Brown McDade Waste Rock Characterization
Mount Nansen Mine Site, Yukon

Summary of 2009 Work Program

Prepared for:

Assessment and Abandoned Mines Branch
Energy, Mines and Resources
Government of Yukon

December 2009

Altura Environmental Consulting

Table of Contents

1.0 Introduction 3

1.1 Purpose of Document 3

2.0 Overview of Work Program 4

2.1 Field Campaigns 4

2.2 Methodology 5

3.0 Results 6

3.1 Technical Memorandums 6

3.1.1 Waste Rock Pile Catchment Areas – Proposed Zones 6

3.1.2 Summary of Studies Assessing Waste Rock Field Screening Potential 6

3.1.3 Mine to Mill Haul Road – Summary of Rock Characterization Studies 8

3.2 Other Results 8

3.2.1 Lysimeter Monitoring 8

3.2.2 Seepage and Ponding Surveys 9

3.2.3 Pit Area Investigations 10

3.2.4 Additional Testing in Waste Rock Pile Area 11

3.2.5 Pre-Mine Topography, Pit and Rock Pile Area 14

4.0 Closure 15

5.0 References 16

List of Tables

Table 3.1 Infiltration Zones, Brown McDade Waste Rock Pile 8

Appendices

Appendix A 2009 Field Program Methodology and Results
A.1 Methodology
A.2 Lysimeter Summary Data
A.3 Seepage and Ponding Data
A.4 Pit Wall Sampling Data
A.5 Fill Sampling - Descriptions
A.6 Fill Sampling - Data
A.7 Coarse and Fine Data
A.8 Precipitate Mineralogy Memorandum and Results
A.9 Neutralizing Minerals Memorandum and Results

1.0 Introduction

1.1 Purpose of Document

This document presents a brief summary of work completed during 2009 with respect to the evaluation of the waste rock geochemical and physical characteristics. Work was carried out in accordance with Altura's May 6 memorandum entitled "Overview of 2009 Proposed Waste Rock Work Program and Cost Estimate". The main objectives of the work were to provide information to support the needs of Mount Nansen Closure Alternatives Assessment.

The activities carried out in 2009 augmented information compiled and data obtained during 2008 and documented in the report entitled "Brown McDade Waste Rock Pile, Mount Nansen Mine Site, Yukon – Geochemical Characterization" (Altura 2009a). The reader is referred to this report for a more comprehensive review of background information.

2.0 Overview of Work Program

Altura worked closely with other consultants including AECOM, Lorax Environmental Services Ltd., EDI Environmental Dynamics Inc., and Protore Geological Services in carrying out the following tasks:

1. initiate and conduct routine monitoring of the two lysimeters L1 and L2 installed in fall 2008 (monitoring conducted by EDI with technical input from Altura and Lorax)
2. conduct spring seepage surveys and a routine seep monitoring program through the spring and summer 2009 season (surveys conducted by Altura, monitoring conducted by EDI with technical input by Altura)
3. install mini-piezometers at the two known rock pile seepage locations (Lorax and Altura)
4. conduct additional geochemical testing along haul road, main rock pile, ore backfill in pit, coarse rock piles, and the base of the old ore stockpile area to the west of the pit (Altura with input from Lorax, AECOM)
5. trenching in Southwest Upper pile to assess heterogeneity, field screening feasibility, and potential for use as general construction fill material (Altura)
6. pit wall sampling and geological mapping within pit and to north (Altura and Protore Geological Services)
7. mineralogical investigations via x-ray diffraction (Altura with technical input from Lorax, work conducted by Queen's University)
8. confirm volumes of rock pile and haul road as required (Altura with assistance from AECOM)
9. rock pile infiltration/water balance estimates based on monitoring, climatic inputs, and rock pile final geometry (Lorax with input from Altura)
10. develop source terms for waste rock into site model (Lorax with input from Altura)
11. identify availability of any pre-mine topography (Altura with input from Underhill Geomatics)

2.1 Field Campaigns

Altura's field work was conducting during four campaigns throughout the 2009 spring and summer season as follows:

May 14: work with EDI to initiate lysimeter monitoring, conduct spring seep surveys in immediate rock pile area.

May 22: spring seep surveys in immediate rock pile area and along the east slope of Dome Creek.

July 5-8: test excavations along haul road, rock pile, and ore backfill at south end of pit. Installation of mini-piezometers at the two rock pile seep zones, assist Lorax with identification of waste rock and ore samples for field bin tests

July 29-30: pit wall sampling and geological mapping within pit and to north; review of old core from drillholes in Brown McDade north and Brown McDade Extension zones

2.2 Methodology

Methodology utilized during the 2009 field work program is given in Appendix A.1.

3.0 Results

3.1 Technical Memorandums

Altura issued a number of technical memorandums summarizing key aspects of the 2009 program for specific input into the Mount Nansen Closure Alternatives Assessment, as described in the following sections. The reader is referred to these memos for more complete information.

3.1.1 Waste Rock Pile Catchment Areas – Proposed Zones

Issued October 4, 2009 (Altura 2009b), this memorandum proposes the major infiltration 'catchment' areas of the Brown McDade waste rock pile for input into the rock pile water balance. The work was based on seepage survey and test pit information, as well as pre-mining topographical information.

The summary gives a best estimate of the pre-mining topographical divide between Pony and Dome Creek drainages, and concludes that in most areas of the waste rock piles, the majority of infiltration reports to a deeper system and not to the toe of the rock pile as surface flow. A key exception to this is a portion of the west area of the rock pile where frozen ground conditions were encountered both in the rock pile and in the undisturbed vegetation down slope of the pile. In this area, the frozen ground appears to act as an infiltration barrier, allowing for seepage to manifest itself at or near surface rather than infiltrating downwards as in most other areas of the rock pile. The three main infiltration zones and associated characteristics are given in Table 3.1.

3.1.2 Summary of Studies Assessing Waste Rock Field Screening Potential

Issued December 18, 2009 (Altura 2009c), this memorandum summarizes the feasibility and expected performance of using field-determined measurements and observations to segregate Brown McDade waste rock and remnant ore into geochemically favourable or unfavourable material.

The assessment concluded that test results indicate that identification of Low-Reactivity material is possible by using the two key criteria of: i) no visible sulphides under hand lens, and ii) paste pH $\geq$ 6.5, coupled with avoidance of areas of obvious mineralization such as ore stockpile areas and zones of intense bleaching and alteration (to minimize the potential for elevated arsenic and other related trace elements). Altura considers that this segregated material would have very low potential for ARD, as well as presenting low solubility of metals, and subject to confirmatory testing could be suitable for use as exposed structural fill and certain erosion protection applications. Depending on the needs for definition of rock types during closure, there is potential for other criteria to be developed as required.

It should be recognized that due to the heterogeneous nature of the waste rock stored in the Brown McDade piles, segregation of a Low-Reactivity material would likely require field assessments every few metres as excavation proceeds. This may result in a manpower-intensive process that while perhaps suitable for isolating smaller amounts of good quality materials, may not be justifiable for an across-the-board relocation of the rock pile.

Table 3.1. Infiltration Zones, Brown McDade Waste Rock Pile (excerpt from Altura 2009b)

Waste Rock Infiltration Zone	**Description**	**Infiltration Reports To**	**Estimated Area** (m^2)	**Estimated Volume of Waste Rock in Contact with Infiltrating Water** (m^3)
A – Permafrost – Underlain Zone	Majority of West Lower pile, and part of West Mid pile. Underlying permafrost acts as infiltration barrier, and seepage migrates along this interface in rock pile, reporting as seeps / pondings in vegetated area downgradient of LW pile toe. This seepage then percolates at shallow depth along the permafrost interface through vegetation, to a tributary just above monitoring station DESS-01. Estimated 2.5m thickness of waste rock above permafrost interface	Shallow seepage zone in vegetation below Lower West Pile, and ultimately to station DESS-01.	26,425	66,062
B – Non-Permafrost Zone, Dome Catchment	Majority of NW pile, entirety of old Ore Stockpile area, South, Southwest piles. Portions of West Mid and West Lower piles, divided into the following sub-zones: NW Pile (12,750m^2; 7m average thickness) Mid-Sector (21,325m^2 at 0.4m average thickness; 725m^2 low grade ore stockpile at 3m average thickness) South and Southwest Pile 38,225m^2 at 5m average thickness)	Groundwater recharge	73,025	291,080
C - Non-Permafrost Zone, Pony Catchment	Eastern Lobe of NW pile, entirety of East pile: NW Pile (7,025m^2; 8m average thickness) East Pile (5,800m^2; 4m average thickness)	Groundwater recharge	12,825	79,400
Total			**112,275**	**436,542**

3.1.3 Mine to Mill Haul Road – Summary of Rock Characterization Studies

Issued December 22, 2009 (Altura, 2009d), this memorandum summarizes geochemical and general physical characteristics of the 'Mine to Mill Haul Road'as they apply to use in closure activities, and estimated volume potentially available for use during closure. The study concludes that:

- Largely owing to its more uniform composition, the road bed material from the main haul road stretch (sites HR08 through HR22) shows more potential as a low-reactivity construction material than most waste rock pile material. Nonetheless, as indicated by one very high shake flask zinc concentration of over 30 mg/L, field verification using paste pH and assessment of sulphide presence is imperative prior to its use in closure construction. This may be some room for additional refinement of the field criteria for the haul road material, possibly allowing for trace amounts of visible sulphides in the material.
- Preliminary estimates indicate that in the order of 14,000 m^3 of road bed fill is potentially available.
- Compared to the HR08 to HR22 road bed fill, the berm material exhibits much more mixing with less desirable highly altered and sulphidic material, and is not considered a good candidate for use as a low-reactivity construction material. The roadbed fill from HR08 towards the mill tends to be mixed with altered and possibly low grade ore and is also not recommended.Removal of the fines from excavated material would likely produce an improved product, however additional analyses would be necessary to confirm this. Several archived samples from 2009 are available for this work.

3.2 Other Results

3.2.1 Lysimeter Monitoring

Lysimeters were monitored on a bi-weekly basis from May 14 through mid-September. During this period there was sufficient infiltrate to obtain a total of four samples from L1 and three samples from L2. Summary results as provided by EDI Environmental Dynamics are given in Appendix A.2. Overall, consistent with its rock geochemistry lysimeter L1 returned results more elevated in dissolved anions and cations – in particular, sulphur species and Zn, with Zn ranging from 0.145 to 2.39 mg/L. Both lysimeters returned circum neutral pH values, and over the course of the spring and summer, concentrations of both sulphate and zinc decreased.

No infiltrate was recovered from the lysimeters during an extended dry period from late June through late July. An analysis of the volumes recovered through to September 17 coupled with measured site precipitation (Altura, 2009e) and indicates that between 3 and 10 percent of precipitation was recovered from the lysimeters. It should be noted that since the lysimeters are relatively shallow installations, upward capillary 'wicking' of moisture is considered possible and thus, these values should be considered to represent a low-end estimation of net infiltration into the rock pile.

3.2.2 Seepage and Ponding Surveys

Seepage Surveys

Reconnaissance for seeps in spring 2009 was completed both on and around the rock pile perimeter, as well as several hundred metres downgradient in the Dome Creek valley, where an old powerline/waterline road cuts across the slope. Data from the 2009 seepage reconnaissance surveys are given in Appendix A.3 including site coordinates, general description, photograph number, estimated flow (if available) and field pH and conductivity measurements. In addition, Lorax sampled a seep located in the mid-levels of the pile in late April 2009; however, this seepage ponds on the West Mid Pile platform prior to infiltrating to waste rock and/or evaporating.

As noted in Altura Environmental Consulting (2009a), two seepage areas were observed in the late 2008 field season: i) NW Seep-01, a low-flow seepage from the toe of the east side of the NW Pile, and ii) LW Seep-01, at the toe of the Lower West pile. No additional seep areas from the waste rock pile were identified in the 2009 surveys. However, the surveys did identify that the Lower West seep area is comprised of a wide belt of small pondings and flows in and over vegetation, including the main LW Seep-01 point. This entire vegetated area was noted to be underlain by permafrost within 30cm of surface, and its vegetation cover of thick sphagnum moss / black spruce / labrador tea can be seen as a distinct zone in the satellite photograph. On May 14, seepage at LW Seep-01 was observed to daylight on the face of the Lower West pile approximately 2 m above the toe, however by May 22 all seepages were confined to the immediate toe area and in the mossy area downgradient.

Seepage and water accumulations in the Lower West seepage zone consistently returned high levels of conductivity (in the 1500 to 2000 µS/cm range) and pH in the slightly acidic to neutral range. Water quality monitoring over the coarse of the 2009 field season returned elevated concentrations of zinc, cadmium and copper from the LW Seep-01 site (in the order of 20 mg/L Zn, 0.15 mg/L Cd, and 0.2 mg/L Cu). Flow rates were difficult to ascertain, but were estimated to peak at 0.4 L/s during May and markedly decrease from June throughout the remainder of the summer and fall. A shallow mini-piezometer to facilitate sampling was installed at the LW Seep-01 site on July 8, penetrating just 40 cm below the top of vegetation with the intent of intercepting seepage above the permafrost layer. At the time of installation, the static water level was 20 cm below the top of vegetation. It is understood that EDI attempted to sample from the piezometer but encountered an obstruction (possibly ice?), and instead, continued to sample the site from water pondings in the immediate area.

Downslope in Dome Creek valley, a broad moist area was encountered downgradient from the Lower West seepage area and it appears that the rock pile seepage converges into a single tributary approximately 250m from the waste rock pile toe. Station DESS-01 (Dome East Slope Seep) was established in late May at this location and was monitored several times during the summer and early fall. Two flanking stations with substantially less flow DESS-02 (to southeast) and 03 (to northwest) were also monitored a few times. Results from DESS-01 indicate a strong Zn signature in the order of 3 to 4 mg/L, with estimated flows up to 1 L/s in late May and gradually diminishing over the summer.

Site NW Seep-01 at the eastern toe of the Northwest Pile produced only minor amounts of seepage during the 2009 monitoring season (in the order of 1 mL/min or 0.00002 L/s). Concentrations of Zn were slightly elevated in the order of 0.1 mg/L, with Cd tending to be in the 0.002 mg/L range.

Ponding Surveys

Reconnaissance to identify areas of water ponding on the rock pile was conducted in May, and seven sites were identified as given in Appendix A.3. Field measurements indicated circum-neutral waters with conductivity typically less than 1000 µS/cm. In contrast, many ponded areas in vegetation below the Lower West pile had markedly higher conductivity with pH neutral to slightly acidic.

3.2.3 Pit Area Investigations

Altura's investigations in the pit area consisted of overseeing the geological mapping of pit wall and Pony Creek area to north, sampling along several benches of the pit wall for static test work, mineralogical investigations of precipitate, and test excavation and sampling of ore backfilled into the south end of the pit.

Geological Mapping

Altura contracted Protore Geological Services (Robert Stroshein, P.Geo.) to update the pit wall geological map and to provide additional geological interpretation of the Pony Creek area to north. Protore provided a summary memorandum (Stroshein, 2009) and sketch map which were both forwarded to AECOM. The map was then digitized by AECOM and is included in the AECOM hydrogeological assessment. In general, the updated work highlighted the recognition of weak to moderately metamorphosed units within the pit area, as well as the presence of a small plug of marbleized carbonate unit at the north end of the pit. While the mapping confirmed previous interpretations that the most prominently defined faulting trends northwest, it also identified an east-dipping fault on the hangingwall side of the pit which along with the previously identified footwall fault, contains the deposit as a zone of alteration and structural weakness within a graben like structure. At the north end of the pit, a quartzite unit in the lower benches is relatively impervious and Stroshein's interpretation is that seasonal seepage into the pit daylights just above this horizon.

Sampling

Sampling along several benches of the pit wall was conducted in late July, with a total of 14 samples submitted for static testing. In most cases, samples were composites over intervals of several tens of metres in order to obtain average-condition values. Data is given in Appendix A.4, and results were forwarded to Lorax to assist in their defining source terms for the open pit water quality model. Overall, the lower footwall area of the pit returned elevated shake flask metal loadings (7.8 to 1113 mg/kg Zn), accompanied by slightly acidic to acidic paste pH. This is considered largely attributable to a veneer of residual ore (mainly sulphidic) exposed along the footwall in the lowest bench. Metal loading was less than 1 mg/kg for samples elsewhere in the pit. Almost all samples showed relatively low NP:AP with only 3 of the 14 samples returning values ≥ 3.0, and the occurrence

of sulphides were noted in some areas of the upper pit, indicating the non-uniformity of surface oxidation depth.

Mineralogy – Precipitate Analysis

Samples of secondary mineral products were taken from site PWE-07 on the lower east pit wall of the pit on July 30. The purpose of this sampling was to identify the mineral products in order to gain a better understanding of soluble products and of potential solubility constraints of the rock exposed in the pit. In this area, secondary minerals form a distinct white-green zone on a small talus fan of highly weathered and sulphidic material. While smaller formations of similar-looking products are seen in some other areas of the pit, it should be noted that the area sampled represented an anomalously thick and concentrated accumulation of these products.

Samples were submitted to the Queen's University Department of Geological Sciences and Geological Engineering for x-ray diffraction analysis. Of most interest was the identification of both the white-green and more darker green products; as such two separate samples were submitted PWE-07a (pale white-green precipitate crust on rock fragments) and PWE-07b (green precipitate crust on rock fragments). Detailed results and a summary memo are given in Appendix A.8. In general the mineralogy indicates a dominance of magnesium and iron sulphate minerals forming in the precipitate.

Ore Backfill Sampling

Ten test pits in the order of 1.5 metres deep (OB01 to OB10) were completed in the ore material backfilled into the south end of the Brown McDade pit. This material is stockpiled ore from the upper platform of the mill site near the crusher feeder, and was relocated back to the pit in the fall of 2008. Stroshein (pers. communication, 2008) believes this material originates from an ore zone discovered in the south end of the pit late in the mine's life. A total of 9 samples were submitted for various static analyses. Data is given in Appendices A.5 and A.6, and results were forwarded to Lorax to assist in their defining source terms for the open pit water quality model. Lorax also took bulk samples from pits OB09 and OB10 for use in their test bin program.

Site personnel indicate that a veneer of organics from the original base of the stockpile was spread over the backfilled area at the end of the ore relocation project, and likewise, some of the test pits did not intercept ore-like material. Nonetheless, static test results from several excavations particularly in the upper elevations of the backfill (eg. OB04 and OB07 through OB10) do confirm that much of this material is of ore grade and with a tendency for elevated values of sulphide, gold, arsenic and shake flask zinc loading.

3.2.4 Additional Testing in Waste Rock Pile Area

Altura's 2009 investigations in the waste rock pile area consisted of geochemical investigations by way of additional test pits in the West Lower and West Mid piles to follow up on anomalous levels of metals in seep LW Seep-01, additional sampling of free dump piles of coarse material on the West Lower pile, and test pits in the area just west of the pit where an old ore stockpile area was located during mine

operation. Trenching in Southwest Upper pile was conducted to assess heterogeneity, field screening feasibility, and potential for use of waste rock as general construction fill material. Finally, several samples from the 2008 assessment were submitted for identification of neutralizing minerals in waste rock.

West Lower and West Mid Pile Test Pits

As mentioned in section 3.2.2, monitoring of seep LW Seep-01 during 2009 returned elevated concentrations of zinc, cadmium and copper from the LW Seep-01 site (in the order of 20 mg/L Zn, 0.15 mg/L Cd, and 0.2 mg/L Cu). In an effort to identify any specific source material causing these high concentrations, eight additional test pits (TP22 to TP29) were completed in the West Lower and West Mid pile area during 2009, with a total of ten samples submitted for various static analyses. Sample descriptions and results are provided in Appendices A.5 and A.6. Only two of nine samples assessed for field paste pH returned values below 6.5, and both these samples in turn yielded the only elevated shake flask zinc values from this area (5.3 and 141 mg/kg Zn from TP 29 and TP26 respectively). The TP26 sample was taken from a 0.2 m wide pyritic horizon cutting across the test pit, and its result represents the highest zinc leaching value out of all 56 shake flask tests conducted in both the waste rock pile and ore backfill areas. The site is located approximately 40 m upgradient from seep LW Seep-01, thus could be contributing to the elevated zinc in the downgradient seepage.

Another important finding of the test pits in this area is the occurrence of frozen ground conditions within portions of the West Lower and West Mid waste rock piles – 1.6 to 2.0 m below the platform in the West Lower pile, and in the order of 3.5 m below the platform for the West Mid pile. As summarized in Altura (2009b), it is considered that the underlying frozen layer of waste rock acts as an infiltration barrier. Infiltrating water follows this interface down-gradient to where the water can be seen at or just below the surface of the moss at the toe of the Lower West pile, which during 2009 was monitored at site LW Seep-01.

Free Dump Pile Sampling, West Lower Pile

One additional site on the West Lower coarse rock free-dump piles was sampled in 2009 to supplement the three sites sampled in 2008. The intent of this sampling is to characterize the feasibility of material use for construction purposes. Both coarse and fine fractions were analysed for acid base accounting, multi-element analysis, and shake flask extractions, with results given in Appendix A.7. While traces of pyrite were visible on about a quarter of the fragments examined, laboratory results for both the fine and coarse fractions returned only 0.01% sulphide, paste pH in the order of 7.0, a low NP of around 5 kg $CaCO_3$/t, and favourable NP:AP ratios of greater than 10. Shake flask results, performed only on the fine fraction, yielded less than 0.1 mg/kg Zn and no other metals of note. Results considering all four West Lower sites sampled are overall favourable with respect to the use of this material for construction purposes, however it is cautioned that pockets of sulphidic material do occur within the material stacked on the West Lower platform. In addition, the four sites sampled contain a wide range of metal concentrations (51 to 2989 ppm As and 274 to 1349 ppm Zn), and thus metals may be solubilised under various pH and redox conditions. As such this material is likely unsuitable for

applications such as waterway protection or subdrains. If used for a specific construction purpose, the material should be carefully field-screened and sulphide-bearing, low paste pH, or highly altered and bleached material not utilized.

Old Ore Stockpile Area

Topography based on 1998 aerial photography (six to eight months before mine closure) shows the presence of stockpiled material in the central part of the Brown McDade waste rock pile area, immediately west of the pit. Given the presence of rust- stained patches throughout this area, five test pits (OS-01 to OS-05) were completed to test the material underlying this sector. Excavations and sample packaging and shipment were carried out under the supervision of Altura, with sampling and pit descriptions completed by Lorax (2009).

Results, given in Appendices A.5 and A.6, indicate the presence of a shallow veneer of residual ore (eg. 1 to 5 ppm Au with 198 to 5197 ppm As), and with it, varying levels of sulphide. Two of the seven samples indicated paste pH in the 6.0 range, and one sample from OS-01 returned a paste pH of 4.29. Shake flask leachable metals were low with the exception of the OS-01 sample, which returned 64.5 mg/kg Zn along with 1.5 mg/kg Cd, 4.6 mg/kg Cu, and 0.07 mg/kg As.

Trenching in Southwest Upper Pile

A 13-metre long by 2 metre wide by 1.6 metre deep trench was cut through a section of the Southwest Mid Pile in order to visually assess larger scale spatial variability of waste rock in the pile. Along the 13 metre stretch 3 main zones were identified: 1) a blocky intrusive material with minor fines (approximately 3 m in length and the full trench depth), 2) a rust-weathering and clayey zone (approximately 8 m at surface tapering to 1m at bottom of trench), and 3) dark brown fines with small cobble-sized fragments (2 m in length and the full trench depth). This variability is consistent with that observed in the smaller test pits and profile trenches completed in other areas of the waste rock pile, and it demonstrates that the material can show substantial variation in particle size and weathering over the space of a few metres. As indicated in Altura (2009c), if this material is used for construction purposes other than general fill, some form of field screening assessment would likely be required along a similar spacing.

Identification of Neutralizing Minerals

Eight samples from the 2008 waste rock characterization program were selected in August 2009 for mineralogy assessment via x-ray diffraction (XRD). The purpose of this sampling was to gain a better understanding of potential neutralizing minerals available in various geochemical categories of waste rock. The 2008 waste rock database was analysed and four 'Neutralizing Potential Categories' were designated:

Category 1: Moderate to High C-NP and Relatively Low NP

Category 2: Moderate to High C-NP and Equivalent or Higher NP

Category 3: Lower C-NP

Category 4: Very Low C-NP and NP

A discussion of results and original laboratory reports are included in Appendix A.9. In general, quartz is by far the dominant gangue mineral with much higher peak intensities than the other minerals. Muscovite ($(KAl_2(Si_3Al)O_{10}(OH,F)_2)$) was also reported in all samples, but with varying peak intensity levels. Carbonate minerals included ankerite ($Ca(Fe^{+2},Mg)(CO_3)_2$) and calcite ($CaCO_3$)were detected only in the samples in the two higher NP and C-NP categories.

3.2.5 Pre-Mine Topography, Pit and Rock Pile Area

In 2008 Assessment and Abandoned Mines Branch provided Altura with an original mylar topographic map of the Mount Nansen area with 10 m contours generated from circa 1987 aerial photography. It was not known if pre-mine topography for the pit and rock pile area existed in a more detailed digital format.

In 2009 Altura consulted with Protore Geological Services and Underhill Geomatics to determine the existence of this digital data. Protore have much of the archived digital geology and pit data from the mine operation phase but was unable to identify any dtm or other topographic data files that showed original topography, particularly in the pit and rock pile area. Underhill Geomatics conducted an updated pit survey in 2003, but do not have pre-mine topography in their archives.

4.0 Closure

This report was prepared for the Assessment and Abandoned Mines Branch, Department of Energy, Mines and Resources of the Government of Yukon. The report, which specifically includes all text, figures, tables and appendices, is based on information provided by the client, and on data and information collected during the investigations conducted by Altura Environmental Consulting.

The work described in this report was conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Altura Environmental Consulting sincerely appreciates the opportunity to participate in and contribute to the decommissioning phase of the Mount Nansen site. Please direct any questions regarding the contents of this report to the undersigned at 867-335-2006.

Prepared by:

ALTURA ENVIRONMENTAL CONSULTING

Diane Lister, M.A.Sc., P.Eng.

5.0 References

Altura Environmental Consulting, 2009a. *Brown McDade Waste Rock Pile, Mount Nansen Mine Site, Yukon – Geochemical Characterization.* Report prepared for Government of Yukon Assessment and Abandoned Mines Branch, Energy, Mines and Resources, 237 pp.

Altura Environmental Consulting, 2009b. *Waste Rock Pile Catchment Areas – Proposed Zones, Updated Version.* Technical Memo to Andrew Rollo of Lorax Environmental dated October 4, 2009, 6pp.

Altura Environmental Consulting, 2009c. *Mount Nansen Mine Closure – Summary of Studies Assessing Waste Rock Field Screening Potential.* Technical Memo to AECOM dated December 18, 2009, 10 pp.

Altura Environmental Consulting, 2009d. *Mount Nansen Mine Closure: Mine to Mill Haul Road – Summary of Rock Characterization Studies.* Technical Memo to AECOM dated December 22, 2009, 8 pp.

Altura Environmental Consulting, 2009e. *Water Infiltration as Indicated by 2009 Lysimeter Waste Rock Monitoring Data.* Technical Memo to Andrew Rollo of Lorax Environmental, dated September 30, 2009, 3 pp.

Lorax Environmental, 2009. *Mt. Nansen Ore Stockpile Area Test Pits and Sampling*. Memorandum to Altura Environmental Consulting, July 21/09, 5pp.

Stroshein, Robert, P.Geo., Personal Communication, 2008. Former employee of BYG Natural Resources Inc.

Stroshein, Robert, 2009. *Geological Considerations at the Brown-McDade Open Pit*. Memorandum to Diane Lister, Aug. 21/09, 2pp.

Appendix A 2009 Field Program Methodology and Results

A.1 Methodology
A.2 Lysimeter Summary Data
A.3 Seepage and Ponding Data
A.4 Pit Wall Sampling Data
A.5 Fill Sampling - Descriptions
A.6 Fill Sampling - Data
A.7 Coarse and Fine Data
A.8 Precipitate Mineralogy Memorandum and Results
A.9 Neutralizing Minerals Memorandum and Results
A.10 As-Received Static Test Laboratory Results, SGS CEMI

A1.1 Field Methodology

General Field Practices

Field work utilized an autocad base map provided by Assessment and Abandoned Mines Branch (*Master.dwg*), as well as oblique photos taken from the air in August 2008. Altura was provided with a georeferenced Tiff satellite photo file in January 2009 (*alpha_oMtNansen_QB_02Sept2008_utm8*); this photo was used for plotting sample and major feature information shown in several of the figures in the main report.

Field coordinates were determined on a NAD 83 datum using a Garmin 60CSx GPS, which for most all points reported accuracy of ±3-4 m horizontal and ±5 m vertical. Field water quality parameters were measurement using a Hanna HI 98130 Combo pH and EC meter, calibrated daily. Field paste pH measurements were determined by the Hanna meter.

Rock Sampling Practices

Geochemical samples were taken using a rock hammer to loosen and extract the sample, and then hand-loading into the sample bag. Samples were then double-bagged in heavy duty clear plastic sample bags.

Test Pits and Other Sampling

Test pits were excavated (typically to 1.0 to 2.0 m depth) using a locally contracted excavator during early July.

Construction Rock Samples

Free-dumped coarse rock was sampled at site CR LW-4 for the purposes of determining suitability for construction material. Both a coarse (chips from cobble and larger-sized fragments) and fine (-1/4" fines) sample was taken from the site. Similarly, coarse and fine fractions were taken from one test excavation on the haul road (HR13).

A1.2 Laboratory Methodology

Table A.1.1 provides details on analysis methodologies.

Note that on most samples, only the minus ¼" fraction of waste rock was analysed for geochemical parameters, in order to get better representativity of the higher surface area particles. Nonetheless, to provide comparison information, analysis of the +¼" fraction was carried out on several of the lysimeter samples in 2008.

A1.3 Data Recording and Data Management

Sample Description

Rock type, alteration, sulphide mineral presence/absence, and matrix characteristic information was entered into the compiled databases.

Rock samples taken in 2009 were described in terms of rock type, matrix texture, and matrix colour. Other observations included other features such as degree of alteration, presence/absence of sulphide minerals, dominant staining, effervescence or other distinct weathering features.

Data Management and Analysis

Analysis data were provided in digital format by the laboratory. Data were merged with the sample location and description information into an Excel™ spreadsheet.

For statistical analysis purposes, analytical results outside of minimum or maximum limits of detection were assigned a value equal to the respective detection limit.

Analysis was carried out using Excel™, XLStat™ , and XLStat 3-D Plot™ software. Primary tools for data analysis included: i) descriptive statistics, ii) box and whiskers plots to graphically demonstrate data tendencies and allow visual comparison by a given category, and iii) review of correlation coefficient and scatterplots to identify key inter-relationships between parameters.

Google™ Earth Pro Version 5.0 was utilized for spatial viewing of the sample sites and select data parameters.

Table A.1.1 Waste Rock Geochemical Physical Analysis Methodology

Analysis	Laboratory	Method(s)
Acid Base Accounting	Carried out by SGS CEMI, Vancouver , with subcontracting to other laboratories as required.	Paste pH: as per procedure by Sobek A., et. al. 1978 "Field and Laboratory Methods Applicable to Overburdens and Minesoils" (Report EPA-600/2-78-054) Neutralization Potential: Modified ABA procedure described in "Acid Rock Drainage Prediction Manual", March, 1991. In this procedure the pH is maintained between 1.5 and 2.0 using either 0.1N or 0.5N based on a fizz test. After 24h on a gyratory shaker the sample is back titrated to 8.3. Total Sulphur : via Leco furnace Total Inorganic Carbon: Using a direct analysis method. In this procedure a known weight of sample is placed in a closed vessel with hydrochloric acid and heated to approximately 90°C to evolve carbon dioxide from the sample. The gas is then purged into a Leco analyzer where the concentration of CO_2 is determined by an infrared detector. The percent CO_2 is converted to equivalent kg $CaCO_3$/tonne by multiplying by 1000/44. Sulphate-sulphur: determined by leaching a known weight of sample with 25% HCl to dissolved sulphate sulphur. The sulphur is then analyzed by ICP and expressed as sulphate-sulphur.
Leachate Extraction (Shake Flask Extraction)	Carried out by SGS CEMI, Vancouver , with subcontracting to other laboratories as required.	The leachate extraction tests used a 3:1 liquid to solids ratio typically with 750 mL of nanopure water and 250 g of sample material (most samples were -1/4", however 'coarse' samples were crushed to pass 3/8"). Extraction solutions were collected after agitating the mixture 24 hours, filtered, and submitted for analysis including pH, redox, conductivity, acidity (to pH 4.5), total Acidity (to pH 8.3), alkalinity, sulphate, and dissolved metals via ICP-MS (Inductively Coupled Plasma – Mass Spectroscopy) methods.
Multi-Element ICP	Carried out by SGS CEMI, Vancouver , with subcontracting to other laboratories as required.	Aqua Regia Digestion with ICP-MS Finish

Lysimeter Location

Lysimeter	Location	Northing	Easting	Elevation (masl)	Estimated Liner Area (m^2)	Estimated Volume (m^3)
L1	NW Pile	6881664	388766	1237	26.6	15
L2	W Lower Pile	6881457	388712	1218	17.5	12

Summary of 2009 Water Quality Monitoring Results

			Lysimeter L1 - Northwest Pile			Lysimeter L2 - West Lower Pile		
Analyte	**Units**	**Detection Limit**	**Count**	**Min**	**Max**	**Count**	**Min**	**Max**
Field-pH			2	7	7.11	2	7.57	7.7
Field-cond	**uS/cm**		2	3788	4720	2	1310	1563
Field-Temp	**oC**		2	2.55	4.38	1	3.74	3.74
Conductivity	uS/cm		4	1820	3680	3	1190	1390
Hardness (as CaCO3)	mg/L	1	3	1240	2750	2	665	838
pH	pH	0.1	4	6.99	7.29	3	7.59	7.73
TSS			2	8	145	2	19	32
Total Dissolved Solids	mg/L	10	3	1910	3600	2	738	938
Acidity			1	12	12	1	5	5
Alkalinity, Total (as CaCO3)	mg/L	2	4	30	75	3	59	64
Bicarbonate Alkalinity			4	40	90	3	70	80
Carbonate Alkalinity			4	6	6	3	6	6
Hydroxide Alkalinity			4	5	5	3	5	5
Ammonia as N	mg/L	0.005	2	0.01	0.04	2	0.02	0.12
Chloride (Cl)	mg/L	0.5	3	0.79	1.57	2	0.4	0.66
Nitrate (as N)	mg/L	0.005	4	0.27	1.17	3	0.14	0.25
Nitrite (as N)	mg/L	0.001	3	0.01	0.33	2	0.01	0.1
Sulfate (SO4)	mg/L	0.5	4	1340	2940	3	467	746
Ag	mg/L	0.00001	4	0.00001	0.0001	3	0.00001	0.0001
Al	mg/L	0.001	4	0.005	0.005	3	0.005	0.005
As	mg/L	0.0001	4	0.0027	0.0056	3	0.0075	0.0088
B	mg/L	0.01	4	0.004	0.004	3	0.004	0.004
Ba	mg/L	0.00005	4	0.002	0.004	3	0.01	0.022
Be	mg/L	0.0005	4	0.00004	0.00004	3	0.00004	0.00004
Bi	mg/L	0.0005	4	0.0001	0.001	3	0.0001	0.001
Ca	mg/L	0.05	4	319	456	3	161	212
Cd	mg/L	0.000017	4	0.00736	0.0323	3	0.0013	0.00141
Co	mg/L	0.0001	4	0.00011	0.00101	3	0.00007	0.00014
Cr	mg/L	0.0005	4	0.0004	0.0004	3	0.0004	0.0004
Cu	mg/L	0.0001	4	0.001	0.01	3	0.001	0.001
Fe	mg/L	0.03	4	0.01	0.02	3	0.01	0.01
Hg	ug/L		3	0.01	0.01	2	0.01	0.01
K	mg/L	2	4	1.8	6.1	3	3.7	4.7
Li	mg/L	0.005	4	0.003	0.013	3	0.004	0.005
Mg	mg/L	0.1	4	95.5	488	3	63.8	75.9
Mn	mg/L	0.00005	4	0.0613	4.64	3	0.005	0.018
Mo	mg/L	0.00005	4	0.00003	0.0001	3	0.00002	0.0001
Na	mg/L	2	4	0.4	1.4	3	1	1.4
Ni	mg/L	0.0005	4	0.002	0.008	3	0.001	0.003
P	mg/L	0.3	4	0.01	0.02	3	0.01	0.08
Pb	mg/L	0.00005	4	0.0001	0.0001	3	0.0001	0.0001
S	mg/L		3	445	831	2	156	256
Sb	mg/L	0.0001	4	0.001	0.0016	3	0.0009	0.0015
Se	mg/L	0.0005	4	0.0006	0.0044	3	0.0006	0.0006
Si	mg/L	0.05	4	0.45	1.92	3	1.19	1.37
Sn	mg/L	0.0001	4	0.0001	0.0001	3	0.0001	0.0001
Sr	mg/L	0.0001	4	0.443	1.04	3	0.61	0.694
Te	mg/L		1	0.0001	0.0001	1	0.0001	0.0001
Th	mg/L		4	0.0001	0.0004	3	0.0001	0.0004
Ti	mg/L	0.01	4	0.0004	0.031	3	0.0003	0.0068
Tl	mg/L	0.0001	4	0.00009	0.00014	3	0.00002	0.0001
U	mg/L	0.00001	4	0.0004	0.0009	3	0.001	0.0012
V	mg/L	0.001	4	0.0001	0.00014	3	0.00007	0.0001
Zn	mg/L	0.001	4	0.154	2.39	3	0.032	0.042
Zr	mg/L		4	0.0001	0.0002	3	0.0001	0.0001

Summary of 2009 Seepage and Ponding Recconnaissance Surveys

Site	Latitude	Longitude	Easting	Northing	Elev (masl)	Date Surveyed	Type	pH	Cond	Temp_C	Type	Description
NW Seep-01	N62.05040	W137.12614	388837	6881617	1220	ongoing	Seep	7.7	2000	-99	Monitoring Point	NW Seep-01
LW-Seep-01	N62.04815	W137.12839	388711	6881371	1195	ongoing	Seep	6.6	2500	-99	Monitoring Point	LW-Seep-01
DESS-01	N62.04598	W137.12976	388632	6881131	1160	ongoing	Surface Flow	5.7	1400	-99	Monitoring Point	Dome East Slope Seep- 01 (Sample Station DESS-01)
DESS-02	N62.04561	W137.12844	388699	6881087	1156	ongoing	Seep	7.7	1300	-99	Monitoring Point	Dome East Slope Seep-02 (Sample Station DESS-02)
DESS-03	N62.04606	W137.13193	388518	6881143	1165	ongoing	Seep	6.1	40	-99	Monitoring Point	Dome East Slope Seep- 03 (Sample Station DESS-03); note extremely low conductivity
Wpt 091	N62.04923	W137.12892	388687	6881491	1212	39947	Ponding	-1	-1	-99	Reconnaissance	minor ponded area in vegetation, fotos 207-08
Wpt 092	N62.04895	W137.12894	388685	6881461	1207	39947	Ponding	7.44	800	-99	Reconnaissance	ponded area in vegetation, approx 4m off toe, some evidence (or. Stained snow) of fines and possible water migration
Wpt 093	N62.04825	W137.12858	388702	6881382	1198	39947	Ponding	7.23	1670	-99	Reconnaissance	minor ponding around boulders, approx. 2 m from toe; fotos 209-210
Wpt 095	N62.04812	W137.12814	388724	6881367	1200	39947	Ponding	3.91	2270	-99	Reconnaissance	ponded area in vegetation, approx 5m off toe, 40X50 cm pond. Orange precipitate in pond, foto 211. Note: ponding had disappeared by May 22/09
Wpt 098	N62.04803	W137.12802	388730	6881356	1200	39947	Ponding	5.95	2930	-99	Reconnaissance	30X30 cm pond in vegetation
Wpt 100	N62.04772	W137.12743	388760	6881321	1197	39947	Ponding	7.28	2510	-99	Reconnaissance	old trench abuts toe; no flow in trench, water tested from accumulation on top of a boulder wedged in toe; foto 212
Wpt 101	N62.04726	W137.12554	388857	6881266	1202	39947	No Seepage or Po	-1	-1	-99	Reconnaissance	old trench abuts toe; no flow in trench, foto 213 looking down trench
Wpt 102	N62.04700	W137.12475	388897	6881236	1202	39947	Ponding	7.51	180	-99	Reconnaissance	ponding underneath toe boulders, no seep. By conductivity, appears to be largely snow melt.
East 1	N62.050917	W137.123183	-1	-1	-1	39955	Surface Flow	-1	250	-99	Reconnaissance	approx 20L/min flow along margin of road and East Pile toe, foto 230, appears to be largely originating from snowmelt
East 2	N62.051284	W137.12455	-1	-1	-1	39955	Ponding	-1	150	-99	Reconnaissance	approx area where Lorax indicated they sampled a seep in April (location later corrected by Bruce, see site WR 09-1), minor accumulation of snow and slight damp area, foto 231
WR 09-1	N62.04818	W137.12625	-1	-1	-1	39932	Seep	6	-1	7	Reconnaissance	seep sampled by Lorax, Total Fe: 0.03 mg/L Ferrous Fe: 0.00 mg/L Sulfate: 276 mg/L Sulfide: 0.01 mg/L ALS file L758528 Flow Approx 0.5 L/min
NW 1	N62.049542	W137.126444	-1	-1	-1	39955	Ponding	6.62	1110	-99	Reconnaissance	toe of nose of NW pile, snowmelt pond accumulation
Wpt 103	N62.04827	W137.12542	388867	6881378	1211	39955	Ponding	7.09	180	-99	Reconnaissance	ponded water south of small ore stockpile, approx 12X7 m X 0.2 m deep, foto 243

Site	Latitude	Longitude	Easting	Northing	Elev (masl)	Date Surveyed	Type	pH	Cond	Temp_C	Type	Description
Wpt 104	N62.04817	W137.12627	388822	6881369	1215	39955	Ponding	6.89	590	10	Reconnaissance	ponded water west of main road through rock pile, orange and brown fines on snow and in pond, approx 0.5X1m, foto 244
Wpt 105	N62.04877	W137.12807	388730	6881439	1214	39955	Ponding	7.3	140	-99	Reconnaissance	snowmelt accumulation / ponded water amongst free dump piles
Wpt 106	N62.04809	W137.12837	388712	6881364	1197	39955	Ponding	6.87	1940	1	Reconnaissance	ponded area in vegetation, over permafrost, 0.4X0.4m
Wpt 107	N62.04801	W137.12855	388702	6881355	1195	39955	Ponding	6.85	2000	0.9	Reconnaissance	ponded area in vegetation, over permafrost, 0.4X0.4m, orange fines on bottom
Wpt 108	N62.04783	W137.12869	388694	6881336	1191	39955	Surface Flow	6.85	1990	0.5	Reconnaissance	slow-flowing ponded area, 0.3X0.3m, flow approx 1L/min, site flagged
Wpt 109	N62.04751	W137.12845	388705	6881299	1188	39955	Ponding	7.35	710	2.2	Reconnaissance	termination of trench, standing water
Wpt 110	N62.04771	W137.12860	388698	6881322	1191	39955	Ponding	6.54	2420	2	Reconnaissance	ponded area in vegetation, 0.3X0.3m
Wpt 111	N62.04791	W137.12837	388711	6881344	1196	39955	Ponding	5.68	2640	2	Reconnaissance	0.3X1.0m ponded area with remnant ice, trace orange finds in bottom, marked with flagging, fotos 249-251
Wpt 112	N62.04752	W137.12476	388899	6881294	1211	39955	Ponding	7.32	560	11.5	Reconnaissance	remnant of ponded area, snowmelt/runoff from west sector of South pile, foto 252
Wpt 113	N62.04429	W137.12036	389117	6880927	1134	39955	No Seepage or Po	-1	-1	-99	Reconnaissance	powerline road, no seepage observed, road dry
Wpt 114	N62.04474	W137.12325	388967	6880982	1143	39955	No Seepage or Po	-1	-1	-99	Reconnaissance	powerline road, pumphouse area, no seepage observed, road dry
Wpt 115	N62.04504	W137.12564	388844	6881019	1149	39955	Moist	-1	-1	-99	Reconnaissance	powerline road, transition point to moist area, no water w/in 15cm of surface
Wpt 116	N62.04544	W137.12758	388744	6881067	1154	39955	Ponding	-1	-1	-99	Reconnaissance	powerline road, start of surface water ponding and flows (originating from point approx 70 up road to nw)
Wpt 117	N62.04561	W137.12844	388699	6881087	1156	39955	Seep	7.6	1200	3.3	Reconnaissance	powerline road, start of seeps from uphill cut along road, approx 8 m strip of drips, site DESS-02
Wpt 120	N62.04631	W137.12964	388639	6881168	1166	39955	Surface Flow	-1	1410	-99	Reconnaissance	low flow tributary leading uphill towards rock pile, 1-2 L/min
Wpt 121	N62.04629	W137.12981	388630	6881166	1163	39955	Surface Flow	5.86	460	3.9	Reconnaissance	uphill terminus of creek above DESS-01, flow approx 15 L/min
Wpt 123	W137.13011	N62.04596 W137.13011	388613	6881129	1162	39955	Seep	6.25	10	7	Reconnaissance	< 1L/min seep onto powerline road

Summary of 2009 Pit Wall Sampling

Site	Sample #	SGS CEMI Sample	Fraction	Wall	Approx. Level	Waypoint(s)	Start Easting	Start Northing	Start Elev (masl)	End Easting	End Northing	End Elev (masl)	Date	Foto	General Description
09 PWN-01	PWN-01	PWN-01	Coarse (+1/4")	North	Upper	211	388868	6881693	1206	NA	NA	NA	29-Jul-09		Calcareous quartzite / meta-sandstone, upper bench of north end of pit. Sample from blocky talus
09 PWN-02a	PWN-02a	PWN-02a (-1/4")	Fine (-1/"4")	North	Upper	212	388873	6881702	1203	388868	6881694	1203	29-Jul-09	339	composite of talus fines along pit mid-bench, north end of pit, variably oxidized with some visible sulphides
09 PWN-02b	PWN-02b	PWN-02b (-1/4")	Fine (-1/"4")	North	Upper	212	388873	6881702	1203	388883	6881707	1203	29-Jul-09		composite of talus fines along pit mid-bench, north end of pit, variably oxidized with some visible sulphides
09 PWE-01	PWE-01	PWE-01 (-1/4")	Fine (-1/"4")	East	Upper	214-215	388927	6881658	1213	388951	6881601	1214	30-Jul-09	402	composite of talus fines along pit upper-bench, east side. Highly weathered and fractured granodiorite with some bleached faulted zones
09 PWE-02	PWE-02	PWE-02 (-1/4")	Fine (-1/"4")	East	Upper	216-217	388982	6881503	1216	389017	6881377	1216	30-Jul-09	406	composite of talus fines along pit upper-bench, east side. Granodiorite with some dyking and/or wide veining, variable surface weathering
09 PWE-03	PWE-03	PWE-03 (-1/4")	Fine (-1/"4")	East	Upper	218-219	389064	6881293	1213	389048	6881324	1214	30-Jul-09	407	composite of talus fines along pit upper-bench, east side, south end. Metamorphic / intrusive contact zone. No sulphides observed during sampling.
09 PWE-04	PWE-04	PWE-04 (-1/4")	Fine (-1/"4")	East	Lower	NA	388950	6881565	1198	388927	6881607	1198	30-Jul-09		composite of talus fines along pit lower bench, east side, shore of main pit lake. Veneer of ore, obvious sulphides.
09 PWE-05	PWE-05	PWE-05 (-1/4")	Fine (-1/"4")	East	Lower	NA	388927	6881607	1198	388882	6881695	1198	30-Jul-09		composite of talus fines along pit lower bench, east side, shore of main pit lake. Veneer of ore, obvious sulphides.
09 PWE-06	PWE-06	PWE-06 (-1/4")	Fine (-1/"4")	East	Lower	NA	388956	6881548	1200	NA	NA	NA	30-Jul-09	409	channel sample (1.5m) of highly sulphidic slump, lower bench, east wall, between pit lakes
09 PWE-07	No static test sa	No static test sample		East	Lower	NA	388955	6881551	1200	NA	NA	NA	30-Jul-09	408	incrustations on rock surfaces in sulphidic slump zone (imm north of PWE-06), lower bench, east wall, between pit lakes
09 PWE-08	PWE-08	PWE-08 (-1/4")	Fine (-1/"4")	East	Lower	NA	388957	6881546	1200	388962	6881530	1200	30-Jul-09		composite of talus fines along pit lower bench, east side, shore of small pit lake (from north until access cut off). Some sulphides observed during sampling.
09 PWE-09	PWE-09	PWE-09 (-1/4")	Fine (-1/"4")	East	Lower	NA	388970	6881496	1201	388974	6881457	1201	30-Jul-09		composite of talus fines along pit lower bench, east side, starting at south end of small pit lake. Occasional sulphides observed during sampling.
09 PWW-01	PWW-01	PWW-01 (-1/4")	Fine (-1/"4")	West	Lower	NA	388882	6881695	1198	388902	6881627	1198	30-Jul-09		composite of talus fines along pit lower bench, west side, shore of main pit lake. Sulphides observed during sampling.
09 PWW-02	PWW-02	PWW-02 (-1/4")	Fine (-1/"4")	West	Lower	NA	388902	6881627	1198	388297	6881562	1198	30-Jul-09		composite of talus fines along pit lower bench, west side, shore of main pit lake. Sulphides observed during sampling.
09 PWW-03	PWW-03	PWW-03 (-1/4")	Fine (-1/"4")	West	Lower	NA	388941	6881525	1201	388951	6881475	1201	30-Jul-09		composite of talus fines along pit lower bench, west side, abeam small pit lake. Occasional sulphides observed during sampling.

Summary of 2009 Pit Wall Sampling

Site	Sample #	Other Comments	Field paste Ph	Field Cond (uS/cm)	ICP -1/4"	ABA -1/4"	SFE -1/4"	Large scale SFE	Other	Comments
09 PWN-01	PWN-01		Not done	Not done	1	1		ABA/ICP ON ENTIRE SAMPLE		
09 PWN-02a	PWN-02a		>6.5	260	1	1	composite of PWN-02a/b			
09 PWN-02b	PWN-02b		>6.2	420	1	1	composite of PWN-02a/b			
09 PWE-01	PWE-01		5.65	70	1	1		1		
09 PWE-02	PWE-02		7.01	120	1	1		1		
09 PWE-03	PWE-03		6.7	140	1	1		1		
09 PWE-04	PWE-04		6.3	3470	1	1		1		
09 PWE-05	PWE-05		4.58	3230	1	1		1		
09 PWE-06	PWE-06	small size samp	2.01	11200	1	1	1			
09 PWE-07	No static test sa	XRD sample or	Not done	Not done						
09 PWE-08	PWE-08		2.28	4690	1	1		1		
09 PWE-09	PWE-09		3.98	1130	1	1		1		
09 PWW-01	PWW-01		>6.4	1290	1	1		1		
09 PWW-02	PWW-02		>6.1	1130	1	1		1		
09 PWW-03	PWW-03		>6.2	1710	1	1		1		

Summary of 2009 Pit Wall Sampling

		ABA	ABA	ABA	ABA	ABA	ABA	ABA		ABA	ABA	ABA	ABA	ABA
Site	**Sample #**	**Paste_pH**	**Paste EC_µS/cm**	**TIC_%**	**C_NP_kgCaCO3/t**	**S(T)_%**	**S(SO4)_%**	**S(S-2)_%**	**%S2-**	**AP_kgCaCO3/t**	**NP_kgCaCO3/t**	**NNP_kgCaCO3/t**	**NP_AP**	**Fizz**
09 PWN-01	PWN-01	8.12	443	0.42	35.0	0.06	0.06	0.01	17%	0.3	36.0	36.0	120.0	Moderate
09 PWN-02a	PWN-02a	7.55	787	0.6	50.0	0.71	0.05	0.66	93%	20.6	46.9	26.3	2.3	Moderate
09 PWN-02b	PWN-02b	7.11	1275	0.54	45.0	0.85	0.08	0.77	91%	24.1	40.4	16.3	1.7	Moderate
09 PWE-01	PWE-01	6.15	4705	0.01	0.8	0.35	0.24	0.11	31%	3.4	3.4	0.0	1.0	None
09 PWE-02	PWE-02	6.46	2020	0.22	18.3	2.41	0.24	2.17	90%	67.8	20.9	-46.9	0.3	Slight
09 PWE-03	PWE-03	7.43	773	0.11	9.2	0.18	0.04	0.14	78%	4.4	13.7	9.3	3.1	Slight
09 PWE-04	PWE-04	4.88	3240	0.08	6.7	3.3	1.64	1.66	50%	51.9	3.7	-48.2	0.1	Slight
09 PWE-05	PWE-05	6.52	2350	0.42	35.0	2.4	0.63	1.77	74%	55.3	29.5	-25.8	0.5	Slight
09 PWE-06	PWE-06	2.39	16570	0.01	0.8	36.2	2.16	34.04	94%	1063.8	-30.5	-1094.3	0.0	None
09 PWE-07	No static test sa													
09 PWE-08	PWE-08	2.71	4060	0.01	0.8	5.38	1.3	4.08	76%	127.5	-11.7	-139.2	-0.1	None
09 PWE-09	PWE-09	4.17	1616	0.01	0.8	0.45	0.37	0.08	18%	2.5	-1.1	-3.6	-0.4	None
09 PWW-01	PWW-01	7.18	2080	0.64	53.3	1.67	0.14	1.53	92%	47.8	48.5	0.7	1.0	Moderate
09 PWW-02	PWW-02	6.87	2070	0.35	29.2	0.65	0.29	0.36	55%	11.3	29.4	18.2	2.6	Moderate
09 PWW-03	PWW-03	7.08	1924	0.42	35.0	0.47	0.25	0.22	47%	6.9	34.8	27.9	5.1	Slight

Summary of 2009 Pit Wall Sampling

		ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Site	**Sample #**	**Au_ppm**	**Ag_ppm**	**Al_%**	**As_ppm**	**Ba_ppm**	**Be_ppm**	**Bi_ppm**	**Ca_%**	**Cd_ppm**	**Ce_ppm**	**Co_ppm**	**Cr_ppm**	**Cs_ppm**	**Cu_ppm**	**Fe_%**	**Ga_ppm**	**Ge_ppm**	**Hf_ppm**	**Hg_ppm**	**In_ppm**
09 PWN-01	PWN-01	0.01	0.1	0.27	9.2	1710	1	0.1	1.49	0.2	7	0.4	64	2.1	3.8	0.23	1	0.1	0.1	0.103	0.01
09 PWN-02a	PWN-02a	0.35	3	0.42	692.9	298	1	3.1	1.66	13.3	15	8.9	69	3.7	43.7	2.71	1	0.1	0.1	0.077	0.23
09 PWN-02b	PWN-02b	0.29	3.6	0.5	529.5	231	1	4.6	1.5	8.8	24	9.2	54	3.7	68.7	2.98	2	0.1	0.1	0.064	0.26
09 PWE-01	PWE-01	0.13	2.7	1.53	436.5	282	1	3.3	0.29	15.3	32	16.4	61	5.4	388.4	4.33	5	0.1	0.1	0.039	0.16
09 PWE-02	PWE-02	0.17	10	1.22	282.2	90	1	16.1	1.15	7	17	11.8	65	7	106.9	5.14	4	0.1	0.1	0.063	0.25
09 PWE-03	PWE-03	0.06	2	1.53	116.5	425	1	2.4	0.77	2.5	18	13.8	60	6.7	53.7	3.19	5	0.1	0.1	0.047	0.06
09 PWE-04	PWE-04	0.43	6.6	0.77	2249.2	66	1	9.1	1.95	9.7	14	15.6	31	6.7	189.5	5.47	2	0.1	0.1	0.073	0.19
09 PWE-05	PWE-05	0.51	14.5	0.96	970.5	74	1	15.5	1.53	16.5	20	10.6	36	5.9	393.6	5.76	3	0.1	0.1	0.106	0.31
09 PWE-06	PWE-06	1.53	122.4	0.12	1731.8	9	1	233.8	0.85	27.8	1	22.3	54	0.6	793	10	1	0.8	0.1	0.091	2.2
09 PWE-07	No static test sa																				
09 PWE-08	PWE-08	0.55	34.2	0.45	787.2	43	1	25.8	0.62	11.5	9	13.7	55	4.8	374.4	6.79	2	0.1	0.1	0.085	0.57
09 PWE-09	PWE-09	0.15	3.3	1.33	510.1	321	1	3.6	0.22	17.2	70	7	36	7.9	334.9	4.87	3	0.1	0.1	0.132	0.37
09 PWW-01	PWW-01	0.1	5.2	0.78	163.5	133	1	6.1	1.82	10.8	27	11.1	49	10.4	58.5	4.04	3	0.1	0.1	0.085	0.3
09 PWW-02	PWW-02	0.24	4.1	0.67	267.2	231	1	5.1	1.24	12.2	29	7.5	38	5.2	133.3	3.55	2	0.1	0.1	0.092	0.38
09 PWW-03	PWW-03	0.09	2.8	0.58	332.6	282	1	2.5	1.3	17.8	26	9	75	8.9	149.7	3.48	2	0.1	0.1	0.112	0.33

Summary of 2009 Pit Wall Sampling

		ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Site	**Sample #**	**K_%**	**La_ppm**	**Li_ppm**	**Mg_%**	**Mn_ppm**	**Mo_ppm**	**Na_%**	**Nb_ppm**	**Ni_ppm**	**P_%**	**Pb_ppm**	**Rb_ppm**	**Re_ppb**	**S_%**	**Sb_ppm**	**Sc_ppm**	**Se_ppm**	**Sn_ppm**	**Sr_ppm**	**Ta_ppm**
09 PWN-01	PWN-01	0.11	4	1.1	0.07	94	8.6	0.03	0.3	2.6	0.015	8.8	3.3	5	0.06	0.7	0.3	0.5	0.1	91	0.1
09 PWN-02a	PWN-02a	0.15	8	2.1	0.36	1742	1.3	0.01	0.3	7.6	0.058	328.9	8.1	5	0.81	34.2	2.8	0.5	0.2	43	0.3
09 PWN-02b	PWN-02b	0.15	12	2.5	0.39	1570	1.2	0.01	0.1	7.4	0.079	337.2	8.2	5	1.00	20	3.8	0.5	0.2	50	0.1
09 PWE-01	PWE-01	0.26	16	8.8	0.47	1843	0.6	0.07	0.7	9	0.116	224.2	15	5	0.42	40.5	5.9	0.5	0.4	76	0.1
09 PWE-02	PWE-02	0.16	8	7	0.51	1874	0.5	0.02	0.4	10.1	0.09	467.6	10.6	5	2.30	24.6	5.1	0.5	0.3	41	0.1
09 PWE-03	PWE-03	0.17	8	9.2	0.78	1432	0.6	0.02	0.3	13.9	0.075	101.6	11.4	5	0.23	19.2	5.9	0.5	1.2	40	0.1
09 PWE-04	PWE-04	0.32	7	5.2	0.37	1285	1.1	0.02	0.2	7.4	0.09	443.2	18.7	5	3.31	94.5	4	0.5	0.4	60	0.1
09 PWE-05	PWE-05	0.22	11	6.1	0.56	2306	1.8	0.03	0.1	7	0.092	1480.4	12.4	5	2.54	166.2	4.2	0.5	0.3	89	0.1
09 PWE-06	PWE-06	0.11	1	3.1	0.07	305	0.6	0.01	1.8	3.5	0.01	5481.9	8.4	5	10.00	201.2	0.1	4.3	0.5	22	0.1
09 PWE-07	No static test sa																				
09 PWE-08	PWE-08	0.4	4	2.5	0.09	601	0.6	0.01	0.1	4.4	0.062	1312.8	19.8	5	4.85	185.5	1.5	0.5	0.2	35	0.1
09 PWE-09	PWE-09	0.27	39	8.1	0.2	2082	0.7	0.02	0.1	5.1	0.087	253.2	14.2	5	0.47	41.5	5.5	0.5	0.4	78	0.1
09 PWW-01	PWW-01	0.13	13	3.5	0.47	2013	1.2	0.02	0.1	7.1	0.091	558.9	9.5	5	1.60	17.8	5.6	0.5	0.3	63	0.1
09 PWW-02	PWW-02	0.18	15	2.8	0.31	1455	0.5	0.01	0.1	7.8	0.077	286.6	10.9	5	0.76	28.5	4.4	0.5	0.3	62	0.1
09 PWW-03	PWW-03	0.18	12	2.5	0.28	3286	1.1	0.01	0.1	13.9	0.087	460.1	12.4	5	0.46	28	4.4	0.5	0.4	39	0.1

Summary of 2009 Pit Wall Sampling

		ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Site	**Sample #**	**Te_ppm**	**Th_ppm**	**Ti_%**	**Tl_ppm**	**U_ppm**	**V_ppm**	**W_ppm**	**Y_ppm**	**Zn_ppm**	**Zr_ppm**
09 PWN-01	PWN-01	0.1	0.9	0.005	0.1	0.3	<2	2.6	2.2	19	0.8
09 PWN-02a	PWN-02a	0.2	2.8	0.005	0.3	0.7	14	0.3	7.8	1281	2.8
09 PWN-02b	PWN-02b	0.2	5	0.005	0.3	0.7	20	0.3	9.4	844	3.3
09 PWE-01	PWE-01	0.1	3.4	0.03	0.4	0.8	46	0.2	9.6	968	1.8
09 PWE-02	PWE-02	0.3	1.8	0.007	0.5	0.5	38	0.3	10.3	707	1.6
09 PWE-03	PWE-03	0.1	1.5	0.019	0.5	0.4	56	0.1	9.6	360	1.7
09 PWE-04	PWE-04	0.4	1.6	0.005	0.7	0.6	27	0.3	8.7	946	3.8
09 PWE-05	PWE-05	0.4	2.6	0.005	0.5	1	27	0.3	10.2	1884	2.3
09 PWE-06	PWE-06	6.3	0.2	0.009	0.6	0.1	<2	0.3	1.4	1896	0.9
09 PWE-07	No static test sa										
09 PWE-08	PWE-08	1	1.4	0.005	0.7	0.4	9	0.3	3.2	1073	1.8
09 PWE-09	PWE-09	0.1	12.3	0.005	0.8	1.7	34	0.8	10.6	1791	3
09 PWW-01	PWW-01	0.2	3	0.007	0.2	0.8	35	0.8	12.5	1248	3.1
09 PWW-02	PWW-02	0.2	3.2	0.005	0.5	0.7	27	0.5	9.5	1146	1.5
09 PWW-03	PWW-03	0.1	3	0.005	0.7	0.9	27	0.7	11.7	1811	6.3

Summary of 2009 Pit Wall Sampling

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Leach_Method**	**Vol_water_mL**	**Samp_wt_g**	**pH**	**Redox_mV**	**Cond_uS/cm**	**Acidity_mg CaCO3/L**	**Tot_Acidity_mg CaCO3/L**	**Alk_mg CaCO3/L**	**SO4_mg/L**	**Maj_Anions_meq/L**	**Maj_Cations_meq/L**	**Diff_meq/L**	**Balance (%)_%**	**Hardness CaCO3_mg/L**
09 PWN-01	PWN-01															
09 PWN-02a	PWN-02a	SFE_3:1	1500	500	7.75	258	338		6.4	52.1	104	3.21	3.58	-0.37	-5.4%	175
09 PWN-02b	PWN-02b	SFE_3:1	1500	500	7.75	258	338		6.4	52.1	104	3.21	3.58	-0.37	-5.4%	175
09 PWE-01	PWE-01	SFE_3:1	1500	500	6.34	323	43		5.0	2.5	13	0.32	0.41	-0.09	-11.8%	13.8
09 PWE-02	PWE-02	SFE_3:1	1500	500	7.64	305	80		4.6	42.6	3	0.91	0.85	0.07	3.9%	39.6
09 PWE-03	PWE-03	SFE_3:1	1500	500	7.76	298	72		3.9	41.4	1	0.83	0.77	0.05	3.4%	35.7
09 PWE-04	PWE-04	SFE_3:1	1500	500	4.19	438	3333	10.4	181.7		2762	57.54	52.20	5.34	4.9%	2330
09 PWE-05	PWE-05	SFE_3:1	1500	500	7.48	293	2486		19.1	49.6	1444	31.07	35.69	-4.62	-6.9%	1720
09 PWE-06	PWE-06	SFE_3:1	750	250	2.48	443	5410	2675.0	9750.0		10211	215.60	281.93	-66.33	-13.3%	2190
09 PWE-07	No static test sa															
09 PWE-08	PWE-08	SFE_3:1	1500	500	2.37	519	3490	1800.0	2975.0		3980	84.73	102.60	-17.86	-9.5%	1740
09 PWE-09	PWE-09	SFE_3:1	1500	500	5.26	289	880		60.1	1.5	439	9.17	10.03	-0.86	-4.5%	440
09 PWW-01	PWW-01	SFE_3:1	1500	500	7.71	236	1168		7.4	30.6	624	13.61	14.48	-0.87	-3.1%	704
09 PWW-02	PWW-02	SFE_3:1	1500	500	7.55	254	1542		8.0	36.7	913	19.75	20.22	-0.47	-1.2%	994
09 PWW-03	PWW-03	SFE_3:1	1500	500	7.63	258	1062		6.7	26.5	552	12.03	13.08	-1.05	-4.2%	646

Summary of 2009 Pit Wall Sampling

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Diss_Al_mg/L**	**Diss_Sb_mg/L**	**Diss_As_mg/L**	**Diss_Ba_mg/L**	**Diss_Be_mg/L**	**Diss_Bi_mg/L**	**Diss_B_mg/L**	**Diss_Cd_mg/L**	**Diss_Ca_mg/L**	**Diss_Cr_mg/L**	**Diss_Co_mg/L**	**Diss_Cu_mg/L**	**Diss_Fe_mg/L**	**Diss_Pb_mg/L**	**Diss_Li_mg/L**	**Diss_Mg_mg/L**	**Diss_Mn_mg/L**	**Diss_Hg_ug/L**	**Diss_Mo_mg/L**
09 PWN-01	PWN-01																			
09 PWN-02a	PWN-02a	0.0033	0.00626	0.0129	0.0445	0.00001	0.000005	0.05	0.00119	52.7	0.0001	0.000055	0.00323	0.002	0.000184	0.0013	10.6	0.0734	0.02	0.0011
09 PWN-02b	PWN-02b	0.0033	0.00626	0.0129	0.0445	0.00001	0.000005	0.05	0.00119	52.7	0.0001	0.000055	0.00323	0.002	0.000184	0.0013	10.6	0.0734	0.02	0.0011
09 PWE-01	PWE-01	0.0246	0.00367	0.00478	0.0287	0.00001	0.000006	0.05	0.0018	3.92	0.0001	0.000044	0.0056	0.026	0.000371	0.0016	0.96	0.0374	0.01	0.00005
09 PWE-02	PWE-02	0.0251	0.00091	0.00747	0.0118	0.00001	0.000005	0.05	0.000033	13.2	0.0002	0.000009	0.001	0.015	0.000337	0.0005	1.64	0.00128	0.02	0.00035
09 PWE-03	PWE-03	0.0369	0.00179	0.0141	0.0312	0.00001	0.000005	0.05	0.000026	12.9	0.0001	0.000126	0.00422	0.025	0.00037	0.0005	0.88	0.00265	0.02	0.00155
09 PWE-04	PWE-04	7.12	0.003	0.0987	0.0005	0.0061	0.00005	0.5	0.481	487	0.001	0.245	2.9	1.25	0.00122	0.04	271	94	0.1	0.0005
09 PWE-05	PWE-05	0.002	0.0122	0.005	0.0146	0.00005	0.00003	0.3	0.0555	444	0.0005	0.00829	0.0176	0.022	0.00481	0.011	147	21.5	0.33	0.0003
09 PWE-06	PWE-06	67.9	0.348	60	0.001	0.009	0.0156	3	4.79	438	0.043	0.321	120	3880	0.0582	0.08	267	96.1	0.5	0.003
09 PWE-07	No static test sa																			
09 PWE-08	PWE-08	127	0.028	17.1	0.002	0.0201	0.0003	3	1.29	439	0.034	0.589	19.6	793	0.0129	0.053	156	92.5	0.5	0.003
09 PWE-09	PWE-09	1.68	0.0002	0.0018	0.0175	0.0009	0.00003	0.3	0.333	141	0.0005	0.00166	0.447	0.038	0.00093	0.026	21.2	7.25	0.32	0.0003
09 PWW-01	PWW-01	0.0044	0.00333	0.00077	0.0302	0.00001	0.000005	0.05	0.00144	166	0.0001	0.000027	0.00258	0.002	0.000339	0.0023	70.5	0.00859	0.01	0.00102
09 PWW-02	PWW-02	0.0032	0.00215	0.00195	0.02	0.00001	0.000005	0.05	0.00547	217	0.0001	0.000085	0.00191	0.003	0.000141	0.003	110	0.25	0.02	0.00031
09 PWW-03	PWW-03	0.0045	0.00094	0.001	0.00512	0.00001	0.000005	0.05	0.00163	162	0.0001	0.000016	0.00091	0.002	0.000088	0.0024	58.8	0.0123	0.02	0.00015

Summary of 2009 Pit Wall Sampling

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Diss_Ni_mg/L**	**Diss_P_mg/L**	**Diss_K_mg/L**	**Diss_Se_mg/L**	**Diss_Si_mg/L**	**Diss_Ag_mg/L**	**Diss_Na_mg/L**	**Diss_Sr_mg/L**	**Diss_S_mg/L**	**Diss_Tl_mg/L**	**Diss_Sn_mg/L**	**Diss_Ti_mg/L**	**Diss_U_mg/L**	**Diss_ V_mg/L**	**Diss_Zn_mg/L**	**Diss_Zr_mg/L**
09 PWN-01	PWN-01																
09 PWN-02a	PWN-02a	0.0004	0.006	2.35	0.00024	1.67	0.000005	0.37	0.181	44	0.000036	0.00001	0.0005	0.000255	0.0002	0.0485	0.0001
09 PWN-02b	PWN-02b	0.0004	0.006	2.35	0.00024	1.67	0.000005	0.37	0.181	44	0.000036	0.00001	0.0005	0.000255	0.0002	0.0485	0.0001
09 PWE-01	PWE-01	0.00069	0.016	1.34	0.00005	3.64	0.000018	2.24	0.0257	5	0.000011	0.00001	0.0005	0.000003	0.0002	0.114	0.0001
09 PWE-02	PWE-02	0.00016	0.01	1.43	0.00006	1.94	0.000007	0.35	0.0405	3	0.000006	0.00001	0.0005	0.000128	0.0002	0.0012	0.0001
09 PWE-03	PWE-03	0.00036	0.107	1.28	0.00013	2.9	0.000012	0.58	0.0371	3	0.000006	0.00001	0.0005	0.000092	0.0005	0.0015	0.0001
09 PWE-04	PWE-04	0.0934	0.02	0.99	0.0006	4.32	0.00015	2.61	0.465	868	0.00006	0.0001	0.005	0.00714	0.002	33.2	0.001
09 PWE-05	PWE-05	0.0071	0.01	6.59	0.0014	1.88	0.0003	8.74	1.04	577	0.00026	0.00005	0.003	0.00027	0.001	2.6	0.0005
09 PWE-06	PWE-06	0.044	4.86	0.5	0.009	5	0.0012	0.5	0.428	3490	0.0001	0.0183	0.03	0.0063	0.365	371	0.005
09 PWE-07	No static test sa																
09 PWE-08	PWE-08	0.132	11.7	0.5	0.002	5	0.0004	0.5	0.217	1410	0.0001	0.0016	0.03	0.0413	0.027	93.2	0.005
09 PWE-09	PWE-09	0.0111	0.01	4.78	0.0002	6.11	0.00005	1.09	0.0997	166	0.00031	0.00005	0.003	0.00059	0.001	20.5	0.0005
09 PWW-01	PWW-01	0.00052	0.005	5.02	0.0002	1.38	0.000006	6.17	0.623	242	0.000049	0.00001	0.0005	0.000365	0.0002	0.0179	0.0001
09 PWW-02	PWW-02	0.00042	0.003	5.16	0.00018	1.35	0.000005	4.8	0.683	337	0.000063	0.00001	0.0005	0.000398	0.0002	0.0484	0.0001
09 PWW-03	PWW-03	0.00019	0.004	4.32	0.00016	1.02	0.000005	1.04	0.295	216	0.000045	0.00001	0.0005	0.000157	0.0002	0.0243	0.0001

Summary of 2009 Pit Wall Sampling

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Tot_Acidity_ mg CaCO3/kg**	**Alk_mg CaCO3/kg**	**SO4_mg/kg**	**Hardness CaCO3_mg/kg**	**Diss_Al_mg/kg**	**Diss_Sb_mg/kg**	**Diss_As_mg/kg**	**Diss_Ba_mg/kg**	**Diss_Be_mg/kg**	**Diss_Bi_mg/kg**	**Diss_B_mg/kg**	**Diss_Cd_mg/kg**	**Diss_Ca_mg/kg**	**Diss_Cr_mg/kg**	**Diss_Co_mg/kg**	**Diss_Cu_mg/kg**	**Diss_Fe_mg/kg**	**Diss_Pb_mg/kg**	**Diss_Li_mg/kg**
09 PWN-01	PWN-01																			
09 PWN-02a	PWN-02a	19.3	156.4	312	525	0.010	0.0188	0.0387	0.134	0.00003	0.00002	0.15	0.0036	158	0.0003	0.0002	0.010	0.01	0.0006	0.0039
09 PWN-02b	PWN-02b	19.3	156.4	312	525	0.010	0.0188	0.0387	0.134	0.00003	0.00002	0.15	0.0036	158	0.0003	0.0002	0.010	0.01	0.0006	0.0039
09 PWE-01	PWE-01	15.0	7.4	39	41.4	0.074	0.0110	0.0143	0.086	0.00003	0.00002	0.15	0.0054	12	0.0003	0.0001	0.017	0.08	0.0011	0.0048
09 PWE-02	PWE-02	13.7	127.8	9	118.8	0.075	0.0027	0.0224	0.035	0.00003	0.00002	0.15	0.0001	40	0.0006	0.0000	0.003	0.05	0.0010	0.0015
09 PWE-03	PWE-03	11.6	124.3	3	107.1	0.111	0.0054	0.0423	0.094	0.00003	0.00002	0.15	0.0001	39	0.0003	0.0004	0.013	0.08	0.0011	0.0015
09 PWE-04	PWE-04	545.0	0.0	8286	6990	21.360	0.0090	0.2961	0.002	0.01830	0.00015	1.50	1.4430	1461	0.0030	0.7350	8.700	3.75	0.0037	0.1200
09 PWE-05	PWE-05	57.2	148.7	4332	5160	0.006	0.0366	0.0150	0.044	0.00015	0.00009	0.90	0.1665	1332	0.0015	0.0249	0.053	0.07	0.0144	0.0330
09 PWE-06	PWE-06	29250.0	0.0	30633	6570	203.700	1.0440	180.0000	0.003	0.02700	0.04680	9.00	14.3700	1314	0.1290	0.9630	360.000	11640.00	0.1746	0.2400
09 PWE-07	No static test sa																			
09 PWE-08	PWE-08	8925.0	0.0	11940	5220	381.000	0.0840	51.3000	0.006	0.06030	0.00090	9.00	3.8700	1317	0.1020	1.7670	58.800	2379.00	0.0387	0.1590
09 PWE-09	PWE-09	180.2	4.4	1317	1320	5.040	0.0006	0.0054	0.053	0.00270	0.00009	0.90	0.9990	423	0.0015	0.0050	1.341	0.11	0.0028	0.0780
09 PWW-01	PWW-01	22.3	91.8	1872	2112	0.013	0.0100	0.0023	0.091	0.00003	0.00002	0.15	0.0043	498	0.0003	0.0001	0.008	0.01	0.0010	0.0069
09 PWW-02	PWW-02	24.0	110.0	2739	2982	0.010	0.0065	0.0059	0.060	0.00003	0.00002	0.15	0.0164	651	0.0003	0.0003	0.006	0.01	0.0004	0.0090
09 PWW-03	PWW-03	20.2	79.6	1656	1938	0.014	0.0028	0.0030	0.015	0.00003	0.00002	0.15	0.0049	486	0.0003	0.0000	0.003	0.01	0.0003	0.0072

Summary of 2009 Pit Wall Sampling

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Diss_Mg_mg/kg**	**Diss_Mn_mg/kg**	**Diss_Hg_ug/kg**	**Diss_Mo_mg/kg**	**Diss_Ni_mg/kg**	**Diss_P_mg/kg**	**Diss_K_mg/kg**	**Diss_Se_mg/kg**	**Diss_Si_mg/kg**	**Diss_Ag_mg/kg**	**Diss_Na_mg/kg**	**Diss_Sr_mg/kg**	**Diss_S_mg/kg**	**Diss_Tl_mg/kg**	**Diss_Sn_mg/kg**	**Diss_Ti_mg/kg**	**Diss_U_mg/kg**	**Diss_V_mg/kg**	**Diss_Zn_mg/kg**	**Diss_Zr_mg/kg**
09 PWN-01	PWN-01																			
09 PWN-02a	PWN-02a	31.8	0.22	0.0600	0.0033	0.0012	0.018	7.1	0.0007	5.01	0.0000	1.11	0.54	132	0.0001	0.0000	0.0015	0.0008	0.0006	0.15	0.0003
09 PWN-02b	PWN-02b	31.8	0.22	0.0600	0.0033	0.0012	0.018	7.1	0.0007	5.01	0.0000	1.11	0.54	132	0.0001	0.0000	0.0015	0.0008	0.0006	0.15	0.0003
09 PWE-01	PWE-01	2.9	0.11	0.0300	0.0002	0.0021	0.048	4.0	0.0002	10.92	0.0001	6.72	0.08	15	0.0000	0.0000	0.0015	0.0000	0.0006	0.34	0.0003
09 PWE-02	PWE-02	4.9	0.00	0.0600	0.0011	0.0005	0.030	4.3	0.0002	5.82	0.0000	1.05	0.12	9	0.0000	0.0000	0.0015	0.0004	0.0006	0.00	0.0003
09 PWE-03	PWE-03	2.6	0.01	0.0600	0.0047	0.0011	0.321	3.8	0.0004	8.70	0.0000	1.74	0.11	9	0.0000	0.0000	0.0015	0.0003	0.0015	0.00	0.0003
09 PWE-04	PWE-04	813.0	282.00	0.3000	0.0015	0.2802	0.060	3.0	0.0018	12.96	0.0005	7.83	1.40	2604	0.0002	0.0003	0.0150	0.0214	0.0060	99.60	0.0030
09 PWE-05	PWE-05	441.0	64.50	0.9900	0.0009	0.0213	0.030	19.8	0.0042	5.64	0.0009	26.22	3.12	1731	0.0008	0.0002	0.0090	0.0008	0.0030	7.80	0.0015
09 PWE-06	PWE-06	801.0	288.30	1.5000	0.0090	0.1320	14.580	1.5	0.0270	15.00	0.0036	1.50	1.28	10470	0.0003	0.0549	0.0900	0.0189	1.0950	1113.00	0.0150
09 PWE-07	No static test sa																				
09 PWE-08	PWE-08	468.0	277.50	1.5000	0.0090	0.3960	35.100	1.5	0.0060	15.00	0.0012	1.50	0.65	4230	0.0003	0.0048	0.0900	0.1239	0.0810	279.60	0.0150
09 PWE-09	PWE-09	63.6	21.75	0.9600	0.0009	0.0333	0.030	14.3	0.0006	18.33	0.0002	3.27	0.30	498	0.0009	0.0002	0.0090	0.0018	0.0030	61.50	0.0015
09 PWW-01	PWW-01	211.5	0.03	0.0300	0.0031	0.0016	0.015	15.1	0.0006	4.14	0.0000	18.51	1.87	726	0.0001	0.0000	0.0015	0.0011	0.0006	0.05	0.0003
09 PWW-02	PWW-02	330.0	0.75	0.0600	0.0009	0.0013	0.009	15.5	0.0005	4.05	0.0000	14.40	2.05	1011	0.0002	0.0000	0.0015	0.0012	0.0006	0.15	0.0003
09 PWW-03	PWW-03	176.4	0.04	0.0600	0.0005	0.0006	0.012	13.0	0.0005	3.06	0.0000	3.12	0.89	648	0.0001	0.0000	0.0015	0.0005	0.0006	0.07	0.0003

Summary of 2009 Fill Sampling: Waste Rock and Pit Backfill

Site	Sample #	SGS CEMI Sample	Fraction	Sector	Material Type	Waypoint #	Easting	Northing	Elev (masl)	Total Depth	Sample Depth	Foto	Rock Type	Dominant Lithology	Est. %Frags
HR1	HR1	HR 1 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	148	387893	6880930	1225	1.5	1.3	148	Metamorphic	Metamorphic	25%
HR2	HR2	HR 2 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	149	387904	6880946	1224	1.3	1.2	149	Metamorphic	Metamorphic	40%
HR4	HR4	HR 4 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	151	387844	6880992	1221	1.3	1.1	152	Metamorphic	Metamorphic	80%
HR5	HR5	HR 5 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	152	387829	6881017	1221	1.4	1.2	153	Metamorphic	Metamorphic	25%
HR7	HR7	HR 7 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	154	387707	6881175	1221	1.6	0.6	156	Metamorphic	Metamorphic	60%
HR8	HR8	HR 8 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	155	387695	6881241	1230	1.5	1.2	157	Intrusive	Intrusive	60%
HR9	HR9	HR 9 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	156	387723	6881265	1238	Not determined	?	159	Intrusive	Intrusive	40%
HR11	HR11	HR 11 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	158	387749	6881293	1240	1.6	1.1 - 1.3	160	Intrusive	Intrusive	75%
HRB03	HRB03a	HRB 03a (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	159	387764	6881298	1237	1.8 (max height to top of berm)	road bed veneer	161-164	Intrusive	Intrusive	60%
HRB03	HRB03b	HRB 03b (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	159	387764	6881298	1237	1.8 (max height to top of berm)		161-164	Intrusive	Intrusive	60%
HR12	HR12	HR 12 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	160	387778	6881318	1237	1.4	1.0	165	Intrusive	Intrusive	65%
HR13	HR13a	HR 13a (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	161	387840	6881356	1234	1.2	1.0	166-167	Intrusive	Unknown	50%
HR13	HR13b	HR 13b	Coarse (+1/4")	Haul Road	Rock Pile	161	387840	6881356	1234	1.2	1.0	166-167	Intrusive	Unknown	100%
HR14	HR14	HR 14 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	162	387894	6881396	1227	1.2	1.0	168	Intrusive	Granodiorite	40%
HR15	HR15	HR 15 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	163	387954	6881435	1241	1.3	1.2	169	Intrusive	Granodiorite	50%
HRB04	HRB04	HRB 04 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	164	388019	6881479	1246	1.0	1.0	170	Unknown	Unknown	60%

Site	Sample #	SGS CEMI Sample	Fraction	Sector	Material Type	Waypoint #	Easting	Northing	Elev (masl)	Total Depth	Sample Depth	Foto	Rock Type	Dominant Lithology	Est. %Frags
HR16	HR16	HR 16 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	165	388039	6881492	1246	1.5	1.5	171-172	Intrusive	Granodiorite	60%
HR17	HR17	HR 17 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	166	388073	6881509	1245	1.5	1.3	173	Intrusive	Granodiorite	70%
HRB05	HRB05	HRB 05 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	167	388095	6881508	1246	1.3	1.2	174-175	Unknown	Quartz Feldspar Porphyry	50%
HRB06	HRB06	HRB 06 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	168	388137	6881517	1251	1.5	1.3	176-177	Intrusive	Unknown	60%
HR18	HR18	HR 18 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	169	388171	6881526	1250	1.4	1.3	179-180	Intrusive	Granodiorite	60%
HRB07	HRB07	HRB 07 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	170	388199	6881530	1253	1.4	1.3	181-182	Intrusive	Unknown	60%
HR19	HR19	HR 19 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	171	388298	6881548	1251	1.3	?	187-188	Intrusive	Granodiorite	60%
HRB08	HRB08	HRB 08 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	172	388311	6881546	1250	1.3	0.6	189-190	Intrusive	Granodiorite	70%
HRB09	HRB09	HRB 09 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	173	388368	6881568	1248	1.5	1.4	191-192	Unknown	Unknown	60%
HR20	HR20	HR 20 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	174	388409	6881595	1251	1.3	0.5	194-196	Intrusive	Granodiorite	70%
HRB10	HRB10	HRB 10 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	175	388445	6881607	1251	1.4	1.3	197-199	Intrusive	Granodiorite	70%
HRB11	HRB11	HRB 11 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	176	388480	6881621	1249	1.6	1.3	200-201	Intrusive	Unknown	60%
HR21	HR21	HR 21 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	177	388523	6881647	1249	1.3	1.2	203-204	Intrusive	Granodiorite	60%
HR22	HR22	HR 22 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	178	388591	6881679	1246	1.4	1.3	205-206	Intrusive	Unknown	60%
LW-Fine-04	LW-Fine-04	LW-Fine-04 (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	179	388821	6881325	1215	surface free dump piles	surface free dump piles	208	Unknown	Unknown	100%
TP22	TP22	TP-22 (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	180	388815	6881331	1207	3*	0.4**	209-211	Intrusive	Unknown	50%

Site	Sample #	SGS CEMI Sample	Fraction	Sector	Material Type	Waypoint #	Easting	Northing	Elev (masl)	Total Depth	Sample Depth	Foto	Rock Type	Dominant Lithology	Est. %Frags
TP23	TP23	TP-23 (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	181	388791	6881347	1212	3.5*	1.5-1.6**	212-214	Intrusive	Unknown	70%
TP24	TP24a	TP-24a (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	182	388755	6881376	1213	3.2*	1.0-1.3**	215-219	Intrusive	Granodiorite	Unknown
TP24	TP24b	TP-24b (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	182	388755	6881376	1213	3.2*	1.0-1.3**	215-219	Unknown	Unknown	Unknown
TP25	TP25a	TP-25a (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	183	388738	6881395	1214	1.6*	0.5-0.8	220-222	Intrusive	Unknown	60%
TP25	TP25b	TP-25b (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	183	388738	6881395	1214	1.6*	1.0-1.3	220-222	Intrusive	Unknown	60%
TP26	TP26	TP-26 (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	184	388726	6881405	1215	1.7*	1.3-1.5	223-224	Unknown	Unknown	50%
TP27	TP27	TP27 (-1/4")	Fine (-1/4")	W Mid Level	Rock Pile	185	388809	6881368	1219	3.5	1.2-1.3	225-227	Intrusive	Granodiorite	60%
TP28	TP28	TP28 (-1/4")	Fine (-1/4")	W Mid Level	Rock Pile	186	388792	6881390	1221	1.8	1.8	228	Intrusive	Granodiorite	60%
TP29	TP29	TP29 (-1/4")	Fine (-1/4")	W Mid Level	Rock Pile	187	388807	6881394	1221	1.5	1.2	229-230	Unknown	Unknown	70%
OB01	OB01	OB01 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	189	389007	6881365	1211	1.3	1.2	233-234	Unknown	Unknown	70%
OB02	OB02	OB02 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	190	388985	6881401	1207	1.3	0.8	236-238	Intrusive	Unknown	40%
OB03	OB03	OB03 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	191	389025	6881333	1212	1.5	1.2	239-241	Intrusive	Granodiorite	40%

Site	Sample #	SGS CEMI Sample	Fraction	Sector	Material Type	Waypoint #	Easting	Northing	Elev (masl)	Total Depth	Sample Depth	Foto	Rock Type	Dominant Lithology	Est. %Frags
OB04	OB04	OB04 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	192	389020	6881319	1213	1.5	0.8	242-243	Intrusive	Unknown	60%
OB05	OB05	OB05 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	193	389038	6881304	1203	1.4	1.2	244-245	Intrusive	Unknown	50%
OB07	OB07	OB-07 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	195	389068	6881250	1205	1.4	1.3	247-248, 250	Unknown	Unknown	70%
OB08	OB08	OB-08 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	196	389056	6881253	1207	1.5	1.3	249, 251	Intrusive	Intrusive	60%
OB09	OB09	OB-09 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	197	389045	6881269	1208	1.6	1.2-1.4	264-265	Unknown	Unknown	50%
OB10	OB10	OB-10 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	198	389062	6881270	1208	1.4	0.8-1.2	261-263	Unknown	Unknown	50%
OS01	OS-01	OS-01 (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	n/a	388816	6881481	n/a	n/a	0-0.5	refer to Lorax memo July 21/09	Unknown	Unknown	Unknown
OS02	OS-02	OS-02 (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	n/a	388850	6881469	n/a	n/a	0-0.1	refer to Lorax memo July 21/09	Unknown	Unknown	Unknown
OS03	OS-03a	OS-03a (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	n/a	388873	6881434	n/a	n/a	0-0.1	refer to Lorax memo July 21/09	Unknown	Unknown	Unknown
OS03	OS-03b	OS-03b (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	n/a	388873	6881434	n/a	n/a	0.3-0.5?	refer to Lorax memo July 21/09	Unknown	Unknown	Unknown
OS04	OS-04	OS-04 (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	n/a	388852	6881507	n/a	n/a	0-0.5	refer to Lorax memo July 21/09	Unknown	Unknown	Unknown
OS05	OS-05a	OS-05a (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	n/a	388848	6881418	n/a	n/a	0.3-0.4	refer to Lorax memo July 21/09	Unknown	Unknown	Unknown
OS05	OS-05b	OS-05b (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	n/a	388848	6881418	n/a	n/a	0-0.2	refer to Lorax memo July 21/09	Unknown	Unknown	Unknown

Summary of 2009 Fill Sa

Site	Sample #	Frags	Fines	Dom_Mx_Txtr	Dom_Mx_Col	Sx observed (under hand lens)	Sx rank	Field Effervescence Rank	Other Comments	Field paste pH	Field paste pH Rank	Field Cond (uS/cm)
HR1	HR1	Highly weathered metamorphic?, black/rust weathering; non-effervescent	sandy texture, black/rust weathering, fines slightly cohesive	Sand	Black/Rust	none visible	0	0		>7.2	2	1730
HR2	HR2	Foliated mafic schist?; non-effervescent	sandy texture, rusty brown	Sand	Brown/Rust	trace fine grained disseminated pyrite on fractures	1	0		6.51	2	270
HR4	HR4	Slightly silicified mafic metamorphic, rust weathering; non-effervescent	not described	Not Specified	Not Specified	trace very fine grained disseminated pyrite	1	0	hard digging, possibly weathered outcrop. Insufficient fines for field pH/conductivity			
HR5	HR5	Black weathering mafic metamorphic; non-effervescent	sandy texture; light brown with rust	Sand	Brown/Rust	none visible	0	0	very minor ore? veneer	4.35	0	1690
HR7	HR7	Dark purply foliated metamorphic along with silicified white rock (appears to be of a medium-grained intrustive protolith); non-effervescent	clayey sand; rust weathering with trace of black	Sand	Rust	none visible	0	0	original ground @ 1.0 m depth (White River Ash horizon). Some greenish silicic fragments with disseminated pyrite observed near top of pit (see large rock in photo)	5.8	1	260
HR8	HR8	Variably altered granodiorite; non-effervescent	clayey sand; tan-coloured with trace of silic fragments with disseminated pyrite	Sand	Tan	with trace of silic fragments with disseminated pyrite	1	0		5.32	1	80
HR9	HR9	Granodiorite, weakly altered, weak effervescence; patchy over 20% of fragment surfaces	slightly clayey sand; brown	Sand	Brown	none visible	0	2		>7.2	2	240
HR11	HR11	Granodiorite, mainly fresh (little alteration); weak effervescence in a few fragments	mainly clayey sand; brown with some pods of light tan/rust sandy clay.	Sand	Brown/Tan/Rust	trace (in a few fragments at bottom of pit)	1	1	at bottom of pit, some fragments of fine-grained siliceous granodiorite with trace of disseminated pyrite, rust weathering	6.2	1	390
HRB03	HRB03a	Granodiorite, mainly fresh (little alteration); non-effervescent	silty clay; white/rust	Clay	White/Rust	none visible	0	0	Sample of road bed veneer, 0.1 m thick (likely from pit, not cut from above slope). Cut was excavated deep to look at berm construction -- appears that road bed extended under most of berm.	6.87	2	240
HRB03	HRB03b	Granodiorite, mainly fresh (little alteration); patchy slow effervescence of 20% of fragment surfaces	slightly clayey sand; brown	Sand	Brown	none visible	0	2	Berm material, mainly fines. Cut was excavated deep to look at berm construction -- appears that road bed extended under most of berm.	>7.2	2	190
HR12	HR12	Approx 95% fresh granodiorite, very hard, rare 'nuggets' of clay-altered granodiorite; non-effervescent; no sulpides visible in fragments but trace of sulphides seen in fines	clayey sand; brown with pods of tan and rust, very rare fine (0.5mm) sulphide grains observed	Sand	Brown/Tan/Rust	none visible	0	0	took separate large sample bag for Ken S.	4.06	0	2190
HR13	HR13a	Most rock of unknown protolith (20% fresh granodiorite and 80% silicified /phyllic altered frags); trace to up to 5% fine grained pyrite in both rock types in quartz patches; one fragment with graphite? on fracture; patchy effervescence over 5-10% of rock	slightly clayey sand; brown	Sand	Brown	none visible	2	1	very blocky digging	>7.0	2	340
HR13	HR13b	Most rock of unknown protolith (20% fresh granodiorite and 80% silicified /phyllic altered frags); trace to up to 5% fine grained pyrite in both rock types in quartz patches; one fragment with graphite? on fracture; patchy effervescence over 5-10% of rock	no fines in sample	No Fines	No Fines	trace fine-grained pyrite	1	1	very blocky digging - no fines available, entire sample crushed/pulverized for analysis			
HR14	HR14	Granodiorite, variably altered; patchy effervescence over 25% of rock fragments, fragments easily broken, oxidized vugs with trace pyrite in rust patches	sandy clay; brown with minor zones of rust/white	Clay	Brown/Tan/Rust	oxidized vugs with trace pyrite in rust patches	1	2		>7.2	2	480
HR15	HR15	Granodiorite, variably altered; non-effervescent	silty sand; brown with trace of white/rust patches (very minor)	Sand	Brown/Tan/Rust	trace pyrite on phyllic/quartz flooded fragments	1	0		>7.2	2	180
HRB04	HRB04	Mixed rock types but mainly clay / phyllic altered, 15% phyllic altered fragments containing trace to 5% pyrite; most fragments non-effervescent, with occasional fragments showing patchy effervescense in matrix	silty sand; brown to rust with flecks of white and rust	Sand	Brown/Rust	trace to 5% in phyllic-altered fragments	2	1		6.87	2	320

Site	Sample #	Frags	Fines	Dom_Mx_Txtr	Dom_Mx_Col	Sx observed (under hand lens)	Sx rank	Field Effervescence Rank	Other Comments	Field paste pH	Field paste pH Rank	Field Cond (uS/cm)
HR16	HR16	Granodiorite, variably altered, heavy manganese stain; non-effervescent	silty sand; mainly brown	Sand	Brown	none visible	0	0	1.2 to 1.5 m: horizon with white strands of mold? amongst fines and fragments, see foto 171 (I think a growth on remnant organics)	7.17	2	230
HR17	HR17	Granodiorite, variably altered with occasional fragments of manganese-stained clear to milky quartz; non-effervescent	sandy silt; brown	Silt	Brown	none visible	0	0		6.8	2	200
HRB05	HRB05	clay to phyllic/silicic altered; phyllic/silicic-altered fragments have a grey very fine grained silicic matrix with 3 to 4 mm cream-coloured remnant phenocrysts; trace to 1% pyrite in most fragments (see foto 175); fragments non effervescent	slightly silty sand; brown with occasional rust patches	Sand	Brown/Rust	trace to 1% pyrite in most fragments	3	0		>7.2	2	480
HRB06	HRB06	clay to phyllic altered intrusive; trace to 1% pyrite in 75% of fragments; non-effervescent	silty sand; colour variable with zones of brown, rust, and white	Sand	Brown/Tan/Rust	trace to 1% pyrite in 75% of fragments	3	0	appears to be reactive (ARD/ML) material that has been topped over the original berm of good quality material.	6.14	1	1440
HR18	HR18	30% fresh/weakly altered granodiorite; 70% variably altered granodiorite with traces of phyllic-altered fragments; trace effervescense in fresher granodiorite; no effervescense in other fragments	silty clay; mainly brown, with trace of dark organics, white mold	Clay	Brown	no pyrite in fresh granodiorite; trace to 5% pyrite in other fragments	3	2	trace of dark organics with white stringy mold	6.64	2	120
HRB07	HRB07	clay to phyllic-altered intrusives, one pod of white- clay altered material; occasional weak effervescence in some rocks	clayey and silty sand; mainly rust coloured with large patches of white and tan.	Sand	Rust	none visible	0	1	took extra large sample	6.92	2	2270
HR19	HR19	Variably altered granodiorite; trace manganese stain; non-effervescent	silty clay; brown	Clay	Brown	none visible	0	0	took separate large sample bag for Ken S.	6.04	1	70
HRB08	HRB08	90% granodiorite; well oxidized, clay? Altered, no visible pyrite, no effervescence; 10% phyllic-altered fragments with 1-2% pyrite; non-effervescent	silty and clayey sand; rust with yellow patches	Sand	Rust	no visible pyrite in well-oxidized granodiorite, 1-2% pyrite in phyllic-altered fragments	2	0		>7.2	2	510
HRB09	HRB09	Mainly clay-altered with trace phyllic-altered frags with 1% pyrite; moderate effervescence in some fragments	silty sand with some clay; dominantly brown with zones of rust and lesser white	Sand	Brown/Tan/Rust	1% pyrite in phyllic-altered fragments	2	2		5.7	1	220
HR20	HR20	Mainly variably altered granodiorite with some fine-grained dyke material, heavy manganese stain; non-effervescent	silty sand; 0.6-1.3: dark brown; 0-0.6: light brown with rust and white	Sand	Brown/Tan/Rust	none visible	0	0		>7.2	2	160
HRB10	HRB10	Mainly variably altered granodiorite with some fine-grained dyke material, heavy manganese stain. Approximately 20% of fragments with effervescence; another 20% with trace pyrite; effervescence in 20% of fragments	siltry and clayey sand; dominantly light brown with zones of rust, yellow, and dark brown	Sand	Brown/Tan/Rust	trace pyrite in 20% of fragments	2	2		>7.2	2	290
HRB11	HRB11	Clay to phyllic-altered intrusive, moderate manganese stain; minor and patchy effervescence in some fragments	light brown with some white flecks/patches, root hairs, organic patches	Not Specified	Brown	none visible	0	1	some root matter/ organics chunks mixed with fill			
HR21	HR21	Clay-altered granodiorite; trace pyrite on some fragments, occasional patchy effervescence, rust weathering; occasional patchy effervescence	silty sand; light brown with many zones of rust colour, occasional white patches	Sand	Brown/Tan/Rust	trace pyrite on some fragments	1	1	although rust-weathering and with colourful fines, the granodiorite in this pit overall appears non-reactive	7.53	3	190
HR22	HR22	Clay-altered intrusive; rare effervescence along quartz cross-veining, manganese and rust staining, highly weathered, trace pyrite visible under hand lens	silty sand; dark brown, towards surface some lenses of rust and white	Sand	Brown/Tan/Rust	trace pyrite	1	1		5.99	1	80
LW-Fine-04	LW-Fine-04	Friable, bleached, trace py by naked eye on approx 25% of frags; 4/4 frags tested non-effervescent	fine clayey sand, rust to white, trace of slow effervescence	Sand	Rust	trace pyrite by naked eye on 25% of frags	2	0		7.05	2	110
TP22	TP22	Kaolinite to phyllic altered intrusives, trace pyrite on phyllic altered fragments, patchy moderate effervescense on some fragments	silty sand; predominantly dark brown with occasional rusty patches	Sand	Brown/Rust	trace pyrite on phyllic altered fragments	2	2	* total pit depth 3m (from top of free dump piles), depth below platform 1.4m. Sample from 1.0m below platform. Moist zone @ sample area, could see water glistening on particle surfaces	7.21	2	360

Site	Sample #	Frags	Fines	Dom_Mx_Txtr	Dom_Mx_Col	Sx observed (under hand lens)	Sx rank	Field Effervescence Rank	Other Comments	Field paste pH	Field paste pH Rank	Field Cond (uS/cm)
TP23	TP23	Variably altered intrusive (propylitic to kaolinitic altered fragments), moderate effervescense in half of fragments, no pyrite visible under hand lens	silty sand; predominantly brown with flecks of rust and white	Sand	Brown/Rust	none visible	0	3	* total pit depth 3m (from top of free dump piles), depth below platform 1.7m. Sample from 1.5-1.6m below platform. Moist zone @ sample area, could see water glistening on particle surfaces. Frozen waste rock 2m below platform.			
TP24	TP24a	Predominantly kaolinite to phyllic altered granodiorite; slow pervasive effervescence on the two fragments checked	slightly clayey sand; rust with white and yellow; very slow effervescence	Sand	Rust	trace very fine grained disseminated pyrite in silicic/phyllic and fresher granodiorite fragments	1	2	* total pit depth 3.2 m (from top of free dump piles), depth below platform 1.9m. Sample from 1.0-1.3m below platform. Frozen waste rock 1.9m below platform. 24a, very wet sample	7.05	2	550
TP24	TP24b	Montmorillinate-altered fragments, moderate effervescence, trace pyrite on phyllic altered fragments	???, brown, very moist/wet, seepage horizon	Not Specified	Brown	trace pyrite on phyllic altered fragments	1	3	* total pit depth 3.2 m (from top of free dump piles), depth below platform 1.9m. Sample from 1.4-1.5m below platform, in moist horizon. Frozen waste rock 1.9m below platform.	7.34	2	270
TP25	TP25a	Large lenses of crumbly predominantly phyllic-altered with 1 to 3% pyrite (which crumbles to small fragments), occasional monmorillinite-altered intrusive with effervescence and no pyrite	sandy and clayey, grey, visible pyrite in fines	Clay	Grey	1-3% pyrite in phyllic-altered fragments, and in fines	3	1	*depth below platform. Frost at 1.6m depth, no moisture horizon encountered	7.11	2	350
TP25	TP25b	Large lenses of crumbly predominantly phyllic-altered with 1 to 3% pyrite (which crumbles to small fragments), occasional monmorillinite-altered intrusive with effervescence and no pyrite	sandy and clayey, grey, visible pyrite in fines	Clay	Grey	1-3% pyrite in phyllic-altered fragments, and in fines	3	1	*depth below platform. Frost at 1.6m depth, no moisture horizon encountered	6.9	2	600
TP26	TP26	Phyllic-altered and "gossan" like materal; 1 to 5% pyrite in almost all fragments; slow effervescense in competent frags (approx 30% of sample)	clayey sand; rust, orange and trace of brown; visible pyrite grains in fines	Sand	Rust	1 to 5% pyrite in almost all fragments and seen in fines	4	2	*depth below platform.	6.31	1	1460
TP27	TP27	Mainly altered non-pyritic granodiorite, occasional fragments of heavy managanese stained fragments with trace pyrite; non-effervescent	silty sand; predominantly brown with flecks of white and rust; very slow effervescence	Sand	Brown	trace pyrite in occasional manganese-stained fragments	1	0	slightly moist horizone and 1.3m. Frozen at 3.5 m	>7.2	2	390
TP28	TP28	Predominantly granodiorite, variably altered (fresh to kaolinite altered), minor trace pyrite on some fragments; steady effervescence from mafic (or Mn-stained) fragments of fresh granodiorite	slightly silty sand; brown; slow effervescence	Sand	Brown	minor trace pyrite on some fragments	1	2		>6.7	2	960
TP29	TP29	Mixed: 1) calcareous quartzite, very hard, moderate effervescence, 2) manganese-stained rusty material, patchy slow effervescence over 20% of surface, 3) phyllic altered material w/ trace pyrite, non-effervescent	silty sand; medium brown with flecks of white, rust	Sand	Brown	trace pyrite on phyllic altered fragments	2	3	in pit, surface rusty zone w/ white precipitate. 0-0.4 orangey clayey fines, pot metal leaching? (not sampled)	6.3	1	1640
OB01	OB01	Heavily manganese stained, possibly altered intrusive?, trace fine-grained pyrite in a few samples (10%), effervescence in approximately 20% of samples	clayey sand; predominantly brown with much white and manganese (black) patches	Sand	Brown/White	trace fine-grained pyrite in a few samples (10%)	1	2		>6.3	1	290
OB02	OB02	Altered intrusive?, crumbly, clay-altered, rust weathering, no visible pyrite under hand lens, no effervescence	clay, grey-rust, non-effervescent	Clay	Grey	none visible	0	0		approx 6.2	1	160
OB03	OB03	Granodiorite, weakly clay-altered, 50% of fragments effervescent, no pyrite under hand lens, rust and manganese weathering	silty sand; brown	Sand	Brown	none visible	0		very organic to soil-like consistency, lots of roots (see photos)			

Site	Sample #	Frags	Fines	Dom_Mx_Txtr	Dom_Mx_Col	Sx observed (under hand lens)	Sx rank	Field Effervescence Rank	Other Comments	Field paste pH	Field paste pH Rank	Field Cond (uS/cm)
OB04	OB04	Kaolinite to phyllic altered (predominantly kaolinite) intrusive, trace pyrite on phyllic altered fragments, rust and white clay weathering, pervasive slow effervescence in some fragments (>20%)	silty sand; light brown with minor flecks of white, non-effervescent	Sand	Brown/White	trace pyrite on phyllic altered fragments	2	0		6.17	1	1520
OB05	OB05	Predominantly clay-altered intrusive, rust weathering with minor manganese stain, trace of siliceous grey fragments with approximately 1% pyrite, all frags tested non-effervescent	clayey sand; dark brown with minor flecks of white	Sand	Brown/White	trace of siliceous grey fragments with approximately 1% pyrite	2	0		>6.5	2	1440
OB07	OB07	Mixed in approximate proportions: 1) 50% phyllic-silicic altered fragments, trace to 1% pyrite; 2) 40% clay-altered granodiorite; 3) 10% pyritic fragments with >30% fine-grained pyrite; frags examined non-effervescent	clayey sand; light brown with much tan and yellow zones	Sand	Brown/Tan/Rust	trace to 1% pyrite in phyllic-silicic altered fragments; 10% pyritic fragments with >30% fine-grained pyrite	4	0		6.81	2	1200
OB08	OB08	Mixed in approximate proportions: 1) 60% crumbly rust-clay altered intrusive; 2) 40% siliceous (and very hard) fragments with 5 to 20% pyrite	clayey sand; light brown with flecks of rusty zones	Sand	Brown/Rust	5-20% pyrite in siliceous fragments	4			6.81	2	1380
OB09	OB09	Mixed in approximate proportions: 1) 60% sulphide-rich rock, phyllic to silicic altered with 2 to 10% pyrite, some fragments with moderate effervescence; 2) 40% kaolinite-altered granodiorite, rust weathering with trace pyrite, some quartz pods/veins, no	clayey silt, light brown with flecks of yellow-tan and trace rust, some visible pyrite (trace, in rare blebs with gray clay)	Sand	Brown/Tan/Rust	2-10% pyrite in phyllic to silicic altered fragments, and trace in kaolinite altered granodiorite	3	3		6.7	2	1760
OB10	OB10	Mixed in approximate proportions: 1) 50% phyllic to silicic altered fragments with pyrite veinlets, 2-10% pyrite, no effervescence; 2) 40% altered granodiorite (kaolinite?) with trace pyrite, no effervescence; 3) 10% fine-grained mafic dyke material, no p	clayey silt, light brown with flecks of yellow-tan and trace rust, some visible pyrite (trace, in rare blebs with gray clay)	Sand	Brown/Tan/Rust	2-10% pyrite in phyllic to silicic altered fragments, and trace pyrite in kaolinite-altered granodiorite	3	0		6.74	2	1200
OS01	OS-01	mostly of oxidized (orange/yellow/red) fragments, but some sulphide bearing clasts (~10%) are obvious, non-effervescent	not described; non-effervescent	Not Specified	Not Specified	some sulphide bearing clasts (~10%) are obvious (with ~10% 1mm euhedral disseminated pyrite); trace very fine grained pyrite in approximately 20% of sample; no pyrite seen in remaining 70% of sample.	2	0	refer to Lorax memo July 21/09	4.6	0	1170
OS02	OS-02	thin (5 to 10 cm) rind of oxide rich material; moderate effervescence in 20-30% of fragments, little to no effervescence in other fragments. No sulphides observed under hand lens.	not described	Not Specified	Not Specified	No sulphides observed under hand lens.	0	3	refer to Lorax memo July 21/09	6.48	1	60
OS03	OS-03a	oxide/precipitate layer present at the surface of the section	not described	Not Specified	Not Specified	unknown	0		refer to Lorax memo July 21/09	6.93	2	130
OS03	OS-03b	soil/rock fragments (no roots) layer immediately above the organic material	not described	Not Specified	Not Specified	unknown			refer to Lorax memo July 21/09	6.71	2	50
OS04	OS-04	surface oxidized layer (approximately 50 cm thick); 60% siliceous, very hard fragments with trace very fined grained euhedral disseminated pyrite, many pyrite? vugs with limonitic staining; strongly siliceous fragments non-effervescent, managanese-stained	not described	Not Specified	Not Specified	trace very fined grained euhedral disseminated pyrite, many pyrite? vugs with limonitic staining in siliceous fragments	2	2	refer to Lorax memo July 21/09	>6.8	2	1740
OS05	OS-05a	top of the oxide matrix supported boulders/cobbles layer; moderate effervescence (easily seen with naked eye) in most fragments	not described; steady effervescence seen under hand lens	Not Specified	Not Specified	No sulphides observed under hand lens.	0	3	refer to Lorax memo July 21/09	>6.8	2	440
OS05	OS-05b	rooty oxidized layer at the top of the section, no effervescence noted on 3 fragments tested	not described; very slight effervescence	Not Specified	Not Specified	No sulphides observed under hand lens.	0	0	refer to Lorax memo July 21/09	>7.0	2	530

Summary of 2009 Fill Sampling: Waste Rock and Pit Backfill

									ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA
Site	**Sample #**	**SGS CEMI Sample**	**Fraction**	**Sector**	**Material Type**	**Field paste pH**	**Field paste pH Rank**	**Field Cond (uS/cm)**	**Paste_pH**	**Paste EC_µS/cm**	**TIC_%**	**C_NP_kgCaCO3/t**	**S(T)_%**	**S(SO4)_%**	**S(S-2)_%**	**AP_kgCaCO3/t**	**NP_kgCaCO3/t**	**NNP_kgCaCO3/t**	**NP_AP**	**Fizz**
HR1	HR1	HR 1 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	>7.2	2	1730												
HR2	HR2	HR 2 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	6.51	2	270												
HR4	HR4	HR 4 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile															
HR5	HR5	HR 5 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	4.35	0	1690												
HR7	HR7	HR 7 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	5.8	1	260												
HR8	HR8	HR 8 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	5.32	1	80												
HR9	HR9	HR 9 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	>7.2	2	240												
HR11	HR11	HR 11 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	6.2	1	390												
HRB03	HRB03a	HRB 03a (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	6.87	2	240												
HRB03	HRB03b	HRB 03b (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	>7.2	2	190												
HR12	HR12	HR 12 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	4.06	0	2190	5.78	2120	0.04	3.3	1.18	0.43	0.75	23.4	4.7	-18.7	0.2	None
HR13	HR13a	HR 13a (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	>7.0	2	340	7.55	811	0.18	15.0	0.47	0.1	0.37	11.6	16.8	5.2	1.5	Slight
HR13	HR13b	HR 13b	Coarse (+1/4")	Haul Road	Rock Pile				8.43	306	0.29	24.2	0.22	0.01	0.21	6.6	29.5	22.9	4.5	Moderate
HR14	HR14	HR 14 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	>7.2	2	480												
HR15	HR15	HR 15 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	>7.2	2	180												
HRB04	HRB04	HRB 04 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	6.87	2	320	7.64	336	0.09	7.5	0.22	0.04	0.18	5.6	12.6	7.0	2.2	None
HR16	HR16	HR 16 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	7.17	2	230												
HR17	HR17	HR 17 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	6.8	2	200												
HRB05	HRB05	HRB 05 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	>7.2	2	480	7.67	476	0.28	23.3	0.37	0.25	0.12	3.8	22.7	19.0	6.1	Slight
HRB06	HRB06	HRB 06 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	6.14	1	1440	6.32	1168	0.13	10.8	1.28	0.19	1.09	34.1	11.7	-22.4	0.3	Slight
HR18	HR18	HR 18 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	6.64	2	120	6.61	229	0.02	1.7	0.05	0.02	0.03	0.9	5.2	4.3	5.5	None
HRB07	HRB07	HRB 07 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	6.92	2	2270												
HR19	HR19	HR 19 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	6.04	1	70	6.51	173.5	0.02	1.7	0.03	0.01	0.02	0.6	7.7	7.1	12.3	None
HRB08	HRB08	HRB 08 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	>7.2	2	510	7.18	421	0.04	3.3	0.05	0.03	0.02	0.6	6.4	5.8	10.2	None
HRB09	HRB09	HRB 09 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	5.7	1	220												
HR20	HR20	HR 20 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	>7.2	2	160												
HRB10	HRB10	HRB 10 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile	>7.2	2	290												
HRB11	HRB11	HRB 11 (-1/4")	Fine (-1/4")	Haul Road Berms	Rock Pile															
HR21	HR21	HR 21 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	7.53	3	190	7.86	320	0.33	27.5	0.08	0.06	0.02	0.6	33.0	32.4	52.8	Moderate
HR22	HR22	HR 22 (-1/4")	Fine (-1/4")	Haul Road	Rock Pile	5.99	1	80	6.17	180.2	0.01	0.8	0.08	0.06	0.02	0.6	3.2	2.6	5.1	None
LW-Fine-04	LW-Fine-04	LW-Fine-04 (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	7.05	2	110	6.96	431	0.02	1.7	0.12	0.11	0.01	0.3	5.0	4.7	16.0	None
TP22	TP22	TP-22 (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	7.21	2	360												
TP23	TP23	TP-23 (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile															
TP24	TP24a	TP-24a (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	7.05	2	550												
TP24	TP24b	TP-24b (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	7.34	2	270	7.54	845	0.53	44.2	1.07	0.07	1.00	31.3	39.5	8.3	1.3	Moderate
TP25	TP25a	TP-25a (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	7.11	2	350	7.74	1428	1.12	93.3	1.64	0.12	1.52	47.5	77.5	30.0	1.6	Moderate
TP25	TP25b	TP-25b (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	6.9	2	600	7.75	1468	1.2	100.0	1.62	0.14	1.48	46.3	81.3	35.1	1.8	Moderate
TP26	TP26	TP-26 (-1/4")	Fine (-1/4")	W Lower Dump	Rock Pile	6.31	1	1460	5.40	2410	0.25	20.8	4.21	0.92	3.29	102.8	11.8	-91.0	0.1	Slight
TP27	TP27	TP27 (-1/4")	Fine (-1/4")	W Mid Level	Rock Pile	>7.2	2	390	7.20	712	0.11	9.2	0.3	0.27	0.03	0.9	11.5	10.6	12.3	Slight
TP28	TP28	TP28 (-1/4")	Fine (-1/4")	W Mid Level	Rock Pile	>6.7	2	960	7.17	1508	0.15	12.5	0.86	0.24	0.62	19.4	15.8	-3.6	0.8	Slight
TP29	TP29	TP29 (-1/4")	Fine (-1/4")	W Mid Level	Rock Pile	6.3	1	1640	6.15	1724	0.1	8.3	2.09	0.77	1.32	41.3	10.1	-31.2	0.2	None
OB01	OB01	OB01 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	>6.3	1	290	7.41	475	0.18	15.0	0.17	0.11	0.06	1.9	17.3	15.4	9.2	Slight
OB02	OB02	OB02 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	approx 6.2	1	160												
OB03	OB03	OB03 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill															
OB04	OB04	OB04 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	6.17	1	1520	6.35	1840	0.05	4.2	1.47	0.78	0.69	21.6	4.4	-17.2	0.2	None
OB05	OB05	OB05 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	>6.5	2	1440	7.13	1651	0.07	5.8	0.58	0.41	0.17	5.3	11.1	5.8	2.1	None

									ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA
Site	**Sample #**	**SGS CEMI Sample**	**Fraction**	**Sector**	**Material Type**	**Field paste pH**	**Field paste pH Rank**	**Field Cond (uS/cm)**	**Paste_pH**	**Paste EC_µS/cm**	**TIC_%**	**C_NP_kgCaCO3/t**	**S(T)_%**	**S(SO4)_%**	**S(S-2)_%**	**AP_kgCaCO3/t**	**NP_kgCaCO3/t**	**NNP_kgCaCO3/t**	**NP_AP**	**Fizz**
OB07	OB07	OB-07 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	6.81	2	1200	5.99	1792	0.09	7.5	1.72	1.01	0.71	22.2	5.5	-16.7	0.2	None
OB08	OB08	OB-08 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	6.81	2	1380	6.77	1938	0.15	12.5	1.55	0.78	0.77	24.1	11.4	-12.7	0.5	None
OB09	OB09	OB-09 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	6.7	2	1760	6.07	1811	0.12	10.0	1.73	0.88	0.85	26.6	7.1	-19.5	0.3	None
OB10	OB10	OB-10 (-1/4")	Fine (-1/4")	Ore Backfill	Backfill	6.74	2	1200	6.42	1839	0.24	20.0	1.76	0.7	1.06	33.1	15.3	-17.8	0.5	Slight
OS01	OS-01	OS-01 (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	4.6	0	1170	4.29	1821	0.01	0.8	2.34	1.24	1.10	34.4	-2.7	-37.1	-0.1	None
OS02	OS-02	OS-02 (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	6.48	1	60	6.12	415	0.02	1.7	0.6	0.56	0.04	1.3	1.9	0.7	1.5	None
OS03	OS-03a	OS-03a (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	6.93	2	130	6.10	365	0.02	1.7	0.61	0.53	0.08	2.5	1.1	-1.4	0.4	None
OS03	OS-03b	OS-03b (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	6.71	2	50												
OS04	OS-04	OS-04 (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	>6.8	2	1740	6.58	1739	0.03	2.5	0.93	0.81	0.12	3.8	3.8	0.0	1.0	None
OS05	OS-05a	OS-05a (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	>6.8	2	440	7.29	714	0.07	5.8	0.34	0.29	0.05	1.6	6.4	4.8	4.1	None
OS05	OS-05b	OS-05b (-1/4")	Fine (-1/4")	Old Ore Stockpile Area	Rock Pile	>7.0	2	530	6.91	966	0.02	1.7	0.74	0.69	0.05	1.6	3.0	1.4	1.9	None

Summary of 2009 Fill Sa

		ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Site	**Sample #**	**Au_ppm**	**Ag_ppm**	**Al_%**	**As_ppm**	**Ba_ppm**	**Be_ppm**	**Bi_ppm**	**Ca_%**	**Cd_ppm**	**Ce_ppm**	**Co_ppm**	**Cr_ppm**	**Cs_ppm**	**Cu_ppm**	**Fe_%**	**Ga_ppm**	**Ge_ppm**	**Hf_ppm**	**Hg_ppm**	**In_ppm**
HR1	HR1	0.01	0.3	1.27	40.5	169	1	0.1	2.53	0.4	68	22.6	28	63.3	37	7.5	6	0.3	0.2	0.03	0.12
HR2	HR2	0.01	1.1	2.04	135.9	850	1	0.1	0.52	4.8	33	17.7	47	30.8	76.7	4.8	6	0.2	0.2	0.289	0.06
HR4	HR4	0.01	0.5	1.02	89.9	255	1	0.2	0.29	2.3	48	10.1	80	14.7	73.9	3.59	6	0.2	0.2	0.07	0.04
HR5	HR5	0.01	0.3	0.9	75.4	127	1	0.1	0.47	5.6	32	9.3	71	9.4	128.1	2.72	4	0.1	0.1	0.043	0.03
HR7	HR7	0.03	2.5	1.32	483.4	247	1	0.2	0.36	1.4	33	12.6	55	8.7	40.1	3.8	5	0.1	0.1	0.11	0.05
HR8	HR8	0.08	2.8	0.96	260	139	1	1.8	0.24	10	26	7.8	68	3	38.9	2.59	4	0.1	0.1	0.072	0.24
HR9	HR9	0.15	1.4	1.35	300.6	516	1	0.7	1.04	7	29	11.1	68	22.7	26.5	3.4	5	0.1	0.1	0.088	0.1
HR11	HR11	0.19	4.1	1.4	898.9	268	1	5.8	0.38	16.7	27	11	47	8.9	166.1	4.44	4	0.1	0.1	0.081	0.19
HRB03	HRB03a	0.52	9.1	0.79	1374.1	262	1	13.4	0.39	12.8	22	8	52	6.6	237.3	6.16	4	0.2	0.1	0.114	0.37
HRB03	HRB03b	0.47	4.4	0.99	465	193	1	3.2	0.52	13.5	30	9.6	57	5.9	63.3	3.28	4	0.1	0.1	0.191	0.2
HR12	HR12	0.19	8.1	0.86	553	194	1	11.2	0.49	10.7	31	9.4	68	5.2	257.9	4.6	3	0.1	0.1	0.089	0.42
HR13	HR13a	0.14	3.9	1.38	556.3	314	1	3.7	0.82	14	48	12.4	51	5.9	228.4	4.13	5	0.1	0.1	0.077	0.3
HR13	HR13b	0.01	0.5	1.16	19.9	72	1	0.5	1.4	5.7	22	6.5	76	3.5	46.6	2.42	6	0.1	0.1	0.026	0.05
HR14	HR14	0.26	8	0.83	791	177	1	5.5	0.85	29	34	11	44	15.9	77.5	4.49	3	0.1	0.1	0.234	0.67
HR15	HR15	3.67	4.8	1.13	561.6	361	1	1.9	0.39	7.5	31	10	72	5.6	43.9	3.31	4	0.1	0.1	0.102	0.25
HRB04	HRB04	0.15	3.5	0.74	257.6	412	1	2.8	0.55	6.9	39	17.5	52	5.6	53.6	3.59	3	0.1	0.1	0.234	0.28
HR16	HR16	0.08	1.7	1.32	282.5	221	1	0.8	0.5	5.3	29	10.3	64	12.4	26.8	3.39	5	0.1	0.1	0.115	0.11
HR17	HR17	0.16	1.5	1.24	254	230	1	0.6	0.5	4.9	28	10.1	65	12	24.3	3.29	5	0.1	0.1	0.117	0.1
HRB05	HRB05	0.18	18.7	0.83	318.1	372	1	17.9	0.76	35.9	32	6.9	47	5.1	271.3	5.83	3	0.1	0.1	0.226	1.76
HRB06	HRB06	3.92	20.3	0.3	3919.9	169	1	23.9	0.37	43.8	18	5.9	66	4.4	148.8	6.29	1	0.1	0.2	0.2	0.38
HR18	HR18	0.07	1.7	1.27	176.8	194	1	0.6	0.41	4.1	25	9.3	76	6.4	32.5	3.09	5	0.1	0.1	0.078	0.14
HRB07	HRB07	0.55	4.9	0.63	888.6	221	1	4.6	0.52	19.6	23	7.1	63	3.7	135	3.1	2	0.1	0.1	0.21	0.32
HR19	HR19	0.03	1.1	1.61	119.8	233	1	0.5	0.35	3.3	23	11.8	56	9.2	30.9	3.72	6	0.1	0.1	0.065	0.09
HRB08	HRB08	0.11	1	0.72	304.1	557	1	0.6	0.34	7.9	27	8.5	69	5.7	38.8	3.35	2	0.1	0.1	0.097	0.05
HRB09	HRB09	1.11	27.5	0.38	1322.1	207	1	25.7	0.16	16.4	23	3.1	53	3.7	353.1	4.92	2	0.1	0.1	0.854	0.42
HR20	HR20	0.02	0.5	0.6	60.2	50	1	0.4	1.31	1.3	30	14.6	56	3.6	7.7	2.76	2	0.1	0.1	0.111	0.05
HRB10	HRB10	1.35	17.4	0.69	771.5	306	1	17.6	0.43	15	27	10.9	53	4.1	276.9	4.36	3	0.1	0.1	0.741	0.47
HRB11	HRB11	0.26	4	0.87	220.1	239	1	3.9	0.46	6.5	29	9.8	57	7	90.1	3.63	3	0.1	0.1	0.192	0.22
HR21	HR21	0.12	3	1	341.9	256	1	2.2	1.42	6.6	32	9.8	39	22.2	41.6	4.01	5	0.1	0.1	0.101	0.15
HR22	HR22	0.22	3	1	393.2	207	1	2.6	0.3	8	29	9.6	69	5.8	47.2	3.61	4	0.1	0.1	0.247	0.18
LW-Fine-04	LW-Fine-04	0.28	4.3	1.4	1695.2	87	1	3.7	0.42	13.7	14	6.6	49	7.3	89.9	3.91	4	0.1	0.1	0.141	0.7
TP22	TP22	0.41	13.7	1.09	861.1	342	1	10	0.9	24.5	21	12.4	45	7.9	109.7	5.15	3	0.1	0.1	0.217	0.27
TP23	TP23	0.08	1.7	0.64	493	209	1	0.5	2.68	6.8	33	14.4	27	25.2	32.6	4.96	3	0.1	0.1	0.151	0.13
TP24	TP24a	0.71	11.9	0.98	1173.8	251	1	10.6	1.15	31	19	9.4	39	5.2	350.3	5.58	3	0.1	0.1	0.271	0.61
TP24	TP24b	0.48	5.7	0.77	1205.1	161	1	6	1.49	29.2	18	10.5	46	4.7	184.8	4.43	2	0.1	0.1	0.165	0.4
TP25	TP25a	0.21	3.7	0.23	544.4	108	1	3.9	2.16	11.9	16	4.6	43	2.9	79.4	2.68	1	0.1	0.2	0.054	0.2
TP25	TP25b	0.34	6.3	0.27	592	103	1	8.6	2.3	20.3	16	5.6	47	3.1	73.6	2.98	1	0.1	0.2	0.071	0.24
TP26	TP26	1.91	22.2	0.52	1928.4	55	1	36.6	1.09	22.6	16	8	55	4	619.5	6.84	2	0.1	0.2	0.163	0.92
TP27	TP27	1.11	9.7	0.8	1822	262	1	7.2	0.68	24.1	23	11.2	46	9.6	136.9	5.63	3	0.1	0.1	0.338	0.37
TP28	TP28	0.19	8.1	1.32	446.7	204	1	13	0.85	11.4	23	12	44	5.6	358.9	4.72	4	0.1	0.1	0.084	0.25
TP29	TP29	0.6	71.4	0.72	1243.7	109	1	14.4	0.93	16.5	18	11.8	63	5.5	583.8	5.72	2	0.1	0.1	0.302	0.37
OB01	OB01	0.15	5.2	0.51	1256.9	425	1	0.4	0.79	41.7	21	15.4	55	12.7	52.9	4.63	2	0.1	0.1	0.132	0.26
OB02	OB02	0.22	7.5	0.47	521.8	265	1	6.5	0.08	5.4	15	1.3	27	6.5	190.5	2.28	1	0.1	0.1	0.199	0.49
OB03	OB03	1.83	14.9	0.93	1380.6	256	1	14.7	0.67	14.8	31	9.8	53	6.6	121.5	4.57	3	0.1	0.1	1.042	0.36
OB04	OB04	2.29	29.5	0.59	2541.7	143	1	32.1	0.58	17.7	16	4.7	57	4.2	220.6	5.21	2	0.1	0.1	0.379	0.64
OB05	OB05	1.28	15.9	0.74	1241.7	218	1	14	0.68	17.8	23	8.5	50	6.6	130.8	4.35	3	0.1	0.1	0.299	0.47

		ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Site	**Sample #**	**Au_ppm**	**Ag_ppm**	**Al_%**	**As_ppm**	**Ba_ppm**	**Be_ppm**	**Bi_ppm**	**Ca_%**	**Cd_ppm**	**Ce_ppm**	**Co_ppm**	**Cr_ppm**	**Cs_ppm**	**Cu_ppm**	**Fe_%**	**Ga_ppm**	**Ge_ppm**	**Hf_ppm**	**Hg_ppm**	**In_ppm**
OB07	OB07	3.4	43.5	0.53	2501.5	116	1	42.1	0.83	19.8	14	4.8	48	4.6	292.4	5.75	2	0.1	0.1	0.502	0.76
OB08	OB08	3.12	19.6	0.51	2308.5	117	1	16.4	0.95	25.2	17	6.6	39	5.1	232.4	4.59	2	0.1	0.1	0.257	0.7
OB09	OB09	3.07	42.9	0.61	3444	115	1	35.9	0.96	17.5	15	4.9	47	4.1	285.1	5	2	0.1	0.1	0.292	0.63
OB10	OB10	1.84	24.3	0.63	1980.4	120	1	23.5	1.11	17.7	17	6.1	38	5.5	280.6	4.89	2	0.1	0.1	0.3	0.57
OS01	OS-01	5.35	35.1	0.38	3742.9	99	1	50.9	0.75	9	12	4.9	51	3.6	202.2	6.92	2	0.1	0.1	0.422	0.4
OS02	OS-02	1.83	23.1	0.64	1933.4	192	1	26.8	0.23	12.6	16	6	52	4.6	176.9	6.41	4	0.1	0.1	0.336	0.8
OS03	OS-03a	2.16	25.1	0.75	1793.8	213	1	24.6	0.22	14.3	20	5.8	49	4.4	190.6	5.02	3	0.1	0.1	0.35	0.58
OS03	OS-03b	0.12	1.7	1.39	198.4	136	1	1.3	0.31	6	25	8.5	67	7	29.7	2.91	4	0.1	0.1	0.169	0.09
OS04	OS-04	1.59	28	0.57	2103.1	205	1	20.6	0.54	15.9	18	4.6	43	4.3	183.3	4.69	2	0.1	0.1	0.393	0.56
OS05	OS-05a	0.81	46.1	0.54	5197.1	145	1	14.1	0.41	47	21	8.4	37	5.1	191.3	6.26	2	0.1	0.1	0.304	1.98
OS05	OS-05b	1.27	26.6	0.46	2142.9	314	1	25.7	0.28	13.6	16	3.5	44	4.5	135.7	7.47	2	0.1	0.1	0.341	1.24

Summary of 2009 Fill Sa

		ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Site	**Sample #**	**K_%**	**La_ppm**	**Li_ppm**	**Mg_%**	**Mn_ppm**	**Mo_ppm**	**Na_%**	**Nb_ppm**	**Ni_ppm**	**P_%**	**Pb_ppm**	**Rb_ppm**	**Re_ppb**	**S_%**	**Sb_ppm**	**Sc_ppm**	**Se_ppm**	**Sn_ppm**	**Sr_ppm**	**Ta_ppm**
HR1	HR1	0.42	28	6.7	0.82	1723	0.2	0.01	0.4	8.9	0.298	9.6	40	5	0.52	12.1	25.3	0.5	1.4	65	0.1
HR2	HR2	0.59	16	8.6	0.77	998	1	0.02	0.9	10.3	0.125	101.2	29.6	5	0.05	11.5	16.3	0.5	0.7	23	0.1
HR4	HR4	0.53	23	7.3	0.57	986	1.2	0.03	1.5	7.1	0.05	27.8	28.2	5	0.08	7.7	9.1	0.5	1.4	32	0.1
HR5	HR5	0.15	16	6.5	0.41	1163	0.7	0.04	1.7	11	0.079	11.6	12.8	5	0.08	5.1	7.4	0.5	0.6	22	0.1
HR7	HR7	0.38	17	9.5	0.6	924	0.5	0.03	1.1	7.5	0.081	335.4	23.4	5	0.05	27.9	10.4	0.5	0.7	27	0.1
HR8	HR8	0.12	13	5.8	0.27	1213	3.3	0.02	1.6	10.7	0.05	342.4	11.6	5	0.05	17.8	4.2	0.5	0.6	24	0.1
HR9	HR9	0.17	14	5.6	0.32	1871	0.4	0.02	0.6	15	0.105	201.2	18.6	5	0.05	15.5	7.7	0.5	0.6	42	0.1
HR11	HR11	0.23	15	7.4	0.3	1806	1.1	0.03	0.5	6.5	0.096	303.5	18.8	5	0.30	50.7	5.7	0.5	0.5	75	0.1
HRB03	HRB03a	0.4	11	7.5	0.25	1558	1.6	0.02	0.6	5.6	0.073	517.2	31.4	5	0.66	87.5	4.5	0.5	0.5	52	0.1
HRB03	HRB03b	0.2	16	6.9	0.29	2050	1	0.02	0.9	9.6	0.075	455.7	14.8	5	0.10	33.1	6.3	0.5	0.5	31	0.1
HR12	HR12	0.33	17	7.5	0.3	1542	1.2	0.02	0.4	5.1	0.07	508.7	22.8	5	0.93	119.7	3.8	0.5	0.4	42	0.1
HR13	HR13a	0.2	26	9.4	0.51	2454	1.1	0.02	0.3	6.7	0.087	243.7	14.8	5	0.37	43	5.4	0.5	0.4	53	0.1
HR13	HR13b	0.17	11	9.6	0.69	1135	0.3	0.05	0.4	6	0.084	26.5	12.5	5	0.16	3	4.3	0.5	0.4	60	0.1
HR14	HR14	0.21	16	3.7	0.18	3091	0.3	0.01	0.3	6.9	0.112	692.8	19.9	5	0.14	44.5	7.5	0.5	0.5	50	0.1
HR15	HR15	0.18	15	6.5	0.26	1894	0.8	0.03	1.1	11.4	0.075	445.3	15.3	5	0.05	29.5	5.5	0.5	0.5	32	0.1
HRB04	HRB04	0.15	22	3.4	0.15	1950	0.6	0.01	0.4	7.1	0.085	491.7	11.2	5	0.15	26.8	5.8	0.5	0.3	22	0.1
HR16	HR16	0.15	14	6.8	0.34	1668	0.6	0.03	1	9.3	0.096	307.9	15.2	5	0.05	12	7	0.5	0.5	29	0.1
HR17	HR17	0.15	14	6.6	0.33	1579	0.5	0.03	1.1	9.1	0.093	238.8	14.7	5	0.05	10.8	6.5	0.5	0.5	30	0.1
HRB05	HRB05	0.15	17	3.5	0.16	1999	1	0.01	0.4	7.7	0.061	6036.3	10.7	5	0.30	37.9	4.3	0.5	0.3	43	0.1
HRB06	HRB06	0.16	9	1.1	0.09	3377	2.6	0.01	0.4	5.8	0.049	1217.7	11.4	5	1.09	146.5	2.4	0.5	1	50	0.1
HR18	HR18	0.2	13	8.4	0.41	1200	0.7	0.04	1.7	9.8	0.066	197.9	15.7	5	0.05	9.4	6.4	0.5	0.6	28	0.1
HRB07	HRB07	0.15	12	2.7	0.18	1913	0.9	0.01	0.2	8.9	0.056	486.7	10.4	5	0.52	35	3.4	0.5	0.4	28	0.1
HR19	HR19	0.51	12	10.7	0.82	1326	0.5	0.03	1.2	9.9	0.072	168.7	25.3	5	0.05	7.7	10.3	0.5	0.5	22	0.1
HRB08	HRB08	0.13	14	4.1	0.12	1329	1.2	0.01	0.4	7.1	0.064	218.4	9.3	5	0.05	18	4.2	0.5	0.3	23	0.1
HRB09	HRB09	0.31	13	1.4	0.06	2930	1.5	0.01	0.3	4.1	0.046	1527.6	21.4	5	0.51	236.7	2	0.5	0.6	46	0.1
HR20	HR20	0.11	16	3.1	0.08	949	0.3	0.01	0.2	5.7	0.095	27.1	9.2	5	0.05	4.5	7.2	0.5	0.3	16	0.1
HRB10	HRB10	0.26	14	3.2	0.16	2900	1.1	0.01	0.2	6.6	0.069	556.7	18.2	5	0.41	157.6	3.6	0.5	0.4	68	0.1
HRB11	HRB11	0.17	15	4	0.18	1307	0.7	0.01	0.3	7.1	0.083	183.5	13.6	5	0.07	28.5	5.2	0.5	0.3	28	0.1
HR21	HR21	0.12	14	5.7	0.35	1860	0.4	0.02	0.4	5.8	0.106	263.1	14.2	5	0.05	29.1	7.7	0.5	0.7	54	0.1
HR22	HR22	0.17	14	5.6	0.21	2292	0.6	0.02	0.8	8.9	0.083	365.4	14.2	5	0.06	33	6.2	0.5	0.4	27	0.1
LW-Fine-04	LW-Fine-04	0.25	8	7.3	0.29	1070	0.8	0.01	0.1	8.6	0.071	534.4	14.3	5	0.14	28.8	5.6	0.5	0.3	41	0.1
TP22	TP22	0.26	10	6.7	0.34	3648	0.6	0.01	0.1	11.4	0.1	2515.5	16.3	5	0.30	52.5	7.1	0.5	0.4	51	0.1
TP23	TP23	0.17	15	2.8	0.44	2603	0.3	0.01	0.1	7	0.162	349.9	17.2	5	0.28	19.3	11.7	0.5	0.6	65	0.1
TP24	TP24a	0.24	10	6.6	0.42	2766	1.3	0.02	0.1	9.1	0.075	2401	14.6	5	0.85	67.8	4.6	0.5	0.5	64	0.1
TP24	TP24b	0.16	9	4.7	0.49	3153	1.7	0.01	0.1	11.3	0.072	1210.2	9	5	1.12	49	4	0.5	0.7	87	0.1
TP25	TP25a	0.14	8	0.8	0.62	2984	1.4	0.01	0.1	5.7	0.054	333.8	7.6	5	1.52	33.9	1.5	0.5	0.2	39	0.1
TP25	TP25b	0.15	9	1.1	0.65	3223	1.4	0.01	0.1	6.6	0.055	513.6	8.6	5	1.49	37.5	1.8	0.5	0.3	51	0.1
TP26	TP26	0.28	9	3.4	0.22	1972	1.8	0.01	0.1	5.1	0.059	1819.5	15.5	5	3.90	192.6	2.6	0.5	0.5	38	0.1
TP27	TP27	0.27	11	4.5	0.19	4116	0.6	0.01	0.4	9.4	0.113	1860.7	19.1	5	0.33	113.9	6.2	0.5	0.5	60	0.1
TP28	TP28	0.2	11	10.5	0.54	1965	0.7	0.03	0.2	6.3	0.094	472.8	12.1	5	0.85	58	5.1	0.5	0.4	48	0.1
TP29	TP29	0.27	9	4.7	0.17	3754	0.6	0.01	0.2	5.8	0.095	950.7	16.1	5	1.92	287.4	5.3	0.5	0.7	44	0.1
OB01	OB01	0.21	10	1.7	0.1	6839	0.3	0.01	0.1	9	0.098	1381.1	14.8	5	0.20	18.1	10.5	0.5	0.5	28	0.1
OB02	OB02	0.21	8	2.1	0.06	102	1.4	0.01	0.1	3	0.031	602.3	11.4	5	0.22	59.4	2.2	0.5	0.4	35	0.1
OB03	OB03	0.31	16	5.5	0.32	2585	0.9	0.02	0.4	8.3	0.099	1355.5	16.9	5	0.55	117.8	6.7	0.5	0.8	36	0.1
OB04	OB04	0.37	8	3.1	0.12	1758	1.2	0.01	0.4	4.6	0.066	2525	19.9	5	1.26	253.5	3.1	0.5	0.9	49	0.1
OB05	OB05	0.27	12	3.7	0.2	2235	0.8	0.02	0.8	7.5	0.086	1411.5	15.9	5	0.62	119.6	5.4	0.5	0.7	39	0.3

		ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Site	**Sample #**	**K_%**	**La_ppm**	**Li_ppm**	**Mg_%**	**Mn_ppm**	**Mo_ppm**	**Na_%**	**Nb_ppm**	**Ni_ppm**	**P_%**	**Pb_ppm**	**Rb_ppm**	**Re_ppb**	**S_%**	**Sb_ppm**	**Sc_ppm**	**Se_ppm**	**Sn_ppm**	**Sr_ppm**	**Ta_ppm**
OB07	OB07	0.4	7	2.6	0.13	1686	1.7	0.01	0.1	4.7	0.064	2149.4	22.2	5	1.74	311.3	3	0.5	1.1	70	0.1
OB08	OB08	0.24	9	2.7	0.19	2142	1.2	0.01	0.1	6.2	0.07	1751.6	14.4	5	1.37	184.6	3.8	0.5	0.9	45	0.1
OB09	OB09	0.3	8	3.5	0.2	1291	1.2	0.01	0.1	5.4	0.067	2804.1	16.2	5	1.67	441	3.4	0.5	1.1	55	0.1
OB10	OB10	0.28	9	3.3	0.3	1490	1.2	0.01	0.1	5.5	0.067	2053.9	15.1	5	1.72	233.7	3.7	0.5	0.8	49	0.1
OS01	OS-01	0.44	6	1.8	0.03	1404	1.8	0.01	0.4	4	0.067	1988.4	24.2	5	2.33	271.9	2.1	0.5	0.8	61	0.2
OS02	OS-02	0.38	9	3.9	0.13	2033	1.4	0.02	0.8	6.4	0.056	1897.9	23.4	5	0.69	166.9	3.2	0.5	0.6	41	0.1
OS03	OS-03a	0.34	11	3.9	0.12	1544	1	0.02	0.5	6	0.072	1741.6	20.2	5	0.62	242.2	3.7	0.5	0.8	44	0.1
OS03	OS-03b	0.13	12	7.3	0.34	1225	0.5	0.02	1.1	10.3	0.07	202.4	11.9	5	0.05	16.2	5.5	0.5	0.5	23	0.8
OS04	OS-04	0.34	9	2.8	0.1	1638	0.9	0.01	0.6	4.4	0.069	1552.4	20.2	5	0.86	225.2	3.1	0.5	0.7	50	0.1
OS05	OS-05a	0.24	11	2.1	0.08	3692	0.9	0.02	0.3	5.5	0.106	3481.8	14.7	5	0.37	561.5	4.1	0.5	1	41	0.1
OS05	OS-05b	0.41	9	1.9	0.08	1077	0.7	0.02	0.2	3.7	0.066	1800.2	22.5	5	0.74	303.1	3	0.5	0.6	49	0.1

Summary of 2009 Fill Sa

		ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Site	**Sample #**	**Te_ppm**	**Th_ppm**	**Ti_%**	**Tl_ppm**	**U_ppm**	**V_ppm**	**W_ppm**	**Y_ppm**	**Zn_ppm**	**Zr_ppm**
HR1	HR1	0.1	3.6	0.037	0.4	0.8	165	0.3	29.3	116	1.9
HR2	HR2	0.1	2.8	0.08	1	0.6	121	0.1	18.6	391	2.1
HR4	HR4	0.1	4.3	0.098	0.2	0.5	44	1	34.2	237	4.5
HR5	HR5	0.1	3.7	0.073	0.4	0.6	62	0.1	11.6	505	2.2
HR7	HR7	0.1	4.1	0.103	0.7	0.7	84	0.1	12.8	164	2.1
HR8	HR8	0.1	2.6	0.041	0.4	0.6	39	0.2	8.3	776	0.6
HR9	HR9	0.1	2.3	0.021	0.6	0.5	50	0.2	14.1	625	1.2
HR11	HR11	0.2	2.8	0.019	0.7	1.6	38	0.1	12.7	1253	2.6
HRB03	HRB03a	0.6	2.3	0.012	1.1	0.9	36	0.1	9.1	1090	3.6
HRB03	HRB03b	0.2	3.6	0.029	0.9	0.8	42	0.1	11.3	992	1.2
HR12	HR12	0.3	7	0.009	0.7	1.1	27	0.1	9.1	947	3.3
HR13	HR13a	0.2	8.5	0.011	0.4	1.1	40	0.2	13.7	1167	2.8
HR13	HR13b	0.1	3.7	0.055	0.2	0.4	44	0.1	9.5	323	2.1
HR14	HR14	0.1	2.5	0.005	1	0.6	40	0.3	15.7	2193	1
HR15	HR15	0.1	3.1	0.027	0.6	0.7	42	0.1	10.7	713	1.1
HRB04	HRB04	0.3	3.9	0.005	0.7	0.5	42	0.6	12.4	688	1
HR16	HR16	0.1	2.5	0.031	0.6	0.6	53	0.2	12.1	544	0.6
HR17	HR17	0.1	2.5	0.029	0.6	0.6	50	0.3	12.2	518	0.6
HRB05	HRB05	0.2	3.6	0.005	0.5	1.2	32	0.2	10.4	3171	4.7
HRB06	HRB06	0.4	2.4	0.005	1	2	10	0.1	12.3	2200	8.4
HR18	HR18	0.1	2.2	0.064	0.4	0.6	56	0.2	10.1	422	0.6
HRB07	HRB07	0.2	3	0.005	0.7	1.2	20	0.2	9.5	1758	3.8
HR19	HR19	0.1	2.3	0.122	0.5	0.5	80	0.1	11	335	1.1
HRB08	HRB08	0.2	3.2	0.006	0.5	1	31	0.3	12.6	1058	2.2
HRB09	HRB09	0.5	2.9	0.005	2.8	0.8	15	0.1	5.3	919	3.6
HR20	HR20	0.1	3.6	0.005	0.2	0.4	29	0.9	11	149	1.2
HRB10	HRB10	0.4	2.9	0.005	1.6	0.8	23	0.1	10.1	1202	2.8
HRB11	HRB11	0.3	2.9	0.005	0.5	0.7	37	0.5	12.1	758	1.6
HR21	HR21	0.1	2	0.009	0.5	0.5	56	0.4	17.6	569	1.5
HR22	HR22	0.1	2.7	0.019	1	0.7	45	0.2	12	743	0.6
LW-Fine-04	LW-Fine-04	0.1	1.2	0.005	1.2	0.5	35	0.2	11.6	1349	0.9
TP22	TP22	0.2	2.1	0.006	1	0.8	43	0.4	12.8	2435	1.7
TP23	TP23	0.1	2.5	0.005	0.6	0.5	67	1.3	17.1	841	1.5
TP24	TP24a	0.3	3	0.005	0.9	1.1	31	0.3	10.3	2962	4.6
TP24	TP24b	0.2	3	0.005	0.6	1.1	22	0.3	10.5	2726	5.1
TP25	TP25a	0.1	3.9	0.005	0.3	1.2	6	0.2	6.7	1134	9.8
TP25	TP25b	0.2	4	0.005	0.3	1.2	9	0.2	7.6	1982	9.8
TP26	TP26	1	5	0.005	0.9	1	14	0.3	7.1	1942	6.9
TP27	TP27	0.1	2.3	0.005	1.6	0.7	31	0.3	12.9	1951	1.6
TP28	TP28	0.3	3.2	0.012	0.4	1.3	38	0.2	10.8	1095	2.3
TP29	TP29	0.3	2	0.005	1.3	0.8	29	0.2	10.2	1382	1.8
OB01	OB01	0.1	2.1	0.005	0.8	0.4	50	0.3	13.3	3330	2.2
OB02	OB02	0.1	2.1	0.005	0.4	0.7	10	0.1	1.6	578	4.3
OB03	OB03	0.3	4.2	0.017	1.9	0.9	42	0.4	10.5	1206	1.8
OB04	OB04	0.5	2.8	0.005	1.5	0.9	18	0.3	5.4	1403	3.5
OB05	OB05	0.3	2.7	0.007	1	0.6	31	0.5	10.1	1435	1.8

		ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Site	**Sample #**	**Te_ppm**	**Th_ppm**	**Ti_%**	**Tl_ppm**	**U_ppm**	**V_ppm**	**W_ppm**	**Y_ppm**	**Zn_ppm**	**Zr_ppm**
OB07	OB07	0.8	2.9	0.005	1.6	1	17	0.2	5.6	1543	5.3
OB08	OB08	0.4	2.6	0.005	1	1.2	21	0.4	8.2	2017	2.8
OB09	OB09	0.7	2.8	0.005	1.1	1	21	0.3	6.2	1361	3.6
OB10	OB10	0.4	2.9	0.005	1	1	22	0.3	6.8	1423	3
OS01	OS-01	1.1	2.5	0.005	2.1	0.8	9	0.2	3.8	839	4.9
OS02	OS-02	0.6	2.6	0.005	1.6	0.7	35	0.2	6.7	1170	3.5
OS03	OS-03a	0.4	2.6	0.006	1.4	0.8	24	0.2	6.4	1144	0.9
OS03	OS-03b	0.1	2.7	0.024	0.6	0.6	44	0.5	9.4	484	0.5
OS04	OS-04	0.5	2.6	0.005	1.4	0.8	16	0.3	5.7	1259	2.2
OS05	OS-05a	0.3	2.6	0.005	1	0.8	23	0.3	11.4	3765	1.7
OS05	OS-05b	0.4	2.2	0.005	1.2	0.7	21	0.2	5.2	1252	1.6

Summary of 2009 Fill Sa

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Leach_Method**	**Vol_water_mL**	**Samp_wt_g**	**pH**	**Redox_mV**	**Cond_uS/cm**	**Acidity_mg CaCO3/L**	**Tot_Acidity_mg CaCO3/L**	**Alk_mg CaCO3/L**	**SO4_mg/L**	**Maj_Anions_meq/L**	**Maj_Cations_meq/L**	**Diff_meq/L**	**Balance (%)_%**	**Hardness CaCO3_mg/L**
HR1	HR1															
HR2	HR2															
HR4	HR4															
HR5	HR5															
HR7	HR7															
HR8	HR8															
HR9	HR9															
HR11	HR11															
HRB03	HRB03a															
HRB03	HRB03b															
HR12	HR12	SFE_3:1	750	250	5.19	372	1383		35.4	0.6	913	19.03	18.75	0.29	0.8%	892
HR13	HR13a	SFE_3:1	750	250	7.86	306	299		3.4	48.4	97	2.99	3.28	-0.29	-4.7%	157
HR13	HR13b	SFE_3:1	750	250	7.96	321	166		2.2	57.9	30	1.78	1.81	-0.03	-0.8%	81.9
HR14	HR14															
HR15	HR15															
HRB04	HRB04	SFE_3:1	750	250	7.74	327	136		2.8	46.3	29	1.53	1.46	0.07	2.5%	69.7
HR16	HR16															
HR17	HR17															
HRB05	HRB05	SFE_3:1	750	250	7.91	321	234		2.8	63.1	62	2.55	2.66	-0.11	-2.0%	128
HRB06	HRB06	SFE_3:1	750	250	6.76	349	497		6.1	8.7	239	5.15	5.67	-0.52	-4.8%	276
HR18	HR18															
HRB07	HRB07															
HR19	HR19	SFE_3:1	750	250	7.04	306	30		2.9	6.4	5	0.23	0.32	-0.09	-15.6%	8.6
HRB08	HRB08	SFE_3:1	750	250	7.75	330	157		2.6	26.9	51	1.60	1.60	0.01	0.2%	75.3
HRB09	HRB09															
HR20	HR20															
HRB10	HRB10															
HRB11	HRB11															
HR21	HR21	SFE_3:1	750	250	7.89	313	127		2.7	63.2	6	1.39	1.42	-0.03	-1.1%	65.5
HR22	HR22	SFE_3:1	750	250	6.86	314	27		2.6	4.4	6	0.21	0.29	-0.07	-14.7%	9.6
LW-Fine-04	LW-Fine-04	SFE_3:1	750	250	7.28	323	39		2.5	20.5	1	0.41	0.43	-0.02	-2.5%	18.4
TP22	TP22															
TP23	TP23															
TP24	TP24a															
TP24	TP24b	SFE_3:1	750	250	7.93	272	422		3.2	54.9	150	4.22	4.74	-0.52	-5.8%	231
TP25	TP25a	SFE_3:1	750	250	7.69	296	794		3.3	39.8	380	8.71	9.06	-0.35	-2.0%	447
TP25	TP25b	SFE_3:1	750	250	7.69	296	794		3.3	39.8	380	8.71	9.06	-0.35	-2.0%	447
TP26	TP26	SFE_3:1	750	250	6.49	340	2566		117.6	12.0	1803	37.80	38.37	-0.57	-0.7%	1680
TP27	TP27															
TP28	TP28															
TP29	TP29	SFE_3:1	750	250	6.74	352	1855		10.0	5.7	1143	23.93	23.25	0.68	1.4%	1140
OB01	OB01															
OB02	OB02															
OB03	OB03															
OB04	OB04	SFE_3:1	750	250	6.68	338	1609		6.8	5.7	1125	23.55	21.70	1.86	4.1%	1060
OB05	OB05	SFE_3:1	750	250	7.48	332	1008		5.2	26.3	586	12.74	12.28	0.46	1.8%	606

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Leach_Method**	**Vol_water_mL**	**Samp_wt_g**	**pH**	**Redox_mV**	**Cond_uS/cm**	**Acidity_mg CaCO3/L**	**Tot_Acidity_mg CaCO3/L**	**Alk_mg CaCO3/L**	**SO4_mg/L**	**Maj_Anions_meq/L**	**Maj_Cations_meq/L**	**Diff_meq/L**	**Balance (%)_%**	**Hardness CaCO3_mg/L**
OB07	OB07	SFE_3:1	750	250	6.74	347	1742		7.7	8.5	1101	23.11	24.29	-1.19	-2.5%	1190
OB08	OB08	SFE_3:1	750	250	6.74	347	1742		7.7	8.5	1101	23.11	24.29	-1.19	-2.5%	1190
OB09	OB09	SFE_3:1	750	250	7.33	315	1861		9.8	10.1	1240	26.04	26.82	-0.78	-1.5%	1300
OB10	OB10	SFE_3:1	750	250	7.33	315	1861		9.8	10.1	1240	26.04	26.82	-0.78	-1.5%	1300
OS01	OS-01	SFE_3:1	750	250	3.60	436	2028	26.0	126.7		1467	30.56	27.50	3.07	5.3%	1220
OS02	OS-02	SFE_3:1	750	250	7.20	275	79		4.6	3.3	34	0.77	0.69	0.09	5.9%	31.1
OS03	OS-03a	SFE_3:1	750	250	6.74	292	62		3.5	2.8	20	0.47	0.53	-0.06	-5.9%	20.7
OS03	OS-03b	SFE_3:1	750	250	6.74	292	62		3.5	2.8	20	0.47	0.53	-0.06	-5.9%	20.7
OS04	OS-04	SFE_3:1	750	250	6.79	350	1493		5.8	7.7	905	19.01	19.54	-0.53	-1.4%	968
OS05	OS-05a	SFE_3:1	750	250	7.40	326	351		4.9	33.3	155	3.89	3.76	0.13	1.7%	184
OS05	OS-05b	SFE_3:1	750	250	7.40	326	351		4.9	33.3	155	3.89	3.76	0.13	1.7%	184

Summary of 2009 Fill Sa

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Diss_Al_mg/L**	**Diss_Sb_mg/L**	**Diss_As_mg/L**	**Diss_Ba_mg/L**	**Diss_Be_mg/L**	**Diss_Bi_mg/L**	**Diss_B_mg/L**	**Diss_Cd_mg/L**	**Diss_Ca_mg/L**	**Diss_Cr_mg/L**	**Diss_Co_mg/L**	**Diss_Cu_mg/L**	**Diss_Fe_mg/L**	**Diss_Pb_mg/L**	**Diss_Li_mg/L**	**Diss_Mg_mg/L**	**Diss_Mn_mg/L**	**Diss_Hg_ug/L**	**Diss_Mo_mg/L**
HR1	HR1																			
HR2	HR2																			
HR4	HR4																			
HR5	HR5																			
HR7	HR7																			
HR8	HR8																			
HR9	HR9																			
HR11	HR11																			
HRB03	HRB03a																			
HRB03	HRB03b																			
HR12	HR12	0.472	0.00099	0.00268	0.017	0.00042	0.000005	0.05	0.242	296	0.0001	0.00449	0.194	0.01	0.00212	0.0356	37	9.83	0.19	0.00005
HR13	HR13a	0.0104	0.00667	0.0156	0.0158	0.00001	0.000005	0.05	0.000321	55	0.0001	0.000021	0.00061	0.002	0.000244	0.0025	4.82	0.00415	0.01	0.00095
HR13	HR13b	0.0669	0.0042	0.0023	0.0172	0.00001	0.000005	0.05	0.000456	28.8	0.0001	0.000035	0.0005	0.004	0.000149	0.0027	2.46	0.0481	0.01	0.00149
HR14	HR14																			
HR15	HR15																			
HRB04	HRB04	0.0092	0.003	0.00431	0.0478	0.00001	0.000005	0.05	0.000092	22.9	0.0001	0.000006	0.00095	0.005	0.000142	0.001	3	0.00109	0.01	0.00076
HR16	HR16																			
HR17	HR17																			
HRB05	HRB05	0.0096	0.00192	0.00136	0.0291	0.00001	0.000005	0.05	0.00123	34.6	0.0001	0.000015	0.00072	0.003	0.0045	0.0023	10.1	0.00387	0.01	0.00053
HRB06	HRB06	0.0023	0.00474	0.0128	0.0289	0.00001	0.000005	0.05	0.00478	78	0.0001	0.000069	0.00281	0.003	0.000392	0.0018	19.7	1.17	0.01	0.00005
HR18	HR18																			
HRB07	HRB07																			
HR19	HR19	0.13	0.00092	0.00336	0.0156	0.00002	0.000005	0.05	0.000369	2.64	0.0007	0.000093	0.0076	0.139	0.00269	0.0005	0.5	0.0463	0.01	0.00016
HRB08	HRB08	0.013	0.00074	0.00528	0.0359	0.00001	0.000005	0.05	0.000279	23.7	0.0001	0.000035	0.00233	0.018	0.00471	0.0007	3.93	0.00188	0.01	0.0011
HRB09	HRB09																			
HR20	HR20																			
HRB10	HRB10																			
HRB11	HRB11																			
HR21	HR21	0.0263	0.00394	0.0278	0.0142	0.00001	0.000005	0.05	0.00005	22.3	0.0002	0.000025	0.00266	0.024	0.000653	0.0005	2.37	0.00172	0.01	0.00072
HR22	HR22	0.0766	0.00154	0.00541	0.017	0.00002	0.000013	0.05	0.000405	2.99	0.0004	0.000057	0.00917	0.075	0.00312	0.0005	0.52	0.0135	0.01	0.00005
LW-Fine-04	LW-Fine-04	0.0357	0.00547	0.232	0.00189	0.00001	0.000006	0.05	0.000299	5.86	0.0005	0.000022	0.00514	0.031	0.000867	0.0012	0.9	0.0122	0.01	0.00015
TP22	TP22																			
TP23	TP23																			
TP24	TP24a																			
TP24	TP24b	0.006	0.0128	0.00679	0.03	0.00001	0.000005	0.05	0.00249	70	0.0001	0.00002	0.00341	0.003	0.000482	0.0036	13.7	0.0269	0.01	0.00159
TP25	TP25a	0.0056	0.0112	0.00242	0.0207	0.00001	0.000005	0.05	0.00638	160	0.0001	0.000074	0.00262	0.006	0.000537	0.0021	11.5	0.207	0.01	0.00258
TP25	TP25b	0.0056	0.0112	0.00242	0.0207	0.00001	0.000005	0.05	0.00638	160	0.0001	0.000074	0.00262	0.006	0.000537	0.0021	11.5	0.207	0.01	0.00258
TP26	TP26	0.012	0.0029	0.0129	0.0045	0.0001	0.00005	0.5	0.308	481	0.001	0.126	0.157	0.03	0.00173	0.035	116	91.5	0.1	0.0005
TP27	TP27																			
TP28	TP28																			
TP29	TP29	0.012	0.0057	0.0024	0.0056	0.0001	0.00005	0.5	0.0363	405	0.001	0.00121	0.0133	0.01	0.00021	0.01	31.3	7.82	0.1	0.0005
OB01	OB01																			
OB02	OB02																			
OB03	OB03																			
OB04	OB04	0.002	0.0132	0.0106	0.0131	0.00005	0.00003	0.3	0.0192	337	0.0005	0.00021	0.0027	0.006	0.0009	0.005	54.4	3.16	0.05	0.0003
OB05	OB05	0.0038	0.0173	0.0387	0.0193	0.00001	0.000009	0.05	0.00195	205	0.0001	0.00002	0.00203	0.007	0.00013	0.0013	22.6	0.00649	0.01	0.00042

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Diss_Al_mg/L**	**Diss_Sb_mg/L**	**Diss_As_mg/L**	**Diss_Ba_mg/L**	**Diss_Be_mg/L**	**Diss_Bi_mg/L**	**Diss_B_mg/L**	**Diss_Cd_mg/L**	**Diss_Ca_mg/L**	**Diss_Cr_mg/L**	**Diss_Co_mg/L**	**Diss_Cu_mg/L**	**Diss_Fe_mg/L**	**Diss_Pb_mg/L**	**Diss_Li_mg/L**	**Diss_Mg_mg/L**	**Diss_Mn_mg/L**	**Diss_Hg_ug/L**	**Diss_Mo_mg/L**
OB07	OB07	0.006	0.0228	0.0212	0.0103	0.00005	0.00003	0.3	0.0383	365	0.0005	0.00145	0.0031	0.022	0.00054	0.006	67.4	9.24	0.05	0.0003
OB08	OB08	0.006	0.0228	0.0212	0.0103	0.00005	0.00003	0.3	0.0383	365	0.0005	0.00145	0.0031	0.022	0.00054	0.006	67.4	9.24	0.05	0.0003
OB09	OB09	0.005	0.0359	0.0201	0.0144	0.00005	0.00003	0.3	0.0449	394	0.0005	0.00353	0.0055	0.012	0.00174	0.008	77.2	15.6	0.05	0.0003
OB10	OB10	0.005	0.0359	0.0201	0.0144	0.00005	0.00003	0.3	0.0449	394	0.0005	0.00353	0.0055	0.012	0.00174	0.008	77.2	15.6	0.05	0.0003
OS01	OS-01	6.43	0.0038	0.0225	0.0088	0.0032	0.00005	0.5	0.506	446	0.001	0.0407	1.55	0.258	0.0889	0.018	26.9	35.4	0.1	0.0005
OS02	OS-02	0.0284	0.00186	0.00553	0.0264	0.00001	0.000039	0.05	0.00103	10.4	0.0001	0.000026	0.00535	0.048	0.00388	0.0007	1.23	0.031	0.03	0.00005
OS03	OS-03a	0.0687	0.00446	0.0113	0.019	0.00001	0.000053	0.05	0.000964	6.61	0.0004	0.000032	0.0248	0.083	0.00256	0.0005	1.02	0.0173	0.01	0.00005
OS03	OS-03b	0.0687	0.00446	0.0113	0.019	0.00001	0.000053	0.05	0.000964	6.61	0.0004	0.000032	0.0248	0.083	0.00256	0.0005	1.02	0.0173	0.01	0.00005
OS04	OS-04	0.002	0.0087	0.0224	0.0078	0.00005	0.00003	0.3	0.00692	324	0.0005	0.00004	0.0055	0.006	0.00021	0.003	38.5	0.0415	0.05	0.0003
OS05	OS-05a	0.0034	0.0176	0.0595	0.0158	0.00001	0.000005	0.05	0.00142	61	0.0001	0.000013	0.00533	0.003	0.000124	0.0021	7.75	0.0058	0.01	0.00023
OS05	OS-05b	0.0034	0.0176	0.0595	0.0158	0.00001	0.000005	0.05	0.00142	61	0.0001	0.000013	0.00533	0.003	0.000124	0.0021	7.75	0.0058	0.01	0.00023

Summary of 2009 Fill Sa

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Diss_Ni_mg/L**	**Diss_P_mg/L**	**Diss_K_mg/L**	**Diss_Se_mg/L**	**Diss_Si_mg/L**	**Diss_Ag_mg/L**	**Diss_Na_mg/L**	**Diss_Sr_mg/L**	**Diss_S_mg/L**	**Diss_Tl_mg/L**	**Diss_Sn_mg/L**	**Diss_Ti_mg/L**	**Diss_U_mg/L**	**Diss_ V_mg/L**	**Diss_Zn_mg/L**	**Diss_Zr_mg/L**
HR1	HR1																
HR2	HR2																
HR4	HR4																
HR5	HR5																
HR7	HR7																
HR8	HR8																
HR9	HR9																
HR11	HR11																
HRB03	HRB03a																
HRB03	HRB03b																
HR12	HR12	0.022	0.019	4.51	0.00013	7.63	0.00003	2.14	0.653	351	0.000137	0.00001	0.0005	0.000597	0.0002	10.2	0.0001
HR13	HR13a	0.0002	0.006	3.39	0.00006	2.33	0.000005	1.22	0.121	43	0.000026	0.00001	0.0005	0.000119	0.0002	0.0018	0.0001
HR13	HR13b	0.00028	0.006	3.21	0.00011	2.46	0.000008	2.1	0.0841	13	0.000033	0.00014	0.0005	0.000054	0.0002	0.0029	0.0001
HR14	HR14																
HR15	HR15																
HRB04	HRB04	0.00024	0.006	1.65	0.00005	2.78	0.000007	0.56	0.0583	10	0.000015	0.00001	0.0005	0.000061	0.0002	0.002	0.0001
HR16	HR16																
HR17	HR17																
HRB05	HRB05	0.00052	0.002	2.66	0.00008	2.42	0.000007	0.76	0.148	27	0.000055	0.00001	0.0005	0.00011	0.0002	0.0199	0.0001
HRB06	HRB06	0.00334	0.004	1.65	0.00033	3.56	0.000005	0.51	0.319	98	0.000152	0.00001	0.0005	0.000007	0.0002	1.61	0.0001
HR18	HR18																
HRB07	HRB07																
HR19	HR19	0.00176	0.055	1.74	0.00011	4.17	0.000028	2.31	0.012	3	0.000006	0.00008	0.0043	0.000045	0.0008	0.0118	0.0004
HRB08	HRB08	0.00041	0.012	1.61	0.00005	3.2	0.000005	1.1	0.102	18	0.000071	0.00001	0.0005	0.000046	0.0002	0.0093	0.0001
HRB09	HRB09																
HR20	HR20																
HRB10	HRB10																
HRB11	HRB11																
HR21	HR21	0.00034	0.016	2.03	0.00008	4.01	0.000006	1.42	0.0422	3	0.000018	0.00001	0.0005	0.000171	0.0003	0.0033	0.0001
HR22	HR22	0.00105	0.018	0.61	0.00004	3.86	0.00003	1.8	0.0162	3	0.000011	0.00014	0.0021	0.000016	0.0003	0.023	0.0001
LW-Fine-04	LW-Fine-04	0.00064	0.032	1.24	0.0001	3.94	0.000014	0.74	0.0141	3	0.000021	0.00001	0.0005	0.000008	0.0003	0.021	0.0001
TP22	TP22																
TP23	TP23																
TP24	TP24a																
TP24	TP24b	0.00038	0.005	3.64	0.00029	1.75	0.000005	0.68	0.211	61	0.000155	0.00001	0.0005	0.000431	0.0002	0.0653	0.0001
TP25	TP25a	0.00099	0.004	3.6	0.00006	0.73	0.000005	0.49	0.206	143	0.000124	0.00002	0.0005	0.000822	0.0002	0.183	0.0001
TP25	TP25b	0.00099	0.004	3.6	0.00006	0.73	0.000005	0.49	0.206	143	0.000124	0.00002	0.0005	0.000822	0.0002	0.183	0.0001
TP26	TP26	0.0315	0.02	1.53	0.0004	2.12	0.00011	0.25	0.333	669	0.0002	0.0001	0.005	0.00002	0.002	47	0.001
TP27	TP27																
TP28	TP28																
TP29	TP29	0.0048	0.02	2.94	0.0004	2.49	0.00005	0.85	0.482	403	0.00011	0.0001	0.005	0.00002	0.002	1.77	0.001
OB01	OB01																
OB02	OB02																
OB03	OB03																
OB04	OB04	0.0016	0.01	5.49	0.0002	2.98	0.00003	2.78	0.348	373	0.00011	0.00005	0.003	0.00001	0.001	0.591	0.0005
OB05	OB05	0.00039	0.011	5.02	0.00008	2.94	0.000005	1.19	0.275	214	0.000059	0.00001	0.0005	0.000085	0.0002	0.0203	0.0001

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Diss_Ni_mg/L**	**Diss_P_mg/L**	**Diss_K_mg/L**	**Diss_Se_mg/L**	**Diss_Si_mg/L**	**Diss_Ag_mg/L**	**Diss_Na_mg/L**	**Diss_Sr_mg/L**	**Diss_S_mg/L**	**Diss_Tl_mg/L**	**Diss_Sn_mg/L**	**Diss_Ti_mg/L**	**Diss_U_mg/L**	**Diss_ V_mg/L**	**Diss_Zn_mg/L**	**Diss_Zr_mg/L**
OB07	OB07	0.0042	0.01	3.94	0.0003	1.81	0.00004	0.69	0.336	411	0.00014	0.00005	0.003	0.00001	0.001	1.83	0.0005
OB08	OB08	0.0042	0.01	3.94	0.0003	1.81	0.00004	0.69	0.336	411	0.00014	0.00005	0.003	0.00001	0.001	1.83	0.0005
OB09	OB09	0.0073	0.01	4.12	0.0004	1.73	0.00005	1	0.424	464	0.0002	0.00005	0.003	0.00001	0.001	2.45	0.0005
OB10	OB10	0.0073	0.01	4.12	0.0004	1.73	0.00005	1	0.424	464	0.0002	0.00005	0.003	0.00001	0.001	2.45	0.0005
OS01	OS-01	0.0368	0.02	0.84	0.0006	5.67	0.00126	0.47	0.35	464	0.00019	0.0001	0.005	0.00296	0.002	21.5	0.001
OS02	OS-02	0.00096	0.005	1.22	0.00008	4.43	0.000034	0.71	0.0308	11	0.000022	0.00003	0.0005	0.000002	0.0002	0.146	0.0001
OS03	OS-03a	0.00102	0.011	1.34	0.00005	4.48	0.000037	1.9	0.0278	8	0.000021	0.00002	0.0012	0.000006	0.0005	0.0994	0.0001
OS03	OS-03b	0.00102	0.011	1.34	0.00005	4.48	0.000037	1.9	0.0278	8	0.000021	0.00002	0.0012	0.000006	0.0005	0.0994	0.0001
OS04	OS-04	0.0005	0.012	4.5	0.0002	3.8	0.00003	1.66	0.241	323	0.00009	0.00005	0.003	0.00001	0.001	0.209	0.0005
OS05	OS-05a	0.00019	0.017	2.6	0.00004	3.52	0.000005	0.37	0.0823	55	0.000062	0.00001	0.0005	0.000039	0.0002	0.0251	0.0001
OS05	OS-05b	0.00019	0.017	2.6	0.00004	3.52	0.000005	0.37	0.0823	55	0.000062	0.00001	0.0005	0.000039	0.0002	0.0251	0.0001

Summary of 2009 Fill Sa

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Tot_Acidity_ mg CaCO3/kg**	**Alk_mg CaCO3/kg**	**SO4_mg/kg**	**Hardness CaCO3_mg/k g**	**Diss_Al_mg/k g**	**Diss_Sb_mg/k g**	**Diss_As_mg/k g**	**Diss_Ba_mg/k g**	**Diss_Be_mg/k g**	**Diss_Bi_mg/k g**	**Diss_B_mg/kg**	**Diss_Cd_mg/ kg**	**Diss_Ca_mg/ kg**	**Diss_Cr_mg/k g**	**Diss_Co_mg/ kg**	**Diss_Cu_mg/ kg**	**Diss_Fe_mg/k g**	**Diss_Pb_mg/k g**	**Diss_Li_mg/k g**
HR1	HR1																			
HR2	HR2																			
HR4	HR4																			
HR5	HR5																			
HR7	HR7																			
HR8	HR8																			
HR9	HR9																			
HR11	HR11																			
HRB03	HRB03a																			
HRB03	HRB03b																			
HR12	HR12	106.1	1.7	2739	2676	1.416	0.0030	0.0080	0.051	0.00126	0.00002	0.15	0.7260	888	0.0003	0.0135	0.582	0.03	0.0064	0.1068
HR13	HR13a	10.3	145.3	291	471	0.031	0.0200	0.0468	0.047	0.00003	0.00002	0.15	0.0010	165	0.0003	0.0001	0.002	0.01	0.0007	0.0075
HR13	HR13b	6.6	173.8	90	245.7	0.201	0.0126	0.0069	0.052	0.00003	0.00002	0.15	0.0014	86	0.0003	0.0001	0.002	0.01	0.0004	0.0081
HR14	HR14																			
HR15	HR15																			
HRB04	HRB04	8.4	138.9	87	209.1	0.028	0.0090	0.0129	0.143	0.00003	0.00002	0.15	0.0003	69	0.0003	0.0000	0.003	0.02	0.0004	0.0030
HR16	HR16																			
HR17	HR17																			
HRB05	HRB05	8.4	189.2	186	384	0.029	0.0058	0.0041	0.087	0.00003	0.00002	0.15	0.0037	104	0.0003	0.0000	0.002	0.01	0.0135	0.0069
HRB06	HRB06	18.4	26.1	717	828	0.007	0.0142	0.0384	0.087	0.00003	0.00002	0.15	0.0143	234	0.0003	0.0002	0.008	0.01	0.0012	0.0054
HR18	HR18																			
HRB07	HRB07																			
HR19	HR19	8.6	19.2	15	25.8	0.390	0.0028	0.0101	0.047	0.00006	0.00002	0.15	0.0011	8	0.0021	0.0003	0.023	0.42	0.0081	0.0015
HRB08	HRB08	7.7	80.7	153	225.9	0.039	0.0022	0.0158	0.108	0.00003	0.00002	0.15	0.0008	71	0.0003	0.0001	0.007	0.05	0.0141	0.0021
HRB09	HRB09																			
HR20	HR20																			
HRB10	HRB10																			
HRB11	HRB11																			
HR21	HR21	8.0	189.7	18	196.5	0.079	0.0118	0.0834	0.043	0.00003	0.00002	0.15	0.0002	67	0.0006	0.0001	0.008	0.07	0.0020	0.0015
HR22	HR22	7.8	13.1	18	28.8	0.230	0.0046	0.0162	0.051	0.00006	0.00004	0.15	0.0012	9	0.0012	0.0002	0.028	0.23	0.0094	0.0015
LW-Fine-04	LW-Fine-04	7.4	61.4	3	55.2	0.107	0.0164	0.6960	0.006	0.00003	0.00002	0.15	0.0009	18	0.0015	0.0001	0.015	0.09	0.0026	0.0036
TP22	TP22																			
TP23	TP23																			
TP24	TP24a																			
TP24	TP24b	9.5	164.6	450	693	0.018	0.0384	0.0204	0.090	0.00003	0.00002	0.15	0.0075	210	0.0003	0.0001	0.010	0.01	0.0014	0.0108
TP25	TP25a	10.0	119.4	1140	1341	0.017	0.0336	0.0073	0.062	0.00003	0.00002	0.15	0.0191	480	0.0003	0.0002	0.008	0.02	0.0016	0.0063
TP25	TP25b	10.0	119.4	1140	1341	0.017	0.0336	0.0073	0.062	0.00003	0.00002	0.15	0.0191	480	0.0003	0.0002	0.008	0.02	0.0016	0.0063
TP26	TP26	352.7	36.1	5409	5040	0.036	0.0087	0.0387	0.014	0.00030	0.00015	1.50	0.9240	1443	0.0030	0.3780	0.471	0.09	0.0052	0.1050
TP27	TP27																			
TP28	TP28																			
TP29	TP29	30.1	17.0	3429	3420	0.036	0.0171	0.0072	0.017	0.00030	0.00015	1.50	0.1089	1215	0.0030	0.0036	0.040	0.03	0.0006	0.0300
OB01	OB01																			
OB02	OB02																			
OB03	OB03																			
OB04	OB04	20.4	17.2	3375	3180	0.006	0.0396	0.0318	0.039	0.00015	0.00009	0.90	0.0576	1011	0.0015	0.0006	0.008	0.02	0.0027	0.0150
OB05	OB05	15.5	79.0	1758	1818	0.011	0.0519	0.1161	0.058	0.00003	0.00003	0.15	0.0059	615	0.0003	0.0001	0.006	0.02	0.0004	0.0039

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Tot_Acidity_ mg CaCO3/kg**	**Alk_mg CaCO3/kg**	**SO4_mg/kg**	**Hardness CaCO3_mg/kg**	**Diss_Al_mg/kg**	**Diss_Sb_mg/kg**	**Diss_As_mg/kg**	**Diss_Ba_mg/kg**	**Diss_Be_mg/kg**	**Diss_Bi_mg/kg**	**Diss_B_mg/kg**	**Diss_Cd_mg/kg**	**Diss_Ca_mg/kg**	**Diss_Cr_mg/kg**	**Diss_Co_mg/kg**	**Diss_Cu_mg/kg**	**Diss_Fe_mg/kg**	**Diss_Pb_mg/kg**	**Diss_Li_mg/kg**
OB07	OB07	23.1	25.4	3303	3570	0.018	0.0684	0.0636	0.031	0.00015	0.00009	0.90	0.1149	1095	0.0015	0.0044	0.009	0.07	0.0016	0.0180
OB08	OB08	23.1	25.4	3303	3570	0.018	0.0684	0.0636	0.031	0.00015	0.00009	0.90	0.1149	1095	0.0015	0.0044	0.009	0.07	0.0016	0.0180
OB09	OB09	29.5	30.3	3720	3900	0.015	0.1077	0.0603	0.043	0.00015	0.00009	0.90	0.1347	1182	0.0015	0.0106	0.017	0.04	0.0052	0.0240
OB10	OB10	29.5	30.3	3720	3900	0.015	0.1077	0.0603	0.043	0.00015	0.00009	0.90	0.1347	1182	0.0015	0.0106	0.017	0.04	0.0052	0.0240
OS01	OS-01	380.0	0.0	4401	3660	19.290	0.0114	0.0675	0.026	0.00960	0.00015	1.50	1.5180	1338	0.0030	0.1221	4.650	0.77	0.2667	0.0540
OS02	OS-02	13.9	9.8	102	93.3	0.085	0.0056	0.0166	0.079	0.00003	0.00012	0.15	0.0031	31	0.0003	0.0001	0.016	0.14	0.0116	0.0021
OS03	OS-03a	10.4	8.3	60	62.1	0.206	0.0134	0.0339	0.057	0.00003	0.00016	0.15	0.0029	20	0.0012	0.0001	0.074	0.25	0.0077	0.0015
OS03	OS-03b	10.4	8.3	60	62.1	0.206	0.0134	0.0339	0.057	0.00003	0.00016	0.15	0.0029	20	0.0012	0.0001	0.074	0.25	0.0077	0.0015
OS04	OS-04	17.3	23.0	2715	2904	0.006	0.0261	0.0672	0.023	0.00015	0.00009	0.90	0.0208	972	0.0015	0.0001	0.017	0.02	0.0006	0.0090
OS05	OS-05a	14.6	99.8	465	552	0.010	0.0528	0.1785	0.047	0.00003	0.00002	0.15	0.0043	183	0.0003	0.0000	0.016	0.01	0.0004	0.0063
OS05	OS-05b	14.6	99.8	465	552	0.010	0.0528	0.1785	0.047	0.00003	0.00002	0.15	0.0043	183	0.0003	0.0000	0.016	0.01	0.0004	0.0063

Summary of 2009 Fill Sa

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Diss_Mg_mg/kg**	**Diss_Mn_mg/kg**	**Diss_Hg_ug/kg**	**Diss_Mo_mg/kg**	**Diss_Ni_mg/kg**	**Diss_P_mg/kg**	**Diss_K_mg/kg**	**Diss_Se_mg/kg**	**Diss_Si_mg/kg**	**Diss_Ag_mg/kg**	**Diss_Na_mg/kg**	**Diss_Sr_mg/kg**	**Diss_S_mg/kg**	**Diss_Tl_mg/kg**	**Diss_Sn_mg/kg**	**Diss_Ti_mg/kg**	**Diss_U_mg/kg**	**Diss_V_mg/kg**	**Diss_Zn_mg/kg**	**Diss_Zr_mg/kg**
HR1	HR1																				
HR2	HR2																				
HR4	HR4																				
HR5	HR5																				
HR7	HR7																				
HR8	HR8																				
HR9	HR9																				
HR11	HR11																				
HRB03	HRB03a																				
HRB03	HRB03b																				
HR12	HR12	111.0	29.49	0.5700	0.0002	0.0660	0.057	13.5	0.0004	22.89	0.0001	6.42	1.96	1053	0.0004	0.0000	0.0015	0.0018	0.0006	30.60	0.0003
HR13	HR13a	14.5	0.01	0.0300	0.0029	0.0006	0.018	10.2	0.0002	6.99	0.0000	3.66	0.36	129	0.0001	0.0000	0.0015	0.0004	0.0006	0.01	0.0003
HR13	HR13b	7.4	0.14	0.0300	0.0045	0.0008	0.018	9.6	0.0003	7.38	0.0000	6.30	0.25	39	0.0001	0.0004	0.0015	0.0002	0.0006	0.01	0.0003
HR14	HR14																				
HR15	HR15																				
HRB04	HRB04	9.0	0.00	0.0300	0.0023	0.0007	0.018	5.0	0.0002	8.34	0.0000	1.68	0.17	30	0.0000	0.0000	0.0015	0.0002	0.0006	0.01	0.0003
HR16	HR16																				
HR17	HR17																				
HRB05	HRB05	30.3	0.01	0.0300	0.0016	0.0016	0.006	8.0	0.0002	7.26	0.0000	2.28	0.44	81	0.0002	0.0000	0.0015	0.0003	0.0006	0.06	0.0003
HRB06	HRB06	59.1	3.51	0.0300	0.0002	0.0100	0.012	5.0	0.0010	10.68	0.0000	1.53	0.96	294	0.0005	0.0000	0.0015	0.0000	0.0006	4.83	0.0003
HR18	HR18																				
HRB07	HRB07																				
HR19	HR19	1.5	0.14	0.0300	0.0005	0.0053	0.165	5.2	0.0003	12.51	0.0001	6.93	0.04	9	0.0000	0.0002	0.0129	0.0001	0.0024	0.04	0.0012
HRB08	HRB08	11.8	0.01	0.0300	0.0033	0.0012	0.036	4.8	0.0002	9.60	0.0000	3.30	0.31	54	0.0002	0.0000	0.0015	0.0001	0.0006	0.03	0.0003
HRB09	HRB09																				
HR20	HR20																				
HRB10	HRB10																				
HRB11	HRB11																				
HR21	HR21	7.1	0.01	0.0300	0.0022	0.0010	0.048	6.1	0.0002	12.03	0.0000	4.26	0.13	9	0.0001	0.0000	0.0015	0.0005	0.0009	0.01	0.0003
HR22	HR22	1.6	0.04	0.0300	0.0002	0.0032	0.054	1.8	0.0001	11.58	0.0001	5.40	0.05	9	0.0000	0.0004	0.0063	0.0000	0.0009	0.07	0.0003
LW-Fine-04	LW-Fine-04	2.7	0.04	0.0300	0.0005	0.0019	0.096	3.7	0.0003	11.82	0.0000	2.22	0.04	9	0.0001	0.0000	0.0015	0.0000	0.0009	0.06	0.0003
TP22	TP22																				
TP23	TP23																				
TP24	TP24a																				
TP24	TP24b	41.1	0.08	0.0300	0.0048	0.0011	0.015	10.9	0.0009	5.25	0.0000	2.04	0.63	183	0.0005	0.0000	0.0015	0.0013	0.0006	0.20	0.0003
TP25	TP25a	34.5	0.62	0.0300	0.0077	0.0030	0.012	10.8	0.0002	2.19	0.0000	1.47	0.62	429	0.0004	0.0001	0.0015	0.0025	0.0006	0.55	0.0003
TP25	TP25b	34.5	0.62	0.0300	0.0077	0.0030	0.012	10.8	0.0002	2.19	0.0000	1.47	0.62	429	0.0004	0.0001	0.0015	0.0025	0.0006	0.55	0.0003
TP26	TP26	348.0	274.50	0.3000	0.0015	0.0945	0.060	4.6	0.0012	6.36	0.0003	0.75	1.00	2007	0.0006	0.0003	0.0150	0.0001	0.0060	141.00	0.0030
TP27	TP27																				
TP28	TP28																				
TP29	TP29	93.9	23.46	0.3000	0.0015	0.0144	0.060	8.8	0.0012	7.47	0.0002	2.55	1.45	1209	0.0003	0.0003	0.0150	0.0001	0.0060	5.31	0.0030
OB01	OB01																				
OB02	OB02																				
OB03	OB03																				
OB04	OB04	163.2	9.48	0.1500	0.0009	0.0048	0.030	16.5	0.0006	8.94	0.0001	8.34	1.04	1119	0.0003	0.0002	0.0090	0.0000	0.0030	1.77	0.0015
OB05	OB05	67.8	0.02	0.0300	0.0013	0.0012	0.033	15.1	0.0002	8.82	0.0000	3.57	0.83	642	0.0002	0.0000	0.0015	0.0003	0.0006	0.06	0.0003

		SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Site	**Sample #**	**Diss_Mg_mg/kg**	**Diss_Mn_mg/kg**	**Diss_Hg_ug/kg**	**Diss_Mo_mg/kg**	**Diss_Ni_mg/kg**	**Diss_P_mg/kg**	**Diss_K_mg/kg**	**Diss_Se_mg/kg**	**Diss_Si_mg/kg**	**Diss_Ag_mg/kg**	**Diss_Na_mg/kg**	**Diss_Sr_mg/kg**	**Diss_S_mg/kg**	**Diss_Tl_mg/kg**	**Diss_Sn_mg/kg**	**Diss_Ti_mg/kg**	**Diss_U_mg/kg**	**Diss_V_mg/kg**	**Diss_Zn_mg/kg**	**Diss_Zr_mg/kg**
OB07	OB07	202.2	27.72	0.1500	0.0009	0.0126	0.030	11.8	0.0009	5.43	0.0001	2.07	1.01	1233	0.0004	0.0002	0.0090	0.0000	0.0030	5.49	0.0015
OB08	OB08	202.2	27.72	0.1500	0.0009	0.0126	0.030	11.8	0.0009	5.43	0.0001	2.07	1.01	1233	0.0004	0.0002	0.0090	0.0000	0.0030	5.49	0.0015
OB09	OB09	231.6	46.80	0.1500	0.0009	0.0219	0.030	12.4	0.0012	5.19	0.0002	3.00	1.27	1392	0.0006	0.0002	0.0090	0.0000	0.0030	7.35	0.0015
OB10	OB10	231.6	46.80	0.1500	0.0009	0.0219	0.030	12.4	0.0012	5.19	0.0002	3.00	1.27	1392	0.0006	0.0002	0.0090	0.0000	0.0030	7.35	0.0015
OS01	OS-01	80.7	106.20	0.3000	0.0015	0.1104	0.060	2.5	0.0018	17.01	0.0038	1.41	1.05	1392	0.0006	0.0003	0.0150	0.0089	0.0060	64.50	0.0030
OS02	OS-02	3.7	0.09	0.0900	0.0002	0.0029	0.015	3.7	0.0002	13.29	0.0001	2.13	0.09	33	0.0001	0.0001	0.0015	0.0000	0.0006	0.44	0.0003
OS03	OS-03a	3.1	0.05	0.0300	0.0002	0.0031	0.033	4.0	0.0002	13.44	0.0001	5.70	0.08	24	0.0001	0.0001	0.0036	0.0000	0.0015	0.30	0.0003
OS03	OS-03b	3.1	0.05	0.0300	0.0002	0.0031	0.033	4.0	0.0002	13.44	0.0001	5.70	0.08	24	0.0001	0.0001	0.0036	0.0000	0.0015	0.30	0.0003
OS04	OS-04	115.5	0.12	0.1500	0.0009	0.0015	0.036	13.5	0.0006	11.40	0.0001	4.98	0.72	969	0.0003	0.0002	0.0090	0.0000	0.0030	0.63	0.0015
OS05	OS-05a	23.3	0.02	0.0300	0.0007	0.0006	0.051	7.8	0.0001	10.56	0.0000	1.11	0.25	165	0.0002	0.0000	0.0015	0.0001	0.0006	0.08	0.0003
OS05	OS-05b	23.3	0.02	0.0300	0.0007	0.0006	0.051	7.8	0.0001	10.56	0.0000	1.11	0.25	165	0.0002	0.0000	0.0015	0.0001	0.0006	0.08	0.0003

								ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA	ABA
Sample #	**Fraction**	**SGS CEMI Sample**	**Location**	**Site**	**Sample Type**	**Material Type**	**Fraction**	**Paste_pH**	**Paste EC_µS/cm**	**TIC_%**	**C_NP_kgCaCO3/t**	**S(T)_%**	**S(SO4)_%**	**S(S-2)_%**	**%_S_Oxidation**	**AP_kgCaCO3/t**	**NP_kgCaCO3/t**	**NNP_kgCaCO3/t**	**NP_AP**	**Fizz**
HR13a	Fine (-1/4")	HR 13a (-1/4")	Haul Road	HR13	Waste Rock	Rock Pile	Fine (-1/4")	7.55	811	0.18	15.0	0.47	0.1	0.37	21%	11.6	16.8	5.2	1.5	Slight
HR13b	Coarse (+1/4")	HR 13b	Haul Road	HR13	Waste Rock	Rock Pile	Coarse (+1/4")	8.43	306	0.29	24.2	0.22	0.01	0.21	5%	6.6	29.5	22.9	4.5	Moderate
LW-Coarse-04	Coarse (+1/4")	LW-Coarse-04	W Lower Dump	CR LW-4	Construction M	Rock Pile	Coarse (+1/4")	7.08	300	0.02	1.7	0.17	0.16	0.01	94%	0.3	3.5	3.2	11.2	None
LW-Fine-04	Fine (-1/4")	LW-Fine-04 (-1/4")	W Lower Dump	CR LW-4	Construction M	Rock Pile	Fine (-1/4")	6.96	431	0.02	1.7	0.12	0.11	0.01	92%	0.3	5.0	4.7	16.0	None

			ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Sample #	**Fraction**	**SGS CEMI Sample**	**Au_pppm**	**Ag_ppm**	**Al_%**	**As_ppm**	**Ba_ppm**	**Be_ppm**	**Bi_ppm**	**Ca_%**	**Cd_ppm**	**Ce_ppm**	**Co_ppm**	**Cr_ppm**	**Cs_ppm**	**Cu_ppm**	**Fe_%**	**Ga_ppm**	**Ge_ppm**	**Hf_ppm**
HR13a	Fine (-1/4")	HR 13a (-1/4")	0.14	3.9	1.38	556.3	314	1	3.7	0.82	14	48	12.4	51	5.9	228.4	4.13	5	0.1	0.1
HR13b	Coarse (+1/4")	HR 13b	0.01	0.5	1.16	19.9	72	1	0.5	1.4	5.7	22	6.5	76	3.5	46.6	2.42	6	0.1	0.1
LW-Coarse-04	Coarse (+1/4")	LW-Coarse-04	0.39	7	0.77	2987.8	58	<1	5.6	0.24	9.4	10	3.9	53	4.9	69.1	3.89	3	<0.1	<0.1
LW-Fine-04	Fine (-1/4")	LW-Fine-04 (-1/4")	0.28	4.3	1.4	1695.2	87	1	3.7	0.42	13.7	14	6.6	49	7.3	89.9	3.91	4	<0.1	<0.1

			ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Sample #	**Fraction**	**SGS CEMI Sample**	**Hg_ppm**	**In_ppm**	**K_%**	**La_ppm**	**Li_ppm**	**Mg_%**	**Mn_ppm**	**Mo_ppm**	**Na_%**	**Nb_ppm**	**Ni_ppm**	**P_%**	**Pb_ppm**	**Rb_ppm**	**Re_ppb**	**S_%**	**Sb_ppm**	**Sc_ppm**
HR13a	Fine (-1/4")	HR 13a (-1/4")	0.077	0.3	0.2	26	9.4	0.51	2454	1.1	0.02	0.3	6.7	0.087	243.7	14.8	5	0.37	43	5.4
HR13b	Coarse (+1/4")	HR 13b	0.026	0.05	0.17	11	9.6	0.69	1135	0.3	0.05	0.4	6	0.084	26.5	12.5	5	0.16	3	4.3
LW-Coarse-04	Coarse (+1/4")	LW-Coarse-04	0.547	1.14	0.23	5	7.6	0.26	311	1.1	0.01	<0.1	6.6	0.057	820.6	13.8	<5	0.19	50.5	4.5
LW-Fine-04	Fine (-1/4")	LW-Fine-04 (-1/4")	0.141	0.7	0.25	8	7.3	0.29	1070	0.8	0.01	<0.1	8.6	0.071	534.4	14.3	<5	0.14	28.8	5.6

			ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Sample #	**Fraction**	**SGS CEMI Sample**	**Se_ppm**	**Sn_ppm**	**Sr_ppm**	**Ta_ppm**	**Te_ppm**	**Th_ppm**	**Ti_%**	**Tl_ppm**	**U_ppm**	**V_ppm**	**W_ppm**	**Y_ppm**	**Zn_ppm**	**Zr_ppm**
HR13a	Fine (-1/4")	HR 13a (-1/4")	0.5	0.4	53	0.1	0.2	8.5	0.011	0.4	1.1	40	0.2	13.7	1167	2.8
HR13b	Coarse (+1/4")	HR 13b	0.5	0.4	60	0.1	0.1	3.7	0.055	0.2	0.4	44	0.1	9.5	323	2.1
LW-Coarse-04	Coarse (+1/4")	LW-Coarse-04	<0.5	0.2	57	<0.1	0.1	1.2	0.008	2.5	0.5	33	0.2	6	886	1.2
LW-Fine-04	Fine (-1/4")	LW-Fine-04 (-1/4")	<0.5	0.3	41	<0.1	0.1	1.2	0.005	1.2	0.5	35	0.2	11.6	1349	0.9

			SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Sample #	**Fraction**	**SGS CEMI Sample**	**Vol_water _mL**	**Samp_wt_g**	**pH**	**Redox_mV**	**Cond_uS/cm**	**Acidity_mg CaCO3/L**	**Tot_Acidity_mg CaCO3/L**	**Alk_mg CaCO3/L**	**SO4_mg/L**	**Maj_Anions_meq/L**	**Maj_Cations_meq/L**	**Diff_meq/L**	**Balance (%)_%**	**Hardness CaCO3_mg/L**	**Diss_Al_mg/L**	**Diss_Sb_mg/L**	**Diss_As_mg/L**	**Diss_Ba_mg/L**
HR13a	Fine (-1/4")	HR 13a (-1/4")	750	250	7.86	306	299		3.4	48.4	97	2.99	3.28	-0.29	-4.7%	157	0.0104	0.00667	0.0156	0.0158
HR13b	Coarse (+1/4")	HR 13b	750	250	7.96	321	166		2.2	57.9	30	1.78	1.81	-0.03	-0.8%	81.9	0.0669	0.0042	0.0023	0.0172
LW-Coarse-04	Coarse (+1/4")	LW-Coarse-04																		
LW-Fine-04	Fine (-1/4")	LW-Fine-04 (-1/4")	750	250	7.28	323	39	#N/A	2.5	20.5	<1	0.41	0.43	-0.02	-2.5%	18.4	0.0357	0.00547	0.232	0.00189

			SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Sample #	**Fraction**	**SGS CEMI Sample**	**Diss_Be_mg/L**	**Diss_Bi_mg/L**	**Diss_B_mg/L**	**Diss_Cd_mg/L**	**Diss_Ca_mg/L**	**Diss_Cr_mg/L**	**Diss_Co_mg/L**	**Diss_Cu_mg/L**	**Diss_Fe_mg/L**	**Diss_Pb_mg/L**	**Diss_Li_mg/L**	**Diss_Mg_mg/L**	**Diss_Mn_mg/L**	**Diss_Hg_ug/L**	**Diss_Mo_mg/L**	**Diss_Ni_mg/L**	**Diss_P_mg/L**	**Diss_K_mg/L**
HR13a	Fine (-1/4")	HR 13a (-1/4")	0.00001	0.000005	0.05	0.000321	55	0.0001	0.000021	0.00061	0.002	0.000244	0.0025	4.82	0.00415	0.01	0.00095	0.0002	0.006	3.39
HR13b	Coarse (+1/4")	HR 13b	0.00001	0.000005	0.05	0.000456	28.8	0.0001	0.000035	0.0005	0.004	0.000149	0.0027	2.46	0.0481	0.01	0.00149	0.00028	0.006	3.21
LW-Coarse-04	Coarse (+1/4")	LW-Coarse-04																		
LW-Fine-04	Fine (-1/4")	LW-Fine-04 (-1/4")	<0.00001	0.000006	<0.05	0.000299	5.86	0.0005	0.000022	0.00514	0.031	0.000867	0.0012	0.9	0.0122	<0.01	0.00015	0.00064	0.032	1.24

			SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1	SFE 3:1
Sample #	**Fraction**	**SGS CEMI Sample**	**Diss_Se_mg/L**	**Diss_Si_mg/L**	**Diss_Ag_mg/L**	**Diss_Na_mg/L**	**Diss_Sr_mg/L**	**Diss_S_mg/L**	**Diss_Tl_mg/L**	**Diss_Sn_mg/L**	**Diss_Ti_mg/L**	**Diss_U_mg/L**	**Diss_V_mg/L**	**Diss_Zn_mg/L**	**Diss_Zr_mg/L**
HR13a	Fine (-1/4")	HR 13a (-1/4")	0.00006	2.33	0.000005	1.22	0.121	43	0.000026	0.00001	0.0005	0.000119	0.0002	0.0018	0.0001
HR13b	Coarse (+1/4")	HR 13b	0.00011	2.46	0.000008	2.1	0.0841	13	0.000033	0.00014	0.0005	0.000054	0.0002	0.0029	0.0001
LW-Coarse-04	Coarse (+1/4")	LW-Coarse-04													
LW-Fine-04	Fine (-1/4")	LW-Fine-04 (-1/4")	0.0001	3.94	0.000014	0.74	0.0141	<3	0.000021	<0.00001	<0.0005	0.000008	0.0003	0.021	<0.0001

Box 2004, 1004 Michie Place
Marsh Lake, YK, Canada
Y0B 1Y2

Telef. 1-867-660-4630
Fax: 1-604-608-4753
E-mail: dianelister@gmail.com

Altura Environmental Consulting

To: Andrew Rollo, Lorax Environmental

From: Diane Lister

Date: September 15, 2009

RE: **Results of X-Ray Diffraction Testing on Pit Wall Precipitates**

Samples of secondary mineral products were taken from site PWE-07 on the east pit wall of the Brown-McDade pit on July 30, 2009. The purpose of this sampling was to identify the mineral products in order to gain a better understanding of soluble products and of potential solubility constraints of the rock exposed in the pit.

This site is located at 388955E / 6881551 N (UTM NAD 83, Zone 08V), at an elevation of approximately 1200 masl. Photographs of the site and samples are shown on the following pages. In this area, secondary minerals form a distinct white-green zone on a small talus fan of highly weathered and sulphidic material. While smaller formations of similar-looking products are seen in some other areas of the pit, it should be noted that the area sampled represented an anomalously thick and concentrated accumulation of these products.

Samples were submitted to the Queen's University Department of Geological Sciences and Geological Engineering for x-ray diffraction analysis. Of most interest was the identification of both the white-green and more darker green products; as such two separate samples were submitted PWE-07a (pale white-green precipitate crust on rock fragments) and PWE-07b (green precipitate crust on rock fragments).

Detailed results are given in the attached reports. In general the mineralogy indicates a dominance of magnesium and iron sulphate minerals forming in the precipitate.

Analysis of the PWE-07a precipitate along with its underlying brown crust was found to consist predominantly of quartz (SiO_2) and epsomite ($MgSO_4$ $(H_2O)_7$), with lesser amounts of muscovite ($KAl_2(Si_3Al)O_{10}(OH,F)_2$. A detailed analysis of a the main pale blue-white precipitate was found to contain melanterite ($FeSO_4(H_2O)_7$) and pentahydrite ($MgSO_4*5(H_2O)$) in addition to epsomite.

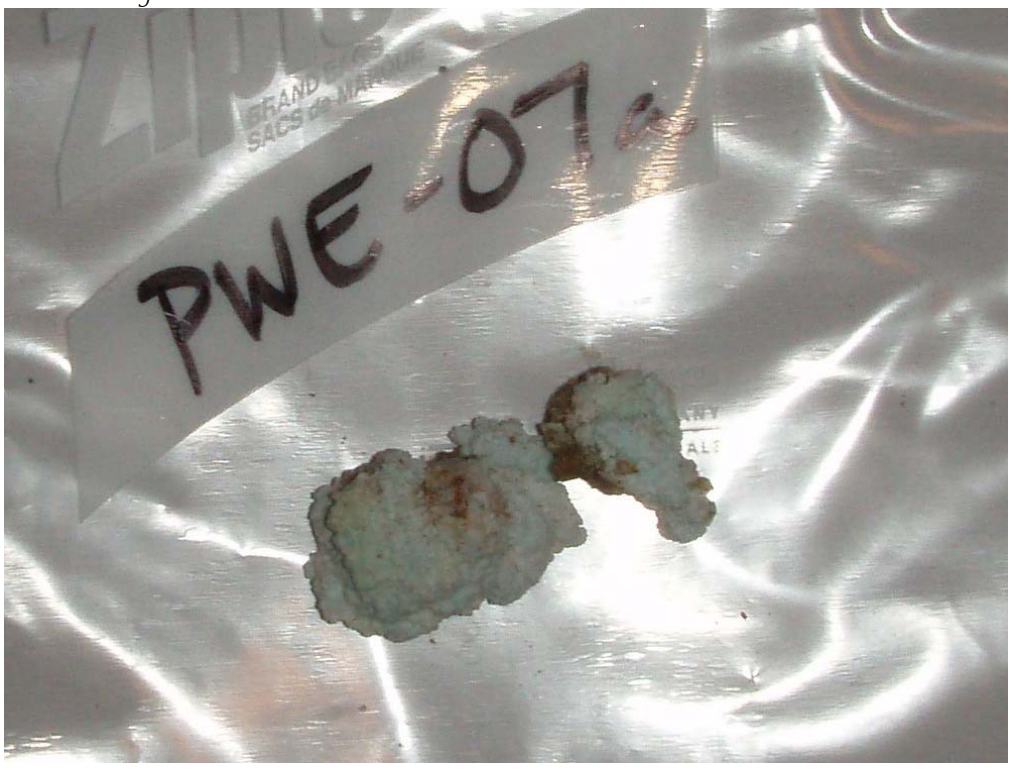
Tests on the darker green area of PWE-07b indicated predominantly quartz, pyrite (FeS_2), melanterite, and hexahydrite ($MgSO_4*6(H_2O)$. The lab also identified a distinct blue phase of precipitate, which was found to contain quartz, melanterite, siderotil ($FeSO_4*5(H_2O)$), and phlogopite ($KMg_3(Si_3Al)O_{10}(F,OH)_2$).

According to feedback from Queen's mineralogy staff, copper and possibly other metals often occur in solid solution in melanterite and siderotil, however these are not detected through x-ray diffraction testing (SEM with EDS would be required).

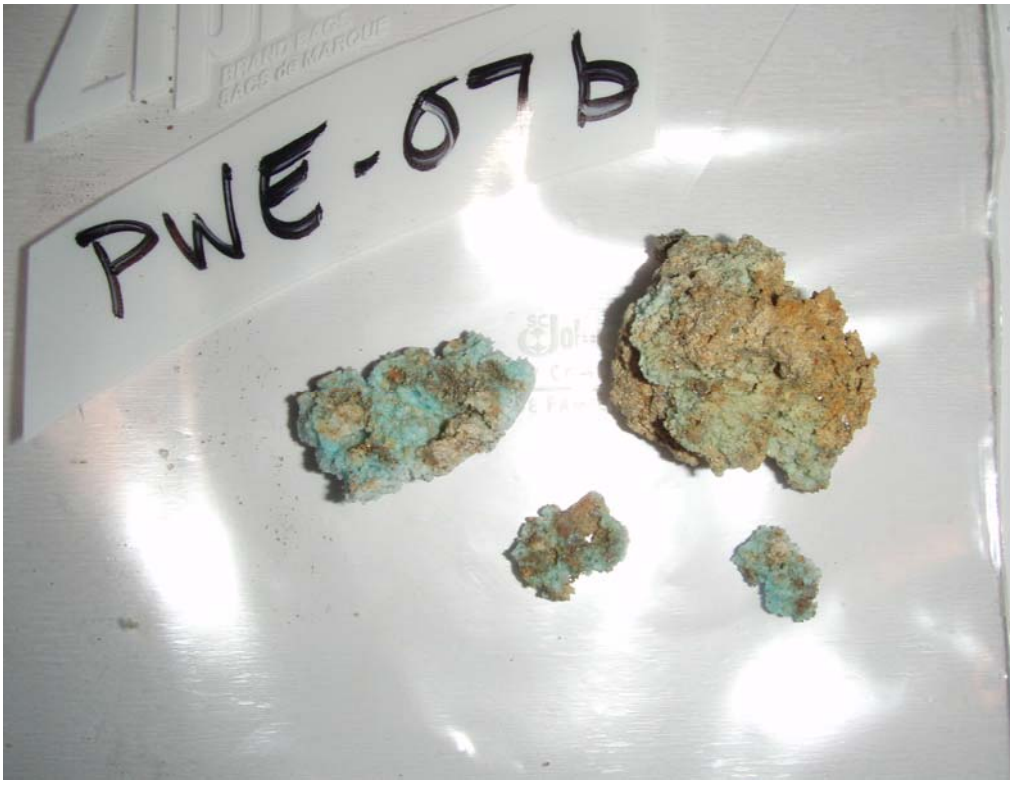
Location of sample site, bottom of Brown McDade pit, east wall. Geological pick is approximately 80 cm long.

Close-up of precipitates sampled.

Specimens collected from site PWE-07

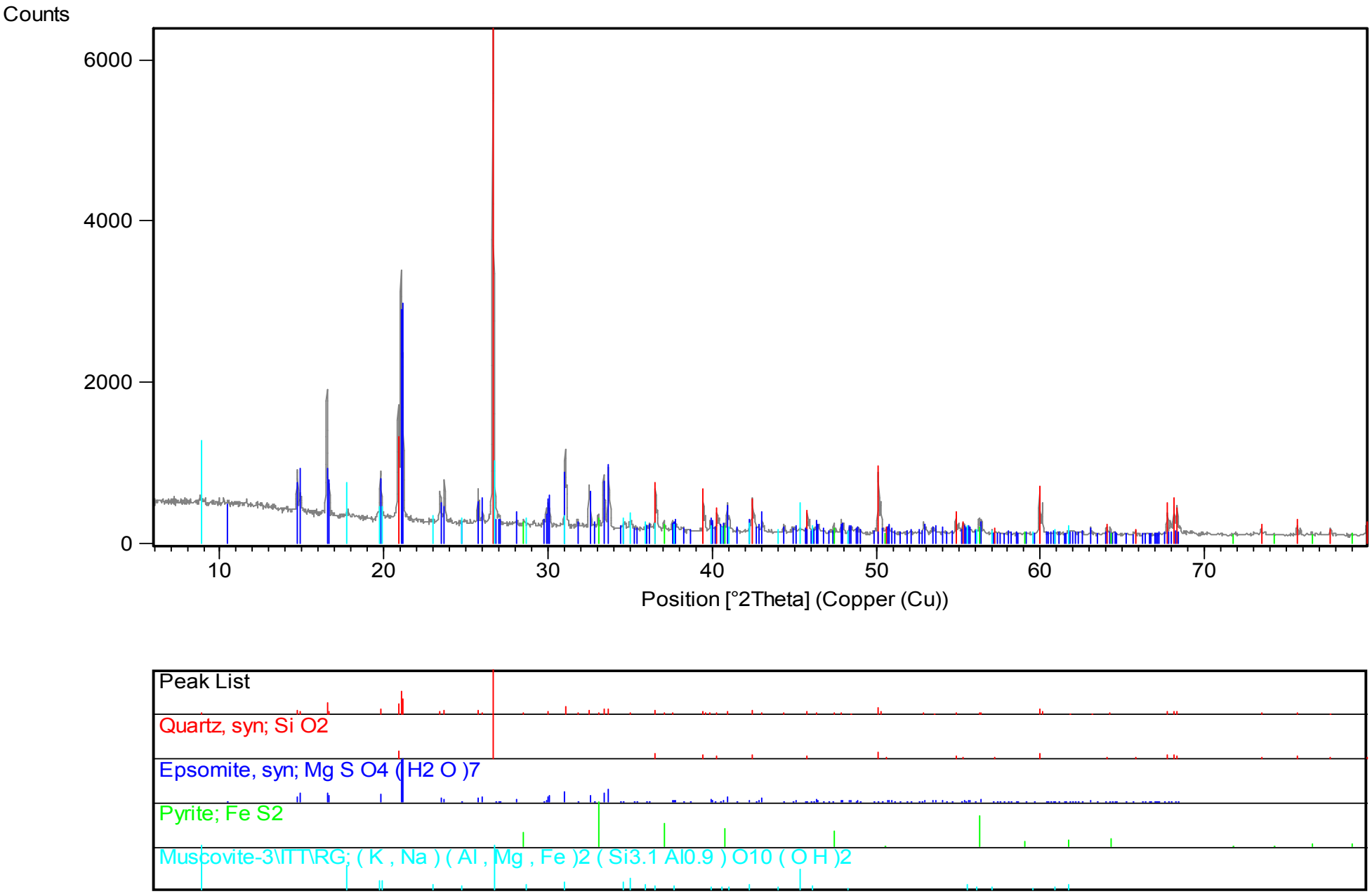


Sample PWE-07a

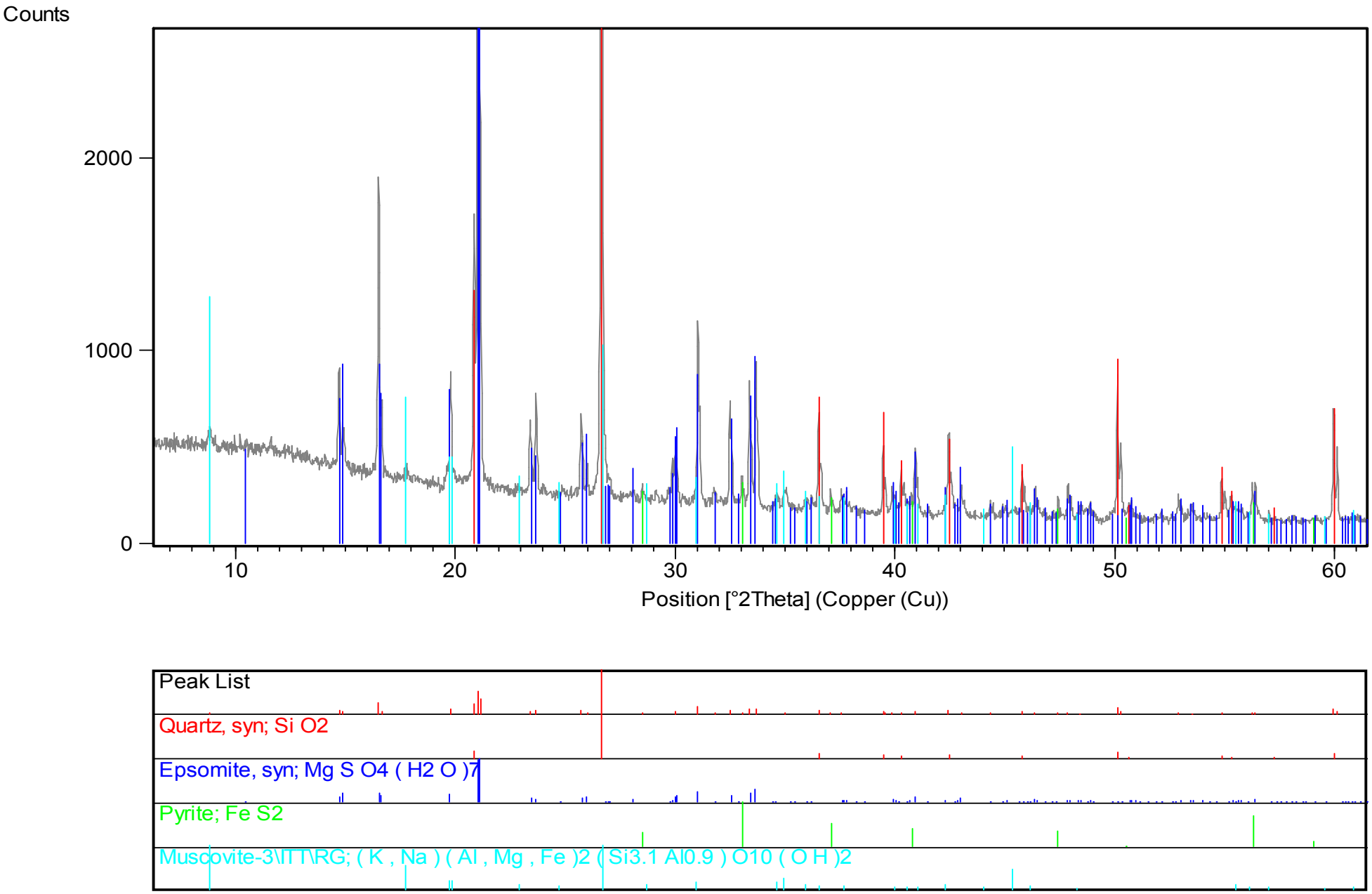


Sample PWE-07b

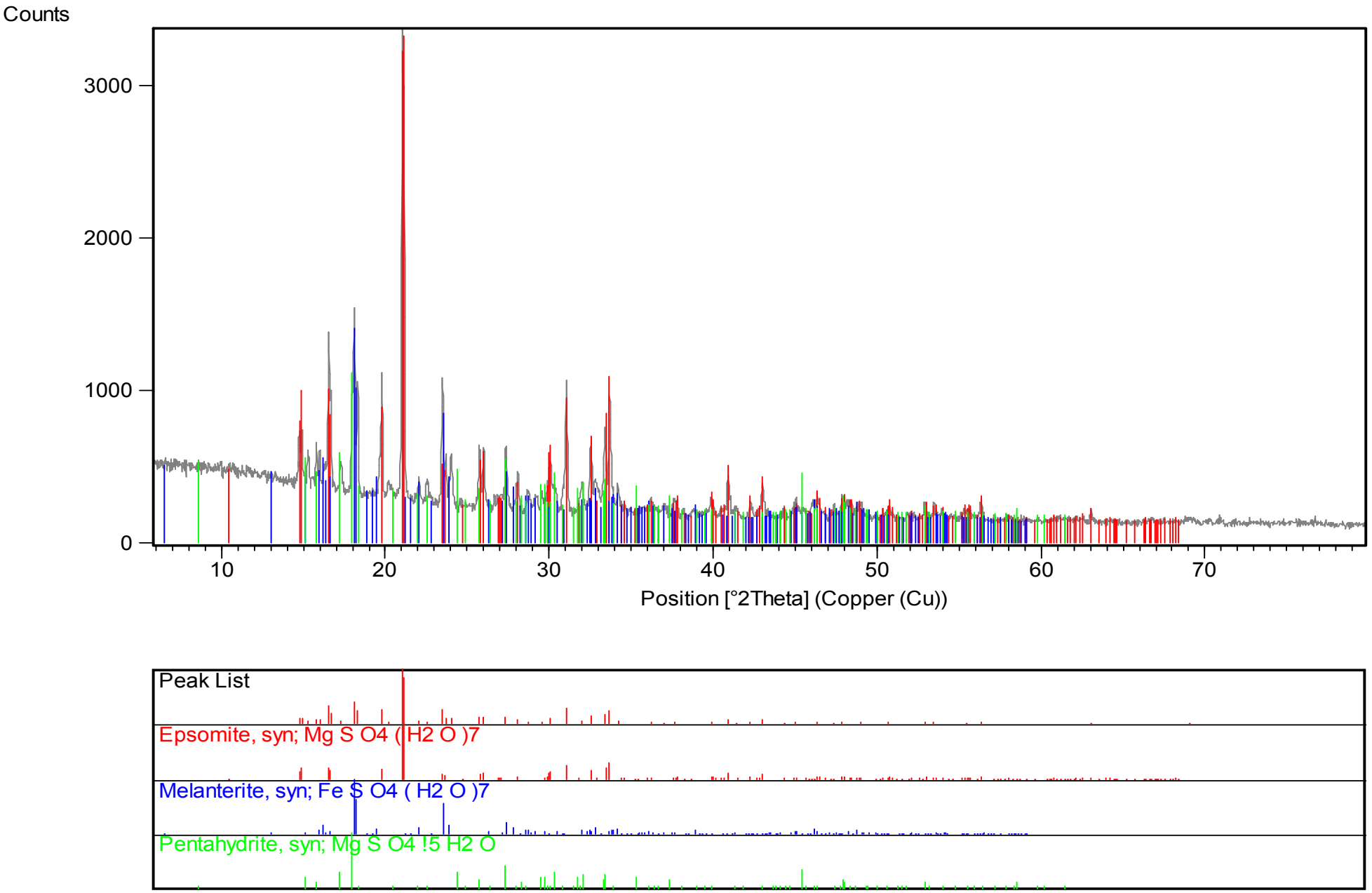
File: PWE_07a_bulk



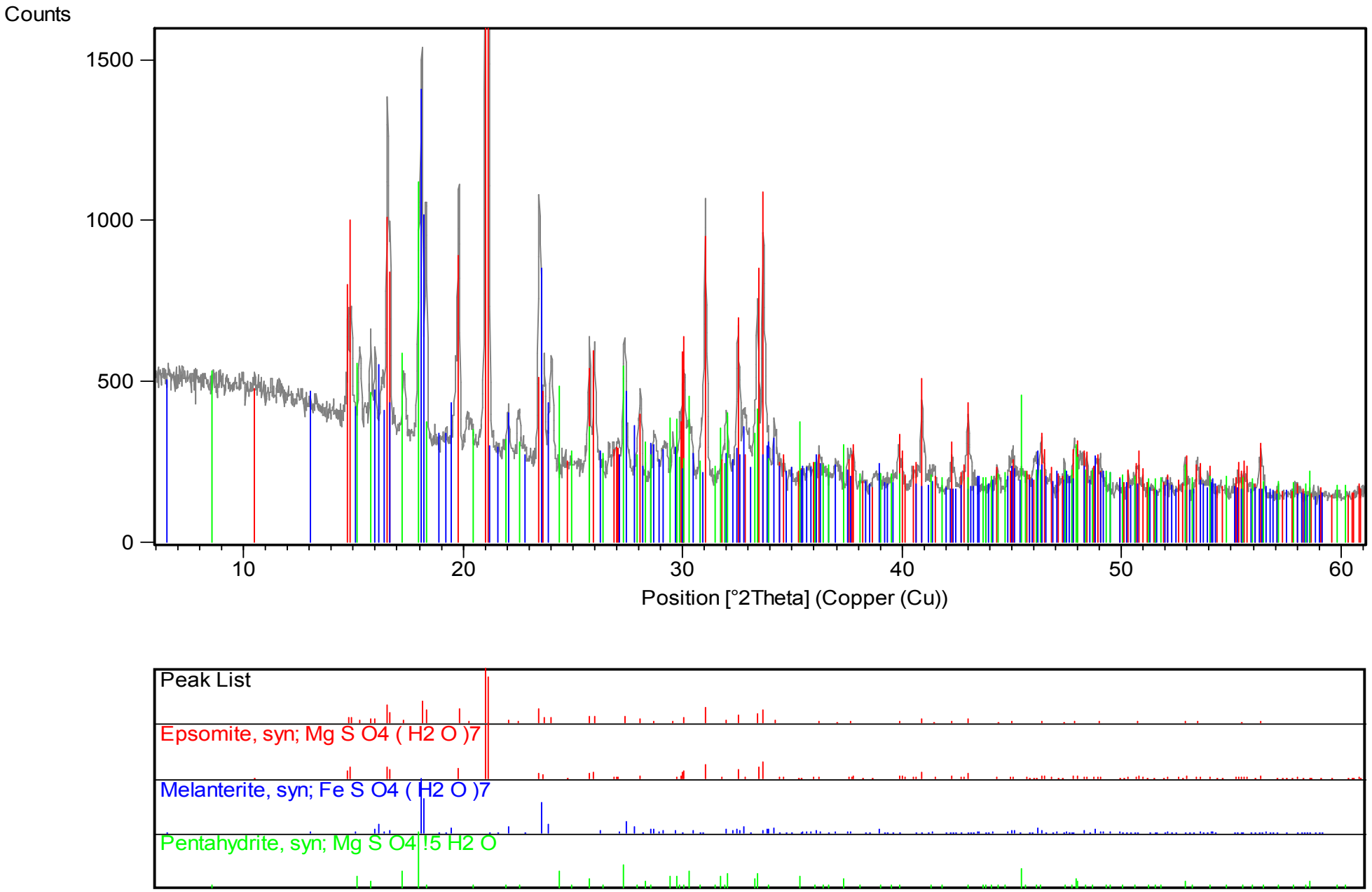
File: PWE_07a_bulk



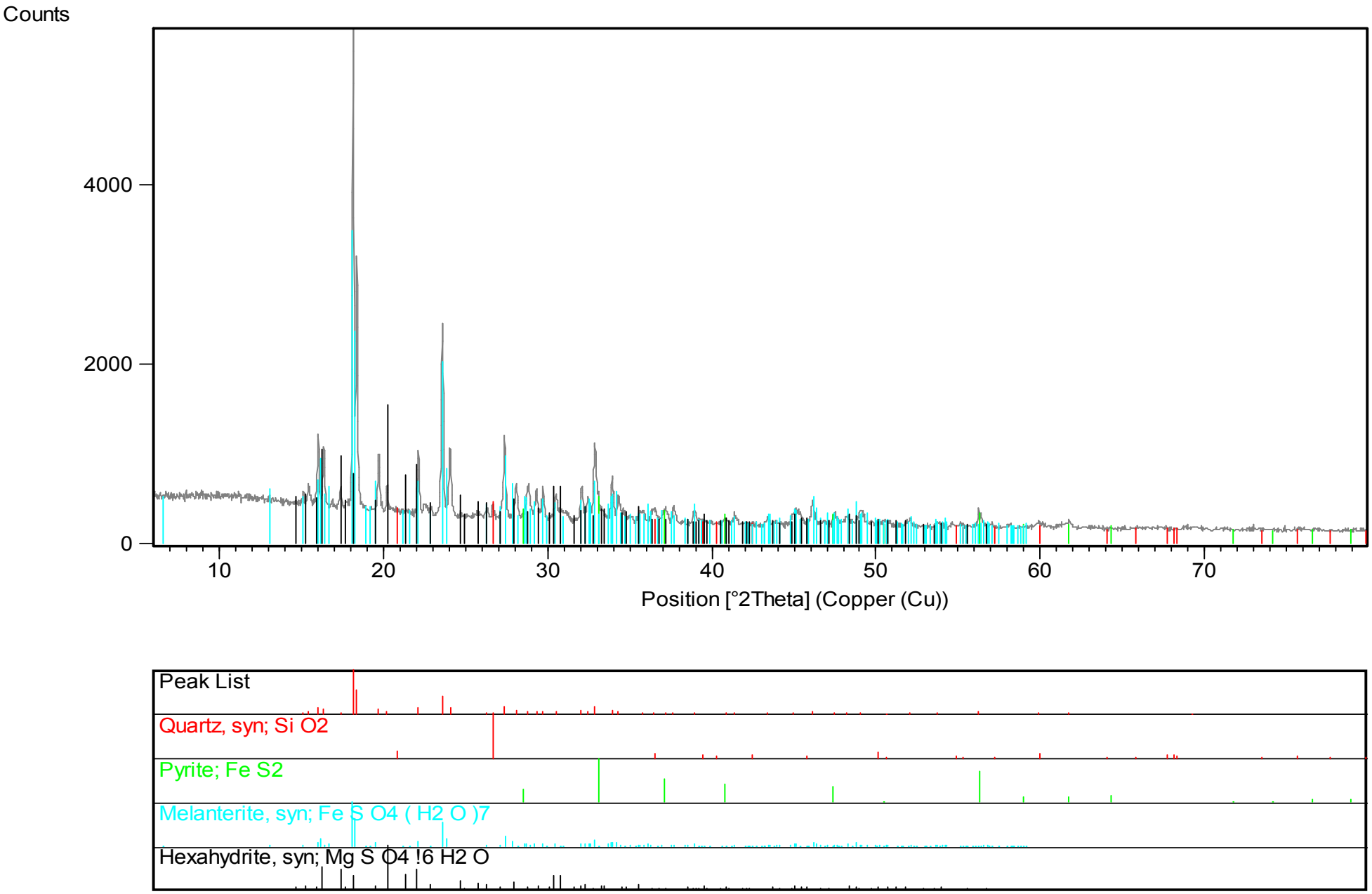
File: PWE_07a_pale blue white



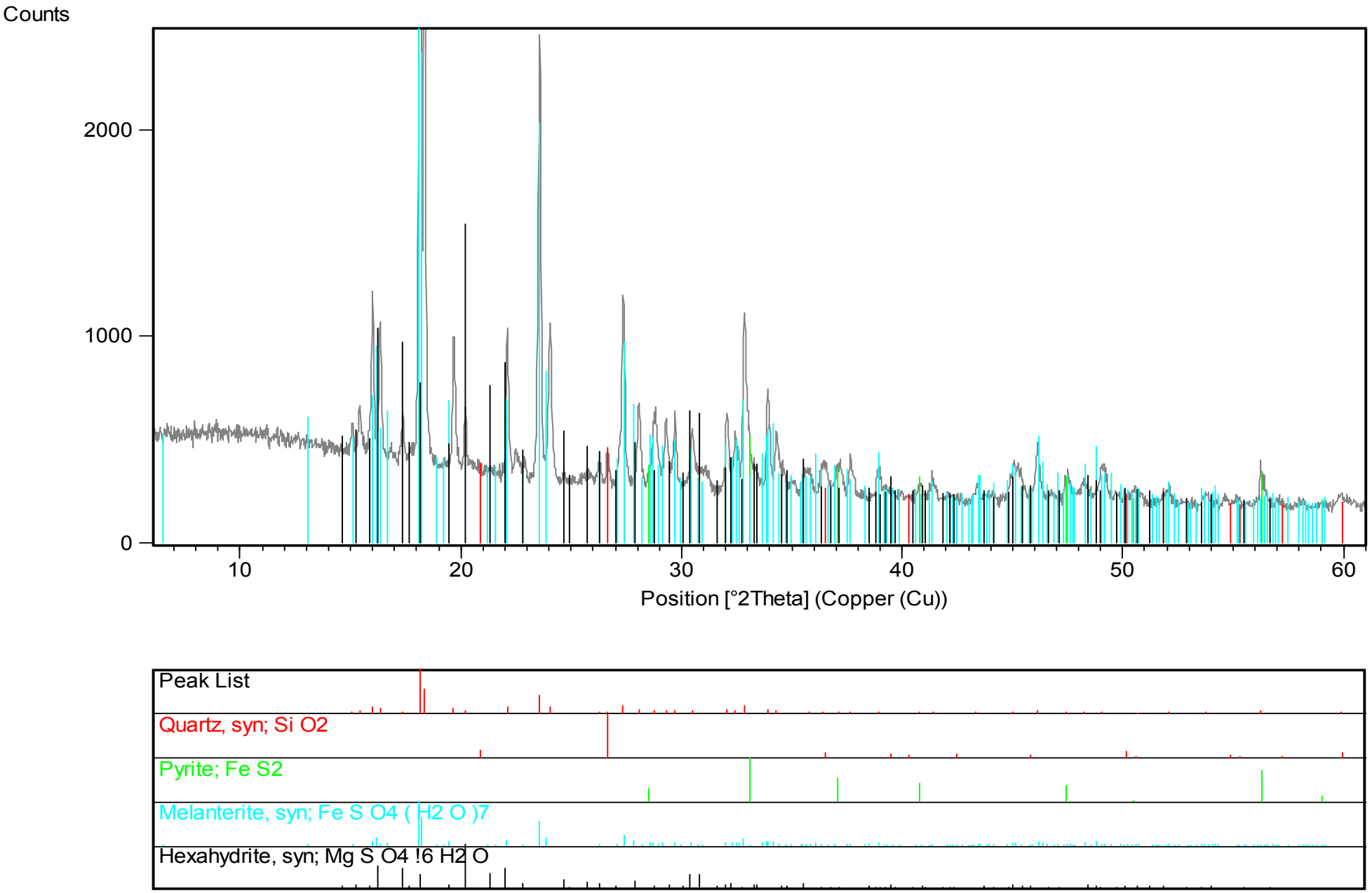
File: PWE_07a_pale blue white



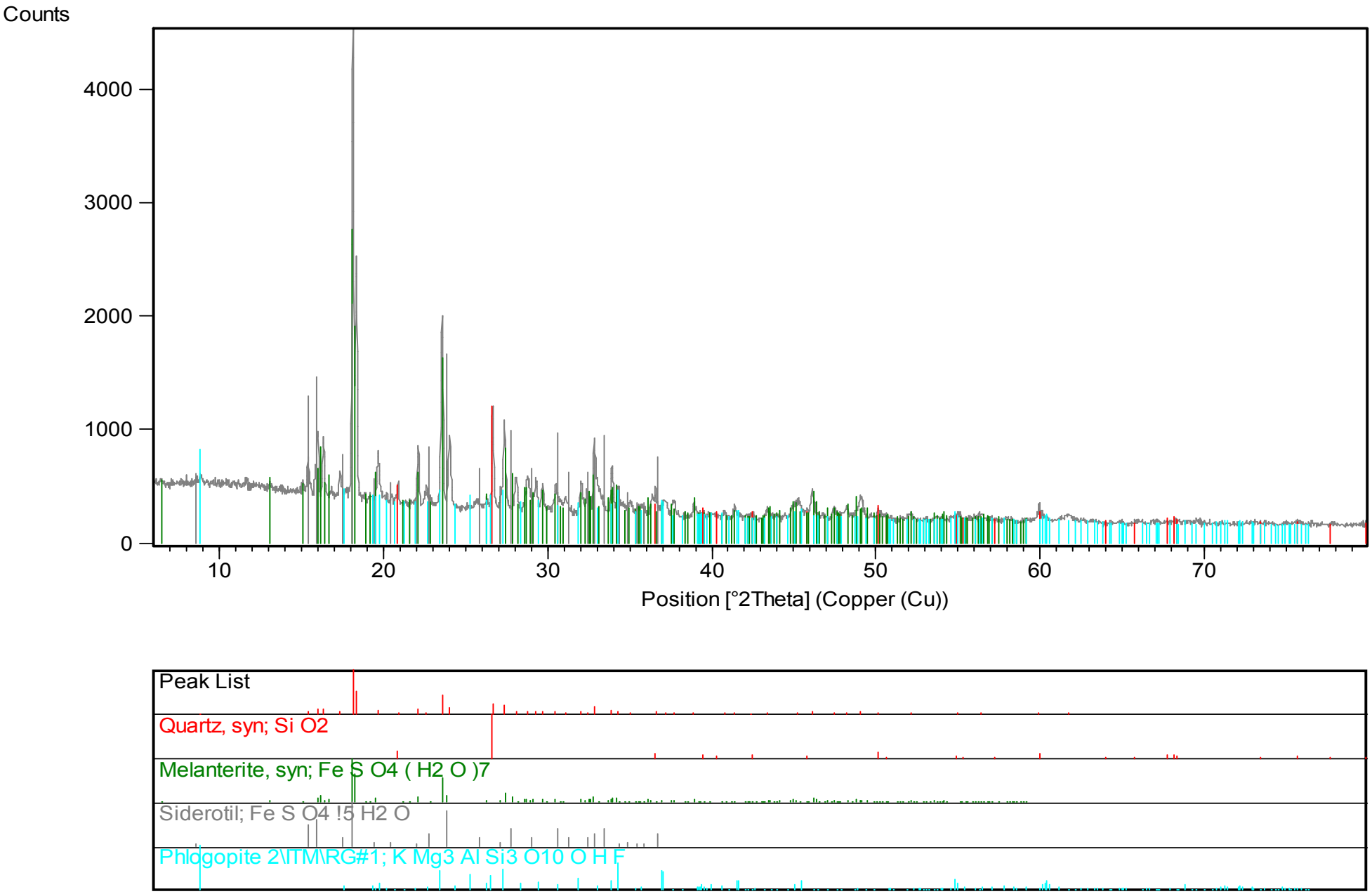
File: PWE_07b_greenish phase



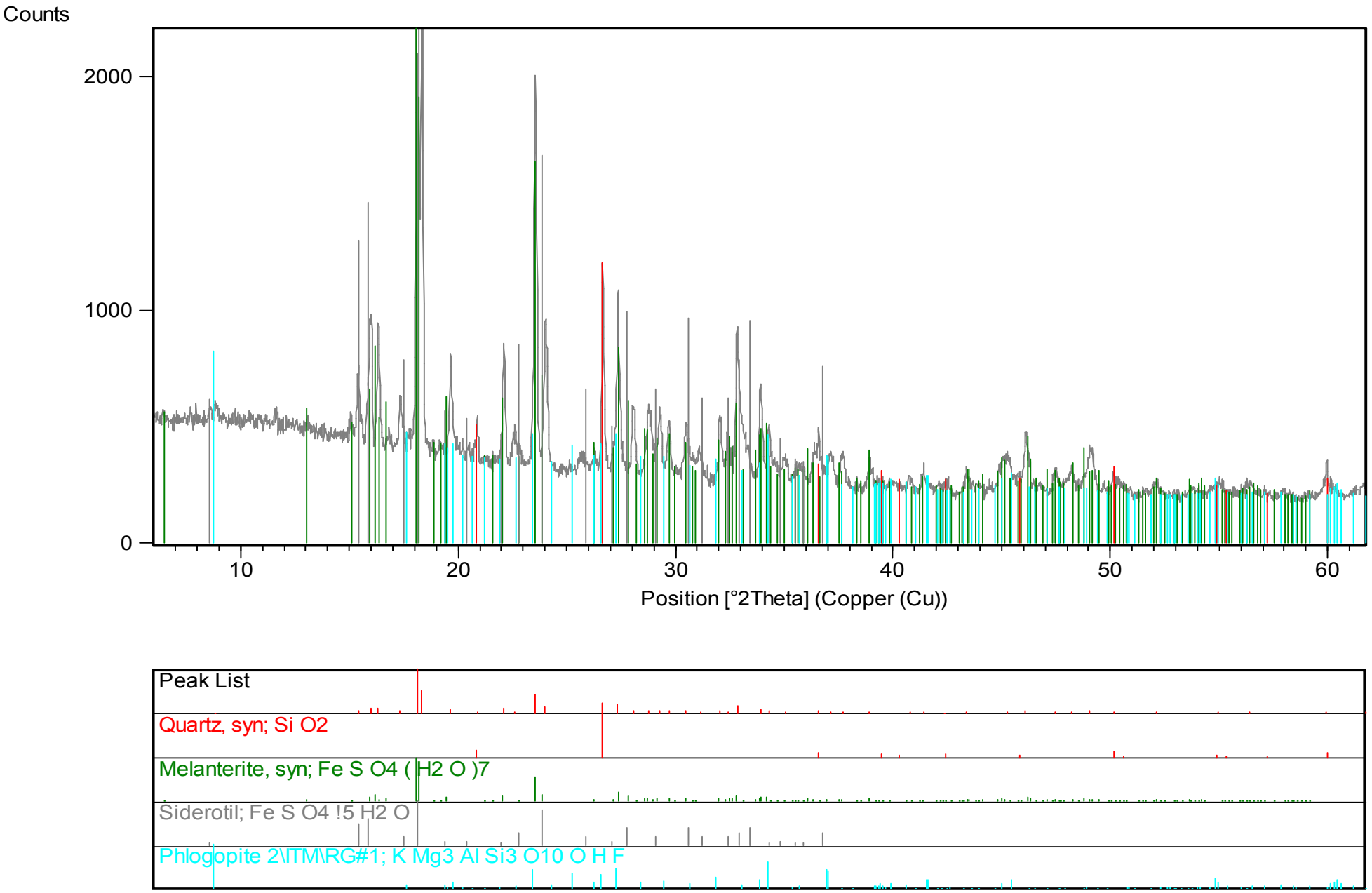
File: PWE_07b_greenish phase



File: PWE_07b_blue phase



File: PWE_07b_blue phase



Box 2004, 1004 Michie Place
Marsh Lake, YK, Canada
Y0B 1Y2

Telef. 1-867-660-4630
Fax: 1-604-608-4753
E-mail: dianelister@gmail.com

Altura Environmental Consulting

To: Andrew Rollo, Lorax Environmental

From: Diane Lister

Date: September 23, 2009

RE: **Results of X-Ray Diffraction Testing on Waste Rock**

Eight samples from the 2008 waste rock characterization program were selected in August 2009 for mineralogy assessment via x-ray diffraction (XRD). The purpose of this sampling was to gain a better understanding of potential neutralizing minerals available in various geochemical categories of waste rock.

The 2008 waste rock database was analysed and four 'Neutralizing Potential Categories' were designated:

Category 1: Moderate to High C_NP and Relatively Low NP

Category 2: Moderate to High C_NP and Equivalent or Higher NP

Category 3: Lower C_NP

Category 4: Very Low C_NP and NP

A shortlist of potential samples in each category was drawn up, with preference to those samples with whole rock analysis data available, and to the lysimeter samples. This list was submitted to SGS CEMI, who then retrieved two sample pulps from each category and forwarded them to the Queen's University Department of Geological Sciences and Geological Engineering for x-ray diffraction analysis. Figure 1 shows the samples selected and their relative carbon-NP and NP.

Detailed results are given in the attached reports, and summarized in Table 1. The table shows mineral occurrence ranked in order of XRD relative peak intensity. This can give a general idea of relative abundance where there is a large difference in peak intensities from one mineral phase to the other (Grant, 2009), however caution must be used for less subtle peak intensity differences.

In all samples, quartz is by far the dominant gangue mineral with much higher peak intensities than the other minerals. Muscovite ($(KAl_2(Si_3Al)O_{10}(OH,F)_2$) was also reported in all samples, but with varying peak intensity levels.

Carbonate minerals were detected only in the samples in the two higher NP and C-NP categories. Ankerite ($Ca(Fe^{+2},Mg)(CO_3)_2$) occurs in both samples in the "Category 1: Moderate to High C_NP and Relatively Low NP" group, and calcite ($CaCO_3$) in the "Category 2: Moderate to High C_NP and Equivalent or Higher NP" group. The calcite-bearing samples both returned elevated NP to AP ratios of higher than 20, and slight to moderate fizz rating, while the ankerite-bearing samples have a slight fizz rating and low NP to AP ratios (0.8 and 1.2). The low NP to AP ratio is in large part owing to the higher sulphide content in the one percent range.

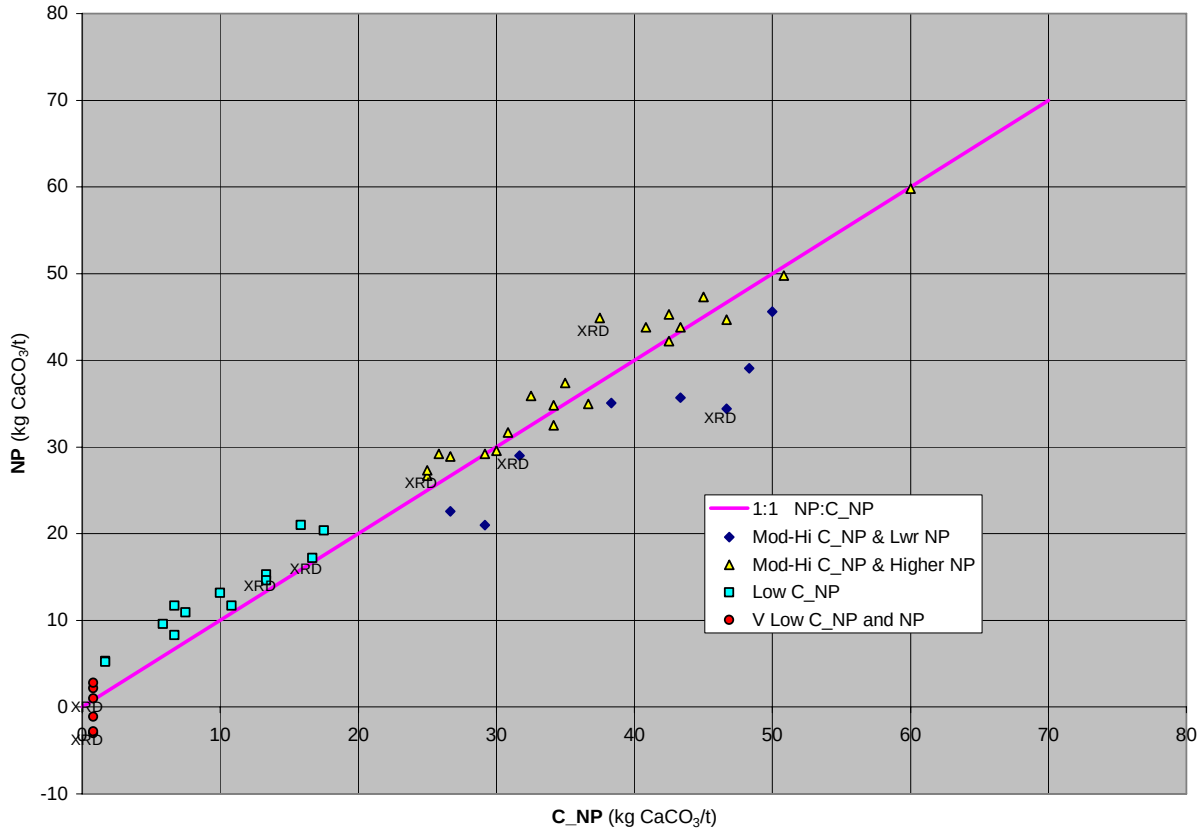


Figure 1. NP versus Carbon-NP of the 2008 acid base accounting samples (-1/4 " fraction). Samples submitted for x-ray diffraction analysis are indicated.

Gypsum (occurs in three of the eight samples, in both of the ankerite-bearing samples, and in a lower carbon-NP sample. Of note is that these three samples are also the three most elevated-sulphide samples in the suite (0.21 to 1.17%), indicating that the gypsum may be an acid-neutralization by-product.

Three of the four lower neutralizing potential samples contain jarosite ($KFe^{3+}_3[(OH)_3 SO_4]_2$), a precipitate formed under low pH conditions. The mineral appears to be most abundant in two samples the "Very Low C_NP and NP" category, which returned paste pH values of 4.54 and 5.54.

References

Grant, A., 2009. Queen's University Department of Geological Sciences and Geological Engineering, Email to D. Lister, Sept 23/09.

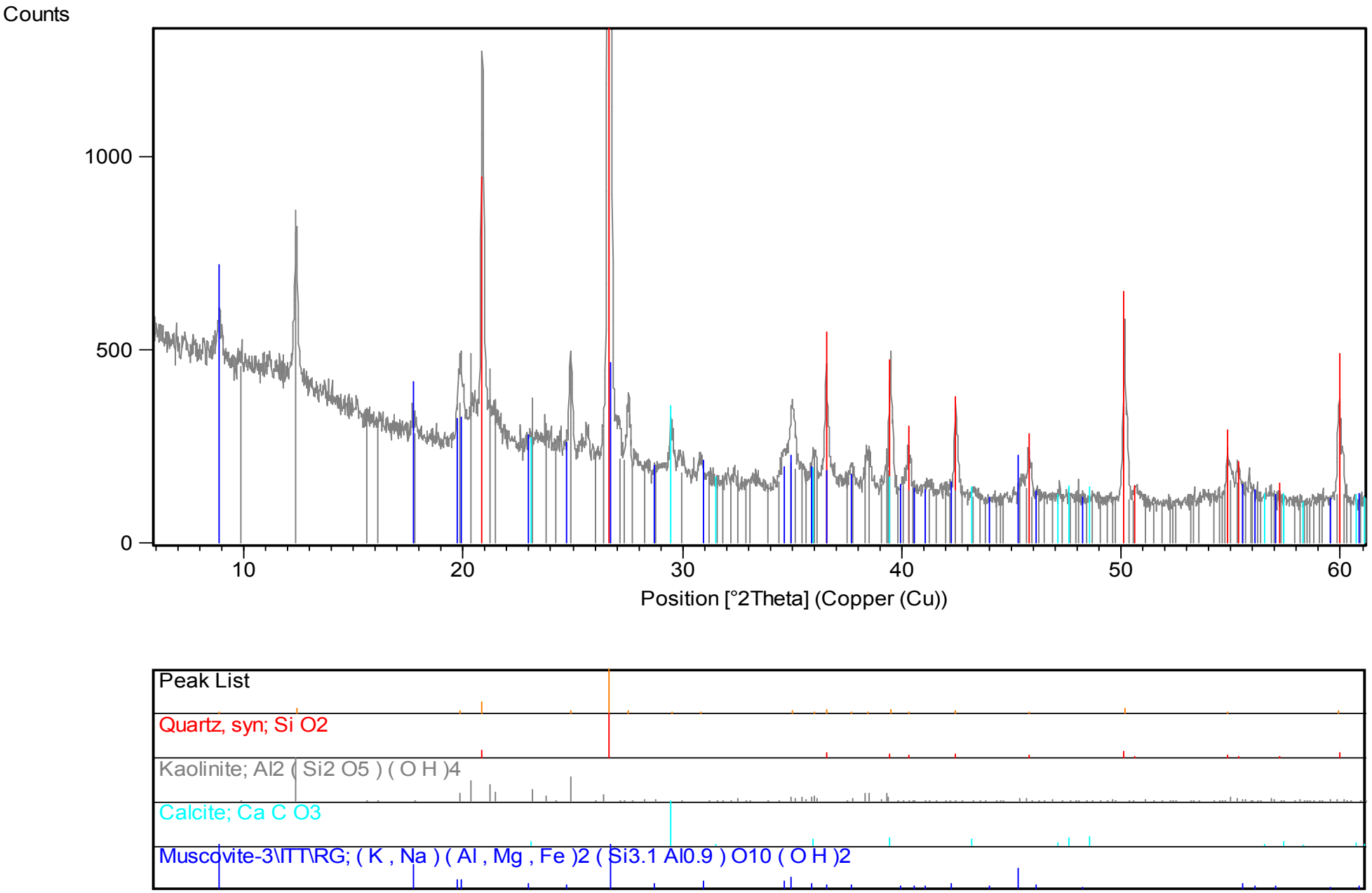
Other Attachments:

- Original XRD reports
- Spreadsheet file: *XRD Selection.xls*

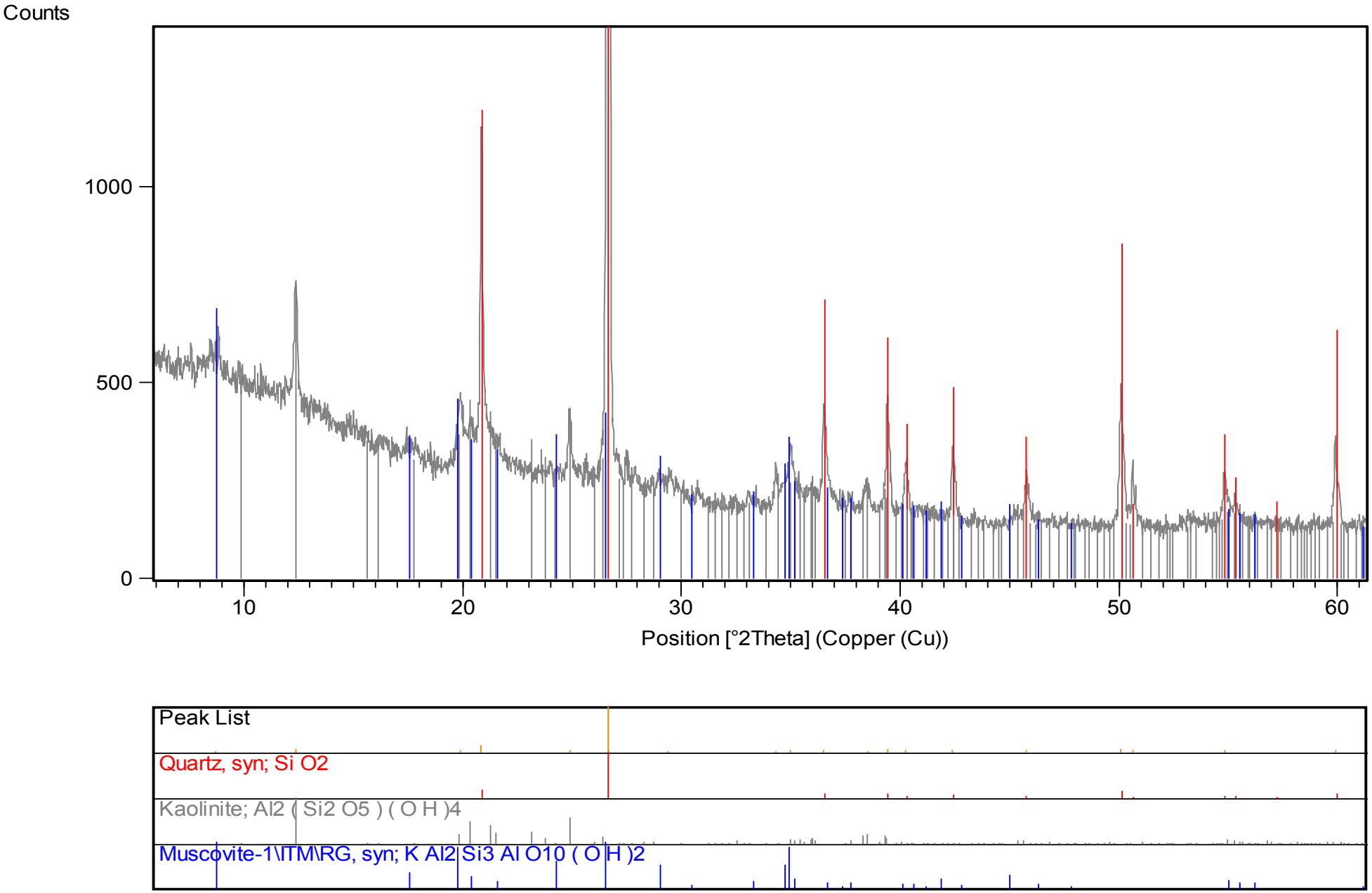
Table 1. Summary of XRD results with selected acid-base accounting parameters

	Relative Peak Intensity in XRD Analysis (1 = highest)												
	Quartz	**Muscovite**	**Gypsum**	**Ankerite**	**Kaolinite**	**Albite**	**Calcite**	**Jarosite**	**NP : C_NP**	**C_NP ($kgCaCO_3$/t)**	**NP ($kgCaCO_3$/t)**	**NP:AP**	**Fizz**
Moderate to High C_NP and Relatively Low NP													
L1-1 (-1/4")	1	2	3	4					0.92	31.7	29.0	0.8	Slight
TP-15 1.2m (-1/4")	1	4	3	5	2				0.74	46.7	34.4	1.2	Slight
Mod to High C_NP and Equivalent or Higher NP													
L2-3 (-1/4")	1	5		6	2	3	4		1.20	37.5	44.9	20.5	Moderate
TP-14 0.8-1.0m (-1/4")	1	4			2		3		1.09	25.0	27.3	>91.0	Slight
Lower C_NP													
TP-1 1.0-2.0m (-1/4")	1	2	5		3	6		4	1.03	16.7	17.2	2.6	Slight
TP-13 1.0m (-1/4")	1	3			2				1.15	13.3	15.3	>51.0	Slight
Very Low C_NP and NP													
TP-1 1.5m (-1/4")	1	3			4			2	1.25	<0.8	1.0	0.5	None
OS-1-1 (-1/4")	1	3						2	-3.50	<0.8	-2.8	-9.3	Slight

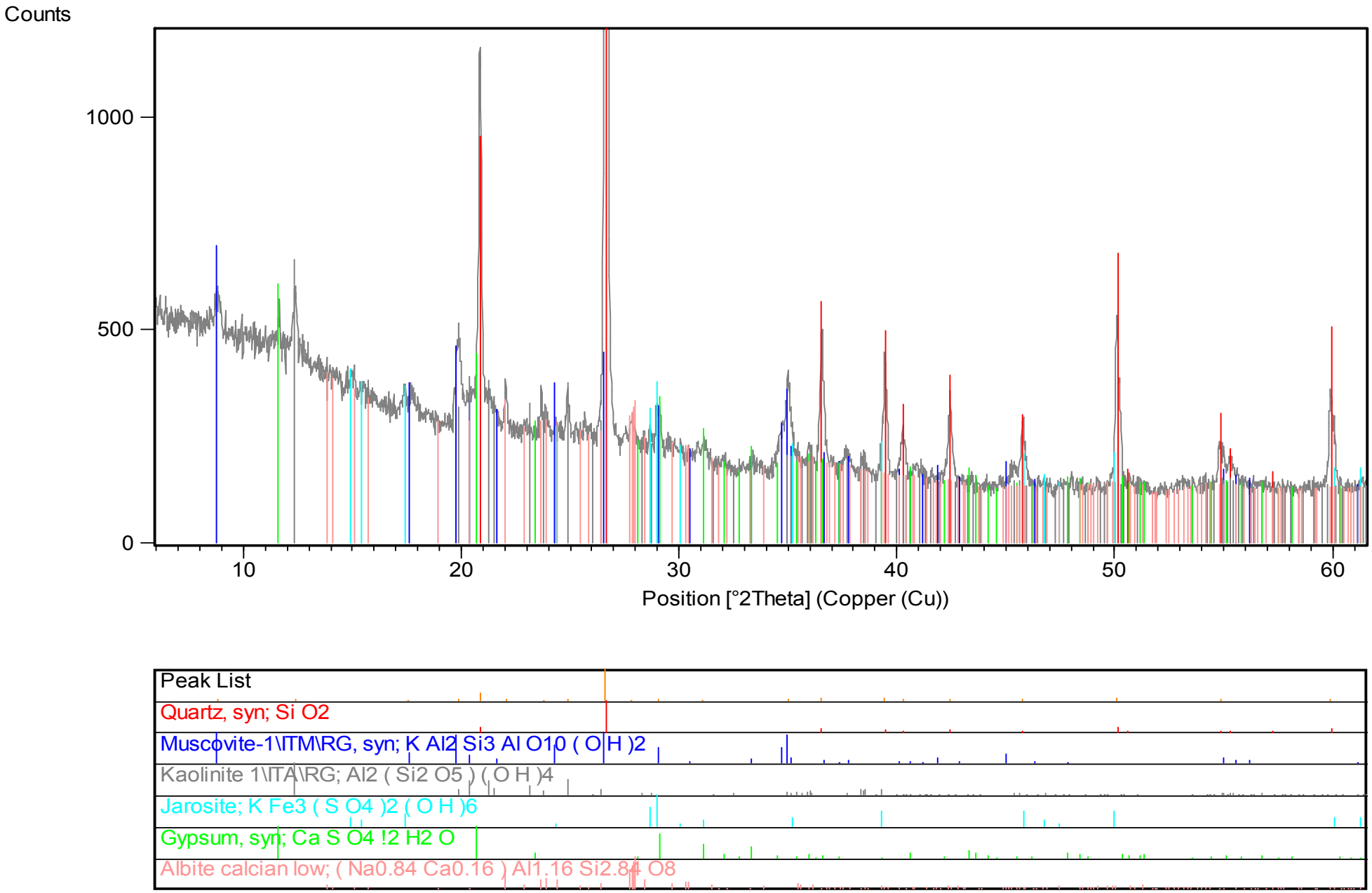
File: TP-14_zero point eight to one meter



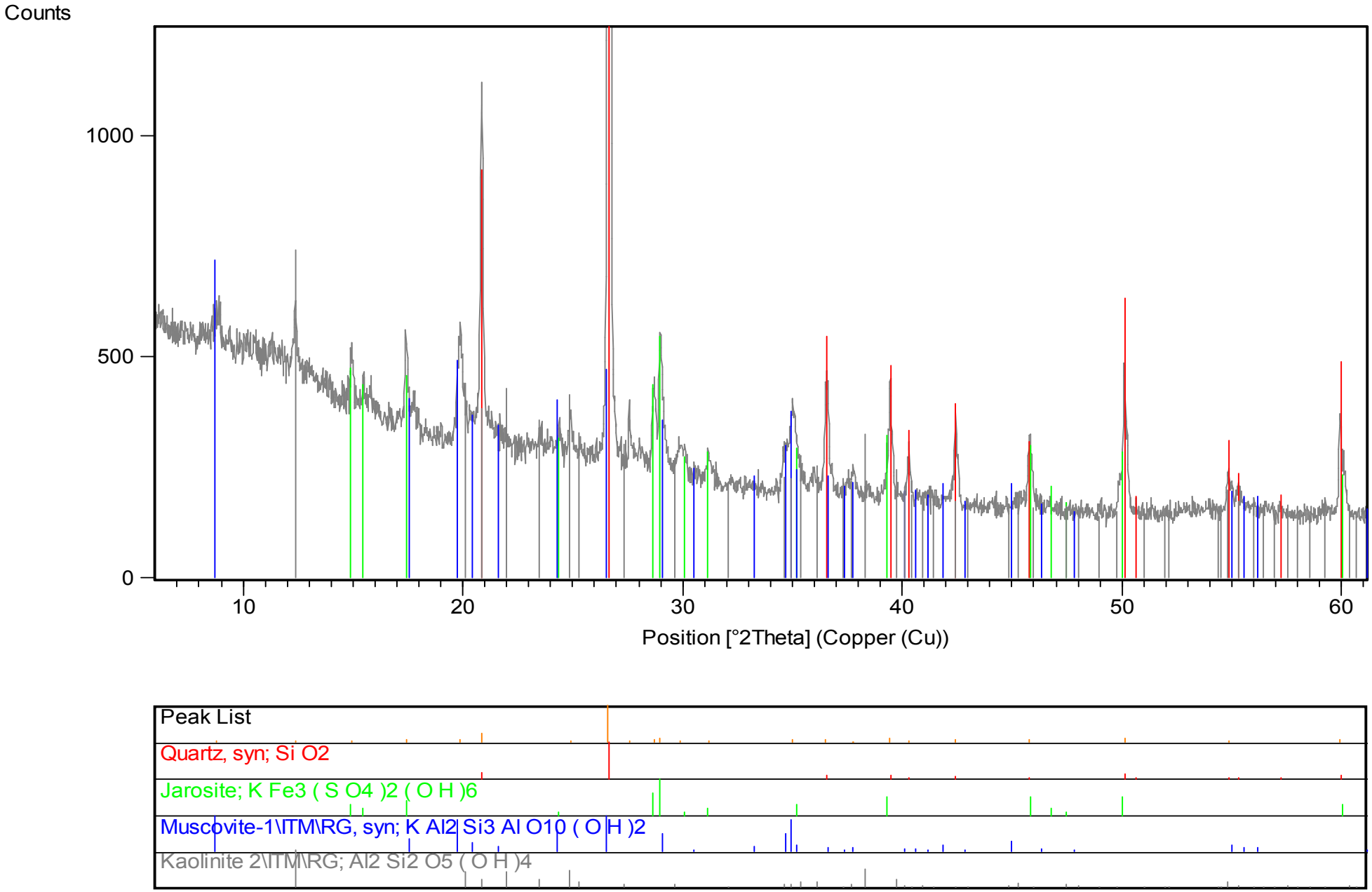
File: TP-13_one meter



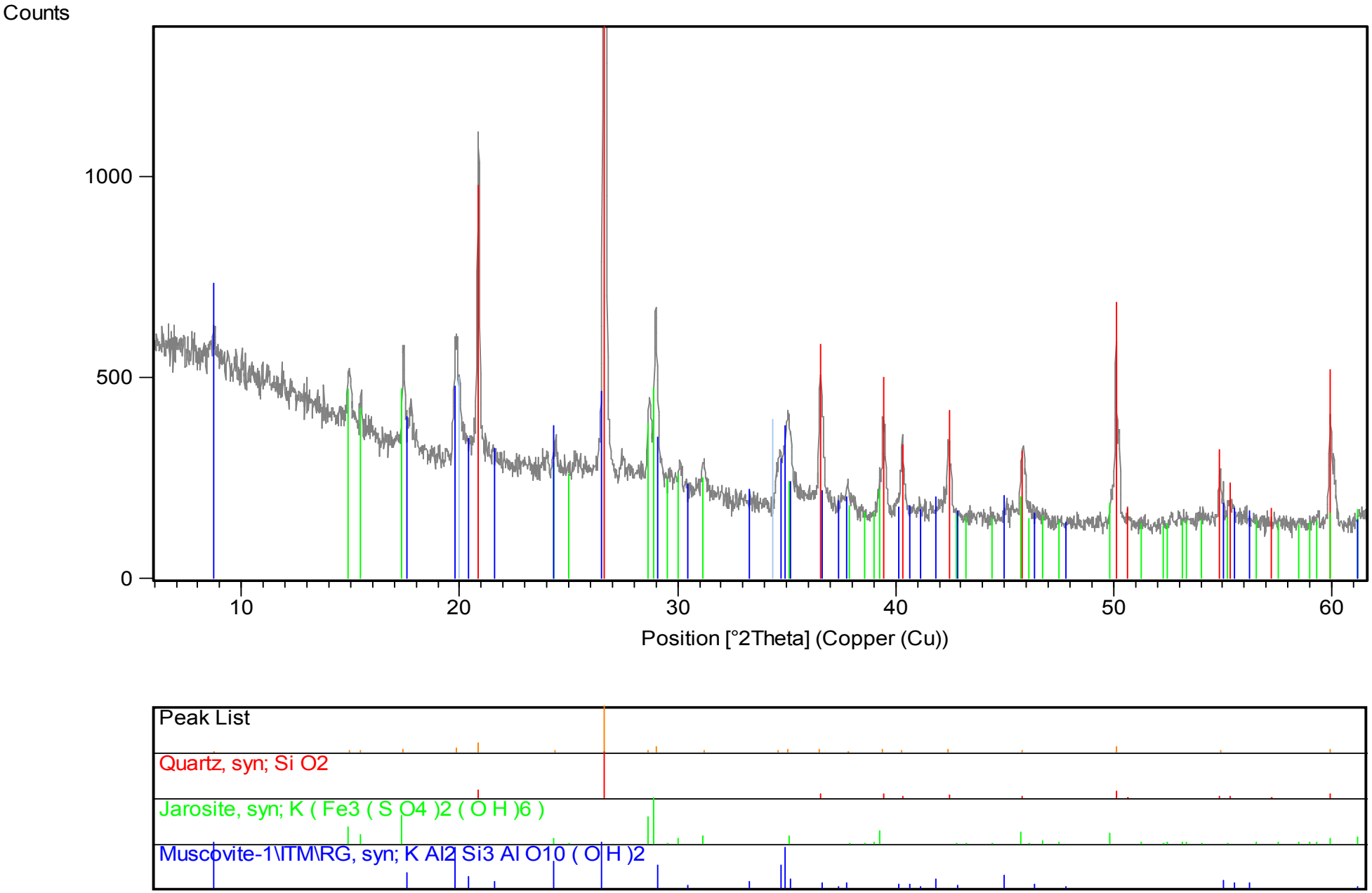
File: TP-1_one to two meters



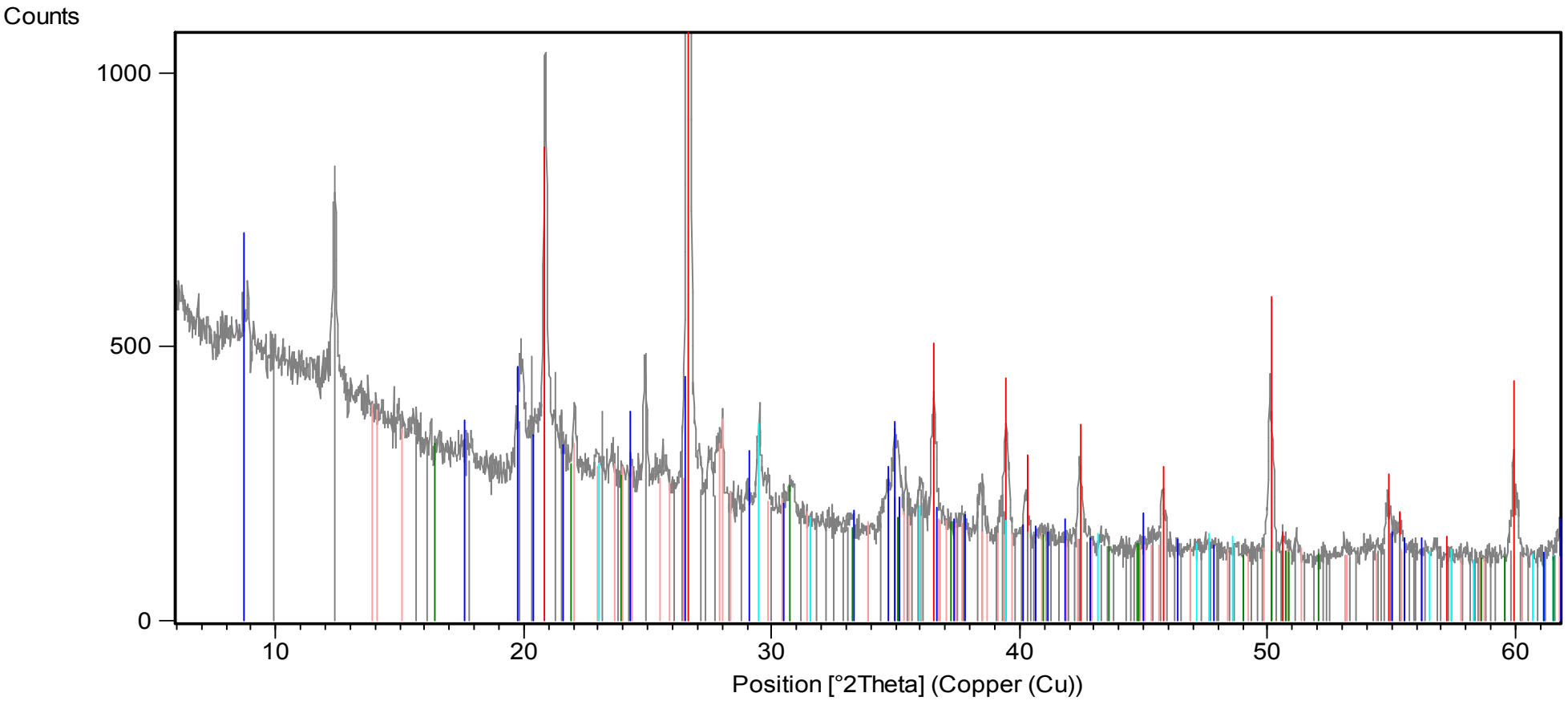
File: TP-1_one and a half meters

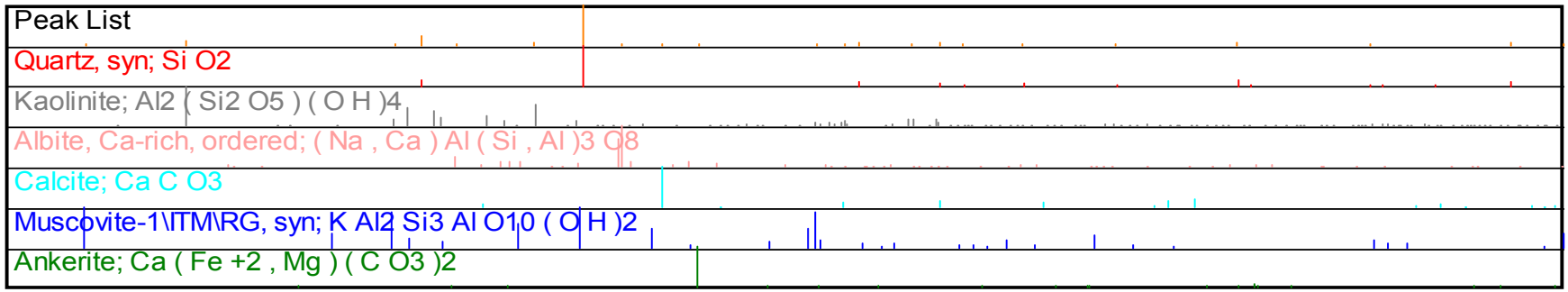


File: OS-1-1

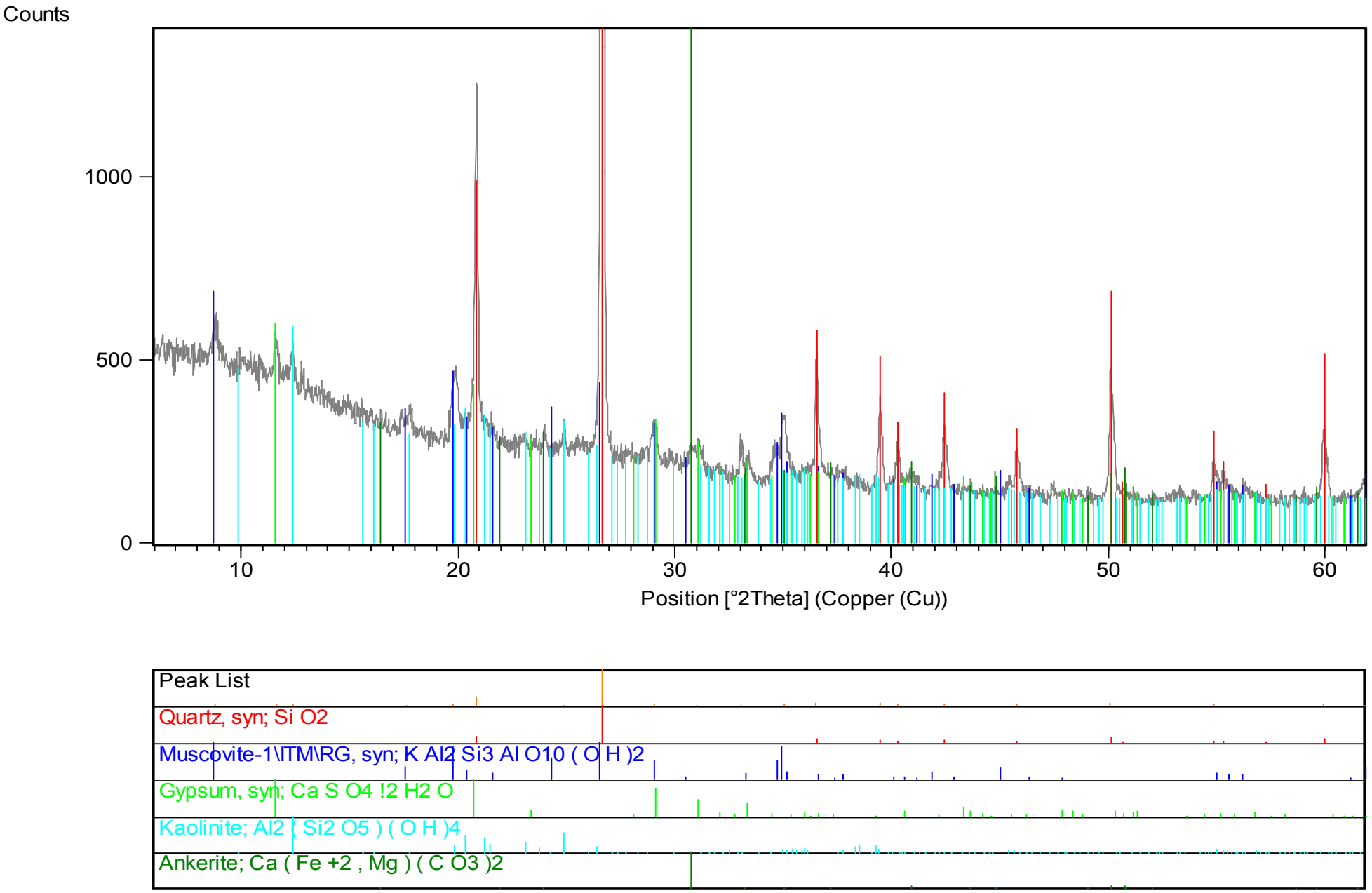

Counts
1000
500
0
10
20
30
40
50
60
Position [°2Theta] (Copper (Cu))
Peak List
Quartz, syn; Si O2
Jarosite, syn; K (Fe3 (S O4)2 (O H)6)
Muscovite-1\ITM\RG, syn; K Al2 Si3 Al O10 (O H)2

File: L2-3

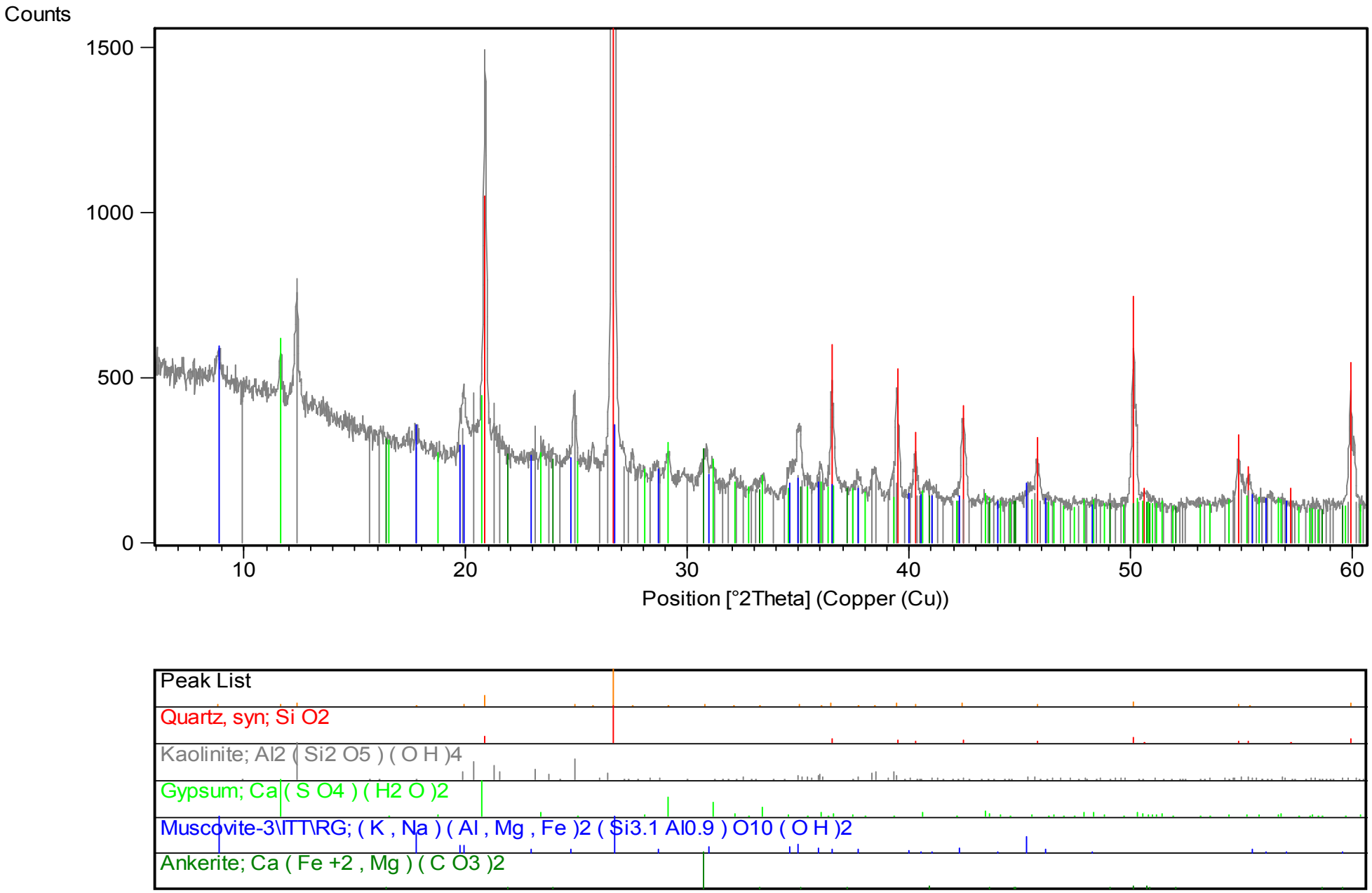

Counts
1000
500
0
10
20
30
40
50
60
Position [°2Theta] (Copper (Cu))


Peak List
Quartz, syn; Si O2
Kaolinite; Al2 (Si2 O5) (O H)4
Albite, Ca-rich, ordered; (Na , Ca) Al (Si , Al)3 O8
Calcite; Ca C O3
Muscovite-1\ITM\RG, syn; K Al2 Si3 Al O10 (O H)2
Ankerite; Ca (Fe +2 , Mg) (C O3)2

File: L1-1


Counts
1000
500
0
10
20
30
40
50
60
Position [°2Theta] (Copper (Cu))
Peak List
Quartz, syn; Si O2
Muscovite-1\ITM\RG, syn; K Al2 Si3 Al O10 (O H)2
Gypsum, syn; Ca S O4 !2 H2 O
Kaolinite; Al2 (Si2 O5) (O H)4
Ankerite; Ca (Fe +2 , Mg) (C O3)2

File: TP-15_one point two meters



Results: SGS CEMI

CLIENT : Altura Environmental Consulting
PROJECT : Mount Nansen Waste Rock
PROJECT # : 0894
TEST : Screen Assay
Date : August 19, 2009

Sample ID	Sample Wt.	+1/4"		-1/4"	
	(g)	(g)	(%)	(g)	(%)
HR 1	300	74.63	24.90%	225.13	75.10%
HR 2	350	153.40	43.84%	196.51	56.16%
HR 4	400	223.02	55.78%	176.82	44.22%
HR 5	400	149.30	37.37%	250.17	62.63%
HR 7	350	98.35	28.15%	251.00	71.85%
HR 8	400	269.46	67.60%	129.14	32.40%
HR 9	400	191.74	47.96%	208.06	52.04%
HR 11	400	163.94	40.99%	236.00	59.01%
HR 12	800	356.50	44.65%	442.00	55.35%
HR 13a	800	472.63	59.10%	327.12	40.90%
HR 14	400	192.84	48.23%	207.00	51.77%
HR 15	400	171.41	42.96%	227.62	57.04%
HR 16	634.35	361.70	57.12%	271.57	42.88%
HR 17	500	281.14	56.34%	217.86	43.66%
HR 18	400	204.13	51.05%	195.70	48.95%
HR 19	861.92	552.90	64.22%	308.00	35.78%
HR 20	601.22	395.38	65.81%	205.40	34.19%
HR 21	695.5	372.12	53.52%	323.19	46.48%
HR 22	657.13	305.82	46.56%	351.08	53.44%
HRB 03a	580.7	324.02	55.90%	255.62	44.10%
HRB 03b	501.75	271.00	54.06%	230.25	45.94%
HRB 04	597.02	267.85	44.87%	329.09	55.13%
HRB 05	806.71	422.28	52.36%	384.20	47.64%
HRB 06	750.15	334.47	44.62%	415.11	55.38%
HRB 07	400	167.50	41.89%	232.31	58.11%
HRB 08	685.88	284.46	41.49%	401.22	58.51%
HRB 09	400	194.65	48.67%	205.25	51.33%
HRB 10	400	167.57	41.91%	232.30	58.09%
HRB 11	400	157.45	39.46%	241.56	60.54%

Results: SGS CEMI

CLIENT : Altura Environmental Consulting
PROJECT : Mount Nansen Waste Rock
CEMI Project # : 0894
Test : Modified Acid-Base Accounting
Date : August 25-29, 2009

Sample ID	Paste pH	Paste EC µS/cm	TIC %	CaCO3 NP	S(T) %	S(SO4) %	S(S-2) %	AP	NP	Net NP	Fizz Test
HR 12 (-1/4")	5.78	2120	0.04	3.3	1.18	0.43	0.75	23.4	4.7	-18.7	None
HR 13a (-1/4")	7.55	811	0.18	15.0	0.47	0.1	0.37	11.6	16.8	5.2	Slight
HR 13b	8.43	306	0.29	24.2	0.22	0.01	0.21	6.6	29.5	22.9	Moderate
HR 18 (-1/4")	6.61	229	0.02	1.7	0.05	0.02	0.03	0.9	5.2	4.3	None
HR 19 (-1/4")	6.51	173.5	0.02	1.7	0.03	0.01	0.02	0.6	7.7	7.1	None
HR 21 (-1/4")	7.86	320	0.33	27.5	0.08	0.06	0.02	0.6	33.0	32.4	Moderate
HR 22 (-1/4")	6.17	180.2	0.01	0.8	0.08	0.06	0.02	0.6	3.2	2.6	None
HRB 04 (-1/4")	7.64	336	0.09	7.5	0.22	0.04	0.18	5.6	12.6	7.0	None
HRB 05 (-1/4")	7.67	476	0.28	23.3	0.37	0.25	0.12	3.8	22.7	19.0	Slight
HRB 06 (-1/4")	6.32	1168	0.13	10.8	1.28	0.19	1.09	34.1	11.7	-22.4	Slight
HRB 08 (-1/4")	7.18	421	0.04	3.3	0.05	0.03	0.02	0.6	6.4	5.8	None
Duplicates											
HR 12 (-1/4")	5.75	2070	0.04		1.19				3.6		None
HR 13b						0.02					
HRB 04 (-1/4")			0.09		0.21	0.05					

Note:

AP = Acid potential in tonnes CaCO3 equivalent per 1000 tonnes of material. AP is determined from the calculated sulphide sulphur content: S(T) - S(SO4).

NP = Neutralization potential in tonnes CaCO3 equivalent per 1000 tonnes of material.

NET NP = NP - AP

Carbonate NP is calculated from TIC originating from carbonate minerals and is expressed in kg CaCO3/tonne.

CLIENT : Altura Environmental Consulting
PROJECT : Mount Nansen Waste Rock
CEMI Project # : 0894
Test : Modified Acid-Base Accounting
Date : August 27/31, 2009

Sample ID	Paste pH	Paste EC µS/cm	TIC %	CaCO3 NP	S(T) %	S(SO4) %	S(S-2) %	AP	NP	Net NP	Fizz Test
LW-Coarse-04	7.08	300	0.02	1.7	0.17	0.16	0.01	0.3	3.5	3.2	None
LW-Fine-04 (-1/4")	6.96	431	0.02	1.7	0.12	0.11	0.01	0.3	5.0	4.7	None
TP-24b (-1/4")	7.54	845	0.53	44.2	1.07	0.07	1.00	31.3	39.5	8.3	Moderate
TP-25a (-1/4")	7.74	1428	1.12	93.3	1.64	0.12	1.52	47.5	77.5	30.0	Moderate
TP-25b (-1/4")	7.75	1468	1.2	100.0	1.62	0.14	1.48	46.3	81.3	35.1	Moderate
TP-26 (-1/4")	5.40	2410	0.25	20.8	4.21	0.92	3.29	102.8	11.8	-91.0	Slight
OB-07 (-1/4")	5.99	1792	0.09	7.5	1.72	1.01	0.71	22.2	5.5	-16.7	None
OB-08 (-1/4")	6.77	1938	0.15	12.5	1.55	0.78	0.77	24.1	11.4	-12.7	None
OB-09 (-1/4")	6.07	1811	0.12	10.0	1.73	0.88	0.85	26.6	7.1	-19.5	None
OB-10 (-1/4")	6.42	1839	0.24	20.0	1.76	0.7	1.06	33.1	15.3	-17.8	Slight
Duplicates											
LW-Coarse-04	7.20	301							3.1		None
OB-09 (-1/4")			0.12		1.73	0.87					

Note:

AP = Acid potential in tonnes CaCO3 equivalent per 1000 tonnes of material. AP is determined from the calculated sulphide sulphur content: S(T) - S(SO4).

NP = Neutralization potential in tonnes CaCO3 equivalent per 1000 tonnes of material.

NET NP = NP - AP

Carbonate NP is calculated from TIC originating from carbonate minerals and is expressed in kg CaCO3/tonne.

CLIENT : Altura Environmental Consulting
PROJECT : Mount Nansen Waste Rock
CEMI Project # : 0894
Test : Modified Acid-Base Accounting
Date : September 1, 2009

Sample ID	Paste pH	Paste EC µS/cm	TIC %	CaCO3 NP	S(T) %	S(SO4) %	S(S-2) %	AP	NP	Net NP	Fizz Test
PWN-01	8.12	443	0.42	35.0	0.06	0.06	<0.01	<0.3	36.0	36.0	Moderate
PWN-02a (-1/4")	7.55	787	0.6	50.0	0.71	0.05	0.66	20.6	46.9	26.3	Moderate
PWN-02b (-1/4")	7.11	1275	0.54	45.0	0.85	0.08	0.77	24.1	40.4	16.3	Moderate
PWE-01 (-1/4")	6.15	4705	<0.01	<0.8	0.35	0.24	0.11	3.4	3.4	0.0	None
PWE-02 (-1/4")	6.46	2020	0.22	18.3	2.41	0.24	2.17	67.8	20.9	-46.9	Slight
PWE-03 (-1/4")	7.43	773	0.11	9.2	0.18	0.04	0.14	4.4	13.7	9.3	Slight
PWE-04 (-1/4")	4.88	3240	0.08	6.7	3.3	1.64	1.66	51.9	3.7	-48.2	Slight
PWE-05 (-1/4")	6.52	2350	0.42	35.0	2.4	0.63	1.77	55.3	29.5	-25.8	Slight
PWE-06 (-1/4")	2.39	16570	<0.01	<0.8	36.2	2.16	34.04	1063.8	-30.5	-1094.3	None
PWE-08 (-1/4")	2.71	4060	0.01	0.8	5.38	1.3	4.08	127.5	-11.7	-139.2	None
PWE-09 (-1/4")	4.17	1616	<0.01	<0.8	0.45	0.37	0.08	2.5	-1.1	-3.6	None
PWW-01 (-1/4")	7.18	2080	0.64	53.3	1.67	0.14	1.53	47.8	48.5	0.7	Moderate
PWW-02 (-1/4")	6.87	2070	0.35	29.2	0.65	0.29	0.36	11.3	29.4	18.2	Moderate
PWW-03 (-1/4")	7.08	1924	0.42	35.0	0.47	0.25	0.22	6.9	34.8	27.9	Slight
Duplicates											
PWN-01	7.98	457	0.43		0.06	0.05			35.3		Moderate
PWE-08 (-1/4")			0.01		5.36	1.46					

Note:

AP = Acid potential in tonnes CaCO3 equivalent per 1000 tonnes of material. AP is determined from the calculated sulphide sulphur content: S(T) - S(SO4).

NP = Neutralization potential in tonnes CaCO3 equivalent per 1000 tonnes of material.

NET NP = NP - AP

Carbonate NP is calculated from TIC originating from carbonate minerals and is expressed in kg CaCO3/tonne.

Results: SGS CEMI

CLIENT : Altura Environmental Consulting
PROJECT : Mount Nansen Waste Rock
CEMI Project # : 0894
Test : Modified Acid-Base Accounting
Date : September 3, 2009

Sample ID	Paste pH	Paste EC µS/cm	TIC %	CaCO3 NP	S(T) %	S(SO4) %	S(S-2) %	AP	NP	Net NP	Fizz Test
TP27 (-1/4")	7.20	712	0.11	9.2	0.3	0.27	0.03	0.9	11.5	10.6	Slight
TP28 (-1/4")	7.17	1508	0.15	12.5	0.86	0.24	0.62	19.4	15.8	-3.6	Slight
TP29 (-1/4")	6.15	1724	0.1	8.3	2.09	0.77	1.32	41.3	10.1	-31.2	None
OB01 (-1/4")	7.41	475	0.18	15.0	0.17	0.11	0.06	1.9	17.3	15.4	Slight
OB04 (-1/4")	6.35	1840	0.05	4.2	1.47	0.78	0.69	21.6	4.4	-17.2	None
OB05 (-1/4")	7.13	1651	0.07	5.8	0.58	0.41	0.17	5.3	11.1	5.8	None
OS-01 (-1/4")	4.29	1821	<0.01	<0.8	2.34	1.24	1.10	34.4	-2.7	-37.1	None
OS-02 (-1/4")	6.12	415	0.02	1.7	0.6	0.56	0.04	1.3	1.9	0.7	None
OS-03a (-1/4")	6.10	365	0.02	1.7	0.61	0.53	0.08	2.5	1.1	-1.4	None
OS-04 (-1/4")	6.58	1739	0.03	2.5	0.93	0.81	0.12	3.8	3.8	0.0	None
OS-05a (-1/4")	7.29	714	0.07	5.8	0.34	0.29	0.05	1.6	6.4	4.8	None
OS-05b (-1/4")	6.91	966	0.02	1.7	0.74	0.69	0.05	1.6	3.0	1.4	None
Duplicates											
TP27 (-1/4")	7.43	699	0.11		0.29	0.27			10.6		Slight
OS-02 (-1/4")			0.01		0.59	0.54					

Note:

AP = Acid potential in tonnes CaCO3 equivalent per 1000 tonnes of material. AP is determined from the calculated sulphide sulphur content: S(T) - S(SO4).

NP = Neutralization potential in tonnes CaCO3 equivalent per 1000 tonnes of material.

NET NP = NP - AP

Carbonate NP is calculated from TIC originating from carbonate minerals and is expressed in kg CaCO3/tonne.

CLIENT : Altura Environmental Consulting
PROJECT : Mount Nansen Waste Rock
CEMI Project # : 0894
Test : Metals by Aqua Regia Digestion with ICP-MS Finish
Date : September 2, 2009

Sample	Au ppm	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cs ppm	Cu ppm	Fe %	Ga ppm	Ge ppm
HR 1 (-1/4")	<0.01	0.3	1.27	40.5	169	1	0.1	2.53	0.4	68	22.6	28	63.3	37	7.5	6	0.3
HR 2 (-1/4")	0.01	1.1	2.04	135.9	850	1	0.1	0.52	4.8	33	17.7	47	30.8	76.7	4.8	6	0.2
HR 4 (-1/4")	<0.01	0.5	1.02	89.9	255	1	0.2	0.29	2.3	48	10.1	80	14.7	73.9	3.59	6	0.2
HR 5 (-1/4")	0.01	0.3	0.9	75.4	127	<1	0.1	0.47	5.6	32	9.3	71	9.4	128.1	2.72	4	0.1
HR 7 (-1/4")	0.03	2.5	1.32	483.4	247	<1	0.2	0.36	1.4	33	12.6	55	8.7	40.1	3.8	5	0.1
HR 8 (-1/4")	0.08	2.8	0.96	260	139	<1	1.8	0.24	10	26	7.8	68	3	38.9	2.59	4	0.1
HR 9 (-1/4")	0.15	1.4	1.35	300.6	516	1	0.7	1.04	7	29	11.1	68	22.7	26.5	3.4	5	0.1
HR 11 (-1/4")	0.19	4.1	1.4	898.9	268	1	5.8	0.38	16.7	27	11	47	8.9	166.1	4.44	4	0.1
HR 12 (-1/4")	0.19	8.1	0.86	553	194	<1	11.2	0.49	10.7	31	9.4	68	5.2	257.9	4.6	3	0.1
HR 13a (-1/4")	0.14	3.9	1.38	556.3	314	1	3.7	0.82	14	48	12.4	51	5.9	228.4	4.13	5	0.1
HR 13b	0.01	0.5	1.16	19.9	72	<1	0.5	1.4	5.7	22	6.5	76	3.5	46.6	2.42	6	0.1
HR 14 (-1/4")	0.26	8	0.83	791	177	1	5.5	0.85	29	34	11	44	15.9	77.5	4.49	3	0.1
HR 15 (-1/4")	3.67	4.8	1.13	561.6	361	1	1.9	0.39	7.5	31	10	72	5.6	43.9	3.31	4	0.1
HR 16 (-1/4")	0.08	1.7	1.32	282.5	221	1	0.8	0.5	5.3	29	10.3	64	12.4	26.8	3.39	5	0.1
HR 17 (-1/4")	0.16	1.5	1.24	254	230	1	0.6	0.5	4.9	28	10.1	65	12	24.3	3.29	5	0.1
HR 18 (-1/4")	0.07	1.7	1.27	176.8	194	<1	0.6	0.41	4.1	25	9.3	76	6.4	32.5	3.09	5	0.1
HR 19 (-1/4")	0.03	1.1	1.61	119.8	233	<1	0.5	0.35	3.3	23	11.8	56	9.2	30.9	3.72	6	0.1
HR 20 (-1/4")	0.02	0.5	0.6	60.2	50	1	0.4	1.31	1.3	30	14.6	56	3.6	7.7	2.76	2	0.1
HR 21 (-1/4")	0.12	3	1	341.9	256	1	2.2	1.42	6.6	32	9.8	39	22.2	41.6	4.01	5	0.1
HR 22 (-1/4")	0.22	3	1	393.2	207	1	2.6	0.3	8	29	9.6	69	5.8	47.2	3.61	4	0.1
HRB 03a (-1/4")	0.52	9.1	0.79	1374.1	262	<1	13.4	0.39	12.8	22	8	52	6.6	237.3	6.16	4	0.2
HRB 03b (-1/4")	0.47	4.4	0.99	465	193	1	3.2	0.52	13.5	30	9.6	57	5.9	63.3	3.28	4	0.1
HRB 04 (-1/4")	0.15	3.5	0.74	257.6	412	1	2.8	0.55	6.9	39	17.5	52	5.6	53.6	3.59	3	0.1
HRB 05 (-1/4")	0.18	18.7	0.83	318.1	372	1	17.9	0.76	35.9	32	6.9	47	5.1	271.3	5.83	3	0.1
HRB 06 (-1/4")	3.92	20.3	0.3	3919.9	169	1	23.9	0.37	43.8	18	5.9	66	4.4	148.8	6.29	1	0.1
HRB 07 (-1/4")	0.55	4.9	0.63	888.6	221	1	4.6	0.52	19.6	23	7.1	63	3.7	135	3.1	2	0.1
HRB 08 (-1/4")	0.11	1	0.72	304.1	557	1	0.6	0.34	7.9	27	8.5	69	5.7	38.8	3.35	2	0.1
HRB 09 (-1/4")	1.11	27.5	0.38	1322.1	207	<1	25.7	0.16	16.4	23	3.1	53	3.7	353.1	4.92	2	0.1
HRB 10 (-1/4")	1.35	17.4	0.69	771.5	306	<1	17.6	0.43	15	27	10.9	53	4.1	276.9	4.36	3	0.1
HRB 11 (-1/4")	0.26	4	0.87	220.1	239	<1	3.9	0.46	6.5	29	9.8	57	7	90.1	3.63	3	0.1
Duplicates																	
HR 1 (-1/4")	<0.01	0.4	1.31	43.2	174	1	0.1	2.69	0.5	69	23.4	30	65.4	39.2	7.9	6	0.3
HR 13a (-1/4")	0.18	3.8	1.39	544	318	1	3.5	0.83	14.2	48	12.3	50	5.9	226.9	4.19	5	0.1
HR 22 (-1/4")	0.16	3	1.05	382.2	211	1	2.6	0.3	7.9	29	9.4	69	5.9	46	3.49	4	0.1
HRB 04 (-1/4")	0.15	3.4	0.77	259.9	409	1	2.9	0.58	6.9	39	18.9	55	5.4	48.8	3.75	3	0.1

CLIENT
PROJECT
CEMI Project #
Test
Date

Sample	Hf ppm	Hg ppm	In ppm	K %	La ppm	Li ppm	Mg %	Mn ppm	Mo ppm	Na %	Nb ppm	Ni ppm	P %	Pb ppm	Rb ppm	Re ppb	S %	Sb ppm
HR 1 (-1/4")	0.2	0.03	0.12	0.42	28	6.7	0.82	1723	0.2	0.01	0.4	8.9	0.298	9.6	40	<5	0.52	12.1
HR 2 (-1/4")	0.2	0.289	0.06	0.59	16	8.6	0.77	998	1	0.02	0.9	10.3	0.125	101.2	29.6	<5	<0.05	11.5
HR 4 (-1/4")	0.2	0.07	0.04	0.53	23	7.3	0.57	986	1.2	0.03	1.5	7.1	0.05	27.8	28.2	<5	0.08	7.7
HR 5 (-1/4")	0.1	0.043	0.03	0.15	16	6.5	0.41	1163	0.7	0.04	1.7	11	0.079	11.6	12.8	<5	0.08	5.1
HR 7 (-1/4")	0.1	0.11	0.05	0.38	17	9.5	0.6	924	0.5	0.03	1.1	7.5	0.081	335.4	23.4	<5	<0.05	27.9
HR 8 (-1/4")	<0.1	0.072	0.24	0.12	13	5.8	0.27	1213	3.3	0.02	1.6	10.7	0.05	342.4	11.6	5	<0.05	17.8
HR 9 (-1/4")	<0.1	0.088	0.1	0.17	14	5.6	0.32	1871	0.4	0.02	0.6	15	0.105	201.2	18.6	<5	<0.05	15.5
HR 11 (-1/4")	0.1	0.081	0.19	0.23	15	7.4	0.3	1806	1.1	0.03	0.5	6.5	0.096	303.5	18.8	<5	0.3	50.7
HR 12 (-1/4")	0.1	0.089	0.42	0.33	17	7.5	0.3	1542	1.2	0.02	0.4	5.1	0.07	508.7	22.8	<5	0.93	119.7
HR 13a (-1/4")	0.1	0.077	0.3	0.2	26	9.4	0.51	2454	1.1	0.02	0.3	6.7	0.087	243.7	14.8	<5	0.37	43
HR 13b	0.1	0.026	0.05	0.17	11	9.6	0.69	1135	0.3	0.05	0.4	6	0.084	26.5	12.5	<5	0.16	3
HR 14 (-1/4")	0.1	0.234	0.67	0.21	16	3.7	0.18	3091	0.3	0.01	0.3	6.9	0.112	692.8	19.9	<5	0.14	44.5
HR 15 (-1/4")	<0.1	0.102	0.25	0.18	15	6.5	0.26	1894	0.8	0.03	1.1	11.4	0.075	445.3	15.3	<5	0.05	29.5
HR 16 (-1/4")	<0.1	0.115	0.11	0.15	14	6.8	0.34	1668	0.6	0.03	1	9.3	0.096	307.9	15.2	<5	<0.05	12
HR 17 (-1/4")	<0.1	0.117	0.1	0.15	14	6.6	0.33	1579	0.5	0.03	1.1	9.1	0.093	238.8	14.7	<5	<0.05	10.8
HR 18 (-1/4")	<0.1	0.078	0.14	0.2	13	8.4	0.41	1200	0.7	0.04	1.7	9.8	0.066	197.9	15.7	<5	<0.05	9.4
HR 19 (-1/4")	<0.1	0.065	0.09	0.51	12	10.7	0.82	1326	0.5	0.03	1.2	9.9	0.072	168.7	25.3	<5	<0.05	7.7
HR 20 (-1/4")	0.1	0.111	0.05	0.11	16	3.1	0.08	949	0.3	0.01	0.2	5.7	0.095	27.1	9.2	<5	<0.05	4.5
HR 21 (-1/4")	0.1	0.101	0.15	0.12	14	5.7	0.35	1860	0.4	0.02	0.4	5.8	0.106	263.1	14.2	<5	<0.05	29.1
HR 22 (-1/4")	<0.1	0.247	0.18	0.17	14	5.6	0.21	2292	0.6	0.02	0.8	8.9	0.083	365.4	14.2	<5	0.06	33
HRB 03a (-1/4")	0.1	0.114	0.37	0.4	11	7.5	0.25	1558	1.6	0.02	0.6	5.6	0.073	517.2	31.4	<5	0.66	87.5
HRB 03b (-1/4")	<0.1	0.191	0.2	0.2	16	6.9	0.29	2050	1	0.02	0.9	9.6	0.075	455.7	14.8	<5	0.1	33.1
HRB 04 (-1/4")	0.1	0.234	0.28	0.15	22	3.4	0.15	1950	0.6	0.01	0.4	7.1	0.085	491.7	11.2	<5	0.15	26.8
HRB 05 (-1/4")	0.1	0.226	1.76	0.15	17	3.5	0.16	1999	1	0.01	0.4	7.7	0.061	6036.3	10.7	<5	0.3	37.9
HRB 06 (-1/4")	0.2	0.2	0.38	0.16	9	1.1	0.09	3377	2.6	0.01	0.4	5.8	0.049	1217.7	11.4	<5	1.09	146.5
HRB 07 (-1/4")	0.1	0.21	0.32	0.15	12	2.7	0.18	1913	0.9	0.01	0.2	8.9	0.056	486.7	10.4	<5	0.52	35
HRB 08 (-1/4")	<0.1	0.097	0.05	0.13	14	4.1	0.12	1329	1.2	0.01	0.4	7.1	0.064	218.4	9.3	<5	<0.05	18
HRB 09 (-1/4")	0.1	0.854	0.42	0.31	13	1.4	0.06	2930	1.5	0.01	0.3	4.1	0.046	1527.6	21.4	<5	0.51	236.7
HRB 10 (-1/4")	0.1	0.741	0.47	0.26	14	3.2	0.16	2900	1.1	0.01	0.2	6.6	0.069	556.7	18.2	<5	0.41	157.6
HRB 11 (-1/4")	<0.1	0.192	0.22	0.17	15	4	0.18	1307	0.7	0.01	0.3	7.1	0.083	183.5	13.6	<5	0.07	28.5
Duplicates																		
HR 1 (-1/4")	0.2	0.026	0.12	0.45	28	7.1	0.85	1804	0.2	0.01	0.5	9.2	0.315	10	42.1	<5	0.55	13.2
HR 13a (-1/4")	0.1	0.062	0.3	0.21	26	10.4	0.53	2505	1.3	0.02	0.3	6.5	0.087	236.4	15	<5	0.37	42.3
HR 22 (-1/4")	<0.1	0.242	0.18	0.18	15	6.2	0.22	2228	0.6	0.02	0.8	8.6	0.082	369.2	14.6	<5	0.06	28.5
HRB 04 (-1/4")	0.1	0.225	0.28	0.16	22	3.8	0.17	2109	0.6	0.01	0.2	7.4	0.091	499.2	10.9	<5	0.19	26.3

CLIENT
PROJECT
CEMI Project #
Test
Date

Sample	Sc ppm	Se ppm	Sn ppm	Sr ppm	Ta ppm	Te ppm	Th ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Y ppm	Zn ppm	Zr ppm
HR 1 (-1/4")	25.3	<0.5	1.4	65	<0.1	0.1	3.6	0.037	0.4	0.8	165	0.3	29.3	116	1.9
HR 2 (-1/4")	16.3	<0.5	0.7	23	<0.1	<0.1	2.8	0.08	1	0.6	121	0.1	18.6	391	2.1
HR 4 (-1/4")	9.1	<0.5	1.4	32	<0.1	<0.1	4.3	0.098	0.2	0.5	44	1	34.2	237	4.5
HR 5 (-1/4")	7.4	<0.5	0.6	22	<0.1	<0.1	3.7	0.073	0.4	0.6	62	0.1	11.6	505	2.2
HR 7 (-1/4")	10.4	<0.5	0.7	27	<0.1	<0.1	4.1	0.103	0.7	0.7	84	<0.1	12.8	164	2.1
HR 8 (-1/4")	4.2	<0.5	0.6	24	<0.1	0.1	2.6	0.041	0.4	0.6	39	0.2	8.3	776	0.6
HR 9 (-1/4")	7.7	<0.5	0.6	42	<0.1	<0.1	2.3	0.021	0.6	0.5	50	0.2	14.1	625	1.2
HR 11 (-1/4")	5.7	<0.5	0.5	75	<0.1	0.2	2.8	0.019	0.7	1.6	38	0.1	12.7	1253	2.6
HR 12 (-1/4")	3.8	<0.5	0.4	42	<0.1	0.3	7	0.009	0.7	1.1	27	0.1	9.1	947	3.3
HR 13a (-1/4")	5.4	<0.5	0.4	53	<0.1	0.2	8.5	0.011	0.4	1.1	40	0.2	13.7	1167	2.8
HR 13b	4.3	<0.5	0.4	60	<0.1	<0.1	3.7	0.055	0.2	0.4	44	<0.1	9.5	323	2.1
HR 14 (-1/4")	7.5	<0.5	0.5	50	<0.1	0.1	2.5	<0.005	1	0.6	40	0.3	15.7	2193	1
HR 15 (-1/4")	5.5	<0.5	0.5	32	<0.1	0.1	3.1	0.027	0.6	0.7	42	0.1	10.7	713	1.1
HR 16 (-1/4")	7	<0.5	0.5	29	<0.1	<0.1	2.5	0.031	0.6	0.6	53	0.2	12.1	544	0.6
HR 17 (-1/4")	6.5	<0.5	0.5	30	<0.1	<0.1	2.5	0.029	0.6	0.6	50	0.3	12.2	518	0.6
HR 18 (-1/4")	6.4	<0.5	0.6	28	<0.1	0.1	2.2	0.064	0.4	0.6	56	0.2	10.1	422	0.6
HR 19 (-1/4")	10.3	<0.5	0.5	22	<0.1	<0.1	2.3	0.122	0.5	0.5	80	0.1	11	335	1.1
HR 20 (-1/4")	7.2	<0.5	0.3	16	<0.1	0.1	3.6	<0.005	0.2	0.4	29	0.9	11	149	1.2
HR 21 (-1/4")	7.7	<0.5	0.7	54	<0.1	0.1	2	0.009	0.5	0.5	56	0.4	17.6	569	1.5
HR 22 (-1/4")	6.2	<0.5	0.4	27	<0.1	0.1	2.7	0.019	1	0.7	45	0.2	12	743	0.6
HRB 03a (-1/4")	4.5	<0.5	0.5	52	<0.1	0.6	2.3	0.012	1.1	0.9	36	0.1	9.1	1090	3.6
HRB 03b (-1/4")	6.3	<0.5	0.5	31	<0.1	0.2	3.6	0.029	0.9	0.8	42	0.1	11.3	992	1.2
HRB 04 (-1/4")	5.8	<0.5	0.3	22	<0.1	0.3	3.9	<0.005	0.7	0.5	42	0.6	12.4	688	1
HRB 05 (-1/4")	4.3	<0.5	0.3	43	<0.1	0.2	3.6	<0.005	0.5	1.2	32	0.2	10.4	3171	4.7
HRB 06 (-1/4")	2.4	<0.5	1	50	<0.1	0.4	2.4	<0.005	1	2	10	0.1	12.3	2200	8.4
HRB 07 (-1/4")	3.4	<0.5	0.4	28	<0.1	0.2	3	<0.005	0.7	1.2	20	0.2	9.5	1758	3.8
HRB 08 (-1/4")	4.2	<0.5	0.3	23	<0.1	0.2	3.2	0.006	0.5	1	31	0.3	12.6	1058	2.2
HRB 09 (-1/4")	2	<0.5	0.6	46	<0.1	0.5	2.9	<0.005	2.8	0.8	15	<0.1	5.3	919	3.6
HRB 10 (-1/4")	3.6	<0.5	0.4	68	<0.1	0.4	2.9	<0.005	1.6	0.8	23	0.1	10.1	1202	2.8
HRB 11 (-1/4")	5.2	<0.5	0.3	28	<0.1	0.3	2.9	0.005	0.5	0.7	37	0.5	12.1	758	1.6
Duplicates															
HR 1 (-1/4")	26.6	<0.5	1.5	69	<0.1	0.1	3.8	0.041	0.4	0.8	166	0.3	30.6	124	2.1
HR 13a (-1/4")	5.4	<0.5	0.5	54	<0.1	0.3	8.3	0.011	0.4	1.1	39	0.2	13.8	1174	2.7
HR 22 (-1/4")	6.4	<0.5	0.4	28	<0.1	0.1	2.8	0.02	1	0.7	45	0.4	12.2	726	0.7
HRB 04 (-1/4")	6.3	<0.5	0.3	22	<0.1	0.3	3.9	<0.005	0.7	0.5	43	0.5	12.5	720	1

CLIENT : Altura Environmental Consulting
PROJECT : Mount Nansen Waste Rock
CEMI Project # : 0894
Test : Metals by Aqua Regia Digestion with ICP-MS Finish
Date : September 9, 2009

Sample	Au ppm	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cs ppm	Cu ppm	Fe %	Ga ppm	Ge ppm
PWN-01	0.01	0.1	0.27	9.2	1710	<1	0.1	1.49	0.2	7	0.4	64	2.1	3.8	0.23	<1	<0.1
PWN-02a (-1/4")	0.35	3	0.42	692.9	298	1	3.1	1.66	13.3	15	8.9	69	3.7	43.7	2.71	1	<0.1
PWN-02b (-1/4")	0.29	3.6	0.5	529.5	231	1	4.6	1.5	8.8	24	9.2	54	3.7	68.7	2.98	2	<0.1
PWE-01 (-1/4")	0.13	2.7	1.53	436.5	282	1	3.3	0.29	15.3	32	16.4	61	5.4	388.4	4.33	5	0.1
PWE-02 (-1/4")	0.17	10	1.22	282.2	90	1	16.1	1.15	7	17	11.8	65	7	106.9	5.14	4	0.1
PWE-03 (-1/4")	0.06	2	1.53	116.5	425	1	2.4	0.77	2.5	18	13.8	60	6.7	53.7	3.19	5	<0.1
PWE-04 (-1/4")	0.43	6.6	0.77	2249.2	66	1	9.1	1.95	9.7	14	15.6	31	6.7	189.5	5.47	2	0.1
PWE-05 (-1/4")	0.51	14.5	0.96	970.5	74	1	15.5	1.53	16.5	20	10.6	36	5.9	393.6	5.76	3	0.1
PWE-06 (-1/4")	1.53	122.4	0.12	1731.8	9	<1	233.8	0.85	27.8	1	22.3	54	0.6	793	>10.00	1	0.8
PWE-08 (-1/4")	0.55	34.2	0.45	787.2	43	<1	25.8	0.62	11.5	9	13.7	55	4.8	374.4	6.79	2	0.1
PWE-09 (-1/4")	0.15	3.3	1.33	510.1	321	1	3.6	0.22	17.2	70	7	36	7.9	334.9	4.87	3	<0.1
PWW-01 (-1/4")	0.1	5.2	0.78	163.5	133	1	6.1	1.82	10.8	27	11.1	49	10.4	58.5	4.04	3	<0.1
PWW-02 (-1/4")	0.24	4.1	0.67	267.2	231	1	5.1	1.24	12.2	29	7.5	38	5.2	133.3	3.55	2	<0.1
PWW-03 (-1/4")	0.09	2.8	0.58	332.6	282	1	2.5	1.3	17.8	26	9	75	8.9	149.7	3.48	2	<0.1
Duplicates																	
PWN-01	<0.01	0.1	0.27	10.3	1681	<1	0.1	1.68	0.2	8	0.4	67	2.1	3.7	0.25	<1	<0.1
PWE-08 (-1/4")	0.5	29.6	0.46	783.4	46	<1	24	0.65	11.4	9	13.2	57	5.4	384.9	6.83	2	<0.1

CLIENT
PROJECT
CEMI Project #
Test
Date

Sample	Hf ppm	Hg ppm	In ppm	K %	La ppm	Li ppm	Mg %	Mn ppm	Mo ppm	Na %	Nb ppm	Ni ppm	P %	Pb ppm	Rb ppm	Re ppb	S %
PWN-01	<0.1	0.103	<0.01	0.11	4	1.1	0.07	94	8.6	0.03	0.3	2.6	0.015	8.8	3.3	5	0.06
PWN-02a (-1/4")	0.1	0.077	0.23	0.15	8	2.1	0.36	1742	1.3	0.01	0.3	7.6	0.058	328.9	8.1	<5	0.81
PWN-02b (-1/4")	0.1	0.064	0.26	0.15	12	2.5	0.39	1570	1.2	0.01	0.1	7.4	0.079	337.2	8.2	<5	1
PWE-01 (-1/4")	0.1	0.039	0.16	0.26	16	8.8	0.47	1843	0.6	0.07	0.7	9	0.116	224.2	15	<5	0.42
PWE-02 (-1/4")	0.1	0.063	0.25	0.16	8	7	0.51	1874	0.5	0.02	0.4	10.1	0.09	467.6	10.6	<5	2.3
PWE-03 (-1/4")	0.1	0.047	0.06	0.17	8	9.2	0.78	1432	0.6	0.02	0.3	13.9	0.075	101.6	11.4	<5	0.23
PWE-04 (-1/4")	0.1	0.073	0.19	0.32	7	5.2	0.37	1285	1.1	0.02	0.2	7.4	0.09	443.2	18.7	<5	3.31
PWE-05 (-1/4")	0.1	0.106	0.31	0.22	11	6.1	0.56	2306	1.8	0.03	0.1	7	0.092	1480.4	12.4	<5	2.54
PWE-06 (-1/4")	<0.1	0.091	2.2	0.11	<1	3.1	0.07	305	0.6	<0.01	1.8	3.5	0.01	5481.9	8.4	<5	>10.00
PWE-08 (-1/4")	<0.1	0.085	0.57	0.4	4	2.5	0.09	601	0.6	0.01	0.1	4.4	0.062	1312.8	19.8	<5	4.85
PWE-09 (-1/4")	0.1	0.132	0.37	0.27	39	8.1	0.2	2082	0.7	0.02	<0.1	5.1	0.087	253.2	14.2	<5	0.47
PWW-01 (-1/4")	0.1	0.085	0.3	0.13	13	3.5	0.47	2013	1.2	0.02	0.1	7.1	0.091	558.9	9.5	<5	1.6
PWW-02 (-1/4")	0.1	0.092	0.38	0.18	15	2.8	0.31	1455	0.5	0.01	<0.1	7.8	0.077	286.6	10.9	<5	0.76
PWW-03 (-1/4")	0.1	0.112	0.33	0.18	12	2.5	0.28	3286	1.1	0.01	<0.1	13.9	0.087	460.1	12.4	<5	0.46
Duplicates																	
PWN-01	<0.1	0.092	<0.01	0.12	4	1.1	0.07	103	7.2	0.03	<0.1	2.3	0.016	8.6	3.5	<5	0.05
PWE-08 (-1/4")	<0.1	0.081	0.56	0.41	5	2.7	0.1	609	0.6	0.01	<0.1	4.5	0.063	1304.4	21.1	<5	4.9

CLIENT
PROJECT
CEMI Project #
Test
Date

Sample	Sb ppm	Sc ppm	Se ppm	Sn ppm	Sr ppm	Ta ppm	Te ppm	Th ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Y ppm	Zn ppm	Zr ppm
PWN-01	0.7	0.3	<0.5	0.1	91	<0.1	<0.1	0.9	<0.005	0.1	0.3	<2	2.6	2.2	19	0.8
PWN-02a (-1/4")	34.2	2.8	<0.5	0.2	43	0.3	0.2	2.8	<0.005	0.3	0.7	14	0.3	7.8	1281	2.8
PWN-02b (-1/4")	20	3.8	<0.5	0.2	50	<0.1	0.2	5	<0.005	0.3	0.7	20	0.3	9.4	844	3.3
PWE-01 (-1/4")	40.5	5.9	<0.5	0.4	76	<0.1	0.1	3.4	0.03	0.4	0.8	46	0.2	9.6	968	1.8
PWE-02 (-1/4")	24.6	5.1	<0.5	0.3	41	<0.1	0.3	1.8	0.007	0.5	0.5	38	0.3	10.3	707	1.6
PWE-03 (-1/4")	19.2	5.9	<0.5	1.2	40	<0.1	0.1	1.5	0.019	0.5	0.4	56	0.1	9.6	360	1.7
PWE-04 (-1/4")	94.5	4	<0.5	0.4	60	<0.1	0.4	1.6	<0.005	0.7	0.6	27	0.3	8.7	946	3.8
PWE-05 (-1/4")	166.2	4.2	<0.5	0.3	89	<0.1	0.4	2.6	<0.005	0.5	1	27	0.3	10.2	1884	2.3
PWE-06 (-1/4")	201.2	0.1	4.3	0.5	22	<0.1	6.3	0.2	0.009	0.6	0.1	<2	0.3	1.4	1896	0.9
PWE-08 (-1/4")	185.5	1.5	<0.5	0.2	35	<0.1	1	1.4	<0.005	0.7	0.4	9	0.3	3.2	1073	1.8
PWE-09 (-1/4")	41.5	5.5	<0.5	0.4	78	<0.1	0.1	12.3	<0.005	0.8	1.7	34	0.8	10.6	1791	3
PWW-01 (-1/4")	17.8	5.6	<0.5	0.3	63	<0.1	0.2	3	0.007	0.2	0.8	35	0.8	12.5	1248	3.1
PWW-02 (-1/4")	28.5	4.4	<0.5	0.3	62	<0.1	0.2	3.2	<0.005	0.5	0.7	27	0.5	9.5	1146	1.5
PWW-03 (-1/4")	28	4.4	<0.5	0.4	39	<0.1	0.1	3	<0.005	0.7	0.9	27	0.7	11.7	1811	6.3
Duplicates																
PWN-01	0.8	0.4	<0.5	<0.1	95	<0.1	<0.1	1	<0.005	0.1	0.3	<2	2.7	2.3	19	0.8
PWE-08 (-1/4")	184.5	1.6	<0.5	0.3	35	<0.1	1	1.4	<0.005	0.7	0.4	10	0.4	3.2	1082	1.8

CLIENT : **Altura Environmental Consulting**
PROJECT : **Mount Nansen Waste Rock**
CEMI Project # : **0894**
Test : **Metals by Aqua Regia Digestion with ICP-MS Finish**
Date : **September 14, 2009**

Sample	Au ppm	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cs ppm	Cu ppm	Fe %	Ga ppm	Ge ppm
TP27 (-1/4")	1.11	9.7	0.8	1822	262	1	7.2	0.68	24.1	23	11.2	46	9.6	136.9	5.63	3	<0.1
TP28 (-1/4")	0.19	8.1	1.32	446.7	204	1	13	0.85	11.4	23	12	44	5.6	358.9	4.72	4	<0.1
TP29 (-1/4")	0.6	71.4	0.72	1243.7	109	1	14.4	0.93	16.5	18	11.8	63	5.5	583.8	5.72	2	<0.1
OB01 (-1/4")	0.15	5.2	0.51	1256.9	425	1	0.4	0.79	41.7	21	15.4	55	12.7	52.9	4.63	2	<0.1
OB02 (-1/4")	0.22	7.5	0.47	521.8	265	<1	6.5	0.08	5.4	15	1.3	27	6.5	190.5	2.28	1	<0.1
OB03 (-1/4")	1.83	14.9	0.93	1380.6	256	1	14.7	0.67	14.8	31	9.8	53	6.6	121.5	4.57	3	<0.1
OB04 (-1/4")	2.29	29.5	0.59	2541.7	143	<1	32.1	0.58	17.7	16	4.7	57	4.2	220.6	5.21	2	<0.1
OB05 (-1/4")	1.28	15.9	0.74	1241.7	218	1	14	0.68	17.8	23	8.5	50	6.6	130.8	4.35	3	<0.1
OS-01 (-1/4")	5.35	35.1	0.38	3742.9	99	<1	50.9	0.75	9	12	4.9	51	3.6	202.2	6.92	2	<0.1
OS-02 (-1/4")	1.83	23.1	0.64	1933.4	192	<1	26.8	0.23	12.6	16	6	52	4.6	176.9	6.41	4	<0.1
OS-03a (-1/4")	2.16	25.1	0.75	1793.8	213	<1	24.6	0.22	14.3	20	5.8	49	4.4	190.6	5.02	3	<0.1
OS-03b (-1/4")	0.12	1.7	1.39	198.4	136	1	1.3	0.31	6	25	8.5	67	7	29.7	2.91	4	<0.1
OS-04 (-1/4")	1.59	28	0.57	2103.1	205	<1	20.6	0.54	15.9	18	4.6	43	4.3	183.3	4.69	2	<0.1
OS-05a (-1/4")	0.81	46.1	0.54	5197.1	145	1	14.1	0.41	47	21	8.4	37	5.1	191.3	6.26	2	<0.1
OS-05b (-1/4")	1.27	26.6	0.46	2142.9	314	<1	25.7	0.28	13.6	16	3.5	44	4.5	135.7	7.47	2	<0.1
Duplicates																	
TP27 (-1/4")	0.7	8.5	0.73	1572.1	247	1	7.6	0.62	21.2	21	9.9	39	8.4	120.6	5.07	2	<0.1
OS-02 (-1/4")	1.68	22.2	0.61	1819.6	187	<1	26	0.21	12.4	16	5.6	53	4.8	164.9	6.07	4	<0.1

CLIENT
PROJECT
CEMI Project #
Test
Date

Sample	Hf ppm	Hg ppm	In ppm	K %	La ppm	Li ppm	Mg %	Mn ppm	Mo ppm	Na %	Nb ppm	Ni ppm	P %	Pb ppm	Rb ppm	Re ppb	S %
TP27 (-1/4")	0.1	0.338	0.37	0.27	11	4.5	0.19	4116	0.6	0.01	0.4	9.4	0.113	1860.7	19.1	<5	0.33
TP28 (-1/4")	0.1	0.084	0.25	0.2	11	10.5	0.54	1965	0.7	0.03	0.2	6.3	0.094	472.8	12.1	<5	0.85
TP29 (-1/4")	0.1	0.302	0.37	0.27	9	4.7	0.17	3754	0.6	0.01	0.2	5.8	0.095	950.7	16.1	<5	1.92
OB01 (-1/4")	0.1	0.132	0.26	0.21	10	1.7	0.1	6839	0.3	0.01	0.1	9	0.098	1381.1	14.8	<5	0.2
OB02 (-1/4")	0.1	0.199	0.49	0.21	8	2.1	0.06	102	1.4	0.01	<0.1	3	0.031	602.3	11.4	<5	0.22
OB03 (-1/4")	<0.1	1.042	0.36	0.31	16	5.5	0.32	2585	0.9	0.02	0.4	8.3	0.099	1355.5	16.9	<5	0.55
OB04 (-1/4")	0.1	0.379	0.64	0.37	8	3.1	0.12	1758	1.2	0.01	0.4	4.6	0.066	2525	19.9	<5	1.26
OB05 (-1/4")	0.1	0.299	0.47	0.27	12	3.7	0.2	2235	0.8	0.02	0.8	7.5	0.086	1411.5	15.9	<5	0.62
OS-01 (-1/4")	0.1	0.422	0.4	0.44	6	1.8	0.03	1404	1.8	0.01	0.4	4	0.067	1988.4	24.2	<5	2.33
OS-02 (-1/4")	<0.1	0.336	0.8	0.38	9	3.9	0.13	2033	1.4	0.02	0.8	6.4	0.056	1897.9	23.4	<5	0.69
OS-03a (-1/4")	<0.1	0.35	0.58	0.34	11	3.9	0.12	1544	1	0.02	0.5	6	0.072	1741.6	20.2	<5	0.62
OS-03b (-1/4")	<0.1	0.169	0.09	0.13	12	7.3	0.34	1225	0.5	0.02	1.1	10.3	0.07	202.4	11.9	<5	<0.05
OS-04 (-1/4")	<0.1	0.393	0.56	0.34	9	2.8	0.1	1638	0.9	0.01	0.6	4.4	0.069	1552.4	20.2	<5	0.86
OS-05a (-1/4")	0.1	0.304	1.98	0.24	11	2.1	0.08	3692	0.9	0.02	0.3	5.5	0.106	3481.8	14.7	<5	0.37
OS-05b (-1/4")	<0.1	0.341	1.24	0.41	9	1.9	0.08	1077	0.7	0.02	0.2	3.7	0.066	1800.2	22.5	<5	0.74
Duplicates																	
TP27 (-1/4")	0.1	0.308	0.33	0.24	10	4.1	0.18	3726	0.5	0.01	0.2	8.1	0.104	1993.4	16.3	<5	0.29
OS-02 (-1/4")	<0.1	0.338	0.77	0.35	9	3.9	0.12	1920	1.4	0.02	0.7	5.9	0.052	1841.6	23.1	<5	0.61

CLIENT
PROJECT
CEMI Project #
Test
Date

Sample	Sb ppm	Sc ppm	Se ppm	Sn ppm	Sr ppm	Ta ppm	Te ppm	Th ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Y ppm	Zn ppm	Zr ppm
TP27 (-1/4")	113.9	6.2	<0.5	0.5	60	<0.1	0.1	2.3	<0.005	1.6	0.7	31	0.3	12.9	1951	1.6
TP28 (-1/4")	58	5.1	<0.5	0.4	48	<0.1	0.3	3.2	0.012	0.4	1.3	38	0.2	10.8	1095	2.3
TP29 (-1/4")	287.4	5.3	<0.5	0.7	44	<0.1	0.3	2	<0.005	1.3	0.8	29	0.2	10.2	1382	1.8
OB01 (-1/4")	18.1	10.5	<0.5	0.5	28	<0.1	<0.1	2.1	<0.005	0.8	0.4	50	0.3	13.3	3330	2.2
OB02 (-1/4")	59.4	2.2	<0.5	0.4	35	<0.1	0.1	2.1	<0.005	0.4	0.7	10	0.1	1.6	578	4.3
OB03 (-1/4")	117.8	6.7	<0.5	0.8	36	<0.1	0.3	4.2	0.017	1.9	0.9	42	0.4	10.5	1206	1.8
OB04 (-1/4")	253.5	3.1	<0.5	0.9	49	<0.1	0.5	2.8	<0.005	1.5	0.9	18	0.3	5.4	1403	3.5
OB05 (-1/4")	119.6	5.4	<0.5	0.7	39	0.3	0.3	2.7	0.007	1	0.6	31	0.5	10.1	1435	1.8
OS-01 (-1/4")	271.9	2.1	<0.5	0.8	61	0.2	1.1	2.5	<0.005	2.1	0.8	9	0.2	3.8	839	4.9
OS-02 (-1/4")	166.9	3.2	<0.5	0.6	41	<0.1	0.6	2.6	0.005	1.6	0.7	35	0.2	6.7	1170	3.5
OS-03a (-1/4")	242.2	3.7	<0.5	0.8	44	<0.1	0.4	2.6	0.006	1.4	0.8	24	0.2	6.4	1144	0.9
OS-03b (-1/4")	16.2	5.5	<0.5	0.5	23	0.8	<0.1	2.7	0.024	0.6	0.6	44	0.5	9.4	484	0.5
OS-04 (-1/4")	225.2	3.1	<0.5	0.7	50	<0.1	0.5	2.6	<0.005	1.4	0.8	16	0.3	5.7	1259	2.2
OS-05a (-1/4")	561.5	4.1	<0.5	1	41	<0.1	0.3	2.6	<0.005	1	0.8	23	0.3	11.4	3765	1.7
OS-05b (-1/4")	303.1	3	<0.5	0.6	49	<0.1	0.4	2.2	<0.005	1.2	0.7	21	0.2	5.2	1252	1.6
Duplicates																
TP27 (-1/4")	110.8	5.7	<0.5	0.4	51	<0.1	0.1	2.3	<0.005	1.6	0.7	28	0.3	11.1	1741	1.4
OS-02 (-1/4")	164.8	2.9	<0.5	0.6	41	<0.1	0.6	2.5	0.005	1.6	0.7	32	0.2	6.4	1100	3.4

CLIENT : **Altura Environmental Consulting**
PROJECT : **Mount Nansen Waste Rock**
CEMI Project # : **0894**
Test : **Metals by Aqua Regia Digestion with ICP-MS Finish**
Date : **September 14, 2009**

Sample	Au ppm	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cs ppm	Cu ppm	Fe %	Ga ppm	Ge ppm
LW-Coarse-04	0.39	7	0.77	2987.8	58	<1	5.6	0.24	9.4	10	3.9	53	4.9	69.1	3.89	3	<0.1
LW-Fine-04 (-1/4")	0.28	4.3	1.4	1695.2	87	1	3.7	0.42	13.7	14	6.6	49	7.3	89.9	3.91	4	<0.1
TP-22 (-1/4")	0.41	13.7	1.09	861.1	342	1	10	0.9	24.5	21	12.4	45	7.9	109.7	5.15	3	<0.1
TP-23 (-1/4")	0.08	1.7	0.64	493	209	1	0.5	2.68	6.8	33	14.4	27	25.2	32.6	4.96	3	<0.1
TP-24a (-1/4")	0.71	11.9	0.98	1173.8	251	1	10.6	1.15	31	19	9.4	39	5.2	350.3	5.58	3	<0.1
TP-24b (-1/4")	0.48	5.7	0.77	1205.1	161	1	6	1.49	29.2	18	10.5	46	4.7	184.8	4.43	2	<0.1
TP-25a (-1/4")	0.21	3.7	0.23	544.4	108	<1	3.9	2.16	11.9	16	4.6	43	2.9	79.4	2.68	1	<0.1
TP-25b (-1/4")	0.34	6.3	0.27	592	103	<1	8.6	2.3	20.3	16	5.6	47	3.1	73.6	2.98	1	<0.1
TP-26 (-1/4")	1.91	22.2	0.52	1928.4	55	<1	36.6	1.09	22.6	16	8	55	4	619.5	6.84	2	<0.1
OB-07 (-1/4")	3.4	43.5	0.53	2501.5	116	<1	42.1	0.83	19.8	14	4.8	48	4.6	292.4	5.75	2	<0.1
OB-08 (-1/4")	3.12	19.6	0.51	2308.5	117	<1	16.4	0.95	25.2	17	6.6	39	5.1	232.4	4.59	2	<0.1
OB-09 (-1/4")	3.07	42.9	0.61	3444	115	<1	35.9	0.96	17.5	15	4.9	47	4.1	285.1	5	2	<0.1
OB-10 (-1/4")	1.84	24.3	0.63	1980.4	120	1	23.5	1.11	17.7	17	6.1	38	5.5	280.6	4.89	2	<0.1
Duplicates																	
TP-22 (-1/4")	0.39	14.3	1	862.3	329	1	10.1	0.88	25.6	20	12.2	42	7.1	109.9	5.08	3	<0.1
OB-09 (-1/4")	2.2	40.6	0.53	3301.1	107	<1	33	0.88	17.2	13	4.5	41	4.2	271.1	4.8	2	<0.1

CLIENT
PROJECT
CEMI Project #
Test
Date

Sample	Hf ppm	Hg ppm	In ppm	K %	La ppm	Li ppm	Mg %	Mn ppm	Mo ppm	Na %	Nb ppm	Ni ppm	P %	Pb ppm	Rb ppm	Re ppb	S %
LW-Coarse-04	<0.1	0.547	1.14	0.23	5	7.6	0.26	311	1.1	0.01	<0.1	6.6	0.057	820.6	13.8	<5	0.19
LW-Fine-04 (-1/4")	<0.1	0.141	0.7	0.25	8	7.3	0.29	1070	0.8	0.01	<0.1	8.6	0.071	534.4	14.3	<5	0.14
TP-22 (-1/4")	0.1	0.217	0.27	0.26	10	6.7	0.34	3648	0.6	0.01	<0.1	11.4	0.1	2515.5	16.3	<5	0.3
TP-23 (-1/4")	0.1	0.151	0.13	0.17	15	2.8	0.44	2603	0.3	0.01	<0.1	7	0.162	349.9	17.2	<5	0.28
TP-24a (-1/4")	0.1	0.271	0.61	0.24	10	6.6	0.42	2766	1.3	0.02	<0.1	9.1	0.075	2401	14.6	<5	0.85
TP-24b (-1/4")	0.1	0.165	0.4	0.16	9	4.7	0.49	3153	1.7	0.01	<0.1	11.3	0.072	1210.2	9	<5	1.12
TP-25a (-1/4")	0.2	0.054	0.2	0.14	8	0.8	0.62	2984	1.4	0.01	0.1	5.7	0.054	333.8	7.6	<5	1.52
TP-25b (-1/4")	0.2	0.071	0.24	0.15	9	1.1	0.65	3223	1.4	0.01	<0.1	6.6	0.055	513.6	8.6	<5	1.49
TP-26 (-1/4")	0.2	0.163	0.92	0.28	9	3.4	0.22	1972	1.8	0.01	<0.1	5.1	0.059	1819.5	15.5	<5	3.9
OB-07 (-1/4")	0.1	0.502	0.76	0.4	7	2.6	0.13	1686	1.7	0.01	0.1	4.7	0.064	2149.4	22.2	<5	1.74
OB-08 (-1/4")	0.1	0.257	0.7	0.24	9	2.7	0.19	2142	1.2	0.01	<0.1	6.2	0.07	1751.6	14.4	<5	1.37
OB-09 (-1/4")	0.1	0.292	0.63	0.3	8	3.5	0.2	1291	1.2	0.01	<0.1	5.4	0.067	2804.1	16.2	<5	1.67
OB-10 (-1/4")	0.1	0.3	0.57	0.28	9	3.3	0.3	1490	1.2	0.01	0.1	5.5	0.067	2053.9	15.1	<5	1.72
Duplicates																	
TP-22 (-1/4")	0.1	0.206	0.27	0.24	9	6.5	0.34	3596	0.6	0.01	<0.1	11.1	0.096	2544.3	15.2	<5	0.31
OB-09 (-1/4")	0.1	0.269	0.63	0.27	7	3.2	0.18	1225	1.3	0.01	0.2	5.1	0.06	2572.2	15.9	<5	1.51

CLIENT
PROJECT
CEMI Project #
Test
Date

Sample	Sb ppm	Sc ppm	Se ppm	Sn ppm	Sr ppm	Ta ppm	Te ppm	Th ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Y ppm	Zn ppm	Zr ppm
LW-Coarse-04	50.5	4.5	<0.5	0.2	57	<0.1	0.1	1.2	0.008	2.5	0.5	33	0.2	6	886	1.2
LW-Fine-04 (-1/4")	28.8	5.6	<0.5	0.3	41	<0.1	0.1	1.2	0.005	1.2	0.5	35	0.2	11.6	1349	0.9
TP-22 (-1/4")	52.5	7.1	<0.5	0.4	51	<0.1	0.2	2.1	0.006	1	0.8	43	0.4	12.8	2435	1.7
TP-23 (-1/4")	19.3	11.7	<0.5	0.6	65	<0.1	<0.1	2.5	0.005	0.6	0.5	67	1.3	17.1	841	1.5
TP-24a (-1/4")	67.8	4.6	<0.5	0.5	64	<0.1	0.3	3	<0.005	0.9	1.1	31	0.3	10.3	2962	4.6
TP-24b (-1/4")	49	4	<0.5	0.7	87	<0.1	0.2	3	<0.005	0.6	1.1	22	0.3	10.5	2726	5.1
TP-25a (-1/4")	33.9	1.5	<0.5	0.2	39	<0.1	0.1	3.9	<0.005	0.3	1.2	6	0.2	6.7	1134	9.8
TP-25b (-1/4")	37.5	1.8	<0.5	0.3	51	<0.1	0.2	4	<0.005	0.3	1.2	9	0.2	7.6	1982	9.8
TP-26 (-1/4")	192.6	2.6	<0.5	0.5	38	<0.1	1	5	<0.005	0.9	1	14	0.3	7.1	1942	6.9
OB-07 (-1/4")	311.3	3	<0.5	1.1	70	<0.1	0.8	2.9	<0.005	1.6	1	17	0.2	5.6	1543	5.3
OB-08 (-1/4")	184.6	3.8	<0.5	0.9	45	<0.1	0.4	2.6	<0.005	1	1.2	21	0.4	8.2	2017	2.8
OB-09 (-1/4")	441	3.4	<0.5	1.1	55	<0.1	0.7	2.8	<0.005	1.1	1	21	0.3	6.2	1361	3.6
OB-10 (-1/4")	233.7	3.7	<0.5	0.8	49	<0.1	0.4	2.9	0.005	1	1	22	0.3	6.8	1423	3
Duplicates																
TP-22 (-1/4")	42.9	7	<0.5	0.4	51	<0.1	0.2	2	0.005	1	0.7	40	0.3	13	2395	1.6
OB-09 (-1/4")	499.8	2.9	<0.5	1	52	<0.1	0.7	2.5	<0.005	1.1	0.9	19	0.3	6.1	1335	3.7

Results: SGS CEMI

CLIENT : **Altura Environmental Consulting**
PROJECT : **Mount Nansen Waste Rock**
CEMI Project # : **0894**
Test : **24 Hour NanoPure Water Leach Extraction Test at 3:1 Liquid to Solid Ratio**
Date : **August 20, 2009**

Leachate Analysis

Sample ID			**TP29 (-1/4")**	**OB04 (-1/4")**	**OB05 (-1/4")**	**OS-01 (-1/4")**	**OS-02 (-1/4")**	**OS-04 (-1/4")**	**OS-03A + OS-03B Composite (-1/4")**
Parameter	**Method**	**Units**							
Volume Nanopure water		mL	750	750	750	750	750	750	750
Sample Weight		g	250	250	250	250	250	250	250
pH	meter		6.74	6.68	7.48	3.60	7.20	6.79	6.74
Redox	meter	mV	352	338	332	436	275	350	292
Conductivity	meter	uS/cm	1855	1609	1008	2028	79	1493	62
Acidity (to pH 4.5)	titration	mg CaCO3/L	#N/A	#N/A	#N/A	26.0	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	titration	mg CaCO3/L	10.0	6.8	5.2	126.7	4.6	5.8	3.5
Alkalinity	titration	mg CaCO3/L	5.7	5.7	26.3	#N/A	3.3	7.7	2.8
Sulphate	Turbidity	mg/L	1143	1125	586	1467	34	905	20
Ion Balance									
Major Anions	Calc	meq/L	23.93	23.55	12.74	30.56	0.77	19.01	0.47
Major Cations	Calc	meq/L	23.25	21.70	12.28	27.50	0.69	19.54	0.53
Difference	Calc	meq/L	0.68	1.86	0.46	3.07	0.09	-0.53	-0.06
Balance (%)	Calc	%	1.4%	4.1%	1.8%	5.3%	5.9%	-1.4%	-5.9%
Dissolved Metals									
Hardness CaCO3		mg/L	1140	1060	606	1220	31.1	968	20.7
Aluminum Al	ICP-MS	mg/L	0.012	0.002	0.0038	6.43	0.0284	0.002	0.0687
Antimony Sb	ICP-MS	mg/L	0.0057	0.0132	0.0173	0.0038	0.00186	0.0087	0.00446
Arsenic As	ICP-MS	mg/L	0.0024	0.0106	0.0387	0.0225	0.00553	0.0224	0.0113
Barium Ba	ICP-MS	mg/L	0.0056	0.0131	0.0193	0.0088	0.0264	0.0078	0.019
Beryllium Be	ICP-MS	mg/L	<0.0001	<0.00005	<0.00001	0.0032	<0.00001	<0.00005	<0.00001
Bismuth Bi	ICP-MS	mg/L	<0.00005	<0.00003	0.000009	<0.00005	0.000039	<0.00003	0.000053
Boron B	ICP-MS	mg/L	<0.5	<0.3	<0.05	<0.5	<0.05	<0.3	<0.05
Cadmium Cd	ICP-MS	mg/L	0.0363	0.0192	0.00195	0.506	0.00103	0.00692	0.000964
Calcium Ca	ICP-MS	mg/L	405	337	205	446	10.4	324	6.61
Chromium Cr	ICP-MS	mg/L	<0.001	<0.0005	<0.0001	<0.001	<0.0001	<0.0005	0.0004
Cobalt Co	ICP-MS	mg/L	0.00121	0.00021	0.00002	0.0407	0.000026	0.00004	0.000032
Copper Cu	ICP-MS	mg/L	0.0133	0.0027	0.00203	1.55	0.00535	0.0055	0.0248
Iron Fe	ICP-MS	mg/L	<0.01	0.006	0.007	0.258	0.048	0.006	0.083
Lead Pb	ICP-MS	mg/L	0.00021	0.0009	0.00013	0.0889	0.00388	0.00021	0.00256
Lithium Li	ICP-MS	mg/L	0.01	0.005	0.0013	0.018	0.0007	0.003	<0.0005
Magnesium Mg	ICP-MS	mg/L	31.3	54.4	22.6	26.9	1.23	38.5	1.02

CLIENT : **Altura Environmental Consulting**
PROJECT : **Mount Nansen Waste Rock**
CEMI Project # : **0894**
Test : **24 Hour NanoPure Water Leach Extraction Test at 3:1 Liquid to Solid Ratio**
Date : **August 20, 2009**

Leachate Analysis

Sample ID			TP29 (-1/4")	OB04 (-1/4")	OB05 (-1/4")	OS-01 (-1/4")	OS-02 (-1/4")	OS-04 (-1/4")	OS-03A + OS-03B Composite (-1/4")
Parameter	**Method**	**Units**							
Manganese Mn	ICP-MS	mg/L	7.82	3.16	0.00649	35.4	0.031	0.0415	0.0173
Mercury Hg	ICP-MS	ug/L	<0.1	<0.05	<0.01	0.1	0.03	<0.05	<0.01
Molybdenum Mo	ICP-MS	mg/L	<0.0005	<0.0003	0.00042	<0.0005	<0.00005	<0.0003	<0.00005
Nickel Ni	ICP-MS	mg/L	0.0048	0.0016	0.00039	0.0368	0.00096	0.0005	0.00102
Phosphorus P	ICP-MS	mg/L	<0.02	<0.01	0.011	<0.02	0.005	0.012	0.011
Potassium K	ICP-MS	mg/L	2.94	5.49	5.02	0.84	1.22	4.5	1.34
Selenium Se	ICP-MS	mg/L	<0.0004	<0.0002	0.00008	0.0006	0.00008	<0.0002	0.00005
Silicon Si	ICP-MS	mg/L	2.49	2.98	2.94	5.67	4.43	3.8	4.48
Silver Ag	ICP-MS	mg/L	<0.00005	<0.00003	<0.000005	0.00126	0.000034	<0.00003	0.000037
Sodium Na	ICP-MS	mg/L	0.85	2.78	1.19	0.47	0.71	1.66	1.9
Strontium Sr	ICP-MS	mg/L	0.482	0.348	0.275	0.35	0.0308	0.241	0.0278
Sulphur (S)	ICP-MS	mg/L	403	373	214	464	11	323	8
Thallium Tl	ICP-MS	mg/L	0.00011	0.00011	0.000059	0.00019	0.000022	0.00009	0.000021
Tin Sn	ICP-MS	mg/L	<0.0001	<0.00005	<0.00001	<0.0001	0.00003	<0.00005	0.00002
Titanium Ti	ICP-MS	mg/L	<0.005	<0.003	<0.0005	<0.005	<0.0005	<0.003	0.0012
Uranium U	ICP-MS	mg/L	<0.00002	<0.00001	0.000085	0.00296	<0.000002	<0.00001	0.000006
Vanadium V	ICP-MS	mg/L	<0.002	<0.001	<0.0002	<0.002	<0.0002	<0.001	0.0005
Zinc Zn	ICP-MS	mg/L	1.77	0.591	0.0203	21.5	0.146	0.209	0.0994
Zirconium Zr	ICP-MS	mg/L	<0.001	<0.0005	<0.0001	<0.001	<0.0001	<0.0005	<0.0001

CLIENT : **Altura Environmental Cor**
PROJECT : **Mount Nansen Waste Roc**
CEMI Project # : **0894**
Test : **24 Hour NanoPure Water**
Date : **August 20, 2009**

Leachate Analysis

Sample ID			**OS-05A + OS-05B Composite (-1/4")**
Parameter	**Method**	**Units**	
Volume Nanopure water		mL	750
Sample Weight		g	250
pH	meter		7.40
Redox	meter	mV	326
Conductivity	meter	uS/cm	351
Acidity (to pH 4.5)	titration	mg CaCO3/L	#N/A
Total Acidity (to pH 8.3)	titration	mg CaCO3/L	4.9
Alkalinity	titration	mg CaCO3/L	33.3
Sulphate	Turbidity	mg/L	155
Ion Balance			
Major Anions	Calc	meq/L	3.89
Major Cations	Calc	meq/L	3.76
Difference	Calc	meq/L	0.13
Balance (%)	Calc	%	1.7%
Dissolved Metals			
Hardness CaCO3		mg/L	184
Aluminum Al	ICP-MS	mg/L	0.0034
Antimony Sb	ICP-MS	mg/L	0.0176
Arsenic As	ICP-MS	mg/L	0.0595
Barium Ba	ICP-MS	mg/L	0.0158
Beryllium Be	ICP-MS	mg/L	<0.00001
Bismuth Bi	ICP-MS	mg/L	<0.000005
Boron B	ICP-MS	mg/L	<0.05
Cadmium Cd	ICP-MS	mg/L	0.00142
Calcium Ca	ICP-MS	mg/L	61
Chromium Cr	ICP-MS	mg/L	<0.0001
Cobalt Co	ICP-MS	mg/L	0.000013
Copper Cu	ICP-MS	mg/L	0.00533
Iron Fe	ICP-MS	mg/L	0.003
Lead Pb	ICP-MS	mg/L	0.000124
Lithium Li	ICP-MS	mg/L	0.0021
Magnesium Mg	ICP-MS	mg/L	7.75

CLIENT : **Altura Environmental Cor**
PROJECT : **Mount Nansen Waste Roc**
CEMI Project # : **0894**
Test : **24 Hour NanoPure Water**
Date : **August 20, 2009**

Leachate Analysis

Sample ID			**OS-05A + OS-05B Composite (-1/4")**
Parameter	**Method**	**Units**	
Manganese Mn	ICP-MS	mg/L	0.0058
Mercury Hg	ICP-MS	ug/L	<0.01
Molybdenum Mo	ICP-MS	mg/L	0.00023
Nickel Ni	ICP-MS	mg/L	0.00019
Phosphorus P	ICP-MS	mg/L	0.017
Potassium K	ICP-MS	mg/L	2.6
Selenium Se	ICP-MS	mg/L	<0.00004
Silicon Si	ICP-MS	mg/L	3.52
Silver Ag	ICP-MS	mg/L	<0.000005
Sodium Na	ICP-MS	mg/L	0.37
Strontium Sr	ICP-MS	mg/L	0.0823
Sulphur (S)	ICP-MS	mg/L	55
Thallium Tl	ICP-MS	mg/L	0.000062
Tin Sn	ICP-MS	mg/L	<0.00001
Titanium Ti	ICP-MS	mg/L	<0.0005
Uranium U	ICP-MS	mg/L	0.000039
Vanadium V	ICP-MS	mg/L	<0.0002
Zinc Zn	ICP-MS	mg/L	0.0251
Zirconium Zr	ICP-MS	mg/L	<0.0001

CLIENT : **Altura Environmental Consulting**
PROJECT : **Mount Nansen Waste Rock**
CEMI Project # : **0894**
Test : **24 Hour NanoPure Water Leach Extraction Test at 3:1 Liquid to Solid Ratio**
Date : **August 20, 2009**

Leachate Analysis

Sample ID			PWE-01 (-1/4")	PWE-02 (-1/4")	PWE-03 (-1/4")	PWE-04 (-1/4")	PWE-05 (-1/4")	PWE-06 (-1/4")	PWE-08 (-1/4")	PWE-09 (-1/4")
Parameter	**Method**	**Units**								
Volume Nanopure water		mL	1500	1500	1500	1500	1500	750	1500	1500
Sample Weight		g	500	500	500	500	500	250	500	500
pH	meter		6.34	7.64	7.76	4.19	7.48	2.48	2.37	5.26
Redox	meter	mV	323	305	298	438	293	443	519	289
Conductivity	meter	uS/cm	43	80	72	3333	2486	5410	3490	880
Acidity (to pH 4.5)	titration	mg CaCO3/L	#N/A	#N/A	#N/A	10.35	#N/A	2675	1800	#N/A
Total Acidity (to pH 8.3)	titration	mg CaCO3/L	5.0	4.6	3.9	181.7	19.1	9750	2975	60.1
Alkalinity	titration	mg CaCO3/L	2.5	42.6	41.4	#N/A	49.6	#N/A	#N/A	1.5
Sulphate	Turbidity	mg/L	13	3	<1	2762	1444	10211	3980	439
Ion Balance										
Major Anions	Calc	meq/L	0.32	0.91	0.83	57.54	31.07	215.60	84.73	9.17
Major Cations	Calc	meq/L	0.41	0.85	0.77	52.20	35.69	281.93	102.60	10.03
Difference	Calc	meq/L	-0.09	0.07	0.05	5.34	-4.62	-66.33	-17.86	-0.86
Balance (%)	Calc	%	-11.8%	3.9%	3.4%	4.9%	-6.9%	-13.3%	-9.5%	-4.5%
Dissolved Metals										
Hardness CaCO3		mg/L	13.8	39.6	35.7	2330	1720	2190	1740	440
Aluminum Al	ICP-MS	mg/L	0.0246	0.0251	0.0369	7.12	0.002	67.9	127	1.68
Antimony Sb	ICP-MS	mg/L	0.00367	0.00091	0.00179	0.003	0.0122	0.348	0.028	0.0002
Arsenic As	ICP-MS	mg/L	0.00478	0.00747	0.0141	0.0987	0.005	60	17.1	0.0018
Barium Ba	ICP-MS	mg/L	0.0287	0.0118	0.0312	0.0005	0.0146	0.001	0.002	0.0175
Beryllium Be	ICP-MS	mg/L	<0.00001	<0.00001	<0.00001	0.0061	<0.00005	0.009	0.0201	0.0009
Bismuth Bi	ICP-MS	mg/L	0.000006	<0.000005	<0.000005	<0.00005	<0.00003	0.0156	<0.0003	<0.00003
Boron B	ICP-MS	mg/L	<0.05	<0.05	<0.05	<0.5	<0.3	<3	<3	<0.3
Cadmium Cd	ICP-MS	mg/L	0.0018	0.000033	0.000026	0.481	0.0555	4.79	1.29	0.333
Calcium Ca	ICP-MS	mg/L	3.92	13.2	12.9	487	444	438	439	141
Chromium Cr	ICP-MS	mg/L	<0.0001	0.0002	0.0001	<0.001	<0.0005	0.043	0.034	<0.0005
Cobalt Co	ICP-MS	mg/L	0.000044	0.000009	0.000126	0.245	0.00829	0.321	0.589	0.00166
Copper Cu	ICP-MS	mg/L	0.0056	0.001	0.00422	2.9	0.0176	120	19.6	0.447
Iron Fe	ICP-MS	mg/L	0.026	0.015	0.025	1.25	0.022	3880	793	0.038
Lead Pb	ICP-MS	mg/L	0.000371	0.000337	0.00037	0.00122	0.00481	0.0582	0.0129	0.00093
Lithium Li	ICP-MS	mg/L	0.0016	<0.0005	<0.0005	0.04	0.011	0.08	0.053	0.026
Magnesium Mg	ICP-MS	mg/L	0.96	1.64	0.88	271	147	267	156	21.2
Manganese Mn	ICP-MS	mg/L	0.0374	0.00128	0.00265	94	21.5	96.1	92.5	7.25
Mercury Hg	ICP-MS	ug/L	0.01	0.02	0.02	0.1	0.33	<0.5	<0.5	0.32

CLIENT : **Altura Environmental Consulting**
PROJECT : **Mount Nansen Waste Rock**
CEMI Project # : **0894**
Test : **24 Hour NanoPure Water Leach Extraction Test at 3:1 Liquid to Solid Ratio**
Date : **August 20, 2009**

Leachate Analysis

Sample ID			PWE-01 (-1/4")	PWE-02 (-1/4")	PWE-03 (-1/4")	PWE-04 (-1/4")	PWE-05 (-1/4")	PWE-06 (-1/4")	PWE-08 (-1/4")	PWE-09 (-1/4")
Parameter	**Method**	**Units**								
Molybdenum Mo	ICP-MS	mg/L	<0.00005	0.00035	0.00155	<0.0005	<0.0003	<0.003	<0.003	<0.0003
Nickel Ni	ICP-MS	mg/L	0.00069	0.00016	0.00036	0.0934	0.0071	0.044	0.132	0.0111
Phosphorus P	ICP-MS	mg/L	0.016	0.01	0.107	<0.02	<0.01	4.86	11.7	<0.01
Potassium K	ICP-MS	mg/L	1.34	1.43	1.28	0.99	6.59	<0.5	<0.5	4.78
Selenium Se	ICP-MS	mg/L	0.00005	0.00006	0.00013	0.0006	0.0014	0.009	<0.002	<0.0002
Silicon Si	ICP-MS	mg/L	3.64	1.94	2.9	4.32	1.88	<5	<5	6.11
Silver Ag	ICP-MS	mg/L	0.000018	0.000007	0.000012	0.00015	0.0003	0.0012	0.0004	0.00005
Sodium Na	ICP-MS	mg/L	2.24	0.35	0.58	2.61	8.74	<0.5	<0.5	1.09
Strontium Sr	ICP-MS	mg/L	0.0257	0.0405	0.0371	0.465	1.04	0.428	0.217	0.0997
Sulphur (S)	ICP-MS	mg/L	5	<3	<3	868	577	3490	1410	166
Thallium Tl	ICP-MS	mg/L	0.000011	0.000006	0.000006	0.00006	0.00026	<0.0001	<0.0001	0.00031
Tin Sn	ICP-MS	mg/L	<0.00001	<0.00001	<0.00001	<0.0001	<0.00005	0.0183	0.0016	<0.00005
Titanium Ti	ICP-MS	mg/L	<0.0005	<0.0005	<0.0005	<0.005	<0.003	<0.03	<0.03	<0.003
Uranium U	ICP-MS	mg/L	0.000003	0.000128	0.000092	0.00714	0.00027	0.0063	0.0413	0.00059
Vanadium V	ICP-MS	mg/L	<0.0002	<0.0002	0.0005	<0.002	<0.001	0.365	0.027	<0.001
Zinc Zn	ICP-MS	mg/L	0.114	0.0012	0.0015	33.2	2.6	371	93.2	20.5
Zirconium Zr	ICP-MS	mg/L	<0.0001	<0.0001	<0.0001	<0.001	<0.0005	<0.005	<0.005	<0.0005

CLIENT : Altura Environmental Co
PROJECT : Mount Nansen Waste Ro
CEMI Project # : 0894
Test : 24 Hour NanoPure Water
Date : August 20, 2009

Leachate Analysis

Sample ID			PWW-01 (-1/4")	PWW-02 (-1/4")	PWW-03 (-1/4")	PWN-02A + PWN-02B Composite (-1/4")	Blank
Parameter	**Method**	**Units**					
Volume Nanopure water		mL	1500	1500	1500	1500	750
Sample Weight		g	500	500	500	500	-
pH	meter		7.71	7.55	7.63	7.75	7.38
Redox	meter	mV	236	254	258	258	288
Conductivity	meter	uS/cm	1168	1542	1062	338	<1
Acidity (to pH 4.5)	titration	mg CaCO3/L	#N/A	#N/A	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	titration	mg CaCO3/L	7.4	8.0	6.7	6.4	2.7
Alkalinity	titration	mg CaCO3/L	30.6	36.7	26.5	52.1	2.6
Sulphate	Turbidity	mg/L	624	913	552	104	<1
Ion Balance							
Major Anions	Calc	meq/L	13.61	19.75	12.03	3.21	#N/A
Major Cations	Calc	meq/L	14.48	20.22	13.08	3.58	#N/A
Difference	Calc	meq/L	-0.87	-0.47	-1.05	-0.37	#N/A
Balance (%)	Calc	%	-3.1%	-1.2%	-4.2%	-5.4%	#N/A
Dissolved Metals							
Hardness CaCO3		mg/L	704	994	646	175	<0.5
Aluminum Al	ICP-MS	mg/L	0.0044	0.0032	0.0045	0.0033	0.0008
Antimony Sb	ICP-MS	mg/L	0.00333	0.00215	0.00094	0.00626	<0.00002
Arsenic As	ICP-MS	mg/L	0.00077	0.00195	0.001	0.0129	<0.00002
Barium Ba	ICP-MS	mg/L	0.0302	0.02	0.00512	0.0445	0.00005
Beryllium Be	ICP-MS	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Bismuth Bi	ICP-MS	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Boron B	ICP-MS	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium Cd	ICP-MS	mg/L	0.00144	0.00547	0.00163	0.00119	<0.000005
Calcium Ca	ICP-MS	mg/L	166	217	162	52.7	<0.05
Chromium Cr	ICP-MS	mg/L	<0.0001	0.0001	<0.0001	<0.0001	<0.0001
Cobalt Co	ICP-MS	mg/L	0.000027	0.000085	0.000016	0.000055	<0.000005
Copper Cu	ICP-MS	mg/L	0.00258	0.00191	0.00091	0.00323	0.0003
Iron Fe	ICP-MS	mg/L	0.002	0.003	0.002	0.002	<0.001
Lead Pb	ICP-MS	mg/L	0.000339	0.000141	0.000088	0.000184	0.000021
Lithium Li	ICP-MS	mg/L	0.0023	0.003	0.0024	0.0013	<0.0005
Magnesium Mg	ICP-MS	mg/L	70.5	110	58.8	10.6	<0.05
Manganese Mn	ICP-MS	mg/L	0.00859	0.25	0.0123	0.0734	0.00006
Mercury Hg	ICP-MS	ug/L	0.01	0.02	0.02	0.02	0.02

CLIENT : Altura Environmental Co
PROJECT : Mount Nansen Waste Ro
CEMI Project # : 0894
Test : 24 Hour NanoPure Water
Date : August 20, 2009

Leachate Analysis

Sample ID			PWW-01 (-1/4")	PWW-02 (-1/4")	PWW-03 (-1/4")	PWN-02A + PWN-02B Composite (-1/4")	Blank
Parameter	**Method**	**Units**					
Molybdenum Mo	ICP-MS	mg/L	0.00102	0.00031	0.00015	0.0011	<0.00005
Nickel Ni	ICP-MS	mg/L	0.00052	0.00042	0.00019	0.0004	0.00008
Phosphorus P	ICP-MS	mg/L	0.005	0.003	0.004	0.006	<0.002
Potassium K	ICP-MS	mg/L	5.02	5.16	4.32	2.35	<0.05
Selenium Se	ICP-MS	mg/L	0.0002	0.00018	0.00016	0.00024	<0.00004
Silicon Si	ICP-MS	mg/L	1.38	1.35	1.02	1.67	<0.1
Silver Ag	ICP-MS	mg/L	0.000006	<0.000005	<0.000005	<0.000005	<0.000005
Sodium Na	ICP-MS	mg/L	6.17	4.8	1.04	0.37	0.07
Strontium Sr	ICP-MS	mg/L	0.623	0.683	0.295	0.181	0.00006
Sulphur (S)	ICP-MS	mg/L	242	337	216	44	<3
Thallium Tl	ICP-MS	mg/L	0.000049	0.000063	0.000045	0.000036	<0.000002
Tin Sn	ICP-MS	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Titanium Ti	ICP-MS	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Uranium U	ICP-MS	mg/L	0.000365	0.000398	0.000157	0.000255	0.000004
Vanadium V	ICP-MS	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc Zn	ICP-MS	mg/L	0.0179	0.0484	0.0243	0.0485	0.0011
Zirconium Zr	ICP-MS	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

CLIENT : **Altura Environmental Consulting**
PROJECT : **Mount Nansen Waste Rock**
CEMI Project # : **0894**
Test : **24 Hour NanoPure Water Leach Extraction Test at 3:1 Liquid to Solid Ratio**
Date : **August 20, 2009**

Leachate Analysis

Sample ID			**HR 12 (-1/4")**	**HR 13a (-1/4")**	**HR 13b**	**HR 19 (-1/4")**	**HR 21 (-1/4")**	**HR 22 (-1/4")**	**HRB 04 (-1/4")**	**HRB 05 (-1/4")**
Parameter	**Method**	**Units**								
Volume Nanopure water		mL	750	750	750	750	750	750	750	750
Sample Weight		g	250	250	250	250	250	250	250	250
pH	meter		5.19	7.86	7.96	7.04	7.89	6.86	7.74	7.91
Redox	meter	mV	372	306	321	306	313	314	327	321
Conductivity	meter	uS/cm	1383	299	166	30	127	27	136	234
Acidity (to pH 4.5)	titration	mg CaCO3/L	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	titration	mg CaCO3/L	35.4	3.4	2.2	2.9	2.7	2.6	2.8	2.8
Alkalinity	titration	mg CaCO3/L	0.6	48.4	57.9	6.4	63.2	4.4	46.3	63.1
Sulphate	Turbidity	mg/L	913	97	30	5	6	6	29	62
Ion Balance										
Major Anions	Calc	meq/L	19.03	2.99	1.78	0.23	1.39	0.21	1.53	2.55
Major Cations	Calc	meq/L	18.75	3.28	1.81	0.32	1.42	0.29	1.46	2.66
Difference	Calc	meq/L	0.29	-0.29	-0.03	-0.09	-0.03	-0.07	0.07	-0.11
Balance (%)	Calc	%	0.8%	-4.7%	-0.8%	-15.6%	-1.1%	-14.7%	2.5%	-2.0%
Dissolved Metals										
Hardness CaCO3		mg/L	892	157	81.9	8.6	65.5	9.6	69.7	128
Aluminum Al	ICP-MS	mg/L	0.472	0.0104	0.0669	0.13	0.0263	0.0766	0.0092	0.0096
Antimony Sb	ICP-MS	mg/L	0.00099	0.00667	0.0042	0.00092	0.00394	0.00154	0.003	0.00192
Arsenic As	ICP-MS	mg/L	0.00268	0.0156	0.0023	0.00336	0.0278	0.00541	0.00431	0.00136
Barium Ba	ICP-MS	mg/L	0.017	0.0158	0.0172	0.0156	0.0142	0.017	0.0478	0.0291
Beryllium Be	ICP-MS	mg/L	0.00042	<0.00001	<0.00001	0.00002	<0.00001	0.00002	<0.00001	<0.00001
Bismuth Bi	ICP-MS	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000013	<0.000005	<0.000005
Boron B	ICP-MS	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium Cd	ICP-MS	mg/L	0.242	0.000321	0.000456	0.000369	0.00005	0.000405	0.000092	0.00123
Calcium Ca	ICP-MS	mg/L	296	55	28.8	2.64	22.3	2.99	22.9	34.6
Chromium Cr	ICP-MS	mg/L	<0.0001	<0.0001	<0.0001	0.0007	0.0002	0.0004	0.0001	<0.0001
Cobalt Co	ICP-MS	mg/L	0.00449	0.000021	0.000035	0.000093	0.000025	0.000057	0.000006	0.000015
Copper Cu	ICP-MS	mg/L	0.194	0.00061	0.0005	0.0076	0.00266	0.00917	0.00095	0.00072
Iron Fe	ICP-MS	mg/L	0.01	0.002	0.004	0.139	0.024	0.075	0.005	0.003
Lead Pb	ICP-MS	mg/L	0.00212	0.000244	0.000149	0.00269	0.000653	0.00312	0.000142	0.0045
Lithium Li	ICP-MS	mg/L	0.0356	0.0025	0.0027	<0.0005	<0.0005	<0.0005	0.001	0.0023
Magnesium Mg	ICP-MS	mg/L	37	4.82	2.46	0.5	2.37	0.52	3	10.1

CLIENT : **Altura Environmental Consulting**
PROJECT : **Mount Nansen Waste Rock**
CEMI Project # : **0894**
Test : **24 Hour NanoPure Water Leach Extraction Test at 3:1 Liquid to Solid Ratio**
Date : **August 20, 2009**

Leachate Analysis

Sample ID			**HR 12 (-1/4")**	**HR 13a (-1/4")**	**HR 13b**	**HR 19 (-1/4")**	**HR 21 (-1/4")**	**HR 22 (-1/4")**	**HRB 04 (-1/4")**	**HRB 05 (-1/4")**
Parameter	**Method**	**Units**								
Manganese Mn	ICP-MS	mg/L	9.83	0.00415	0.0481	0.0463	0.00172	0.0135	0.00109	0.00387
Mercury Hg	ICP-MS	ug/L	0.19	<0.01	<0.01	0.01	<0.01	0.01	<0.01	<0.01
Molybdenum Mo	ICP-MS	mg/L	<0.00005	0.00095	0.00149	0.00016	0.00072	<0.00005	0.00076	0.00053
Nickel Ni	ICP-MS	mg/L	0.022	0.0002	0.00028	0.00176	0.00034	0.00105	0.00024	0.00052
Phosphorus P	ICP-MS	mg/L	0.019	0.006	0.006	0.055	0.016	0.018	0.006	0.002
Potassium K	ICP-MS	mg/L	4.51	3.39	3.21	1.74	2.03	0.61	1.65	2.66
Selenium Se	ICP-MS	mg/L	0.00013	0.00006	0.00011	0.00011	0.00008	0.00004	0.00005	0.00008
Silicon Si	ICP-MS	mg/L	7.63	2.33	2.46	4.17	4.01	3.86	2.78	2.42
Silver Ag	ICP-MS	mg/L	0.00003	<0.000005	0.000008	0.000028	0.000006	0.00003	0.000007	0.000007
Sodium Na	ICP-MS	mg/L	2.14	1.22	2.1	2.31	1.42	1.8	0.56	0.76
Strontium Sr	ICP-MS	mg/L	0.653	0.121	0.0841	0.012	0.0422	0.0162	0.0583	0.148
Sulphur (S)	ICP-MS	mg/L	351	43	13	<3	3	<3	10	27
Thallium Tl	ICP-MS	mg/L	0.000137	0.000026	0.000033	0.000006	0.000018	0.000011	0.000015	0.000055
Tin Sn	ICP-MS	mg/L	<0.00001	<0.00001	0.00014	0.00008	<0.00001	0.00014	<0.00001	<0.00001
Titanium Ti	ICP-MS	mg/L	<0.0005	<0.0005	<0.0005	0.0043	<0.0005	0.0021	<0.0005	<0.0005
Uranium U	ICP-MS	mg/L	0.000597	0.000119	0.000054	0.000045	0.000171	0.000016	0.000061	0.00011
Vanadium V	ICP-MS	mg/L	<0.0002	<0.0002	0.0002	0.0008	0.0003	0.0003	<0.0002	<0.0002
Zinc Zn	ICP-MS	mg/L	10.2	0.0018	0.0029	0.0118	0.0033	0.023	0.002	0.0199
Zirconium Zr	ICP-MS	mg/L	<0.0001	<0.0001	<0.0001	0.0004	<0.0001	0.0001	<0.0001	<0.0001

CLIENT : **Altura Environmental Cor**
PROJECT : **Mount Nansen Waste Roc**
CEMI Project # : **0894**
Test : **24 Hour NanoPure Water**
Date : **August 20, 2009**

Leachate Analysis

Sample ID			**HRB 06 (-1/4")**	**HRB 08 (-1/4")**	**Blank**
Parameter	**Method**	**Units**			
Volume Nanopure water		mL	750	750	750
Sample Weight		g	250	250	-
pH	meter		6.76	7.75	6.78
Redox	meter	mV	349	330	255
Conductivity	meter	uS/cm	497	157	<1
Acidity (to pH 4.5)	titration	mg CaCO3/L	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	titration	mg CaCO3/L	6.1	2.6	2.3
Alkalinity	titration	mg CaCO3/L	8.7	26.9	2.0
Sulphate	Turbidity	mg/L	239	51	<1
Ion Balance					
Major Anions	Calc	meq/L	5.15	1.60	#N/A
Major Cations	Calc	meq/L	5.67	1.60	#N/A
Difference	Calc	meq/L	-0.52	0.01	#N/A
Balance (%)	Calc	%	-4.8%	0.2%	#N/A
Dissolved Metals					
Hardness CaCO3		mg/L	276	75.3	<0.5
Aluminum Al	ICP-MS	mg/L	0.0023	0.013	0.0009
Antimony Sb	ICP-MS	mg/L	0.00474	0.00074	<0.00002
Arsenic As	ICP-MS	mg/L	0.0128	0.00528	<0.00002
Barium Ba	ICP-MS	mg/L	0.0289	0.0359	0.00002
Beryllium Be	ICP-MS	mg/L	<0.00001	<0.00001	<0.00001
Bismuth Bi	ICP-MS	mg/L	<0.000005	<0.000005	<0.000005
Boron B	ICP-MS	mg/L	<0.05	<0.05	<0.05
Cadmium Cd	ICP-MS	mg/L	0.00478	0.000279	<0.000005
Calcium Ca	ICP-MS	mg/L	78	23.7	<0.05
Chromium Cr	ICP-MS	mg/L	<0.0001	<0.0001	<0.0001
Cobalt Co	ICP-MS	mg/L	0.000069	0.000035	<0.000005
Copper Cu	ICP-MS	mg/L	0.00281	0.00233	0.00032
Iron Fe	ICP-MS	mg/L	0.003	0.018	<0.001
Lead Pb	ICP-MS	mg/L	0.000392	0.00471	0.000014
Lithium Li	ICP-MS	mg/L	0.0018	0.0007	<0.0005
Magnesium Mg	ICP-MS	mg/L	19.7	3.93	<0.05

CLIENT : **Altura Environmental Cor**
PROJECT : **Mount Nansen Waste Roc**
CEMI Project # : **0894**
Test : **24 Hour NanoPure Water**
Date : **August 20, 2009**

Leachate Analysis

Sample ID			**HRB 06 (-1/4")**	**HRB 08 (-1/4")**	**Blank**
Parameter	**Method**	**Units**			
Manganese Mn	ICP-MS	mg/L	1.17	0.00188	0.00008
Mercury Hg	ICP-MS	ug/L	<0.01	<0.01	0.03
Molybdenum Mo	ICP-MS	mg/L	0.00005	0.0011	<0.00005
Nickel Ni	ICP-MS	mg/L	0.00334	0.00041	0.00014
Phosphorus P	ICP-MS	mg/L	0.004	0.012	<0.002
Potassium K	ICP-MS	mg/L	1.65	1.61	<0.05
Selenium Se	ICP-MS	mg/L	0.00033	0.00005	<0.00004
Silicon Si	ICP-MS	mg/L	3.56	3.2	<0.1
Silver Ag	ICP-MS	mg/L	0.000005	<0.000005	<0.000005
Sodium Na	ICP-MS	mg/L	0.51	1.1	0.08
Strontium Sr	ICP-MS	mg/L	0.319	0.102	0.00006
Sulphur (S)	ICP-MS	mg/L	98	18	<3
Thallium Tl	ICP-MS	mg/L	0.000152	0.000071	<0.000002
Tin Sn	ICP-MS	mg/L	<0.00001	<0.00001	<0.00001
Titanium Ti	ICP-MS	mg/L	<0.0005	<0.0005	<0.0005
Uranium U	ICP-MS	mg/L	0.000007	0.000046	<0.000002
Vanadium V	ICP-MS	mg/L	<0.0002	<0.0002	<0.0002
Zinc Zn	ICP-MS	mg/L	1.61	0.0093	0.0002
Zirconium Zr	ICP-MS	mg/L	<0.0001	<0.0001	<0.0001

CLIENT : **Altura Environmental Consulting**
PROJECT : **Mount Nansen Waste Rock**
CEMI Project # : **0894**
Test : **24 Hour NanoPure Water Leach Extraction Test at 3:1 Liquid to Solid Ratio**
Date : **August 27, 2009**

Leachate Analysis

Sample ID			LW-Fine-04 (-1/4")	OB-07 + OB-08 Composite (-1/4")	OB-09 + OB-10 Composite (-1/4")	TP-24b (-1/4")	TP-25a + TP-25b Composite (-1/4")	TP-26 (-1/4")	Blank
Parameter	**Method**	**Units**							
Volume Nanopure water		mL	750	750	750	750	750	750	750
Sample Weight		g	250	250	250	250	250	250	-
pH	meter		7.28	6.74	7.33	7.93	7.69	6.49	6.73
Redox	meter	mV	323	347	315	272	296	340	324
Conductivity	meter	uS/cm	39	1742	1861	422	794	2566	<1
Acidity (to pH 4.5)	titration	mg CaCO3/L	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total Acidity (to pH 8.3)	titration	mg CaCO3/L	2.5	7.7	9.8	3.2	3.3	117.6	1.5
Alkalinity	titration	mg CaCO3/L	20.5	8.5	10.1	54.9	39.8	12.0	1.5
Sulphate	Turbidity	mg/L	<1	1101	1240	150	380	1803	<1
Ion Balance									
Major Anions	Calc	meq/L	0.41	23.11	26.04	4.22	8.71	37.80	#N/A
Major Cations	Calc	meq/L	0.43	24.29	26.82	4.74	9.06	38.37	#N/A
Difference	Calc	meq/L	-0.02	-1.19	-0.78	-0.52	-0.35	-0.57	#N/A
Balance (%)	Calc	%	-2.5%	-2.5%	-1.5%	-5.8%	-2.0%	-0.7%	#N/A
Dissolved Metals									
Hardness CaCO3		mg/L	18.4	1190	1300	231	447	1680	<0.5
Aluminum Al	ICP-MS	mg/L	0.0357	0.006	0.005	0.006	0.0056	0.012	0.0018
Antimony Sb	ICP-MS	mg/L	0.00547	0.0228	0.0359	0.0128	0.0112	0.0029	<0.00002
Arsenic As	ICP-MS	mg/L	0.232	0.0212	0.0201	0.00679	0.00242	0.0129	<0.00002
Barium Ba	ICP-MS	mg/L	0.00189	0.0103	0.0144	0.03	0.0207	0.0045	0.00003
Beryllium Be	ICP-MS	mg/L	<0.00001	<0.00005	<0.00005	<0.00001	<0.00001	<0.0001	<0.00001
Bismuth Bi	ICP-MS	mg/L	0.000006	<0.00003	<0.00003	<0.000005	<0.000005	<0.00005	<0.000005
Boron B	ICP-MS	mg/L	<0.05	<0.3	<0.3	<0.05	<0.05	<0.5	<0.05
Cadmium Cd	ICP-MS	mg/L	0.000299	0.0383	0.0449	0.00249	0.00638	0.308	<0.000005
Calcium Ca	ICP-MS	mg/L	5.86	365	394	70	160	481	<0.05
Chromium Cr	ICP-MS	mg/L	0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.001	<0.0001
Cobalt Co	ICP-MS	mg/L	0.000022	0.00145	0.00353	0.00002	0.000074	0.126	<0.000005
Copper Cu	ICP-MS	mg/L	0.00514	0.0031	0.0055	0.00341	0.00262	0.157	0.00011
Iron Fe	ICP-MS	mg/L	0.031	0.022	0.012	0.003	0.006	0.03	<0.001
Lead Pb	ICP-MS	mg/L	0.000867	0.00054	0.00174	0.000482	0.000537	0.00173	0.000031
Lithium Li	ICP-MS	mg/L	0.0012	0.006	0.008	0.0036	0.0021	0.035	<0.0005
Magnesium Mg	ICP-MS	mg/L	0.9	67.4	77.2	13.7	11.5	116	<0.05

CLIENT : **Altura Environmental Consulting**
PROJECT : **Mount Nansen Waste Rock**
CEMI Project # : **0894**
Test : **24 Hour NanoPure Water Leach Extraction Test at 3:1 Liquid to Solid Ratio**
Date : **August 27, 2009**

Leachate Analysis

Sample ID			LW-Fine-04 (-1/4")	OB-07 + OB-08 Composite (-1/4")	OB-09 + OB-10 Composite (-1/4")	TP-24b (-1/4")	TP-25a + TP-25b Composite (-1/4")	TP-26 (-1/4")	Blank
Parameter	**Method**	**Units**							
Manganese Mn	ICP-MS	mg/L	0.0122	9.24	15.6	0.0269	0.207	91.5	<0.00005
Mercury Hg	ICP-MS	ug/L	<0.01	<0.05	<0.05	<0.01	<0.01	<0.1	<0.01
Molybdenum Mo	ICP-MS	mg/L	0.00015	<0.0003	<0.0003	0.00159	0.00258	<0.0005	<0.00005
Nickel Ni	ICP-MS	mg/L	0.00064	0.0042	0.0073	0.00038	0.00099	0.0315	<0.00002
Phosphorus P	ICP-MS	mg/L	0.032	<0.01	<0.01	0.005	0.004	<0.02	<0.002
Potassium K	ICP-MS	mg/L	1.24	3.94	4.12	3.64	3.6	1.53	<0.05
Selenium Se	ICP-MS	mg/L	0.0001	0.0003	0.0004	0.00029	0.00006	<0.0004	<0.00004
Silicon Si	ICP-MS	mg/L	3.94	1.81	1.73	1.75	0.73	2.12	<0.1
Silver Ag	ICP-MS	mg/L	0.000014	0.00004	0.00005	<0.000005	<0.000005	0.00011	<0.000005
Sodium Na	ICP-MS	mg/L	0.74	0.69	1	0.68	0.49	0.25	<0.05
Strontium Sr	ICP-MS	mg/L	0.0141	0.336	0.424	0.211	0.206	0.333	<0.00005
Sulphur (S)	ICP-MS	mg/L	<3	411	464	61	143	669	<3
Thallium Tl	ICP-MS	mg/L	0.000021	0.00014	0.0002	0.000155	0.000124	0.0002	<0.000002
Tin Sn	ICP-MS	mg/L	<0.00001	<0.00005	<0.00005	<0.00001	0.00002	<0.0001	<0.00001
Titanium Ti	ICP-MS	mg/L	<0.0005	<0.003	<0.003	<0.0005	<0.0005	<0.005	<0.0005
Uranium U	ICP-MS	mg/L	0.000008	<0.00001	<0.00001	0.000431	0.000822	0.00002	<0.000002
Vanadium V	ICP-MS	mg/L	0.0003	<0.001	<0.001	<0.0002	<0.0002	<0.002	<0.0002
Zinc Zn	ICP-MS	mg/L	0.021	1.83	2.45	0.0653	0.183	47	0.0003
Zirconium Zr	ICP-MS	mg/L	<0.0001	<0.0005	<0.0005	<0.0001	<0.0001	<0.001	<0.0001