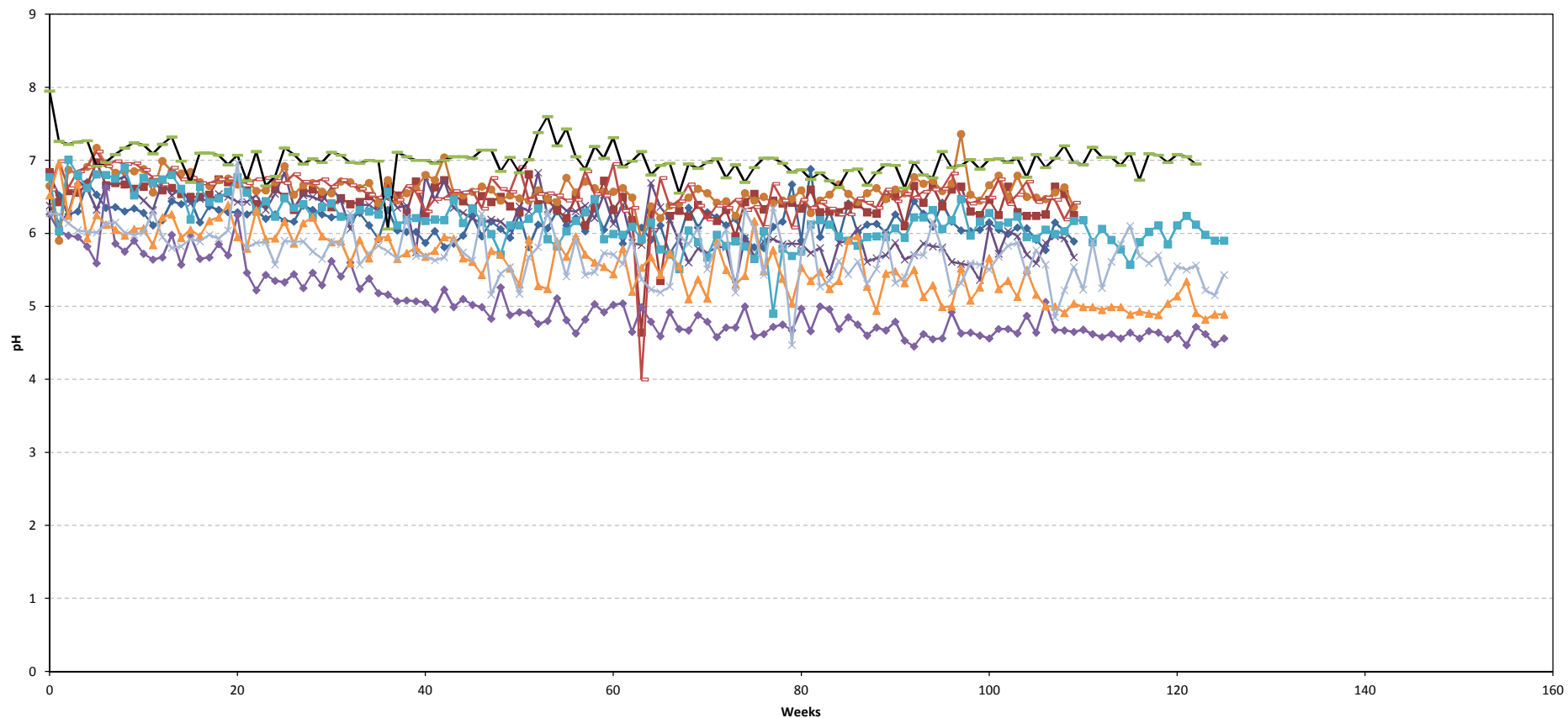
Table A-8: Qualitative XRD and Whole Rock Analysis

Waste Classification	Lithology	MIN Sample ID	Minerals	Whole Rock (%)												
				SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	V2O5	LOI
Hanging Wall Waste	Amphibolite	16407	Almandine, Clinocllore	31	17	29	14	0.14	0.020	0.010	0.81	0.020	0.46	0.070	0.030	7.7
Hanging Wall Waste	Amphibolite	16409	Clinocllore, Quartz	31	17	20	19	0.64	0.020	0.16	0.83	0.46	0.79	0.010	0.020	10
Hanging Wall Waste	Gniess	16081	Quartz, Clinocllore, Muscovite, Phlogopite, Andalusite	67	16	5.6	2.6	0.26	0.23	4.7	0.79	0.19	0.030	0.020	0.020	2.1
Hanging Wall Waste	Gniess	16083	Quartz, Clinocllore, Muscovite	69	15	4.4	2.5	0.28	0.27	4.0	0.80	0.20	0.040	0.010	0.010	2.5
Hanging Wall Waste	Schist	16405	Clinocllore, Quartz	27	21	20	20	0.030	0.030	0.020	1.1	0.010	0.15	0.84	0.060	10
Hanging Wall Waste	Schist	16411	Quartz, Phlogopite, Clinocllore	61	13	12	7.7	0.14	0.10	1.4	0.54	0.10	0.24	0.23	0.020	4.2
Hanging Wall Waste	Schist	16413	Clinocllore	31	16	19	21	0.18	0.030	0.25	0.63	0.090	0.85	0.25	0.030	10
Hanging Wall Waste	Schist	16415	Clinocllore	31	18	16	21	0.21	0.010	0.31	0.72	0.11	1.2	0.32	0.040	11
Hanging Wall Waste	Schist	16567	Quartz, Cordierite, Clinocllore, Annite, Anthophyllite	54	15	16	8.9	0.52	0.11	1.3	0.77	0.38	0.060	0.12	0.020	3.2
Hanging Wall Waste	Volcanic Tuff	16655	Quartz, Magnesiohornblende, Albite, Clinocllore, Magnesium Calcite	55	18	6.4	3.2	10	3.2	0.54	1.0	0.070	0.24	0.050	0.050	1.8
Hanging Wall Waste	Volcanic Tuff	16657	Quartz, Magnesiohornblende, Magnesium Calcite, Albite	67	9.0	5.5	3.4	8.8	1.2	0.58	0.55	0.040	0.17	0.040	0.030	3.4
Hanging Wall Waste	Volcanic Tuff	16659	Quartz, Magnesium Calcite, Anorthite, Magnesiohornblende, Phlogopite	39	16	6.1	3.4	20	1.9	1.3	0.86	0.070	0.30	0.050	0.050	10
Hanging Wall Waste	Volcanic Tuff	16661	Quartz, Magnesiohornblende, Anorthite, Clinocllore, Magnesium Calcite	53	19	8.5	4.4	11	2.4	0.32	1.1	0.080	0.25	0.070	0.070	0.56
Internal Waste	Amphibolite	16273	Quartz, Magnetite, Clinocllore, Willemsite, Hematite	29	14	29	18	0.60	0.040	0.050	0.81	0.44	0.29	0.11	0.040	7.9
Internal Waste	Banded Iron Formation	16275	Quartz, Magnetite, Hematite	43	0.24	57	0.31	0.030	0.020	0.020	0.010	0.010	0.10	0.020	0.010	-1.37
Internal Waste	Banded Iron Formation	16277	Quartz, Magnetite, Hematite	36	0.40	63	0.56	0.020	0.040	0.010	0.020	0.010	0.14	0.010	0.010	-1.18
Internal Waste	Banded Iron Formation	16633	Magnetite, Almandine, Anthophyllite, Pyrite	23	6.1	66	3.2	0.45	0.030	0.010	0.17	0.16	1.1	0.010	0.010	-1.81
Internal Waste	High Grade Iron Formation	16279	Magnetite, Quartz, Clinocllore	9.8	0.40	91	0.46	0.020	0.020	0.010	0.010	0.010	0.21	0.010	0.010	-2.51
Internal Waste	High Grade Iron Formation	16637	Quartz, Magnetite, Hematite	42	0.33	57	0.21	0.19	0.020	0.030	0.010	0.18	0.080	0.010	0.010	0.050
Internal Waste	High Grade Iron Formation	16639	Magnetite, Cummingtonite, Grossular	31	2.9	52	5.9	0.36	0.010	0.010	0.15	0.060	4.4	0.010	0.010	2.6
Internal Waste	High Grade Iron Formation	16643	Magnetite, Clinocllore, Anthophyllite	3.8	0.85	92	2.1	0.58	0.010	0.010	0.050	0.41	1.3	0.010	0.010	-1.13
Internal Waste	Schist	16635	Clinocllore, Quartz, Almandine, Magnesiocummingtonite	36	14	32	9.5	0.93	0.010	0.020	1.1	0.54	3.2	0.10	0.030	2.8
Internal Waste	Schist	16641	Magnetite, Pyrite, Cummingtonite, Clinocllore, Quartz	17	1.6	56	5.0	2.0	0.020	0.010	0.060	1.3	1.2	0.010	0.010	16
Mineralized Waste	Amphibolite	16287	Quartz, Clinocllore, Muscovite	63	16	8.9	3.9	0.24	0.12	3.3	0.77	0.18	0.090	0.010	0.010	3.8
Mineralized Waste	Banded Iron Formation	16281	Magnetite, Anthophyllite, Clinocllore	7.6	1.9	86	2.4	0.13	0.020	0.010	0.050	0.010	2.5	0.010	0.010	-1.45
Mineralized Waste	Banded Iron Formation	16727	Magnetite, Magnesiocummingtonite, Pyrite, Quartz	13	0.48	82	3.8	0.25	0.020	0.020	0.020	0.17	0.89	0.010	0.010	-1
Mineralized Waste	Banded Iron Formation	16731	Clinocllore, Magnetite, Pyrope	18	13	57	7.1	0.43	0.010	0.010	0.58	0.12	2.1	0.030	0.020	2.4
Mineralized Waste	High Grade Iron Formation	16055	Magnetite	2.3	0.33	95	1.5	0.070	0.010	0.010	0.010	0.020	2.6	0.010	0.010	-2.2
Mineralized Waste	High Grade Iron Formation	16057	Magnetite, Ferroglaucophane, Clinocllore, Pyrite, Siderite	4.6	0.68	76	5.9	0.55	0.010	0.010	0.020	0.22	3.5	0.010	0.010	6.8
Mineralized Waste	High Grade Iron Formation	16067	Magnetite, Goethite, Pyrite	0.26	0.17	95	0.30	0.010	0.010	0.010	0.010	0.010	1.7	0.010	0.010	1.9
Mineralized Waste	High Grade Iron Formation	16165	Magnetite, Clinocllore, Hematite	6.2	4.2	77	5.3	0.34	0.020	0.020	0.17	0.040	1.3	0.010	0.010	4.3
Mineralized Waste	High Grade Iron Formation	16283	Magnetite, Siderite, Pyrite	1.5	0.80	82	2.1	0.11	0.010	0.020	0.030	0.010	2.9	0.010	0.010	8.4
Mineralized Waste	High Grade Iron Formation	16285	Magnetite, Siderite	0.53	0.25	92	1.0	0.10	0.020	0.010	0.010	0.010	3.3	0.010	0.010	2.0
Mineralized Waste	High Grade Iron Formation	16733	Magnetite, Magnesiocummingtonite	4.4	0.98	95	1.0	0.74	0.020	0.010	0.040	0.56	0.28	0.010	0.010	-2.8
Mineralized Waste	Schist	16163	Magnetite, Hematite, Clinocllore	3.4	2.3	74	1.9	0.41	0.030	0.010	0.060	0.050	8.9	0.010	0.010	7.8
Mineralized Waste	Schist	16729	Clinocllore, Almandine	27	23	33	9.2	0.41	0.010	0.040	0.88	0.13	1.1	0.010	0.030	5.1

APPENDIX B

KIENTIC DATA TABLES AND PLOTS

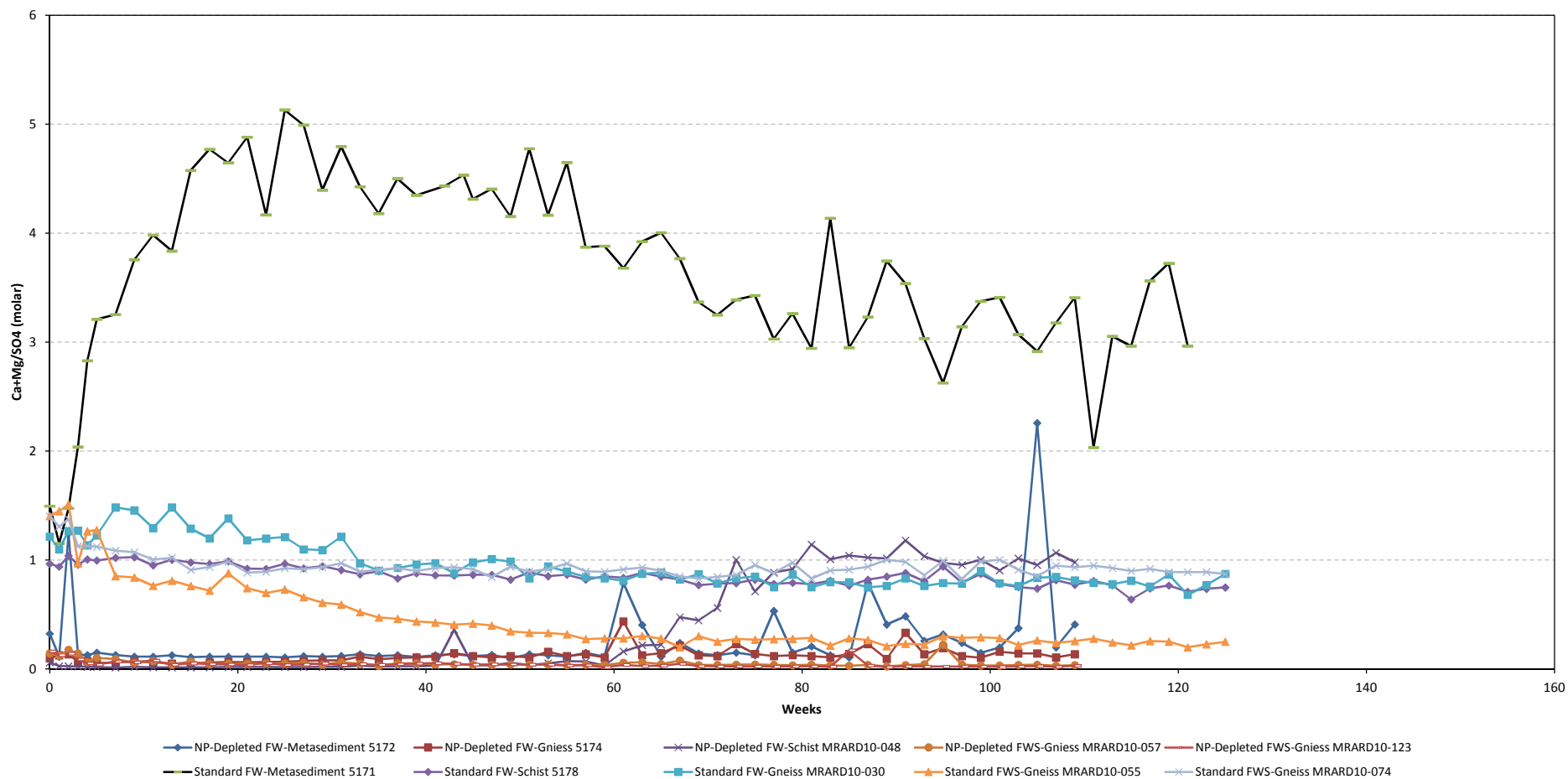
pH - Footwall



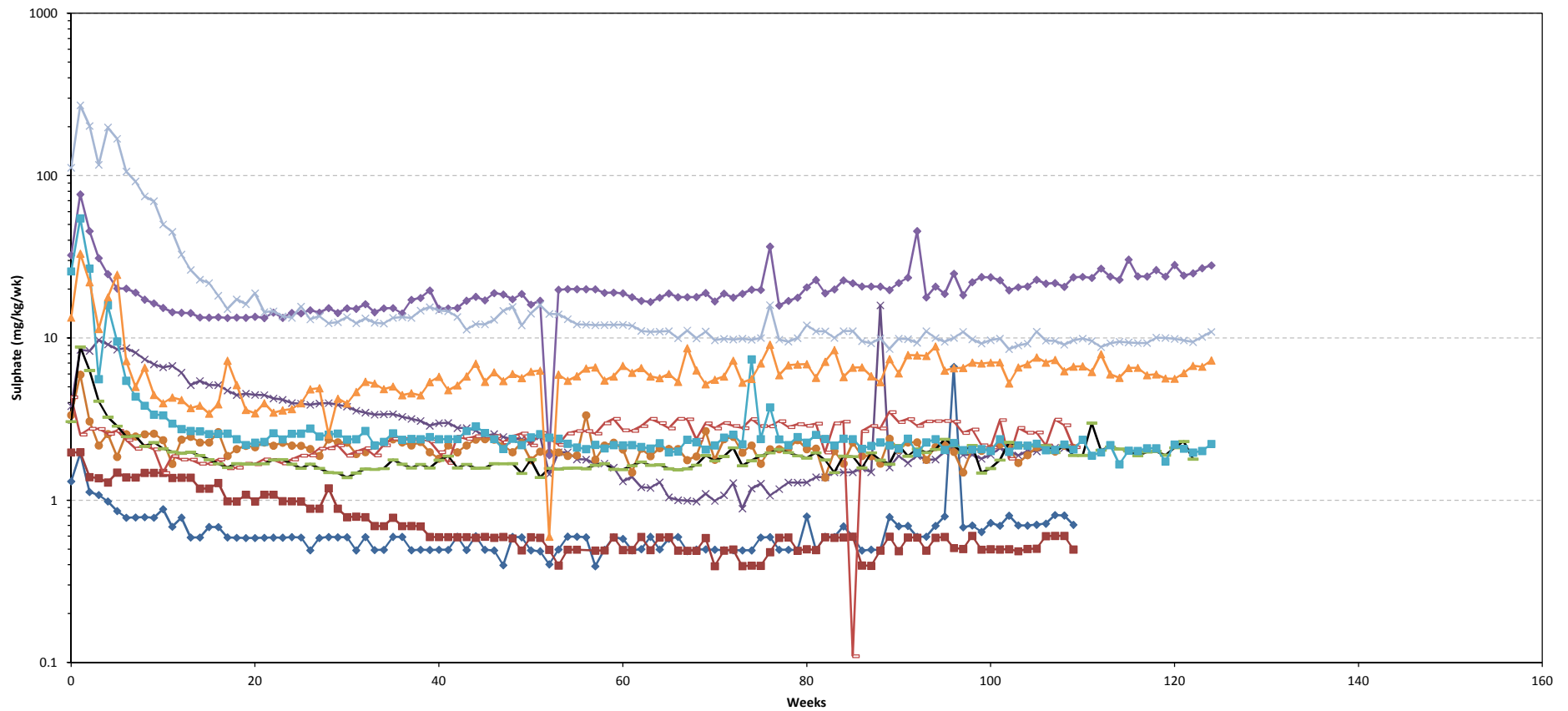
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 Standard FW-Metasediment 5171 Standard FW-Schist 5178 Standard FW-Gneiss MRARD10-030 Standard FWS-Gneiss MRARD10-055 Standard FWS-Gneiss MRARD10-074

 	
Mary River Project	
pH - Footwall	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	
Figure B-1	

(Ca+Mg)/SO₄ - Footwall

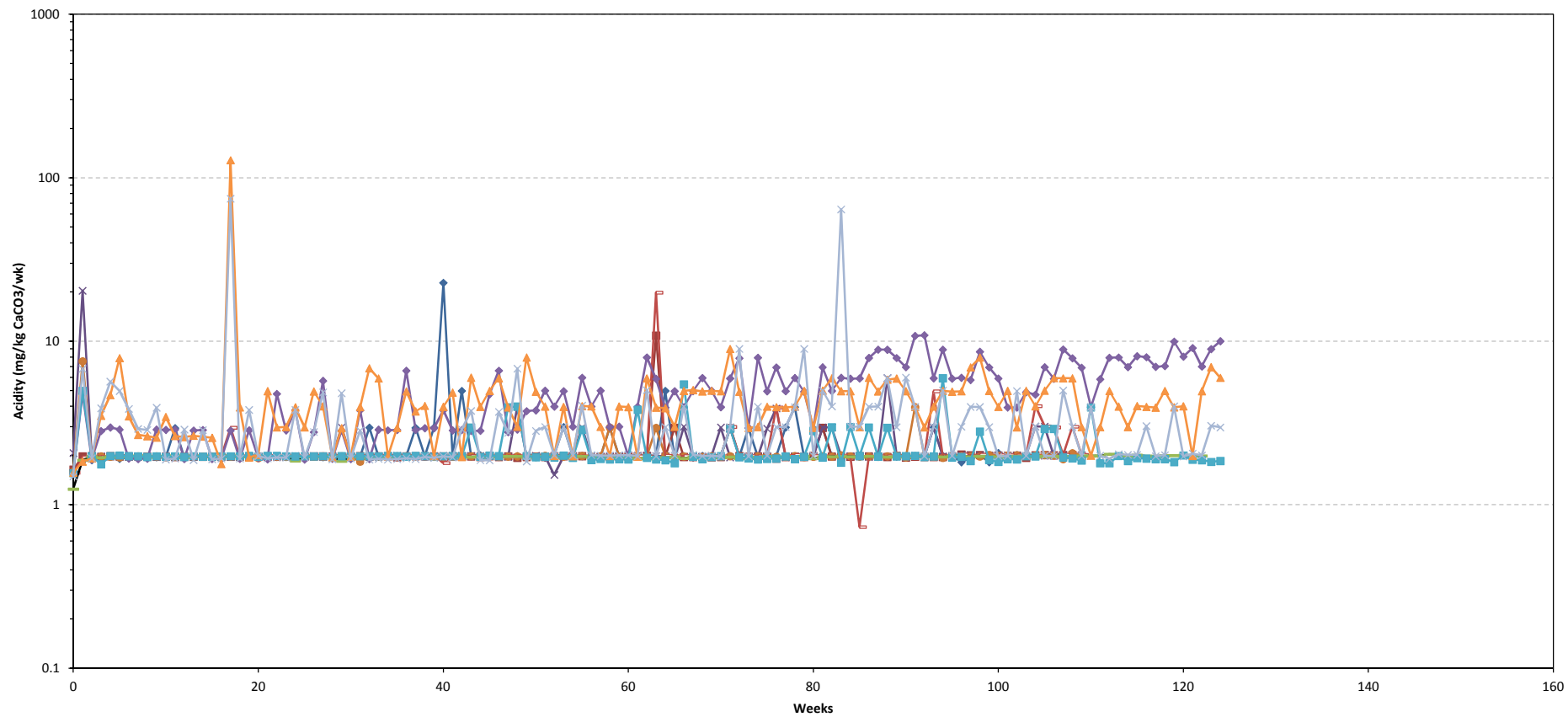


Sulphate - Footwall

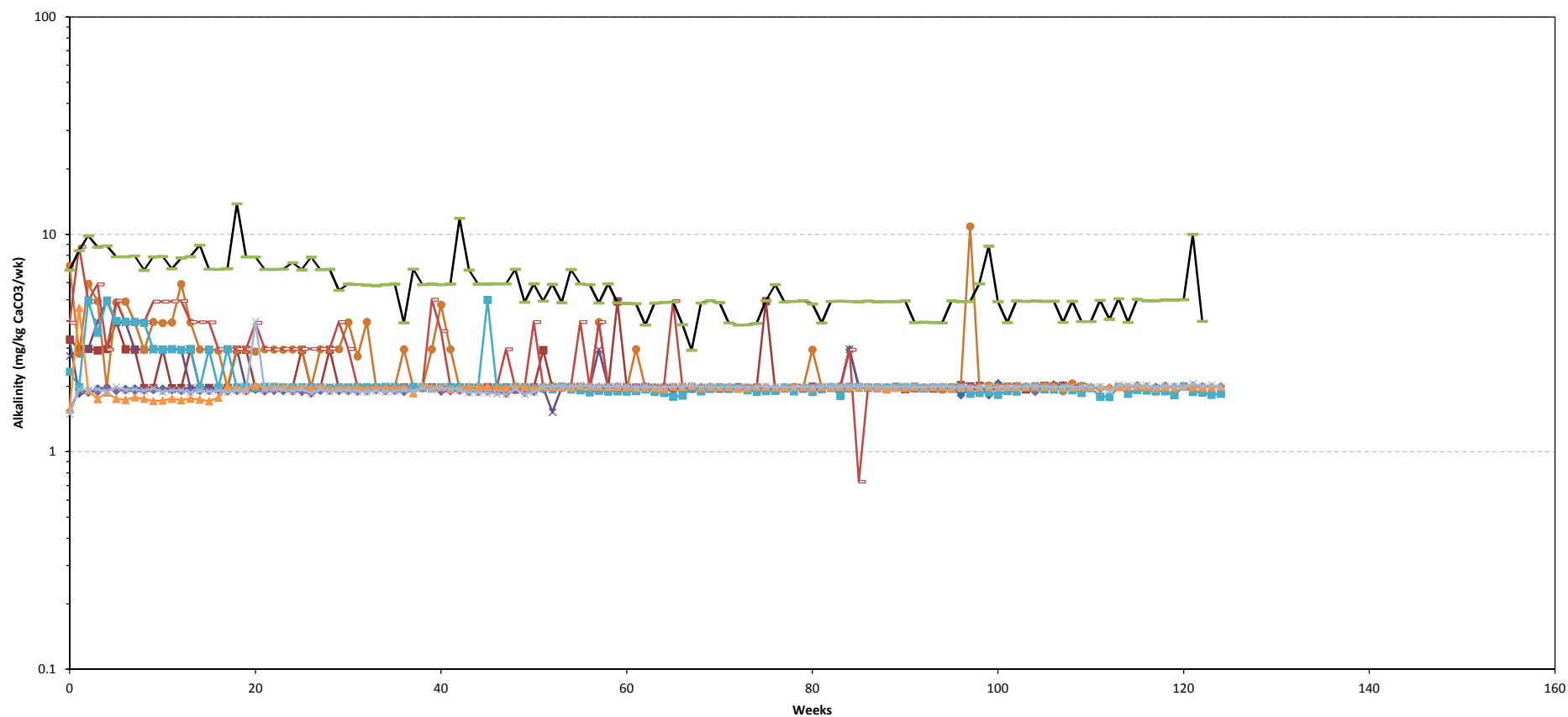


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 Standard FW-Metasediment 5171 Standard FW-Schist 5178 Standard FW-Gneiss MRARD10-030 Standard FWS-Gneiss MRARD10-055 Standard FWS-Gneiss MRARD10-074

Acidity - Footwall

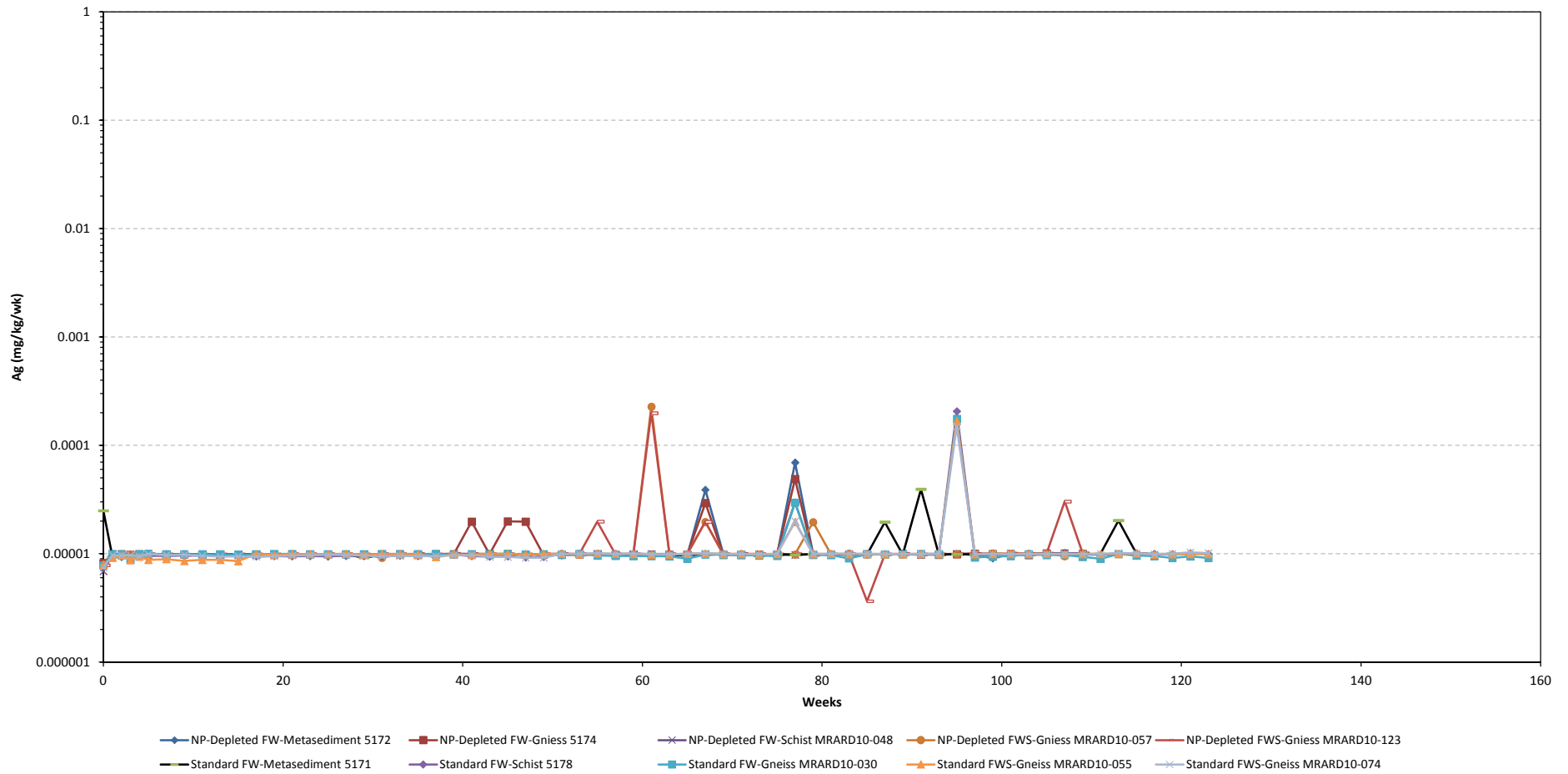


Alkalinity - Footwall

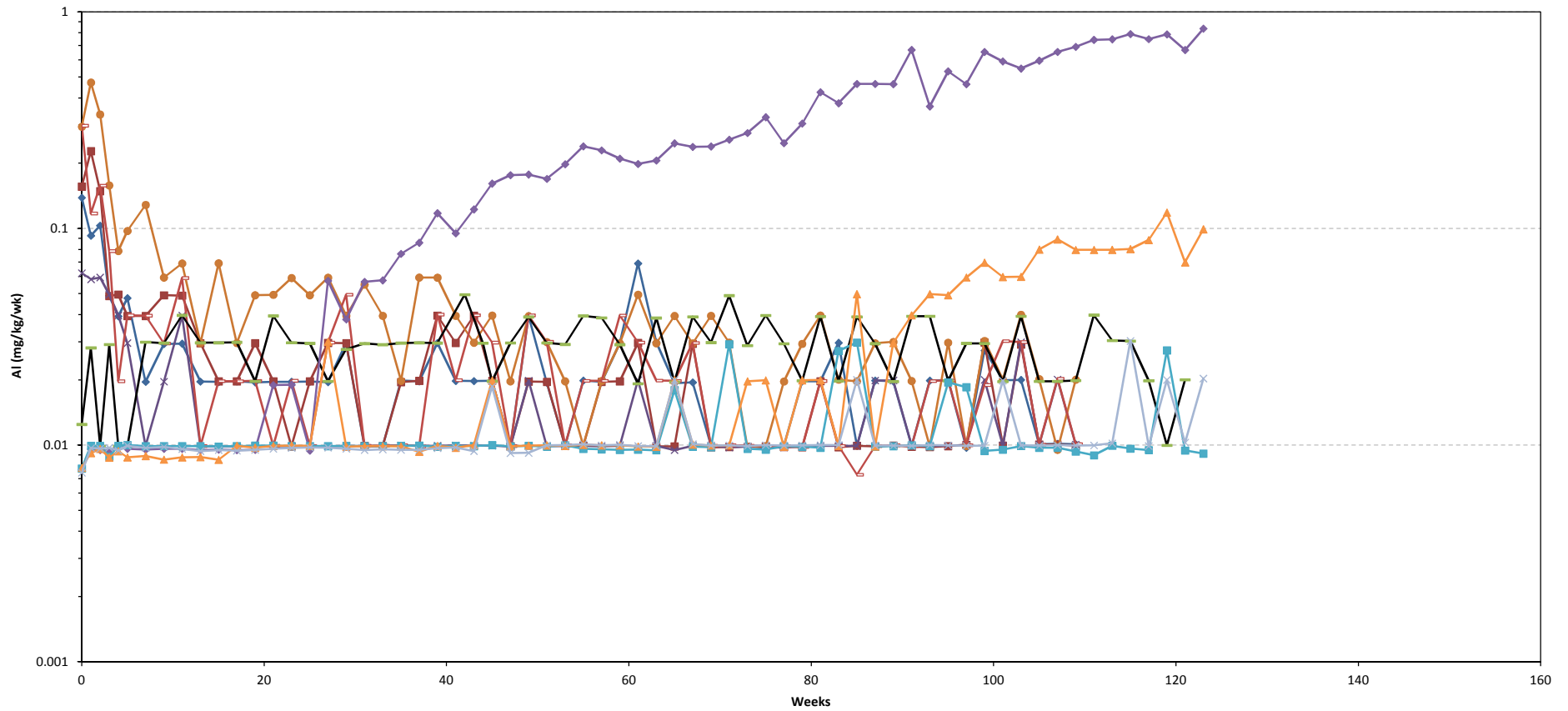


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 Standard FW-Metasediment 5171 Standard FW-Schist 5178 Standard FW-Gneiss MRARD10-030 Standard FWS-Gneiss MRARD10-055 Standard FWS-Gneiss MRARD10-074

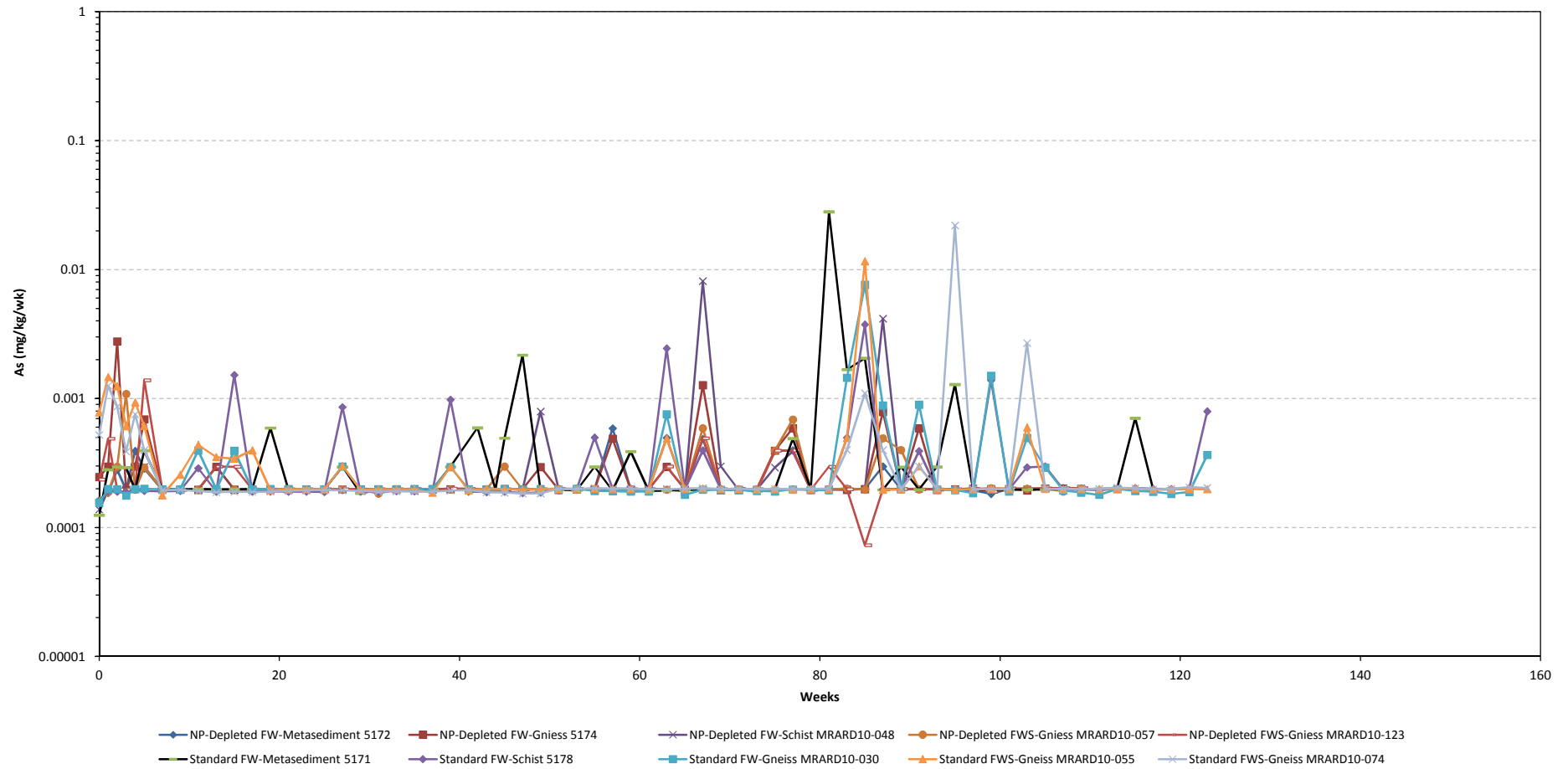
Silver - Footwall



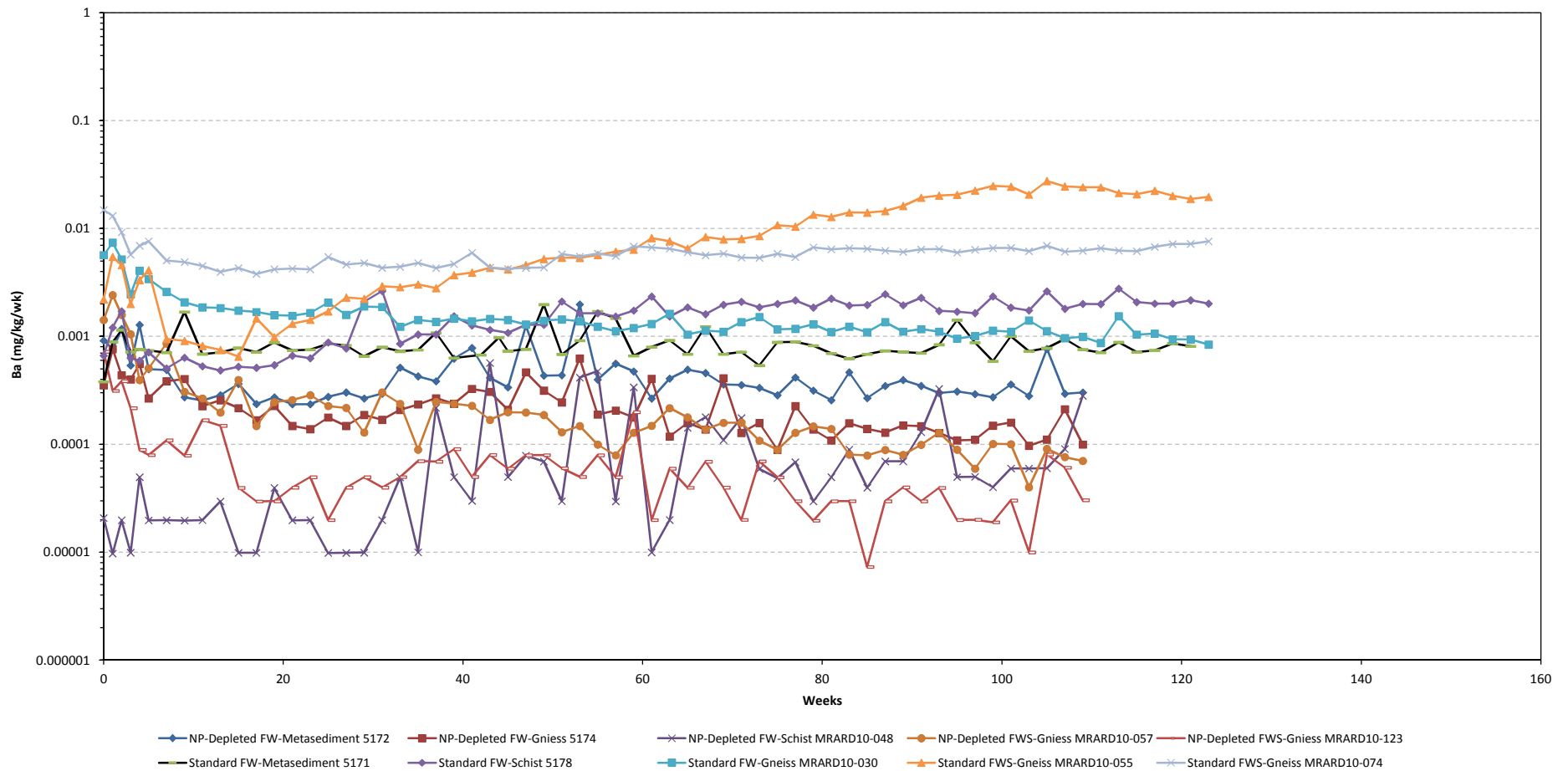
Aluminum - Footwall



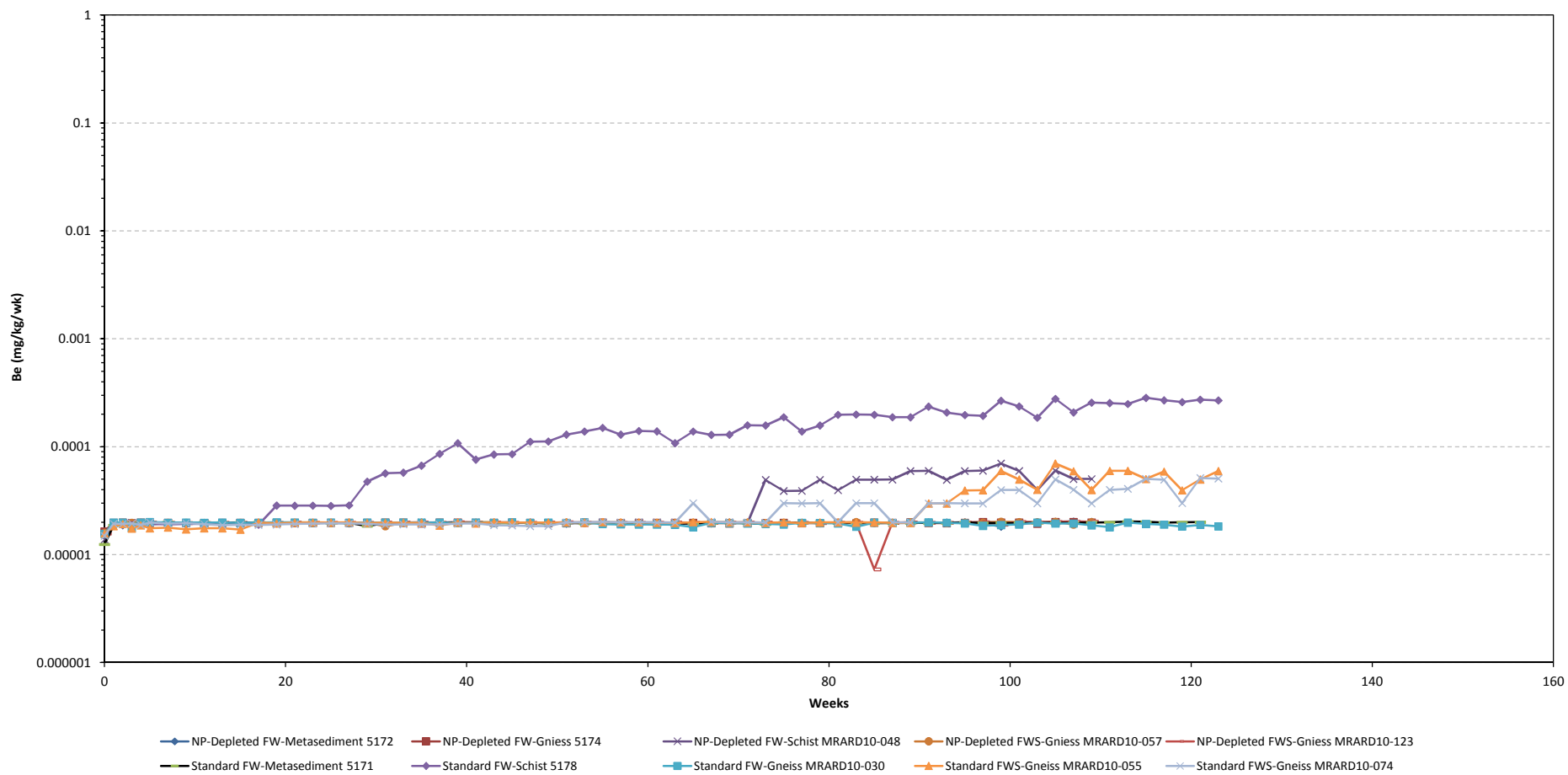
Arsenic - Footwall



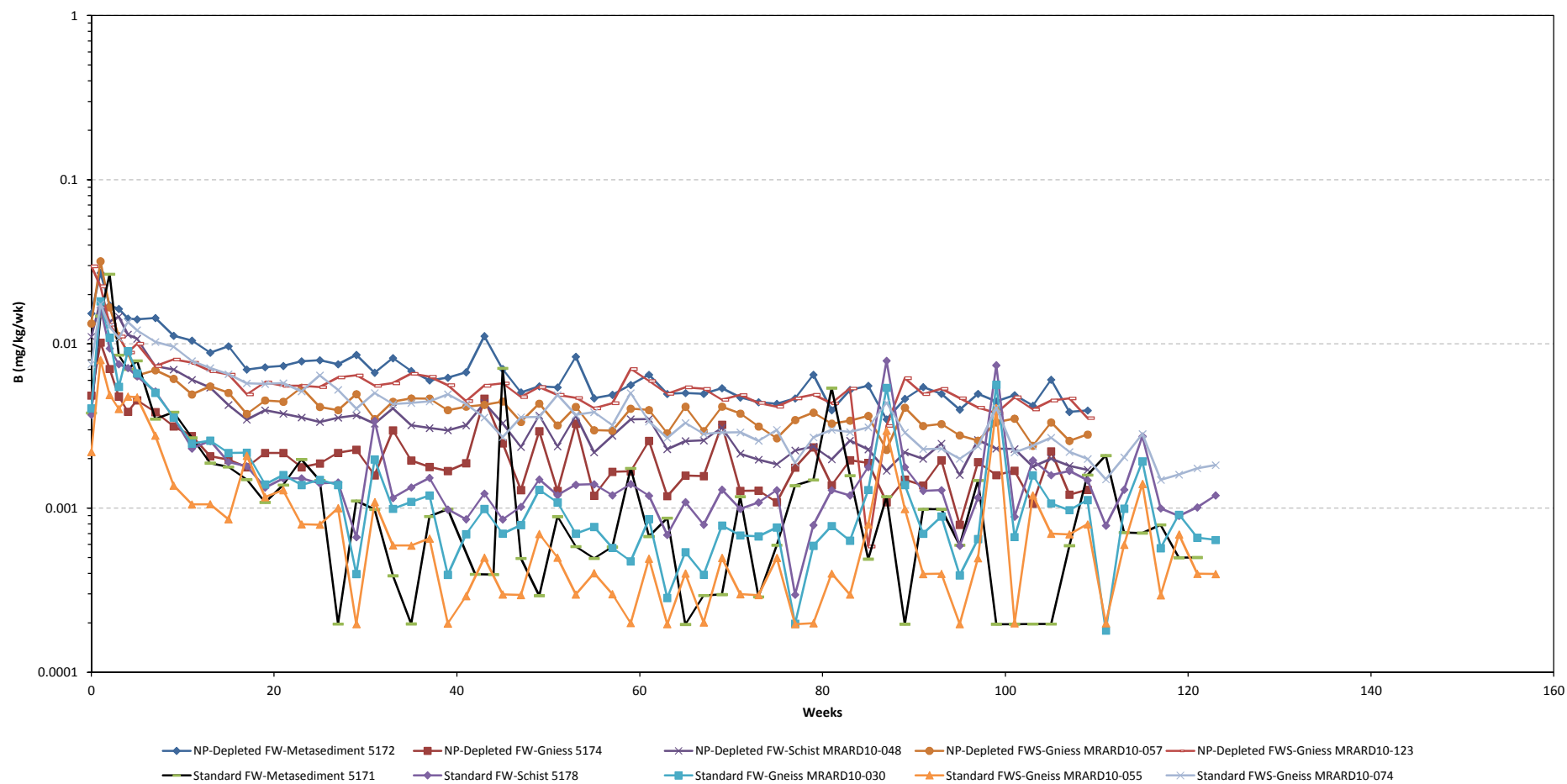
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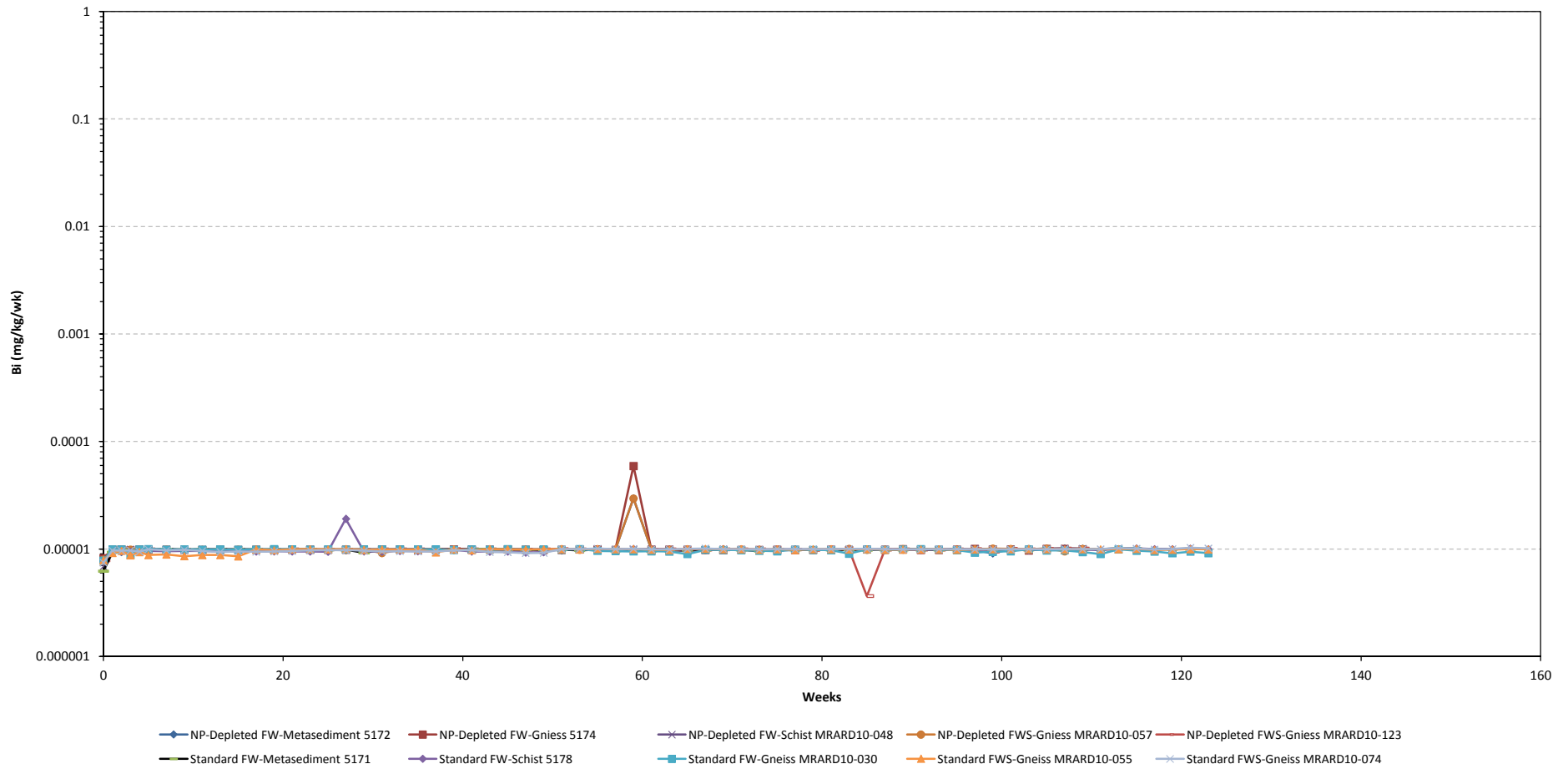
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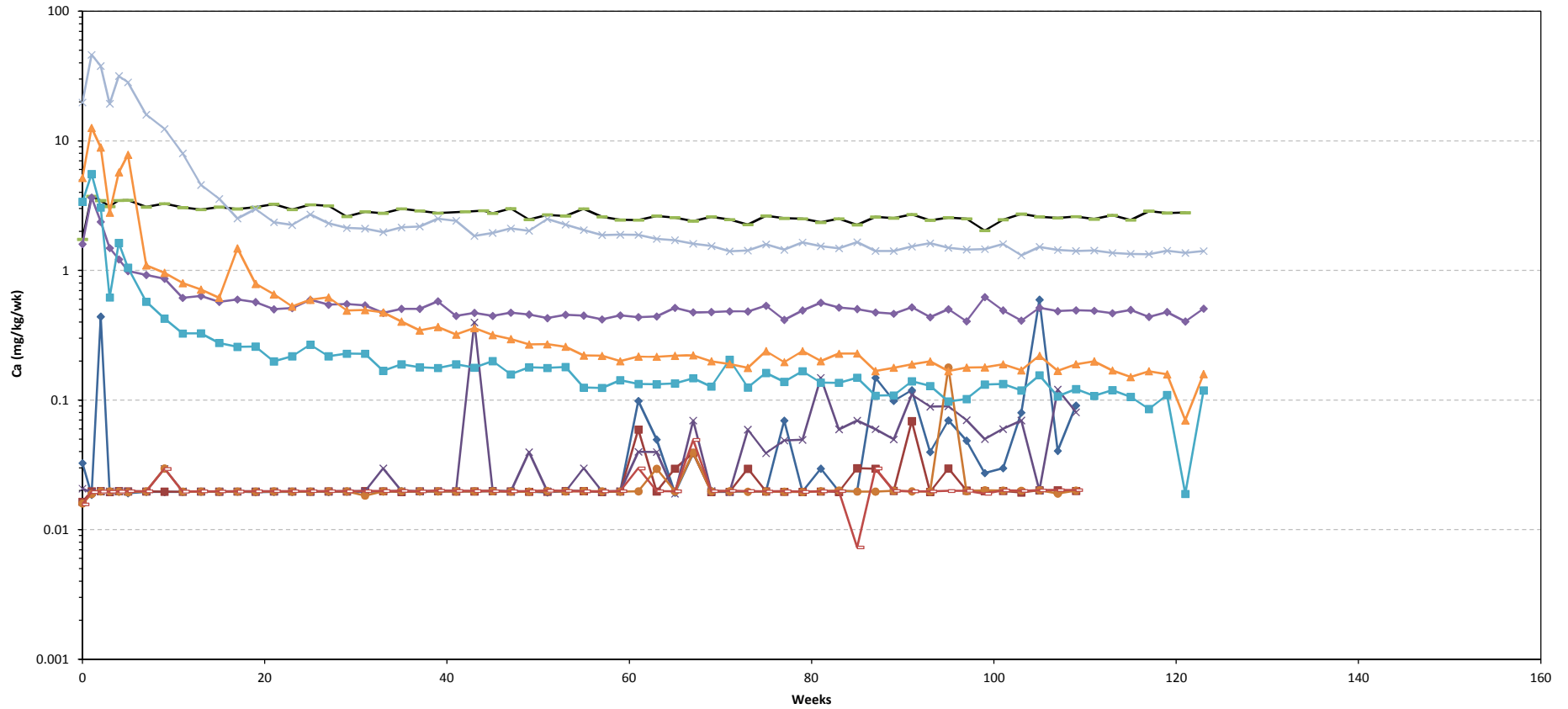
Boron - Footwall



Bismuth - Footwall

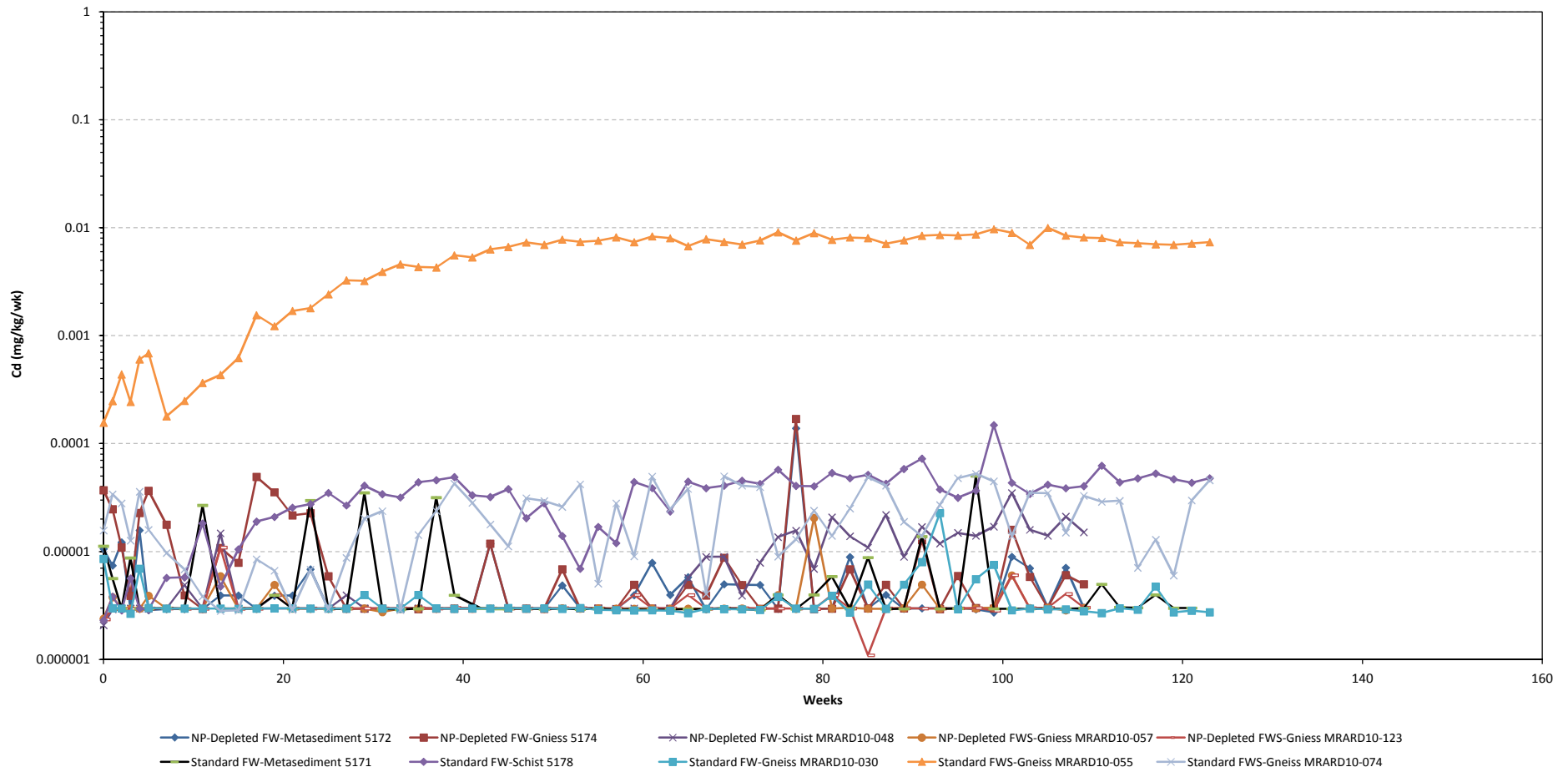


Calcium - Footwall

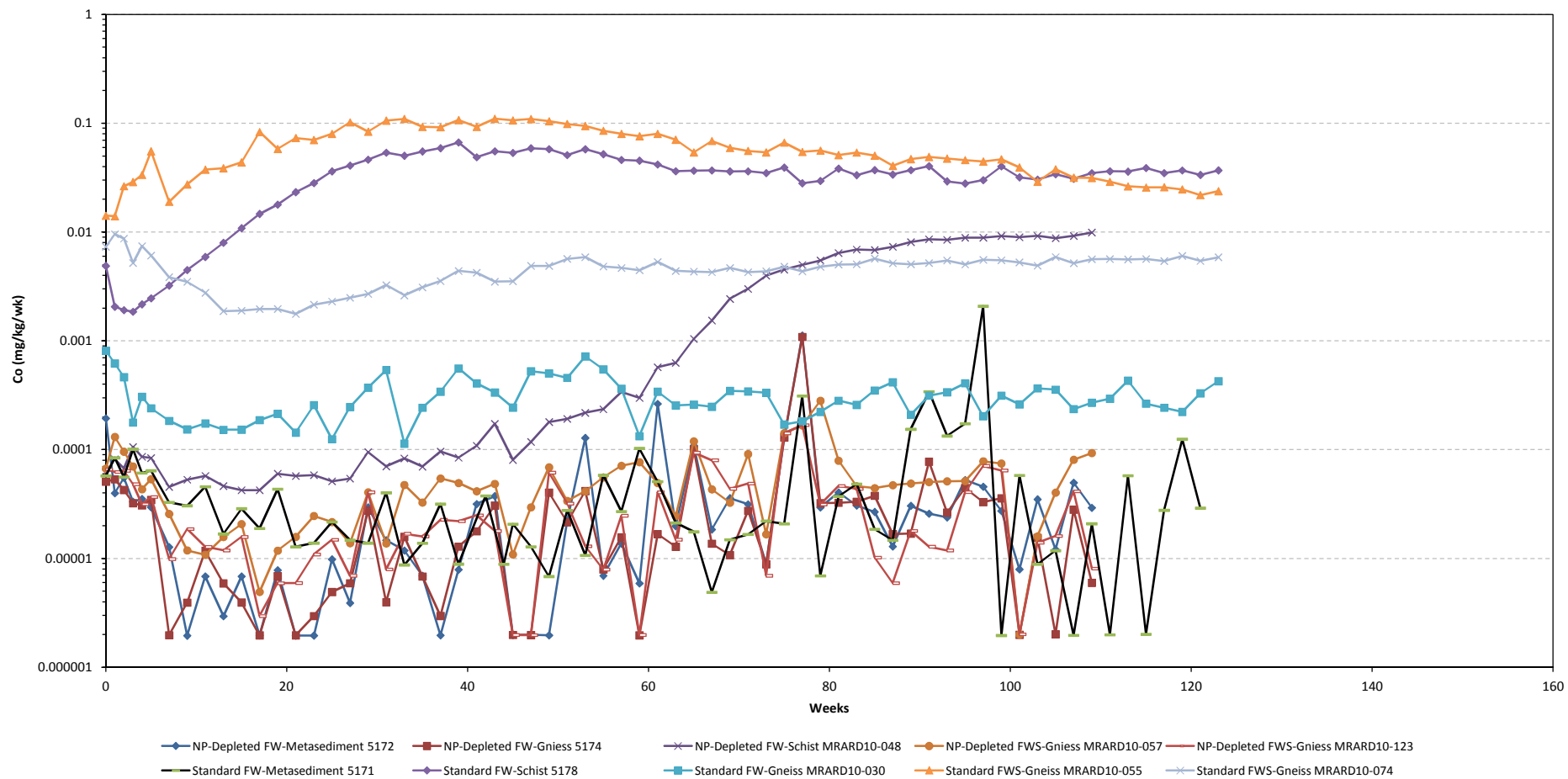


NP-Depleted FW-Metasediment 5172 NP-Depleted FW-Gneiss 5174 NP-Depleted FW-Schist MRARD10-048 NP-Depleted FWS-Gneiss MRARD10-057 NP-Depleted FWS-Gneiss MRARD10-123
 Standard FW-Metasediment 5171 Standard FW-Schist 5178 Standard FW-Gneiss MRARD10-030 Standard FWS-Gneiss MRARD10-055 Standard FWS-Gneiss MRARD10-074

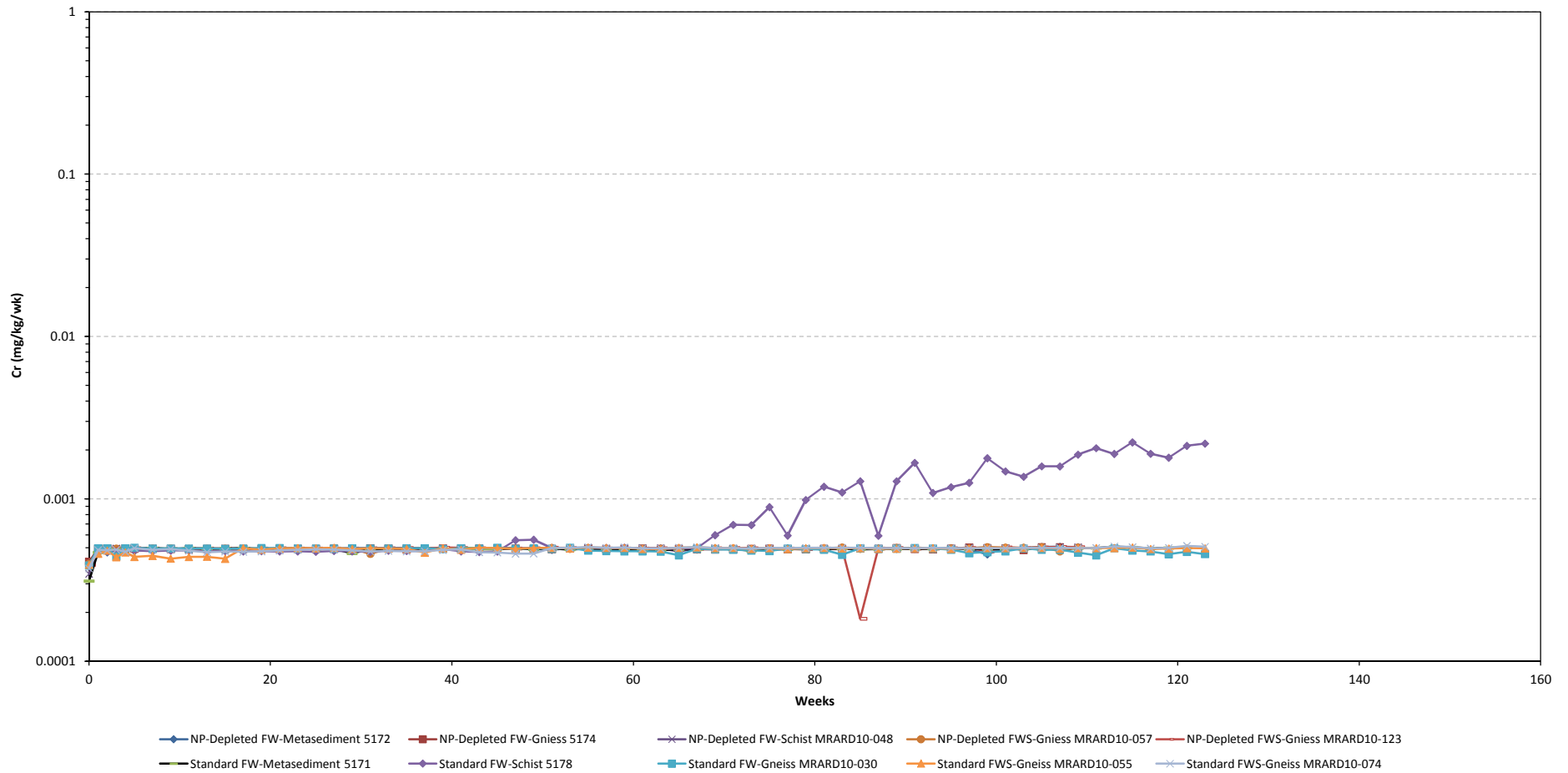
Cadmium - Footwall



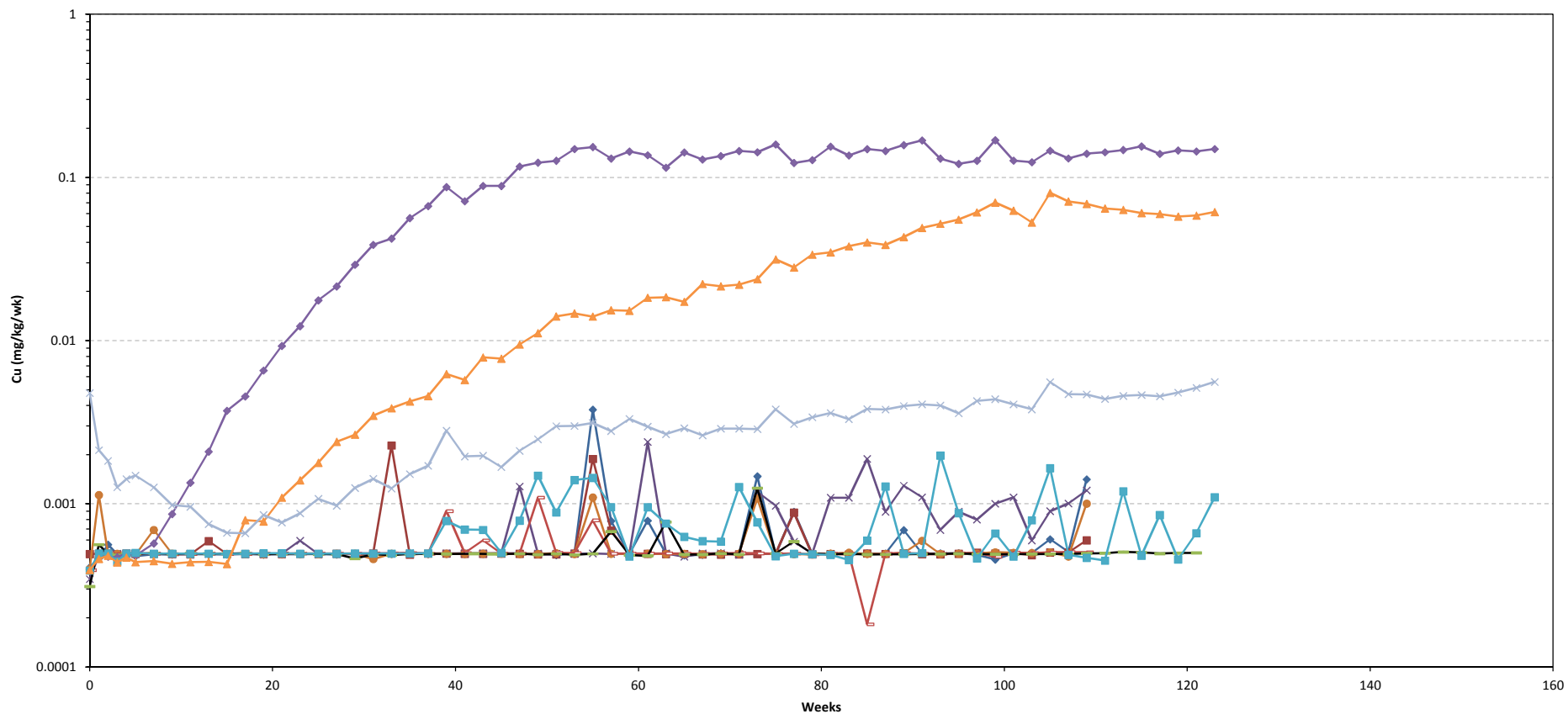
Cobalt - Footwall



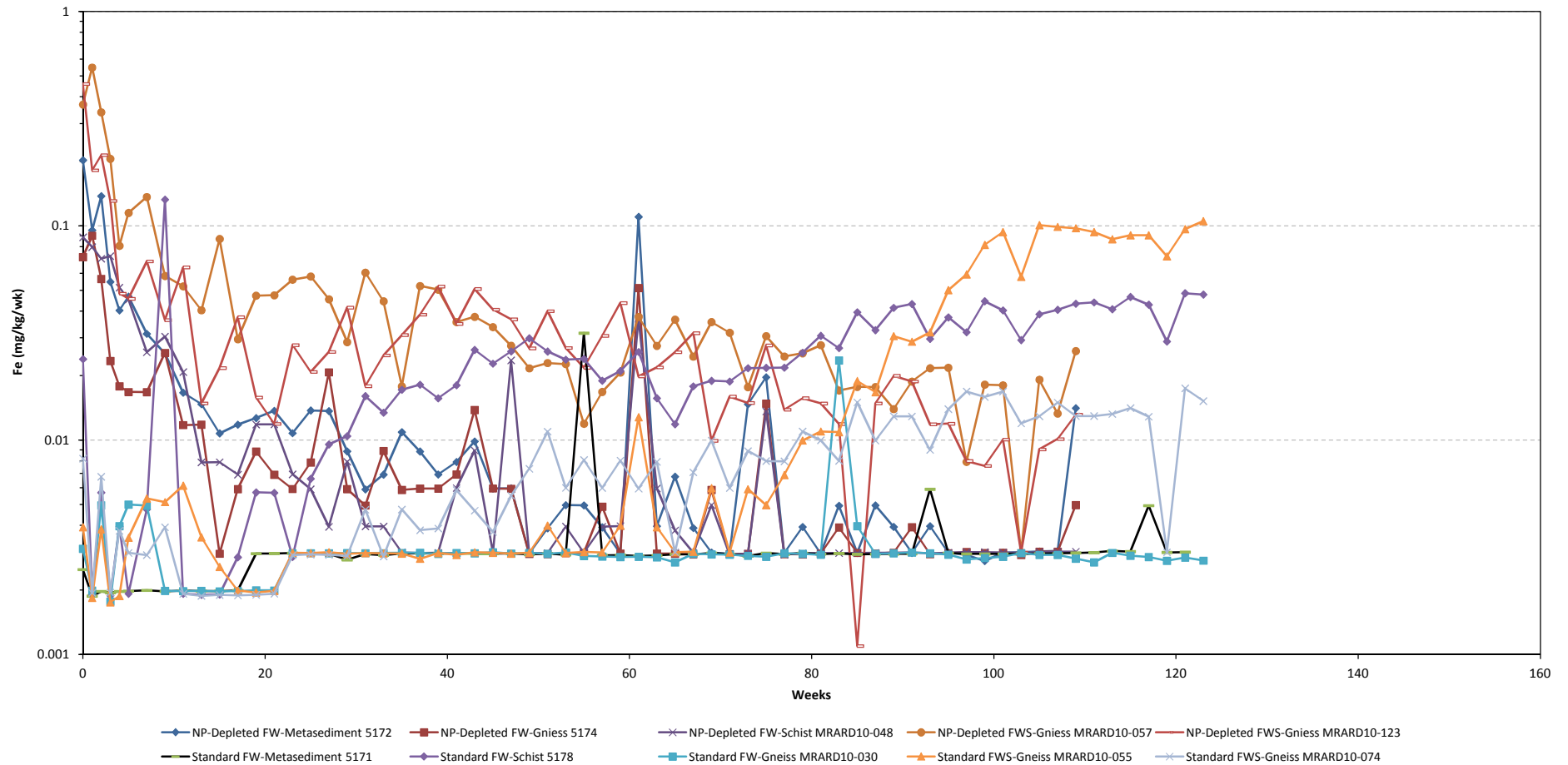
Chromium - Footwall



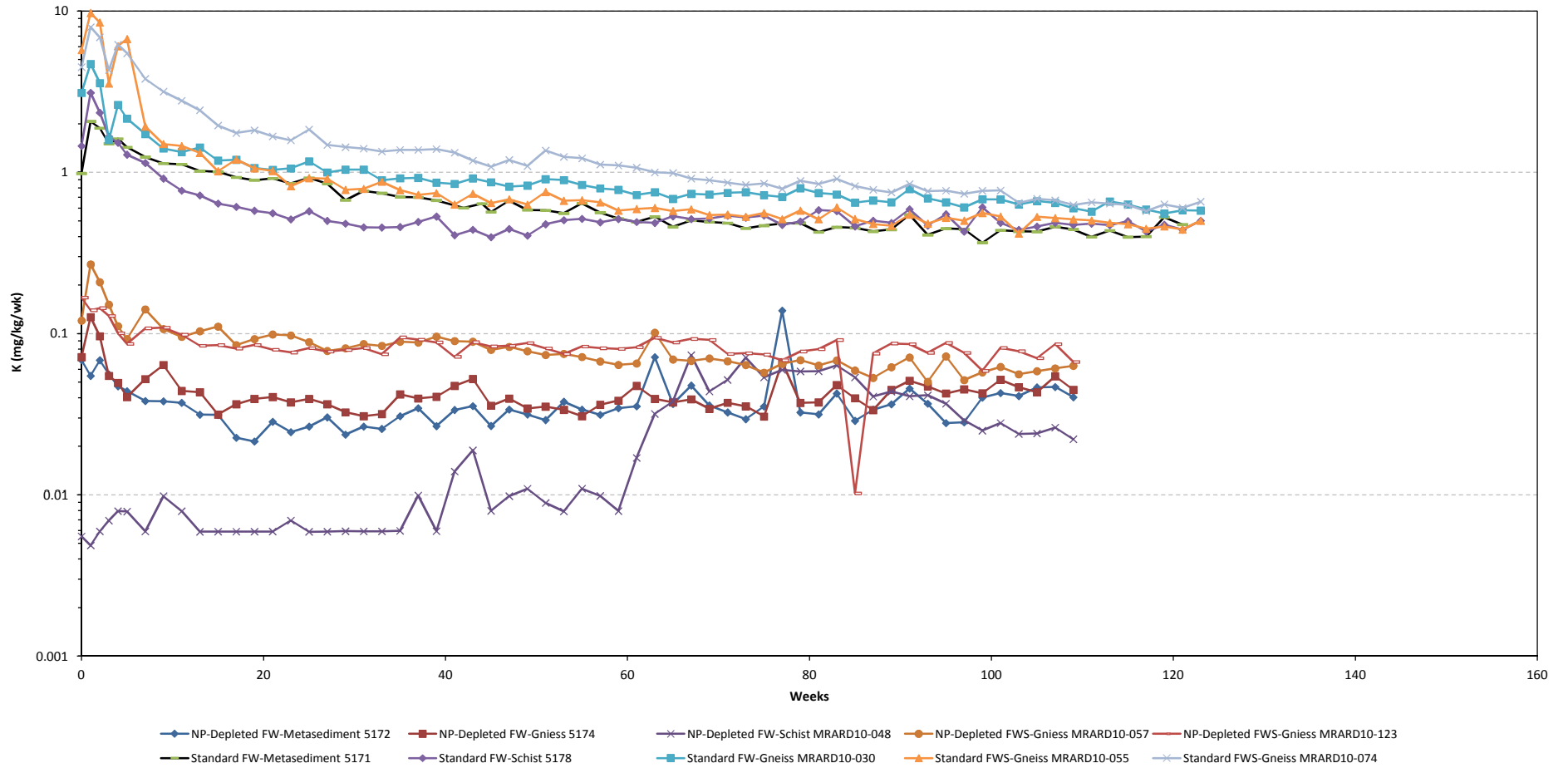
Copper - Footwall



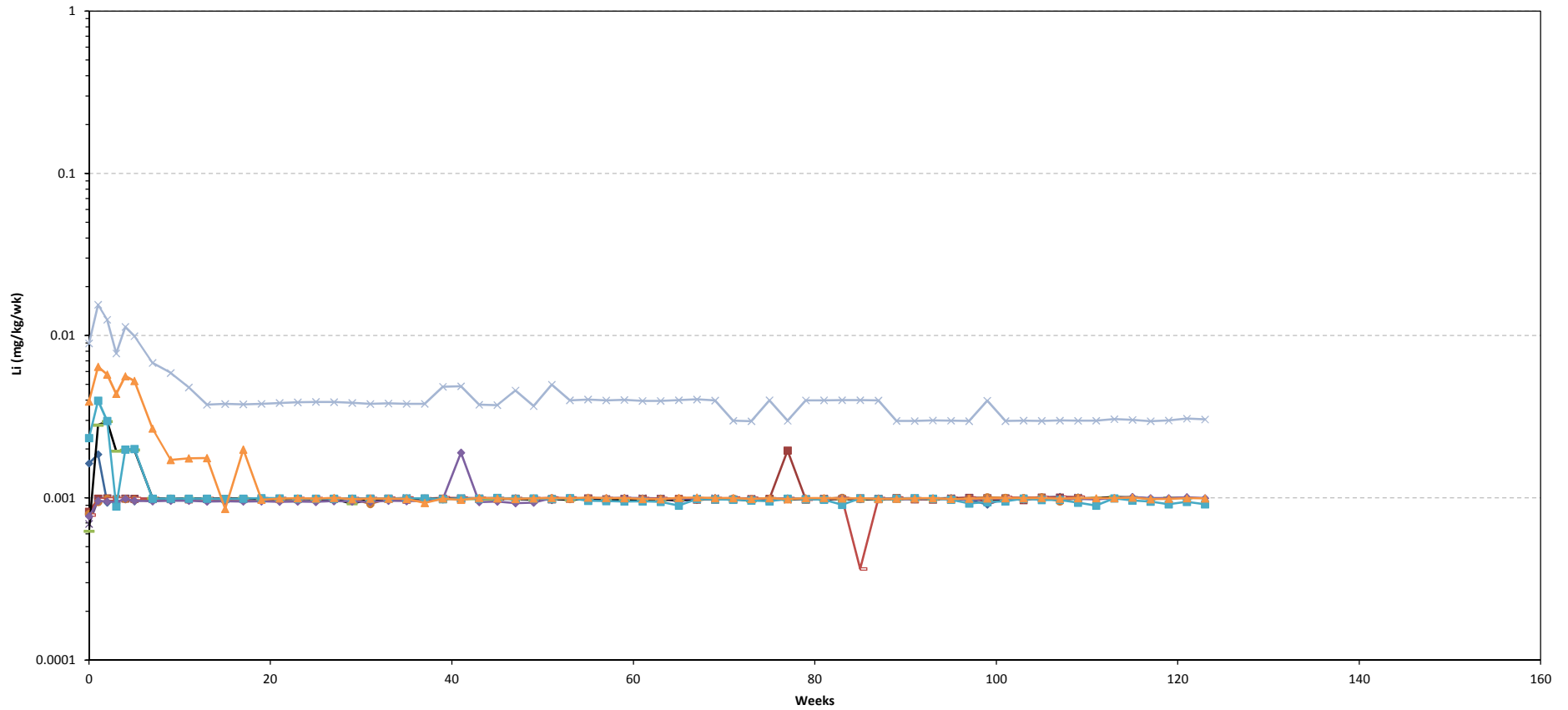
Iron - Footwall



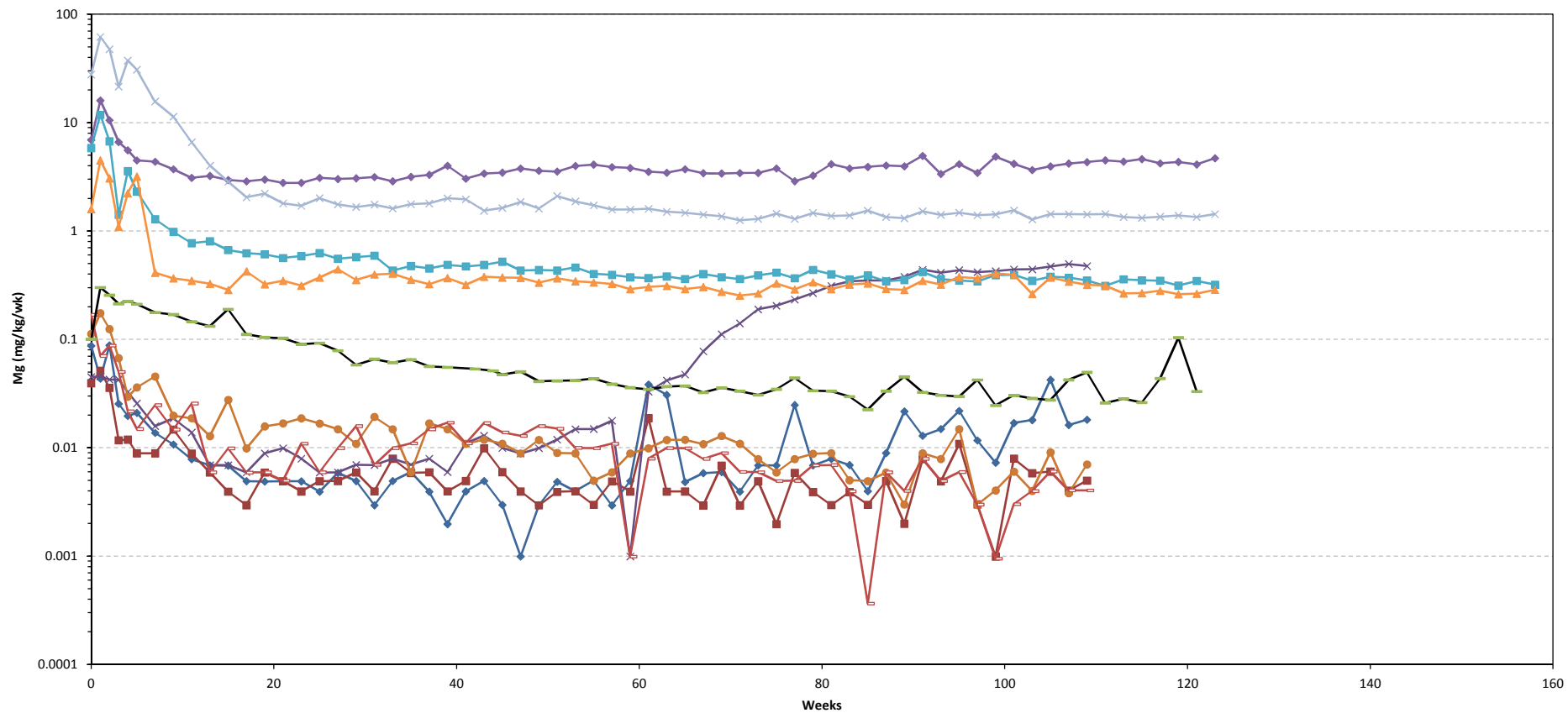
Potassium - Footwall



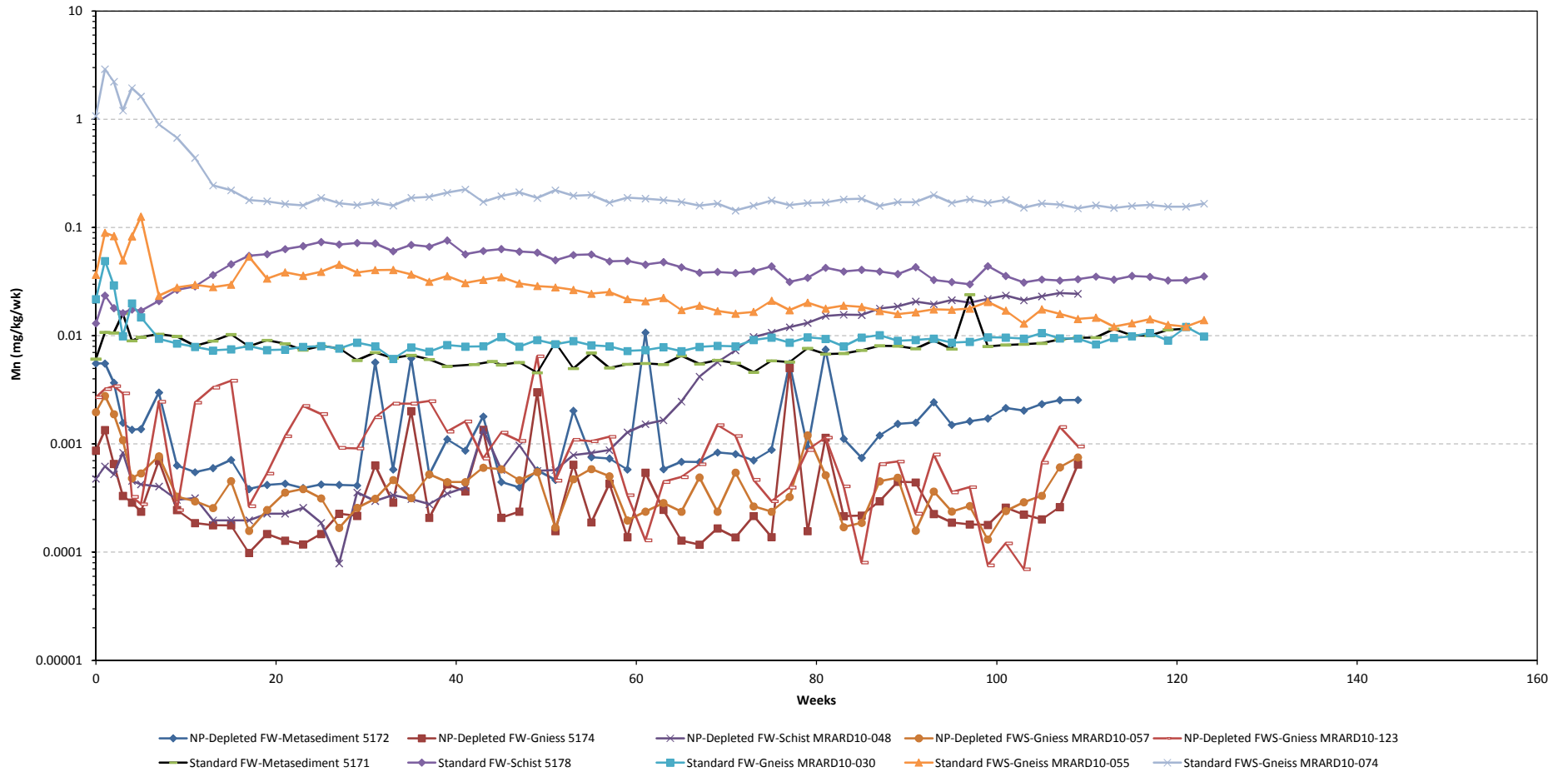
Lithium - Footwall



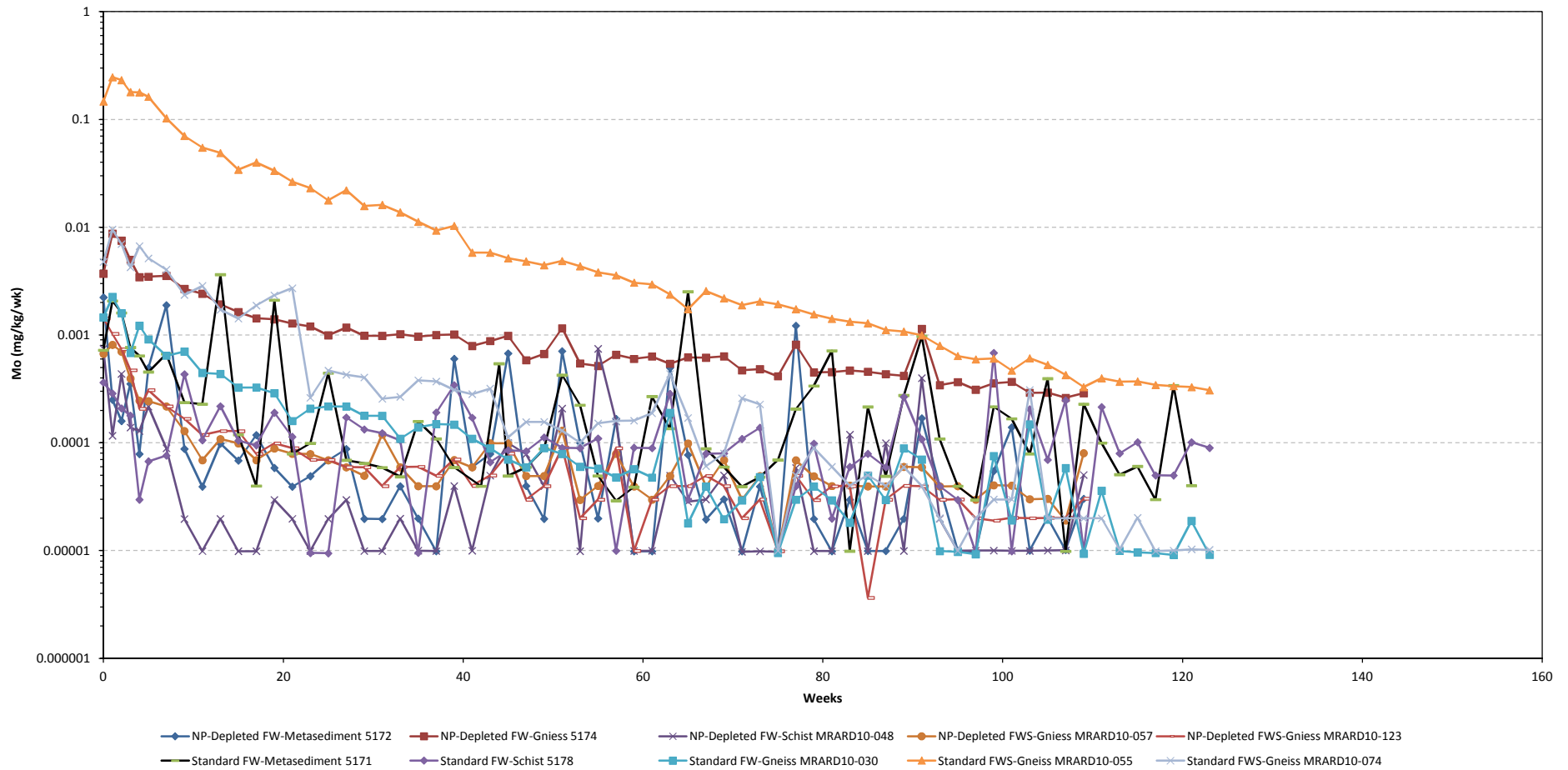
Magnesium - Footwall



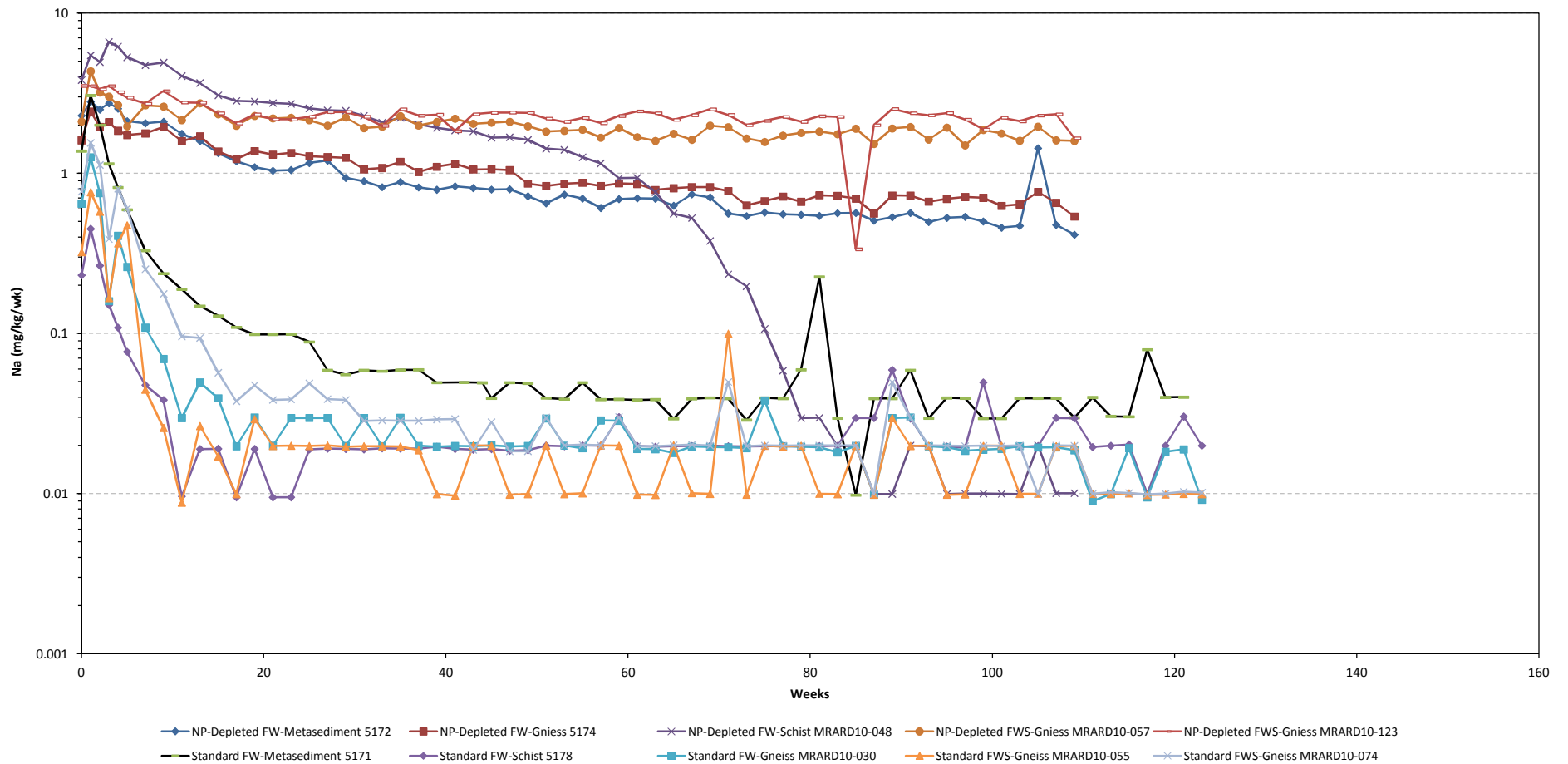
Manganese - Footwall



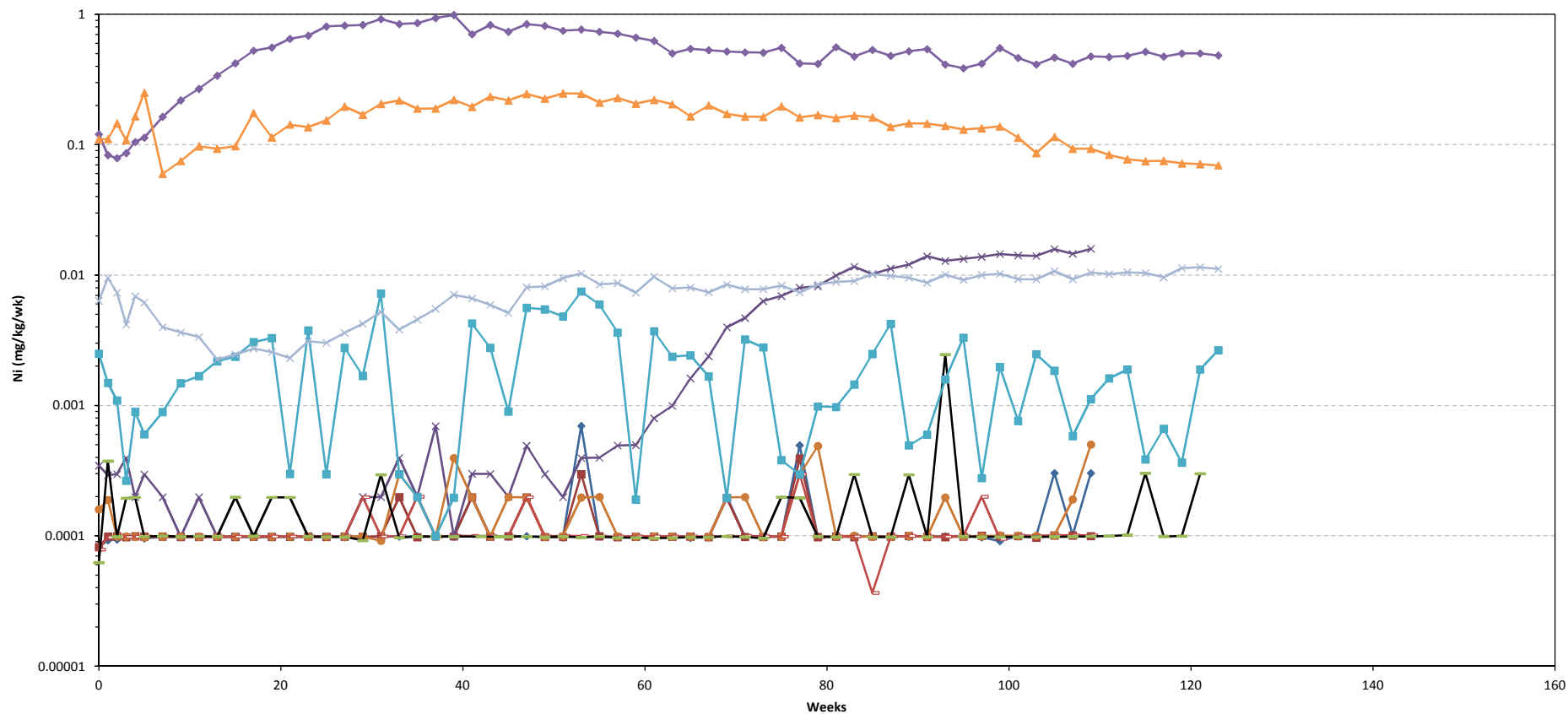
Molybdenum - Footwall



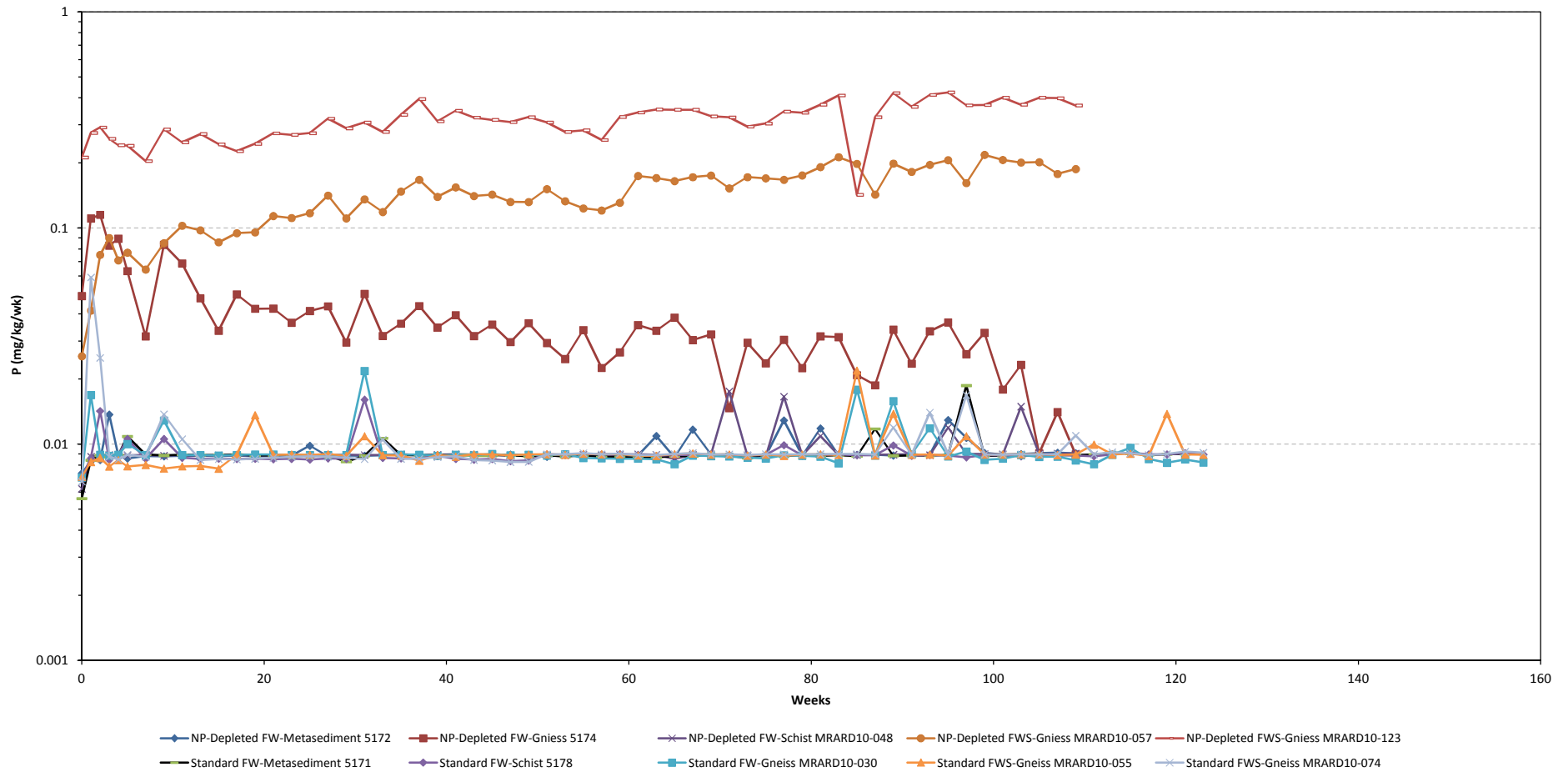
Sodium - Footwall



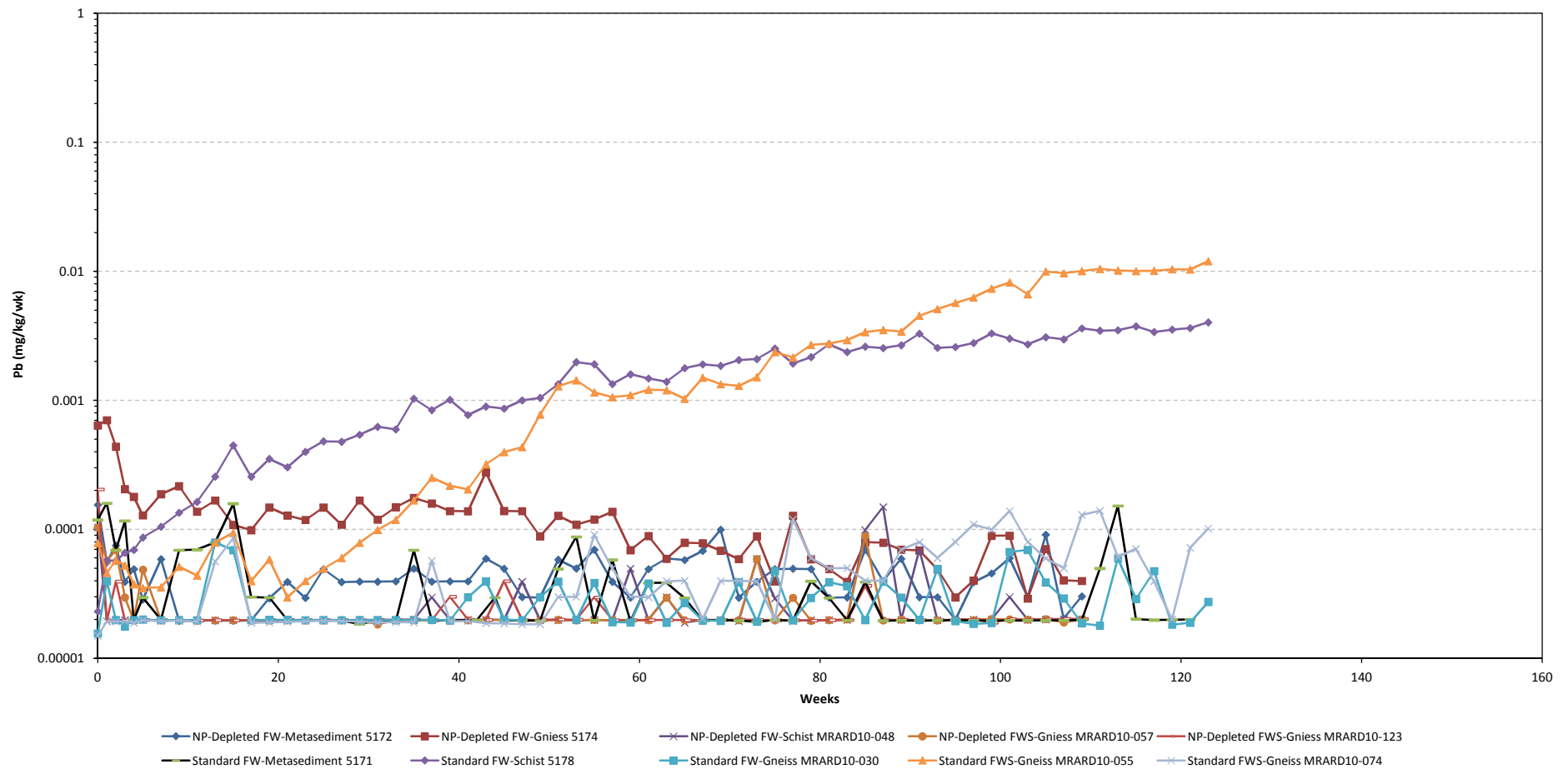
Nickel - Footwall



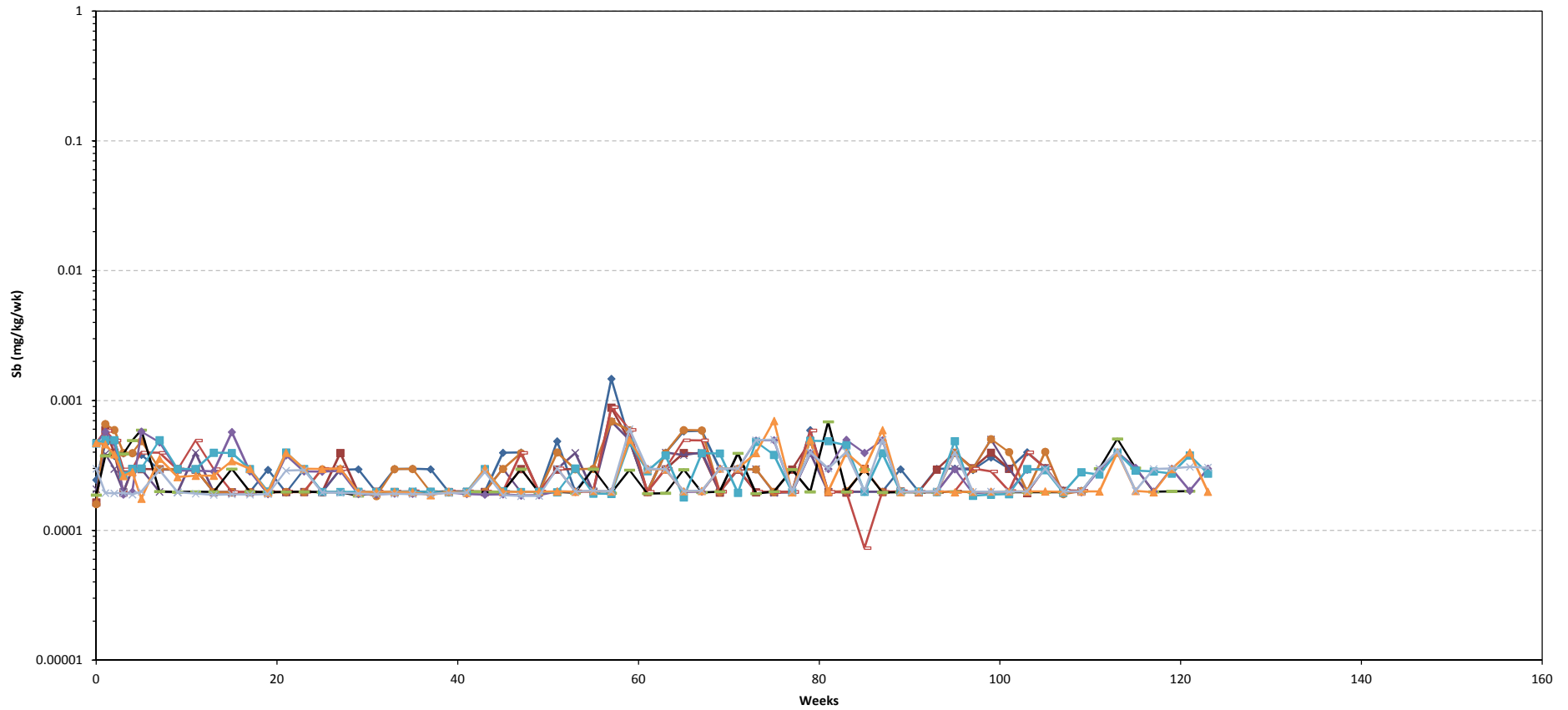
Phosphorus - Footwall



Lead - Footwall



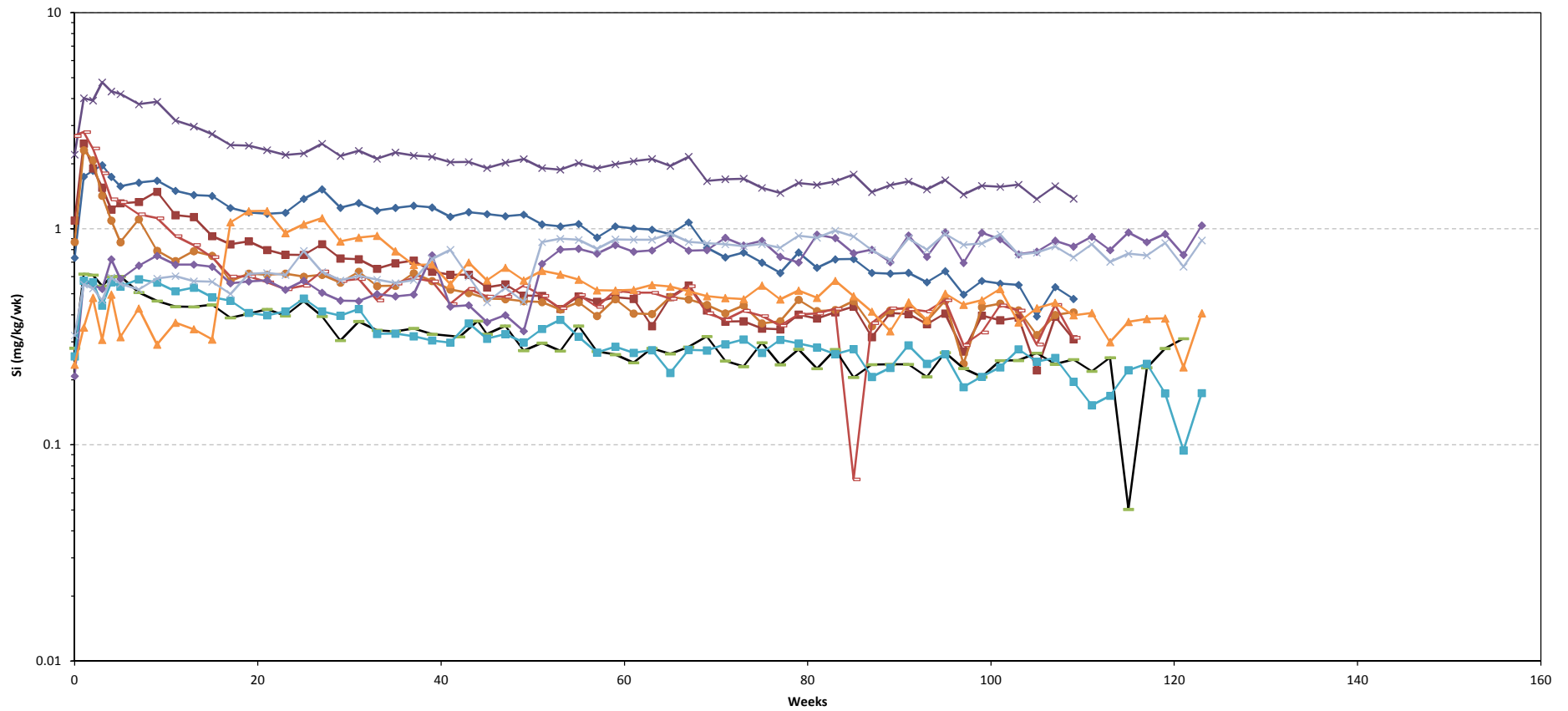
Antimony - Footwall



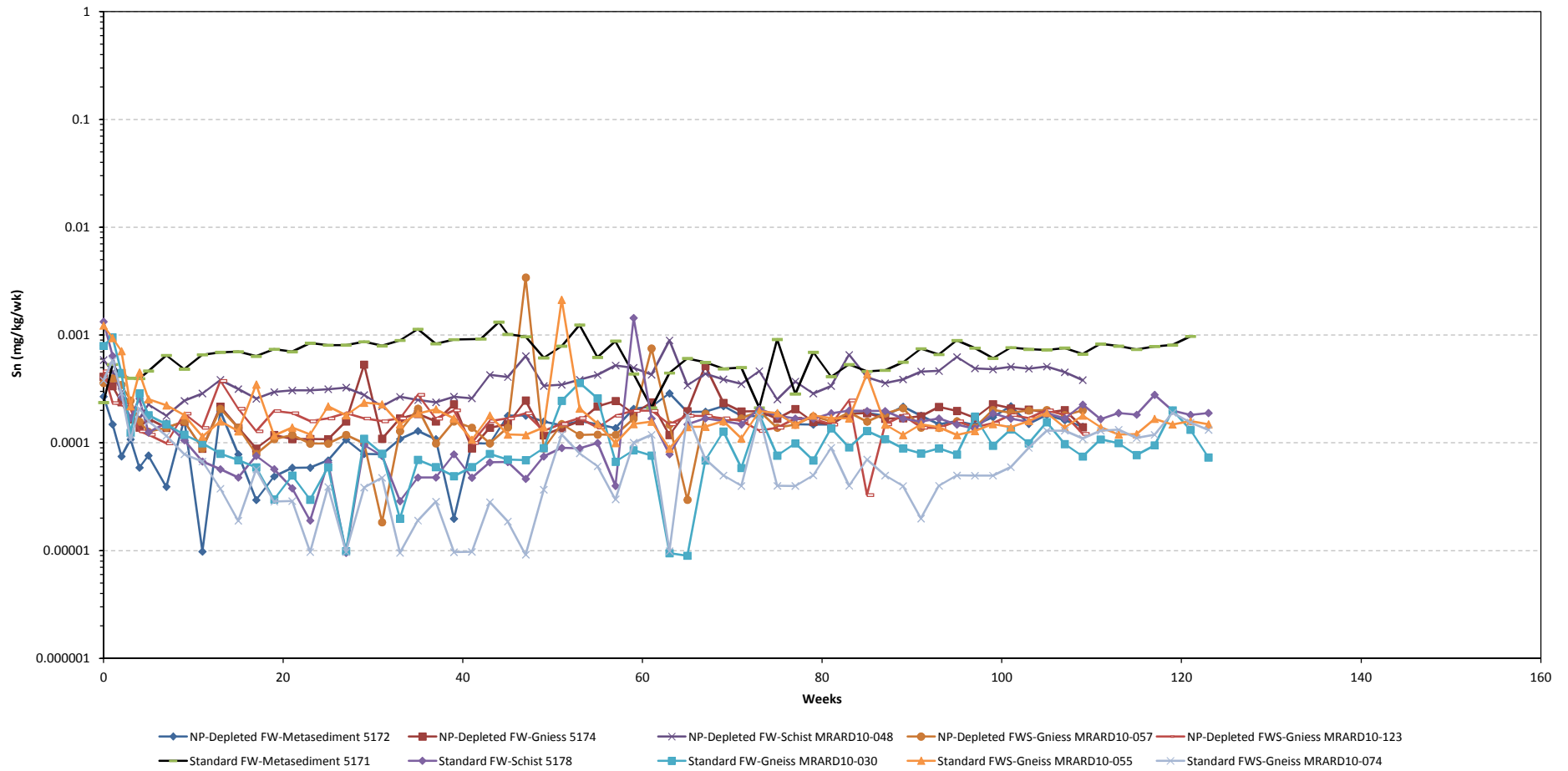
Selenium - Footwall



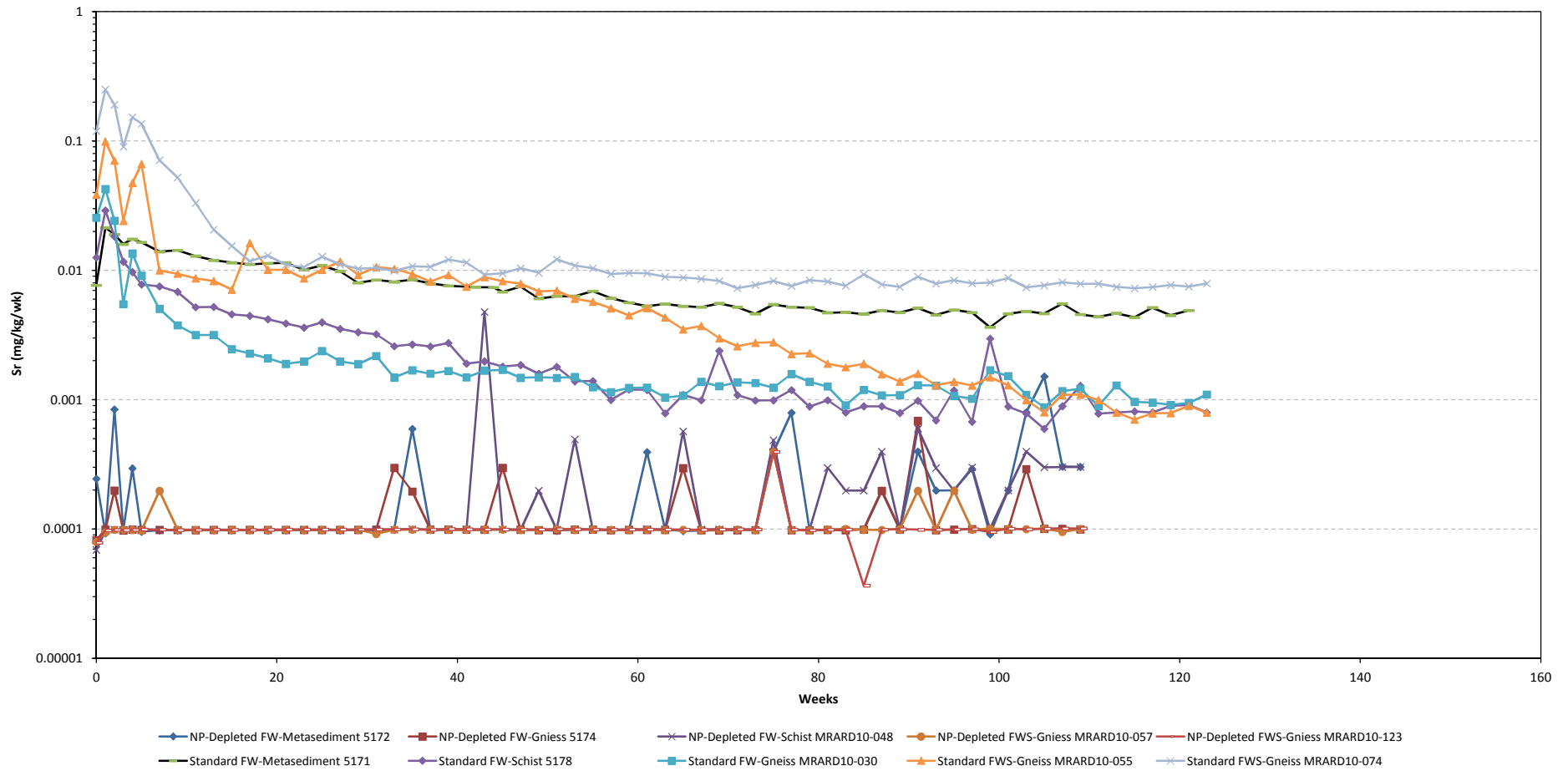
Silicon - Footwall



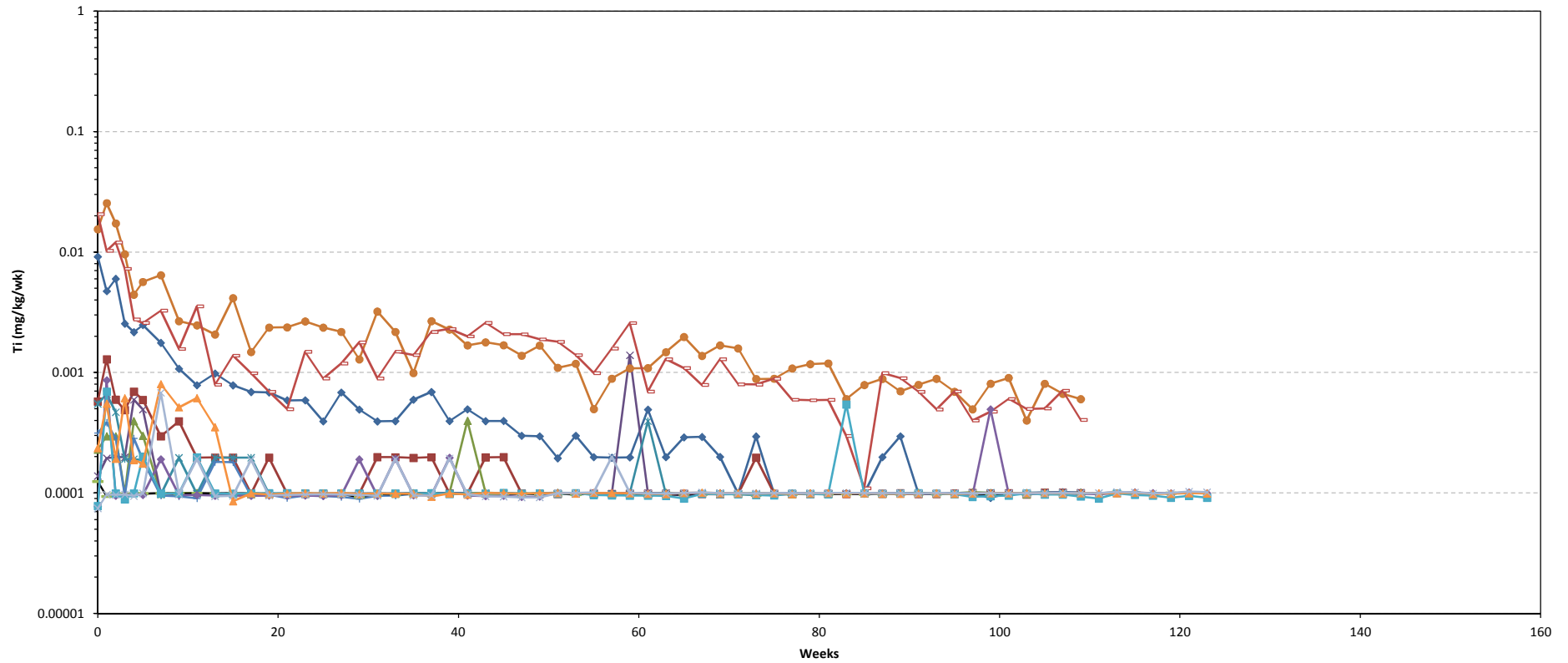
Tin - Footwall



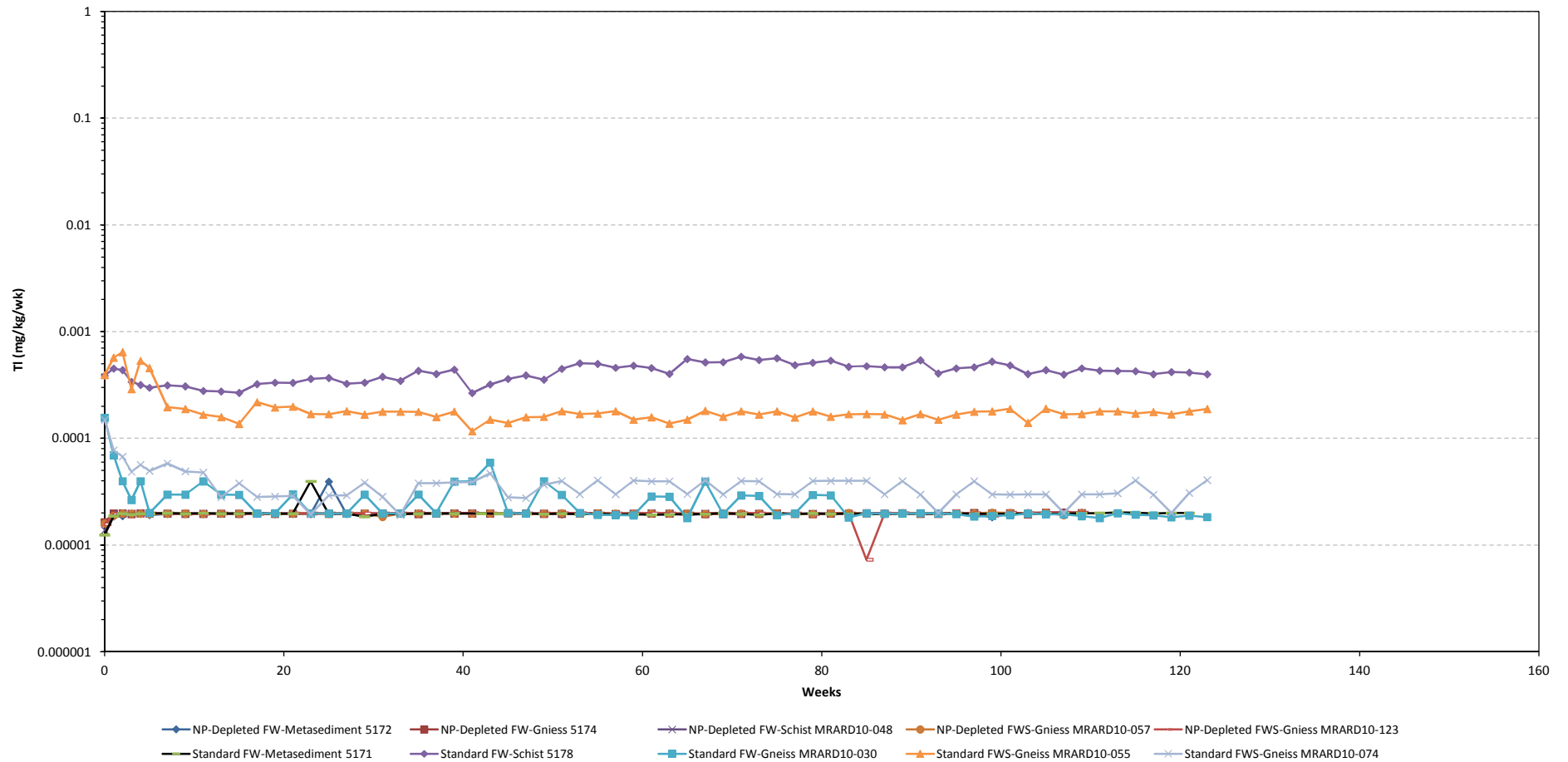
Strontium - Footwall



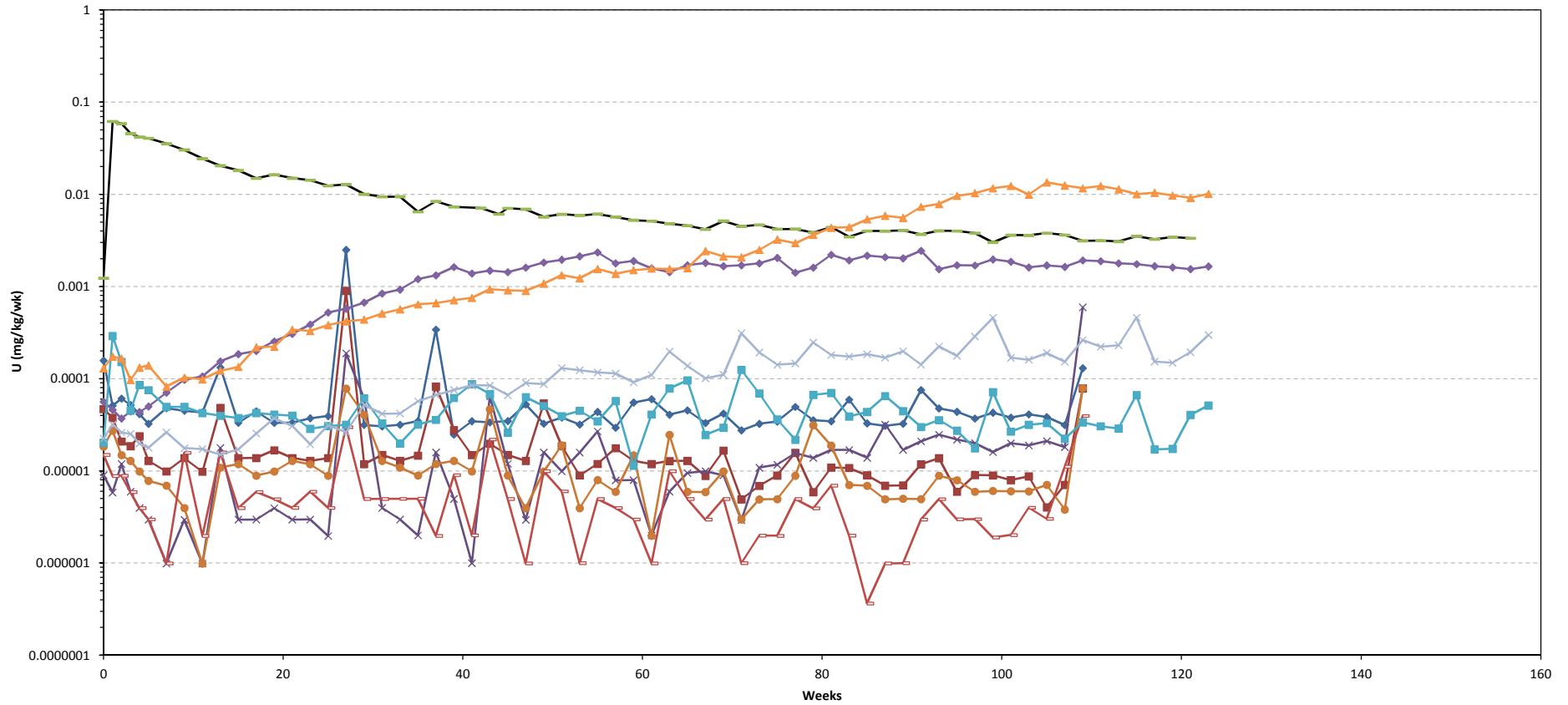
Titanium - Footwall



Thallium - Footwall

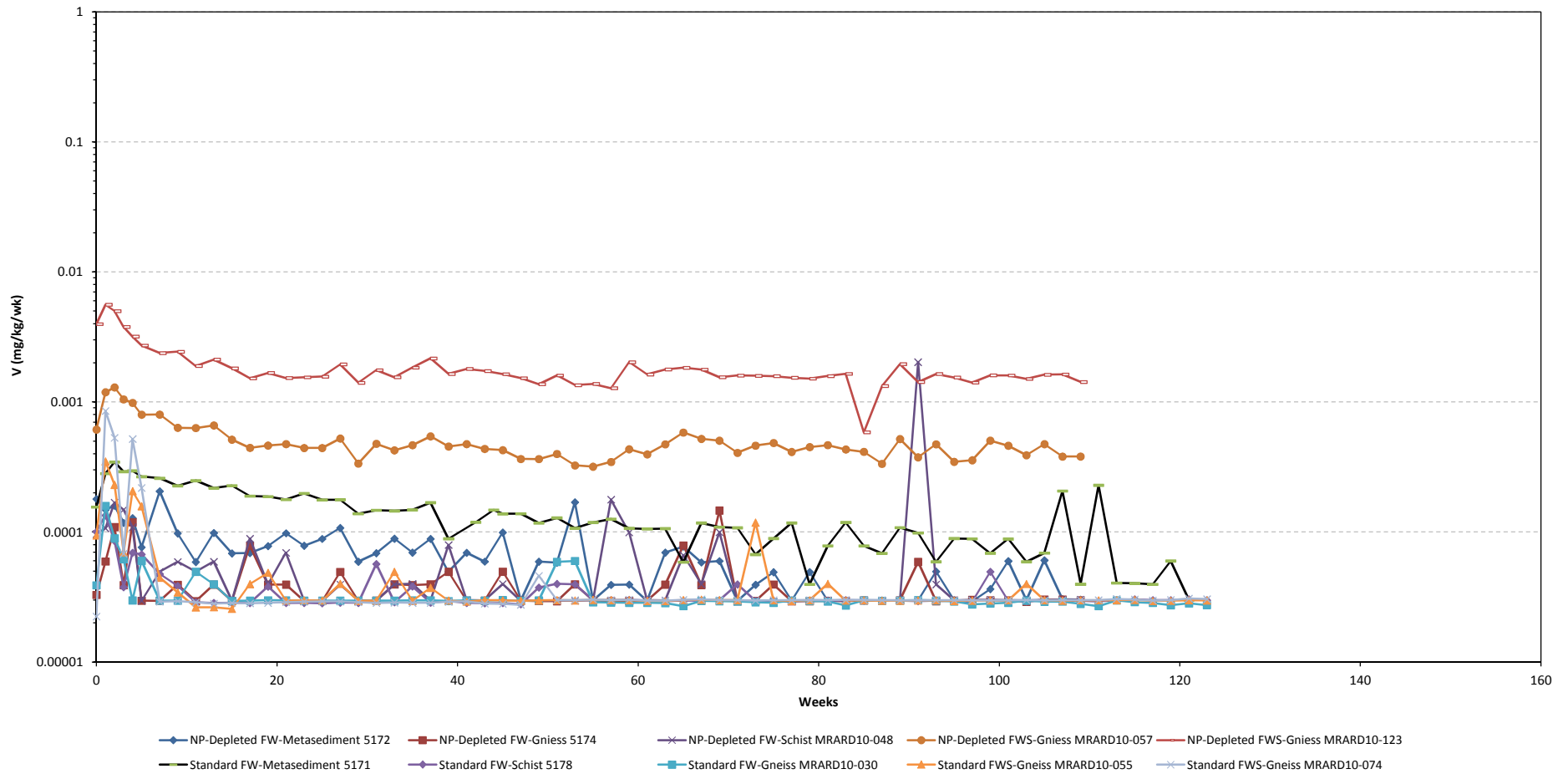


Uranium - Footwall

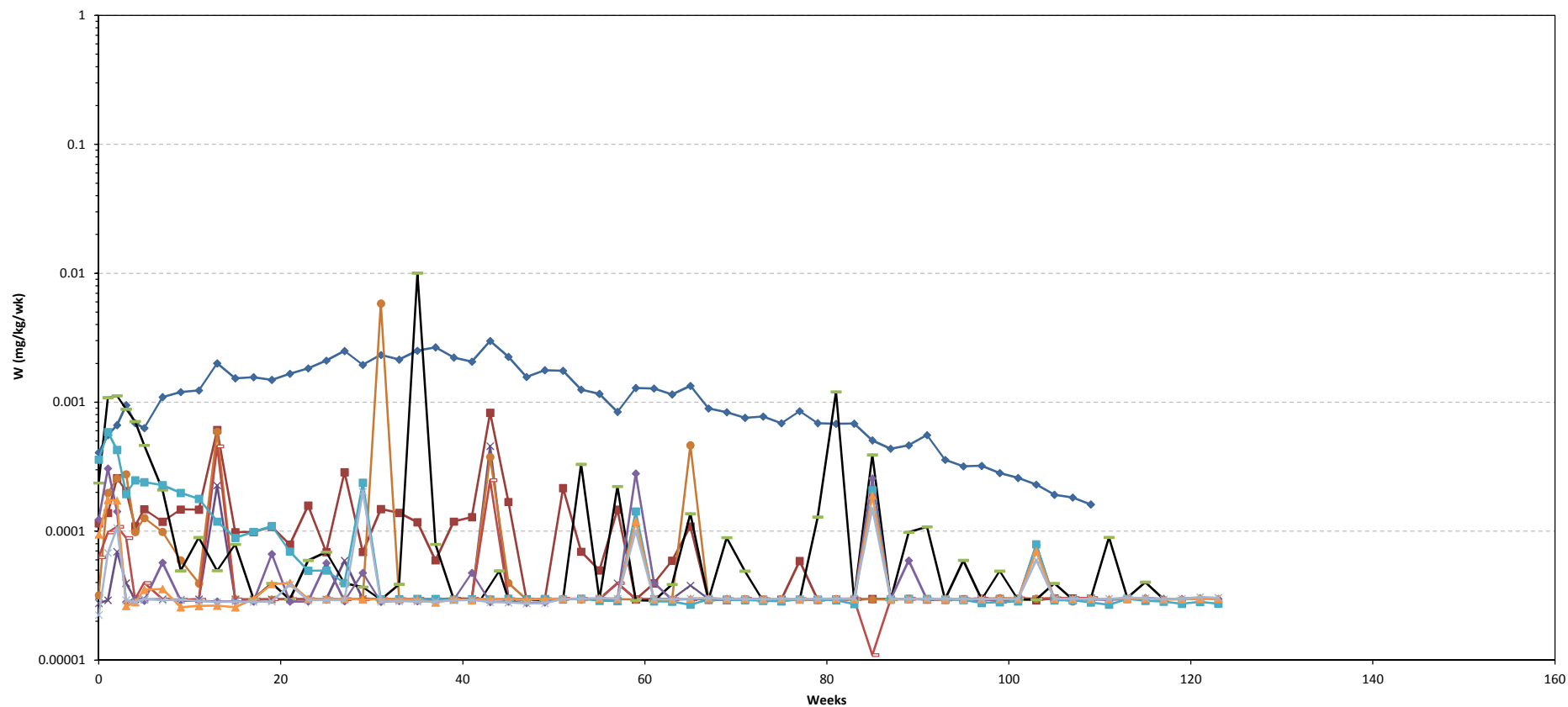


NP-Depleted FW-Metasediment 5172 NP-Depleted FW-Gneiss 5174 NP-Depleted FW-Schist MRARD10-048 NP-Depleted FWS-Gneiss MRARD10-057 NP-Depleted FWS-Gneiss MRARD10-123
 Standard FW-Metasediment 5171 Standard FW-Schist 5178 Standard FW-Gneiss MRARD10-030 Standard FWS-Gneiss MRARD10-055 Standard FWS-Gneiss MRARD10-074

Vanadium - Footwall

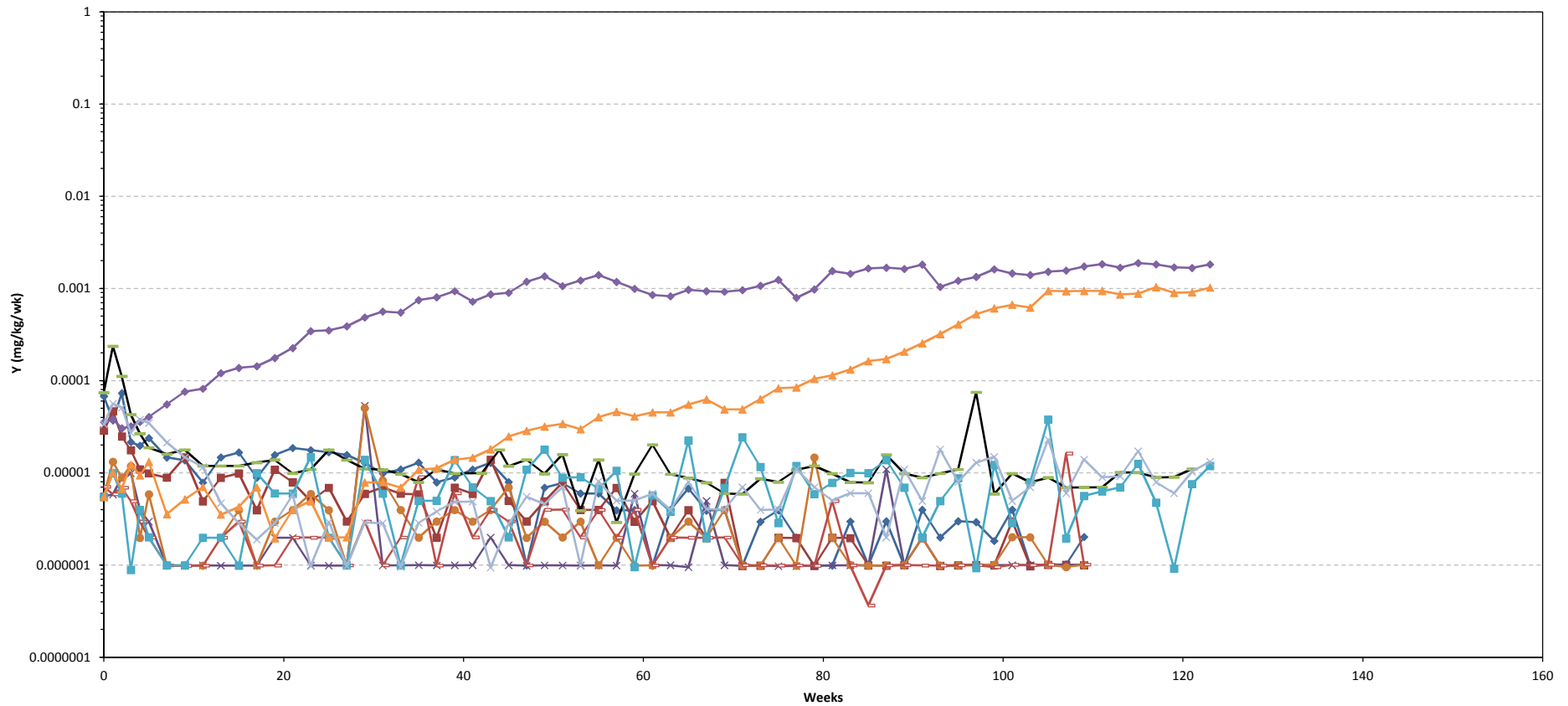


Tungsten - Footwall



NP-Depleted FW-Metasediment 5172 NP-Depleted FW-Gneiss 5174 NP-Depleted FW-Schist MRARD10-048 NP-Depleted FWS-Gneiss MRARD10-057 NP-Depleted FWS-Gneiss MRARD10-123
 Standard FW-Metasediment 5171 Standard FW-Schist 5178 Standard FW-Gneiss MRARD10-030 Standard FWS-Gneiss MRARD10-055 Standard FWS-Gneiss MRARD10-074

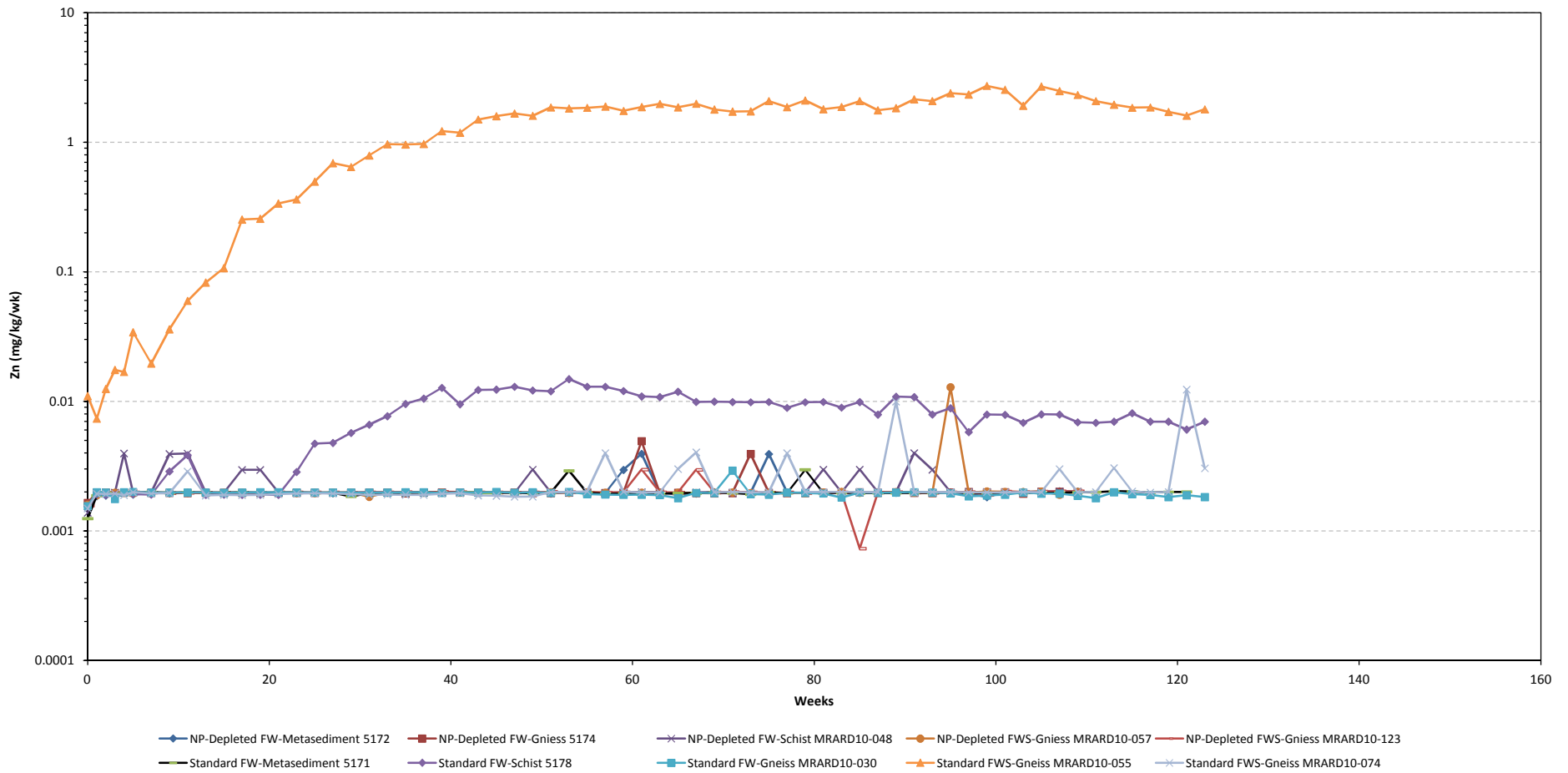
Yttrium - Footwall



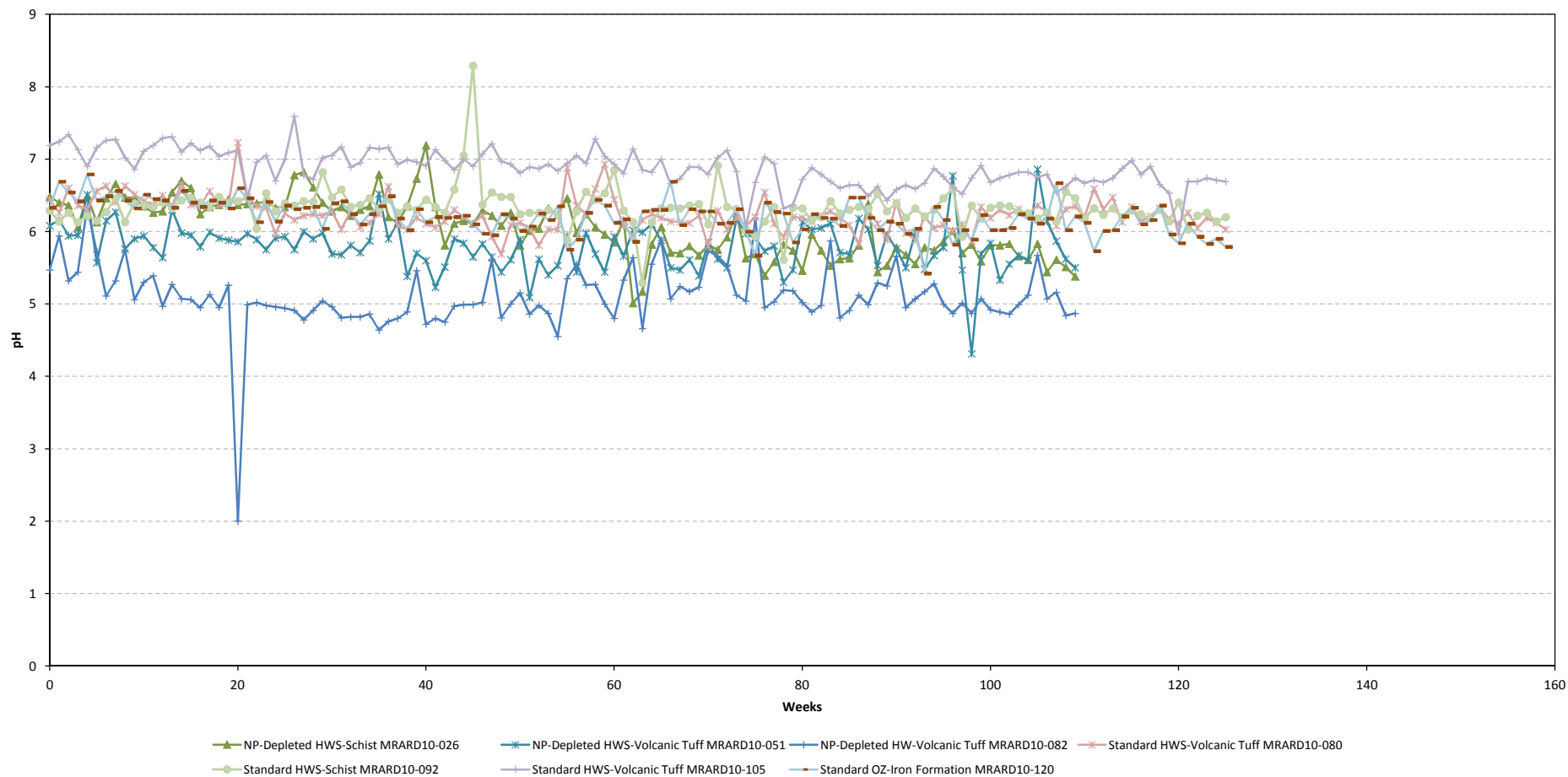
NP-Depleted FW-Metasediment 5172 NP-Depleted FW-Gneiss 5174 NP-Depleted FW-Schist MRARD10-048 NP-Depleted FWS-Gneiss MRARD10-057 NP-Depleted FWS-Gneiss MRARD10-123
 Standard FW-Metasediment 5171 Standard FW-Schist 5178 Standard FW-Gneiss MRARD10-030 Standard FWS-Gneiss MRARD10-055 Standard FWS-Gneiss MRARD10-074

 	
Mary River Project	
Yttrium - Footwall	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	Figure B-38

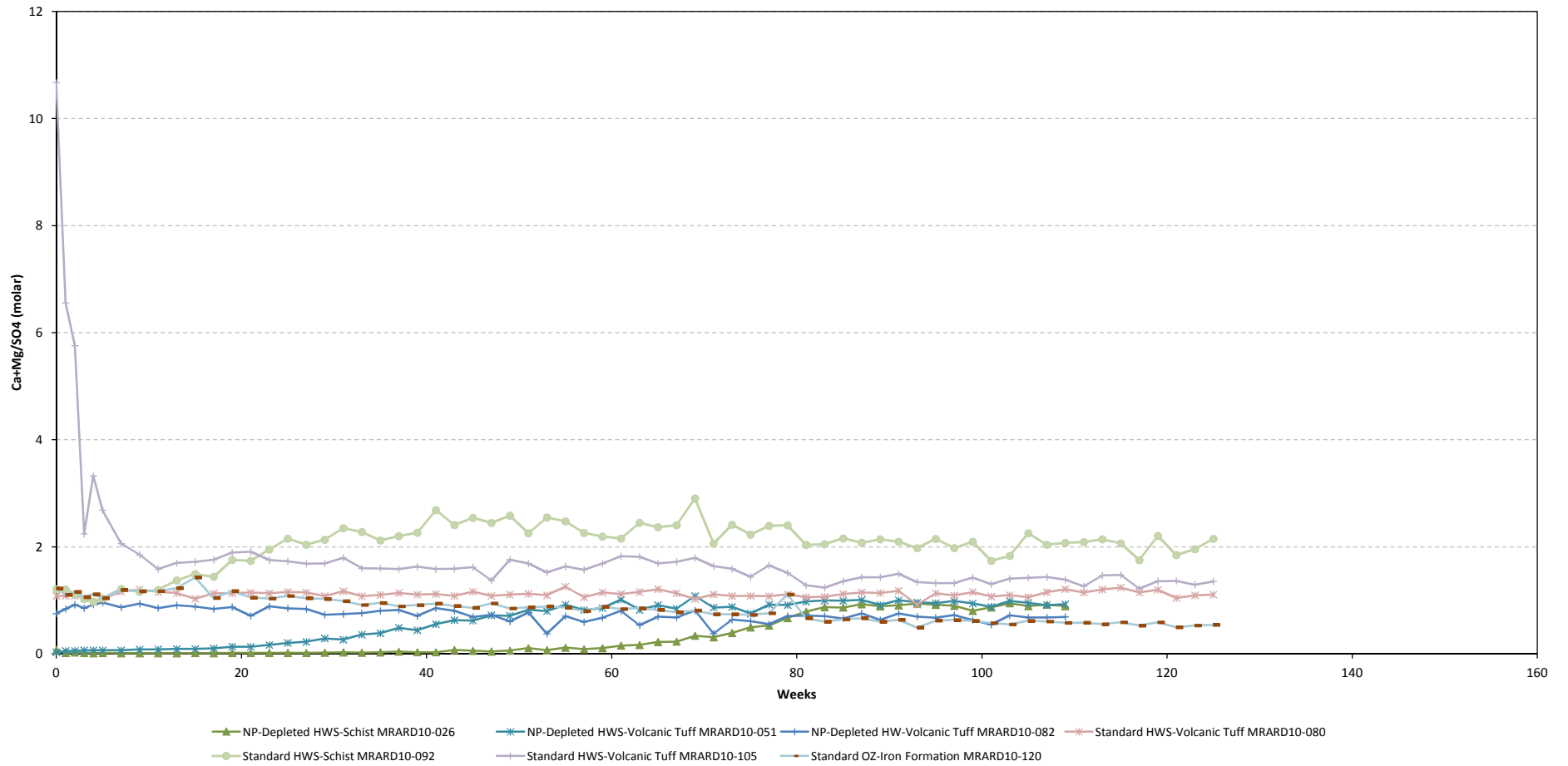
Zinc - Footwall



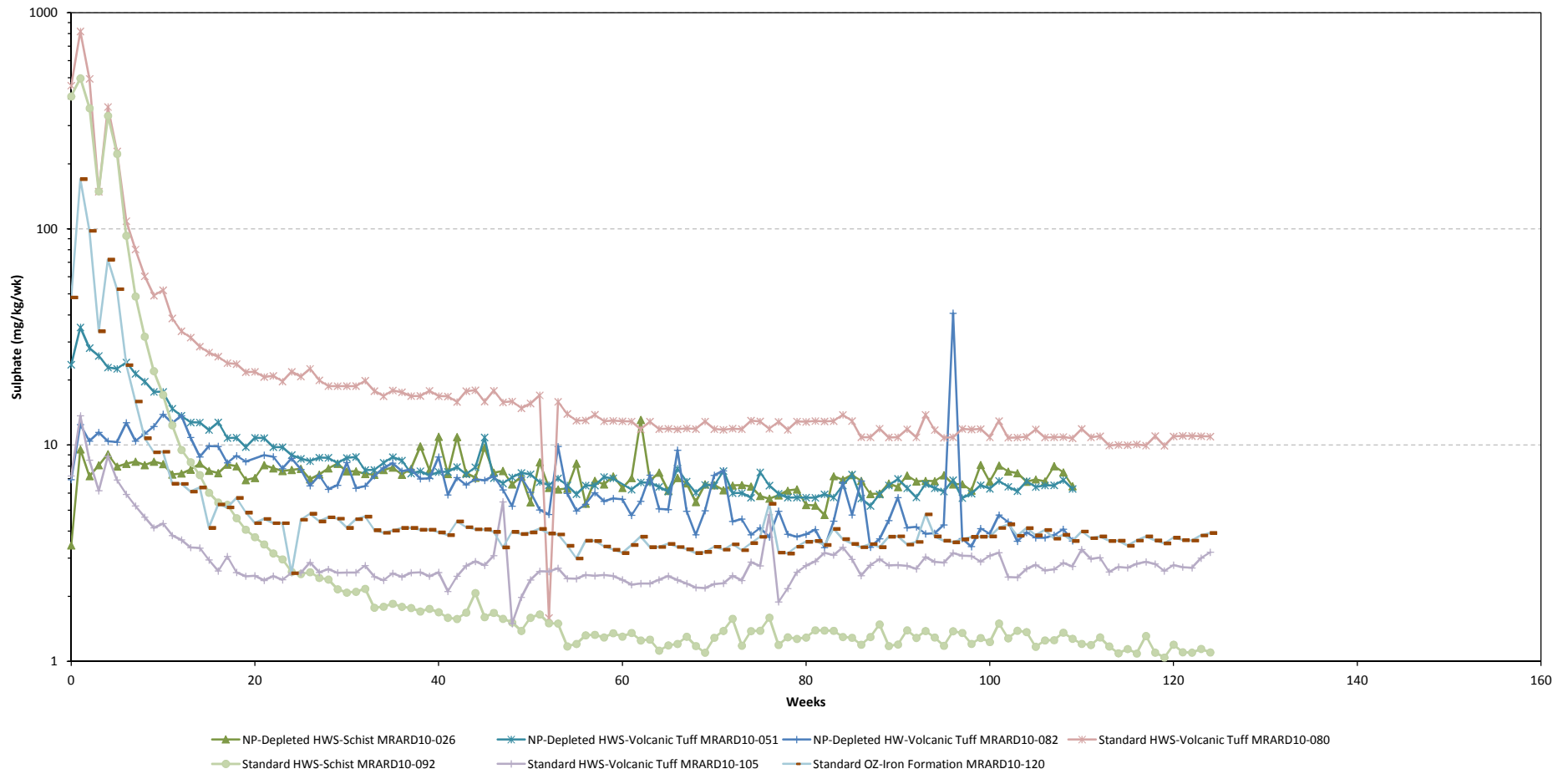
pH - Hanging Wall



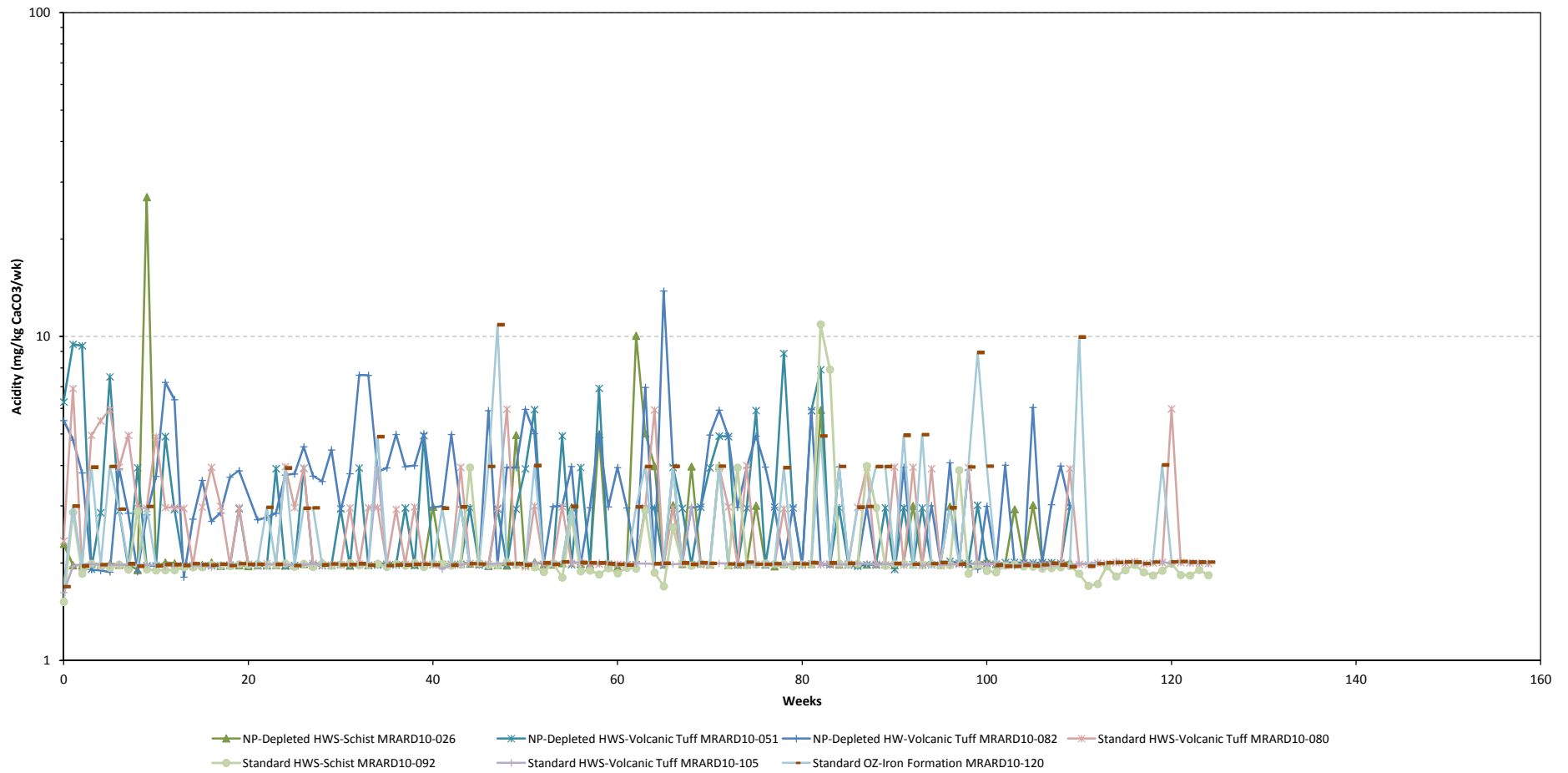
(Ca+Mg)/SO₄ - Hanging Wall



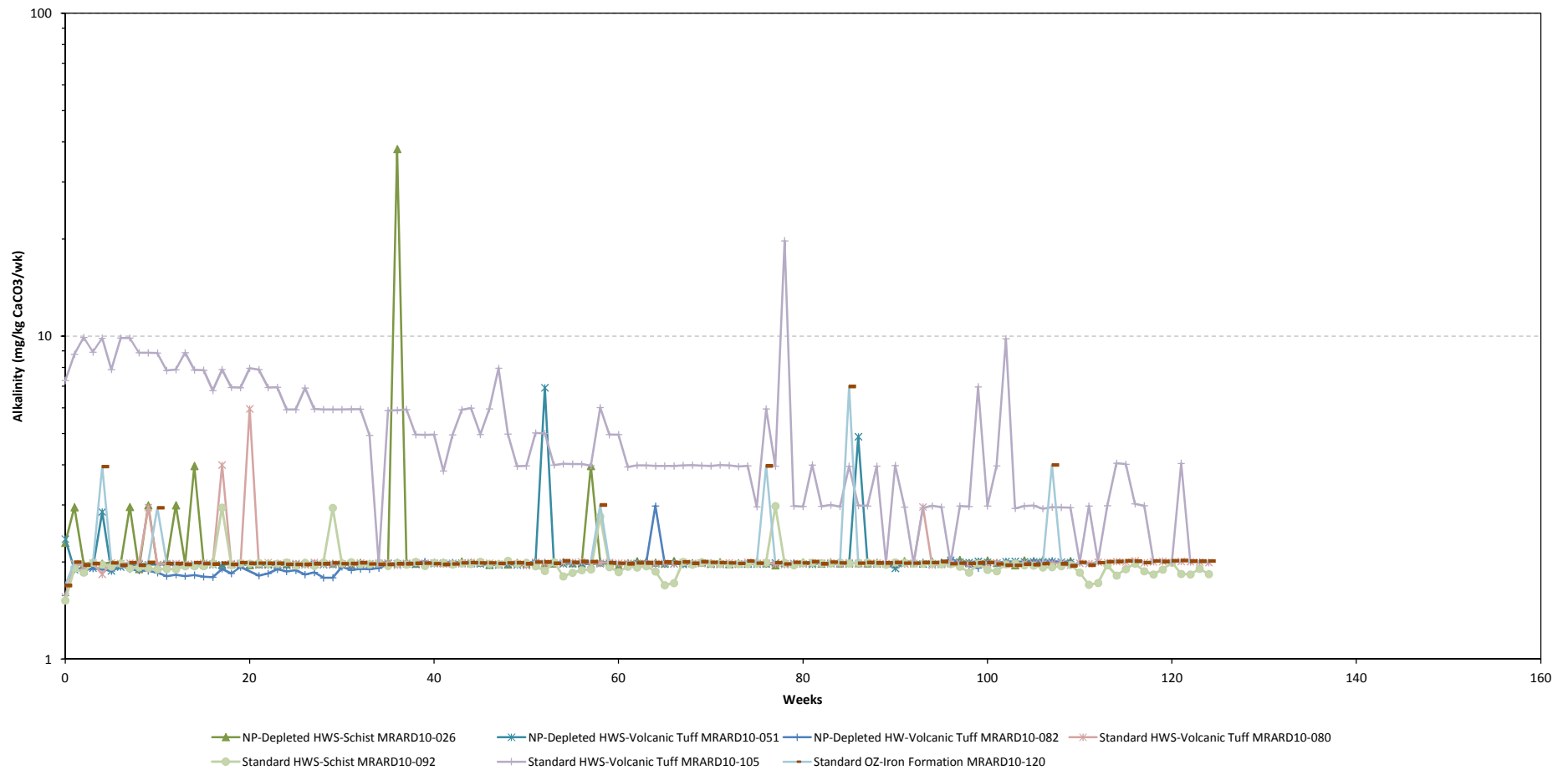
Sulphate - Hanging Wall



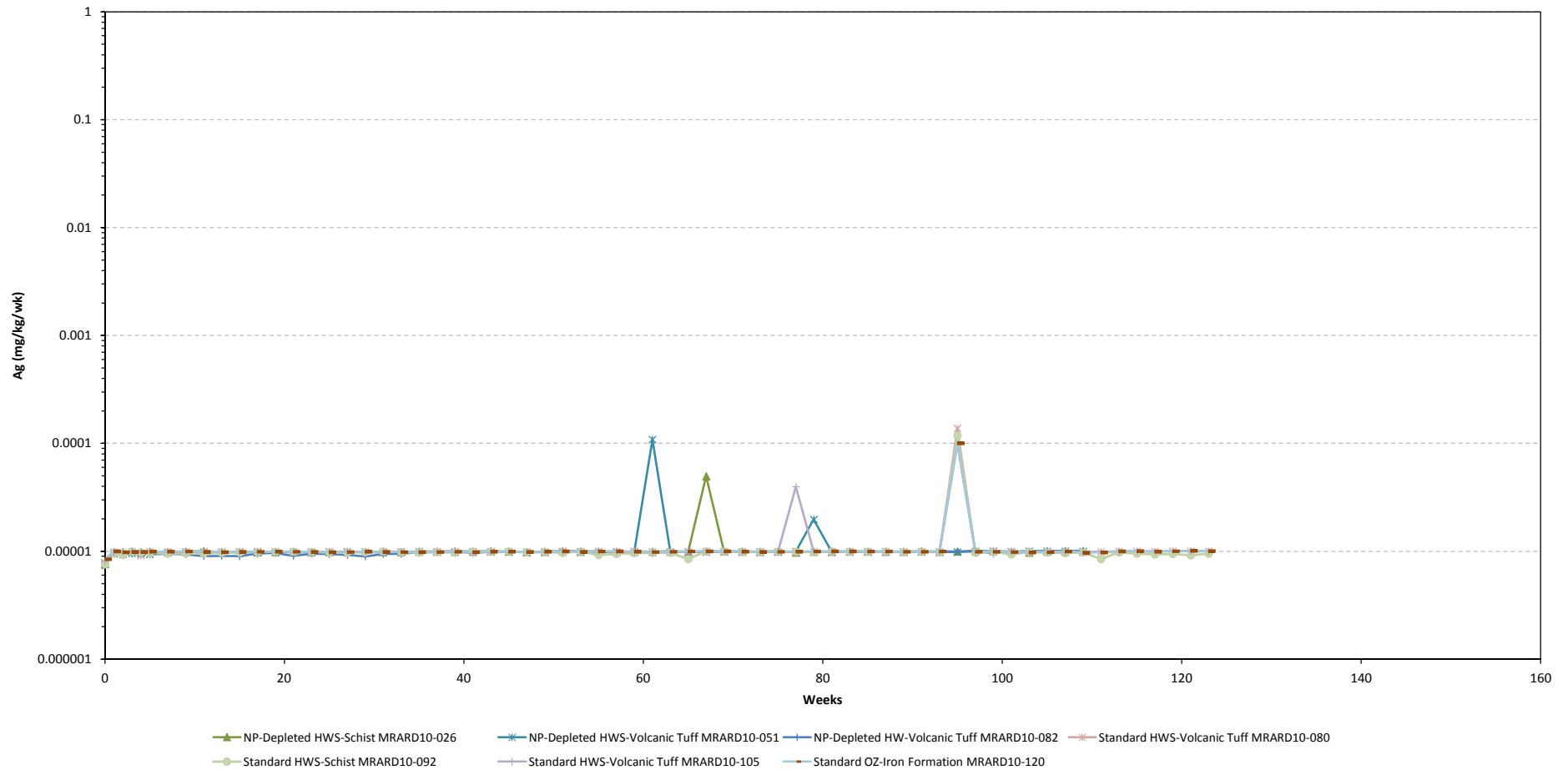
Acidity - Hanging Wall



Alkalinity - Hanging Wall

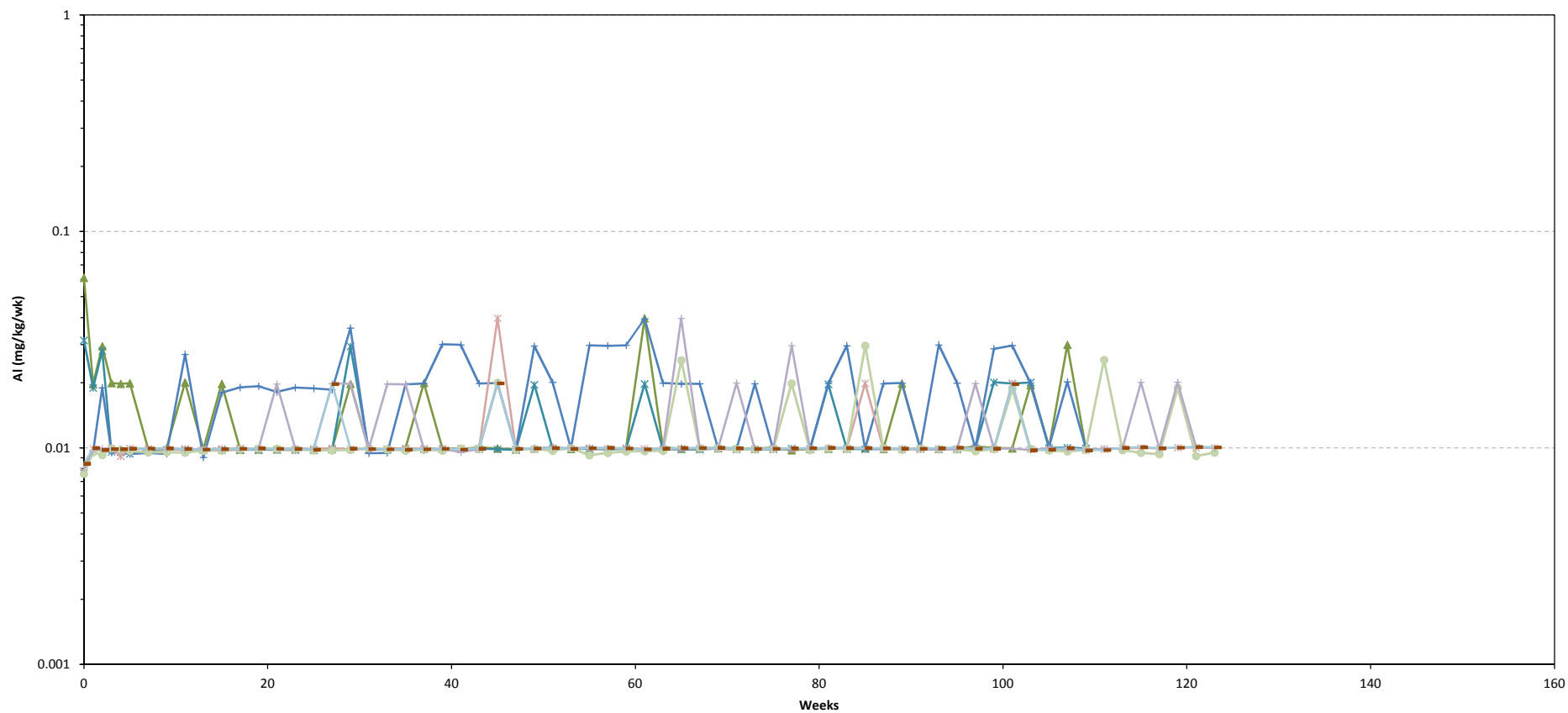


Silver - Hanging Wall



 	
Mary River Project	
Silver - Hanging Wall	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	Figure B-45

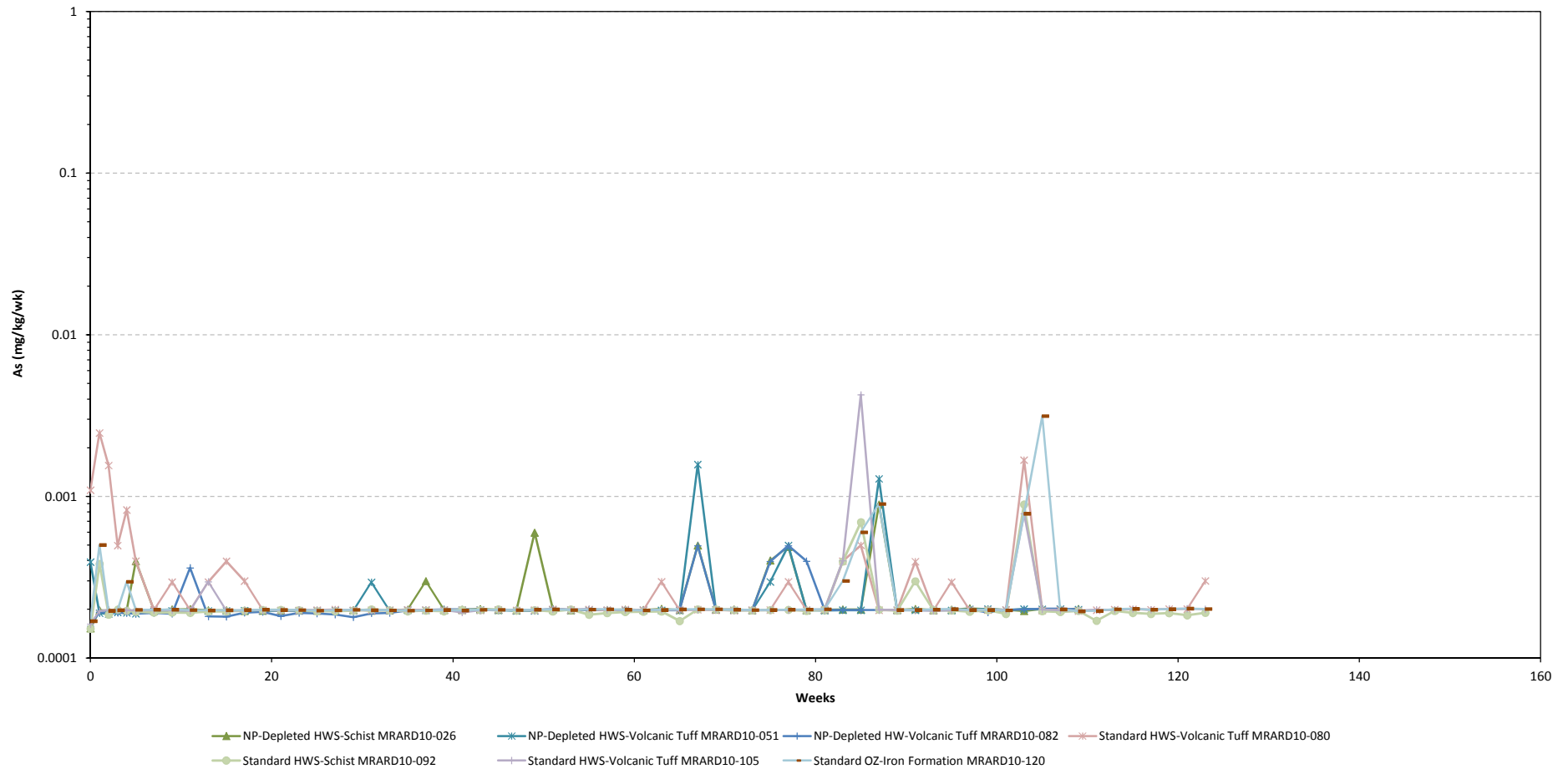
Aluminum - Hanging Wall



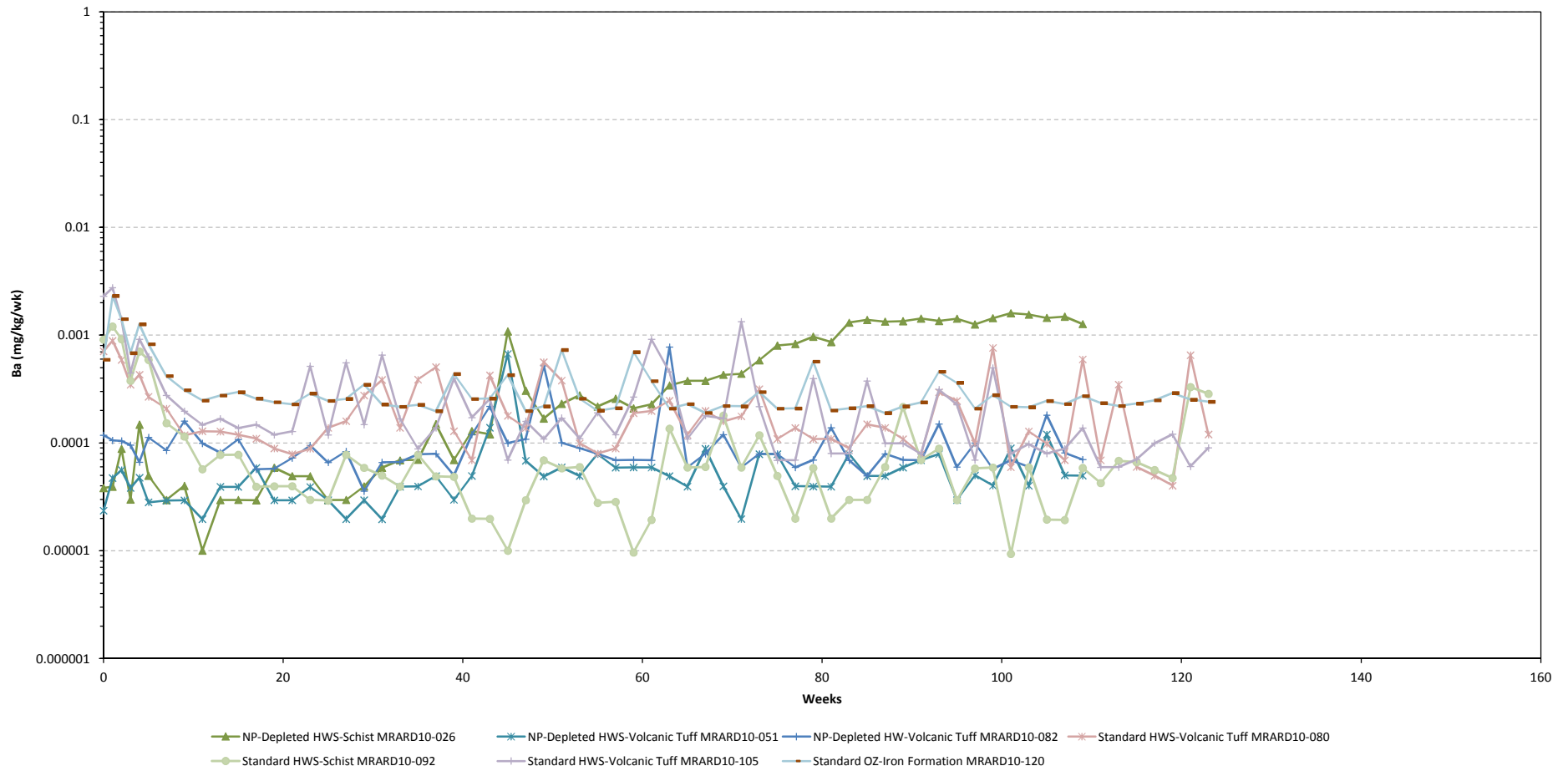
NP-Depleted HWS-Schist MRARD10-026 NP-Depleted HWS-Volcanic Tuff MRARD10-051 NP-Depleted HW-Volcanic Tuff MRARD10-082 Standard HWS-Volcanic Tuff MRARD10-080
 Standard HWS-Schist MRARD10-092 Standard HWS-Volcanic Tuff MRARD10-105 Standard OZ-Iron Formation MRARD10-120

 	
Mary River Project	
Aluminum - Hanging Wall	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	Figure B-46

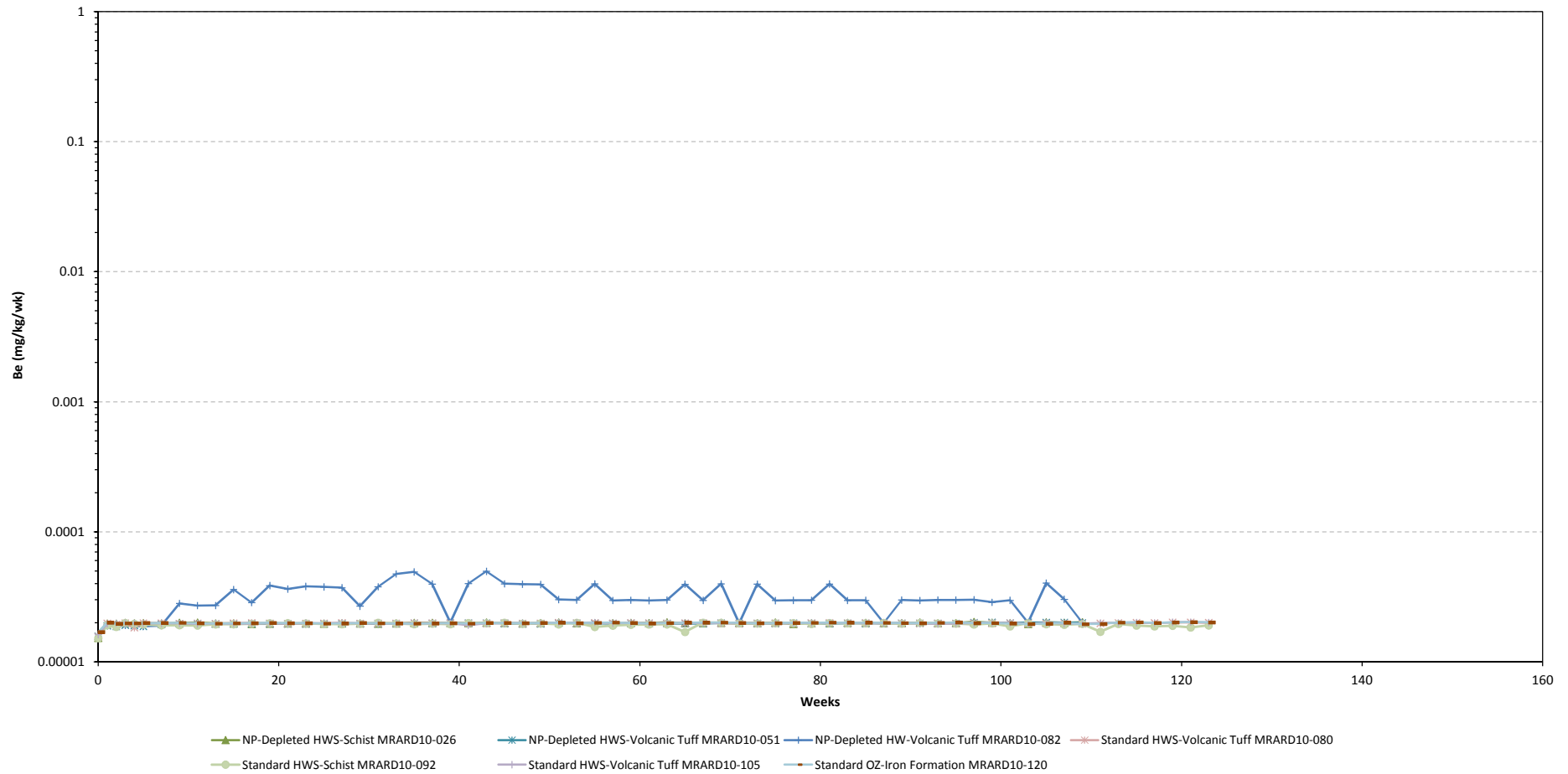
Arsenic - Hanging Wall



Barium - Hanging Wall

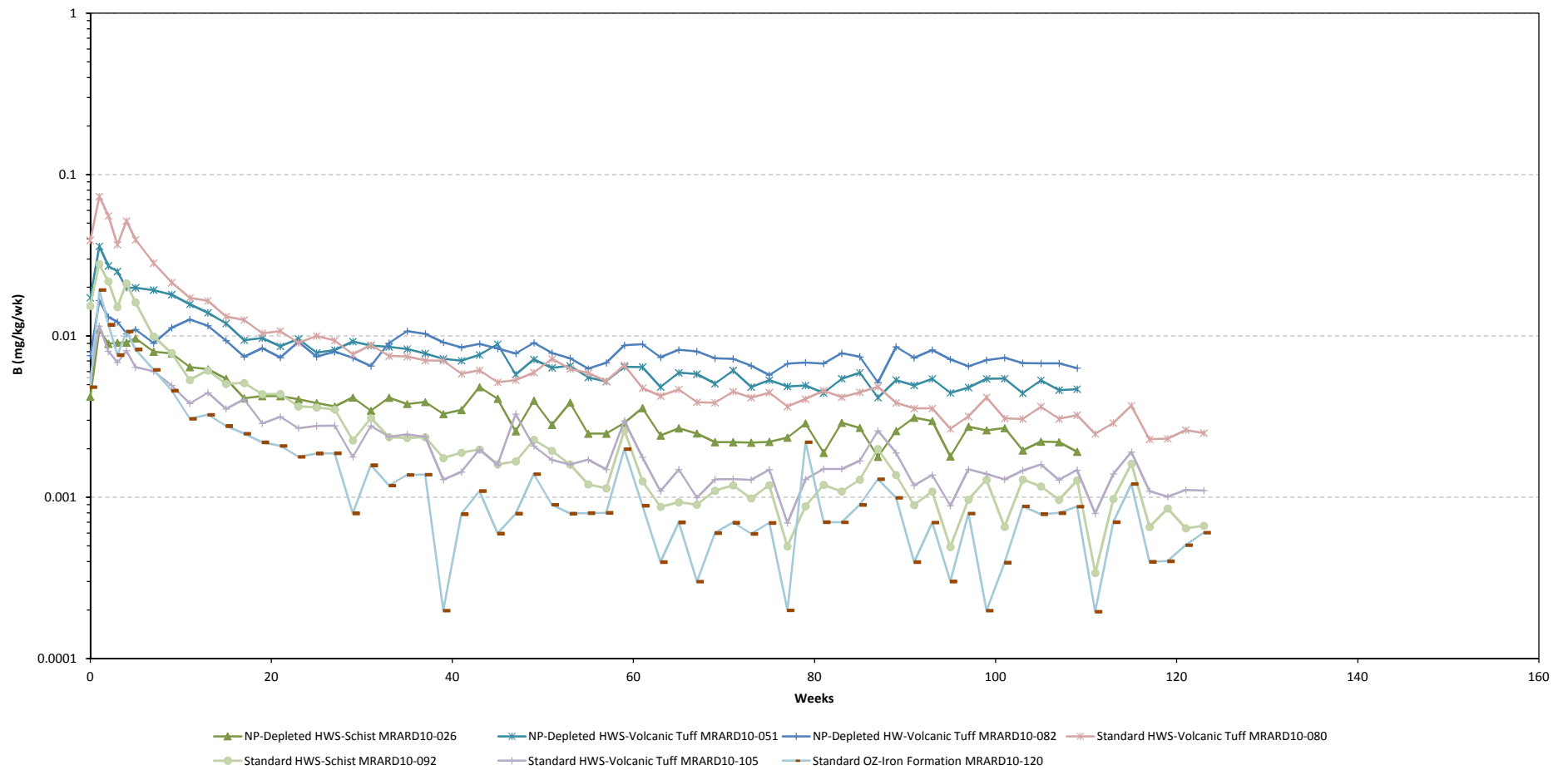


Beryllium - Hanging Wall

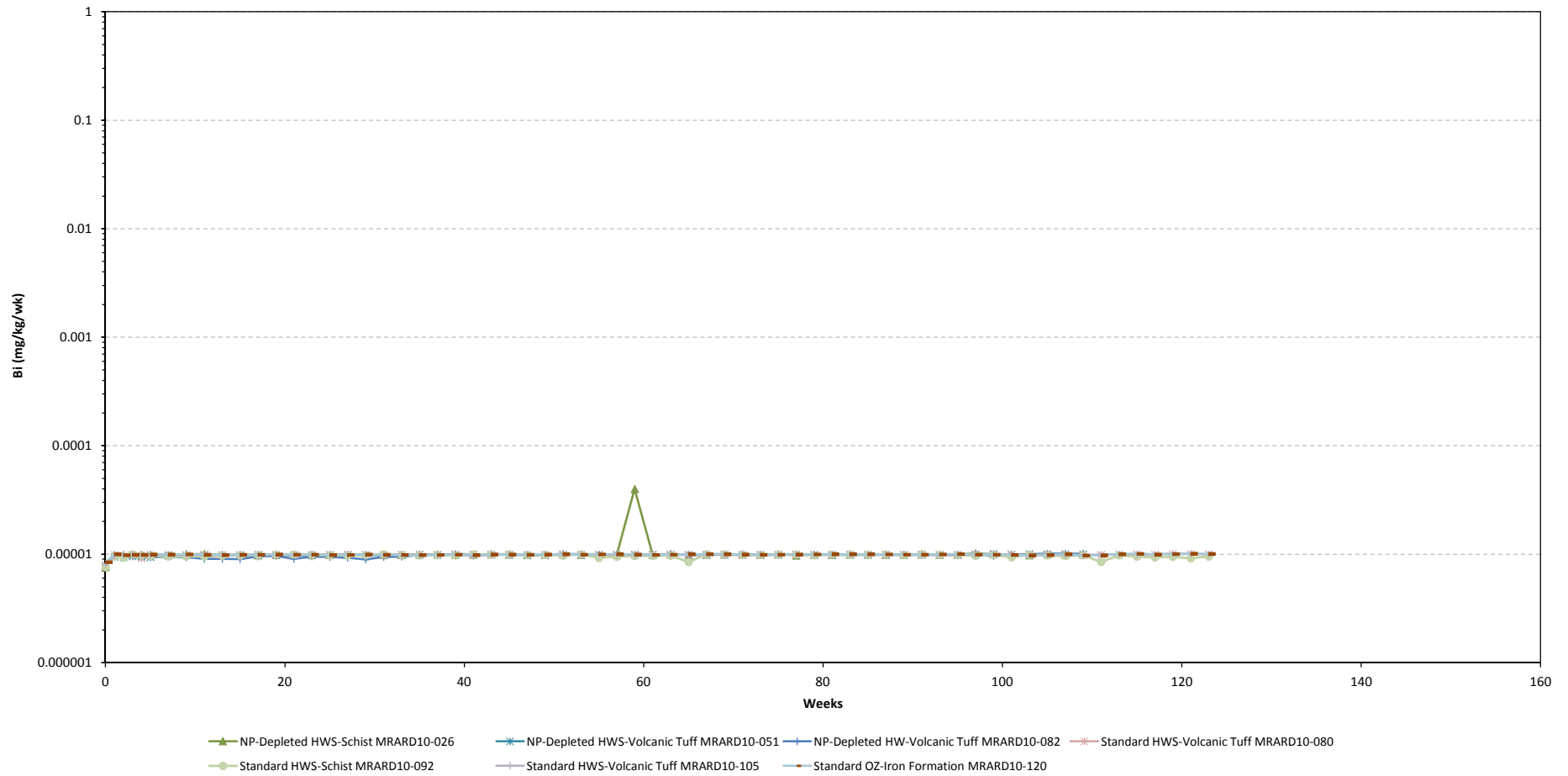


Mary River Project	
Beryllium - Hanging Wall	
Drawn by: LC	Checked by: SW
Project: TC123908	Date: March 2014
Figure B-49	

Boron - Hanging Wall

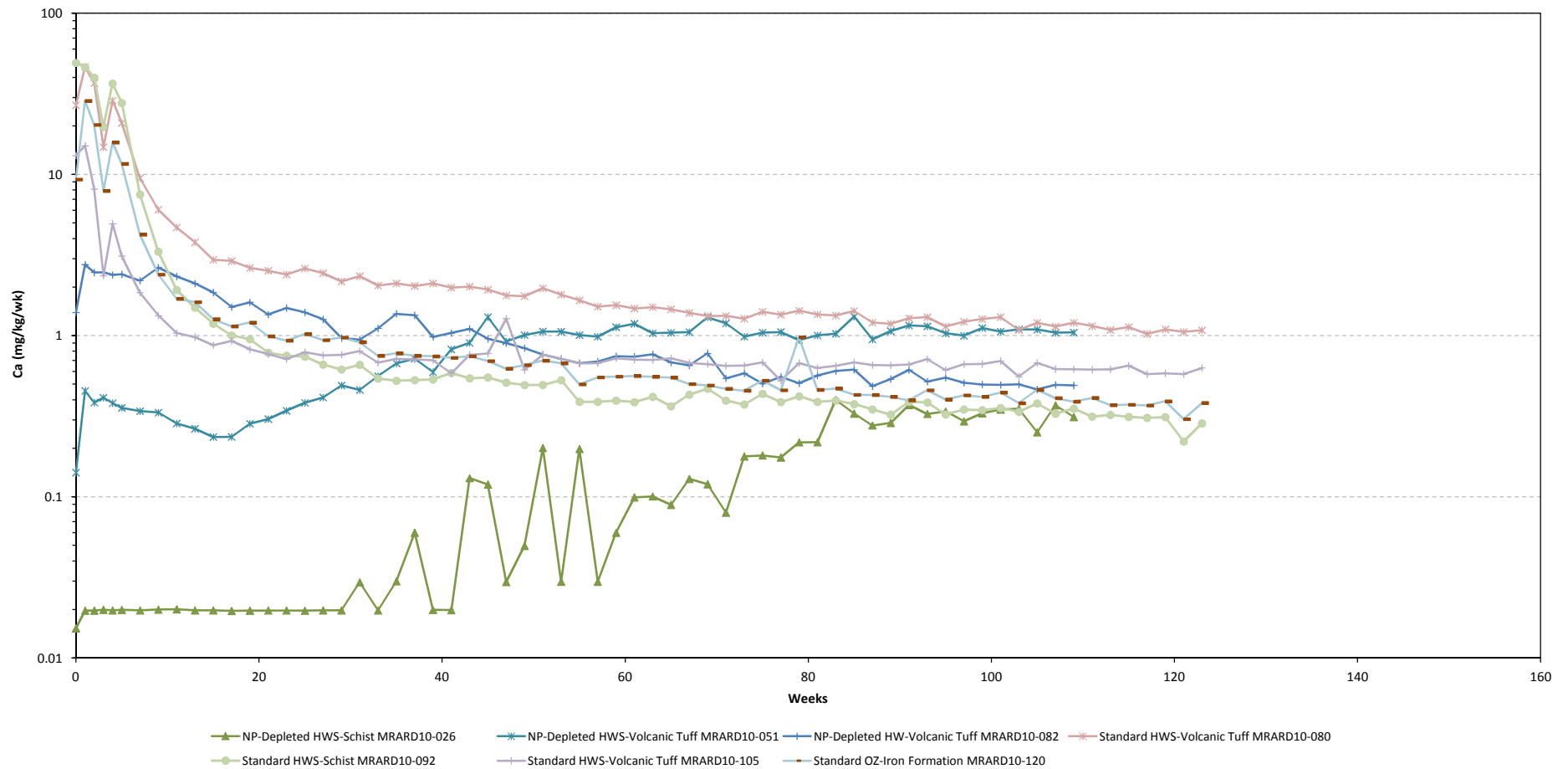


Bismuth - Hanging Wall

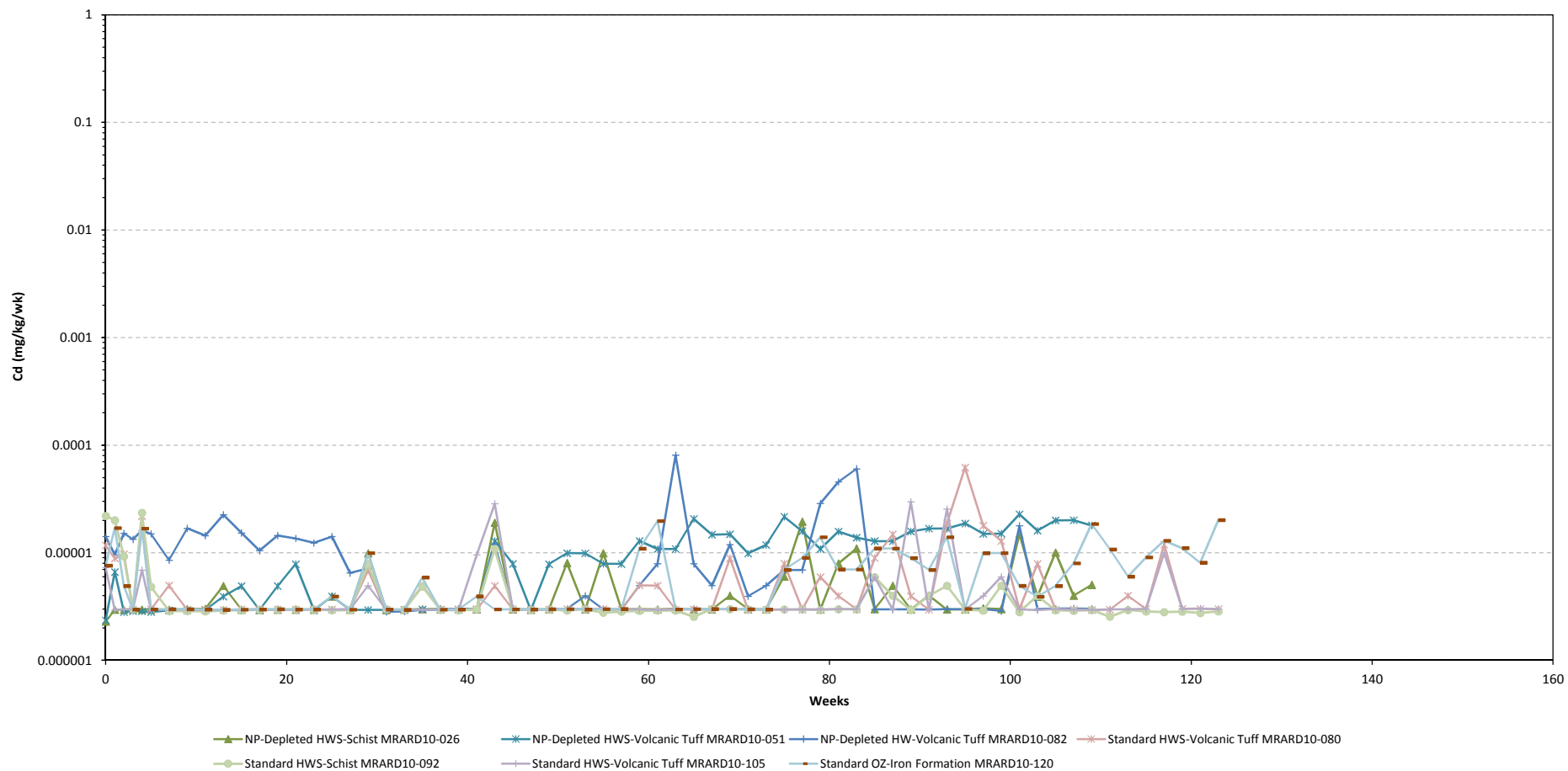


 	
Mary River Project	
Bismuth - Hanging Wall	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	Figure B-51

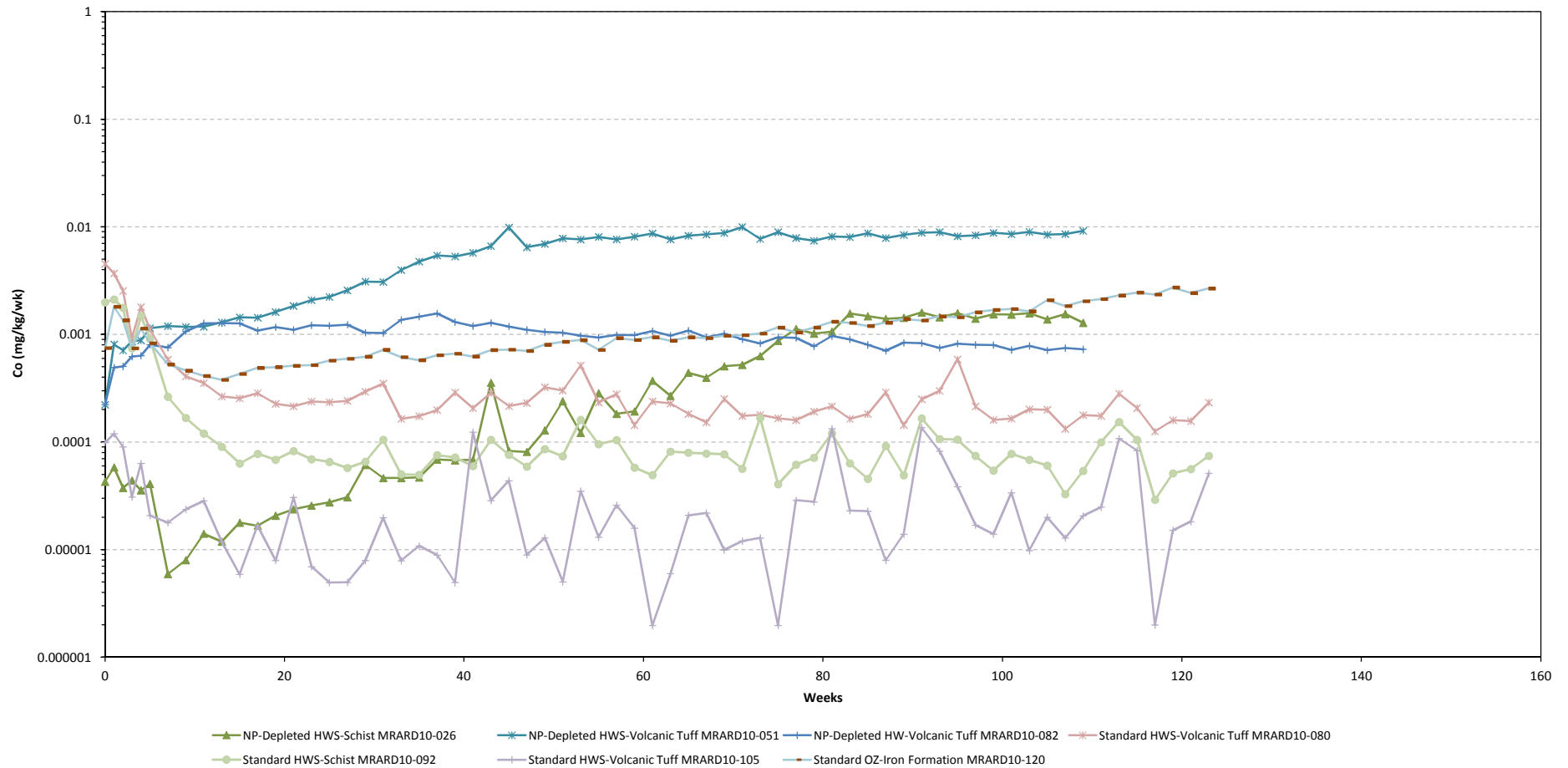
Calcium - Hanging Wall



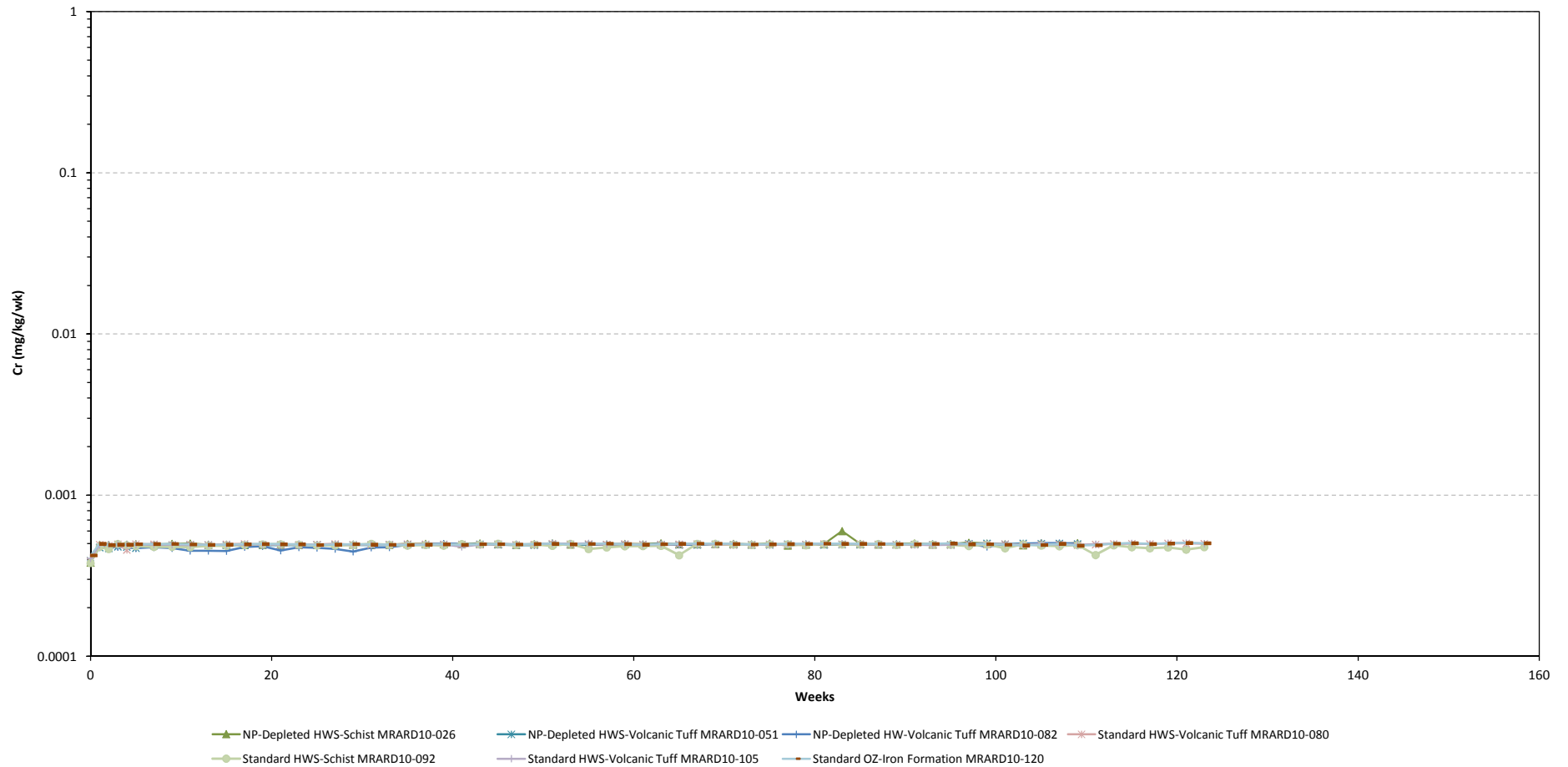
Cadmium - Hanging Wall



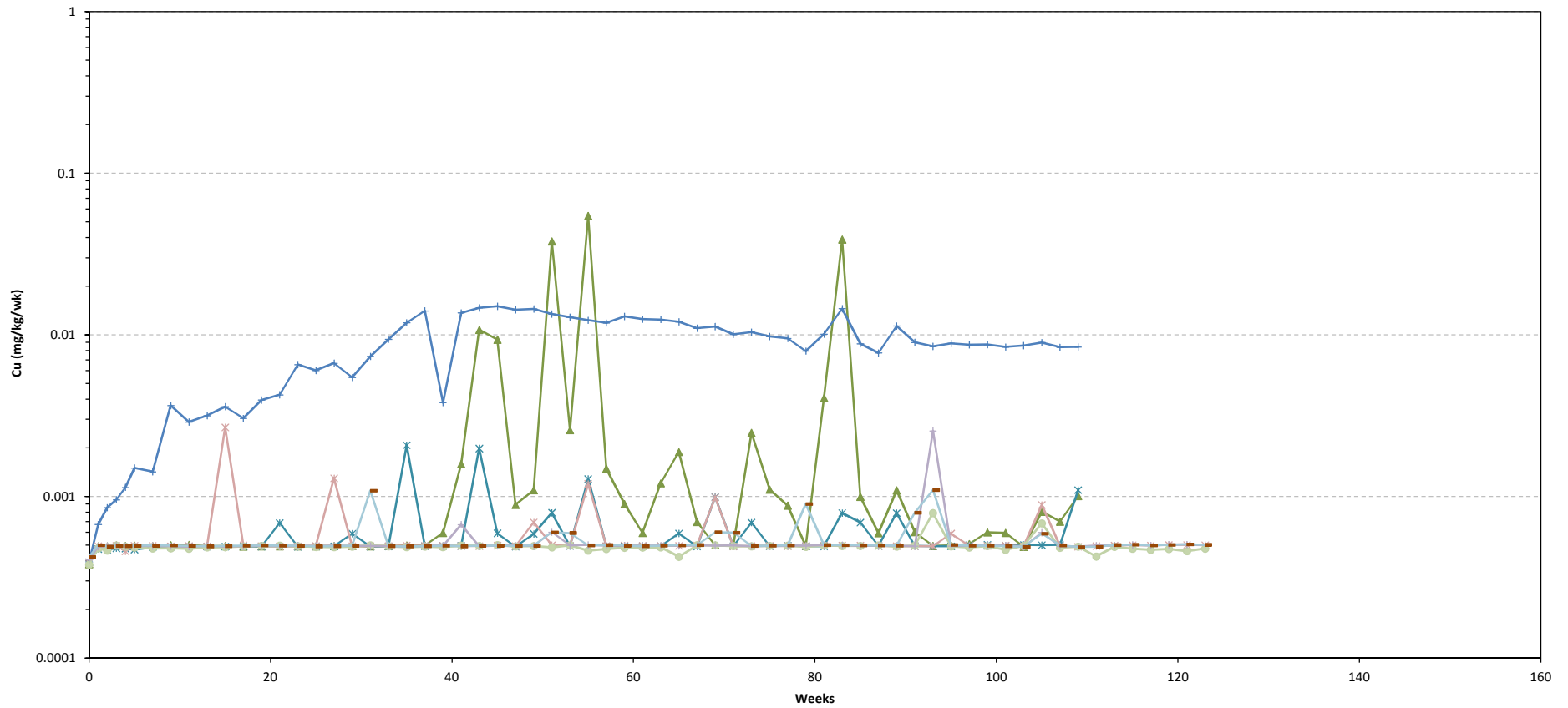
Cobalt - Hanging Wall



Chromium - Hanging Wall



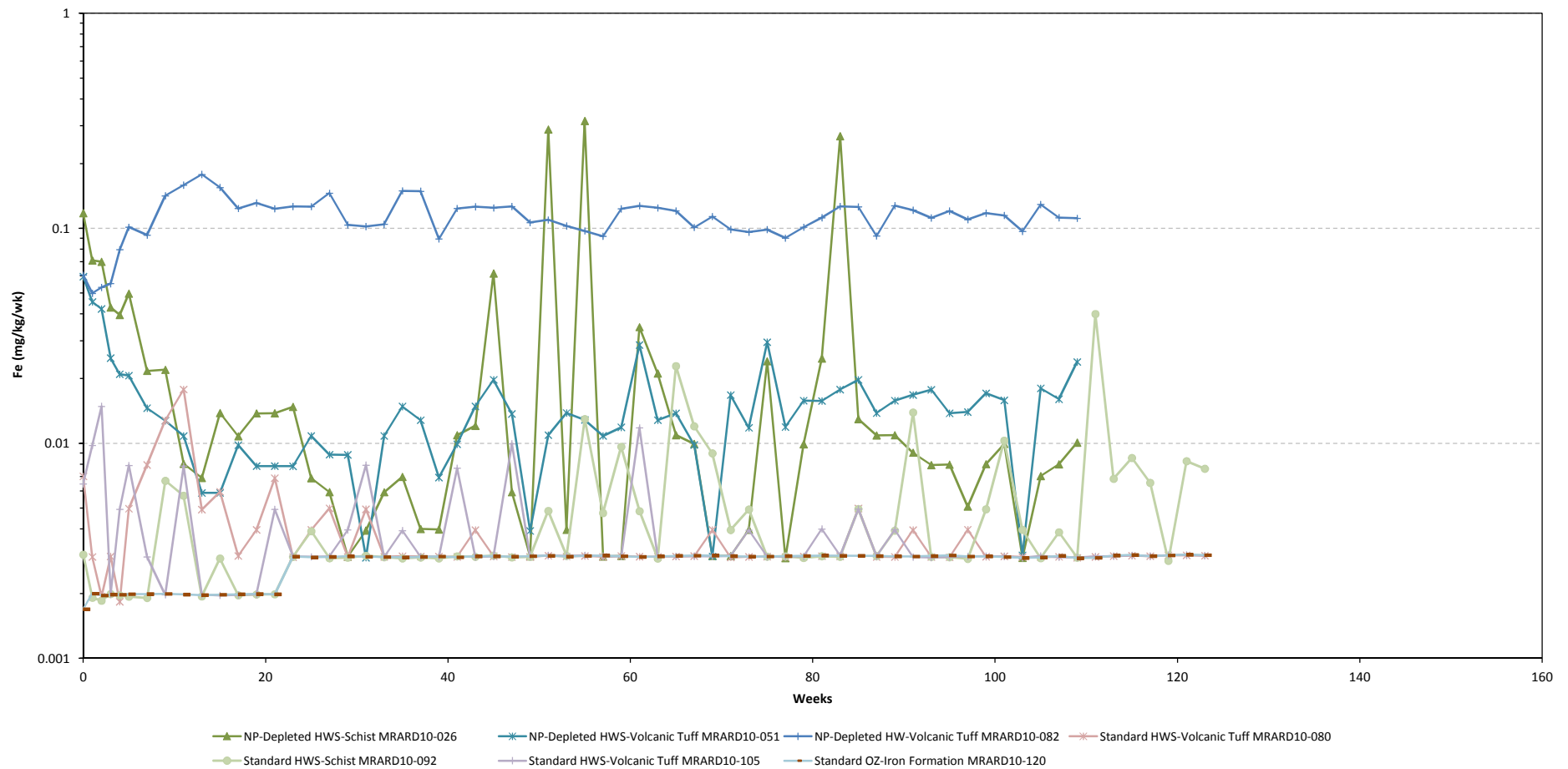
Copper - Hanging Wall



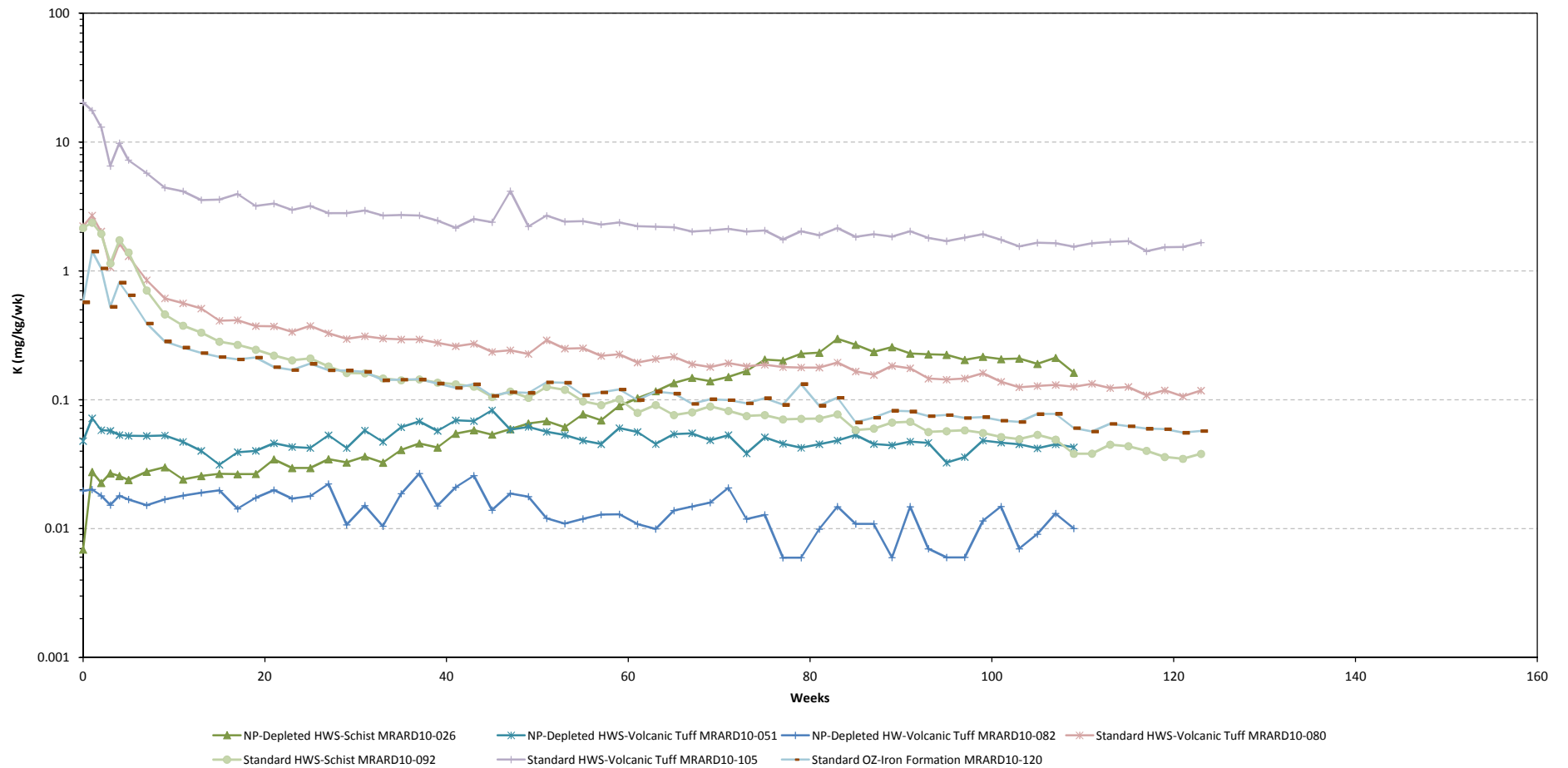
NP-Depleted HWS-Schist MRARD10-026 NP-Depleted HWS-Volcanic Tuff MRARD10-051 NP-Depleted HW-Volcanic Tuff MRARD10-082 Standard HWS-Volcanic Tuff MRARD10-080
 Standard HWS-Schist MRARD10-092 Standard HWS-Volcanic Tuff MRARD10-105 Standard OZ-Iron Formation MRARD10-120

 	
Mary River Project	
Copper - Hanging Wall	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	Figure B-56

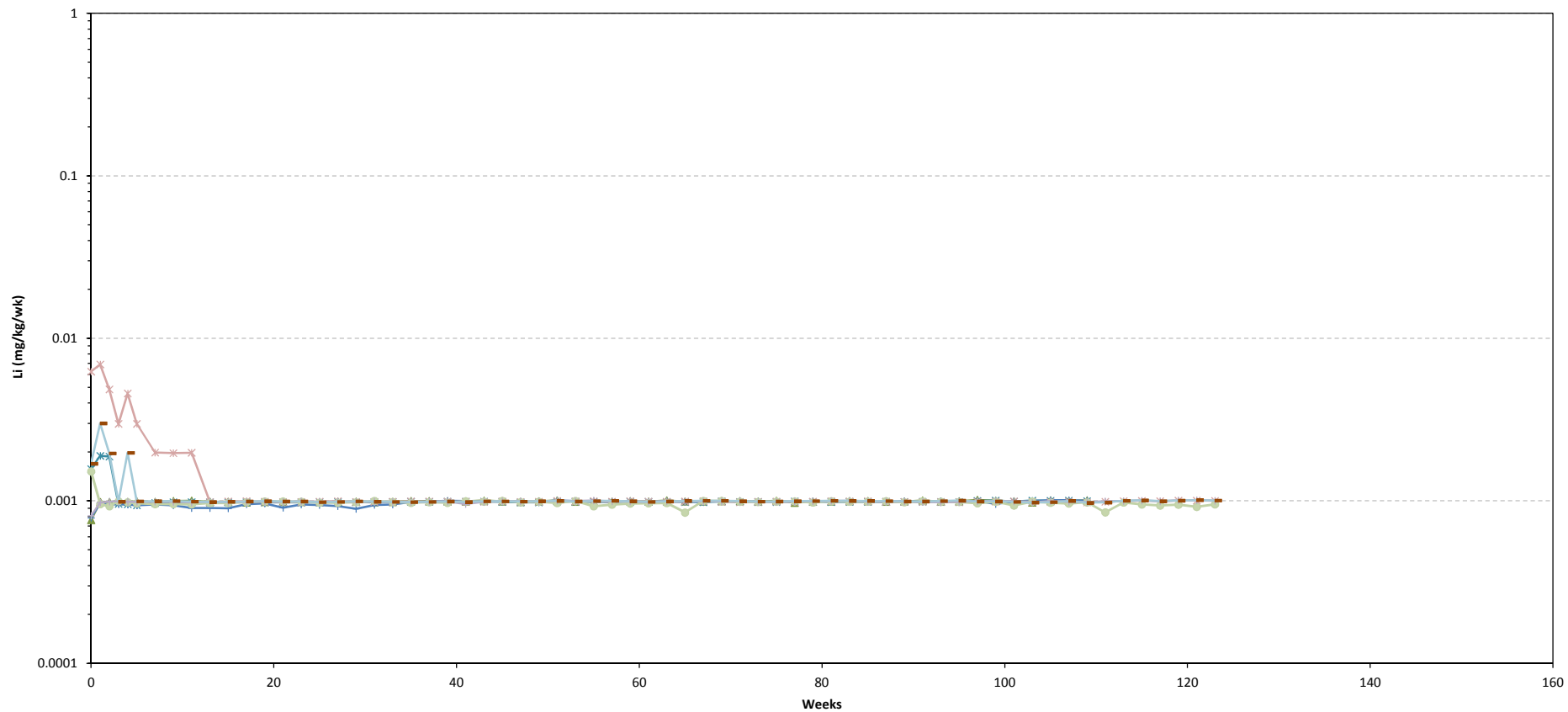
Iron - Hanging Wall



Potassium - Hanging Wall



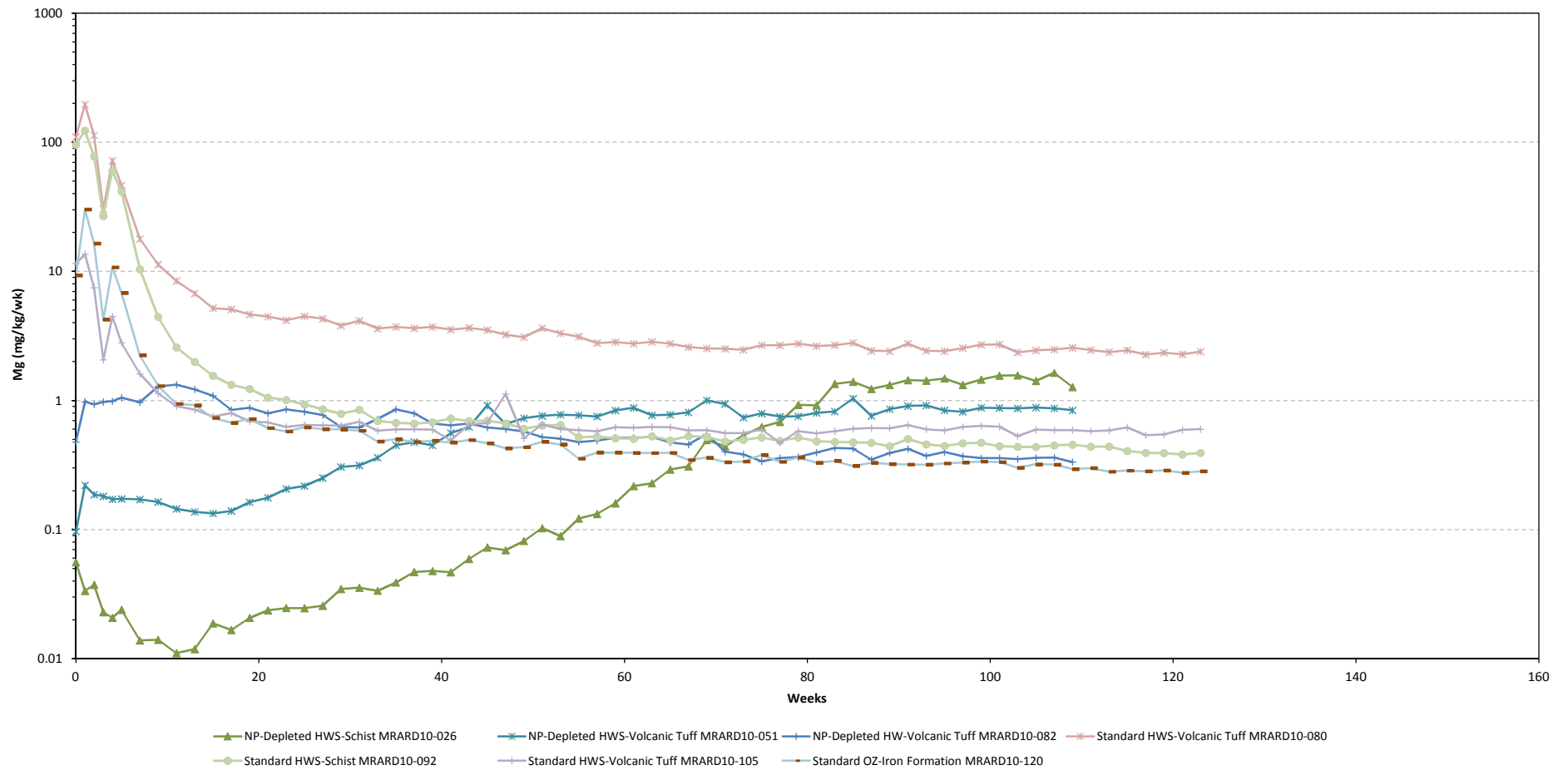
Lithium - Hanging Wall



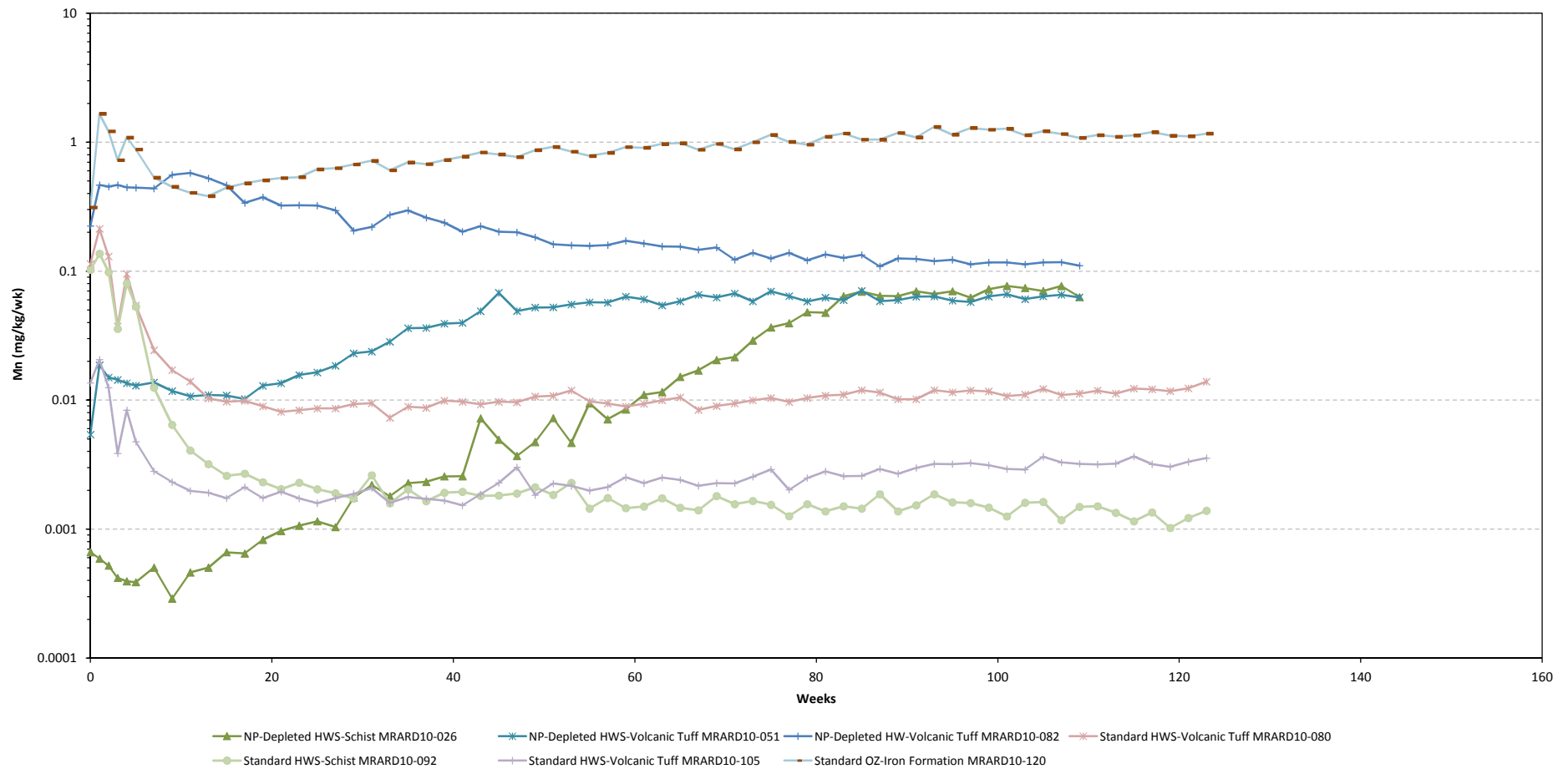
NP-Depleted HWS-Schist MRARD10-026 NP-Depleted HWS-Volcanic Tuff MRARD10-051 NP-Depleted HW-Volcanic Tuff MRARD10-082 Standard HWS-Volcanic Tuff MRARD10-080
 Standard HWS-Schist MRARD10-092 Standard HWS-Volcanic Tuff MRARD10-105 Standard OZ-Iron Formation MRARD10-120

 	
Mary River Project	
Lithium - Hanging Wall	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	Figure B-59

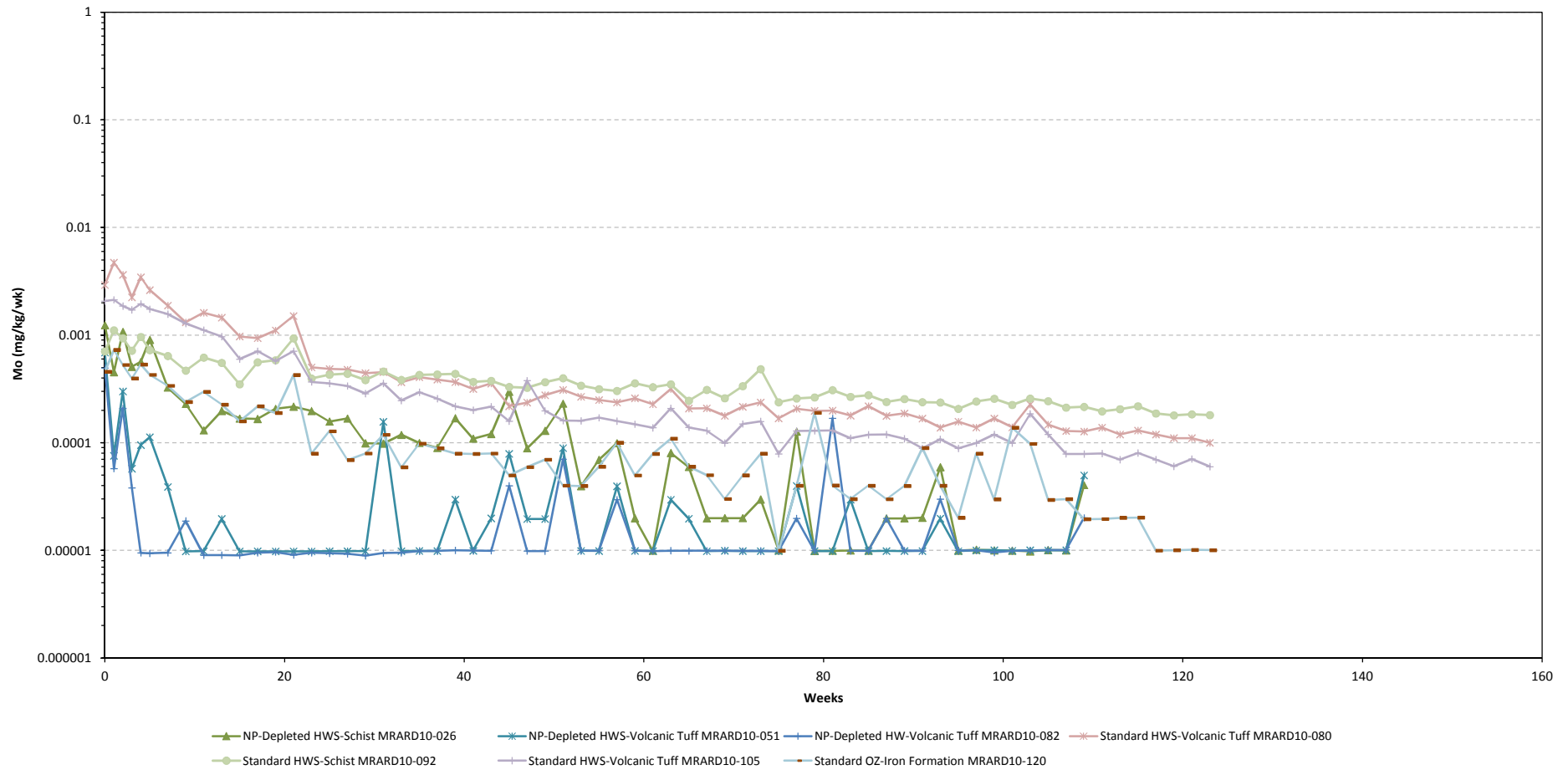
Magnesium - Hanging Wall



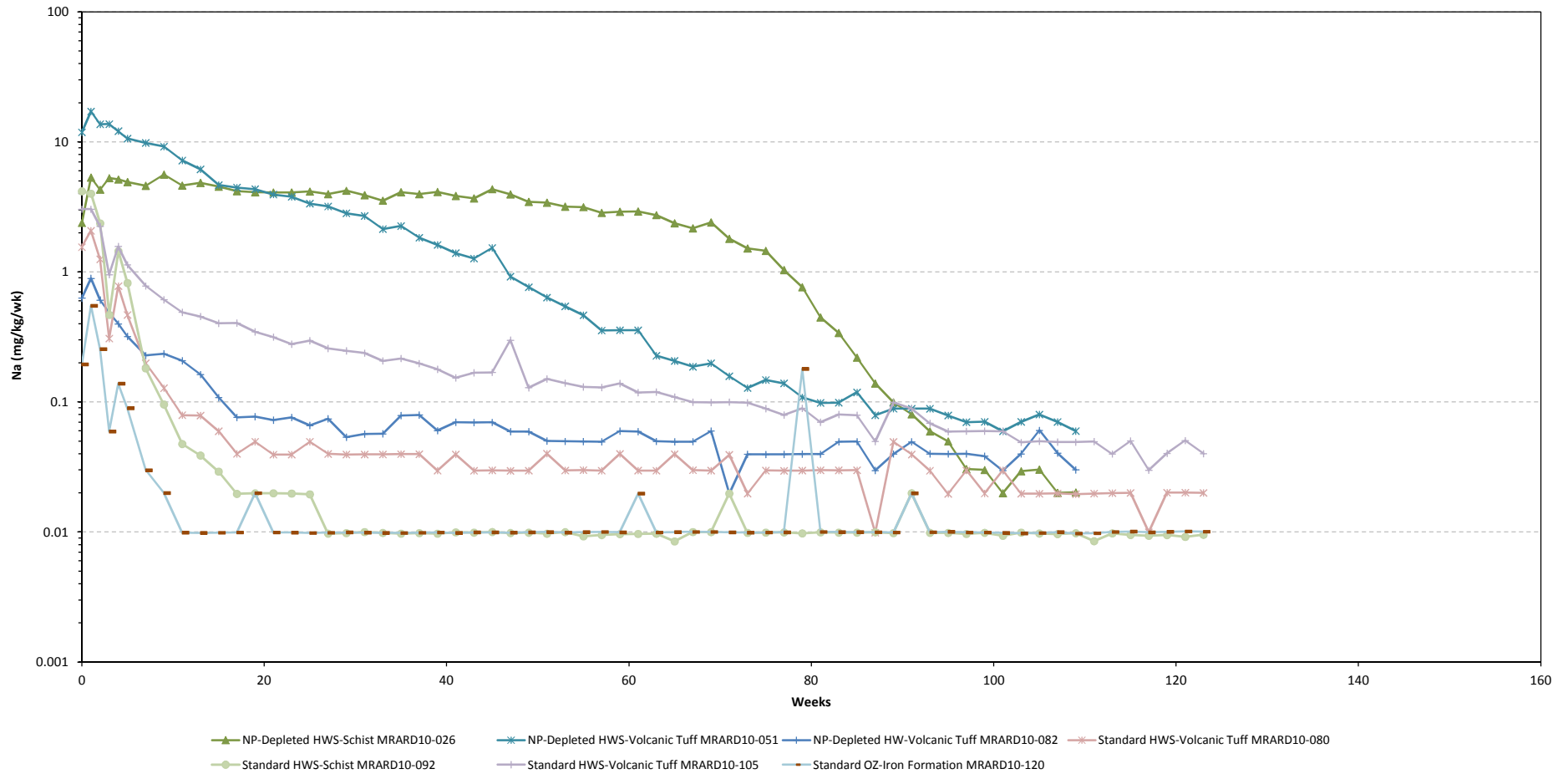
Manganese - Hanging Wall



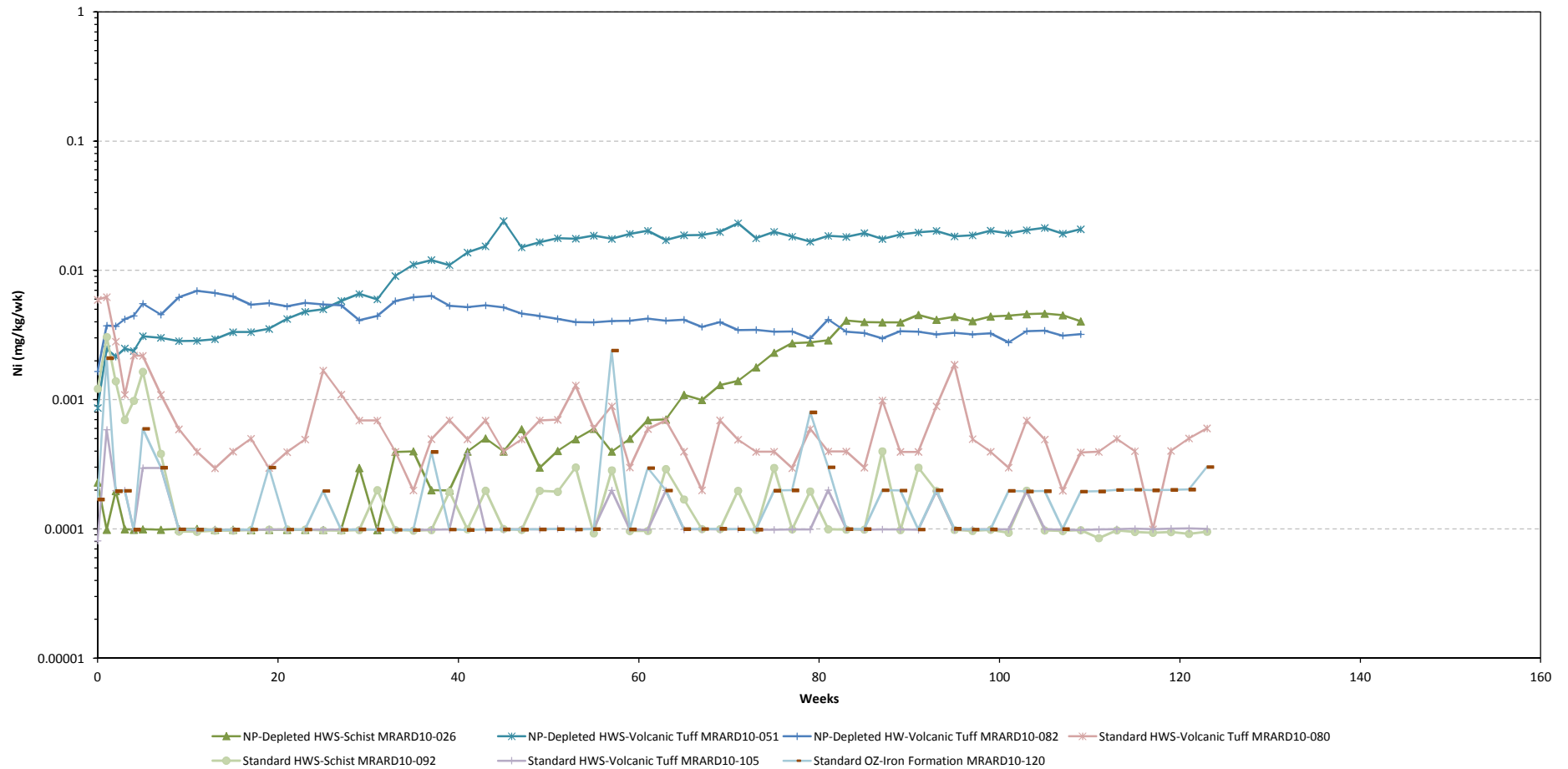
Molybdenum - Hanging Wall



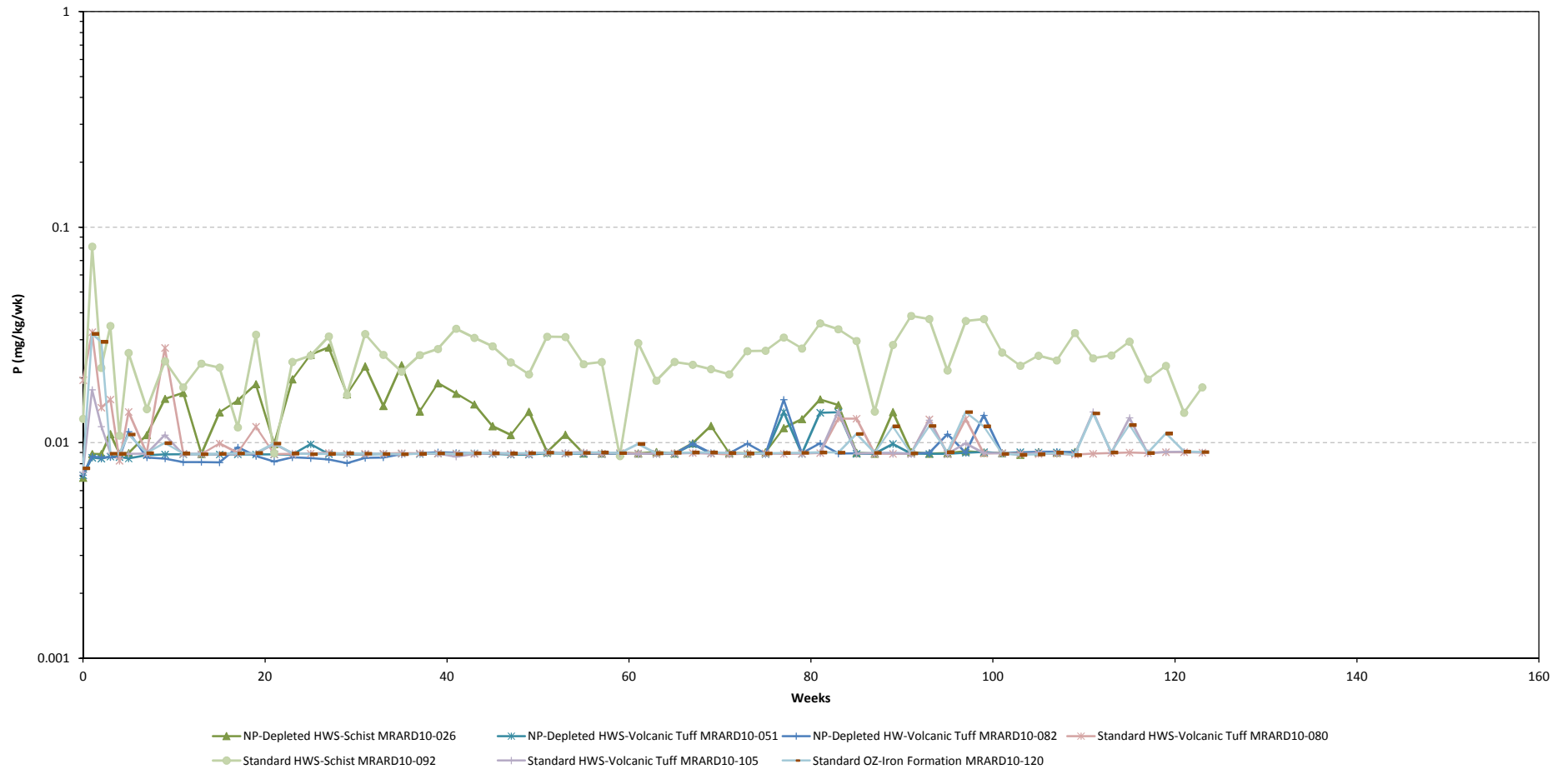
Sodium - Hanging Wall



Nickel - Hanging Wall

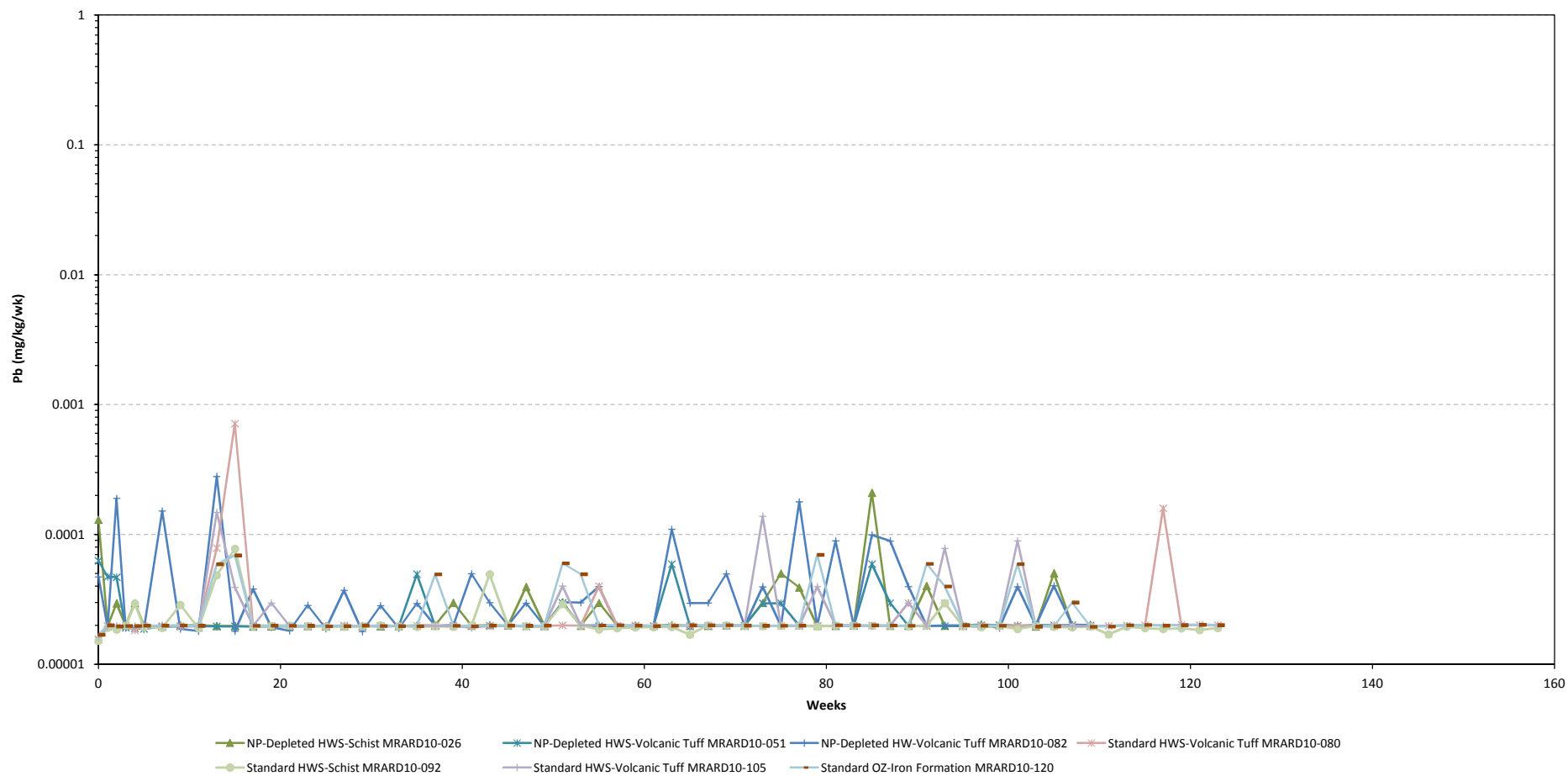


Phosphorus - Hanging Wall

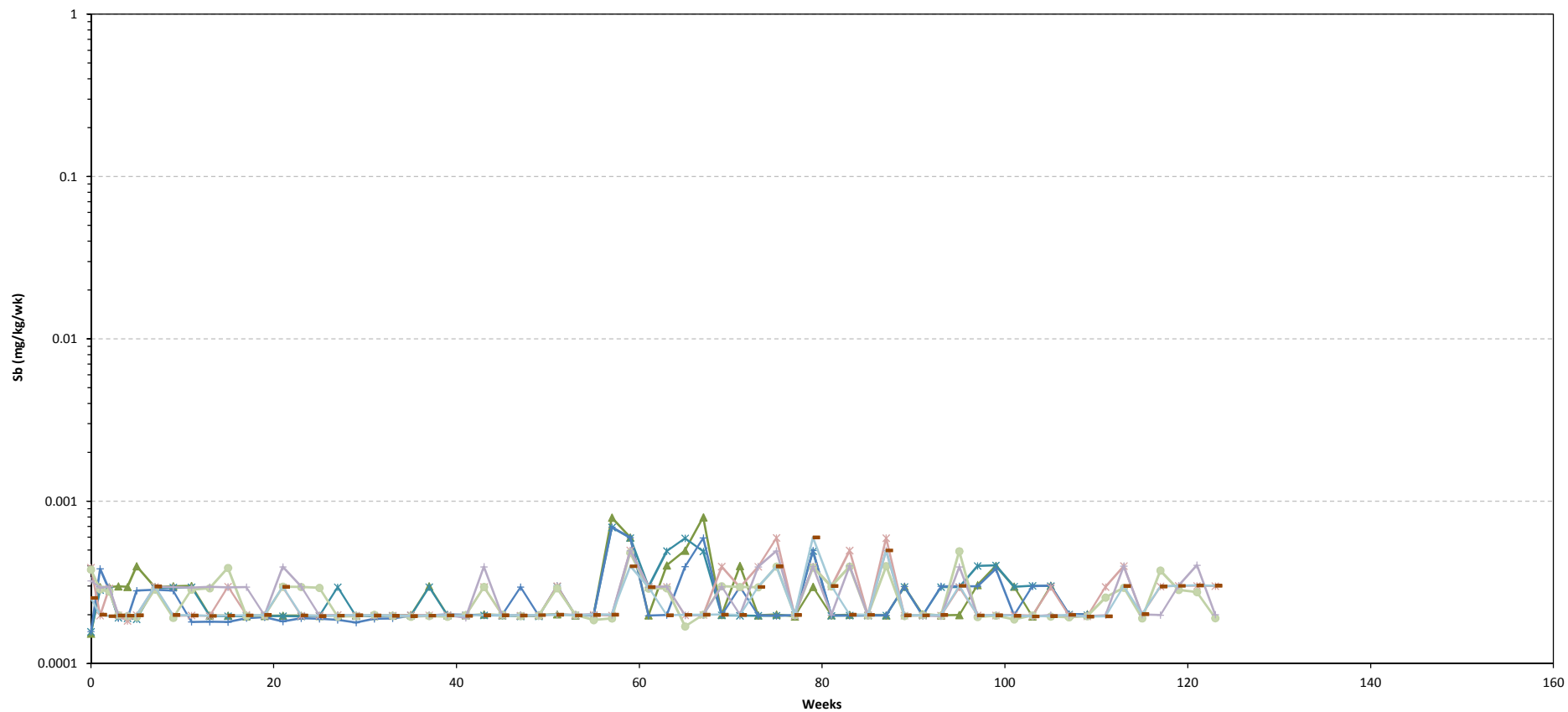


Mary River Project		
Phosphorus - Hanging Wall		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure B-65

Lead - Hanging Wall



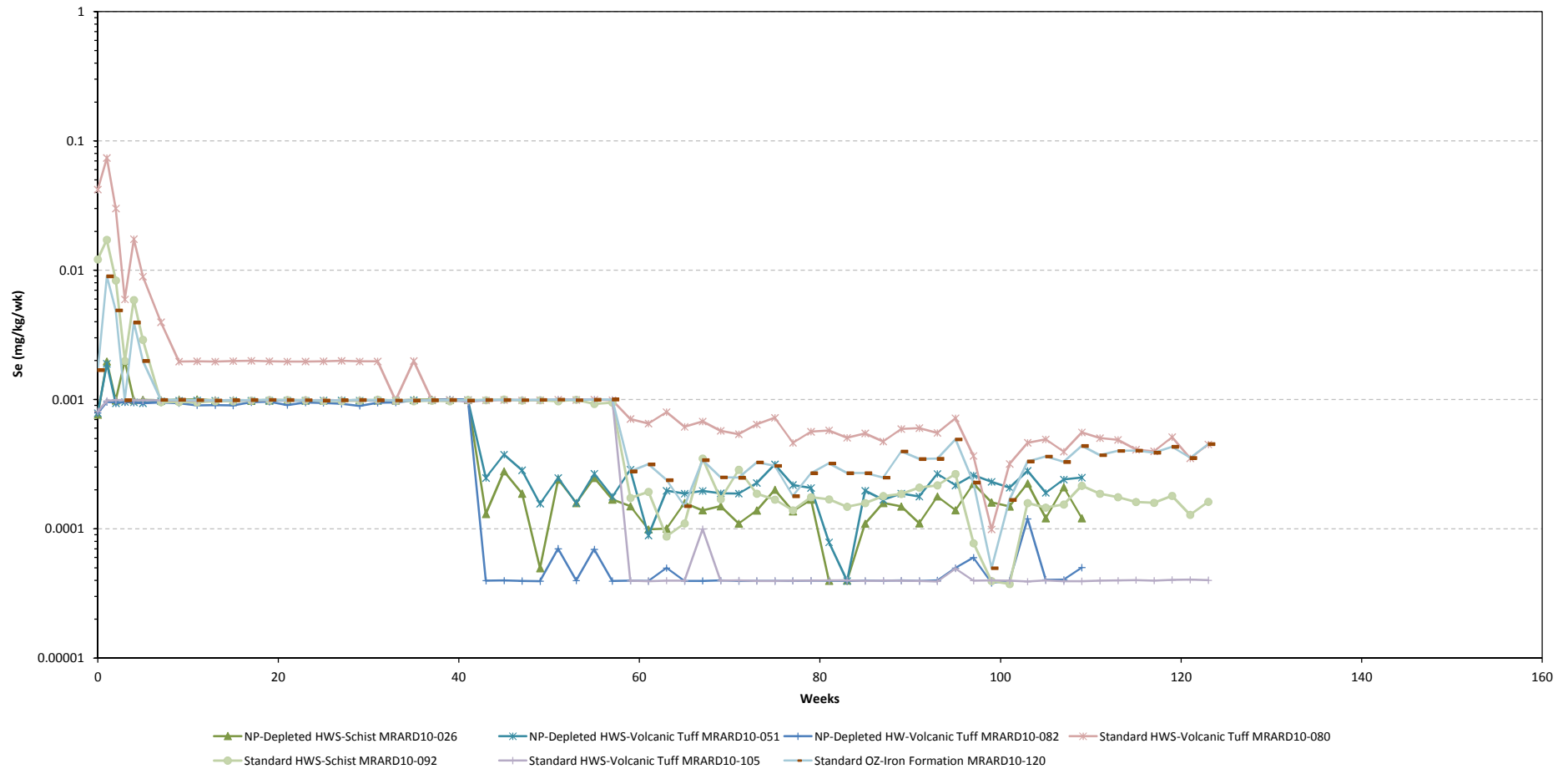
Antimony - Hanging Wall



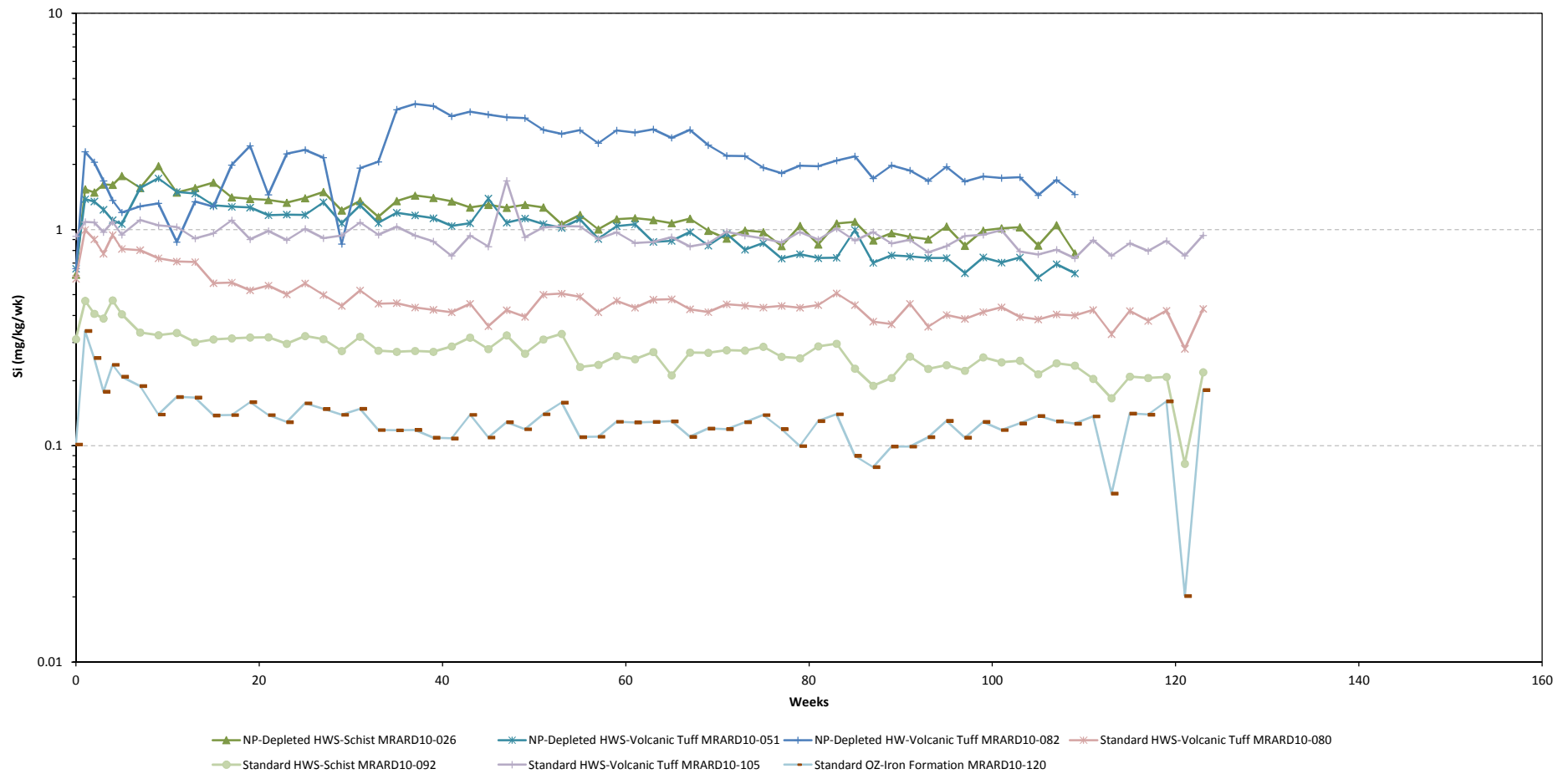
NP-Depleted HWS-Schist MRARD10-026 NP-Depleted HWS-Volcanic Tuff MRARD10-051 NP-Depleted HW-Volcanic Tuff MRARD10-082 Standard HWS-Volcanic Tuff MRARD10-080
 Standard HWS-Schist MRARD10-092 Standard HWS-Volcanic Tuff MRARD10-105 Standard OZ-Iron Formation MRARD10-120

Mary River Project		
Antimony - Hanging Wall		
Drawn by: LC	Checked by: SW	Date: March 2014
Project: TC123908		Figure B-67

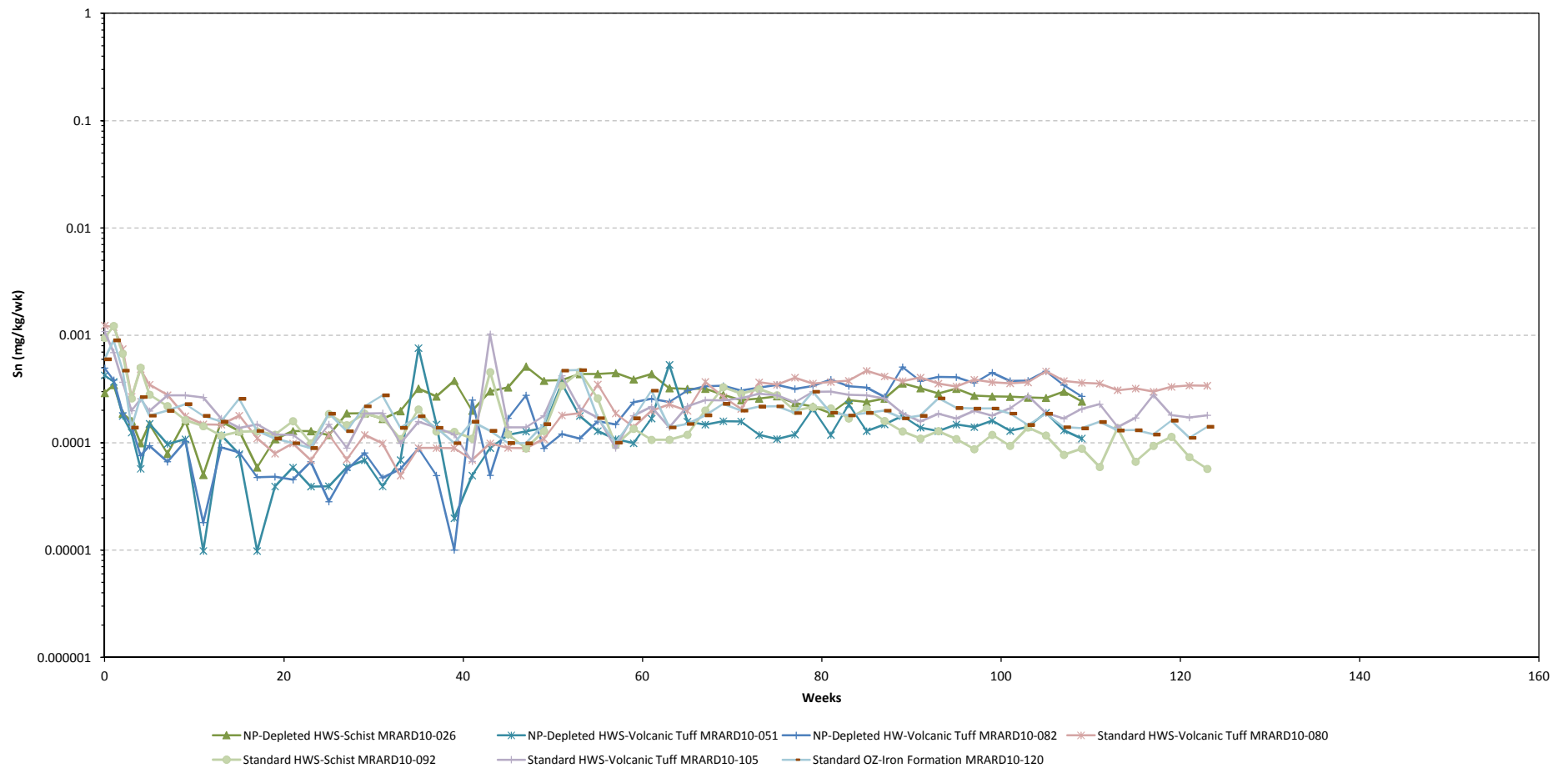
Selenium - Hanging Wall



Silicon - Hanging Wall

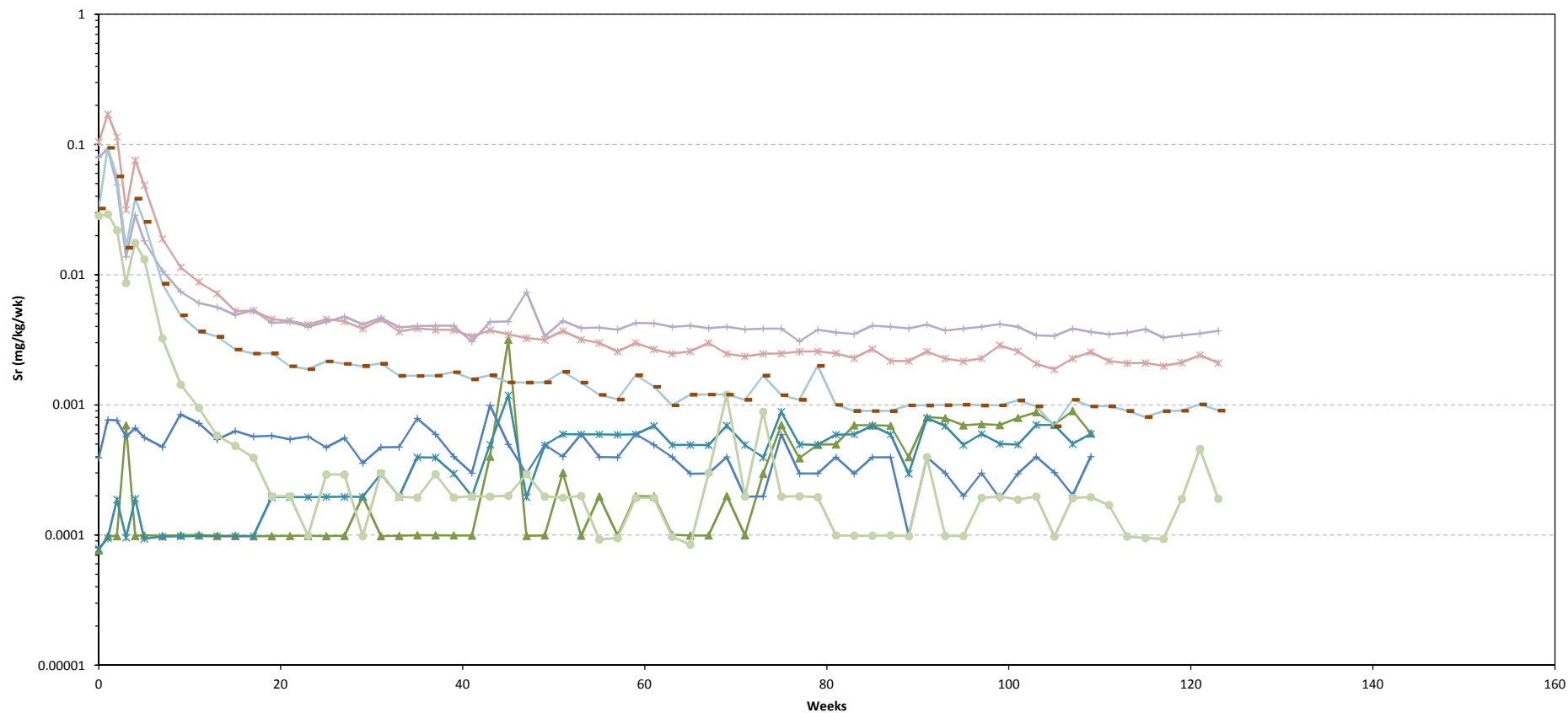


Tin - Hanging Wall



Mary River Project	
Tin - Hanging Wall	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	Figure B-70

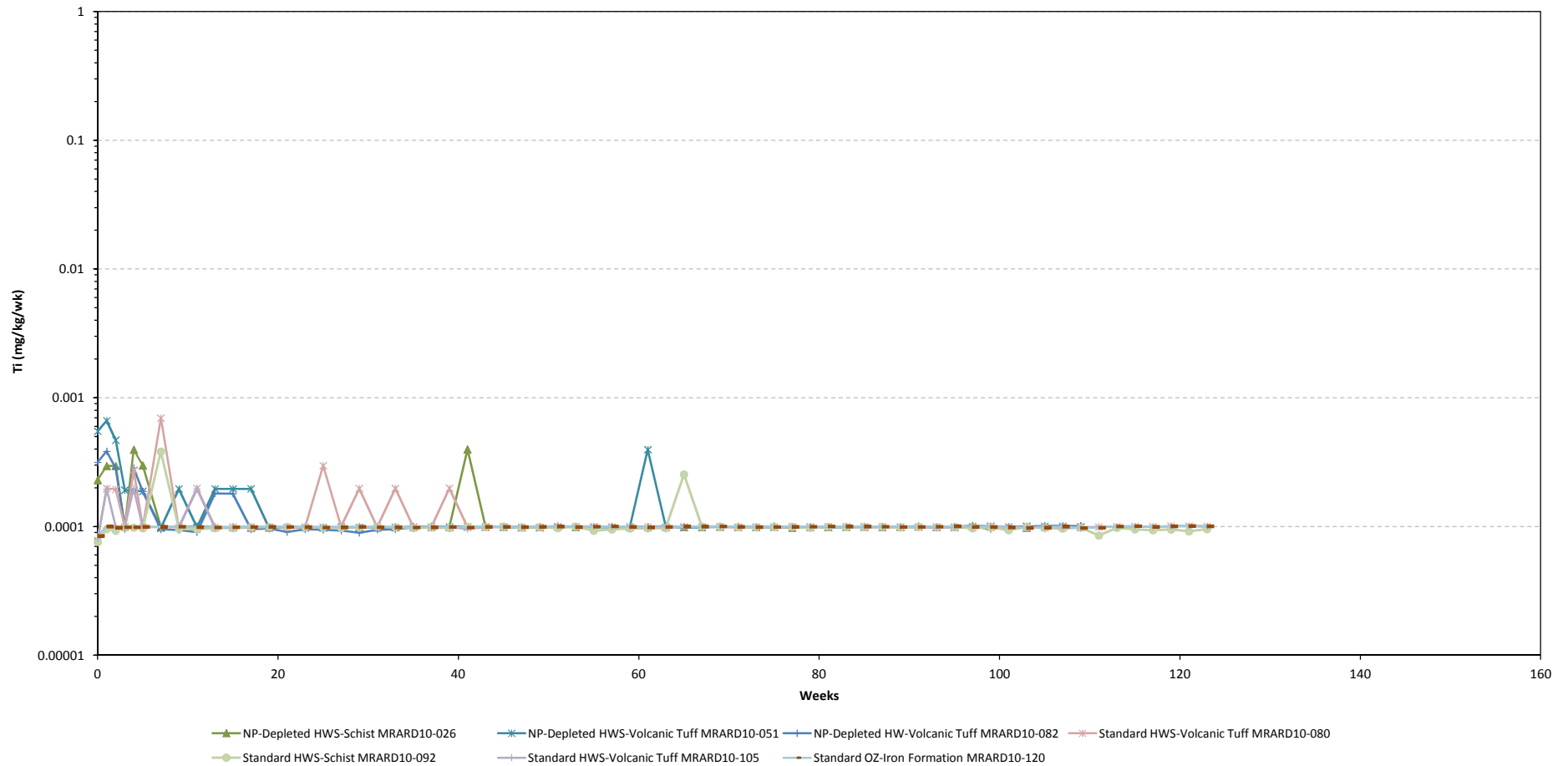
Strontium - Hanging Wall



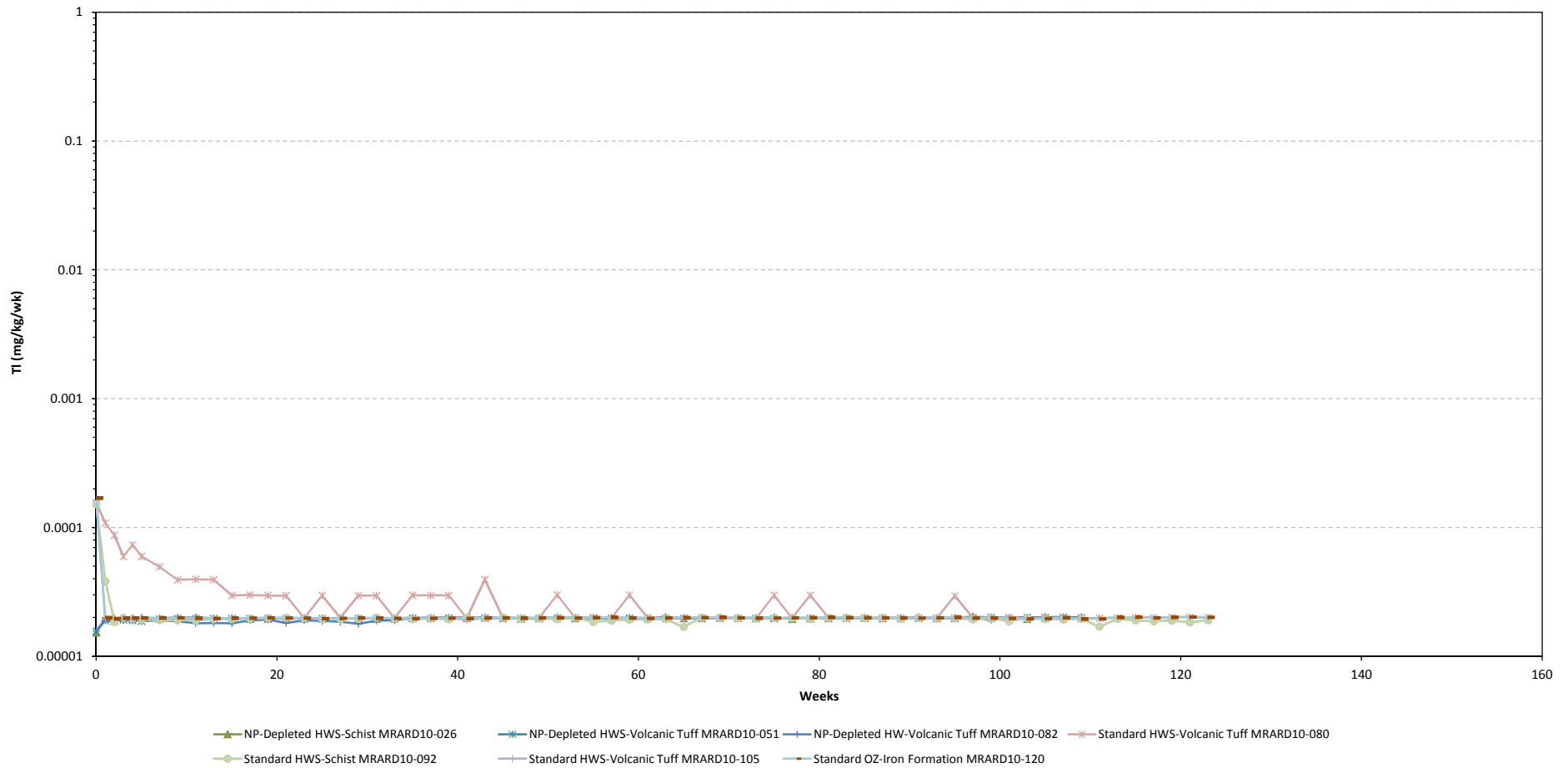
NP-Depleted HWS-Schist MRARD10-026 NP-Depleted HWS-Volcanic Tuff MRARD10-051 NP-Depleted HW-Volcanic Tuff MRARD10-082 Standard HWS-Volcanic Tuff MRARD10-080
 Standard HWS-Schist MRARD10-092 Standard HWS-Volcanic Tuff MRARD10-105 Standard OZ-Iron Formation MRARD10-120

 	
Mary River Project	
Strontium - Hanging Wall	
Drawn by: LC	Checked by: SW
Date: March 2014	
Project: TC123908	Figure B-71

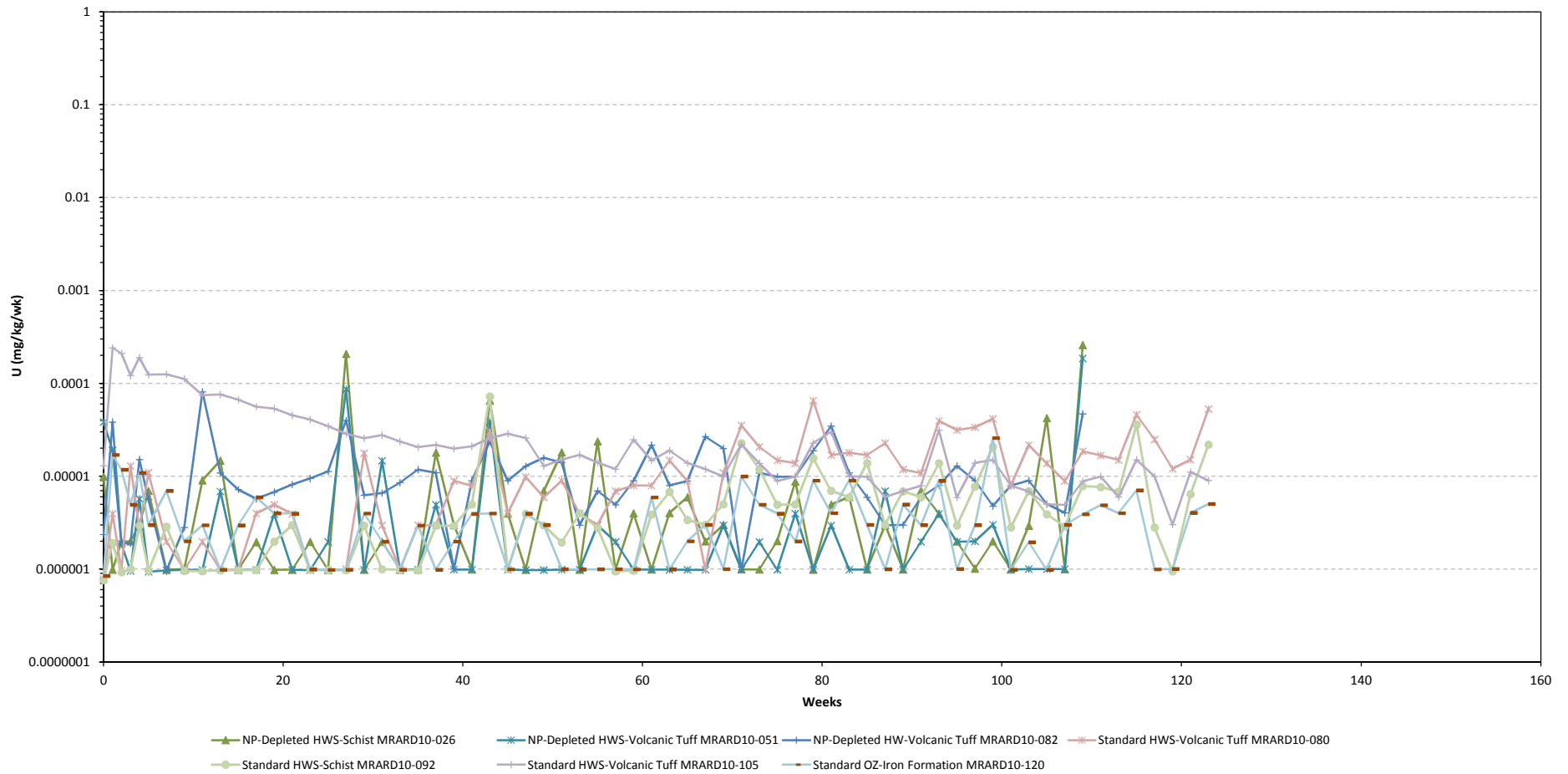
Titanium - Hanging Wall



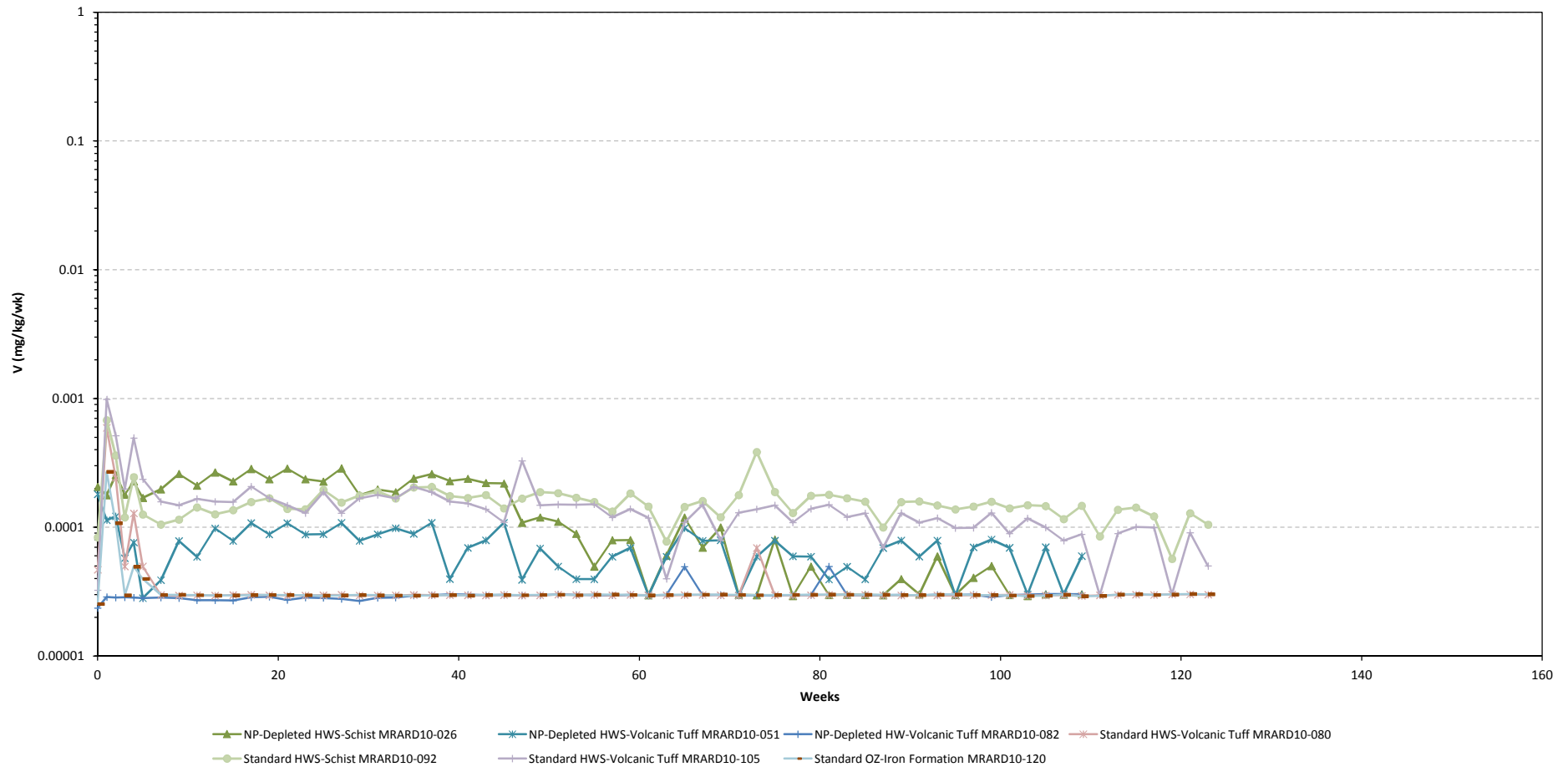
Thallium - Hanging Wall



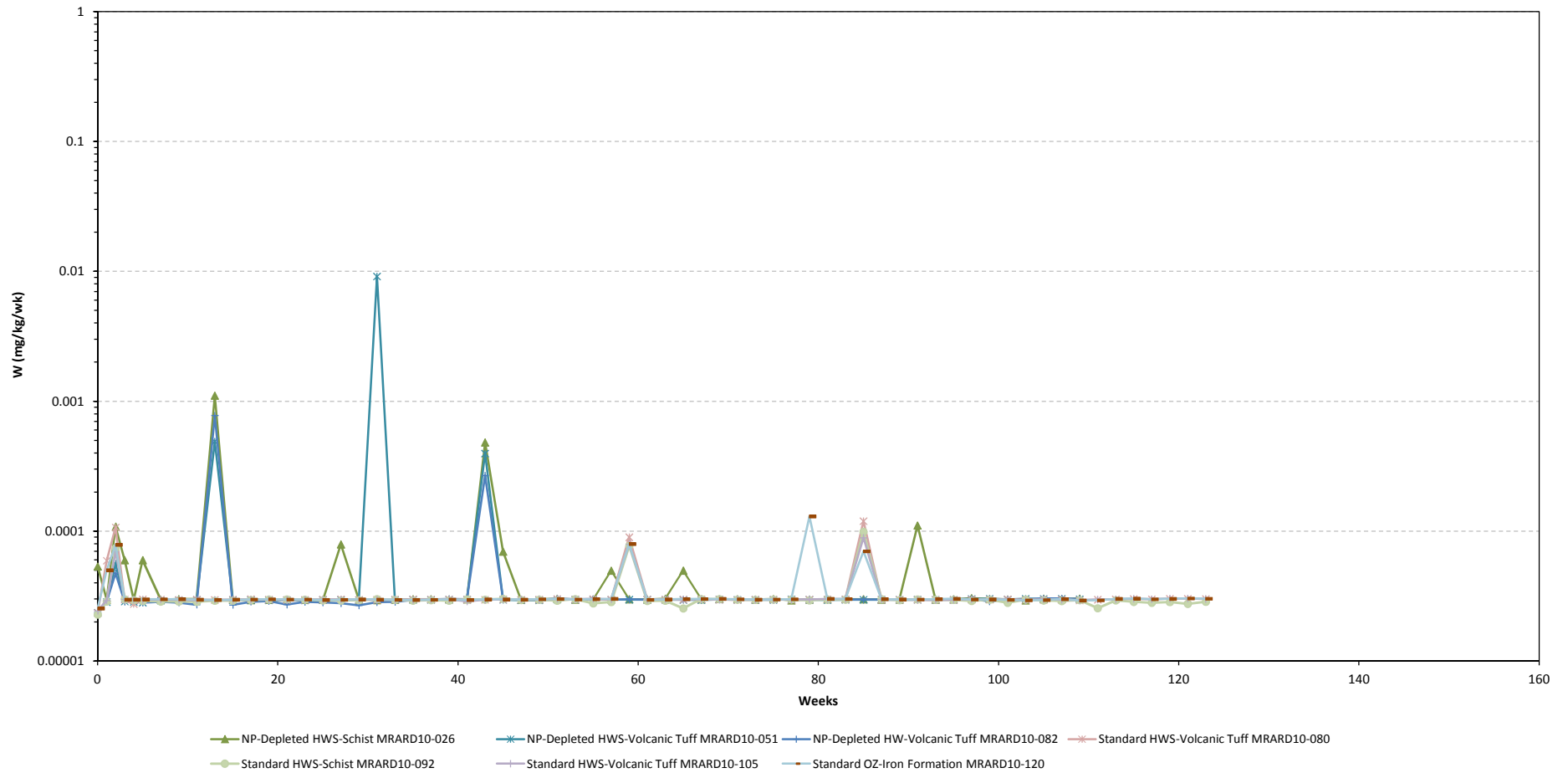
Uranium - Hanging Wall



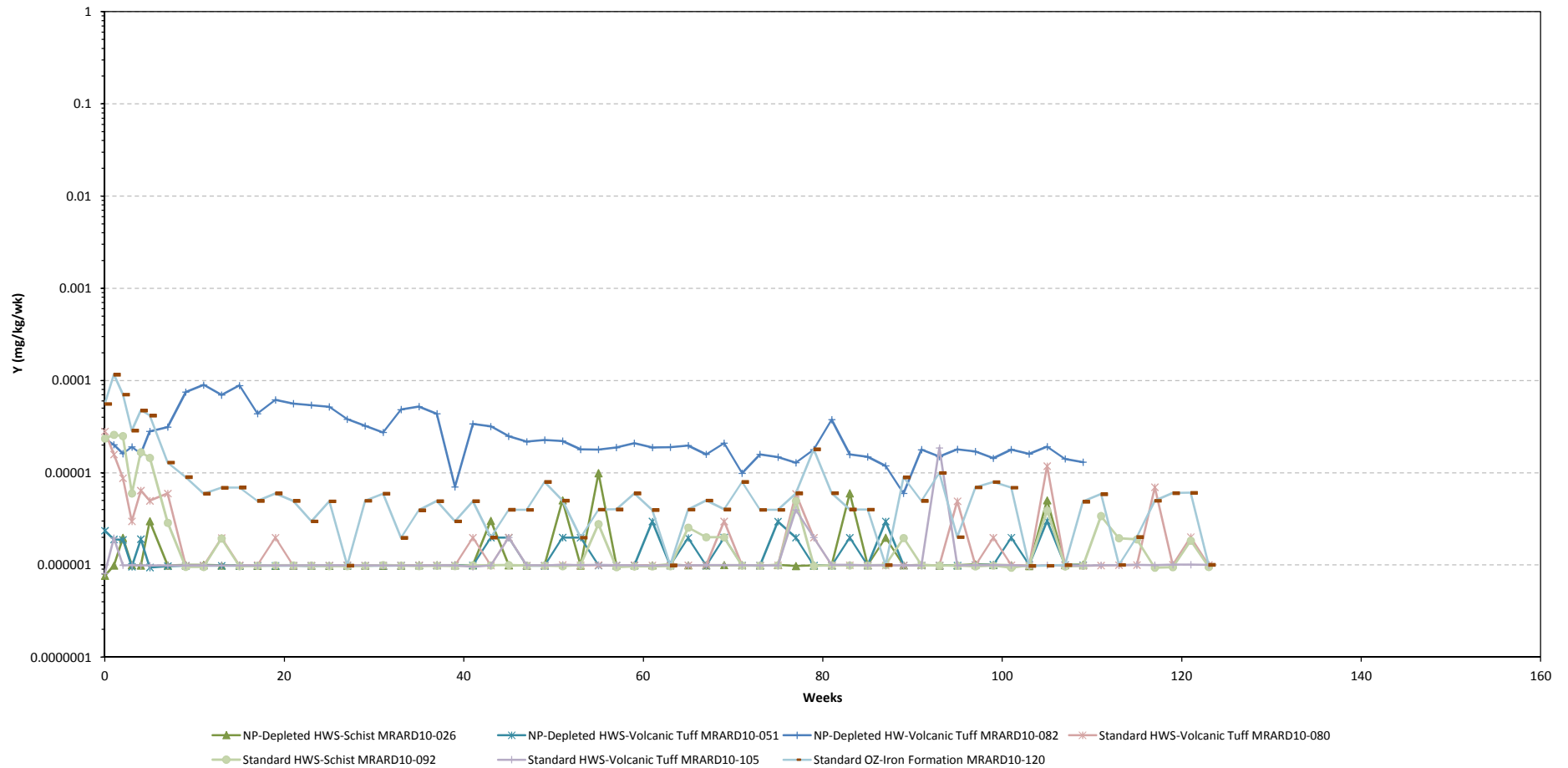
Vanadium - Hanging Wall



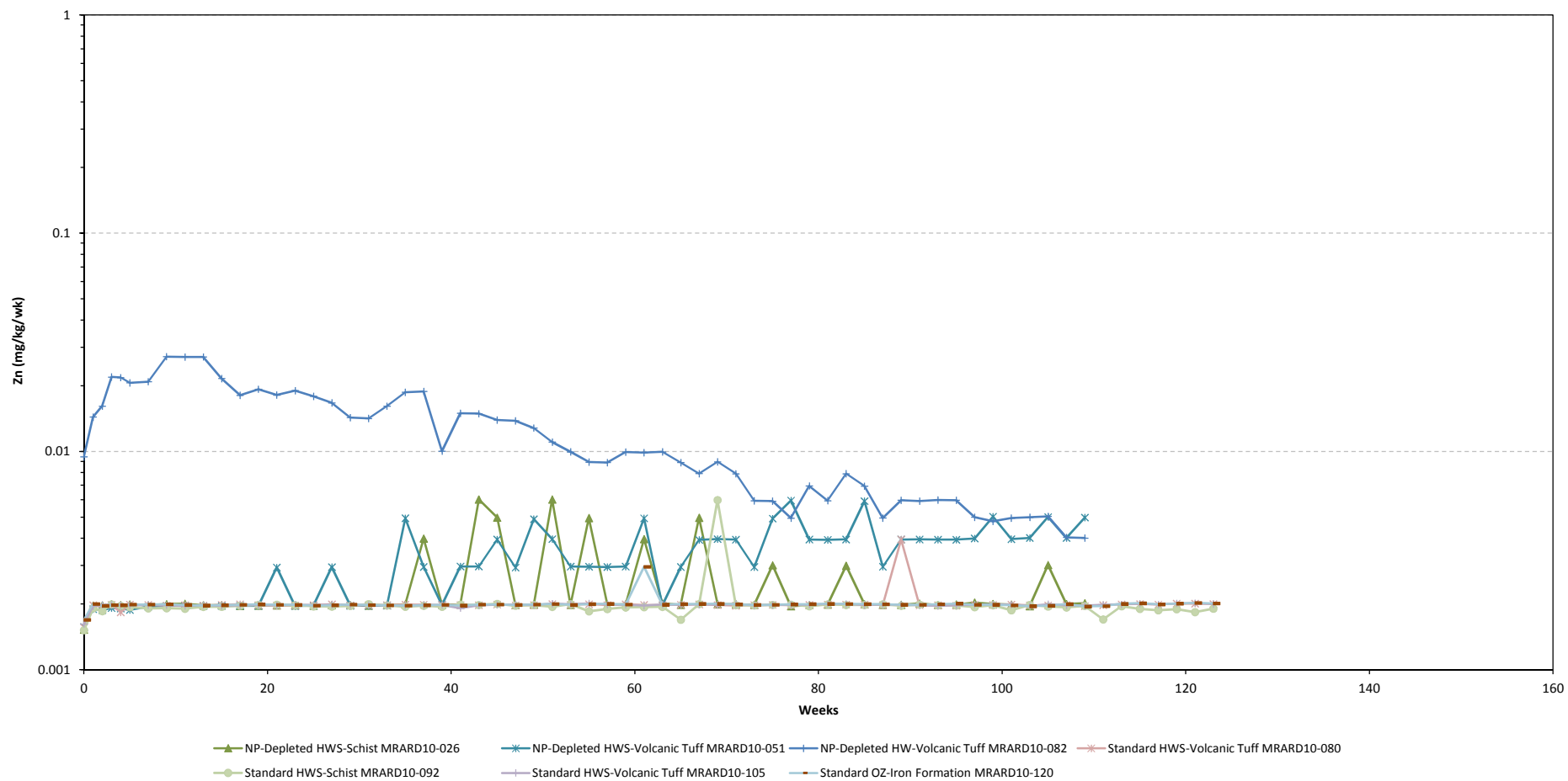
Tungsten - Hanging Wall

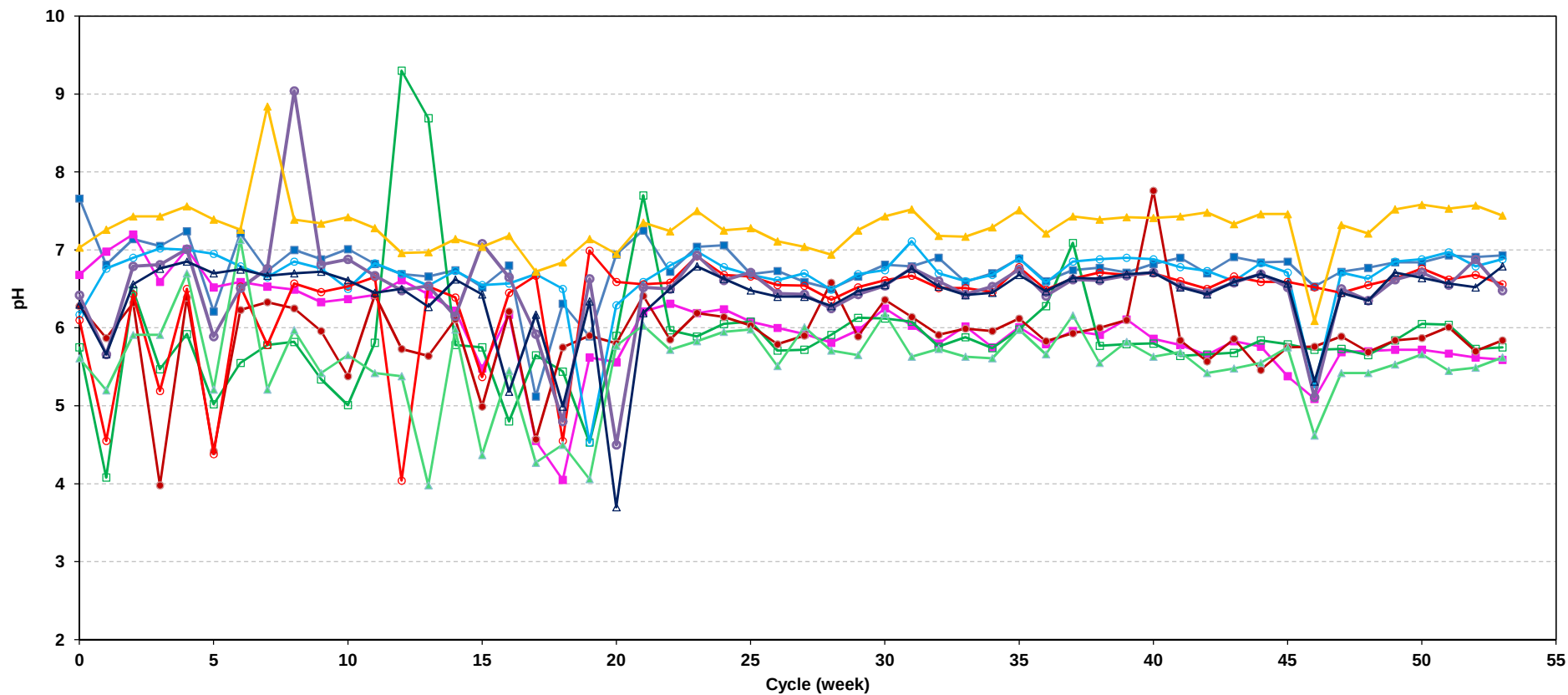


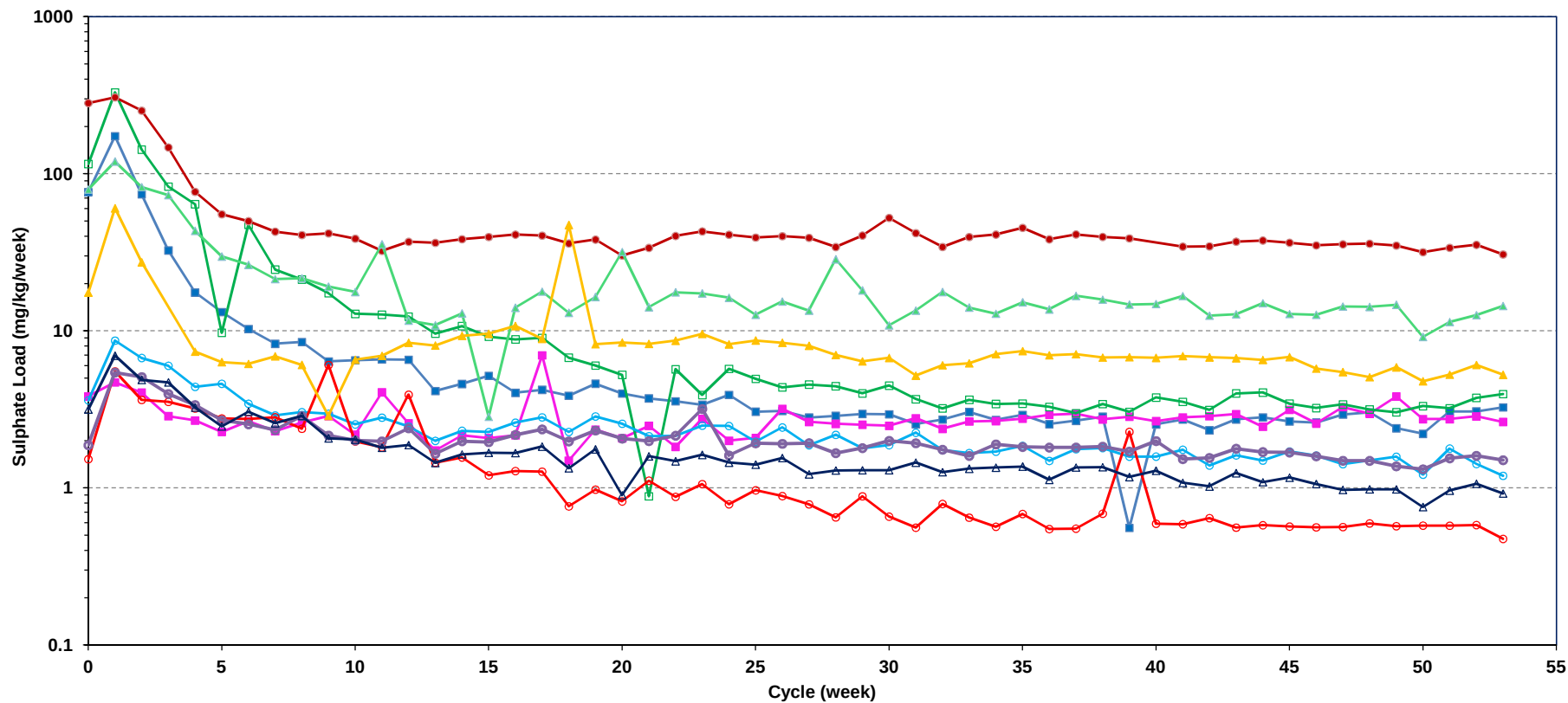
Yttrium - Hanging Wall



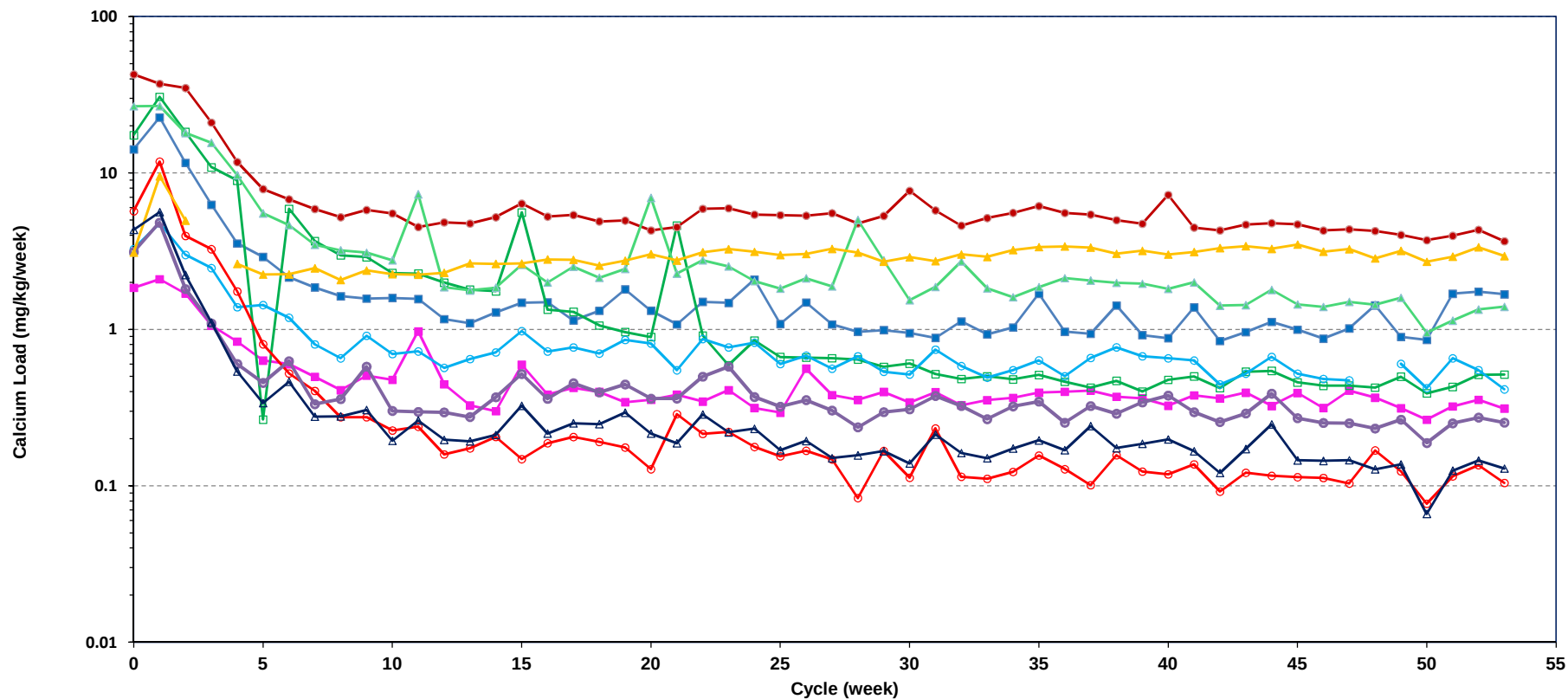
Zinc - Hanging Wall



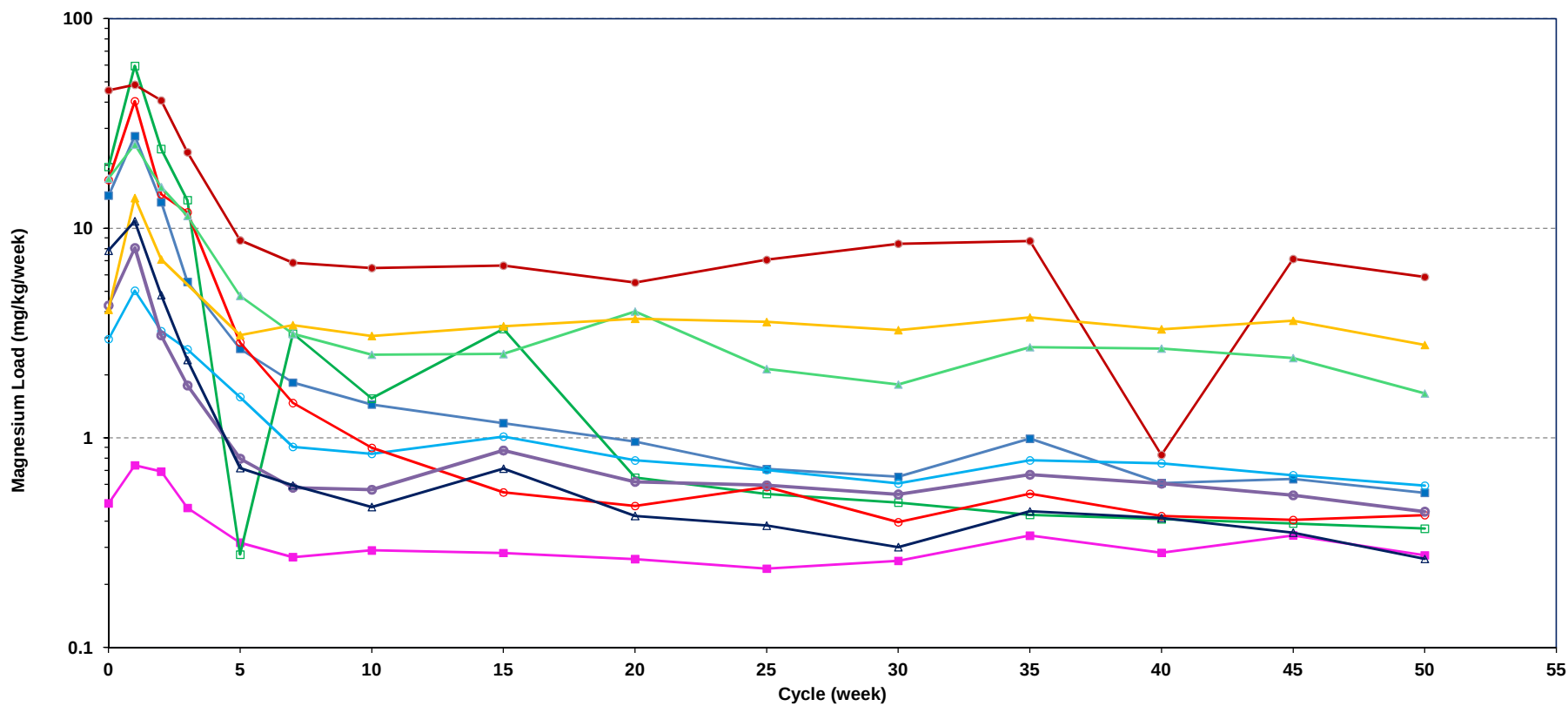




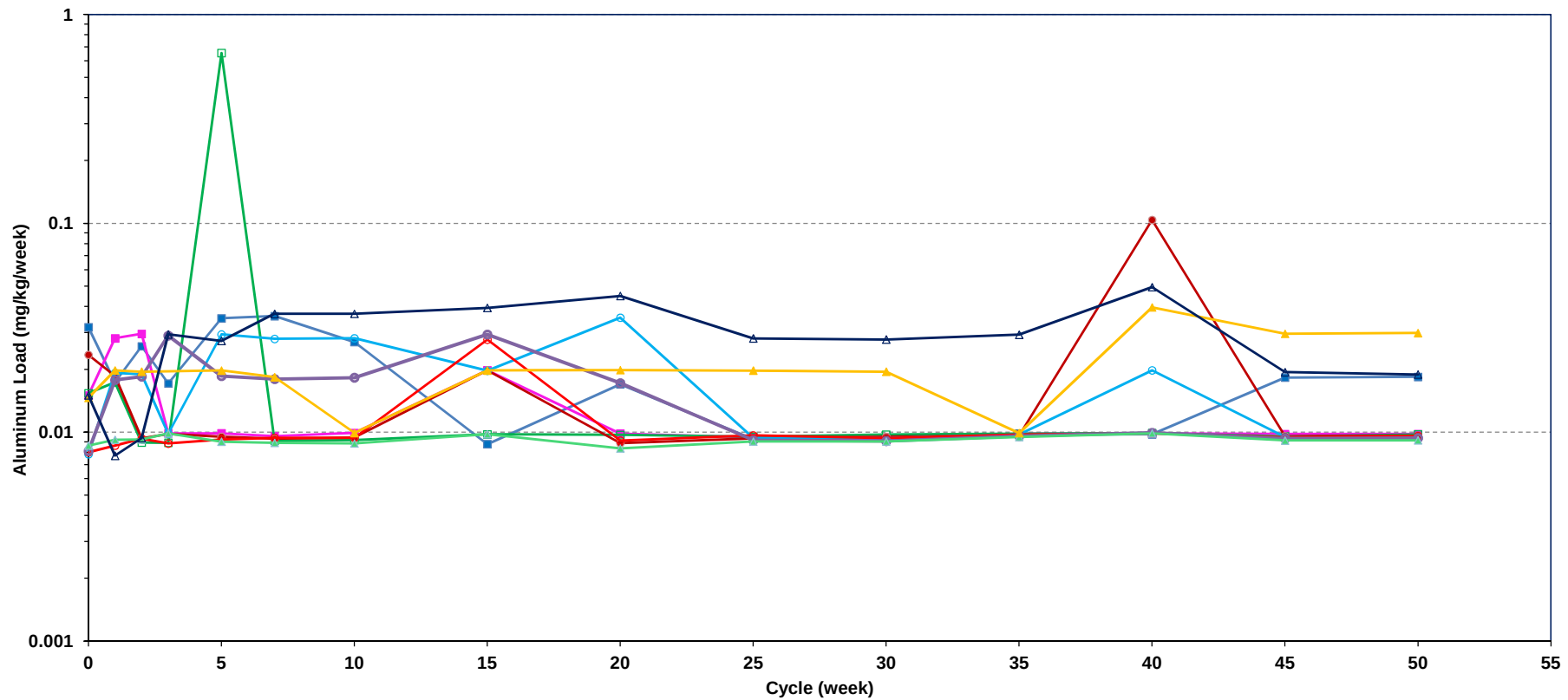
FW-Gneiss FW-Gneiss FW-Gneiss/Amphibolite FW-Amphibolite FW-Amphibolite/Tuff/Greywacke
 FW-Amphibolite/Schist/Tuff FW-Amphibolite/Tuff/Greywacke FW-Schist FW-Schist FW-Tuff / Schist



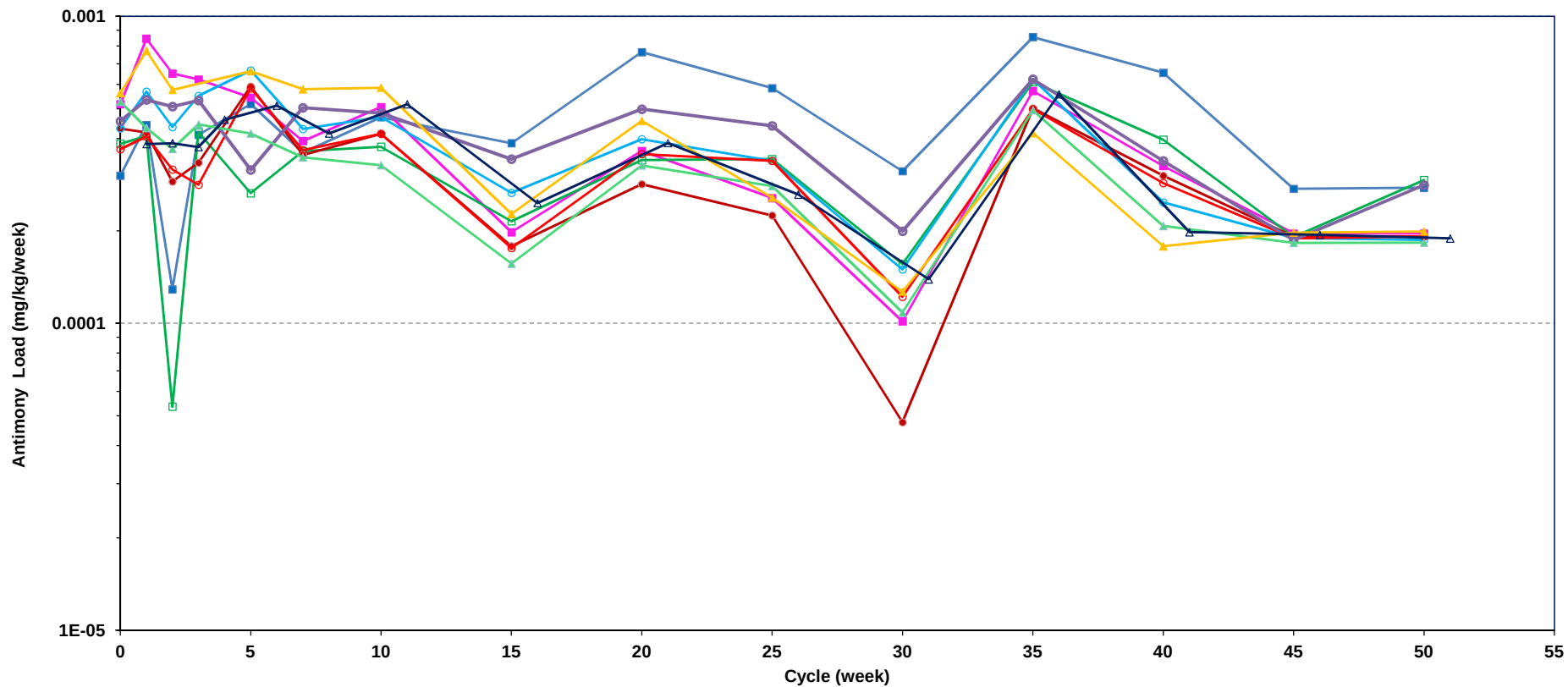
■ FW-Gneiss ■ FW-Gneiss ■ FW-Gneiss/Amphibolite ■ FW-Amphibolite ○ FW-Amphibolite/Tuff/Greywacke
 ○ FW-Amphibolite/Schist/Tuff ● FW-Amphibolite/Tuff/Greywacke ▲ FW-Schist ▲ FW-Schist ▲ FW-Tuff / Schist



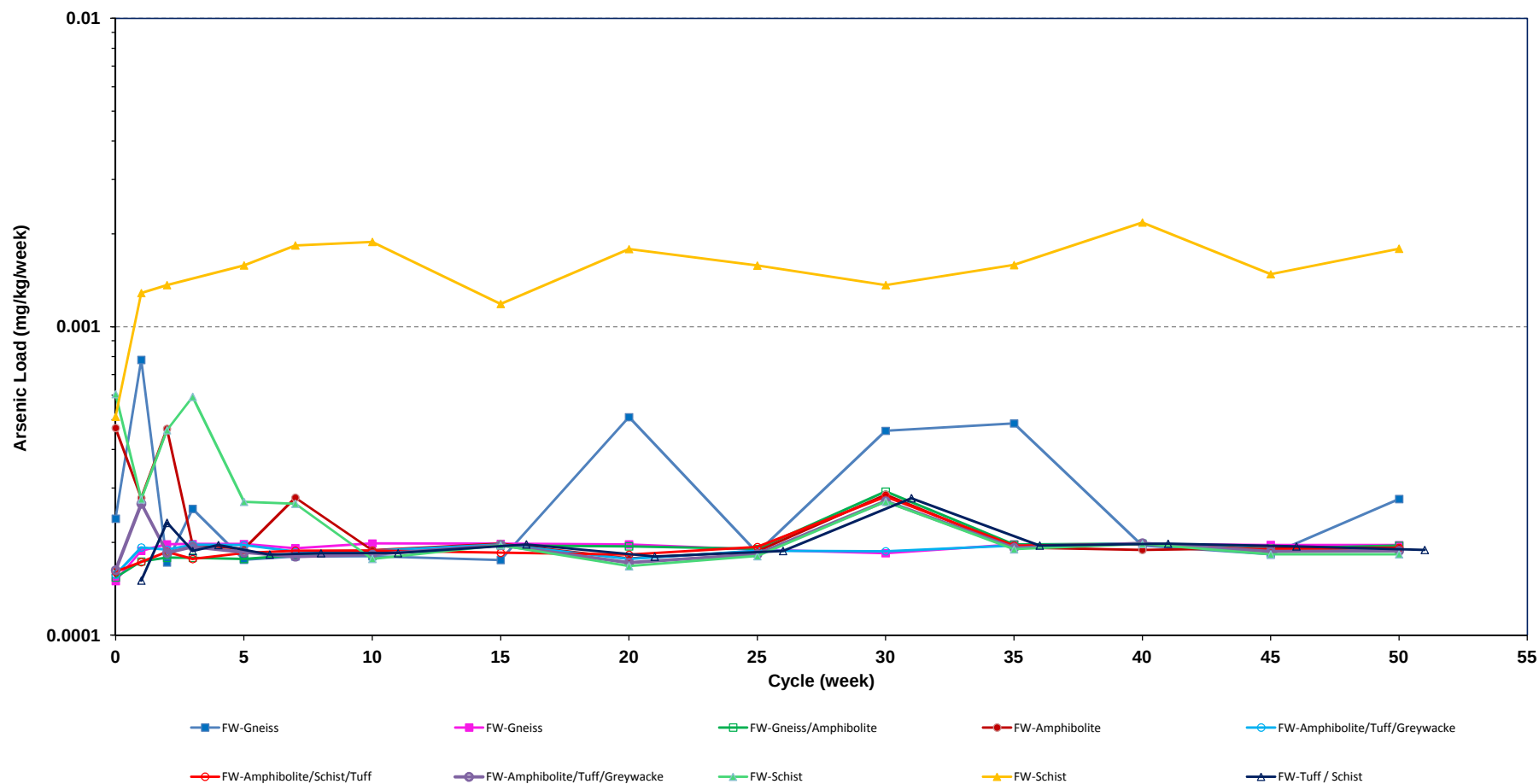
FW-Gneiss FW-Gneiss FW-Gneiss/Amphibolite FW-Amphibolite FW-Amphibolite/Tuff/Greywacke
 FW-Amphibolite/Schist/Tuff FW-Amphibolite/Tuff/Greywacke FW-Schist FW-Schist FW-Tuff / Schist

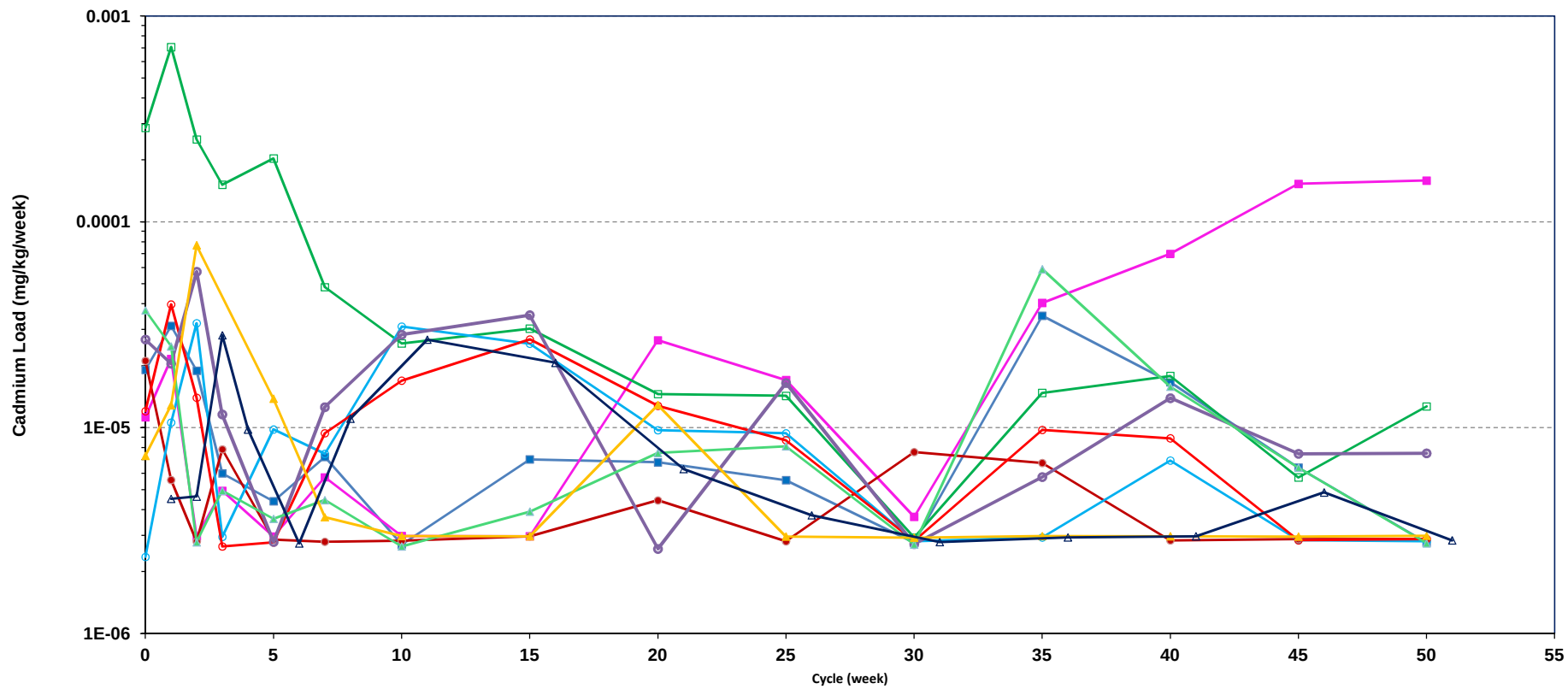


FW-Gneiss
 FW-Gneiss
 FW-Gneiss/Amphibolite
 FW-Amphibolite
 FW-Amphibolite/Tuff/Greywacke
 FW-Amphibolite/Schist/Tuff
 FW-Amphibolite/Tuff/Greywacke
 FW-Schist
 FW-Schist
 FW-Tuff / Schist

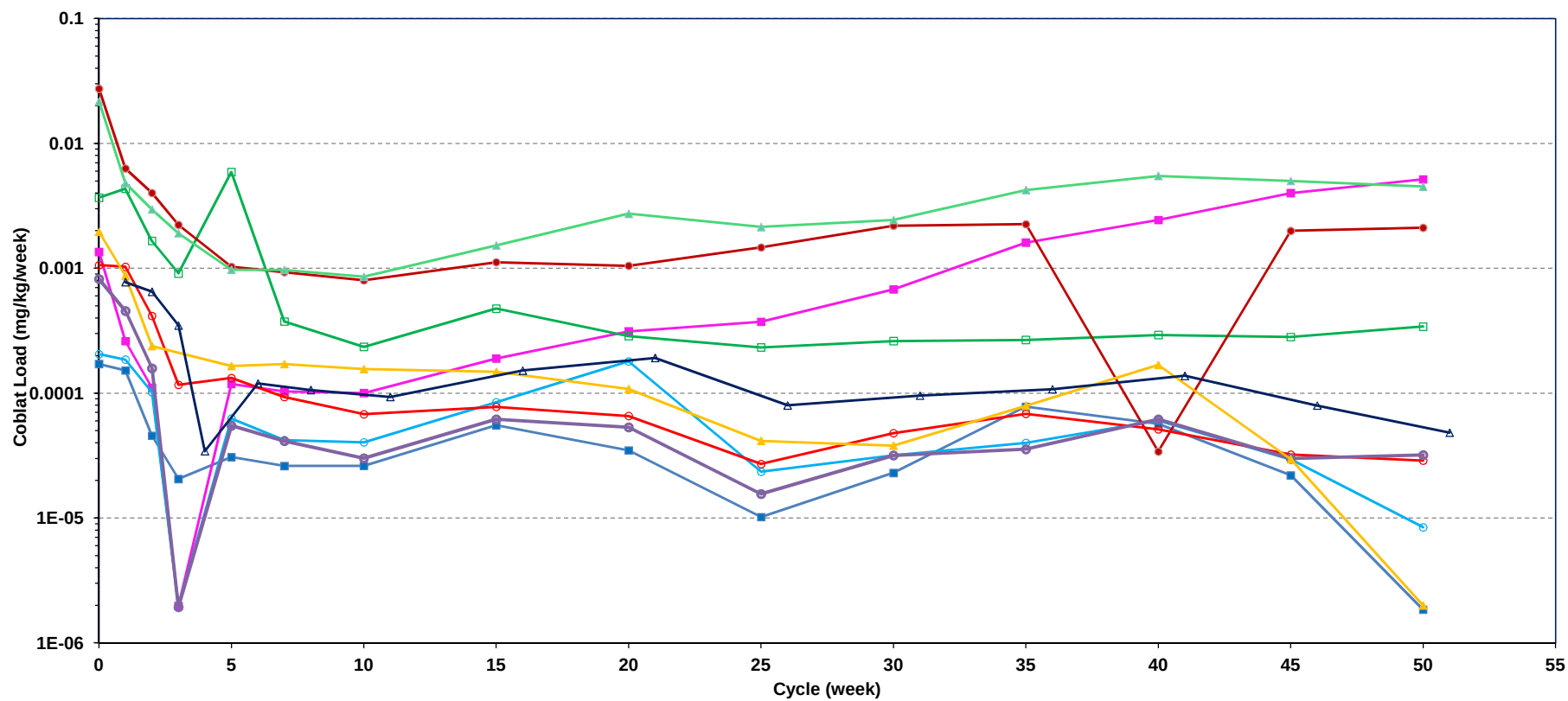


FW-Gneiss FW-Gneiss FW-Gneiss/Amphibolite FW-Amphibolite FW-Amphibolite/Tuff/Greywacke
 FW-Amphibolite/Schist/Tuff FW-Amphibolite/Tuff/Greywacke FW-Schist FW-Schist FW-Tuff / Schist

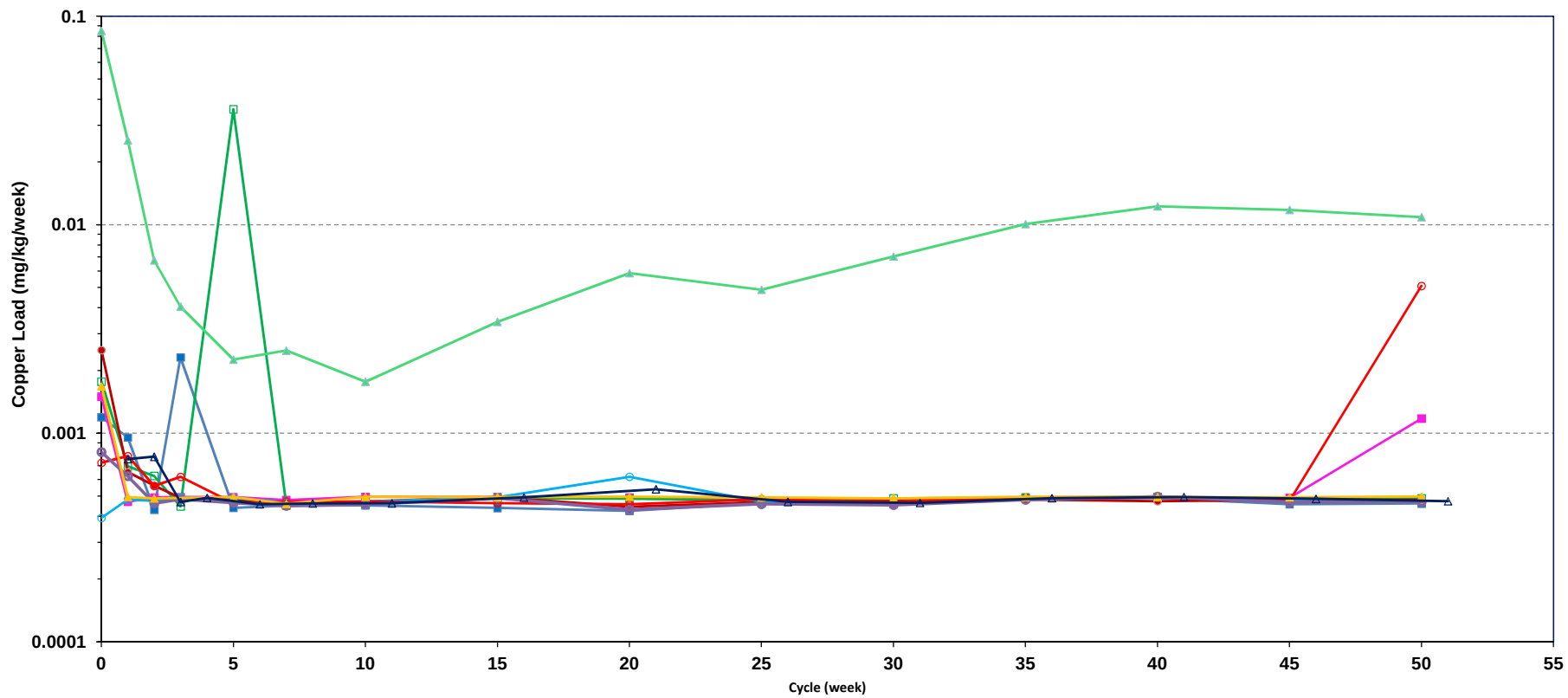




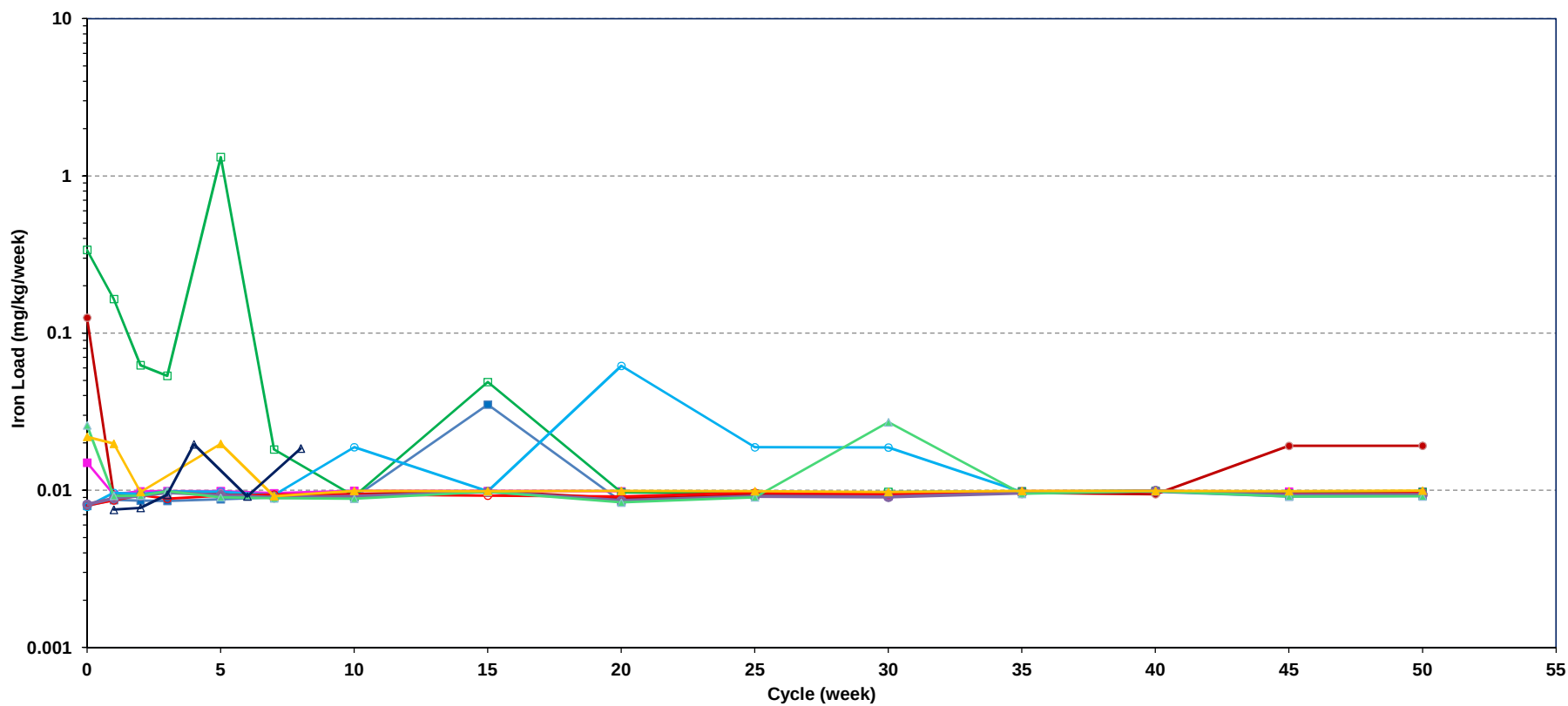
■ FW-Gneiss ■ FW-Gneiss □ FW-Gneiss/Amphibolite ● FW-Amphibolite ○ FW-Amphibolite/Tuff/Greywacke
 ○ FW-Amphibolite/Schist/Tuff ● FW-Amphibolite/Tuff/Greywacke ▲ FW-Schist ▲ FW-Schist ▲ FW-Tuff / Schist



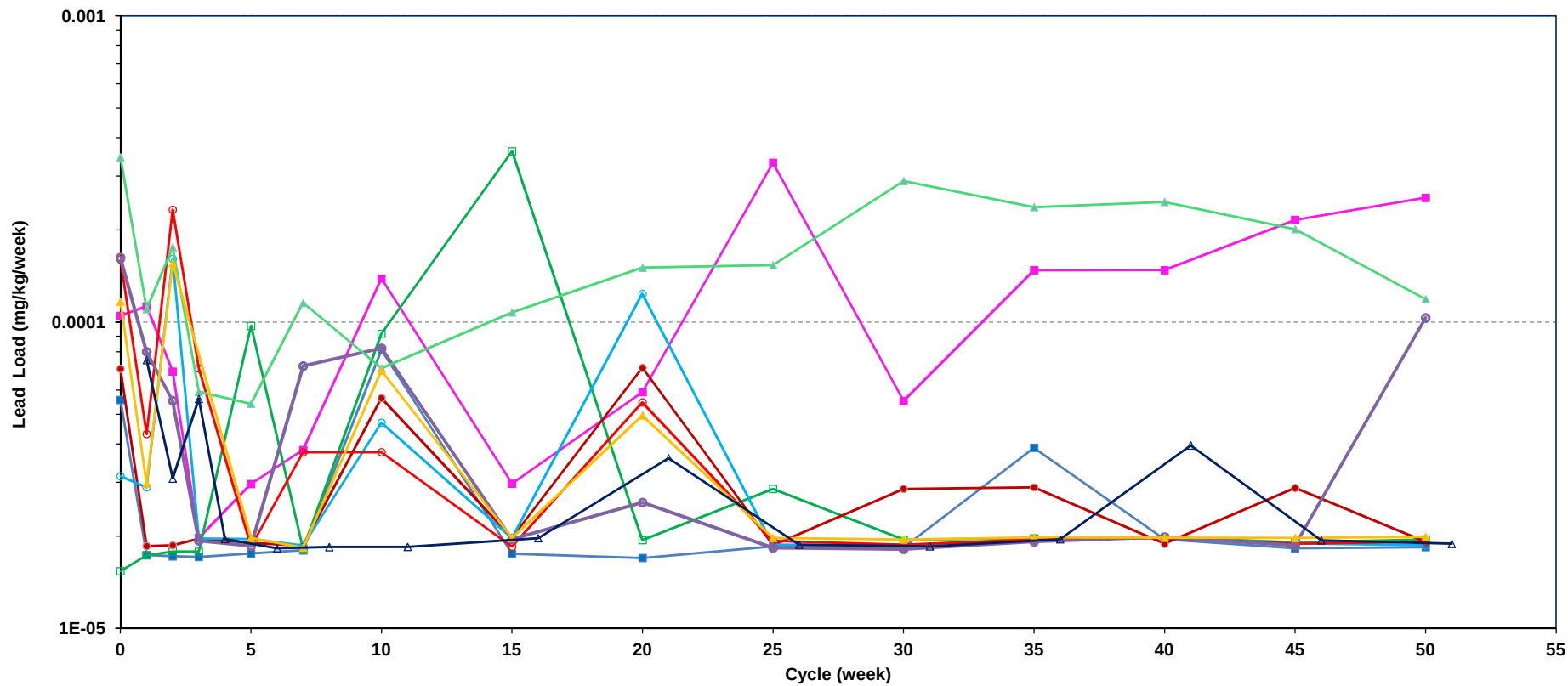
■ FW-Gneiss ■ FW-Gneiss □ FW-Gneiss/Amphibolite ● FW-Amphibolite ○ FW-Amphibolite/Tuff/Greywacke
 ○ FW-Amphibolite/Schist/Tuff ● FW-Amphibolite/Tuff/Greywacke ▲ FW-Schist ▲ FW-Schist ▲ FW-Tuff / Schist



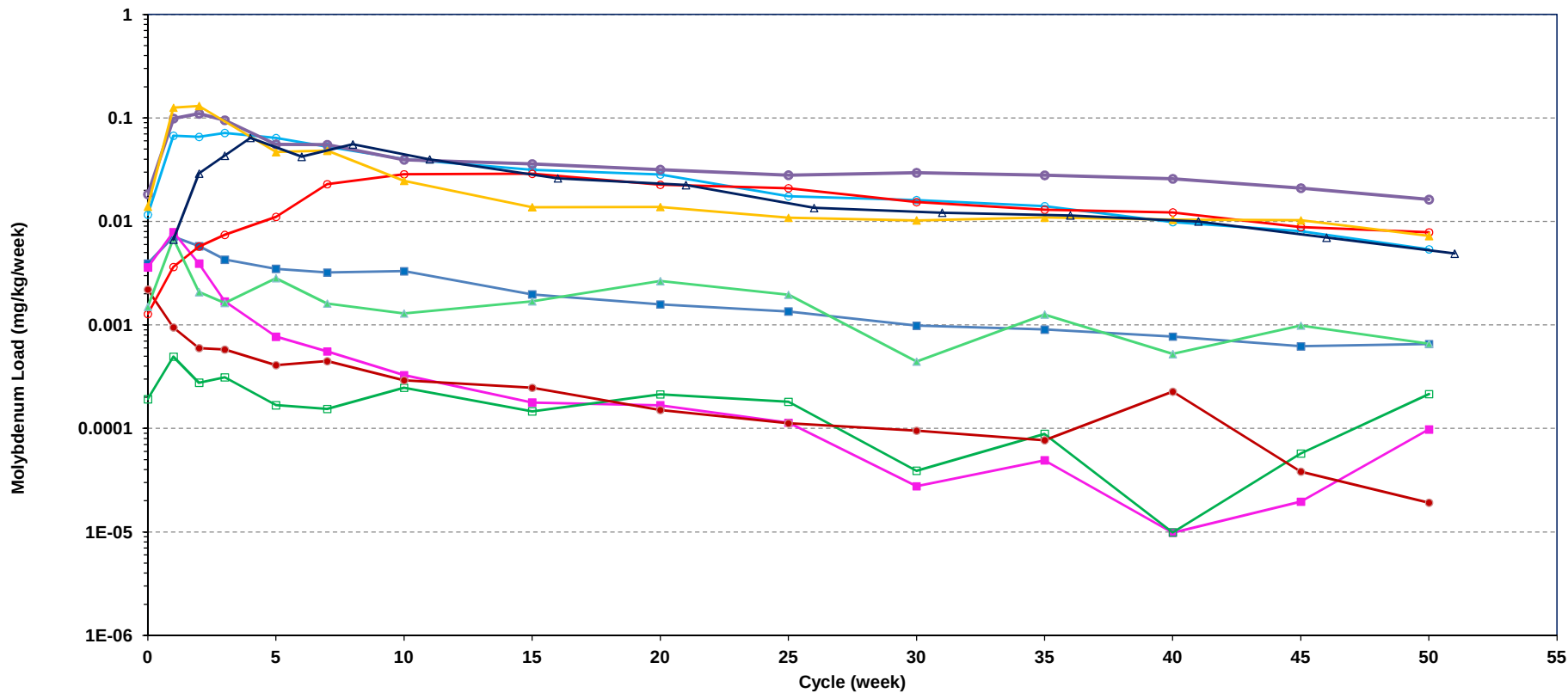
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 FW-Amphibolite/Schist/Tuff FW-Amphibolite/Tuff/Greywacke FW-Schist FW-Schist FW-Tuff / Schist



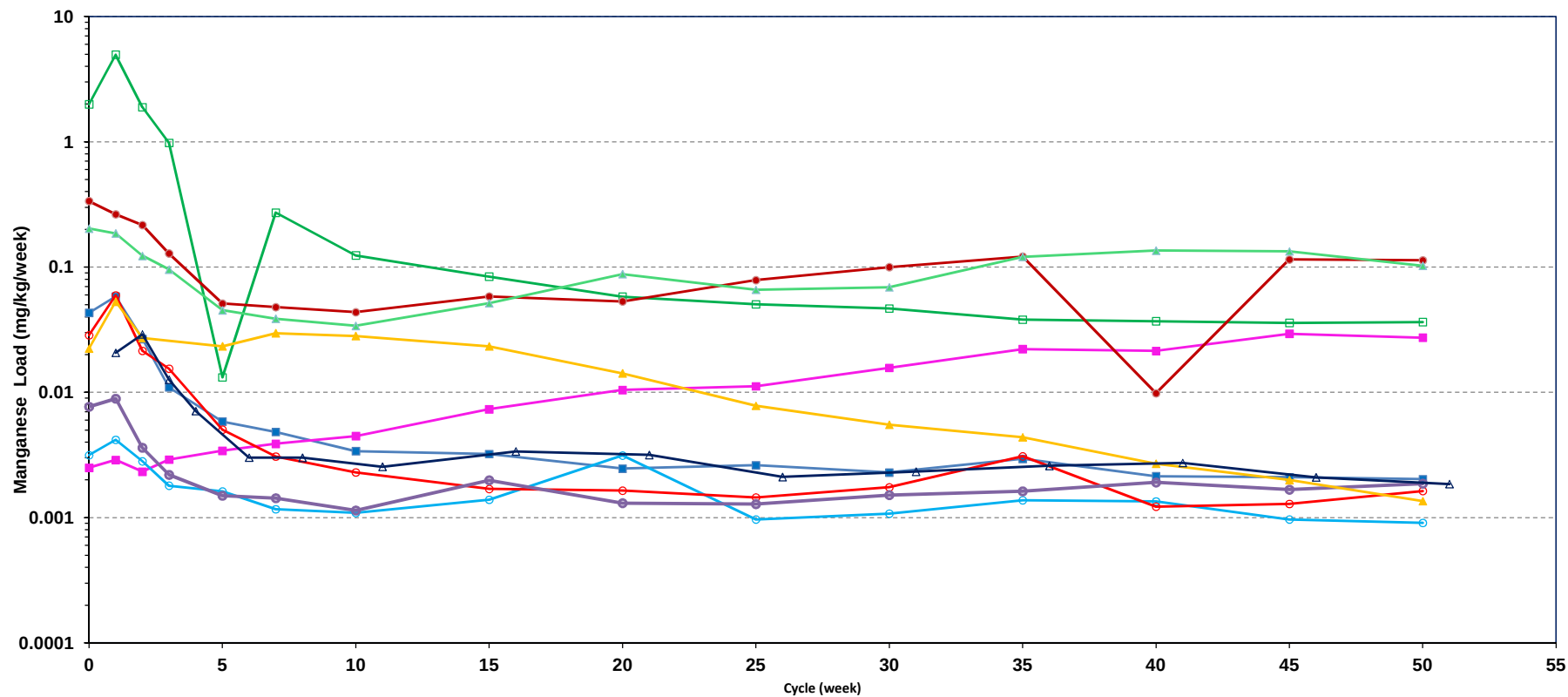
■ FW-Gneiss ■ FW-Gneiss □ FW-Gneiss/Amphibolite ● FW-Amphibolite ○ FW-Amphibolite/Tuff/Greywacke
 ○ FW-Amphibolite/Schist/Tuff ● FW-Amphibolite/Tuff/Greywacke ▲ ARD19 FW-Schist ▲ 07ARD06 FW-Schist ▲ 07ARD41 FW-Tuff / Schist



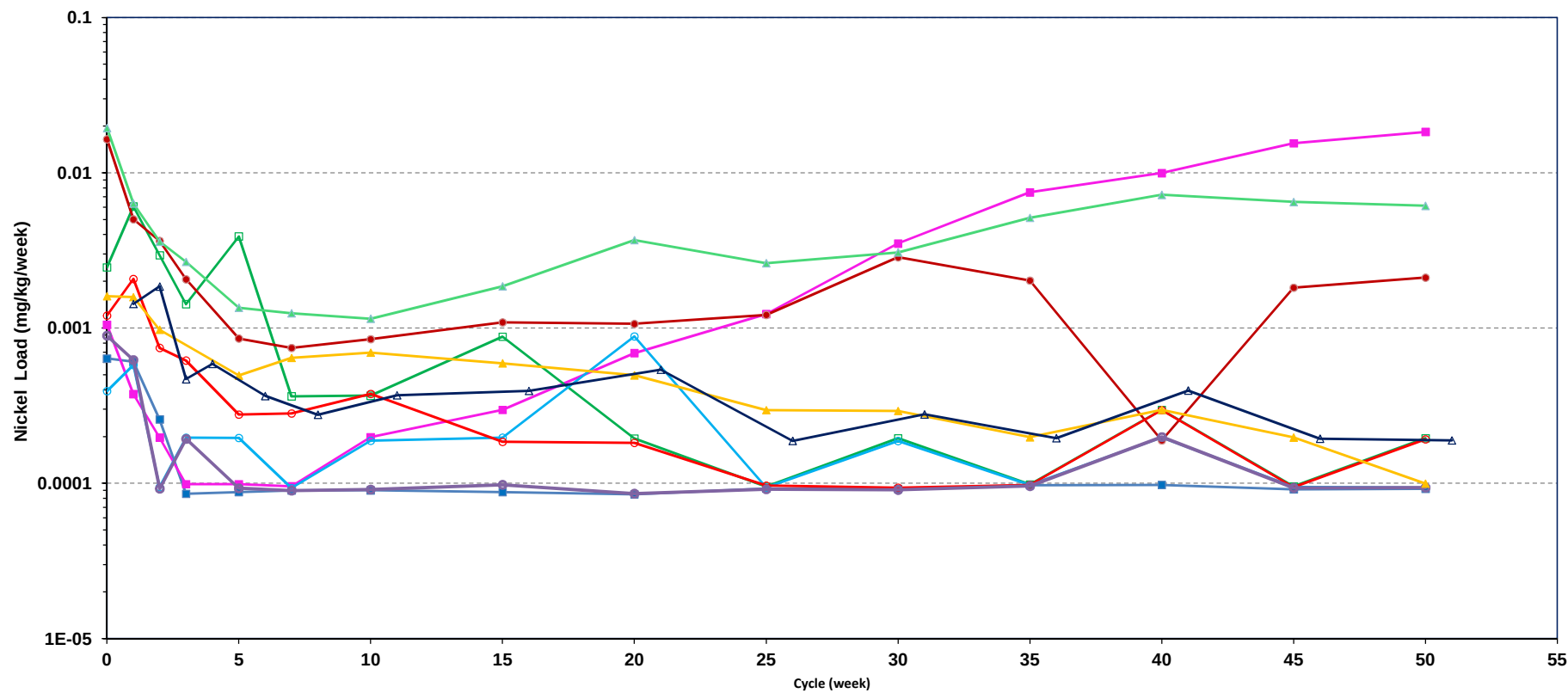
FW-Gneiss
 FW-Gneiss
 FW-Gneiss/Amphibolite
 FW-Amphibolite
 FW-Amphibolite/Tuff/Greywacke
 FW-Amphibolite/Schist/Tuff
 FW-Amphibolite/Tuff/Greywacke
 FW-Schist
 FW-Schist
 FW-Tuff / Schist



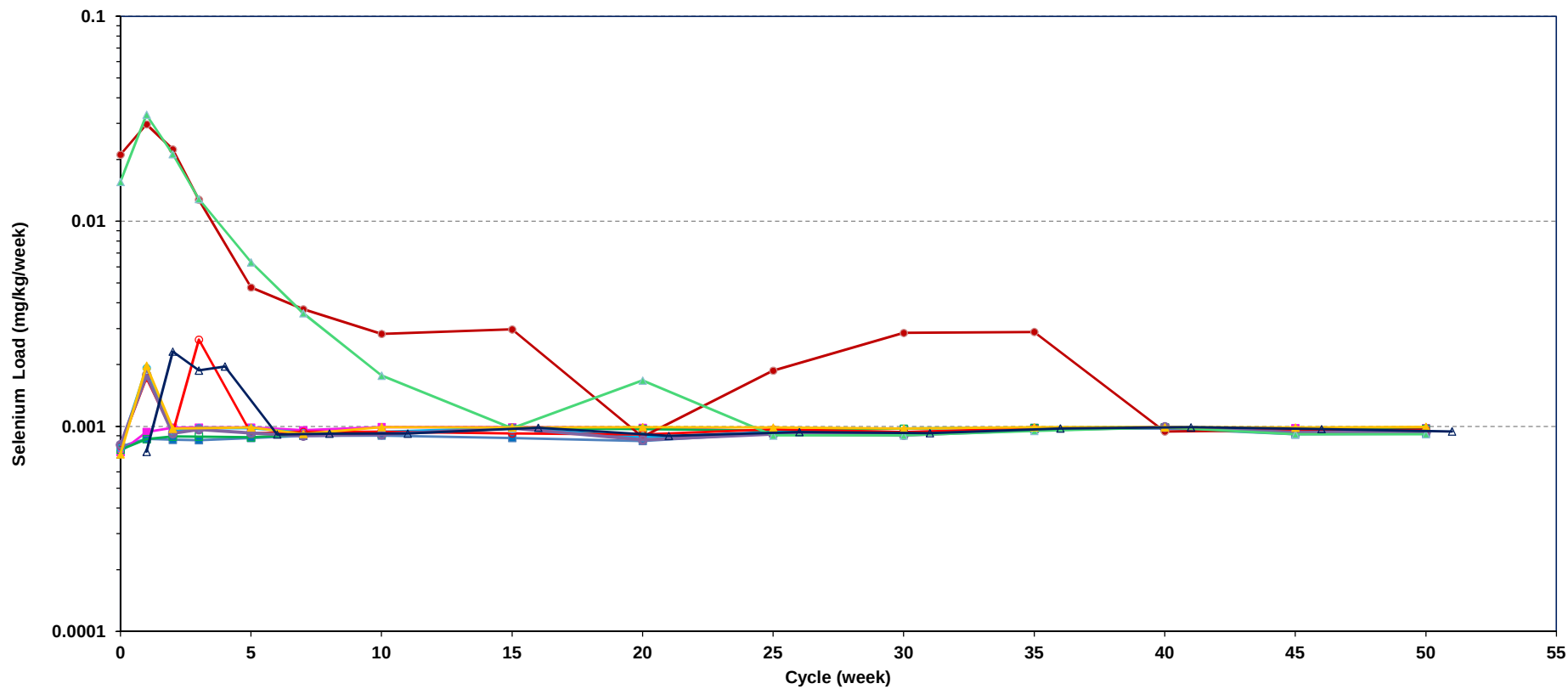
FW-Gneiss FW-Gneiss FW-Gneiss/Amphibolite FW-Amphibolite FW-Amphibolite/Tuff/Greywacke
 FW-Amphibolite/Schist/Tuff FW-Amphibolite/Tuff/Greywacke FW-Schist FW-Schist FW-Tuff / Schist



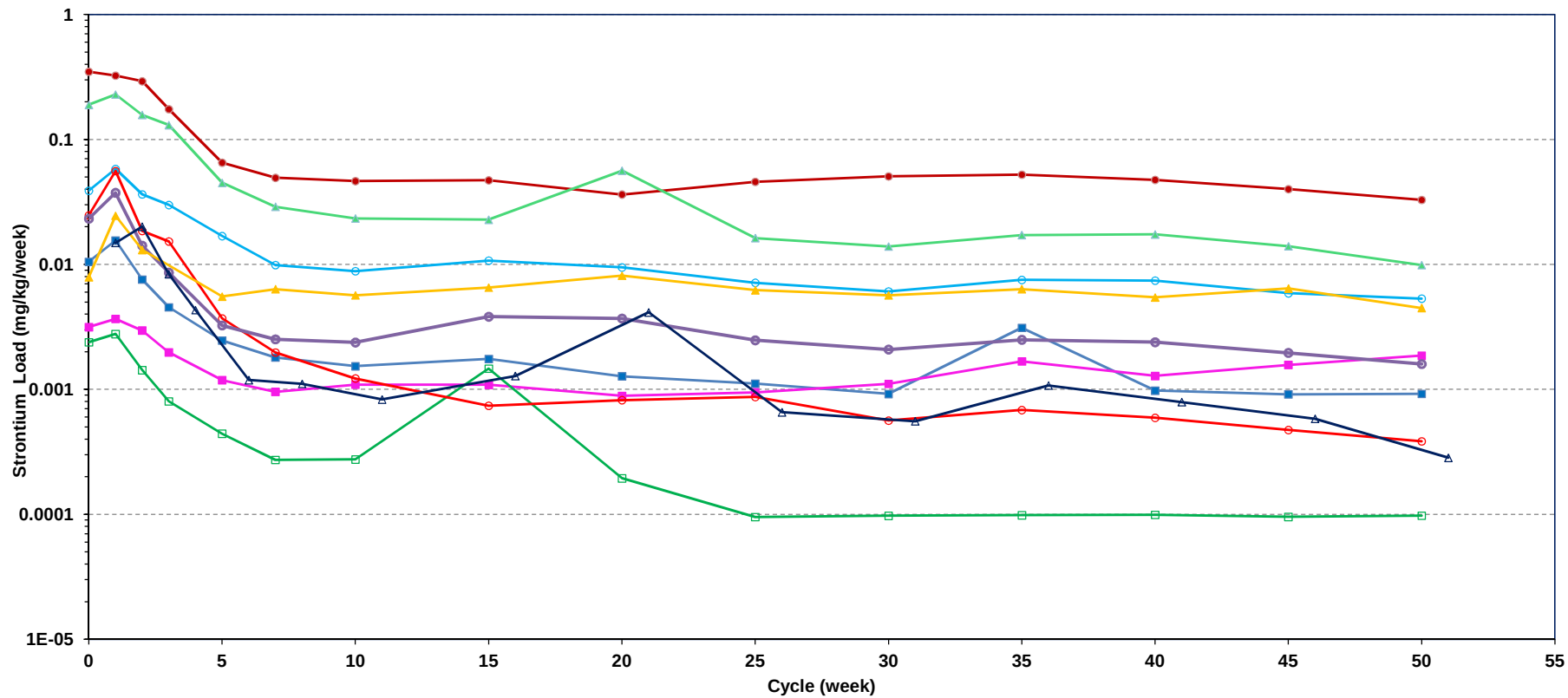
FW-Gneiss FW-Gneiss FW-Gneiss/Amphibolite FW-Amphibolite FW-Amphibolite/Tuff/Greywacke
 FW-Amphibolite/Schist/Tuff FW-Amphibolite/Tuff/Greywacke FW-Schist FW-Schist FW-Tuff / Schist



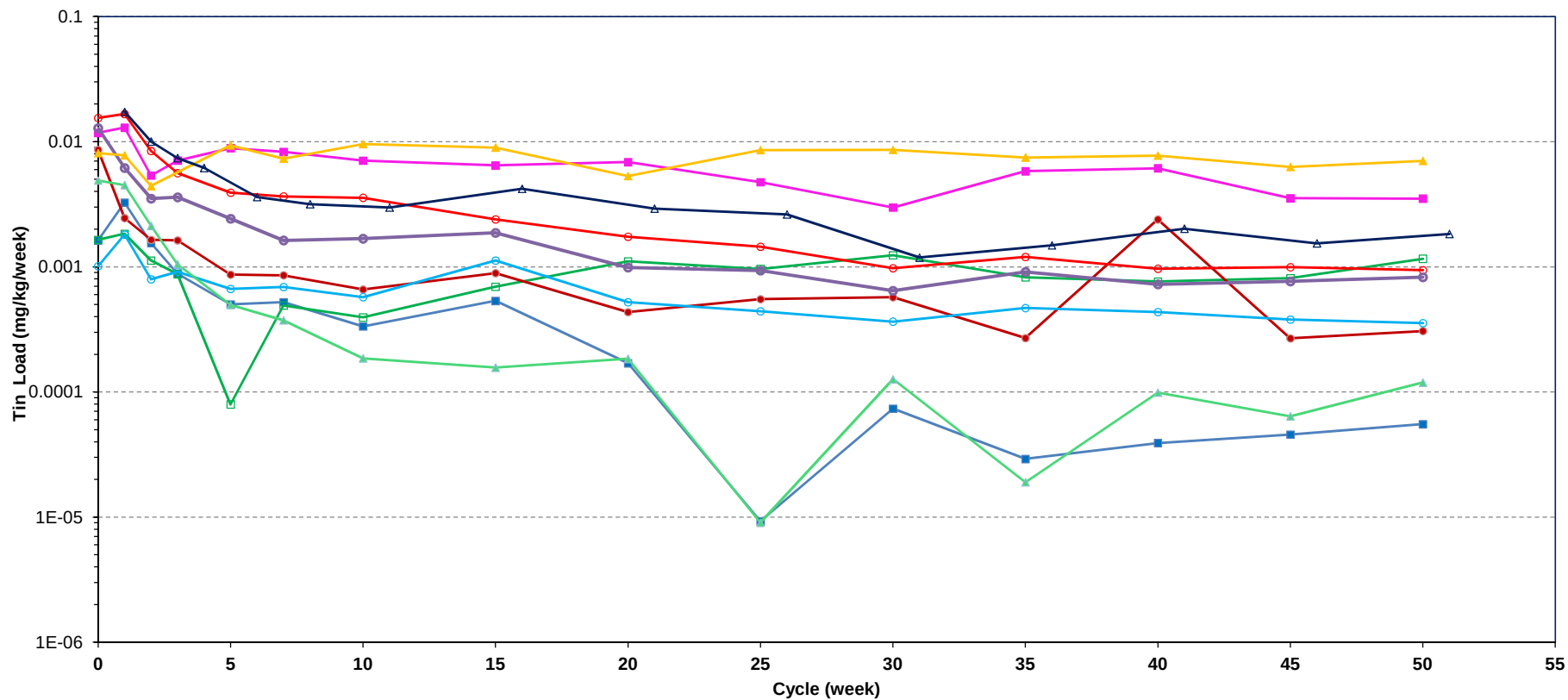
FW-Gneiss FW-Gneiss FW-Gneiss/Amphibolite FW-Amphibolite FW-Amphibolite/Tuff/Greywacke
 FW-Amphibolite/Schist/Tuff FW-Amphibolite/Tuff/Greywacke FW-Schist FW-Schist FW-Tuff / Schist



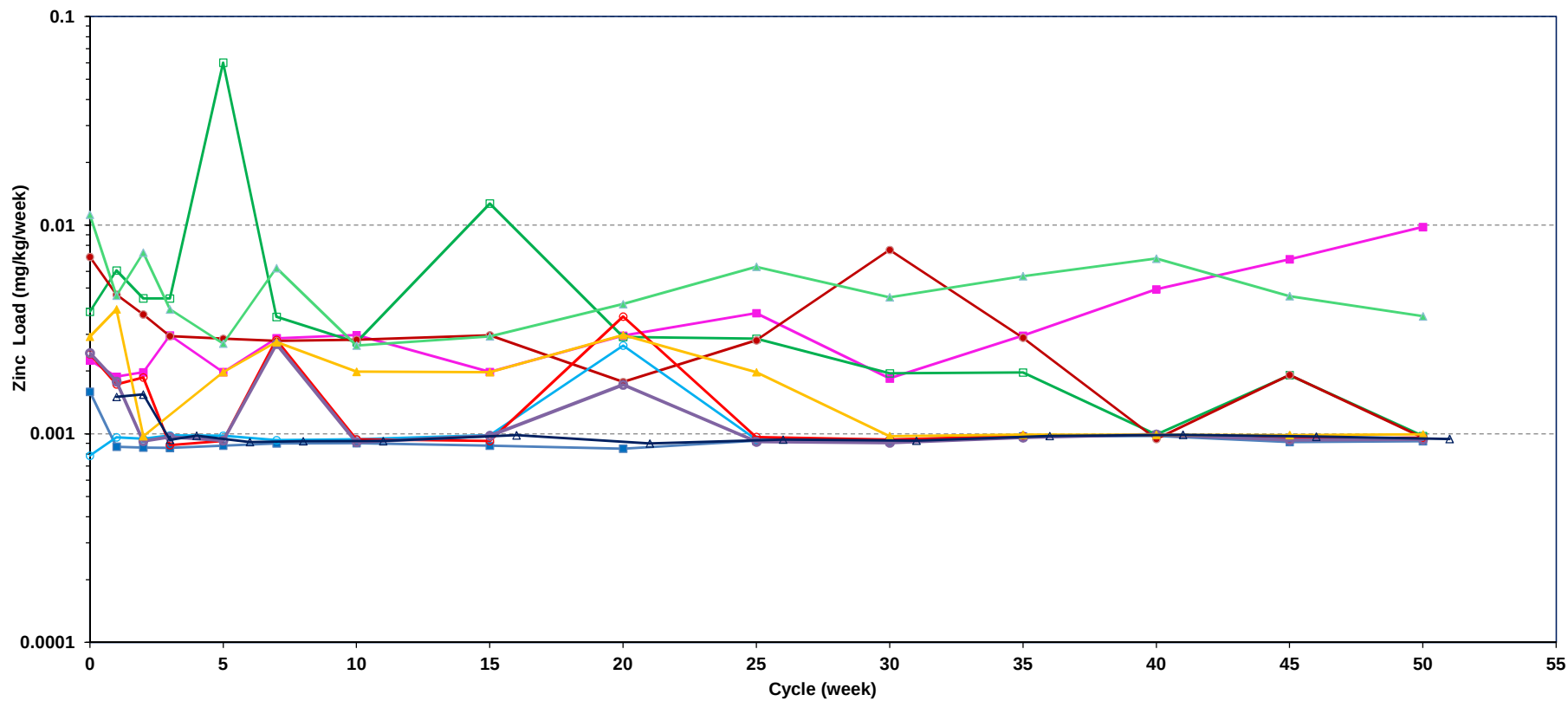
FW-Gneiss FW-Gneiss FW-Gneiss/Amphibolite FW-Amphibolite FW-Amphibolite/Tuff/Greywacke
 FW-Amphibolite/Schist/Tuff FW-Amphibolite/Tuff/Greywacke FW-Schist FW-Schist FW-Tuff / Schist



■ FW-Gneiss ■ FW-Gneiss ■ FW-Gneiss/Amphibolite ● FW-Amphibolite ○ FW-Amphibolite/Tuff/Greywacke
 ○ FW-Amphibolite/Schist/Tuff ● FW-Amphibolite/Tuff/Greywacke ▲ FW-Schist ▲ FW-Schist ▲ FW-Tuff / Schist



■ FW-Gneiss ■ FW-Gneiss □ FW-Gneiss/Amphibolite ● FW-Amphibolite ○ FW-Amphibolite/Tuff/Greywacke
 ● FW-Amphibolite/Schist/Tuff ● FW-Amphibolite/Tuff/Greywacke ▲ FW-Schist ▲ FW-Schist ▲ FW-Tuff / Schist



FW-Gneiss
 FW-Gneiss
 FW-Gneiss/Amphibolite
 FW-Amphibolite
 FW-Amphibolite/Tuff/Greywacke
 FW-Amphibolite/Schist/Tuff
 FW-Amphibolite/Tuff/Greywacke
 FW-Schist
 FW-Schist
 FW-Tuff / Schist

APPENDIX C
DRAINAGE QUALITY DATA

Table C-1: Ore Stockpile Drainage Data

PARAMETER	UNITS	MMER	CWQG (PAL)	CDWQ	NWB	Waste Rock										822547	827287	827280	830899	830888	827288	827281	830900	830889
						FC No.1		FC No.2		Modeled Concentrations						2010-08-17	2010-09-07	2010-09-07	2010-09-19	2010-09-19	2010-09-07	2010-09-19	2010-09-19	
						Footwall		Hanging wall		WR			Pit			MRY-11-LS Lump Ore	MRY-11-LS Lump Ore	MRY-11-LS Lump Ore	MRY-11-LS Lump Ore	MRY-11-LS Lump Ore	MRY-11-LS Fine Ore	MRY-11-LS Fine Ore	MRY-11-LS Fine Ore	MRY-11-LS Fine Ore
						Total	Dissolved	Total	Dissolved	Minimum	Maximum	Average	Minimum	Maximum	Average	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Alkalinity as CaCO3	mg/L														<5		<5				<5		<5	
Chemical Oxygen Demand	mg/L														14		14				20		15	
Chloride	mg/L		230	<250											1040		1000				1780		1440	
Conductivity	uS/cm														3.42		5				0.78			
N-NH3 (Ammonia)	mg/L		1.73-38.6 ^{d)}												4.97		5				12.1		14.5	
N-NO3 (Nitrate)	mg/L		13	10											4.97		5				12.1		14.5	
NO2 + NO3 as N	mg/L														5.76		5.93				6.68		6.48	
pH		6.0 - 9.5	6.5 - 9.0	6.5 - 8.5	6.0 - 9.5					10	264	68	58	211	188	500		490			999		799	
Sulphate	mg/L			<500 ^{l)}											728		700				1420		1150	
Total Dissolved Solids (COND - CALC)	mg/L														4.26		4.71				1.24		2.75	
Total Kjeldahl Nitrogen	mg/L					0.03	0.02	0.01	0.01						<0.05		<0.05				0.14		0.09	
Total Phosphorus	mg/L														11		3				<2		<2	
Total Suspended Solids	mg/L	15	5		120																			
Turbidity	NTU															24.6		1.8		2.2		0.4		
CO3 as CaCO3	mg/L															N/A-PH		N/A-PH		N/A-PH		N/A-PH		
Hardness as CaCO3 (Dissolved)	mg/L					291	278	375	361						536	223	534	153	532	308	942	695	698	
HCO3 as CaCO3	mg/L															<5		<5		<5		<5		
Calcium	mg/L														25.5	61.1	57.9	61.8	60.6	115	115	76.6	72	
Magnesium	mg/L					34.1	32.0	46.3	44.1						38.6	93.1	90.3	92.2	92.4	159	159	123	125	
Potassium	mg/L					6.8	6.13	5.44	5.28						1.5	1.91	1.95	1.87	2.18	4.6	5.1	3.2	3.7	
Sodium	mg/L					16.7	15.8	27.60	26.30						2.11	4.89	4.98	4.94	5.76	27.3	29.8	25.3	27.8	
Aluminum	mg/L		0.005-0.1 ^{h)}			0.14	<0.01	0.16	<0.01	0.011	0.278	0.058	0.061	0.222	0.197	16.3	0.0063	0.127	<0.015	<0.015	<0.02	<0.02	<0.15	<0.06
Antimony	mg/L			0.006		0.0004	0.0005	0.0014	0.0015						<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.002	<0.005	<0.002	
Arsenic	mg/L	0.5	0.005	0.005		0.0008	0.0008	0.0189	0.0188	0.0005	0.004	0.003	0.001	0.003	0.003	0.00236	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.002	<0.005	<0.002
Barium	mg/L			1		0.0274	0.0256	0.0121	0.0119						0.0497	0.0236	0.0236	0.0215	0.0251	0.0191	0.0213	0.0104	0.0115	
Beryllium	mg/L					<0.00004	<0.00004	<0.00004	<0.00004						<0.00025	<0.00025	<0.00025	<0.00025	<0.0025	<0.01	<0.01	<0.025	<0.01	
Bismuth	mg/L					<0.00002	<0.00002	<0.00002	<0.00002						<0.00025	<0.00025	<0.00025	<0.00025	<0.0025	<0.01	<0.01	<0.025	<0.01	
Boron	mg/L					0.053	0.052	0.097	0.094						0.144	0.151	0.159	0.137	0.158	<0.2	0.21	<0.5	0.31	
Cadmium	mg/L		0.00009	0.005		0.00010	0.00009	<0.00006	<0.00006	0.00004	0.0009	0.0002	0.0002	0.0008	0.0007	0.000331	0.000214	0.000203	0.000213	0.000198	<0.0002	<0.0002	<0.0005	0.00057
Chromium	mg/L		0.001	0.051		0.0014	0.0028	0.0011	0.0009	0.0003	0.0078	0.002	0.002	0.006	0.0059	0.0345	<0.0025	<0.0025	<0.0025	<0.0025	<0.01	<0.01	<0.025	<0.01
Cobalt	mg/L					0.00171	0.00153	0.000602	0.000348						0.155	0.0958	0.0974	0.0917	0.108	0.0421	0.0462	0.132	0.14	
Copper	mg/L	0.3	0.002-0.004 ^{b)}	≤1.0 ^{b)}		0.0104	0.0088	0.0062	0.0054	0.0005	0.0112	0.003	0.003	0.106	0.010	0.0613	0.00124	0.00183	<0.0025	<0.0025	<0.002	<0.002	<0.025	<0.01
Iron	mg/L		0.3	<0.3 ^{b)}		0.23	<0.01	0.24	<0.01	0.009	0.189	0.045	0.049	0.183	0.171	122	<0.03	0.825	<0.03	0.031	<0.03	0.041	<0.03	0.082
Lead	mg/L	0.2	0.001-0.007 ^{b)}	0.01		0.0005	0.00008	0.00035	<0.00002	0.0001	0.0018	0.0004	0.0005	0.017	0.002	0.0125	<0.0003	<0.0003	<0.0003	0.001	<0.001	<0.001	<0.003	<0.001
Lithium	mg/L					<0.002	<0.002	<0.002	<0.002						0.052	<0.025	<0.025	<0.025	<0.025	<0.1	<0.1	<0.25	<0.1	
Manganese	mg/L			≤0.05		0.343	0.319	0.173	0.162						15.2	18.1	18.4	17.8	21.5	59.7	65.5	104	112	
Mercury	mg/L		0.026	0.001		<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0016	0.0003	0.0003	0.084	0.012	0.000054	0.000018	<0.00001	0.000031	0.000035	<0.00001	<0.00001	<0.00001	
Molybdenum	mg/L		0.073			0.00224	0.00274	0.0153	0.0109	0.007	0.178	0.037	0.039	0.142	0.126	0.000082	<0.00025	<0.00025	0.00034	<0.00025	<0.001	<0.001	<0.0025	0.0012
Nickel	mg/L	0.5	0.025-0.15 ^{h)}			0.0278	0.0264	0.0044	0.0048	0.003	0.106	0.020	0.025	0.089	0.084	0.185	0.0961	0.0977	0.0923	0.107	0.028	0.035	0.101	0.113
Selenium	mg/L		0.001	0.01		<0.001	<0.001	0.003	0.003	0.0008	0.022	0.005	0.005	0.018	0.017	<0.005	<0.005	<0.005	<0.005	0.0051	<0.02	<0.02	<0.05	<0.02
Silicon	mg/L					1.64	1.35	1.72	1.51						12.2	2.36	2.34	2.16	2.08	1.34	1.35	1.26	1.25	
Silver	mg/L					<0.00003	<0.00003	0.00004	<0.00003	0.0039	0.103	0.022	0.023	0.084	0.078	0.00049	<0.00005	<0.00005	<0.00005	<0.00005	<0.0002	<0.0002	<0.0005	<0.0002
Strontium	mg/L														0.0675	0.1	0.101	0.0948	0.112	0.129	0.14	0.135	0.144	
Thallium	mg/L					0.130	0.126	0.256	0.251						<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.002	<0.005	<0.002	
Tin	mg/L					<0.0003	<0.0003	<0.0003	<0.0003						<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.002	<0.005	<0.002	
Titanium	mg/L					0.0043	0.0003	0.0036	<0.0002						0.212	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Uranium	mg/L					0.0009	0	0.000090	<0.00002						0.0095	<0.00005	0.000096	<0.00005	<0.00005	<0.0002	<0.0002	<0.0005	<0.0002	
Vanadium	mg/L					0.00063	0.00229	0.00194	0.00124						0.0051	<0.005	<0.005	<0.005	<0.005	<0.02	<0.02	<0.05	<0.02	
Zinc	mg/L	0.5	0.03	≤5.0		0.0188	0.0227	0.0064	0.0043	0.003	0.070	0.015	0.025	0.080	0.071	0.046	<0.005	<0.005	<0.015	<0.015	<0.02	<0.02	<0.15	<0.06

Note:
Bold value indicates exceedance of MMER limit
MMER = Metal Mining Effluent Regulation
CEQG (PAL) = Canadian Council of Minister of the Environment (CCME) Canadian Water Quality Guideline for the protection of Aquatic Life
CDWQ = Health Canada - Canadian Drinking Water Quality Guideline
MMER, CEGQ (PAL) and CDWQ provided for reference purposes (see text)
NWB = Nunavut Water Board Wastewater Criteria
a) varies with pH
b) varies with hardness
c) aesthetic objective
d) varies with pH and temperature
Minimum and maximum values are the summary data of all monitoring locations

Table C-2: Weathered Ore and Waste Rock Drainage Data Near Bulk Sample Pit (MRY-10)

PARAMETER	UNITS	MMER	CWQG (PAL)	CDWQ	NWB	652435	652435	726623	737178	821636	827284	827277	892834	892842
						2008-08-16	2008-08-16	2009-06-29	2009-06-29	2010-08-13	2010-09-07	2010-09-07	2011-06-27	2011-06-24
						MRY-10	MRY-10	MRY-10	MRY-10	MRY-10	MRY-10	MRY-10	MRY-10	MRY-10
						Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Dissolved	Total
Alkalinity as CaCO ₃	mg/L								13			37		18
Chemical Oxygen Demand	mg/L													
Chloride	mg/L		230	<250					<1			2		<1
Conductivity	uS/cm								25			173		45
N-NH ₃ (Ammonia)	mg/L		1.73-38.6 ^{d)}				0.09					1.25		
N-NO ₃ (Nitrate)	mg/L		13	10					<0.10			9.94		0.10
NO ₂ + NO ₃ as N	mg/L								<0.10			9.94		0.10
pH		6.0 - 9.5	6.5 - 9.0	6.5 - 8.5	6.0 - 9.5		7.65		7.23			7.68		6.70
Sulphate	mg/L			<500 ^{d)}					<1			5		5
Total Dissolved Solids (COND - CALC)	mg/L								16			112		29
Total Kjeldahl Nitrogen	mg/L						<0.10		0.12			2.07		0.22
Total Phosphorus	mg/L						0.004		0.01			0.024		0.009
Total Suspended Solids	mg/L	15	5		120		7		8			3		<2
Turbidity	NTU								1.6			7.5		0.8
CO ₃ as CaCO ₃	mg/L													
Hardness as CaCO ₃ (Dissolved)	mg/L							12	12	191	70.6	38.6	19.0	18.4
HCO ₃ as CaCO ₃	mg/L							13			37			18
Calcium	mg/L					7	8	2.29	2.27	38.4	14	14.2	3.62	3.54
Magnesium	mg/L					5	5	1.44	1.58	23	8.67	8.89	2.41	2.33
Potassium	mg/L					0.47	0.44	0.163	0.263	3.82	0.576	0.748	0.270	0.308
Sodium	mg/L					0.45	0.44	0.122	0.152	5.34	1.51	1.7	0.345	0.375
Aluminum	mg/L		0.005-0.1 ^{d)}			<0.01	0.05	0.0041	0.226	2.16	0.0073	0.367	0.0121	0.0501
Antimony	mg/L			0.006				<0.0001	<0.0001	0.00017	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.5	0.005	0.005		<0.001	<0.001	<0.0001	<0.0001	0.00032	<0.0001	<0.0001	<0.0001	<0.0001
Barium	mg/L			1		<0.01	<0.01	0.00114	0.00217	0.0556	0.0104	0.0127	0.00272	0.00305
Beryllium	mg/L							<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Bismuth	mg/L							<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron	mg/L					<0.01	<0.01	<0.01	<0.01	0.079	0.015	0.019	<0.01	<0.01
Cadmium	mg/L		0.00009	0.005		<0.0001	<0.0001	<0.00001	<0.00001	0.000012	<0.00001	<0.00001	<0.00001	<0.00001
Chromium	mg/L		0.001	0.051		<0.001	<0.001	<0.0005	0.00097	0.00715	<0.0005	0.00135	<0.0005	<0.0005
Cobalt	mg/L					<0.0002	<0.0002	<0.0001	0.00018	0.00211	0.00019	0.00051	<0.0001	<0.0001
Copper	mg/L	0.3	0.002-0.004 ^{b)}	≤1.0 ^{b)}		<0.001	<0.001	0.00078	<0.0005	0.00475	0.00068	0.00154	<0.0005	0.00053
Iron	mg/L		0.3	<0.3 ^{b)}		<0.03	0.07	<0.03	0.237	3.07	<0.03	0.505	<0.03	0.05
Lead	mg/L	0.2	0.001-0.007 ^{b)}	0.01		<0.001	<0.001	<0.00005	0.00016	0.00581	<0.00005	0.00067	<0.00005	0.00012
Lithium	mg/L							<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	mg/L			≤0.05		<0.01	<0.01	0.000703	0.00576	0.106	0.00743	0.016	0.00164	0.00291
Mercury	mg/L		0.026	0.001				<0.00001	<0.00001	<0.00001	0.000014	0.000018	<0.00001	<0.00001
Molybdenum	mg/L		0.073			<0.005	<0.005	<0.00005	<0.00005	0.000341	0.000192	0.00028	<0.00005	0.000071
Nickel	mg/L	0.5	0.025-0.15 ^{b)}			<0.005	<0.005	<0.0005	<0.0008	0.00742	<0.0005	0.00146	<0.0005	0.00052
Selenium	mg/L		0.001	0.01		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon	mg/L							0.24	0.535	5.29	0.552	1.23	0.37	0.45
Silver	mg/L					<0.0001		<0.00001	<0.00001	0.000032	<0.00001	<0.00001	<0.00001	0.00001
Strontium	mg/L					0.005	0.005	0.00111	0.00146	0.0299	0.00845	0.00911	0.00239	0.0026
Thallium	mg/L					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin	mg/L					<0.01	<0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium	mg/L							<0.01	<0.01	0.105	<0.01	0.02	<0.01	<0.01
Uranium	mg/L							0.000023	0.000062	0.000726	0.000118	0.000166	0.000027	0.000044
Vanadium	mg/L					<0.001	<0.001	<0.001	<0.001	0.0042	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.5	0.03	≤5.0		<0.01	<0.01	<0.001	0.0019	0.0059	<0.001	0.003	0.0053	<0.003

Note:

Bold value indicates exceedance of MMER limit

MMER = Metal Mining Effluent Regulation

CEQG (PAL) = Canadian Council of Minister of the Environment (CCME) Canadian Water Quality Guideline for the protection of Aquatic Life

CDWQ = Health Canada - Canadian Drinking Water Quality Guideline

MMER, CEGQ (PAL) and CDWQ provided for reference purposes (see text)

NWB = Nunavut Water Board Wastewater Criteria

a) varies with pH

b) varies with hardness

c) aesthetic objective

d) varies with pH and temperature

Minimum and maximum values are the summary data of all monitoring locations

Table C-3: Ore Stockpile Drainage Data at Crusher Site (MRV-11 - Test Pits)

PARAMETER	UNITS	MMER	CWQG (PAL)	CDWQ	NWB	827285	827278	821633	821634	821635	827286	827279	892835	892843	892836	892844	892837	892845	892838	892846	896810	896811	896812
						2010-09-07	2010-09-07	2010-08-13	2010-08-13	2010-08-13	2010-09-07	2010-09-07	2011-06-24	2011-06-24	2011-06-24	2011-06-24	2011-06-24	2011-06-24	2011-06-24	2011-06-24	2011-07-14	2011-07-14	2011-07-14
						MRV-11-TP1	MRV-11-TP1	MRV-11-TP2	MRV-11-TP3	MRV-11-TP4	MRV-11-TP4	MRV-11-TP4	MRV-11-TP1	MRV-11-TP2	MRV-11-TP2	MRV-11-TP2	MRV-11-TP3	MRV-11-TP3	MRV-11-TP4	MRV-11-TP4	MRV-11-TP1	MRV-11-TP1	MRV-11-TP2
						Dissolved	Total	Total	Total	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Alkalinity as CaCO ₃	mg/L					31					109			60		38		48		54		114	
Chemical Oxygen Demand	mg/L																						
Chloride	mg/L		230	<250			1					3		2		1		1		2		3	
Conductivity	uS/cm						95					293		157		90		100		140		386	
N-NH ₃ (Ammonia)	mg/L		1.73-38.6 ^{a)}				<0.02					<0.02				0.47		0.27		1.56		1.17	
N-NO ₃ (Nitrate)	mg/L		13	10			<0.10					2.13		0.59		0.47		0.27		1.56		1.17	
NO ₂ + NO ₃ as N	mg/L						<0.10					2.13		0.59		0.47		0.27		1.56		1.17	
pH		6.0 - 9.5	6.5 - 9.0	6.5 - 8.5	6.0 - 9.5		7.58					7.99		7.36		6.98		7.14		7.22		8.2	
Sulphate	mg/L						16					32		16		7		5		12		77	
Total Dissolved Solids (COND - CALC)	mg/L			<500 ^{b)}			62					190		102		58		65		91		251	
Total Kjeldahl Nitrogen	mg/L						0.23					0.13		0.26		0.16		0.26		0.17		0.25	
Total Phosphorus	mg/L						0.032					0.044		0.48		0.037		0.011		0.037		0.012	
Total Suspended Solids	mg/L	15	5		120		5					15		163		6		<2		5		<2	
Turbidity	NTU						42.4					27.4		>100		27.4		5.5		31.4		4.7	
CO ₃ as CaCO ₃	mg/L					N/A-PH					N/A-PH		N/A-PH	N/A-PH		N/A-PH		N/A-PH		N/A-PH		N/A-PH	
Hardness as CaCO ₃ (Dissolved)	mg/L					44.1	35.3	521	259	385	225	68.1	96.0	41.7	52.7	61.6	54	185		184		137	
HCO ₃ as CaCO ₃	mg/L					31					109		60		38		48		54		114		79.5
Calcium	mg/L						12.1	11.8	101	50.5	75.8	28.6	14.6	17.8	8.87	8.47	9.79	9.98	12.8	12.9	38.1	37.3	26.3
Magnesium	mg/L						3.39	3.61	65.2	32.3	47.4	27.2	17.2	7.68	12.5	5.07	4.99	6.25	6.75	7.18	21.9	22	17.4
Potassium	mg/L						1.28	1.4	4.04	1.78	2.31	1.63	1.46	2.32	0.503	0.911	0.638	1.05	0.859	1.17	5.8	6.26	1.76
Sodium	mg/L						0.496	0.516	17.6	12.9	8.39	2.02	1.35	2.34	2.92	0.898	0.971	0.951	1.03	3.81	4.16	6.15	6.89
Aluminum	mg/L		0.005-0.1 ^{b)}				0.0104	0.387	0.0904	0.0482	0.0629	0.0061	0.58	0.0124	8.47	0.0139	0.613	0.051	0.819	0.0188	0.53	0.0212	0.0153
Antimony	mg/L			0.006		<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.00012	0.00015	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00018	0.00026	<0.0001	<0.0001
Arsenic	mg/L	0.5	0.005	0.005		<0.0001	<0.0001	0.00025	<0.0001	0.00015	<0.0001	0.00012	0.00011	0.00105	<0.0001	<0.0001	0.00013	<0.0001	0.00014	0.00018	0.00021	<0.0001	<0.0001
Barium	mg/L			1		0.00486	0.00684	0.0389	0.0157	0.041	0.0194	0.0162	0.00882	0.0535	0.0032	0.00612	0.00296	0.0103	0.00447	0.00805	0.0428	0.0254	0.035
Beryllium	mg/L					<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Bismuth	mg/L					<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron	mg/L					<0.01	0.015	0.058	0.038	<0.01	<0.01	0.01	0.01	0.032	<0.01	0.016	<0.01	0.011	<0.01	0.024	0.021	0.051	0.046
Cadmium	mg/L		0.00009	0.005		<0.0001	0.000015	0.000021	<0.00001	0.000011	<0.00001	0.000019	0.000013	0.000061	<0.00001	0.000013	<0.00001	0.000018	0.000023	<0.00001	0.000028	<0.00001	0.000012
Chromium	mg/L		0.001	0.051		<0.0005	0.00141	<0.001	0.00076	0.00078	<0.0005	0.00147	<0.0005	0.0227	<0.0005	0.00147	<0.0005	0.0022	<0.0005	0.00136	<0.0005	0.00062	<0.0005
Cobalt	mg/L					<0.0001	0.00052	0.00094	0.0003	0.00023	0.00011	0.00071	0.00024	0.00059	<0.0001	0.00047	<0.0001	0.00066	<0.0001	0.00057	0.00013	0.00022	0.00014
Copper	mg/L	0.3	0.002-0.004 ^{b)}	<1.0 ^{b)}		0.00026	0.00151	0.00259	0.00141	0.00201	0.00101	0.00213	0.00073	0.0136	0.00072	0.00166	0.00078	0.00198	0.00091	0.00208	0.00139	0.00188	0.00106
Iron	mg/L		0.3	<0.3 ^{b)}		<0.03	0.746	0.134	0.044	0.076	<0.03	0.874	<0.03	7.19	<0.03	0.77	0.05	1.06	<0.03	0.71	<0.03	0.09	<0.03
Lead	mg/L	0.2	0.001-0.007 ^{b)}	0.01		<0.00005	0.00129	0.0002	0.00008	0.00013	<0.00005	0.00089	<0.00005	0.00635	<0.00005	0.00084	0.00006	0.00115	<0.00005	0.00066	<0.00005	0.00001	<0.00005
Lithium	mg/L					<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	0.0126	<0.005	<0.005	<0.005	<0.005	<0.005	0.00068	0.00074	<0.005	<0.005
Manganese	mg/L			<0.05		0.00891	0.028	0.0151	0.00821	0.0668	0.0237	0.0779	0.0208	0.148	0.00458	0.0238	0.00657	0.0749	0.00126	0.023	0.00567	0.00221	0.00555
Mercury	mg/L		0.026	0.001		<0.00001	<0.00001	0.000018	0.000017	<0.00001	<0.00001	0.000035	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L		0.073			0.00153	0.00128	0.00042	0.000288	0.000453	0.000632	0.000259	0.00291	0.0031	0.000387	0.000385	0.000291	0.00035	0.00106	0.00105	0.00433	0.00083	0.000967
Nickel	mg/L	0.5	0.025-0.15 ^{b)}			<0.0005	0.00196	0.0033	0.0011	0.00457	0.00116	0.00263	0.00192	0.0253	<0.0005	0.00177	0.00057	0.00241	0.00054	0.00192	0.00116	0.00169	0.00072
Selenium	mg/L		0.001	0.01		<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon	mg/L					0.284	1.02	2.2	1.43	2.22	1.29	1.93	0.7	17.3	0.32	1.58	0.34	1.88	0.37	1.38	0.5	0.7	0.8
Silver	mg/L					<0.00001	<0.00001	<0.00002	<0.00001	<0.00001	<0.00001	0.000011	<0.00001	0.000119	<0.00001	0.000017	<0.00001	0.000017	<0.00001	0.00002	<0.00001	<0.00001	<0.00001
Strontium	mg/L					0.00995	0.0101	0.0562	0.0235	0.0341	0.0195	0.0131	0.0126	0.0235	0.00519	0.00588	0.00524	0.00624	0.00683	0.00787	0.0243	0.0274	0.0174
Thallium	mg/L					<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00014	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin	mg/L					<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00036	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium	mg/L					<0.01	0.018	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	0.29	<0.01	0.02	<0.01	0.04	<0.01	0.02	<0.01	<0.01	<0.01
Uranium	mg/L					0.00273	0.00323	0.0045	0.00231	0.00237	0.00138	0.00101	0.00187	0.000252	0.000376	0.000788	0.000771	0.00097	0.00625	0.00103	0.00132	0.00132	0.000832
Vanadium	mg/L					<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	0.0012	<0.001	0.0152	<0.001	0.0011	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.5	0.03	<5.0		<0.001	0.0029	0.0275	0.0032	0.0162	<0.001	0.0035	<0.003	0.018	<0.003	<0.003	<0.003	0.0043	<0.003	0.0032	0.0136	<0.003	0.0171

Note:
Bold value indicates exceedance of MMER limit
MMER – Metal Mining Effluent Regulation
CEQG (PAL) – Canadian Council of Minister of the Environment (CCME) Canadian Water Quality Guideline for the protection of Aquatic Life
CDWQ – Health Canada - Canadian Drinking Water Quality Guideline
MMER, CEGQ (PAL) and CDWQ provided for reference purposes (see text)
NWB – Nunavut Water Board Wastewater Criteria
a) varies with pH
b) varies with hardness
c) aesthetic objective
d) varies with pH and temperature
Minimum and maximum values are the summary data of all monitoring locations

Table C-3: Ore Stockpile Drainage Data at Crusher Site (MRY-11 - Test Pits)

PARAMETER	UNITS	MMER	CWQG (PAL)	CDWO	NWB	896812	896391	896813	904565	905646	904566	905647	904567	905648	904568	905649
						2011-07-14	2011-07-14	2011-07-14	2011-08-16	2011-08-16	2011-08-16	2011-08-16	2011-08-16	2011-08-16	2011-08-16	2011-08-16
						MRY-11-TP3	MRY-11-TP4	MRY-11-TP4	MRY-11-TP1	MRY-11-TP1	MRY-11-TP2	MRY-11-TP2	MRY-11-TP3	MRY-11-TP3	MRY-11-TP4	MRY-11-TP4
						Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Alkalinity as CaCO ₃	mg/L					81		135		57		141		141		200
Chemical Oxygen Demand	mg/L															
Chloride	mg/L		230	<250		1		3		<1		6		4		3
Conductivity	uS/cm					158		332		144		677		354		467
N-NH ₃ (Ammonia)	mg/L		1.73-38.6 ^{a)}													
N-NO ₃ (Nitrate)	mg/L		13	10		0.35		3.24		<0.10		5.25		2.74		2.84
NO ₂ + NO ₃ as N	mg/L					0.35		3.24		5.25		5.25		2.74		2.84
pH		6.0 - 9.5	6.5 - 9.0	6.5 - 8.5	6.0 - 9.5	7.6		8.08		6.99		7.54		7.79		8.03
Sulphate	mg/L			<500 ^{b)}		5		28		21		181		36		46
Total Dissolved Solids (COND - CALC)	mg/L					103		216		94		440		230		304
Total Kjeldahl Nitrogen	mg/L					<0.10		0.4		0.56		0.59		0.46		0.36
Total Phosphorus	mg/L					0.004		0.003		0.81		0.007		0.032		0.017
Total Suspended Solids	mg/L	15	5		120	<2		<2		911		3		2		4
Turbidity	NTU					1.4		1.8		> 100		3.7		1.1		7.3
CO ₃ as CaCO ₃	mg/L					N/A-PH		N/A-PH		N/A-PH		N/A-PH		N/A-PH		N/A-PH
Hardness as CaCO ₃ (Dissolved)	mg/L					78.9	159	160	67.7	89.1	379	353	183	189	262	260
HCO ₃ as CaCO ₃	mg/L					81		135		57		141		141		200
Calcium	mg/L					15.1	32.3	32.3	15.5	17.7	73.9	68.2	35.7	37.2	51.3	50.6
Magnesium	mg/L					10	18.9	19.3	7.06	10.9	47.2	44.4	22.8	23.4	32.4	32.5
Potassium	mg/L					0.769	1.73	1.89	2.52	5.04	3.24	3	1.31	1.3	1.98	1.9
Sodium	mg/L					1.74	7.76	9.2	1.63	2.05	13.2	13.1	7.05	7.47	5.94	6.24
Aluminum	mg/L		0.005-0.1 ^{b)}			0.0689	0.0096	0.0391	0.0452	4.76	0.006	0.0477	0.01	0.0344	0.0051	0.0471
Antimony	mg/L			0.006		<0.0001	<0.0001	<0.0001	<0.0001	0.00018	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	0.5	0.005	0.005		<0.0001	<0.0001	<0.0001	0.00011	0.00082	0.00012	0.00012	<0.0001	<0.0001	<0.0001	<0.0001
Barium	mg/L			1		0.0047	0.039	0.0124	0.00833	0.0343	0.0294	0.0267	0.0118	0.0117	0.0244	0.0229
Beryllium	mg/L					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Bismuth	mg/L					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron	mg/L					0.013	0.01	0.011	0.014	0.022	0.068	0.071	0.023	0.028	<0.01	0.011
Cadmium	mg/L		0.00009	0.005		<0.00001	<0.00001	0.000013	<0.00001	0.00005	0.000011	0.000017	<0.00001	<0.00001	<0.00001	<0.00001
Chromium	mg/L		0.001	0.051		0.00057	<0.0005	0.00059	0.00054	0.0125	<0.0005	0.00055	<0.0005	<0.0005	<0.0005	<0.0005
Cobalt	mg/L					<0.0001	<0.0001	0.00011	<0.0001	0.0043	0.00047	0.00049	0.00015	0.00017	0.00011	0.00017
Copper	mg/L	0.3	0.002-0.004 ^{b)}	<1.0 ^{b)}		0.00095	0.00152	0.00155	0.00128	0.0109	0.00129	0.00171	0.00193	0.00131	0.00125	0.0016
Iron	mg/L		0.3	<0.3 ^{b)}		<0.03	<0.03	0.04	<0.03	5.77	<0.03	0.08	<0.03	0.04	<0.03	0.08
Lead	mg/L	0.2	0.001-0.007 ^{b)}	0.01		<0.00005	<0.00005	<0.00005	<0.00005	0.00602	<0.00005	0.0001	<0.00005	0.00006	<0.00005	0.00011
Lithium	mg/L					<0.005	<0.005	<0.005	<0.005	0.0089	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	mg/L			30.05		0.00463	0.00357	0.0138	0.00156	0.12	0.0138	0.016	0.00498	0.00566	0.0299	0.0379
Mercury	mg/L		0.026	0.001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L		0.073			0.00039	0.00136	0.00148	0.0034	0.00218	0.000473	0.000498	0.000316	0.000318	0.000854	0.000888
Nickel	mg/L	0.5	0.025-0.15 ^{b)}			0.00059	0.00087	0.00114	0.00064	0.0203	0.00147	0.00155	0.00059	0.00071	0.00108	0.00126
Selenium	mg/L		0.001	0.01		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon	mg/L					0.55	0.9	0.94	0.27	10.2	1.32	1.31	1	1.07	1.52	1.6
Silver	mg/L		<0.000001	<0.000001		<0.000001	<0.000001	<0.000001	<0.000001	0.000047	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001
Strontium	mg/L					0.00777	0.0152	0.0166	0.0106	0.0169	0.0389	0.0362	0.0156	0.0166	0.0223	0.0226
Thallium	mg/L					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin	mg/L					<0.0001	<0.0001	<0.0001	<0.0001	0.00031	<0.0001	<0.0001	0.00166	<0.0001	<0.0001	<0.0001
Titanium	mg/L					<0.01	<0.01	<0.01	<0.01	0.15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	mg/L					0.00104	0.00153	0.00195	0.0032	0.00484	0.00296	0.00278	0.00165	0.00178	0.00193	0.00209
Vanadium	mg/L					<0.001	<0.001	<0.001	<0.001	0.0081	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.5	0.03	<5.0		<0.003	0.0164	<0.003	<0.003	0.0151	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003

Note:
Bold value indicates exceedance of MMER limit
 MMER – Metal Mining Effluent Regulation
 CEQG (PAL) – Canadian Council of Minister of the Environment (CCME) Canadian Water Quality Guideline for the protection of Aquatic
 CDWO – Health Canada - Canadian Drinking Water Quality Guideline
 MMER, CEQG (PAL) and CDWO provided for reference purposes (see text)
 NWB – Nunavut Water Board Wastewater Criteria
 a) varies with pH
 b) varies with hardness
 c) aesthetic objective
 d) varies with pH and temperature
 Minimum and maximum values are the summary data of all monitoring locations

Table C-4: Ore Stock-pile Drainage Data at Milne Inlet (MRY-12 - Drive Points)

PARAMETER	UNITS	MMER	CWQG (PAL)	CDWQ	NWB	828062	828058	828063	828059	828064	828064	828065	828061
						2010-09-09	2010-09-09	2010-09-09	2010-09-09	2010-09-09	2010-09-09	2010-09-09	2010-09-09
						MRY-12-DP1	MRY-12-DP1	MRY-12-DP101	MRY-12-DP101	MRY-12-DP2	MRY-12-DP2	MRY-12-DP3	MRY-12-DP3
						Dissolved	Total *	Dissolved	Total *	Dissolved	Total *	Dissolved	Total *
Alkalinity as CaCO ₃	mg/L						125		124		208		107
Chemical Oxygen Demand	mg/L												
Chloride	mg/L		230	<250			199		188		272		120
Conductivity	uS/cm						1760		1710		1570		852
N-NH ₃ (Ammonia)	mg/L		1.73-38.6 ^(c)				<0.02		<0.02		0.24		<0.02
N-NO ₃ (Nitrate)	mg/L		13	10			4.47		4.62		2.16		15.2
NO ₂ + NO ₃ as N	mg/L						4.47		4.62		2.16		15.2
pH		6.0 - 9.5	6.5 - 9.0	6.5 - 8.5	6.0 - 9.5		8.07		8.07		8.15		7.64
Sulphate	mg/L			<500 ^(c)			457		434		123		48
Total Dissolved Solids (COND - CAL)	mg/L						1230		1200		1020		554
Total Kjeldahl Nitrogen	mg/L						0.37		0.45		0.69		0.19
Total Phosphorus	mg/L						0.052		0.039		0.03		0.02
Total Suspended Solids	mg/L	15	5		120		11900		4170		230		417
Turbidity	NTU						>100		>100		87.5		71.4
CO ₃ as CaCO ₃	mg/L												
Hardness as CaCO ₃ (Dissolved)	mg/L					528	1590	530	1350	375	671	187	367
HCO ₃ as CaCO ₃	mg/L					125		124		208		107	
Calcium	mg/L					98.2	351	94.3	295	63.6	133	41.3	80.5
Magnesium	mg/L					68.5	173	71.6	150	52.5	82.2	20.5	40.3
Potassium	mg/L					19.1	27	19.1	24.8	15.6	22.3	4.22	6.3
Sodium	mg/L					160	155	151	150	166	182	87.5	95.3
Aluminum	mg/L		0.005-0.1 ^(a)			0.0034	12	0.003	8.39	0.0035	7.77	0.0032	2.35
Antimony	mg/L			0.006		<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
Arsenic	mg/L	0.5	0.005	0.005		<0.0014	0.0541	<0.0016	0.0343	<0.0018	<0.006	0.00048	0.00095
Barium	mg/L			1		0.00246	0.0768	0.00271	0.0541	0.00646	0.0329	0.00654	0.0165
Beryllium	mg/L					<0.001	<0.0025	<0.001	<0.0025	<0.001	<0.001	<0.001	<0.001
Bismuth	mg/L					<0.001	<0.0025	<0.001	<0.0025	<0.001	<0.001	<0.001	<0.001
Boron	mg/L					0.535	0.63	0.536	0.614	0.554	0.677	0.197	0.241
Cadmium	mg/L		0.00009	0.005		<0.00002	0.000141	0.00002	0.000115	<0.00002	0.000056	<0.00002	0.000023
Chromium	mg/L		0.001	0.051		<0.001	0.102	<0.001	0.0602	<0.006	0.148	0.0016	0.0597
Cobalt	mg/L					0.00094	0.00917	0.00092	0.00665	0.00036	0.00473	<0.0002	0.00171
Copper	mg/L	0.3	0.002-0.004 ^(b)	≤1.0 ^(c)		<0.004	0.0457	<0.004	0.031	0.00237	0.0215	0.00249	0.0139
Iron	mg/L		0.3	<0.3 ^(c)		<0.03	45.4	<0.03	30.1	0.036	7.96	<0.03	2.86
Lead	mg/L	0.2	0.001-0.007 ^(b)	0.01		<0.0001	0.0162	<0.0001	0.0107	<0.0001	0.0053	<0.0001	0.0015
Lithium	mg/L					0.018	0.062	0.018	0.052	0.012	0.046	<0.01	0.015
Manganese	mg/L			≤0.05		0.0509	0.726	0.0479	0.497	0.0378	0.177	0.00453	0.0817
Mercury	mg/L		0.026	0.001		0.000015	0.000013	0.000015	0.00003	<0.00001	0.000058	<0.00001	<0.00001
Molybdenum	mg/L		0.073			0.00551	0.00903	0.00537	0.00754	0.00412	0.00539	0.00342	0.00359
Nickel	mg/L	0.5	0.025-0.15 ^(b)			0.0056	0.0595	0.0035	0.04	0.0102	0.0764	0.0031	0.029
Selenium	mg/L		0.001	0.01		<0.008	<0.005	<0.008	<0.005	<0.006	<0.008	<0.002	<0.002
Silicon	mg/L					0.674	28	0.707	22	0.983	21.5	0.871	6.75
Silver	mg/L					<0.00002	0.000102	<0.00002	0.000081	<0.00002	0.000043	<0.00002	<0.00002
Strontium	mg/L					0.552	0.754	0.54	0.686	0.264	0.331	0.0884	0.112
Thallium	mg/L					<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
Tin	mg/L					<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	0.00021	<0.0002	<0.0002
Titanium	mg/L					<0.01	0.453	<0.01	0.348	<0.01	0.292	<0.01	0.128
Uranium	mg/L					0.00238	0.00477	0.00238	0.00378	0.00243	0.00325	0.0017	0.00204
Vanadium	mg/L					<0.002	0.0602	<0.002	0.0397	<0.002	<0.02	<0.002	0.0064
Zinc	mg/L	0.5	0.03	≤5.0		<0.002	0.0352	<0.002	0.0275	0.0039	0.0217	0.0025	0.0118

Note:

Bold value indicates exceedance of MMER limit

* Elevated suspended solids due to silting of drive points during sampling. Total metals may not be representative and are not included in Max and Min statistics reported in Table 8.

MMER = Metal Mining Effluent Regulation

CEQG (PAL) = Canadian Council of Minister of the Environment (CCME) Canadian Water Quality Guideline for the protection of Aquatic Life

CDWQ = Health Canada - Canadian Drinking Water Quality Guideline

MMER, CEGQ (PAL) and CDWQ provided for reference purposes (see text)

NWB = Nunavut Water Board Wastewater Criteria

a) varies with pH

b) varies with hardness

c) aesthetic objective

d) varies with pH and temperature

Minimum and maximum values are the summary data of all monitoring locations

Table C-5: Bulk Sample Pit Seepage Data (MRY-9)

PARAMETER	UNITS	MMER	CWQG (PAL)	CDWQ	NWB	645773	645776	827283	827276	892839	892847	896364	896814
						2008-07-25	2008-07-25	2010-09-07	2010-09-07	2011-06-24	2011-06-24	2011-07-13	2011-07-13
						MRY-9	MRY-9	MRY-9	MRY-9	MRY-9	MRY-9	MRY-9	MRY-9
						Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Alkalinity as CaCO ₃	mg/L								32		<5		25
Chemical Oxygen Demand	mg/L												
Chloride	mg/L		230	<250					3		<1		10
Conductivity	uS/cm								184		19		141
N-NH ₃ (Ammonia)	mg/L		1.73-38.6 ^(a)				0.07		<0.02				
N-NO ₃ (Nitrate)	mg/L		13	10					0.82		0.63		0.69
NO ₂ + NO ₃ as N	mg/L								0.82		0.63		0.69
pH		6.0 - 9.5	6.5 - 9.0	6.5 - 8.5	6.0 - 9.5		7.31		7.57		4.92		6.6
Sulphate	mg/L			<500 ^(c)					48		3		26
Total Dissolved Solids (COND - CALC)	mg/L								120		12		92
Total Kjeldahl Nitrogen	mg/L						0.27		0.17		<0.10		0.12
Total Phosphorus	mg/L						0.013		0.043		0.087		0.005
Total Suspended Solids	mg/L	15	5		120		15		23		30		<2
Turbidity	NTU								10.4		76.3		4.6
CO ₃ as CaCO ₃	mg/L										N/A-PH		N/A-PH
Hardness as CaCO ₃ (Dissolved)	mg/L								57.2	1.4	1.5	56.3	
HCO ₃ as CaCO ₃	mg/L										<1		25
Calcium	mg/L					19	19	22	21.7	0.206	0.180	13.2	12.7
Magnesium	mg/L					18	18	7.68	7.88	0.22	0.26	5.65	5.52
Potassium	mg/L					0.57	0.68	0.571	0.711	<0.050	0.096	0.605	0.775
Sodium	mg/L					0.98	0.96	2.24	2.4	0.0670	0.0680	3.94	3.48
Aluminum	mg/L		0.005-0.1 ^(a)			<0.01	0.67	0.0058	0.287	0.0779	0.5420	0.0117	0.101
Antimony	mg/L			0.006				<0.0001	<0.0001	<0.0001	0.00014	<0.0001	<0.0001
Arsenic	mg/L	0.5	0.005	0.005		<0.001	<0.001	<0.0001	<0.0001	<0.0001	0.00012	<0.0001	<0.0001
Barium	mg/L			1		0.01	0.02	0.00522	0.00679	0.000955	0.0017	0.0629	0.00378
Beryllium	mg/L							<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Bismuth	mg/L							<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron	mg/L					<0.01	<0.01	<0.01	0.013	<0.01	<0.01	0.029	0.014
Cadmium	mg/L		0.00009	0.005		<0.0001	<0.0001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001
Chromium	mg/L		0.001	0.051		<0.001	0.003	<0.0005	0.00106	<0.0005	0.00217	<0.0005	0.00071
Cobalt	mg/L					0.0015	0.0030	0.00024	0.0005	0.00143	0.00161	0.00011	0.00017
Copper	mg/L	0.3	0.002-0.004 ^(b)	≤1.0 ^(b)		<0.001	0.005	0.00032	0.00083	0.00154	0.00169	0.00079	0.00112
Iron	mg/L		0.3	<0.3 ^(b)		<0.03	1.11	<0.03	0.382	0.2	3.59	<0.03	0.16
Lead	mg/L	0.2	0.001-0.007 ^(b)	0.01		<0.001	0.016	<0.00005	0.00033	0.00019	0.00145	<0.00005	0.0001
Lithium	mg/L							<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	mg/L			≤0.05		0.32	0.40	0.00134	0.0136	0.117	0.103	0.123	0.131
Mercury	mg/L		0.026	0.001				0.000013	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L		0.073			<0.005	<0.005	0.000102	0.000164	<0.00005	0.00011	0.000469	0.000512
Nickel	mg/L	0.5	0.025-0.15 ^(b)			<0.005	<0.005	<0.0005	0.00101	0.00225	0.00348	<0.0005	<0.0005
Selenium	mg/L		0.001	0.01		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon	mg/L							0.522	1.08	<0.05	0.6	0.38	0.49
Silver	mg/L					<0.0001	<0.0001	0.000018	<0.00001	<0.00001	0.000037	0.000035	0.000044
Strontium	mg/L					0.016	0.015	0.0382	0.0393	0.00023	0.0004	0.0171	0.0191
Thallium	mg/L					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin	mg/L					<0.01	<0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium	mg/L							<0.01	0.017	<0.01	0.01	<0.01	<0.01
Uranium	mg/L							0.000078	0.000111	0.000031	0.000086	0.000051	0.000078
Vanadium	mg/L					<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.5	0.03	≤5.0		<0.01	<0.01	<0.001	0.0014	0.0041	0.0045	0.0291	0.0053

Note:

Bold value indicates exceedance of MMER limit

MMER = Metal Mining Effluent Regulation

CEQG (PAL) = Canadian Council of Minister of the Environment (CCME) Canadian Water Quality Guideline for the protection of Aquatic Life

CDWQ = Health Canada - Canadian Drinking Water Quality Guideline

MMER, CEQG (PAL) and CDWQ provided for reference purposes (see text)

NWB = Nunavut Water Board Wastewater Criteria

a) varies with pH

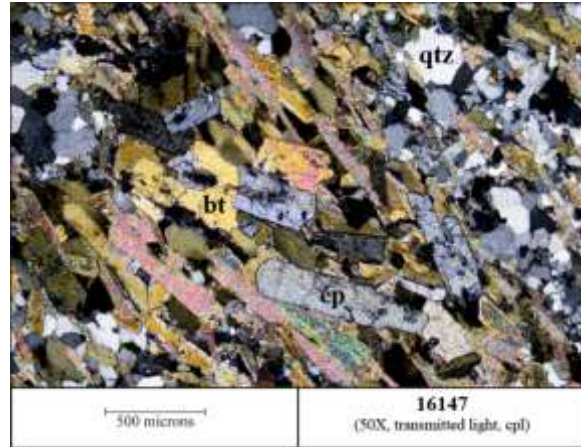
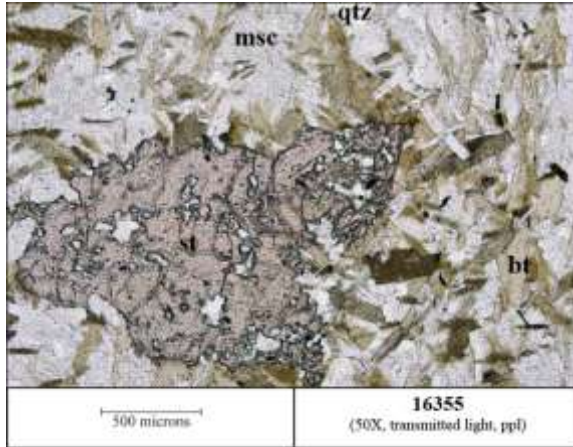
b) varies with hardness

c) aesthetic objective

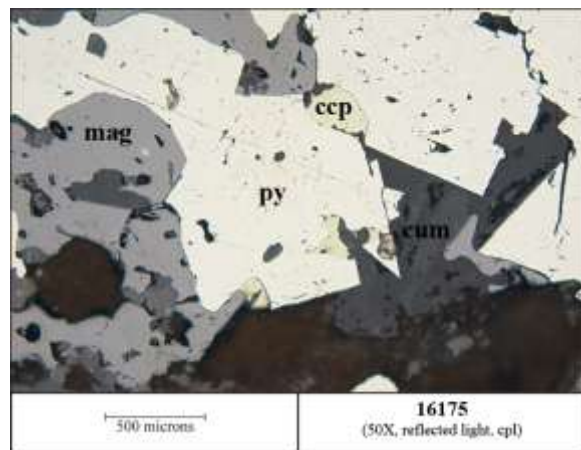
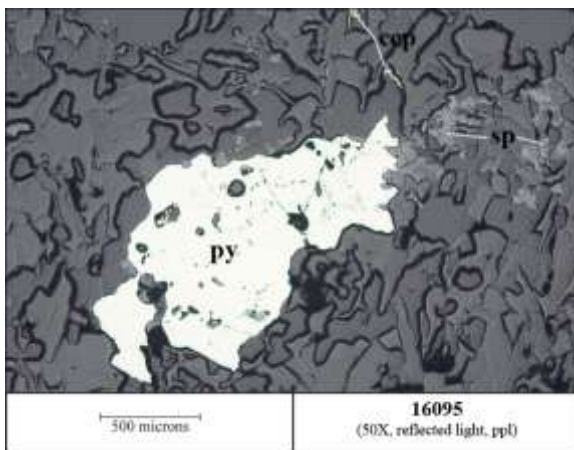
d) varies with pH and temperature

APPENDIX D
MINERALOGY REPORT

Mineralogical Characterization Report: BIMC-11-001



Mineralogical Characterization of Twenty Samples from the Mary River Deposit, Baffinland Iron Mines Corp.



January 3, 2012

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Summary

Twenty samples of drill core were analyzed in this study. The samples contain mineral assemblages typical of at least amphibolite grade. Sixteen of the twenty samples contain sulfides. A variety of sulfides were identified in the rocks studied. Pyrite, chalcopyrite, pyrrhotite, and sphalerite are common accessory minerals and were identified in many of the rock types studied. Marcasite was identified in one sample and pentlandite was identified in three samples. Only sample, 16175 contained measurable amounts (1.8 wt.%, by Rietveld analysis) of pyrite. No sulfides were identified in four of the samples: 16137, 16355, 16397, and 16467. All other samples contained sulfide in trace amounts. In most cases the sulfides were disseminated and fresh without oxidized shells.

The major rock forming silicate minerals observed in this study include quartz, feldspar (plagioclase and alkali feldspar), amphibole (cummingtonite and hornblende), biotite, muscovite, and chlorite. The other major rock forming mineral is the oxide magnetite, which occurs in iron formation. The rocks observed in this study can be subdivided into five groups based on the relative abundance of the major rock forming minerals: quartz-feldspar-rich, amphibolite (composed dominantly of amphibole and plagioclase), magnetite-rich, mica-rich (biotite and/or muscovite), and chlorite-rich.

No asbestos was identified in the rocks studied. However, the metamorphic and structural conditions necessary for the growth of asbestiform amphiboles are present. Special attention should be given to logging with careful attention to the presence of fibrous amphiboles.

Introduction

Twenty samples of drill core were analyzed in this study. The samples represent waste rock types that will be handled and stored during the life of mining operation at Mary River. The purpose of this mineralogical characterization was to: 1) identify the minerals with particular attention to minerals with the potential to generate and neutralize acid, 2) identify textures and fabrics that can affect the rate at which acid generating and acid neutralizing minerals and could be weathered, and 3) identify asbestos minerals, if present.

Methods

Twenty samples of saw-cut drill core were provided for mineralogical analysis by Baffinland Iron Mines. The core samples and the rock names assigned by Baffinland Iron Mines are listed in Table 1. Twenty matching samples of pulverized drill core were provided by SGS Mineral Services, Lakefield on Baffinland Iron Mines behalf. Digital images were acquired for each sample (Appendix A). A thin section and polished mount of each sample were prepared at Rod Johnson and Associates, Inc. in Negaunee, Michigan. Thin sections were selected from an area of the drill core sample that was thought to be most representative of the sample. Samples for polished mounts were selected from an area of the drill core that contained sulfides, if present. Therefore, thin sections and polished mounts in some instances were selected from different areas of the drill core. The thin sections and polished mounts were analyzed with transmitted and reflected light respectively, using an Olympus BX60 petrographic microscope. Images were acquired using a Canon 5D digital SLR camera and processed using Adobe Photoshop C3 Extended. Cursors image analysis was also performed using Adobe Photoshop CS5 Extended. Minerals were identified using a combination of optical properties in transmitted and reflected light, x-ray diffraction (XRD), scanning electron microscopy (SEM), and energy dispersive spectroscopy (EDS). Description of each sample is provided in Appendix A.

Table 1. List of samples analyzed in this study with field identification names assigned by Baffinland Iron Mines.

Sample ID	Rock Type
16095	greywacke
16099	mica amphibole chlorite schist
16137	ab_QF gneiss
16147	ab_QF gneiss
16151	greywacke
16175	HG_IF 60-72.36% Fe 60-100% mag.
16195	greywacke
16241	amphibolite
16281	Banded_IF 60-72.36% Fe 0-25% mag.
16299	greywacke
16355	QFm gneiss
16393	QFm gneiss
16397	amphibolite
16415	mica amphibole schist
16441	HG_IF 60-72.36% Fe 60-100% mag.
16467	chlorite schist
16667	volcanic tuff (massive)
16729	chlorite schist
16739	chlorite schist
16745	volcanic tuff (layered)

XRD scans were collected of each sample using a Scintag XDS 2000 theta/theta, in the Department of Material Science and Engineering at Michigan Technological University. Samples were loaded in a holder by the side drift method. Scans were collected from 5° to 45° 2θ, 0.02° step size, 2 second dwell time, at 35 mA, and 45 kV. The scans were processed by Rod Johnson & Associates, Inc. Background was removed and phases matched using Match! software (Crystal Impact) and the American Mineralogist Crystal Structure Database (R.T. Downes and M. Hall-Wallace, 2003). XRD can identify most minerals at concentrations greater than about 2 wt.% however, some minerals, like pyroxenes, have low relative intensity ratios that result in their detection limit being much higher, about 5-7 wt.%. The abundance of minerals identified by XRD was determined by Rietveld analysis using Siroquant software and is summarized in Appendix A. In this study Rietveld analysis provided reasonable estimates of the abundances of minerals present. However, the relative error of Rietveld analysis increases at concentrations below 6 wt% (Raudsepp, M. and Pani, E, 2003).

Major element chemistries of the major and minor mineral phases of interest were collected to provide background data on mineral chemistry. Major element mineral chemistries were determined by energy dispersive spectroscopy (EDS). EDS analyses are standardless qualitative analyses and have a detection limit of 0.1wt% (Goldstein, J.I., et.al., 2003). EDS was performed on the polished mounts that were prepared for optical microscopy. The spectra were collected from the centers of mineral grains. When multiple analyses of a particular mineral were collected the average of the analyses are reported. Major element chemistry of minerals was determined at Rod Johnson & Associates, Inc. using a JEOL JXA-840 SEM, Thermo Scientific UltraDry SDD detector, and Thermo Scientific System Seven digital processor. The polished mounts were coated with carbon using a Spectrum Probe, Inc. carbon evaporator. EDS analyses were collected at a working distance of 39mm, 20kV and counts were collected until 5,000 counts were accumulated. Major element mineral analyses are included in Appendix A with the sample descriptions.

Results

Twenty samples of drill core were analyzed in this study. The samples contain mineral assemblages typical of rocks metamorphosed to at least amphibolite grade. The samples also contain trace amounts of accessory minerals including: apatite, zircon, and monazite. Trace accessory minerals were not determined in a quantitative manner and are not included in descriptions. The mineralogy of the samples studied is summarized in Table 2. The minerals have been subdivided into silicate, sulfides, and oxides and will be presented in that order. The physical characteristics of the rocks will also be presented.

Table 2. Summary of minerals identified in this study. Major and minor phases are indicated with an X and trace phases are indicated with an x. Some trace accessory minerals including apatite, monazite, e.g. are not included in this table.

	Silicates											Sulfides					Oxides						
	Quartz	Plagioclase	K-feldspar	Cummingtonite	Hornblende	Biotite	Muscovite	Chlorite	Garnet	Epidote	Staurolite	Cordierite	Pyrite	Pyrrhotite	Marcasite	Chalcopyrite	Sphalerite	Pentlandite	Magnetite	Hematite	Goethite	Ilmenite	Chromite
16095	X	X			X	X							x			X	X						
16099	X	X				X							x			X	X						
16137	X	X				X																	
16147	X		X		X	X				x			x									x	
16151	X	X	x			X							x	x		X							
16175				X				X	X				X			X			X				
16195	X	X			X	X		X					x	x		X		x				x	
16241	X	X		X	X			X	X						x	X		x				x	
16281	X			X				X					x	x		X			X				
16299								X								X							
16355	X					X	X	X			x											x	
16393	X	X				X	X	X					x			X			x				
16397	X							X														x	
16415								X					x										x
16441				x				X					x			X			X	x			
16467	X					X		X				X											
16667	X	X			X	X							x	x		X		x					
16729								X	X				x									x	
16739	X							X	X				x								x		
16745	X							X	X							X	X					X	

Silicates

The following silicates were identified in this study: quartz, plagioclase, k-feldspar, cummingtonite, hornblende, biotite, muscovite, chlorite, garnet, epidote, staurolite and cordierite. Quartz, feldspars, cummingtonite, hornblende, biotite, muscovite, and chlorite are the major silicate rock forming minerals in this study.

Quartz occurs as granoblastic aggregates with or without feldspar (Figure 1a and 1b). Feldspar occurs as porphyroblasts and in the matrix with quartz in granoblastic aggregates. The plagioclase minerals albite, oligoclase, andesine, and anorthite were identified in the course of this study.

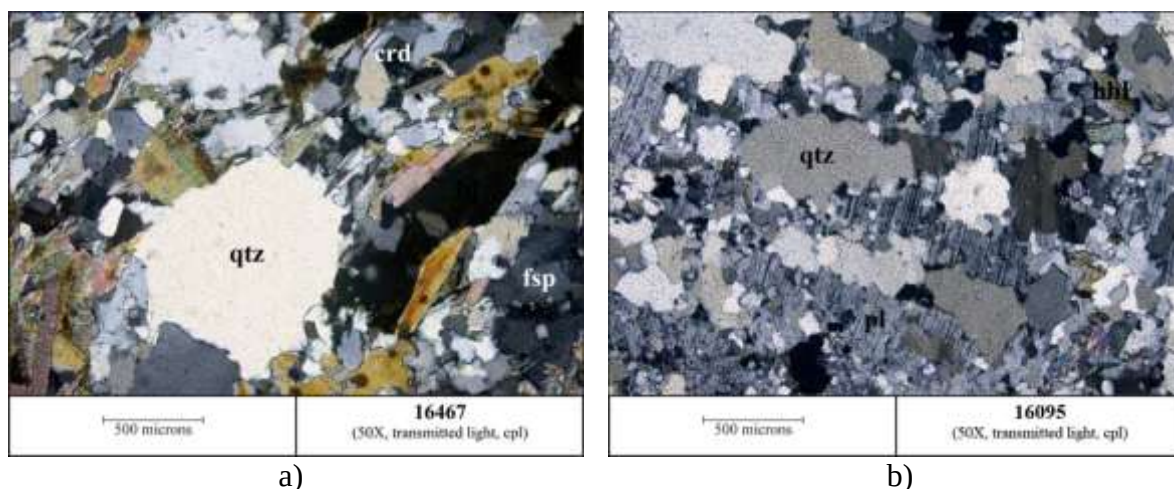


Figure 1. Photomicrographs illustrating the occurrence of quartz and feldspar. a) Photomicrograph of relatively coarse quartz grains in a matrix of granoblastic quartz and cordierite with decussate biotite. b) Photomicrographs of plagioclase porphyroblasts in a matrix of granoblastic quartz and feldspar with disseminated hornblende.

The amphiboles cummingtonite and hornblende typically occur in decussate aggregates and aligned with the foliation when present (Figure 2a and 2b). Although cummingtonite in some instances had high aspect ratios, no asbestiform cummingtonite was observed.

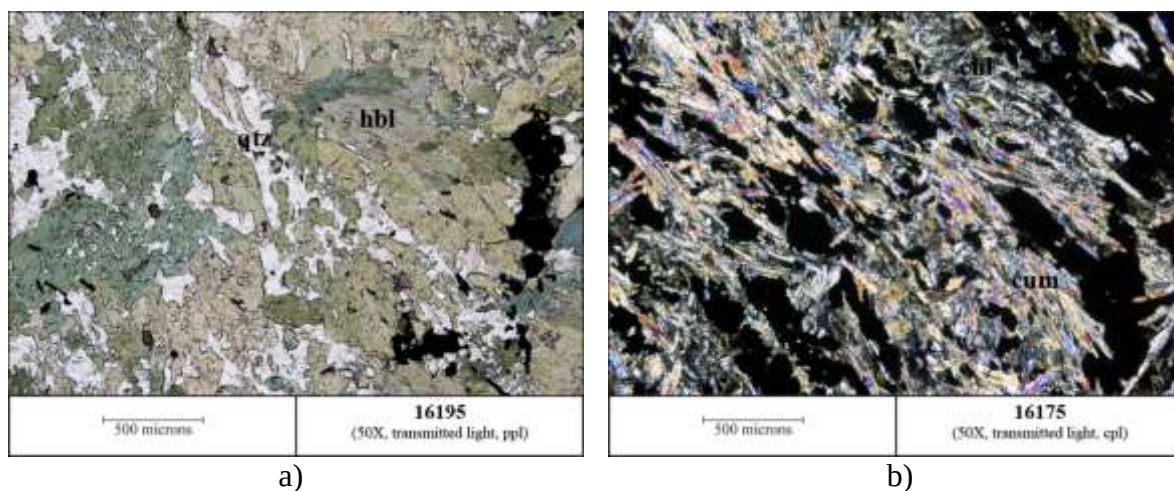


Figure 2. Photomicrographs illustrating the occurrence of amphiboles. a) Photomicrograph of decussate hornblende in a matrix of granoblastic plagioclase and quartz. b) Photomicrographs of foliated to decussate cummingtonite and magnetite (opaque).

The platy silicates biotite, muscovite and chlorite typically occur as disseminated flakes or aligned with foliation (Figure 3a and 3b). Chlorite occurs as either a high iron (possibly

chamosite) or high magnesium (possibly clinocllore) variety. In some cases the high-Mg and high-Fe varieties occur together.

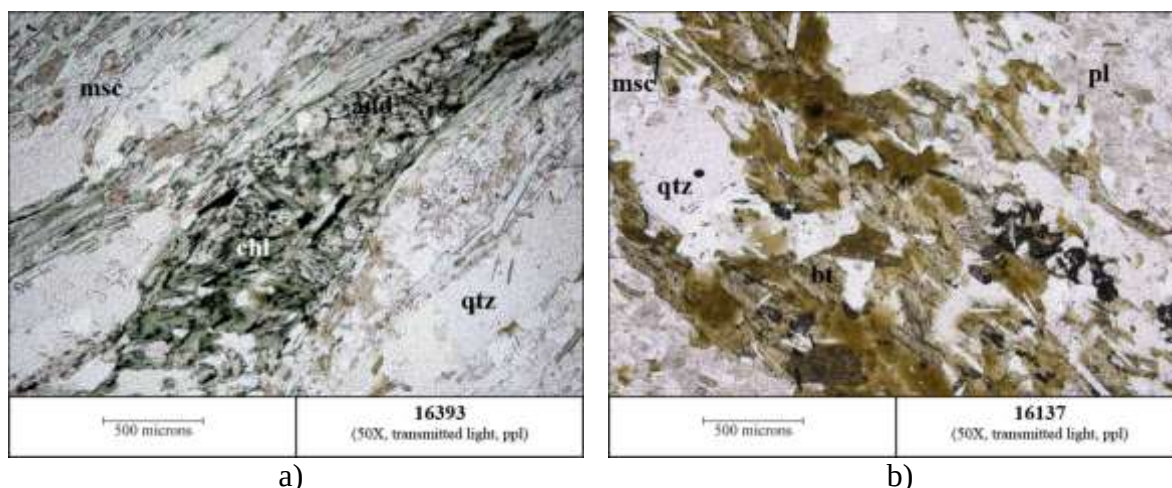


Figure 3. Photomicrographs illustrating the occurrence of platy minerals. a) Photomicrograph of asymmetric pod composed of chlorite quartz and andalusite and bands of foliated muscovite. b) Photomicrographs of band composed of foliated biotite with granoblastic quartz and feldspar.

Other silicate minerals occurred in minor to trace amounts including garnet, epidote, staurolite, cordierite, and andalusite. Garnet occurred in several samples, often as conspicuous porphyroblasts.

Sulfides

A variety of sulfides were identified in the rocks studied. Pyrite, chalcopyrite, pyrrhotite, and sphalerite are common accessory minerals and were identified in many of the rock types studied. Marcasite was identified in one sample and pentlandite was identified in three samples. Only sample, 16175 contained measurable amounts (1.8 wt.%, by Rietveld analysis) of pyrite (Figure 4a and 4b). No sulfides were identified in four of the samples: 16137, 16355, 16397, and 16467. All other samples contained sulfide in trace amounts. In most cases the sulfides were disseminated and fresh without oxidized shells.

Pyrite is the most common sulfide mineral and typically occurs as disseminated anhedral to euhedral grains. EDS analysis of pyrite grains did not identify arsenic or mercury above detection limits. Chalcopyrite is the next most commonly occurring sulfide. Sphalerite does contain measurable levels of cadmium (up to 1.6 wt.% average in 16095). The sulfide assemblage pyrrhotite, chalcopyrite, and pentlandite was identified in three samples, 16195, 16241, and 16667. The pentlandite in samples 16195 and 16241 contain elevated cobalt. Marcasite was identified in sample 16745. Marcasite contains measureable amounts of nickel and copper.

Oxides

Magnetite, hematite, goethite, ilmenite and chromite were identified in the rocks studied. Iron formation samples contained granular magnetite.

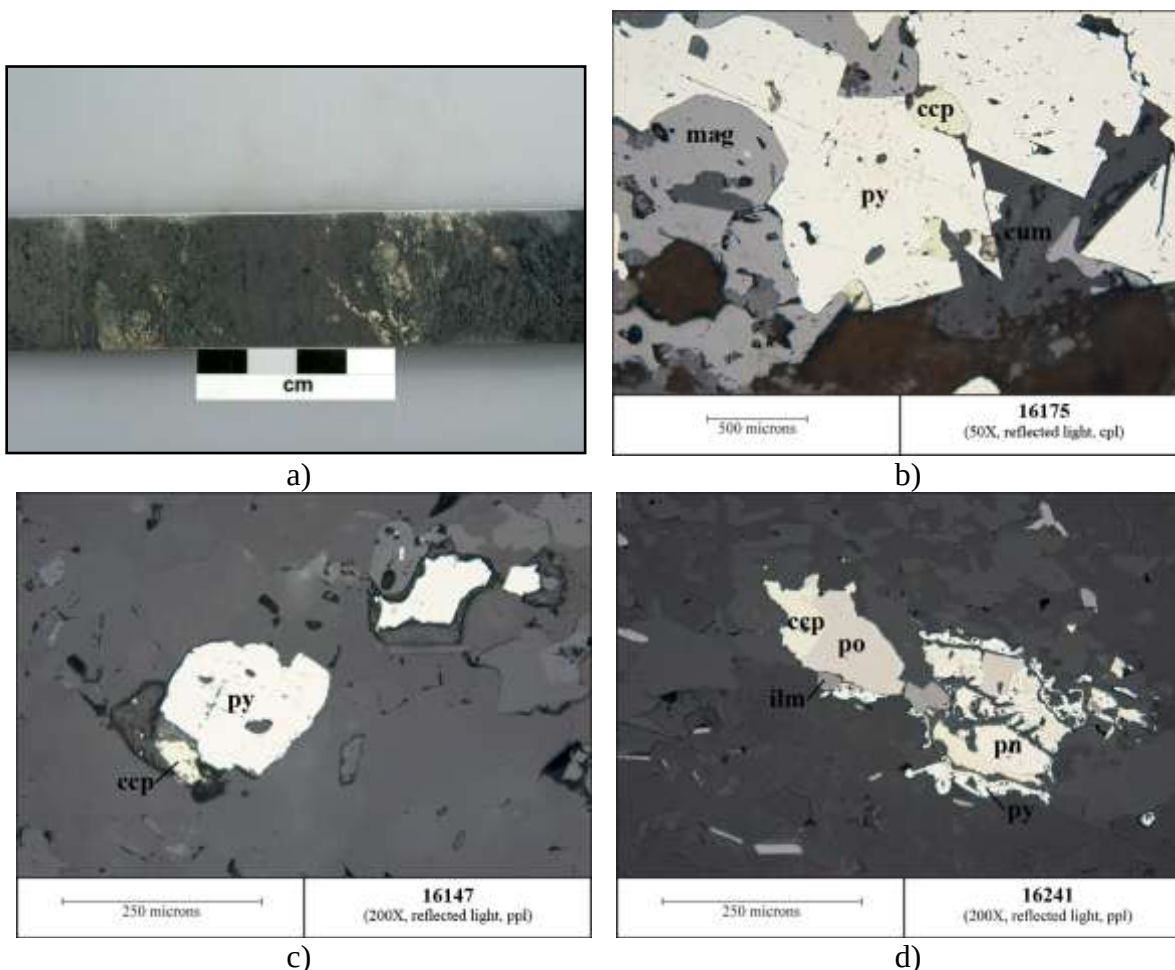


Figure 4. Photomicrographs illustrating the occurrence of sulfide minerals. a) Photograph of sample 16175 with bands containing pyrite and chalcopyrite. b) Photomicrograph of pyrite intergrown with magnetite. Note pyrite contains inclusions of chalcopyrite. Note also that the sulfides are unaltered. c) Photomicrograph of disseminated pyrite and chalcopyrite grains. d) Photomicrograph of irregular grain composed of pyrite, pyrrhotite, chalcopyrite, and pentlandite.

Physical Characteristics

The twenty samples of drill core in this study contain textures and fabrics typical of metamorphosed and deformed rocks. Most of the core samples are banded, gneissic, or foliated to some degree. The development of planar fabrics as seen in schist and gneiss are in

part controlled by the abundance and distribution of platy minerals. The platy minerals, biotite, muscovite, and chlorite, occur as disseminated flakes, decussate aggregates and networks, and along foliation planes (cleavage e.g.). Gneiss and schist contain bands rich in platy minerals (Figures 5a and 5b). Platy minerals in some instances heal fractures in the rock (Figure 5c and 5d). The non-platy minerals, such as quartz and feldspar, typically occur in either granoblastic assemblages or as porphyroblasts (Figure 5b and 5d).

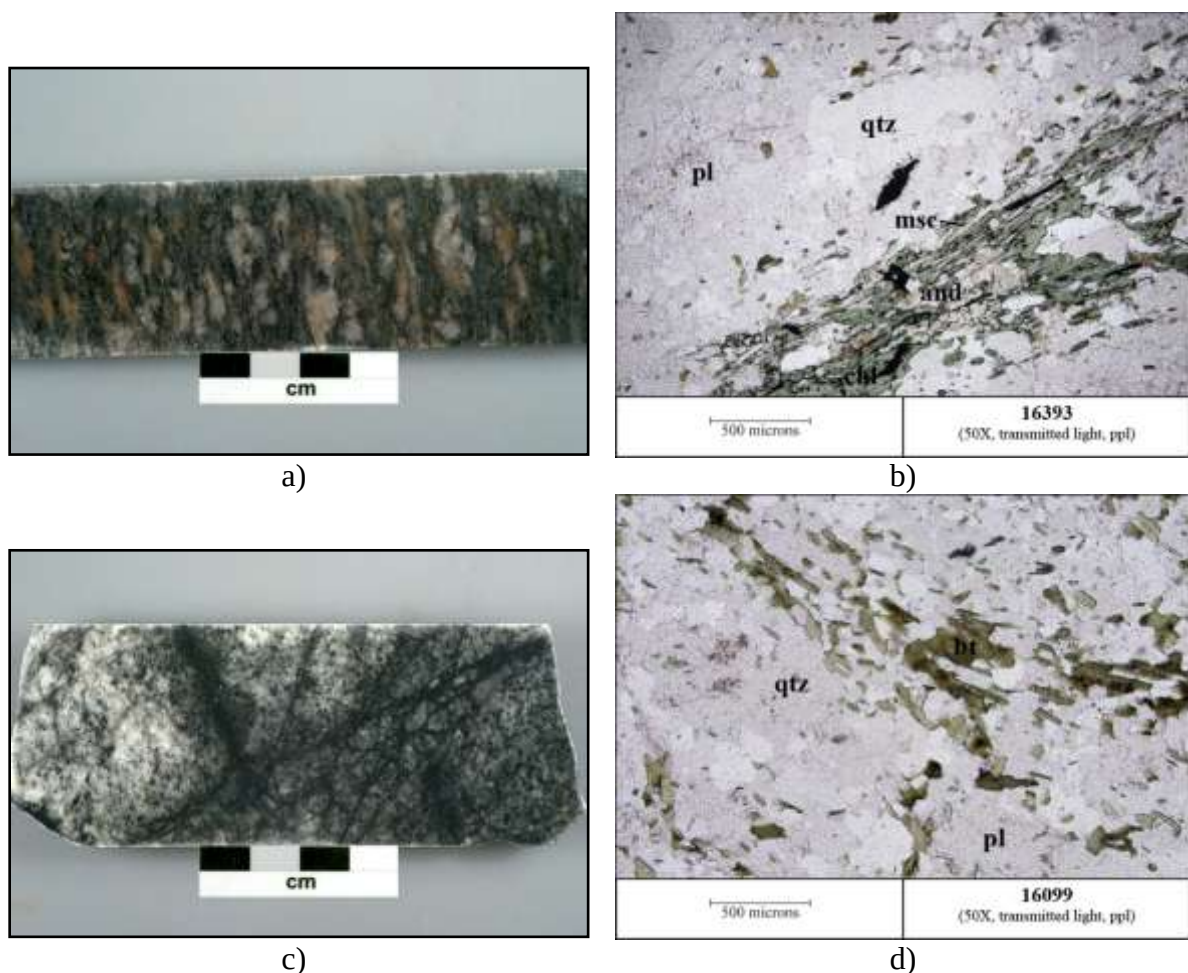


Figure 5. Photomicrographs illustrating the physical characteristics. a) Photograph of a gneiss, sample 16393. b) Photomicrograph of band composed of foliated muscovite and chlorite. c) Photograph of sample 16099 containing fractures healed by biotite. d) Photomicrograph of biotite occurring along fractures.

Some drill core samples show evidence of permeability. Iron formation sample 16441 contains a reddish band (Figure 6a) that has magnetite grains with partially oxidized margins (Figure 6b). The age of the oxidation of the magnetite is equivocal. However, the surficial oxidation of magnetite is similar to the oxidation of magnetite observed in weathering profiles of iron formation in Minnesota and Brazil. Garnet schist sample 16739 has a bleached appearance (Figure 6c) and contains fractures stained by iron oxides (Figure 6d). The secondary iron oxides along the fractures are likely the result of weathering of iron-rich

silicates adjacent to the fractures. Pyrite grains in sample 16739 are pervasively replaced by goethite. The oxidation of pyrite to goethite is often associated with surface weathering.

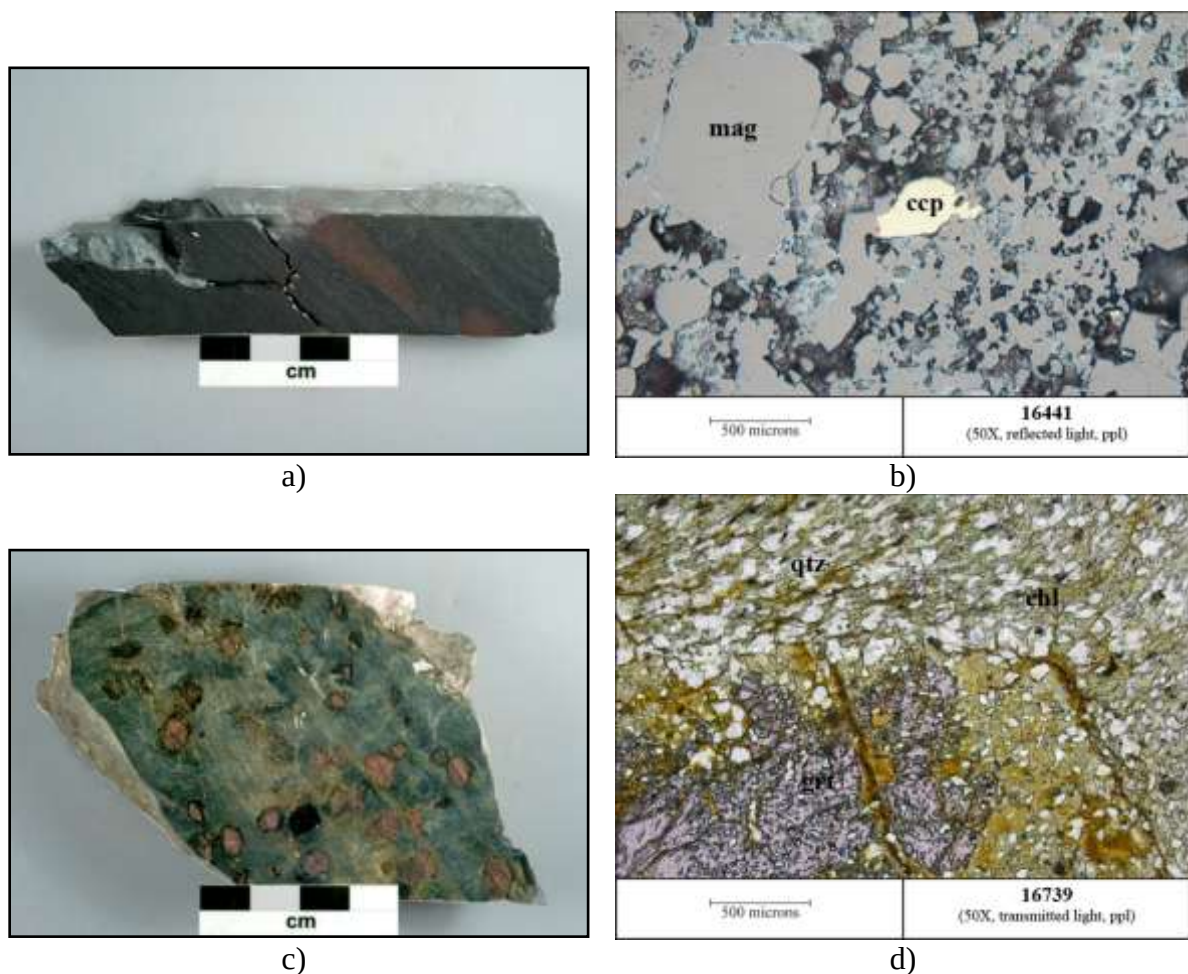


Figure 6. Photographs and photomicrographs illustrating permeability. a) Photograph of iron formation sample with red hematite bed. b) Photomicrograph of granular magnetite grains partially oxidized to hematite (white) along grain rims. c) Photograph of garnet schist sample 16739 with bleached zones and veinlets. d) Photomicrograph of iron-stained fractures cross-cutting sample 16739.

Discussion

Twenty samples of drill core were analyzed in this study. The samples contain mineral assemblages typical of at least amphibolite grade. Sixteen of the twenty samples contain sulfides. Only one sample, 16175, contained enough sulfide minerals such that their abundance could be determined by Rietveld analysis. The remaining sulfide bearing samples

contained sulfides at trace levels. No carbonate minerals were identified in samples in this study.

The major rock forming silicate minerals observed in this study include quartz, feldspar (plagioclase and alkali feldspar), amphibole (cummingtonite and hornblende), biotite, muscovite, and chlorite. The other major rock forming mineral is the oxide magnetite, which occurs in iron formation. The rocks observed in this study can be subdivided into five groups based on the relative abundance of the major rock forming minerals: quartz-feldspar rich, amphibolite (composed dominantly of amphibole and plagioclase), magnetite-rich, mica-rich (biotite and/or muscovite), and chlorite-rich (Table 3).

Table 3. Summary of rocks observed in this study by major rock forming minerals.

Quartz-feldspar-rich	Amphibolite	Mica-rich	Chlorite-rich	Iron formation
16095	16195	16137	16299	16175
16099	16241	16147	16397	16281
16151	16667	16355	16415	16441
		16393	16729	
		16467	16739	
			16745	

The minor silicate minerals observed in this study include: garnet (almandine), cordierite, staurolite, and epidote.

The combination of mineralogy and rock fabrics and textures will play a role in determining the size of rock fragments produced by blasting, handling, and weathering. Some of the sulfides not enclosed by resistant minerals (quartz and feldspar e.g.) will be more readily exposed. However, the same process will result in greater surface area and expose silicates with potential neutralization capacity.

While no carbonate minerals were identified in this study it does not mean that carbonate minerals are not present. This study used thin sections and polished mounts to identify minerals and it is likely that the areas selected for thin sections and polished mounts may not have contained carbonate minerals that may have been present in other parts of the same drill core sample. Carbonate minerals commonly form along fractures and joints. Rocks with carbonate cemented joints and fractures tend to break along these surfaces. Samples that have chemical analyses that indicate the presence of carbonate minerals could be re-examined both macroscopically and microscopically for the presence of carbonate minerals.

No asbestos was identified in the rocks studied. However, the metamorphic and structural conditions necessary for the growth of asbestiform amphiboles are present. Special attention should be given to logging with careful attention to the presence of fibrous amphiboles. If fibrous amphiboles are identified in the field or in core, samples should be collected and sent to a lab where they can be determined to be either asbestos or fibrous amphiboles. This

determination can be done with a combination of polarized light microscopy and scanning electron microscopy.

Respectfully Submitted,

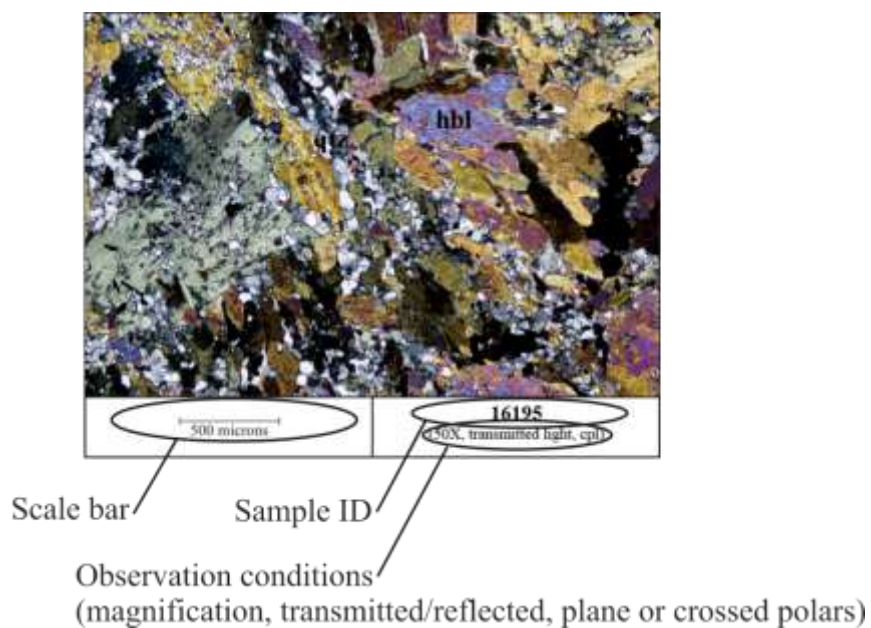


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Rod Johnson & Associates, Inc.

References

- Downs, R.T. and Hall-Wallace, M. (2003), The American Mineralogist Crystal Structure Database. American Mineralogist 88, 247-250.
- Goldstein, J.I., et.al., 2003, Scanning Electron Microscopy and X-ray Microanalysis, Third Edition: Springer, 690 p.
- Match!, Version 1.10, CRYSTAL IMPACT, Rauthausgasse 30, 5311 Bonn, Germany.
- Raudsepp, M. and Pani, E. (2003): Application of Rietveld Analysis to Environmental Mineralogy. Mineralogical Association of Canada, Short Course 31, Chapter 8, 165-180.

Appendix A. Descriptions of Samples from Mary River



Sample: 16095

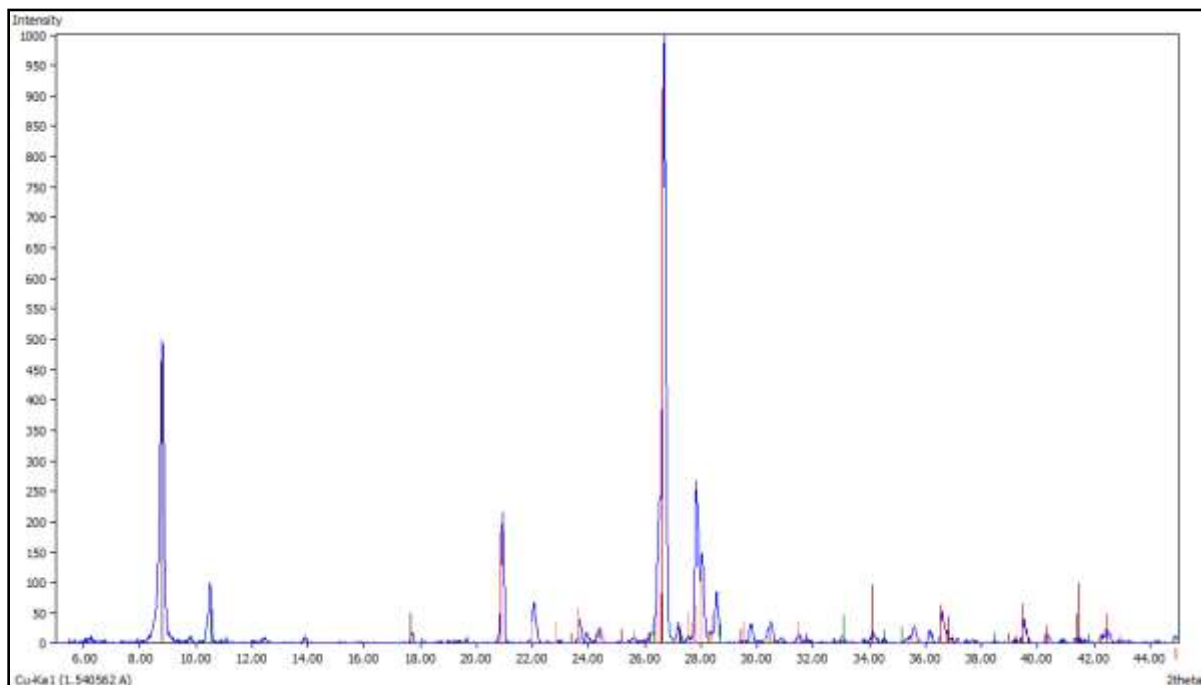
Baffinland Iron Mines Field Identification: Greywacke

Classification: Meta Feld spathic-wacke



Photograph of sample 16095. Note the massive white quartz-feldspar layer in biotite-hornblende schist with disseminated sulfides.

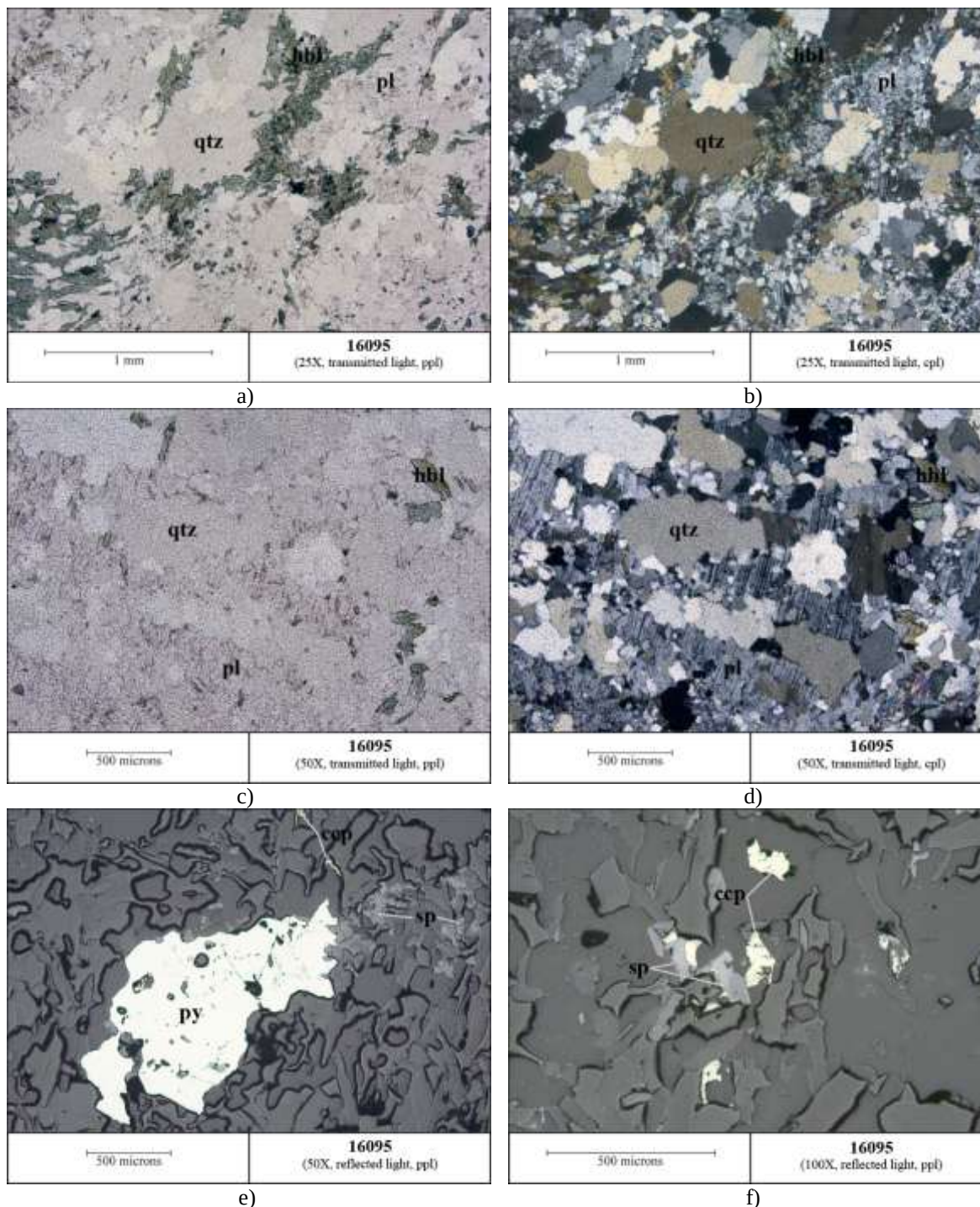
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Quartz	40.3
Andesine	30.3
Biotite	22.1
Hornblende	7.3

Optical Microscopy:



Photomicrographs of sample 16095. a) and b) Photomicrographs of granoblastic quartz, plagioclase porphyroblasts (cloudy grains), and irregular branching masses of decussate hornblende. c) and d) Photomicrographs of granoblastic quartz, plagioclase porphyroblasts, and disseminated hornblende. e) Photomicrograph of pyrite porphyroblast and disseminated sphalerite. f) Photomicrograph of disseminated chalcopyrite and sphalerite. Note that the sulfides are unaltered and are enclosed in silicate minerals.

EDS Analyses

	Na2O	Al2O3	SiO2	K2O	CaO	n
Andesine	8.23	24.31	60.30	0.31	6.80	15

	Na2O	Al2O3	SiO2	K2O	TiO2	MnO	FeO	n
Biotite	12.29	16.03	39.48	10.86	2.38	0.25	18.72	15

	Al2O3	SiO2	S	CaO	FeO	Zn	Cd	n
Pyrite	0.2	0.2	55.1	0.0	44.5	0.0	0.0	3
Sphalerite	0.8	0.4	32.2	0.1	2.1	62.6	1.9	3

Description:

Granular, composed of granoblastic quartz, plagioclase (andesine) porphyroblasts, and decussate hornblende and biotite. The sulfides pyrite, chalcopyrite, and sphalerite occur in trace amounts as disseminated grains. Trace accessory minerals include sphene and zircon. Quartz occurs in pods and lenses of granoblastic aggregates in a matrix of granoblastic quartz and plagioclase. Plagioclase occurs as porphyroblasts and in the matrix. Hornblende occurs as idioblastic grains in decussate aggregates and as disseminated grains. Pyrite occurs in trace amounts as disseminated xenoblastic porphyroblasts. Sphalerite and chalcopyrite occur as disseminated grains. No carbonate minerals were identified in this sample.

Sample: 16099

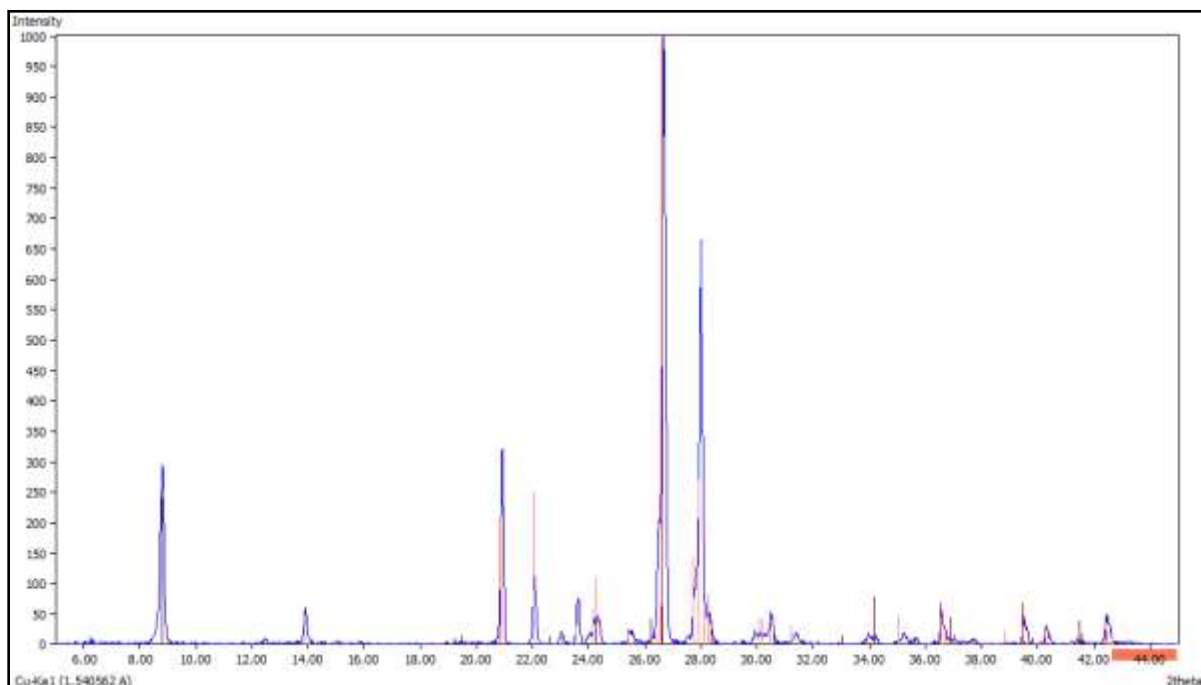
Baffinland Iron Mines Field Identification: Mica amphibole chlorite schist

Classification: Meta feldspathic-arenite



Photograph of sample 16099. Note the network of fractures healed by biotite.

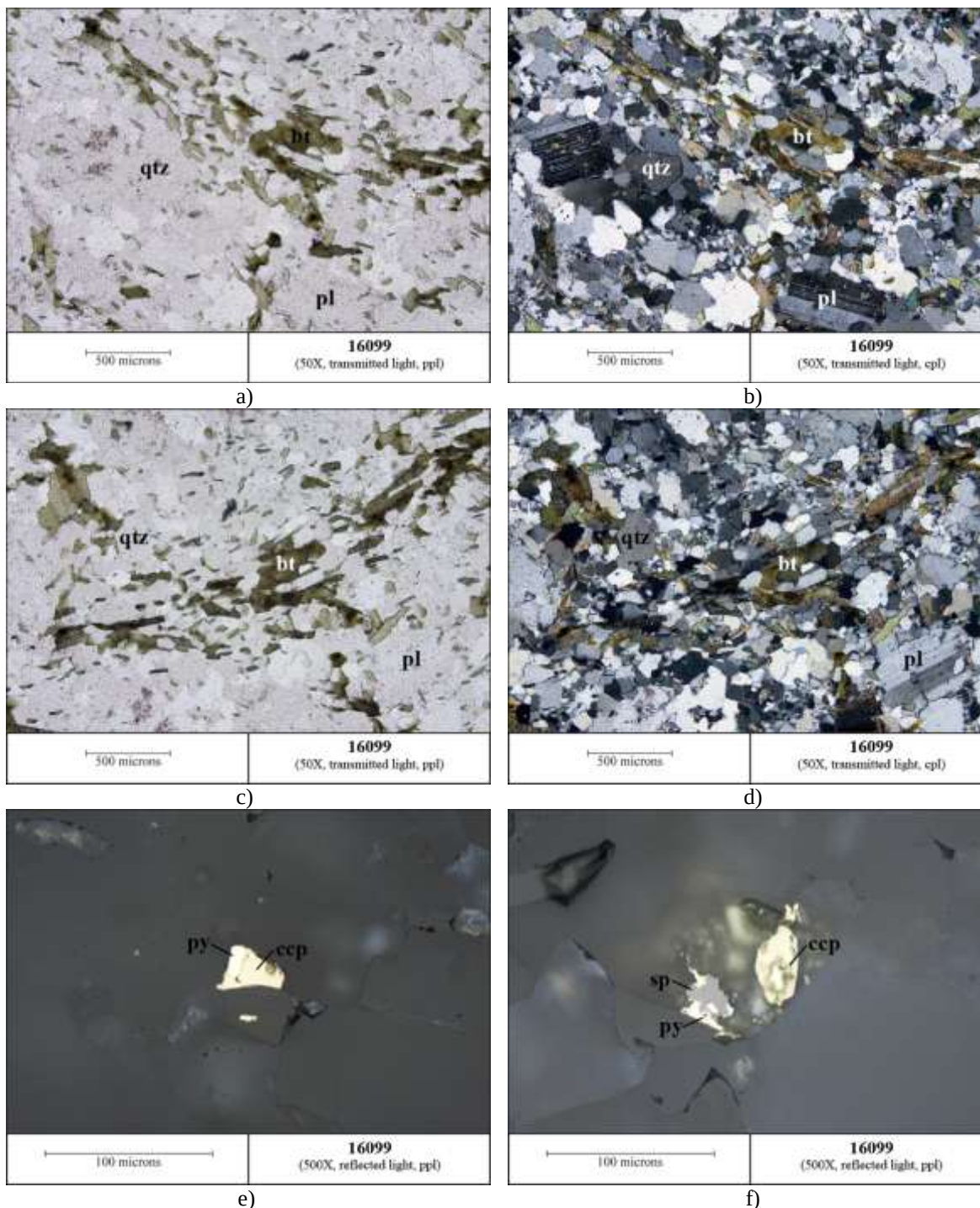
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Albite	51.2
Quartz	33.9
Biotite	14.9

Optical Microscopy:



Photomicrographs of sample 16099. a) and b) Photomicrographs of granoblastic quartz and plagioclase with disseminated flakes of biotite. c) and d) Photomicrographs of granoblastic quartz and plagioclase with disseminated flakes of biotite. e) Photomicrograph of grain composed of pyrite and chalcopyrite. f) Photomicrograph of chalcopyrite grain adjacent to grain composed of pyrite and sphalerite. Note that the sulfides are unaltered and are enclosed in silicate minerals.

EDS Analyses

	Na2O	Al2O3	SiO2	CaO	FeO	n
Albite	10.4	22.1	63.6	3.7	0.2	3

	MgO	Al2O3	SiO2	K2O	TiO2	FeO	n
Biotite	11.5	18.4	39.0	11.2	1.2	18.7	6

	MgO	Al2O3	SiO2	S	K2O	CaO	Fe	Cu	Zn	Cd	n
Pyrite	0.0	0.5	0.2	55.5	0.0	0.0	43.8	0.0	0.0	0.0	2
Chalcopyrite	0.0	2.6	4.6	34.4	1.0	0.3	27.2	29.7	0.0	0.0	6
Sphalerite	0.1	2.9	5.0	33.6	1.0	0.3	22.4	24.4	9.7	0.6	2

Description:

Granoblastic, with healed fractures, composed of granoblastic quartz and plagioclase (albite), and disseminated biotite flakes. The sulfides pyrite, chalcopyrite, and sphalerite occur in trace amounts as disseminated grains. Quartz and plagioclase occur as a granoblastic matrix. Biotite occurs as disseminated flakes and as fracture filling. Pyrite, sphalerite, and chalcopyrite occur in trace amounts as disseminated grains. No carbonate minerals were identified in this sample.

Sample: 16137

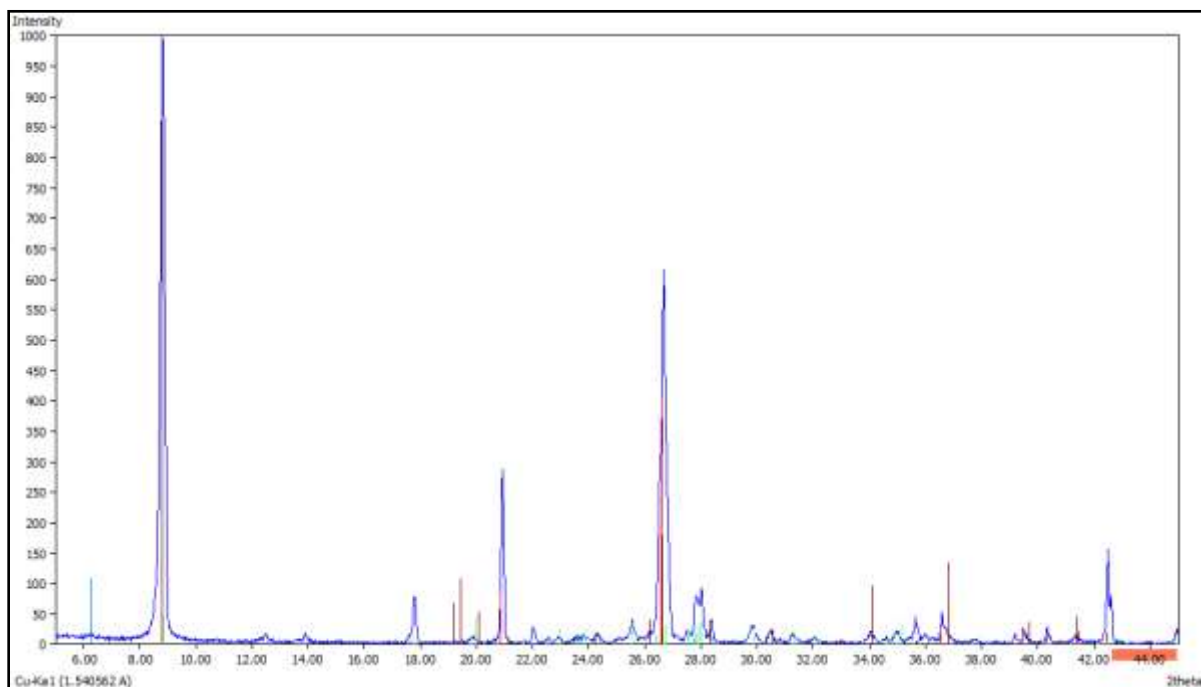
Baffinland Iron Mines Field Identification: Ab_QF gneiss

Classification: Biotite-quartz-feldspar gneiss



Photograph of sample 16137.

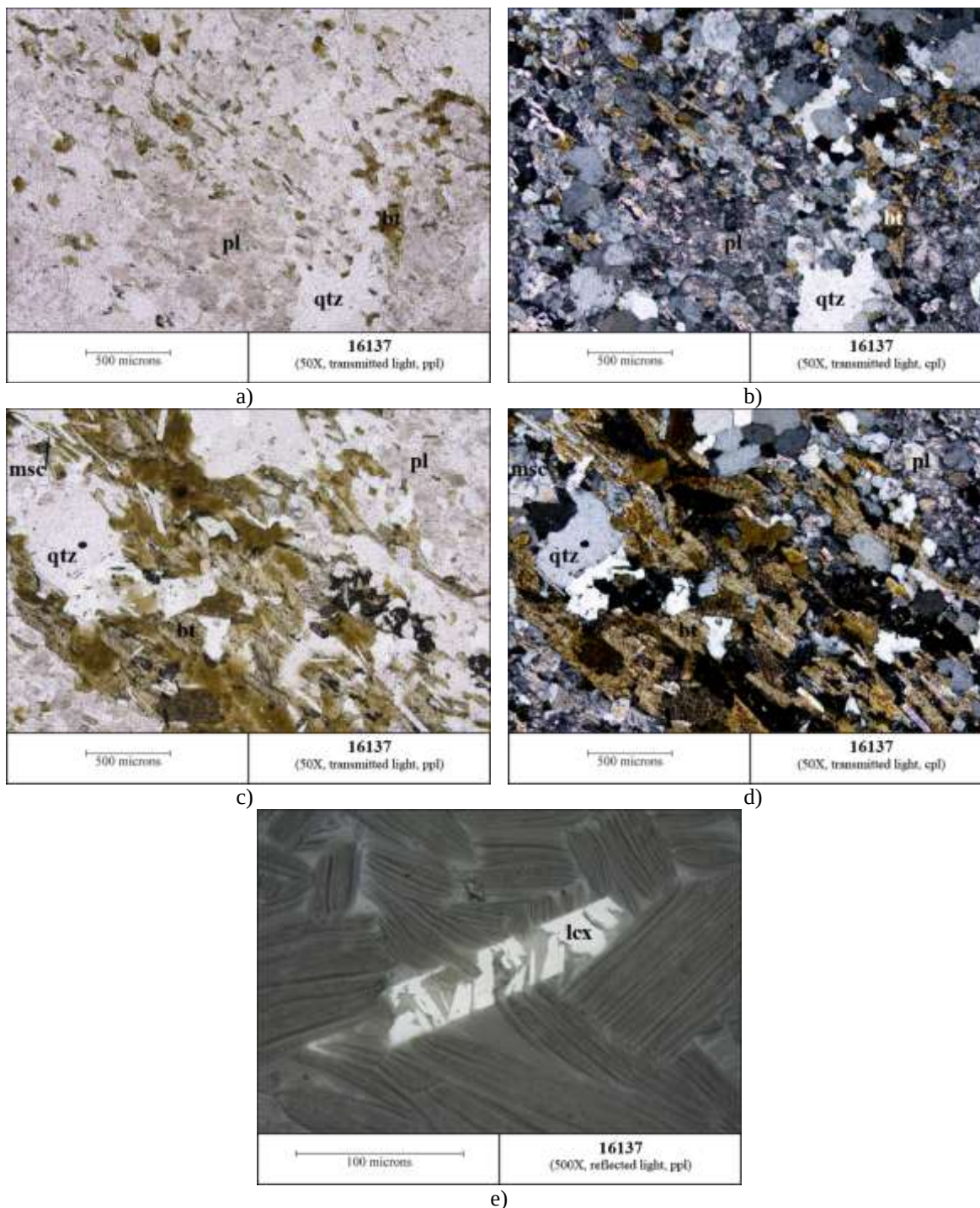
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Biotite	67.3
Quartz	26.6
Andesine	6.1

Optical Microscopy:



Photomicrographs of sample 16137. a) and b) Photomicrographs band composed of granoblastic quartz and feldspar with disseminated biotite. c) and d) Photomicrographs of band composed of foliated biotite with granoblastic quartz and feldspar. e) Photomicrograph of ilmenite lath replaced by leucoxene.

EDS Analyses

	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	Ba	n
K-feldspar 1	1.0	0.0	18.4	63.8	15.3	0.0	0.0	0.0	0.0	1.5	3
K-feldspar 2	5.2	0.2	28.9	57.6	7.1	0.0	0.2	0.1	0.7	0.0	4
Andesine	9.0	0.0	24.0	60.3	0.0	6.7	0.0	0.0	0.0	0.0	4

	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	n
Muscovite	0.1	5.5	28.5	48.5	8.5	1.3	1.9	0.0	5.6	6
Biotite	0.0	6.9	17.2	36.0	10.2	0.0	3.6	0.3	25.8	9

Description:

Foliated, composed of alternating bands of granoblastic quartz and feldspar and bands of biotite, quartz and feldspar. Quartz occurs in a granoblastic matrix with plagioclase (andesine) and disseminated biotite flakes. Plagioclase and minor k-feldspar occur in the granoblastic matrix. Biotite occurs as in foliated bands with quartz and feldspar and as disseminated flakes. Leucoxene occurs in trace amounts of disseminated leucoxene laths after ilmenite. No sulfide or carbonate minerals were identified in this sample.

Sample: 16147

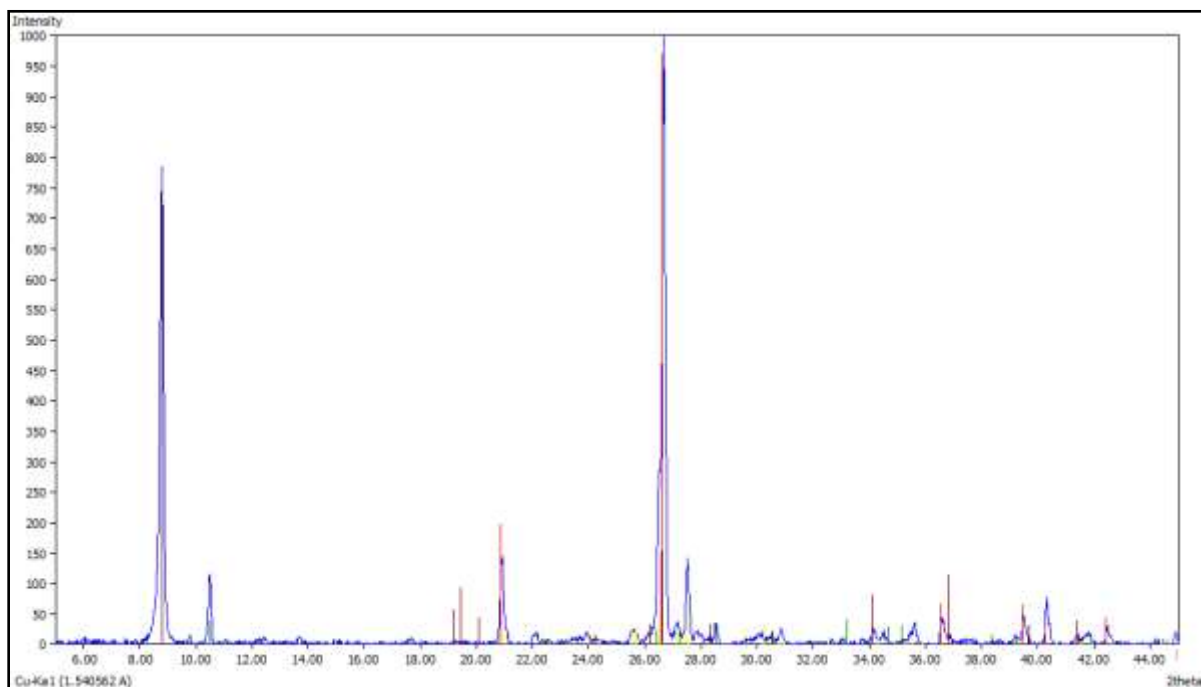
Baffinland Iron Mines Field Identification: Ab_QF gneiss

Classification: Biotite-quartz-feldspar gneiss



Photograph of sample 16147.

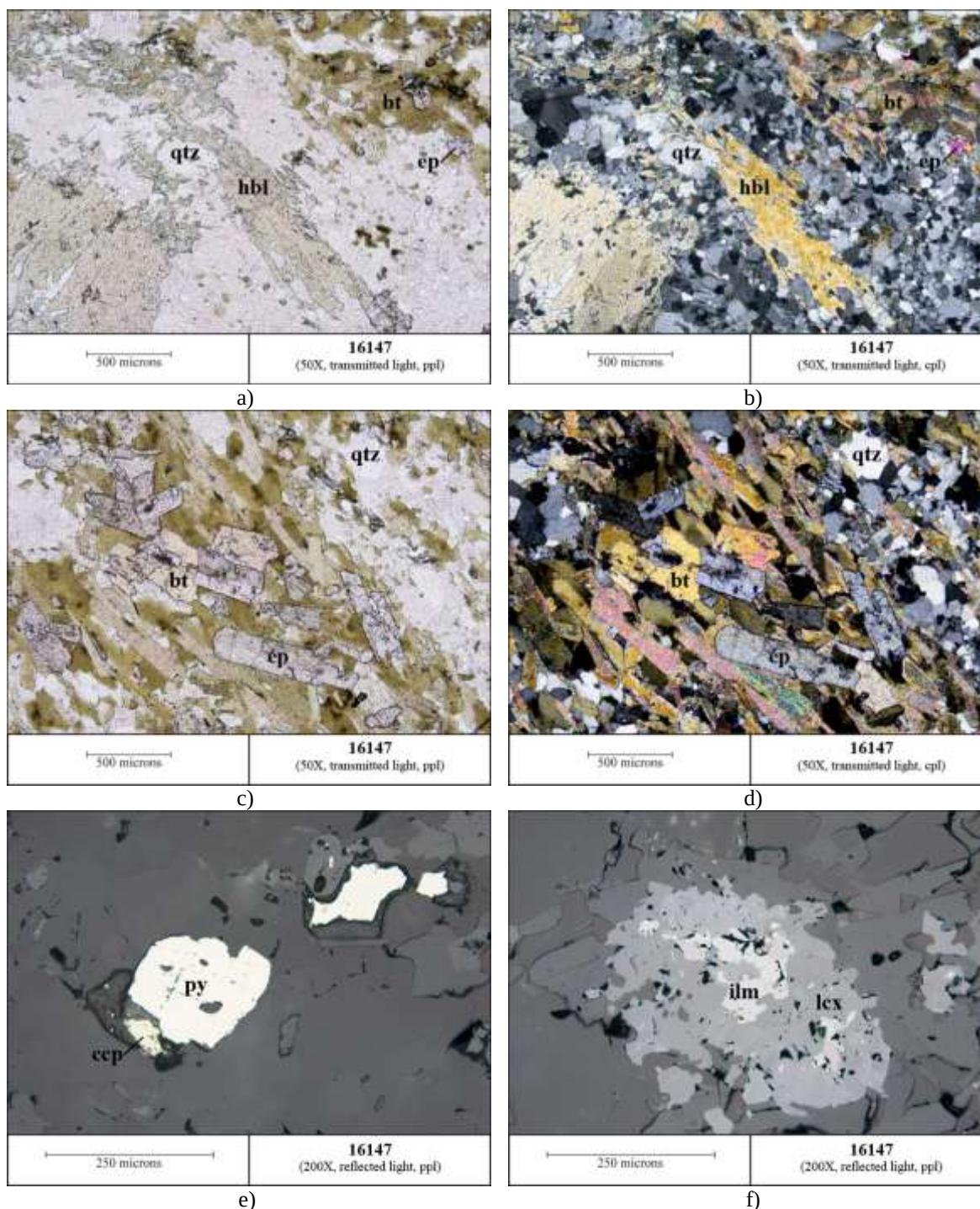
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Biotite	49.9
Quartz	32.9
Microcline	10.5
Hornblende	6.7

Optical Microscopy:



Photomicrographs of sample 16147. a) and b) Photomicrographs hornblende porphyroblasts and decussate biotite in a matrix of granoblastic quartz and k-feldspar. c) and d) Photomicrographs of band composed of foliated biotite and oriented epidote laths in a matrix granoblastic quartz and feldspar. e) Photomicrograph of disseminated pyrite and chalcopyrite grains. d) Photomicrograph of disseminated ilmenite grain with shell of leucoxene. Note that the sulfides are unaltered and are enclosed in silicate minerals.

EDS Analyses

	Na2O	Al2O3	SiO2	K2O	CaO	Ba	n
k-feldspar	0.8	18.2	64.4	16.2	0.0	0.5	10
Andesine	8.1	25.0	58.9	0.1	7.9	0.0	8

	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	n
Biotite	13.0	15.3	39.2	9.3	0.1	1.8	0.8	20.5	7
Hornblende	0.0	18.9	35.8	0.0	27.0	8.7	0.2	9.4	9

	Al2O3	S	Fe	Cu	n
Pyrite	0.4	55.8	43.8	0.0	10
Chalcopyrite	0.7	37.7	31.2	30.4	8

Description:

Foliated, composed of alternating bands of biotite, quartz and feldspar and bands composed of granoblastic quartz and feldspar. Biotite occurs in foliated bands with granoblastic quartz and feldspar (k-feldspar). Quartz occurs in a granoblastic matrix with k-feldspar and minor plagioclase (andesine). Epidote occurs in trace amounts as laths with foliated biotite. Trace amounts of pyrite and chalcopyrite occur as disseminated grains. Ilmenite occurs as disseminated grains with shells of leucoxene. No carbonate minerals were identified in this sample.

Sample: 16151

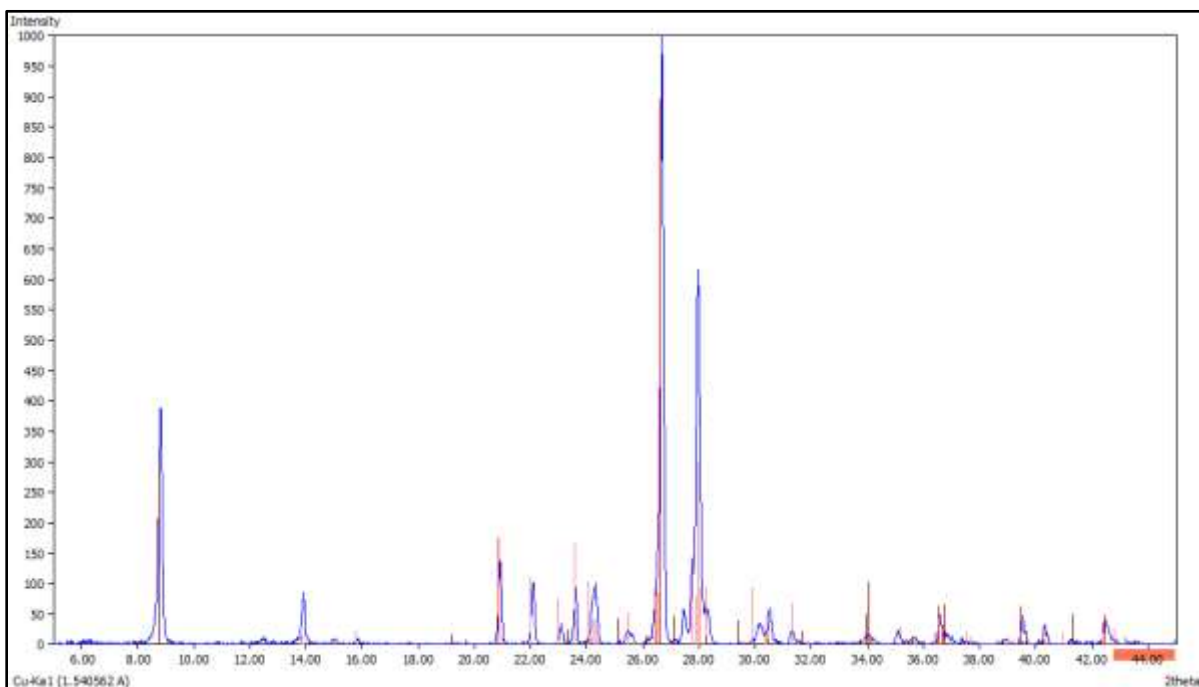
Baffinland Iron Mines Field Identification: Greywacke

Classification: Meta feldspathic-wacke



Photograph of sample 16151. Note the granular texture.

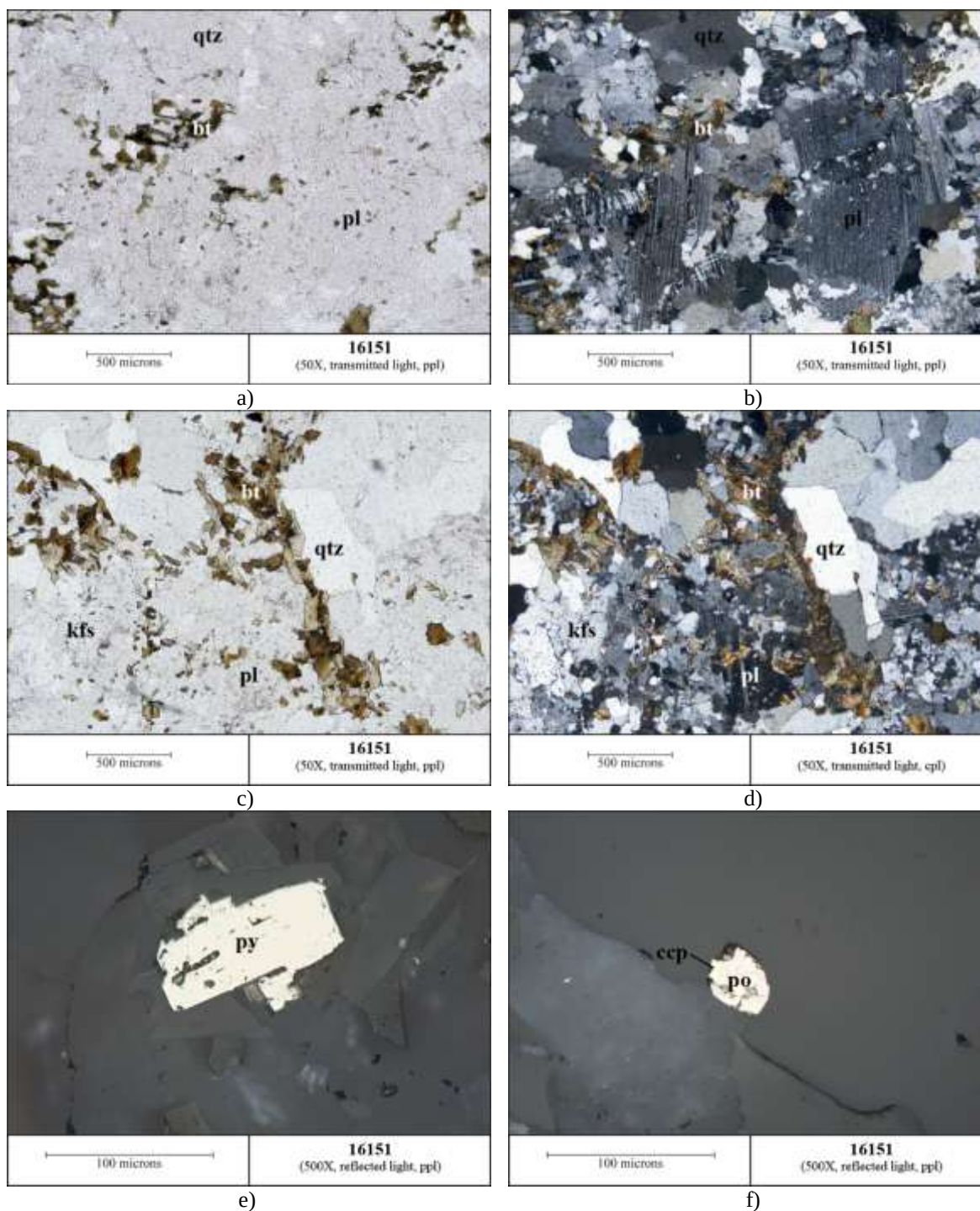
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Oligoclase	56.6
Quartz	28.0
Biotite	15.4

Optical Microscopy:



Photomicrographs of sample 16151. a) and b) Photomicrograph of plagioclase and quartz phenocrysts in a matrix of granoblastic plagioclase and quartz.. c) and d) Photomicrograph of granoblastic quartz aggregates in a matrix of granoblastic quartz and feldspar. e) Photomicrograph idioblastic pyrite. f) Photomicrograph rounded pyrrhotite grain with minor chalcopyrite. Note that the sulfides are unaltered and are enclosed in silicate minerals.

EDS Analyses

	Na2O	Al2O3	SiO2	K2O	CaO	n
Oligoclase	11.1	21.1	65.1	0.1	2.6	7

	MgO	Al2O3	SiO2	K2O	TiO2	MnO	FeO	n
Biotite	11.4	17.1	39.1	10.6	3.2	0.2	18.5	11

	Al2O3	SiO2	S	Fe	n
Pyrite	0.3	0.1	55.5	44.2	5

Description:

Granular, composed of plagioclase and granoblastic quartz phenocrysts in a matrix of granoblastic quartz and feldspar with disseminated and irregular decussate aggregates of biotite. Plagioclase (oligoclase) occurs as relatively coarse phenocrysts with irregular grain margins and in a granoblastic matrix with quartz and minor k-feldspar. Biotite occurs as disseminated flakes and in irregular decussate aggregates. Pyrite, pyrrhotite, and sphalerite occur in trace amounts as disseminated grains. No carbonate minerals were identified in this sample.

Sample: 16175

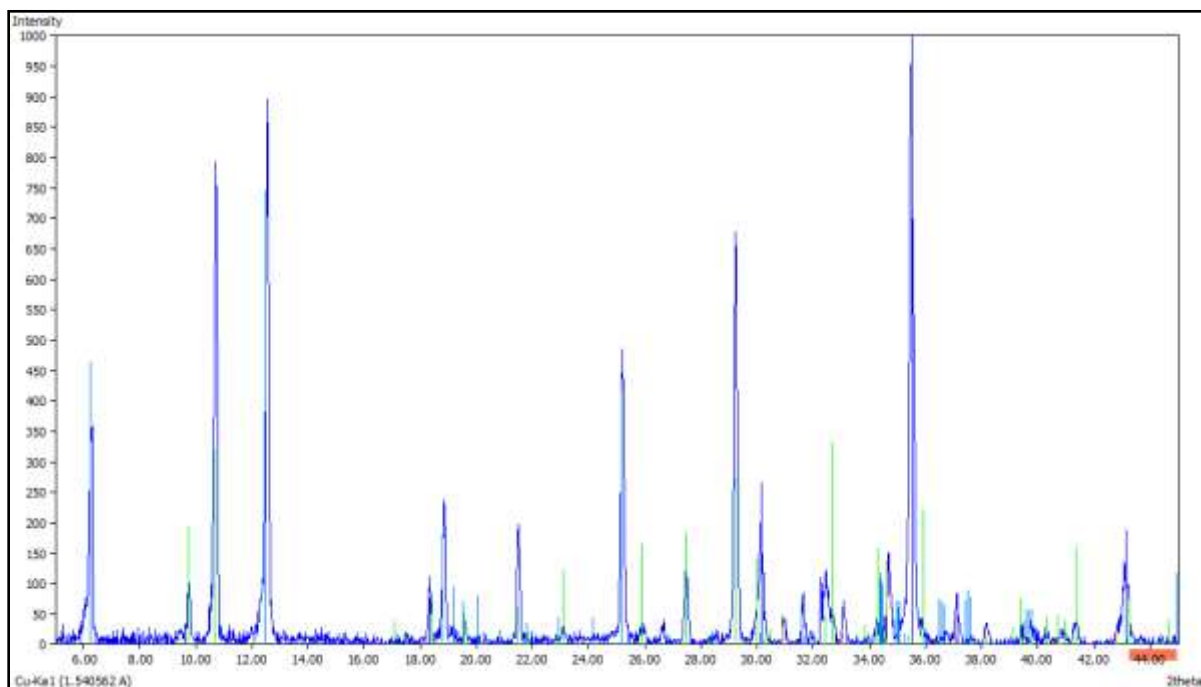
Baffinland Iron Mines Field Identification: HG_IF 60-72.36% Fe 60-100% mag\

Classification: Cummingtonite-magnetite-chlorite iron formation



Photograph of sample 16175. Note the irregular lenses containing sulfides.

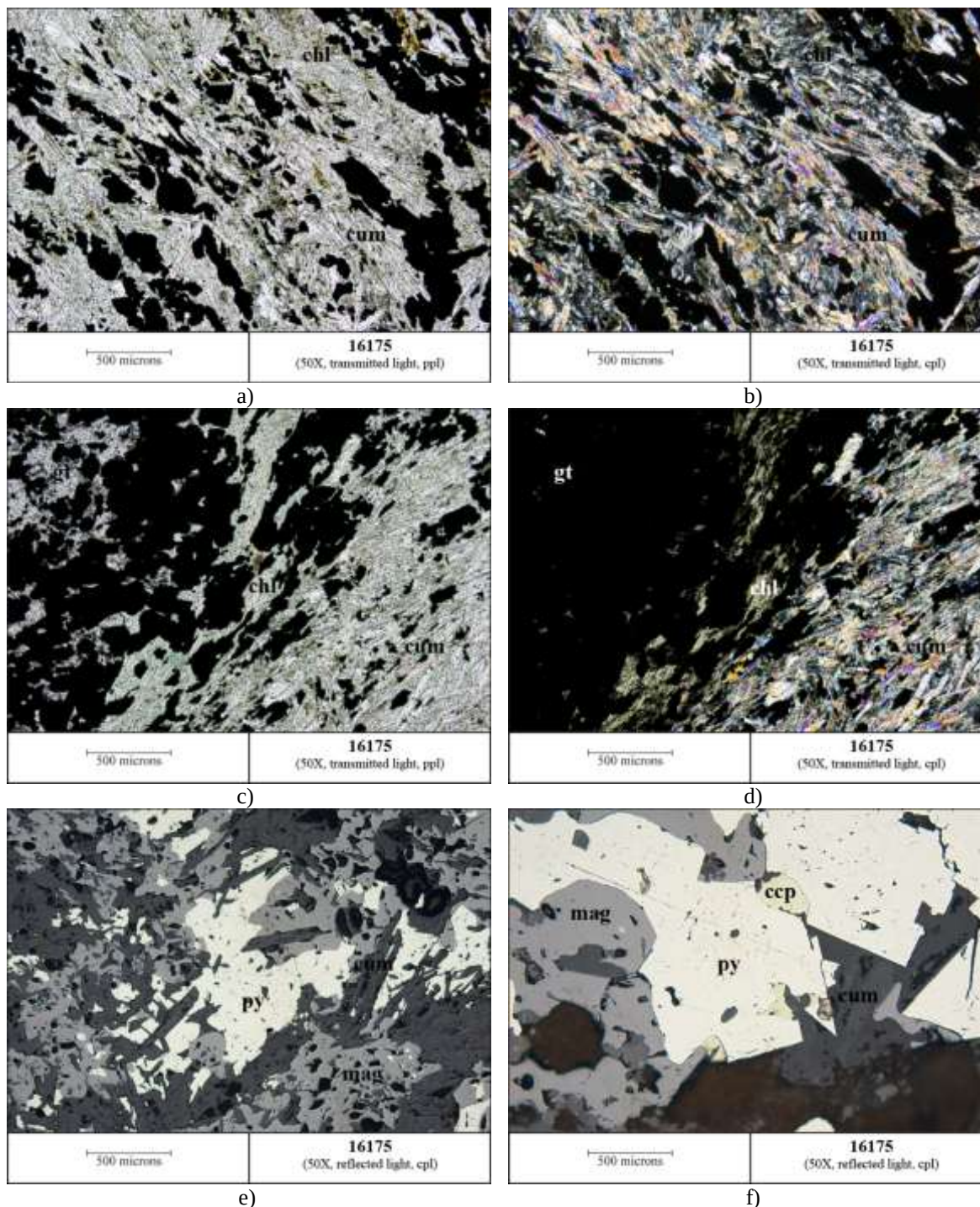
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Cummingtonite	35.3
Magnetite	33.2
Chlorite	25.9
Almandine	3.8
Pyrite	1.8

Optical Microscopy:



Photomicrographs of sample 16175. a) and b) Photomicrographs of foliated to decussate cummingtonite and magnetite (opaque). c) and d) Photomicrograph of foliated to decussate cummingtonite, chlorite, magnetite (opaque), and garnet porphyroblast. e) Photomicrograph of magnetite intergrown with pyrite. f) Photomicrograph of pyrite intergrown with magnetite. Note pyrite contains inclusions of chalcopyrite. Note that the sulfides are unaltered.

EDS Analyses

	MgO	Al ₂ O ₃	SiO ₂	S	CaO	MnO	FeO	N
Cummingtonite	14.10	0.55	54.95	0.03	0.03	2.98	27.36	8
Chlorite	13.88	22.35	31.57	0.00	0.27	3.17	28.77	4

	Al ₂ O ₃	SiO ₂	S	Fe	Cu	n
Pyrite	0.4	0.1	52.5	47.0	0.0	6
Chalcopyrite	0.6	0.0	36.7	30.7	32.0	2

Description:

Massive to banded, foliated to decussate cummingtonite and chlorite, granular magnetite, and minor garnet porphyroblasts. Cummingtonite occurs as foliated to decussate aggregates in bands and between magnetite grains. Magnetite is granular and occurs in massive aggregates and as disseminated grains. Chlorite occurs as foliated to decussate aggregates in bands and between magnetite grains. Garnet (almandine) occurs as disseminated porphyroblasts. Garnet porphyroblasts commonly contain magnetite inclusions. Pyrite occurs in minor amounts as irregular aggregates and as disseminated grains. Chalcopyrite occurs in trace amounts as disseminated grains or as inclusions in pyrite. No carbonate minerals were identified in this sample.

Sample: 16195

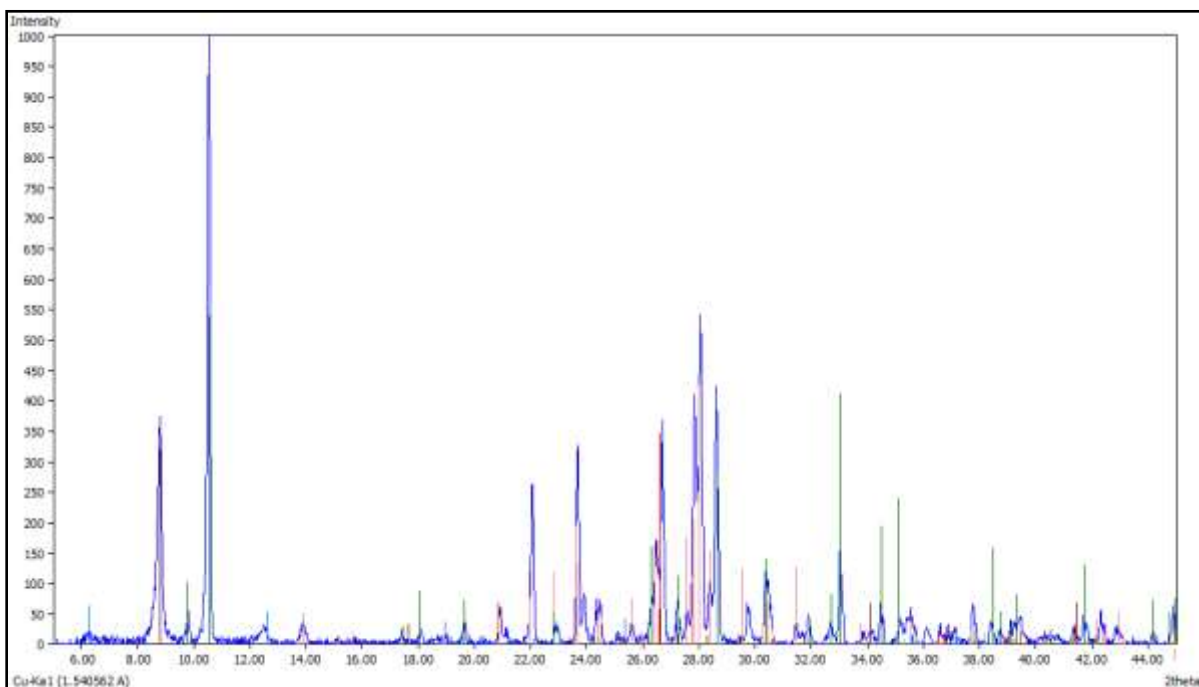
Baffinland Iron Mines Field Identification: Greywacke

Classification: Biotite amphibolite



Photograph of sample 16195.

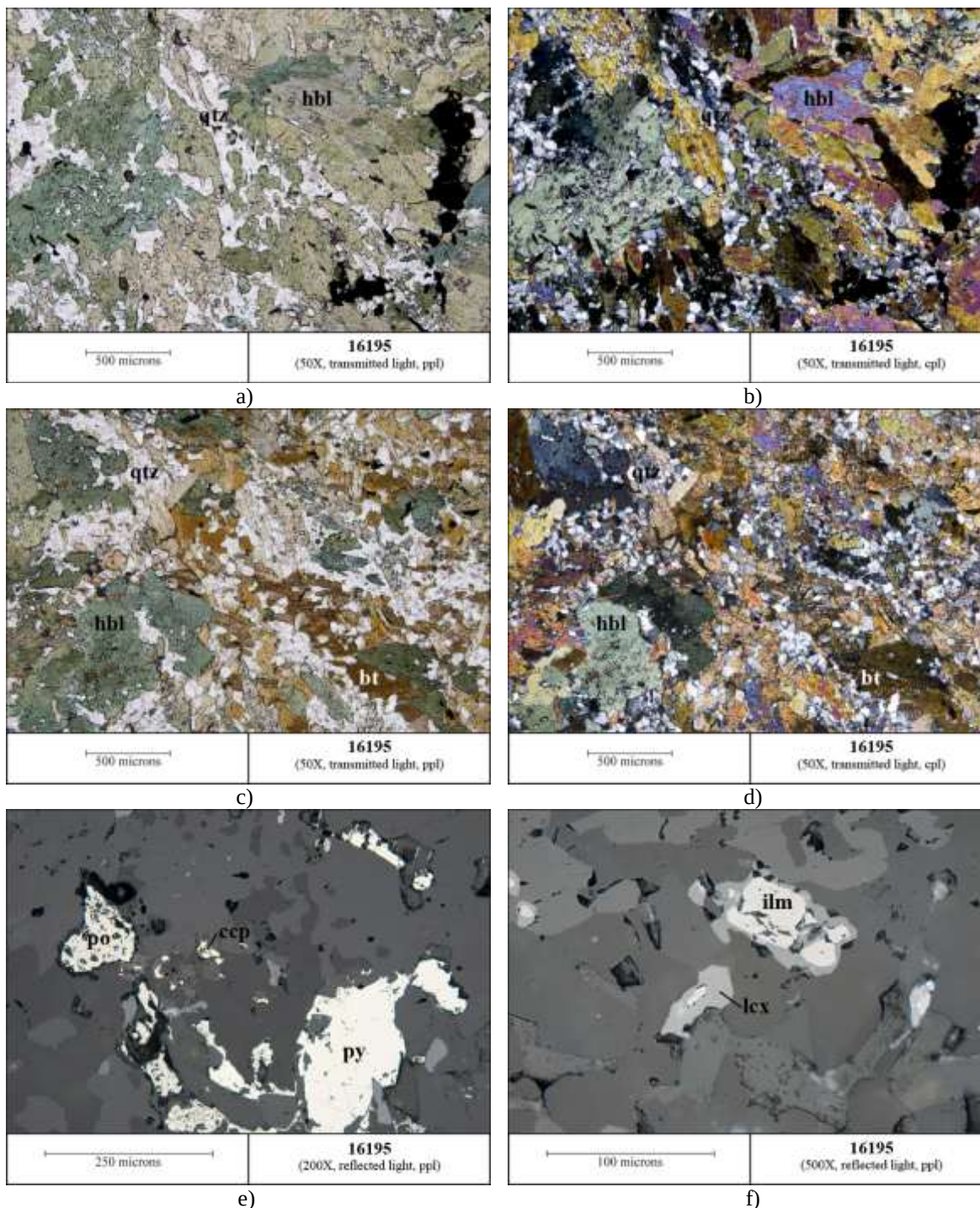
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Hornblende	49.5
Labradorite	34.9
Biotite	10.9
Quartz	4.6
Chlorite	0.2

Optical Microscopy:



Photomicrographs of sample 16195. a) and b) Photomicrographs of decussate hornblende in a matrix of granoblastic plagioclase and quartz. c) and d) Photomicrographs hornblende porphyroblasts in a matrix of granoblastic biotite, plagioclase and quartz. e) Photomicrograph of disseminated anhedral grains of pyrite, pyrrhotite and chalcopyrite. f) Photomicrograph of disseminated ilmenite grains with rims of leucoxene. Note that the sulfides are unaltered and are enclosed in silicate minerals.

EDS Analyses

	Na2O	Al2O3	SiO2	CaO	n
Labradorite	7.8	25.6	57.9	8.6	7

	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	Cr	MnO	FeO	n
Hornblende	1.4	8.8	11.8	44.7	0.5	13.2	0.5	0.0	0.9	18.2	7
Biotite	0.1	11.3	16.7	37.8	9.6	0.0	3.0	0.0	0.3	21.1	7

	MgO	Al2O3	SiO2	S	Fe	Co	Ni	Cu	n
Pyrite	0.0	0.2	0.0	55.1	44.6	0.0	0.0	0.0	2
Pentlandite	0.2	1.5	0.4	36.3	25.9	0.0	35.7	0.0	3
Co-Pentlandite	0.0	0.5	0.0	39.0	18.9	10.2	31.4	0.0	1
Chalcopyrite	0.0	1.0	0.0	37.8	30.2	0.0	0.0	31.0	1

Description:

Granoblastic, composed of hornblende porphyroblasts in a matrix of granoblastic plagioclase, biotite and quartz. Hornblende occurs as decussate porphyroblasts. Plagioclase occurs in the matrix as a granoblastic intergrowth with biotite and quartz. Quartz occurs in the granoblastic matrix with plagioclase and biotite. Biotite occurs as flakes in the granoblastic matrix with plagioclase and quartz and as decussate aggregates. Sulfides occur as disseminate grains of pyrite, pyrrhotite, and chalcopyrite. No carbonate minerals were identified in this sample.

Sample: 16241

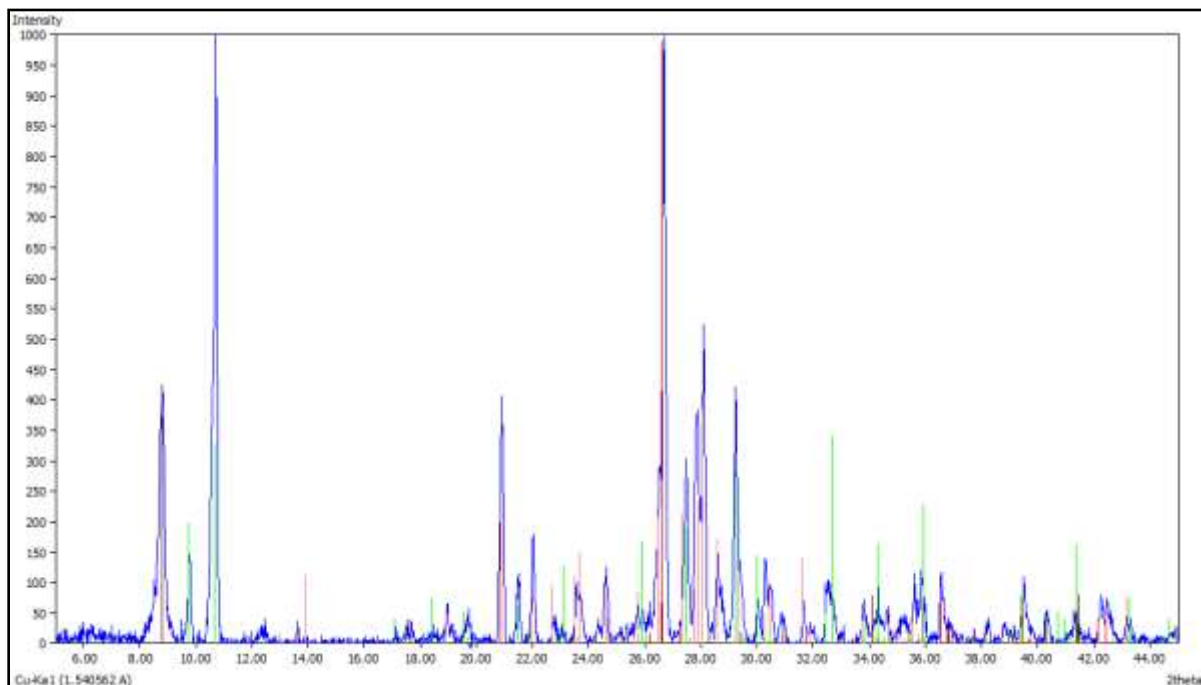
Baffinland Iron Mines Field Identification: Amphibolite

Classification: Biotite-quartz-garnet amphibolite



Photograph of sample 16241. Note the irregular brown and green areas. Green areas are biotite-rich green areas are chlorite-rich.

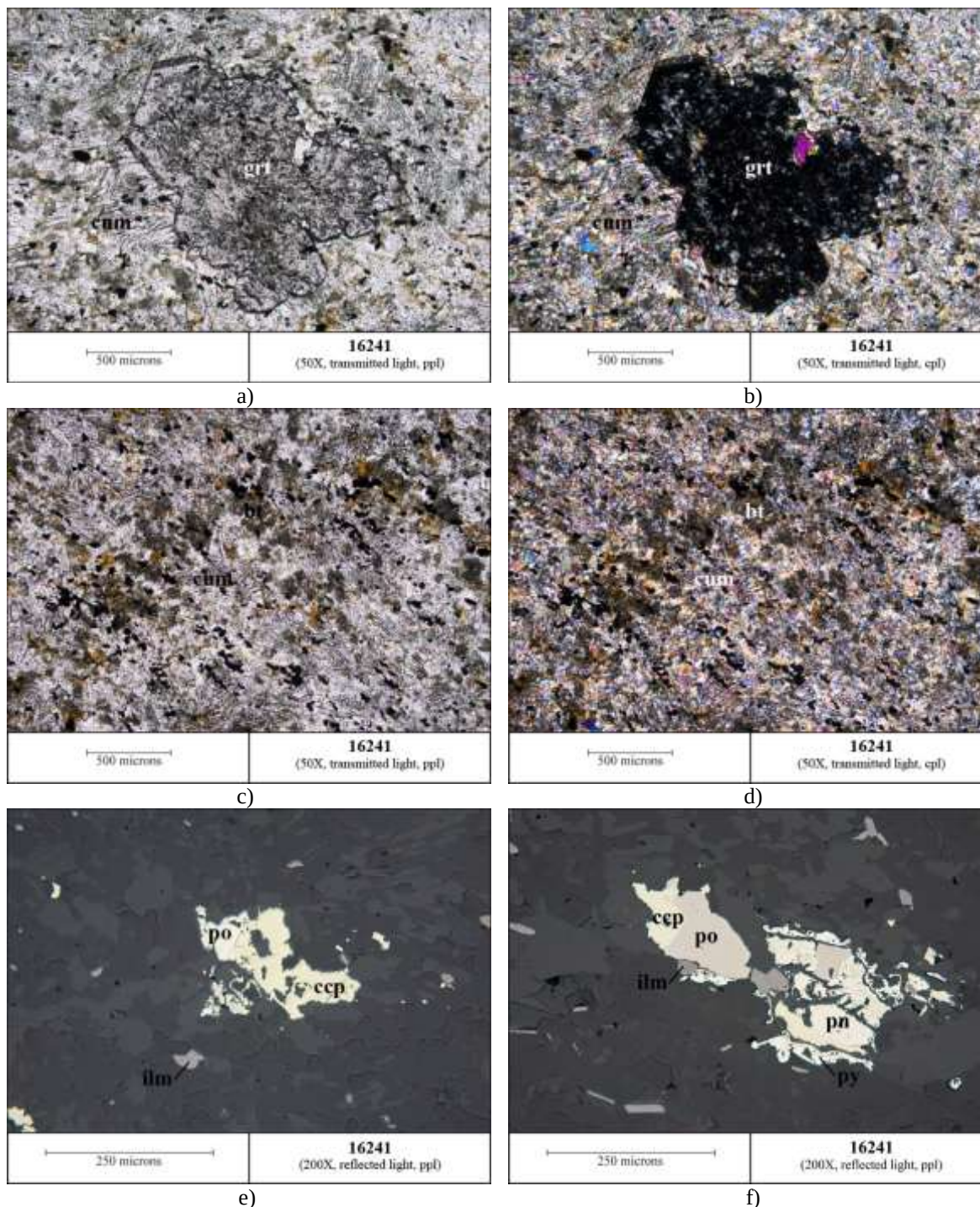
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Anorthite	33.8
Cummingtonite	31.7
Biotite	17.2
Quartz	13.6
Chlorite	1.7
Almandine	2.0

Optical Microscopy:



Photomicrographs of sample 16241. a) and b) Photomicrographs of garnet porphyroblast in a matrix of granoblastic cummingtonite, plagioclase, and chlorite. c) and d) Photomicrographs of granoblastic cummingtonite, plagioclase, biotite, and chlorite. e) Photomicrograph of irregular grain of pyrrhotite and chalcopyrite. f) Photomicrograph of irregular grain composed of pyrite, pyrrhotite, chalcopyrite, and pentlandite. Note that the sulfides are unaltered and are enclosed in silicate minerals.

EDS Analyses

	Na2O	Al2O3	SiO2	CaO	n
Anorthite	1.4	33.8	44.9	19.8	14.0

	MgO	Al2O3	SiO2	CaO	MnO	FeO	n
Cummingtonite	14.6	1.3	55.1	1.0	1.6	26.2	14
Mn-Chlorite	2.5	20.1	36.5	3.7	7.6	29.7	3

	Al2O3	SiO2	S	CaO	FeO	Co	Ni	Cu	n
Pentlandite	0.7	0.1	36.3	0.0	22.1	4.8	36.0	0.0	6
Chalcopryrite	0.8	0.0	37.2	0.4	30.4	0.0	0.0	31.1	1

Description:

Granoblastic, irregularly banded, composed of garnet (almandine) porphyroblasts in a matrix of granoblastic plagioclase (anorthite), cummingtonite, biotite, quartz, and chlorite. Garnet occurs as idioblastic porphyroblasts. Sulfide occurs in trace amounts as disseminated pyrite, pyrrhotite, chalcopryrite, and pentlandite. Ilmenite occurs as disseminated tabular grains. No carbonate minerals were identified in this sample.

Note the irregular banding is probably caused by variations in the abundance of biotite (brown areas) and chlorite (green areas).

Sample: 16281

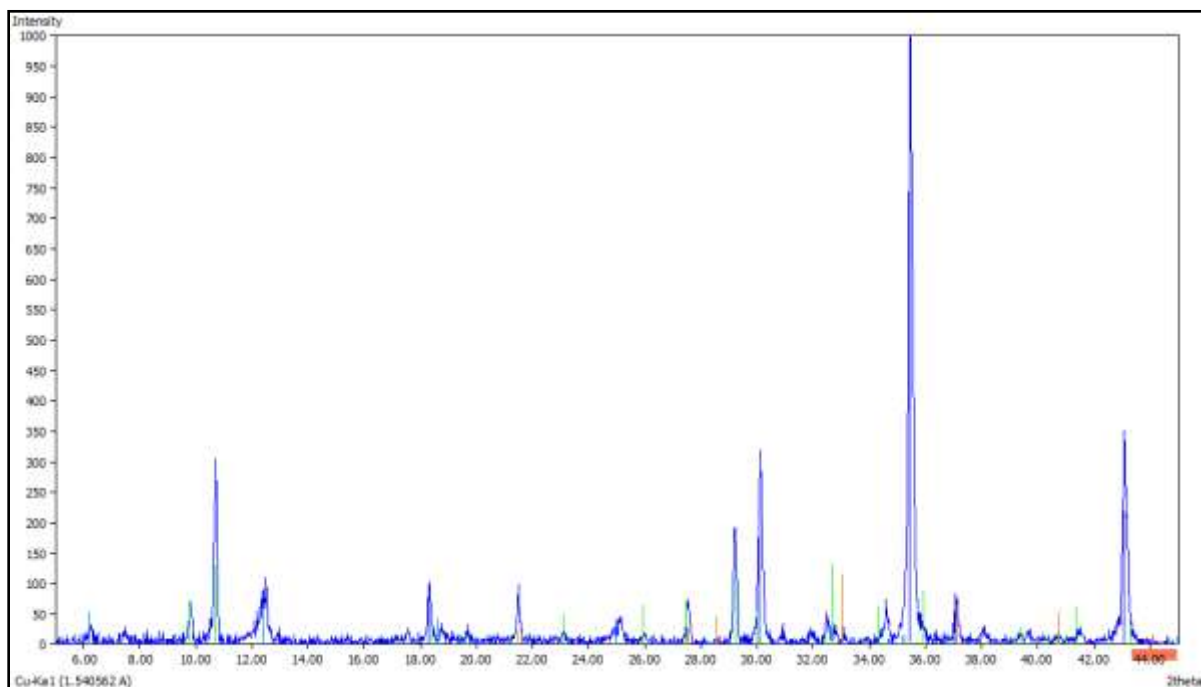
Baffinland Iron Mines Field Identification: Banded_IF 60-72.36% Fe 0-25% mag

Classification: Magnetite-cummingtonite iron formation



Photograph of sample 16281. Note the thin banding and thin sulfide beds.

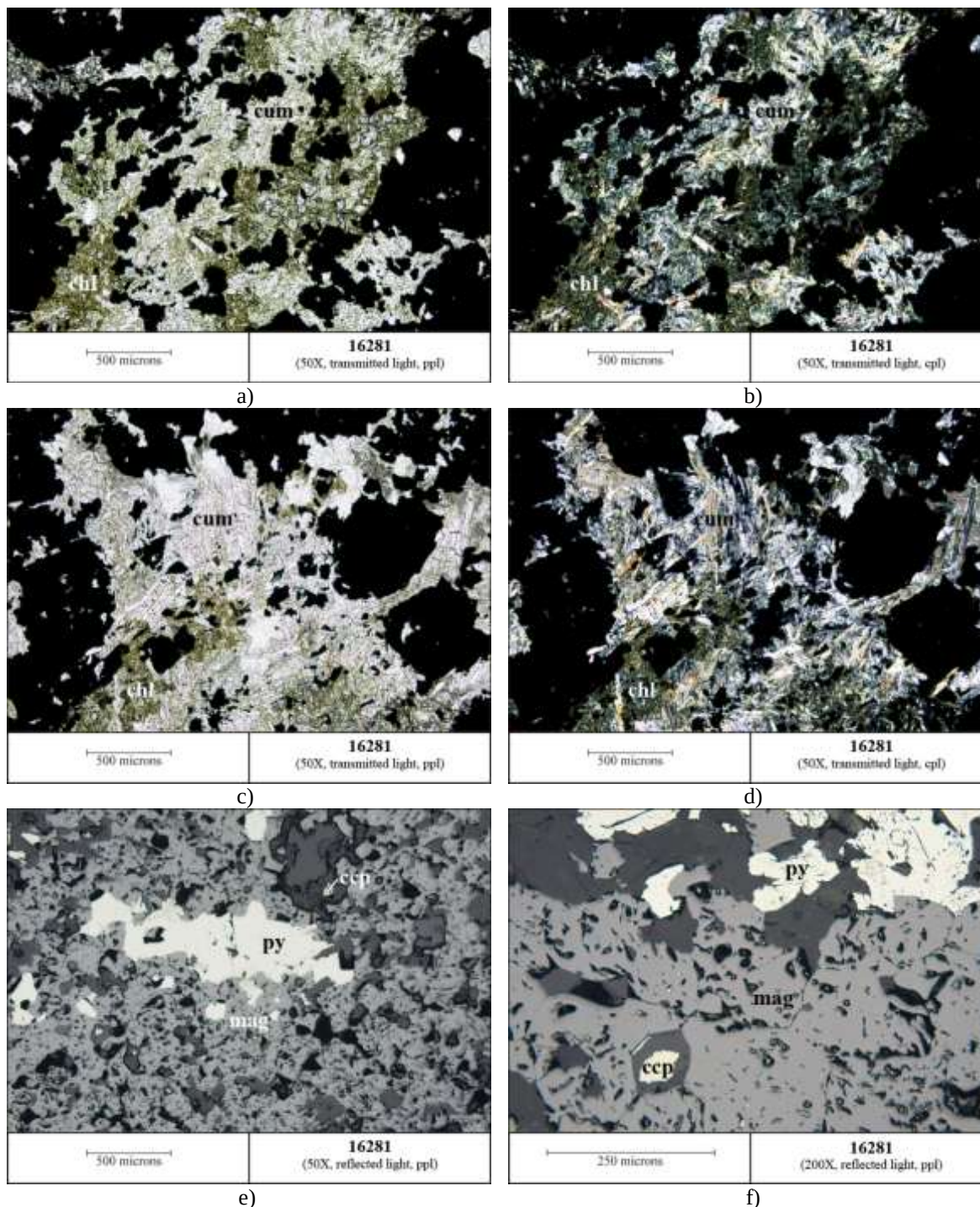
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Magnetite	68.2
Cummingtonite	20.8
Chlorite	7.6
Quartz	3.4

Optical Microscopy:



Photomicrographs of sample 16281. a) and b) Photomicrographs of decussate chlorite and cummingtonite between magnetite grains (opaque). c) and d) Photomicrographs of decussate cummingtonite and chlorite with granoblastic quartz between magnetite grains (opaque). e) Photomicrograph of irregular pyrite grains in granular magnetite. f) Photomicrograph of irregular pyrite and chalcopyrite intergrown with granular magnetite. Note that the sulfides are unaltered and are enclosed in silicate minerals.

EDS Analyses

	MgO	Al ₂ O ₃	SiO ₂	S	Cl	CaO	MnO	FeO	n
Cummingtonite	18.3	0.5	57.0	0.0	0.0	0.4	8.6	15.1	8
Chlorite	7.7	9.5	35.1	0.0	0.3	0.1	1.0	46.4	8

	Al ₂ O ₃	SiO ₂	S	Fe	n
Pyrite	0.3	0.1	55.1	44.6	4

Description:

Thinly banded, composed of alternating bands of massive granular magnetite and bands of foliated to granoblastic cummingtonite, chlorite, magnetite. Less common are thin conspicuous bands of pyrite. Pyrite and chalcopyrite occur as disseminated grains. No carbonate minerals were identified in this sample.

Sample: 16299

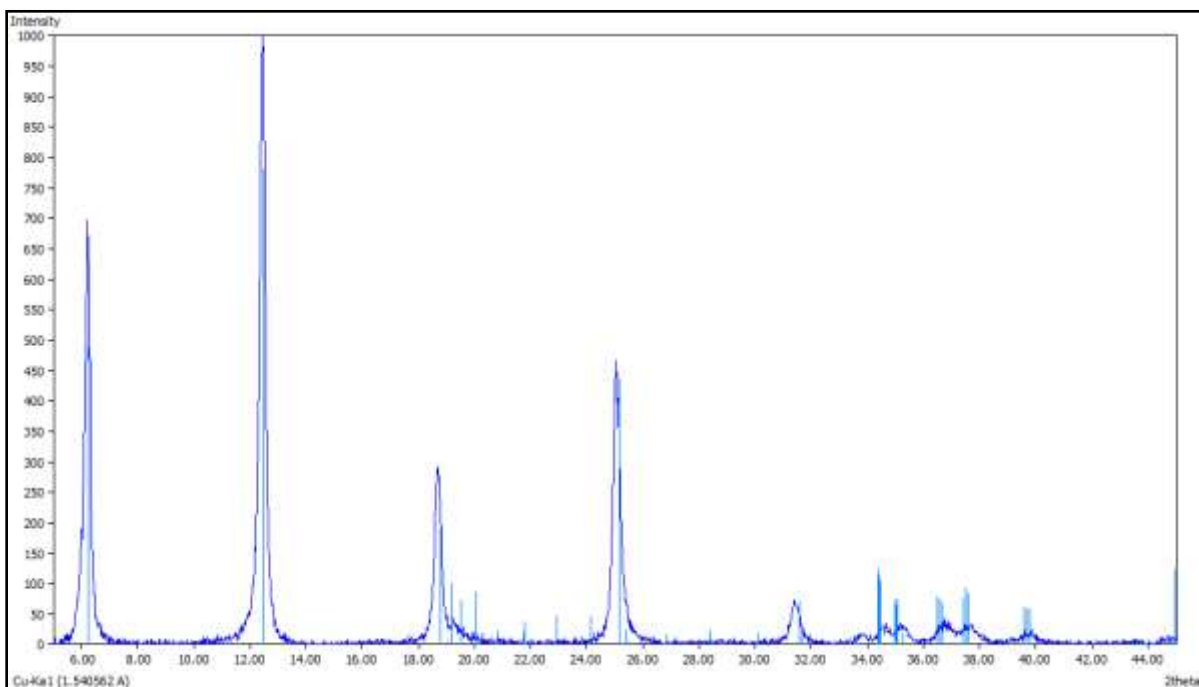
Baffinland Iron Mines Field Identification: Greywacke

Classification: Meta argillite



Photograph of sample 16299. Note the indistinct bands.

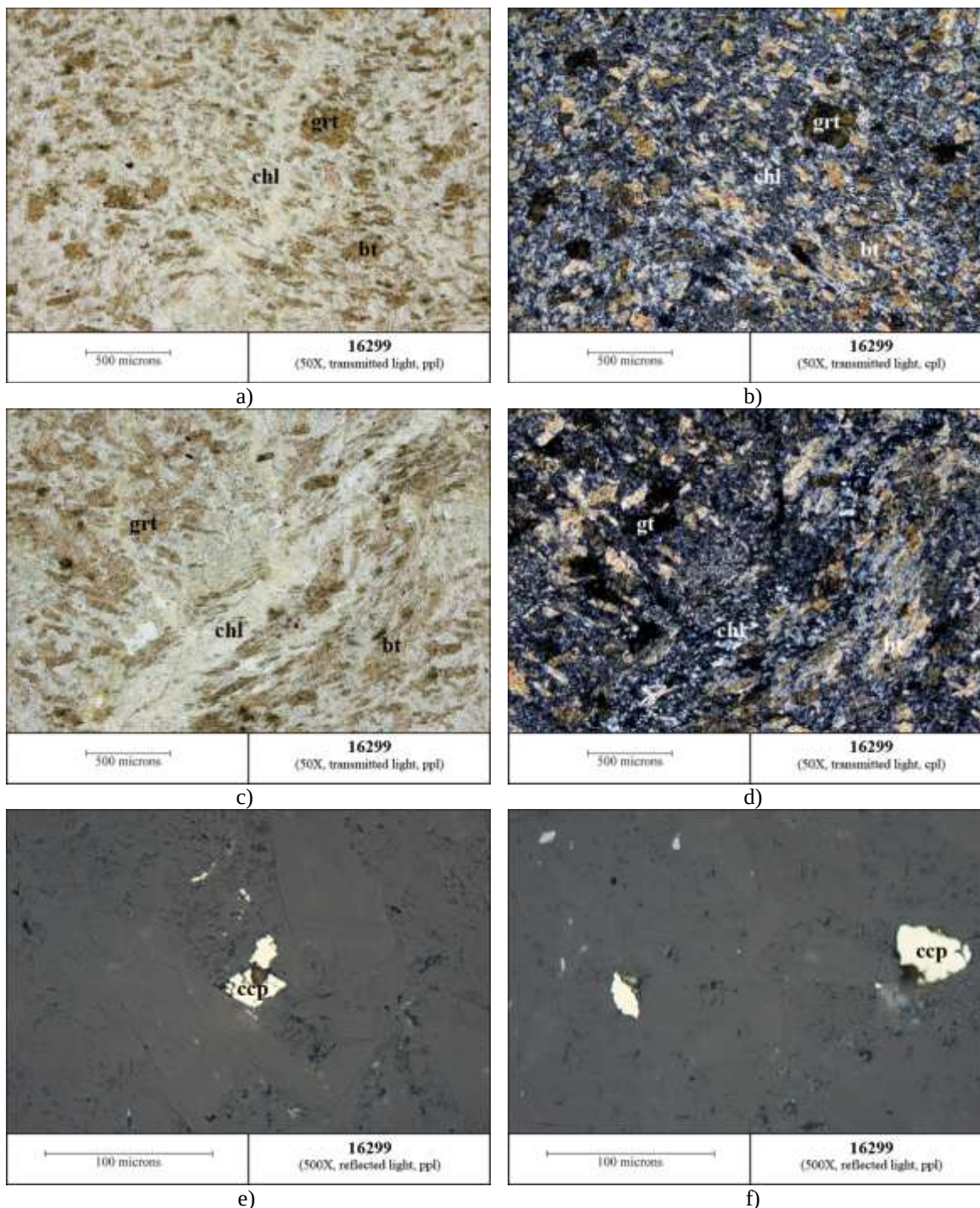
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Chlorite	100.0

Optical Microscopy:



Photomicrographs of sample 16299. a) and b) Photomicrographs of relict garnet and biotite porphyroblasts in a matrix of foliated chlorite. c) and d) Photomicrographs of relict garnet and biotite porphyroblasts in a matrix of foliated chlorite. e) and f) Photomicrographs disseminated chalcopyrite grains. Note that the sulfides are unaltered and are enclosed in silicate minerals.

EDS Analyses

	MgO	Al2O3	SiO2	K2O	TiO2	MnO	FeO	n
Chlorite	18.7	21.4	35.3	0.9	0.8	1.1	21.8	7

Description:

Foliated and banded, composed of foliated chlorite with relict garnet and biotite porphyroblasts. Chalcopyrite occurs in trace amounts as disseminated grains. No carbonate minerals were identified in this sample.

Sample: 16355

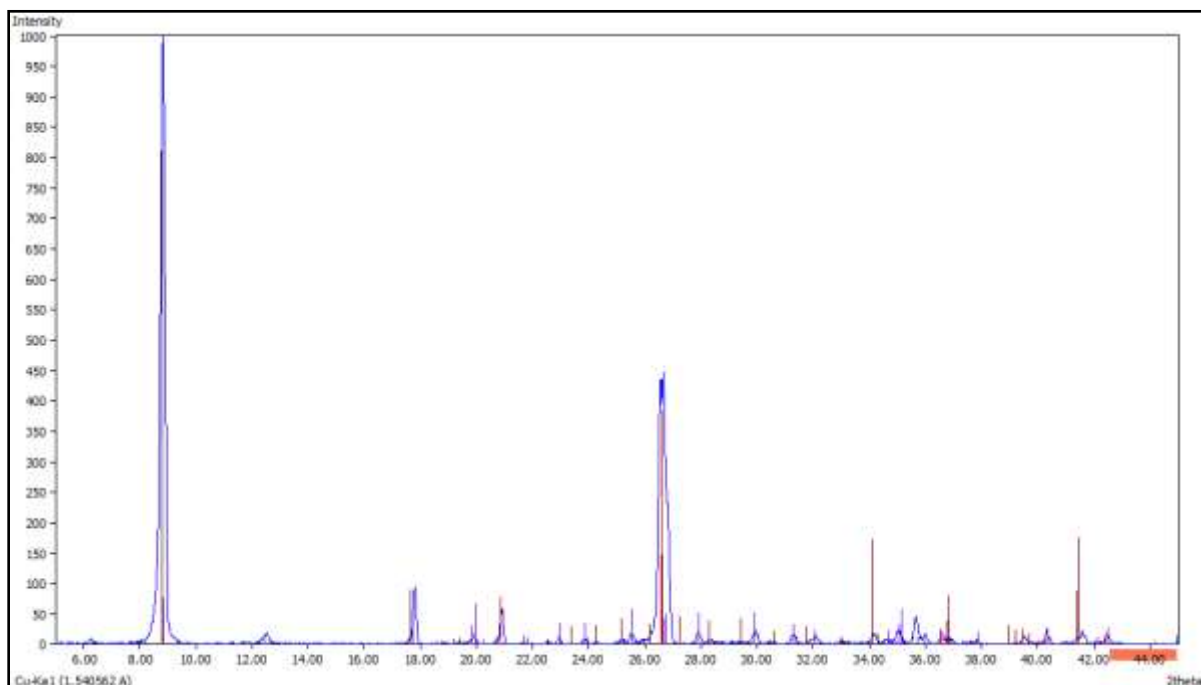
Baffinland Iron Mines Field Identification: QFm gneiss

Classification: Biotite-muscovite-quartz paragneiss



Photograph of sample 16355. Note the staurolite porphyroblasts.

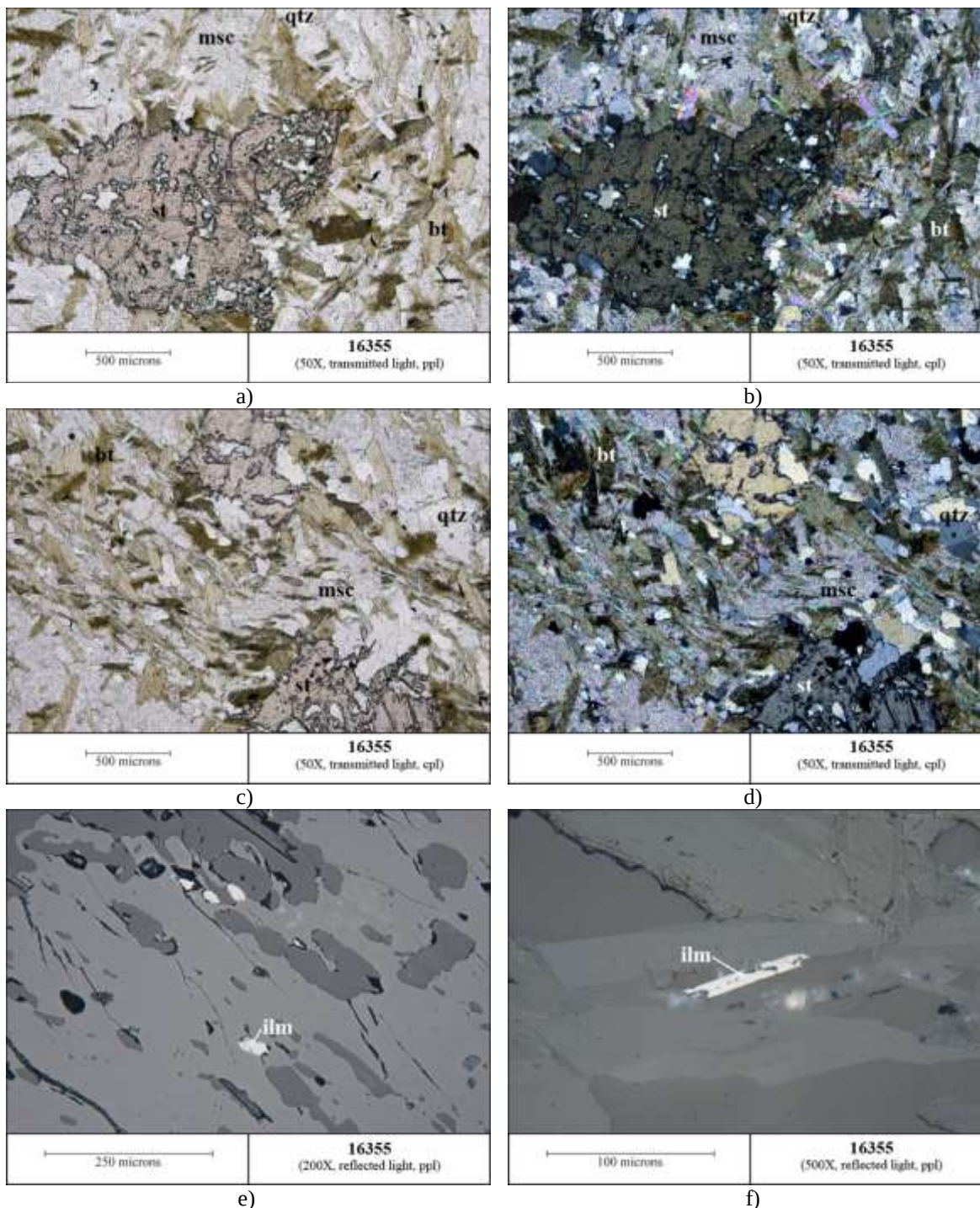
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Biotite	54.3
Muscovite	34.5
Quartz	9.6
Chlorite	1.6

Optical Microscopy:



Photomicrographs of sample 16355. a) and b) Photomicrographs of staurolite porphyroblasts in a matrix of granoblastic biotite, muscovite, quartz, and chlorite. c) and d) Photomicrographs of staurolite porphyroblasts in a matrix of granoblastic biotite, muscovite, quartz, and chlorite. e) and f) Photomicrographs of disseminated rounded and lobate ilmenite grains.

EDS Analyses

	F	Na2O	MgO	Al2O3	SiO2	K2O	TiO2	FeO	Ba	n
Muscovite	0.1	0.7	0.6	36.1	48.2	11.7	0.7	1.9	0.1	5
Biotite	0.0	0.0	9.8	19.5	38.0	10.4	2.1	20.3	0.0	6

Description:

Granoblastic, massive, composed of xenoblastic staurolite porphyroblasts in a matrix of granoblastic biotite, muscovite, quartz, and chlorite. Ilmenite occurs in trace amounts as disseminated equant and lobate grains. No sulfide or carbonate minerals were identified in this sample.

Sample: 16393

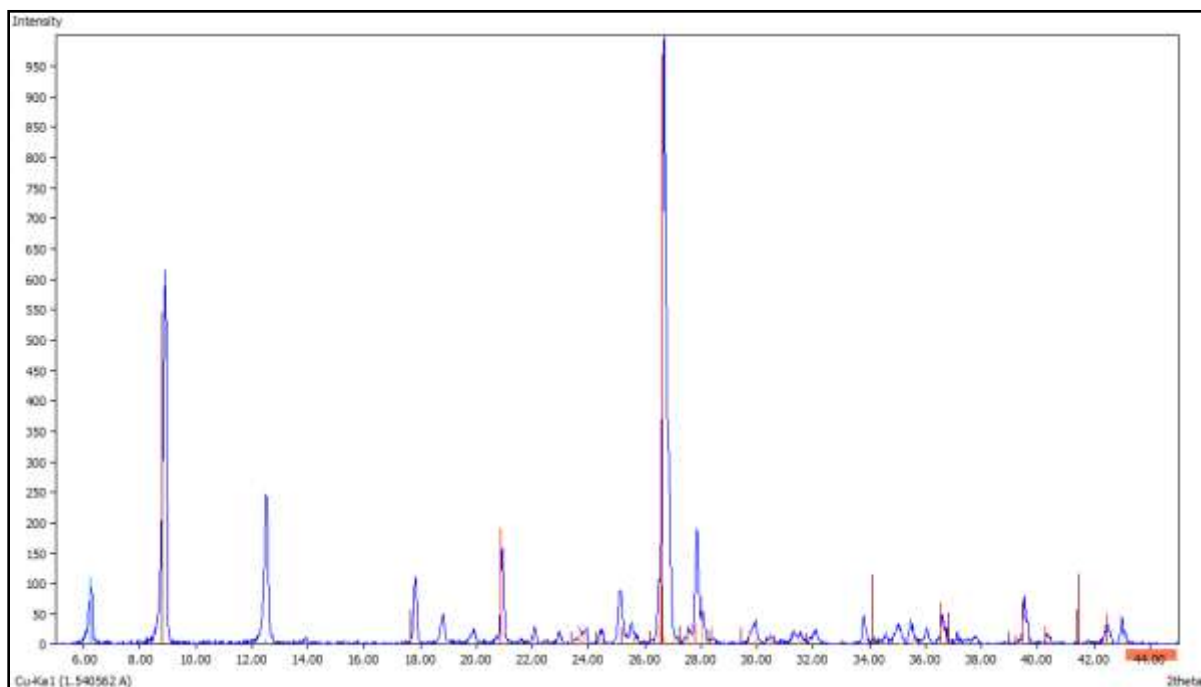
Baffinland Iron Mines Field Identification: QFm gneiss

Classification: Quartz-biotite-muscovite-chlorite-feldspar gneiss



Photograph of sample 16393.

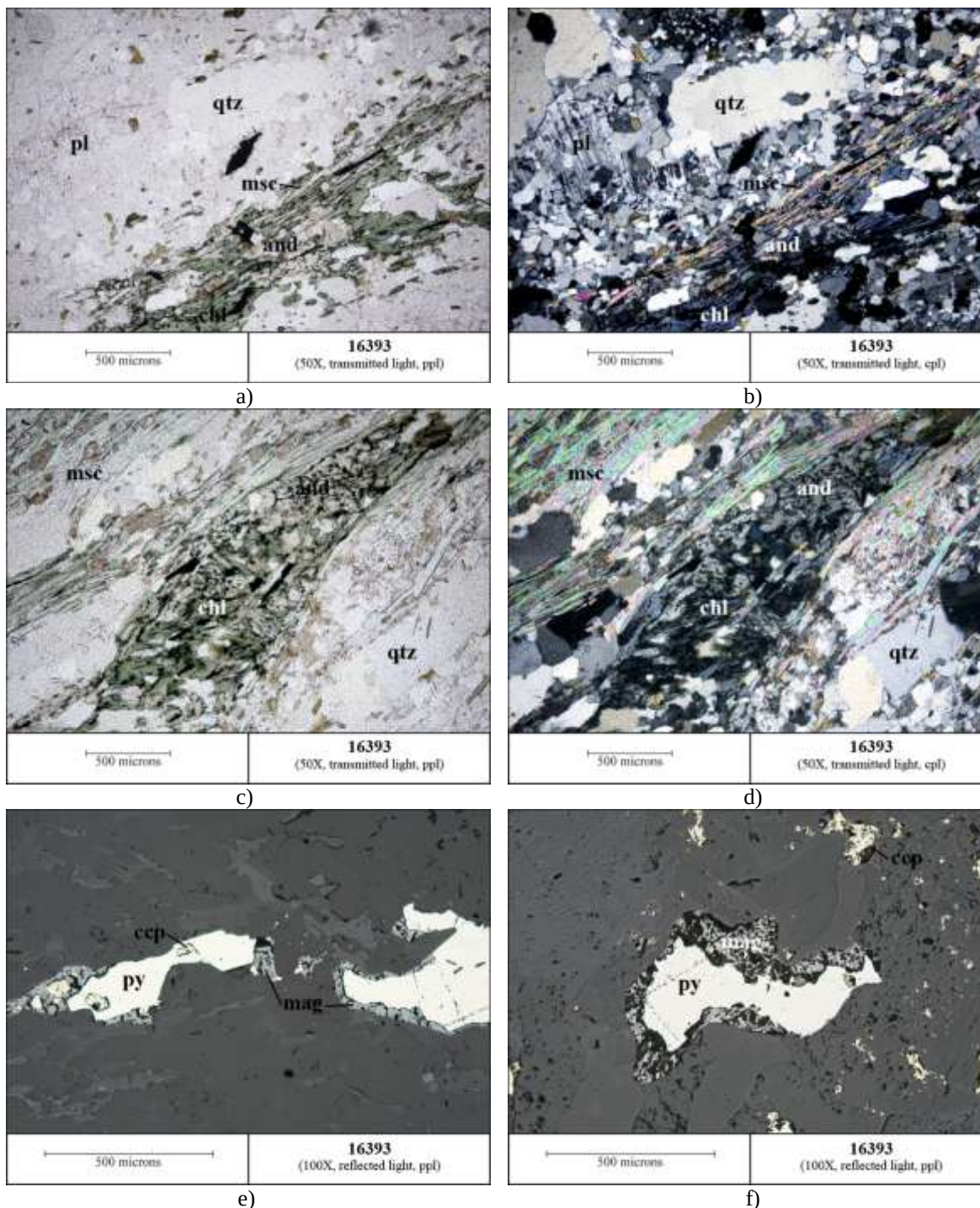
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Quartz	29.3
Biotite	27.1
Muscovite	20.3
Chlorite	12.7
Labradorite	10.6

Optical Microscopy:



Photomicrographs of sample 16393. a) and b) Photomicrographs relatively coarse quartz and plagioclase grains in a matrix of granoblastic quartz and feldspar cross-cut by bands of foliated chlorite and muscovite with andalusite porphyroblasts. c) and d) Photomicrographs of asymmetric pod composed of chlorite quartz and andalusite. e) and f) Photomicrograph of irregular pyrite grains with chalcopyrite inclusions and partially rimmed by magnetite. Note that the sulfides are unaltered and are enclosed in silicate minerals.

EDS Analyses

	Na2O	Al2O3	SiO2	S	K2O	CaO	TiO2	FeO	n
k-feldspar	0.0	17.6	63.9	0.1	17.3	0.0	0.6	0.7	5
Labradorite	7.7	25.2	58.5	0.0	0.5	8.1	0.0	0.0	8

	MgO	Al2O3	SiO2	K2O	TiO2	MnO	FeO	n
Biotite	10.1	18.7	35.9	8.0	2.2	0.7	24.4	8
Chlorite	15.0	18.6	31.6	0.0	0.0	0.8	34.0	5

	Al2O3	S	Fe	Cu	Ta	n
Pyrite	0.3	48.3	51.1	0.0	0.3	4
Chalcopyrite	1.2	38.6	32.8	27.4	0.0	1

Description:

Gneissic, composed of pods and eyes of granoblastic quartz and feldspar in a matrix of granoblastic quartz and feldspar with bands of foliated muscovite and chlorite. Pods and lenses are composed of granoblastic quartz or feldspar. The matrix is composed of granoblastic quartz, feldspar, muscovite and biotite. Foliated bands are composed of muscovite, biotite and chlorite. In some instances, foliated bands contain asymmetric andalusite porphyroblasts. Pyrite occurs as irregularly shaped disseminated grains that are partially rimmed by magnetite. Chalcopyrite occurs as disseminated grains. No carbonate minerals were identified in this sample.

Sample: 16397

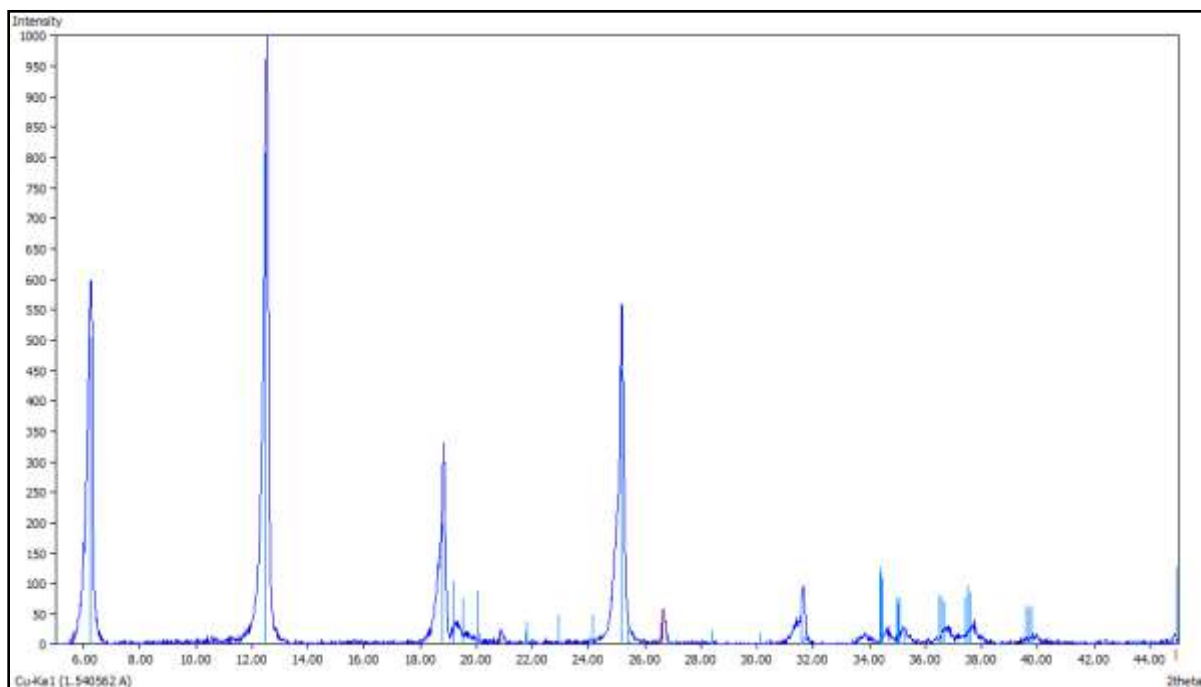
Baffinland Iron Mines Field Identification: Amphibolite

Classification: Meta argillite



Photograph of sample 16397. Note the anastomosing clay veinlets.

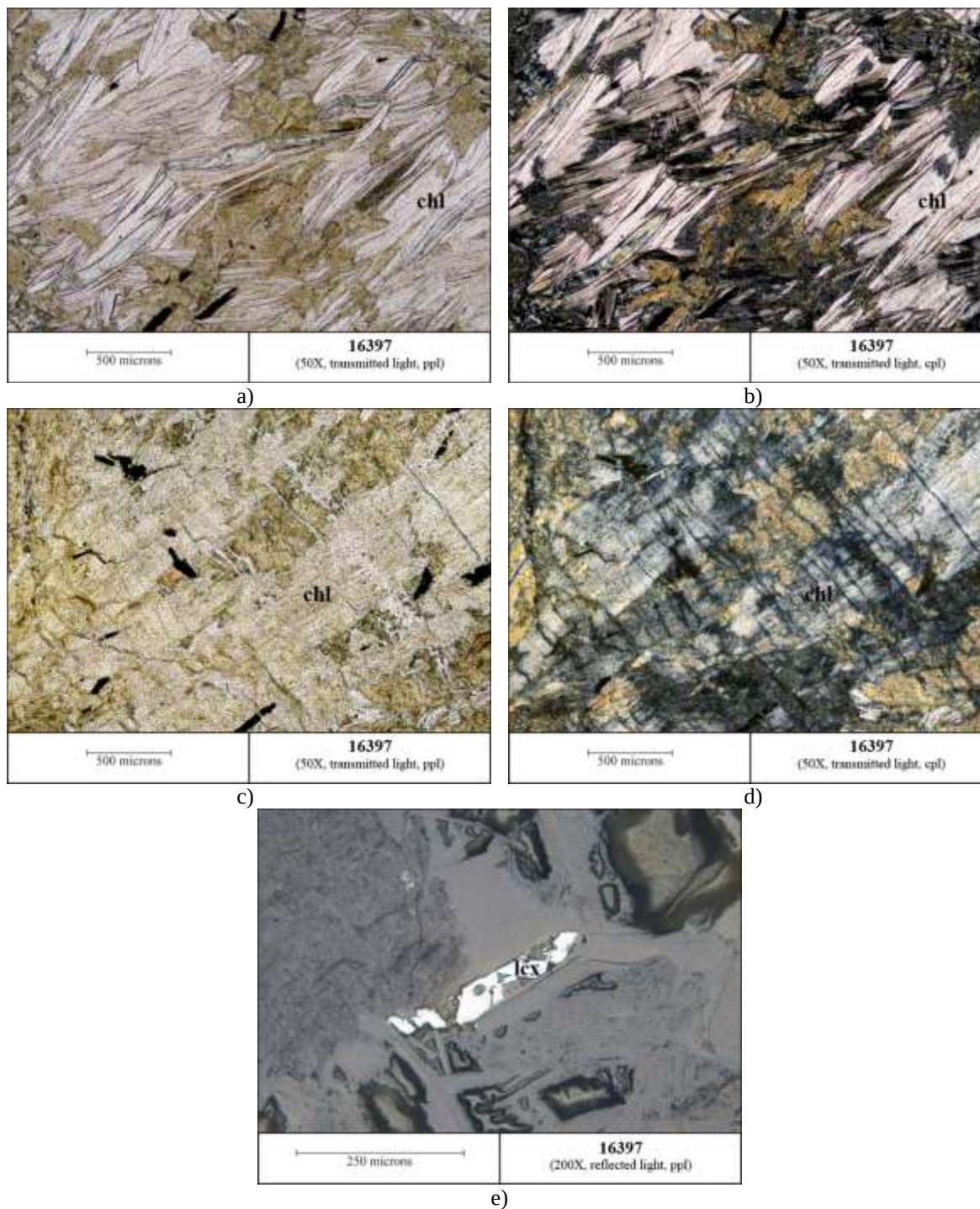
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Chlorite	98.2
Quartz	1.8

Optical Microscopy:



Photomicrographs of sample 16397. a) and b) Photomicrographs of chlorite grains possibly replacing biotite. c) and d) Photomicrographs of relict grains, possibly hornblende, pervasively replaced by chlorite. e) Photomicrograph of lobate ilmenite grain replaced by leucoxene.

EDS Analyses

	F	MgO	Al ₂ O ₃	SiO ₂	S	Cl	CaO	TiO ₂	MnO	FeO	n
Chlorite	0.4	20.5	19.4	37.7	0.5	0.1	0.6	0.1	1.6	19.2	15

Description:

Foliated to massive, composed of chlorite. Relict grain shapes suggest hornblende and biotite were pervasively replaced by chlorite. Garnet occurs in trace amounts as disseminated porphyroblasts. Ilmenite occurs as disseminated lobate grains pervasively replaced by leucoxene. No sulfide or carbonate minerals were identified in this sample. The rock contains anastomosing clay veinlets.

Sample: 16415

Baffinland Iron Mines Field Identification: Mica amphibole schist

Classification: Chlorite schist



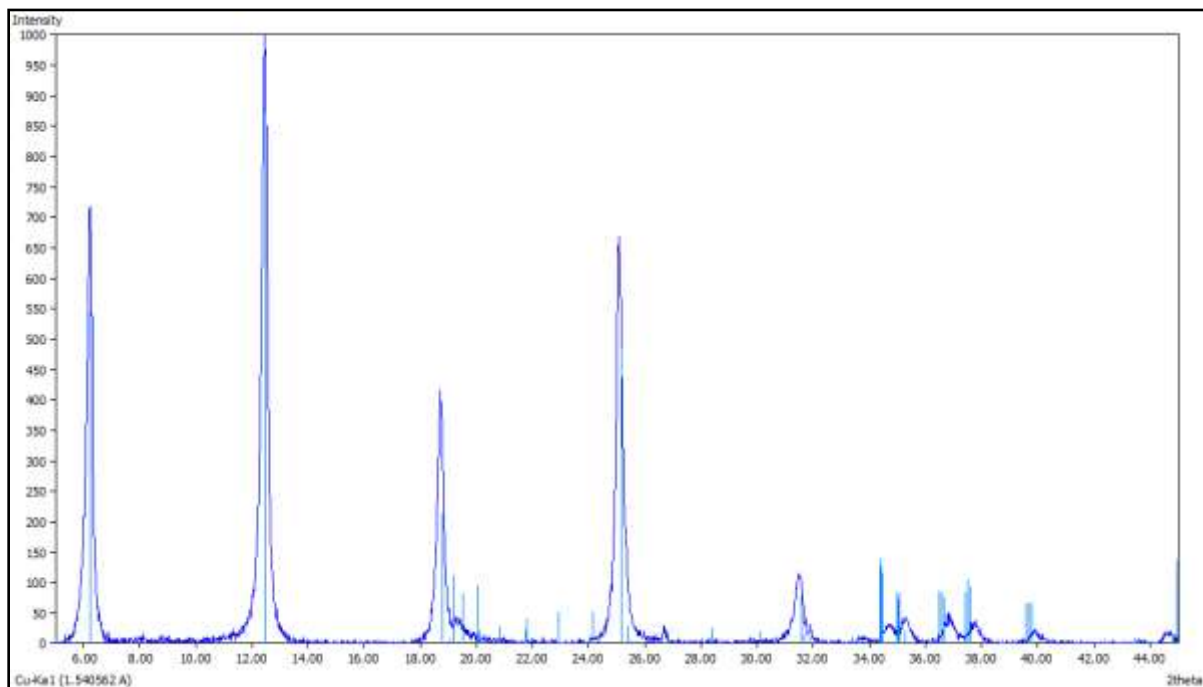
a)



b)

Photographs of sample 16415.

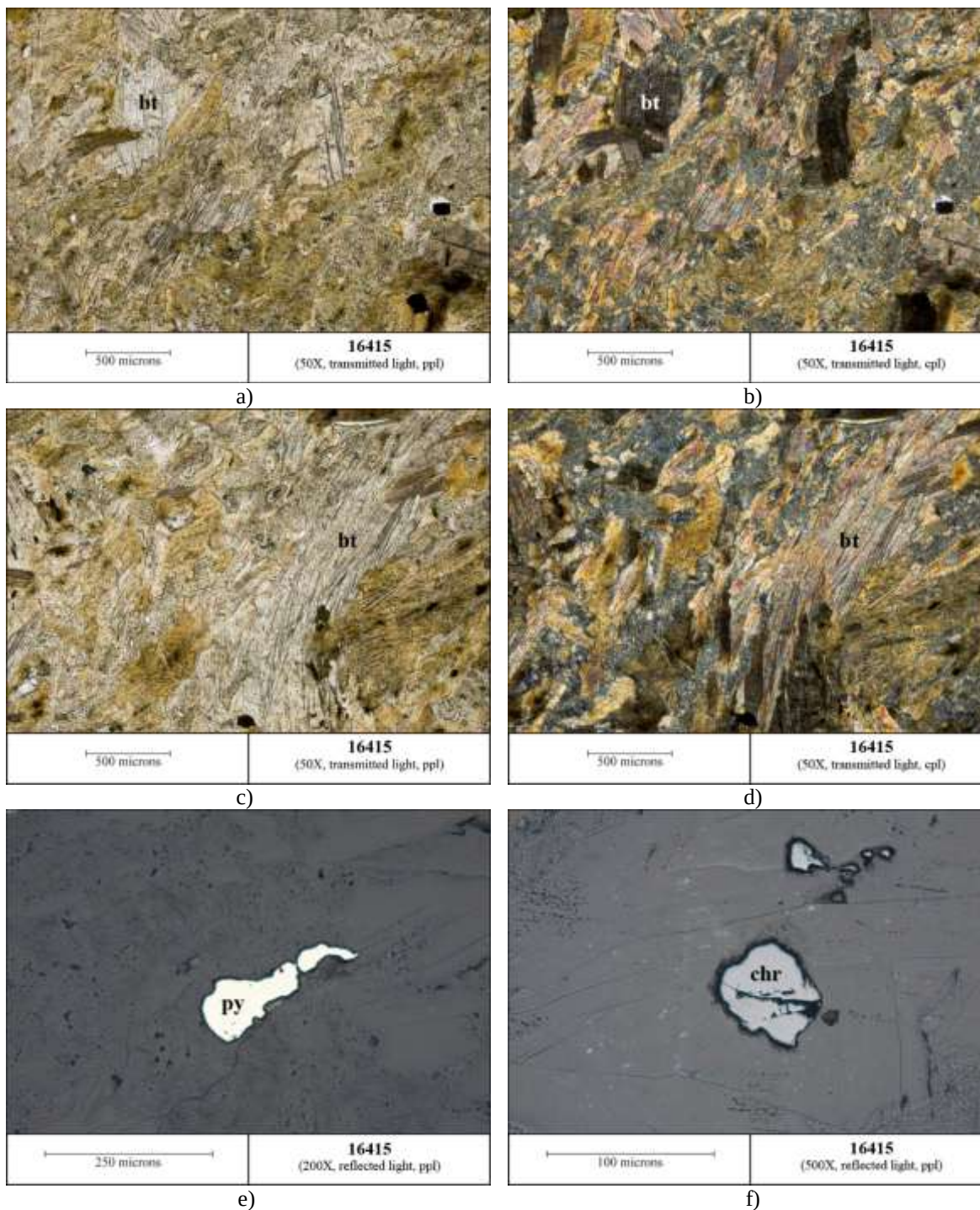
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Chlorite	100.0

Optical Microscopy:



Photomicrographs of sample 16415. a) and b) Photomicrographs of decussate biotite pervasively replaced by chlorite. c) and d) Photomicrographs of decussate biotite flakes pervasively replaced by chlorite with interstitial chlorite and clay. e) Photomicrograph of pyrite grain. f) Photomicrograph of equant chromite grain.

EDS Analyses

	MgO	Al ₂ O ₃	SiO ₂	K ₂ O	TiO ₂	Cr	MnO	FeO	n
Chlorite 1	24.4	23.1	37.9	0.0	0.0	0.2	1.6	12.7	6
Chlorite 2	18.5	20.0	35.5	1.4	1.7	0.5	1.8	20.7	6

Description:

Massive to weakly foliated, composed of decussate chlorite. Biotite is pervasively replaced by chlorite. Pyrite occurs in trace amounts as disseminated grains. Chromite occurs in trace amounts as disseminated anhedral grains. No carbonate minerals were identified in this sample.

Sample: 16441

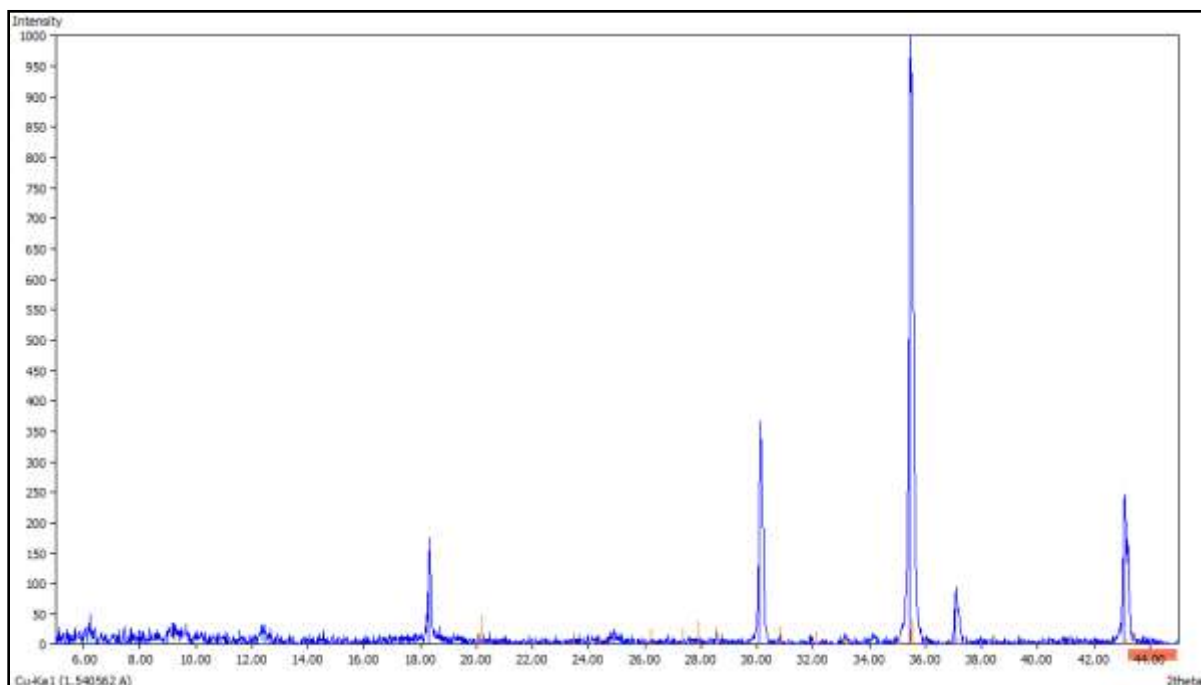
Baffinland Iron Mines Field Identification: HG_IF 60-72.36% Fe 60-100% mag

Classification: Magnetite iron formation



Photograph sample 16441. Note the reddish bed.

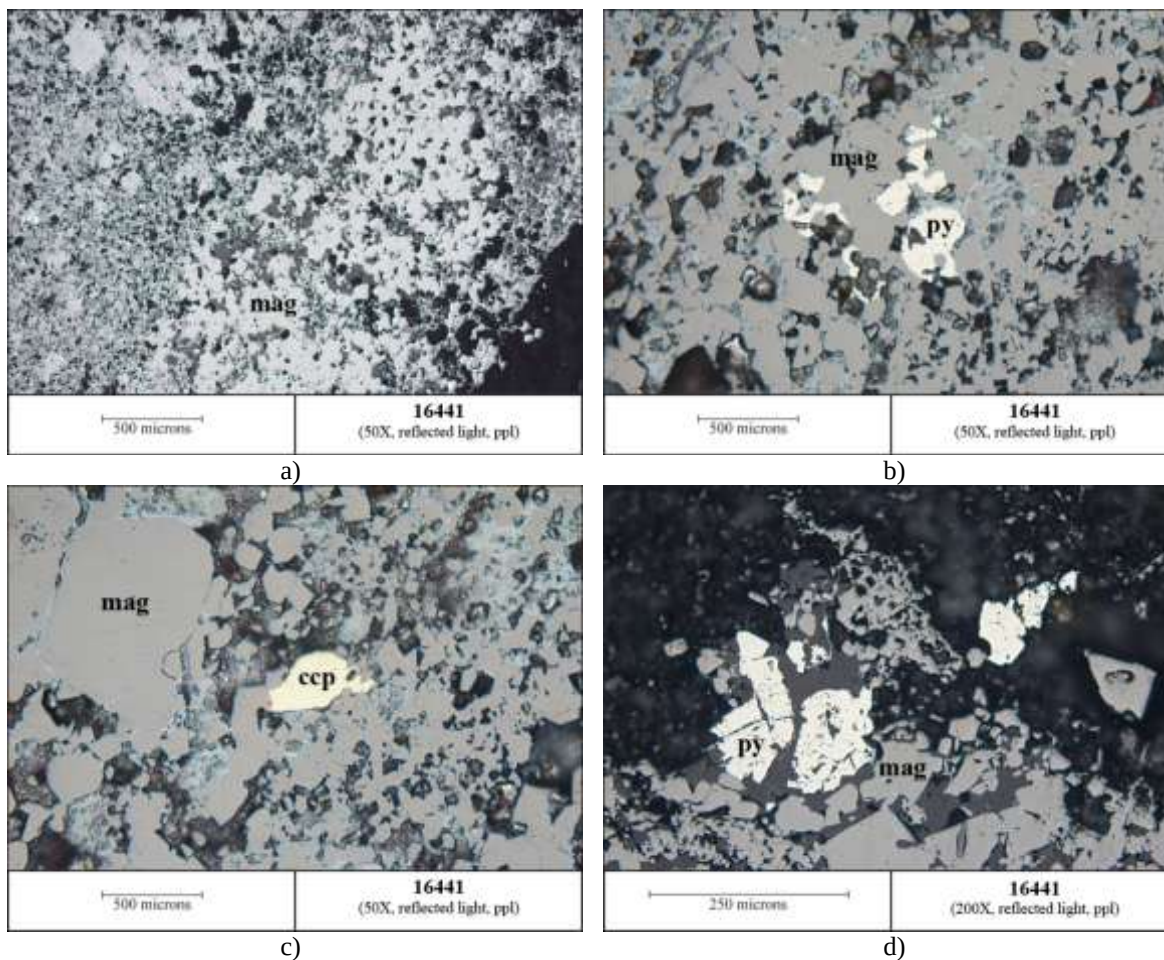
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Magnetite	97.0
Chlorite	3.0

Optical Microscopy:



Photomicrographs of sample 16441. a) Photomicrograph of granular magnetite. b) Photomicrograph of granular magnetite with irregular shaped pyrite grains. c) Photomicrograph of granular magnetite with equant chalcopyrite grain. d) Photomicrograph of granular magnetite with irregular pyrite grains. Note that some of the magnetite grains have poorly developed hematite (white) along their margins.

EDS Analyses

	Na2O	MgO	Al2O3	SiO2	CaO	MnO	FeO	n
Amphibole	0.3	18.7	10.3	39.8	0.4	0.2	30.2	5

Description:

Thinly banded or bedded, composed of granular magnetite with interstitial chlorite, amphibole, and quartz. The red bands are due to the partial oxidation of magnetite to hematite along grain boundaries. Pyrite and chalcopyrite occur as disseminated grains. No carbonate minerals were identified in this sample.

Sample: 16467

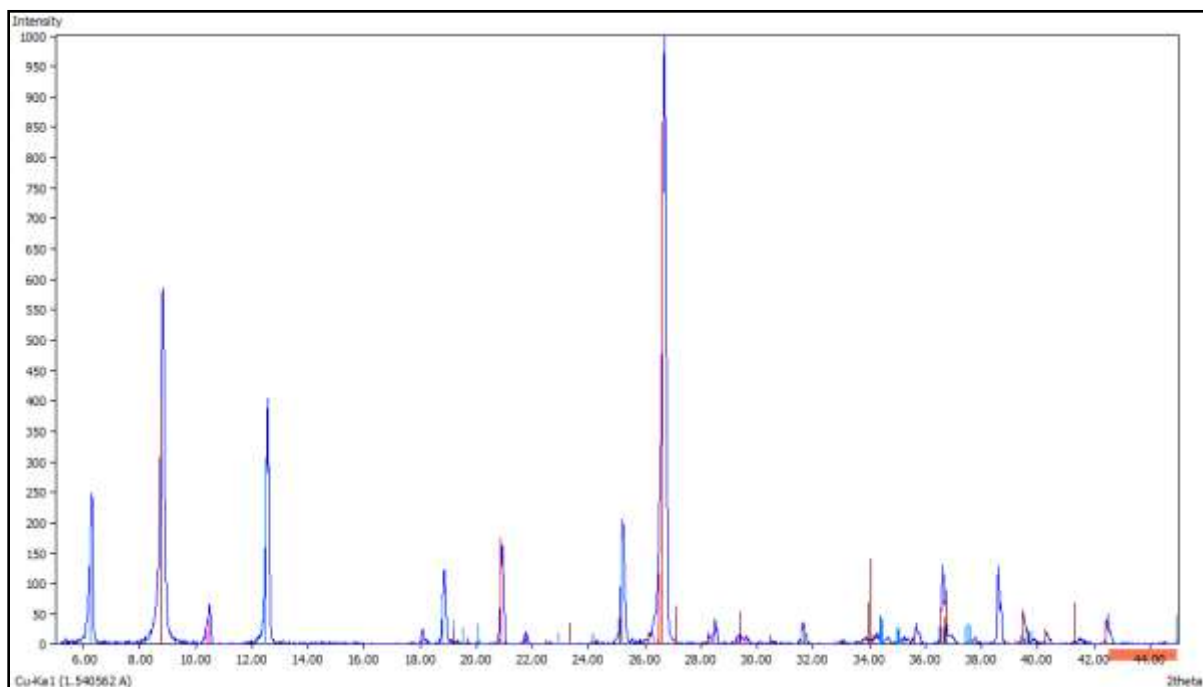
Baffinland Iron Mines Field Identification: Chlorite schist

Classification: Quartz-chlorite-biotite schist



Photograph of sample 16467.

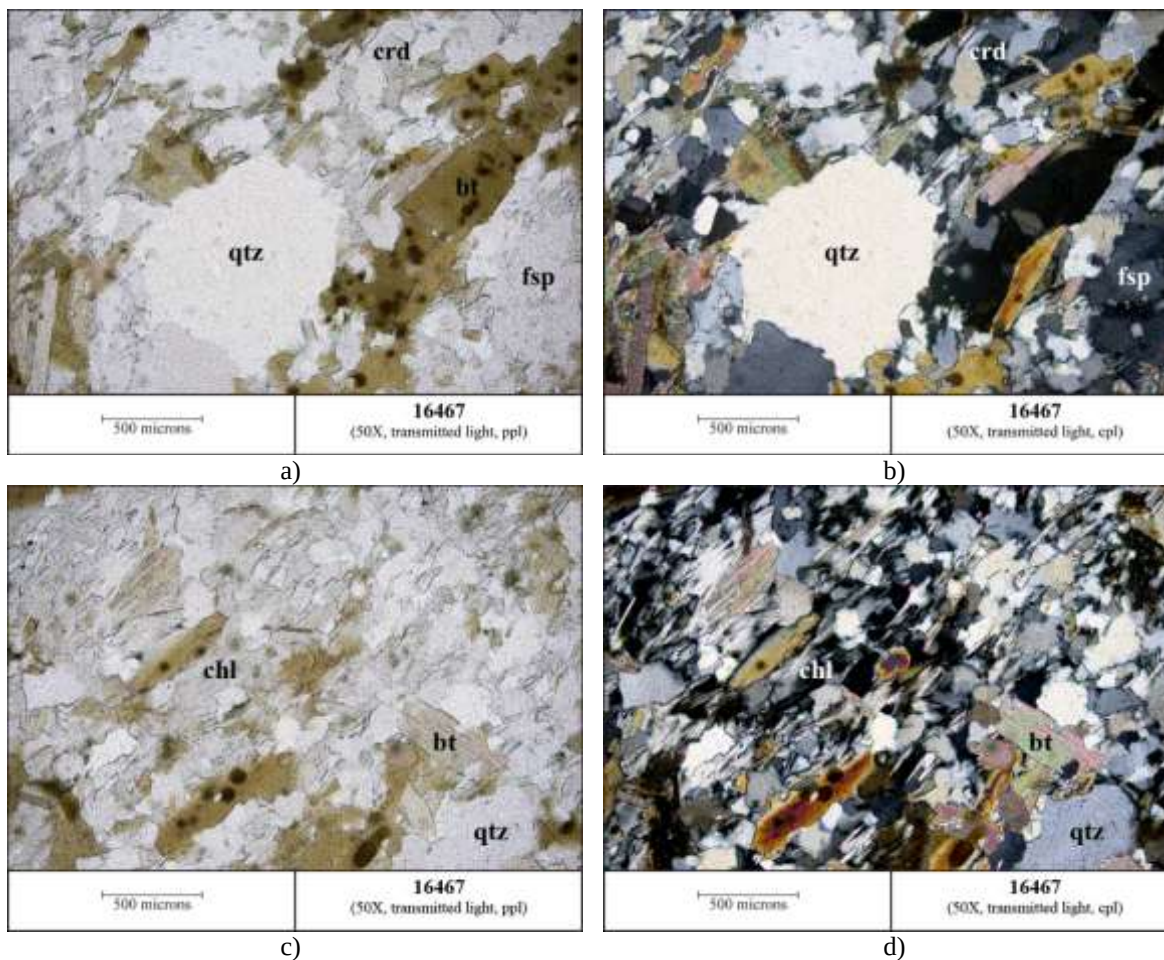
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Quartz	56.8
Chlorite	20.4
Biotite	16.3
Cordierite	6.5

Optical Microscopy:



Photomicrographs of sample 16467. a) and b) Photomicrographs of relatively coarse quartz grains in a matrix of granoblastic quartz and cordierite with decussate biotite. c) and d) Photomicrograph of granoblastic quartz and cordierite (cloudy grains with inclusions) and decussate biotite. Note the abundance of dark spots, haloes around zircons, in the biotite grains.

EDS Analyses

	MgO	Al ₂ O ₃	SiO ₂	K ₂ O	MnO	FeO	n
Cordierite	9.0	33.7	51.0	0.2	0.1	6.0	6

	Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	Cl	K ₂ O	TiO ₂	FeO	n
Biotite	0.1	12.5	20.0	39.7	0.0	10.3	1.6	15.8	6

Description:

Granoblastic to weakly foliated, composed of relatively coarse quartz grains in a matrix composed of granoblastic quartz, cordierite, and decussate biotite and chlorite. Biotite contains abundant zircons with “burn” haloes. No sulfide or carbonate minerals were identified in this sample.

Sample: 16667

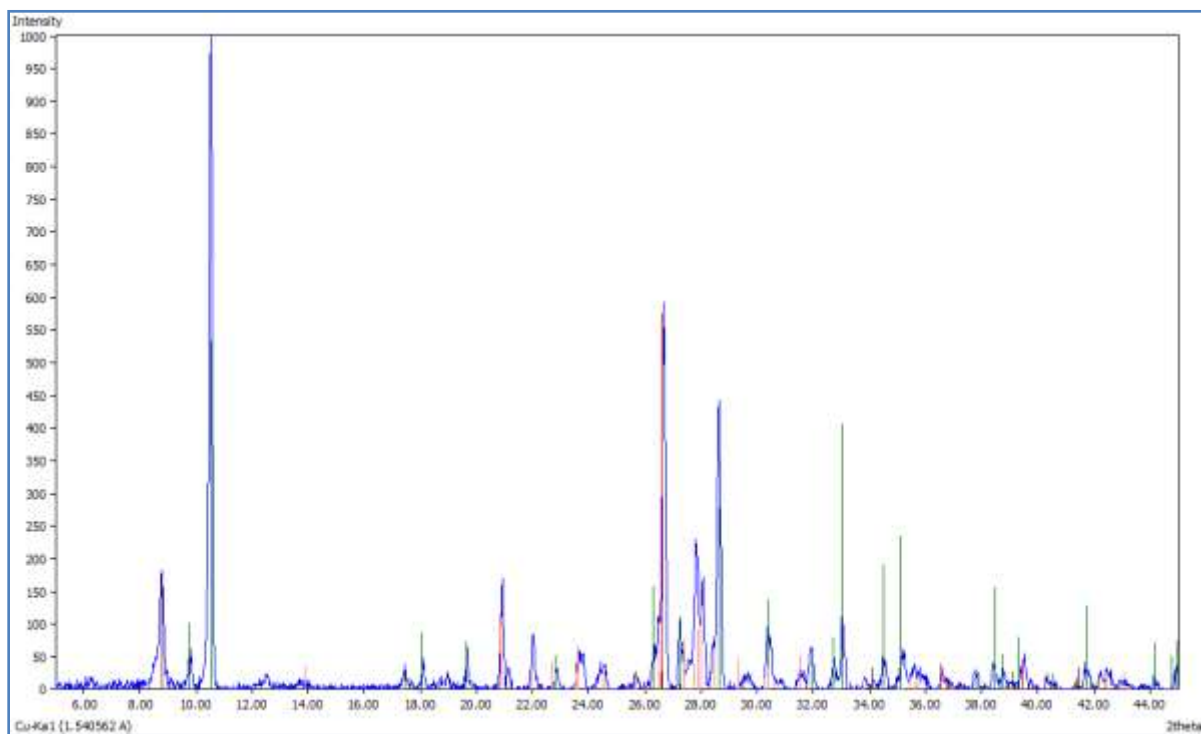
Baffinland Iron Mines Field Identification: Volcanic tuff (massive)

Classification: Amphibolite



Photograph of sample 16667. Note the veinlets. Veinlets are filled with metamorphic minerals.

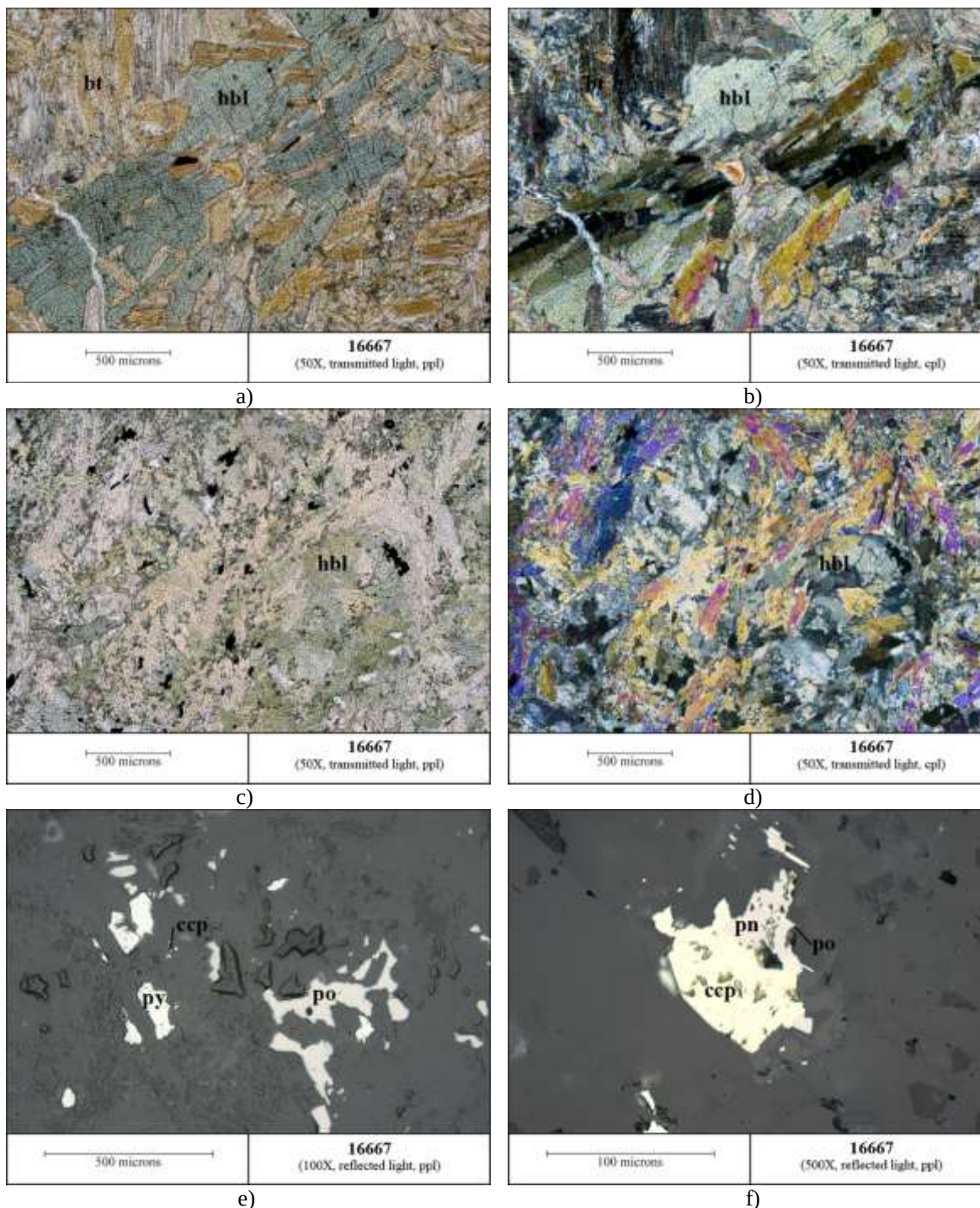
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Hornblende	64.6
Anorthite	20.9
Quartz	10.1
Biotite	4.4

Optical Microscopy:



Photomicrographs of sample 16667. a) and b) Photomicrographs of decussate hornblende and biotite. c) and d) Photomicrograph of decussate hornblende with interstitial plagioclase. e) Photomicrograph of disseminated pyrrhotite, pyrite and chalcopyrite. f) Photomicrograph of sulfide grain composed of chalcopyrite and pentlandite. Note that the sulfides are unaltered and are enclosed in silicate minerals.

EDS Analyses

	Na2O	Al2O3	SiO2	K2O	CaO	FeO	n
Albite	12.4	19.1	68.4	0.0	0.2	0.0	5
k-feldspar	0.0	18.1	64.7	17.1	0.0	0.2	3
Anorthite	0.6	29.6	46.1	3.1	20.1	0.3	13

	MgO	Al2O3	SiO2	K2O	CaO	FeO	n
Muscovite	0.1	37.6	48.5	12.5	0.4	0.9	12

	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	n
Hornblende	1.1	11.0	11.9	45.2	1.6	11.4	0.6	0.5	16.7	11

	Al2O3	SiO2	S	Fe	Ni	Cu	n
Pyrite	0.4	0.1	55.4	44.1	0.0	0.0	8
Pyrrhotite	0.5	0.1	43.2	55.6	0.7	0.0	12
Pentlandite	0.7	0.0	44.4	34.3	20.7	0.0	1
Chalcopyrite	0.4	0.0	37.5	30.2	0.0	31.9	2

Description:

Banded, composed of decussate hornblende and biotite with interstitial plagioclase (anorthite) and quartz. Sulfides, pyrite, pyrrhotite, pentlandite, and chalcopyrite, occur in trace amounts as disseminated grains. No carbonate minerals were identified in this sample. Cross-cutting veinlets are filled with quartz, feldspar, mica, and amphibole.

Note that there are two plagioclase anorthite and albite present. The distinction in the two plagioclase feldspars was made with EDS. The occurrence of anorthite and albite together probably result from the breakdown of an intermediate plagioclase feldspar in to the two components.

Sample: 16729

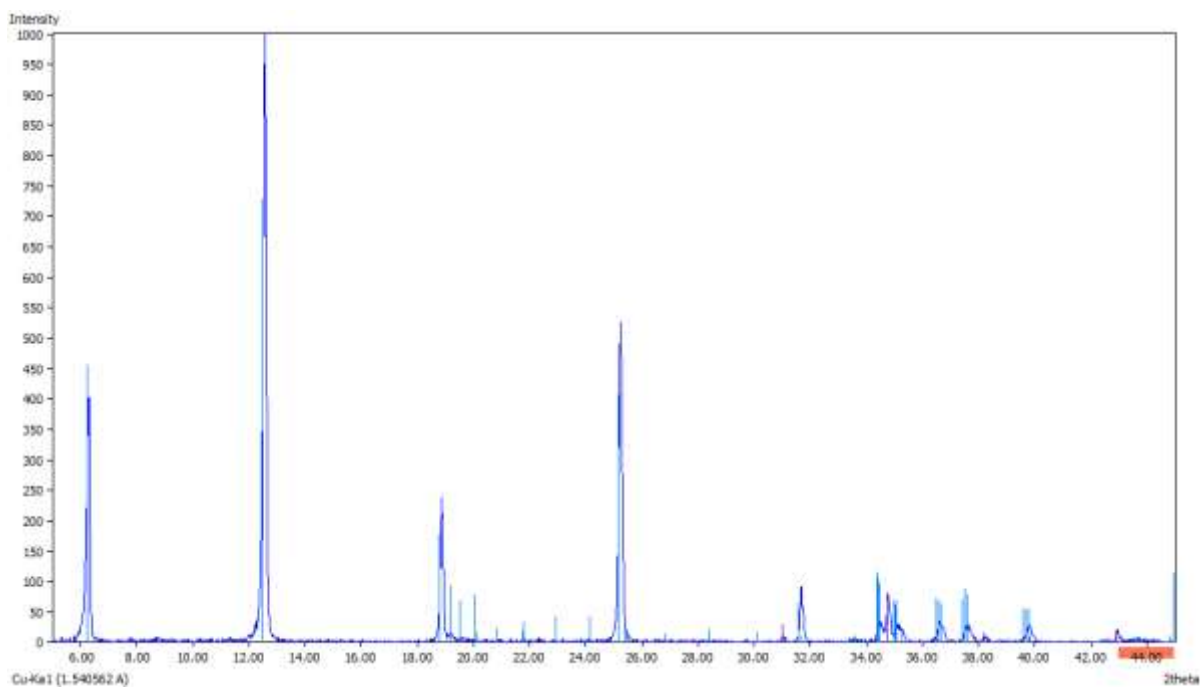
Baffinland Iron Mines Field Identification: Chlorite schist

Classification: Chlorite-garnet paraganofels



Photograph of 16729. Note the garnet porphyroblasts.

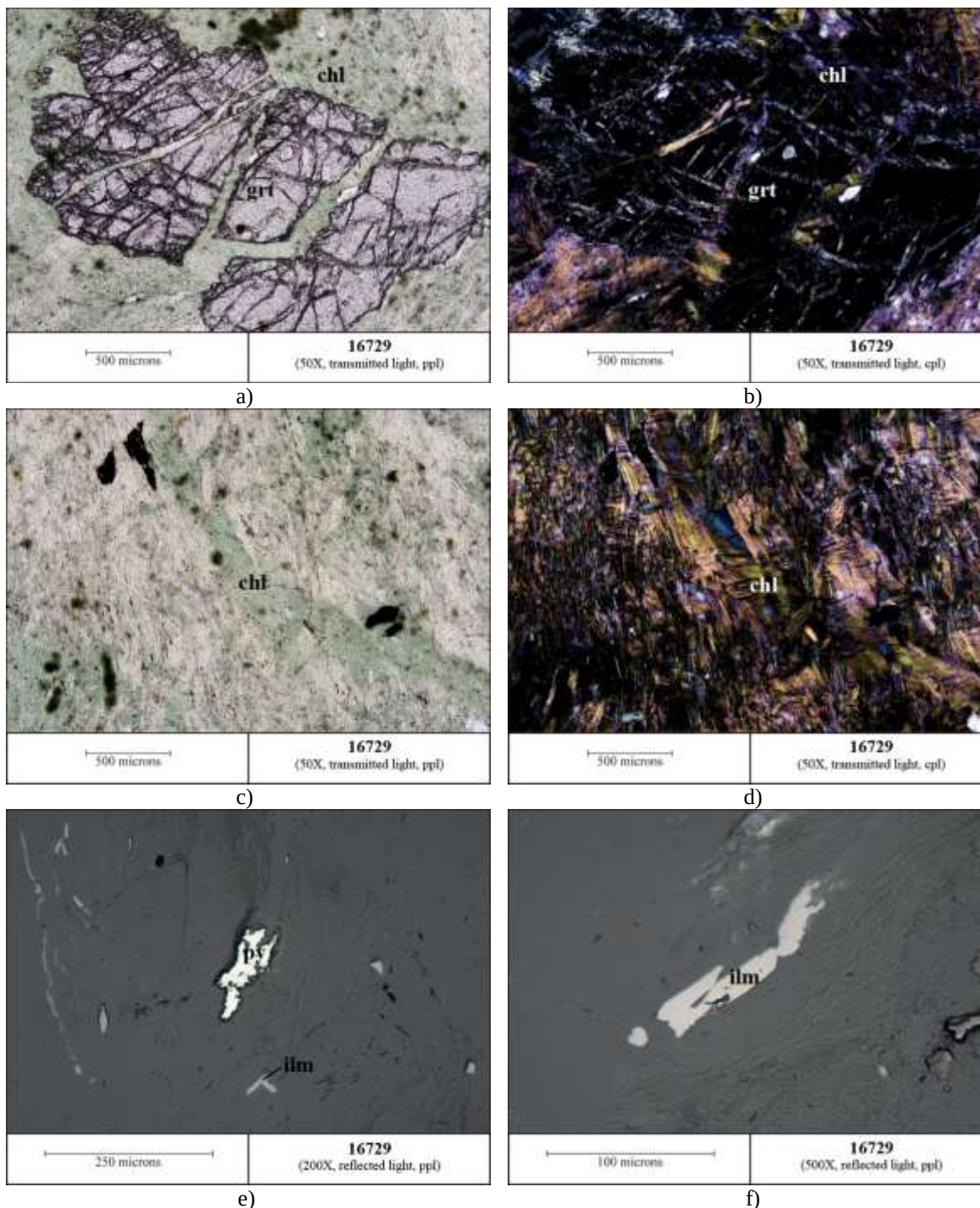
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Chlorite	94.6
Almandine	5.4

Optical Microscopy:



Photomicrographs of sample 16729. a) and b) Photomicrographs of fractured garnet porphyroblast in a matrix of chlorite. c) and d) Photomicrographs chlorite. Variations in color probably reflect variations in composition of the chlorite. e) Photomicrograph of xenoblastic pyrite gran and tabular ilmenite. f) Photomicrograph of tabular ilmenite grain.

EDS Analyses

	MgO	Al ₂ O ₃	SiO ₂	K ₂ O	CaO	MnO	FeO	n
Almandine	2.7	20.2	36.0	0.0	0.6	1.0	39.4	3
Chlorite	12.8	25.5	27.3	0.0	0.1	0.0	34.2	7

	Al ₂ O ₃	S	Fe	Zn	n
Sphalerite	1.0	33.9	3.4	61.7	4

Description:

Massive, porphyroblastic, composed of massive chlorite with garnet (almandine) porphyroblasts. Sulfide occurs in trace amounts as disseminated pyrite and sphalerite grains. Ilmenite occurs in trace amounts as disseminated tabular grains. No carbonate minerals were identified in this sample

Sample: 16739

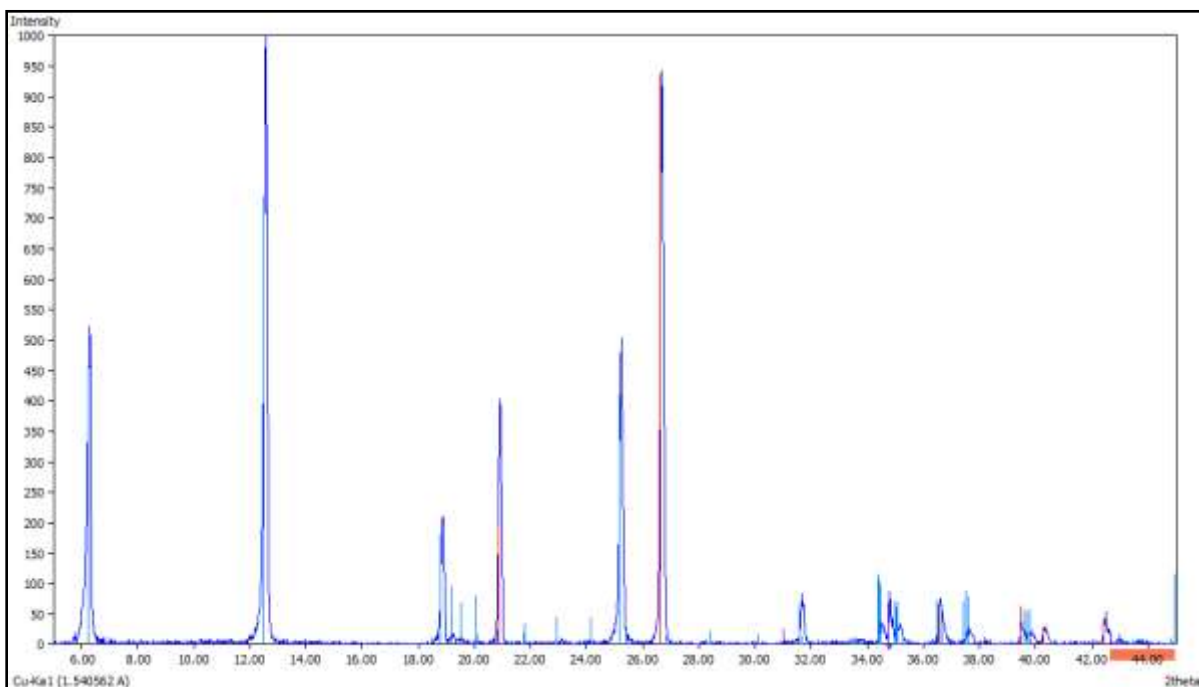
Baffinland Iron Mines Field Identification: Chlorite schist

Classification: Chlorite-garnet schist



Photograph of sample 16739. Note the yellowish bleached area and the network of fine cross-cutting veinlets.

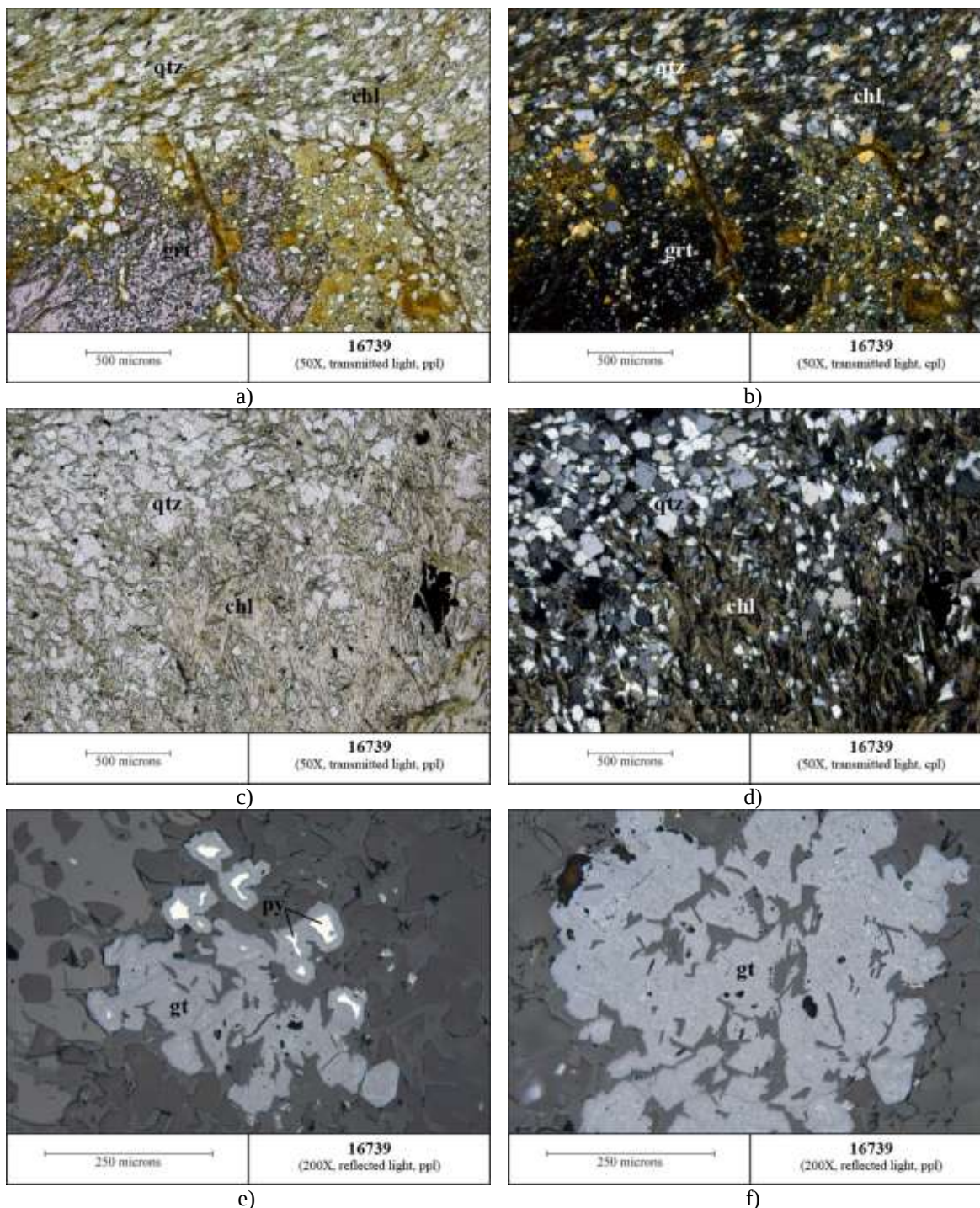
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Chlorite	66.9
Quartz	31.2
Almandine	1.9

Optical Microscopy:



Photomicrographs of sample 16739. a) and b) Photomicrograph of garnet porphyroblast in a matrix of quartz grains supported in chlorite. c) and d) Photomicrograph of matrix composed of decussate chlorite and matrix supported quartz grains. e) Photomicrograph of pyrite porphyroblast partially replaced by goethite. f) Photomicrograph of pyrite porphyroblast pervasively replaced by goethite.

EDS Analyses

	MgO	Al ₂ O ₃	SiO ₂	CaO	FeO	n
Almandine	2.6	20.0	36.4	0.3	40.6	6
Chamosite	15.4	25.0	28.7	0.0	30.9	9

	Al ₂ O ₃	S	Fe	n
Pyrite	0.3	55.3	44.4	8

Description:

Massive to weakly foliated, composed of garnet (almandine) porphyroblasts in a matrix composed of decussate chlorite and chlorite supported quartz grains. Pyrite occurs in trace amounts as disseminated xenoblastic porphyroblasts that are pervasively replaced by goethite. No carbonate minerals were identified in this sample. A network of thin anastomosing veinlets are filled with or stained by iron oxides (hematite, goethite, and/or limonite).

Sample: 16745

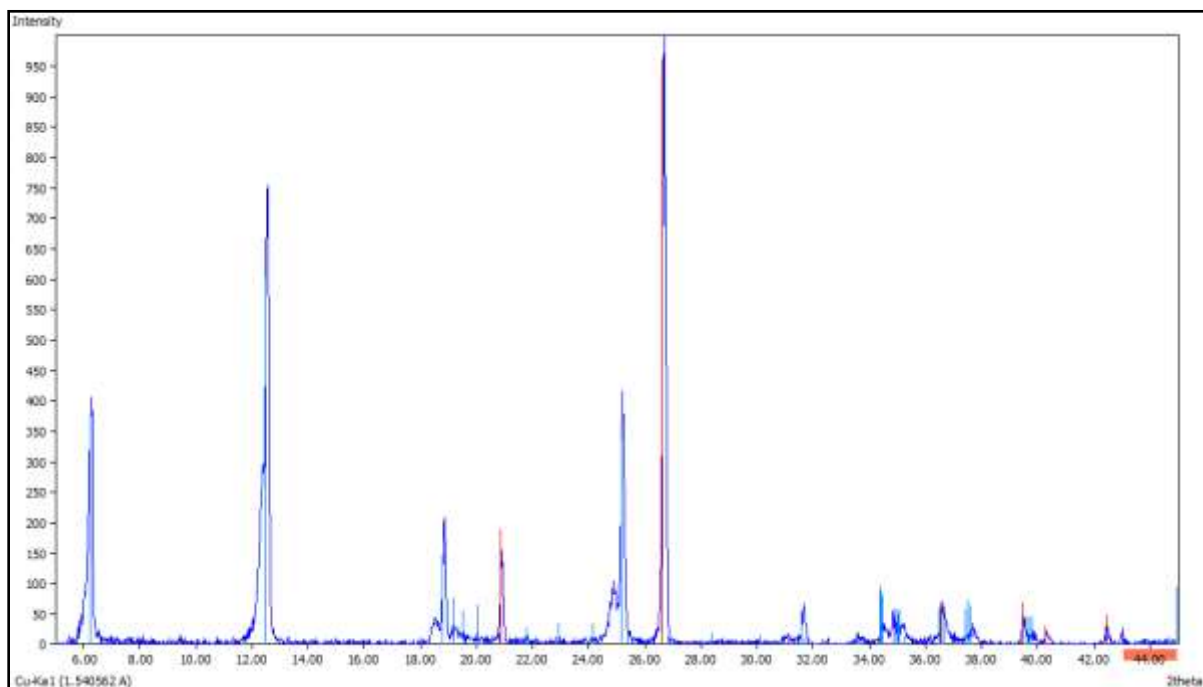
Baffinland Iron Mines Field Identification: Volcanic tuff (layered)

Classification: Chlorite-quartz-garnet schist



Photograph of sample 16745.

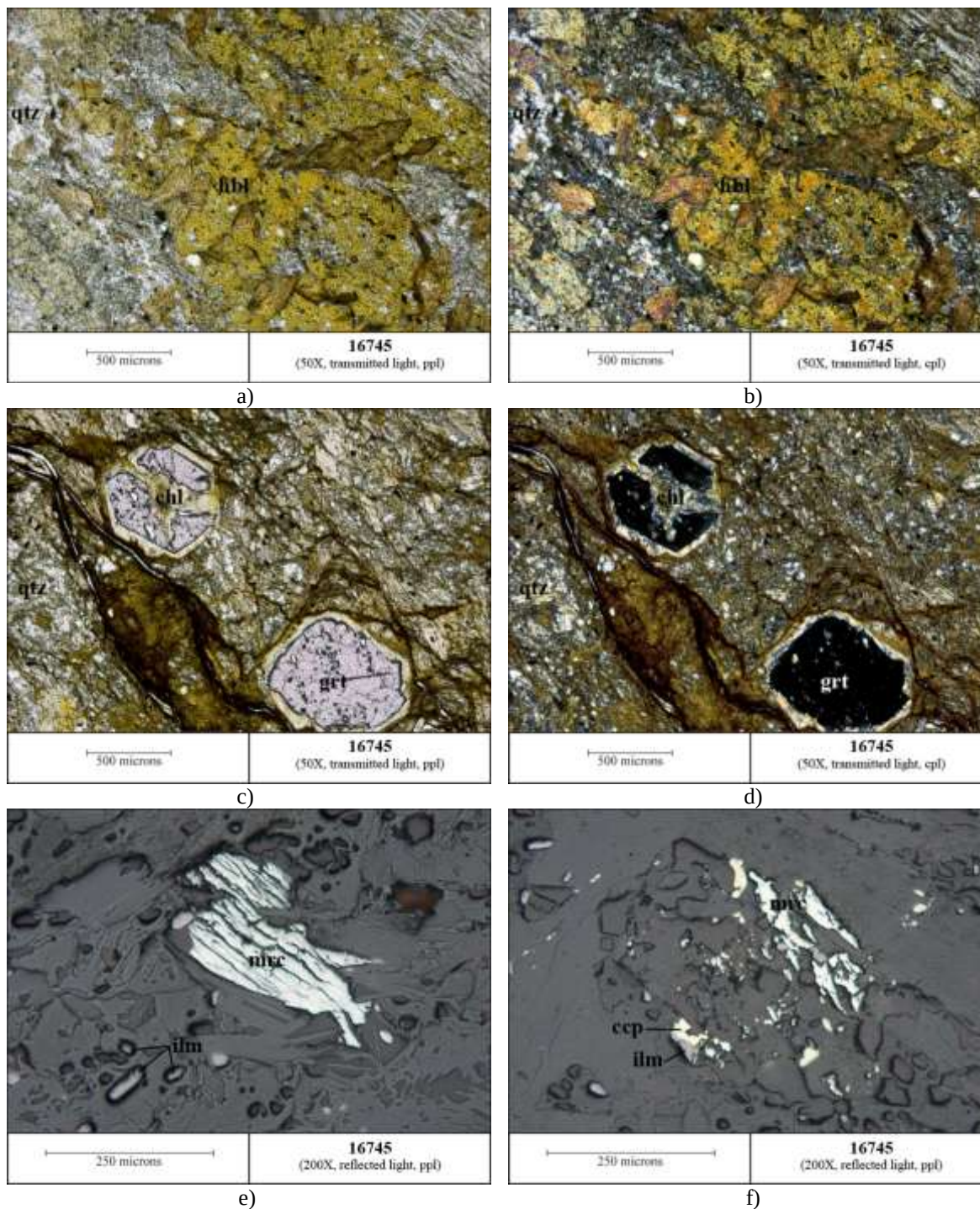
X-ray Diffraction



Rietveld analysis

Phase	Weight%
Chlorite	63.7
Quartz	32.7
Almandine	3.6

Optical Microscopy:



Photomicrographs of sample 16745. a) and b) Photomicrographs of relict hornblende replaced by chlorite in a matrix of chlorite and granoblastic quartz. c) and d) Photomicrograph of garnet porphyroblasts partially replaced by chlorite in a matrix composed of chlorite and granoblastic quartz. e) Photomicrograph of marcasite grain. f) Photomicrograph of disseminated marcasite, chalcopyrite and ilmenite grains.

EDS Analyses

	MgO	Al₂O₃	SiO₂	CaO	MnO	FeO	n
Garnet	3.1	20.2	36.5	0.1	1.1	39.0	3

	MgO	Al₂O₃	SiO₂	S	Fe	Ni	Cu	n
Marcasite	0.1	0.6	0.6	53.9	41.4	1.8	1.6	8

Description:

Foliated, composed of relict hornblende and garnet porphyroblasts in a matrix of chlorite and chlorite supported quartz grains. Hornblende porphyroblasts have been pervasively replaced by chlorite. The matrix is composed of quartz grains supported by chlorite. Garnet occurs as disseminated grains that are partially replaced by chlorite. Marcasite occurs in trace amounts as disseminated laminated grains. Chalcopyrite and ilmenite occur in trace amounts as disseminated grains. No carbonate minerals were identified in this sample.