Deloitte & Touche

Faro Mine Complex 2007 Supplemental Geochemical Studies Report

2007/08 - Task 28 - FINAL

Prepared for

Deloitte and Touche Inc.

on behalf of

Faro Project Management Team

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Executive Summary

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Objectives and Primary Findings:

This report summarizes the status and findings to date from the five studies carried out under the Supplemental Geochemical Studies work plan in 2007/08. Three of the five studies are complete and the primary objectives and outcomes are summarized below. Two studies (Task 100- Literature Review and Task 500- Integrated Review) are continuing into the 2008/09 fiscal year.

Task 200: Haul Road Investigation

The objectives of this study were to assess whether water quality in minor creeks crossing the Haul Road reflected significant leaching of contaminants, and to assess the potential of Haul Road materials to produce increased contaminant loads or acidic drainage in the future. The investigation found that 2007 contaminant loadings from the Haul Road to streams were not significant, and that, while there are trace amounts of sulphide-bearing materials in the Haul Road fill, these occurrences are localized and are not likely to cause a significant increase in contaminant loadings in the future.

Task 300: Northwest Dumps Investigation

The objective of this study was to delineate localized piles of high-sulphide waste within the footprint of the Northwest Dumps to support relocation of these materials as part of early remediation efforts. The investigation identified three main piles of sulphide waste and numerous small deposits, all of which were mapped. Subsequent to the delineation, the highest priority stockpile (Stockpile 2) was relocated to an area at Low Grade Stockpile 'C'.

Task 400: Mill Area Investigation

The objective of this study was to better understand the extent to which the rock fill that makes up the Mill Pad will require mitigative efforts to minimize post-closure leaching of metals or generation of acidic drainage. The investigation found that rock fill within the eastern portion of the Mill Pad will likely require some form of mitigation, while the material within the western portion of the Mill Pad will not likely require mitigation to prevent metal leaching or acid rock drainage.

Future Work Recommendations:

The Haul Road, Northwest Dumps, and Mill Area studies are complete, and no additional work is recommended in these areas at this time.

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1 Introduction

Several information gaps relating to geochemical properties of various mine wastes and construction materials were identified during the review carried out by the Independent Peer Review Panel (IPRP) in late 2006 and early 2007. To address these gaps, a work plan for the 2007/08 planning year was developed that combined several studies under the umbrella of Task 28: Supplemental Geochemical Studies.

The 2007/08 Supplemental Geochemical Studies consisted of five separate tasks. Distinct workplans were developed for each task. The following sections (Sections 2 through 6) summarize the status and findings of these 2007/08 studies.

2 Task 100: Literature Review- Oxidation Rates and Related Water Chemistry at Other Mine Analogs

Current estimates of future chemical loadings from the ARMC waste rock dumps are a major factor in determining the closure measures required to control loadings to the receiving environment. As the final selection of closure measures will, in part, be based on the estimates of future chemical loadings, the IPRP recommended that a literature review be carried out to compare estimated loading rates for the ARMC compare with those observed elsewhere. A plan was developed to review the technical literature and to conduct interviews with experts to update the compiled estimates of sulphide oxidation rates at other mines in similar geological settings (particularly sedimentary exhalative deposits), and to compare the rates of sulphide oxidation in the ARMC waste rock dumps with these other mine analogs.

The literature searches and interviews carried out to date have indicated that there is little in the way of new information available specifically from sedimentary exhalative deposits, and the review was expanded to encompass a broader range of deposit types. Comparison of oxidation rates from the literature with those estimated for ARMC show that ARMC oxidation rates are within the range of those observed elsewhere. The evaluation of the available information remains in progress.

A memorandum documenting the complete findings of Task 100 will completed as part of a separate 2008/09 task.

3 Task 200: Assessment of Potential for Chemical Loading from Haul Road Material

3.1 Scope

Waste rock characterization programs completed at the Faro site in 2002 included a series of test pits along the surface of the 10 km long haul road that connects the mine at Faro with the Vangorda and Grum mines. Sulphide minerals were identified in the near-surface material, and a limited program of follow-up investigation was proposed for 2007 to assess whether measurable contaminant leaching was occurring from the Haul Road, and to further evaluate the extent of Haul Road construction fill containing sulphide minerals.

To carry out the assessment of the Haul Road materials, the following investigations were planned for 2007:

- Collection of water samples upstream and downstream of the Haul Road to evaluate whether there is a measurable increase in concentrations of contaminants;
- Surface mapping of the Haul Road embankment to assess the material type and to improve the understanding of sulphide distribution in the bulk road fill; and
- Laboratory analysis for ABA parameters and elemental concentrations of selected samples collected during mapping.

3.2 Contaminant Loading

All streams crossing the Haul Road via culverts or rock drains (with the exception of North Fork Rose Creek) were sampled in the spring and fall of 2007 in order to assess loadings from the Haul Road materials to local streams. It was found that there are generally no significant differences between upstream and downstream concentrations. This finding indicates that surface water loadings from the Haul Road to the local water courses are not significant at present. However, the monitoring approach did not quantify chemical loads transported by groundwater pathways. Although groundwater loadings from the Haul Road are not likely to be significant, there is a potential for higher loadings than indicated by surface water monitoring. A memorandum discussing the findings of the up- and down-gradient water quality monitoring campaigns in greater detail is included as Appendix A.

3.3 ML/ARD Characteristics of Haul Road Material

Surface mapping of the Haul Road embankment was performed in order to assess material type and to improve understanding of rock type and sulphide distribution in the bulk road fill. The mapping showed that a wide range of material was used as bulk road fill. It has also shown that sulphides are distributed in the road fill in trace quantities along the length of the road.

Results from laboratory testing showed that Haul Road materials display a range of metal contents and ABA characteristics. Most of the samples tested have sulphur contents and Neutralization Potential to Acid Potential (NP:AP) characteristics that indicate the material is not potentially acid generating (nPAG). However, pockets of locally-elevated sulphur and metal contents are potentially acid generating (PAG) or are already acid generating (AG). The mapping exercise showed that these pockets are both rare and, where present, limited in extent.

There may be pockets of elevated sulphide content at depth within the Haul Road embankment that cannot be reasonably identified through closure planning investigations. If portions of the Haul Road are excavated, visual inspection of excavated materials should be undertaken to identify any large pockets of high sulphide material that may be exposed, and to appropriately segregate such material to minimize metal release and acid generation. A memorandum discussing the results of Haul Road mapping and laboratory testing in greater detail is included as Appendix A.

4 Task 300: Northwest Dumps Investigation

4.1 Scope

The Northwest Dumps at Faro are thought to contain largely non-acid generating rock; however, there are a number of local piles of highly oxidized and sulphide-rich rock that appear to have been placed at various locations on present traffic surfaces. There was concern that these local, small-tonnage piles may lead to elevated metal concentrations in seepage from the Northwest Dumps. The goal of this task was to identify and delineate these local piles, and to prepare recommendations for relocation of the high-sulphide material in order to minimize future leaching of metals from the Northwest Dumps, which otherwise have relatively low sulphide content.

4.2 Site Visit

A site visit was carried out by SRK geochemist (Dylan MacGregor) on July 3, 2007, to delineate high-sulphide material stored in the Northwest Dumps, and in particular that material located within the Upper Guardhouse Creek catchment (as defined by pre-mining topography). In addition, two water quality samples were collected from Upper Guardhouse Creek at the upper and lower ends of the Northwest Interceptor Ditch, as this stream receives seepage from the Northwest Dumps. The stretch of Upper Guardhouse that flows through the Northwest Interceptor Ditch has not been monitored as part of the recent routine monitoring program defined by the water licence. A memorandum documenting the findings of the site visit is included as Appendix B1. Water quality results from the Northwest Interceptor Ditch are provided in Appendix B2.

Most of the high-sulphide waste was found to be situated in three discrete piles on the Northwest Dumps (designated Stockpiles 1 and 2 on the upper lobe (UNWD) and as Stockpile 3 on the middle lobe (MNWD)). Based on field observations and measured paste pH and conductivity, the priority for removal, from highest to lowest, was Stockpile 2, Stockpile 1 and Stockpile 3.

The volume of high-sulphide material in stockpiles 1 to 3 was estimated by multiplying the approximate surface area by the average height observed in the field.

A number of candidate disposal locations were identified including Faro Low-grade Ore Stockpiles “A” (LGSP A) and “C” (LGSP C), as well as alternate repositories within the Northwest Dumps.

4.3 Waste Relocation from Northwest Dumps

Following the delineation of sulphide rich stockpiles, a partial relocation program was designed and carried out under 2007/08 Task 31: Early Remediation. The relocation was carried out in August 2007, when approximately 5,000 m^3 of highly reactive waste rock from Stockpile 2 were moved from the Upper Northwest Dump to Low-grade Stockpile C. The details of the relocation program are summarized in an as-built report (SRK, 2008).

The primary objective of the sulphide relocation was to remove a localized and concentrated source of metals and acidity from the Northwest Dumps, which have relatively low sulphide content overall. Contact tests (rinse pH and rinse conductivity) were used to confirm waste marked for relocation, to evaluate the degree of contamination in the waste rock under Stockpile 2, to ensure that contaminants were not being dispersed via vehicle traffic, and to determine background levels of rinse parameters.

As part of the relocation program, three lined test pads were constructed to allow the collection of runoff to assess the ‘first-flush’ water quality that was generated by the relocated sulphide material. Metal concentrations were in the upper range of concentrations observed in recent semi-annual waste rock seep surveys, while pHs were lower. Sulphate and iron concentrations were higher in comparison to the most acidic waste rock seep samples (SRK, 2007; SRK, 2008). Limited monitoring of the test pads is planned for 2008, to be carried out in conjunction with waste rock seepage surveys, to assess whether seepage and runoff water chemistry improves within the first year following relocation.

5 Task 400: Mill Area

5.1 Scope

During investigations into the distribution of oxide fines in 2004, a series of hand pits were excavated and logged along the crest of the Mill Pad. The materials identified in these pits showed that the Mill Pad area cannot be assumed to be constructed from geochemically non-reactive materials. To better understand the extent to which the Mill Pad material will require mitigative efforts to prevent generation of acidic drainage or leaching of metals, a limited investigation was planned for 2007.

The 2007 investigation was to consist of a review of drill logs from the 2005 Mill Area Hydrocarbon Investigation, and an excavator-supported test pit program. Materials encountered in test pits were to be logged and sampled, tested for rinse pH and conductivity, and submitted for ABA and elemental analyses on a subset of samples to establish the geochemical properties of the Mill Pad fill.

5.2 Results of Geochemical Investigation

A total of 35 samples were collected from 17 excavator test pits within the Mill Pad area in September 2007. A memorandum documenting the findings of Task 400 is included as Appendix C and is summarized below.

The 2007 test pitting program has confirmed earlier indications that the Mill Pad is constructed with a large proportion of material that is either already acid generating (AG) or potentially acid generating (PAG). Sulphide and metal concentrations are elevated in a number of samples and, with the possible exception of the northwest portion of the Mill Pad, these samples are distributed both laterally and vertically throughout the Mill Pad area.

The most likely option for closure of PAG waste rock in the Faro Waste Rock Dumps is to cover it with a 0.5 to 2 metre soil cover. The PAG and AG portion of the Mill Pad will likely require a similar treatment, and a scoping comparison of the costs of covering the material in place vs. relocating to a location for which covers is currently planned. The ‘cover in place’ option was estimated to be more cost effective, however final remediation decisions need to be made in the context of other remediation activities in the general vicinity of the mill pad, notably those relating to the oxide fines and emergency tailings areas.

6 Task 500: Integrated Review

The IPRP review recommended that a comprehensive review of characterization of mine wastes and of ongoing monitoring efforts be carried out to confirm that all aspects of the geochemical characteristics and behaviour of the ARMC mine wastes are adequately captured, and that there are no significant omissions. At present, this work remains in progress. The following points summarize the focus of review efforts being undertaken, and the main findings to date.

- Review thermal and oxygen monitoring data, and carry out modelling of oxygen transport (using the Sulfidox two-dimensional reactive transport model)
  - Modelling has indicated that gas transport rates are rapid within the Faro Intermediate Dump. Based on similar work on other projects, and on review of relevant technical literature, we expect that rates of gas transport would be significantly reduced by the cover variants being considered for the ARMC.
- Review waste rock and seepage monitoring data, and assess whether early construction of covers would be beneficial

- This review remains in progress, however initial indications are that there would likely be a benefit in covering the Grum sulphide cell early. Zinc concentrations in down-gradient seepage have increased and are hovering around current discharge limits, but at present no collection and treatment of seepage is required below Grum Dump. Reducing oxidation rates within the Grum sulphide cell has the potential to delay the requirement for collection and treatment of Grum waste dump seepage for decades, which would significantly reduce initial closure costs.

- Review seepage and groundwater monitoring data and assess whether elevated concentrations of minor elements (e.g. cadmium) have currently-unrecognized implications for long-term water quality and efficacy of water treatment
  - The 2007 waste rock seep samples were analyzed using analytical methods (ICP-MS/OES) that returned lower detection levels than were achieved in previous monitoring. The results of these low-level analyses were reviewed to determine whether any elements were present at concentrations that would be environmentally significant, but that had not been recognized as such. Other than zinc, only cadmium appears to be leaching at concentrations that may require water treatment to meet receiving environment objectives. There are currently available technologies for cadmium treatment that can be implemented at relatively low cost in conjunction with lime treatment to achieve required discharge concentrations, if necessary.
- Review seepage and groundwater monitoring data to assess whether the water chemistry is suggesting that exhaustion of waste rock NP is imminent
  - Water quality at station X23 (below the Main Dump at Faro) has evolved from a calcium dominated water to a zinc and magnesium dominated water since 1999. This review remains in progress, however results to date indicate that the dominate neutralization process within the dump may have shifted from calcite to dolomite dissolution over this period.

A memorandum documenting the complete findings of Task 500 will completed as part of a separate 2008/09 task.

This report, **"1CD003.092 – Anvil Range Mining Complex- 2007 Supplemental Geochemical Studies Report: 2007/08 Task 28–Final",** was prepared by SRK Consulting (Canada) Inc.

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7 References

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SRK Consulting, 2008. Anvil Range Mining Complex - Waste Relocation from Northwest Dump to Low Grade Stockpile ‘C’, As-Built Report, 2007/08 Task 31: Early Remediation. Prepared for Deloitte & Touche, on behalf of the Faro Mine Closure Planning Office, February 2008.

Appendices

Appendix A
Assessment of Potential for Chemical Loading from Haul Road Material

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Memo

To:	File	**Date:**	September 12, 2008
cc:		**From:**	Madeleine Corriveau, Dylan MacGregor
Subject:	2007/08 "Supplemental Geochemical Studies"- Task 200: Geochemistry of Haul Road Material	**Project #:**	1CD003.092.0200

1 Introduction

Detailed waste rock characterization programs completed at the Faro site in 2002 included a series of test pits along the surface of the haul road (SRK, 2004). Locations of 2002 test pits are shown on Figure 1 and results are provided in Attachment 1. Sulphide minerals were identified in some of these test pits, indicating that some of the material used to construct the Haul Road has potential for metal leaching and/or ARD. However, there was some question whether the 2002 samples accurately represented the bulk composition of the Haul Road foundation or whether sulphides observed in the 2002 test pits were either localized or typical of near-surface road bed material. As a result, a follow-up investigation was proposed for 2007 to assess whether measurable contaminant leaching was occurring from the Haul Road, and to further evaluate the extent of Haul Road construction fill containing sulphide minerals.

The 2007 field program consisted of two parts: spring and fall water sampling in streams crossing the Haul Road to determine whether the haul road was affecting downstream water quality; and surface mapping of embankments to gain a better understanding of the spatial distribution of potentially acid generating rock in the embankment.

2 Comparison of Upstream and Downstream Water Quality Data

2.1 Methods

All streams crossing the Haul Road via culverts or rock drains (with the exception of North Fork Rose Creek) were sampled in the spring and fall of 2007 in order to assess loadings from the Haul Road materials to local streams.

Spring and fall samples were collected from approximately 50 m upstream of the Haul Road and 50 m downstream of the Haul Road at a total of nine flowing culvert or rock drain locations (Figure 2). The samples were filtered and preserved in the field according to standard methods for collection of environmental samples. Field pH, conductivity, redox, and temperatures measurements were taken at each station using a WTW meter; flows were estimated visually. Samples were submitted for analyses of routine parameters (pH, conductivity, acidity, alkalinity, chloride and sulphate), and dissolved metals by ICP-MS. Duplicates and field blanks were collected as a check on the quality of field methods and laboratory results.

2.2 Results and Discussion

Results for spring and fall water quality monitoring are provided in Attachment 2 and a summary of flow, pH, conductivity, sulphate and zinc concentrations at each station is presented in Figure 2.

At most of the sampling locations, there were no significant differences between upstream and downstream metal concentrations. However, at two locations characterized by small ephemeral flows, increases in dissolved concentrations of most parameters were noted at the downstream location. Monitoring results from both locations are discussed briefly below.

- HR-09: this station was sampled in spring 2007 only. At the upstream end of the culvert, water was ponded in shallow depressions over a broad area with no defined channel. A low ridge of soil prevented surface flow into the culvert, with trace inflow occurring as seepage through the soil at the culvert mouth. Water was sampled from the ponded area closest to the culvert inlet.

  The downstream flow of less than 1L/minute was sampled by catching drips from the culvert outlet suspended above the adjacent ground. Culvert discharge infiltrated into the ground immediately, and there was no discernable stream flowing downstream of the culvert.

  A comparison of upstream and downstream monitoring results at HR-09 showed that downstream values ranged from 0.5 to 9 times for sulphate, chloride, and dissolved metals other than zinc. Dissolved zinc was elevated by a factor of 133 in the downstream sample (1.6 mg/L downstream vs. 0.012 mg/L upstream). Given the very low flow, and the much larger increase in downstream zinc concentration relative to other parameters, it is possible that the galvanized culvert is the source of most of the increased zinc load at the downstream station.

  Sulphate increased by a factor of 7 at the downstream station- this indicates another source of load since the culvert itself would not be a source of sulphate. It is likely that the additional sulphate load reports from the Haul Road material via infiltration through openings into the culvert downstream of the inlet, and that a portion of the zinc increase can also be attributed to the Haul Road fill.

  Overall, minimal flow volumes and low to moderate concentrations together show that contaminant loadings at this location are very low.

- HR-01: this station was sampled in fall 2007. Water upstream of this station flowed over a broad area of disturbed overburden before being channelled into the culvert inlet. The upstream HR-01 sample was collected from the area of broad diffuse flow, upgradient of all road fill material.

The downstream end of the culvert was buried by road fill, which resulted in a diffuse discharge consisting of a few adjacent small flows. Growths of green and brown algae were noted where flow exited the toe of the road, and an isolated boulder with rusty staining was observed in the flow. The downstream HR-01 sample was collected from approximately 30m downstream of the base of the Haul Road, where the diffuse flow converged into a single narrow channel.

A comparison of upstream and downstream monitoring results at HR-01 showed that downstream values ranged from 0.6 to 10 times for sulphate, chloride, and dissolved metals other than zinc and cadmium. Dissolved zinc was elevated by a factor of at least 1133 in the downstream sample (0.68 mg/L downstream vs. <0.0006 mg/L upstream), while dissolved cadmium was elevated by a factor of at least 30 (0.0015 mg/L downstream vs. <0.00005 mg/L upstream).

The proportionally large increase in cadmium concentrations relative to other metals suggests that the culvert is not the only source of zinc, since the culvert itself would not be expected to leach cadmium. However, the relatively low concentrations and the small and ephemeral nature of this flow support the conclusion that this is an insignificant source of load.

In conclusion, the sampling of streams crossing the Haul Road has indicated that there were no significant differences between upstream and downstream concentrations at any of the locations with appreciable flows. An increase in zinc was noted at two locations with relatively small and ephemeral flows, but the relative amount of loading from these sites is minor. This finding indicates that contaminant loadings from the Haul Road to the intersecting streams were low in 2007.

Despite evidence of limited loading from the Haul Road to the intersecting streams, the approach taken measured chemical loading only at the stream crossing locations and only in surface water pathways. As for other waste dumps, there is potential for chemical loading via groundwater pathways. Although the potential for groundwater loadings from the Haul Road is considered to be low, the monitoring carried out in 2007 was limited to surface water monitoring. It is possible that loadings may be higher than indicated if significant chemical loads are being transported by groundwater.

3 Surface Mapping of Embankments

3.1 Methods

Surface mapping of Haul Road embankments was performed in order to assess material type and to improve understanding of rock type and sulphide distribution in the bulk road fill.

The investigation consisted of a variant of the geological technique of line mapping. At one kilometer intervals along the length of the Haul Road, 100 metre sections along the downstream toe of the embankment were visually mapped and logged. At each of these locations, the mapping extended from the crest of the haul road to the toe, and then 50 m in each direction along the embankment toe.

Up to 3 samples were collected from each mapping segment. Samples were collected to represent “typical” material at each location, as well as “worst case” material at select sites on the basis of visual indicators such as abundant sulphides and/or evidence of intense weathering. Where embankment material was visually uniform (segments HRM-09 and HRM-10), only a single sample was collected, and test results for these samples were considered to be representative of the respective section of the Haul Road. The samples were generally collected from part way up the embankment where fine material was more likely to be present.

A total of 23 samples were collected from the ten mapped intervals along the length of the Haul Road (Figure 1). Contact tests (rinse pH and conductivity) were performed on the samples by SRK staff. All samples were sent to Cantest Ltd. (Burnaby, BC) for analysis by aqua regia digestion and ICP-MS for a full suite of elements, including sulphur.

A subset of ten samples were selected for acid-base accounting (ABA) following review of the contact test results. ABA tests included paste pH, sulphur forms (total S, sulphate), and modified-neutralization potential (NP).

3.2 Results and Discussion

3.2.1 Material Type

Rock types encountered during surface mapping included calc-silicates, biotite schist, chloritic schist, quartz porphyry, till, and phyllite mixed with sulphides (Attachment 3). These rock types occurred in different proportions along the length of the Haul Road. Sulphide minerals were present in massive sulphide cobbles, in association with quartz veins in schists, and as a component of quartz porphyry rocks. Sulphides were observed at several of the sites that were mapped along the Haul Road, although visual estimates of sulphide abundance never exceeded 1%. Evidence of sulphide weathering (i.e local rusty staining) was observed, particularly of massive sulphide cobbles, but these occurrences were localized. Large areas (i.e. meter scale) of sulphide weathering were not observed.

3.2.2 Contact Tests

Contact test results are presented in Table 1. The majority of samples had rinse pH values between 5.5 and 6.3. Anomalous rinse pHs were measured for two samples with circum-neutral pH values and four samples with acidic pH values between 3.1 and 4.9. Rinse conductivities ranged from 0.07 to 3.4 mS/cm for all samples. Three of the acidic samples were from localized “worst case” material mapped as containing sulphides and/or evidence of sulphide oxidation and these samples also tended to have the highest rinse conductivities.

3.2.3 ABA

Samples for ABA testing were selected to provide spatial coverage over the length of the Haul Road and to span the range of rinse pH and conductivity values, as shown in Table 2.

Acid base accounting test results are provided in Table 3. NP and AP results for Haul Road samples are plotted in Figure 3, and NP/AP ratios plotted against distance along the Haul Road are shown in Figure 4.

Previous geochemical studies of waste rock at the Anvil Range Mining Complex (SRK 2004) determined that, a site specific NP/AP value of 1.1 differentiates potentially acid generating (PAG) and not potentially acid generating (nPAG) materials (SRK 2004).

Two of the samples tested had NP/AP ratios of less than 1.1 and are considered potentially acid generating (PAG). The sulphide-sulphur content of one of these samples (HRM-05-C) was 9.8%, the reported NP was negative, and the rinse pH was 3.14, which demonstrated that the local material was already acidic. This sample was taken from an area (approximately 1 m^2) containing weathered massive sulphides, and significant amounts of sulphide were noted in the sample during collection. It was chosen for ABA testing to represent “worst case” material. The other PAG sample (HRM-04A) had a much lower sulphide-sulphur content of 0.63%, and was classified as PAG due to the low NP value relative to other non-acidic samples tested (Table 3).

The majority of the ABA samples had NP/AP ratios that were greater than 1.1 (between 1.4 and 88) and are considered not potentially acid generating (nPAG). The bulk of the material at the SE end of the Haul Road in particular (towards the Vangorda/Grum side of the Anvil Range Complex) appears to have no potential for ML/ARD with NP/AP ratios all greater than 9 (Figure 4). NPAG samples had sulphide-sulphur contents between 0.02 and 0.72%.

Most ABA samples contained minimal sulphate-sulphur (<0.1% in most ABA samples), and as such the sulphide-sulphur and total sulphur content of these samples is very well correlated. The evaluation of acid potential can be expanded to the larger ICP-MS data set using this correlation. Figure 5 shows ICP-MS sulphur concentrations from all 23 samples plotted by distance of collection site from the start of the Haul Road, with samples at the northwest end of the Haul Road (closer to Faro) having higher sulphur content.

Table 1: Contact Test Results

Sample ID	Contact tests		Sample Classification
	pH	Cond (mS/cm)	
HRM-01-A	5.64	0.81	Typical of area
HRM-01-B	6.00	0.07	Typical of area
HRM-01-C	5.83	0.25	Typical of area
HRM-02-A	5.63	1.03	Typical of area
HRM-02-B	5.57	0.71	Typical of area
HRM-02-C	6.08	0.23	Typical of area
HRM-03-A	5.91	1.30	Typical of area
HRM-03-B	4.56	1.59	“Worst-case” sample collected from area with localized evidence of sulphide weathering
HRM-03-C	5.59	0.34	Typical of area
HRM-04-A	5.50	0.82	Typical of area
HRM-04-B	5.47	0.71	Typical of area
HRM-04-C	5.52	0.65	“Worst case” sample collected from area with intense massive sulphide weathering
HRM-05-A	7.20	0.43	Typical of area
HRM-05-B	7.36	0.26	Typical of area
HRM-05-C	3.14	1.50	“Worst case” sample collected from area with localized evidence of massive sulphide weathering; abundant sulphides in sample
HRM-06-A	3.13	3.39	“Worst case” sample collected from area with localized evidence of sulphide weathering; sulphides in sample
HRM-06-B	6.10	1.17	Typical of area
HRM-07-A	6.29	0.35	Typical of area
HRM-07-B	4.88	0.30	Typical of area
HRM-08-A	5.96	0.10	Typical of area
HRM-08-B	5.80	0.12	Typical of area
HRM-09-A	5.74	1.37	Typical of area; mapping showed material at this location to be visually uniform
HRM-10-A	6.21	1.43	Typical of area; mapping showed material at this location to be visually uniform

Table 2: Selection Matrix for ABA Samples

	Approximate distance (km) from start of Haul Road (west end of North Fork Rock Drain)									
	1	2	3	4	5	6	7	8	9	10
Low pH, High conductivity pH<5, Cond>1.2mS)			HRM-03B		HRM-05C	HRM-06A				
Low pH, Low conductivity (pH<5, Cond<0.4mS)							HRM-07B			
Mod pH, High conductivity (5<pH<7, Cond >1.2mS)			HRM-03A						HRM-09A	HRM-10A
Mod pH, Mod conductivity (5<pH<7, 0.4mS<Cond<1.2 mS)	HRM-01A	HRM-02A		HRM-04A		HRM-06B				
		HRM-02B		HRM-04B						
				HRM-04C						
Mod pH, Low conductivity (5<pH<7, Cond<0.4mS)	HRM-01B	HRM-02C	HRM-03C				HRM-07A	HRM-08A		
	HRM-01C							HRM-08B		
High pH, Mod conductivity (pH>7, 0.4mS<Cond<1.2 mS)					HRM-05A					
High pH, Low conductivity (pH>7, Cond<0.4mS)					HRM-05B					

Note: Samples shaded in grey were those chosen for ABA testing.

Table 3: ABA Results

Sample ID	Fizz Rating	Total-S[1] (wt.%)	SO$_4$-S (wt.%)	S$_2$-S[2] (wt.%)	AP[3] kg CaCO$_3$/t	NP[4] kg CaCO$_3$/t	NNP kg CaCO$_3$/t	NP/AP	Acid Generation Potential
HRM-01-A	Moderate	0.78	0.06	0.72	22.5	31.9	9.4	1.4	nPAG
HRM-02-A	Moderate	0.41	0.09	0.32	10.0	17.2	7.2	1.7	nPAG
HRM-02-B	Strong	0.71	0.08	0.63	19.7	52.8	33.1	2.7	nPAG
HRM-04-A	None	0.62	0.04	0.58	18.1	11.4	-6.8	0.6	PAG
HRM-05-B	Strong	0.10	0.01	0.09	2.8	67.7	64.9	24.1	nPAG
HRM-05-C*	Moderate	11.10	1.31	9.79	305.9	-13.6	-319.5	-0.04	PAG
HRM-07-A	Strong	0.20	0.07	0.13	4.1	70.9	66.9	17.5	nPAG
HRM-07-B	Strong	0.10	0.08	0.02	0.6	54.9	54.3	87.8	nPAG
HRM-09-A	Strong	0.24	0.08	0.16	5.0	48.8	43.8	9.8	nPAG
HRM-10-A	Strong	0.19	0.05	0.14	4.4	92.9	88.5	21.2	nPAG

Notes:
1. Total Sulphur by LECO furnace.
2. Sulphide-sulphur, calculated from the difference between total sulphur and sulphate-sulphur.
3. Calculated from sulphide-sulphur.
4. NP Method Used (Cantest SOP No. 7150): Modified ABA Method (Lawrence *et al*., 1989).

* Sample classified as "worst case" from a localized area of high sulphide material.

3.2.4 Metals

A summary of selected metal results are presented in Table 4; complete results are provided in Attachment 4. Zinc concentrations relative to location along the Haul Road are shown in Figure 6.

The bulk of the Haul Road material has somewhat elevated metal content, with lead and zinc concentrations similar to median concentrations reported for calc-silicate and schist waste rock from Faro, and phyllite waste rock from Grum (Tables 4.1 and 4.10 in SRK, 2004). Overall metal content appears to decrease with distance along the Haul Road from Faro towards Grum (Figures 5 and 6). These sites were mapped as being primarily composed of till, as opposed to much higher schist content observed at mapping segments to the NW (nearer the Faro mine). The highest metal concentrations were measured in samples collected in localized areas of anomalously elevated sulphide content.

Table 4: Summary of Metals Results for 2007 Samples

Parameter	Unit	Minimum	Average	Median	Maximum
Al	%	0.53	2.0	1.9	3.9
As	ppm	5.0	27	15	170
Cd	ppm	0.10	1.3	1.0	4.2
Cu	ppm	31	93	61	280
Fe	%	3.0	5.6	5.2	15
Hg	ppb	59	260	160	1400
Ni	ppm	29	46	45	87
Pb	ppm	62	370	250	1200
S	%	0.10	1.1	0.44	11
Zn	ppm	150	730	550	3600

4 Conclusions

Sampling and analysis of water at Haul Road stream crossings has indicated that chemical loadings from the Haul Road to the local water courses are not significant at present. Although groundwater loadings are not expected to be significant, the monitoring approach did not capture chemical loading from groundwater. There is a potential for total loadings from the Haul Road to be greater than indicated by the surface water monitoring results.

Surface mapping and field and laboratory testing have indicated that overall the bulk of the Haul Road material is not expected to develop acidic weathering conditions or to contribute higher metal loads to local water courses in the future. Pockets of locally-elevated sulphur and metal contents are potentially acid generating, but surface mapping has shown these anomalies to be both rare and, where present, limited in extent.

The above findings are based on surface investigations. There may be pockets of elevated sulphide content at depth within the Haul Road embankment that cannot be reasonably identified through closure planning investigations. If portions of the Haul Road are excavated, visual inspection of excavated materials should be undertaken to identify any large pockets of high sulphide material that may be exposed, and to appropriately segregate such material to minimize acid generation and metal release from excavated materials.

5 References

SRK 2004. Geochemical Studies Of Waste Rock at the Anvil Range Mining Complex: Phase 3 Report. June, 2004.

Figures

Map Scale : 1:7,500
Contour Interval: 2m
Date of Photography: 03/07/25
Scale of Photography: 1:20000
Survey control derived from existing 1:20000 photography
Survey control based on: UTM Projection, NAD27
Compiled by The ORTHOSHOP, Calgary, September 2003
WO 8856

LEGEND:
- 2002 Test pits
- 2007 Mapping Intervals

0 300 600 900 1200 1500
Scale in Metres

SRK Consulting
Engineers and Scientists
Vancouver

Deloitte & Touche

Haul Road Geochemical Study

Haul Road
Geochemical Sampling Locations

Anvil Range Mining Complex

SRK JOB NO.:	1CD003.092.0200
FILE NAME:	HaulRoad_Geochem_Data.dwg

DATE:	APPROVED:	FIGURE:
Mar. 2008	M.C.C.	1

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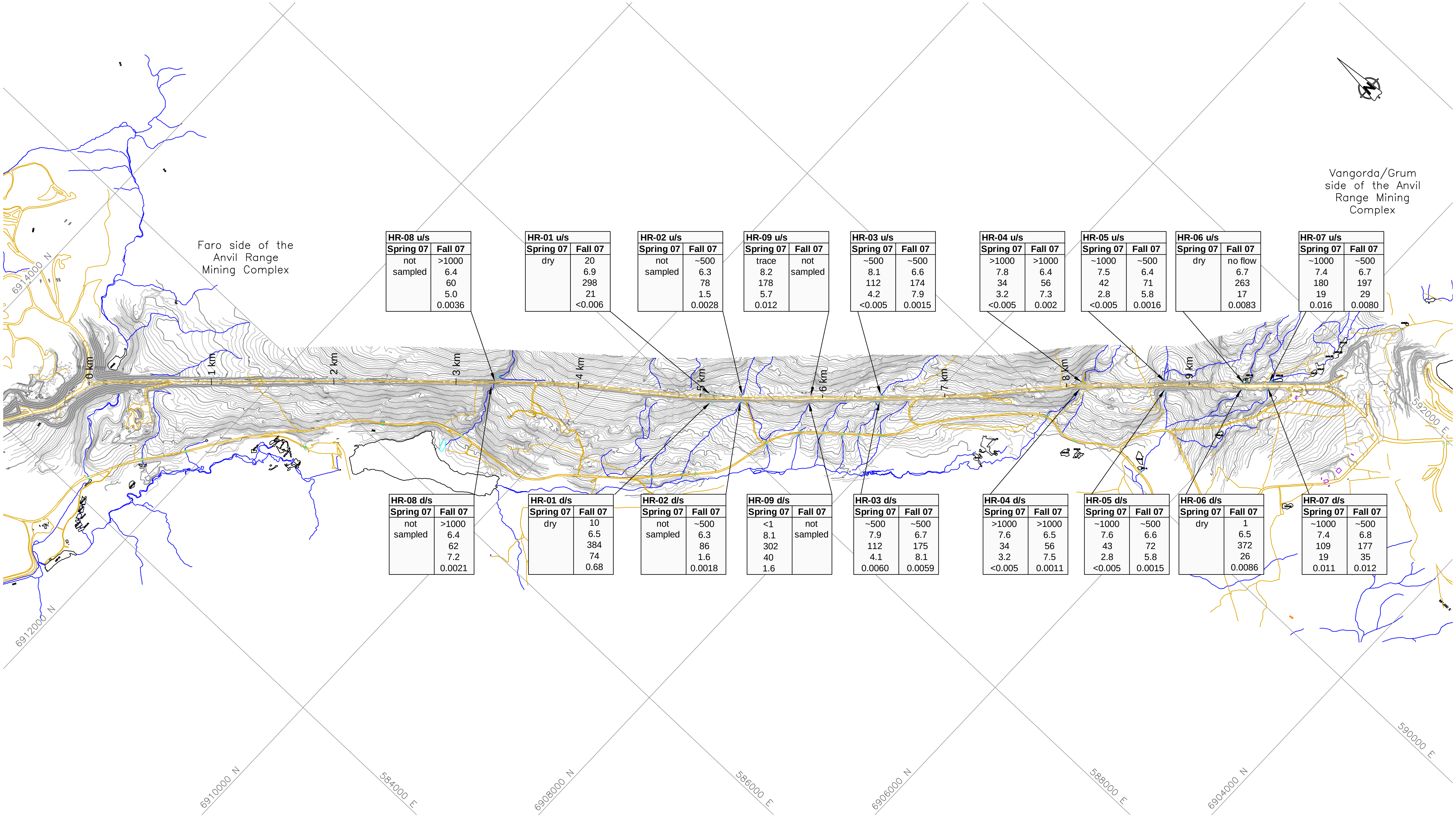

LEGEND

HR-01 d/s		Sample ID
Spring 07	Fall 07	Sample Date
Dry	10	Flow (L/min)
	6.5	pH
	384	Cond (uS/cm)
	74	SO4 (mg/L)
	0.68	Zinc (mg/L)

Map Scale : 1:7,500
Contour Interval: 2m
Date of Photography: 03/07/25
Scale of Photography: 1:20000
Survey control derived from existing 1:20000 photography
Survey control based on: UTM Projection, NAD27
Compiled by The ORTHOSHOP, Calgary, September 2003
WO 8856

0 300 600 900 1200 1500
Scale in Metres

SRK Consulting Engineers and Scientists Vancouver

Deloitte & Touche

Haul Road Geochemical Study

Haul Road Water Sampling Locations

Anvil Range Mining Complex

SRK JOB NO.: 1CD003.092.0200
FILE NAME: HaulRoad_Geochem_Data.dwg

DATE:	APPROVED:	FIGURE:
Mar. 2008	M.C.C.	2

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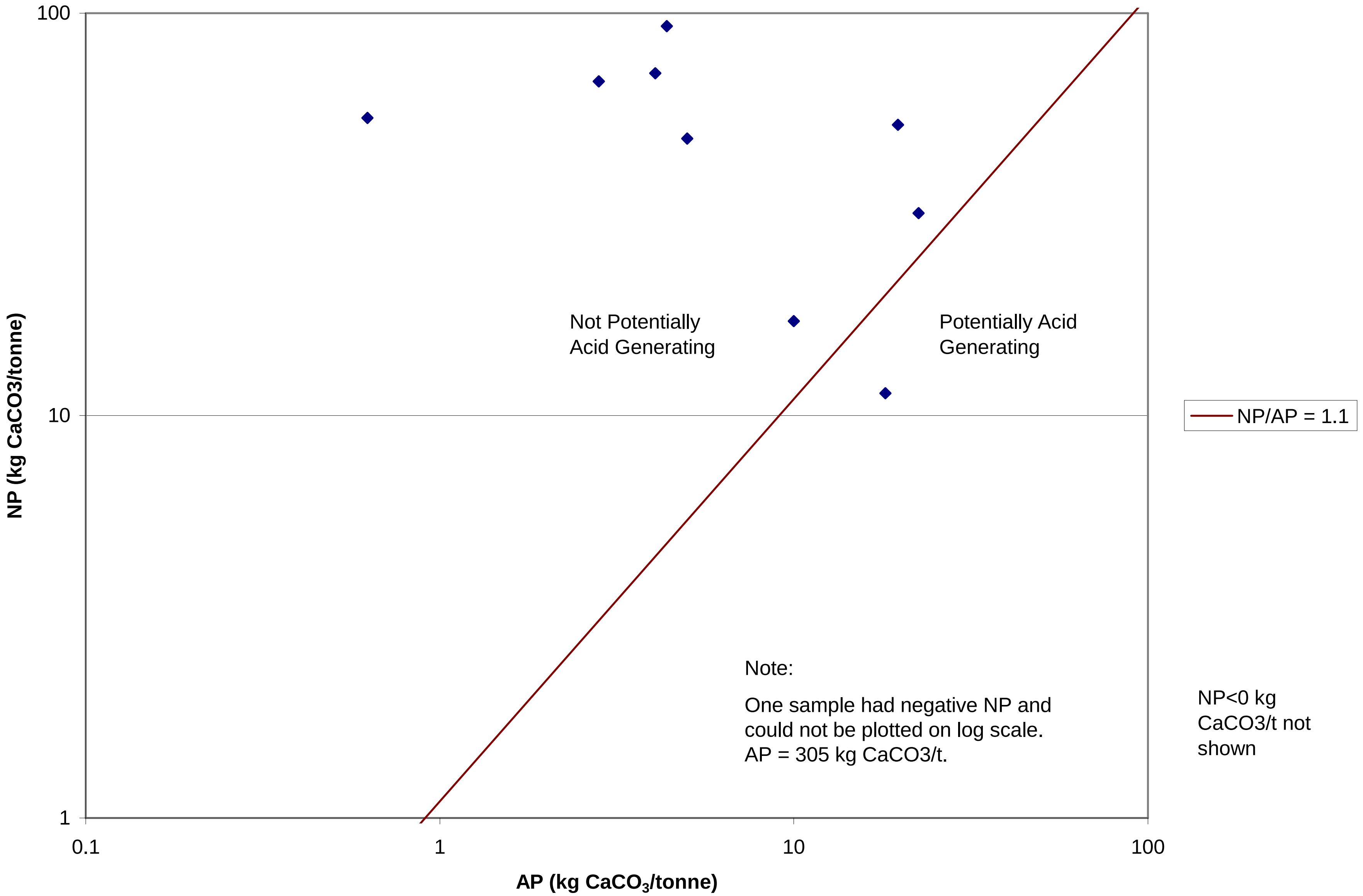
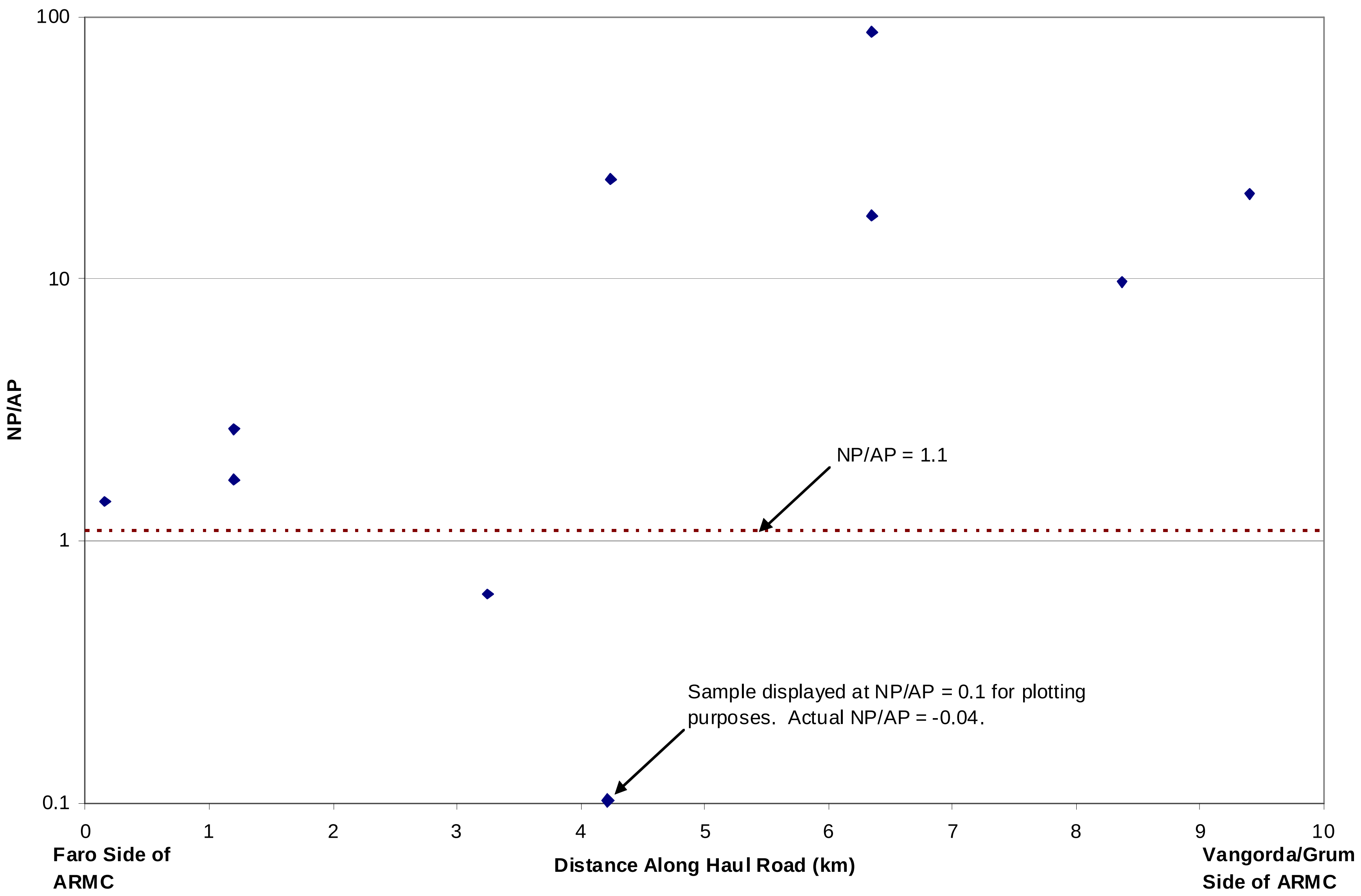
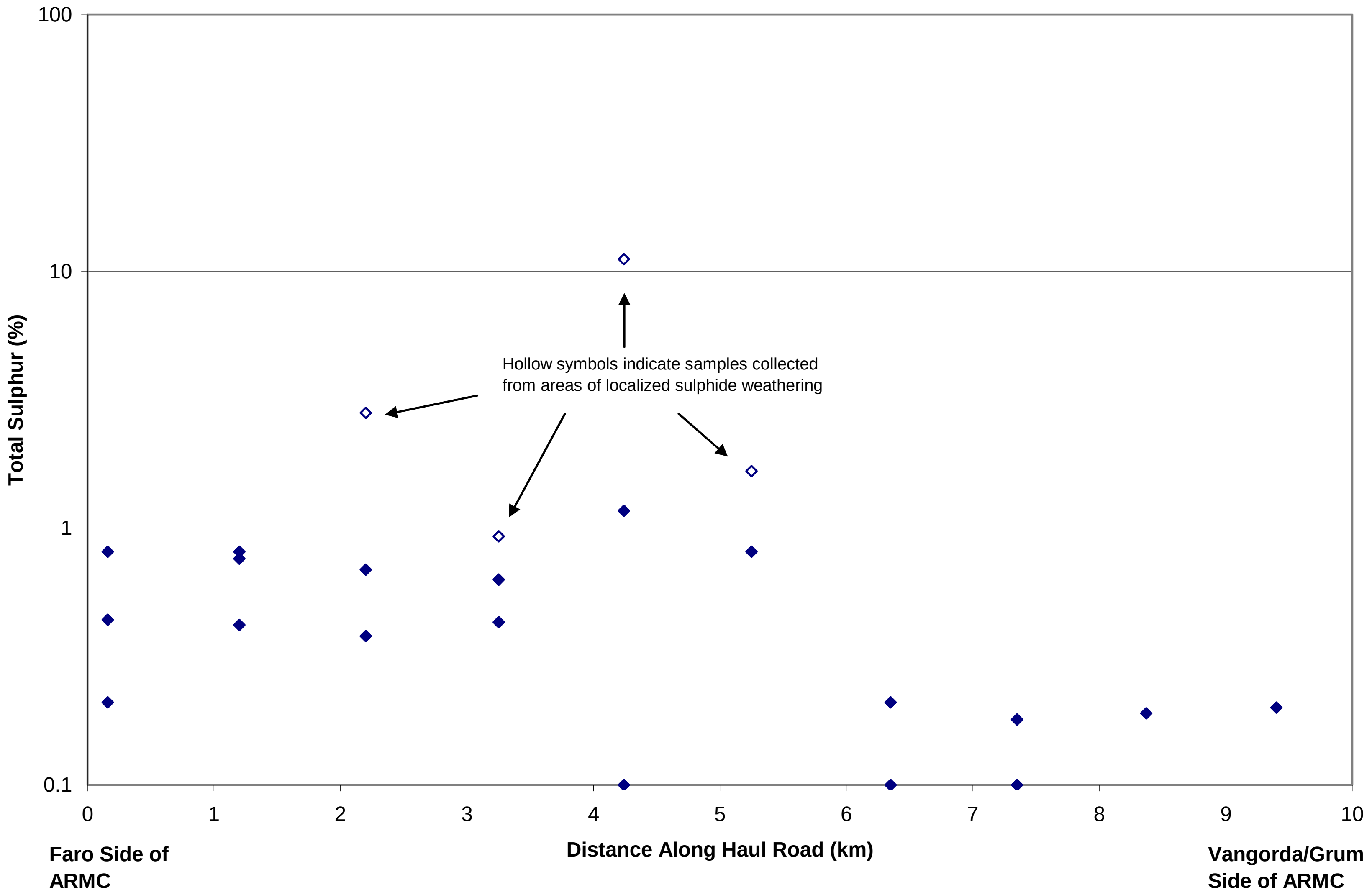


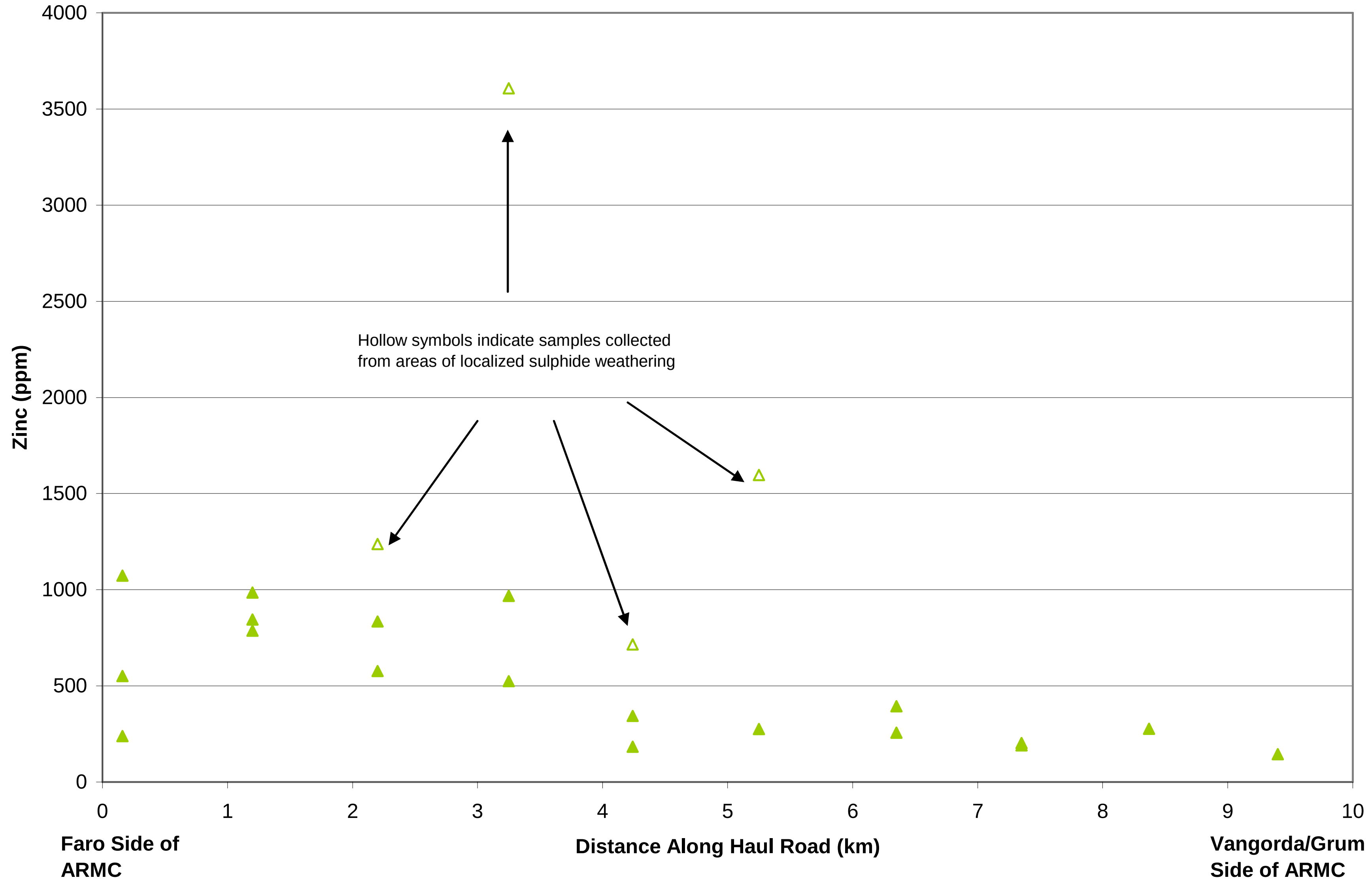
SRK Consulting Engineers and Scientists VANCOUVER	Deloitte & Touche	**NP vs AP**
Job No: 1CD003.092.0200 Filename: ABA Metals.rev2.xls	Anvil Range Mining Complex	Date: April 2008 / Approved: MCC / Figure: **3**



SRK Consulting Engineers and Scientists VANCOUVER	Deloitte & Touche	NP/AP Ratios Relative to Position along Road
Job No: 1CD003.092.0200 Filename: ABA Metals.rev2.xls	Anvil Range Mining Complex	Date: April 2008 / Approved: MCC / Figure: 4



SRK Consulting Engineers and Scientists VANCOUVER	Deloitte & Touche	Total Sulphur Concentrations Relative to Position along Road		
Job No: 1CD003.092.0200 Filename: ABA Metals.rev2.xls	Anvil Range Mining Complex	Date: April 2008	Approved: MCC	Figure: 5



SRK Consulting Engineers and Scientists VANCOUVER	Deloitte & Touche	**Total Zinc Concentrations Relative to Position along Road**
Job No: 1CD003.092.0200 Filename: ABA Metals.rev2.xls	Anvil Range Mining Complex	Date: April 2008 / Approved: MCC / Figure: **6**

Attachments

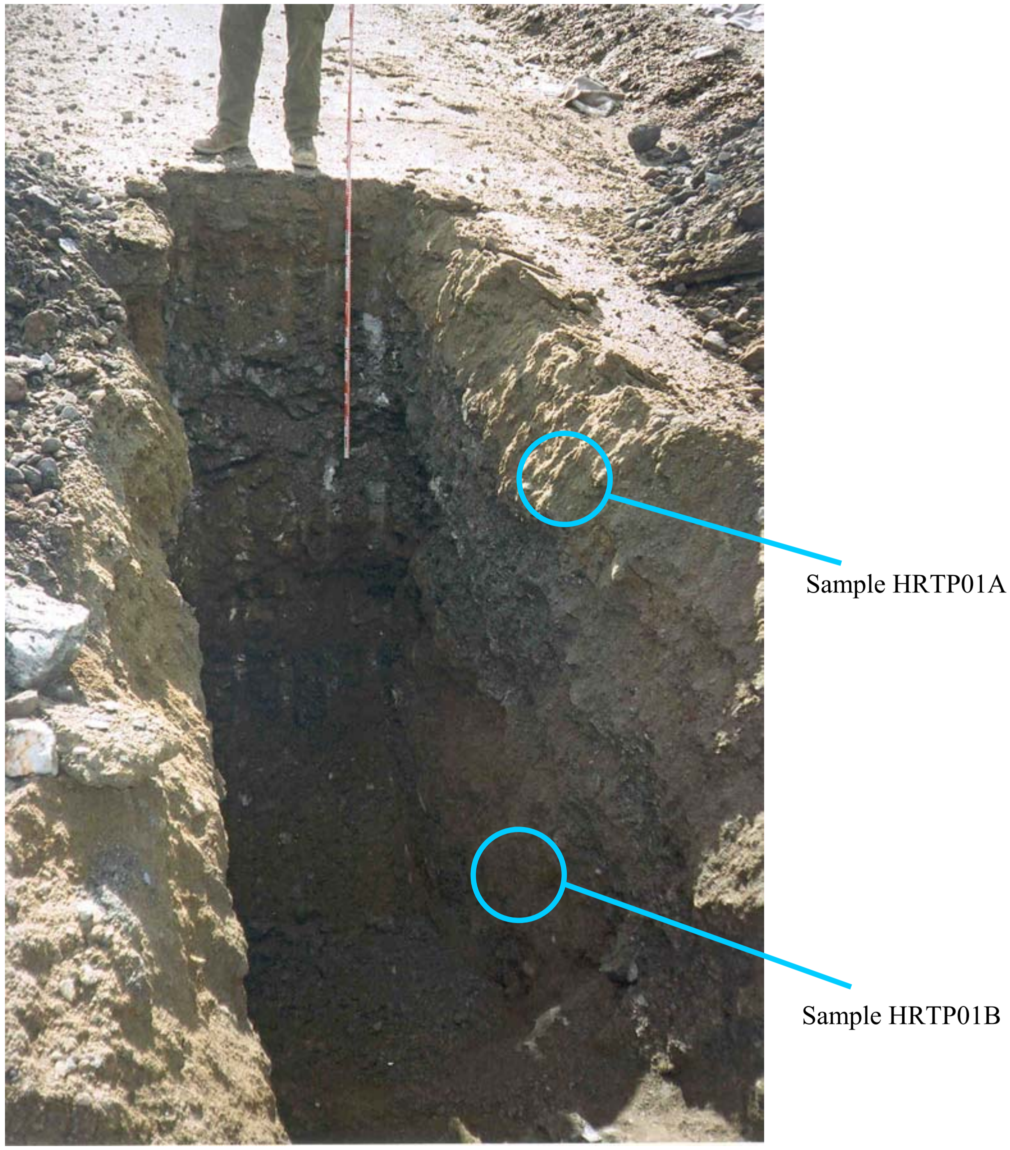
Attachment 1

2002 Haul Road Test Pitting Results

Taken from:

SRK 2004. Geochemical Studies Of Waste Rock at the Anvil Range Mining Complex: Phase 3 Report. June, 2004.

HRTP01



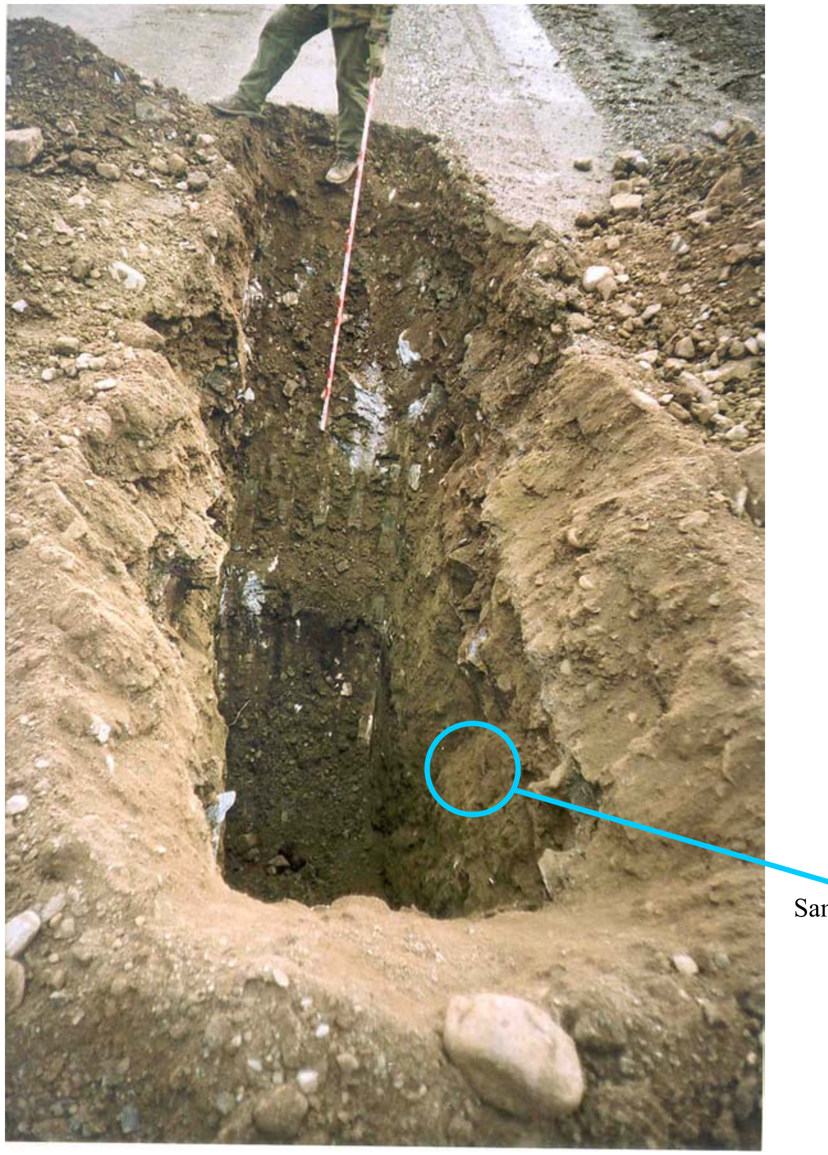
Photo# HRTP_01.jpeg

Description:
Pale brown gravel road surface overlies a medium grey horizon containing dark grey crenulated phyllite, massive pyrite with sphalerite and galena, and pyritic quartzite with sphalerite. 40 cm of pale reddish brown gravel constitute the third layer, which overlies a dark grey phyllite and sulphide waste horizon. The bottom 40 cm of the pit are in pale reddish brown gravel.

Samples collected:

Sample ID	Lab ID	Depth (cm)
HRTP01A	70912	30-100
HRTP01B	70913	180-220

HRTP02



Sample HRTP02A

Photo# HRTP_02.jpeg

Description:
100 cm of pale to medium brown gravel and calc-silicate riprap overlies pale olive brown till and calc-silicate schist, which locally contains minor organics.

Samples collected:

Sample ID	Lab ID	Depth (cm)
HRTP02A	70914	150

HRTP03

Sample HRTP03A

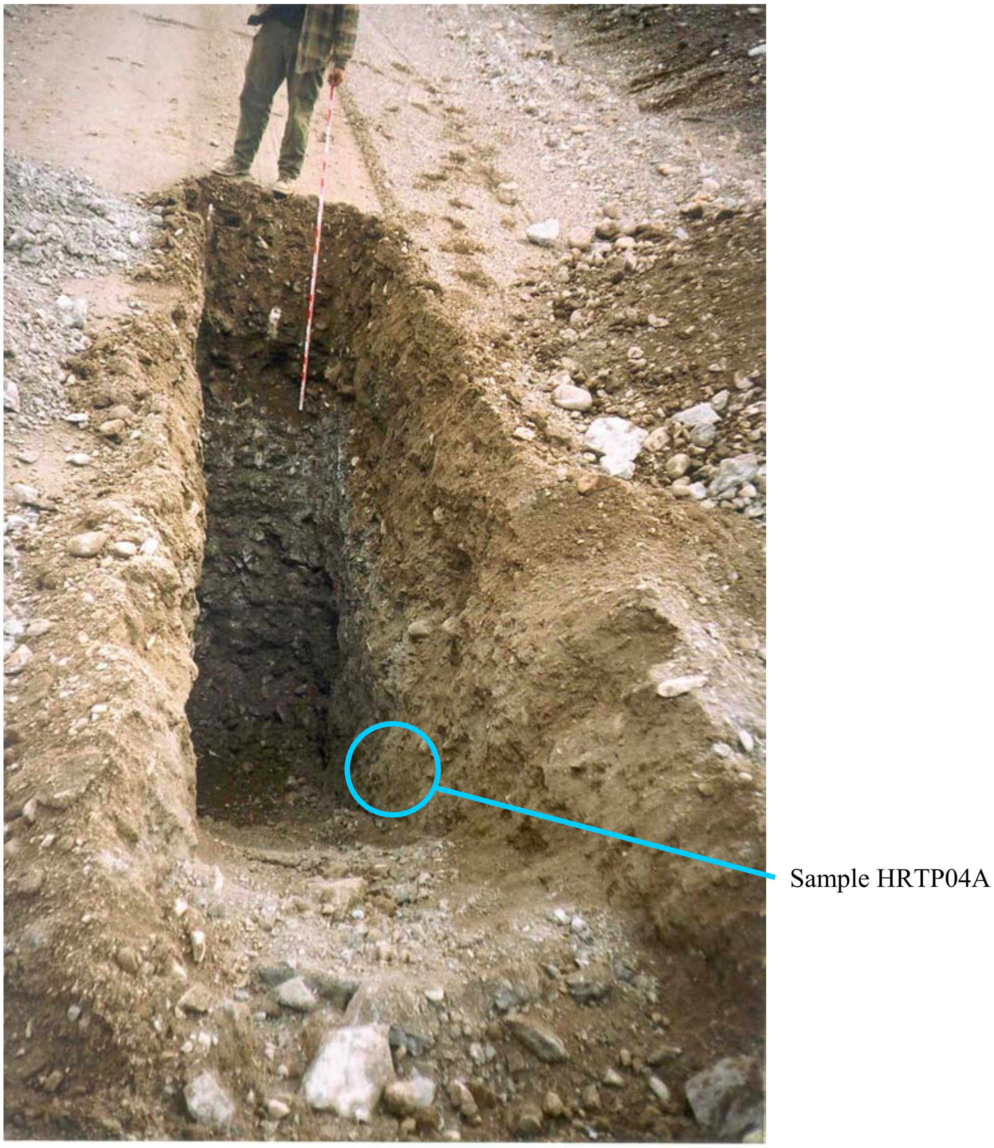
Photo# HRTP_03.jpeg

Description:
Pale brown sandy gravel road surface overlies pale green calc silicate waste with granular calcareous fines.

Samples collected:

Sample ID	Lab ID	Depth (cm)
HRTP03A	70915	200

HRTP04



Photo# HRTP_04.jpeg

Description:
Brown overburden and gravel cobbles make up road surface. Underlain by pale greenish grey mixed waste including chloritic schist, dark grey phyllite, calc-silicate schist, biotite muscovite schist, rare fine grained massive pyrite, pyritic quartzite with sphalerite and galena, and quartzite with chalcopyrite, all in a matrix of pale greenish grey non calcareous fines.

Samples collected:

Sample ID	Lab ID	Depth (cm)
HRTP04A	70916	200-300

HRTP05

Photo# HRTP_05.jpeg

Description:
50 cm brown gravel and sand traffic surface overlies a light greenish grey sandy clay with calc-silicate schist fragments and rare dark grey phyllite and rare pyrite in calc-silicate schist; matrix consists of medium greenish grey calcareous clay. Contains a wedge of pale orange brown oxidized quartz porphyry with weakly calcareous granular fines.

Samples collected:

Sample ID	Lab ID	Depth (cm)
HRTP05A	70917	150
HRTP05B	70918	220

Test Pit Sample Log

		Location					Sample Info					Grain size				Field Measurements			
Pit	Date	Area	Easting	Northing	Elevation	Acc (m)	Sample	Tag No	Notes	Rock Type	Sample Description	% > 1 cm	% < 1 cm	Fines description	Photo	pH	Cond (µs	Fizz	Colour
HRTP01	29-Sep	Haul Road	590797	6906632	1259.4	6	HRTP01A	70912	30-100 cm	grey phyllite + sulfides	30% dark grey crenulated phyllite, 10% (2E) mass py, sph, gn, 10% (2CD) py qtzite sph, 50% fines	50	50	med grey non-calc granular fines		5.9	2300	weak	med grey
							HRTP01B	70913	180-220 cm	grey phyllite + sulfides	Dark grey phyllite, 15% (2E), 5% (2CD)	50	50	dark grey granular fines		6.4	1000	weak	dark grey
HRTP02	29-Sep	Haul Road	589226	6908138	1225.1	6	HRTP02A	70914	150 cm	Till + calc-silicate	Pale olive brown till w/ rounded cobbles + angular calc-silicate schist			Pale olive rey-brown granular non-calc fines		6.9	200	strong	med green grey
HRTP03	29-Sep	Haul Road	587779	6909742	1231.8	5	HRTP03A	70915	200 cm	Calc-silicate	Pale green calc-silicate schist, 2-4 cm blocky	40	60	Pale greenish granular calc fines		8.7	500	strong	med green grey
HRTP04	29-Sep	Haul Road	586553	6911176	1190	6	HRTP04A	70916	200-300 cm	Chl schist	Mixed waste, chl schist, dark grey phyllite, calc-silicate schist, biot-musc qtz schist, rare fg mass py, pyritic quartzite with sph gn, qtzite w/ cpy	40	60	Pale greenish-grey non-calc fines		6.7	3200	weak	pale green grey
HRTP05	29-Sep	Haul Road	585291	6912509	1135.2	6	HRTP05A	70917	150 cm	Ox qtz porphyry	Pale orange brown oxidized qtz porphyry (10F)	40	60	Pale orange brown granular fines weakly calc		7.6	500	moderate	pale olive brown
							HRTP05B	70918	220 cm	Calc-silicate schist	Calc-silicate schist frags (3D0), rare dark grey phyllite, rare py in calc-silicate schist	40	60	Med greenish grey clay balls, calc		9.5	600	strong	pale green grey

Client : **SRK Consulting**
Project : **Faro - Part 2**
CEMI Project : **0248**
Test : **Modified Sobek Method Acid-Base Accounting**
Date : **January 31, 2003**

SAMPLE	Paste pH	S(T) %	S(SO4) %	AP	NP	Net NP	NP/AP	TIC %	Carbonate NP
70913	8.0	1.05	0.02	32.2	48.3	16.1	1.5	1.35	112.5
70915	8.5	0.36	0.02	10.6	64.4	53.8	6.1	0.80	66.7
70916	7.7	1.44	0.12	41.3	27.7	-13.6	0.7	1.22	101.7
70918	8.9	0.37	0.01	11.3	82.8	71.5	7.4	0.91	75.8

AP = Acid potential in tonnes CaCO3 equivalent per 1000 tonnes of material. AP is determined from calculated sulphide sulphur content: S(T) - S(SO4), assuming total conversion of sulphide to sulphate.

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

NET NP = Net neutralization potential = Tonnes CaCO3 equivalent per 1000 tonnes of material.

NOTE: Where S(T) is reported as <0.01%, a S(T) value of 0.01% is used for the AP calculation.
Where S(SO4) is reported as <0.01%, it is assumed to be zero for the AP calculation. (ie. if S(SO4) is less than 0.01% or is not analyzed, AP is calculated from S(T) only)

TIC = Total Inorganic Carbon as %C.

Carbonate NP calculated from total inorganic carbon (TIC) assay. TIC value of 0.01 is used in calculation if TIC <0.01%.

RE = Replicate.

Client : SRK Consulting
Project : Faro - Part 2
CEMI Project : 0248
Test : 96 Hour Leach Extraction Test
Date : January 28, 2003

SAMPLE	DISTILLED WATER VOLUME (mL)	SAMPLE WEIGHT (g)	pH	REDOX. (mV)	CONDUCTIVITY (uS/cm)	ALKALINITY (mg CaCO3/L)	ACIDITY (pH 4.5) (mg CaCO3/L)	ACIDITY (pH 8.3) (mg CaCO3/L)	SULPHATE (mg/L)
70916	750	250	7.79	310	1404	30.0	0.0	1.5	966

Attachment 2

Water Quality Data

		Field Parameters					Physical Tests		Dissolved Anions			
Sample ID	**Date Sampled**	pH (WTW)	Cond (uS/cm)	Temp (C)	ORP (mV)	Flow (L/min)	Cond (uS/cm)	Lab pH	Acidity (to pH 8.3) CaCO3	Alkalinity - Total CaCO3	Cl (mg/L)	SO4 (mg/L)
HR-09 d/s	29-May-07	8.1	302	1.4	228	<1	292	7.85	2	117	0.65	39.8
HR-09 u/s	29-May-07	8.18	178	5.5	211	trace	186	7.62	3	86.3	0.51	5.74
HR-03 d/s	30-May-07	7.87	112	0.9	250	500	104	7.49	2	54.9	0.3	4.12
HR-03 u/s	30-May-07	8.14	112	0.6	230	500	107	7.43	3	53.7	0.3	4.17
HR-04 d/s	30-May-07	7.56	34	2.3	309	>>1000	38	7.14	1	17.2	0.23	3.21
HR-04 u/s	30-May-07	7.75	34	2	305	>>1000	32	7.01	2	15.6	0.23	3.21
HR-05 d/s	30-May-07	7.55	43	0.6	275	1000	47	7.24	2	21.7	0.31	2.81
HR-05 u/s	30-May-07	7.47	42	0.4	240	1000	43	7.08	2	20.2	0.31	2.77
HR-07 d/s	30-May-07	7.35	109	3.3	246	1000	100	7.28	2	32.3	0.3	19.3
HR-07 u/s	30-May-07	7.35	180	3.9	236	1000	101	7.25	2	30.4	0.32	19.2
HR-01 d/s	16-Sep-07	6.54	384	4.4	145	10	377	8.06	4.2	133	<0.50	74.2
HR-01 u/s	16-Sep-07	6.88	298	2.3	114	20	290	8.18	2	138	<0.50	21.1
HR-02 d/s	16-Sep-07	6.27	86	3.2	132	500	83.1	8.08	2.6	44.7	<0.50	1.63
HR-02 u/s	16-Sep-07	6.31	78	3.1	108	500	79.8	8.13	2.1	43.1	<0.50	1.5
HR-03 d/s	16-Sep-07	6.68	175	3.4	87	500	171	8.11	2.8	86	<0.50	8.14
HR-03 u/s	16-Sep-07	6.63	174	3.5	88	500	169	8.05	3.1	80.8	<0.50	7.89
HR-04 d/s	16-Sep-07	6.53	56	6	142	>1000	53.6	8.03	2.6	18.3	<0.50	7.51
HR-04 u/s	16-Sep-07	6.42	56	6	149	>1000	53.8	8.09	2.2	19.7	<0.50	7.34
HR-05 d/s	16-Sep-07	6.57	72	4	122	500	68	8	3	28.8	<0.50	5.77
HR-05 u/s	16-Sep-07	6.43	71	4	109	500	67.9	7.98	3.4	29.5	<0.50	5.83
HR-06 d/s	16-Sep-07	6.49	372	8.5	92	1	357	8.17	2.4	191	<0.50	25.5
HR-06 u/s	16-Sep-07	6.73	263	8	80	no flow	252	8.11	3	122	<0.50	17.3
HR-07 d/s	16-Sep-07	6.84	177	6	90	500	176	6.88	6.9	54.1	<0.50	35
HR-07 u/s	16-Sep-07	6.73	197	7	94	500	168	8.09	2.9	55.98	<0.50	29.4
HR-08 d/s	16-Sep-07	6.39	62	4.5	199	>1000	66.1	8.2	1.4	27.8	<0.50	7.2
HR-08 u/s	16-Sep-07	6.39	60	4.3	184	>1000	59.4	8.12	2.1	25.5	<0.50	4.99

	Dissolved Metals (mg/L)															
Sample ID	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg
HR-09 d/s	0.014	<0.0002	0.0009	0.05	<0.0002	<0.0002	<0.01	0.00008	55.8	<0.0002	<0.0002	0.0022	<0.01	0.001	0.003	6.56
HR-09 u/s	0.03	<0.0002	0.0007	0.023	<0.0002	<0.0002	<0.01	0.00003	38.8	<0.0002	<0.0002	0.0016	0.02	0.0005	0.001	1.81
HR-03 d/s	0.02	<0.0002	0.0006	0.014	<0.0002	<0.0002	<0.01	0.00001	20.2	<0.0002	<0.0002	0.0011	0.06	0.0002	<0.001	2.24
HR-03 u/s	0.02	<0.0002	0.0005	0.014	<0.0002	<0.0002	<0.01	0.00001	19.9	<0.0002	<0.0002	0.0011	0.05	<0.0002	<0.001	2.23
HR-04 d/s	0.032	<0.0002	0.0003	0.015	<0.0002	<0.0002	<0.01	0.00001	4.76	<0.0002	<0.0002	0.0005	0.21	<0.0002	<0.001	0.73
HR-04 u/s	0.032	<0.0002	0.0003	0.016	<0.0002	<0.0002	<0.01	<0.00001	4.74	<0.0002	<0.0002	0.0006	0.22	<0.0002	<0.001	0.72
HR-05 d/s	0.086	<0.0002	0.0006	0.019	<0.0002	<0.0002	<0.01	0.00002	6.52	<0.0002	<0.0002	0.0012	0.08	0.0002	<0.001	1.16
HR-05 u/s	0.087	<0.0002	0.0006	0.018	<0.0002	<0.0002	<0.01	0.00002	6.46	<0.0002	<0.0002	0.0014	0.07	0.0003	<0.001	1.14
HR-07 d/s	0.093	<0.0002	0.0018	0.022	<0.0002	<0.0002	<0.01	0.00001	15.7	<0.0002	<0.0002	0.0012	0.22	0.0005	<0.001	3.79
HR-07 u/s	0.084	<0.0002	0.0019	0.026	<0.0002	<0.0002	<0.01	0.00005	19.8	<0.0002	0.0003	0.0011	0.25	0.0008	<0.001	4.74
HR-01 d/s	0.0027	<0.00010	0.00048	0.0309	<0.00050	<0.00050	<0.010	0.00149	61.5	<0.00050	<0.00010	0.00161	<0.030	0.000185	<0.0050	12
HR-01 u/s	0.0038	<0.00010	<0.00020	0.0194	<0.00050	<0.00050	<0.010	<0.000050	56.6	<0.00050	<0.00010	0.00116	0.052	0.000248	<0.0050	4.67
HR-02 d/s	0.0138	<0.00010	0.00024	0.0154	<0.00050	<0.00050	<0.010	<0.000050	13.8	<0.00050	<0.00010	0.00072	<0.030	0.000057	<0.0050	1.57
HR-02 u/s	0.0148	<0.00010	0.00025	0.0151	<0.00050	<0.00050	<0.010	<0.000050	13	<0.00050	<0.00010	0.00059	<0.030	0.00013	<0.0050	1.51
HR-03 d/s	0.0074	<0.00010	0.00032	0.0199	<0.00050	<0.00050	<0.010	<0.000050	31.6	<0.00050	<0.00010	0.0006	0.094	0.000162	<0.0050	3.17
HR-03 u/s	0.0068	<0.00010	0.00033	0.0193	<0.00050	<0.00050	<0.010	<0.000050	31.3	<0.00050	<0.00010	0.00068	0.053	0.000067	<0.0050	3.15
HR-04 d/s	0.0123	<0.00010	0.00026	0.0194	<0.00050	<0.00050	<0.010	<0.000050	7.52	<0.00050	<0.00010	0.00042	0.083	0.00026	<0.0050	1.15
HR-04 u/s	0.0124	<0.00010	0.00029	0.02	<0.00050	<0.00050	<0.010	<0.000050	7.61	<0.00050	<0.00010	0.0004	0.075	0.000149	<0.0050	1.16
HR-05 d/s	0.0219	<0.00010	0.00024	0.0258	<0.00050	<0.00050	<0.010	<0.000050	9.99	<0.00050	<0.00010	0.0006	<0.030	<0.000050	<0.0050	1.8
HR-05 u/s	0.0235	<0.00010	0.00025	0.026	<0.00050	<0.00050	<0.010	<0.000050	9.92	<0.00050	<0.00010	0.00064	<0.030	0.000345	<0.0050	1.8
HR-06 d/s	0.0016	<0.00010	0.00034	0.0758	<0.00050	<0.00050	<0.010	0.000098	68.7	<0.00050	<0.00010	0.00044	<0.030	0.000332	<0.0050	7.11
HR-06 u/s	0.0078	0.00013	0.00316	0.0447	<0.00050	<0.00050	<0.010	<0.000050	48.2	<0.00050	<0.00010	0.00095	0.044	0.00211	<0.0050	4.59
HR-07 d/s	0.0288	<0.00010	0.00138	0.0251	<0.00050	<0.00050	<0.010	<0.000050	24.8	<0.00050	<0.00010	0.00059	0.159	0.000354	<0.0050	5.54
HR-07 u/s	0.0242	<0.00010	0.00138	0.0244	<0.00050	<0.00050	<0.010	<0.000050	25.2	<0.00050	<0.00010	0.00058	0.145	0.000218	<0.0050	5.04
HR-08 d/s	0.01	<0.00010	0.00015	0.0162	<0.00050	<0.00050	<0.010	<0.000050	9.92	<0.00050	<0.00010	0.00087	<0.030	0.000195	<0.0050	1.48
HR-08 u/s	0.0139	<0.00010	0.00015	0.0166	<0.00050	<0.00050	<0.010	<0.000050	9.01	<0.00050	<0.00010	0.00063	0.293	0.000607	<0.0050	1.19

Sample ID	Mn	Mo	Ni	P	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	U	V	Zn
HR-09 d/s	0.055	<0.0001	0.0013	<0.03	1.95	<0.0002	3.35	<0.00005	0.98	0.279	<0.00002	<0.0002	0.0003	0.0012	<0.0002	1.59
HR-09 u/s	0.006	<0.0001	0.0007	<0.03	1.42	<0.0002	2.35	<0.00005	0.76	0.194	<0.00002	<0.0002	0.0005	0.0006	<0.0002	0.012
HR-03 d/s	0.0088	<0.0001	0.0004	<0.03	0.8	<0.0002	3.71	<0.00005	1.21	0.097	<0.00002	<0.0002	0.0004	0.0023	<0.0002	0.006
HR-03 u/s	0.0075	<0.0001	0.0005	<0.03	0.78	<0.0002	3.71	<0.00005	1.22	0.093	<0.00002	<0.0002	0.0005	0.0022	<0.0002	<0.005
HR-04 d/s	0.01	0.0002	0.0002	<0.03	0.77	<0.0002	2.28	<0.00005	0.88	0.027	<0.00002	<0.0002	0.0006	0.0004	0.0003	<0.005
HR-04 u/s	0.011	0.0002	0.0002	<0.03	0.79	<0.0002	2.32	<0.00005	0.87	0.027	<0.00002	<0.0002	0.0006	0.0004	0.0003	<0.005
HR-05 d/s	0.012	<0.0001	0.0005	<0.03	0.7	<0.0002	3.41	<0.00005	1.06	0.031	<0.00002	<0.0002	0.0007	0.0008	<0.0002	<0.005
HR-05 u/s	0.014	<0.0001	0.0005	<0.03	0.7	<0.0002	3.36	<0.00005	1.06	0.031	<0.00002	<0.0002	0.0007	0.0008	<0.0002	<0.005
HR-07 d/s	0.044	<0.0001	0.0007	<0.03	0.69	<0.0002	3.26	<0.00005	1.08	0.061	<0.00002	<0.0002	0.0009	0.0011	0.0002	0.011
HR-07 u/s	0.08	<0.0001	0.0007	<0.03	0.76	<0.0002	3.17	<0.00005	1.06	0.08	<0.00002	<0.0002	0.0008	0.0014	0.0002	0.016
HR-01 d/s	<0.00020	0.0001	0.00485	<0.30	2.7	<0.0010	4.59	<0.000010	2.1	0.305	<0.00010	<0.00010	<0.010	0.000891	<0.0010	0.68
HR-01 u/s	<0.00040	0.00008	<0.00050	<0.30	2.5	<0.0010	4.17	<0.000010	<2.0	0.273	<0.00010	<0.00010	<0.010	0.000978	<0.0010	<0.0060
HR-02 d/s	0.000732	<0.000050	<0.00050	<0.30	<2.0	<0.0010	6.43	<0.000010	2.1	0.0721	<0.00010	<0.00010	<0.010	0.000731	<0.0010	0.0018
HR-02 u/s	0.000662	<0.000050	<0.00050	<0.30	<2.0	<0.0010	6.38	<0.000010	2	0.0701	<0.00010	<0.00010	<0.010	0.000682	<0.0010	0.0028
HR-03 d/s	0.0128	0.000083	<0.00050	<0.30	<2.0	<0.0010	5.31	<0.000010	<2.0	0.143	<0.00010	<0.00010	<0.010	0.00454	<0.0010	0.0059
HR-03 u/s	0.00714	0.000094	<0.00050	<0.30	<2.0	<0.0010	5.36	<0.000010	<2.0	0.142	<0.00010	<0.00010	<0.010	0.00459	<0.0010	0.0015
HR-04 d/s	0.00417	0.000178	<0.00050	<0.30	<2.0	<0.0010	3.9	<0.000010	<2.0	0.0418	<0.00010	<0.00010	<0.010	0.000247	<0.0010	0.0011
HR-04 u/s	0.00439	0.000195	<0.00050	<0.30	<2.0	<0.0010	3.96	<0.000010	<2.0	0.0423	<0.00010	<0.00010	<0.010	0.000255	<0.0010	0.002
HR-05 d/s	0.000564	0.000118	<0.00050	<0.30	<2.0	<0.0010	5.05	<0.000010	<2.0	0.0467	<0.00010	<0.00010	<0.010	0.00037	<0.0010	0.0015
HR-05 u/s	0.000682	0.000107	<0.00050	<0.30	<2.0	<0.0010	5.04	<0.000010	<2.0	0.0468	<0.00010	<0.00010	<0.010	0.000365	<0.0010	0.0016
HR-06 d/s	0.00163	0.000172	<0.00050	<0.30	<2.0	<0.0010	2.93	<0.000010	<2.0	0.257	<0.00010	<0.00010	<0.010	0.000868	<0.0010	0.0086
HR-06 u/s	0.0165	0.000493	<0.00050	<0.30	<2.0	<0.0010	2.66	<0.000010	<2.0	0.192	<0.00010	<0.00010	<0.010	0.00172	<0.0010	0.0083
HR-07 d/s	0.0174	0.000093	<0.00050	<0.30	<2.0	<0.0010	5.44	<0.000010	<2.0	0.1	<0.00010	<0.00010	<0.010	0.0013	<0.0010	0.0119
HR-07 u/s	0.0152	0.000127	<0.00050	<0.30	<2.0	<0.0010	5.28	<0.000010	<2.0	0.103	<0.00010	<0.00010	<0.010	0.00125	<0.0010	0.008
HR-08 d/s	0.000245	0.000056	<0.00050	<0.30	<2.0	<0.0010	4.96	<0.000010	<2.0	0.0519	<0.00010	<0.00010	<0.010	0.000527	<0.0010	0.0021
HR-08 u/s	0.000719	0.000073	<0.00050	<0.30	<2.0	<0.0010	5.06	<0.000010	<2.0	0.0492	<0.00010	<0.00010	<0.010	0.000555	<0.0010	0.0036

Attachment 3

Haul Road Mapping Summary

Test Pit No.	Mapping Summary	Sample	Sample Comments
HRM-01	- boulders: rounded granitoid (25%), calc-silicate (30%), 1D schist (20%), 1D4 schist (20%), qtz porphyry (5%) - occassional rusty-coloured staining along fractures along fractures of schists and along qtz viens; some chunks more weathered w deep red staining + yellow and white salts - occassional chunks of schist with visible brassy-coloured sulphides along qtz veins (~1% of rocks)	A	- 50% < 1cm; fines brown with some grey micaceous material; small platey pieces of schist, occassionally with rusty coloured staining along layers; rounded qtz chunks + variety of other rock types
		B	- 50% < 1cm; fines brown silt; angular chunks of 1D4 schist + chloritic schist + qtz
		C	- 60% < 1 cm; much higher clay content that "B"; fines brown; wet clumps of material; clasts of a variety of rock chunks
HRM-02	- much fewer large boulders than HRM01; rock frags 1 - 12" mix of schist, granitoid, dioite, calc-silicates - fines mostly brown till material, some rusty coloured blebs - minor brass-coloured sulphides observed along qtz veins in schist; some rusty-coloured staining	A	- 50% < 1 cm; brown sandy till with occas. rusty coloured blebs; rounded chunks of schist, granitoid + qtz with minor rusty-coloured staining
		B	- 50% < 1 cm; brown, sandy; chunks of 1D + chlorite schist, granitoid, calc-silicate, qtz
		C	- 50% < 1 cm; brown with lots of rusty-coloured blebs; platey pieces of light-coloured schist (1 cm up to 10's of cm), qtz, darker schist, calc-silicate
HRM-03	- same mix of rock types but dominantly lighter-coloured schist; one dumpload of primarily qtz porphyry rock	A	- 50% <1 cm; brown, also some purple-brown finer seds; bit of rusty-coloured blebs; mix of clasts mostly various coloured schists (pinky, green, dark grey)
		B	- 50% <1cm; mostly dk grey, very micaceous fines; big chunk weathering sulphide - yellow and grey-green; rusty-coloured fines
		C	- 50% <1cm; dk grey, bit of brown, clumpier than "B"; frags mostly lighter schist, some dk grey schist w rusty-coloured staining
HRM-04	- all rock types observed, larger proportion of darker schist in all size fractions, also 1D4 variety - occassional chunks of massive sulphide (<1% total)	A	- 40% <1cm; med. Grey brown; micaceous
		B	- 50% <1cm, brown with maroon tinge; sulphides on adjacent qtz chunk
		C	- 40% <1cm; mostly rusty-coloured + med. Grey-brown; localized area of massive sulphide weathering
HRM-05	- mix of rocks dominated by darker schist and calc-silicate; few large boulders	A	- 60% <1cm; med grey w rusty-coloured blebs; high clay content
		B	- 60% <1cm; brown; higher clay content than "A"
		C	- massive sulphide weathering; abundant sulphides in sample with rusty-coloured seds

HRM-06	- more till material than previous sites; also more abundant quartz porphyry - up to 50% of larger pieces (3 - 30 cm), some show evidence of sulphides being preferentially weathered	A	- 70%<1cm; rusty-coloured seds admist maroon/brown clay-rich seds; beneath qtz porphyry rocks rich in sulphides; visible sulphides in sample
		B	- this sample is more typical of the area; mostly brown clay-rich seds with some light pink seds as well
HRM-07	- rock frags mostly till (60%), calc-silicate (30%), dark-coloured schist (10%), bit of 1D4 schist; brown fines	A	- 50%<1cm; brown, earthy smell; mix of clasts; more sandy than other similar brown seds
		B	same as "A"
HRM-08	- mostly till with med-dark grey schist dumped on upper section of embankment; may be excavated section into till below; evidence of sulphide weathering along qtz veins in schist	A	- similar to "7A" and "7B"; brown till, some rusty-coloured blebs, lots of organics
	- fines brown, more grey in some areas; lots of vegetation	B	- rusty-coloured brown seds (90%) mixed with grey/brown clay-rich material
HRM-09	- cobbles very uniform in size (1 - 3 cm); primarily till but also contains schists, granitoid frags, qtz w bit of rusty-coloured staining; fines brown	A	- brown till
HRM-10	- higher schist content here than at HRM-09, but still primarily till; fines brown w some med grey; more rusty-coloured staining	A	- brown till + grey schist content

Attachment 4

Geochemical Mapping Samples Metals Results

CANTEST Ltd. 4606 Canada Way, Burnaby, BC Canada V5G 1K5 Tel: 604 734 7276 Fax: 604 731 2386 www.cantest.com

SRK Consulting, Faro, 8-Feb-08

Trace Metals Using Aqua Regia Digestion with ICP-MS Finish - March 2008

S. No:	Sample ID	Ag	Al	As	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	Hg	K	La	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sc	Se	Sr	Te	Th	Ti	Tl	U	V	W	Y	Zn
		ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppb	%	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
36	HRM-01-A	0.8	1.84	32	216	1.7	1.26	3.1	21.8	75	64	5.59	6.3	243	0.34	14.2	1.33	743	4.0	0.06	54.8	681	378	0.81	0.1	5.7	<0.5	47	<0.5	6.7	0.01	0.5	1.7	52	0.2	9.3	1073
37	HRM-01-B	0.2	2.2	24	224	0.4	0.85	0.7	21.5	80	43	4.88	8.3	161	0.85	8.0	1.10	549	3.2	0.06	48.8	576	95	0.21	0.1	7.4	<0.5	36	<0.5	3.5	0.07	0.4	0.6	64	0.1	6.1	238
38	HRM-01-C	0.5	2.24	12	382	0.8	2.16	1.9	19.5	72	56	4.53	8.5	214	0.54	18.5	1.34	573	2.0	0.08	53.5	604	316	0.44	0.2	7.1	<0.5	69	<0.5	8.4	0.03	0.5	1.1	51	0.1	9.8	552
39	HRM-02-A	0.8	1.86	12	236	2.4	0.88	2.4	23.2	88	54	5.11	6.9	139	0.35	15.4	1.14	794	3.0	0.07	54.5	693	219	0.42	0.2	6.3	<0.5	44	<0.5	6.6	0.02	0.7	1.0	45	0.2	9	845
40	HRM-02-B	0.8	2.84	44	247	1.1	2.80	1.7	24.7	122	114	6.24	8.9	213	0.63	17.7	1.66	665	2.7	0.09	87.4	721	675	0.76	0.3	6.9	<0.5	102	<0.5	7.8	0.04	0.7	1.1	62	0.3	9.5	985
41	HRM-02-C	1.2	1.26	51	270	0.6	0.64	1.1	23.9	65	98	6.55	4.6	325	0.37	18.7	0.82	920	2.7	0.05	52.4	646	734	0.81	1.0	5.6	<0.5	27	<0.5	8.2	0.01	2.7	1.2	36	0.2	8.4	788
42	HRM-03-A	1.1	2.47	16	306	2.1	1.16	2.0	20.2	73	107	6.10	8.2	139	0.56	11.2	1.41	722	2.1	0.07	46.7	689	309	0.38	0.2	6.3	<0.5	43	<0.5	6.0	0.03	0.5	1.1	47	0.4	6.5	577
43	HRM-03-B	1.5	1.22	67	107	1.3	0.79	1.9	25.2	61	196	7.70	4.9	373	0.29	7.8	0.88	531	3.7	0.06	45.3	774	899	2.81	0.8	4.2	<0.5	38	<0.5	5.1	<0.01	0.4	1.6	32	0.2	6.5	1237
44	HRM-03-C	0.5	2.48	10	282	0.4	0.86	1.2	21	88	61	6.04	7.9	300	0.73	7.1	1.43	480	3.8	0.05	53.7	879	409	0.69	0.2	5.8	<0.5	32	<0.5	3.7	0.04	0.4	1.4	49	0.2	5.3	835
45	HRM-04-A	0.7	1.91	22	471	0.4	0.52	1.0	20	72	42	5.96	5.9	598	0.29	6.3	1.13	493	2.3	0.05	41.2	542	562	0.63	0.3	3.9	<0.5	23	<0.5	4.7	<0.01	0.3	1.0	32	0.1	5	968
46	HRM-04-B	0.4	1.73	26	304	0.4	1.31	0.9	21.3	109	47	5.22	6.4	197	0.35	9.6	1.32	609	3.8	0.06	61.6	715	253	0.43	0.3	6.1	<0.5	67	<0.5	5.1	0.01	0.3	1.0	42	0.1	7.2	525
47	HRM-04-C	1.5	1.62	32	156	0.5	1.28	4.2	18.5	69	203	5.64	5.9	1353	0.23	9.9	0.82	468	3.3	0.07	33.5	675	1207	0.93	2.2	4.4	<0.5	52	<0.5	5.6	0.01	1.7	1.0	37	0.2	6.3	3607
48	HRM-05-A	0.3	1.9	5	183	0.6	2.06	0.5	33.4	40	174	4.67	7.6	81	0.10	11.1	1.55	497	1.7	0.09	61.5	1255	65	1.17	0.1	10.8	<0.5	86	<0.5	3.2	0.01	0.1	0.3	121	0.2	7.9	183
49	HRM-05-B	0.4	2.39	6	477	0.8	3.50	1.4	14.1	80	54	3.93	7.7	70	0.37	20.4	1.27	739	2.6	0.10	35.5	707	213	0.10	0.2	6.4	<0.5	111	<0.5	7.8	0.02	0.2	1.0	54	0.3	10	344
50	HRM-05-C	1.6	1.6	174	38	0.7	1.04	1.0	20.6	59	115	15.48	5.7	246	0.26	8.8	0.68	332	3.1	0.09	28.6	492	705	11.18	1.0	3.6	<0.5	47	<0.5	4.5	0.01	0.4	0.6	29	0.4	4.9	716
51	HRM-06-A	1.4	0.53	14	121	1.8	0.41	1.6	35.2	53	282	7.00	2.9	576	0.21	7.5	0.24	381	3.7	0.05	50.5	313	664	1.67	0.4	4.5	<0.5	25	<0.5	13.2	<0.01	4.2	4.9	22	0.3	12.5	1597
52	HRM-06-B	0.5	1.12	8	189	3.6	0.69	0.5	25.1	76	169	5.27	4.1	98	0.40	6.0	0.90	475	3.6	0.06	40.5	443	96	0.81	0.2	4.8	<0.5	41	<0.5	3.7	0.02	0.5	1.0	33	0.1	5.8	276
53	HRM-07-A	0.4	3.86	17	264	0.5	3.75	0.5	16.4	92	41	4.58	11.8	122	0.78	22.7	2.51	429	3.0	0.14	38.7	519	229	0.21	0.3	7.5	<0.5	295	<0.5	8.6	0.07	0.4	1.0	47	0.2	10.2	394
54	HRM-07-B	0.3	2.98	14	173	0.5	3.29	0.4	12.6	81	32	3.17	9.2	108	0.40	19.5	0.85	375	3.2	0.14	31.8	490	163	0.10	0.2	4.7	<0.5	340	<0.5	7.8	0.04	0.3	1.2	35	0.2	8.7	257
55	HRM-08-A	0.2	1.88	11	139	0.2	4.23	0.2	16.3	74	37	3.95	5.4	64	0.14	23.9	1.28	705	3.7	0.05	37.7	515	74	0.10	0.1	3.1	<0.5	133	<0.5	10.8	<0.01	0.1	1.0	23	0.1	8.4	191
56	HRM-08-B	0.3	2.69	11	150	16.9	2.81	0.4	16.5	69	79	4.28	9.9	147	0.36	26.7	0.83	533	2.4	0.14	38.9	561	100	0.18	0.5	5.9	<0.5	276	<0.5	10.6	0.04	0.5	2.5	32	16.8	9.8	203
57	HRM-09-A	0.2	1.33	15	186	3.7	2.12	0.3	13.9	48	31	3.00	8.6	66	0.13	27.9	0.88	481	12.1	0.05	33.5	569	129	0.19	0.3	5.3	0.1	83	0.0	7.2	<0.01	0.3	2.9	18	1.8	10.7	277
58	HRM-10-A	0.1	1.23	6	94	0.1	3.52	0.1	15.4	41	31	3.73	4.0	59	0.11	18.3	1.29	438	2.0	0.05	37.6	550	62	0.20	0.1	2.2	<0.5	125	<0.5	11.0	<0.01	0.1	1.0	16	0.1	6.2	145
Detection Limits		0.1	0.01	0.5	1	0.1	0.01	0.1	0.1	1	0.2	0.01	1	0.01	0.01	1	0.01	5	0.1	0.01	0.2	0.001	0.2	0.05	0.1	0.1	0.5	1	0.05	0.2	0.005	0.1	0.1	2	0.1	2	1

Analysis done at Global Discovery Labs (Teck Cominco)

Appendix B
Northwest Dumps Investigation

Appendix B.1
Memo: Northwest Dumps Investigation

SRK Consulting
Engineers and Scientists

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Suite 2200 – 1066 West Hastings Street
Vancouver, B.C. V6E 3X2
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Memo

To:	File	**Date:**	July 21, 2007
cc:		**From:**	Dylan MacGregor
Subject:	ARMC 2007/08 Task 28-Supplemental Geochemical Studies: NW Dumps Investigation	**Project #:**	1CD003.092

A site visit was carried out by a SRK geochemist (Dylan MacGregor) on July 3, 2007, to delineate high-sulphide material stored in the Northwest Dumps, and in particular that material located within the Upper Guardhouse Creek catchment (as defined by pre-mining topography). This material is under consideration for relocation as part of early reclamation. Two ARMC summer students (John Minder and Chris Croy) accompanied the SRK geochemist for briefing purposes in anticipation of the students supervising the relocation activities.

In addition to material delineation, two water quality samples were collected from Upper Guardhouse Creek, as this stream receives seepage from the Northwest Dumps but has not been monitored as part of the routine monitoring program defined by the water licence. A station in the Northwest Interceptor Ditch was monitored several times during the 1990s, with zinc concentrations ranging from 0.006 to 0.52 mg/L.

1 Observations

- The upper lobe of the Northwest Dump (UNWD) is largely within the boundary of the surface catchment of Upper Guardhouse Creek, as defined by the pre-mining topography (Figure 1). There are two discrete piles of high sulphide material sitting on top of the dump surface (Stockpiles 1 and 2 in Figure 1); the bulk of the dump itself appears to be clean hornblende quartz diorite.

  – The northwest pile (Stockpile 1) consists of a prism of rusty orange-stained material (probably Unit 1D4) containing about 10% purplish-black stained pyritic quartzite boulders. This material has been dozed such that it forms a wedge sloping gently to the northeast; the shape of the steep face of the wedge does not suggest that material has been excavated from this pile. The entire volume of Stockpile 1 could be re-handled using a loader- an excavator would not be required.

    There are two significant surface run-off pathways (one active, one relict) that are heavily stained with orange precipitate; these pathways lead directly from the toe of the sulphide pile (as is visible on the aerial photograph) and report over the crest of the dump to the southwest. Both flowpaths were dry at the time of the July 2007 inspection. Ditching along the current flowpath indicates that the flow was diverted approximately 50 m to the east (away from Upper Guardhouse Creek) from its original point of discharge over the dump crest. Willow growth in a portion of the ditch along the relict flowpath indicates that these runoff management measures were taken some time ago, probably during active mining operations.

    There is a large zone of dead vegetation directly downgradient of the dump toe below Stockpile 1, as indicated by the grey zone in the aerial photograph shown in Figure 1.

- The southeast pile (Stockpile 2) consists of approximately 50 truckloads of free-dumped material of two distinct compositions (as is visible on the aerial photograph). One material type is orange-stained sulphide waste (Unit 1D4) with purplish-black pyritic quartzite boulders, as described for the northwest pile above. The other material type is a very pale yellow pyritic sand (unit unknown)- this material has rapidly slaked from it's original structure and is highly acidic (based on visual observations of highly-corroded rocks where schist and other lithologies contact this material, on the bright untarnished appearance of the pyrite at the individual dump scale, and on observations of haloes of unstained rock surrounding orange-stained surfaces where clasts protrude out of the pyritic sand). This material should be a high priority candidate for relocation.

  A portion of the safety berm adjacent to the southeast pile appears to be composed of similar material, is included within the perimeter of Stockpile 2 in Figure 1, and should be relocated at the same time as the main pile. Re-handling the safety berm material will require an excavator, as a loader will not safely be able to pick up the safety berm without working close to the crest, and without pushing high-sulphide material over the dump crest.

  Surface runoff from this area flows along the dump surface parallel to the crest, and reports to the east outside of the Guardhouse Creek catchment. The dump surface is stained orange over a wide area, as shown on the aerial photograph, with no clear surface runoff channel evident.

- The western half of the middle lobe of the Northwest Dump (MNWD) is within the boundary of the surface catchment of Upper Guardhouse Creek, as defined by the pre-mining topography. This dump is mainly hornblende quartz diorite and calc-silicate schist, but appears to have more sulphide material mixed in than the UNWD.

  - There is a single large pile of high-sulphide material within the inferred Upper Guardhouse Creek catchment. This material is orange-stained and contains purplish-black pyrite quartzite boulders (likely Unit 1D4). The material has been dozed into a wedge-shaped prism, and the eastern face of the pile is near-vertical and appears to have been an active digging face. Where overhangs occur on this eastern face, secondary salts were observed- these are indicative of the reactive nature of the material.

  - There are isolated other berms and single dumps of similar material; these are volumetrically small, but should be relocated if the larger relocation program is undertaken. These locales are identified in Figure 1 by dashed green lines. The material at these locations is visually distinct and relocation can be undertaken on a visual basis alone.
  - Current dump surface runoff drains towards the Faro Pit over most of the MNWD, as the highest point on the MNWD is the western crest of the dump and the traffic surface is sloped towards the pit from the dump crest.

- The lower lobe of the Northwest Dump (LNWD) is almost completely outside the boundary of the surface catchment of Upper Guardhouse Creek, as defined by the pre-mining topography- only a small region of the northwest portion of the LNWD is within the catchment. This dump is largely calc-silicate schist, and the western portion of the LNWD appears to be uniformly calc-silicate schist, as observed from the free dumps on the pile surface and the material exposed in the dump face. The eastern portion of the LNWD contains some proportion of mixed sulphide material, based on observations of material currently exposed. This dump was observed from the crest of the MNWD only and was not inspected on foot during July 2007. The remote observations agree with previous observations by the principal investigator from toe seep surveys in this area in previous years.

2 Volume Estimates

Volume estimates for Stockpiles 1, 2, and 3 are shown in Table 1. Volumes above the plane of the dump surface were estimated, and a separate estimate was prepared for volumes including over-excavation by 0.5m to ensure the majority of residual sulphide material is removed. Volumes of sulphide material outside of the Upper Guardhouse Creek catchment were not estimated, but could be estimated using the areas defined in Figure 1 and an average thickness of 1.5 m.

Table 1: Estimates of sulphide stockpile volumes within Upper Guardhouse Creek catchment, Northwest Dumps

Sulphide Stockpile	Area	Perimeter	Est. Average Thickness	Volume Above Plane	Volume of 0.5m Over-excavation Within Footprint	Total Estimated Volume to be Relocated
	[m^2]	[m]	[m]	[m^3]	[m^3]	[m^3]
1 (UNWD)	2,793	238	2.0	5,586	1,397	6,983
2 (UNWD)	4,381	420	1.5	6,572	2,191	8,762
3 (MNWD)	2,363	299	3.0	7,089	1,182	8,271
Total Volume				**19,247**	**4,769**	**24,015**

3 Candidate Disposal Locations

The western-most of the Faro low-grade ore stockpiles (LGSP A) is a candidate repository for the high-sulphide material in the Upper Guardhouse Creek catchment. The upper surface of this pile is fairly flat and there is ample capacity to increase the height of this stockpile without increasing the footprint.

The eastern Faro low-grade stockpile (LGSP C) currently has an irregular surface, and would require a minor amount of dozer work to prepare a candidate repository for the sulphide material form the Northwest Dump. A candidate location previously identified as location for receiving oxide fines and low grade ore is presently used as a scrap yard, and is presently the site of a steel-cutting program to prepare scrap steel for sale.

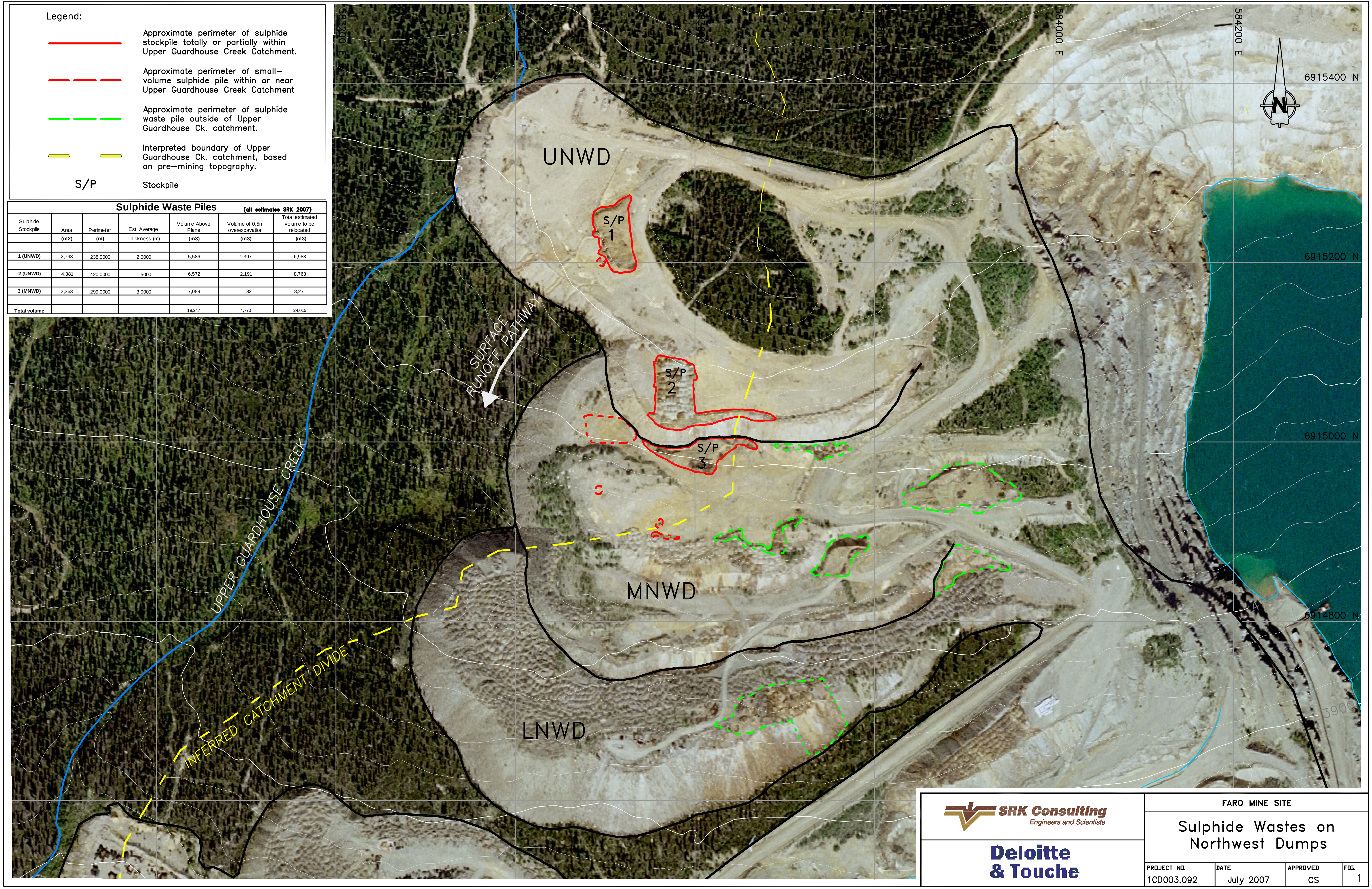
Several alternate repositories are available within the Upper Northwest Dump. These candidate sites provide opportunities for shorter haul distances while maintaining the objective of removing high sulphide material from the Upper Guardhouse Creek catchment. The candidate locations are currently the sites of similar high-sulphide material as observed and noted elsewhere. Re-location of high sulphide material to these locations requires consideration of the ultimate site closure measures adopted for the Northwest Dumps and the low grade ore stockpiles.

Legend:

- (solid red line) Approximate perimeter of sulphide stockpile totally or partially within Upper Guardhouse Creek Catchment.
- (dashed red line) Approximate perimeter of small-volume sulphide pile within or near Upper Guardhouse Creek Catchment
- (dashed green line) Approximate perimeter of sulphide waste pile outside of Upper Guardhouse Ck. catchment.
- (dashed yellow line) Interpreted boundary of Upper Guardhouse Ck. catchment, based on pre-mining topography.
- S/P — Stockpile

Sulphide Waste Piles (all estimates SRK 2007)

Sulphide Stockpile	Area	Perimeter	Est. Average	Volume Above Plane	Volume of 0.5m overexcavation	Total estimated volume to be relocated
	(m2)	(m)	Thickness (m)	(m3)	(m3)	(m3)
1 (UNWD)	2,793	238.0000	2.0000	5,586	1,397	6,983
2 (UNWD)	4,381	420.0000	1.5000	6,572	2,191	8,763
3 (MNWD)	2,363	299.0000	3.0000	7,089	1,182	8,271
Total volume				19,247	4,770	24,015



SRK Consulting
Engineers and Scientists

Deloitte & Touche

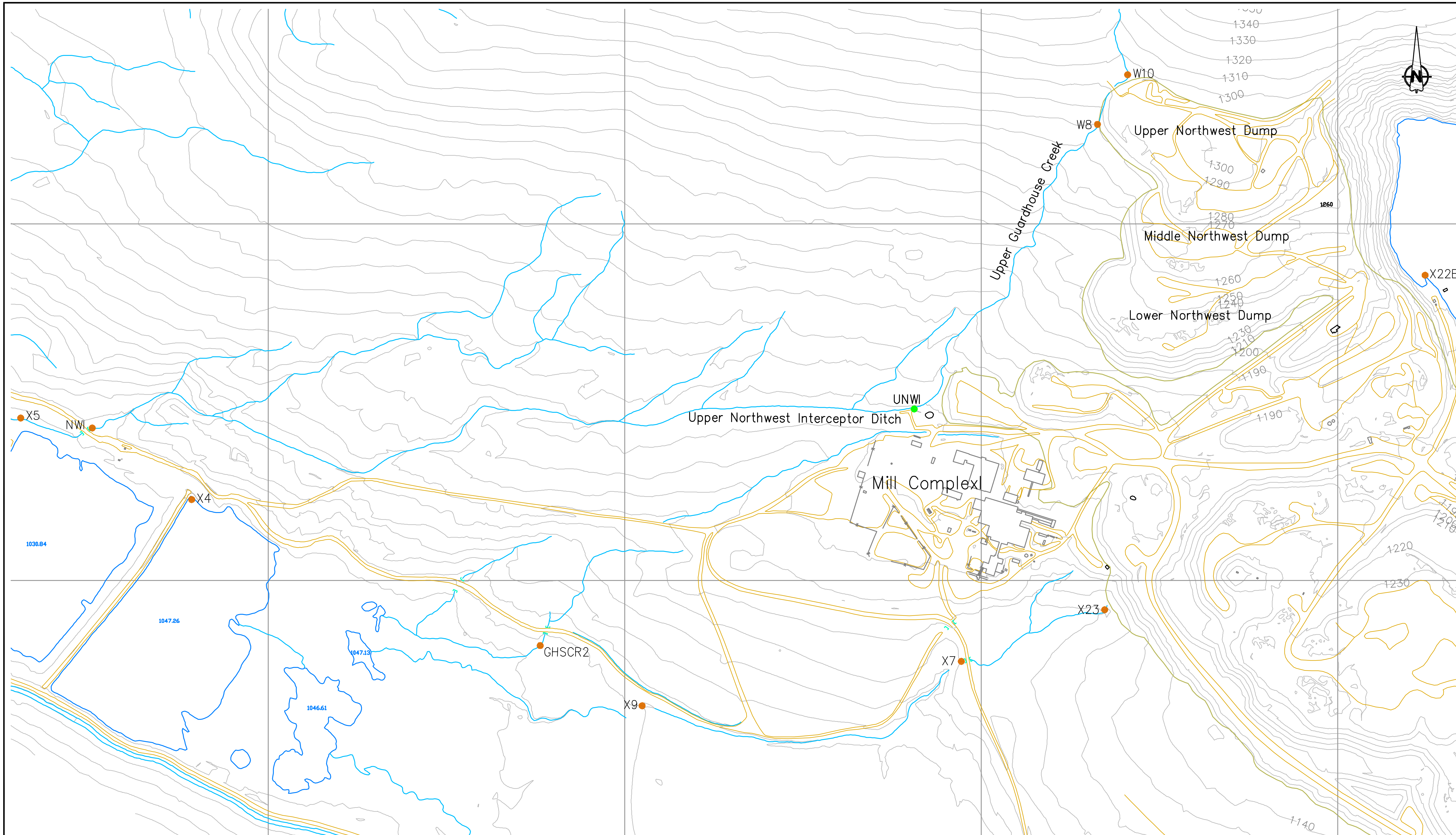
FARO MINE SITE

Sulphide Wastes on Northwest Dumps

PROJECT NO.	DATE	APPROVED	FIG.
1CD003.092	July 2007	CS	1

Appendix B.2

Northwest Interceptor Ditch Water Quality Monitoring



Legend

- UNWI — SRK 2007 Water Sampling Location
- X23 — Routine Surface Water Sampling Location

0 100 200 300 400 500 Metres

1:10,000

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Vancouver B.C.

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2007 Supplemental Geochemical Studies Report

Northwest Interceptor
Ditch Sample Locations

SRK JOB NO.: 1CD003.092.0200

FILE NAME: 2008 FARO SITE PLAN–TP_Locations.dwg

Anvil Range Mining Complex

DATE: Sept. 08

APPROVED:

FIGURE: 1

Client:	SRK Consulting (Canada) Inc.
Download Date:	7/12/2007
Project Name:	NW Dump
Project Number:	ICD003.092
Chain of Custody:	167864
Samples received:	7/5/2007

Field Parameters (collected by SRK)			
Sample ID		Upper NWI	NWI
Field pH	pH units	7.96	7.54
Field Conductivity	uS/cm	80	240
Colour		None	Brown
Clarity		Clear	Cloudy with suspended silt
Station coordinates			
Easting (NAD 27 Zone 8V)		582812	580560
Northing (NAD 27 Zone 8V)		6914481	6914435

TABLE: Results of WATER Analyses			
Sample ID		Upper NWI	NWI
CANTEST ID		707060069	707060066
Date Sampled		7/3/2007	7/3/2007
Parameter	**Units**		
Conventional Parameters			
pH, Laboratory	pH units	7.87	7.78
Conductivity	uS/cm	172	288
Hardness CaCO3	mg/L	71.8	132
Dissolved Sulphate SO4	mg/L	16.3	20
Metals Analysis			
Dissolved Aluminum Al	mg/L	0.014	0.016
Dissolved Antimony Sb	mg/L	< 0.0002	< 0.0002
Dissolved Arsenic As	mg/L	0.0003	0.001
Dissolved Barium Ba	mg/L	0.032	0.058
Dissolved Beryllium Be	mg/L	< 0.0002	< 0.0002
Dissolved Bismuth Bi	mg/L	< 0.0002	< 0.0002
Dissolved Boron B	mg/L	< 0.01	< 0.01
Dissolved Cadmium Cd	mg/L	0.00003	0.00001
Dissolved Calcium Ca	mg/L	23.8	41.7
Dissolved Chromium Cr	mg/L	< 0.0002	< 0.0002
Dissolved Cobalt Co	mg/L	< 0.0002	< 0.0002
Dissolved Copper Cu	mg/L	0.0023	0.0014
Dissolved Iron Fe	mg/L	< 0.01	0.13
Dissolved Lead Pb	mg/L	0.0002	< 0.0002
Dissolved Lithium Li	mg/L	0.003	0.003
Dissolved Magnesium Mg	mg/L	2.98	6.72
Dissolved Manganese Mn	mg/L	0.0003	0.031
Dissolved Mercury Hg	ug/L	< 0.02	< 0.02
Dissolved Molybdenum Mo	mg/L	0.0002	0.0004
Dissolved Nickel Ni	mg/L	0.0009	0.0009
Dissolved Phosphorus P	mg/L	< 0.03	< 0.03
Dissolved Potassium K	mg/L	0.81	1.8
Dissolved Selenium Se	mg/L	< 0.0002	0.0005
Dissolved Silicon Si	mg/L	5.39	4.59
Dissolved Silver Ag	mg/L	< 0.00005	< 0.00005
Dissolved Sodium Na	mg/L	1.66	1.71
Dissolved Strontium Sr	mg/L	0.102	0.182
Dissolved Tellurium Te	mg/L	< 0.0002	< 0.0002
Dissolved Thallium Tl	mg/L	< 0.00002	< 0.00002
Dissolved Thorium Th	mg/L	< 0.0001	< 0.0001
Dissolved Tin Sn	mg/L	< 0.0002	< 0.0002
Dissolved Titanium Ti	mg/L	0.0005	0.0007
Dissolved Uranium U	mg/L	0.0004	0.0008
Dissolved Vanadium V	mg/L	< 0.0002	0.0003
Dissolved Zinc Zn	mg/L	0.017	0.003
Dissolved Zirconium Zr	mg/L	< 0.002	< 0.002

Appendix C
Mill Area Investigation

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Memo

To:	File	**Date:**	September 12, 2008
cc:		**From:**	Madeleine Corriveau and Dylan MacGregor
Subject:	2007/08 "Supplemental Geochemical Studies"- Task 400: Mill Area	**Project #:**	1CD003.092.400

1 Introduction

During investigations into the distribution of oxide fines in 2004, a series of hand pits were excavated and logged along the southern edge of the Mill Pad. A large proportion of the samples were acidic or contained sulphides, and it was determined that further delineation of these materials would be required to develop appropriate mitigation plans for this area.

Further investigations of the Mill Pad were initiated in 2007. These included geochemical logging and field tests on samples collected as part of a 2005 hydrocarbon investigation by Gartner Lee Limited (GLL), and additional field investigations to delineate the horizontal and vertical extent of acidic material within the Mill Pad, and to develop a better understanding of the composition and the chemical characteristics of the fill material.

2 Review of Existing Data

2.1 2004 Assessment of Oxide Fines

During investigations into the distribution of oxide fines in 2004, the southern crest of the Mill Pad was surveyed to assess the potential remediation requirements in this area. Shallow test pits were excavated and logged along the southern face of the Mill Pad, from the emergency tailings area to the guardhouse parking lot, and paste parameters were determined. Sample locations are shown in Figure 1. Paste parameters and sample descriptions are provided in Attachment 1.

It was found that a large proportion of the materials encountered were acidic and had elevated conductivity values. It was also noted that a significant proportion of the samples had elevated sulphide mineral content. The study concluded, however, that at least some of these areas represent thin layers of reactive material that have been pushed over the crest of the fills at the plant site area. Other areas showed evidence (e.g. mill balls) that ore or ore-like material has been used as sub-grade for roads and parking areas (SRK, 2006).

2.2 Mill Area Hydrocarbon Investigation

In 2005, Gartner Lee Limited (GLL) conducted a field study of hydrocarbon-contaminated soils. A number of drill holes from this investigation were located within the Mill area (Figure 1). Samples were analyzed for hydrocarbon contamination only (GLL, 2006), and were archived at GLL's Whitehorse facilities.

3 2007 Mill Area Geochemical Investigation

3.1 Methods

3.1.1 Testing of 2005 samples

Forty-five archived samples from the 2005 GLL hydrocarbon drilling investigation were retrieved in 2007. These samples were re-logged by SRK staff and subjected to contact tests (rinse pH and conductivity at a 1:1 solid to liquid mass ratio).

3.1.2 Collection and Testing of Additional Samples

A total of 35 samples were collected from 17 excavator test pits within the mill pad area in September 2007. Locations of the pits are shown in Figure 1. All pits were logged, and where possible, depth to original ground was noted. Contact tests (rinse pH and conductivity at a 1:1 solid to liquid mass ratio) were performed on the samples by SRK staff. All samples were sent to Cantest Ltd. (Burnaby, BC) for acid-base accounting (ABA) tests including paste pH, sulphur forms (total S, sulphate), and modified neutralization potential (NP), as well as elemental analysis by ICP-MS.

3.2 Results

3.2.1 General Observations

A wide range of materials was observed in the mill pad area, including till-like soils, waste rock, fine silty to sandy material which could be from either tailings or concentrate spills, and buried garbage, including wood, plastic, and metal. Yellow to orange staining was noted in several of the test pit samples and sulphides were relatively abundant. There were indications that these materials have been redistributed in the past, with buried layers of tailings/concentrate like material and/or traffic layers evident in some of the test pits. The variable nature of materials in the Mill Pad reflects the historical milling operations in this area.

Materials in the west and northwest portion of the mill pad were generally more till like, with little introduced fill, while materials in the east and southeast (around the mill and concentrate load-out) were more variable, with more of the sulphide rich materials.

3.2.2 Thickness and Volume of Fill

Original ground was encountered in most of the pits between about 0.5 and 2 m (Attachment 3). Pits TP-03 and TP-10 along the southern face of the mill pad had 3.5 and 4.5 m of fill, respectively; the excavator was not able to dig to original ground at two other sites along this southern face, but there was at least 5 m (TP-16) and 3 m (TP-17) of fill at these two locations. It was also not possible to reach original ground at TP-01 which had at least 2.5 m of fill.

Pre-mine topography of the mill pad area is relatively coarse, with contour intervals often greater than the known thickness of fill in many areas. However, comparisons of pre-mine and current topography along the southern face of the mill pad suggest that fill in these areas reaches a maximum of approximately 15 m. The estimated volume of fill in the mill pad area is on the order of 500,000 m^3, based on the difference between original and current topography.

3.2.3 Contact Tests

There was a wide variety of rinse pH and conductivity values ranging from 2.5 to 8.1 (average 5.2) and 0.02 to 5.8 mS/cm (average 2.3 mS/cm), respectively (Attachment 3). There is a weak correlation between low pH and high conductivity. The samples with the lowest pH and highest conductivity values tended to be located within the upper ~0.5 meter of material (TP-01, TP-02, TP-09, TP-15), with the exception of some very high conductivity levels (up to 5.8 mS/cm) and relatively low pH values (4.5) at depth in pits excavated near the southern crest of the mill pad (i.e. TP-10 and TP-17). Figure 1 shows the distribution of acidic and circum-neutral rinse pH values in near-surface (<0.5m) and deeper (>0.5m) samples collected in 2005 and 2007.

3.2.4 ABA and Element Scan

Previous closure geochemical studies of waste rock at the Anvil Range Mining Complex determined that, a site specific NP/AP value of 1.1 differentiates potentially acid generating (PAG) and not potentially acid generating (nPAG) materials (SRK 2004). ABA results for the mill pad area (Table 1) indicate that approximately two thirds of the samples have NP/AP ratios of less than 1.1 and are considered potentially acid generating (PAG). A number of samples actually had negative NP values indicating that they have no neutralization potential and are already acid generating (AG). PAG and AG samples have a wide range of sulphide-sulphur content from as low as 0.3% up to 33%.

Nearly a quarter of the total number of samples had sulphide-sulphur contents greater than 10% and came from a variety of locations throughout the mill pad area: TP-03, TP-09, TP-12, TP-13, TP-14, TP-15, TP-16, and TP-17. High sulphide concentrations often corresponded with very high metal concentrations (see Table 2 for a summary of metal results; complete results are provided in Attachment 4). Typical metal concentrations for PAG and AG material were 0.2 to 2.6 % lead (maximum 4.6%), and 0.4 to 5.6% zinc (maximum 17%).

Only about a third of the samples had NP/AP ratios greater than 1.1 and are considered not potentially acid generating (nPAG). These samples had much lower metal concentrations than did PAG and AG samples. Test pits TP-04, TP-05, TP-06, TP-07 and TP-08 contained no PAG samples. TP-03 had one sample taken from a layer of PAG material with high sulphide and metal content; however nPAG samples were collected from above and below this layer.

4 Discussion

Field and laboratory testing has shown that the Mill Pad contains a mix of nPAG, PAG, and AG material. It appears that PAG and AG materials are more common in the east and southeast areas of the Mill Pad, where mineralized products (ore, concentrate, and tailings) were handled during operations. In contrast, the west and northwest portion of the Mill Pad contain dominantly nPAG material. These observations apply both to near-surface material and to material at depth.

Figure 2 shows an approximate outline of the area of PAG and AG material. Potential closure options for this area are to cover it in place or to relocate it to a nearby location on the Faro Waste Rock Dumps that also contains PAG materials. The most likely option for closure of PAG waste rock in the Faro Waste Rock Dumps is to cover it with a 0.5 to 2 metre soil cover.

A scoping assessment (Table 1) was carried out to provide a basis for comparing the cost of covering in place vs. relocation to a nearby location on the Faro waste rock dumps that will already be receiving a cover. The ‘cover in place’ option is estimated to cost 35% less than the ‘relocate and cover’ option, based on unit costs for soil covers used in cost estimates for covering and ‘relocating+ covering’ of waste materials adjacent to the Mill Pad. Future optimization will be necessary to finalize cover designs, and could also lead to the development of a ‘consolidate and cover’ option within the Mill Pad footprint. In that case, consideration should be also given to reconfiguring the area to prevent drainage from escaping to the southwest.

Final remediation decisions need to be made in the context of other remediation activities in the general vicinity of the mill pad, notably relating to the oxide fines and emergency tailings areas.

5 References

SRK Consulting, 2004. Geochemical Studies of Waste Rock at the Anvil Range Mining Complex – Phase 3 Report. Report prepared for Deloitte & Touche Inc. June 2004.

SRK Consulting, 2006. Anvil Range Mining Complex, Yukon – Assessment of Low and Medium Grade Ore Stockpiles 2005/06 Task 30 – DRAFT. Report prepared for Deloitte & Touche Inc. March 2006.

Gartner Lee Limited (GLL), 2006. Anvil Range Mine, 2005 Investigation of Hydrocarbon-Contaminated Soils. Report prepared for Deloitte & Touche Inc. June 2006.

Table 1: ABA Results for 2007 Samples

Sample ID	Rinse pH	Rinse Conductivity. mS/cm	Fizz Rating	Total S[1] (Wt.%)	SO4-S (Wt.%)	S-S[2] (Wt.%)	AP[3]	NP[4] (kg $CaCO_3$/t)	NNP	NP/AP	Acid Generation Potential
MS-TP-01A	2.91	3.65	Moderate	2.37	1.66	0.71	22.2	-7.4	-29.6	-0.33	PAG
MS-TP-01B	4.36	0.91	Moderate	0.28	0.03	0.25	7.8	30.6	22.8	3.9	nPAG
MS-TP-02A	2.93	4.16	Slight	2.30	1.39	0.91	28.4	-10.7	-39.1	-0.38	PAG
MS-TP-02B	4.68	2.99	Slight	6.62	0.81	5.81	181.6	1.0	-180.5	0.006	PAG
MS-TP-03A	5.55	1.05	Strong	0.40	0.12	0.28	8.8	52.2	43.4	6.0	nPAG
MS-TP-03B	5.27	0.69	None	17.70	0.37	17.33	541.6	7.4	-534.2	0.014	PAG
MS-TP-03C	5.42	0.47	Strong	0.41	0.11	0.30	9.4	38.6	29.2	4.1	nPAG
MS-TP-04A	5.66	0.22	Strong	0.12	0.08	0.04	1.3	71.4	70.2	57	nPAG
MS-TP-05A	6.01	0.02	None	0.15	0.04	0.11	3.4	6.5	3.1	1.9	nPAG
MS-TP-05B	5.85	0.11	Strong	0.04	0.04	0.00	0.3	33.6	33.3	112	nPAG
MS-TP-06A	6.01	0.21	Strong	0.50	0.08	0.42	13.1	60.3	47.2	4.6	nPAG
MS-TP-07A	5.96	0.24	Strong	0.08	0.06	0.02	0.6	26.0	25.4	42	nPAG
MS-TP-08A	4.60	1.59	None	0.42	0.34	0.08	2.5	3.8	1.3	1.5	nPAG
MS-TP-08B	5.17	0.68	Strong	0.18	0.08	0.10	3.1	60.6	57.4	19	nPAG
MS-TP-09A	3.15	5.28	None	19.10	1.42	17.68	552.5	-13.2	-565.7	-0.024	PAG
MS-TP-09B	5.08	1.77	Strong	2.28	0.17	2.11	65.9	31.5	-34.4	0.48	PAG
MS-TP-10A	5.70	2.23	Strong	7.05	0.50	6.55	204.7	28.7	-176.0	0.14	PAG
MS-TP-10B	6.24	2.66	Strong	7.14	0.27	6.87	214.7	34.4	-180.3	0.16	PAG
MS-TP-10C	8.06	5.10	Moderate	6.67	0.24	6.43	200.9	16.3	-184.6	0.081	PAG
MS-TP-11A	4.88	1.37	Moderate	4.22	0.19	4.03	125.9	26.7	-99.3	0.21	PAG
MS-TP-12A	5.85	1.39	Slight	30.50	0.36	30.14	941.9	7.6	-934.3	0.008	PAG
MS-TP-12B	6.93	0.61	None	0.08	0.03	0.05	1.6	10.0	8.4	6.4	nPAG
MS-TP-13A	4.78	3.03	Slight	11.70	0.56	11.14	348.1	20.7	-327.4	0.059	PAG
MS-TP-13B	5.63	1.88	Strong	1.79	0.14	1.65	51.6	87.8	36.3	1.7	nPAG
MS-TP-14A	5.53	3.89	Moderate	19.80	0.62	19.18	599.4	21.5	-577.9	0.036	PAG
MS-TP-15A	2.46	4.27	None	14.20	1.44	12.76	398.8	-12.2	-411.0	-0.031	PAG
MS-TP-15B	5.17	2.71	Moderate	1.80	0.44	1.36	42.5	21.4	-21.1	0.50	PAG
MS-TP-16A	4.84	3.75	Slight	13.60	1.26	12.34	385.6	1.4	-384.2	0.0037	PAG
MS-TP-16B	5.32	0.635	Slight	33.60	0.47	33.13	1035.3	11.0	-1024.3	0.011	PAG
MS-TP-16C	5.51	1.80	Strong	6.22	0.69	5.53	172.8	131.2	-41.6	0.76	PAG
MS-TP-17A	5.04	2.11	Moderate	4.33	1.22	3.11	97.2	8.6	-88.5	0.089	PAG
MS-TP-17B	5.68	1.96	Moderate	10.10	0.68	9.42	294.4	30.1	-264.3	0.10	PAG
MS-TP-17C	4.64	5.79	Moderate	14.60	1.60	13.00	406.3	-14.4	-420.7	-0.036	PAG
MS-TP-17D	5.03	4.16	Strong	2.79	1.08	1.71	53.4	21.5	-31.9	0.40	PAG
MS-TP-17E	4.48	5.23	Slight	0.33	0.04	0.29	9.1	-3.1	-12.2	-0.35	PAG

Notes:
1. Total Sulphur by LECO furnace.
2. Sulphide-sulphur, calculated from the difference between total sulphur and sulphate-sulphur.
3. Calculated from sulphide-sulphur.
4. NP Method Used (Cantest SOP No. 7150): Modified ABA Method (Lawrence *et al*., 1989).

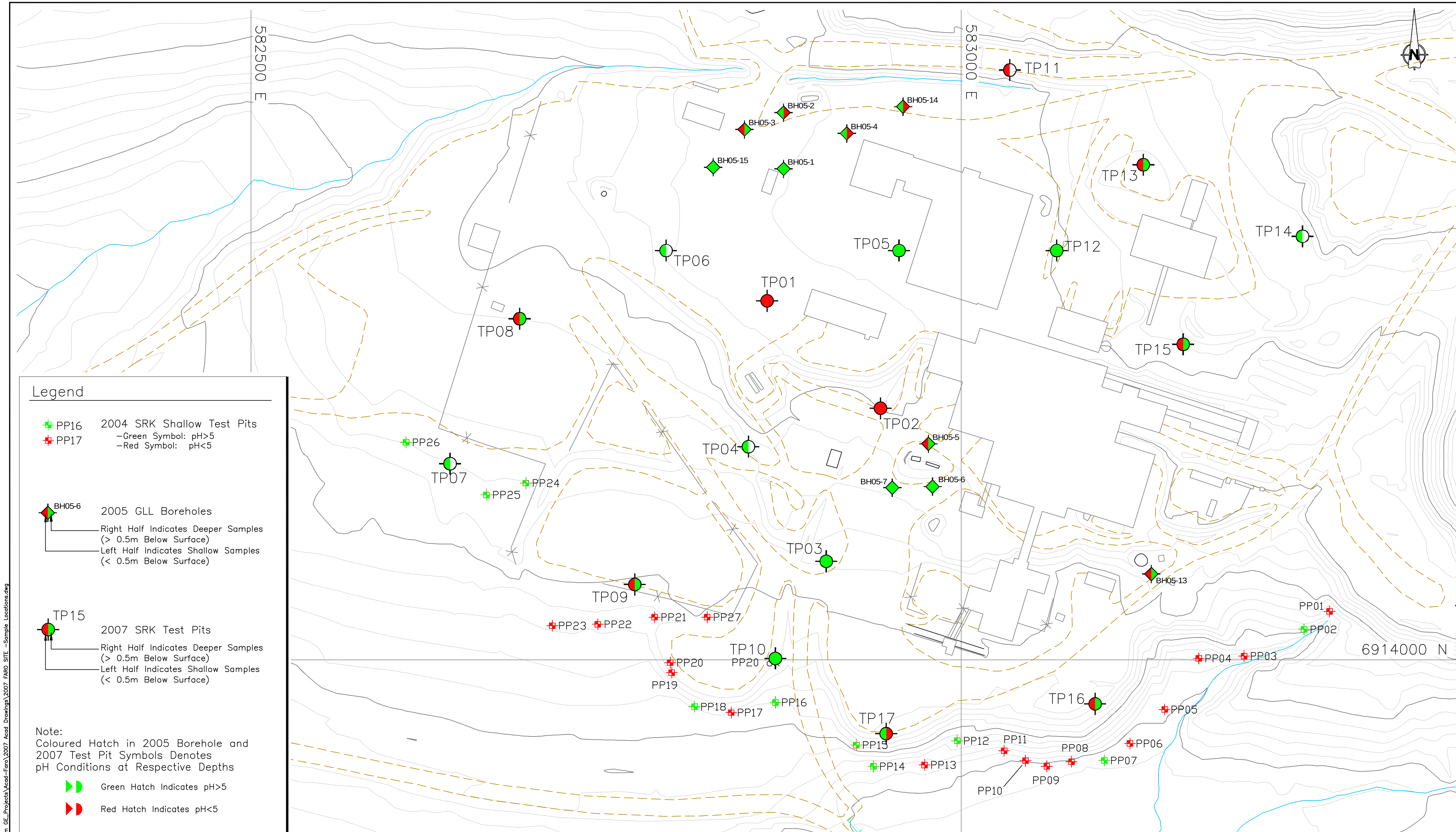
Table 2: Summary of Metals Results for 2007 Samples

Sample ID	Al %	As ppm	Cd ppm	Cu ppm	Fe %	Hg ppb	Ni ppm	Pb ppm	Zn ppm
MS-TP-01A	1.48	80	1.4	238	5.54	1591	28.8	2050	1075
MS-TP-01B	1.99	21	0.8	63	3.30	205	34.9	219	567
MS-TP-02A	1.8	88	2.6	192	5.94	1553	30.1	2031	1674
MS-TP-02B	2.06	114	20.4	379	8.95	3814	34.7	6265	12510
MS-TP-03A	2.08	11	1.1	52	3.02	337	38.6	436	989
MS-TP-03B	1.07	335	32.2	824	17.42	9651	33.6	12970	25310
MS-TP-03C	3.81	18	2.3	91	4.26	675	47.3	1232	1782
MS-TP-04A	3.36	15	0.7	46	3.73	198	45.4	271	515
MS-TP-05A	1.77	38	1.5	125	3.75	332	37	447	1125
MS-TP-05B	3.17	6	0.2	37	3.53	39	41	30	141
MS-TP-06A	4.36	16	1.4	85	5.19	395	47.3	809	1205
MS-TP-07A	2.56	15	0.5	50	3.58	133	41	159	351
MS-TP-08A	1.72	31	0.6	85	3.61	212	27.6	266	487
MS-TP-08B	3.29	7	0.3	36	3.87	63	40.4	109	670
MS-TP-09A	0.89	363	87.6	1855	16.67	33097	23.9	7055	65150
MS-TP-09B	1.93	36	6.1	227	4.41	1842	30.3	2703	4604
MS-TP-10A	1.96	91	15.3	390	8.30	2966	38.1	5484	9441
MS-TP-10B	1.82	101	17.2	492	8.41	5016	35.8	7193	10340
MS-TP-10C	1.67	144	13.8	422	8.59	4352	29.7	6606	8618
MS-TP-11A	2.83	95	6.8	368	7.89	1986	91.9	2896	4944
MS-TP-12A	0.59	537	21.9	1642	29.06	5605	20.2	2716	12390
MS-TP-12B	2.56	10	0.6	47	3.90	186	50	159	375
MS-TP-13A	0.72	1707	41.5	1200	14.69	11344	61.9	13460	29080
MS-TP-13B	3.94	222	5.7	201	5.26	1961	45.7	2224	4903
MS-TP-14A	0.66	1019	49.6	1348	19.97	18648	44.7	6077	41990
MS-TP-15A	0.65	680	11.7	1163	15.17	13143	18.8	10100	8347
MS-TP-15B	2.63	31	6.2	85	4.76	641	38.9	1006	5506
MS-TP-16A	1.14	288	57.8	1394	12.14	17991	27.3	38620	44430
MS-TP-16B	0.27	465	78.0	1686	32.00	22209	22.8	2669	58290
MS-TP-16C	1.58	74	18.9	482	7.56	5500	25.7	11840	11080
MS-TP-17A	1.51	67	29.5	872	4.88	16648	18	45570	22880
MS-TP-17B	1.73	169	48.0	1351	10.11	14308	39.5	23850	36620
MS-TP-17C	0.99	157	211.5	3396	8.18	69123	35.7	26360	170000
MS-TP-17D	1.39	35	30.6	461	4.62	8050	28.8	7398	31820
MS-TP-17E	0.07	2	5.6	89	0.53	1962	12.1	2357	3995

Table 3: Comparison of Relocation Costs and Cover Costs for PAG and AG Area of Mill Pad

Option	Unit Cost	Units	Total Cost	Notes
Cover in place	$4.97/m^2$	224 462 m^2	$1 115 576	– Unit cost adopted from unit cost for placement of Lower Parking Lot Dump cover.
Relocate and cover	$3.05/m^3$	500 000 m^3	$1 525 000	– Unit cost adopted from unit cost for relocating Oxide Fines Stockpile to Low Grade Stockpile 'C'. – Assumed relocation to an area already slated to receive a cover- no incremental cover placement cost would be incurred.

Figures



Legend

PP16, PP17 — 2004 SRK Shallow Test Pits
- Green Symbol: pH>5
- Red Symbol: pH<5

BH05-6 — 2005 GLL Boreholes
- Right Half Indicates Deeper Samples (> 0.5m Below Surface)
- Left Half Indicates Shallow Samples (< 0.5m Below Surface)

TP15 — 2007 SRK Test Pits
- Right Half Indicates Deeper Samples (> 0.5m Below Surface)
- Left Half Indicates Shallow Samples (< 0.5m Below Surface)

Note:
Coloured Hatch in 2005 Borehole and 2007 Test Pit Symbols Denotes pH Conditions at Respective Depths

- Green Hatch Indicates pH>5
- Red Hatch Indicates pH<5

Faro Mine, Yukon
Map Scale:1:2000
Contour Interval: 2m
Date of Photography: 03/07/25
Scale of Photography: 1:20000
Survey control derived from existing 1:20000 photography Survey control based on: UTM Projection, NAD27
Compiled by The ORTHOSHOP, Calgary, September 2003 WO 8856

25 0 50 100 150 feet
12.5 0 25 50 75 Metres

SRK Consulting
Engineers and Scientists
Vancouver

Deloitte & Touche

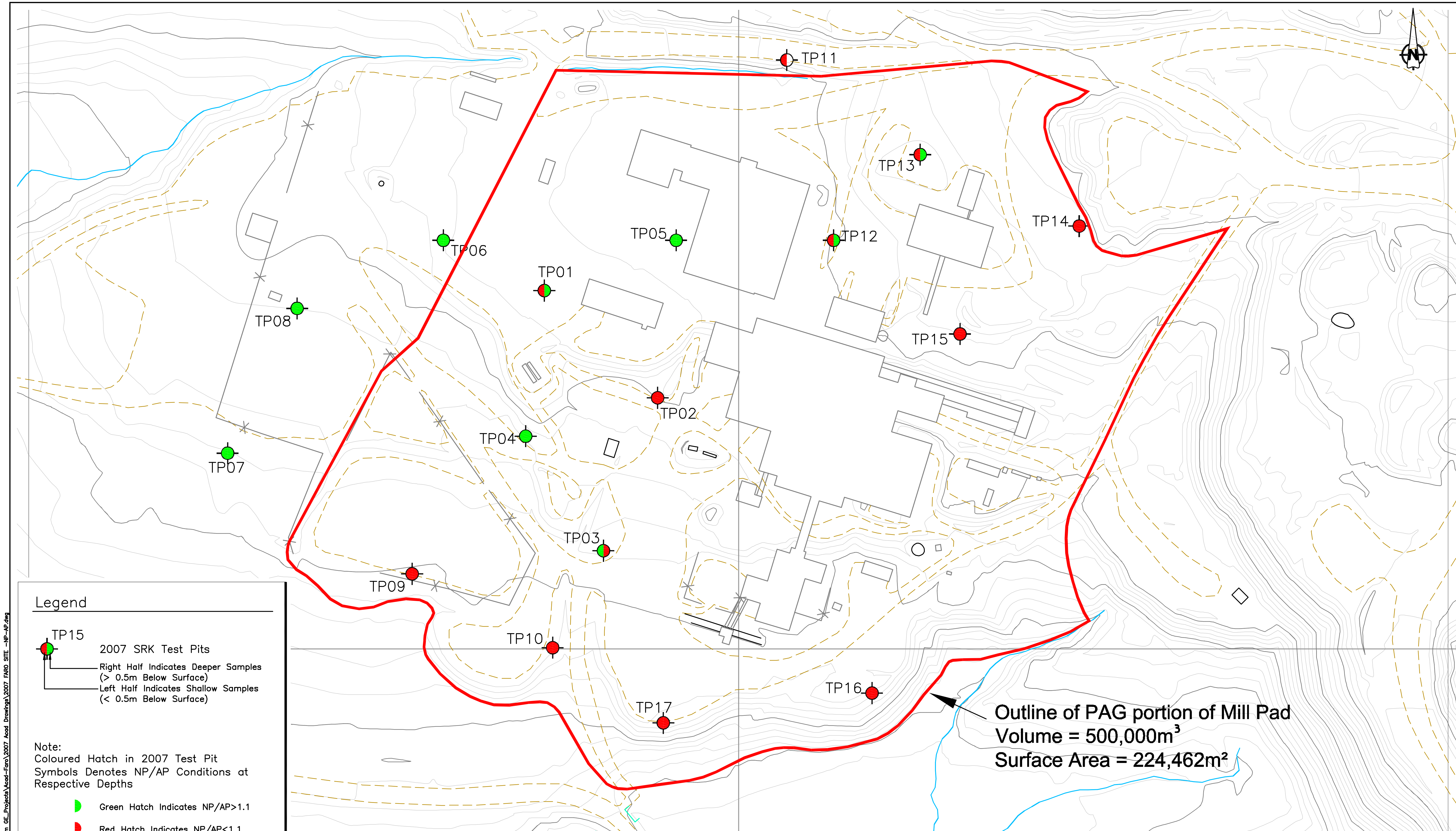
Mill Area Geochemical Study

Sample Locations and Rinse pH Data

Faro Mine Site

SRK JOB NO.: 1CD003.092	DATE: March 2008	APPROVED: M.C.C.	FIGURE: 1
File Name: 2007 FARO SITE -Sample Locations.dwg			

J:\01_SITES\FARO\1000_Deloitte_from GE_Projects\Acad-Faro\2007 Acad Drawings\2007 FARO SITE -Sample Locations.dwg



Faro Mine, Yukon

Map Scale:1:2000
Contour Interval: 2m
Date of Photography: 03/07/25
Scale of Photography: 1:20000
Survey control derived from existing 1:20000 photography Survey control based on: UTM Projection, NAD27
Compiled by The ORTHOSHOP, Calgary, September 2003 WO 8856

25 0 50 100 150 feet
12.5 0 25 50 75 Metres

SRK Consulting
Engineers and Scientists
Vancouver

Deloitte & Touche

Mill Area Geochemical Study

2007 Sample Locations with NP/AP Ratios and Outline of PAG Area

SRK JOB NO.: 1CD003.092

File Name: 2007 FARO SITE -NP-AP.dwg

Faro Mine Site

DATE:	APPROVED:	FIGURE:
March 2008	M.C.C.	2

Attachments

Appendix D - Plant Site Fill Geological Descriptions and Paste Parameters
From: Anvil Range Mining Complex, Yukon: Assessment of Low and Medium Grade Ore Stockpiles 2005/2006 Task 30, March 2006.

2004 Mill Site Fill Geological Descriptions and Paste Parameters

Station ID	EC	pH	Easting	Northing	Material Description and Notes
	(mS/cm)	(s.u.)	NAD27	NAD27	
PP01	15.04	2.17	583277	6914025	Orangish brown to yellowish brown fines, with angular to subrounded grey sulphidic phyllite gravel and dark rusty brown clasts. Sulphides abundant on surface, in clasts and as individual grains
PP02	2.94	5.39	583250	6914009	Pushed calc-silicate waste with greyish brown matrix. Occasional patches where matrix is weathered dark orange. Secondary salts observed in sheltered locations beneath large rocks, and patches of surface (10%) have pale yellowish stain (could be from runoff). Similar material, mixed with metal waste, half way back to previous point.
PP03	5.92	3.27	583205	6913993	Similar to PP02- calc silicatewaste, mixed with metal and trash, with orangey- to yellosih brown matrix
PP04	9.52	2.72	583167	6914001	Dark orangey brown and yellowish brown matrix of sand/silt, with 50% mix of calc-silicate, sulphide, and rounded granitoid gravel. Looks like a mix of till and mine waste.
PP05	6.32	1.97	583143	6913965	Yellowish olive brown to orangey brown matrix with 40-50% angular gravel and cobbles of grey phyllite, green schist, and sulphides. Sulphide clasts are weathered dark orangey brown.
PP06	6.46	1.98	583123	6913935	Yellowish tan matrix with abundant orangish tan staining. 40-50% angular gravel and rock chips of weathered greyish to greenish schist, highly weathered to pale yellow on external surfaces, and dark orangish brown to rusty brown on internal surfaces. Isolated well-rounded granitoid clasts observed.
PP07	1.98	5.72	583105	6913923	Gray matrix with local orange stained patches. Rock is 50% dark grey schist with orange staining on foliation. This location is the first instance of grey material along this stretch of toe (proceeding west).
PP08	2.56	3.69	583081	6913916	Material at base of several erosional gullies near crest of plant pad. Rock is angular mix of dark grey- and pale greenish grey-weathering schist. Fines are small chips of schist, ranging from dark grey to rusty brown, with patches of yellowish light brown.
PP09	4.39	5.68	583060	6913925	Below surface layer, material is angular dark grey biotite schist, with open framework (few fines or sand).
PP09 surf	10.04	2.5	583060	6913925	Surficial deposition of yellowish light brown matrix, with visible individual sulphide grains and orange to dark rusty brown staining locally. Clasts are angular dark grey schist with rusty orange staining on internal surfaces.
PP10	3.47	6.42	583045	6913929	Location at edge of runoff/ dozer push zone. Original material appears to be grey biotite schist with grey matrix.
PP10 push	6.26	3.89	583045	6913929	Location at edge of runoff/ dozer push zone. Push material is yellowish light brown, with orange staining, and contains abundant angular to subrounded gravel of grey schist, pale green schist, massive sulphides, and calc-silicate.
PP11	10.49	4.84	583030	6913936	Medium brown silty sand fines with visible sulhpide sand on surface. Efflorescent salts forming on surface, and accumulating beneath overhangs. Rocks are calc-silicate, grey schist, subrounded to rounded granitoids, and massive sulphides. Granitoid clasts stained yellow to orange. Location is below ramp for water treatment plant pipeline.
PP12	8.94	10.35	582997	6913943	Medium brown sand with white surface crust adjacent to runoff channel on pad face. Clasts are mainly granitoid gravel with approximately 10% subangular schist particles; few to no fines present. No staining observed. Abundant mill chemical residue in local area- possibly soda ash (??)
PP13	6.75	4.26	582974	6913926	Orangish brown sandy matrix with local orange staining and 30% calc-silicate, granitoid, schist, and coal gravel. Abundant trash mixed with material. Sulphide sand grains visible on washed surfaces. Clasts appear slightly bleached.
PP14	4.07	5.44	582938	6913925	Medium brown sand with local orange staining, with 20% angular calc-silicate and biotite schist gravel, with trace subrounded granitoid clasts. No secondary salts or visible sulphide grains observed. Minor coal and trash mixed with material.

2004 Mill Site Fill Geological Descriptions and Paste Parameters (cont.)

Station ID	EC	pH	Easting	Northing	Material Description and Notes
	(mS/cm)	(s.u.)	NAD27	NAD27	
PP15	7.36	5.06	582926	6913940	Medium brown sand with local orange staining, with 30% angular calc-silicate and biotite schist gravel, with trace subrounded granitoid clasts. No secondary salts or visible sulphide grains observed. Minor coal and trash mixed with material.
PP16	2.92	6.36	582869	6913970	Grey silty sand with grey biotite schist and granitoid gravel. Contains coal, plastic, metal and wood trash.
PP16 surf	5.43	3.94	582869	6913970	Yellowish to orangish light brown surface material with yellowish-stained granitoids, clac-silicate, and schist. Local orange to dark rusty brown staining in matrix. Contains coal, plastic, metal and wood trash.
PP17	5.35	4.1	582840	6913952	Yellowish to orangish light brown silty sand with local orange to rusty brown staining. Clasts consist of calc-silicate, grey biotite schist, and unstained granitoid gravel. Material contains abundant trash. Surface weathers grey, with traces of secondary salts and accumulations beneath overhangs.
PP18	2.91	6.36	582812	6913967	Loose medium brown sandy till, with isolated laminations of greyish orange sand. Abundant wood, plastic, metal trash
PP19	4.71	4.29	582796	6913991	Yellowish tan matrix with local orange to dark rusty brown staining in matrix and near clasts. Clasts are angular dark grey, yellowish-stained schist and minor subrounded granitoids. No sulphides visible in matrix and no massive sulphides observed.
PP20	3.51	4.94	582795	6913998	Orange silty sand matrix with local dark rusty brown staining, and 30-40% angular gray schist gravel with trace granitoid clasts.
PP20 ox	5.28	5.86	582795	6913998	Dark chocolate brown fines dumped at the edge of laydown area, near scrap mill components. May be milling residue- very uniform colour and grain size.
PP21	4.91	3.87	582784	6914030	Yellowish to orangish tan silty sand matrix with local dark rusty brown staining, 20% angular dark grey schist, calc-silicate, massive quartz, and subrounded granitoid gravel, clasts on surface all stained pale yellow (bleached).
PP22	4.26	3.95	582744	6914025	Yellowish to orangish tan silty sand matrix with local dark rusty brown staining, 20% angular dark grey schist, calc-silicate, massive quartz, and subrounded granitoid gravel, clasts on surface all stained pale yellow (bleached). Mixed with natural woody debris.
PP23	11.03	3.63	582712	6914024	Yellowish to orangish tan silty sand matrix with local dark rusty brown staining, 20% angular dark grey schist, calc-silicate, massive quartz, and subrounded granitoid gravel, clasts on surface all stained pale yellow (bleached). Mixed with natural woody debris.
PP24	0.7	6.38	582712	6914117	Medium olive brown till, dense, with subrounded to subangular granitoid and schistose clasts. Minor balsam poplar growing on pad. This location marks the southeasterm limit of the guardhouse laydown pad toe.
PP25	0.5	7.57	582687	6914118	Medium brown sandy matrix with secondary white salt forming on 15-20% of surface. Material contains 30-40% angular schist, calc-silicate, and subrounded granitoid gravel, with trace dark rusty brown-stained clasts.
PP26	2.13	7.03	582609	6914153	Medium brown matrix with local orange staining, gravel is angular green and grey schist and subrounded granitoids with isolated massive sulphide cobbles. Contains discarded mill balls. Location is southeasten limit of employee parking lot pad by guardhouse.
PP27	8.16	4.1	582821	6914030	Mix of dark orangey brown sulphide sand and sulphide, schist, and granitoid clasts. Surface weathers greensih yellow, and this colouration extends over a 30m x 50m area.

Attachment 2 - Paste Parameters for 2005 GLL Samples

Borehole/Sample #	pH	Conductivity Ec (mS)	Sample Description
BH-05-1-1	7.37	1.21	Medium grey brown, silt, clay, sand, and gravel, phyllite and quartz exhibiting a minor odor.
BH05-1-2	7.79	0.2	Light Brown, silt, sand and gravel, quartz and phyllite.
BH05-1-3	8.08	0.29	Light orange brown, sand, gravel and silt, oxidized phyllite.
BH05-1-4	8.18	0.53	Light grey with a hint of green, silt, sand, and gravel, quartz and phyllite (strong phyllitic sheen observed).
BH05-1-5	8.37	0.5	Light green grey, clay and some gravel, phyllite with minor hydrocarbon odor.
BH05-1-6	8.35	0.42	Grey, slity clay, gravel and some sand, phyllite and quartz (calcite? No HCL) expelling a minor hydrocarbon odor.
BH05-2-1	6.92	2.98	Brown with a hint of green, sand, silt gravel, and clay, phyllite with minor oxidation.
BH05-2-2	6.72	0.98	Dark Grey with faint green colouration, sand, gravel, trace fines, strongly foliated phyllite with some granodiorite rock fragments.
BH05-2-3	6.18	0.94	Brown with a hint of green, moist minor oxidized phyllite soil.
BH05-2-4	6.13	1.64	Dark brownish black, slit, clay, some fine grained sand and trace gravel, mica (sulphides?) observed.
BH05-2-5	3.7	3.41	Medium black brown, grey clay, organics, sand, mica and sulphides with a dominant odor. No significant rock fragments for identification.
BH05-3-1	7.62	2.83	Grey, phyllite soil showing minor oxidation and exhibiting a hydrocarbon odor.
BH05-3-2	6.88	2.92	Medium to light green grey, silt, sand, gravel and trace clay, phyllite with a minor hydrocarbon odor.
BH05-3-3	4.33	3.43	Medium orange brown, sand, clay, gravel, some silt, oxidized phyllite with a dominant hydrocarbon odor.
BH05-3-4	5.19	1.76	Dark brown, wet sand, clay, gravel, some silt, oxidized phyllite and quartz with a minor hydrocarbon odor.
BH05-3-5	5.68	0.91	Deep brown black, high percentage of silty clay, some organics, trace sand, trace gravel and trace mica. A strong decaying odor was observed.
BH05-3-6	4.19	2.39	Medium brown, silty clay, trace silt, mica and trace sulphides. No major rock fragments present for adequate classification.
BH05-4-1	7.75	0.68	Moderate brown with a green tinge, sand, silt and some gravel, quartz and minor oxidized phyllite.
BH05-4-2	7.46	0.79	Light grey, fine sand, silt and some gravel, phyllite and quartz (small basaltic fragments also seen).
BH05-4-3	6.78	0.29	Deep brown, wet silty clay, some sand, some organics, trace gravel, with a decaying type odor.
BH05-4-4	3.48	4.24	Medium brown, gravel, clay, trace sand and trace silt, phyllite exhibiting minor oxidation and strong planar cleavage, with a subtle hydrocarbon odor.
BH05-5-1	3.56	11	Black, fine sand, silt, some clay, some gravel, mica and sulphides, oxidized weathered phyllite (snap easily between fingers) and quartz. *Note*: for the conductivity the meter would fluctuate between 10.75 to 11.3 paused on 11 for the longest time interval.
BH05-5-2	3.79	0.63	Light orangish brown oxidized phyllite and quartzite soil, expelling a moderate hydrocarbon odor.
BH05-5-3	7.51	2.5	Grey green, clay, sand, gravel, trace silt, phyllite exhibiting strong planar cleavage and quartzite.
BH-05-6-1	7.65	0.67	Medium brown, gravel. Silt, some sand, trace clay, trace organics, phyllite (some quartz rich --> iron ore?) with a minor hydrocarbon smell.
BH05-6-2	7.51	0.74	Medium grayish brown, gravel with dominantly silt and clay fines, phyllite.
BH-05-6-3	6.86	0.97	Black, silt, clay, organics, trace gravel exhibiting a moderate to strong hydrocarbon smell.
BH05-6-4	7.36	0.65	Light grey, gravel and silt mainly, quartz and phyllite (showing some minor oxidation and strong planar cleavage), exhibiting a moderate to high level of hydrocarbon odor.
BH05-6-5	7.41	1.36	Grey with a light green tinge, sand, silt and some gravel, minorly oxidized phyllite and quartz.

Attachment 2 - Paste Parameters for 2005 GLL Samples

Borehole/Sample #	pH	Conductivity Ec (mS)	Sample Description
BH05-7-1	7.17	1.89	Light orange brown, sand, gravel, some silt, phyllite, quartz and quartzite, significant oxidation seen as well as a minor hydrocarbon odor observed.
BH05-7-2	6.77	1.08	Brown with a minor orange tinge, gravel, sand and silt (major elements) quartzite and phyllite, with hydrocarbon odor.
BH05-7-3	7.89	0.66	Green grey, gravel, coarse sand, some clay, trace fine sand, and trace silt.
BH05-7-4	7.28	2.04	Light grey green, silt, sand and gravel, phyllite with some oxidization seen.
BH05-7-5	7.27	1.64	Fine light grey with a green hue, gravel, fine sand, silt, and trace clay, emitting a mild hydrocarbon smell.
BH05-13-1	4.83	4.75	Deep green brown, clay, gravel, trace silt, sand, mica and sulphides, quartz rich phyllite and quartzite. *Note:* there was some fluctuation around the 4.75 mS conductivity reading.
BH05-13-2	7.66	2.5	Light brown, silt, some sand and some gravel, phyllite (oxidized and with strong planar cleavage), with a minor hydrocarbon odor.
BH05-14-1	7.76	0.18	Light to medium orange brown, gravel, silt and clay, quartz and phyllite, exhibiting minor oxidation on the phyllite and the sample had a faint hydrocarbon odor.
BH05-14-2	7.51	0.49	Green grey, Gravel (some fairly large grains), clay, some silt and some sand, phyllite (heavy grey sheen).
BH05-14-3	4.2	2.15	Black brown, moist sandy clay, some silt, trace gravel and mica, no suitable rock fragments for identification.
BH05-14-4	5.33	0.42	Dark brown black, clay, mica, trace sulphides?, trace organics. No significant rock fragments sufficient for proper identification were in this sample.
BH05-15-1	8.11	0.46	Grey green with a hint of brown, gravel, sand and silt, phyllite.
BH05-15-2	7.11	1.21	Grayish brown, clay, gravel, sand and some silt, quartz and phyllite.
BH05-15-3	7.85	0.92	Green grey, gravel, sand, silt and clay, large percentage of quartz with some phyllite (with almost more of a gneissose texture).
BH05-15-4	8.06	0.95	Light green grey, high clay and gravel content, phyllite with minor oxidation observed.
BH05-15-5	7.48	0.96	Grey green, silt, gravel, some sand and some clay, phyllite (strong sheen) with oxidation observed.

Attachment 3 - Contact Test Results and Test Pit Logs for 2007 Samples

Sample ID	Rinse pH	Rinse Conductivity (mS)	Sample Depth (ft)	Depth to Original Ground (ft)	Comments	Test Pit Photo Numbers
MS-TP-01A	2.91	3.65	0 - 1.5	>8	Mix of med to dark grey clay-sized material weathered to yellow/rust coloured fine-grained clay material. Underlain by rusty-coloured sandy material. Lots of wood and other junk esp. at top of pit.	3008, 3009
MS-TP-01B	4.36	0.91	5 - 7		Brown sandy material.	
MS-TP-02A	2.93	4.16	.5 - 2.5	4	Rusty coloured sandy layer with rounded gravel pieces below grey/yellow/orange weathered clay layer on surface.	3010 - 3012
MS-TP-02B	4.68	2.99	2.5 - 3.5		Brown sandy layer below rusty-coloured one.	
MS-TP-03A	5.55	1.05	1.5 - 2.5	14	Brown/grey clayey layer directly below thin layer of nearly pure sulphide (gold coloured).	3013 - 3022
MS-TP-03B	5.27	0.69	1.5 -3		Grey, sulphide-rich.	
MS-TP-03C	5.42	0.47	3.5 - 7		Brown sand, possibly till, with pieces of shale. Little lenses of coal.	
MS-TP-04A	5.66	0.22	0 - 5.5	5.5	Uniform light brown silty sand material with shale pieces.	3023 - 3025
MS-TP-05A	6.01	0.02	1 - 4	5.5	Mix of med. brown to rustly-brown sandy material.	3026 - 3029
MS-TP-05B	5.85	0.11	4 - 5.5		Grey silt clay with some shale pieces and other rock fragments.	
MS-TP-06A	6.01	0.21	.3 - 2.5	3	Grey sandy silt, lots of large rock fragments (mostly schist).	3030 - 3032
MS-TP-07A	5.96	0.24	.2 - 2.5	2.5	Brown sandy silt with gravel pieces (mostly schist).	3033 - 3035
MS-TP-08A	4.60	1.59	1 -3	7.5	Rusty-coloured silty sand.	3036 - 3038
MS-TP-08B	5.17	0.68	3 - 7.5		Med. grey sandy silt/clay with some rusty-coloured blebs.	
MS-TP-09A	3.15	5.28	0 - 1	4	Yellow/rusty-coloured silty sand with clumps of more clay-rich material and very friable pieces of shale.	3039 - 3041
MS-TP-09B	5.08	1.77	1 - 4		Grey-brown silty sand.	
MS-TP-10A	5.70	2.23	.5 - 3	11.5	Brown sandy silt, some layers with more yellow/rusty-coloured weathering.	3042 - 3044
MS-TP-10B	6.24	2.66	3- 5		Grey sandy silt, some rusty coloured blebs.	
MS-TP-10C	8.06	5.10	5 - 11.5		Brown sandy silt.	
MS-TP-11A	4.88	1.37	0 - 2.5	2.5	Composite sample of whole pit including: brown, very clay-rich layer with lots of cobbles; underlain by a thin brown sandy silt layer with cobbles and abundant sulphides; underlain by a greenish clay-rich layer with cobbles; underlain by a grey sandy silt	3045 - 3048
MS-TP-12A	5.85	1.39	.5 - 2.5	6.5	Combined sample from rusty-coloured sandy silt layer with abundant sulphides and an underlying layer of grey sandy silt material. (The top of this pit consists of a very fine-grained purple-coloured compacted layer with a black liner beneanth it).	3049 - 3051
MS-TP-12B	6.93	0.61	2.5 - 6.5		Brown clayey layer with big clumps of material. Rusty-coloured blebs and grains.	
MS-TP-13A	4.78	3.03	.5 - 1.5	5	Grey sandy silt with rusty-coloured lenses and blebs. Sample also included some of the grey, compacted surface layer with abundant yellow and rusty-coloured weathering.	3052 - 3054
MS-TP-13B	5.63	1.88	1.5 - 5		Brown sandy silt.	
MS-TP-14A	5.53	3.89	0 - 2	2	Grey sandy silt/clay with abundant sulphides esp. in bottom 4". Rusty coloured staining near surface. Yellow/rusty-coloured weathering on bedrock beneath.	3055 - 3060
MS-TP-15A	2.46	4.27	0 - 1	3	Greenish and yellow/rusty coloured weathered silt/clay with fine-grained sulphides. Massive sulphides on surface.	3061 - 3063
MS-TP-15B	5.17	2.71	1 - 3		Brown/grey sandy silt, some rusty-coloured lenses and blebs.	
MS-TP-16A	4.84	3.75	2 - 5	>16	Grey sandy silt with rusty-coloured lenses and gold-coloured sulphides.	3064 - 3069
MS-TP-16B	5.32	0.635	5 - 9		Fine-grained dark grey (almost purple in colour in upper section) with abundant sulphides.	
MS-TP-16C	5.51	1.80	9 - 16		Grey sandy silt with brown lenses and rusty blebs. Concretions up to a foot in diameter of gey seds, rusty blebs and white salts.	
MS-TP-17A	5.04	2.11	0 - 1.5	>10	Sandy silt, mostly med. brown - yellow and rusty-coloured with some compacted clay layers grey-purple in colour	3070 - 3075
MS-TP-17B	5.68	1.96	1.5 - 3.5		Grey sandy silt/clay with some rusty-coloured blebs.	
MS-TP-17C	4.64	5.79	3.5 - 7.5		Dark brown sandy silt with some compacted clay-rich material.	
MS-TP-17D	5.03	4.16	8 - 9		Light-coloured sand and weathered rock.	
MS-TP-17E	4.48	5.23	9 - 10		Med-brown sandy silt with sulphides.	

Sample ID	Ag	Al	As	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	Hg	K	La	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sc	Se	Sr	Te	Th	Ti	Tl	U	V	W	Y	Zn
	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppb	%	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
MS-TP-01A	3.2	1.48	80	127	0.6	1.25	1.4	17.5	62	238	5.54	6.3	1591	0.30	7.9	0.70	242	4.4	0.10	28.8	550	2050	2.42	11.3	4.4	<0.5	60	<0.5	5.1	0.02	1.0	0.8	32	0.8	4.6	1075
MS-TP-01B	0.4	1.99	21	310	0.5	1.51	0.8	14.4	84	63	3.30	6.9	205	0.32	13.4	0.93	401	4.1	0.11	34.9	698	219	0.29	0.3	4.7	<0.5	80	<0.5	6.5	0.03	0.2	0.9	42	0.3	7.2	567
MS-TP-02A	2.9	1.8	88	126	0.7	1.21	2.6	16.5	75	192	5.94	7.8	1553	0.36	8.3	0.85	234	3.9	0.09	30.1	532	2031	2.30	1.6	4.3	<0.5	56	<0.5	5.9	0.04	1.0	0.7	38	0.4	4.3	1674
MS-TP-02B	8.4	2.06	114	49	0.9	1.39	20.4	34.4	65	379	8.95	7.6	3814	0.31	14.4	0.89	618	4.4	0.10	34.7	621	6265	6.50	4.9	3.7	1.3	63	<0.5	6.8	0.03	2.1	1.1	32	1.8	7.5	12510
MS-TP-03A	0.6	2.08	11	311	0.3	2.35	1.1	14.2	91	52	3.02	7.6	337	0.39	14.7	1.11	367	3.7	0.12	38.6	567	436	0.37	0.3	5.0	<0.5	109	<0.5	6.5	0.03	0.3	0.8	43	0.3	7.2	989
MS-TP-03B	20.4	1.07	335	86	1.5	0.79	32.2	72.9	89	824	17.42	5.1	9651	0.15	4.4	0.47	733	8.1	0.08	33.6	373	12970	13.89	9.9	2.2	2.5	33	<0.5	2.5	0.02	3.6	1.0	18	1.8	3.5	25310
MS-TP-03C	1.4	3.81	18	381	0.4	2.53	2.3	19.5	100	91	4.26	12.7	675	0.81	24.3	1.51	455	3.8	0.20	47.3	624	1232	0.40	0.6	7.6	<0.5	128	<0.5	11.4	0.07	0.5	1.0	57	0.3	8.8	1782
MS-TP-04A	0.4	3.36	15	402	0.3	3.87	0.7	17.5	95	46	3.73	11.3	198	0.69	22.3	1.41	450	3.1	0.15	45.4	599	271	0.12	0.2	7.0	<0.5	144	<0.5	10.2	0.06	0.3	0.8	51	0.3	9.2	515
MS-TP-05A	0.8	1.77	38	247	0.9	0.54	1.5	20	84	125	3.75	6.5	332	0.40	10.5	0.70	457	4.3	0.08	37	605	447	0.13	0.5	5.2	<0.5	44	<0.5	5.2	0.04	0.5	1.1	34	0.4	6.3	1125
MS-TP-05B	0.1	3.17	6	203	0.3	2.02	0.2	16.3	79	37	3.53	11.2	39	0.56	25.2	1.35	393	2.0	0.15	41	505	30	<0.05	<0.1	7.3	<0.5	118	<0.5	10.6	0.03	0.2	0.7	49	0.2	10	141
MS-TP-06A	0.9	4.36	16	372	0.7	3.55	1.4	21	114	85	5.19	13.5	395	1.18	26.6	1.88	424	3.8	0.21	47.3	610	809	0.55	0.3	8.8	<0.5	197	<0.5	12.4	0.09	0.4	1.0	67	0.7	9.5	1205
MS-TP-07A	0.2	2.56	15	233	0.4	1.59	0.5	16.2	100	50	3.58	8.6	133	0.38	18.4	1.18	441	3.9	0.11	41	569	159	0.08	0.3	5.9	<0.5	81	<0.5	8.4	0.03	0.2	0.7	43	0.3	7.8	351
MS-TP-08A	0.5	1.72	31	358	0.7	0.73	0.6	12.6	108	85	3.61	6.7	212	0.37	8.9	0.67	292	6.1	0.10	27.6	542	266	0.42	0.7	5.2	<0.5	45	<0.5	6.0	0.04	0.4	0.9	38	4.2	5.2	487
MS-TP-08B	0.1	3.29	7	183	0.1	2.87	0.3	16.5	92	36	3.87	9.4	63	0.38	22.6	2.60	383	3.0	0.10	40.4	527	109	0.19	0.1	5.0	<0.5	86	<0.5	10.8	0.02	0.1	0.6	41	0.2	7.6	670
MS-TP-09A	25	0.89	363	<5	3.6	0.94	87.6	67	63	1855	16.67	8.4	33097	0.14	6.0	0.41	753	9.3	0.07	23.9	231	7055	15.03	15.8	2.6	6.2	27	<0.5	3.4	0.01	10.1	1.1	14	2.0	3.7	65150
MS-TP-09B	3.5	1.93	36	143	0.7	1.72	6.1	20.3	89	227	4.41	7.1	1842	0.32	12.8	0.83	464	5.3	0.12	30.3	585	2703	2.21	1.6	4.0	<0.5	88	<0.5	5.8	0.03	1.0	0.8	34	0.4	6.5	4604
MS-TP-10A	7.1	1.96	91	67	1.0	2.03	15.3	37.4	68	390	8.30	7.5	2966	0.34	13.9	0.77	542	4.7	0.11	38.1	424	5484	6.04	2.8	4.2	0.8	96	<0.5	6.2	0.03	2.0	1.0	32	0.5	7.2	9441
MS-TP-10B	8.3	1.82	101	90	0.9	1.73	17.2	35.1	108	492	8.41	7.2	5016	0.32	12.1	0.82	662	7.2	0.21	35.8	444	7193	6.01	3.7	4.2	1.1	81	<0.5	5.8	0.03	2.1	1.0	32	0.6	6.8	10340
MS-TP-10C	7.8	1.67	144	68	1.8	0.89	13.8	35.4	80	422	8.59	6.6	4352	0.37	10.6	0.67	802	5.7	0.38	29.7	494	6606	6.12	4.5	3.9	0.7	45	<0.5	5.3	0.04	2.2	1.4	33	0.8	6.3	8618
MS-TP-11A	4.1	2.83	95	100	0.7	1.63	6.8	41.7	147	368	7.89	10.2	1986	0.57	20.8	1.66	574	5.0	0.11	91.9	617	2896	3.99	1.6	6.6	<0.5	101	<0.5	9.6	0.06	1.1	1.4	53	2.2	8.9	4944
MS-TP-12A	14.5	0.59	537	6	1.8	0.47	21.9	125.5	56	1642	29.06	3.4	5605	0.12	4.4	0.27	551	8.7	0.05	20.2	357	2716	21.36	11.0	2.3	3.2	10	<0.5	2.2	0.01	3.0	1.3	3	0.6	4.8	12390
MS-TP-12B	0.3	2.56	10	165	0.6	1.00	0.6	15.3	103	47	3.90	8.5	186	0.32	16.7	1.07	582	3.6	0.11	50	774	159	0.13	0.2	6.1	<0.5	84	<0.5	6.7	0.03	0.2	0.7	57	0.3	9.8	375
MS-TP-13A	17.8	0.72	1707	23	2.0	1.01	41.5	71.2	110	1200	14.69	3.6	11344	0.11	4.9	0.72	1785	10.6	0.05	61.9	463	13460	11.00	30.1	2.8	2.9	28	<0.5	3.3	<0.01	6.3	2.6	17	0.4	5.6	29080
MS-TP-13B	3.2	3.94	222	311	0.3	5.51	5.7	27.1	110	201	5.26	11.0	1961	0.63	22.4	1.33	736	3.7	0.25	45.7	672	2224	1.91	2.6	5.6	<0.5	234	<0.5	10.1	0.07	1.1	0.8	46	0.3	9.3	4903
MS-TP-14A	27.6	0.66	1019	6	1.4	0.97	49.6	100	93	1348	19.97	4.1	18648	0.10	4.1	0.52	1292	10.3	0.05	44.7	254	6077	15.94	26.8	2.5	3.3	23	<0.5	2.5	<0.01	7.7	1.6	9	0.9	4.1	41990
MS-TP-15A	18.6	0.65	680	26	1.5	0.54	11.7	47.2	54	1163	15.17	4.9	13143	0.15	2.5	0.28	352	7.6	0.06	18.8	281	10100	10.65	25.1	1.8	1.8	15	<0.5	1.7	<0.01	7.9	0.7	16	1.1	1.9	8347
MS-TP-15B	1.1	2.63	31	181	0.4	1.88	6.2	20.2	79	85	4.76	8.8	641	0.43	19.7	1.22	756	3.3	0.16	38.9	531	1006	1.77	0.7	5.5	<0.5	106	<0.5	8.5	0.04	0.7	0.9	51	0.3	9.5	5506
MS-TP-16A	24.4	1.14	288	<5	6.5	0.87	57.8	50.9	56	1394	12.14	6.4	17991	0.22	5.0	0.59	764	11.7	0.07	27.3	328	38620	10.84	32.0	2.5	6.1	27	<0.5	2.8	0.02	10.8	1.0	18	3.0	4	44430
MS-TP-16B	59.1	0.27	465	<5	4.0	0.16	78.0	123.5	52	1686	32.00	4.9	22209	0.03	1.1	0.19	1301	10.6	0.05	22.8	102	2669	23.59	49.8	0.7	4.4	2	<0.5	0.6	<0.01	17.3	1.0	<2	2.9	1.8	58290
MS-TP-16C	14.1	1.58	74	126	1.1	4.65	18.9	27.1	32	482	7.56	5.2	5500	0.12	8.0	1.13	907	4.2	0.07	25.7	250	11840	5.30	7.6	4.4	0.7	217	<0.5	2.5	0.04	2.3	1.0	27	0.5	6.5	11080
MS-TP-17A	10.1	1.51	67	39	3.5	1.64	29.5	14.1	57	872	4.88	7.5	16648	0.28	11.2	0.64	420	7.0	0.10	18	571	45570	3.99	13.4	3.0	3.5	64	<0.5	5.2	0.06	5.7	0.7	30	1.0	4.7	22880
MS-TP-17B	19.5	1.73	169	<5	3.3	2.05	48.0	46	69	1351	10.11	7.5	14308	0.23	9.9	0.82	714	8.4	0.11	39.5	469	23850	8.60	16.5	3.4	4.7	54	<0.5	4.5	0.03	6.5	0.9	33	2.1	5.6	36620
MS-TP-17C	34.4	0.99	157	<5	5.1	1.02	211.5	24.2	59	3396	8.18	13.1	69123	0.13	5.5	0.50	1297	10.7	0.08	35.7	217	26360	11.44	26.4	2.0	11.0	30	<0.5	2.7	0.02	9.8	1.0	16	2.5	3.7	170000
MS-TP-17D	8.1	1.39	35	105	1.4	2.06	30.6	17.6	64	461	4.62	6.1	8050	0.30	17.3	0.78	1079	4.0	0.10	28.8	545	7398	2.68	2.9	6.4	1.5	87	<0.5	7.0	0.01	2.2	0.8	40	0.3	10.9	31820
MS-TP-17E	1.9	0.07	2	50	0.1	0.04	5.6	1.2	234	89	0.53	<1	1962	0.02	2.5	0.01	61	13.4	0.04	12.1	20	2357	0.36	1.3	0.3	<0.5	2	<0.5	1.2	<0.01	0.3	0.2	<2	0.1	0.6	3995